Corporation of the City of
NEW WESTMINSTER

Attachment # 2

Phase 1 Pre-Design Phase Summary Report

MASSEY THEATRE RENOVATION



PHASE I PRE-DESIGN SUMMARY REPORT

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TABLE OF CONTENTS	PAGE
1.0 INTRODUCTION	3
2.0 BACKGROUND	4
3.0 RELEVANT CITY POLICIES	9
4.0 MASSEY THEATRE OPERATIONS	16
5.0 MTS TENANT IMPROVEMENT WORKS	21
6.0 MTR PROJECT GOALS, OBJECTIVES & MINIMUM VIABLE OPTION SCOPE	22
7.0 PROJECT SCHEDULE	28
8.0 PROJECT BUDGET & CLASS D COST ESTIMATES	29
9.0 FINANCIAL STRATEGY	31
10.0 KNOWN RISKS	32
11.0 RECOMMENDATIONS	34
12.0 ATTACHMENTS	35

1.0 INTRODUCTION

The City of New Westminster ('the City') is advancing the phased renovation of the Massey Theatre Complex.

The Massey Theatre Renovation (MTR) project demonstrates the City's ongoing commitment to the cultural sector through strategic and planned investment. The MTR project recognizes the Massey Theatre Complex's importance as a significant community cultural asset. The work proposed is foundational to supporting the achievement of the broader long-term vision for the facility: to establish an innovative creative space and a vibrant centre for performing arts for New Westminster and the Region.

As part of the City's portfolio of specialized theatre assets, the Massey Theatre fulfills an important role along with the Bernie Legge and Anvil Theatres as a place for local, accessible, and inclusive performing arts development for the benefit of a diverse community. The City acquired ownership of the Massey Theatre from the School District in its "as is" condition, after it was slated for demolition as part of the old New Westminster Secondary School. After decades of successful operation, the aging facility requires renovation to bring it into the modern era and to ensure the continued viability of both the Theatre and the performing arts industry in the City.

The MTR project as outlined in this report is the first step and lays the groundwork in advancing the goals and objectives identified in the City's Theatre Strategy. It recognizes the shared vision of the City and its operating partner, the Massey Theatre Society (MTS), which is to bring together the opportunities, capabilities and resources of both organizations to improve and sustain the physical asset and its specialized functions for the use and enjoyment of all citizens of New Westminster, support the advancement of the arts and cultural sector in the City and region and activate and develop the facility to its fullest potential artistically, culturally and socially.

At the same time, the City is committed to its corporate responsibility under the Asset Management Strategy and Financial Plan to balance aspirational Theatre objectives with prudent decision-making to ensure the efficient use of City resources and a sustainable level of service delivery.

The purpose of this report is to present the findings of the MTR project's pre-design phase, including the recommendation of a revised "minimum viable option" (MVO) scope that considers the aspirational objectives set out by the Theatre Strategy 2019, as well as principles of corporate and fiscal responsibility set out by the Asset Management Strategy, Financial Plan and Corporate Reserve Policy.

This report forms the basis of a recommendation for Tier 1-Scenario 3 as the revised MVO and recommended Massey Theatre Renovation scope, for consideration by Council in May 2023.

2.0 BACKGROUND

2.1 Massey Theatre Complex

The Massey Theatre Complex refers to the existing building and surrounding lands that includes the Massey Theatre lease space, as well as the North Wing.

The Massey Theatre lease space is over 83,000 ft^2 (7,711 m^2) over four floors and is situated on a site area of 187,856 ft^2 (17,452.4 m^2). The Massey Theatre lease space excludes the North Wing.

The North Wing includes the large gymnasium and supporting spaces at the north end of the building, which are unoccupied. Together, the Massey Theatre lease space, North Wing and surrounding lands within the property lines make up the Massey Theatre Complex.

Refer to Attachment 1 for the existing floor plans, legal survey, and Massey Theatre lease space drawings.

2.2 Transfer of Massey Theatre Ownership

The Massey Theatre Complex was formerly owned by the Ministry of Education (School District 40). It was constructed around 1949 and formed a physical part of the adjacent New Westminster Secondary School (NWSS).

The Theatre served as a hub for entertainment and arts education for the New Westminster School District and the surrounding region. It was initially operated as a rental hall for the community and as a venue for touring artists and entertainers. With 1260 seats, it was the first theatre in Metro Vancouver to attract regional audiences for dance and musical productions. In 1982, the Massey Theatre Improvement Society was formed to raise funds for technical and facility upgrades, eventually becoming the Massey Theatre Society in 1991.

With NWSS slated for demolition and replacement by the School District, the future of the Massey Theatre came into question. From 2015 to 2021, there was a negotiation between the Ministry of Education, School District 40, the City and MTS to decide ownership and continued operation of the Massey Theatre. Three options were considered by former owner School District 40:

1. Demolish the Massey Theatre
2. Replace the Massey Theatre
3. Transfer ownership of the Massey Theatre to the City to allow continued operation by MTS

Option (3) was agreed between the School District and the City, on the proviso that the Ministry of Education would contribute funding to help meet the cost of making the Massey Theatre a stand-alone building separate to the school. A Ministry contribution of $1,119,500 was agreed to help fund demolition of the North Wing and the associated north wall reinstatement. The Ministry of

Education has since withdrawn this funding commitment, citing a lack of available funds. This left the cost of making the Massey Theatre a stand-alone building to be absorbed by the City. Nevertheless, the City retained an important cultural asset which continues to provide benefits to the community under the continued operation of MTS. Ownership of the Massey Theatre Complex and lands on which it rests was formally transferred to the City in November 2021.

As the new owner, the City signed a 25-year Lease and Working Agreement with MTS to operate the Massey Theatre and ancillary spaces within the Massey Theatre lease space. The Lease and Working Agreement was developed collaboratively based on a shared vision to bring together the opportunities, capabilities and resources of both organizations to improve and sustain the physical asset and its specialized functions for the use and enjoyment of all citizens of New Westminster, support the advancement of the arts and cultural sector in the City and region and activate and develop the facility to its fullest potential artistically, culturally and socially.

The land transfer and lease demonstrated the City's commitment to the cultural sector, and ensured that the facility would continue to serve the community and region, and provide the core infrastructure to establish a thriving arts centre for the City and region.

2.3 Cultural Heritage

The Massey Theatre Complex is situated upon the land of Halkomelem speaking peoples and is culturally significant to several First Nations. The land is also important to the Chinese community and is located adjacent to the New Westminster Historic Chinese Cemetery. The joint Memorialization Acquisition Committee (MAC) was established to engage with stakeholders and manage the layered interests in this area.

The Massey Theatre Complex is bound to the west by a restrictive covenant that prevents future development in this culturally significant area, roughly described as a 7,000 m^2 parcel on the corner of 8th Avenue and 8th Street.

2.4 Heritage and Archeology Permits

In accordance with the BC *Heritage Conservation Act,* the City submitted heritage inspection and alteration permit applications to the Province in 2022. To date, no direct evidence of archeologically significant features has been discovered within the property lines of the Massey Theatre Complex. Ground scanning and First Nations engagement is ongoing while the City awaits the issuance of the required permits.

When received, heritage inspection and alteration permits will allow ground disturbance to occur within the Massey Theatre Complex land parcel. Future work performed by the City or MTS within the property lines will be covered under the permits.

2.5 Previous Facility Studies

Prior to approval of the MTR project, feasibility studies were performed between 1997 and 2021. These studies focused on understanding the existing condition of the facility and its expected service life under several different renovation scopes and City programming scenarios. A summary of previous staff recommendations and closed Council reports relating to the MTR project can be found in Attachment 2.

The Study findings indicated that the facility requires significant upgrades and repairs, particularly to the building's internal structure, building envelope, and mechanical systems, in order to meet modern BC Building Code life safety requirements as well as the expectations of modern theatre operation.

From 2015 to 2021, feasibility studies focused on identifying a "minimum viable option" (MVO) scope that achieves a basic level of life safety upgrades, as well as modest internal theatre renovations, to improve BC Building Code compliance and allow effective theatre operation, in addition to improving access and inclusion for people to work, perform, participate and enjoy performances at the venue.

The studies also considered options that went beyond the MVO to investigate the potential implications of retention and renovation of the attached large gymnasium and supporting spaces (including a potential childcare facility). Further study into scope options beyond the MVO were eventually abandoned due to anticipated costs that exceeded the available budget at the time.

Page 2 of the Proscenium Phase 1 Report available in Attachment 3 provides an overview of previous facility studies from 1997 – 2021.

2.6 Structural System (Seismic Resistance) Study June 2015

A structural system study focusing on seismic resistance performance was undertaken by structural engineering consultant Bush, Bohlman & Partners in June 2015. Council was presented with the findings in September 2015 to support ongoing negotiations with the Ministry of Education regarding the transfer of ownership of the Massey Theatre and associated funding to address areas of deficient condition and performance.

The study identified the Massey Theatre Complex as "highly non-[Building] Code compliant" and proposed a "base case" scope of structural upgrades to address critical deficiencies. The "base case" formed part of the 2015 MVO scope adopted by Council in April 2016.

The majority of these structural upgrades, with the exception of new handrails and externally located electrical distribution equipment, have been carried into the current recommended MVO Tier 1-Scenario 3 scope. The main structural upgrades to improve seismic resistance in Tier 1-Scenario 3 include new building footings, exterior shear wall upgrades, rotting floor member

replacement, roof member upgrades, and enhancements to the heavy timber roof trusses overhanging the main auditorium.

Refer to Attachment 11 for the Council report and 2015 Bush, Bohlman & Partners June 2015 report.

2.7 Evolution of the "Minimum Viable Option" (MVO) Scope

Since originally approved by Council in 2016, the MVO scope has changed as different renovation and program scenarios were explored. Since 2019, the MVO scope has narrowed significantly to meet rising construction costs within a fixed project budget.

The MVO scope is currently described by Tier 1-Scenario 3 within the Proscenium Phase 1 Report provided in Attachment 3. It includes the highest priority scope items identified in the 2015 MVO. It is aimed at achieving a minimum viable base building that is functional and safe for public assembly. It defers other scope items, such as those focused more on internal theatre enhancements, to either MTS tenant improvement (TI) works or future phases of the MTR capital project.

Since August 2022, the mandate of the MTR project scope has been to limit scope the available project budget of $14.1 million. This scope is referred to as the Tier 1-Scenario 1 scope in this report. Although achievable within the available budget, Tier 1-Scenario 1 is not recommended as it could not be reasonably considered to provide a "minimum" level of base building improvement.

This report recommends Tier 1-Scenario 3 as the MVO, which better advances the project objectives to provide a minimum level of base building improvement. Additional funding of approximately $6 million is required to deliver Tier 1-Scenario 3.

It is important to note that some 2015 MVO scope items are still excluded from Tier 1-Scenario 3 in order to limit the magnitude of additional funding required at this stage. Excluded scope items are still considered relevant to the goals of the Theatre Strategy, but have been de-prioritized and deferred to a future project phase for implementation when funding becomes available.

A comparison of the 2015 MVO vs Tier 1-Scenario 3 (inc. excluded scope items) is provided in Attachment 9.

2.8 August 2022 Council Direction

In August 2022, Council approved the City staff recommendation to proceed with removal of the unoccupied North Wing, including large gymnasium and supporting spaces. Council also provided direction to City staff to define a revised MVO scope that is achievable within the overall available project budget of $14.1 million.

2.9 Early Service and Utility Works

Early works to the value of approximately $1 million were completed in October 2022. These works disconnected the existing gas, water, sprinkler, security, fire alarm and electrical services originating from the defunct NWSS and replaced them with dedicated services for the Massey Theatre Complex independent of the school. The cost of early works has been met by the MTR project budget.

2.10 Looking Ahead

Today, the MTR project focuses on base building renovation work to be undertaken by the City, that will include upgrades and repairs to the existing building to improve conformance with modern life safety and accessibility requirements aimed at achieving a 25 year service life of the Theatre.

The MTR project does not include typical facility upgrades that every building requires over time, including unscheduled replacement of failed building components and equipment, accessibility upgrades, interior or exterior painting, energy improvement projects, localized envelope repair, etc. As staff learn more about the building condition, and operational requirements, asset management intelligence will improve, which will enable improved building maintenance, operations, and capital planning to be undertaken.

The MTR project does not include the completed, ongoing and future TI works undertaken by MTS, that will include the repurposing of former classrooms and the small gymnasium within the lease space to support a variety of contemporary arts, cultural, and community uses. A full list of MTS TI works is provided later in this report.

While the MTR project excludes MTS TI works, both base building and TI works are important to achieving the objectives of the Arts and Theatre strategies. Each will be coordinated to ensure logical shared investment decisions, and to support the ongoing viability of MTS and the performing arts in the City under the guidance of the Arts and Theatre Strategies and MTS Lease and Working Agreement.

3.0 RELEVANT CITY POLICIES

The following City policies and documents have been considered in the pre-design phase:

Arts and Culture

- Official Community Plan 2017-2041
- Arts Strategy 2019-2024
- Theatre Strategy 2019
- Public Art Policy – January 31, 2022

Corporate

- Asset Management Strategy
- Facilities Asset Management Plan (Draft)

Financial

- City Reserve Policy 2009
- Financial Plan 2022 - 2026

Environmental & Accessibility

- Green Building Policy – September 2021
- Efficient Equipment Selection Policy – September 27, 2021
- Corporate Energy and Emissions Strategy – September 1, 2020
- Climate Action Budgeting Framework – November 4, 2019
- eMobility Roadmap – June 27, 2022
- Universal Design Review – June 15, 2017

For a high-level evaluation of City policy alignment refer to:

- Multiple Account Evaluation matrix provided in Attachment 6
- Page 8 of the Proscenium Phase 1 report available in Attachment 3

3.1 Official Community Plan 2017-2041

The City's Official Community Plan 2017-2014 established a renewed and ongoing commitment to arts and culture, calling for the enhancement of the city's cultural facilities and creative community spaces.

3.2 Arts Strategy 2019 – 2024

The Arts Strategy 2019 – 2024 was developed to direct City decisions and actions for the performing arts in the City at a high level. It provides the aspirational direction of the MTR project to help achieve the City's overall cultural goals.

The Arts Strategy 2019 – 2024, shaped through broad community engagement, provides high-level planning strategies for arts development, and defines specific tactics to achieve them. The Strategy notes that artists, arts organizations, infrastructure investment and local arts generation are significant and valued components of a healthy and creative community. The Massey Theatre was identified as a key resource and asset for the cultural sector. It is one of the most utilized cultural facilities in the City, and continues to play a central role in community-building, cultural development and artistic incubation as well as supporting local business, employment and economic development.

Extensive community engagement for the Arts Strategy began in 2016. Results indicated that the City's existing theatre assets were of varying age, condition and unique programming potential. Importantly, results indicated that the Massey Theatre was among the most utilized cultural facilities in the City, and plays a crucial role in community-building, local business, employment and economic development. This feedback was instrumental in the City's decision to retain the Massey Theatre and invest in its modernization.

The final Arts Strategy 2019-2024 was approved by Council on December 10, 2018 and is available at the following web address:

3.3 Theatre Strategy 2019

The Theatre Strategy, adopted by Council in 2019, provides more detailed direction regarding the governance of, and future investment in, the City's specialized theatre assets. Developed in anticipation of the land transfer which saw the Massey Theatre and Complex become a civic facility, the Strategy identifies the key role that this facility can play in supporting and facilitating growth and development of the local and regional cultural sector.

The Strategy directly identifies the need to renovate the Massey Theatre and bring it up to modern standards - which is beyond the "minimum viable option" outlined in this report– in order to fulfil the larger vision of establishing the Massey Theatre and Complex as a community cultural hub and vibrant regional destination. With the current funding that has been approved to initiate this

Project, the City is not in a position to realize this vision, and a long-term and strategic funding and implementation plan is required.

The final Theatre Strategy 2019 was approved by Council on December 9, 2019.

Together, the Arts and Theatre Strategies, and the community engagement that informed them, set the foundation for the City's investment in the Massey Theatre. They represent "la raison d'être" for the MTR project.

3.4 Asset Management Strategy

The City adopted the Asset Management Strategy in April 2019. The Strategy does not speak to capital projects directly, but sets the framework for responsible corporate decision-making within a context of various asset classes (including facilities) and public spending.

The Strategy also connects core City services, such art programs, theatres and galleries, to their corresponding asset class, such as facilities. In doing so, it aims to improve alignment of Council, Corporate and Business Unit service delivery, planning, prioritizing and costing, so that day-to-day activities carried out on the City's assets meet the City's high-level strategic objectives.

While not formally adopted yet, key ideas from the Strategy have factored into MTR project decision-making when considering how best to apply project funding to advance the project objectives. Key ideas included:

- Informed decision-making
- Organizational accountability and responsibility
- Sustainable service delivery
- Efficient use of resource
- Managed risk.

Key ideas relating to facility asset management are described in the following section.

3.6 Facilities Asset Management Plan (Draft)

The City is currently developing the Facilities Asset Management Plan to guide the management of its infrastructure assets and associated levels of service delivery within the community.

While not adopted yet, key ideas from the draft Plan have been considered as part of the scope definition process of the MTR project. Some initial and informal considerations are presented below.

3.6.1 State of Local Infrastructure

Independent to the MTR project, a third-party facility condition assessment was undertaken in October 2022 by the Civic Buildings & Properties team as part of the City's asset management framework. The facility condition assessment report is available in Attachment 7.

The conditions described range from *Good* to *Poor,* with the roof and portions of the exterior wall system rated as performing poorly. Other building elements, such as metal portions of the exterior wall system as well as portions of the substructure, are rated as performing satisfactorily to well.

Unrelated to the above facility condition assessment report, separate building investigations specific to the MTR project were performed in November 2022 to support the specific scope of works under consideration for inclusion in the MVO Tier 1 scope. Based on a limited and informal assessment, the current condition of the Massey Theatre Complex within the areas investigated likely falls between two categories: *Poor* and *Very Poor.* An important point in interpreting this result is that building investigations performed as part of the MTR project were limited to known or suspected areas of poor conditions, not the whole building. Therefore a 'selection bias' is at work, and results skew towards identifying only poor conditions that require correction, while ignoring other parts of the building that are meeting performance expectations and do not require attention as part of the MTR project.

Under the Facilities Asset Management Plan, *Poor* condition means that the asset is significantly deteriorated, performing below its intended level, and requiring maintenance costs that exceed acceptable standards and norms. This typically indicates that the asset is approaching the end of its expected life.

For the Massey Theatre Complex, this includes issues related to failure of existing roofing and exterior wall waterproofing membranes, as well as window frames, resulting in water leaks. It also includes issues related to accessibility, such as an insufficient number of washrooms, barrier-free entries, accessible ramps, and elevators, as well as lifecycle costs that have not been captured for HVAC equipment and aged electrical panels and wiring.

Very Poor condition means that the asset is physically unsound and has a high probability of failure or that failure is imminent. Replacement or major refurbishment is required because maintenance is not cost-effective or possible.

For the Massey Theatre Complex, this includes suspected foundation drainage failure in a limited section along the southern elevation, resulting in water leaks, wood rot and suspected mould growth in the small Studio 1A storage area.

There are also elements of the physical condition of the building identified during building investigations that could be considered positive, including:

- Dryer-than-expected exterior walls (in selected areas)
- Viable extended use of:
    - Existing boiler
    - Hot water tanks
    - Air handling units
    - Hydronic piping
    - Domestic water piping
    - Existing sprinkler system
    - Existing sprinkler heads (pending testing)
    - Existing entry doors at north and south end of lobby
- Re-use of shiplap sheathing and stud framing for all walls that do not require a foundation upgrade
- Retention of existing roof structure (with structural additions in some locations)
- Roof and exterior wall upgrades offer convenient access for moderate seismic performance improvements (e.g. new roof diaphragms and auditorium truss repair).

3.6.2 Levels of Service Analysis

Levels of Service Analysis data is limited to MTS and City staff operational issue logs, as well as the limited building condition assessment data described in the previous section.

The status of specific Customer and Technical Level of Service metric data is under development, including asset lifecycle prediction data, and is expected to be available over the next six months.

3.6.3 Lifecycle Management Strategy

Specific asset risk/criticality assessments have not been undertaken, though high-level lifecycle cost assessments were undertaken as part of the facility condition assessment report available in Attachment 7.

Recommendations for MVO Tier 1 Scenarios 1,2 & 3 scope inclusions are based on the professional judgement of the MTR project team, including relevant Professionals of Record, contemplating asset integrity, life safety and a targeted 25-year service life of the building. Rationale for scope inclusions is available in the Proscenium Phase 1 Report in Attachment 3 as well as the Multiple Account Evaluation matrix in Attachment 6.

Lifecycle activity work history data is limited due to recent acquisition of the asset by the City.

Major theatrical infrastructure such as winches, stage deck, house lights and dimmers, have not been assessed as part of the MTR project. Additionally, upgrades that will ultimately be required to achieve the Tier 3 Optimized Arts Centre envisaged by the Theatre Strategy are outside the scope of the MTR project and have not been considered. This comes into play when considering lifecycle replacement and the corresponding level of product replacement quality. For example, when replacing a component at the end of its lifecycle, such as flooring, the existing (i.e. former NWSS) level of quality is used to determine the replacement flooring product, rather than specifying a product with a level of quality more in line with the future Tier 3 Optimized Arts Centre.

Current lifecycle strategies are currently based on historical practices and ad hoc adjustments. A transition to better consideration of asset condition, risk and level of service is underway as part of the MTR project.

3.7 Finance Policy

The following corporate-level documents have been considered in the financing strategy to ensure prudent financial decision-making:

- 2009 Corporate Reserve Policy
- Financial Plan 2022 – 2026.

3.8 Green Building and Efficient Equipment Selection Policies

The Green Building and Efficient Equipment Selection policies are subsidiary to the Corporate Energy and Emissions Strategy 2020 and Climate Action Budgeting Framework 2019. Satisfying the requiremetns of the Green Building and Efficient Equipment Selection policies meets the intent of the Corporate Energy and Emissions Strategy 2020 and Climate Action Budgeting Framework 2019.

Scope definition and design work is proceeding in the spirit of, and therefore in accordance with, the Green Building policy. Under Tier 1-Scenario 3, it is expected that scope related to upgrading envelope (including roof) performance will contribute greatly to the facility's overall energy efficiency and reduced GHG emissions.

While formal LEED Gold certification is not part of the MTR project scope, thermal enhancements such as significantly improved roof and exterior wall insulation are aligned with the spirit of LEED certification and CaGBC's Zero Building Standard for Performance. Removal of the large gymnasium and its compromised roof and building envelope is also expected to contribute to overall energy efficiency of the facility.

With respect to efficient equipment selection, Energy Star guidelines are not applicable to MVO Tier

1- Scenario 3 scope items but will become relevant should Tier 2 Voluntary Code Upgrades, including HVAC and boiler system replacement, be pursued in the future.

3.9 City Policy Variance

Variance from the Public Art Policy will be required in the recommended Tier 1-Scenario 3 scope scenario. Scope definition and design work is proceeding in the spirit of (and therefore in accordance with), the other City policies.

For the Green Building and Efficient Equipment Selection policies, forthcoming energy study/LEED assessments to be conducted as part of subsequent Phase II schematic design phase work, will provide quantitative modelled data and provide greater detail on City policy conformance and asset performance. This data will also assist in third-party funding applications for future phases (if required).

Refer to Page 8 of the Proscenium Phase 1 Report available in Attachment 3 for more details on City policy alignment.

4.0 MASSEY THEATRE OPERATIONS

The Massey Theatre Society (MTS) has operated the Massey Theatre within the Complex beginning in 1983. MTS holds the legal operating name for the theatre and has carried the community and stakeholder relationships since that time. External stakeholders include funding bodies, artistic, community and business organizations, professional associations in the cultural sector and audiences and participants who attend activities and programs from throughout the Province and beyond.

MTS owns the significant theatrical and facility equipment assets, and has quickly leveraged both its relationships, fundraising and earned revenue to begin repurposing as soon as the Lease agreement was completed.

4.1 Massey Theatre Working Group – Lease and Working Agreement Development

The original Massey Theatre Working Group emerged from a motion from Council to advance the lease development process and support operational continuity through the transition/land transfer. The Council-approved Terms of Reference included two (2) Council and MTS Society Board representatives as well as staff leads from both organizations (Manager, Community Arts and Theatre, City of New Westminster and Executive Director, Massey Theatre Society) and other staff as required. Other City staff directly involved with the Working Group and Lease development were the Manager of Civic Buildings and Properties and the City Solicitor.

Together the Working Group defined the principles of partnership, shared goals and refined the roles and responsibilities of each party to be included in the Lease and Working Agreement. All components were reviewed by the Culture and Economic Development Task Force prior to being brought to Council for final review approval. This Council-appointed Working Group did not continue to meet following the signing of the Lease. However, a Working Group is identified in the Lease (see below) which is intended to be an ad-hoc group brought together as needed to address emergent issues or needs rather than an ongoing Working Group.

4.1.1 Relationship and Governance

Section 36 of the Lease includes specific language related to governance, relationships and reporting:

- A City and Society Liaison to maintain an active relationship and support the specialized operations in relation to the City's wider arts and cultural goals. These roles have been fulfilled by the Manager, Community Arts and Theatre (representing the City) and Executive Director, MTS (representing the Society)

- Civic Operational Liaisons from Civic Buildings and Properties and Information Technology to support planning, coordination and implementation of the facility maintenance and infrastructure needs. Although a single point person from MTS has been fulfilling this role, the City does not have a single liaison assigned from Civic Buildings and Properties. Rather, there are a number of key staff from various service areas liaising with MTS rather than assignment of a single point of coordination

- City Financial and Planning Liaison to support the coordination of capital and infrastructure planning

- A Council Liaison to serve as a conduit between City Council and the Society.

In addition to the ongoing operational liaison as outlined above, there are additional bodies noted in the Lease and Working Group to respond to emergent issues, address conflict and maintain the relationship between the City and Society:

- A Theatre Working Group comprised of City and Society representatives will be brought together as needed to resolve conflict, review major decisions and negotiate adjustments to the Schedules.

- A Joint Leadership Team Session will be held annually, providing an opportunity to bring together Mayor and Council, MTS Board and key staff from both the City and Society in the spirit of partnership to maintain the relationship, share information and report on all aspects of operations.

4.1.2 Operational Responsibilities

Schedule "C" of the Lease, available in Attachment 10 of this report, outlines the general responsibilities of the City and Society, noting that MTS is to fund direct operational and organizational expenses to deliver programs and services including all direct utility servicing, and the City is responsible for the maintenance, repair and/or replacement of the building, building envelope, grounds and major systems and all expenses and costs related to the Premises and the building (including expenses set out in this Schedule) other than the MTS Operating Expenses.

The City's Civic Buildings & Properties division fulfills maintenance services as outlined in the Lease and Working Agreement and in accordance with the City's approved annual facility operating budget of $400,000. Additional operational support is provided by the City's IT, Engineering Operations, Parks and Recreation, and Electrical Operations groups, as is the case for most civic facilities.

The schedule of maintenance responsibilities is included in the MTS Lease and Working Agreement and is included in Attachment 10.

The City's roles and responsibilities as facility owner are in line with a typical landlord/property manager role, with some additional nuances. The building's age and condition present regular challenges in the form of unscheduled maintenance needs; historical maintenance records were not provided at the time of ownership transfer so staff are continuing to "get to know" the facility; an active capital project in an occupied facility can cause uncertainty around operational limits and capital scope. City staff continue to build familiarity with the building and are committed to ongoing reviews with MTS as operating partner, as laid out in the Lease and Working Agreement.

4.1.3 Major Decisions

Section "7" of the Working Group speaks to how major decisions are made in relation to the facility, in the spirit of collaboration and in alignment with the shared goals for the City and Society. Major decisions are defined as including structural improvements, approval of designs, plans and modifications, expenditures or incurring any obligation by or on behalf of the Parties, and any decisions that materially affect the operation of the Theatre.

4.1.4 Shared Goals

The City and Society will collaborate through shared investment to improve and sustain the physical asset and its specialized function for the use and enjoyment of all citizens, to advance the arts and cultural sector and to activate and develop the facility to its fullest potential artistically, culturally and socially.

4.2 Current MTS Operations

The Massey Theatre is a busy facility that is utilized by a diverse number of community groups. Community demand for the performing arts at the Massey Theatre is growing. From 2021 to 2022, over 50,000 patrons visited the Massey Theatre, with event bookings increasing from 174 to 260 and MTS staff growing from a team of 14 to a team of 22.

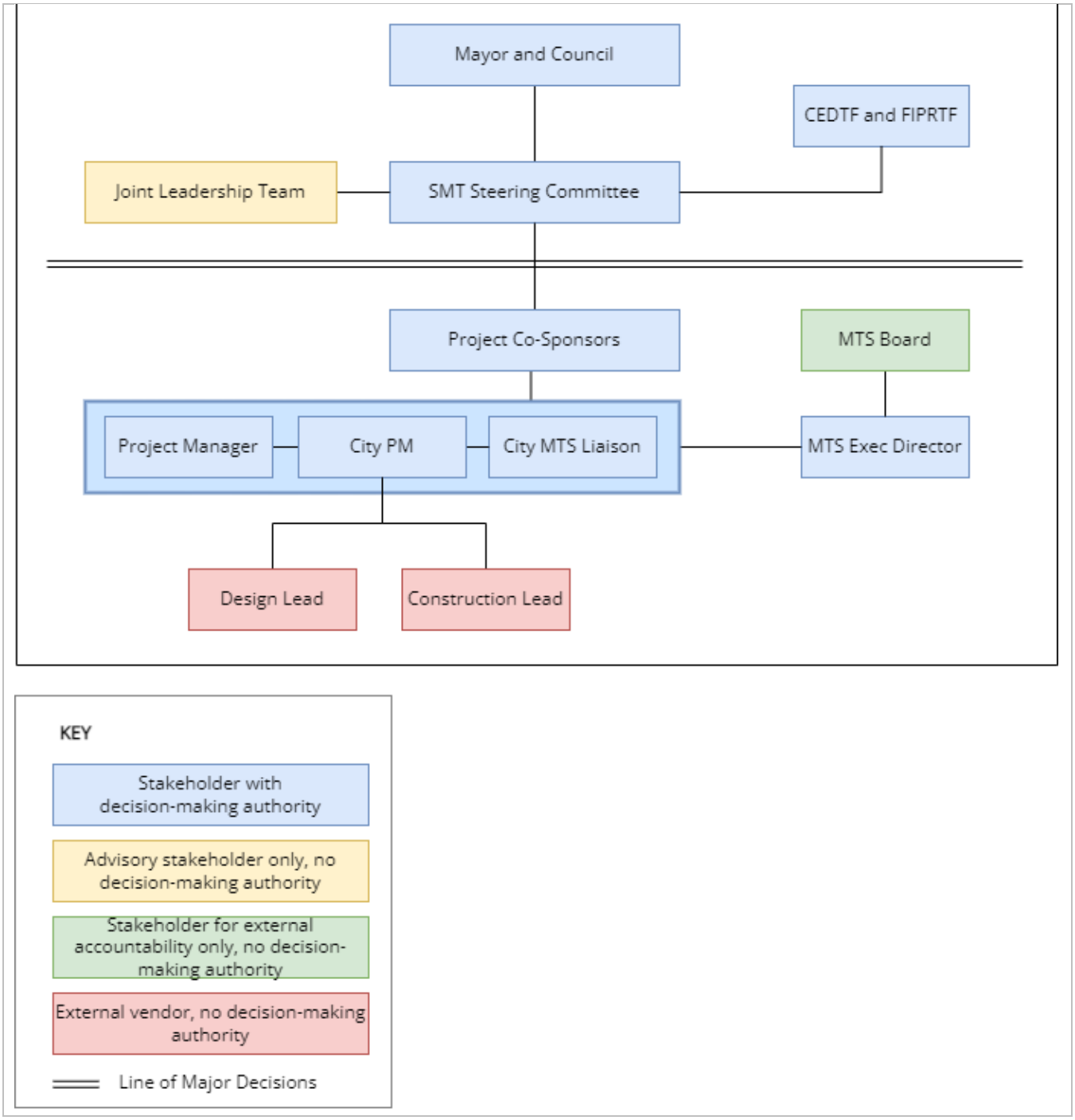
To cater to an increasingly diversified demand, MTS programming is responsive and adaptable, offering international, large-scale theatrical productions, as well as local performances aimed at fostering emerging artists and local community groups. Programming spaces are similarly diverse, including places to perform, rehearse, discover, work, teach and learn, as well as places to display artwork in the Plaskett Gallery.

To demonstrate the depth of community utilization and the corresponding benefits provided by the Massey Theatre, a list of 2021-2022 MTS collaborators, partners and presenters is provided in Attachment 4.

4.3 MTR Capital Project Governance

Responsibility and accountability for decision-making within the MTR capital project is illustrated by the diagram below. It seeks to align with governance terms outlined in the MTS Lease and Working Agreement, summarized in section 4.1.1 of this report. A key feature of the MTR capital project governance model is that the Executive Director of MTS is involved in City project decision-making at the project level.

Discussion is ongoing at a high-level between the City and MTS to adjust the governance model in response to both City and MTS feedback "on the ground". Adjustments to the model, currently under City consideration, aim to better balance roles and responsibilities between MTS and the City, contemplating the original roles as described under the Lease and Working Agreement. In this way, the governance model can be considered adaptive and subject to change in response to need and agreement by both the City and MTS.


Mayor and Council
CEDTF and FIPRTF
Joint Leadership Team
SMT Steering Committee
Project Co-Sponsors
MTS Board
Project Manager
City PM
City MTS Liaison
MTS Exec Director
Design Lead
Construction Lead
KEY
Stakeholder with decision-making authority
Advisory stakeholder only, no decision-making authority
Stakeholder for external accountability only, no decision-making authority
External vendor, no decision-making authority
Line of Major Decisions

5.0 MTS TENANT IMPROVEMENT (TI) WORKS

Alongside its daily operations, MTS is advancing a program of TI works that is aligned with but separate to the MTR project. Together, these works represent the spirit of shared investment described within the MTS Lease and Working Agreement. To date, MTS have completed TI works that are valued at over $500,000, with another approximately $1.5 million expected to be completed in 2023.

Completed MTS TI works include:

- Streamlined storage and cleaned the facility following NWSS relocation
- Painted 97,000 linear feet of wall and ceiling tiles
- Resurfaced 45,000 square feet of floor
- Installed exterior and interior signage and banners on two of the four sides of the facility
- Replaced exterior readaboard sign lens and photo sensitive LED sign lighting
- Replaced lobby wall sconces with LED fixtures
- Purchased furnishings for all spaces
- Installed floor to ceiling, wall to wall acoustic drapery in 6,000 square feet of studio space
- Installed performance quality sound systems in three previously unequipped areas
- Replaced electrical panels and upgraded electrical services in Concession & Lobby, Studio 1A / 1B, Studio 1C
- Installed Heat Pumps and controls in Studios 1A and 1B
- Installed Dante control system and Wi-Fi coverage throughout facility for connectivity and media interface
- Installed media hub equipment for audio and video production programs (cameras, lights, green screen, editing software and hardware)
- Purchased commercial kitchen equipment.

Future MTS TI works include:

- Install new electrical wiring in Studio 1C, future kitchen, concession and lobby
- Install Heat Pump, Programmable event lighting and controls in Studio 1C
- Renovate Concession Kitchen to include high temp dishwasher, ice machine and industrial sink
- Renovate current Front of House service area to be a community kitchen
- Install new frontage landscape, accessible pathways and open air gathering space plus Indigenous public art installation
- Install Indigenous murals throughout interior (artists from Kwikwetlem, Katzie, Kwantlen, Musqueam and Tsleil-watuth)
- Install Interactive and Immersive Digital Experience based in Indigenous land-based heritage, storytelling and imagery.

6.0 MTR PROJECT GOALS, OBJECTIVES & MINIMUM VIABLE OPTION SCOPE

6.1 Project Goals and Objectives

The MTR project has the following goals and objectives:

No.	Goal	Objectives
1	Improve the physical asset and its specialized functions for the use and enjoyment of all citizens of New Westminster.	• Deliver MVO scope (TBC) that reflects 25-year asset service life • Improve BC Building Code compliance, specifically within areas of life safety, accessibility and seismic resistance • Improve performance of building envelope, seeking better alignment with City climate-related policies • Coordinate City MTR and MTS scopes of work to ensure functional alignment and logical shared investment decisions • Collaborate with MTS on major decisions to develop and activate facility to ensure its ongoing commercial and operational viability

No.	Goal	Objectives
2	Deliver the project on budget	• Tailor scope to available project funding to keep total project costs within approved capital plan amount of $14.1 million • Define and prioritize scope work packages. Estimate costs at pre-defined points in project schedule to maintain budget alignment. Allow appropriate contingency reserves for unknown existing conditions and market cost escalation • During scope development, identify future work packages that do not form part of approved scope but could be logically executed at a future date subject to availability of third-party funding and associated conditions • Explore third-party funding strategy to facilitate logical future integration of future work packages (not part of MTR scope) • In event there is insufficient budget to meet the basic commitments made by the City, then address budget issues in a proactive, strategic and transparent way.

No.	Goal	Objectives
3	Deliver the project on schedule	• Theatre is open for unencumbered operation by December 31, 2025 • Coordinate with MTS in advance to define work packages and associated construction phasing plan • Coordinate with MTS in advance to identify operational “dark periods” and opportunities for MTR and MTS TI scope and schedule synergies

6.2 Minimum Viable Option (MVO) Scope

A reassessment of the previous 2015 MVO scope has been carried out in accordance with the approved work plan adopted by Council in August 2022. The goal of the reassessment was to re-estimate the final scope possible in today’s market, within the current approved 2022-2026 5 Year Financial Plan Bylaw amount of $14.1 million.

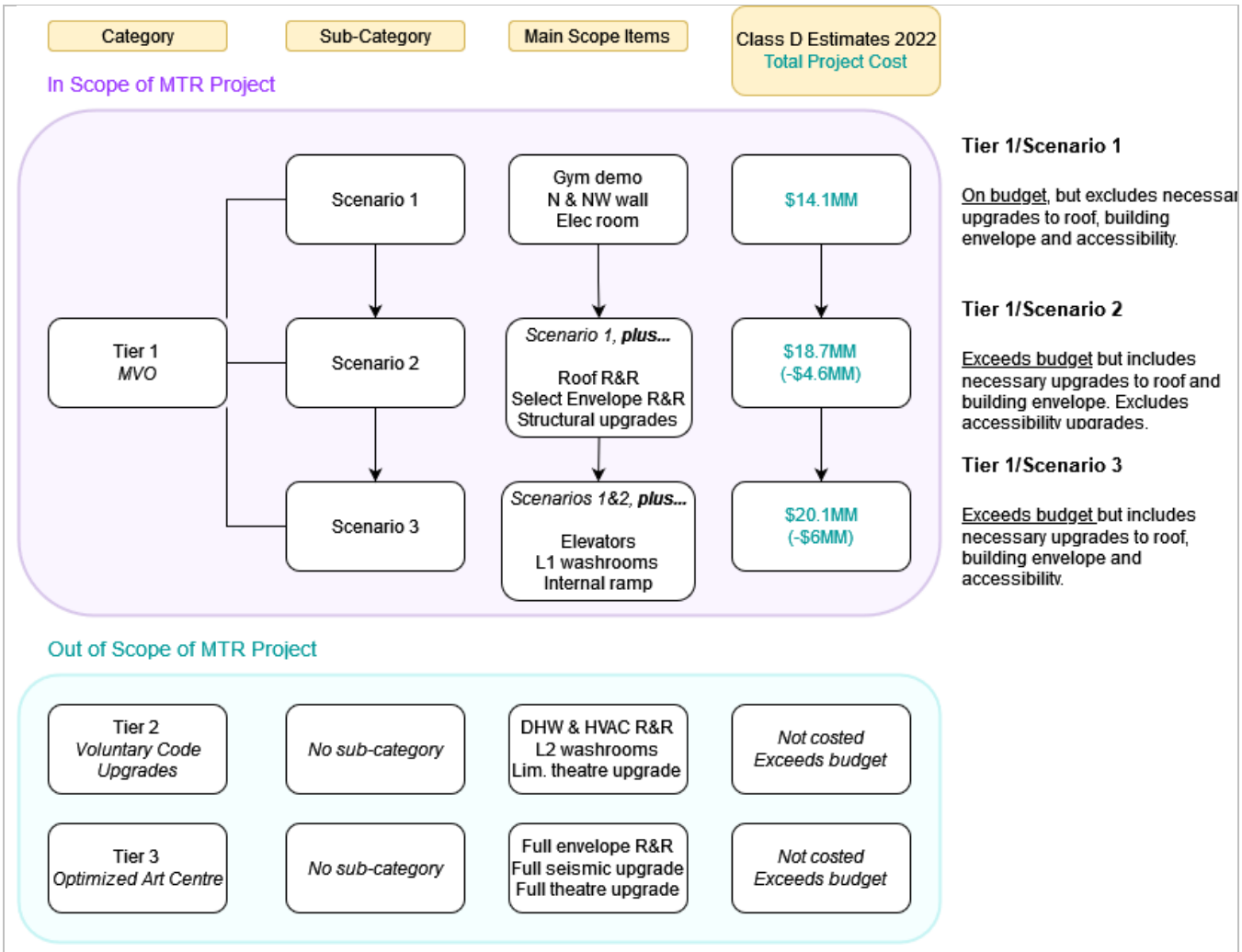
A detailed description of the revised MVO scope under Tier 1-Scenario 1, 2 and 3, as well as the methodology behind costing and the scope selection process, is provided on pages 4-7 in the Proscenium Phase 1 Report in Attachment 3.

The results of the Class D cost estimates performed in December 2022 indicated the MVO Tier 1 scope exceeded the available project budget. The MVO Tier 1 was subsequently broken down into Tier 1 – Scenarios 1, 2 & 3 by order of priority to advance the most time-critical elements first, given a lack of available funds to deliver all the desired Tier 1 items.

Tier 1 scope models are provided in Attachment 8 to illustrate the general location of the proposed scope inclusions. Detailed drawings of the Tier 1 scope package are also provided in Attachment VII of Proscenium's Phase 1 report, which is available in Attachment 3 of this report.

Within Tier 1, scope scenarios were prioritized to address as many of the most basic upgrades required as possible, within the available project budget. Priority was given based on the mandatory physical dependencies between related work packages, as well as degree to which the scope items could satisfy the project objectives, as well as time sensitivity of the items to the building's integrity and maintenance costs.

The Multiple Account Evaluation matrix in Attachment 6 highlights the performance of each Tier 1 scenario against the project objectives. The diagram below breaks down Tiers 1, 2 and 3.



Tier 1-Scenario 1 (on budget) focuses on the large gymnasium demolition and associated reinstatement works, including:

- Gymnasium Demolition & Hazmat Abatement
- New Parking Lot in Place of Existing Gym
- New Concrete Addition 1-storey
- New Stair Shaft 4-storey (no elevator)
- New Roofs and Parapet Tie-ins at North Wall Upgrade
- North Exterior Wall Conversion & Upgrade
- New Fire Panel and Fire Department Connection @ Front Entry
- New Roofs and Parapet Tie-ins at West Wall Upgrade
- West Wall Foundation and Exterior Upgrade
- New Electrical Distribution Equipment and Electrical Room

Tier 1-Scenario 2 (+$4.6 million to budget) focuses on all of Scenario 1 plus removing and replacing the roof and exterior wall sections, including:

- All scope listed in Scenario 1
- Structural upgrades related to roof, addressing roof membrane failure (re-roofing)
- Structural and envelope upgrade to trusses over Theatre and south-west wall

Tier 1-Scenario 3 (+6 million to budget) deals with all of the above, plus providing basic, though not exhaustive, accessibility upgrades to make the facility an inclusive and accessible facility for staff, performers, and patrons, including:

- All scope listed in Scenarios 1 and 2
- New 4-stop elevator beside stairwell for patron use for building access
- New 2-stop elevator at back of house for performer use
- New handicap accessible ramp at front of house
- New gender neutral and universal washrooms at L1 for patron use

Tiers 2 & 3 were established as part of a feasibility study in 2020 and are included for reference. They were not costed as part of the MTR project in December 2022 as they were already known to be outside the project scope and budget at this stage. They are intended to be funded in future phases.

The Proscenium Phase 1 Report available in Attachment 3 describes in detail the costing and scope development process.

MVO Tier 1 Sub-Category	Estimated Construction Cost	Additional Budget Required	Total Project Value
Scenario 1	$7.6 million	On budget	$14.1 million
Scenario 2	$12.2 million	$4.6 million	$18.7 million
Scenario 3	$13.6 million	$6 million	$20.1 million

Refer to the Multiple Account Evaluation matrix in Attachment 6 for an itemized breakdown of scope inclusions for:

Tier 1 - MVO
Scenario 1 – Gym demolition & reinstatement
Scenario 2 – Roof and building envelope upgrades
Scenario 3 – Accessibility and washroom upgrades
Tier 2 – Voluntary Code Upgrades
Not in MTR project scope – future scope packages
Tier 3 – Optimized Art Centre
Not in MTR project scope – future scope packages

Refer to Appendix VII within the Proscenium Phase 1 Report in Attachment 3 for the full package of consultant drawings that illustrate the Tier 1 scope package.

6.3 Phased Construction Implementation

It is possible that renovation work will be completed in phases spanning four years from 2022 to December 2025, depending on final scope approval, funding availability and coordination with ongoing MTS theatre operations.

Phased construction implementation should be considered carefully against the project objectives and MTS operational requirements once the final scope is approved at the end of the pre-design phase. Phased implementation is necessary to continue MTS operations within the facility during construction, but also brings additional cost and schedule risks. Risks stem from sources such as market cost escalation; requirement for repeated contractor de- and re-mobilizations; constrained site productivity due to access and noise restrictions; and a corresponding lack of competitive market interest in the work due to these factors.

If Tier 1-Scenario 1 is approved, it is recommended to complete this work in a single phase due to the physically integrated and dependent nature of the selected scope items, and the limited internal intervention within the Massey Theatre lease space required to deliver them.

If Tier 1-Scenario 2 or -Scenario 3 are implemented now or deferred to a future phase, the phased construction implementation plan will need to be reviewed due to the additional scope items that will bring different potential impacts and disruptions to MTS operations that must be balanced against the risk of additional time and cost. Similarly, if Tier 2 and 3 scopes of work are pursued in a future phase, the implementation plan will need to be reviewed again.

7.0 PROJECT SCHEDULE

The following represents the project schedule as it is understood in the pre-design phase. It is subject to change once the revised MVO scope is approved and a detailed construction implementation plan is developed and considered alongside the MTS event schedule.

A goal of the construction implementation plan is to maximize disruptive works during MTS "dark periods" when no major events are booked. Similarly, MTS event bookings will seek to work around periods of disruptive construction works. However, the exact schedule and cost impacts of construction phasing require further evaluation in the design development period prior to confirmation.

Phase 1: Pre-Design	
Phase 1.1 Project Initiation	**Jun – Jul 2022**
Council Decision – North Wing (Closed)	Jul 11 2022
Stage Gate 1 – Sponsor Sign-Off	Jul 2022
Phase 1.2 Project Planning & Pre-Design	**Jun 2022 – May 2023**
Design RFP	Jul – Oct 2022
Complete Building Investigations	Oct – Nov 2022
Develop MVO, Scope & Phasing Options	Oct – Nov 2022
Develop Class D Estimate	Nov 2022
Define Recommended Final Scope	Feb – March 2023
Stage Gate 2 – Sponsor Sign-Off	March – April 2023
Council Decision – Revised MVO Scope, Draft Finance Strategy & Approval to Proceed	May 8 2023

Phase 1.3 Concept Design	**May – Jun 2023**
Develop Concept Design Package	May 2023
Develop Finance Strategy*	May – Jun 2023
Stage Gate 3 – Sponsor Sign-Off	Jun 2023
Phase 2 Schematic Design & Design Development	**Jun – Dec 2023**
Phase 3 Construction Documents	**Dec 2023 – Mar 2024**
Phase 4 Construction – Phased †	**Mar 2024 – Dec 2025 †**
Phase 5 CNW & MTS Handover †	**Dec 2025 †**

*Third-party funding application timeframes not included
† Date dependent on approved MVO scope and phased construction implementation plan. Phasing subject to confirmation.

8.0 PROJECT BUDGET & CLASS D COST ESTIMATES

8.1 Project Budget

A summary of the approved $14.1 million project budget is provided in Attachment 5.

The Massey Theatre was identified in the 2020-2024 Financial Plan at over $22 million. This allocation relied on $9 million from the City's existing asset replacement reserves, with the remaining balance to come from third-party grants. In the same Financial Plan, the new təməsewtxʷ Aquatic and Community Centre was also relying on approximately $16 million from existing City Facility Reserves, with the remaining balance to come largely from third-party grant funding. Since that time, the City has had to reset the budget for the MTR project, as neither project has received major grant funding.

Accordingly, the 2022-2026 Approved 5 Year Financial Plan includes $14.1 million for the MTR project that must include all soft costs, hard costs and contingencies, and is to be funded from the City's Facility Reserves. To date Council has approved over $4 million in Capital Budget Funding to advance early works.

As part of the pre-design phase, the Tier 1-Scenario 3 scope ($20.1 million) has been developed as the minimum amount of work possible while still prioritizing critical works that address base building requirements. With a budget of $14.1 million, the MTR project can only accomplish Tier 1-Scenario 1 works, which is not considered to achieve the minimum level of improvement required to provide safe, functional and viable operation and to meet the project objectives.

8.2 Class D Cost Estimates

To stay within a total project budget of $14.1 million, a target construction budget of approximately $7.5 million was used to guide the scope development process.

Two independent Class D cost estimates were prepared in December 2022 based on a revised Tier 1 MVO scope. Results are shown below.

	Class D Estimate	Estimated Construction Cost	Variance to Target Construction Budget
1	PQS Jim Bush & Associates	$13.9 million	-$6.4 million
2	CM Heatherbrae Builders	$13.8 million	-$6.3 million

Results indicated that the revised Tier 1 MVO scope is likely over-budget and either further scope reduction or additional funding is necessary to deliver it.

From initial Class D estimates, major cost drivers include:

- Gymnasium demolition and hazmat abatement: $1.5 – 2 million
- Concrete addition 1-storey North Elevation: $1.5 – 2 million
- North and west wall remediation and upgrades: $1 million
- New electrical room and distribution equipment: $900K
- New 4-storey stair shaft (no elevator): $540K
- Parking lot: $256K

The Proscenium Phase 1 Report available in Attachment 3 describes in detail the costing and scope development process.

9.0 FINANCIAL STRATEGY

The recommended MVO Tier 1-Scenario 3 scope is estimated to cost $20.1 million and require an additional $6 million of funding above the approved project budget of $14.1 million.

On March 31, 2023, City of New Westminster received over $15 million in community funding support from the Province to support the City with any infrastructure gaps/needs. To date, that funding has not been applied to projects within the existing Capital Plan.

The purpose of this report is to inform Council that the MVO, as defined by Tier 1-Scenario 3, cannot be accomplished within the $14.1 million budget and should Council choose, the community funds could be applied to this project to support Tier 1-Scenario 3 works.

Finalizing and moving forward with a revised MVO scope defined by Tier 1-Scenario 3 is critical to avoid growing financial risk such as cost escalation of approximately 9% per annum.

Long-range funding strategies will be required if the Massey Theatre Renovation Capital Plan needs to grow beyond $20.1 million to meet the scope scenarios described by Tier 2 Voluntary Code Upgrades and Tier 3 Optimized Art Centre.

Refer to the Multiple Account Evaluation matrix in Attachment 6 for a summary of potential additional funding opportunities for these excluded scope scenarios.

10.0 KNOWN RISKS

Renovation projects possess a higher level of risk than new construction, due to the substantial risks of unknown and unforeseen existing conditions, as well as the complicated nature of integrating with established building systems while building operations continue. Appropriate risk response strategies exist for the project, and have been incorporated into the recommended Tier 1-Scenario 3 scope.

Key risks of the MTR project include:

- Limited budget – not achieving project objectives or City policy goals due to limited available project budget
- Deferred future scope packages, e.g. Tier 2 Voluntary Code Upgrades and Tier 3 Optimized Art Centre, not possible without costly re-work to Tier 1 MVO work that is executed in the first phase of the MTR project
- Delay to construction contract buy-out amidst rising costs, while caught in an extended value engineering process during the planning phase. The risk is that the scope can never "catch up" and be reconciled with rising costs, which results in a perennial scope reduction and delay / cost escalation feedback loop
- Risk of further delay while applying for additional third-party funding. Risk of spending limited capital funding on additional funding applications with limited chance of success
- Cost premium for phased construction implementation and future integration of deferred scopes packages, while trying to work within MTS "dark periods" or event schedule
- Some elements of existing building have already failed – e.g. building envelope – conditions continue to deteriorate and threaten functional parts of the building, including new work
- Existing and unforeseen conditions – hazmat abatement requirements have been identified, but are likely worse than documented based on recent NWSS demolition experience
- Lifecycle costs are undocumented due to recent asset acquisition and lack of records from the former owner. The risk is that capital investment decisions made now, either by the City of MTS, create unintended operational burdens and unforeseen expenses to MTS and City in the future
- Extended planning and disruption – ongoing planning and construction impacts to MTS operations

- Concurrent MTS projects – shared investment decisions not coordinated with MTR project scope – future conflict and lack of logical integration or extensive re-work required.

- Budget and scope addressed in this report is only for the MTR project, and does not include the facility upgrade capital program that all other buildings typically require. Given the age and complexity of the building, and the fact we've only had staff working on it for a limited amount of time, our understanding is limited and there may be further costs

- Both CNW and MTS are severely resource constrained, both in terms of capital and operating budgets and in terms of staff capacity.

11.0 RECOMMENDATIONS

- Out of Tier 1- Scenarios 1, 2 & 3, Scenario 3 is the only defined scope scenario to address the highest priority scope inclusions to ensure a safe and functional facility. Proceed with Tier 1 – Scenario 3 scope as the revised MVO scope recommendation to Council.

- Seek Council direction on using the City's existing financial reserves, grant funding or debt financing to meet the additional cost of Tier 1 – Scenarios 3 which requires an estimated $6 million of additional funding.

- Proceed with a third-party Universal Design review to inform the design details of Tier 1- Scenario 1. Advance this work immediately, even though it relates to Phase II of the MTR project.

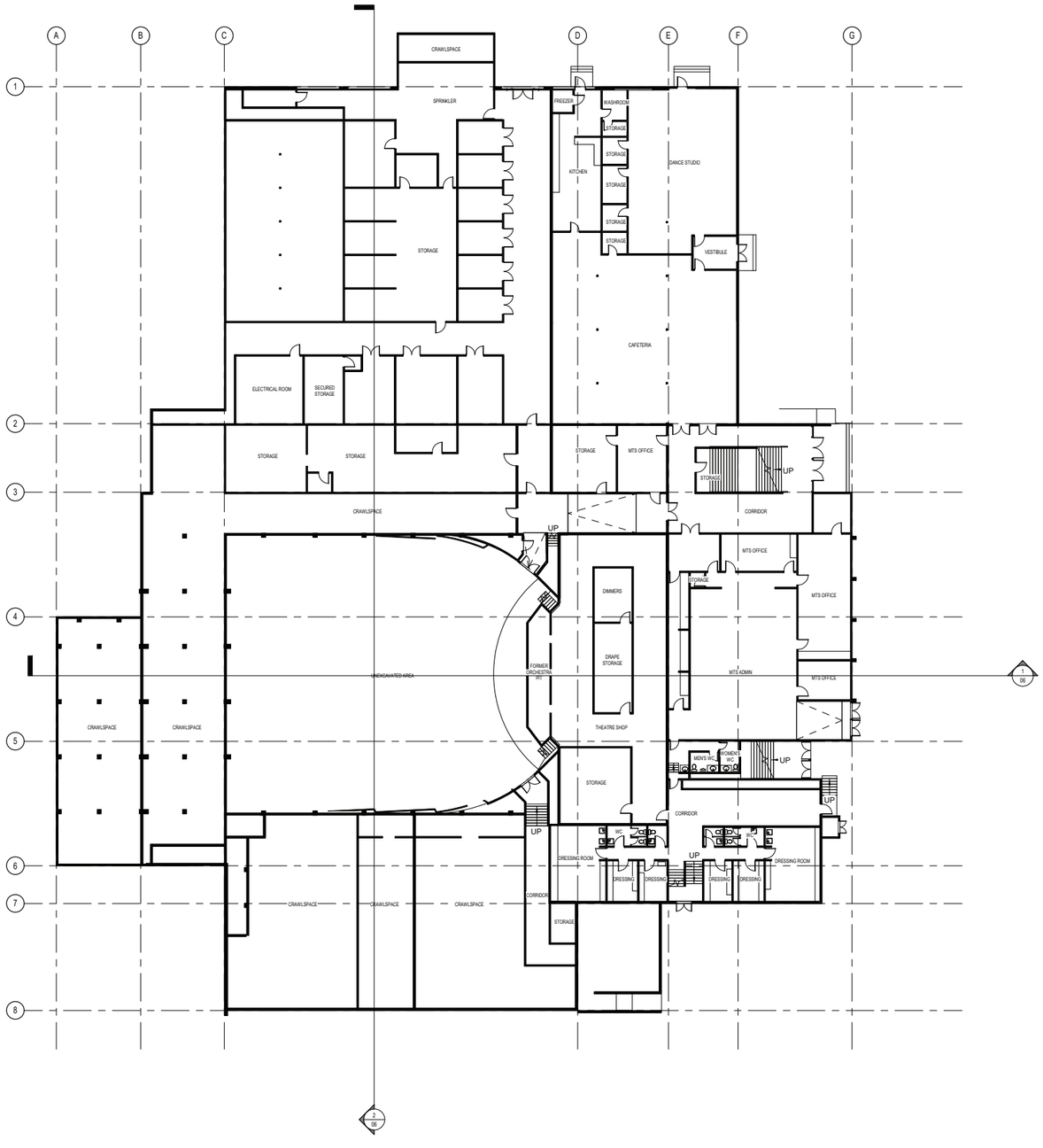
- Proceed with third-party energy and LEED assessment studies to better understand quantitative asset performance, as well as conformance or variance to City policies. Modelled data will also help to inform future third-party funding applications, as required. Advance this work immediately, even though it relates to Phase II of the MTR project.

- Seek Council direction regarding the pursuit of third-party funding opportunities. If desired, additional project resources (time or personnel) will be required to fully understand funding application requirements, including application timing and conditions of funding release. Funding applications would be advanced in Phase II of the MTR project.

12.0 ATTACHMENTS

ATTACHMENT 1 – EXISTING FLOOR PLANS AND SURVEY DRAWINGS

EXISTING FLOOR PLANS



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SURVEYOR

CIVIL ENGINEER

PROGRESS SET

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CURRENT REVISION			

PROJECT ADDRESS

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PROJECT

MASSEY THEATRE RENEWAL

DRAWING TITLE

EXISTING GROUND LEVEL FLOOR PLAN

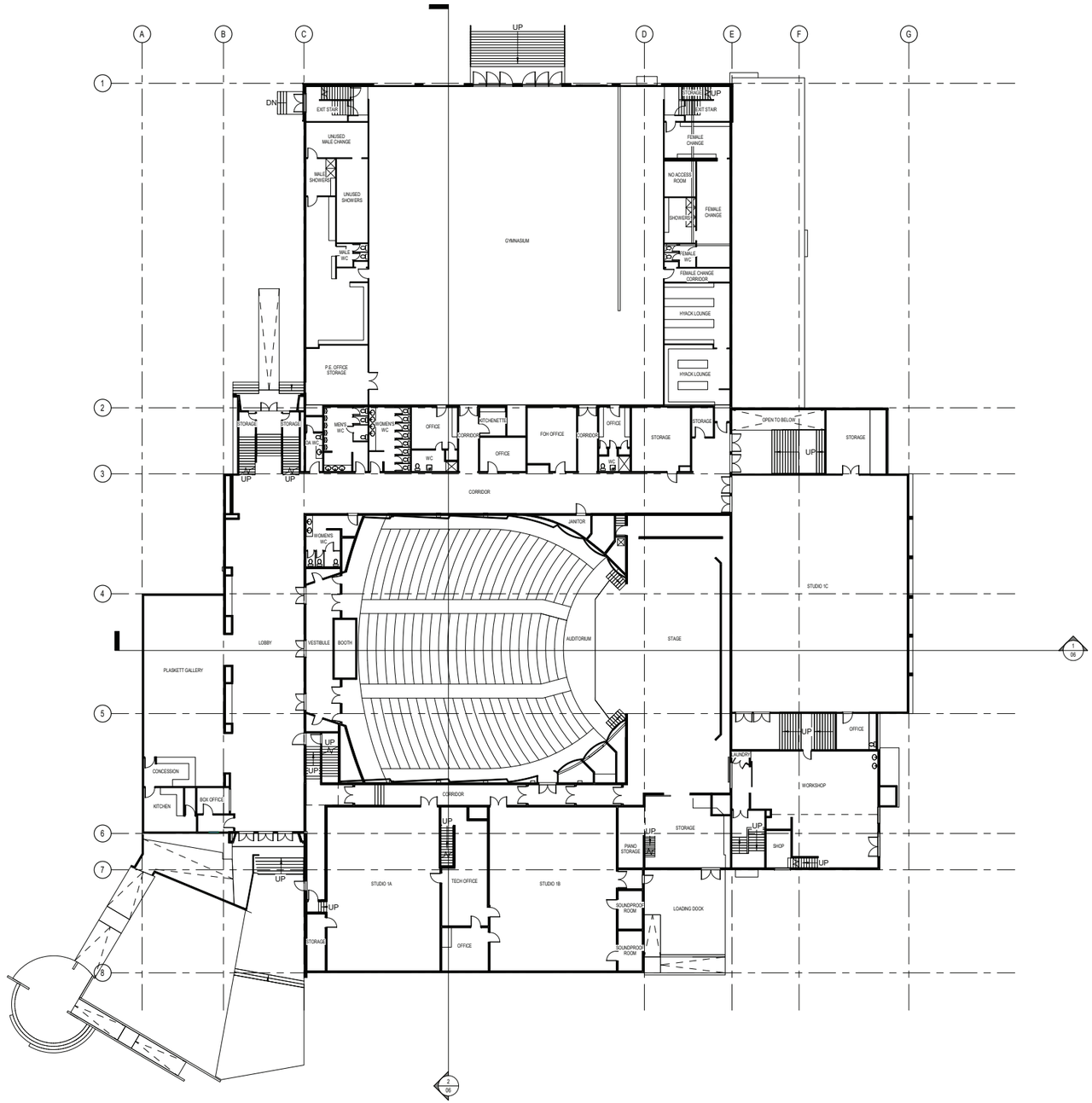
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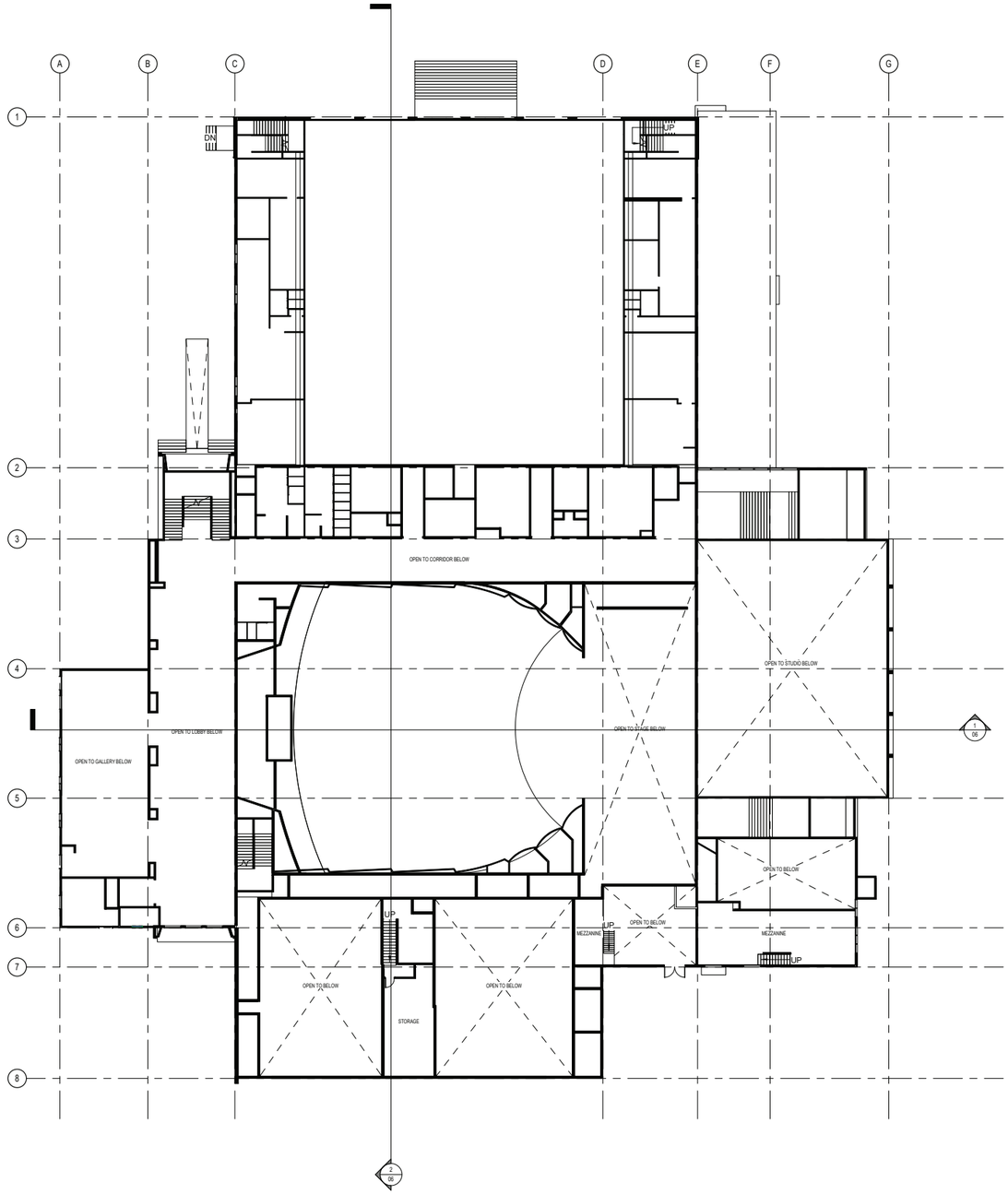
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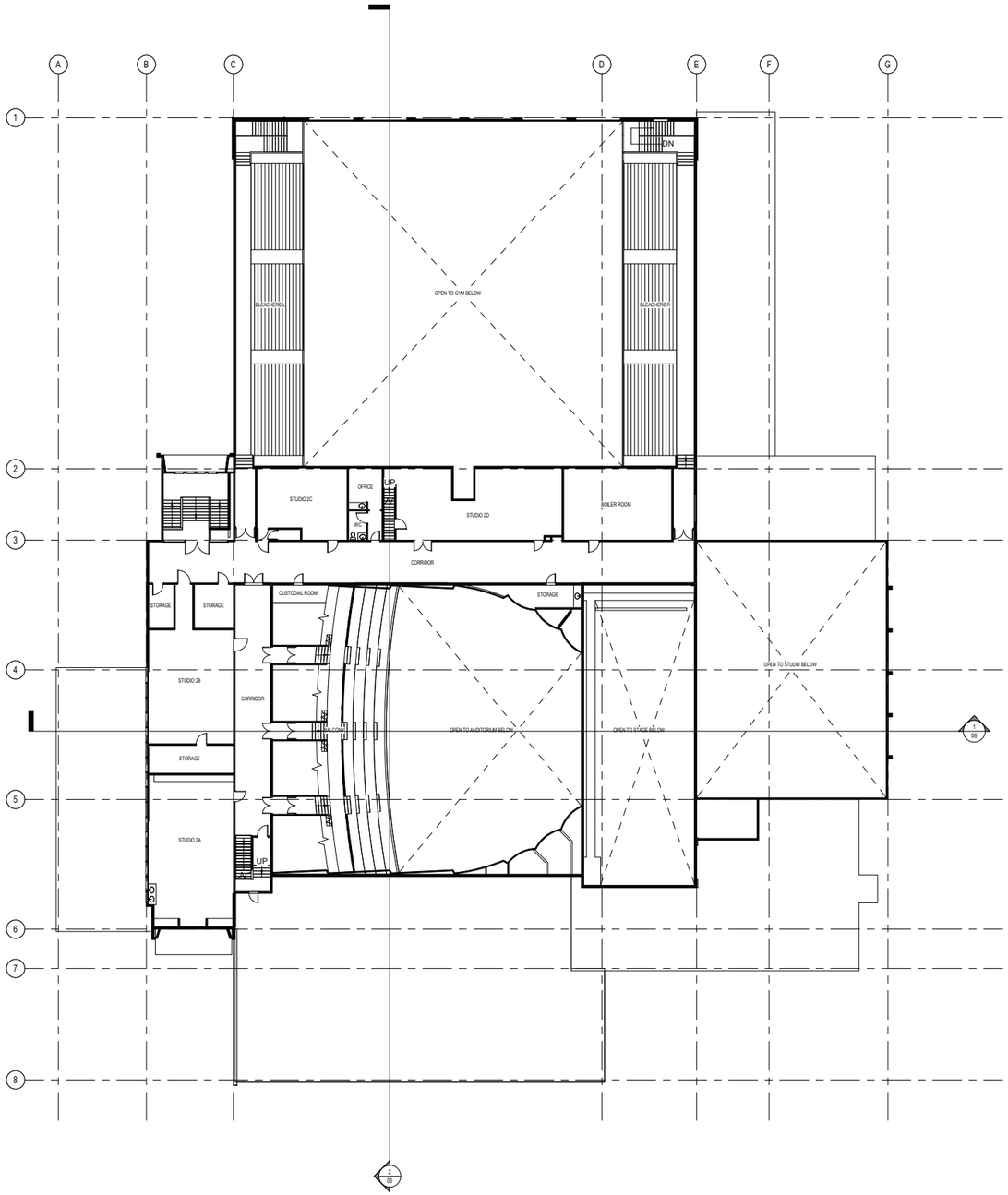
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FLOOR PLAN

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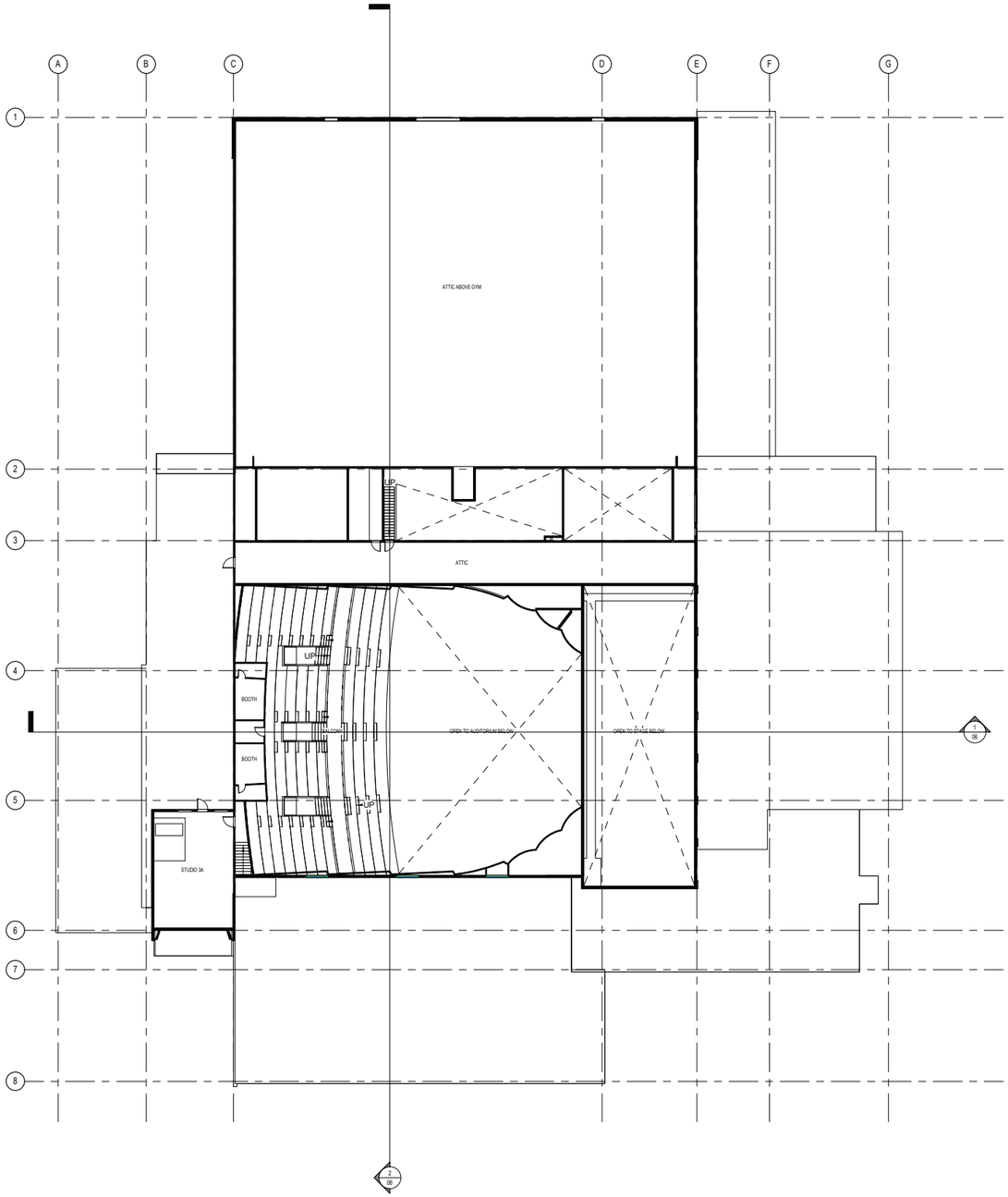
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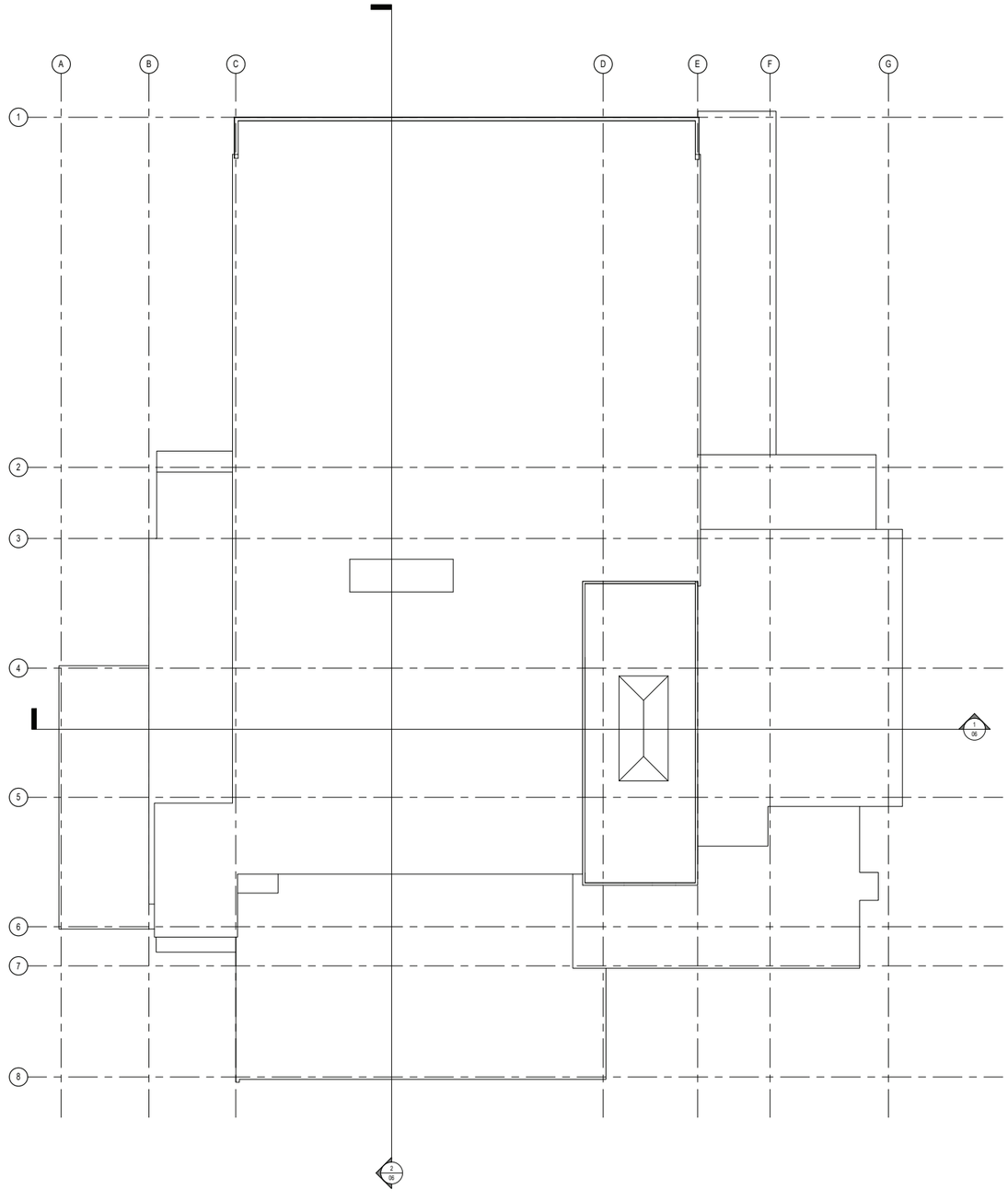
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LEVEL 3 FLOOR
PLAN

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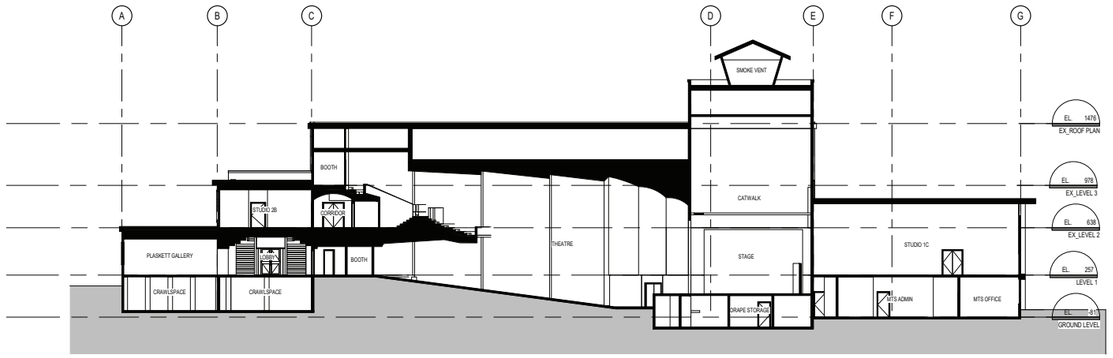
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MASSEY THEATRE RENEWAL

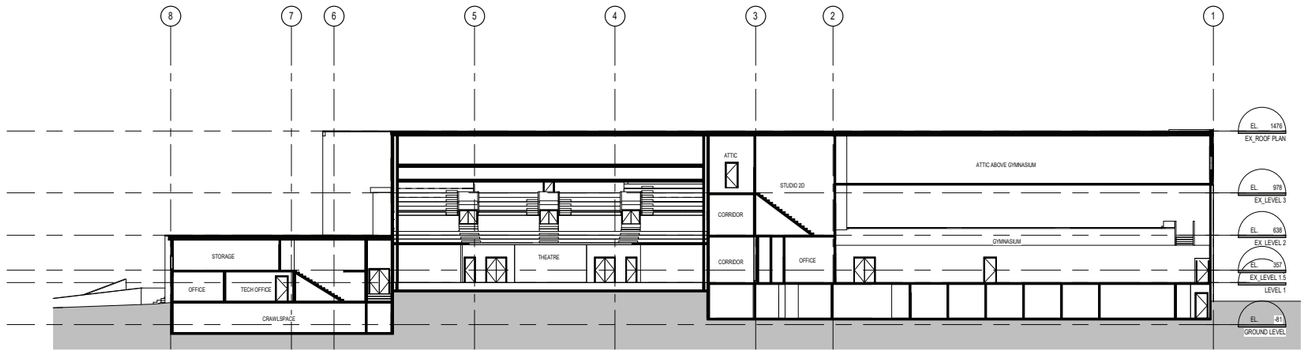
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EXISTING
ROOF PLAN

PROJECT NUMBER
22-20

DWG. NO.
05

DATE	SCALE	DRAWN	CHECKED
21/11/2022	1 : 200	CD	HC





PROSCENIUM
ARCHITECTURE + INTERIORS INC.

300 - 151 EAST 2ND AVE.
VANCOUVER BC V5T 1B4 CANADA

604.879.0118
www.proscenium.ca

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LANDSCAPE ARCHITECT
FIRM NAME

STRUCTURAL ENGINEER

MECHANICAL ENGINEER

ELECTRICAL ENGINEER

GEOTECHNICAL ENGINEER

TRAFFIC ENGINEER

SURVEYOR

CIVIL ENGINEER

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

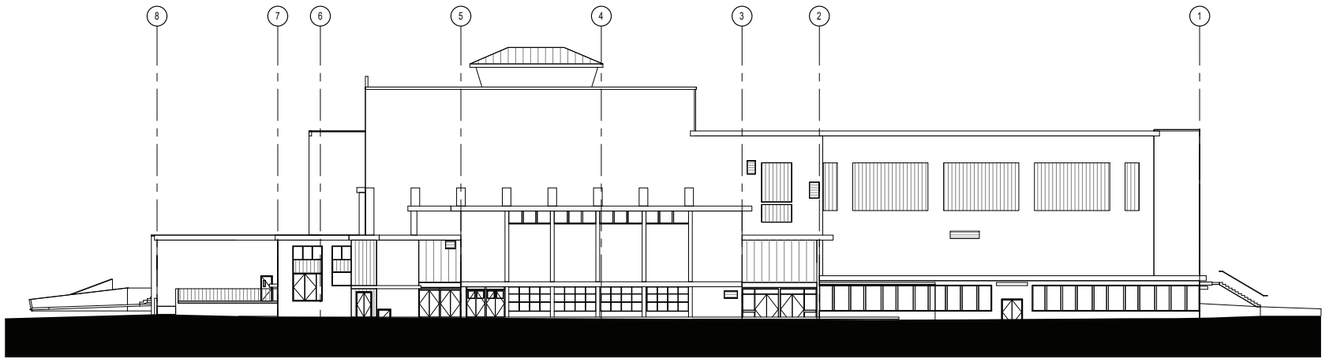
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EXISTING SECTIONS

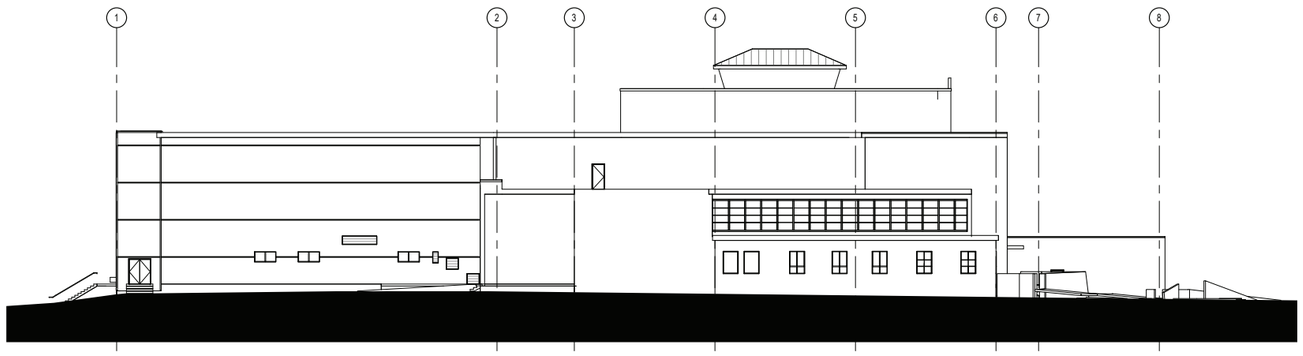
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22-20

DWG. NO.
06

DATE	SCALE	DRAWN	CHECKED
21/11/2022	1 : 200	CD	HC



1 EX Elevation North East
1 : 200



2 EX Elevation South West
1 : 200

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LANDSCAPE ARCHITECT
FIRM NAME

STRUCTURAL ENGINEER

MECHANICAL ENGINEER

ELECTRICAL ENGINEER

GEOTECHNICAL ENGINEER

TRAFFIC ENGINEER

SURVEYOR

CIVIL ENGINEER

PROGRESS SET

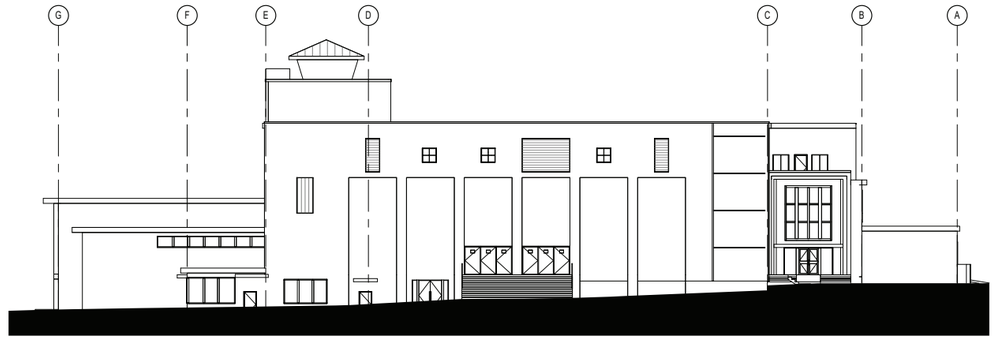
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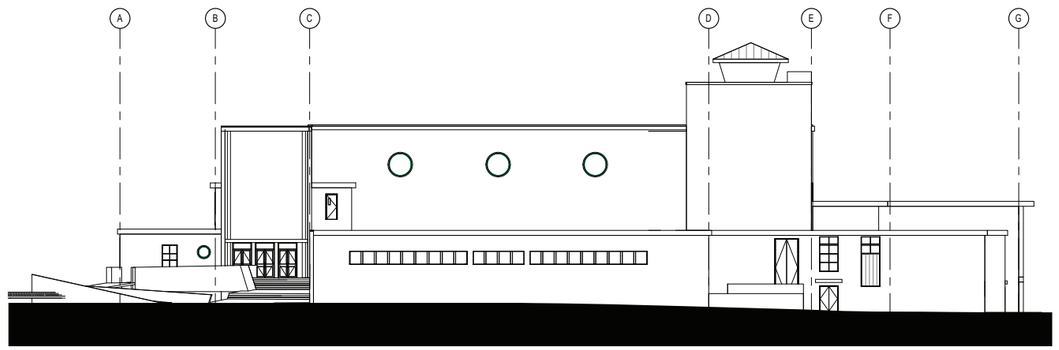
PROJECT
MASSEY THEATRE RENEWAL

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EXISTING ELEVATIONS 1	22-20
	DWG. NO. 07

DATE	SCALE	DRAWN	CHECKED
21/11/2022	1 : 200	CD	HC



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1 : 200



2 EX Elevation South East
1 : 200

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LANDSCAPE ARCHITECT
FIRM NAME

STRUCTURAL ENGINEER

MECHANICAL ENGINEER

ELECTRICAL ENGINEER

GEOTECHNICAL ENGINEER

TRAFFIC ENGINEER

SURVEYOR

CIVIL ENGINEER

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

PROJECT
MASSEY THEATRE RENEWAL

DRAWING TITLE
EXISTING ELEVATIONS 2

PROJECT NUMBER
22-20

DWG. NO.
08

DATE	SCALE	DRAWN	CHECKED
21/11/2022	1 : 200	CD	HC

LEGAL SURVEY

BRITISH COLUMBIA LAND SURVEYOR'S CERTIFICATE
OF LOCATION SHOWING A BUILDING ON PROPOSED LOT A
DISTRICT LOTS 2055 AND 5678 GROUP 1 NWD PLAN EPP109420

CIVIC ADDRESS
#725 EIGHTH AVENUE
NEW WESTMINSTER, B.C.

LEGEND
SCALE 1:250

5 0 5 10 15

ALL DISTANCES ARE IN METRES

DIMENSIONS ARE MEASURED AT GRADE, TO VERTICAL FACE OF EXTERIOR BUILDING WALLS UNLESS INDICATED OTHERWISE.



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RESTRICTED COVENANT ADDED: JUNE 22, 2021
DATE OF SURVEY: JUNE 15, 2021

SEBASTIANO LOCONTE
BC LAND SURVEYOR (#945)

THIS DOCUMENT IS NOT VALID UNLESS ORIGINALLY SIGNED AND SEALED.

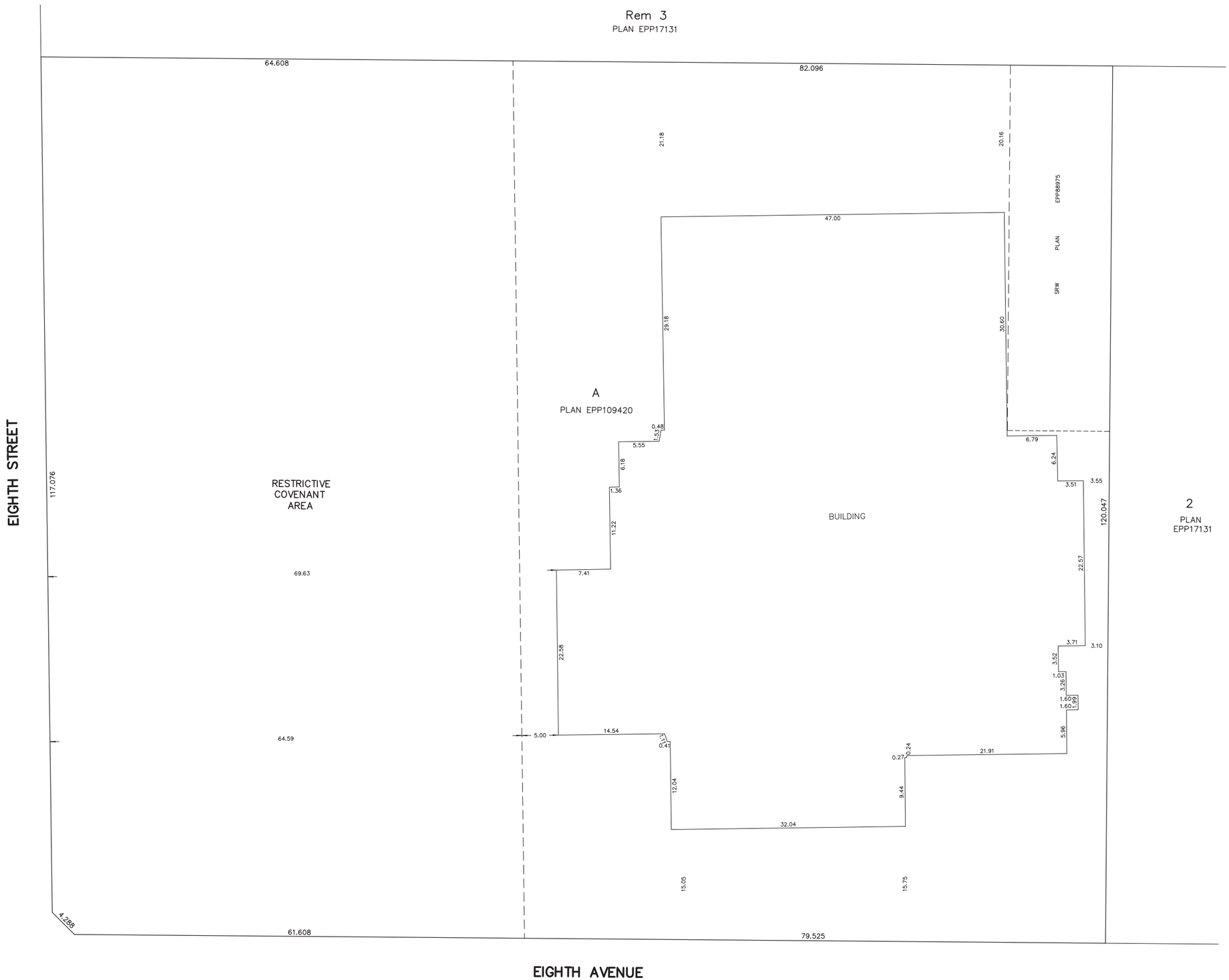
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MATSON PECK & TOPLISS
SURVEYORS & ENGINEERS
#320 – 11120 HORSESHOE WAY
RICHMOND, B.C., V7A 5H7
PH: 604-270-9331
FAX: 604-270-4137

CADFILE: 16034-017-CERT-001.DWG

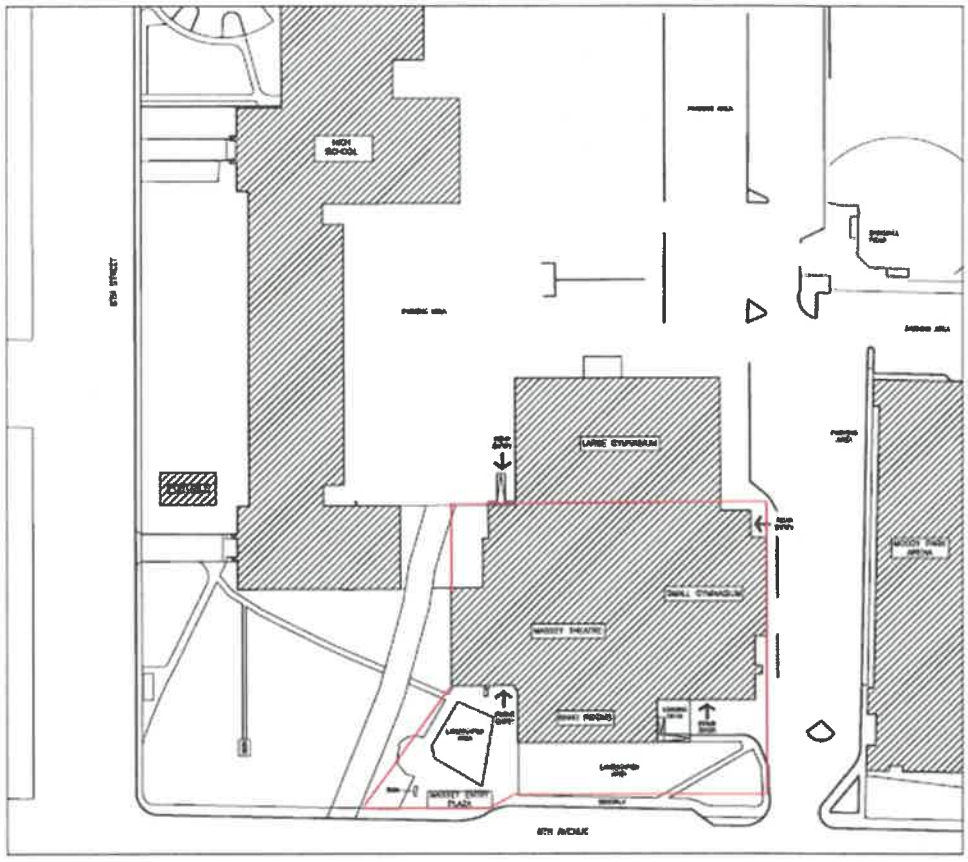
NW-21-16034-CERT

CLIENT REF: NEW WESTMINSTER SCHOOL DISTRICT #40



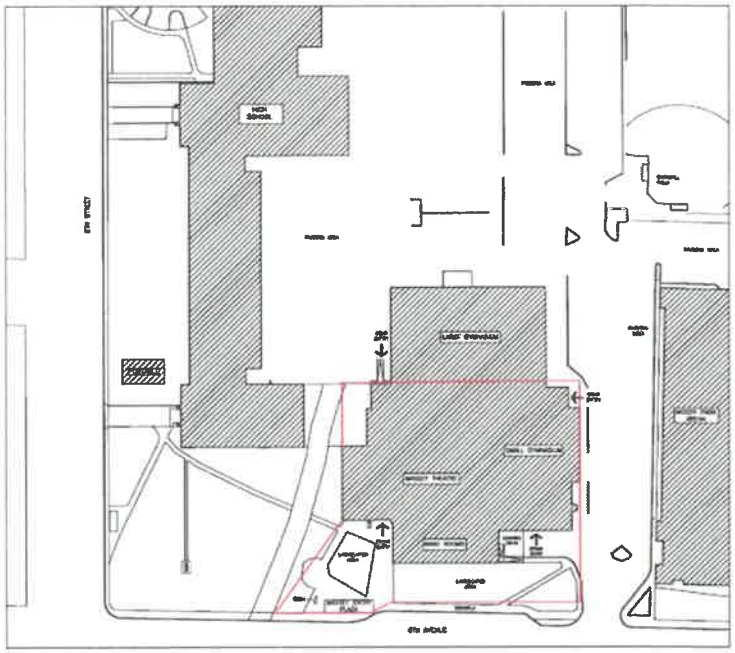
MASSEY THEATRE LEASE AREA (MTS LEASE SPACE)

Schedule "A"
Lands

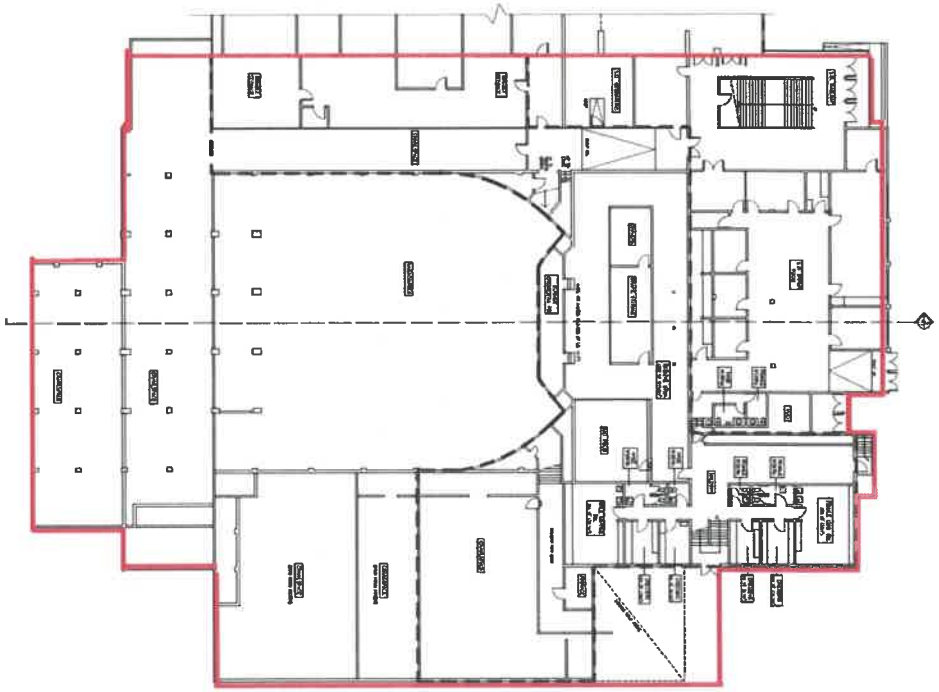


Schedule "B"
Premises

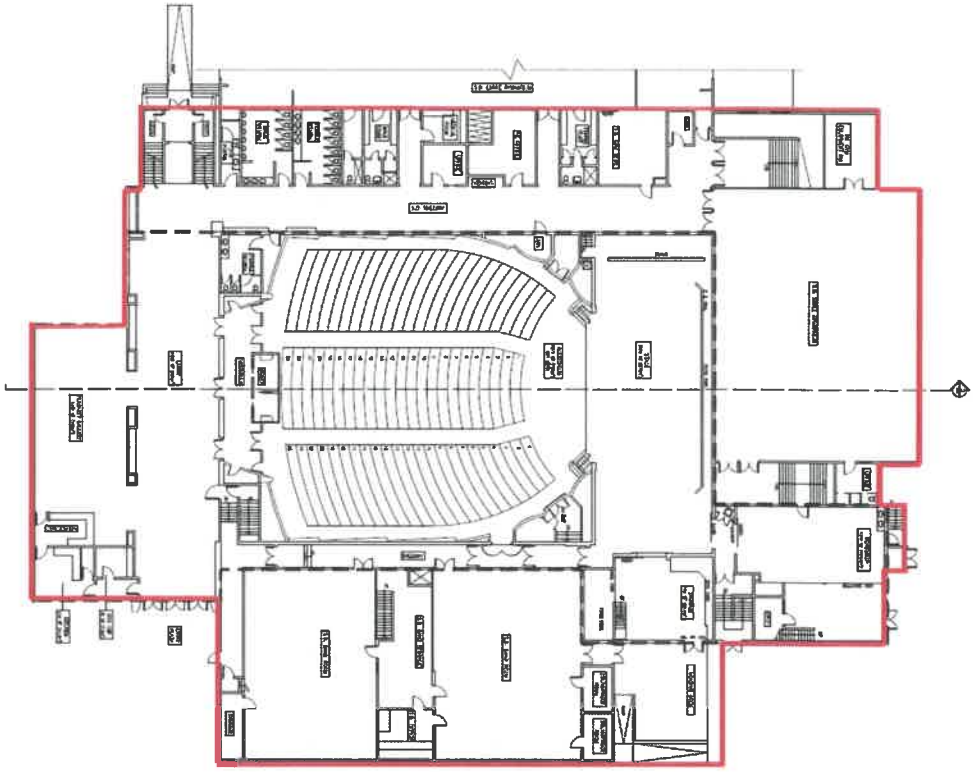
Exterior



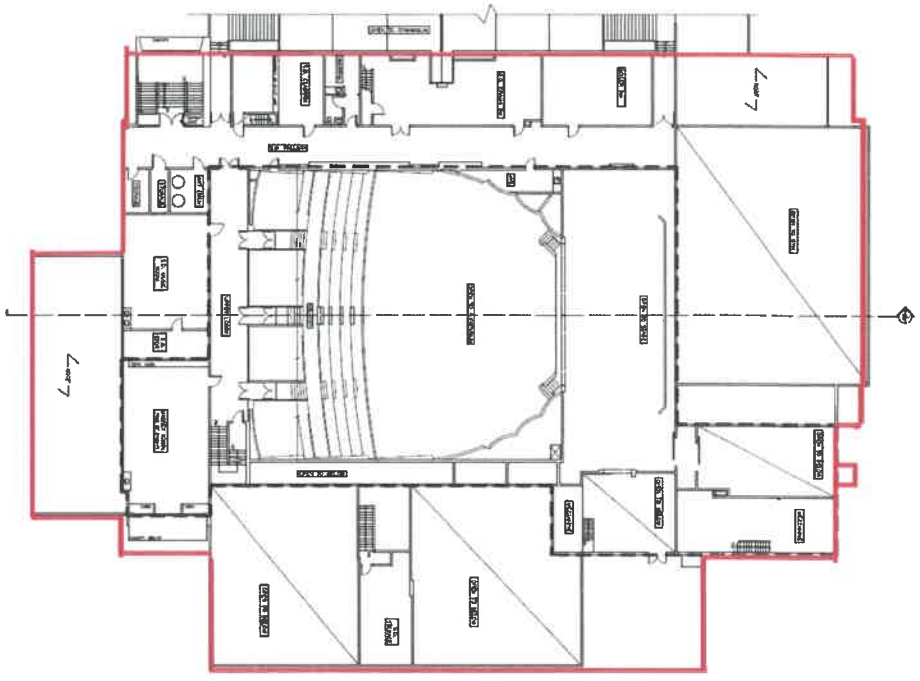
Interior – Level 1



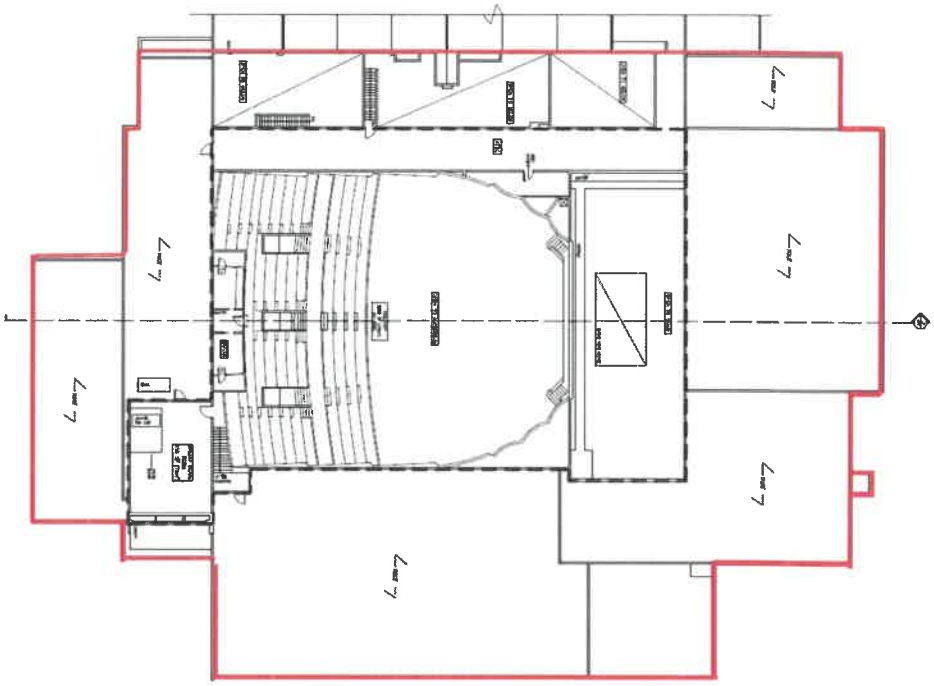
Interior – Level 2



Interior – Level 3



Interior – Level 4



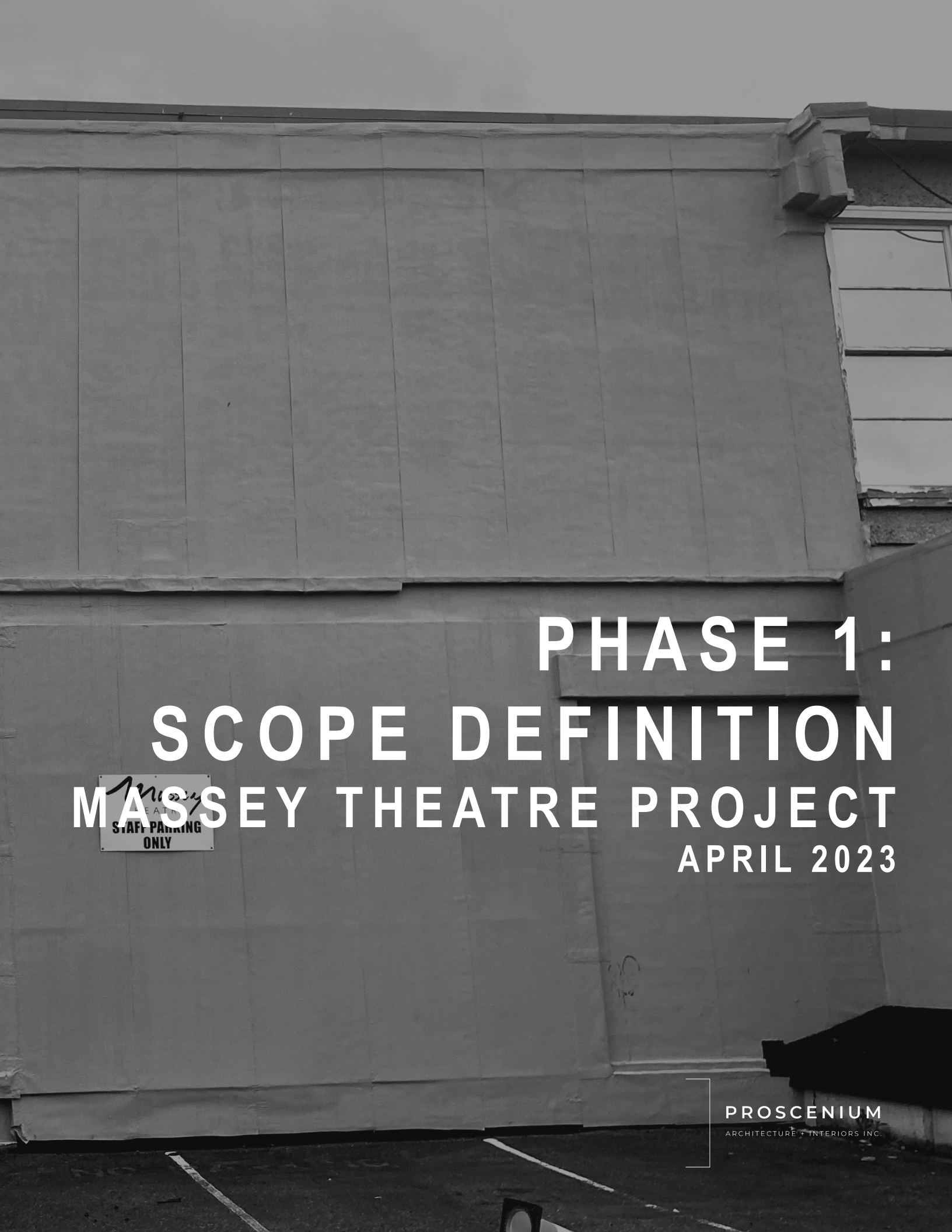
ATTACHMENT 2 – PREVIOUS COUNCIL REPORTS SUMMARY

July 13, 2015 Massey Theatre Updates – closed report for information	Report introduces Class D cost estimates for minimal upgrades to the Massey Theatre Lease space at $10M based on the Ministry of Education funding of $1M.
March 11, 2019 Massey Theatre Facility Assessment – Options 1A & 1B – closed report	Council directed staff to obtain cost estimates to demolish the gymnasium wing and renovate the Massey Theatre lease space (1A), and renovate the entire complex and retain the gymnasium wing (1B).
July 8, 2019 Massey Theatre Facility Preliminary Class D Estimates – closed report for information	Council received cost options 1A and 1B; $19.9M and $26.5M. Staff was directed to report back with the finalized Class D cost estimate, including a phasing strategy for Options 1A and 1B, options to reduce costs, and childcare grant opportunities.
October 28, 2019 Massey Theatre Facility – Update Work Plan – closed report	Council received a report exploring use of the gymnasium wing for sports programming and childcare, along with government funding. Staff was directed to report back with cost updates for Options 1A and 1B, a phasing strategy and business case for Option 1B, and preliminary design and cost estimates for a child care facility.
February 3, 2020 Massey Theatre - Possible Child Care Opportunity – closed report	Council received a report stating the City is well positioned to receive the full cost of $3M to retrofit a space for childcare purposes. Council directed staff to engage consultants to provide cost estimates for a childcare program; to consult with the Massey Theatre Society, and report numbers of childcare spaces.
March 4, 2020 Large Massey Gym and Program Spaces – closed report for information	Council received a report from P&R staff presenting a business case for sports programming. In the discussion, Council commented that it would be worthwhile to evaluate what could be removed from the P&R capital plan to justify the incorporation of this building into the City's portfolio of buildings, and the stability of projected construction costs and the City's future projected debt levels are of concern.
February 1, 2021 Massey Theatre Facility Capital Project and Land Transfer – Update and Next Steps – closed report	Council received a report on: • Market escalation has increased Options 1A and 1B to $24.5M and $29.8M. • Option 1C to add a childcare retrofit increasing the estimated cost to $33M. • Option 1A now includes the cost of demolishing the gymnasium wing as the School District were not able to contribute the $1.2M funding.

	• Child Care funding program will now not cover the $3M retrofit cost estimate. The funding has been reduced from $70K to $40K per child, become more competitive, and has limited application opportunities. Council directed staff to engage a Design Team to begin work on the Capital Project; a scope definition exercise evaluating the retention of the large gymnasium wing and childcare programming; and the advancement of the project scope and design to a detailed level acceptable for government funding.
January 31, 2022 Massey Theatre Update – closed report	In discussion Council expressed interest in keeping the gymnasium with uses ranging from reconciliation to programmed spaces. Staff responded with: • Staff are working methodically to determine requirements in terms of demolishing or keeping the large gymnasium space and the Massey Cafeteria; • The first step is to provide Council with an understanding of the implications of keeping or demolishing the large gym, then a conversation can be had about future uses; • Turning the large gym and Massey Cafeteria/dance space into something different would require additional capital; and, • Staff are developing a project plan to understand what can be done for the budget that is available; anything beyond basic life safety, heating and building envelope will likely exceed the current budget.
June 14, 2022 FIPR Meeting - closed presentation	Recommendations: • Engage professionals and advance updated and detailed building investigation, engineering design, and architectural plans to develop a thorough scope and defensible cost estimate • Develop a revised Project Budget and Renovation Plan aligned with current City Strategic Priorities and Polices • Focus on a 25-year asset life for the facility • Work with Parks & Recreation and the MTS to create an interim use plan and operational agreement to utilize the Massey gymnasium for the 2 years leading to demolition • Develop a clear strategy for CNW's retirement from Massey Theatre ownership FIPR recommendations:

	• Include climate strategies (scope not defined) • Provide cost details to demolish and retain the gymnasium wing • Supports the interim use of the gym wing
July 11 2022 – Massey Theatre Large Gymnasium Wing and Renovation Scope of Work – closed	Council accepted the staff recommendation to: 1. Continue with development of a detailed scope of work, schedule and budget for renovation of the Massey Theatre, assuming: a. Consideration of current City policy and agreements and a transparent variance process; b. Demolition of the Large Gymnasium Wing included in the scope of work and budget for the Massey Theatre renovation, and no further consideration given to retaining and renovating that space; c. A 25-year service life for the renovated Massey Theatre lease space; 2. Endorse the Theatre Renovation Project Work Plan, milestones, and target dates as outlined in the report.
August 29 2022 – Massey Theatre Renovation Update – Regular	Council received a report for information describing an overview of project milestones completed to date, and the approved work plan looking ahead, including removal of the large gymnasium and supporting spaces as per the 2015 approved plan for the project.

ATTACHMENT 3 – PROSCENIUM PHASE 1 REPORT AND DRAWINGS



PHASE 1: SCOPE DEFINITION

MASSEY THEATRE PROJECT

APRIL 2023

PROSCENIUM
ARCHITECTURE + INTERIORS INC.

TABLE OF CONTENTS

PROJECT UNDERSTANDING..... 1
METHODOLOGY 4
EXECUTION..... 5
ANALYSIS..... 7
RECOMMENDATIONS..... 9

APPENDIX I - PROJECT SCHEDULE
APPENDIX II - CONSULTANT REPORTS
APPENDIX III - SCOPE MATRIX
APPENDIX IV - TIER 1 COSTING PACKAGE
APPENDIX V - TIER 1 COST REPORT
APPENDIX VI - TIER 1 SCENARIO 1 COST REPORT
APPENDIX VII - TIER 1 SCENARIO 1 SCOPE PACKAGE

PROJECT UNDERSTANDING

PROJECT SCOPE DETERMINATION

From the New Westminster Request for Proposal 22-12: The City Capital Plan has allocated $14,100,000 as the total project budget for an intervention at the Massey Theatre to address scope likely to consist of

- Immediate and necessary repairs to allow operation of the Massey Theatre to continue
- Accessibility upgrades, including new passenger elevators
- Internal reconfigurations and refurbishments, including lobby and washrooms
- Fire and life safety system upgrades
- HVAC system replacement
- Demolition and reconfiguration of existing building components
- Replacement of building services and utilities
- Hazardous material abatement
- Building envelope replacement, including roof, external walls and windows

It is the purpose of this Phase 1 – Pre-Design Services: Project Scope Determination study to determine a scope of work that contributes effectively to the 25 year service life of the theatre, and which is estimated to be actionable with the allocated budget.

CONTEXT / BACKGROUND

The Massey Theatre is named after the first Governor General of Canada to be Canadian born, an individual instrumental in the creation of the Canada Council for the Arts. The Massey Theatre was built in 1949 and in its early days was the entertainment centre of the Royal City and surrounding region. Situated on New Westminster Secondary School property, it was operated by the school district as a rental hall for the community and a road-house for touring artists and entertainers, as well as the heart of arts education for the school system in New Westminster. The Massey Theatre with 1260 seats was the first theatre in Metro Vancouver to attract regional audiences for dance and musical productions.

In 1982, the Massey Theatre Improvement Society was formed to make effective use of funds raised for technical and facility updates. This became the Massey Theatre Society in 1991, a registered non-profit society governed by an independent board of directors to operate the theatre and hire professional staff.

2015 – 2021 saw an ongoing negotiation with the School Board regarding the transfer of ownership of the Massey Theatre facility. Massey Theatre ownership transferred to the City of New Westminster in 2021, with a lease agreement with the Society to operate and manage the Theatre on behalf of the City.

REVIEW OF PAST STUDIES

- Massey Theatre Facility Assessment:
  Proscenium completed the original Theatre Facility Study, which recommended plans for maintaining and upgrading the existing facility. The scope of work included increasing the size of public areas, improving the acoustics of the audience chamber and reconfiguring the back of house facilities.
  PAI / 1997

- New Westminster Theatre Report:
  The 2008 Study recommended maintaining the Massey Theatre and building a new purpose built black-box theatre of 300-400 seats. An appendix was requested of Proscenium Architecture to explore several facility scenarios and assess the impact of each on the performing arts community in New Westminster and the surrounding region.
  Cultural Planning Consultancy / 2008

- Gap Assessment Appendix: This 2009 Study looked at establishing a new built theatre of 1000 seats should the existing theatre be demolished. It analyzed the gap that would be left in the Lower Mainland if the Massey Theatre were torn down, in order to form recommendations of what should replace it.
  PAI / 2009

- New Westminster Theatre Facilities Room List:
  Developed a program for a generic 1000-seat civic theatre capable of school use and a 650-seat school theatre capable of civic use.
  PAI / 2010

- New Westminster MPAC Functional Review: 2012, B.E. Beck

- Needs Assessment Report – theatre component of New Westminster secondary school:
  The 2013 Needs Assessment was conducted to imagine the appropriate size of a new theatre facility as a component of the proposed new New Westminster Secondary School. The Study reassessed the existing preliminary functional space program and cost analysis to meet new budget parameters, so that the City of New Westminster could commit appropriate funding for the project. Proscenium prepared a functional program for both 800- and 1000-seat options.
  2013, PAI

- A Standalone Massey Theatre – Market Needs Assessment and Facility Assessment:
  The 2015 Study developed two options, including base level upgrades and expanded upgrades. Both options included an existing facility assessment, market analysis, costing and final report and presentation.
  PAI / 2015

- Massey Theatre and Gym Facility Assessment:
  An update of the 2015 Study that expanded the scope and updated the budget for two options—the removal of the gym, or the retention and repurposing of the gym for possible parks board use. A phasing strategy was developed, breaking the scope of work down into a series of phased packages that would allow the theatre to remain functional, ensuring the scope of work packages aligned with project budget.
  2020, PAI

  At the end of the 2020 Massey Theatre and Gym Facility Assessment, several options were developed and costed.

  Option 1 –
  The Gym is demolished
  The City undertakes a minimal level of upgrade required for continued operations.

  Option 1A –
  The Gym is demolished.
  The Theatre undergoes upgrades targeting optimal qualitative, functional and operational needs.

  Option 1B
  The Gym is retained.
  The Facility undergoes upgrades targeting optimal qualitative, functional and operational needs.

- Facility Condition Assessment / Massey Theatre
  Based on the ASTM Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process (E2018-15)
  and included:
  • Background Information Request and Review;
  • Interview(s) with Knowledgeable Site Staff;
  • Walk-through Site Assessment Visit; and
  • Preparation of a comprehensive report.

REVIEW OF PERTINENT DOCUMENTS

GREEN BUILDING POLICY

September 2021

- design and construction of new City-owned buildings, or new additions/major building renovations with a floor space greater than 500 square metres (or a minimum site area of 5,000 square metres) or greater, shall:
- Achieve a minimum LEED Gold certification through Canada Green Building Council (CaGBC) standard; and
- Achieve CaGBC's Zero Carbon Building Standard certification for Design (in the case of a new building) or Performance (in the case of an existing building), where it is determined by the Energy Management Committee that a significant reduction in greenhouse gases (GHGs) can be achieved; and
- Use the LEED rating system and accompanying Reference Guide as a design and measurement tool. Design and project management teams are encouraged to meet higher LEED rating levels, if feasible in a cost-effective manner.
- In the case that the minimum requirements outlined in section 4.1 of this policy are not met or the pursuit of certification is not considered to be financially feasible upon review, the design and construction of new City-owned buildings, or new additions/major building renovations shall be built with the spirit of the aforementioned certifications in mind and strive to achieve the objectives they set forth.

EFFICIENT EQUIPMENT SELECTION POLICY

September 27, 2021

- The City must purchase energy efficient equipment, supplies, and appliances wherever possible. This will result in a measurable increase in energy efficiency, or a net reduction in energy consumption. This requires that product specifications be compliant with:
- Energy Star ® guidelines and recommendations
- Natural Resources Canada Office of Energy Efficiency (NRCOEE) guidelines and recommendations

PUBLIC ART POLICY – JANUARY 31, 2022

Percent for Art

The City will provide a 'percent for public art' funding strategy for the acquisition, administration and management of public art in New Westminster. The 'percent for public art' will be calculated at 1% of total capital project costs for eligible capital projects with budgets over $1 million and at 0.5% for projects in the $500,000 – $1 million range. Eligible capital projects include all upgrade and growth budget items %500,000 or more. Land purchase, movable equipment, maintenance and service budgets are not included in this policy.

UNIVERSAL DESIGN REVIEW

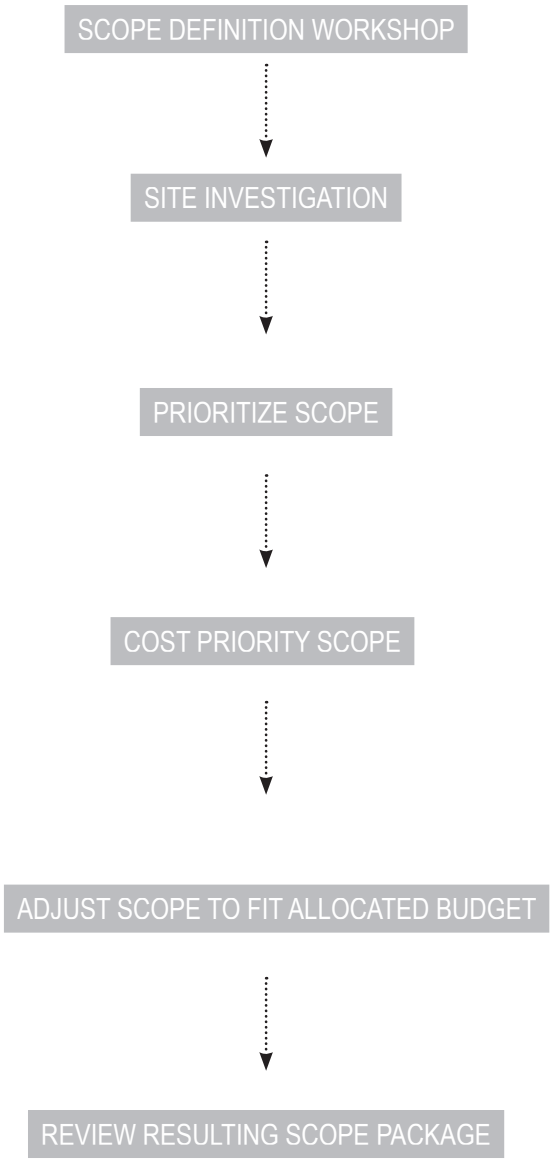
June 15, 2017

MOVED and SECONDED: THAT the Access Ability Advisory Committee ask Council that a universal design review and plan be funded as a component of the Massey Theatre renewal project before the building improvements are finalized.

EMOBILITY ROADMAP

June 27, 2022

Accommodating and promoting electric vehicle access, use, parking and charging in the city of New Westminster. This policy addresses vehicles ranging in scale from electric scooters and bicycles to electric automobiles.



METHOD DEVELOPMENT

Phase 1: Scope Definition methodology is drIven by the project understanding and review of previous studies.

At the conclusion of the 2020 Massey Theatre and Gym Facility Assessment, Option 1A was selected by Council.

The City Capital Plan allocates $14,100,000 as the total project budget to address hard and soft costs as well as contingency reserves.

The identified budget is not sufficient to address Option 1A from the 2020 Massey Theatre and Gym Facility Assessment - without accounting for market inflation.

This report will update our understanding of required or possible facility upgrade scope, prioritize scope items, and identify a scope package of suitable priority that can be logically addressed using the identified available budget. It will further review the proposed scope package for alignment with city policy, alignment with future scope, and internal coordination between elements.

SCOPE DEFINITION WORKSHOP

The scope definition workshop was held October 14, 2022 at New Westminster City Hall.

Attendees included representatives from the City of New Westminster and the Massey Theatre Society; engaged project managment and construction management firms; and consultants from architectural, electrical, mechanical and structural disciplines.

Scope understood to exist based on the 2020 Massey Theatre and Gym Facility Assessment, augmented with the observations of building users, was listed and sorted into preliminary categories identified as Must / Should / Could:

MUST

- Gym demo & hazmat
- Site reinstatement
- New exterior wall
  - or re-use the wall and upgrade
  - new foundation
  - drainage requirements
- Move or protect elec services
  - or upgrade/ build new building w new roof
- Sprinkler Room
- Roof
  - associated structural & seismic upgrades incl truss repair
  - insulation
  - extension of parapet
- Rebuild NW fake exterior wall
- New footing
- Mechanical distribution
- Patch & repair of envelope where mech penetrates
- Window replacement/upgrade
- Accessibility (1 mil)
  - elevator & ramp
- Washroom upgrades
- Abatement

SHOULD / COULD

- Envelope upgrade
- Full Seismic upgrade
- New drainage
- BOH accessibility
- Lifts (stair climber)

SITE INVESTIGATION

The consulting team visited the Massey Theatre on October 25th 2022 to confirm Scope Definition Workshop results, identify additional scope, and determine locations for destructive testing.

Destructive testing to allow for concealed structural review and assembly moisture readings occured November 22nd 2022.

See Appendix II for Consultant Reports.

Scope confirmed by the consulting team was categorized into tiers. Initially, these tiers were determined as follows:

Tier 1: Scope addressing the ongoing physical degradation of the facilty/life-safety risks.

Tier 2: Voluntary Code Upgrades - scope addressing facility alignment with current codes and standards.

Tier 3: Optimized Arts Centre - scope required to optimize the Massey Theatre as an arts centre.

see Appendix III for full scope matrix:

Tier 1 scope was captured as a drawing package to facilitate cost estimation. Some scope elements were adjusted outside of original Tier definitions to reflect priorities as identified by the end-users and tailor scope to cost estimate findings.

See Appendix IV for Tier 1 costing package,

COST TIER 1 SCOPE

Cost estimates were limited to scope identified as Tier 1 only, as previous costing exercises indicated Tier 1 scope would exceed available budget. According to 2020 cost estimates, without adjusting for inflation, the identified project budget of $14,100,000.00 is not sufficient to address then selected Option 1A from the 2020 Massey Theatre and Gym Facility Assessment.

From the 2020 Massey Theatre and Gym Facility Assessment:

Option 1 –
The Gym is demolished
The City undertakes a minimal level of upgrade required for continued operations.

Option 1A –
The Gym is demolished.
The Theatre undergoes upgrades targeting optimal qualitative, functional and operational needs.

For this scope definition report, Tier 1 Scope, considered essentially equivalent to Option 1 formed the basis of a costing exercise to determine whether that scope category could be addressed using the identified budget.

Initial costing was performed in parallel by cost consultant Jim Bush and Associates as well as construction manager Heatherbrae. Parallel independent costing exercises provide a framework for the comparison and confirmation of assumptions and associated estimations.

JBA and HBB estimates, at $19,087,200 and $17,909,444 respectively, exceed the project budget and do not represent viable scope packages for this project.

See Appendix V for Tier 1 costing reports.

REFINE SCOPE DEFINITION

It is the purpose of this Phase 1 – Pre-Design Services: Project Scope Determination study to determine a scope of work of logical priority that contributes effectively to the 25 year service life of the theatre, and which is estimated to be actionable with the allocated budget.

The City Capital Plan has allocated $14,100,000 as the total project budget for an intervention at the Massey Theatre.

Tier 1 Scope requires refinement to align with available budget. This refined scope package will form Tier 1 - Scenario 1 and will be identified through the following argument:

SCOPE SELECTION AXIOMS

1. GYM REPAIR IS OUTSIDE MANDATE. DEMOLISH THE GYM
   - The budget allocation is for a scope of work that contributes effectively to the 25 year service life of the theatre, repair work to areas targeted for demolition do not align with the project mandate
   - It is not good practice to allow the ongoing degradation of a facility that is structurally, mechanically and electrically conjoined, within a contiguous envelope, to a civic asset targeted for renovation.

2. MAKE GOOD SCOPE AFFECTED BY GYM DEMOLITION
   - Reinstate demolished wall of theatre
   - Sheltering ex. electrical equipment in place impractical, replace and install in new elec room /
   - Add stair to make good the dead-end condition created via demolition.

3. ACCOMMODATE FUTURE SCOPE. AVOID CAPITAL WASTE
   - Build elevator shaft along with stair to accomodate future elevator accessibility upgrades to avoid capital expendiature on elements requiring future demolition.

4. USE AVAILABLE BUDGET EFFECTIVELY
   - Additional scope should be identified to use the available budget to the extent possible. This scope should align to divisions already included to maximize project efficiency. Select scope associated with NW wall repair.

TIER 1- SCENARIO 1 DEFINITION

SCOPE

ARCHITECTURE:

- Gym demolition & hazmat.
- Site reinstatement (see civil)
- Ex. shared wall with gym upgraded to exterior assembly.
- Electric room (see electrical)
- New sprinkler room.
- Rebuild NW fake exterior wall (temporary wall)
- Add stair to address dead end condition intrduced by gym demolition

STRUCTURAL

- Demolish Gymnasium.
- Upgrade existing North stud wall (current South wall of Gymnasium) to be a new exterior wall. This includes misc repairs after gym trusses are removed (and possibly wood-rot) and upgrades for wind and seismic loads.
- Electrical vault and Sprinkler room: New concrete structure.
- Rebuild NW fake exterior wall (temporary wall): foundations and new wall framing.
- Add new R/C stair to eliminate level 2 dead end condition created by demolition of gym: new foundations, R/C shaft wall stair and roof slab.

MECHANICAL

- Demolition of gym HVAC and Plumbing equipment.
- Relocation of sprinkler tree and water entry room out of gym area, this includes providing new fire department Siamese connection.
- Perimeter drainage to accommodate gym demolition and new foundation walls.

ELECTRICAL

- Revision of the Fire Alarm panel and Annunciator. Fire alarm zones will have to be revised due to the removal of the gym and other changes made to the building as part of this project.
- Lighting for parking lot site remediation post demo.
- Upgrade exit signs along the egress path from the new basement space to outside of the building.
- Demolition of electrical equipment in the gym.
- Replacement of electrical equipment within main electrical room on basement level. Build new electrical room adjacent to existing room. Install new service equipment in new electrical room.

SPRINKLER

- Test a reasonable sampling (+/- 6) of existing heads
- (required sprinkler head replacements should be handled under maintennance budget)
- Add sprinkler heads to existing non-conforming closet spaces. (x3)

ENVELOPE

- Gym demolition: Re-use the north wall structure, upgrade insulation and envelope
- Rebuild NW fake exterior wall (temporary wall)

CODE

- Sprinkler heads should be added to identified existing non-conforming closet spaces. (x3)
- Add new stair to eliminate level 2 dead end condition created by demolition of gym: new foundations, masonry shaft wall stair and roof deck.
- Upgrade exit signs along the egress path from the new basement space to outside of the building.

CIVIL

- Bring water entry to new room in new basement building services wing
- Asphalt and parking to remediate site after gym demo
- Site drainage as required

ANALYZE TIER 1 - SCENARIO 1

(DEMO GYM & MAKE GOOD, NEW ELEC. ROOM & EQUIP.)

COST

Tier 1 - Scenario 1 Scope cost estimates align with the available $14,100,000 project budget.

see Appendix VI for Tier 1 - Scenario 1 cost report

POLICY ALIGNMENT

GREEN BUILDING POLICY

Tier1 - Scenario 1 scope related to upgrading envelope performance will contribute to the facilities overall energy efficiency and reduce GHG emissions and are aligned with the spirit of LEED certification and CaGBC's Zero Building Standard for Performance. Removal of the gym and its compromised envelope should also contribute to overall energy efficiency of the facility.

EFFICIENT EQUIPMENT SELECTION POLICY

Energy Star guidelines are not applicable to Tier 1- Scenario 1 scope. The efficiency of the dry-type transformer in the unit substation included under Tier 1 - Scenario 1 is regulated by Natural Resources Canada and CSA standards.

PUBLIC ART POLICY

Tier 1 - Scenario 1 represents an eligible capital project as an upgrade and growth budget tiem with a value > $500,000. As a capital project with a budget over $1 million the 'Percent for Public Art contribution should be calcualted at 1% of total capital project costs. No public art contribution is currently accommodated in Tier 1 - Scenario 1 costing.

UNIVERSAL DESIGN REVIEW

The universal design review was not included as part of the project scope. Scope elements within Tier 1 - Scenario 1 should be informed by a facility wide Universal Design Review prior to implementation.

EMOBILITY ROADMAP

Goals of the EMobility Roadmap should be taken into account during the layout of the parkting lot associated with site reinstatement included in Tier 1 - Scenario 1.

ANALYZE TIER 1 - SCENARIO 2/3

(ENVELOPE UPGRADES / ACCESSIBILITY UPGRADES)

Scope outside of Tier 1- Scenario 1 is outside the mandate of this report but offers further alignment to relevant policy.

GREEN BUILDING POLICY

All identified scope upgrading envelope performance will further contribute to the facility's overall energy efficiency and reduce GHG emissions and are aligned with the spirit of LEED certification and CaGBC's Zero Building Standard for Performance.

EFFICIENT EQUIPMENT SELECTION POLICY

All identified scope replacing mechanical equipment throughout the building will esult in a measurable increase in energy efficiency, or a net reduction in energy consumption through the selection of products following the guidelines and recommendations of EnergyStar or Natural Resources Canada Office of Energy Efficiency where applicable.

PUBLIC ART POLICY

Future scope packages alignment with the Public Art Policy will depend on their value. No public art contribution is currently accommodated in Tier 1 costing.

UNIVERSAL DESIGN REVIEW

The universal design review was not included as part of the project scope. Multiple scope elements should be informed by a facility wide Universal Design Review prior to implementation.

EMOBILITY ROADMAP

Success of Tier 1 - Scenario 1 in addressing the Goals of the EMobility Roadmap should be evaluated as part of the design development of future scope packages.

RECOMMENDATIONS

1. PROCEED WITH UNIVERSAL DESIGN REVIEW
   The universal design review was not included as part of the project scope. Multiple scope elements should be informed by a facility wide Universal Design Review prior to implementation.

2. PROCEED WITH ENERGY MODELLING AND LEED ASSESSMENT OF PROPOSED SCOPE
   In order to provide quantitative projections regarding energy performance impacts of scope packages and an evaluation of where LEED certification can be pursued for increased alignment with the CoNW Green Building Policy.

3. PROCEED WITH TIER 1 - SCENARIO 1
   - The scope package is estimated to align with the available $14,100,000 budget.
   - The scope package is aligned with the directive to contribute to the building's 25 year life cycle.
   - The scope package accommodates future work

4. IDENTIFY ADDITIONAL FUNDING OPPORTUNITIES
   - Scope outside of Tier 1 - Scenario 1 could further align the facility with the Green Building Policy, Efficient Equipment Selection Policy, Public Art Policy and Emobility Roadmap.

NOTE:
To the degree possible, phased works should consider and limit long term ongoing impact to the ability of the facility to operate effectively.

APPENDIX I
PROJECT SCHEDULE

Refer to Project Schedule within MTR Pre-Design Phase Summary Report

APPENDIX II
CONSULTANT REPORTS

CONSULTANT REPORTS

STRUCTURAL

BushBohlman &Partners

Hugh Cochlin, Architect AIBC
Principal
Proscenium Architecture Interiors Inc.
300-151 East 2nd Ave.
Vancouver, BC V5T 1B4

Oct. 29, 2022
BBP Project #: 8544

Re: Massey Theatre Renovations
Structural Scope List

Hugh,

In regards to the above project, we have provided a list of structural items in three categories ("Must Haves", "Need to haves" and "Nice to haves"). Additionally we have listed items that we would like Heatherbrae to help us investigate on site.

Structural Scope
Below is a list of items required to extend the life-span of the Massey theatre to 25 years.

"Must haves"
1) Demolish Gymnasium
2) Upgrade existing North stud wall (current South wall of Gymnasium) to be a new exterior wall. This includes misc repairs after gym trusses are removed (and possibly wood-rot) and upgrades for wind and seismic loads.
3) Electrical vault: Structural intervention to support retention.
4) Replacement of temporary exterior wall: foundations and new wall framing.
5) New plywood on roofs where roofing is being replaced to seismically upgrade roof diaphragms.
6) Repair/strengthening of auditorium roof trusses
7) Upgrade of roof framing where new roof top units are being placed OR in a snow drift zone where insulation is being increased.
8) Wood rot remediation where discovered

"Need to haves"
9) Accessibility (New Elevator): new foundations, pit, NLT shaft walls and floor framing modifications.
10) Framing modifications to accommodate washroom upgrades.

"Nice to haves"
11) Seismic upgrade to entire building (suggest to Seismic Retrofit Guidelines level (approx. 60% of code or 10% in 50 year hazard, given 25 year retention plan).

On-Site Investigation
We would like Heatherbrae to help investigate the following:

a) Access to space over auditorium to double check scope of work to repair trusses
b) Expose gym wall full height (or at least at base and intermediate floor level)
c) Expose roof framing in drift zones and where new mechanical units are proposed
d) Expose floor framing where new elevator is proposed

Please contact the undersigned if you have any questions or require anything further at this time.

Prepared by,



Tim White, Ph.D., P.Eng.
Partner
EGBC Permit to Practice: 1000651

CONSULTANT REPORTS

MECHANICAL

Memo

Date: October 31, 2022

Proscenium Architecture Interiors
300-151 East 2nd Ave.
Vancouver, BC V5T 1B4

AME File: 139b-010-22
Email: HCochlin@proscenium.ca
Ph: 604.879.0118

Attention: Hugh Cochlin, Architect AIBC, AAA, MRAIC, LEED AP - Principal

RE: **City of New Westminster - Massey Theatre Renovation**

Dear Hugh,

AME Consulting Group has reviewed the current conditions of the Massey Theatre through an initial consultant walkthrough and a review of the mechanical assessment report completed in 2019 by Jade West Engineering. From initial meetings and discussions, AME is providing recommendations to extend the Massey Theatre lifespan for another 25 years. Recommendations are broken down into three categories as discussed, Must Happen, Needs to Happen, and Should Happen. Recommendations are as follows:

Must Happens

1. Demolition of gym HVAC and Plumbing equipment
2. Relocation of sprinkler tree and water entry room out of gym area, this includes providing new fire department Siamese connection
3. Perimeter drainage to accommodate gym demolition and new foundation walls
    a. AME has been notified of water ingress in the crawl space, lack of foundation drainage may be the cause of water ingress. Additional perimeter drainage outside of the new demolition wall area may be required

Needs to Happen

1. Boiler replacements
2. Air handling unit and other Rooftop unit replacements
3. Washroom upgrade. New fixtures, domestic hot water tanks, plumbing, and upgrade to minimum exhaust requirements
4. Elevator pit drains and ventilation for elevator shaft (for New Elevator only)
5. Provide seismic restraints for all new mechanical equipment to meet current building code requirements.

Should Happen

1. Providing cooling and ventilation to Entrance Lobby area
2. Re-piping of hydronic piping
3. Re-piping of domestic water piping

4. Upgrade building control system to a central DDC system and replace all pneumatic controls with DDC
5. Upgrade current Theatre smoke exhaust system to meet current code requirements.

Yours very truly,
The AME Consulting Group Ltd.



Jeremy Maguddayao
Mechanical Designer - Vancouver, BC

Attachment(s): *N/A*

PROFESSIONAL'S SEAL & SIGNATURE

CONSULTANT REPORTS

ELECTRICAL

H:\PROJECTS\2022\0222.6206\CORRESPONDENCE\LETTERS\0222.6206 MASSEY THEATRE_ELECTRICAL SCOPE LIST.DOCX
Refer to File: 0222.6206

November 10, 2022

Attn: Hugh Cochlin
Proscenium Architecture Interiors
300-151 East 2nd Ave.
Vancouver, BC V5T 1B4

RE: City of New Westminster – Massey Theatre Renovation

Dear Hugh,

Based on our site review conducted on Tuesday, October 25, AES Engineering has identified the following electrical scope of work for the renovation of the Massey Theatre. The proposed scope is subdivided into three categories: Must Happen, Needs to Happen and Should Happen.

Must Happen:

1. New elevator installation – provide power connection, communication connection, and fire alarm connection for new elevator.
2. Revision of the Fire Alarm panel and Annunciator. Fire alarm zones will have to be revised due to the removal of the gym and other changes made to the building as part of this project.

Needs to Happen:

1. Replacement of electrical equipment within main electrical room on basement level.
    a. An upgrade of the electrical service and a retrofit of the service entry equipment was completed recently as part of a separate project. The remaining existing switchgear in the electrical room is nearing the end of its anticipated lifetime but seems to be in good condition.
    b. Currently the room is not code compliant. however, if the room can remain as-is (no change), the existing electrical vault can remain as it is. If the electrical room cannot remain at current location, electrical equipment will need to be replaced.
    c. If a new unit substation is installed, the current electrical room is not large enough to accommodate it. An outdoor electrical unit substation will need to be provided in this case.
2. Performers' elevator upgrade. Addition of power connection for performers elevator.
3. Washroom upgrade – upgrade lighting, provide power to any new mechanical units.

Should Happen:

1. New AV/Comm room.

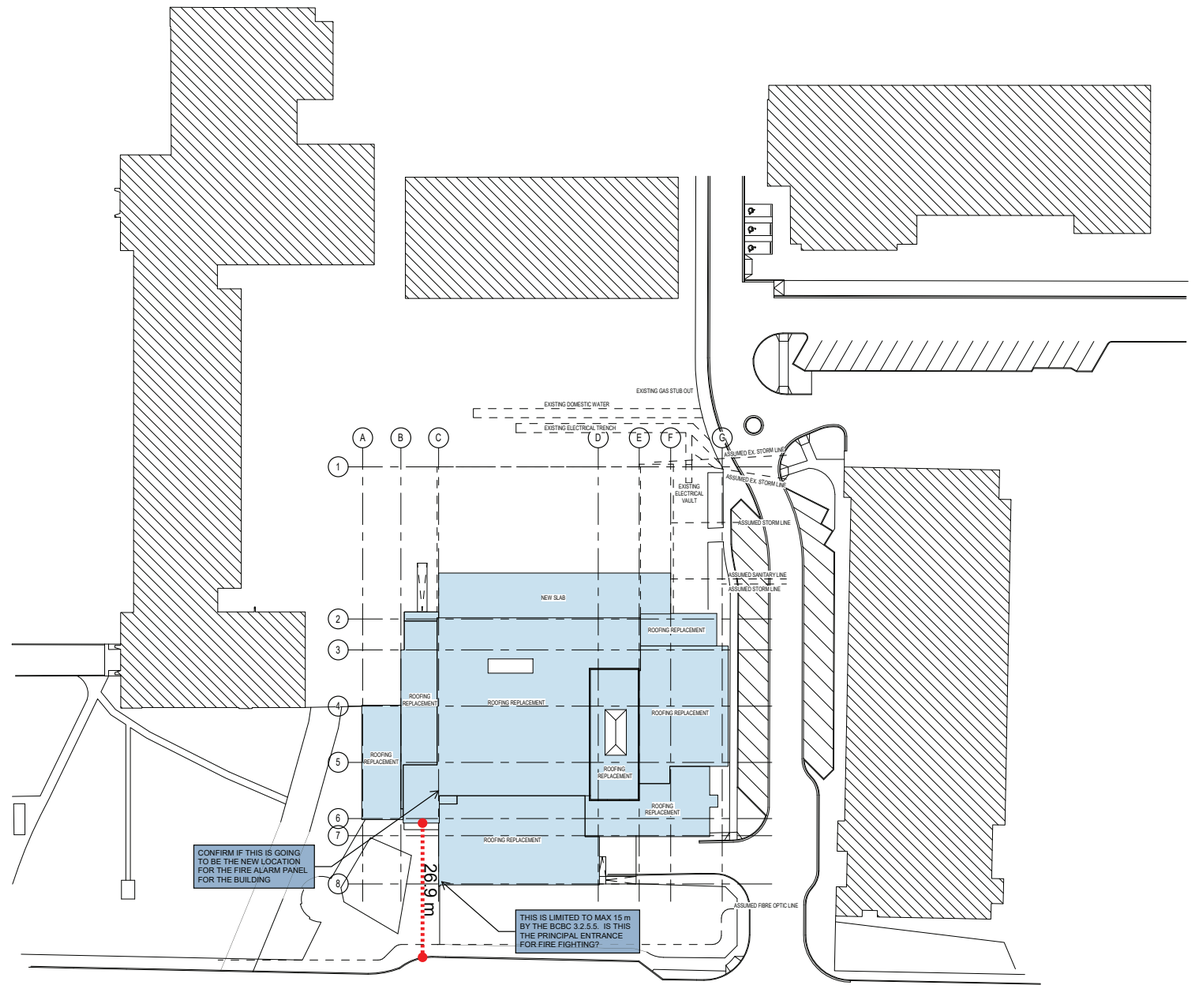
Sincerely,



Brad Ou-Yang, P.Eng., LEED AP BD+C
Associate Principal
AES Engineering Ltd.
BOY/ds

CONSULTANT REPORTS

BUILDING CODE



PROSCENIUM
ARCHITECTURE + INTERIORS INC.

300 - 151 EAST 2ND AVE.
VANCOUVER BC V5T 1B4 CANADA

604.879.0118
www.proscenium.ca

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LANDSCAPE ARCHITECT
FIRM NAME

STRUCTURAL ENGINEER

MECHANICAL ENGINEER

ELECTRICAL ENGINEER

GEOTECHNICAL ENGINEER

TRAFFIC ENGINEER

SURVEYOR

CIVIL ENGINEER

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

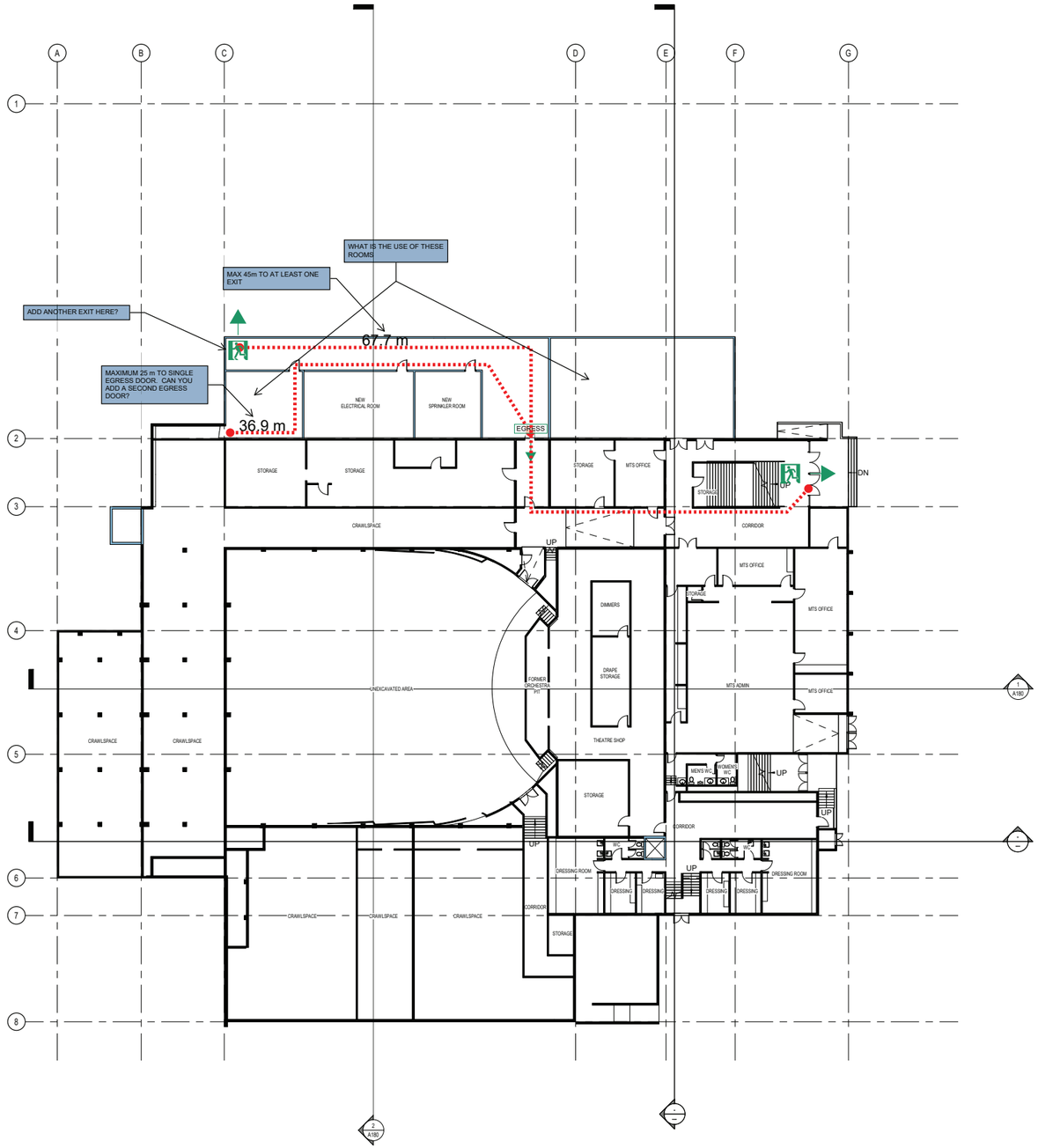
PROJECT
MASSEY THEATRE RENEWAL

DRAWING TITLE
SITE PLAN

PROJECT NUMBER
22-20

DWG. NO.
A100

DATE	SCALE	DRAWN	CHECKED
28/11/2022	1 : 500	CD	HC



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LANDSCAPE ARCHITECT

FIRM NAME

STRUCTURAL ENGINEER

MECHANICAL ENGINEER

ELECTRICAL ENGINEER

GEOTECHNICAL ENGINEER

TRAFFIC ENGINEER

SURVEYOR

CIVIL ENGINEER

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS

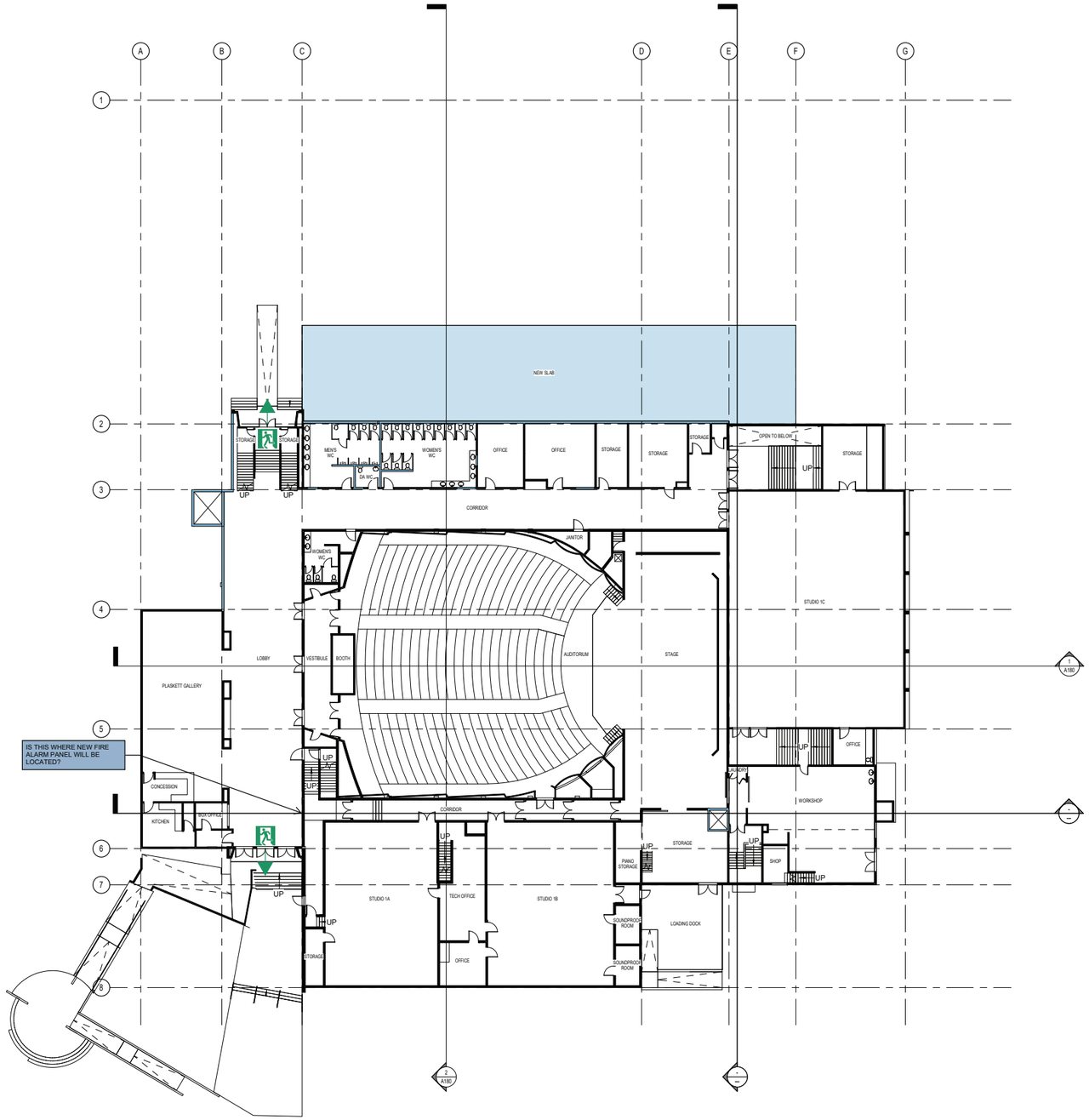
735 8th AVE, NEW WESTMINSTER

PROJECT

MASSEY THEATRE RENEWAL

DRAWING TITLE	PROJECT NUMBER
NEW_GROUND FLOOR PLAN	22-20
	DWG. NO. A200

DATE	SCALE	DRAWN	CHECKED
21/11/2022	1 : 200	CD	HC



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LANDSCAPE ARCHITECT
FIRM NAME
STRUCTURAL ENGINEER
MECHANICAL ENGINEER
ELECTRICAL ENGINEER
GEOTECHNICAL ENGINEER
TRAFFIC ENGINEER
SURVEYOR
CIVIL ENGINEER

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

PROJECT
MASSEY THEATRE RENEWAL

DRAWING TITLE
NEW_LEVEL 1 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A201

DATE	SCALE	DRAWN	CHECKED
21/11/2022	1 : 200	CD	HC

CONSULTANT REPORTS

SPRINKLER

Murray Johnson Engineering Ltd.
Specialising in Codes, Fire & Life Safety,
and Fire Protection Systems

212 5th Ave.,
New Westminster, B.C V3L 1R4
email: murlo@telus.net Cell: (604) 961-2859
Fax: (604) 526-3338 Phone: (604) 526-3335

December 12, 2022 Our File: 22-644

TRANSMITTED VIA email (RMaddock@proscenium.ca)
Proscenium Architecture + Interiors Inc.
300 - 151 East 2nd Ave
Vancouver BC V5T 1B4

Attention: Hugh Cochin / Rachel Maddock

RE: FIRE PROTECTION DESIGN CONSIDERATIONS
MASSEY THEATRE - 735 EIGHTH AVENUE, NEW WESTMINSTER, B.C.

Pursuant to our proposal to review the sprinkler system, we are providing the following observations and recommendations regarding the sprinkler system above noted project. The following is based on the intention to demolish the existing gymnasium part of the building and replace it with a much small extension to the north of the Massey Theatre part of the structure which will remain. We never received dwg files for the addition but the focus is on the intent of removing the gymnasium building so issues associated with the gymnasium building sprinkler system are not part of this report.

We have conducted a detailed review of the existing sprinkler system and put this into a dwg file. While quite accurate for the purposes of tendering showing mains for sway bracing and locating almost all sprinklers it does not show concealed piping branch lines is not accurate enough to provide a budget and guideline for upgrading the building.

It is understood that funding is insufficient to fully upgrade the building. Without prejudging the final agreed on level of upgrade, it is anticipated that since the sprinkler system substantially protects the entire building it will not undergo replacement of significant alternations.

Observations and recommendations:

1. The system is not zoned per current Code requirements. Breaking the system into proper zoning would be very expensive. The current zoning combines sprinkler systems on multiple levels but the gross area of each zone is close to the maximum area of a sprinkler / fire alarm zone. While adhering to current zoning would facilitate faster fire department determination of a fire, it is likely that this will have a lower would assist the fire department in locating a fire more quickly, other proposed improvements will facilitate faster fire department response

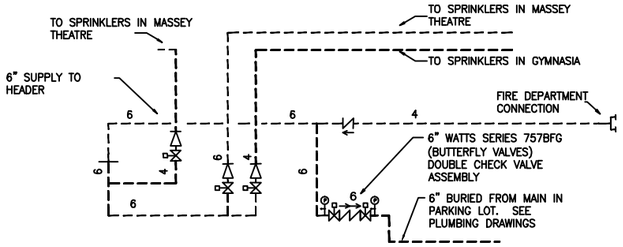
2. There is basically one zone for the Massey Theatre sprinkler system. The current Code (the 2018 British Columbia Building Code) requires zoning on a floor by floor basis. With the interconnections between the levels there is minimal benefit to zoning. The bulk of the building will be the theatre and stage, which are visible just by walking into the area from the main lobby. and it would be quite expensive so the threshold of cost versus benefit is not met and it is not proposed to change the zoning.
3. There are new seismic requirements for the sprinkler system which the current system does not comply with. The addition of flexible couplings is difficult and it is not proposed to provide them in all locations they are required. However, all new work will comply.
4. It is proposed that all exposed sprinkler mains will have sway braces added as required by current Code. This will improve the seismic performance of the system.
5. Branch line seismic restraint shall be provided for exposed branch lines which are readily accessible and
    a. are more than 6 m long, and
    b. have hangers more than 150 mm long
6. Almost all if not all sprinklers are standard response sprinklers. The Code requires that new sprinkler systems utilise quick response sprinklers in light hazard areas (which includes almost the entire Theatre). Fast response sprinklers have lower hydraulic demand than standard response and pipe schedule system means the system will perform more than adequately from a hydraulic perspective. Regardless, existing pipe schedule systems are acceptable and standard response sprinklers are permitted. .
7. Sprinklers more than 50 years old must be spot checked to confirm they are still operating as required. This involves removing a representative sample and sending to a test facility to confirm adequate performance.
8. Besides the concealed areas, there were certain areas identified in the drawings and summarize as
    a. The box office room and adjacnet room west of the main lobby
    b. the women's washroom NW of the theatre.
    c. .former orchestra pit
    d. Corridor under NW corner of the stage.
    e. Corridor SE of theatre seating and room south of dressing rooms.
    f. Mezzanines south of stage and theatre seating area.
9. We also observed a room that is sprinklered room not shown on the architectural drawings south of the upper level access at the top of the elevated theatre seating area.
10. Areas of poor coverage require new sprinklers at the workshop and storage room SE of the theatre seating area / stage.
11. With the loss of the gym building a new water entry room along the north side will be required. As mentioned earlier, the water entry room should be on the exterior wall NFPA does not permit underground pipe running under buildings, permitting it to only come up near the exterior wall. It may be possible to keep the proposed layout but it is not recommended. Electrical and water entry service rooms be located along the exterior wall.
12. This is fairly straight forward and it is anticipate that flow switches will replace the existing alarm check valves.

13. As part of this a new fire department connection will be required. With a fire hydrant near the sidewalk just east of the main entrance, the logical location is to feed through the crawl space to near the entry with some coordination to locate it exactly.
14. The below grade part of the system would be more trapped so drainage of below grade areas will have to be reviewed and adjusted.

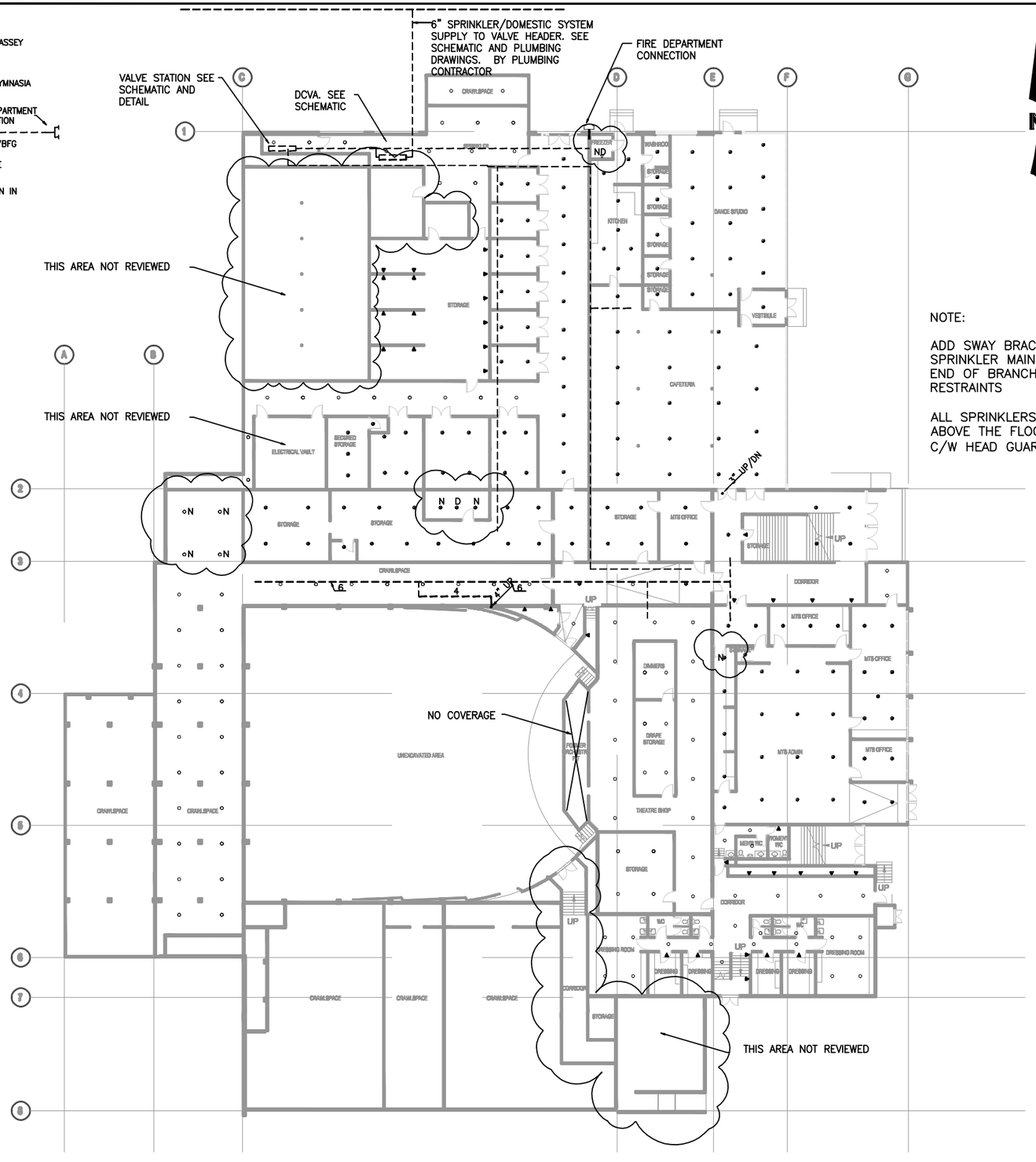
Yours very truly,
Murray Johnson Engineering Ltd. - PtP# 1002962

Per:
Murray Johnson, M.Sc., FEC, P.Eng., CP

Proscenium-Massey Theatre 22644-D12.wpd



PIPING SCHEMATIC



LEGEND

- NEW SPRINKLER
- DELETE SPRINKLER
- EXISTING SIDEWALL SPRINKLER
- EXISTING VERTICAL SIDEWALL SPRINKLER
- EXISTING PENDENT SPRINKLER
- EXISTING UPRIGHT SPRINKLER
- SUPERVISED CONTROL VALVE W/T TROUBLE CIRCUIT
- CHECK VALVE
- PRESSURE GAUGE
- EXISTING ALARM CHECK VALVE
- EXISTING SPRINKLER PIPING

No	Revision	Date
1	ISUUED FOR	22–11–28

Contractor

Consultant

Murray Johnson Engineering Ltd

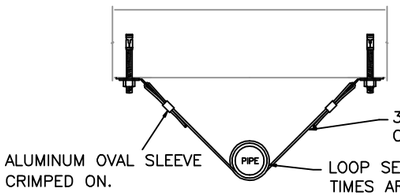
212 Fifth Avenue
New Westminster, B.C.
V3L 1R4
email: murlo@telus.net Cell: (604) 961-2859
Fax: (604) 526-3338 Phone: (604) 526-3335

Project
SPRINKLER LAYOUT
MASSEY THEATRE,
NEW WESTMINSTER, B.C.

Dwg. Title
GROUND & SCHEMATIC – FIRE PROTECTION

Date	Drawing No.
2022–11–27	SP–1
Drawn By: TM	
SCALE: NOT TO SCALE	
Project No.: 21–593	Of 4

NOTE:
DROP IN ANCHORS ARE NOT PERMITTED. USE HILTI KWIK BOLT–TZ WITH COUPLER. PROVIDE SHOP DRAWING TO MJE IF NOT USING THE ABOVE
FOR WOOD CONSTRUCTION USE
MIN. 10 mm x 50 mm LAG BOLTS

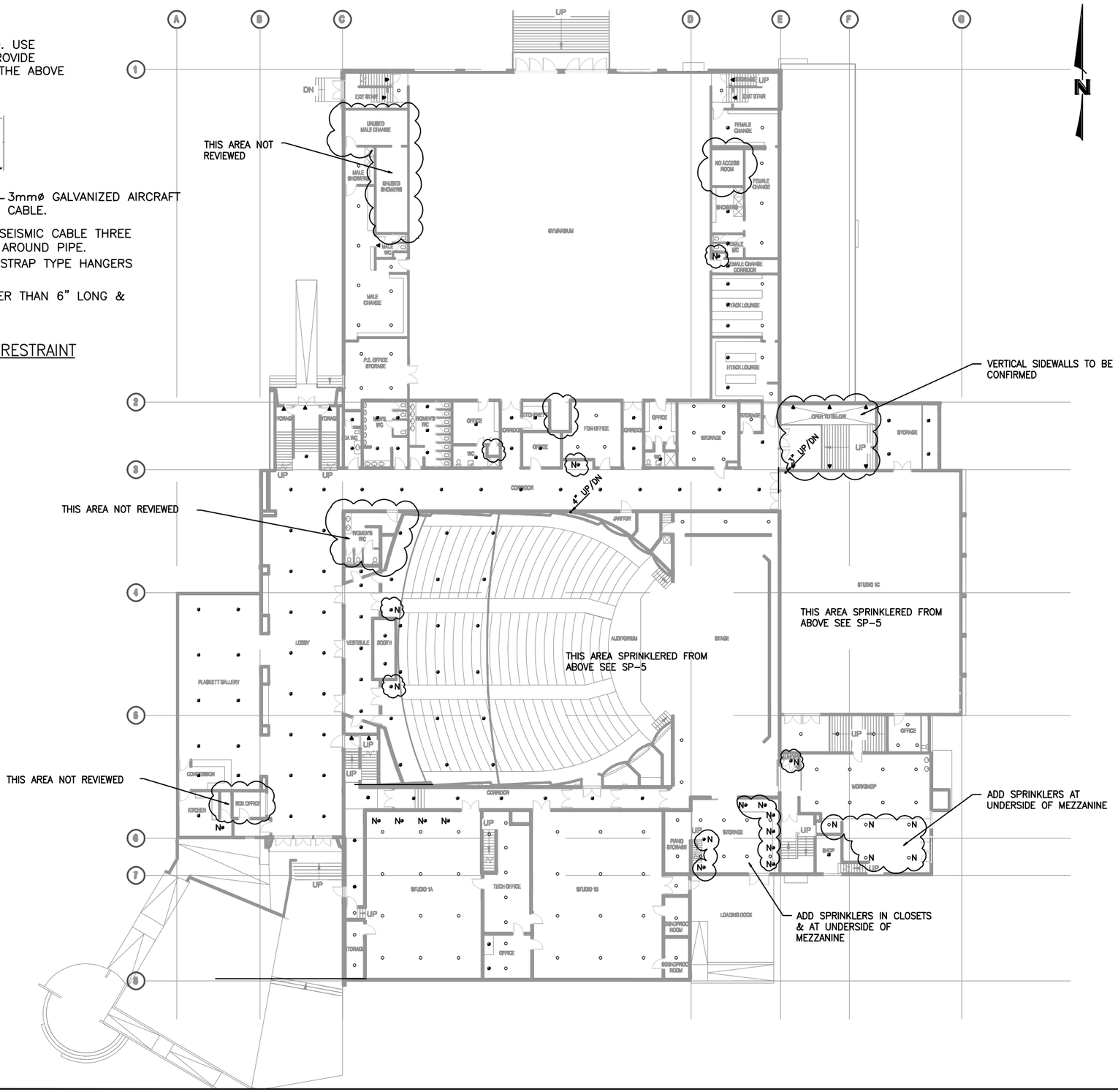


SUPPORT THROUGH JOISTS WITH LISTED STRAP TYPE HANGERS WILL BE ACCEPTABLE.

NOTE: REQUIRED WHEN HANGERS GREATER THAN 6" LONG & BRANCHLINES GREATER THAN 20' LONG.

BRANCH LINE SEISMIC RESTRAINT

NOT TO SCALE



No	Revision	Date

Contractor

Consultant

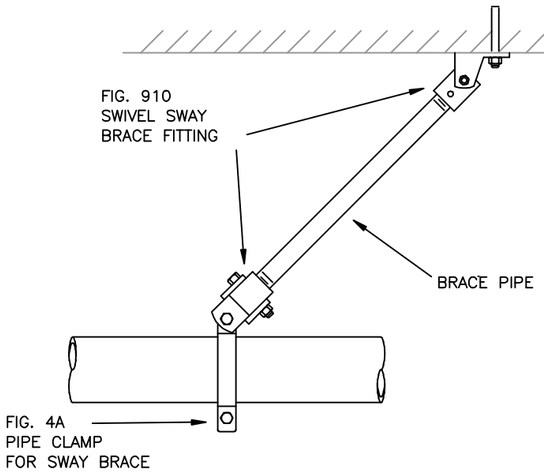
Murray Johnson Engineering Ltd

212 Fifth Avenue
New Westminster, B.C.
V3L 1R4
email: murlo@telus.net Cell: (604) 961-2859
Fax: (604) 526-3338 Phone: (604) 526-3335

Project
DCVA ADDITION
MASSEY THEATRE,
NEW WESTMINSTER, B.C.

Dwg. Title
LEVEL 1
– FIRE PROTECTION

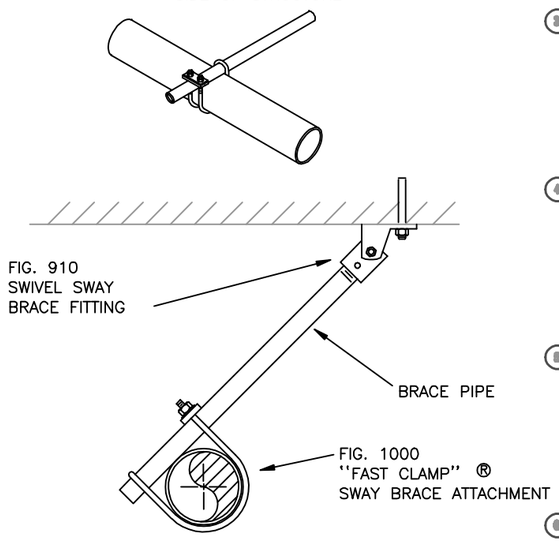
Date	Drawing No.
2022–11–27	SP–2
Drawn By: TM	
SCALE: NOT TO SCALE	
Project No.: 21–593	Of 4



LONGITUDINAL EARTHQUAKE BRACE

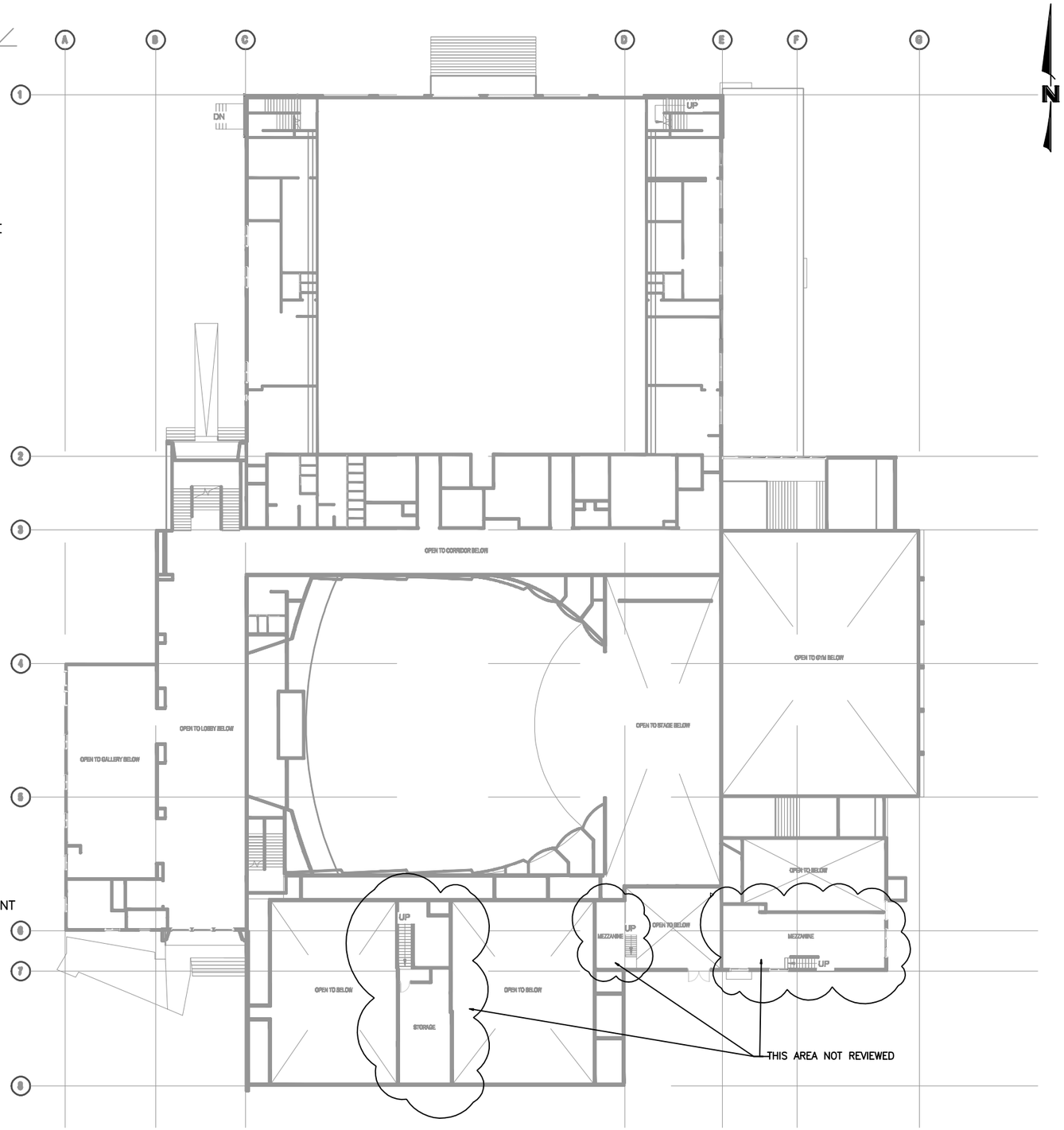
THREADED BRACE PIPE

NOTE:
ATTACH HORIZONTALLY TO TOP
SIDE OF STRUCTURE



LATERAL EARTHQUAKE BRACE

BRACE PIPE THREADED ONE END



No	Revision	Date
1		21–05–12

Contractor

Consultant

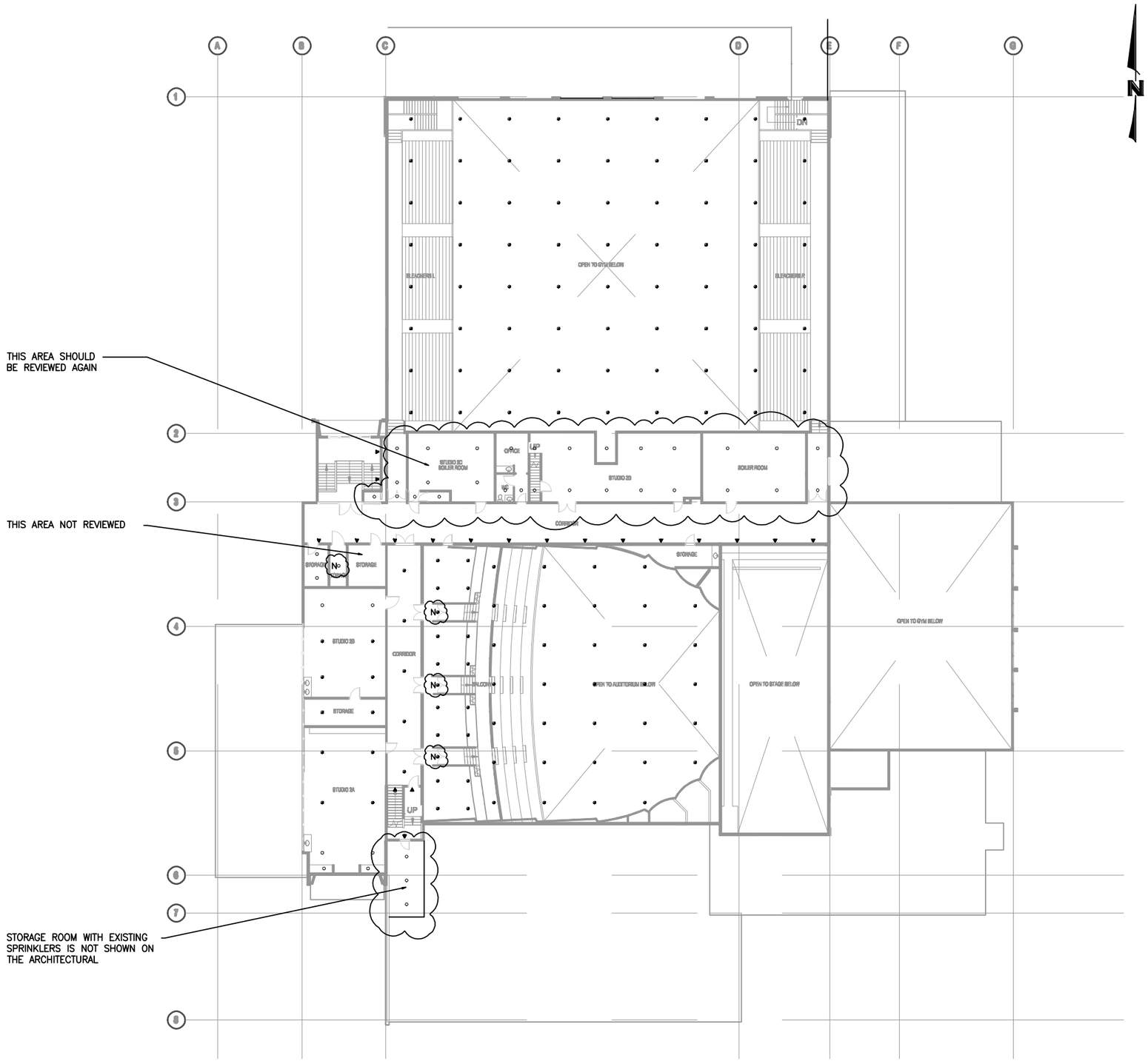
Murray Johnson Engineering Ltd

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New Westminster, B.C.
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Project
DCVA ADDITION
MASSEY THEATRE,
NEW WESTMINSTER, B.C.

Dwg. Title
LEVEL 1–5
– FIRE PROTECTION

Date 2021–05–12	Drawing No. SP–3
Drawn By TM	
SCALE NOT TO SCALE	
Project No. 21–593	Of 4



No	Revision	Date
1		21–05–12

Contractor

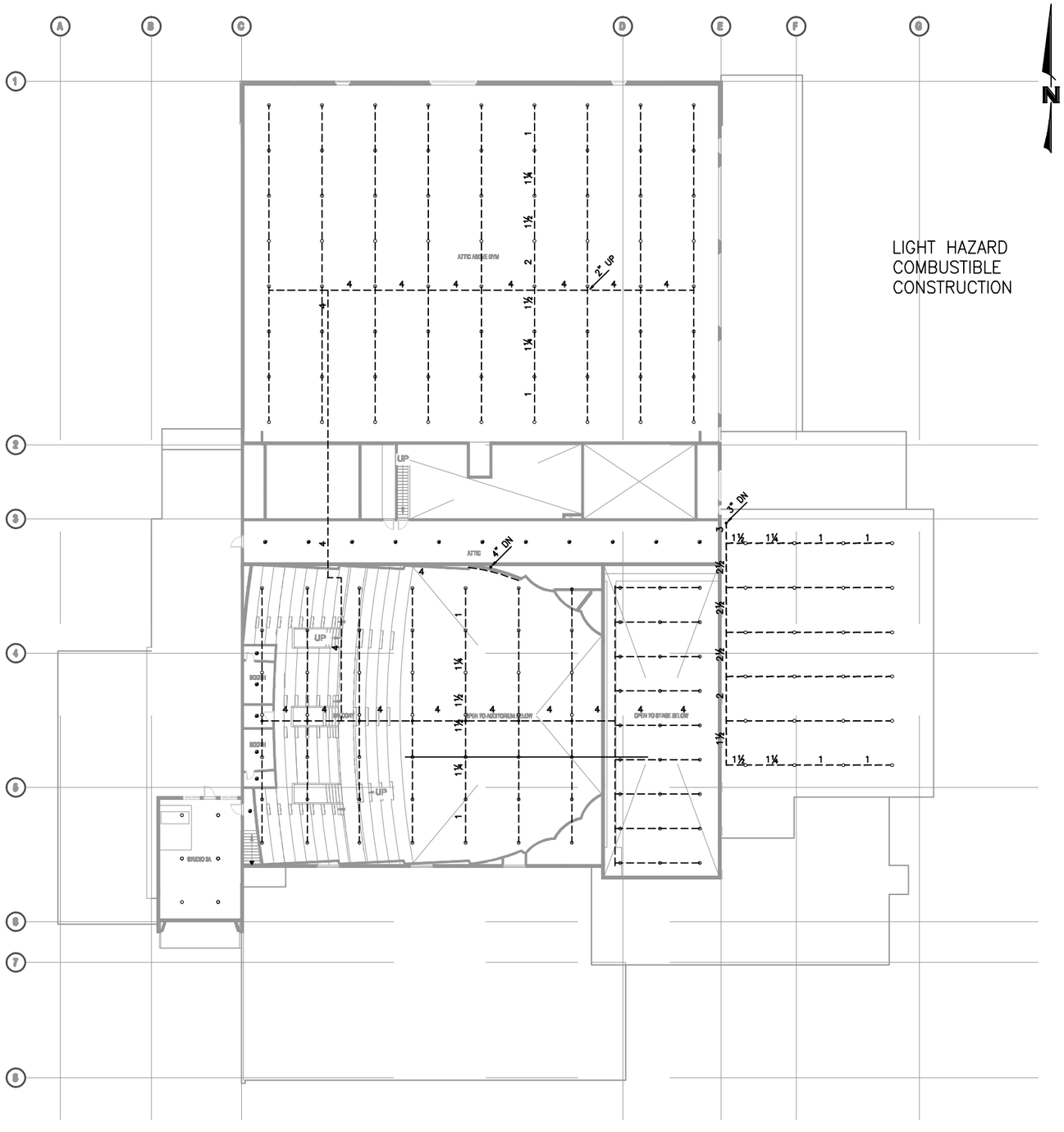
Consultant

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Project
DCVA ADDITION
MASSEY THEATRE,
NEW WESTMINSTER, B.C.

Dwg. Title
LEVEL 2
– FIRE PROTECTION

Date 2021–05–12	Drawing No. SP–4
Drawn By TM	
SCALE NOT TO SCALE	
Project No. 21–593	Of 4



No	Revision	Date
1		21–05–12

Contractor

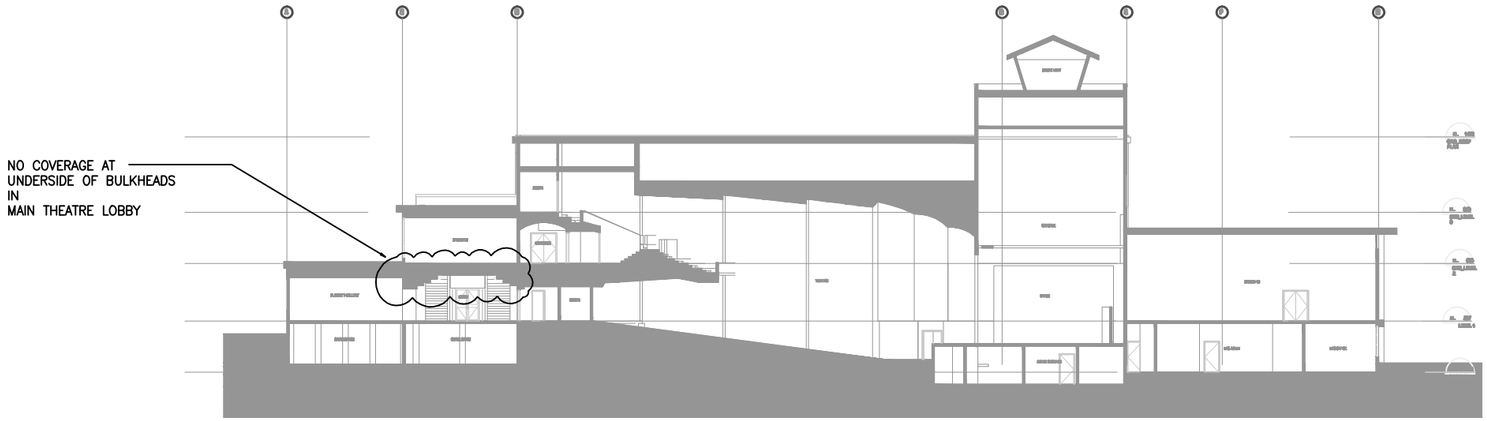
Consultant

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Fax: (604) 526-3338 Phone: (604) 526-3335

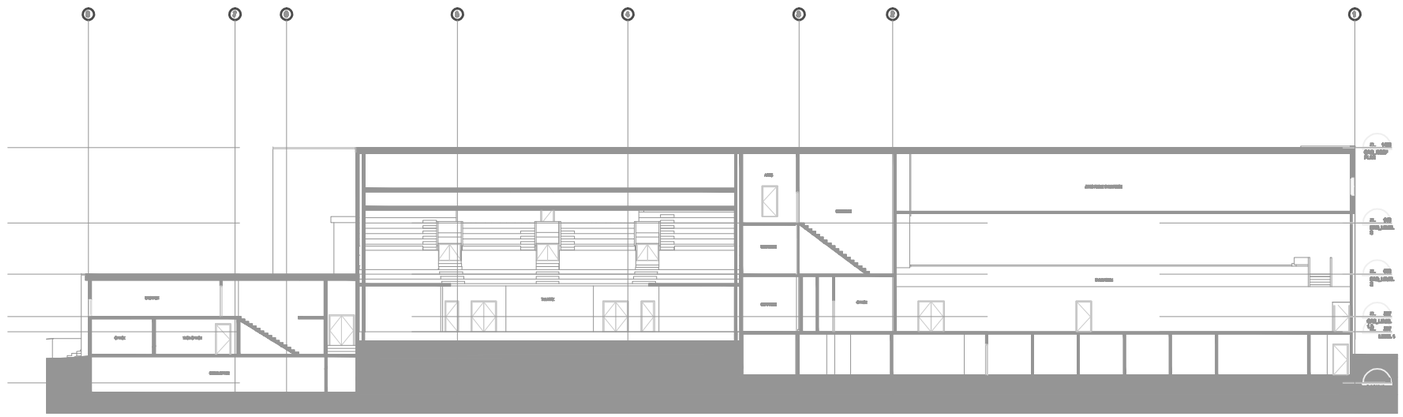
Project
DCVA ADDITION
MASSEY THEATRE,
NEW WESTMINSTER, B.C.

Dwg. Title
LEVEL 3
– FIRE PROTECTION

Date: 2021–05–12	Drawing No. SP–5
Drawn By: TM	
SCALE: NOT TO SCALE	
Project No.: 21–593	Of 5



SECTION A



SECTION B

No	Revision	Date
1		21–05–12

Contractor

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Project
DCVA ADDITION
MASSEY THEATRE,
NEW WESTMINSTER, B.C.

Dwg. Title
LEVEL 2
– FIRE PROTECTION

Date: 2021–05–12	Drawing No. SP–6
Drawn By: TM	
SCALE: NOT TO SCALE	
Project No.: 21–593	Of 4

APPENDIX III
SCOPE MATRIX

MASSEY THEATRE RENEWAL - SCOPE OF WORK

	ARCHITECTURE *PAI*	STRUCTURE *BBP*	MECHANICAL *AME Group*	ELECTRICAL *AES*	SPRINKLER *MJE*	ENVELOPE *JRS*	CODE *MC*	CIVIL *CORE*
TIER 1	Gym demolition & hazmat. Site reinstatement (see civil) Ex. shared wall with gym upgraded to exterior assembly. Electric room (see electrical) New sprinkler room. Roofs to be demolished down to existing structure, new assembly installed including insulation. Parapets to be extended as required to suit insulation depth. Rebuild NW fake exterior wall (temporary wall) Accessibility a. Elevator : masonry shaft, footing, pit, drainage, fire alarm integration b. Add 2 stop Performer's lift, remove existing stair climber Abatement Replace all the wood windows Washroom upgrade: replace existing washroom with a new gender neutral washroom consisting of private stalls and a shared handwashing area. New layout to include 4 universal toilet rooms.	Demolish Gymnasium. Upgrade existing North stud wall (current South wall of Gymnasium) to be a new exterior wall. This includes misc repairs after gym trusses are removed (and possibly wood-rot) and upgrades for wind and seismic loads. Electrical vault and Sprinkler room: New concrete structure. Rebuild NW fake exterior wall (temporary wall): foundations and new wall framing. New plywood on roofs where roofing is being replaced to seismically upgrade roof diaphragms. Repair of auditorium roof trusses. Upgrade of roof framing where new roof top units are being placed AND in snow drift zones. Wood rot remediation where discovered. Timber infill of level 2 studio floor. Add new R/C stair to eliminate level 2 dead end condition created by demolition of gym: new foundations, R/C shaft wall stair and roof slab. Framing modifications to accommodate washroom upgrades.	Demolition of gym HVAC and Plumbing equipment. Relocation of sprinkler tree and water entry room out of gym area, this includes providing new fire department Siamese connection. Perimeter drainage to accommodate gym demolition and new foundation walls. Elevator pit drains and ventilation for elevator shaft (for New Elevator only). Washroom upgrade: New fixtures, plumbing, and upgrade to minimum exhaust requirements.	New elevator installation - provide power connection, communication connection, and fire alarm connection for new elevator. Revision of the Fire Alarm panel and Annunciator. Fire alarm zones will have to be revised due to the removal of the gym and other changes made to the building as part of this project. Additional elec. work to support mech/arch scope (Washroom upgrade, added stair lighting, lighting in service addition) Lighting for parking lot site remediation post demo. Upgrade exit signs along the egress path from the new basement space to outside of the building. Demolition of electrical equipment in the gym. Replacement of electrical equipment within main electrical room on basement level. Three options are considered: a. Keep existing service equipment in the room . The structure above the existing room will be demolished. therefore, the electrical room will have to be re-built around the existing equipment. b. Build new electrical room adjacent to existing room. Install new service equipment in new electrical room. c. New outdoor substation on grade. New basement space can be smaller to reduce cost. Add 2 stop Performer's lift: Addition of power connection for performer's lift. Washroom upgrade - upgrade lighting, provide power to any new mechanical units.	Test a reasonable sampling (+/- 6) of existing heads (required sprinkler head replacements should be handled under maintennance budget) Add sprinkler heads to existing non-conforming closet spaces. (x3)	Gym demolition: Re-use the north wall structure, upgrade insulation and envelope Roofs to be demolished down to existing structure, new assembly installed including insulation. Parapets to be extended as required to suit insulation depth. Rebuild NW fake exterior wall (temporary wall) Patch & repair of envelope at mech penetrations Replace all the wood windows and doors Upgrade NE wall assembly @ loading dock (high MC reading). Demolish to structure, new assembly installed including insulation. Upgrade wall SW to main entrance (high MC reading). Demolish to structure, new assembly installed including insulation. Upgrade South wall, Level 2 - This is a concrete CMU block wall with signs of large cracking. Demolish to structure, new assembly installed including insulation. Level 1.5 south door façade (above main entrance - JRS understands there may be possible windows in this location) Envelope upgrades to front facing flashing at north extrance door	Sprinkler heads should be added to identified existing non-conforming closet spaces. (x3) Washroom upgrade to minimum code requirements Accessibility (New Elevator): new foundations, pit, masonry shaft wall, hoist beam and roof deck. Add new stair to eliminate level 2 dead end condition created by demolition of gym: new foundations, masonry shaft wall stair and roof deck. Upgrade exit signs along the egress path from the new basement space to outside of the building. REFER TO STRUCTURAL FOR UPGRADES TO MEET STRUCTURAL / SEISMIC CODES.	Bring water entry to new room in new basement building services wing Asphalt and parking to remediate site after gym demo Site drainage as required
TIER 2	• Interior finish upgrade FOH (coord w seismic upgrade) • Interior finish upgrade Audience Chamber (coord w seismic upgrade) • New drainage a. Scope, and repair existing as required		Upgrade domestic hot water tanks, Boiler replacements. Air handling unit and other Rooftop unit replacements. Provide seismic restraints for all new mechanical equipment to meet current building code requirements. Stage smoke exhaust New drainage a. Scope, and repair existing as required Replace hydronic distribution pumps			Envelope upgrades to south Level 1.5 wall, NE Level 2 wall assemblies, and SW Level 3 wall.	REFER TO STRUCTURAL FOR UPGRADES TO MEET STRUCTURAL / SEISMIC CODES.	• New drainage a. Scope, and repair existing as required
TIER 3	• House lighitng updates • Additional accessible viewing postiions from balcony • Platform lift to stage • Structural upgrades to facilitate addiitonal rigging points • Stage deck condition assessment, replacement • Orchestra pit add	• Seismic upgrade to entire building (suggest to Seismic Retrofit Guidelines level (approx. 60% of code or 10% in 50 year hazard, given 25 year retention plan).	Providing cooling and ventilation to Entrance Lobby area. Re-piping of hydronic piping. Re-piping of domestic water piping. Replace existing domestic hot water heater for concession	• New AV/Comm room. • Upgrade exit signs to green running man type throughout the building. • Upgrade exiting emergency lighting in the building.	Replacing all sprinklers. New sprinklers would be fast response.	Upgrade doors at main entrance and back entrance Upgrade levels 1.5-3 NE wall assembly (space above windows) Full exterior cladding renewal (ie. Get rid of stucco, wood ship-lap)	• Upgrade exit signs to green running man type throughout the building. • Upgrade exiting emergency lighting in the building. REFER TO STRUCTURAL FOR UPGRADES TO MEET STRUCTURAL / SEISMIC CODES.	• Cohesive landscape / grading / parking solution to area surrounding buildilng.

APPENDIX IV
TIER 1 COSTING PACKAGE

TIER 1 COSTING PACKAGE

ARCHITECTURAL

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ARCHITECTURE + INTERIORS INC.

300 - 151 EAST 2ND AVE
VANCOUVER BC V5T 1B4 CANADA

604.879.0118
www.proscenium.ca

ARCHITECTURAL DRAWING LIST

DWG.	DRAWING NAME
A020	WALL TYPES
A150	DEMOLITION_ GROUND FLOOR LEVEL PLAN
A151	DEMOLITION_ LEVEL 1 FLOOR PLAN
A152	DEMOLITION_ LEVEL 2 FLOOR PLAN
A153	DEMOLITION_ LEVEL 3 FLOOR PLAN
A154	DEMOLITION_ ROOF PLAN
A170	DEMOLITION_ ELEVATIONS 1
A171	DEMOLITION_ ELEVATIONS 2
A180	DEMOLITION_ SECTIONS 1
A181	DEMOLITION_ SECTIONS 2
A200	NEW_ GROUND FLOOR PLAN
A200b	ELECTRICAL ROOM OPTIONS
A201	NEW_ LEVEL 1 FLOOR PLAN
A202	NEW_ LEVEL 2 FLOOR PLAN
A203	NEW_ LEVEL 3 FLOOR PLAN
A204	NEW_ROOF PLAN
A300	NEW_ ELEVATIONS 1
A301	NEW_ ELEVATIONS 2
A311	NEW_ SECTIONS 1
A312	3D VIEWS ENVELOPE
A100	SITE PLAN
A310	NEW_ SECTIONS 1

MASSEY THEATRE RENEWAL - PHASE 1

22-20

735 8th AVE, NEW WESTMINSTER

ISSUED FOR CLASS D COSTING
06/12/2022

ENVELOPE
CHRIS LUNG
JRS ENGINEERING
300 - 4595 CANADA WAY,
BURNABY BC

STRUCTURAL
TIMOTHY WHITE
BUSH BOHLMAN & PARTNERS
1550 - 1500 W GEORGIA ST,
VANCOUVER BC

MECHANICAL
PATRICK STEWART
AME CONSULTING GROUP
200 - 638 SMITHE ST,
VANCOUVER BC

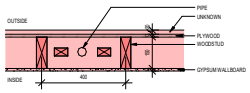
ELECTRICAL
BRAD OU-YANG
AES ENGINEERING
950- 505 BURRARD ST,
VANCOUVER BC

SPRINKLER
MURRAY JOHNSON
MURRAY JOHNSON ENGINEERING
212 5th AVE, NEW WESTMINSTER
BC

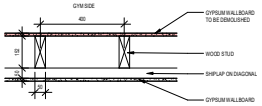
CODE
TAVIS MCAULEY
MCAULEY CONSULTING INC
503 - 1587 W 8th AVE,
VANCOUVER BC

CIVIL
CORMAC NOLAN
CORE GROUP CONSULTANTS
8988 FRASERTON CT, BURNABY
BC

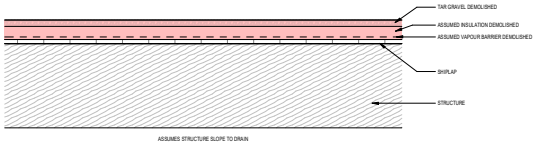
PROJECT MANAGER
ALEXANDER GODFREY
TURNBULL
SUITE 1670 CENTRAL CITY
TOWER, 13450 102nd AVE,
SURREY BC



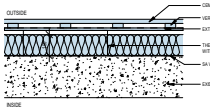
1a TEMPORARY WALL DEMOLITION
1 : 10



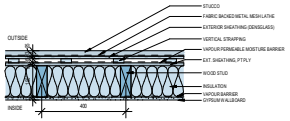
2a WALL GYM DEMOLITION
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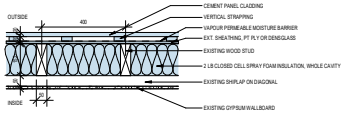
3a ROOF DEMOLITION
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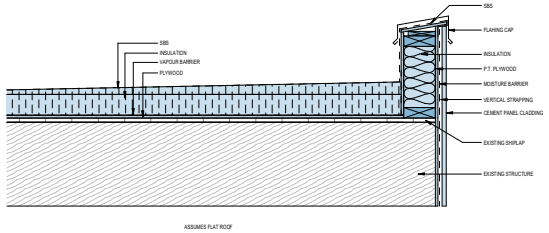
8 NEW WALL AUDITORIUM
1 : 10



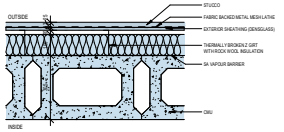
1b NEW WALL WEST
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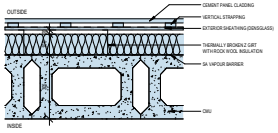
2b NEW WALL GYM
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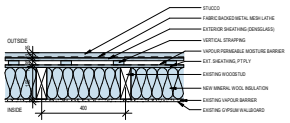
3b ROOF SCOPE NEW
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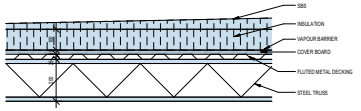
4 NEW WALL SERVICES ADD.
1 : 10



5 NEW WALL STAIRCASE + ELEVATOR
1 : 10



6 WALL STUCCO UPGRADE
1 : 10



7 ROOF SERVICES ADD.
1 : 10

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ELECTRICAL
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SPRINKLER
MURRAY JOHNSON ENGINEERING

CODE
MCAULEY CONSULTING INC.

CIVIL
CORE GROUP CONSULTANTS

PROJECT MANAGER
TURNBULL

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

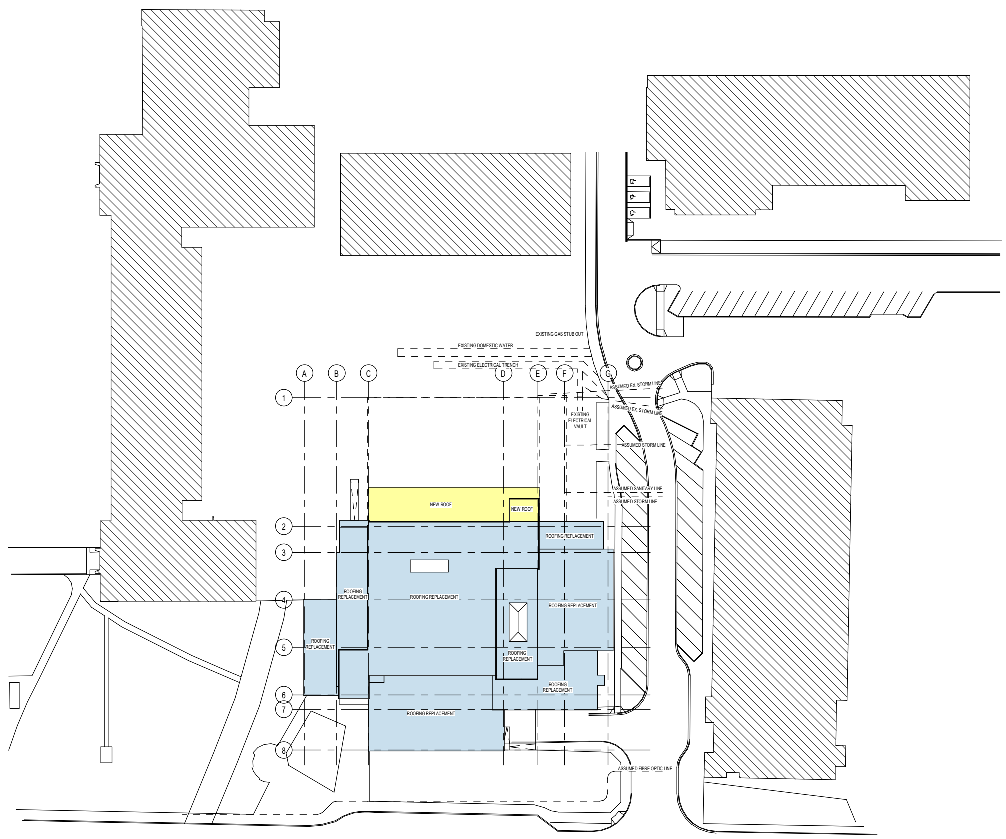
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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
WALL TYPES

PROJECT NUMBER
22-20

DWG. NO.
A020

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 10	CD	HC



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PROGRESS SET

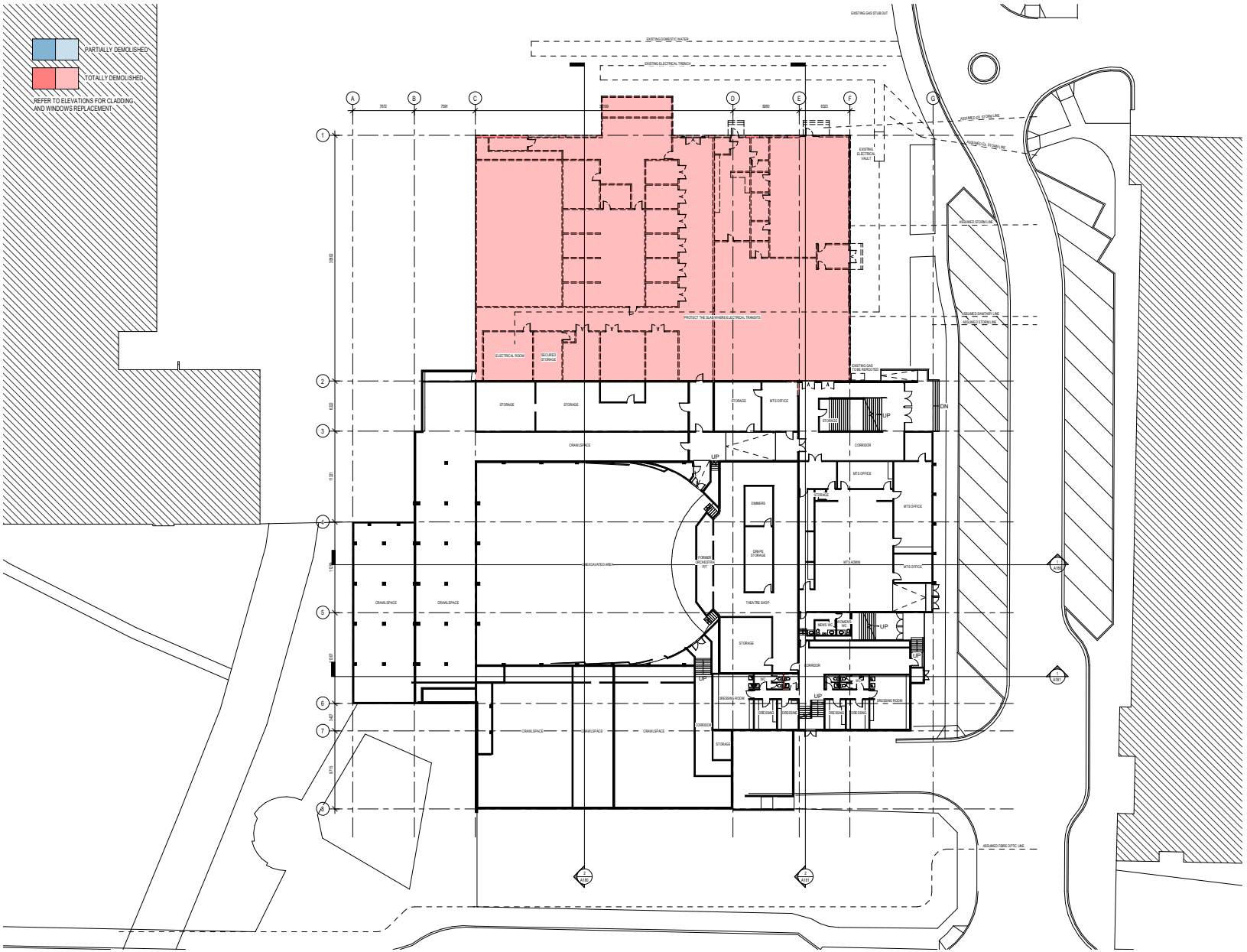
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CURRENT REVISION			

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
SITE PLAN	22-20
	DWG. NO. A100

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 500	CD	HC



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CURRENT REVISION			

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ GROUND FLOOR LEVEL PLAN

PROJECT NUMBER
22-20

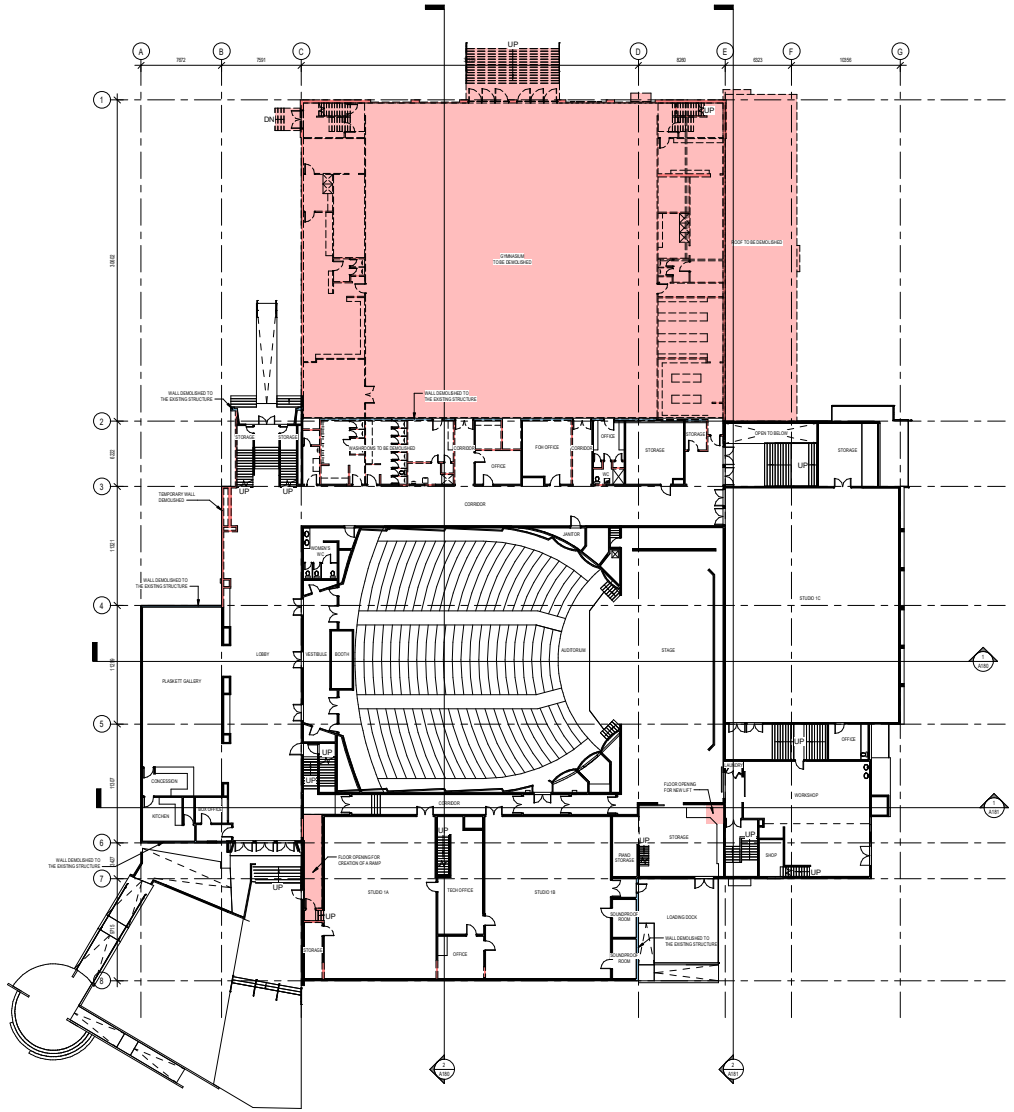
DWG. NO.
A150

DATE	SCALE	DRAWN	CHECKED
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PARTIALLY DEMOLISHED

TOTALLY DEMOLISHED

REFER TO ELEVATIONS FOR CLADDING AND WINDOWS REPLACEMENT



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MCAULEY CONSULTING INC.

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NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ LEVEL 1 FLOOR PLAN

PROJECT NUMBER
22-20

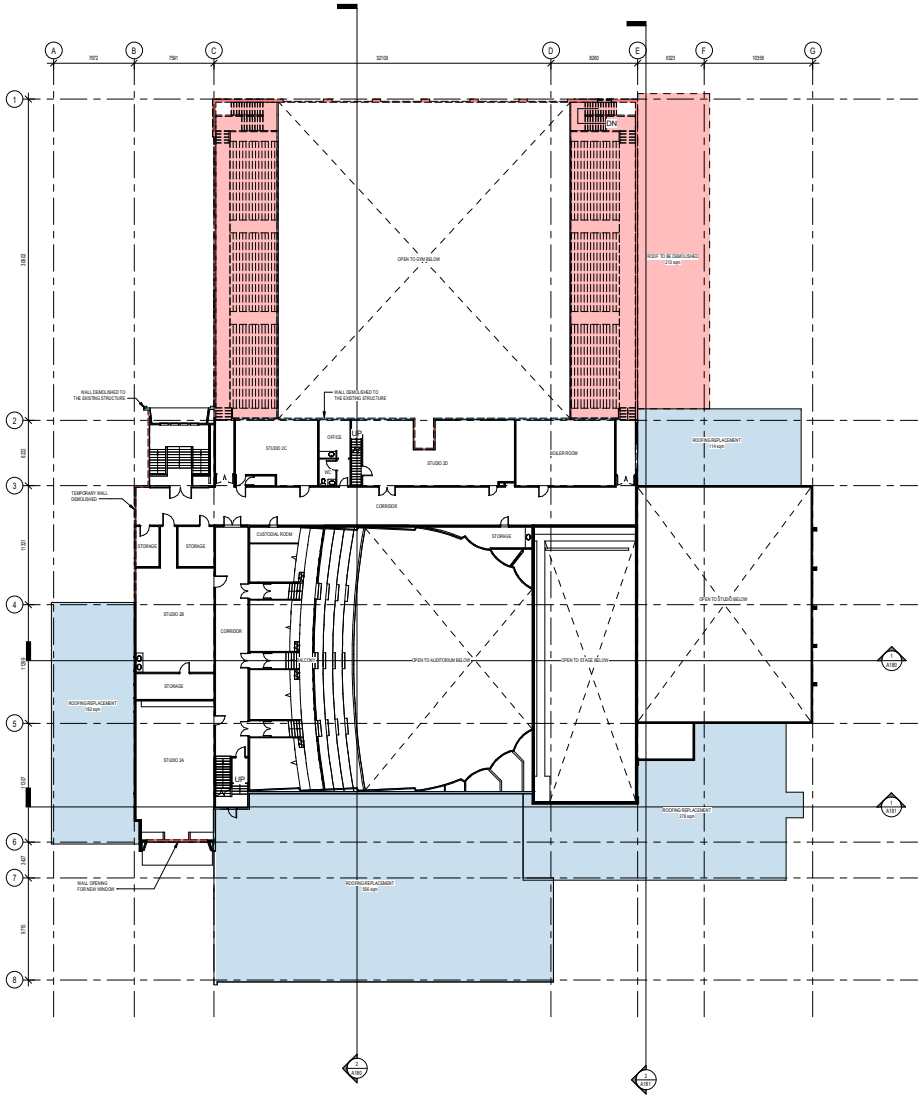
DWG. NO.
A151

DATE	SCALE	DRAWN	CHECKED
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ LEVEL 2 FLOOR PLAN

PROJECT NUMBER
22-20

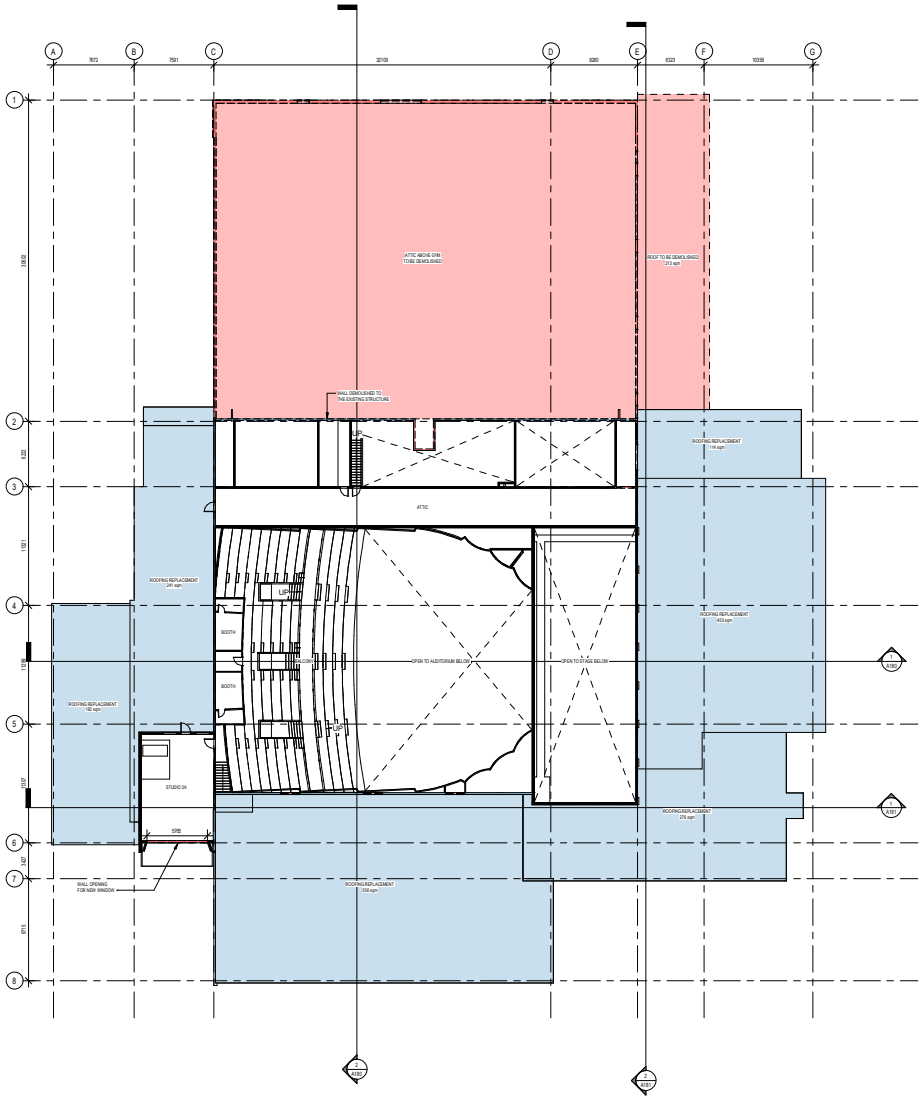
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A152

DATE	SCALE	DRAWN	CHECKED
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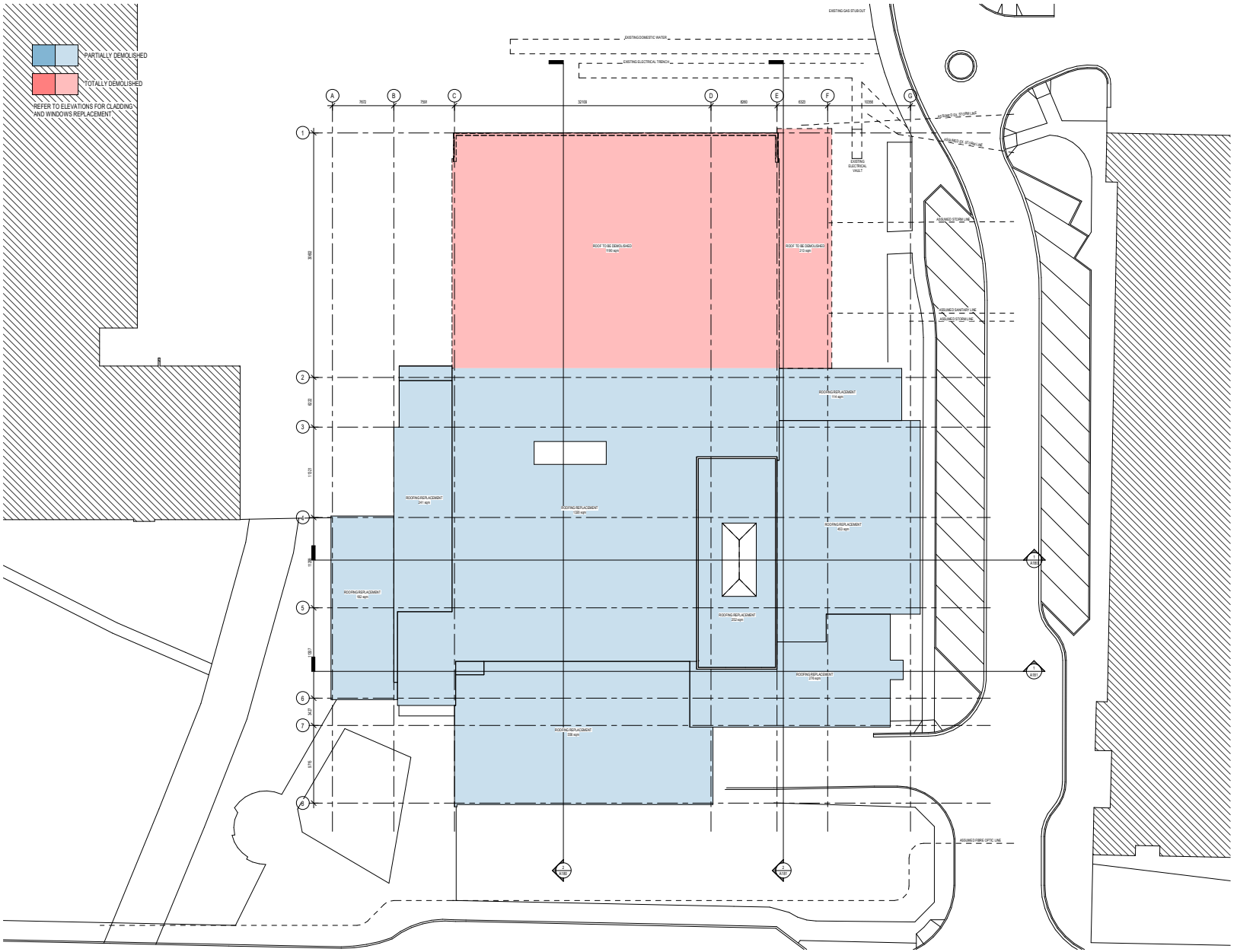
PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ LEVEL 3 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A153

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DRAWING TITLE
DEMOLITION_ ROOF PLAN

PROJECT NUMBER
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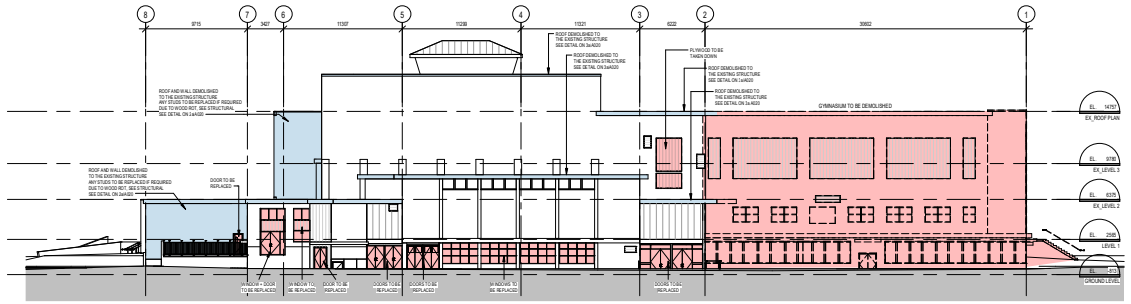
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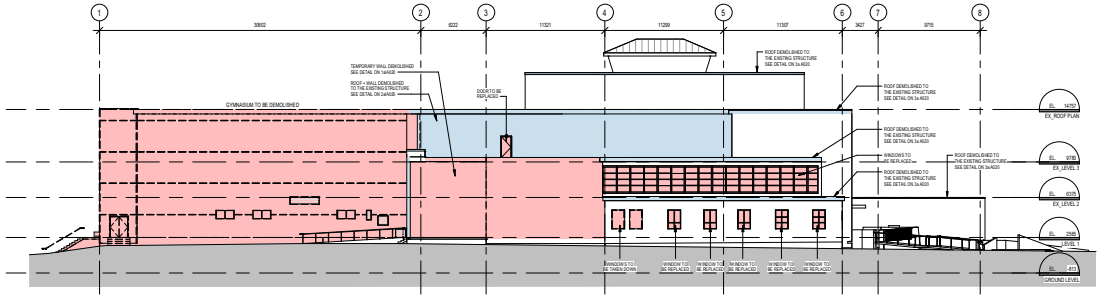
PARTIALLY DEMOLISHED

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1 DEMOL ELEVATION NORTH EAST
1 : 200



2 DEMOL ELEVATION SOUTH WEST
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ ELEVATIONS 1

PROJECT NUMBER
22-20

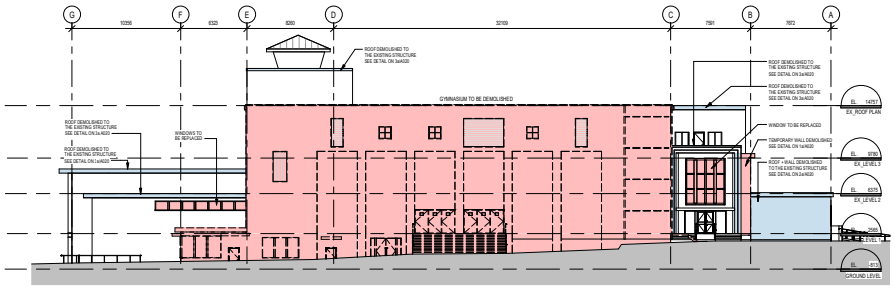
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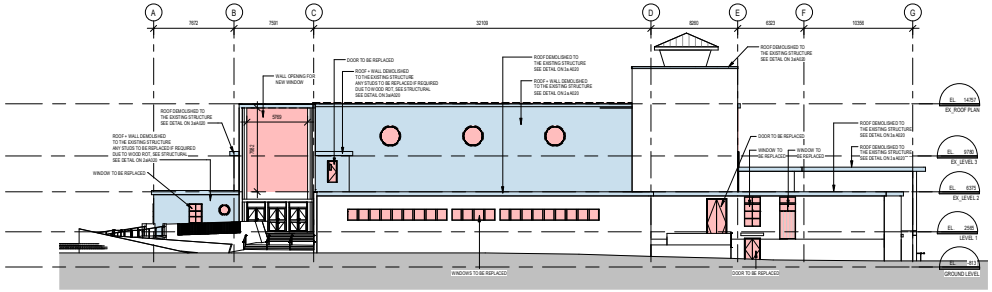
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1 DEMOL ELEVATION NORTH WEST
1 : 200



2 DEMOL ELEVATION SOUTH EAST
1 : 200

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ ELEVATIONS 2

PROJECT NUMBER
22-20

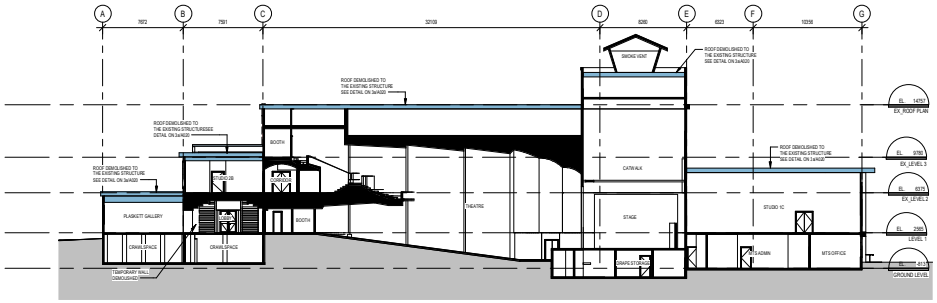
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DATE	SCALE	DRAWN	CHECKED
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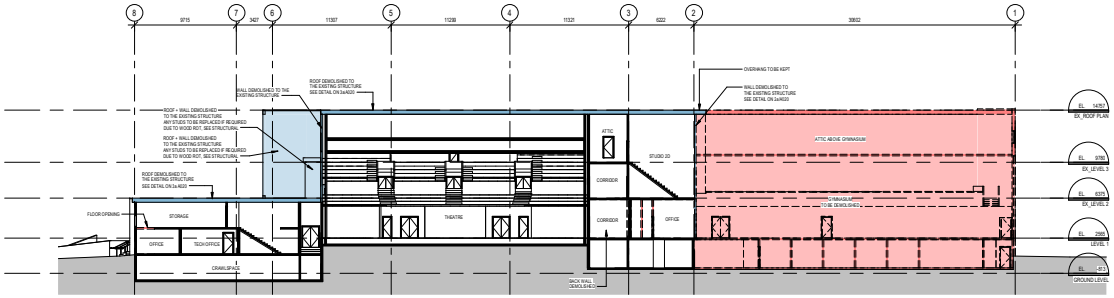
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1 DEMOL SECTION 1
1 : 200



2 DEMOL SECTION 2
1 : 200

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ SECTIONS 1

PROJECT NUMBER
22-20

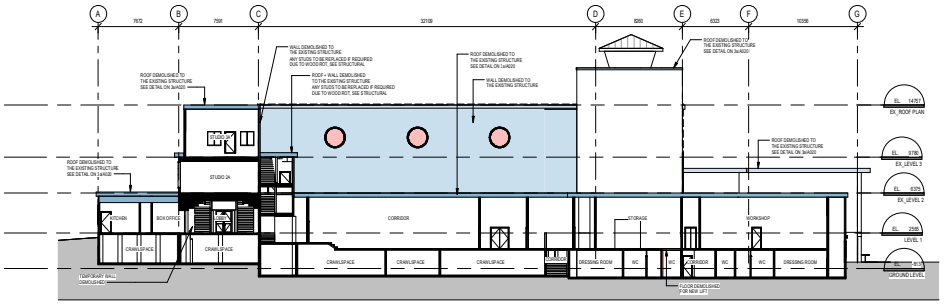
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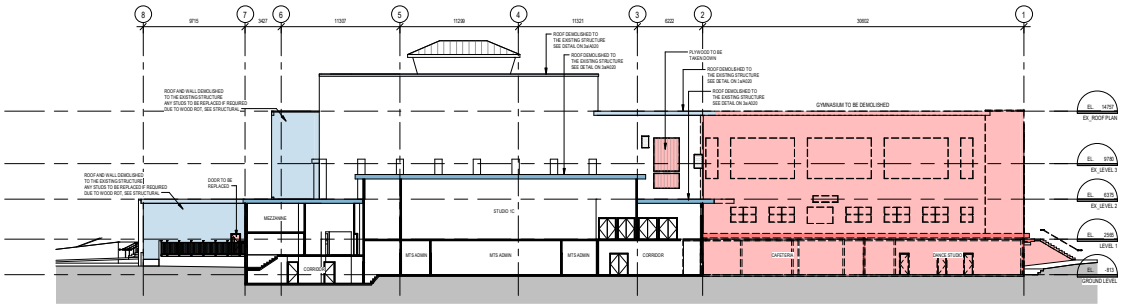
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1 DEMOL SECTION 3
1 : 200



2 DEMOL SECTION 4
1 : 200

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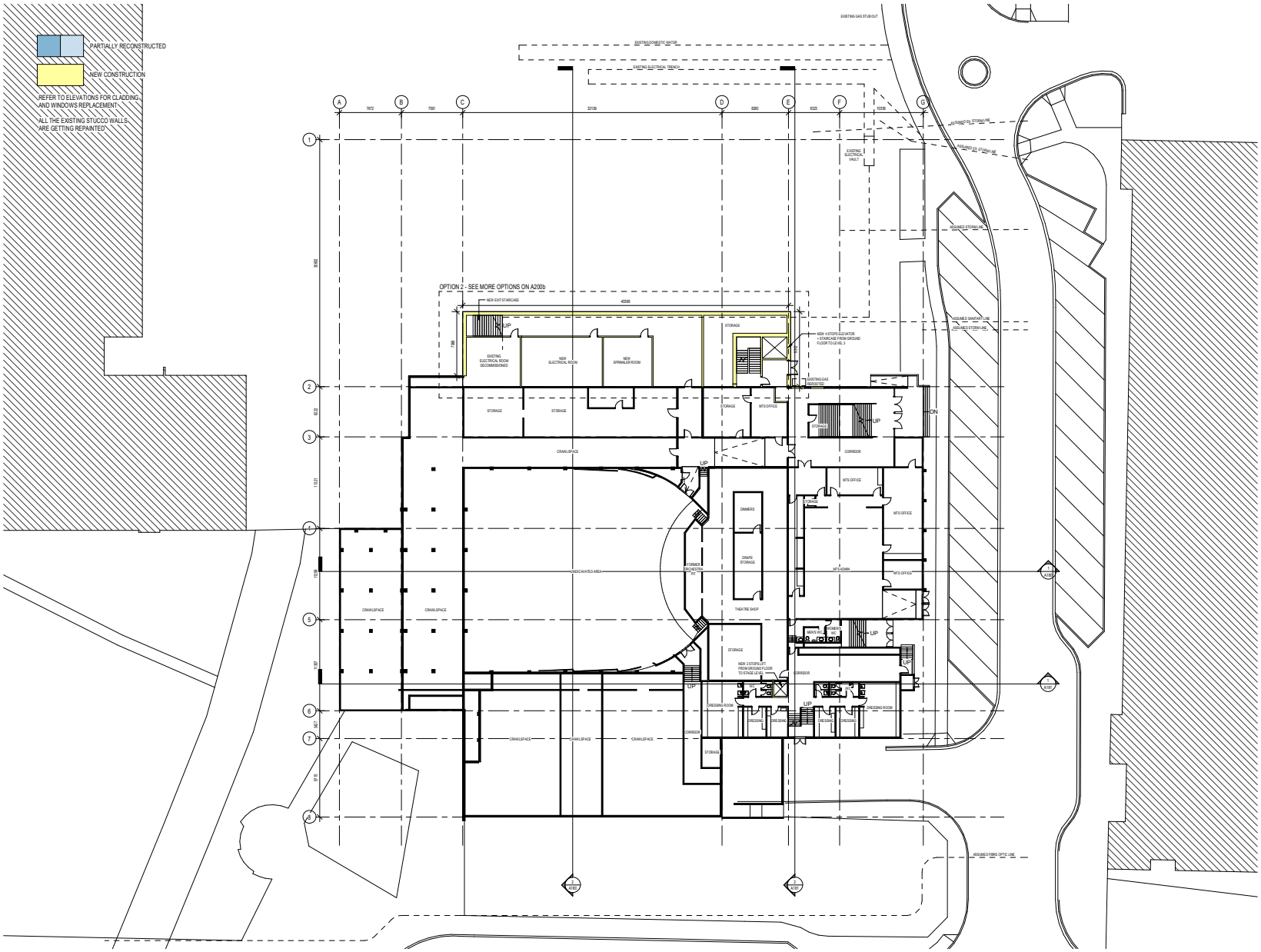
PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ SECTIONS 2

PROJECT NUMBER
22-20

DWG. NO.
A181

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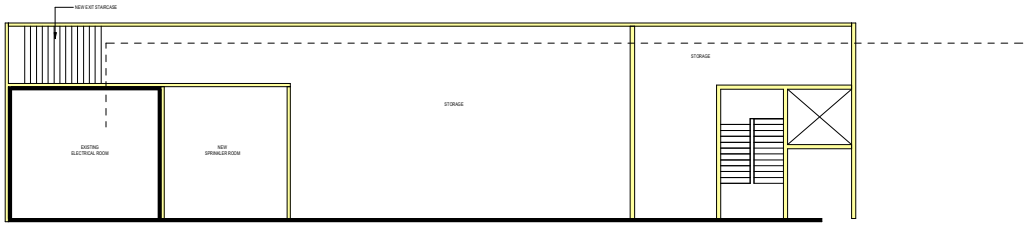
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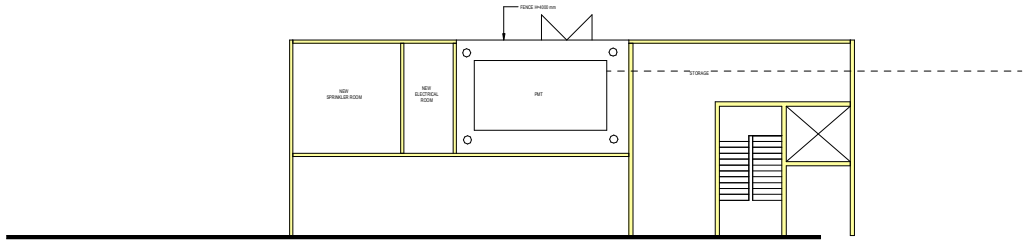
PROJECT
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DRAWING TITLE	PROJECT NUMBER
NEW_GROUND FLOOR PLAN	22-20
	DWG. NO. A200

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OPTION 1



OPTION 3

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
ELECTRICAL ROOM OPTIONS

PROJECT NUMBER
22-20

DWG. NO.
A200b

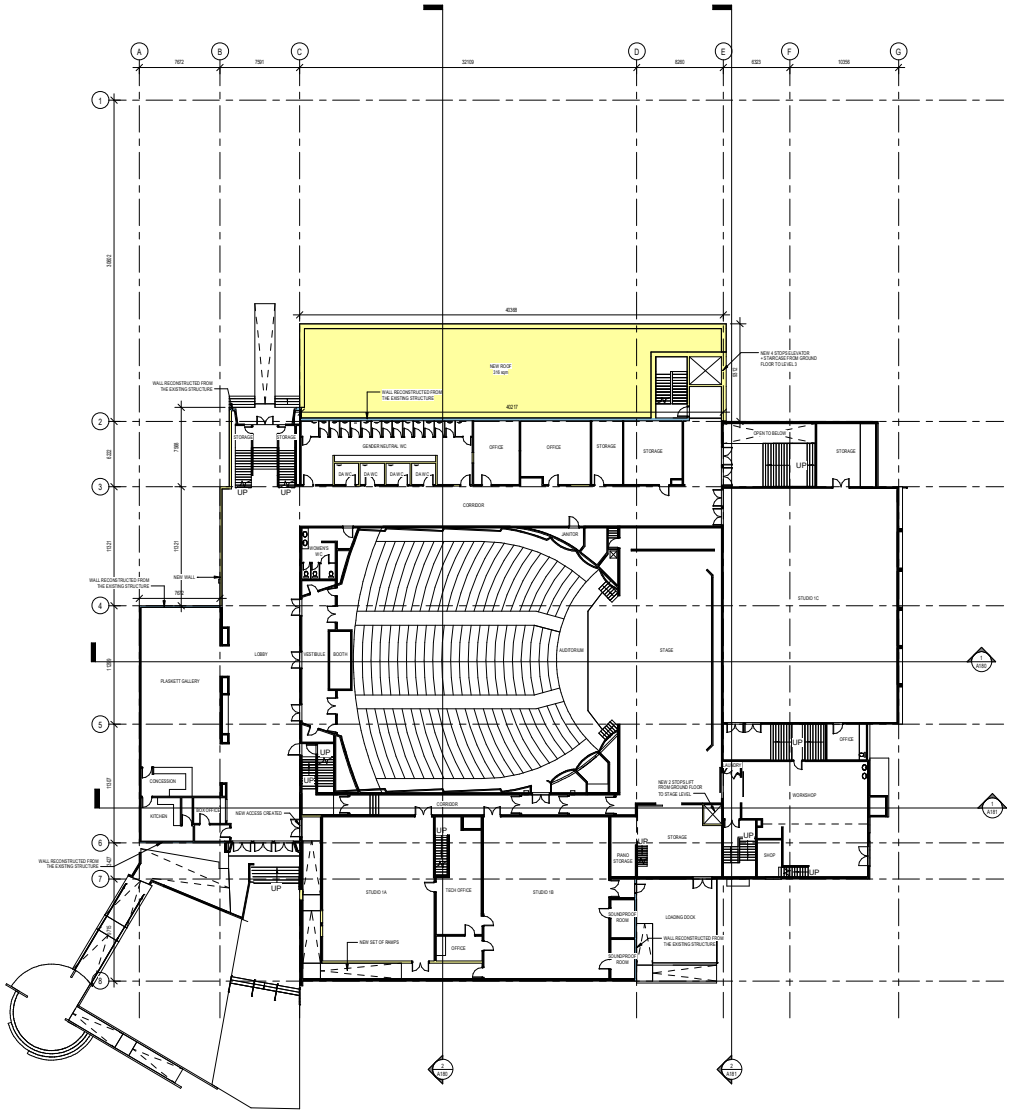
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
NEW_LEVEL 1 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A201

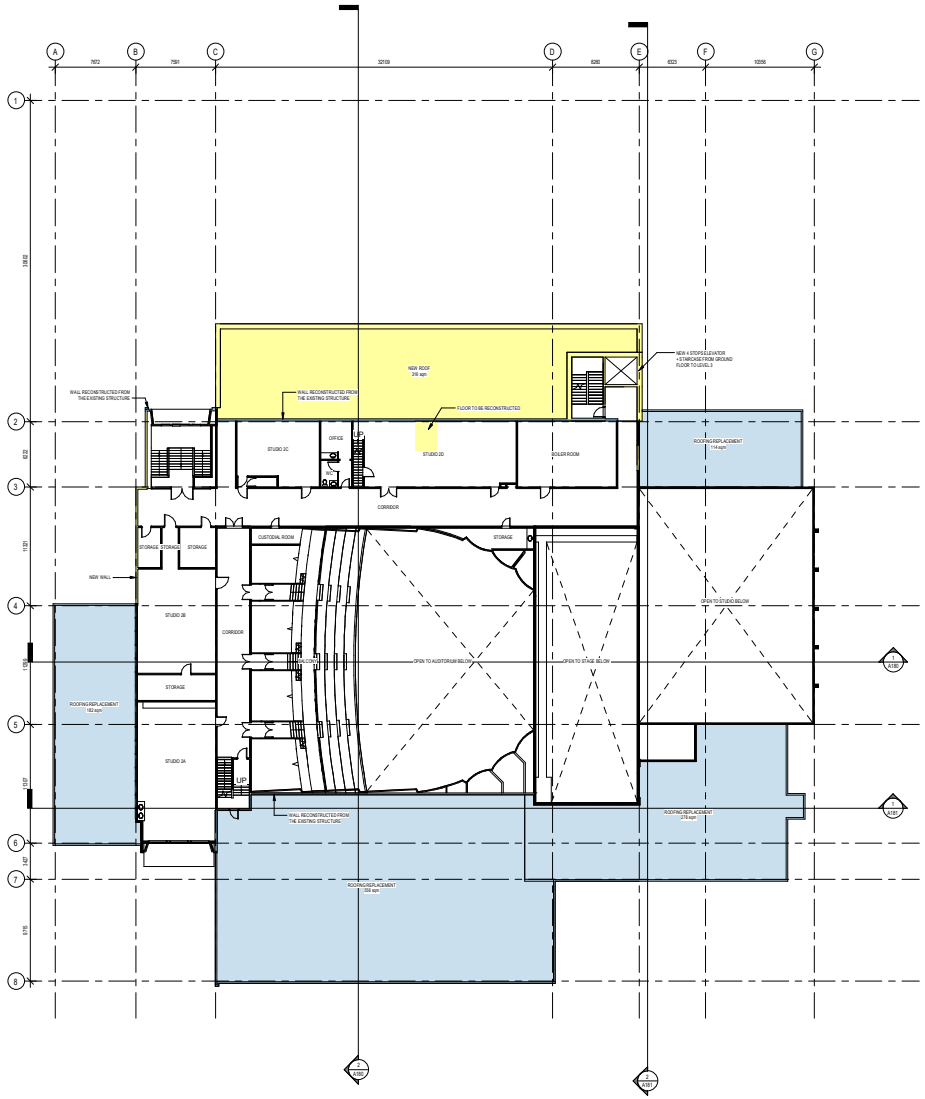
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_LEVEL 2 FLOOR PLAN	22-20
	DWG. NO. A202

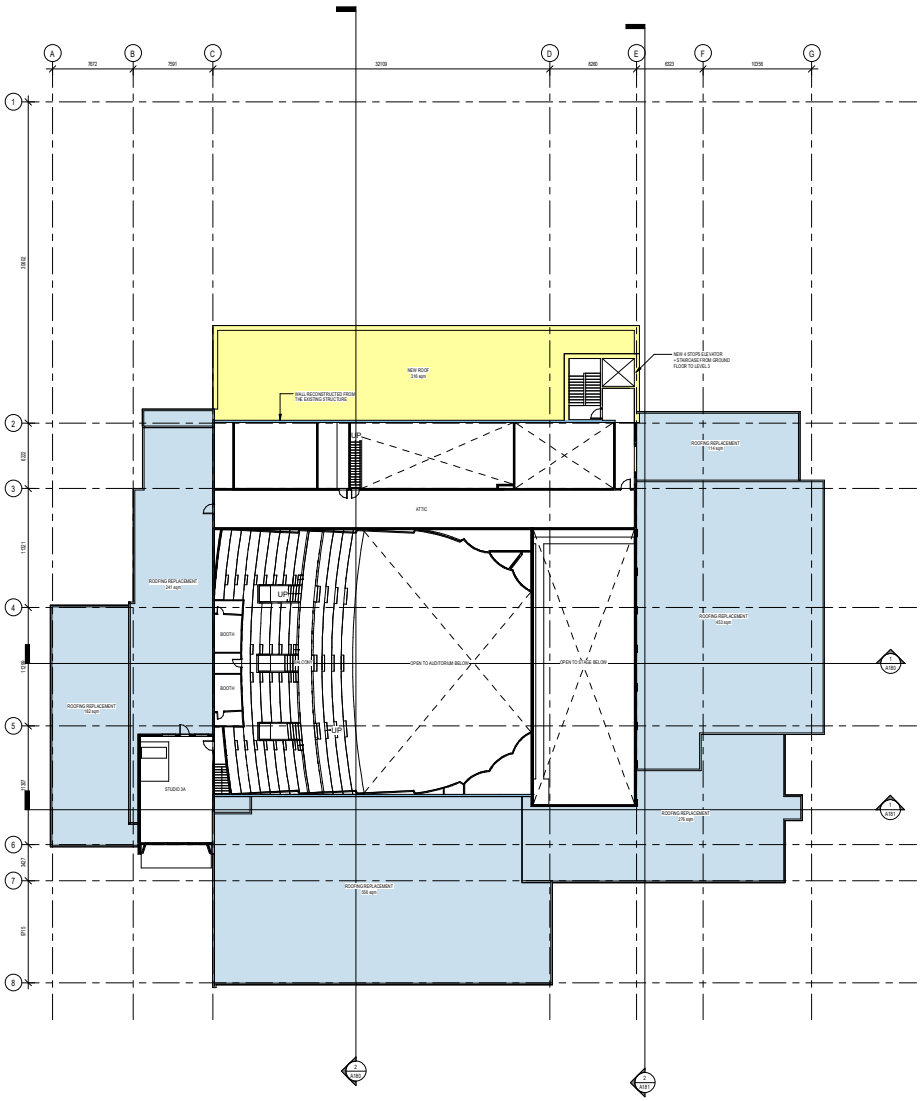
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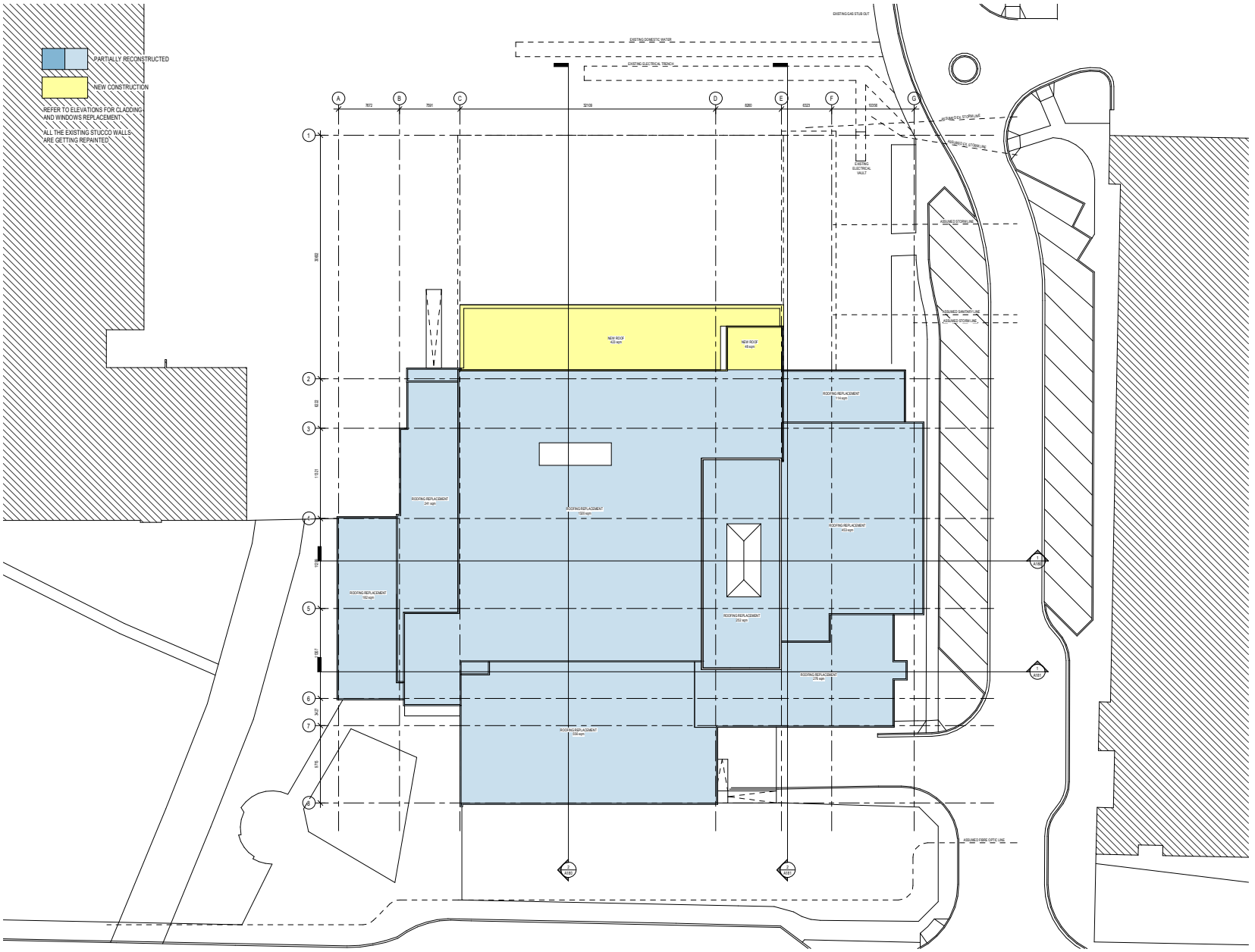
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_LEVEL 3 FLOOR PLAN	22-20
	DWG. NO. A203

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PROJECT
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DRAWING TITLE
NEW_ROOF PLAN

PROJECT NUMBER
22-20

DWG. NO.
A204

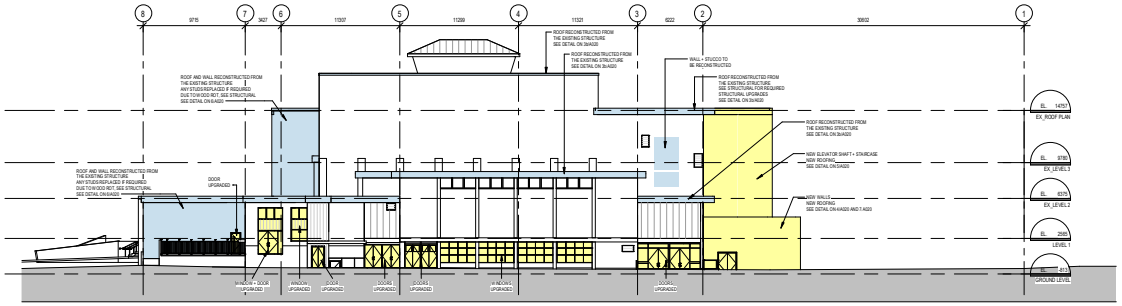
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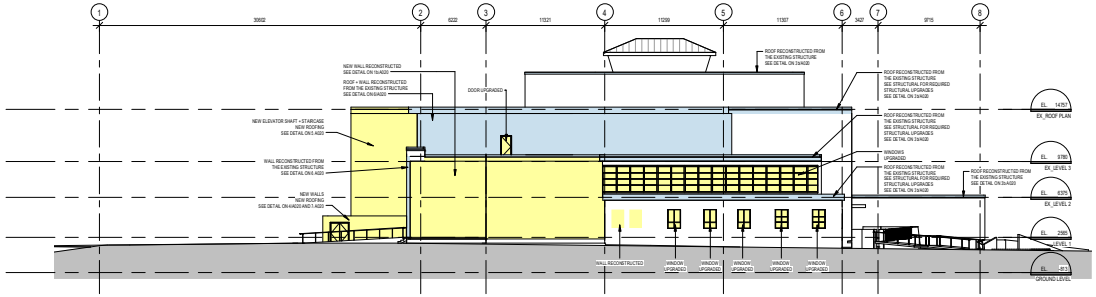
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NEW_
ELEVATIONS 1

PROJECT NUMBER
22-20

DWG. NO.
A300

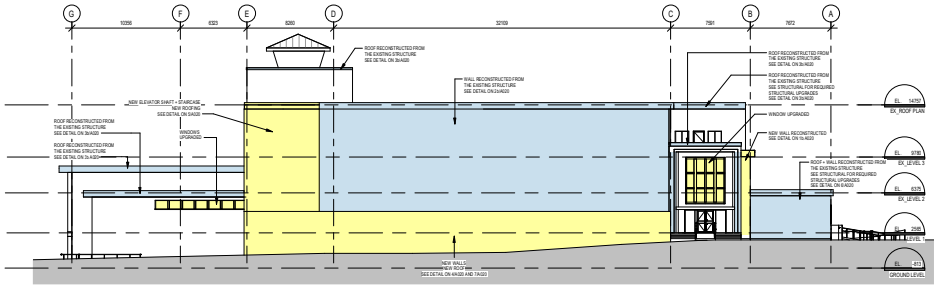
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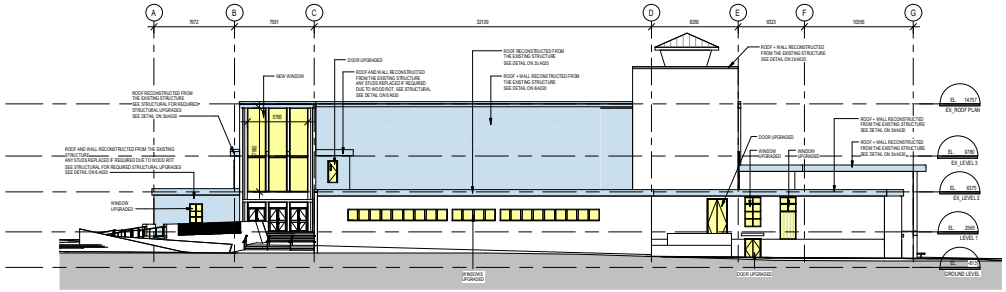
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DRAWING TITLE
NEW_
ELEVATIONS 2

PROJECT NUMBER
22-20

DWG. NO.
A301

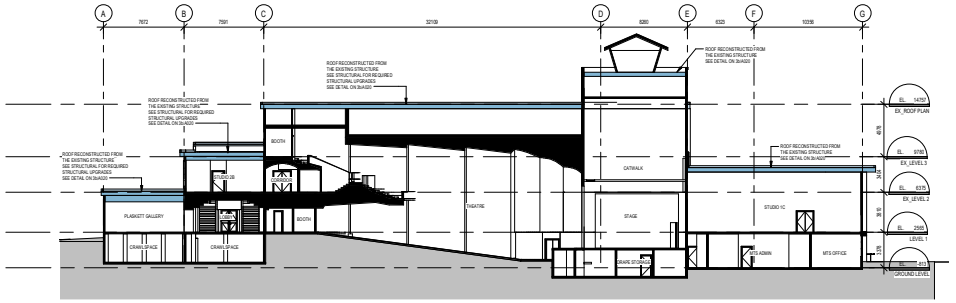
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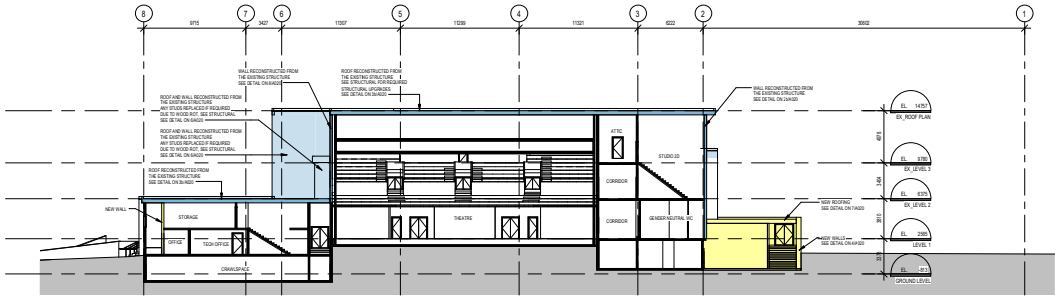
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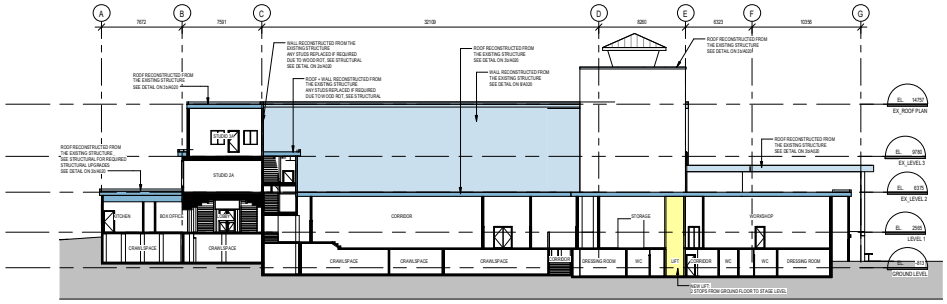
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NEW_ SECTIONS 1		22-20
		DWG. NO. A310
DATE	SCALE	DRAWN / CHECKED
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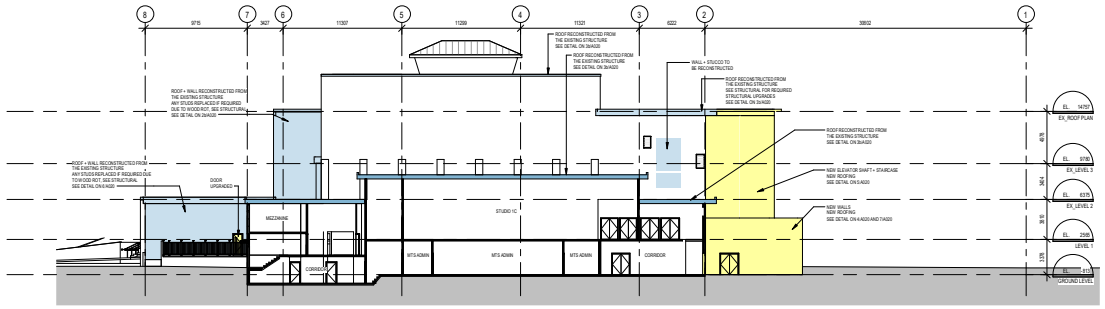
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1 : 200



2 NEW SECTION 4
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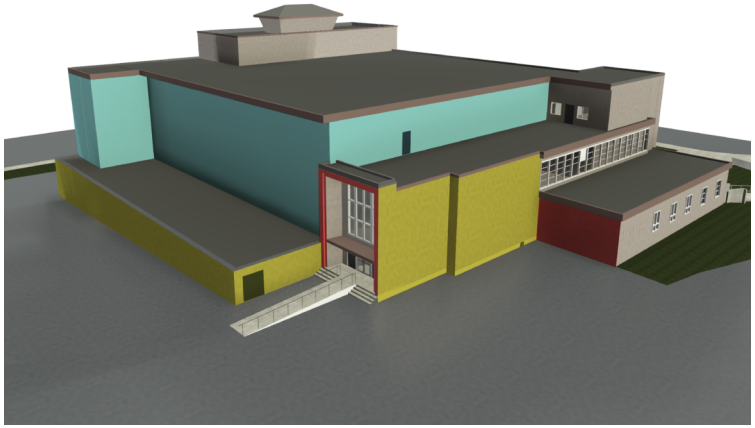
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NEW_ SECTIONS 1	22-20
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WALL STUCCO UPDATED

NEW WALL STUCCO

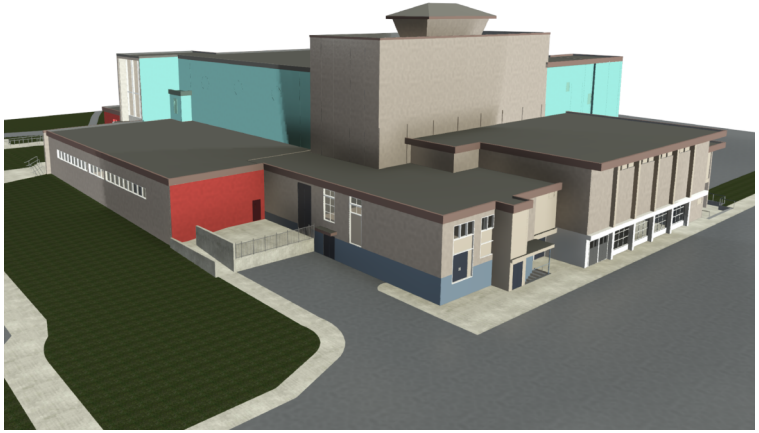
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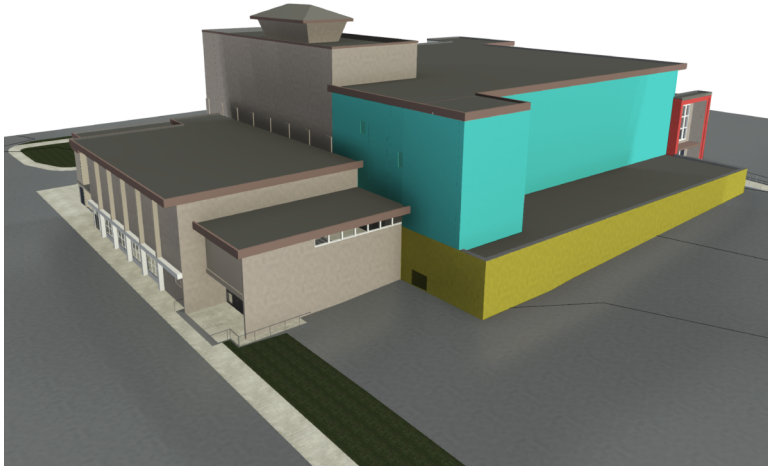
WEST VIEW



SOUTH VIEW



EAST VIEW



NORTH VIEW

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3D VIEWS ENVELOPE

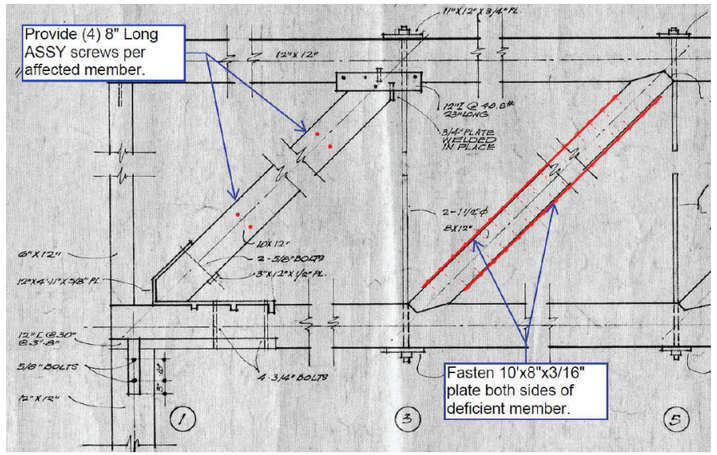
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TIER 1 COSTING PACKAGE

STRUCTURAL

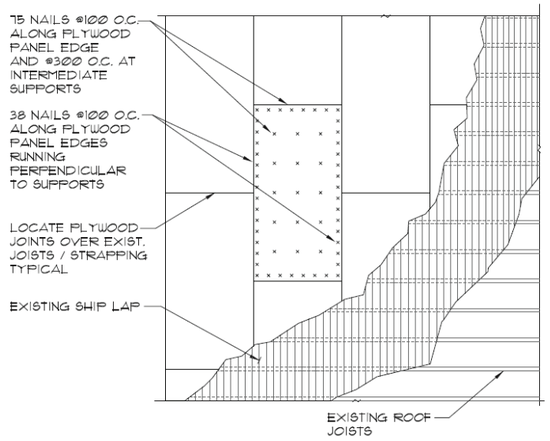


Trusses over Auditorium
Span = 81'10" with 8 panels
6 Trusses total (approx 10' deep)

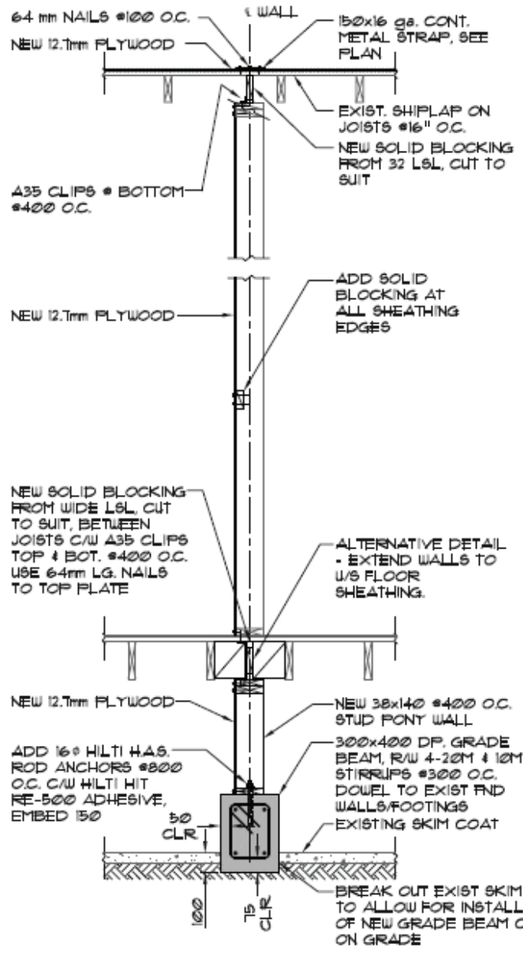
For ASSY screw upgrade: 96 members affected requiring 384 screws

For steel plate upgrade: 48 members affected requiring 96 steel plates.

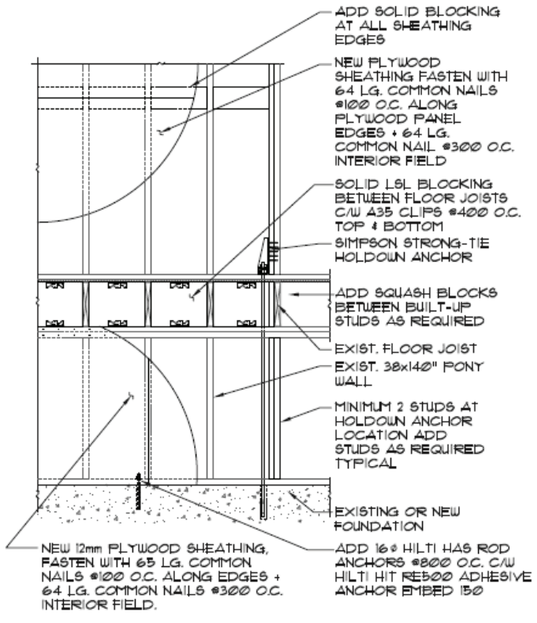
Detail 1. Auditorium Roof Truss Repairs and Upgrades



Detail 2. Roof Sheathing over Existing Shiplap

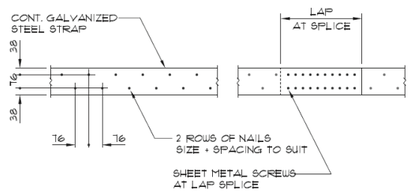


Detail 3. Typical Plywood Shearwall Section



NOTE: DETAILS SHOWN FOR ILLUSTRATIVE PURPOSES DESIGN WALL AND ANCHORAGES/CONNECTIONS TO SUIT

Detail 4. Typical Plywood Shearwall Elevation



NOTES
1. CONTINUOUS GAUGE STEEL STRAP TO BE CENTRED OVER WALLS OR BLOCK
2. FASTEN TO PLYWOOD SHEATHING WITH 2 ROWS OF NAILS AND SPLICE AS PER DETAILS.

Provide around perimeter of all roofs and along interior shearwalls.

Detail 5. Sheet metal roof straps

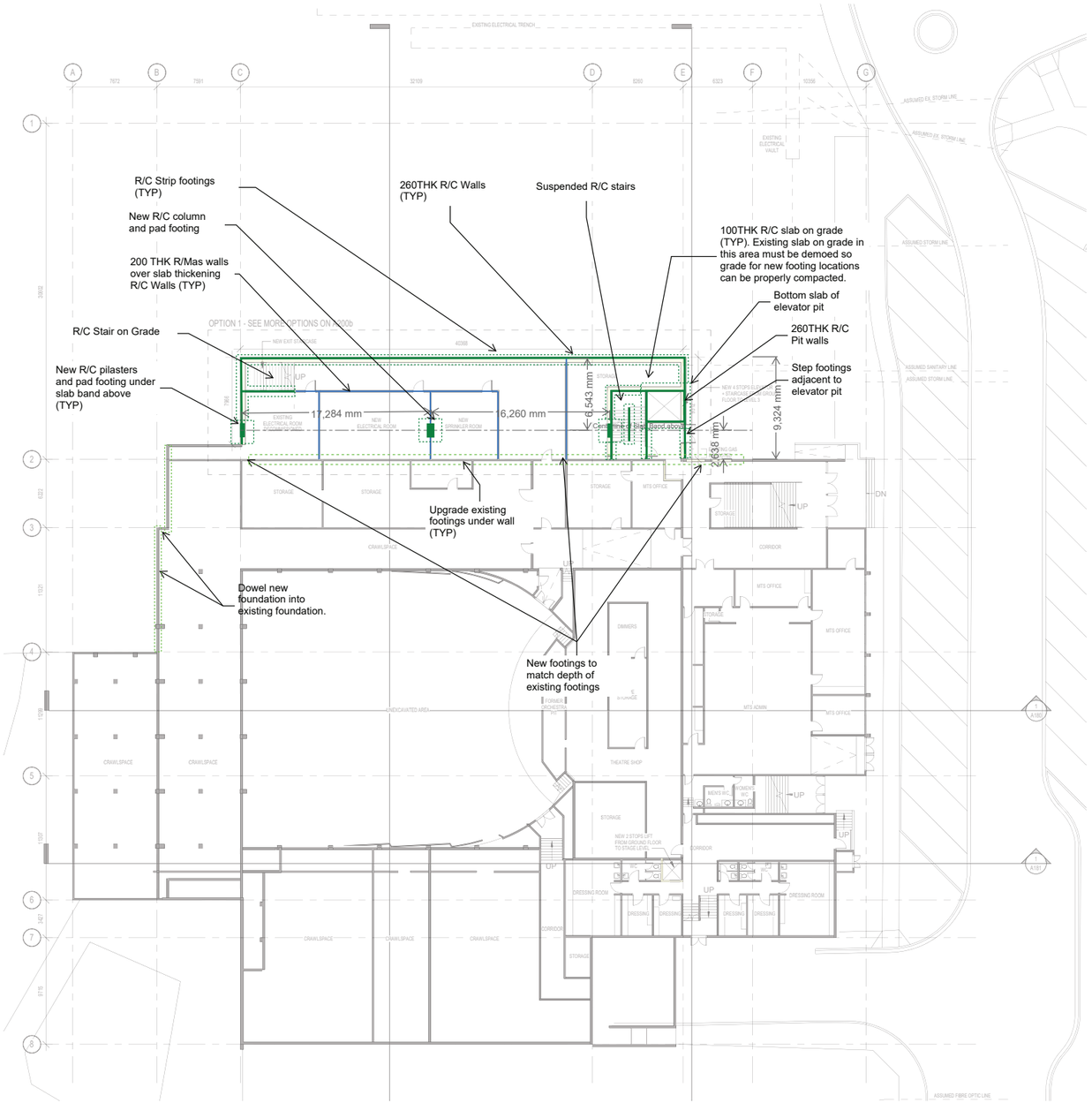
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Vancouver, BC V6G 2Z6
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bushbohlman.com

DATE	SCALE	DRN.	CH'D.	PROJECT No.
2022.12.09	NTS	TWW	AWM	8544

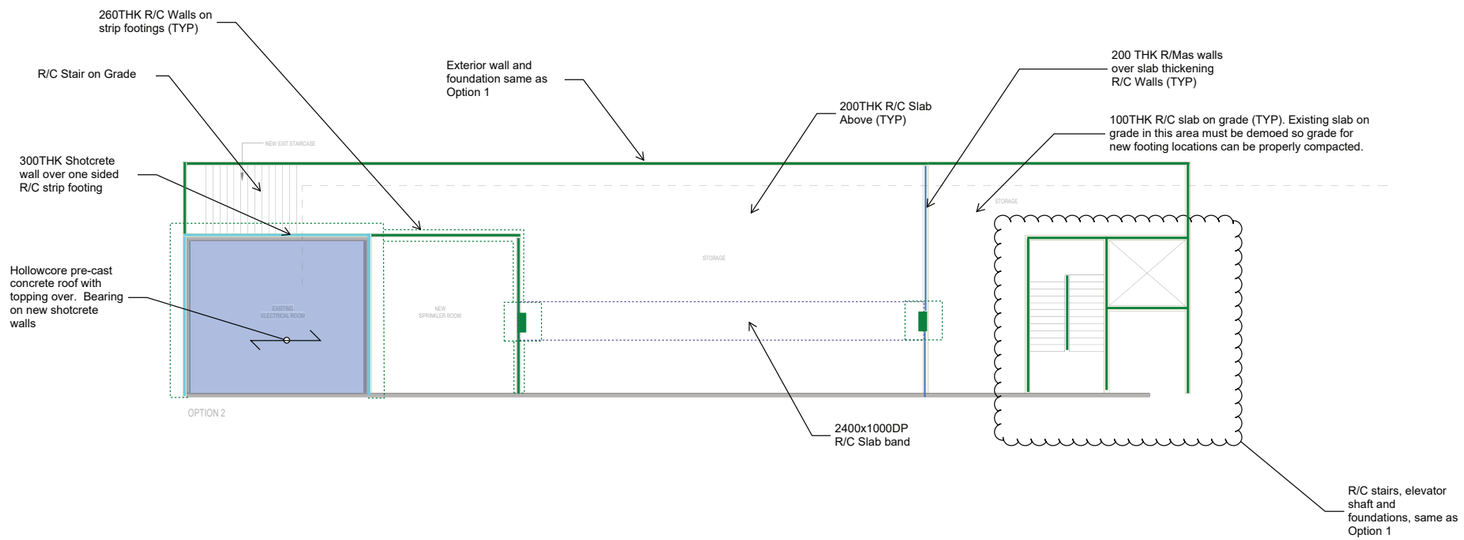
Massey Theatre Renewal

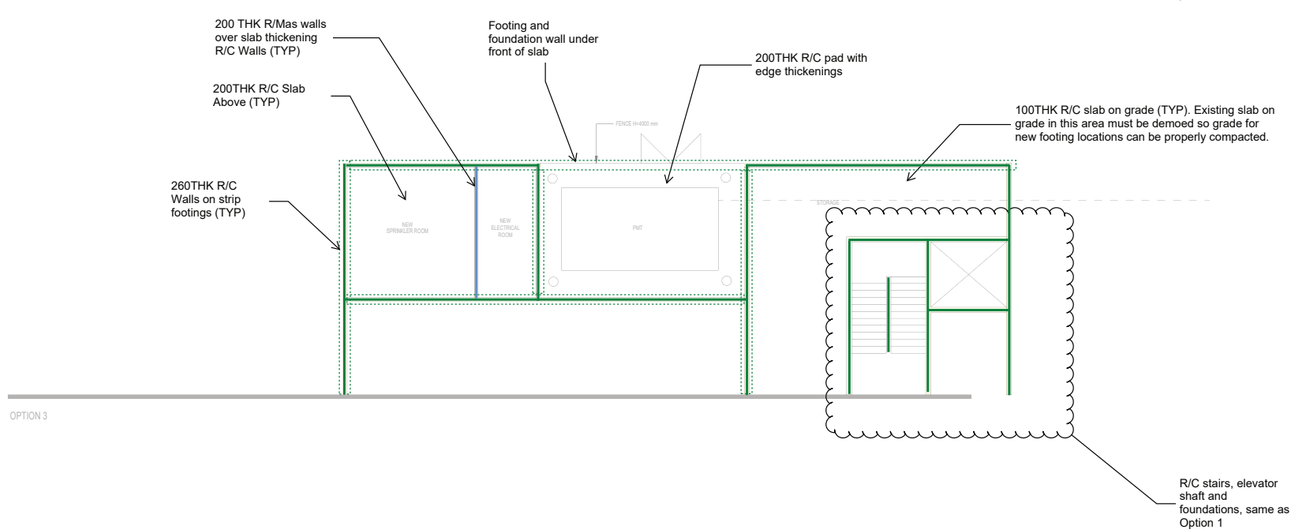
Structural Typical Details

SHEET No. SSK-00



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		Massey Theatre Renewal Structural Scope Ground Floor				SHEET No. SSK-01





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Massey Theatre Renewal

Structural - Electrical Room Options

SHEET No.

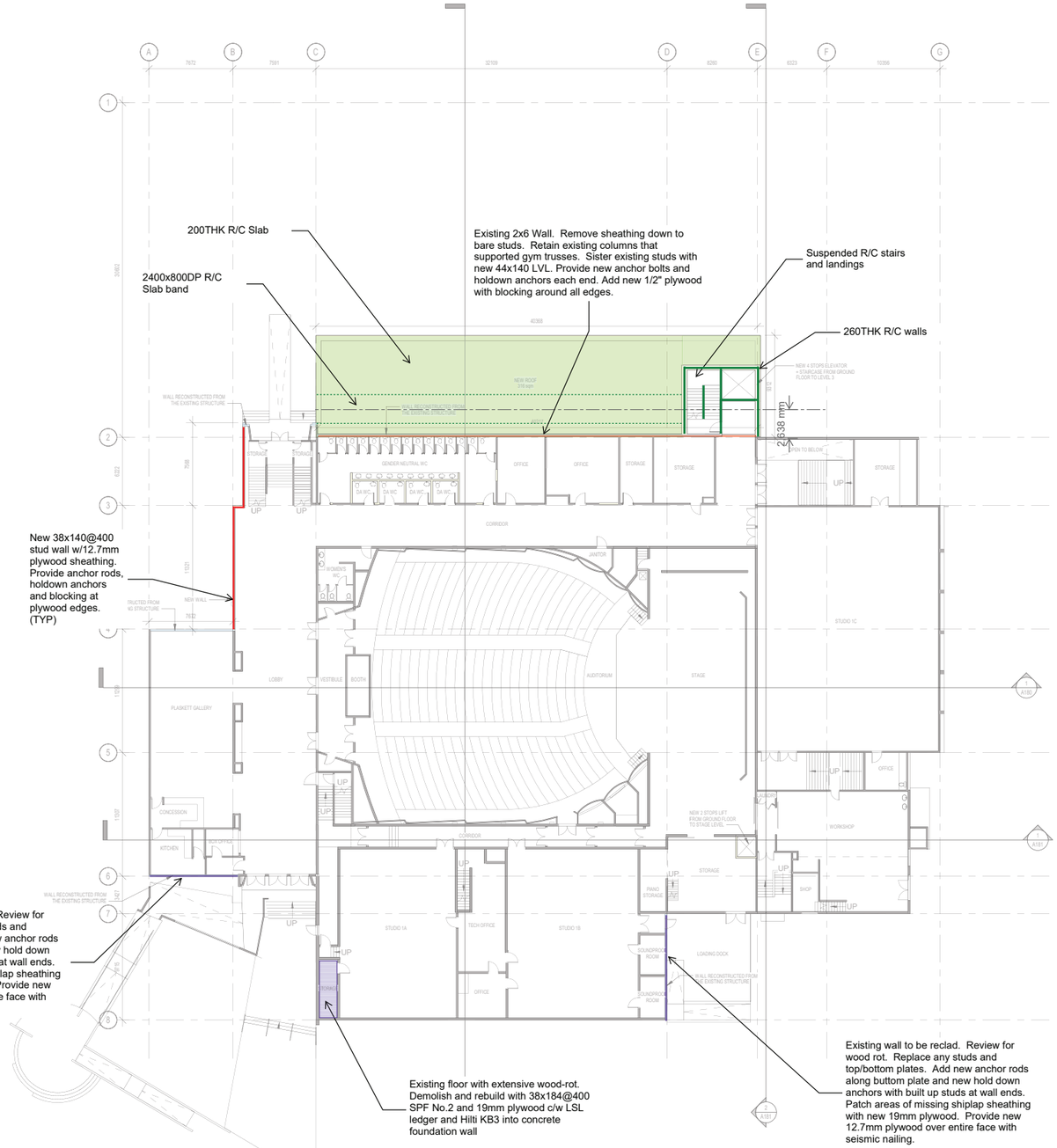
SSK-02

RECONSTRUCTED

RUCTION

VDING

S



Note:
1. We recommend a cash allowance be carried for misc wood rot remediation.

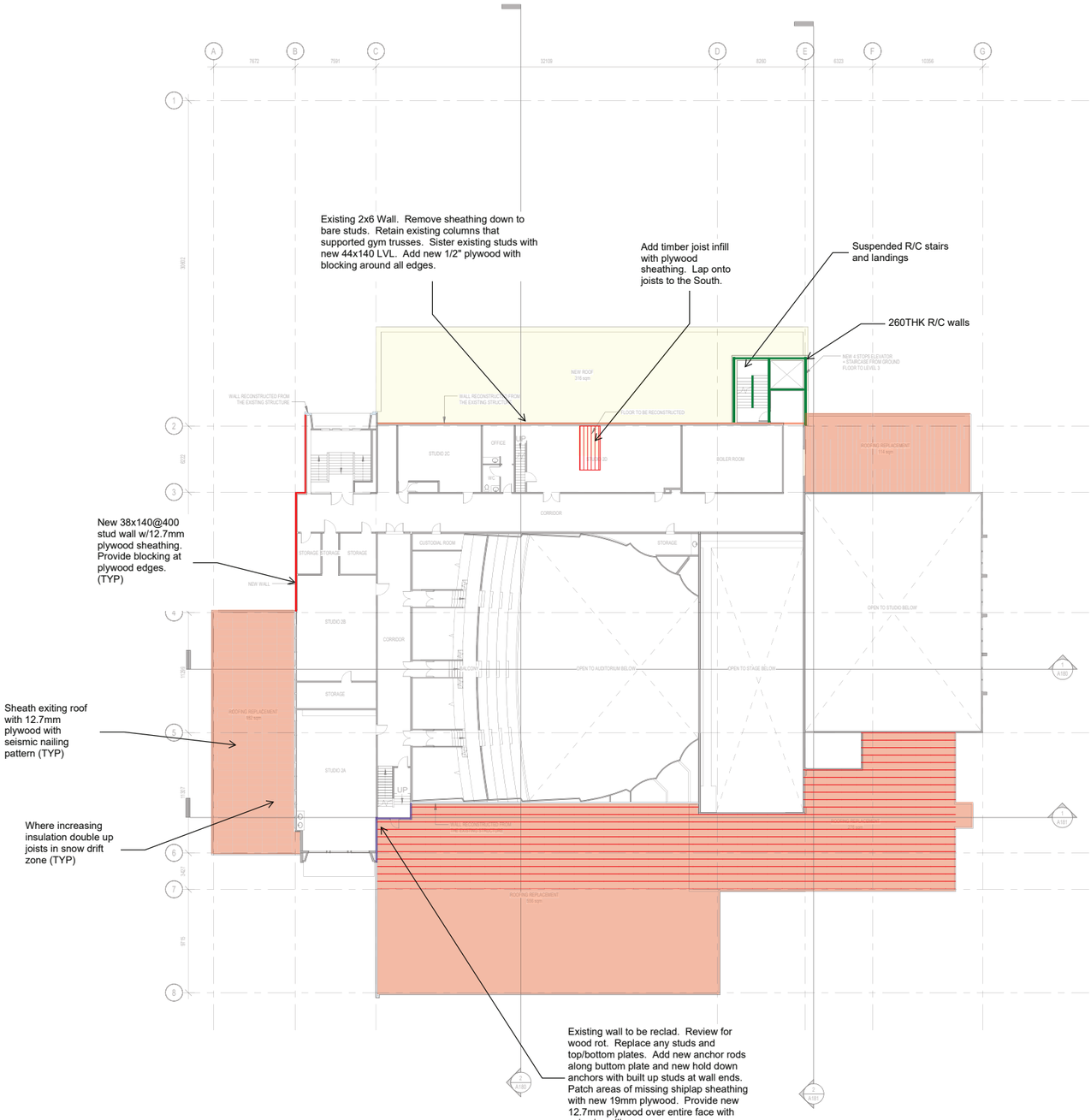
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DATE	SCALE	DRN.	CH'D.	PROJECT No.
2022.12.09	NTS	TWW	AWM	8544

Massey Theatre Renewal

Structural Scope Level 1

SHEET No. SSK-03



Note:
1. We recommend a cash allowance be carried for misc wood rot remediation.
2. For locations of new RTU, existing wood-framing to be upgraded.

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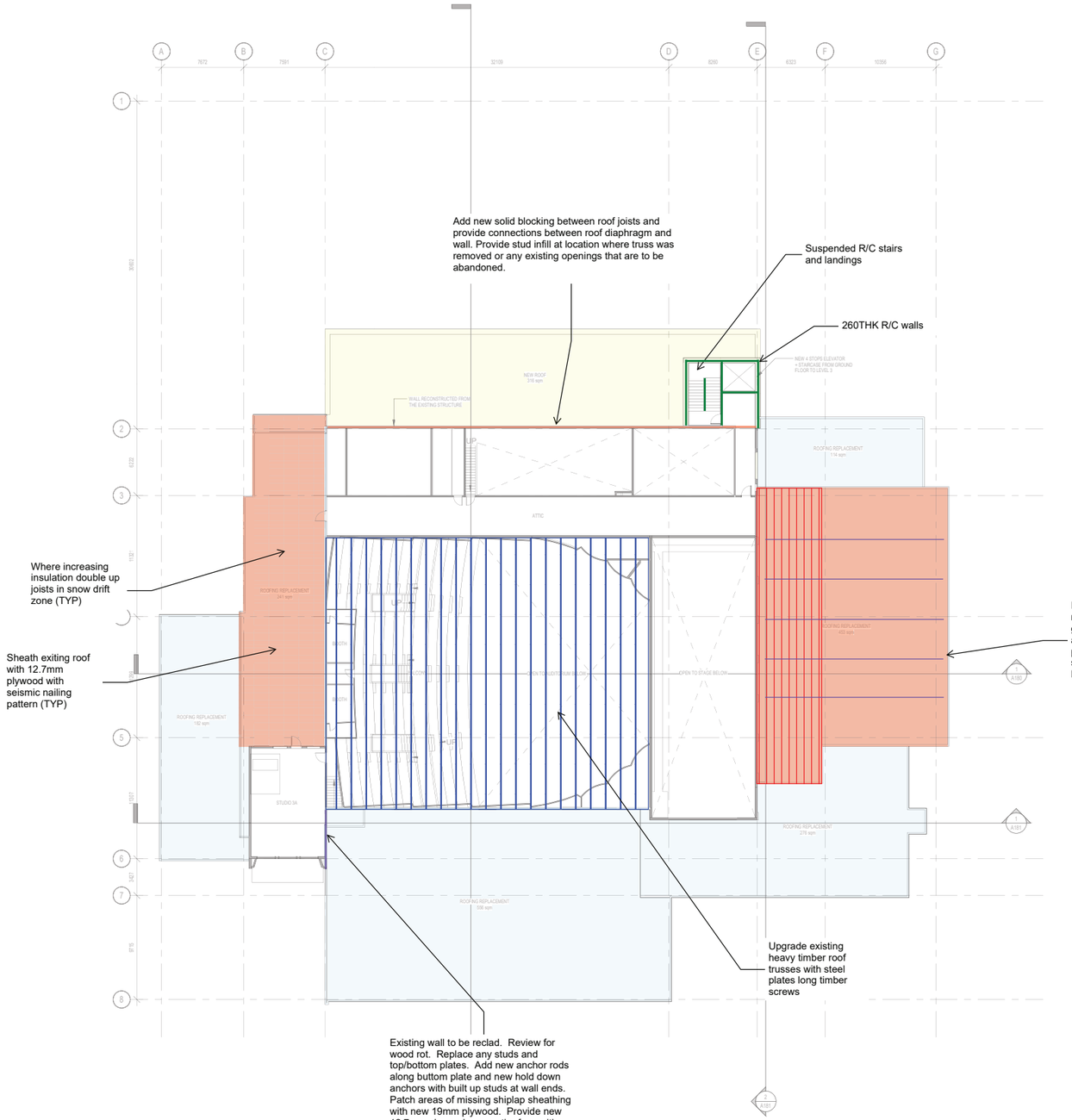
DATE	SCALE	DRN.	CH'D.	PROJECT No.
2022.12.09	NTS	TWW	AWM	8544

Massey Theatre Renewal

Structural Scope Level 2

SHEET No.

SSK-04



Note:
1. We recommend a cash allowance be carried for misc wood rot remediation.
2. For locations of new RTU, existing wood-framing to be upgraded.

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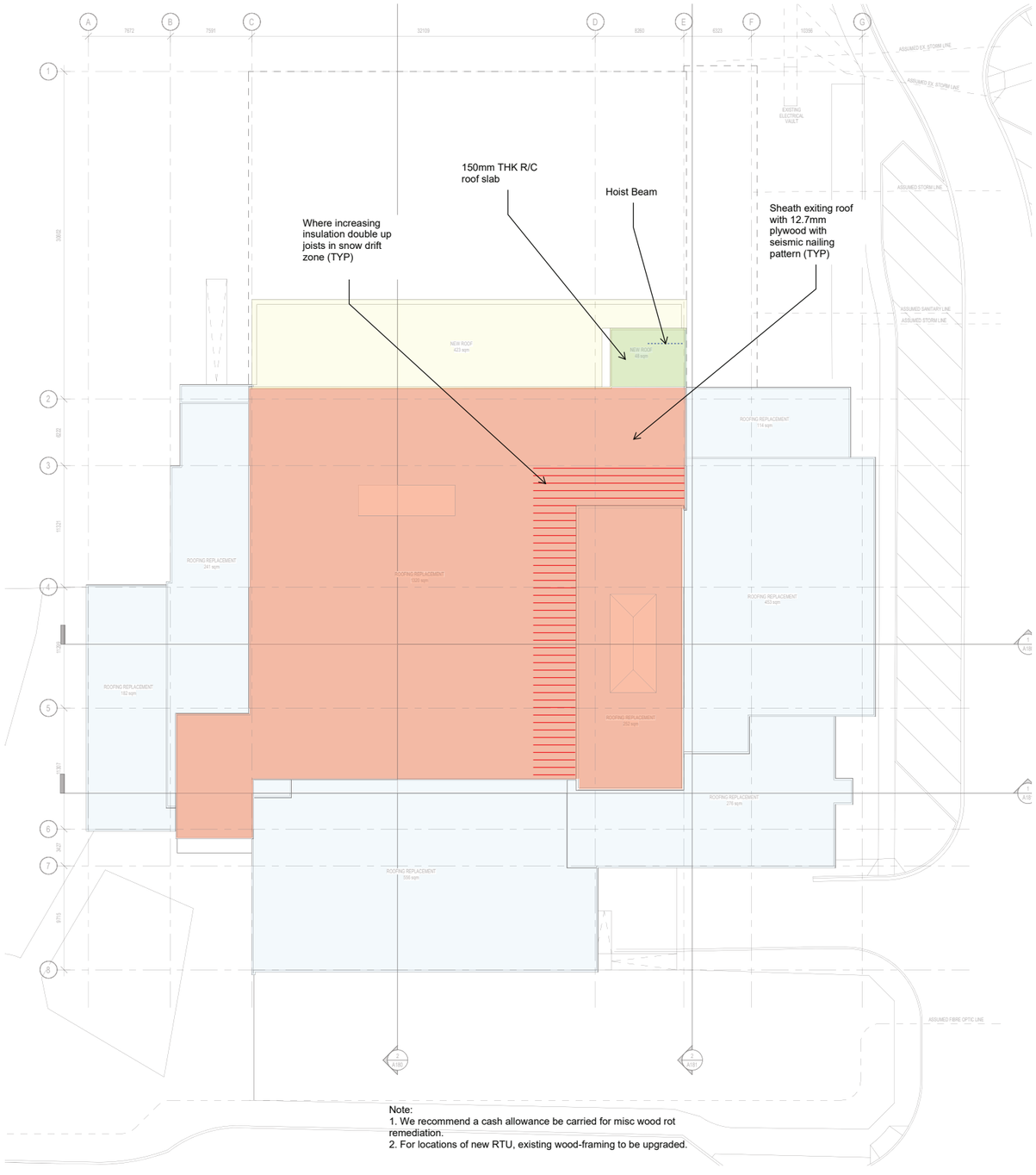
DATE	SCALE	DRN.	CH'D.	PROJECT No.
2022.12.09	NTS	TWW	AWM	8544

Massey Theatre Renewal

Structural Scope Level 3

SHEET No.

SSK-05



Note:
1. We recommend a cash allowance be carried for misc wood rot remediation.
2. For locations of new RTU, existing wood-framing to be upgraded.

BushBohlman &Partners
Consulting Structural Engineers
1550—1500 West Georgia St.
Vancouver, BC V6G 2Z6
604 688 9861
bushbohlman.com

DATE	SCALE	DRN.	CH'D.	PROJECT No.
2022.12.09	NTS	TWW	AWM	8544

Massey Theatre Renewal

Structural Scope Roof

SHEET No.

SSK-06

TIER 1 COSTING PACKAGE

MECHANICAL

PARTIALLY DEMOLISHED

TOTALLY DEMOLISHED

REFER TO ELEVATIONS FOR CLADDING AND WINDOWS REPLACEMENT

APPROXIMATE LOCATION OF EXISITING WATER ENTRY TO BE RELOCATED

APPROXIMATE LOCATION OF EXISITING SPRINKLER ZONE VALVES TO BE DEMOLISHED

EXISTING GAS STUB OUT

EXISTING DOMESTIC WATER

EXISTING ELECTRICAL TRENCH

EXISTING ELECTRICAL VAULT

ASSUMED EX. STORM LINE

ASSUMED STORM LINE

ASSUMED SANITARY LINE

ASSUMED FIBRE OPTIC LINE

INTENT TO KEEP PART OF GROUND FLOOR SLAB

EXISTING GAS TO BE REROUTED

ELECTRICAL ROOM
SECURED STORAGE
STORAGE
STORAGE
STORAGE
MTS OFFICE
STORAGE
CORRIDOR
CRAWLSPACE
UP
DN
DIMMERS
DRAPE STORAGE
FORMER ORCHESTRA PIT
UNEXCAVATED AREA
MTS OFFICE
MTS ADMIN
MTS OFFICE
CRAWLSPACE
CRAWLSPACE
THEATRE SHOP
MENS WC
WOMENS WC
STORAGE
CORRIDOR
UP
UP
UP
WIC
WIC
DRESSING ROOM
DRESSING
DRESSING
DRESSING
DRESSING
DRESSING ROOM
CORRIDOR
CRAWLSPACE
CRAWLSPACE
CRAWLSPACE
STORAGE

2 A180

7 A181

4 A180

A181

MECHANICAL MARKUPS FOR PHASE 1 CONCEPT (AME)

BLUE TEXT = MUST HAPPEN
RED TEXT = SHOULD HAPPEN
GREEN TEXT = COULD HAPPEN

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CORE GROUP CONSULTANTS

PROJECT MANAGER
TURNBULL

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

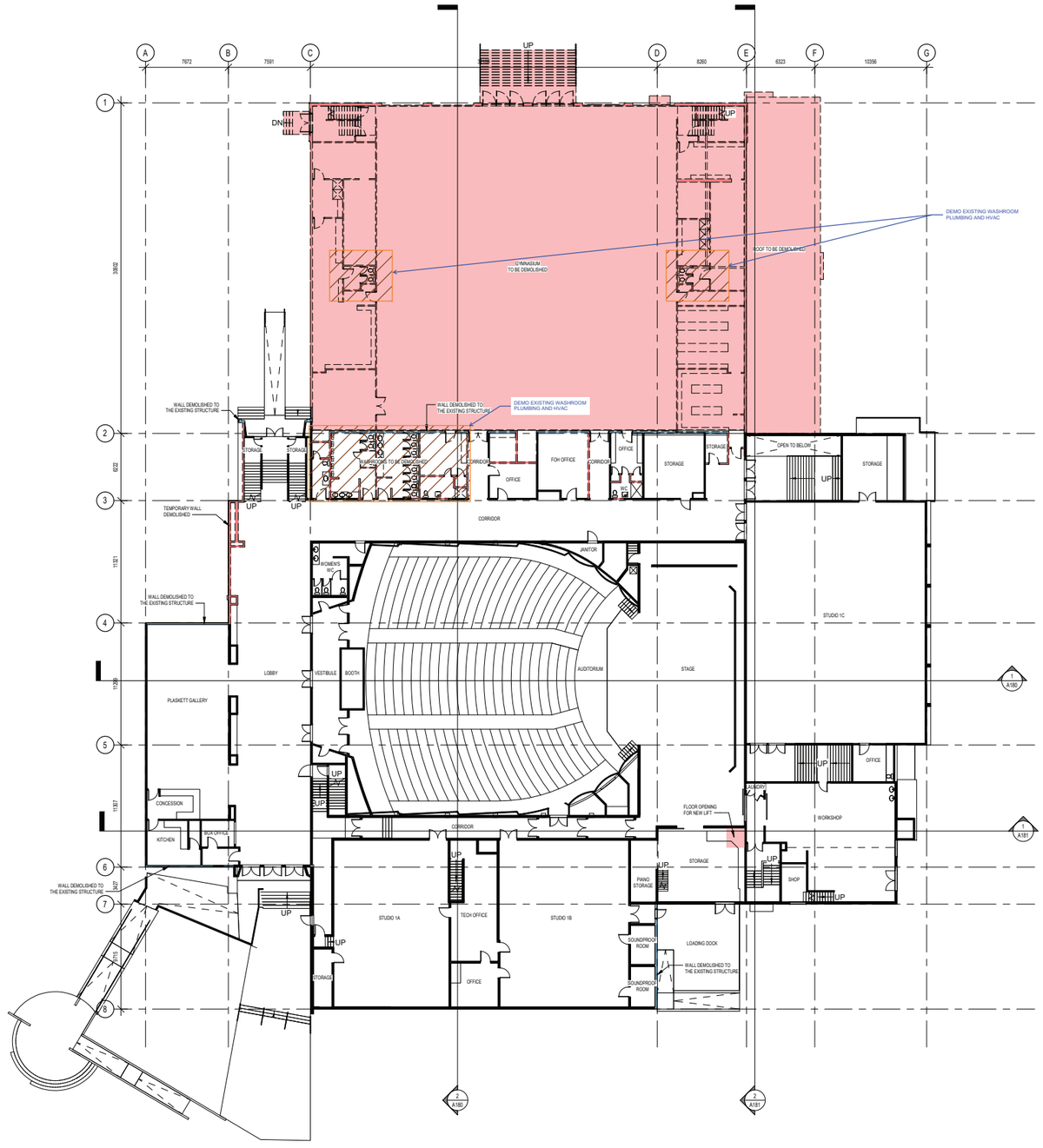
DRAWING TITLE	PROJECT NUMBER
DEMOLITION_ GROUND FLOOR LEVEL PLAN	22-20
	DWG. NO. A150

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 200	CD	HC

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MASSEY THEATRE RENEWAL - PHASE 1

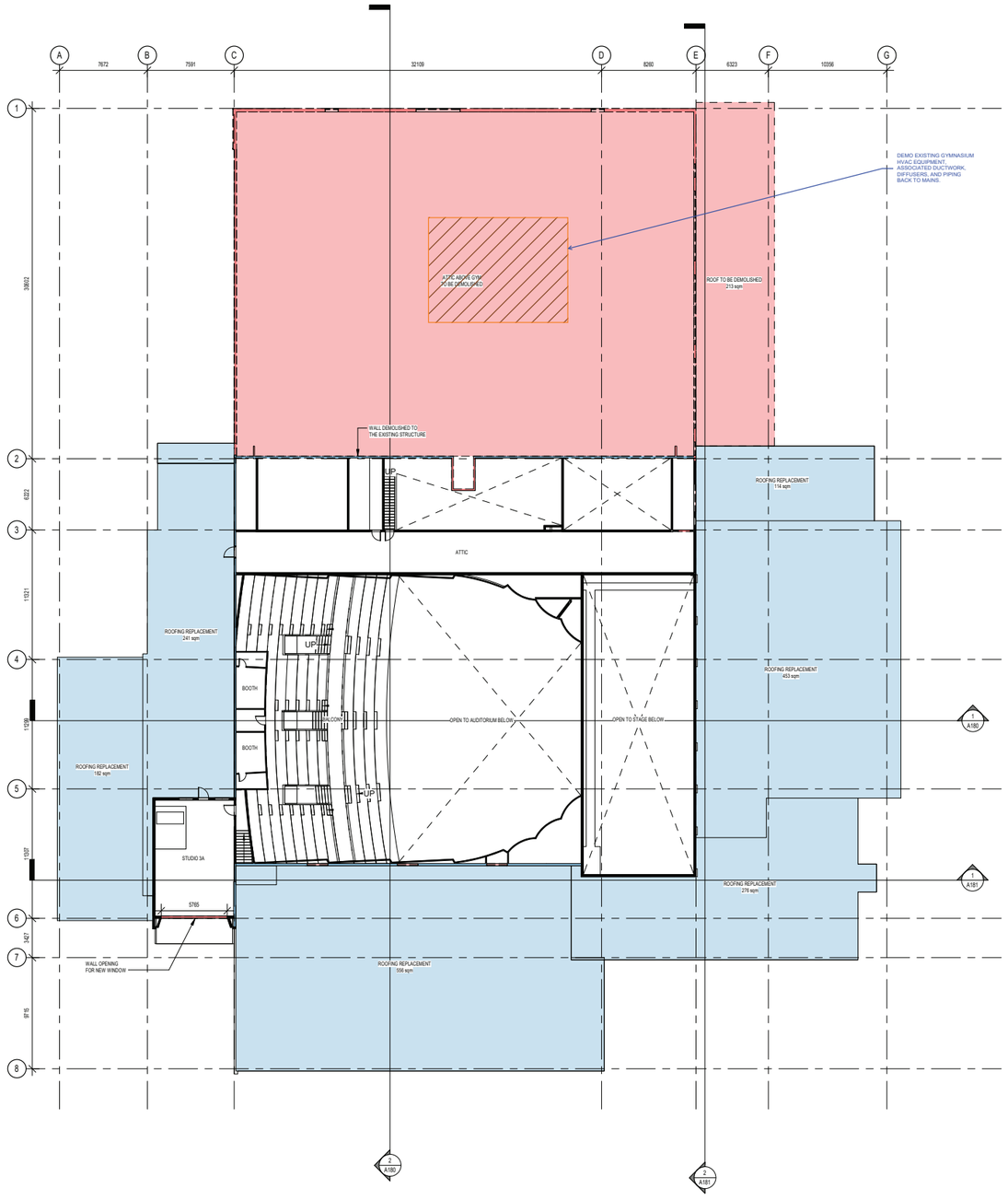
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DEMOLITION_ LEVEL 1 FLOOR PLAN	22-20
	DWG. NO. A151

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 200	CD	HC

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TOTALLY DEMOLISHED

REFER TO ELEVATIONS FOR CLADDING AND WINDOWS REPLACEMENT



MECHANICAL MARKUPS FOR PHASE 1 CONCEPT (AME)

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DRAWING TITLE
DEMOLITION_ LEVEL 3 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A153

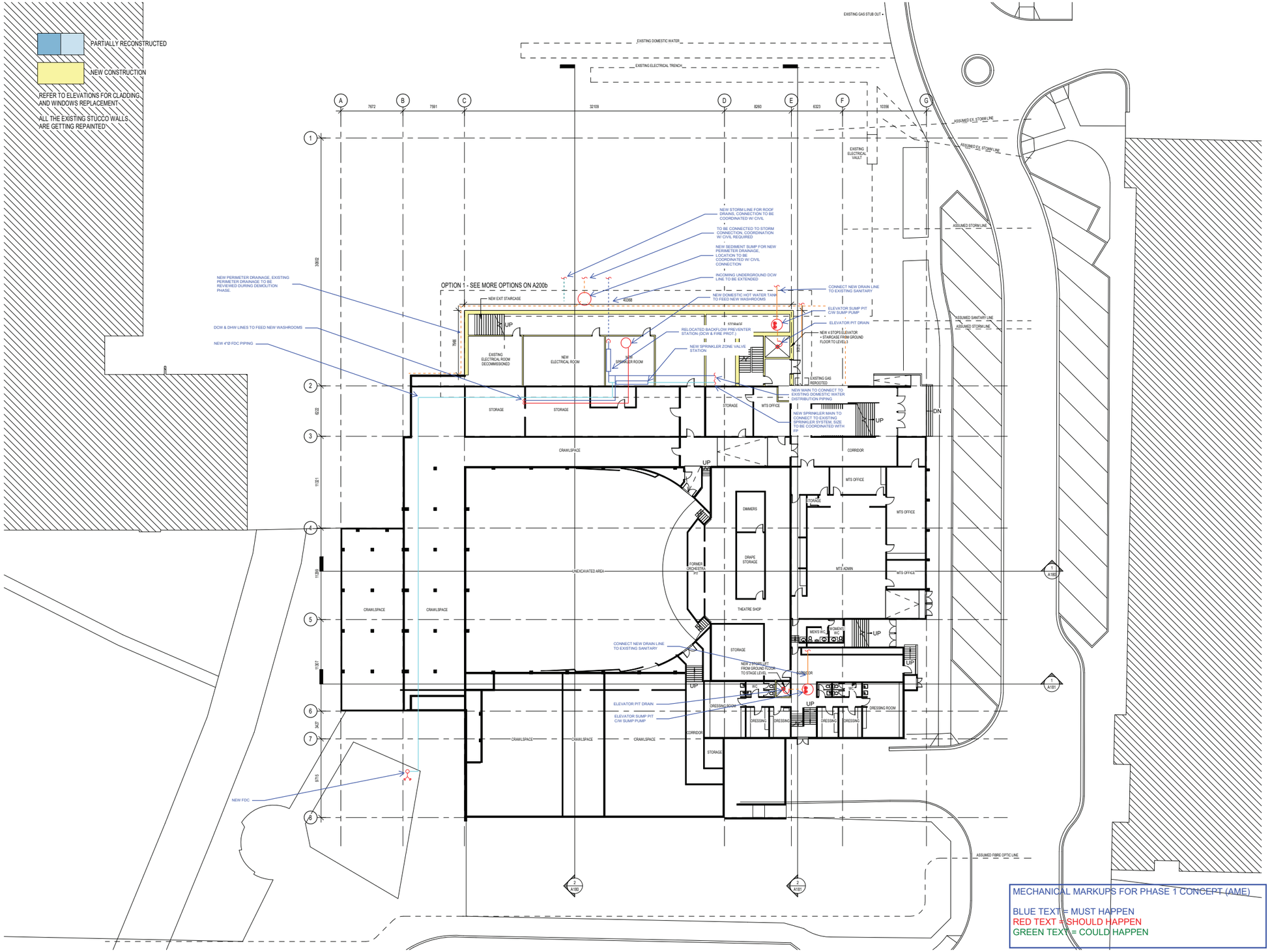
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_GROUND FLOOR PLAN	22-20
	DWG. NO. A200

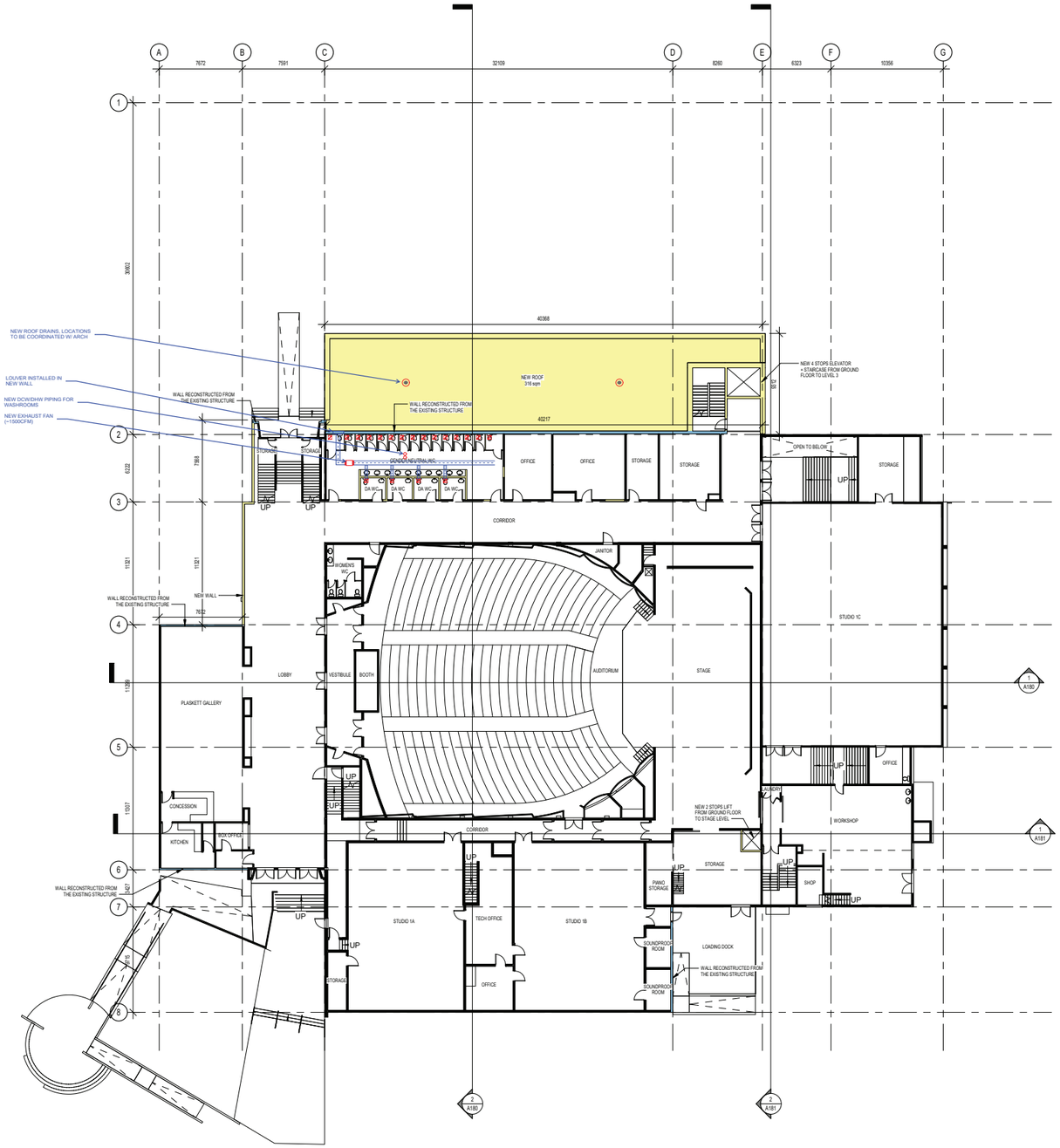
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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
NEW_LEVEL 1 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A201

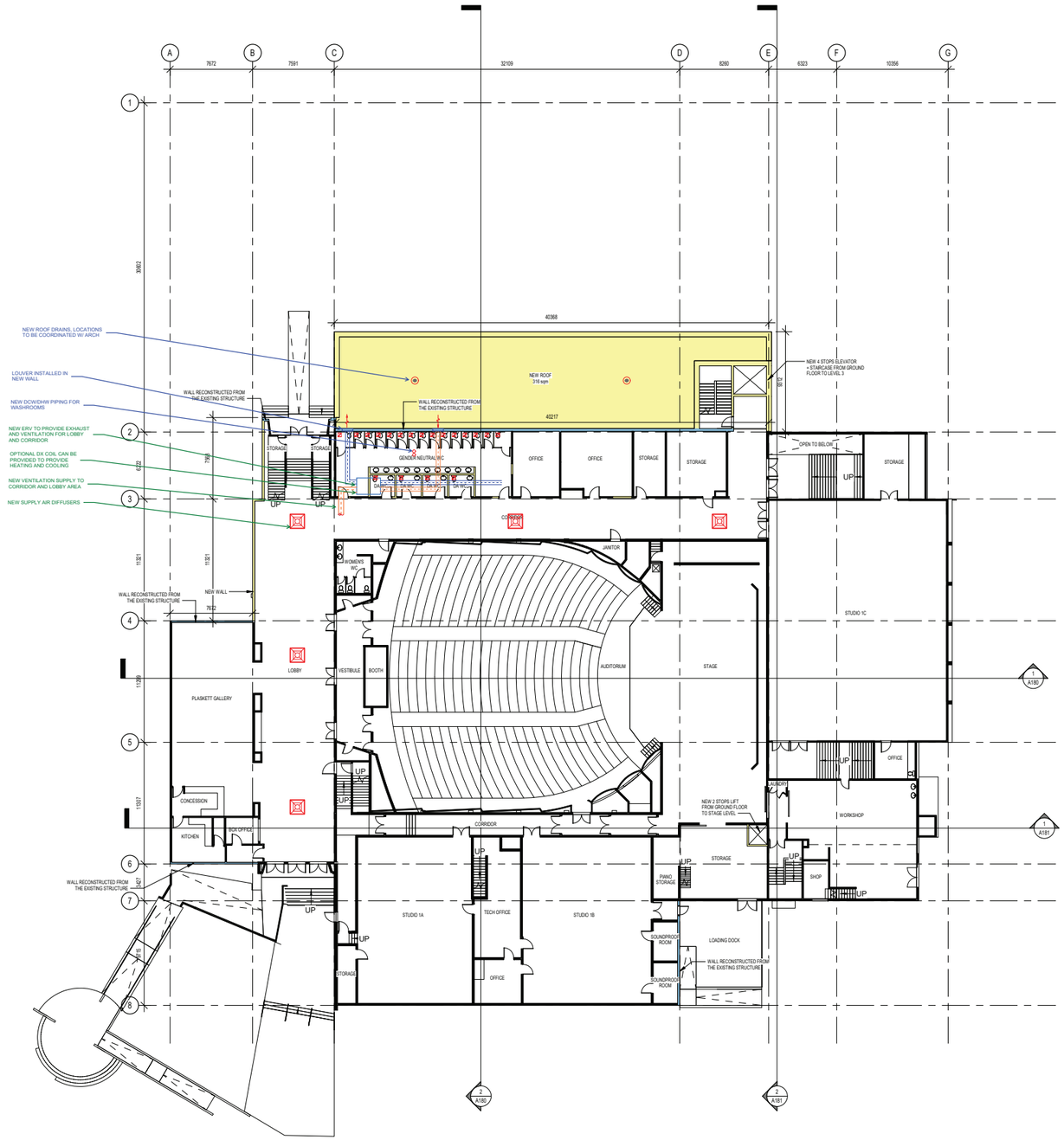
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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_LEVEL 1 FLOOR PLAN	22-20
	DWG. NO. A201

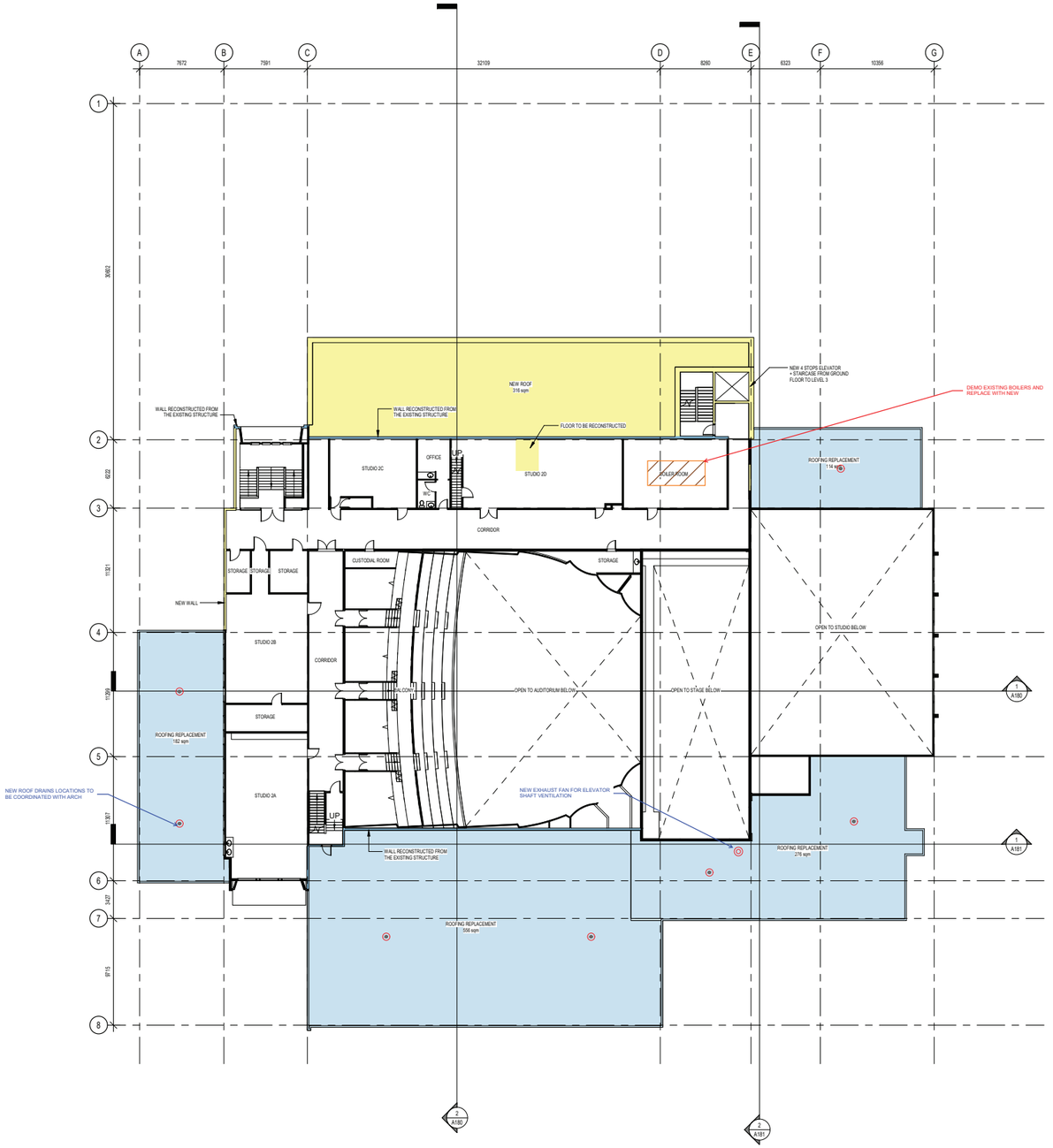
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CURRENT REVISION			

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_LEVEL 2 FLOOR PLAN	22-20
	DWG. NO. A202

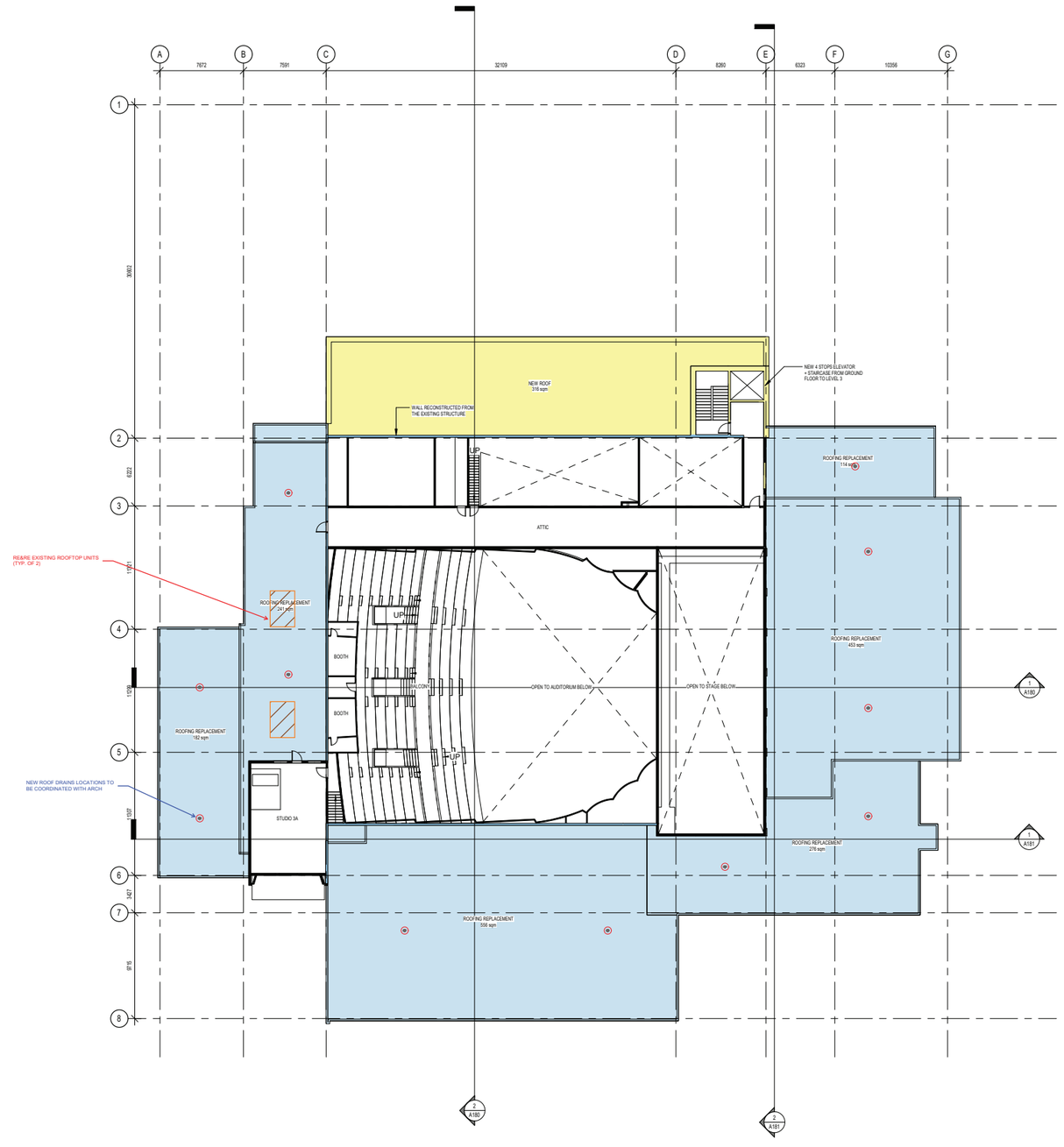
DATE	SCALE	DRAWN	CHECKED
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NEW CONSTRUCTION

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AND WINDOWS REPLACEMENT

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MECHANICAL MARKUPS FOR PHASE 1 CONCEPT (AME)

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GREEN TEXT = COULD HAPPEN

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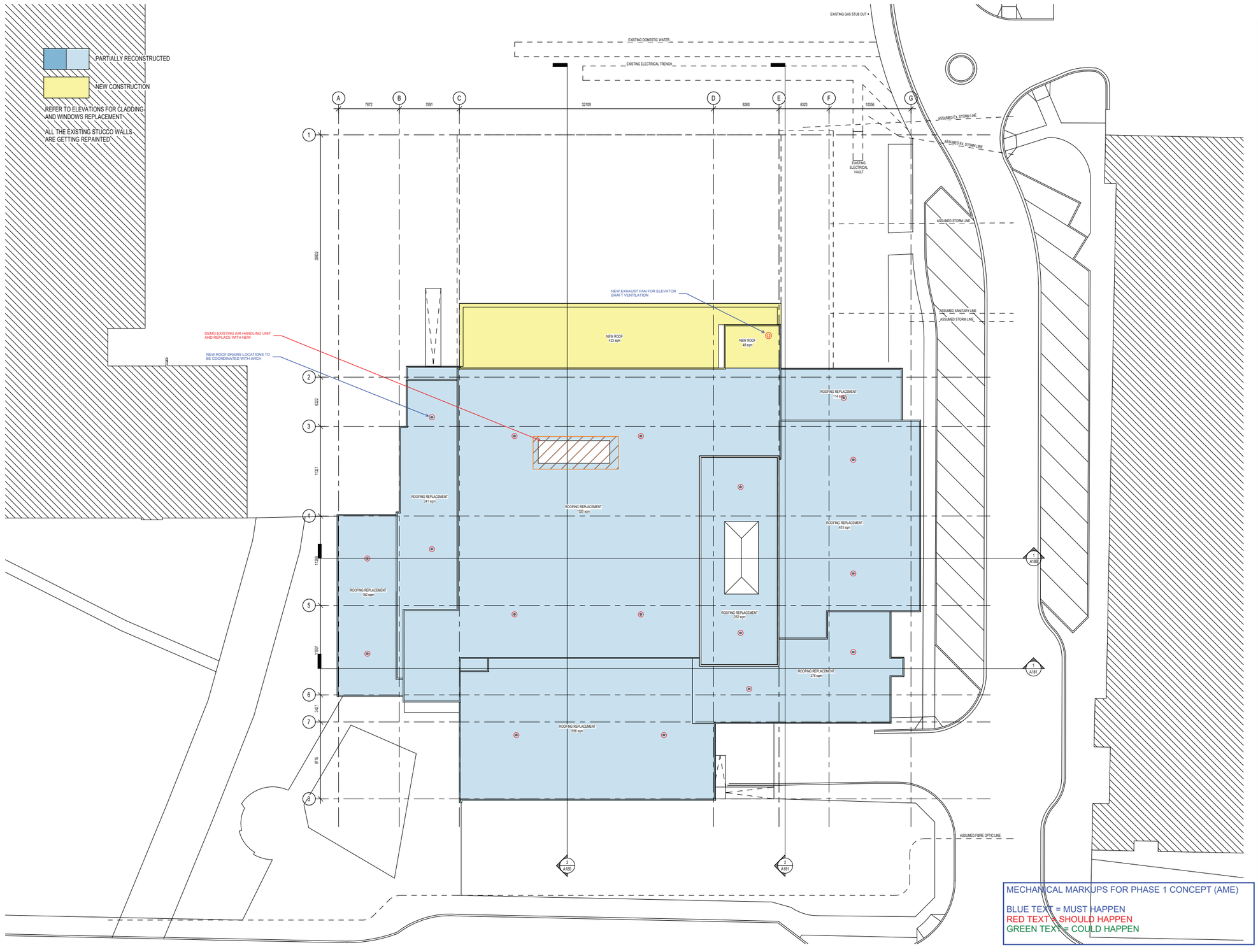
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_LEVEL 3 FLOOR PLAN	22-20
	DWG. NO. A203

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 200	CD	HC



MECHANICAL MARKUPS FOR PHASE 1 CONCEPT (AME)

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CURRENT REVISION			

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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_ROOF PLAN	22-20
	DWG. NO. A204

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 200	CD	HC

TIER 1 COSTING PACKAGE

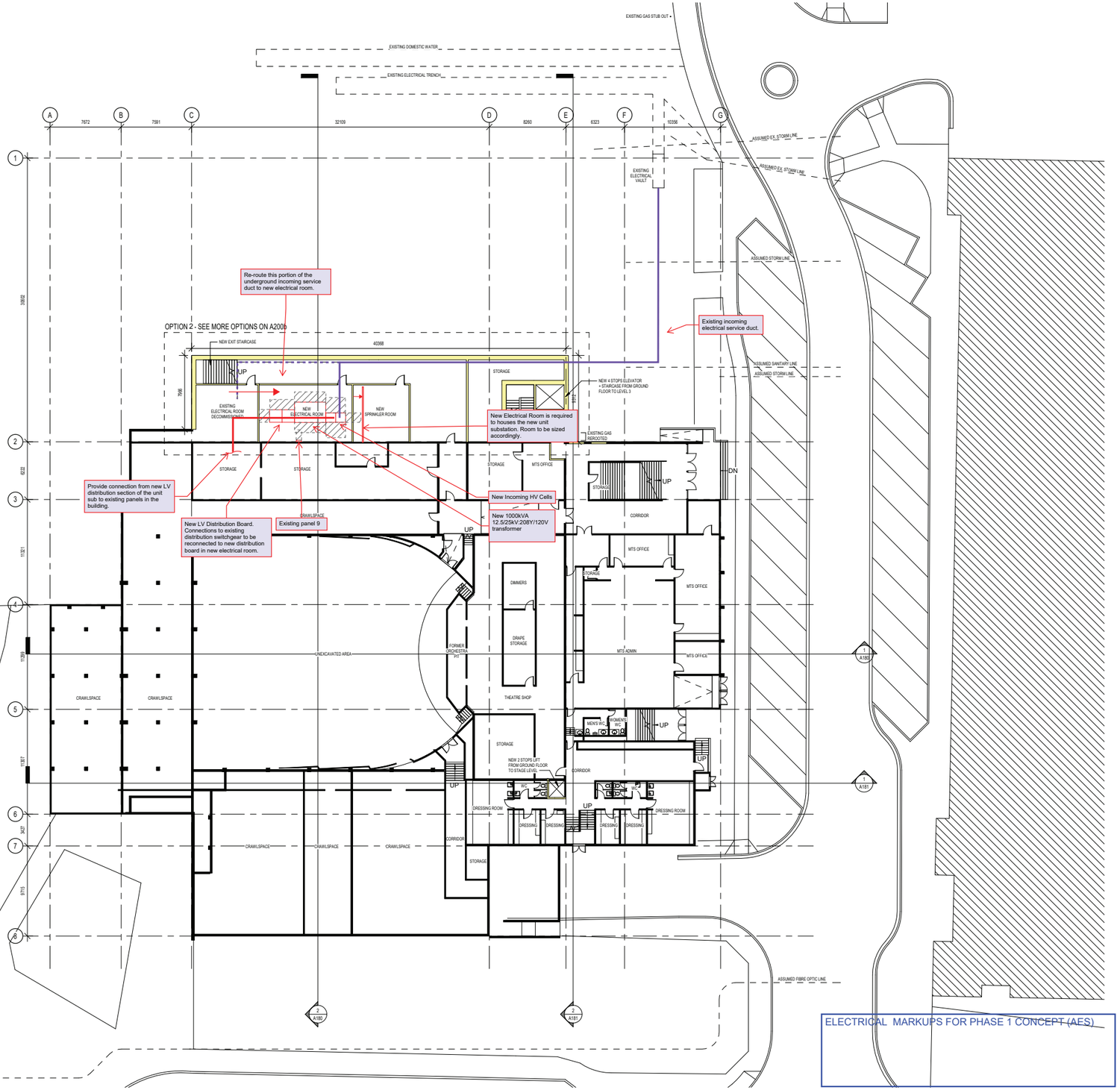
ELECTRICAL

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ELECTRICAL MARKUPS FOR PHASE 1 CONCEPT (AES)

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PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

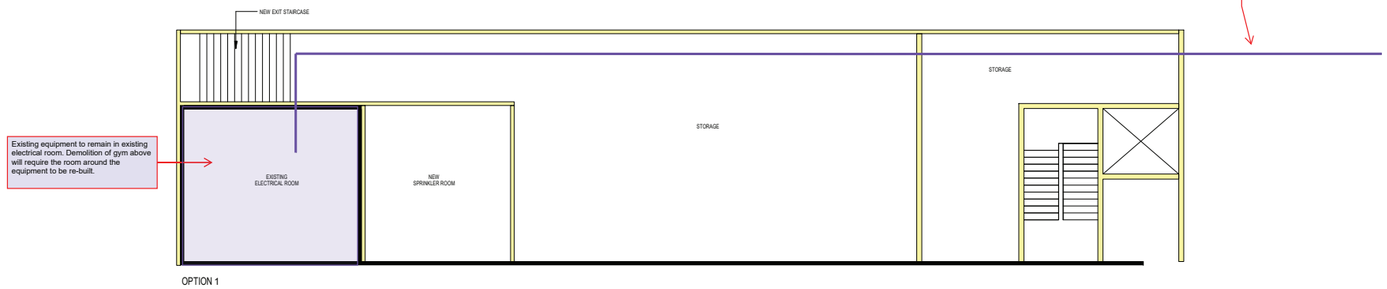
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NEW_GROUND FLOOR PLAN

PROJECT NUMBER
22-20

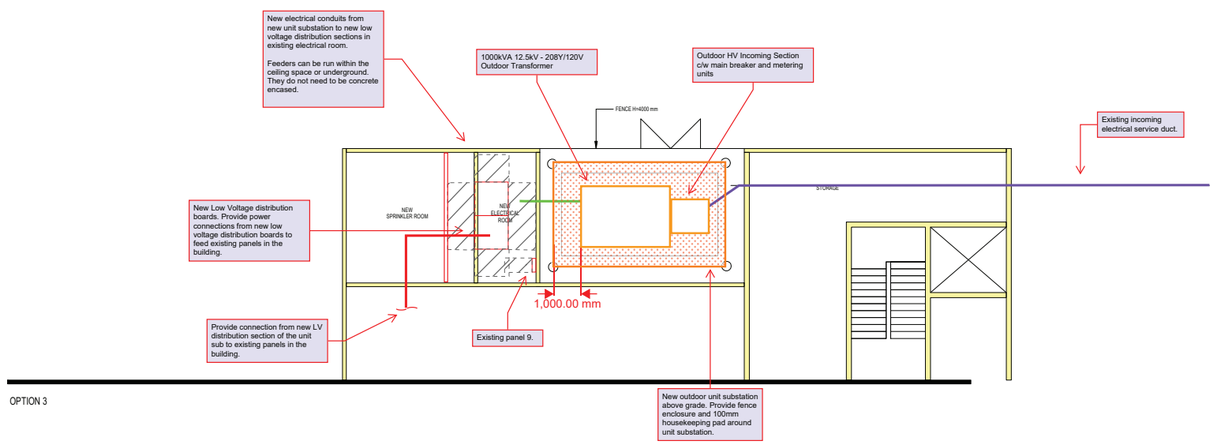
DWG. NO.
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New Electrical Room - Option1 - Keep existing equipment in existing electrical room.



OPTION 1



OPTION 3

ELECTRICAL MARKUPS FOR PHASE 1 CONCEPT (AES)

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MCAULEY CONSULTING INC

CIVIL
CORE GROUP CONSULTANTS

PROJECT MANAGER
TURNBULL

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
ELECTRICAL ROOM OPTIONS

PROJECT NUMBER
22-20

DWG. NO.
A200b

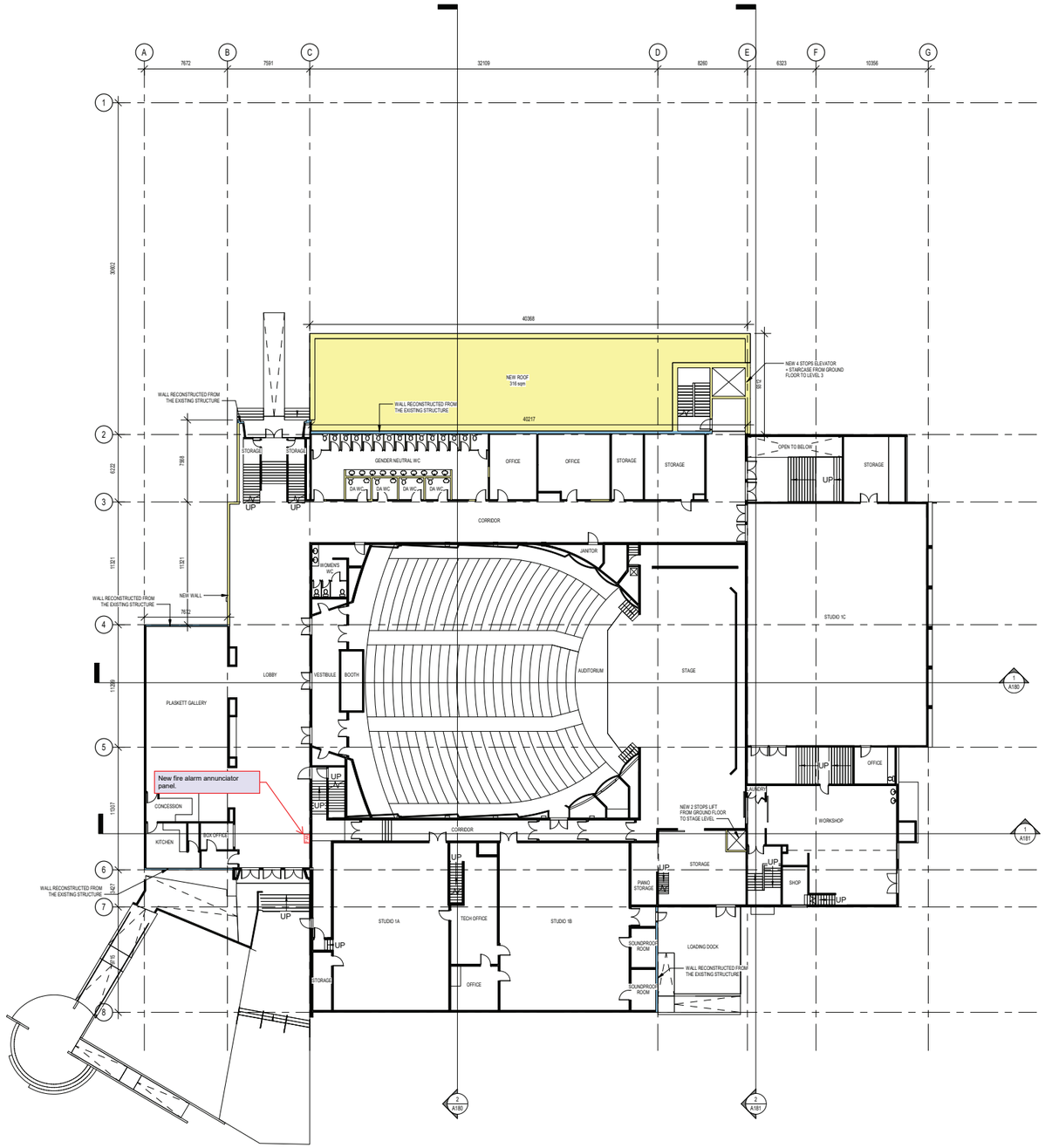
DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 100	CD	HC

PARTIALLY RECONSTRUCTED

NEW CONSTRUCTION

REFER TO ELEVATIONS FOR CLADDING
AND WINDOWS REPLACEMENT

ALL THE EXISTING STUCCO WALLS
ARE GETTING REPAINTED



ELECTRICAL MARKUPS FOR PHASE 1 CONCEPT (AES)

PROSCENIUM

ARCHITECTURE + INTERIORS INC.

300 - 151 EAST 2ND AVE.
VANCOUVER BC V5T 1B4 CANADA

604.879.0118
www.proscenium.ca

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ENVELOPE
JRS ENGINEERING

STRUCTURAL
BUSH BOHLMAN & PARTNERS

MECHANICAL
AME CONSULTING GROUP

ELECTRICAL
AES ENGINEERING

SPRINKLER
MURRAY JOHNSON ENGINEERING

CODE
MCAULEY CONSULTING INC

CIVIL
CORE GROUP CONSULTANTS

PROJECT MANAGER
TURNBULL

PROGRESS SET

NO.	DESCRIPTION	BY	DATE
CURRENT REVISION			

PROJECT ADDRESS
735 8th AVE, NEW WESTMINSTER

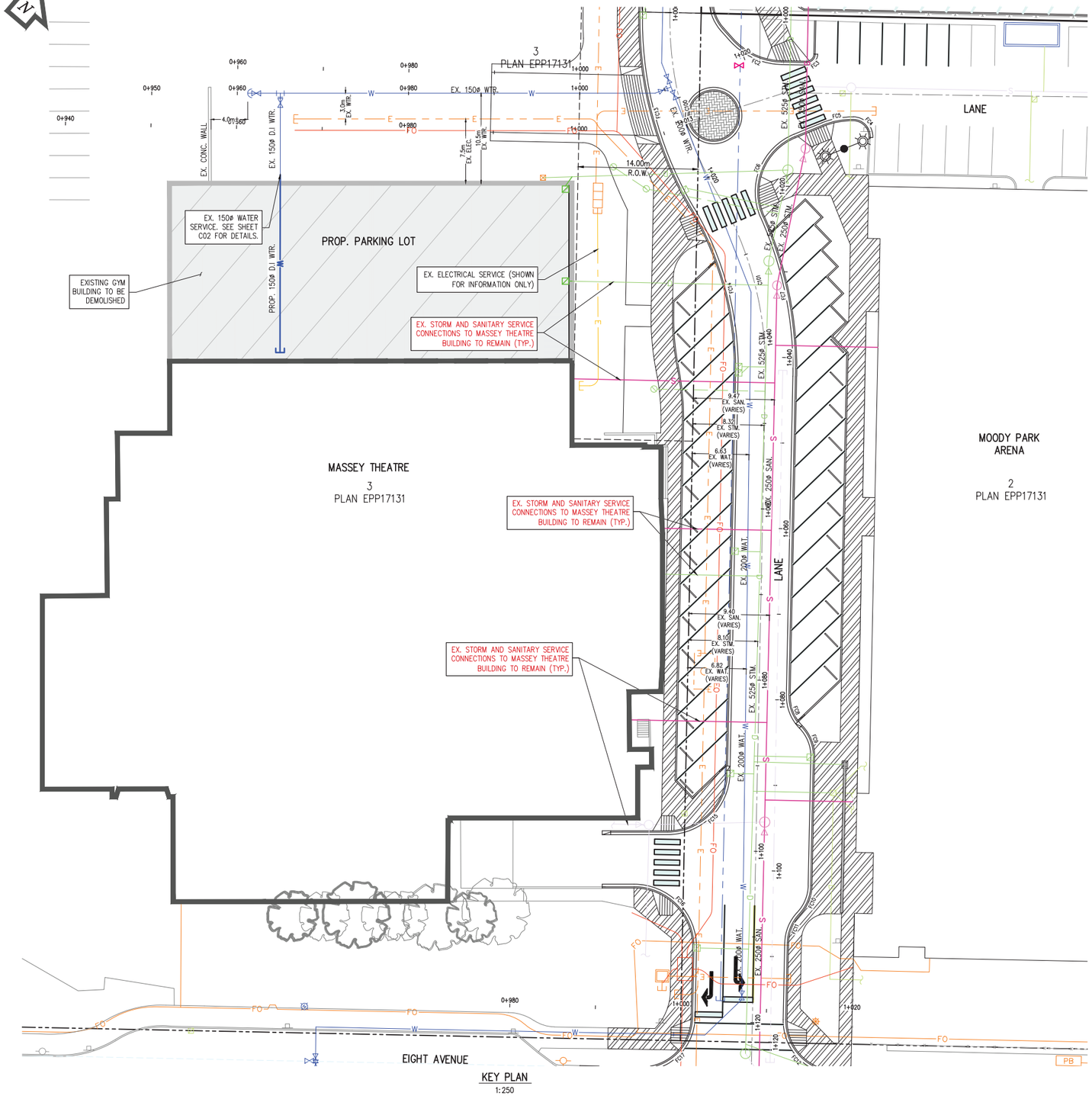
PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE	PROJECT NUMBER
NEW_LEVEL 1 FLOOR PLAN	22-20
	DWG. NO. A201

DATE	SCALE	DRAWN	CHECKED
05/12/2022	1 : 200	CD	HC

TIER 1 COSTING PACKAGE

CIVIL



KEY PLAN
1:250



SITE MAP
N.T.S.

PROSCENIUM
ARCHITECTURE + INTERIORS INC.
1 WEST 7TH AVENUE
VANCOUVER BC V5Y 1L4 CANADA
P604.879.0118
F604.879.1486
www.proscenium.ca

PRELIMINARY DRAWING 22.11.30

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LEGEND

W	PROP. WATER
D	PROP. STORM MAIN
E	EX. ELECTRICAL
D	EX. STORM MAIN
S	EX. SANITARY MAIN
W	EX. WATER MAIN
FO	EX. FIBRE OPTIC
E	EX. ELECTRICAL
	ABANDONED UTILITY

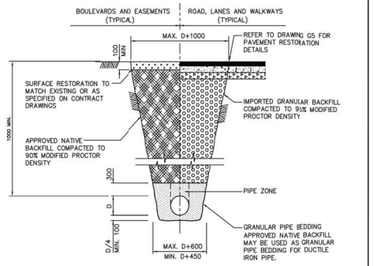
GRAPHIC SCALE
−5 0 5 10
SCALE: 1:250

PROJECT ADDRESS
735 EIGHTH AVENUE
NEW WESTMINSTER, BC
V3M 2R2

CHECK BEFORE YOU DIG
CONTRACTOR SHALL REFER TO DRAWINGS FOR ALL OTHER UTILITIES, SERVICE LOCATIONS, AND DETAILS. THE EXACT LOCATION OF THESE UTILITIES SHALL BE DETERMINED ON SITE. INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

PROJECT: MASSEY THEATRE REDEVELOPMENT – PHASE 1			
DRAWING TITLE: KEYPLAN PRELIMINARY			PROJECT NUMBER: 2230 DWG. NO.: C01
DATE: NOV 30, 2022	SCALE: 1:250	DRAWN: SG	CHECKED: CN

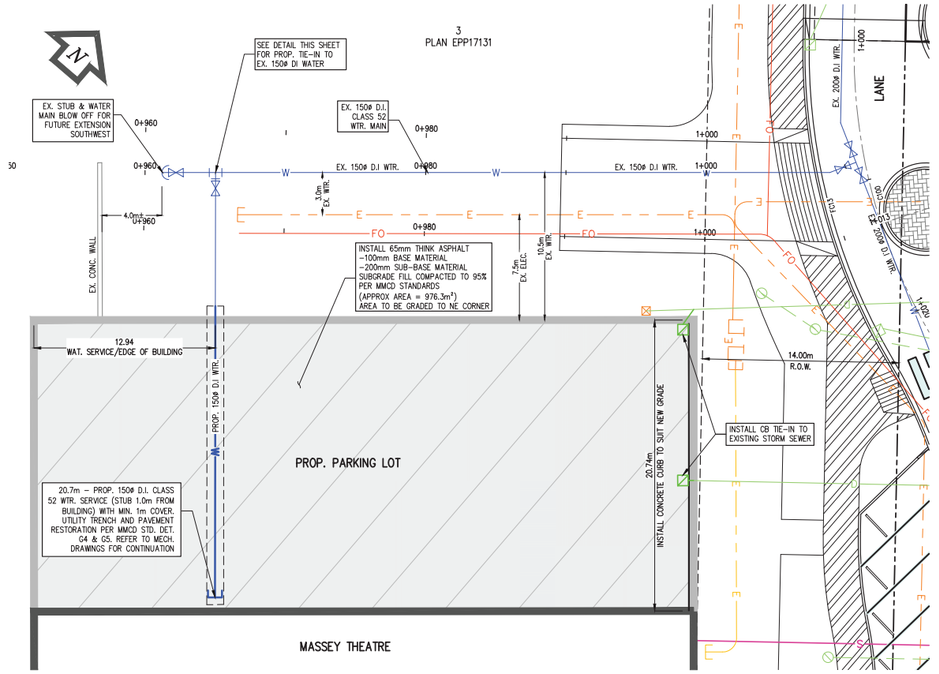
MMCD STANDARD DETAIL DRAWINGS



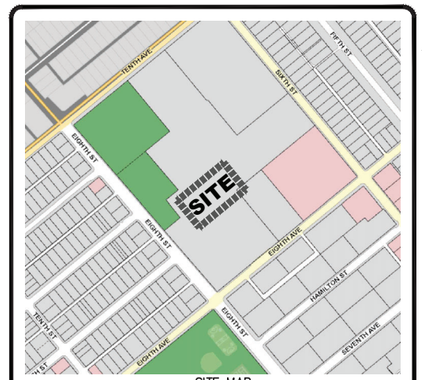
NOTE: 1. TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF WORKSAFE BC.
2. REFER TO CONTRACT DRAWINGS, SECTION 31 23 01 FOR DETAILED SPECIFICATIONS.

NOT TO SCALE

2008 UTILITY TRENCH — DRAWING NUMBER: **G4**



PLAN VIEW
1:200



SITE MAP
N.T.S.

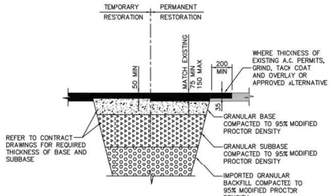
PROSCENIUM
ARCHITECTURE + INTERIORS INC.

1 WEST 7TH AVENUE
VANCOUVER BC V5Y 1L4 CANADA
P604.879.0118
F604.879.1486
www.proscenium.ca

PRELIMINARY DRAWING 22.11.30

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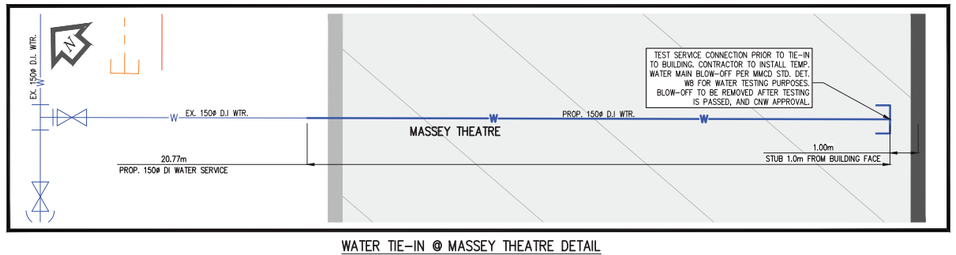
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. REFER TO CONTRACT DRAWINGS, SECTIONS 31 23 01 AND 32 12 16 FOR DETAILED SPECIFICATIONS.

NOT TO SCALE

2008 PAVEMENT RESTORATION — DRAWING NUMBER: **G5**



WATER TIE–IN @ MASSEY THEATRE DETAIL
1:100

CHECK BEFORE YOU DIG

CONTRACTOR SHALL REFER TO DRAWINGS FOR ALL OTHER UTILITIES, SERVICE LOCATIONS, AND DETAILS. THE EXACT LOCATION OF THESE UTILITIES SHALL BE DETERMINED ON SITE. INFORMATION ON EXISTING UTILITIES MAY NOT BE COMPLETE OR ACCURATE. PRIOR TO CONSTRUCTION CONTRACTOR SHALL EXPOSE LOCATIONS OF ALL EXISTING UTILITIES AND ADVISE THE ENGINEER OF POTENTIAL CONFLICTS.

WATER NOTES:

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CORPORATION OF THE CITY OF NEW WESTMINSTER'S SUBDIVISION AND DEVELOPMENT BYLAW NO. 7142. 2007, THE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (MMCD PLATINUM EDITION), SUPPLEMENTAL UPDATES AND STANDARD DETAIL DRAWINGS, UNLESS SPECIFIED OTHERWISE.
2. INFORMATION ON THE DRAWINGS REGARDING EXISTING UTILITIES WAS COMPILED FROM MUNICIPAL RECORD DRAWINGS, CONSTRUCTION DRAWINGS AND FIELD SURVEYS. THIS INFORMATION IS NOT NECESSARILY ACCURATE OR COMPLETE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMMEDIATELY REPORT ANY DISCREPANCIES TO CORE GROUP CONSULTANTS IF REMEDIAL ACTION IS REQUIRED.
3. ALL UTILITIES AND SERVICES CROSSING THE PROPOSED WATERMAIN, AND TIE–IN LOCATIONS SHALL BE LOCATED AND EXPOSED. PRELOCATION SHALL BE DONE IN ADVANCE OF WATERMAIN INSTALLATION WHICH PROVIDES ENOUGH DISTANCE FOR ADJUSTMENT IN LINE AND GRADE TO BE MADE TO SUIT FIELD CONDITIONS. CLAIMS RESULTING FROM THE CONTRACTOR'S FAILURE TO DO SO SHALL BE AT THE CONTRACTOR'S EXPENSE
4. CONTRACTOR SHALL PHOTOGRAPH PRIOR TO CONSTRUCTION, ANY EXISTING FEATURES TO BE DISTURBED. THE CONTRACTOR SHALL RESTORE ALL DISTURBED PAVEMENTS, CURBS, SIDEWALK, LANDSCAPING, FENCES, OR ANY OTHER FEATURES AFFECTED BY THE CONSTRUCTION WORKS TO THE ORIGINAL CONDITION OR BETTER, AND TO THE SATISFACTION OF THE CONSULTANT / CITY.
5. ALL CONSTRUCTION ACTIVITY TO CONFORM TO WorkSafeBC STANDARDS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING BC ONE CALL.
7. CONTRACTOR TO NOTIFY FORTIS BC, TELUS, NEW WESTMINSTER ELECTRICAL DEPARTMENT DIRECTLY, AT LEAST 48 HOURS PRIOR TO WORKING IN AREAS OF THESE EXISTING UTILITIES.
8. THE PROPONENT SHALL BE LIABLE FOR ANY DAMAGES TO MV FACILITIES INCURRING AS A RESULT OF THE PROPOSED WORK.
9. ANY CHANGES TO THE DESIGN MUST BE APPROVED IN WRITING BY CORE GROUP CONSULTANTS AND THE CITY OF NEW WESTMINSTER. FAILURE TO NOTIFY CORE GROUP CONSULTANTS AND THE CITY OF NEW WESTMINSTER IN ADVANCE OF CHANGES MAY RESULT IN REJECTION OF WORK.
10. CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL, WHICH SHALL BE IN ACCORDANCE WITH WorkSafebc, AND TERMS AND CONDITIONS OF ANY MUNICIPAL PERMITS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR WORK WITHIN THE CITY ROAD ALLOWANCE.
12. RESIDENTS DIRECTLY AFFECTED BY CONSTRUCTION SHALL BE GIVEN ONE WEEK WRITTEN NOTICE OF THE START OF CONSTRUCTION. IF CONSTRUCTION ENTERS ONTO PRIVATE PROPERTY, THE CONTRACTOR WILL REQUIRE WRITTEN AUTHORIZATION FROM THE PROPERTY OWNERS.
13. NEW WATERMAIN TIE–IN TO BE COMPLETE BY CNW FORCES
14. CONTRACTOR SHALL SUPPLY ALL MATERIALS AND FITTINGS REQUIRED FOR THE TIE–INS.
15. THE CONTRACTOR SHALL ENSURE THAT ALL SECTIONS OF MAINS HAVE TEST POINTS AND TEMPORARY BLOW–OFFS SUITABLE TO ENSURE ADEQUATE PRESSURE TESTING, CHLORINATION AND FLUSHING.
16. PRESSURE TESTING, CHLORINATION AND FLUSHING PROCEDURES TO CONFORM TO AWWA STANDARDS.
17. DISCHARGE OF CHLORINATED WATER INTO DITCHES, STORM SEWERS OR WATERCOURSES IS STRICTLY PROHIBITED.
18. POLY ENCASE ALL WATERMAIN AS PER ANSI/AWWA C105/A21.5. POLY ENCASED WATERMAIN SHALL BE BEDDED WITH PIT–RUN SAND GRANULAR BEDDING TO 95% MPD. PIPE BEDDING TO BE CLEAN BACKFILL WITH ELECTRICAL RESISTIVITY GREATER THAN 10,000 OHM–CM AND LESS THAN 50PPM CHLORIDE IONS AND LESS THAN 50PPM SULFATE IONS (OR SECHELT SAND).
19. NEW WATERMAIN SHALL MAINTAIN A MINIMUM OF 0.5m VERTICAL SEPARATION AND 3.0m HORIZONTAL SEPARATION FROM ANY SANITARY OR STORM SEWER.
20. WHEN WATERMAIN CANNOT MEET THE ABOVE CRITERIA JOINTS SHALL BE HEAT SHRINK PLASTIC WRAPPED OR PACKED WITH INSER PETROLEUM COMPOUND AND WRAPPED WITH TAPE IN ACCORDANCE WITH ANSI/AWWA STANDARDS C209 AND C217–90. CROSSING SHALL BE MADE MIDWAY ON A FULL LENGTH OF PIPE.
21. LOCATION OF SERVICE CONNECTIONS WERE COMPILED FROM AS–BUILT DRAWINGS AND SERVICE RECORD CARDS. CONTRACTOR TO LOCATE AND VERIFY AS REQUIRED. LOTS WITH MISSING RECORDS SHOWING SERVICE CONNECTIONS ARE ILLUSTRATIVE ONLY; CONTRACTOR TO VERIFY LOCATIONS.
22. ALL JOINT TO BE MECHANICALLY RESTRAINTS.
23. PIPES MAY BE DEFLECTED AT JOINTS TO A MAXIMUM OF HALF THE MANUFACTURER'S RECOMMENDATION ALLOWABLE.
24. ALL NEW WATERMAINS TO BE DUCTILE IRON CLASS 52 CEMENT MORTAR LINED.
25. ALL GATE VALVES TO BE TERMINAL CITY, MUELLER OR CLOW.
26. ALL COUPLINGS TO BE ROMAC ALPHA COUPLING OR APPROVED EQUAL.
27. CONTRACTOR SHALL ACCURATELY RECORD, ON A CURRENT SET OF PLANS, IN A NEAT MANNER, ALL CHANGES AND DELETIONS TO REFLECT THE "AS CONSTRUCTED" INSTALLATION. THIS SET OF PLANS SHALL BE MAINTAINED ON SITE, AND WILL BE REVIEWED PERIODICALLY DURING THE COURSE OF CONSTRUCTION. THIS SET OF PLANS SHALL BE RETURNED TO THE ENGINEER AT THE COMPLETION OF THE WORKS AND PRIOR TO THE ISSUANCE OF SUBSTANTIAL PERFORMANCE.

TESTING:

1. ALL TESTING TO BE PERFORMED BY A CSA OR CQIL (CANADIAN CERTIFIED TESTING LABORATORIES) CERTIFIED LABORATORY.
2. FREQUENCY OF DENSITY TESTS FOR EXCAVATING, TRENCHING AND BACKFILLING SHALL BE ONE TEST PER 50 LINEAL METRES OR TRENCH PER METRE OF DEPTH. MATERIAL TO BE COMPACTED IN 300mm LIFTS.
3. FREQUENCY OF DENSITY TESTS FOR ROADWAY EXCAVATION, EMBANKMENT (SUB–GRADE FILL) AND COMPACTION SHALL BE ONE TEST PER 250m² PER 300mm LIFT.
4. FREQUENCY OF DENSITY TESTS FOR GRANULAR BASE AND SUB–BASE SHALL BE ONE TEST PER 30 LINEAL METRES OF LANE WIDTH STAGGERED EACH SIDE OF CENTRELINE PER 150mm LIFT OR OF SPECIFIED THICKNESS.
5. FREQUENCY OF MARSHALL TESTS FOR HOT–MIX ASPHALT CONCRETE PAVING SHALL BE ONE TEST PER 500 TONNES OF MIX PLACED OR ONE TEST FOR EACH TYPE OF ASPHALT MIX, MINIMUM ONE PER DAY.
6. PRESSURE TESTING, AND BACTERIOLOGICAL TESTING (C/W CHLORINATION) TO BE DONE BY CONTRACTOR PRIOR TO TIE–IN AND ACCEPTANCE BY CITY OF NEW WESTMINSTER. ASSUMED TEST PRESSURE OF 1380 kPa (200 psi). THE CONTRACTOR SHALL TEST ALL WATERMAINS: PRESSURE TEST TO CITY OF NEW WESTMINSTER STANDARDS AND SHALL CHLORINATE AND FLUSH TO MINISTRY OF HEALTH AND AWWA STANDARDS. ALL TESTING IS TO BE WITNESSED BY THE ENGINEER AND THE CITY INSPECTOR. TESTING TO BE APPROVED BY CNW PRIOR TO TIE–IN TO MUNICIPAL WATER SYSTEM.
7. ALL TESTING TO BE DONE AND APPROVED AFTER BACKFILLING PIPE.
8. ALL UTILITY COVERS INCLUDING MANHOLE LIDS, VALVES, CLEANOUTS, AND CB RIMS TO BE ADJUSTED TO SUIT FINISHED GRADES.

GRAPHIC SCALE
–4 0 4 8
SCALE: 1:200

PROJECT ADDRESS
735 EIGHTH AVENUE
NEW WESTMINSTER, BC
V3M 2R2

PROJECT: MASSEY THEATRE REDEVELOPMENT – PHASE 1			
DRAWING TITLE: WATER BUILDING CONNECTION PRELIMINARY			PROJECT NUMBER: 2230; DWG. NO.: C02
DATE: NOV 30, 2022	SCALE: 1:200	DRAWN: MM	CHECKED: CN

APPENDIX V
TIER 1 COST REPORT

City of New Westminster

MASSEY THEATRE REDEVELOPMENT PHASE 1

concept design by: PROSCENIUM Architecture and Interiors

Class D Estimate

January 17, 2023

James Bush & Associates Ltd
Professional Quantity Surveyors
Construction Cost Managers
Value Analysts
LEED Accredited Professional
Green Building Specialist

3722-197th Street
Langley, BC
V3A 1B3

☎604 533 8004
jim@jba.bc.ca
www.jba.bc.ca

CELEBRATING 29 YEARS

SUMMARY OF PROJECT COSTS		PHASE 1 - Tier 1 Upgrades, Addition Option 2			
		JBA Estimate Jan 17, 2023		Heatherbrae CM Estimate Jan 16, 2023	
CONSTRUCTION CLASS D COST ESTIMATE			**$15,270,200**		**$14,326,744**
Div 1	GENERAL CONDITIONS, OVERHEAD & CM FEE	$1,759,400	11.52%	$1,681,444	11.74%
Div 2	EXISTING BUILDINGS (Include GYM Demolition, Hazmat)	$2,119,200	13.88%	$2,419,300	16.89%
Div 2	SITE WORKS, incl. Earthworks, Civil, Landscape	$702,400	4.60%	$792,500	5.53%
Div 3	CONCRETE	$1,089,800	7.14%	$1,047,600	7.31%
Div 4	MASONRY	$91,900	0.60%	$78,000	0.54%
Div 5	METALS	$92,500	0.61%	$124,300	0.87%
Div 6	WOOD, STRUTURE, MILLWORK	$1,503,000	9.84%	$1,316,400	9.19%
Div 7	THERMAL & MOISTURE	$2,683,900	17.58%	$2,862,100	19.98%
Div 8	DOORS & WINDOWS	$599,100	3.92%	$519,000	3.62%
Div 9	FINISHES	$745,200	4.88%	$642,100	4.48%
Div 10	SPECIALTIES	$99,900	0.65%	$69,500	0.49%
Div 11	EQUIPMENT	$25,000	0.16%	$35,000	0.24%
Div 12	FURNISHINGS	$0	0.00%	$23,000	0.16%
Div 14	VERTICAL MOVEMENT	$320,000	2.10%	$275,000	1.92%
Div 15	MECHANICAL SYSTEMS	$780,100	5.11%	$750,000	5.23%
Div 16	ELECTRICAL SYSTEMS	$1,271,400	8.33%	$1,191,500	8.32%
	DESIGN CONTINGENCY 15%	$1,387,400	9.09%	$500,000	3.49%
Reasonable Bid Price - Construction Contract *(JAN 2023 Construction, excl. GST)*			**$15,270,200**		**$14,326,744**
Market Escalation	12 Months	10.0%	**$1,527,000**	10.0%	**$1,432,700**
Construction Contingency (change orders) - Extg Bldg		15.0%	**$2,290,000**	15.0%	**$2,150,000**
TOTAL PROJECT COST:			**$19,087,200**		**$17,909,444**
THEATRE & PERFORMANCE EQUIPMENT			**$0**		**$0**
	PERFORMANCE LIGHTING SYSTEMS	Not In Scope		Not In Scope	
	STAGE RIGGING (MOTORIZED)	Not In Scope		Not In Scope	
	SEATING, PLATFORMS	Not In Scope		Not In Scope	
	SOUND, VIDEO & COMMUNICATIONS	Not In Scope		Not In Scope	
Soft Costs:			**$0**		**$0**
General Fittings, Furnishings & Equipment (FF&E)		By Others		By Others	
Offsite Costs		Existing		Existing	
General Soft Costs					
	Consultant Fees & Expenses	$0		$0	
	Development Cost Charges/DCL/Building Permits	$0		$0	
	Project Mngmt & Testing	$0		$0	
	Owners Project Admin Costs	$0		$0	
	Goods & Services Tax - 100% Rebate for Municipality	$0		$0	

SEPARATE PRICES		
Opiton 1 - Keep Existing Electrical Equipment in Existing Elect Room	to be determined	to be determined
Option 3 - Outdoor Electric Substation	to be determined	to be determined
Teir 2 Grandfathered Conditons	Not Included	Not Included
Tier 3 Optimized Art Centre	Not Included	Not Included

City of New Westminster January 17, 2023

MASSEY THEATRE REDEVELOPMENT PHASE 1

concept design by: PROSCENIUM Architecture and Interiors

TRADE COST SUMMARY		JBA Class D Estimate - Jan 17/2023		Variance (HB to JBA)		Heatherbrae CM - Jan 16/2023	
DIV 1 - GENERAL CONDITIONS		**1,759,400**		**(77,956)**	**-5%**	**1,681,444**	
1000	General Conditions	**1,013,500**				**808,075**	
1010	CM FEE	**670,900**				**679,369**	
1050	Temporary Protection	**75,000**				**94,000**	
1300	Allowances	**0**				**100,000**	Archeological
DIV 2 - SITEWORK, EARTHWORK		**2,821,600**		**390,200**	**12%**	**3,211,800**	
2000	Building Demolition (incl. Hazmat)	**1,370,900**	Incl. Hazmat for Gym			**1,200,000**	GYM DEMO
2150	Asbestos & Hazardous Materials (Renov)	**167,800**				**505,000**	
2180	Selective Demolition	**580,500**				**714,300**	
	Scaffold/Shrinkwrap	**206,200**				**203,000**	
2200	Earthworks, Excavation & Backfill	**266,700**				**340,900**	
2650	Parking Asphalt & Curbs	**102,000**				**116,600**	
2750	Site Paving, Sidewalks					**79,500**	
2780	Hard Landscaping, Fencing						
2900	Furniture - Flag Pole, Benches, Bike Racks						
2800	Soft Landscaping, Planting	**35,000**				**22,500**	
2300	Civil Serivces - Water, Storm, Sanitary	**62,500**				**30,000**	
2500	Site Electrical	**30,000**	Parking Lot Lighting				
DIV 3 - CONCRETE		**1,089,800**		**(42,200)**	**-4%**	**1,047,600**	
3100	North Addition	**930,900**				**963,700**	
3200	Interior Elevator	**20,000**				**23,300**	
3300	Interior Ramp	**33,000**				**8,400**	
3950	West Foudation	**105,900**	Underpinning			**52,200**	
DIV 4 - MASONRY		**91,900**		**(13,900)**	**-18%**	**78,000**	
4100	Masonry & Brickwork	**91,900**				**78,000**	
DIV 5 - METALS		**92,500**		**31,800**	**26%**	**124,300**	
5100	Structural Steel, Metal Deck supply & erect						
5500	Miscellaneous Metals	**92,500**				**124,300**	
DIV 6 - WOOD		**1,503,000**		**(186,600)**	**-14%**	**1,316,400**	
6100	Addition	**132,600**	Steel			**25,300**	Wood
6200	Wall Upgrade	**441,800**				**434,600**	
6300	Roof Truss / FRP	**286,500**				**200,500**	
6400	Roof Framing/Sheathing	**581,300**				**493,500**	
6500	Rough Carpentry	**15,800**	Incl. Rot Remediation			**87,500**	
6600	Finish Carpentry/Millwork	**45,000**				**75,000**	
DIV 7 - THERMAL & MOISTURE		**2,683,900**		**178,200**	**6%**	**2,862,100**	
7150	Damproofing	**11,900**				**21,300**	
7200	Building Insulation					**28,800**	
7400	Fibre Cement Cladding/Stucco	**1,038,500**				**1,330,000**	
7500	Membrane Roofing	**1,633,500**				**1,452,000**	
7600	Fire Stopping					**10,000**	
7700	Sealants					**20,000**	
DIV 8 - DOORS & WINDOWS		**599,100**		**(80,100)**	**-15%**	**519,000**	
8100	Doors & Frames (Supply) Metal/Wood	**65,700**				**51,500**	
8300	Special Doors	**15,000**				**11,000**	
8500	Aluminum Windows & Glazing, Mirrors	**474,400**				**378,400**	
8700	Door Hardware	**44,000**				**78,100**	
DIV 9 - FINISHES		**745,200**		**(103,100)**	**-16%**	**642,100**	
9100	Drywall & steel studs, ACT, Acoustics	**460,100**				**411,900**	
9300	Ceramic Tile, Pool Tiling, Topping	**76,600**				**40,900**	
9550	Resilient Flooring & Base	**84,100**				**45,300**	
9900	Painting & Special Coatings	**124,400**				**144,000**	
DIV 10 - SPECIALTIES		**99,900**		**(30,400)**	**-44%**	**69,500**	
10100	Whiteboards						
10160	Toilet partitions & WC Accessories	**92,400**				**67,000**	
10950	Miscellaneous Specialties	**7,500**				**2,500**	
DIV 11- EQUIPMENT		**25,000**		**10,000**	**29%**	**35,000**	
11300	Signage	**25,000**				**35,000**	Incl. Firesafety Plan
11900	Projection Screens, Monitor Mounts						
DIV 12- FURNISHINGS		**0**		**23,000**	**100%**	**23,000**	
12100	Furniture						
12700	Window Coverings	**0**				**23,000**	
DIV 13 - SPECIAL CONSTRUCTION		**0**				**0**	
DIV 14 - ELEVATORS & ESCALATORS		**320,000**		**(45,000)**	**-16%**	**275,000**	
DIV 15 - MECHANICAL		**780,100**		**(30,100)**	**-4%**	**750,000**	
DIV 16 - ELECTRICAL		**1,271,400**		**(79,900)**	**-7%**	**1,191,500**	
DESIGN CONTINGENCY		**1,387,400**		**(887,400)**	**-177%**	**500,000**	
OFFSITE WORKS							
COST ESCALATION		**See Main Summary**				**0**	
TOTAL REASONABLE BID PRICE (EXCL. GST)		**$15,270,200**		**($943,456)**	**-7%**	**$14,326,744**	

Class D Estimate
Comparison to CM Estimate

JBA QS

MASSEY THEATRE REDEVELOPMENT PHASE 1

concept design by: PROSCENIUM Architecture and Interiors

ELEMENTAL COST SUMMARY	PHASE 1 - Tier 1 Upgrades, Addition Option 2			
	Element Cost			
Element	Quantity	Unit Rate	Sub-total	Total Cost
1. DIV 2 - SITEWORK / Existing Building				**2,676,400**
Selective Demol & Alteration Work		Item	580,500	
Temp Weather Protection & Exterior Hoardings		Item	281,200	
Asbestos & Lead Paint Remediation		Item	642,000	
Building Demolition - Existing Gymnasium		Item	896,700	
Site Development & Landscaping		Item	213,500	
Civil Services		Item	62,500	
2. STRUCTURE				**2,768,000**
Foundations		Item	777,200	
Slab Construction		Item	1,416,400	
Structural & Seismic Wall Upgrading		Item	574,400	
3. EXTERIOR CLADDING				**3,208,300**
Roofing		Item	1,633,500	
Exterior Walls & Doors		Item	1,100,400	
Windows & Curtainwalls		Item	474,400	
Canopies		Item	0	
4. INTERIOR PARTITIONS				**528,100**
(a) Permanent partitions - Demising & Privacy	934 m2	485.70	453,400	
(b) Glazed Windows		Item	0	
(d) Interior Doors	15 Lvs	4,980.00	74,700	
5. VERTICAL MOVEMENT				**374,000**
(a) Stairs		Item	54,000	
(b) Elevators		Item	320,000	
6. INTERIOR FINISHES				**383,700**
(a) Floor finishes	866 m2	123.69	107,100	
(b) Ceiling finishes	696 m2	141.69	98,600	
(c) Wall finishes	3,062 m2	58.12	178,000	
7. FITTINGS & EQUIPMENT				**208,400**
(a) Millwork		Item	45,000	
(b) WC Specialties		Item	92,400	
(c) Specialties		Item	7,500	
(d) Miscell Metals		Item	38,500	
(e) Signage		Item	25,000	
(f) Equipment - Loading/Bar Equip		Item	0	
8. ELECTRICAL	6,698 m2	189.82		**1,271,400**
(a) Service & Distribution	6,698 m2	136.00	910,900	
(b) Lighting	6,698 m2	26.58	178,000	
(c.1) Power	6,698 m2	4.63	31,000	
(c.2) Theatrical Systems	6,698 m2	0.00	0	
(d) Fire Alarm	6,698 m2	12.91	86,500	
(f) Tel / Data	6,698 m2	5.23	35,000	
(e) Security	6,698 m2	4.48	30,000	
(d) PA Systems /AV System	6,698 m2	0.00	0	
9.. MECHANICAL	6,698 m2	116.47		**780,100**
(a) Plumbing & drainage	6,698 m2	69.59	466,100	
(b) Fire protection	6,698 m2	13.14	88,000	
(c) HVAC	6,698 m2	28.52	191,000	
(d) Controls	6,698 m2	5.23	35,000	
GENERAL CONDITIONS, OVERHEAD & FEE				**1,684,400**
(a) General Conditions			1,013,500	
(b) CM Fee			670,900	
12. CASH ALLOWANCES				**0**
DESIGN CONTINGENCY			15%	**1,387,400**
NET BUILDING COST	6,698 **m2**		$2,279.85	**$15,270,200**

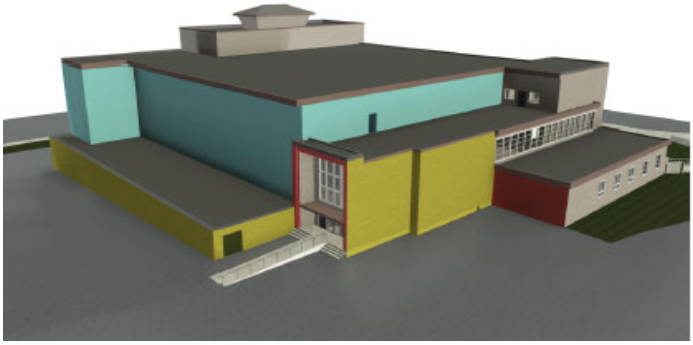
CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

RENOVATION & FITOUT AREA SUMMARY		
Basement Level	10	m2
MTS Office for corridor	10	m2
Elevator (2 Stop)		
Main Level 1	308	m2
Gender Neutral Washroom	78	m2
Universal Wrm (4 No.)	22	m2
Offices (2 No.)	70	m2
Storage (2 rms)	54	m2
Corridor	24	m2
Handicapped Access Ramp (Studio 1A)	60	m2
Elevator (3 stop)		
UpperLevel 2	0	m2
Upper Level 3	0	m2
TOTAL RENOVATION AREAS	**318**	**m2**

EXISTING BUILDING GROSS FLOOR AREAS	
Lower Basement (excl. crawlspace)	1,427 m2
Main Level 1	3,211 m2
Upper Floor Level 2	1,071 m2
Upper Floor Level 3	527 m2
TOTAL FLOOR AREA - extg bldg	**6,236 m2**

NEW BUILDING ADDITION AREAS	
Basement - Elec/Storage Addition	376 m2
Stair/Elevator - 2 levels	86 m2
TOTAL NEW BUILDING ADDITION	**462 m2**

EXISTING BUILDING DEMOLITION - GYMNASIUM	
Basement	1,465 m2
Gym Level	1,210 m2
Upper Level	384 m2
TOTAL SLAB DEMOL	**3,059 m2**





1. Existing Buildings & Site Work — $2,676,400

Selective Demolition Works					$580,500
Structural & Selective Demolition					$5,000
Demol basement slab on grade demolition - elevator			Item	5,000	
Exterior Envelope Demoltion - Walls					$311,200
Remove exterior finish and sheathing for Structural Reconstruction	1,389	m2	175.00	243,100	
Remove windows, glazed entrances	277	m2	210.00	58,100	
Remove existing doors	10	Lvs	1,000.00	10,000	
Interior Demolition	1,465	m2			$264,300
Remove exterior finishes etc GYM wall	620	m2	140.00	86,800	
Demolish and Tear out existing finishes, partitions, doors at bsmnt entry	10	m2	Item	7,500	
Demolish and Tear out existing finishes, partitions, doors etc for ramp	60	m2	Item	25,000	
Demolsih Gym pocket walls			Item	10,000	
Demolish and Tear out existing finishes, partitions, doors etc for Washroom	100	m2	350.00	35,000	
Miscellaneous Demolition			Item	25,000	
Cleanup, dust control during demol, sweeping	4	Mths	15,000.00	60,000	
Disposal bins for general cleanup - incl. Trucking & dump	20	No.	Item	15,000	

CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

Temp Weather Protection & Exterior Hoardings						$281,200
Hoarding & Temporary Protection & Access - Hoard off Site						
• Temporary Construction Access to building				Item	25,000	
• Temporary Construction Fence/Security screen		250	m	Item	50,000	
Allowance for Premium / after hours work (demol/cutting/coring etc.)					Not Included	
Scaffold walls for remediation incl. return at top for parapet protection		917	m2	110.00	100,800	
Shrink wrap walls		917	m2	60.00	55,000	
Temporary Weather protection - ROOF during re-roofing (assume temp tarps & measures, re-roofing done during good weather)		3,359	m2	15.00	50,400	
Asbestos Removal & Lead Paint Remediation						$642,000
GYM DEMOLITION						
Asbestos Removal - Finishes, Mech Duct/Pipe	GYM	3,059	m2	120.00	367,100	
Lead abatement	GYM	3,059	m2	35.00	107,100	
Existing Building due to Renovations						
Interior renovated space		318	m2	200.00	63,600	
Exterior Envelope - Walls		1,389	m2	75.00	104,200	
Building Demolition - Existing Gymnasium						$896,700
GYM Building demoltion	GYM	3,059	m2	225.00	688,300	
Foundation removal					remain	
Infil foundations and slab to new paving base level ~1.2m import		1,878	m3	95.00	178,400	
Protect underground electrical service				Item	30,000	
Site Development						$213,500
Parking Area		978	m2			
Granular base - supply		293	m3	75.00	22,000	
Compact and grade parking		978	m2	25.00	24,500	
65mm Asphalt paving		978	m2	85.00	83,100	
Concrete curb		21	m	185.00	3,900	
Make good/transitition all existing grades				Item	15,000	
Parking Lot lighting				Item	30,000	
Landscaping						
Make good all landscaping disturbed around building due to recladding				Item	35,000	
Civil Services						$62,500
Water Main						
150mm dia DI water main		21	m	300.00	6,300	
Tie in to existing water main incl. Tee/Valve				Item	8,000	
Testing, disinfecting				Item	2,500	
Storm Drainage						
New Catch Basin		2	No.	6,500.00	13,000	
100mm catchbasin lead		25	m	250.00	6,300	
Tie into existing stoarm main		2	No.	Item	5,000	
Civil Work/Treanching						
Sawcutting pavement for trenching/tie in		42	m	90.00	3,800	
Tranching		46	m	185.00	8,500	
Backfilling		46	m	90.00	4,100	
Make good paving etc.				Item	5,000	

CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

2. STRUCTURE						**$2,768,000**
FOUNDATIONS						$777,200
Earthworks						$220,200
Earthworks - small machine - Underpinning in sections	66 m	95	m3	350.00	33,300	
Import - backfill Supply		48	m3	120.00	5,700	
Material handling, cpmpaction		95	m3	95.00	9,000	
Trucking & Disposal		95	m3	95.00	9,000	
ESC, barricades, flagging					8,600	
Addition:						
Bulk excavation to basement (existg gym)		376	m3	185.00	69,500	
Shoring excavations					0	
Detailed excavation footings		82	m2	125.00	10,200	
Import and backfilling		29	m3	78.00	2,300	
Slab base		94	m3	78.00	7,300	
Compact and grade slab base		376	m2	25.00	9,400	
Trucking & Disposal		376	m3	95.00	35,700	
ESC, barricades, flagging					20,200	
Soils Anchors						$0
Concrete Work - UNDERPINNING FOUNDATIONS						$105,900
Underpinning Existing foundations (from exterior)	66 m	48	m3	1,700.00	80,800	
Drilled and expoxy anchors		440	No.	40.00	17,600	
Clean off existing foundation		79	Hrs	Item	7,500	
Concrete Work - ADDITION						$431,100
Strip footings	73 m	53	m3	1,350.00	71,000	
Pad footings	3 No.	10	m3	1,350.00	14,000	
Elevator Pit				Item	15,000	
Foundation wall (incl. interior walls)		402	m2	700.00	281,100	
Tie into existing				Item	10,000	
Electrical housekeeping pads/under ducts/pits etc for HV equipment				Item	40,000	
Concrete Work - INTERIOR						$20,000
Shearwall Strip footings					See Underpinning	
Elevator pad/foundation/pit in existing		1	No.	20,000.00	20,000	
SLAB CONSTRUCTION						$1,416,400
ADDITION						$499,800
New SOG to addition		376	m2	270.00	101,500	
Suspended Slab Addition		86	m2	725.00	62,400	
Stairs construction		3	Flt	Item	54,000	
Roof Slab incl. slab band		376	m2	750.00	281,900	
EXISTING ROOF UPGRADING						$867,800
Resheath existign roof structucture		2,539	m2	68.00	172,700	
Upgrade existing roof structure for snow load, add joists etc, new plywood		820	m2	375.00	307,500	
Upgrade heavy timber roof with steel plates/long screws		762	m2	250.00	190,500	
Upgrade existing roof beams with FRP	5 No.	38	m	2,500.00	96,000	
Reconstruct parapet/perimeter		443	m	200.00	88,600	
Wall/roof junction, cant & blocking		156	m	80.00	12,500	
INTERIOR						$48,800
New ramp construction, build up on existing floor		60	m2	550.00	33,000	
Joist infil with plywood (gym wall recess)		9	m2	700.00	6,300	
Rot Remediation						
Allowance for reconstruction of walls affected by rot		10	m2	700.00	7,000	
Rot remediation, demol, cleanup, mould treatment				Item	2,500	

CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

STRUCTURAL & SEISMIC WALL UPGRADING					$574,400
ADDITION					$132,600
concrete Walls	204	m2	650.00	132,600	
EXISTING WALLS - Seismic Upgrading					$441,800
Reconstruct GYM wall where removed, incl. column, 1/2 plywood, hold downs	620	m2	525.00	325,500	
New 38x140 stud wall, 1/2" plywood	148	m2	300.00	44,500	
Rot Remediation					
Allowance for reconstruction of walls affected by rot	234	m2	200.00	46,800	
Rot remediation, demol, cleanup, mould treatment			Item	25,000	
3. EXTERIOR ENVELOPE					**$3,208,300**
ROOFING					$1,633,500
ADDITION					$144,100
New roof to Addition	376	m2	325.00	122,200	
Perimter flashing, upstand	72	m	180.00	13,000	
Flashing to wall	61	m	130.00	7,900	
Fall protection			Item	1,000	
RE-ROOFING					$1,489,400
Remove existing roofing	3,359	m2	45.00	151,200	
Deconstruct perimeter, parapets etc	443	m	105.00	46,500	
New roofing	3,359	m2	325.00	1,091,700	
Stage Roof Vents				existing	
Fall protection			Item	50,000	
New parapet/fascia flashing	443	m	180.00	79,700	
Flashing to wall	156	m	130.00	20,300	
Re/re existign Mechanical equipment/vents etc			Item	50,000	
EXTERIOR WALLS & DOORS					$1,100,400
Waterproofing new basement walls	99	m2	120.00	11,900	
Rainscreen cladding - STUCCO, insulation - ADDITION	507	m2	525.00	265,900	
Rainscreen cladding - STUCCO, insulation - EXISTING	1,042	m2	525.00	546,900	
Rainscreen cladding - CEMENT PANEL, insulation - EXISTING	347	m2	650.00	225,700	
	1,896	m2			
Doors					
Large - Loading Door	2	No.	7,500.00	15,000	
Hollow Metal Doors/Frames, Hardware	10	Lvs	3,500.00	35,000	
WINDOWS, CURTAINWALLS					$474,400
Windows - replacement	198	m2	1,500.00	296,300	
Curtainwall	79	m2	1,500.00	118,500	
Entry door - glazed entry, auto operator	2	Pair	Item	23,600	
Entry door - glazed entry/with sidelights, auto operator	2	Pair	Item	36,000	
CANOPIES					$0

CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

4. INTERIOR CONSTRUCTION						**$1,494,200**
Partitions, Walls and Doors						$528,100
Partitions and Walls		934	m2	485.70		$453,400
Masonry Walls		105	m2	400.00	42,000	
Masonry Walls - Elevator in existing		125	m2	400.00	49,900	
Metal Stud and Drywall Demising - rated, wall, to u/s structure		613	m2	400.00	245,000	
Metal Stud and Drywall partition		91	m2	310.00	28,300	
Drywall, furring to inside of exterior/reconstructed walls		972	m2	65.00	63,200	
Remedial tie into existing and make good			Item		25,000	
Glazed Windows						$0
Interior Doors		15	Lvs	4,980.00		$74,700
Interior doors - incl. frames/door/install/painting/hardware						
• Single		14	No.	4,800.00	67,200	
• Double		1	Set	7,500.00	7,500	
Stairs & Elevators						$374,000
Stairs						$54,000
New stairs (Exit Back of house) - Finishes/Handrails		3	Flight	15,000.00	45,000	
Steps on grade		1	Flt	9,000.00	9,000	
Miscell ladders						
Elevators						$320,000
Passenger elevator	2 stops		Item		100,000	
Passenger elevator	4 stops		Item		220,000	
Finishes						$383,700
FLOOR FINISHES		866	m2	123.69		$107,100
Sealed concrete		462	m2	35.00	16,200	
Carpet		70	m2	130.00	9,100	
Sheet vinyl		234	m2	125.00	29,300	
Ceramic/Porcelain tile		100	m2	230.00	23,000	
Remedial work to existing finishes disturbed during construction				Item	25,000	
Base				Item	4,500	
CEILINGS		696	m2	141.69		$98,600
ACT		304	m2	130.00	39,500	
Drywall, painted		234	m2	210.00	49,100	
Unfinished		462	m2		0	
Re/re existing ceilings due to serivces					10,000	
WALL FINISHES		3,062	m2	58.12		$178,000
Painting		2,839	m2	35.00	99,400	
Ceramic/Porcelain Tile		223	m2	240.00	53,600	
Reinstate finishes due to Seismic Upgrade				Item	25,000	

CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

Fittings and Equipment					$208,400
MILLWORK	10	m2	4,500.00		$45,000
Vanities	10	m	3,500.00	35,000	
Back of House, incl. circ			Item	10,000	
WC & Shower Accessories					$92,400
WC Accessories	19	Set	2,100.00	39,900	
WC Partitions - Gender Neutral	15	Set	3,500.00	52,500	
Shower Partitions/Accessories				0	
Specialties					$7,500
Access Panels covers			Item	2,500	
Caulking & Sealants			Item	5,000	
Miscellaneous Metals					$38,500
Miscell metals			Item	25,000	
Ramp railing	30	m	450.00	13,500	
Signage - Wayfinding					$25,000
EQUIPMENT					$0
Loading Dock			Item	existing	

CONSTRUCTION COST ESTIMATE | **PHASE 1 - Tier 1 Upgrades, Addition Option 2**

5. Electrical — $1,271,400

Power Service & Distribution					$910,900
Main HV Distribution, Feeders etc.				777,000	
Incoming Hydro Duct (4x103)	60	m	Item	36,000	
Reroute existing u/g feeders			Item	25,000	
Hydro Fee (incl. HV feeder to new Elec Vault)			Item	75,000	
1000Kva Transformer (25kv/12.47kv dual winding)	1	No.	Item	220,000	
Install in new Main HV Room, connect to feeder from HV Elect Rm			Item	40,000	
Transformers			Item	50,000	
New LV Distribution Centre	1	No.	Item	75,000	
Bus Feeder from Transformer			Item	25,000	
Vibration isolation mounts/seismic restraint all equipment			Item	25,000	
Conduits for feeders from LV Panel to existing panels			Item	60,000	
Feeders connect from LV Panel to extg Panels/Loads			Item	96,000	
Shut downs and tie in's			Item	50,000	
Distribution, Mechanical Loads				59,600	
House Panelboards (incl. in addition)	2	No.	6,800.00	13,600	
Feeders from LV to new Panelboards	2	No,	7,500.00	15,000	
Elevator Feeder, disconnect etc incl. sump	2	No.	Item	19,000	
Connections & MCC's for Mechanical Equipment - Existing Equipment				existing	
New Mechanical equipment feeders & disconnects- Addition			Item	12,000	
Emergency Generators				0	
Demolition and Removals				74,300	
Demolition and removal of existing HV switchgear, Transformers, Wiring			Item	60,000	
Demol/removal, disconnect redundant dvcs, fxts, ccts in renovated areas	318	m2	45.00	14,300	
Lighting					$178,000
GN Washrooms	100	m2	300.00	30,000	
Back of House, incl. circ, offices	218	m2	220.00	48,000	
Service Areas	462	m2	130.00	60,000	
Upgrade Exit Signs in extg		Item		40,000	
Power Outlets					$31,000
GN Washrooms	100	m2	50.00	5,000	
Back of House, incl. circ, offices	218	m2	45.00	9,800	
Service Areas	462	m2	35.00	16,200	
Theatrical Systems					$0
Performance Lighting - Conduit & Circuits to Grid					
Rigging - Conduit & Circuits to Grid					
Performance Sound - Power Wiring to equipment					
Div 16 Contract installation Lighting/Dimmer/Sound Equipment					
Fire Alarm	6,236	m2	35.00		$86,500
Addition	462	m2	25.00	11,500	
New Annunuicator				15,000	
Re/re due to renovations	318	m2	21.00	6,700	
Revisions to existing zones	5,918	m2	9.00	53,300	
Telephone & Data	6,236	m2			$35,000
Security	6,236	m2			$30,000
AV Systems,, PA, Clocks Etc	6,236	m2			$0

CONSTRUCTION COST ESTIMATE — PHASE 1 - Tier 1 Upgrades, Addition Option 2

6. MECHANICAL					**$780,100**
Plumbing & Drainage					$466,100
Existing					
Buried Piping rework encountered during excavations			Item	5,000	
Re/re existing for Seismic Upgrade			Item	10,000	
Water Entry to be relocated to new Addition			Item	15,000	
New water entry tree (BFP/PRV/Meters/Valves etc)	2	Sets	Item	40,000	
Connect new water main to existing			Item	15,000	
Plumbing Pipework					
Footing drains - addition incl. sumps/pumps etc			Item	20,000	
Roof Drainage - addition	376	m2	45.00	16,900	
Roof Drainage - existing, replace drains	20	No.	1,500.00	30,000	
New DWT			Item	12,000	
DCW/DHW recirc main, incl. pumps, valves insulation etc (to new Wrms)			Item	15,000	
DCW lead to fixtures, in stop valves	23	Fxt	700.00	16,100	
DCW/DHW lead to fixtures, in stop valves & insulation	15	Fxt	1,650.00	24,800	
Sanitary waste & Vent piping	44	Fxt	1,100.00	48,400	
Under slab piping (basement)			Item	5,000	
Elevator sump pit incl. pump	2	No.	6,500.00	13,000	
Sump drainage connections	2	No.	Item	12,000	
Fixtures					
WC	19	No.	4,350.00	82,700	
LAV - public	10	No.	5,500.00	55,000	
LAV = BOH	4	No.	3,400.00	13,600	
Sinks, Janitor	1	No.	3,450.00	3,500	
Showers		No.	4,500.00	0	
Hose bibs	4	No.	900.00	3,600	
Floor drains	10	No.	950.00	9,500	
Sprinklers					$88,000
Re/re sprinkler system to new areas	376	m2	54.00	20,300	
Re/re sprinkler system to renovated areas	318	m2	40.00	12,700	
Connect new sprinkler main to existing			Item	25,000	
New Simese Fire Department Connection, incl. new line in extg	75	m	Item	30,000	
HVAC					$191,000
HVAC to Addition	376	m2	250.00	94,000	
New ERV for Washrooms	100	m2	Item	75,000	
New Unit for Corridor/office ventilation				Tier 2	
Ductwork	100	m2	220.00	22,000	
Boiler Replacement			Separate Project - Tier 2		
Replace existing Roof Top AHU's			Separate Project - Tier 2		
Stage Smoke Exhaust Repalcement			Separate Project - Tier 2		
Replace Hydronic Pumps			Separate Project - Tier 2		
Controls					$35,000
DDC controls	694	m2		35,000	
GENERAL CONDITIONS, OVERHEAD & FEE				14%	**$1,684,400**
Direct Site Overhead *(office, privies, general expense)*				434,000	
Superintendent, foreman, full-time supervision				335,500	
Insurance, Bonding & Permits				244,000	
Construction Manager Fee or Contractor Mark-up/Profit				670,900	
Design Contingency	10%				**$1,387,400**
TOTAL CONSTRUCTION					**$15,270,200**

HEATHERBRAE BUILDERS CO. LTD.
#140 - 12371 HORSESHOE WAY RICHMOND BC V7A 4X6
T: 604.277.2315 F: 604 277.2311 heatherbrae.com

January 16, 2023

Massey Theatre Opinion of Probable Cost - Summary

Code	Description		Tier 1	Comments
	Summary			
	Division 1		$ 808,075.00	
	Division 2 to 16		$ 12,339,300.00	
	Sub-Total		$ 13,147,375.00	
	Design Development Contingency		$ 500,000.00	
	Sub-Total		$ 13,647,375.00	
	Pre-construction Fee		$ 22,000.00	
	Management Fee	5.0%	$ 657,368.75	
	Total		$ 14,326,743.75	

Items Not Included

G.S.T,
Bonding
Wrap-up Gen Liability Insurance Policy & All-Risk Insurance
Overtime, evening or Weekend work
No allowance for work shut-downs due to theatre operations
Underpinning
Audio Visual / Sound Systems or Equipment
PA Systems
Data / IT

Massey Theatre - TIER 1
GENERAL CONDITIONS BUDGET BREAKDOWN

		Months
		15
Description	**Comments**	**Tier 1 Totals**
Project Manager	monthly	$ 37,500.00
Project Superintendent	monthly	$ 210,000.00
Project Coordinator	monthly	$ 15,000.00
Construction Safety Officer	monthly	$ 127,500.00
Mobilization / Demobilization	LS	$ 5,000.00
Temporary Buildings	monthly	$ 22,500.00
Sanitary Facilities	monthly	$ 6,750.00
Office supplies and equipment	LS	$ 2,250.00
Office furnishings	LS	$ 2,500.00
Computers, radios, telephones and cells	monthly	$ 3,750.00
First Aid supplies and equipment	monthly	$ 3,750.00
Couriers and mail	monthly	$ 1,500.00
Cartage, delivery and demurrage	month	$ 1,500.00
Progress photographs (incl. description and cataloguing)	Not Applicable	$ -
Plans and printing	Allowance	$ 5,000.00
Electronic document posting	Included in Fee	$ -
Site Security (Set-up Alarm & Cameras with monitoring)	8 months	$ 34,000.00
Security Guards for Fire watch	Allowance	$ 10,000.00
Inspections and Testing	Material testing by owner	$ -
On-going cleanup and finish protection	monthly	$ 129,000.00
Waste disposal containers / recycling	monthly	$ 22,500.00
Small tools and consumables	LS	$ 2,500.00
Warning / Safety signs / Site Safety Plans	LS	$ 1,500.00
Temporary fencing, hoarding and protection	LS	$ 8,575.00
Temporary hoarding and dust protection	LS	$ 15,000.00
Ladders, barricades and fall protection	By Trades	$ -
Temporary access	By Trades	$ -
Final cleanup	LS	$ 17,000.00
Legal and professional services	Included in Fee	$ -
Close-out Manuals, As-Builts	LS	$ 5,000.00
Warranty and Deficiency Repairs	LS	$ 2,500.00
Temp. Power distribution	LS	$ 10,000.00
Temp. Water	Existing	$ 5,000.00
Temp. Lighting		$ 2,500.00
Temp. Weather Protection	Allowance	$ 25,000.00
Hoists, cranes and forklifts	By trades	$ -
Vehicles	monthly	$ 18,000.00
Fire Safety Plan - Updated	LS	$ 7,500.00
Equipment Rental	LS	$ 5,000.00
Commercial Gen. Liability (Does Not include Wrap-Up)	LS	$ 43,000.00
TOTALS		$ 808,075.00

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January 16, 2023

Massey Theatre - TIER 1

Code	Description	Contractor	Quantity	Unit	TOTAL	Comments / Assumptions
General Requirements						
00100	General Requirements	See Summary	1.00	LS	-	
Total Division 1					-	
Divison 2						
	Site Services				-	
	Civil - Sanitary		1.00	LS	10,000.00	
	Civil - Storm		1.00	LS	10,000.00	
	Civil - Parking Lot Lighting set bases and trenching		1.00	LS	10,000.00	
	Hazardous Material Testing		1.00	LS	5,000.00	
	Hazardous material Abatement		1.00	LS	500,000.00	Included below
	Temporary Weather Protection over Electrical Room		1.00	LS	16,500.00	
	Temporary Protection to Ext Gym Wall		1.00	LS	27,500.00	
	Temporary Weather Protection to Roofs		1.00	LS	50,000.00	
	Saw-cut Tunnel Connection		1.00	LS	11,000.00	
	Gym Demolition		1.00	LS	1,200,000.00	
	Demolition Existing Electrical Room		1.00	LS	11,000.00	
	Interior Demolition - Architectural		1.00	LS	165,600.00	
	Demolition of Finishes for M&E trades		1.00	LS	50,000.00	
	Cutting,Coring & Scanning		1.00	LS	25,000.00	
	Demolition Envelope Work		1.00	LS	424,200.00	
	Boom Lift access - Demolition Work		1.00	LS	27,500.00	
	Scaffold access - Envelope Work		1.00	LS	153,000.00	
	Shrinkwrap Rain Hood & Scaffnet		1.00	LS	50,000.00	
	Archeological consultant & Additional Machine time for Excavat		1.00	LS	100,000.00	
	Sitework Clearing & Demolition		1.00	LS	50,000.00	
	GL 2 Excavation to upgrade footings		1.00	LS	25,000.00	
	Excavation - Addition		678	m3	71,500.00	
	Detail Excavation - Under SOG Addition		1.00	LS	21,400.00	
	Backfill - Addition - Under SOG and Perimeter		281	m3	35,000.00	
	Backfill - Addition - Existing Electrical Room		1.00	LS	13,200.00	Done after new electrical Distribution is up and running
	Elevator Sumps		1.00	LS	10,000.00	
	Excavation & Backfill - West Foundation		104.0	m3	17,200.00	
	Excavation & Backfill - Electrical Trench		1.00	LS	22,000.00	
	Excavation & Backfill - Mechanical Trench		1.00	LS	50,000.00	
	Backfill - West Foundation		104.0	m3	15,600.00	
	Footing Drains		1.00	LS	10,000.00	
	Parking Lot Base & Sub-Base Gravel		270.00	m3	40,500.00	
	Asphalt Paving		1,800	SM	67,800.00	
	Parking Lot - Line Painting		1.00	LS	8,300.00	
	Hard Landscaping - Concrete Pad for Gas meter		1.00	LS	5,500.00	
	Hard Landscaping - Concrete Retaining Wall		1.00	LS	25,000.00	
	Hard Landscaping - Garbage Enclosure Concrete pad		1.00	LS	5,000.00	

Code	Description	Contractor	Quantity	Unit	TOTAL	Comments / Assumptions
	Landscape Removals for scaffold access		1.00	LS	7,500.00	
	Landscape Restitution		1.00	LS	15,000.00	
	Replace Rear Concrete Ramp		1.00	LS	44,000.00	
Total Division 2			-		3,405,800.00	
Division 3						
	North Addition		1.00	LS	-	
	Formwork		2,350	CSA	418,000.00	
	Rebar		570	m3	171,000.00	
	Concrete Placing & Finishing & Pumping		570	m3	125,400.00	
	Concrete Supply		570	m3	169,300.00	
	Concrete Floor to Original Elec room		1.00	LS	7,700.00	Installed after new electrical Distribution is up and running
	Concrete Tunnel - Blockout wall		1.00	LS	16,500.00	
	Crane - mobile - for Formwork Panels		1.00	LS	28,200.00	
	Scaffold access for Formwork		3,000	SF	11,600.00	
	Epoxy & Drilling		1.00	LS	16,000.00	
	Interior Elevator Pit Foundation				-	
	Formwork		27.90	CSA	11,000.00	
	Rebar		6.00	m3	3,000.00	
	Concrete Placing & Finishing & Pumping		6.00	m3	6,600.00	
	Concrete Supply		6.00	m3	2,700.00	
	Epoxy & Drilling		1.00	LS	-	
	Interior Ramp Floor topping over Q-deck				-	
	Rebar		1.00	LS	2,400.00	
	Concrete Placing & Finishing & Pumping		1.00	LS	4,300.00	
	Concrete Supply		5.00	m3	1,700.00	
	West Foundation				-	
	Formwork		123.00	CSA	22,000.00	
	Rebar		27.00	m3	8,100.00	
	Concrete Placing & Finishing & Pumping		27.00	m3	6,000.00	
	Concrete Supply		27.00	m3	8,100.00	
	Epoxy & Drilling		1.00	LS	8,000.00	
Total Division 3					1,047,600.00	
Division 4						
	CMU Walls in Basement		195.30	SM	64,000.00	
	CMU Walls - Elevator Door infills		4.00	No	14,000.00	
Total Division 4					78,000.00	
Division 5						
	Chain Link Gas Meter Surround		1.00	LS	5,000.00	
	Chain Link Garbage Enclosure Surround		1.00	LS	5,000.00	
	Metal Fabrications (Elevator Shaft, Hoist beams,pit ladders,etc.)		1.00	LS	45,500.00	
	Misc. Metals - Truss Upgrade - Supply Only		1.00	LS	30,000.00	
	Pipe Railings to stairs & Ramps		101.2	LM	25,000.00	
	Guard Railings to lev 3 Stair Landing		1.70	LM	1,200.00	
	Metal Decking to roof of Elevator Shaft & Ramps		1.00	LS	12,600.00	
					-	
Total Division 5					124,300.00	

Code	Description	Contractor	Quantity	Unit	TOTAL	Comments / Assumptions
Division 6						
06100	Rough Carpentry - Addition		1.00	LS	13,300.00	
06100	Rough Carpentry - LVL Wall Upgrade to ext wall		1.00	LS	428,200.00	
06100	Rough Carpentry -Reframe Ext Wall for Elevator Connections		4.00	LS	6,400.00	
06100	Rough Carpentry - Roof Sheathing		3,408	SM	168,300.00	
06100	Rough Carpentry - Roof parapets		572.00	LM	41,200.00	
06100	Rough Carpentry - FRP Glulam Beams Up-grade		5.00	No	50,000.00	TO be assessed
06100	Rough Carpentry - Roof Joists Upgrade		1.00	LS	284,000.00	
06100	Rough Carpentry - Floor Joists level 2 studio		1.00	LS	6,000.00	
06100	Rough Carpentry - Floor Joists level 1 studio 1A		1.00	LS	6,000.00	
06100	Rough Carpentry Truss Upgrade - over theatre		1.00	LS	50,500.00	
06100	Truss Access Requirements		1.00	LS	100,000.00	
06100	Rough Caprentry - Backing & Blocking		1.00	LS	87,500.00	
06200	Finish Carpentry		1.00	LS	25,000.00	
06400	Millwork		1.00	LS	50,000.00	w/r's and elevator fronts
Total Division 6					1,316,400.00	
Division 7						
07 15 00	Elevator Pit Waterproofing		2.00	No	7,000.00	
07 18 00	Foundation wall Waterproofing		59.00	SM	14,300.00	
07 21 00	Below Grade Rigid Insulation to Foundation Wall		59.00	SM	11,000.00	
07 21 00	Batt Wall Insulation		1.00	LS	17,800.00	
07 45 00	Rainscreen Fibre Cement Fascias		254	SM	82,000.00	
07 45 00	Rainscreen Fibre Cement Cladding		836	SM	669,000.00	
07 45 00	Rainscreen Fibre Cement Cladding - Ext Insulated		545	SM	323,000.00	
07 49 00	Rainscreen Stucco Cladding		428	SM	231,000.00	
07 49 00	New FC Window Trims For Done in existing Cladding		1.00	LS	25,000.00	
07 55 00	MBM Roofing - New Roof		371	SM	120,000.00	
07 55 00	MBM Roofing - Existing Roofs		3,407	SM	1,284,000.00	
07 60 00	Metal Upper Roof		45	SM	15,000.00	
07 62 00	Flashings		1.00	LS	30,000.00	
07 62 00	Gutters RWL		1.00	LS	3,000.00	At metal Roof
07 84 00	Firestopping		1.00	LS	10,000.00	
07 92 00	Finish Joint Sealants - Interior		1.00	LS	5,000.00	
07 92 00	Finish Joint Sealants - Exterior		1.00	LS	15,000.00	
Total Division 7					2,862,100.00	
Division 8						
08 11 00	P.S. Frames , H.M. Door		1.00	LS	51,500.00	Supply Only
08 11 00	Wood Frame, Wood Door		1.00	LS	-	None
08 11 00	Custom Double Door at Loading Bay 12' tall		1.00	LS	11,000.00	
08 72 00	Door Hardware		1.00	LS	78,100.00	Supply Only
08 45 00	Aluminum Windows & Curtain Wall		211	SM	334,400.00	
08 50 00	Glass & Alum Entry Doors		4.00	No	44,000.00	
					-	
Total Division 8					519,000.00	

Code	Description	Contractor	Quantity	Unit	TOTAL	Comments / Assumptions
Division 9						
09 10 00	Steel Stud Framing		1.00	LS	118,100.00	
09 25 00	Drywall Walls/Ceiling		1.00	LS	204,900.00	
09 25 00	Drywall Repair due to M&E trades		1.00	LS	75,000.00	
09 35 00	Ceramic Tile - Lev 1 Washroom Flooring & Walls		189	SM	40,900.00	
09 50 00	Acoustic Ceilings		161	SM	13,900.00	
09 55 00	Elev. Cab Flooring		2.00	No	3,000.00	
09 65 16	Flooring - Resilient		1.00	LS	42,300.00	
09 91 00	Painting - Sealed Concrete Floors & Exposed Walls		1,125	SM	15,000.00	
09 91 00	Painting Interior		1.00	LS	50,000.00	
09 91 00	Painting Exterior		1.00	LS	79,000.00	
Total Division 9					642,100.00	
Division 10						
					-	
10 30 00	Washroom Toilet Partitions		15	No	45,000.00	
10 40 00	Washroom Accessories		1.00	LS	15,000.00	
10 50 00	Hand Dryers		2.00	No	7,000.00	
10 55 00	Fire Extinguishers		1.00	LS	2,500.00	
10 40 01	Signage - Interior		1.00	LS	5,000.00	
10 40 05	Signage - Exterior		1.00	LS	25,000.00	
					-	
Total Division 10					99,500.00	
Division 11						
No Div 11 Work Required					-	
					-	
Total Division 11					-	
Division 12						
125000	Window Blinds		1.00	LS	23,000.00	
	Entrance mats				-	None indicated
	Fire Safety Plan		1.00	LS	5,000.00	
					-	
Total Division 12					28,000.00	
Division 13 & 14						
	Elevator (4stop)		1.00	LS	175,000.00	
	Elevator (2stop)		1.00	LS	100,000.00	
Total Division 13 & 14					275,000.00	
Division 15						
15000	Mechanical Plumbing and HVAC		1.00	LS	650,000.00	
	Fire Protection		1.00	LS	100,000.00	
Total Division 15					750,000.00	
Division 16						
16000	Electrical Demolition		1.00	LS	-	
	Electrical Power Distibution		1.00	LS	1,175,000.00	
	Fire Alarm		1.00	LS	-	
	Electrical - Washroom Upgrades		1.00	LS		
	Parking lot Light Fixtures		1.00	LS		
	Security Modifications		1.00	LS	16,500.00	
Total Division 16					1,191,500.00	
	Division 2-16 Sub-Total including P.S.T				**12,339,300.00**	

APPENDIX VI

TIER 1 - SCENARIO 1 COST REPORT

HEATHERBRAE BUILDERS CO. LTD.
#140 - 12371 HORSESHOE WAY RICHMOND BC V7A 4X6
T: 604.277.2315 F: 604 277.2311 heatherbrae.com

February 10, 2023

Massey Theatre Opinion of Probable Cost - Summary

Code	Description		Tier 1 - Scope of Work Reduced	Add Replace Roofing Sep Price #1	Add Replace Wall Envelope where designated Sep Price #2	Add Elevator (4stop) beside Stairwell in tier 1 Sep Price #3	Add Elevator (2stop) (back of House) Sep Price #4	Add h/c Accesiblity ramp Sep Price #5	Add W/R main floor Sep Price #6	Revised Total	Comments
	Summary										
	Division 1		$ 759,950.00	$ 5,000.00	$ 5,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 809,950.00	
	Division 2 to 16		$ 6,435,700.00	$ 2,272,515.00	$ 2,052,855.00	$ 409,200.00	$ 325,900.00	$ 227,400.00	$ 459,600.00	$ 12,183,170.00	
	Sub-Total		$ 7,195,650.00	$ 2,277,515.00	$ 2,057,855.00	$ 419,200.00	$ 335,900.00	$ 237,400.00	$ 469,600.00	$ 12,993,120.00	
	Management Fee	5.0%	$ 360,000.00	$ 114,000.00	$ 103,000.00	$ 21,000.00	$ 17,000.00	$ 12,000.00	$ 24,000.00	$ 651,000.00	
	Total Construction Budget		$ 7,555,650.00	$ 2,391,515.00	$ 2,160,855.00	$ 440,200.00	$ 352,900.00	$ 249,400.00	$ 493,600.00	$ 13,644,120.00	
	Design Development Contingency	5.0%	$ 360,000.00	$ 114,000.00	$ 103,000.00	$ 21,000.00	$ 17,000.00	$ 12,000.00	$ 24,000.00	$ 651,000.00	
	Market Escalation	10%	$ 755,600.00	$ 239,200.00	$ 216,100.00	$ 44,100.00	$ 35,300.00	$ 25,000.00	$ 49,400.00	$ 1,364,700.00	
	Construction Contingency	15%	$ 1,133,400.00	$ 358,800.00	$ 324,200.00	$ 66,100.00	$ 53,000.00	$ 37,500.00	$ 74,100.00	$ 2,047,100.00	
	Total		$ 9,804,650.00	$ 3,103,515.00	$ 2,804,155.00	$ 571,400.00	$ 458,200.00	$ 323,900.00	$ 641,100.00	$ 17,706,920.00	

The Tier 1 revised scope of work is generally as follows:	Approximate Tier 1Break-out Price
1 Demolish Gymnasium	$ 1,700,000.00
2 New Parking Lot in place of Gymnasium	$ 255,700.00
3 New Concrete Addition 1 storey North Elevation	$ 1,770,000.00
4 New Stair shaft 4 storey (No elevator)	$ 540,000.00
5 GL. 2 North Exterior Wall conversion and upgrade	$ 600,000.00
6 West Wall Foundation upgrade	$ 120,000.00
7 West Wall Exterior Wall upgrade	$ 270,000.00
8 Roof Work to New Roofs and parapet tie-ins at N & W wall upgrade	$ 170,000.00
9 New Electrical Distribution equipment in the new electrical room in the addition	$ 900,000.00
10 New Annunciator Panel at front entry	$ 10,000.00
11 New FDC at front of building	$ 100,000.00

* No other Roofing, Cladding, or windows are replaced
* Separate Price #1 includes the structural Upgrade work related to the roof
* Separate Price #2 includes the structural Upgrade work to the Trusses over the theatre due to the way we access them from the south eleveation
* Separate Price #3 for the new 4 stop elevator will be located as per the original design beside the stairwell.
* Please note the separate prices have been accounted for with the assumption they would be carried out witht the Tier 1 scope of work. Completing them in a second phase of work will add additional Gen Cond. co

Items Not Included

G.S.T,
Bonding
Wrap-up Gen Liability Insurance Policy & All-Risk Insurance
Overtime, evening or Weekend work
No allowance for work shut-downs due to theatre operations
Underpinning
Audio Visual / Sound Systems or Equipment
PA Systems
Data / IT
CM Pre-Construction Fee

APPENDIX VII
TIER 1 - SCENARIO 1 SCOPE PACKAGE

PROSCENIUM
ARCHITECTURE + INTERIORS INC.

300 - 151 EAST 2ND AVE
VANCOUVER BC V5T 1B4 CANADA

604.879.0118
www.proscenium.ca

ARCHITECTURAL DRAWING LIST

DWG.	DRAWING NAME
A020	WALL TYPES
A150	DEMOLITION_ GROUND FLOOR LEVEL PLAN
A151	DEMOLITION_ LEVEL 1 FLOOR PLAN
A152	DEMOLITION_ LEVEL 2 FLOOR PLAN
A153	DEMOLITION_ LEVEL 3 FLOOR PLAN
A154	DEMOLITION_ ROOF PLAN
A170	DEMOLITION_ ELEVATIONS 1
A171	DEMOLITION_ ELEVATIONS 2
A180	DEMOLITION_ SECTIONS 1
A181	DEMOLITION_ SECTIONS 2
A200	NEW_GROUND FLOOR PLAN
A200b	ELECTRICAL ROOM OPTIONS
A201	NEW_LEVEL 1 FLOOR PLAN
A202	NEW_LEVEL 2 FLOOR PLAN
A203	NEW_LEVEL 3 FLOOR PLAN
A204	NEW_ROOF PLAN
A300	NEW_ ELEVATIONS 1
A301	NEW_ ELEVATIONS 2
A311	NEW_ SECTIONS 2
A312	3D VIEWS ENVELOPE
A315	Unnamed
A100	SITE PLAN
A310	NEW_ SECTIONS 1
A400	WALL SECTIONS

MASSEY THEATRE RENEWAL - PHASE 1

22-20

735 8th AVE, NEW WESTMINSTER

ISSUED FOR CLASS D COSTING
06/12/2022

ENVELOPE
CHRIS LUNG
JRS ENGINEERING
300 - 4595 CANADA WAY,
BURNABY BC

STRUCTURAL
TIMOTHY WHITE
BUSH BOHLMAN & PARTNERS
1550 - 1500 W GEORGIA ST,
VANCOUVER BC

MECHANICAL
PATRICK STEWART
AME CONSULTING GROUP
200 - 638 SMITHE ST,
VANCOUVER BC

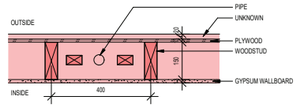
ELECTRICAL
BRAD OU-YANG
AES ENGINEERING
950- 505 BURRARD ST,
VANCOUVER BC

SPRINKLER
MURRAY JOHNSON
MURRAY JOHNSON ENGINEERING
212 5th AVE, NEW WESTMINSTER
BC

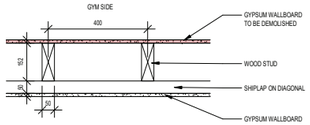
CODE
TAVIS MCAULEY
MCAULEY CONSULTING INC
503 - 1587 W 8th AVE,
VANCOUVER BC

CIVIL
CORMAC NOLAN
CORE GROUP CONSULTANTS
8988 FRASERTON CT, BURNABY
BC

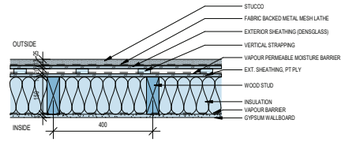
PROJECT MANAGER
ALEXANDER GODFREY
TURNBULL
SUITE 1670 CENTRAL CITY
TOWER, 13450 102nd AVE,
SURREY BC



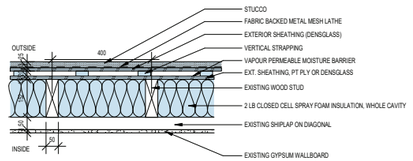
1a TEMPORARY WALL DEMOLITION
1 : 10



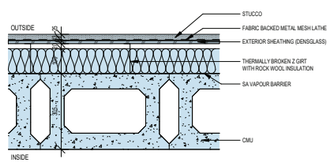
2a WALL GYM DEMOLITION
1 : 10



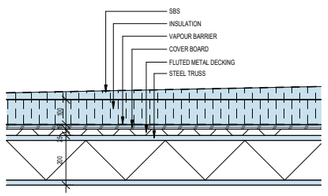
1b NEW WALL WEST
1 : 10



2b NEW WALL GYM
1 : 10



4 NEW WALL SERVICES ADD. + STAIRCASE
1 : 10



7 ROOF SERVICES ADD.
1 : 10

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SPRINKLER
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CORE GROUP CONSULTANTS

PROJECT MANAGER
TURNBULL

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NO.	DESCRIPTION	BY	DATE
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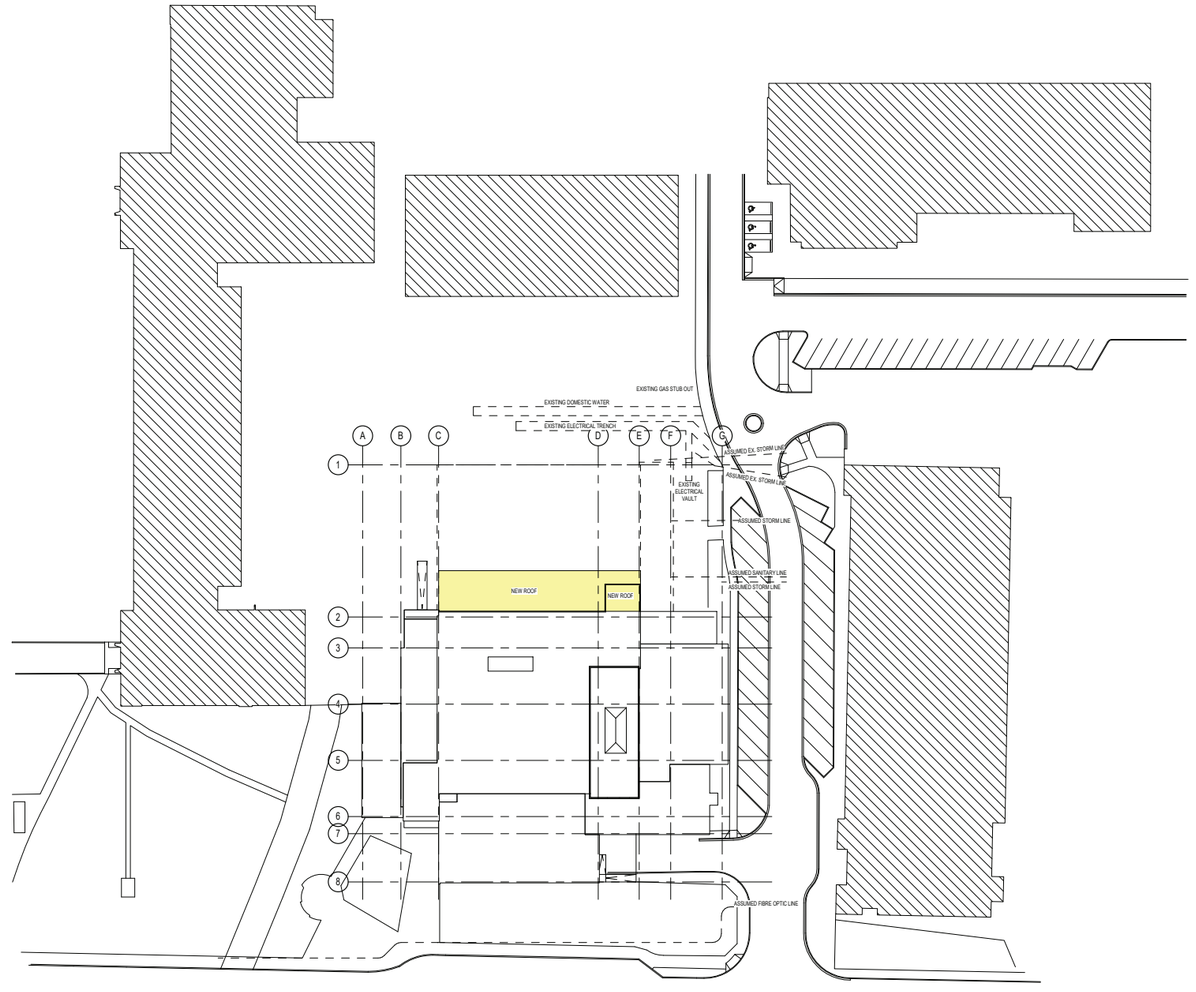
PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
WALL TYPES

PROJECT NUMBER
22-20

DWG. NO.
A020

DATE	SCALE	DRAWN	CHECKED
09/08/2023	1 : 10	CD	HC



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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

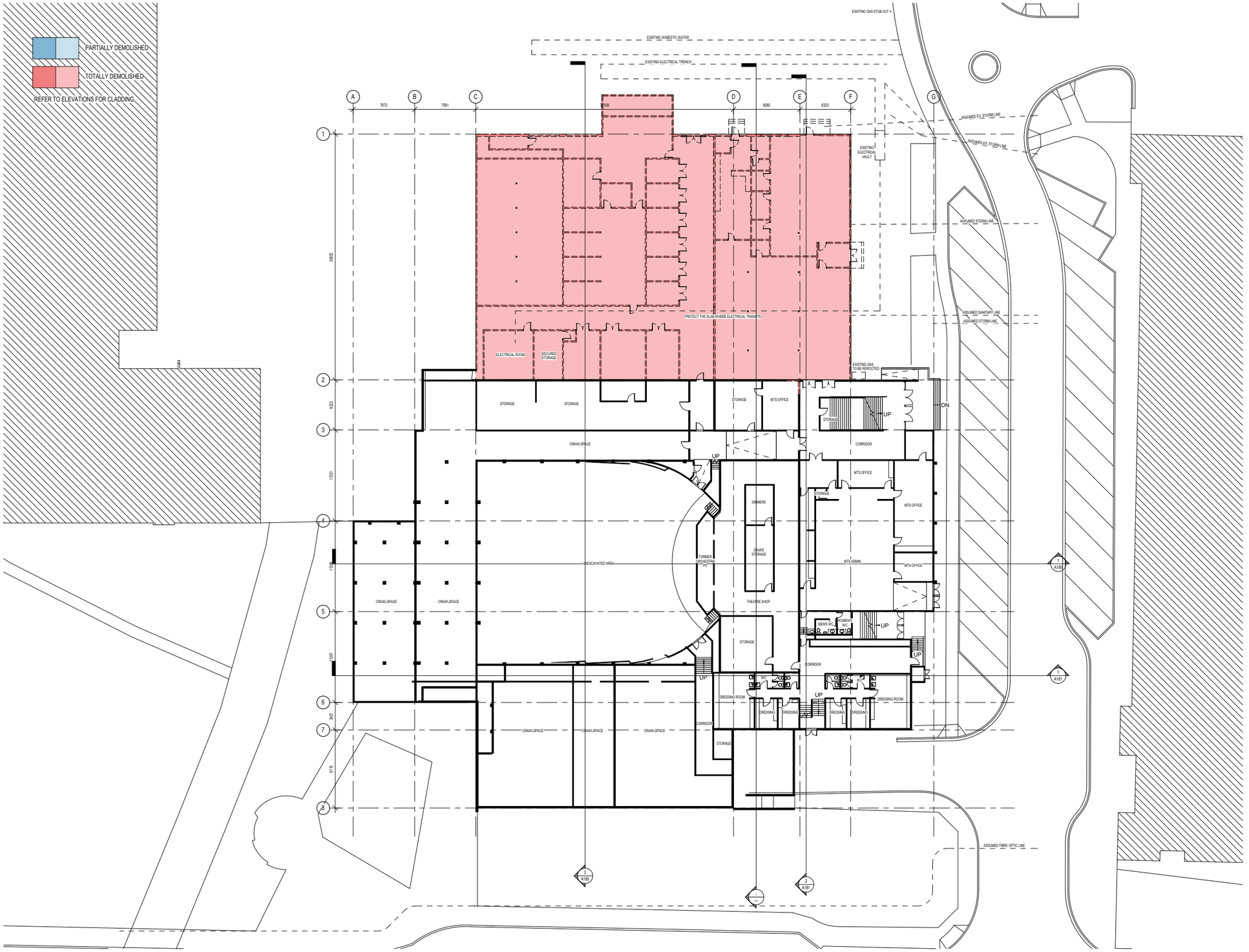
DRAWING TITLE	PROJECT NUMBER
SITE PLAN	22-20
	DWG. NO. A100

DATE	SCALE	DRAWN	CHECKED
09/08/2023	1 : 500	CD	HC

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ GROUND FLOOR LEVEL PLAN

PROJECT NUMBER
22-20

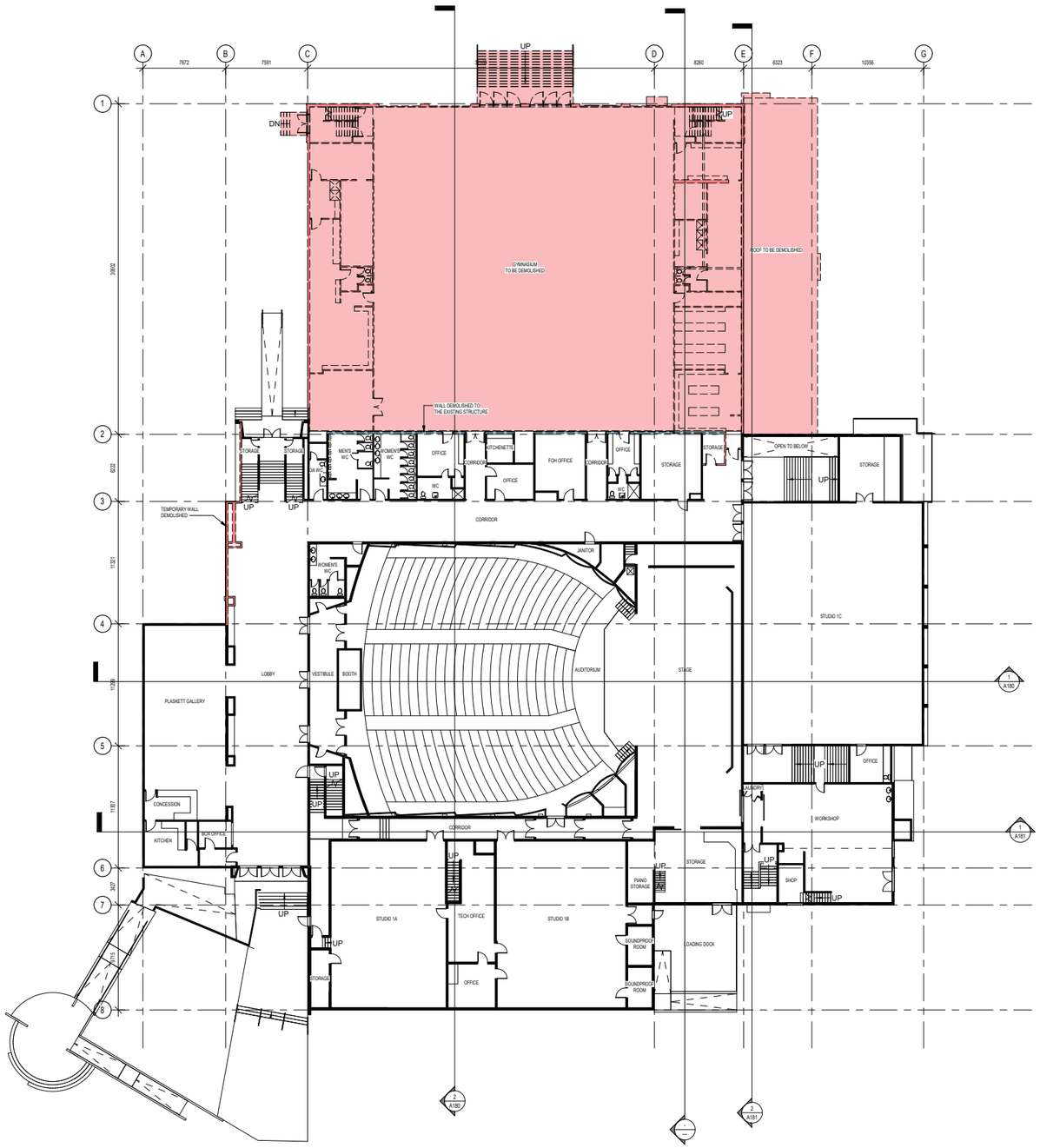
DWG. NO.
A150

DATE	SCALE	DRAWN	CHECKED
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DRAWING TITLE
DEMOLITION_ LEVEL 1 FLOOR PLAN

PROJECT NUMBER
22-20

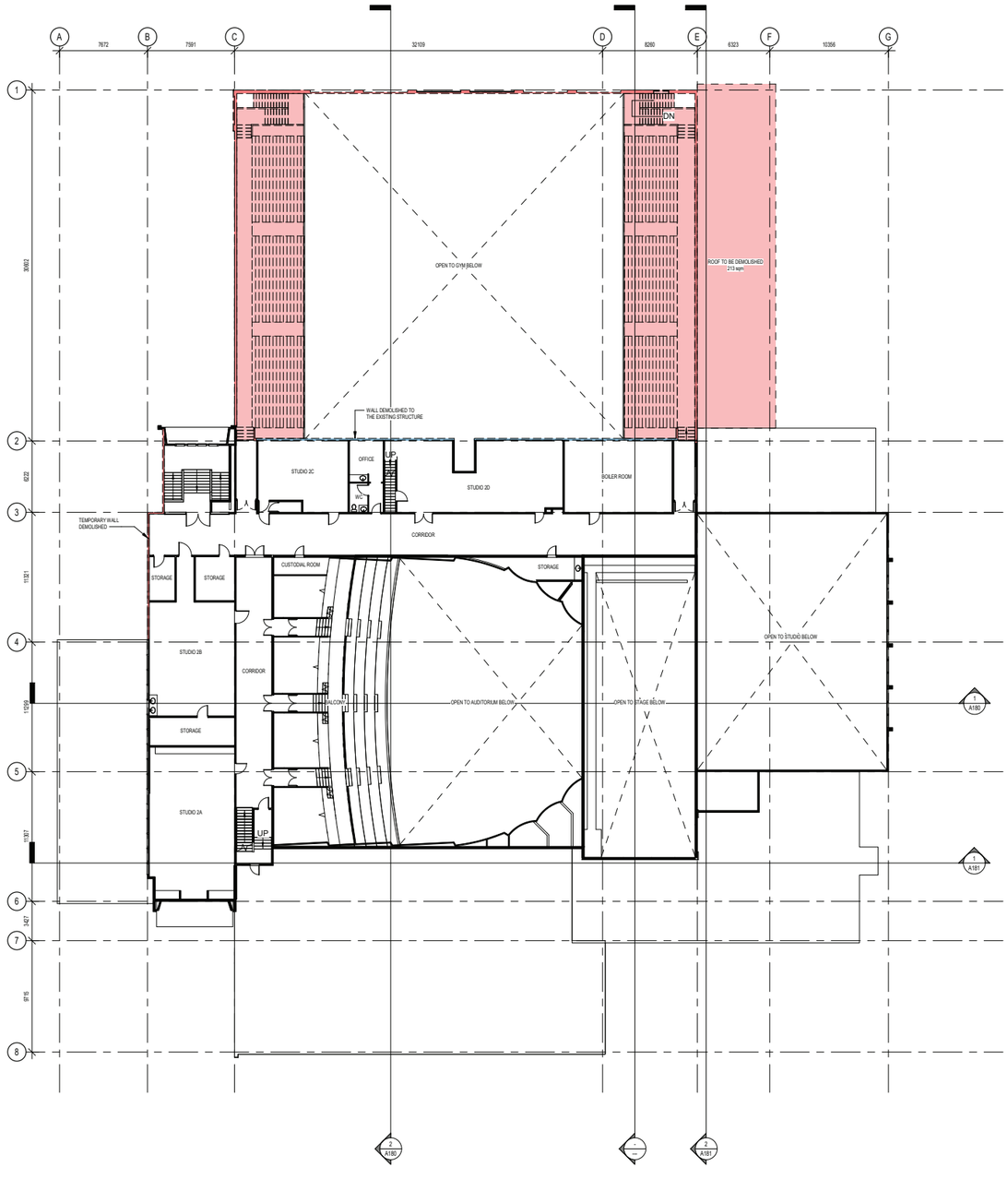
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09/08/2023	1 : 200	CD	HC

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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ LEVEL 2 FLOOR PLAN

PROJECT NUMBER
22-20

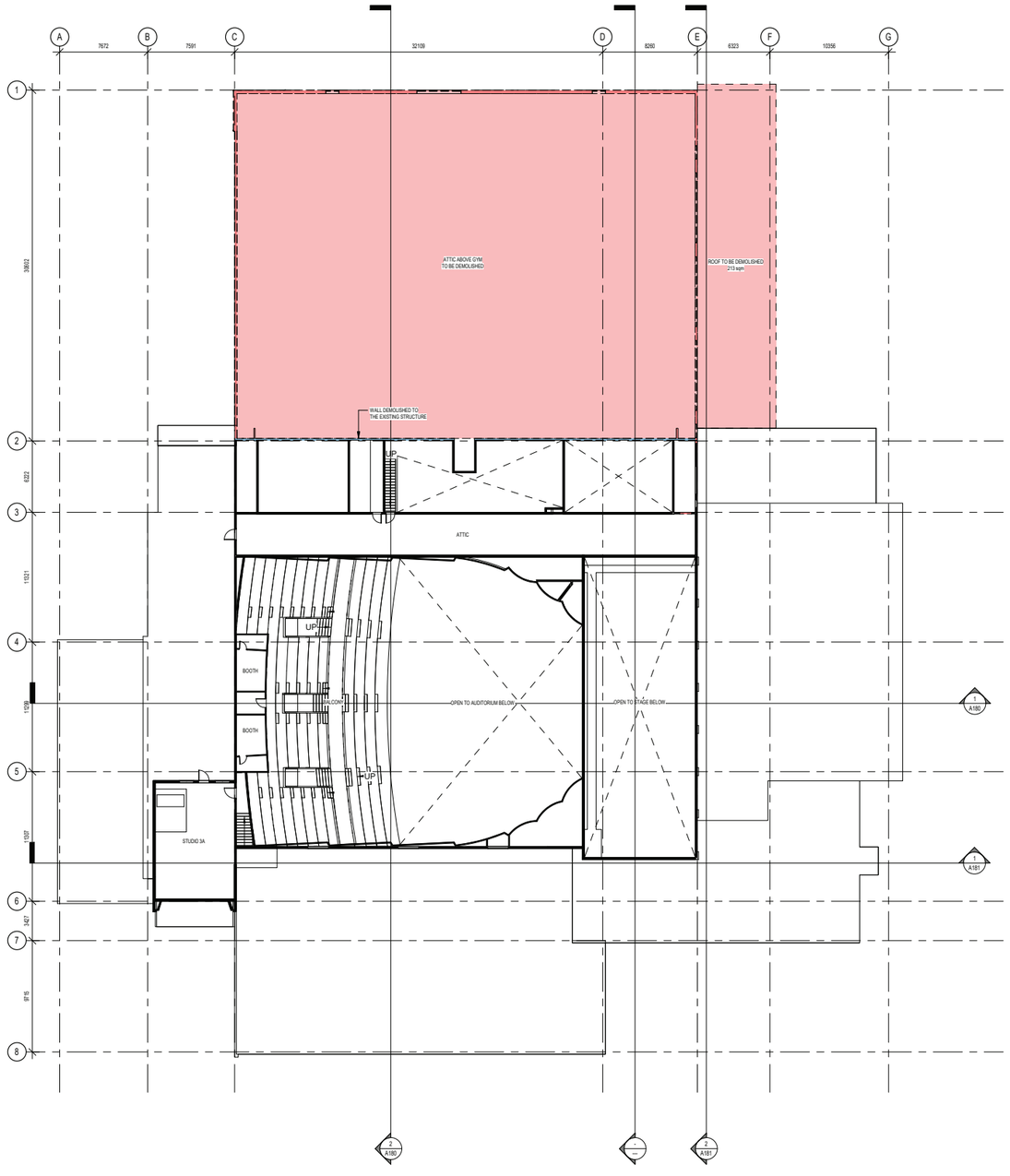
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ LEVEL 3 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A153

DATE	SCALE	DRAWN	CHECKED
09/08/2023	1 : 200	CD	HC

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EXISTING GAS STUB OUT

EXISTING DOMESTIC WATER

EXISTING ELECTRICAL TRENCH

A B C D E F G

7672 7591 32109 8260 6323 10356

1 2 3 4 5 6 7 8

3905 6222 1320 1320 3107 3107 8715

ROOF TO BE DEMOLISHED
1190 sqm

ROOF TO BE DEMOLISHED
213 sqm

EXISTING ELECTRICAL VAULT

ASSUMED EX. STORM LINE

ASSUMED EX. STORM LINE

ASSUMED STORM LINE

ASSUMED SANITARY LINE

ASSUMED STORM LINE

ASSUMED FIBRE OPTIC LINE

1 A180

1 A181

2 A180

3 A181

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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ ROOF PLAN

PROJECT NUMBER
22-20

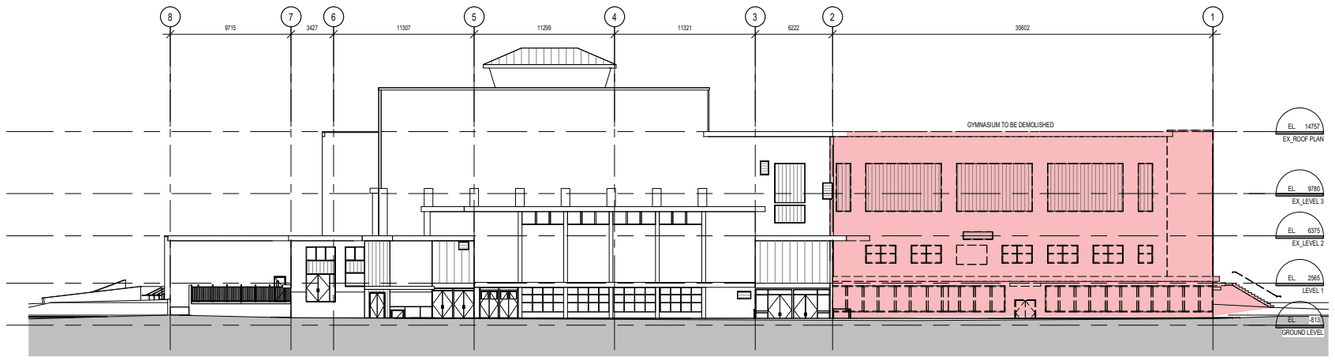
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DATE	SCALE	DRAWN	CHECKED
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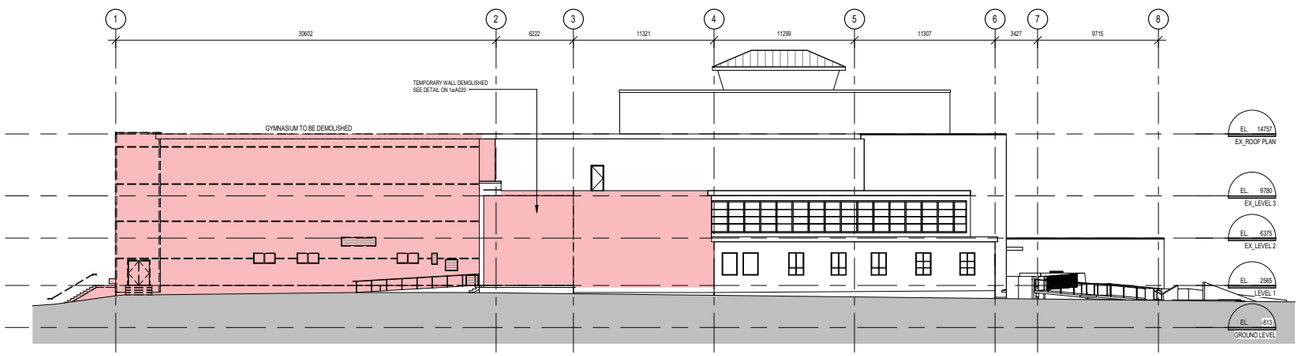
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1 DEMOL ELEVATION NORTH EAST
1 : 200



2 DEMOL ELEVATION SOUTH WEST
1 : 200

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CURRENT REVISION			

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

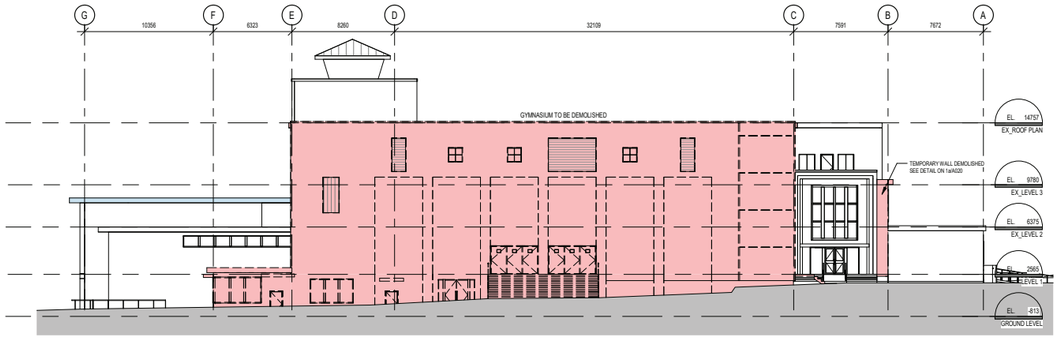
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	DWG. NO. A170

DATE	SCALE	DRAWN	CHECKED
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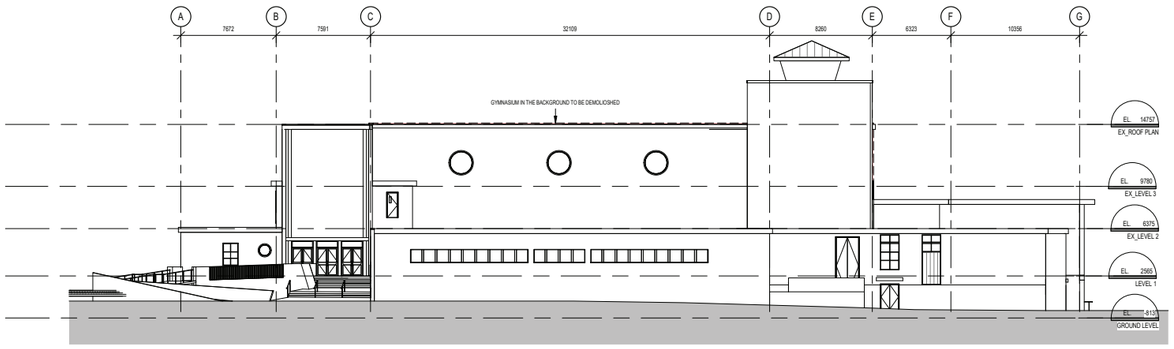
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1 DEMOL ELEVATION NORTH WEST
1 : 200



2 DEMOL ELEVATION SOUTH EAST
1 : 200

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MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ ELEVATIONS 2

PROJECT NUMBER
22-20

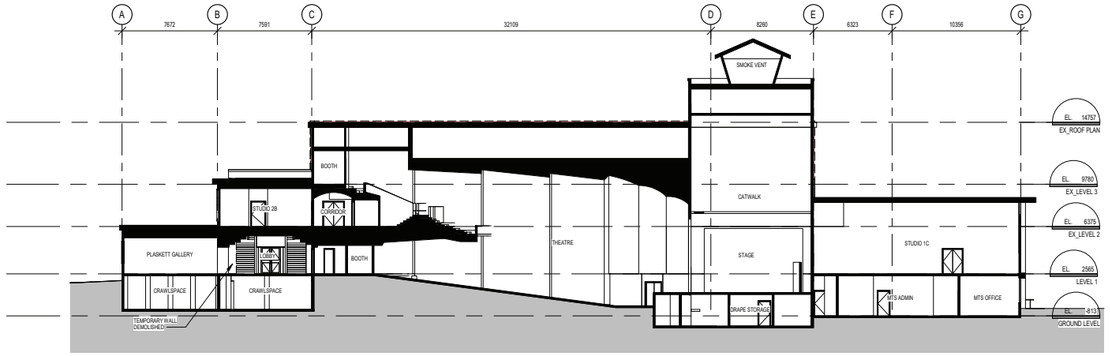
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DATE	SCALE	DRAWN	CHECKED
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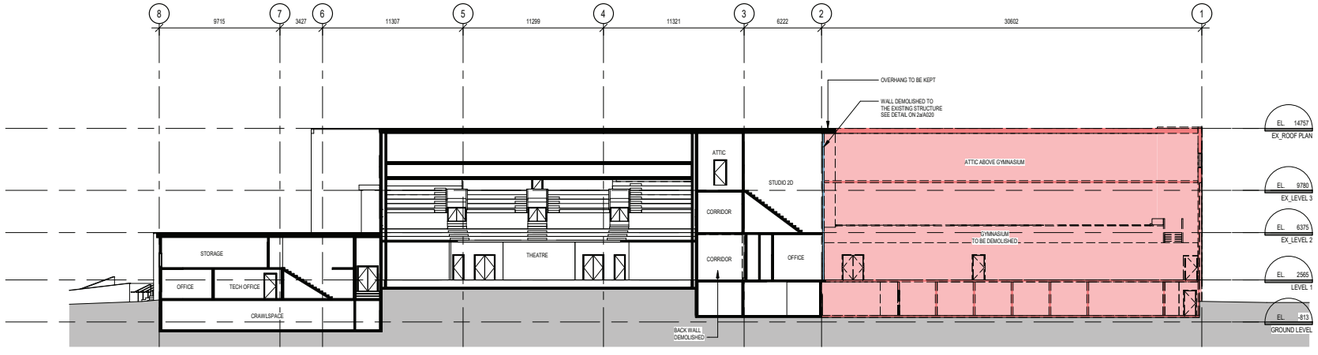
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1 DEMOL SECTION 1
1 : 200



2 DEMOL SECTION 2
1 : 200

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
DEMOLITION_ SECTIONS 1

PROJECT NUMBER
22-20

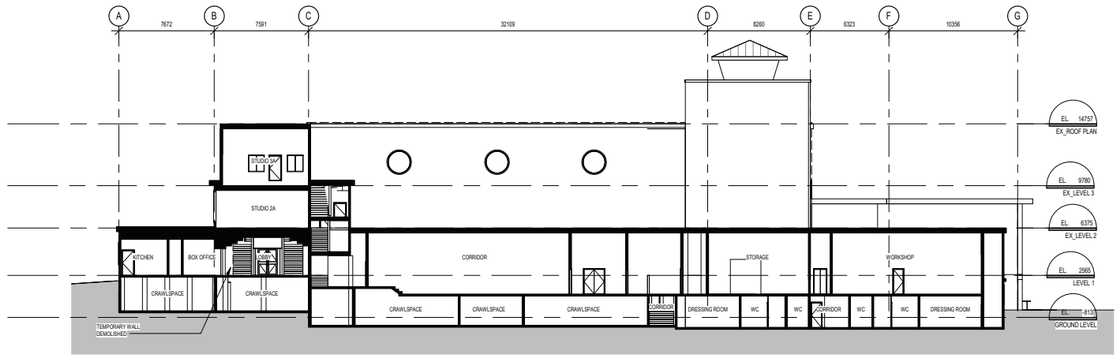
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DATE	SCALE	DRAWN	CHECKED
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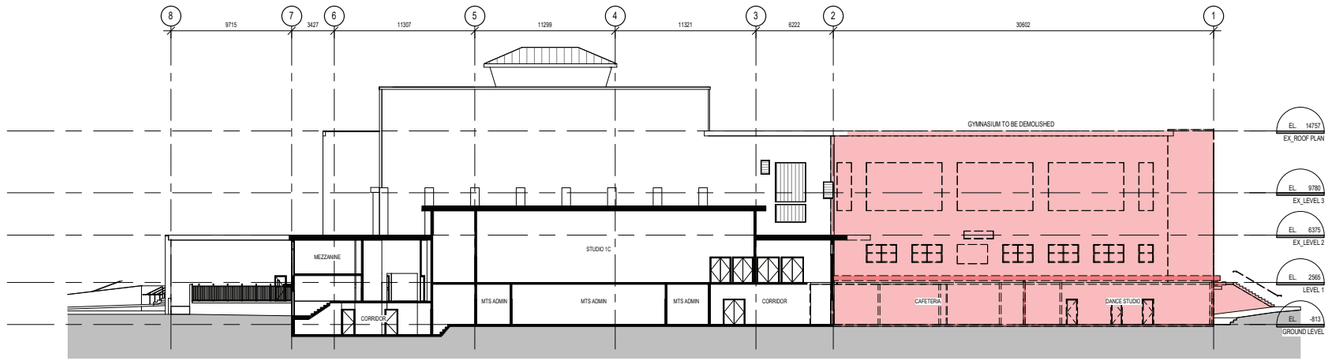
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1 DEMOL SECTION 3
1 : 200



2 DEMOL SECTION 4
1 : 200

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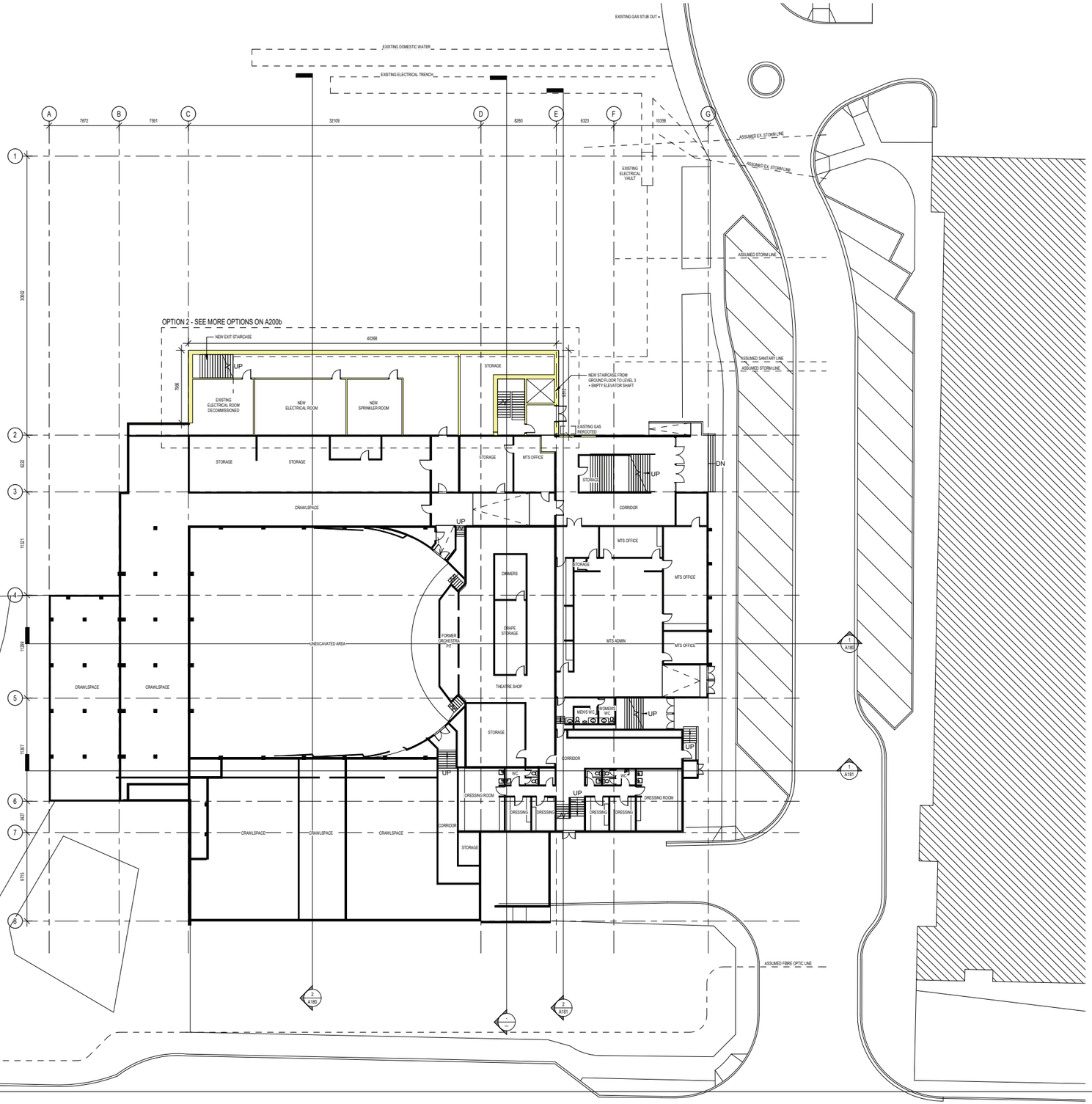
DRAWING TITLE	PROJECT NUMBER
DEMOLITION_ SECTIONS 2	22-20
	DWG. NO. A181

DATE	SCALE	DRAWN	CHECKED
09/08/2023	1 : 200	Author	Checker

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NEW CONSTRUCTION

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PROJECT ADDRESS
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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

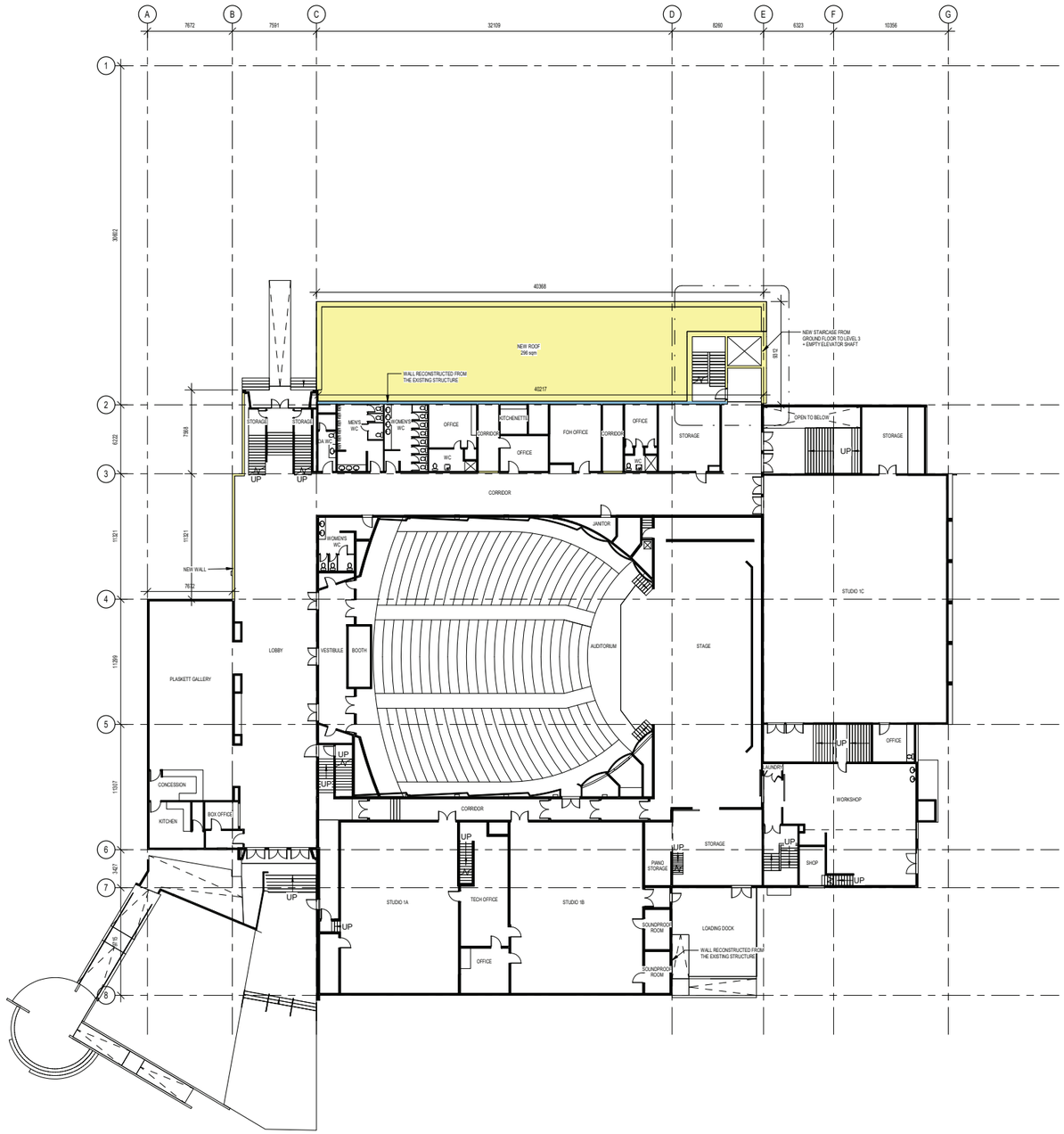
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NEW_GROUND FLOOR PLAN	22-20
	DWG. NO. A200

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SPRINKLER
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CODE
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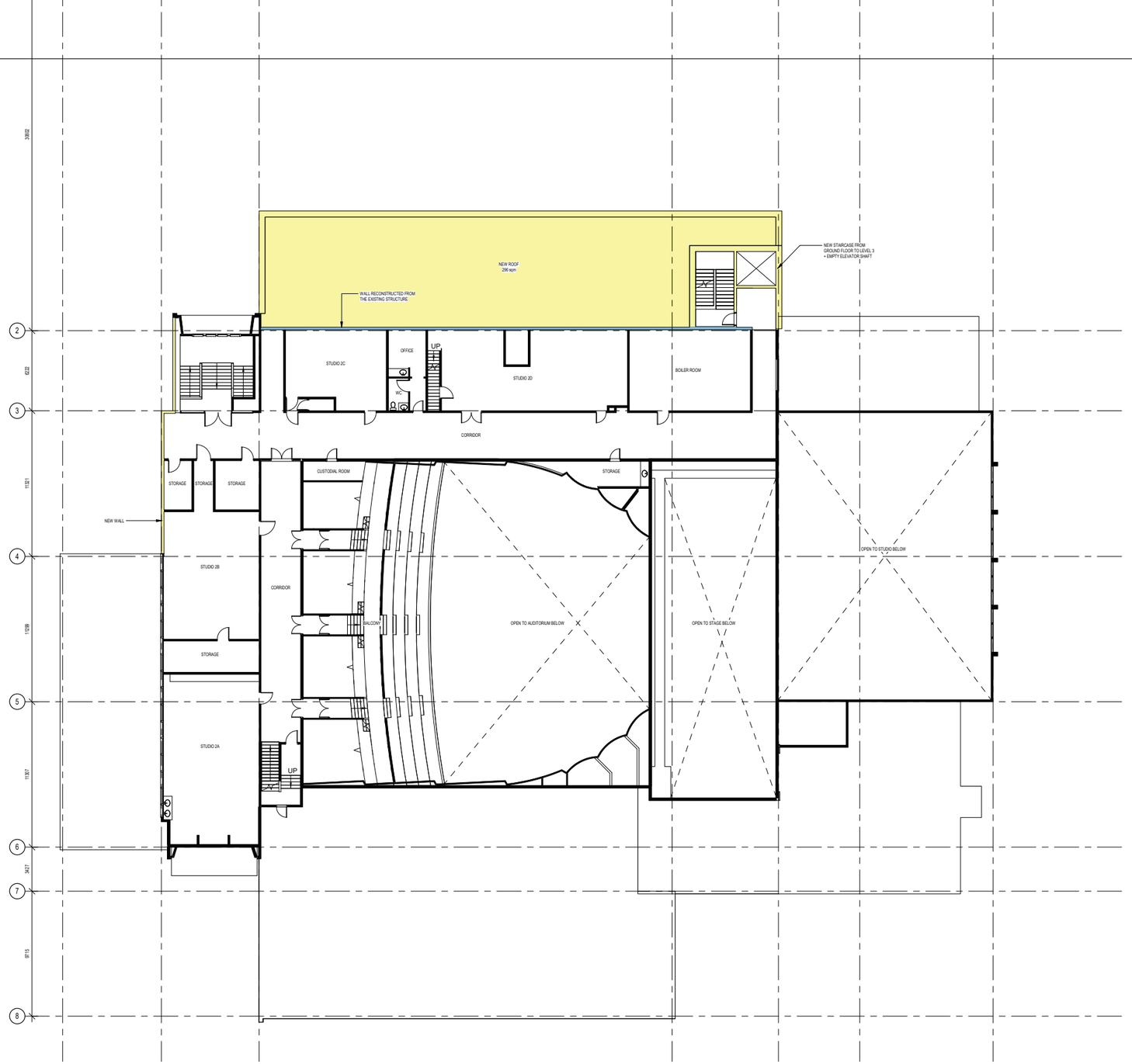
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NEW_LEVEL 1 FLOOR PLAN	22-20
	DWG. NO. A201

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

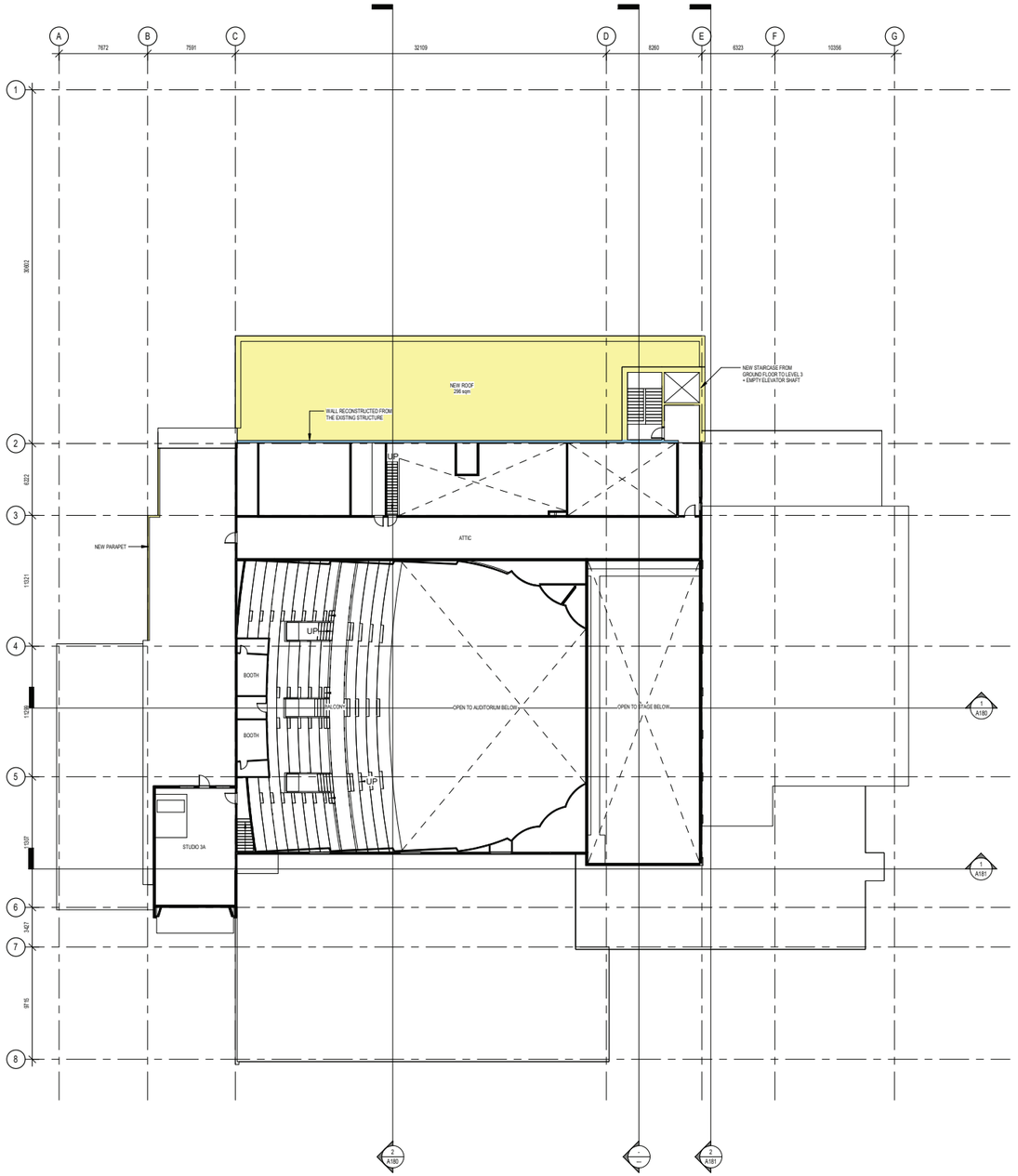
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NEW_LEVEL 2 FLOOR PLAN	22-20
	DWG. NO. A202

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PROJECT
MASSEY THEATRE RENEWAL - PHASE 1

DRAWING TITLE
NEW_LEVEL 3 FLOOR PLAN

PROJECT NUMBER
22-20

DWG. NO.
A203

DATE	SCALE	DRAWN	CHECKED
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NEW CONSTRUCTION

REFER TO ELEVATIONS FOR CLADDING

EXISTING GAS STUB OUT

EXISTING DOMESTIC WATER

EXISTING ELECTRICAL TRENCH

A B C D E F G

7672 7591 32109 8260 6323 10356

1 2 3 4 5 6 7 8

30602 6322 11321 11309 9307 9427 9715

ASSUMED EX. STORM LINE

ASSUMED EX. STORM LINE

EXISTING ELECTRICAL VAULT

ASSUMED STORM LINE

ASSUMED SANITARY LINE

ASSUMED STORM LINE

NEW ROOF 296 sqm

NEW ROOF 39 sqm

1 A1NC

1 A181

2 A180

2 A181

ASSUMED FIBRE OPTIC LINE

PROGRESS SET

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DRAWING TITLE
NEW_ROOF PLAN

PROJECT NUMBER
22-20

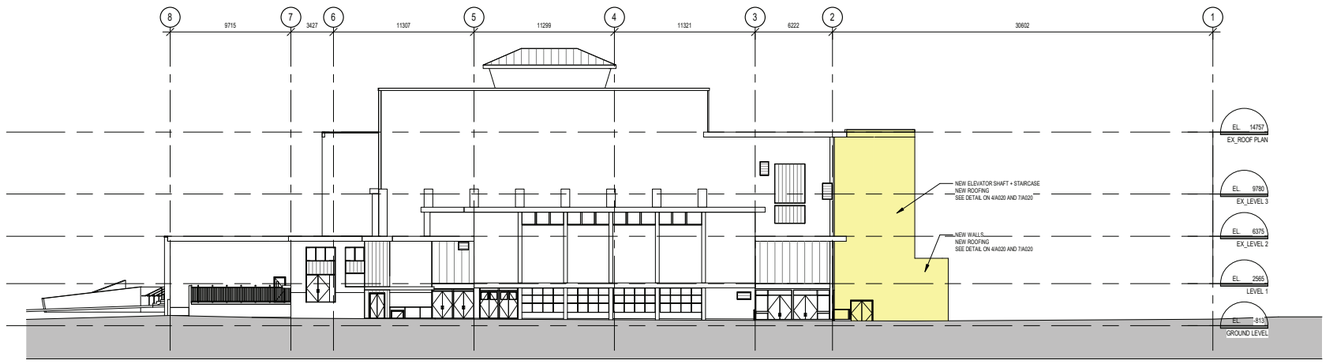
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A204

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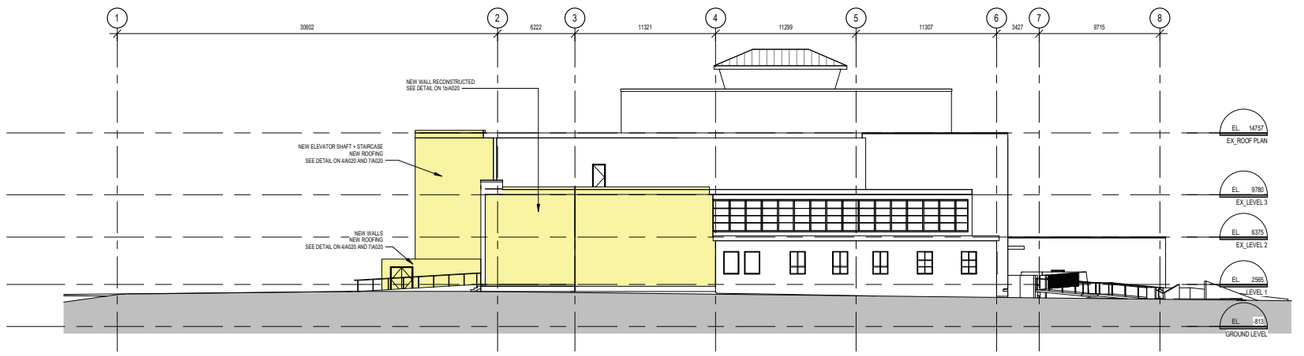
NEW CONSTRUCTION

REFER TO ELEVATIONS FOR CLADDING



1 NEW ELEVATION NORTH EAST

1 : 200



2 NEW ELEVATION SOUTH WEST

1 : 200

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DRAWING TITLE
NEW_ ELEVATIONS 1

PROJECT NUMBER
22-20

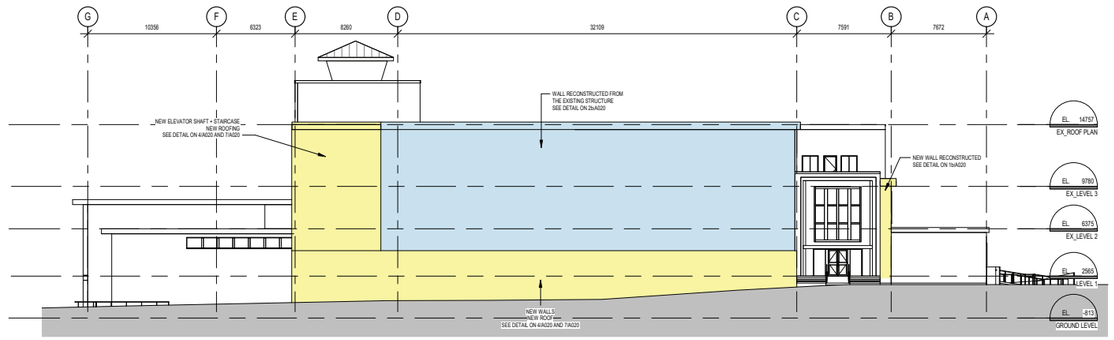
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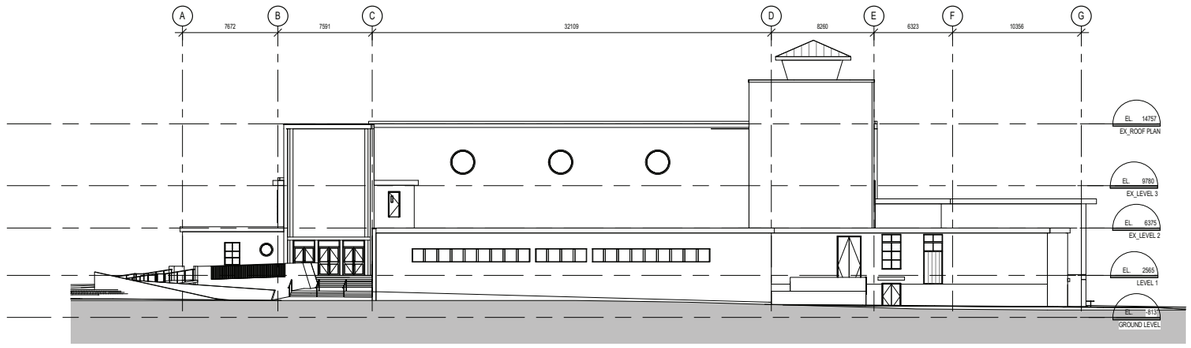
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NEW CONSTRUCTION

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1 NEW ELEVATION NORTH WEST
1 : 200



2 NEW ELEVATION SOUTH EAST
1 : 200

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DRAWING TITLE
NEW_ ELEVATIONS 2

PROJECT NUMBER
22-20

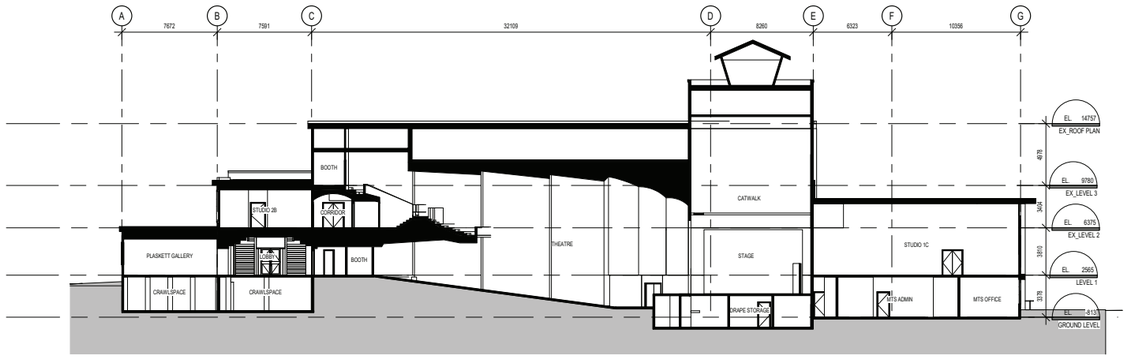
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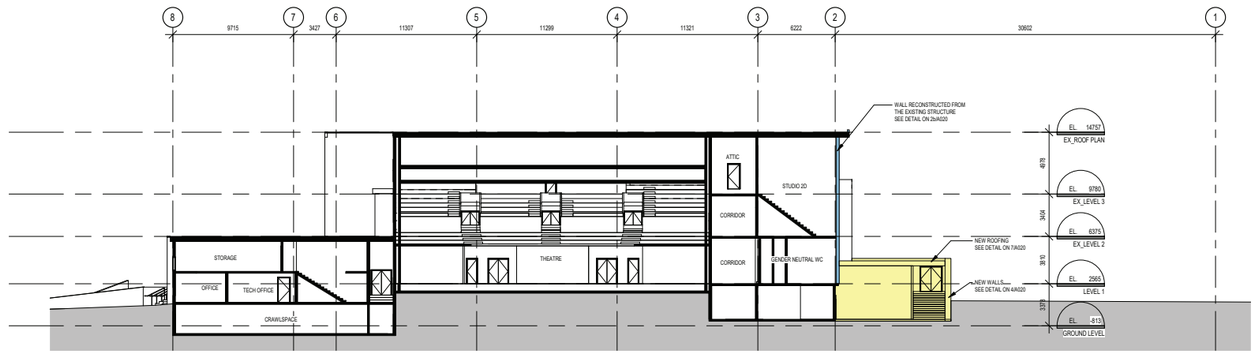
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1 NEW SECTION 1
1 : 200



2 NEW SECTION 2
1 : 200

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PROJECT
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DRAWING TITLE
NEW_
SECTIONS 1

PROJECT NUMBER
22-20

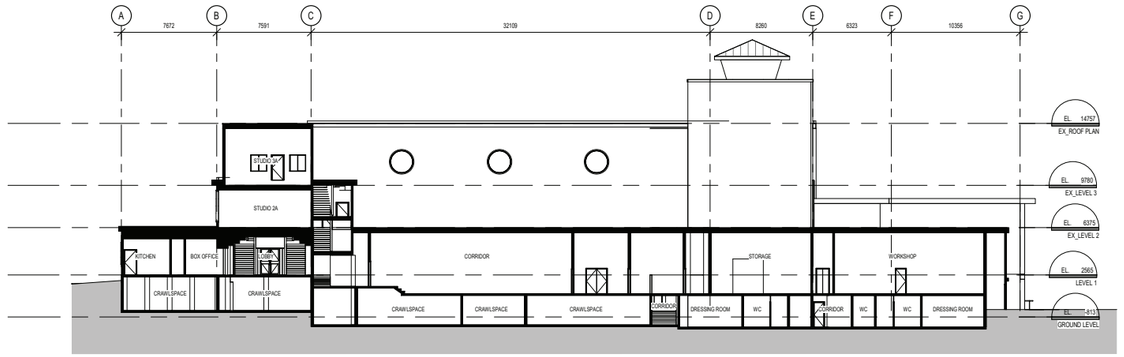
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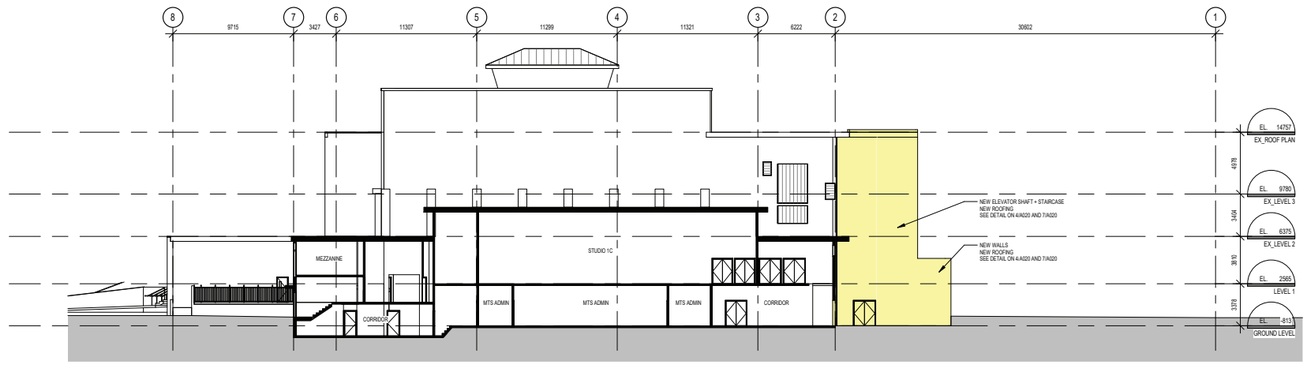
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1 NEW SECTION 3
1 : 200



2 NEW SECTION 4
1 : 200

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DRAWING TITLE
NEW_
SECTIONS 2

PROJECT NUMBER
22-20

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A311

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ATTACHMENT 4 – MTS COLLABORATORS, PARTNERS AND PRESENTERS LIST

MASSEY & ANVIL THEATRE
COLLABORATORS, PARTNERS AND PRESENTERS

In 2021-2022, Massey Theatre Society worked with the following organizations for artistic collaborations, presentations, productions, and more. This work brought hundreds of individual artists to the stages and attracted nearly 100,000 audience members to the theatres.

Massey Theatre and Eighth & Eight Creative Spaces

3 Wave Fitness
Anna Pidgorna
Archbishop Carney Regional Secondary School
Arts Council of New Westminster
Ballet BC
Boreal Productions
Century House Association
Chilliwack
Community Living Society
Gerry Poole
Hanson Canada
Influential Sports Inc.
James & Jamesy Performance Society
Kids in Motion
Krack Productions
Last Door Recovery Centre
Live Nation Canada-Calgary
Martha Wainwright
Mascall Dance Society
Moon Coin Productions
Mushtari Begum Festival
Music Box Music School
Negin Deldargolchin
New West Music
New Westminster Family Place
New Westminster Secondary School
New Westminster Symphony Orchestra
Outback Presents
Paquette Productions
Phoenix Dance Competition
Production Town Inc.
Pulse Dance Centre
Rice & Beans Theatre
Richmond Academy of Dance
Richmond Academy of Dance
Royal Canadian Theatre Company
Royal City Musical Theatre Society
Royal City Youth Ballet
Shotglass Productions
Shuang Music Ltd.
Sound the Alarm: Music/Theatre
The Arts Club Theatre Company
The Arts Conservatory
The Dance Force Studio
Timbre Concerts
Tri City Dance Centre
Turning Point Ensemble
UBC Centre for Inclusion and Citizenship
Urban Academy School
Vancouver Kiwanis Music Festivals Society
Vancouver Symphony Orchestra
Vancouver Thunderbird Chorus
Vancouver Welsh Men's Choir
Westminster House
Wonderheads Theatre Society
Xtreme Promotions Ltd.

Anvil Theatre

Axe Capoeira
Blackthorn
City of New Westminster
Co.Esraga
Deer Lake Congregation of Jehovah's Witnesses
Hilarapy
Jodi Proznick
Kelli Hanes
Locarno Band
Mandala Arts & Culture
Masae Day
Music Box
Music Encore Concert Society Dancers of Damelahamid
Musical Theatre Works
Out/Innerspace
Rec Recovery Soccer Association
Royal Canadian Theatre Company
Ruploops
Ryan Leslie Fisher
The Stage New West
The Kerplunks
The Sakura Singers
Vancouver Chamber Music Society
Vitaly Beckman

ATTACHMENT 5 – PROJECT BUDGET

			BUDGET	Comments
SOFT COSTS				
	CONSULTANTS			
	SUBTOTAL - CONSULTANTS	**$**	**2,653,706.00**	
	SUBTOTAL - AHJ FEES	**$**	**-**	
	SUBTOTAL - LAND & RELATED	**$**	**7,460.00**	
	SUBTOTAL - SERVICES RECONNECTION EARLY WORKS	**$**	**212,833.13**	
	TOTAL - SOFT COSTS	**$**	**2,873,999.13**	**20.38%**
HARD COSTS				
	CLASS D COST ESTIMATES - TIER 1 MVO SCOPE			
	PQS Jim Bush & Associates	$	13,882,800.00	
	CM Heatherbrae Builders	$	13,826,744.00	
	TARGET CONSTRUCTION BUDGET	**$**	**7,504,794.07**	
	DESIGN CONTIGENCY			
	10%	$	750,479.41	
	COST ESCALATION CONTIGENCY			
	9%	$	704,001.45	9% p.a.
	SUBTOTAL - DESIGN & COST ESCALATION CONTINGENCY	**$**	**1,454,480.86**	
	SERVICES RECONNECTION EARLY WORKS			
	Heatherbrae Builders	$	781,368.00	
	SUBTOTAL - SERVICES RECONNECTION EARLY WORKS	**$**	**781,368.00**	
	TOTAL - HARD COSTS	**$**	**9,740,642.93**	**69.08%**
CONTINGENCIES				
	SOFT COSTS			
	5%	$	133,058.30	
	HARD COSTS			
	15%	$	1,352,299.64	
	SUBTOTAL - CONTINGENCIES	**$**	**1,485,357.94**	
	TOTAL - CONTINGENCIES	**$**	**1,485,357.94**	**10.53%**
	TOTAL PROJECT COSTS	**$**	**14,100,000.00**	
	PROJECT BUDGET	$	14,100,000.00	
	VARIANCE	$	0.00	
	TARGET CONSTRUCTION BUDGET *Rounded to nearest $100,000*	$	7,500,000.00	
	TOTAL CONTINGENCY RESERVES *Includes design, cost escalation, soft costs, hard costs*	$	2,939,838.80	

ATTACHMENT 6 – MULTIPLE ACCOUNT EVALUATION MATRIX

				Cost								Project Objectives												City Policy Alignment							
				Class D Cost Estimate - Construction Cost	Overall project budget	Within approved project budget?	Additional budget required	Additional funding opps?	Funding eligibility verified?	Funding application ready?	Pre-design phase drawings completed?	Tailor scope to approved project budget	Prioritize urgent building repairs, replacements or upgrades	Replace end of life building components / 25-year service life	Aspirational Viability - Optimized Art Centre & Aesthetic Upgrades	Improve lifecycle cost performance	Upgrade/replace building envelope	Upgrade mechanical HVAC and DHW systems	Upgrade life safety	Upgrade accessibility	Upgrade seismic resistance	Improve energy performance	Advance Goals of 2019 Theatre Strategy	Facilities Asset Management Plan (Draft)	2021 Green Building Policy	2021 Energy Efficient Equipment Selection Policy	2022 Public Art	MTS Lease/Working Agreement	2017 Accessibility Committee / Council Motion	2022 eMobility Roadmap	Variance required?
In Scope MTR Project	Class D Costed Dec 2022	Tier 1 MVO	Scenario 1	$ 7,600,000.00	$ 14,100,000.00	Yes	$ -	No	n/a	n/a	Yes	Yes	Low	Low	Low	Low	Low	None	Med	None	Low	Low	Low	TBC	Low	Low	None	TBC	None	None	Yes
			Scenario 2	$ 12,200,000.00	$ 18,700,000.00	No	$ 4,600,000.00	FP Offsets GICB FCM CBR	No No No	Yes No No	Yes	No	Med	Med	Low	Med	Med	None	Med	None	Med	Low	Low	TBC	Low	Low	None	TBC	None	None	Yes
			Scenario 3	$ 13,600,000.00	$ 20,100,000.00	No	$ 6,000,000.00	EAF	No	No	Yes	No	Med	Med	Med	Med	Med	None	Med	Med	Med	Low	Med	TBC	Low	Low	None	TBC	Med	None	Yes
Out of Scope MTR Project	Not costed in 2022	Tier 2 Voluntary Code Upgrades		n/a	n/a	No	n/a	CBC 1,2,3 GICB FCM CBR	No	No	No	No	High	High	Med	High	Med	High	Med	Med	Med	Med	Med	TBC	Med	TBC	None	TBC	Med	None	n/a
		Tier 3 Optimized Art Centre		n/a	n/a	No	n/a	CCSF EAF GICB	No	No	No	No	Best	High	High	Best	High	High	High	High	Med	High	High	TBC	High	TBC	TBC	TBC	High	None	n/a

Revised MVO		ARCHITECTURE *PAI*	STRUCTURE *BBP*	MECHANICAL *AME Group*	ELECTRICAL *AES*	SPRINKLER *MJE*	ENVELOPE *JRS*	CODE *MC*	CIVIL *CORE*
TIER 1	SCENARIO 1	Gym demolition & hazmat abatement Site reinstatement (see civil) Ex. shared wall with gym upgraded to exterior assembly. Electric room (see electrical) New sprinkler room. Rebuild NW fake exterior wall (temporary wall) Add stair to address dead end condition intrduced by gym demolition New 4 storey stair and elevator shaft (no elevator)	Demolish Gymnasium. Upgrade existing North stud wall (current South wall of Gymnasium) to be a new exterior wall. This includes misc repairs after gym trusses are removed (and possibly wood-rot) and upgrades for wind and seismic loads. Electrical vault and Sprinkler room: New concrete structure. Rebuild NW fake exterior wall (temporary wall): foundations and new wall framing. Add new R/C stair to eliminate level 2 dead end condition created by demolition of gym: new foundations, R/C shaft wall stair and roof slab.	Demolition of gym HVAC and Plumbing equipment. Relocation of sprinkler tree and water entry room out of gym area, this includes providing new fire department Siamese connection. Perimeter drainage to accommodate gym demolition and new foundation walls.	Revision of the Fire Alarm panel and Annunciator. Fire alarm zones will have to be revised due to the removal of the gym and other changes made to the building as part of this project. Lighting for parking lot site remediation post demo. Upgrade exit signs along the egress path from the new basement space to outside of the building. Demolition of electrical equipment in the gym. Replacement of electrical equipment within main electrical room on basement level. Build new electrical room adjacent to existing room. Install new service equipment in new electrical room.	Test a reasonable sampling (+/- 6) of existing heads (required sprinkler head replacements should be handled under maintennance budget) Add sprinkler heads to existing non-conforming closet spaces. (x3)	Gym demolition: Re-use the north wall structure, upgrade insulation and envelope Rebuild NW fake exterior wall (temporary wall)	Sprinkler heads added to identified existing non-conforming closet spaces. (x3) Add new stair to eliminate level 2 dead end condition created by demolition of gym: new foundations, masonry shaft wall stair and roof deck. Upgrade exit signs along the egress path from the new basement space to outside of the building.	Bring water entry to new room in new basement building services wing Asphalt and parking to remediate site after gym demo Site drainage as required
TIER 1	SCENARIO 2 *All of Scenario 1, plus…*	Hazmat abatement Replace all wood windows and doors Roofs to be demolished down to existing structure, new assembly installed including insulation. Parapets to be extended as required to suit insulation depth.	New plywood on roofs where roofing is being replaced to seismically upgrade roof diaphragms. Repair of auditorium roof trusses. Upgrade of roof framing where new roof top units are being placed AND in snow drift zones. Wood rot remediation where discovered.				Roofs to be demolished down to existing structure, new assembly installed including insulation. Parapets to be extended as required to suit insulation depth. Patch & repair of envelope at mech penetrations Replace all the wood windows and doors Envelope upgrades to south Level 1.5 wall, NE Level 2 wall assemblies, and SW Level 3 wall. Upgrade NE wall assembly @ loading dock (high MC reading). Demolish to structure, new assembly installed including insulation. Upgrade wall SW to main entrance (high MC reading). Demolish to structure, new assembly installed including insulation. Upgrade South wall, Level 2 - This is a concrete CMU block wall with signs of large cracking. Demolish to structure, new assembly installed including insulation. Level 1.5 south door façade (above main entrance - there may be possible windows in this location) Envelope upgrades to front facing flashing at north extrance door		
TIER 1	SCENARIO 3 *All of Scenario 1 and 2, plus…*	Accessibility a. Add 4 stop elevator: masonry shaft, footing, pit, drainage, fire alarm integration b. Add 2 stop Performer's lift, remove existing stair climber L1 washroom upgrades: replace existing washroom with a new gender neutral washroom consisting of private stalls and a shared handwashing area. New layout to include 4 universal toilet rooms.	Framing modifications to accommodate washroom upgrades.	Elevator pit drains and ventilation for elevator shaft (for New Elevator only). Washroom upgrade: New fixtures, plumbing, and upgrade to minimum exhaust requirements.	Additional elec. work to support mech/arch scope (Washroom upgrade, added stair lighting, lighting in service addition) Addition of power connection for 4 stop elevator and 2 stop performer's lift. Washroom upgrade - upgrade lighting, provide power to any new mechanical units.			Washroom upgrade to minimum code requirements Accessibility (New Elevator): new foundations, pit, masonry shaft wall, hoist beam and roof deck.	

FUTURE SCOPE PACKAGES	ARCHITECTURE *PAI*	STRUCTURE *BBP*	MECHANICAL *AME Group*	ELECTRICAL *AES*	SPRINKLER *MJE*	ENVELOPE *JRS*	CODE *MC*	CIVIL *CORE*
TIER 2 Voluntary Code Upgrades	House lighting updates New washrooms added in place of storage at t.o. L2 stairs between gridlines 3 &4. Expand L2 washroom between gridline 2 &3 to displace adjacent office. Interior finish upgrade FOH (coord w seismic upgrade) Interior finish upgrade Audience Chamber (coord w seismic upgrade) New drainage a. Scope, and repair existing as required Stage deck condition assessment, replacement Structural upgrades to facilitate additioonal rigging points Ventilation to support kitchen amenity Dressing room bathroom/shower upgrade	Timber infill of level 2 studio floor. Structural upgrades to facilitate additional rigging points	Upgrade domestic hot water tanks Boiler replacements Air handling unit and other Rooftop unit replacements Provide seismic restraints for all new mechanical equipment to meet current building code requirements Stage smoke exhaust New drainage a. Scope, and repair existing as required Replace hydronic distribution pumps Ventilation to support kitchen amenity Dressing room bathroom/shower upgrade Providing cooling and ventilation to Entrance Lobby area, Admin office, dressing rooms, Studio 1C, all of L2	Additional elec. work to support mech/arch scope			REFER TO STRUCTURAL FOR UPGRADES TO MEET STRUCTURAL / SEISMIC CODES.	New drainage a. Scope, and repair existing as required

FUTURE SCOPE PACKAGES	ARCHITECTURE *PAI*	STRUCTURE *BBP*	MECHANICAL *AME Group*	ELECTRICAL *AES*	SPRINKLER *MJE*	ENVELOPE *JRS*	CODE *MC*	CIVIL *CORE*
TIER 3 Optimized Art Centre	House lighting updates Additional accessible viewing positions from balcony Platform lift to stage Orchestra pit add Additional windows and doors between Plaskett Gallery and exterior Upgrade fly system Add lighting truss Add hydraulic lift in restored orchestra pit Add servery / community commissary kitchen Additional washrooms L1 near Studio 1C	Seismic upgrade to entire building (suggest to Seismic Retrofit Guidelines level (approx. 60% of code or 10% in 50 year hazard, given 25 year retention plan).	Additional washrooms L1 near Studio 1C	New AV/Comm room. Upgrade exit signs to green running man type throughout the building. Upgrade exiting emergency lighting in the building. Work required for additional architectural and mechanical scope - auditorium upgrades and additional washrooms	Replacing all sprinklers. New sprinklers would be fast response.	Upgrade doors at main entrance and back entrance Upgrade levels 1.5-3 NE wall assembly (space above windows) Full exterior cladding renewal (ie. Get rid of stucco, wood ship-lap)	Upgrade exit signs to green running man type throughout the building. Upgrade exiting emergency lighting in the building. REFER TO STRUCTURAL FOR UPGRADES TO MEET STRUCTURAL / SEISMIC CODES.	Cohesive landscape / grading / parking solution to area surrounding buildilng.

Code	Source	Administered By…	Funding Name	Aimed At…	Eligible Costs	Study Required?	Notes	Link
FP Offsets	Municipal	CNW Finance Dept	Financial Plan Offsets	Improved energy efficiency and GHG emission reduction	Tier 1/Scenario 2 - roof and building envelope upgrades $4.6MM	No		
GICB	Federal	Infrastructure Canada	Green and Inclusive Community Buildings Program	Improved enviro and accessibility outcomes	Between $3MM and $25MM for large retrofit / new build projects if >25% improvement	Yes	Demo > 30% area = new build. Need to check.	https://www.infrastructure.gc.ca/gicb-bcvi/applicant-guide-demandeur-eng.html
FCM CBR	Federal	Federation of Canadian Municipalities	Green Municipal Fund Community Building Retrofit Program	Improved enviro and accessibility outcomes	Energy monitoring and study costs up $90K; capital costs up to $5MM if >30% improvement	Yes	Two pathways available. Need to review.	https://greenmunicipalfund.ca/community-buildings-retrofit-initiative
EAF	Federal	Employment and Social Development Canada	Enabling Accessibility Fund Small Projects Component	Improved accessibility	Up to $100K for small projects; up to $3MM for mid-size projects.	No	Custom flat rates apply - see flowchart via link.	https://www.canada.ca/en/employment-social-development/programs/enabling-accessibility-fund.html
CBC 1	Provincial, Federal	BC Hydro	Clean BC Custom Program	Improved energy efficiency and GHG emission reduction	Energy study up to $20K; capital costs up to $200K if switching from gas to elec	Yes		https://betterbuildingsbc.ca/incentives/cleanbc-custom-program/
CBC 2	Provincial, Federal	BC Hydro	Clean BC Custom Lite Program	Improved energy efficiency and GHG emission reduction	Energy study up to $2K; capital costs up to $72K if switching from gas to elec	Yes		https://betterbuildingsbc.ca/incentives/cleanbc-custom-lite-program/
CBC 3	Provincial, Federal	BC Hydro	Clean BC Comeercial Express Program	Improved energy efficiency and GHG emission reduction	No energy study required; capital costs up to $100K based on qualitative narrative	No		https://www.betterbuildingsbc.ca/incentives/cleanbc-commercial-express-program/
CCSF	Federal	Canadian Heritage	Canada Cultural Spaces Fund	Improved arts and heritage culture outcomes	Up $500K feasibility study; capital costs up to $15MM	Yes	% coverage limits apply.	https://www.canada.ca/en/canadian-heritage/services/funding/cultural-spaces-fund.html

ATTACHMENT 7 – FACILITY CONDITION ASSESSMENT REPORT

NEW WESTMINSTER



Submission to
New Westminster

FACILITY CONDITION ASSESSMENT
Massey Theatre

October 17, 2022

Roth IAMS Ltd.
207 – 1075 North Service Road West, Oakville, ON L6M 2G2
www.rothiams.com
Project No. 22059

Roth IAMS
Integrated Asset Management Strategies

Executive Summary

Facility Summary

The Massey Theatre is located at 735 8th Ave, New Westminster, BC. The building is a three-storey structure with a partial basement, constructed circa 1948. The 1948 Massey Theatre building was part of the old New Westminster High School. The section connecting the Theatre building with the old High School was demolished in 2008 to construct a fire lane. The Massey Theatre is currently used as a performing arts theatre. The building is provided with systems and components which have been updated or replaced since the initial building construction. The building's total gross floor area is estimated to be approximately 6,100 SM.

Facility No	9264
Name	Massey Theatre
Address	735 Eighth Avenue, New Westminster, BC
Area	6100 SM
Floors	-
Year Constructed	1948
Condition Assessment Date	2022-05-17
Replacement value	$17,786,446.60
5 Year FCI	42.5%

System Summaries

Structural and Architectural Summary

The three-storey building with a partial basement appears to be constructed on cast-in-place concrete footings. Where exposed, the superstructure for the 1948 building appears to be a mix of wood framing and concrete framing construction with wood and steel roof trusses at the building's flat roofs. A newer rooftop smoke vent was constructed above the theatre stage with metal panel siding and metal roof panels. The partial basement floor is a cast-in-place concrete slab-on-grade with exterior concrete basement walls. The building includes a theatre with a mezzanine, offices, activity rooms, storage rooms, dressing rooms, a concession, utility rooms, and two gymnasiums with washrooms, showers, and change rooms. The building's exterior walls are generally comprised of stucco siding and wood siding. The building exteriors include a metal-framed window wall with fixed and operable single glass units located on the first floor east elevation. The exterior front main entrance doors are glazed metal double doors set in metal frames with butt hinges and the emergency exit doors are hollow-core metal single and double doors set in metal frames with butt hinges. Exterior doors are mostly provided with panic bars and self closure hardware. The exterior windows are single panel wood framed. The building's flat roof is covered with a conventional built-up roofing system. Overall, the building envelope components appear to be in fair to poor condition except for the exterior doors which are in a good condition. The interior

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finishes in the building include painted concrete floor, vinyl sheet flooring, vinyl floor tiles, carpet flooring, ceramic floor tiles, quarry floor tiles, hardwood flooring, painted wall finish, acoustic wall panels, ceramic wall tiles, suspended acoustic ceiling tiles, acoustic ceiling panels, and painted ceiling finish. The interior finishes appear to be in good to fair condition except for the 1990 carpets, the vinyl flooring, and the acoustic ceiling panels which are in poor condition.

Plumbing and Mechanical Systems Summary

Access between the main floor and the second floor is provided by a wheelchair lift. The facility is provided with a domestic water distribution system that appears to be composed of copper piping with soldered fittings. Sanitary waste drainage appears to be composed of a mix of cast iron pipes with ABS and galvanized piping underneath the sinks. Rainwater drainage piping is assumed to be cast iron and includes roof drains and internal leaders. The washroom plumbing fixtures include one and two-piece floor mounted water closets with manual flush valves, countertop mounted vitreous china and stainless-steel single basin lavatories with manually activated hot and cold taps, wall-mounted urinals with manual flush valves and through wall commercial grade showers with common mixing valves. There are wall mounted enamel on cast iron custodial sinks in the janitor rooms, stainless-steel kitchen sinks in the staff break rooms, and wall mounted, non-refrigerated, stainless steel drinking fountains in the corridors. Domestic hot water is provided by three electric water heaters installed in the tunnel. Heating hot water is provided by six gas-fired modular hot water boilers which supply hot water to the air handling units, and to the hydronic fin tube radiation system. Fresh and recirculated air is provided by the air handling units equipped with heating coils and by several electric heat/electric cool packaged units located on the roof. Conditioned air is distributed to the individual interior spaces via constant volume diffusers and the return air via vent grilles. Additional cooling for the performer’s room is provided by a water-cooled condenser. The building uses pneumatic controls as a method of control for the HVAC systems. Fire suppression for the interior spaces is provided by a wet sprinkler system. The entire building is equipped with wall mounted ABC fire extinguishers.

Electrical Systems Summary

The power from the utility is supplied at 12.5 KV to the High Voltage Electrical Vault and is distributed to five 1200A, 120/208V distribution switchboards and a 4000A, 120/208V main distribution switchboard via a 1000 KVA 12.5KV/120/208V step down transformer. The High Voltage Electrical Vault also supplies power to the old school. The 120/208V switchboards feed distribution panelboards, each rated at 225A 120/208V located in the electrical rooms and corridors throughout the facility. The interior lighting system includes linear surface mounted and recessed fluorescent tube light fixtures in most offices, activity rooms and hallways; quartz halogen lighting fixtures in the theatre and pendant metal halide lighting fixtures in the large gym. The lighting system for the theatre also includes ceiling mounted stage lighting with dimmer controls. Exterior

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lighting is provided by wall pack lights around the perimeter of the building. Other electrical components include a zone-based fire alarm system, an intrusion alarm system, a public address system, video surveillance system, emergency battery packs and Exit signs that are strategically located throughout the building to mark the path of emergency egress.

Site Feature Systems Executive Summary

The Massey Theatre site development includes an asphalt paved parking lot, asphalt paved driveway, concrete paved walkways, precast concrete pavers, concrete loading dock with metal guardrails, exterior concrete ramps, exterior concrete-framed stairs, and exterior wood-framed stairs, chain link fence, electrical massage sign on metal posts, and a landscaping area with lawn, trees, and shrubs. Overall, the site components appear to be in good condition except for the asphalt paved parking lot which is in a poor condition, and the exterior wood-framed stairs which are in fair condition.

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Table of Contents

1 Introduction 1
2 Scope of Work 1
2.1 Deviations from the Guide 2
3 Condition Rating 3
4 Limiting Conditions 3
5 Condition Assessment Report 4

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1 INTRODUCTION

Roth IAMS Ltd., was retained by New Westminster to undertake a Building Condition Assessment (BCA) of Massey Theatre, located at 735 Eighth Avenue, New Westminster, -.

The site visit was undertaken on 2022-05-17.

2 SCOPE OF WORK

The scope of work was generally based on the ASTM Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process (E2018-15) and included:

- Background Information Request and Review;
- Interview(s) with Knowledgeable Site Staff;
- Walk-through Site Assessment Visit; and
- Preparation of a comprehensive report.

The ASTM defines a physical deficiency as a conspicuous defect or significant deferred maintenance of a site's material systems, components, or equipment as observed during the site assessor's walk-through site visit. Included within this definition are material systems, components, or equipment that are approaching, have reached, or have exceeded their typical expected useful life (EUL) or whose remaining useful life (RUL) should not be relied upon in view of actual or effective age, abuse, excessive wear and tear, exposure to the elements, lack of proper or routine maintenance, etc. This definition specifically excludes deficiencies that may be remedied with routine maintenance, miscellaneous minor repairs, normal operating maintenance, etc., and excludes conditions that generally do not constitute a material physical deficiency of the site.

The review of the site was based on a visual walk-through review of the visible and accessible components of the property, building and related structures. The roof surface, interior and exterior wall finishes, and floor and ceiling finishes of the on-site building and related structures were visually assessed to determine their condition and to identify physical deficiencies, where observed. The assessment did not include an intrusive investigation of wall assemblies, ceiling cavities, or any other enclosures/assemblies. No physical tests were conducted, and no samples of building materials were collected to substantiate observations made, or for any other reason.

The review of the mechanical systems, electrical systems, and fire & life safety systems at the property included discussions with the site representative and review of pertinent maintenance records that were made available. A visual walk-through assessment of

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the mechanical systems, electrical systems, and fire & life safety systems was conducted to determine the type of systems present, age, and aesthetic condition, with considerations of the reported performance. No physical tests were conducted on these systems.

A detailed evaluation of the property development's compliance with applicable national and/or provincial Building Codes and/or Fire Codes is not part of the scope of this assessment. It is assumed that the existing buildings and related structures were reviewed and approved by local authorities at the time of construction. However, applicable codes may be referenced by Roth IAMS Ltd., at their discretion, to identify deficiencies and appropriate recommendations.

Replacement and repair costs are based on unit rates published by Means Publishing and/or Marshall & Swift Valuation Service, combined with local experience gained by Roth IAMS Ltd. The quantities associated with each item have been estimated during a walk-through site assessment and do not represent exact measurements or quantities. At the time of replacement, specific "scope of work" statements and quotations should be determined, and the budgetary items revised to reflect actual expenditures. Not included are items that would be addressed as routine maintenance. However, the capital costs may include items, which are currently managed under the Operations and Maintenance budget for the site.

Opinions of probable costs for deficiencies that are individually less than the established threshold amount are generally not included in the FCA cost tables. The exception are deficiency costs relating to life, safety or accessibility, these may be included regardless of this cost threshold.

2.1 Deviations from the Guide

The major deviations from ASTM E2018-15 for this project that was not included are as follows:

- A review of municipal/public records for zoning;
- A comprehensive building and/or fire & life safety code/regulatory review for compliance. It is assumed that at the time of building construction/commission and/or subsequent renovation(s), a duty of care was undertaken to ensure the building and related structures were constructed in accordance with the current building and fire code, as well as reviewed and approved by the local authorities having jurisdiction; and
- A review of municipal/regional records to determine if the property resides in a designated flood plain.

Furthermore, the BCA did not include a:

- Verification of the number of parking spaces;

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- Verification of gross and net usable areas of the site building(s); and
- Review of as-built construction drawings for the building and site.

3 CONDITION RATING

Roth IAMS Ltd. applied a condition rating to each component assessed and included in the report. Table 1 outlines the condition rating system utilized.

Table 1 – Condition Rating

Rating	Definition
1: Very Good	The infrastructure in the system or network is generally in very good condition, typically new or recently rehabilitated. A few elements show general signs of deterioration that require attention. Remaining Useful Life greater than 10.
2: Good	The infrastructure in the system or network is in good condition; some elements show general signs of deterioration that require attention. A few elements exhibit significant deficiencies
3: Fair	The infrastructure in the system or network is in fair condition; it show s general signs of deterioration and requires attention. Some elements exhibit significant deficiencies.
4: Poor	The infrastructure in the system or network is in poor condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration.
5: Very Poor	The infrastructure in the system or network is in unacceptable condition with widespread signs of advanced deterioration. Many components in the system exhibit signs of imminent failure, which is affecting service

4 LIMITING CONDITIONS

This report has been prepared for the exclusive and sole use of New Westminster. The report may not be relied upon by any other person or entity without the express written consent of Roth IAMS Ltd. and the City.

Any reliance on this report by a third party, any decisions that a third party makes based on this report, or any use at all of this report by a third party is the responsibility of such third parties. Roth IAMS Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions taken, based on this report.

The assessment of the building/site components was performed using methods and procedures that are consistent with standard commercial and customary practice as outlined in ASTM Standard E 2018-15 for facility condition assessments. As per this ASTM Standard, the assessment of the building/site components was based on a visual walk-through site visit, which captured the overall condition of the site at that specific point in time only.

No legal surveys, soil tests, environmental assessments, geotechnical assessments, detailed barrier-free compliance assessments, seismic assessments, detailed

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engineering calculations, or quantity surveying compilations have been made. No responsibility, therefore, is assumed concerning these matters. Roth IAMS Ltd. did not design or construct the building(s) or related structures and therefore will not be held responsible for the impact of any design or construction defects, whether or not described in this report. No guarantee or warranty, expressed or implied, with respect to the property, building components, building systems, property systems, or any other physical aspect of the property is made.

The recommendations and our opinion of probable costs associated with these recommendations, as presented in this report, are based on walk-through non-invasive observations of the parts of the building which were readily accessible during our visual review. Conditions may exist that are not as per the general condition of the system being observed and reported in this report. Opinions of probable costs presented in this report are also based on information received during interviews with operations and maintenance staff. In certain instances, Roth IAMS Ltd. has been required to assume that the information provided is accurate and cannot be held responsible for incorrect information received during the interview process. Should additional information become available with respect to the condition of the building and/or site elements, Roth IAMS Ltd. requests that this information be brought to our attention so that we may reassess the conclusions presented herein.

The opinions of probable costs are intended for order of magnitude budgeting purposes only. The scope of work and the actual costs of the work recommended can only be determined after a detailed examination of the element/system in question, understanding of the site restrictions, understanding of the effects on the ongoing operations of the site/building, definition of the construction schedule, and preparation of tender documents. We expressly waive any responsibilities for the effects of any action taken as a result of these endeavors unless we are specifically advised of prior to, and participate in the action, at which time, our responsibility will be negotiated.

Our opinions and recommendations presented in our reports will be rendered in accordance with generally accepted professional standards and are not to be construed as a warranty or guarantee regarding existing or future physical conditions at the site or regarding compliance of Site systems/components and procedures/operations with the various regulating codes, standards, regulations, ordinances, etc.

5 CONDITION ASSESSMENT REPORT

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A Substructure
A10 Foundations

Element Description	
Name	A101001 - Standard Foundations
Installation Year	1948
Condition	2 - Good
Expected Useful Life	75 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	300 / LM Footprint
Unit Cost	$984.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$383,760.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description
According to the provided drawings, the building is generally constructed on reinforced concrete spread and continuous footings which are bearing on native undisturbed soil.

Condition Narrative
No major deficiencies were observed or reported on the superstructure to suggest differential settlement of the building foundations. The building foundations are nearing the end of their expected useful life, although their remaining useful life has been extended due to the absence of significant observed or reported deficiencies. Since this element is mostly below grade and is concealed, no photographs are available to confirm the construction and condition.

Recommendations

Recommendations #1 - Standard Foundations	
Type	Life Cycle Replacement
Year	2028
Cost	$383,760.00

Element Description	
Name	A103001 - Slab on Grade
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	75 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	2400 / SM Footprint
Unit Cost	$71.33
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$222,549.60
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's basement floor and part of the first floor are provided with a slab-on-grade, which is poured concrete continuously supported likely on a moisture barrier on a free draining gravel layer on engineered fill or native soil.

Condition Narrative

The basement concrete slab-on-grade is mostly exposed. At the observed isolated cracks, no significant elevation difference was noted to suggest differential settlement of the concrete slab-on-grade . Recommend that the cracks be monitored and should significant change be noted, a licensed engineer be retained to evaluate the performance of the concrete slab-on-grade. Concrete slab in the mechanical room was observed to be damaged and apparently stained by spilled chemicals. The component is approaching the end of its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

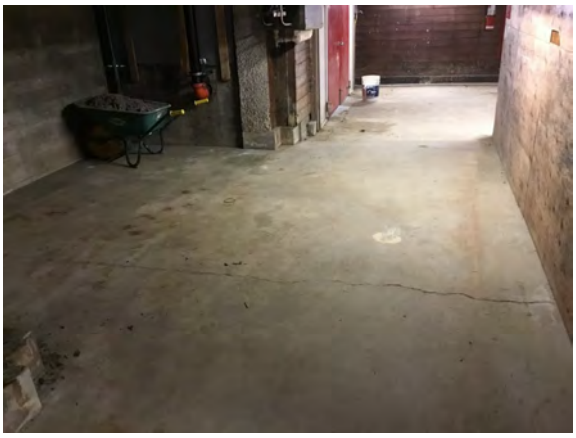
Photos



Massey Theatre - A103001



Massey Theatre - A103001



Massey Theatre - A103001

Recommendations

Recommendations #1 - Slab on Grade	
Type	Life Cycle Replacement
Year	2028
Cost	$222,549.60

B Shell
B10 Superstructure

Element Description	
Name	B103001 - Structure
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	75 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$280.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$2,220,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Based on the provided drawings, the superstructure roof framing is a mix of wood and steel trusses. The audience balcony in the theatre is a poured reinforced concrete, whereas the building's floors and stairs are wood framing.

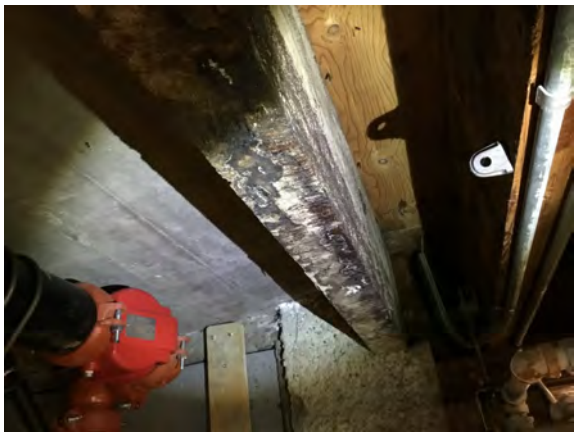
Condition Narrative

Hairline cracks on the third floor exterior walls surface, large gymnasium bleachers area, and the second floor mechanical room were observed. Monitoring the cracks for significant changes is recommended. In the other assessed areas, no significant deterioration was noted to suggest movement or twisting of the building structure. Also, some of the wood beams and posts in the basement crawl space area were observed to rotten and damaged. The component is approaching the end of its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - B103001



Massey Theatre - B103001



Massey Theatre - B103001



Massey Theatre - B103001



Massey Theatre - B103001



Massey Theatre - B103001

Recommendations

Recommendations #1 - Structure	
Type	Life Cycle Replacement
Year	2028
Cost	$2,220,400.00

B20 Exterior Enclosure

Element Description	
Name	B201023 - Stucco
Installation Year	1948
Condition	4 - Poor
Expected Useful Life	40 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	2600 / SM
Unit Cost	$180.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$608,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The majority of the building's exterior walls are provided with a stucco finish.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Minor cracks which are less than 1.0 mm wide. - Damaged and deteriorated stucco which may allow water penetration into the building. - Stucco delaminated from the exterior wall at the top of the northeast elevation. - The stucco has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - B201023



Massey Theatre - B201023



Massey Theatre - B201023



Massey Theatre - B201023



Massey Theatre - B201023

Recommendations

Recommendations #1 - Stucco	
Type	Life Cycle Replacement
Year	2024
Cost	$608,400.00

Element Description	
Name	B201024 - Metal Siding
Installation Year	1990
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	50 / SM
Unit Cost	$160.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$10,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The exterior walls at the theatre rooftop smoke vent are clad with metal panels.

Condition Narrative

No major deficiencies were observed or reported. However, repainting the metal panels is recommended as part of the maintenance activities.

Photos



Massey Theatre - B201024



Massey Theatre - B201024

Recommendations

Recommendations #1 - Metal Siding	
Type	Life Cycle Replacement
Year	2030
Cost	$10,400.00

Element Description	
Name	B201026 - Wood Siding
Installation Year	1990
Condition	4 - Poor
Expected Useful Life	30 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	76 / SM
Unit Cost	$200.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$19,760.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Part of the building's exterior walls is finished with wood siding. Some exterior windows were also boarded with wood and plywood siding.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Damaged and cracked wood siding which may allow water penetration into the building. - The wood siding has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - B201026



Massey Theatre - B201026



Massey Theatre - B201026

Recommendations

Recommendations #1 - Wood Siding	
Type	Life Cycle Replacement
Year	2024
Cost	$19,760.00

Element Description	
Name	B202001 - Windows
Installation Year	1948
Condition	4 - Poor
Expected Useful Life	35 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	66 / SM
Unit Cost	$950.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$81,510.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's exterior windows are wood-framed with single glass units.

Condition Narrative

The windows are likely original to the construction of the building. The following deficiencies were observed or reported at the time of the assessment: - Damaged window wood frames. - The broken glass in some windows on the basement and first floors were replaced with plywood. - Single glass windows are not energy efficient. - The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - B202001



Massey Theatre - B202001



Massey Theatre - B202001



Massey Theatre - B202001



Massey Theatre - B202001

Recommendations

Recommendations #1 - Windows	
Type	Life Cycle Replacement
Year	2024
Cost	$81,510.00

Element Description	
Name	B202003 - Window Walls
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	4 Years
Renewal Year	2026
Quantity / Unit of Measure	25 / SM
Unit Cost	$1,250.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$40,625.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's first floor east elevation is provided with window walls that are metal-framed with fixed and openable single glass units.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Single glass windows are not energy efficient. - The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - B202003

Recommendations

Recommendations #1 - Window Walls	
Type	Life Cycle Replacement
Year	2026
Cost	$40,625.00

Element Description	
Name	B203023 - Single Door - Hollow Metal
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	5 Years
Renewal Year	2027
Quantity / Unit of Measure	12 / Each
Unit Cost	$3,200.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$49,920.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building is provided with emergency exit hollow metal single doors set in metal frames with butt hinges. Access to the building roofs is also provided by hollow metal single doors. Emergency exit doors are provided with panic bars and self closure hardware. Some exit doors are provided also with a vision panel.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Damaged roof access door was observed. Repair is recommended. - Some exterior metal doors are rusted at the door bottom. - Metal door's painting is faded or peeling. Repainting is recommended to protect the exterior doors from the elements. - The component has surpassed its expected useful life, although the remaining useful life has been extended pending the execution of the aforementioned recommendations. An allowance for the repair and repainting of the exterior metal doors is included in this report.

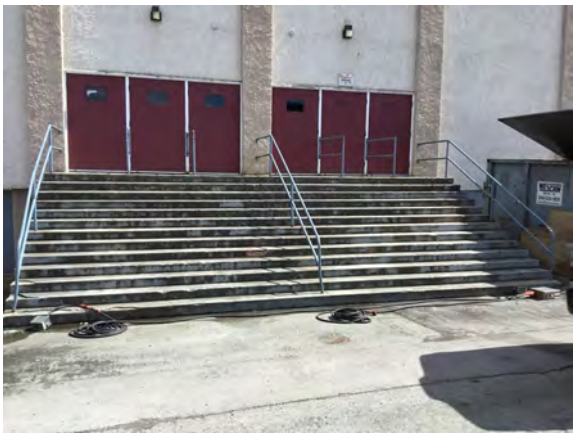
Photos



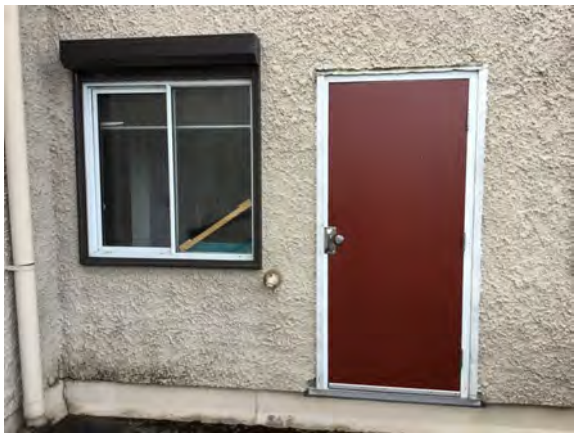
Massey Theatre - B203023



Massey Theatre - B203023



Massey Theatre - B203023



Massey Theatre - B203023



Massey Theatre - B203023



Massey Theatre - B203023

Recommendations

Recommendations #1 - Exterior Metal Doors	
Type	Major Repair
Year	2023
Cost	$5,000.00

Recommendations #2 - Single Door - Hollow Metal	
Type	Life Cycle Replacement
Year	2028
Cost	$49,920.00

Element Description	
Name	B203026 - Double Door - Hollow Metal
Installation Year	1948
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	13 / Each
Unit Cost	$6,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$101,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The emergency exit stairwells, storage, and utility rooms are provided with hollow metal double doors at street level. Hollow metal double doors are set in metal frames with butt hinges. Emergency exit doors are provided with panic bars and self closure hardware. Some exterior metal doors are also provided with vision panels.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. The component is approaching the end of its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

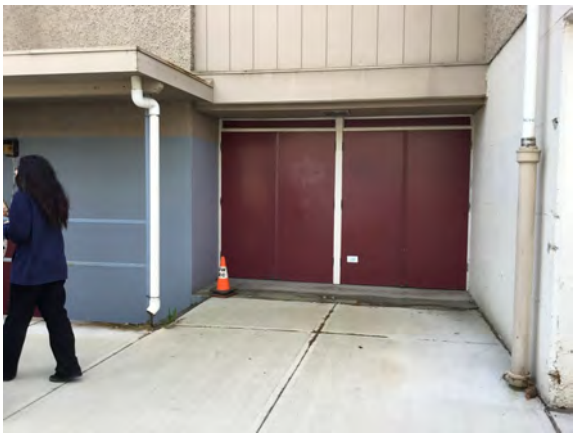
Photos



Massey Theatre - B203026



Massey Theatre - B203026



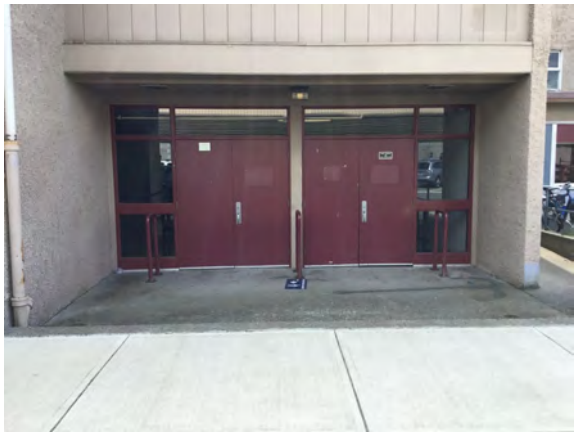
Massey Theatre - B203026



Massey Theatre - B203026



Massey Theatre - B203026



Massey Theatre - B203026

Recommendations

Recommendations #1 - Double Door - Hollow Metal	
Type	Life Cycle Replacement
Year	2028
Cost	$101,400.00

Element Description	
Name	B203028 - Double Door - Glazed
Installation Year	1990
Condition	2 - Good
Expected Useful Life	35 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	4 / Each
Unit Cost	$9,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$46,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's main entrances are provided with glass doors in metal frames mounted on metal frames with butt hinges. Doors are provided with panic bars and self closure hardware.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. The component is approaching the end of its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - B203028



Massey Theatre - B203028

Recommendations

Recommendations #1 - Double Door - Glazed	
Type	Life Cycle Replacement
Year	2028
Cost	$46,800.00

B30 Roofing

Element Description	
Name	B301021 - Conventional - Built-Up Roof
Installation Year	1990
Condition	4 - Poor
Expected Useful Life	22 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	3850 / SM
Unit Cost	$200.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$1,001,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's flat roofs are covered with a built-up roofing system.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Roofing deterioration due to standing water and water ponding. - Bare spots from ballast were observed. - Previous repair and patches were observed. - Roof leaks were reported. - The roof is covered with debris, moss, and algae. - The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - B301021



Massey Theatre - B301021



Massey Theatre - B301021



Massey Theatre - B301021



Massey Theatre - B301021



Massey Theatre - B301021

Recommendations

Recommendations #1 - Conventional - Built-Up Roof	
Type	Life Cycle Replacement
Year	2024
Cost	$1,001,000.00

Element Description	
Name	B301028 - Metal Roofing
Installation Year	1990
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	35 / SM
Unit Cost	$280.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$12,740.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The theatre rooftop smoke vent and the rooftop mechanical unit are covered with standing seam prefinished metal roof panels, attached likely by clips to the roof structure.

Condition Narrative

The smoke vent metal roof cover is performing as intended at the time of the assessment, no roof leaks were reported or observed. Whereas the rooftop mechanical unit metal roof is missing two panels and the metal ridge cap is damaged. Replacing the missing roof panels and the metal ridge cap is recommended.

Photos



Massey Theatre - B301028



Massey Theatre - B301028



Massey Theatre - B301028

Recommendations

Recommendations #1 - Metal Roofing	
Type	Life Cycle Replacement
Year	2030
Cost	$12,740.00

C Interiors
C10 Interior Construction

Element Description	
Name	C101001 - Fixed Partitions - Interior Walls
Installation Year	1948
Condition	2 - Good
Expected Useful Life	75 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$95.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$753,350.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description
Room separations and hallways are generally provided with interior wood framing partition walls that are finished with painted drywalls or painted wood panels. Concrete masonry block (CMU) walls are also used as interior partition walls for fire-rated separation.

Condition Narrative
No significant deficiencies were observed or reported. However, Some interior walls had the drywalls removed and wall studs exposed. Ceiling drywall damage was observed The component is approaching the end of its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos

Massey Theatre - C101001


Massey Theatre - C101001

Recommendations

Recommendations #1 - Fixed Partitions	
Type	Life Cycle Replacement
Year	2028
Cost	$753,350.00

Element Description	
Name	C101024 - Retractable Partitions - Sliding Accordion - Plaskett Gallery
Installation Year	2010
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	13 Years
Renewal Year	2035
Quantity / Unit of Measure	40 / SM
Unit Cost	$775.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$40,300.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

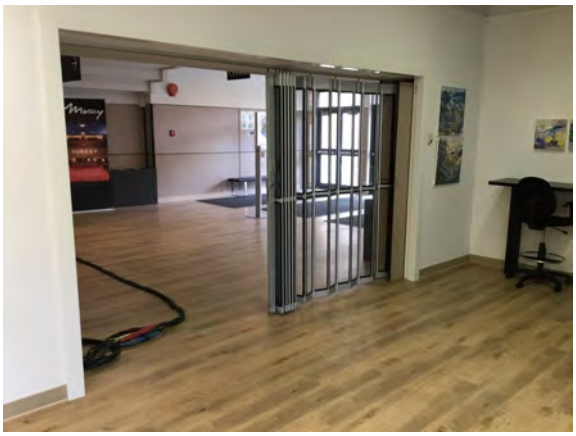
Description

The Plaskett Gallery, located on the second floor, is provided with two glazed aluminum retractable sliding accordion doors.

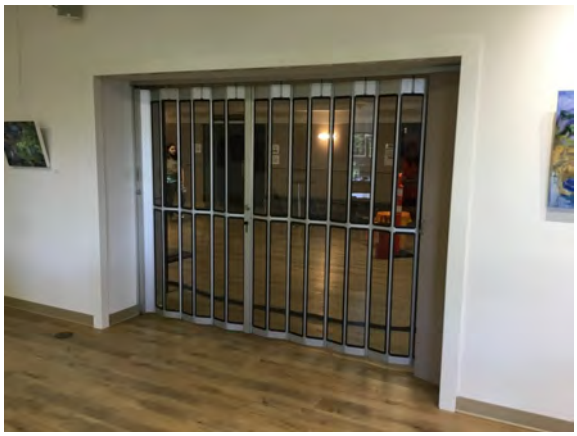
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C101024



Massey Theatre - C101024

Recommendations

Recommendations #1 - Retractable Partitions - Sliding Accordion	
Type	Life Cycle Replacement
Year	2035
Cost	$40,300.00

Element Description	
Name	C101024 - Retractable Partitions - Sliding Accordion - Hallway and Dance Studio
Installation Year	2010
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	13 Years
Renewal Year	2035
Quantity / Unit of Measure	60 / SM
Unit Cost	$775.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$60,450.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

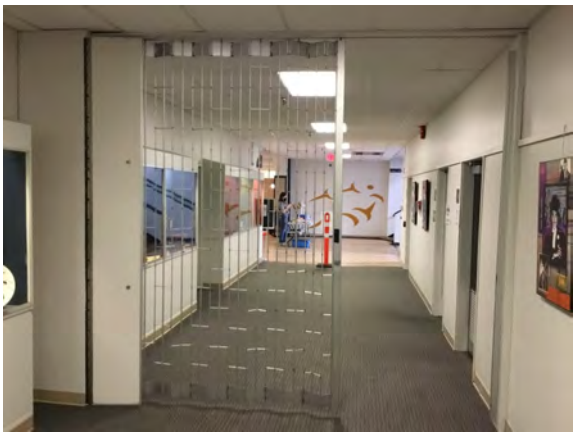
Description

The first-floor hallway and the basement floor dance studio are provided with aluminum retractable sliding partitions.

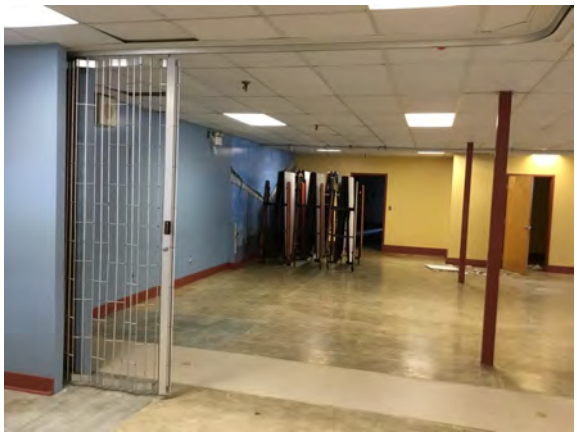
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C101024



Massey Theatre - C101024



Massey Theatre - C101024

Recommendations

Recommendations #1 - Retractable Partitions - Sliding Accordion	
Type	Life Cycle Replacement
Year	2035
Cost	$60,450.00

Element Description	
Name	C101025 - Retractable Partitions - Gym (Manual) - Large Gymnasium
Installation Year	1990
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	75 / SM
Unit Cost	$300.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$29,250.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The large gymnasium is provided with a manual retractable sliding partition.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - C101025



Massey Theatre - C101025

Recommendations

Recommendations #1 - Retractable Partitions - Gym (Manual)	
Type	Life Cycle Replacement
Year	2028
Cost	$29,250.00

Element Description	
Name	C101027 - Retractable Partitions - Overhead Counter Shutter - Concession and Administration Office
Installation Year	2010
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	2 / Each
Unit Cost	$3,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$7,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The service counter at the concession, which is at the second-floor entrance lobby, is provided with an overhead counter shutter. The administration office is also provided with an aluminum shutter to enclose file storage shelves.

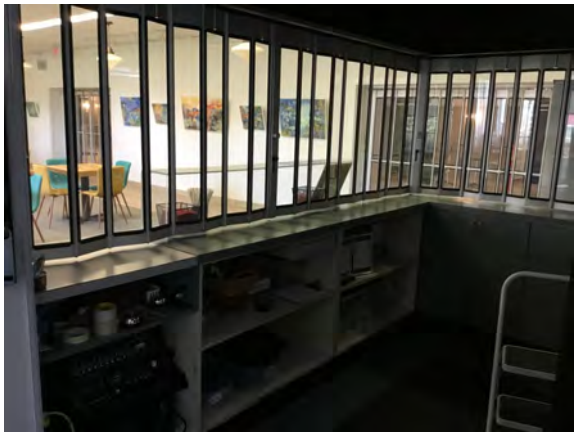
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C101027



Massey Theatre - C101027



Massey Theatre - C101027

Recommendations

Recommendations #1 - Retractable Partitions - Overhead Counter Shutter	
Type	Life Cycle Replacement
Year	2040
Cost	$7,800.00

Element Description	
Name	C102022 - Single Door - Wood - Interior
Installation Year	1990
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	110 / Each
Unit Cost	$2,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$286,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

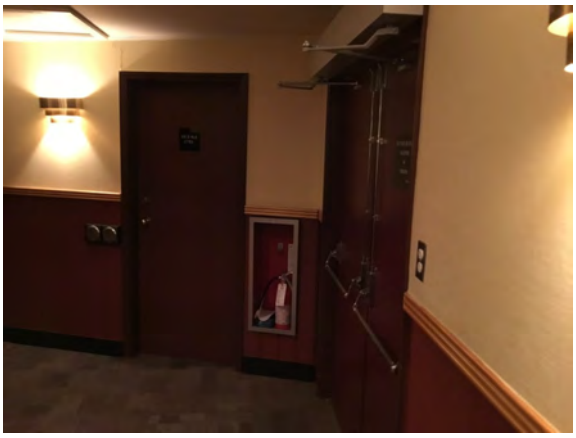
Description

The offices, washrooms, and different rooms are provided with solid core wood doors mounted to wood frames with butt hinges.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

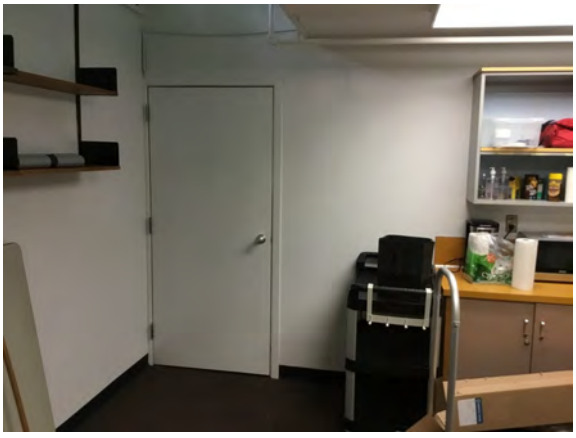
Photos



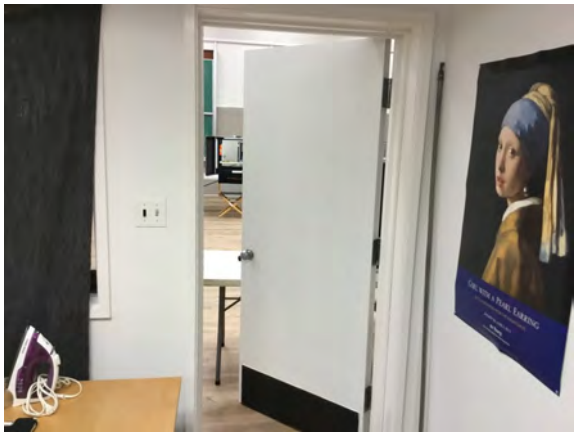
Massey Theatre - C102021



Massey Theatre - C102021



Massey Theatre - C102021



Massey Theatre - C102021

Recommendations

Recommendations #1 - Single Door - Wood	
Type	Life Cycle Replacement
Year	2030
Cost	$286,000.00

Element Description	
Name	C102025 - Double Door - Wood - Interior
Installation Year	1990
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	32 / Each
Unit Cost	$3,500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$145,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

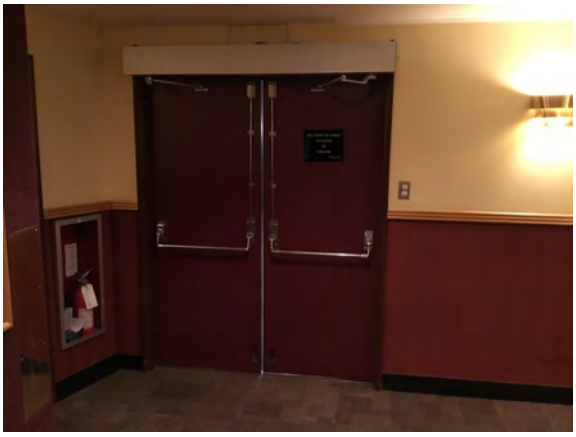
Description

The building's interior doors include solid core wood double doors mounted on wood frames with butt hinges. Some interior double doors are provided with vision panels, panic bars, and self closure.

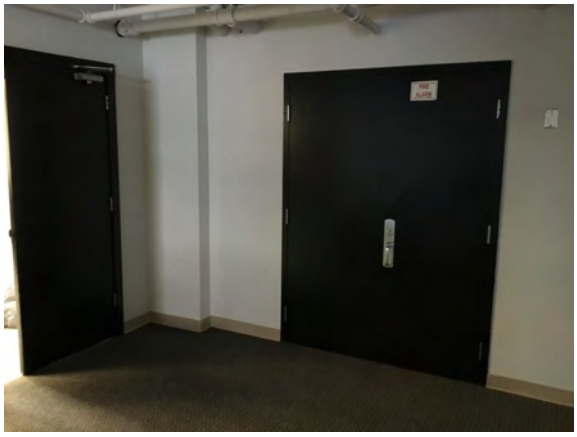
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C102025



Massey Theatre - C102025



Massey Theatre - C102025

Recommendations

Recommendations #1 - Double Door - Wood	
Type	Life Cycle Replacement
Year	2030
Cost	$145,600.00

Element Description	
Name	C102026 - Double Door - Glazed - Interior
Installation Year	1990
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	7 / Each
Unit Cost	$7,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$63,700.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's interior doors include glass double doors in wood frames mounted on wood frames with butt hinges. Some interior double doors are provided with safety glass, panic bars, and self closure.

Condition Narrative

The doors appear to be functioning as intended at the time of the assessment.

Photos



Massey Theatre - C102026



Massey Theatre - C102026



Massey Theatre - C102026



Massey Theatre - C102026



Massey Theatre - C102026

Recommendations

Recommendations #1 - Double Door - Glazed	
Type	Life Cycle Replacement
Year	2030
Cost	$63,700.00

Element Description	
Name	C103005 - Lockers - Full Height
Installation Year	1990
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	3 / Each
Unit Cost	$500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$1,950.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

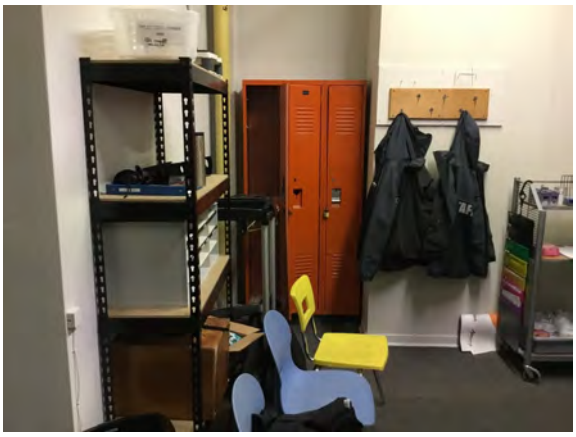
Description

Prefinished metal full height storage lockers are provided in the second-floor staff room.

Condition Narrative

No significant deficiencies were reported or observed at the time of the assessment. The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - C103005

Recommendations

Recommendations #1 - Lockers - Full Height	
Type	Life Cycle Replacement
Year	2028
Cost	$1,950.00

Element Description	
Name	C103006 - Lockers - Half Height
Installation Year	1990
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	56 / Each
Unit Cost	$250.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$18,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Prefinished metal half-height storage lockers are provided in the basement dance studio and the gymnasium change rooms.

Condition Narrative

No significant deficiencies were reported or observed at the time of the assessment. The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - C103006



Massey Theatre - C103006

Recommendations

Recommendations #1 - Lockers - Half Height	
Type	Life Cycle Replacement
Year	2028
Cost	$18,200.00

Element Description	
Name	C103009 - Cabinets - Kitchens
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	35 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	28 / LM
Unit Cost	$1,500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$54,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The staff lunch room, the concession area, and the kitchen at the dance studio are provided with floor and wall-mounted wood-framed cabinets that are completed with a laminate finish. Laminated wood countertops form part of the millwork with countersunk stainless steel sinks.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Missing drawer nub. - Minor damage at the bottom of the cabinet doors.

Photos



Massey Theatre - C103009



Massey Theatre - C103009



Massey Theatre - C103009



Massey Theatre - C103009



Massey Theatre - C103009

Recommendations

Recommendations #1 - Cabinets - Kitchens	
Type	Life Cycle Replacement
Year	2025
Cost	$54,600.00

Element Description	
Name	C103010 - Vanities - Washrooms and Dressing Rooms
Installation Year	2000
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	30 / LM
Unit Cost	$600.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$23,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's washrooms and dressing rooms are provided with wood-framed counters completed with a laminate finish. Washroom vanity countertops are provided with hand wash sinks.

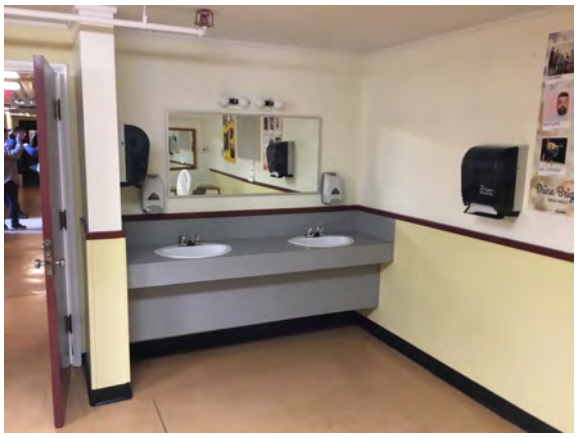
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. However, the vanity countertop in the gymnasium women's washroom was observed to be damaged.

Photos



Massey Theatre - C103010



Massey Theatre - C103010



Massey Theatre - C103010



Massey Theatre - C103010



Massey Theatre - C103010



Massey Theatre - C103010



Massey Theatre - C103010

Recommendations

Recommendations #1 - Vanities	
Type	Life Cycle Replacement
Year	2028
Cost	$23,400.00

Element Description	
Name	C103011 - Cabinets - General - Millworks
Installation Year	2000
Condition	2 - Good
Expected Useful Life	35 Years
Remaining Useful Life	13 Years
Renewal Year	2035
Quantity / Unit of Measure	246 / LM
Unit Cost	$1,200.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$383,760.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building is provided with millworks which include wood cabinets in the concision, Wood cabinets in the band rooms & room 2A, laminated wood countertops in the dressing rooms, wood shelves, and glass wood-framed art displays in the hallways.

Condition Narrative

No significant deficiencies were reported or observed at the time of the assessment.

Photos



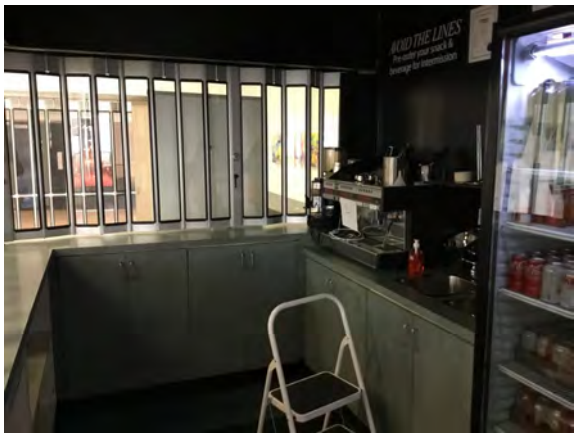
Massey Theatre - C103011



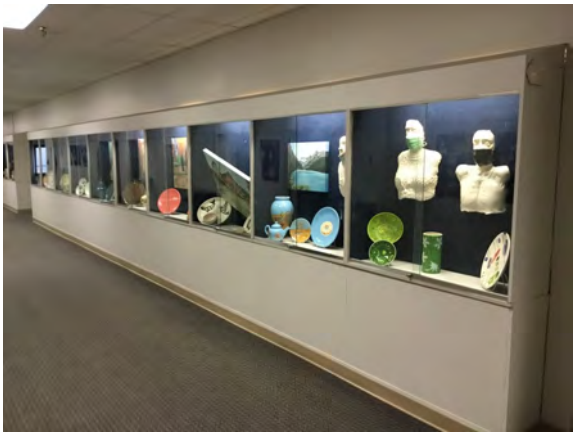
Massey Theatre - C103011



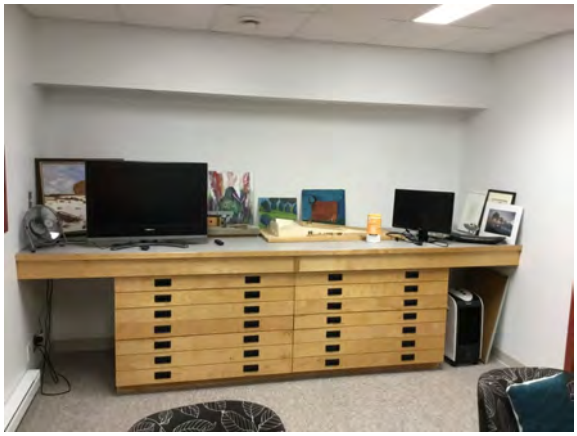
Massey Theatre - C103011



Massey Theatre - C103011



Massey Theatre - C103011



Massey Theatre - C103011



Massey Theatre - C103011

Recommendations

Recommendations #1 - Cabinets - General	
Type	Life Cycle Replacement
Year	2035
Cost	$383,760.00

Element Description	
Name	C103026 - Washroom Partitions - Prefinished Metal
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	4 / Each
Unit Cost	$1,200.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$6,240.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The gymnasium washrooms are provided with floor and wall-mounted prefinished metal toilet partitions. Washroom partitions are provided with a metal top track and stainless steel hardware.

Condition Narrative

The following deficiencies were reported or observed at the time of the assessment: - Drilled holes in the metal partition post were observed. - Minor scratches, dent, and painting damage. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - C103026



Massey Theatre - C103026

Recommendations

Recommendations #1 - Washroom Partitions - Prefinished Metal	
Type	Life Cycle Replacement
Year	2028
Cost	$6,240.00

Element Description	
Name	C103028 - Washroom Partitions - Laminated Fiberboard
Installation Year	2010
Condition	2 - Good
Expected Useful Life	20 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	13 / Each
Unit Cost	$1,400.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$23,660.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building's washrooms are provided with floor and wall-mounted laminated fiberboard toilet partitions. Washroom partitions are provided with a metal top track and stainless steel hardware.

Condition Narrative

No significant deficiencies were reported or observed at the time of the assessment.

Photos



Massey Theatre - C103028



Massey Theatre - C103028



Massey Theatre - C103028

Recommendations

Recommendations #1 - Washroom Partitions - Laminated Fiberboard	
Type	Life Cycle Replacement
Year	2030
Cost	$23,660.00

C20 Stairs

Element Description	
Name	C201001 - Interior Stair Construction
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	75 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	232 / Per Riser
Unit Cost	$800.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$241,280.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

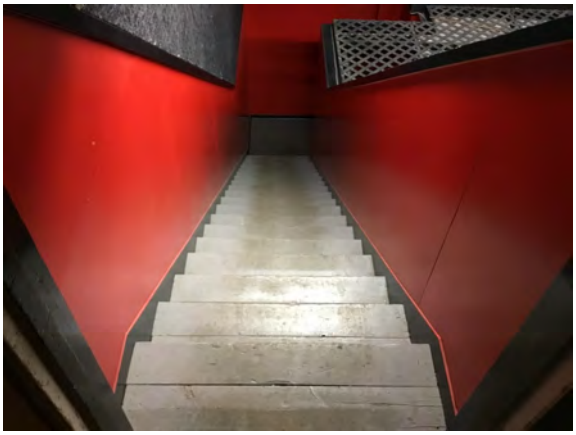
Description

Access to different floors, roofs, mezzanines, and catwalks is provided by interior wood-framed stairs with wood or steel handrails.

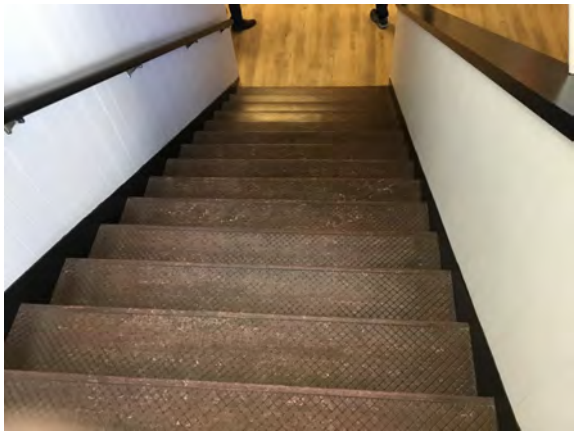
Condition Narrative

No significant deficiencies were observed or reported with the stair construction at the time of the assessment. However, some stairs were not provided with handrails. Replacement can be deferred.

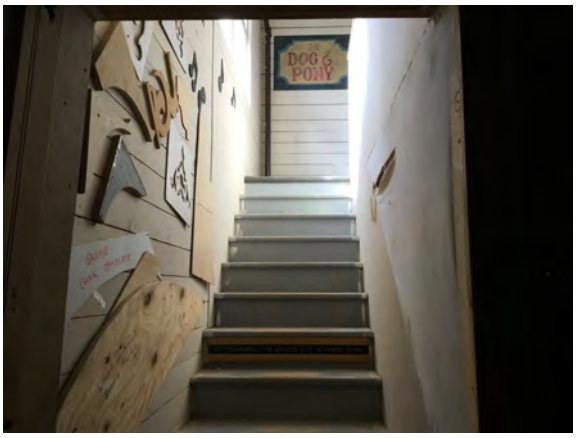
Photos



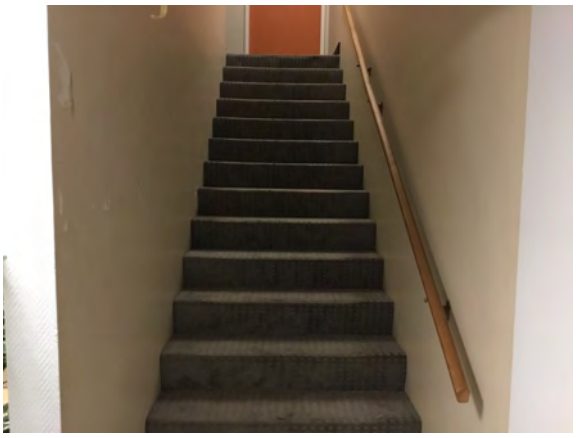
Massey Theatre - C201001



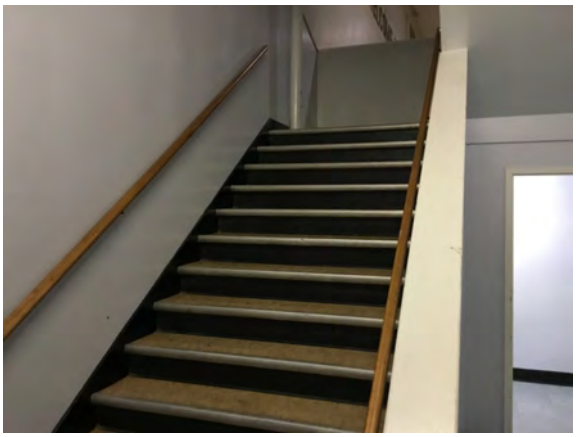
Massey Theatre - C201001



Massey Theatre - C201001



Massey Theatre - C201001



Massey Theatre - C201001

Recommendations

Recommendations #1 - Interior Stair Construction	
Type	Life Cycle Replacement
Year	2028
Cost	$241,280.00

Element Description	
Name	C201027 - Access Ladders - Roofs, Theatre Stage, Shop, and Mechanical Room
Installation Year	1990
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	26 / LM
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$33,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Access to the high roofs is provided by metal ladders. Also, access to the mezzanine located in the shop is provided by a wood-framed ladder. The theatre stage is also provided with a metal ladder and cage for access to the catwalk. The mechanical room beside 2D is provided with a wood-framed ladder for access to the vent.

Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment. However, the exterior metal ladders paint is fading. Repainting is recommended to protect them from rust.

Photos



Massey Theatre - C201027



Massey Theatre - C201027



Massey Theatre - C201027



Massey Theatre - C201027



Massey Theatre - C201027

Recommendations

Recommendations #1 - Access Ladders	
Type	Life Cycle Replacement
Year	2030
Cost	$33,800.00

Element Description	
Name	C202001 - Interior Stair Finishes
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	14 / Per Floor
Unit Cost	$5,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$91,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

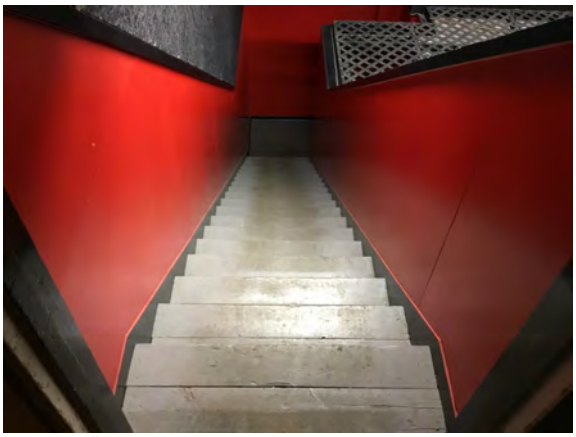
Description

The interior wood-framed stairs are finished with carpet, painting, or vinyl finish. Some interior stairs are also provided with metal nosings.

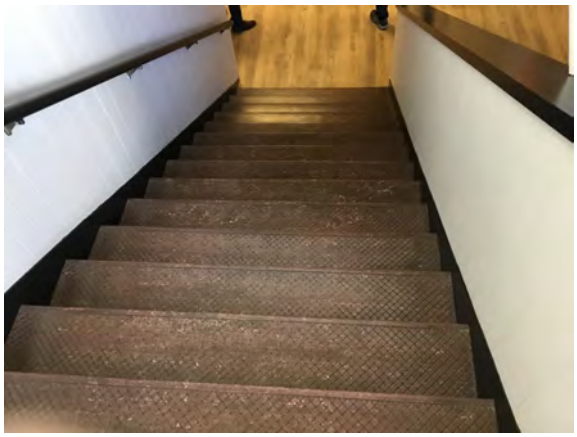
Condition Narrative

No significant deficiencies were observed or reported with the stair construction at the time of the assessment. However, the stairs carpet needs to be cleaned and some wood stairs need to be repainted as part of the maintenance activities. Replacement can be deferred.

Photos



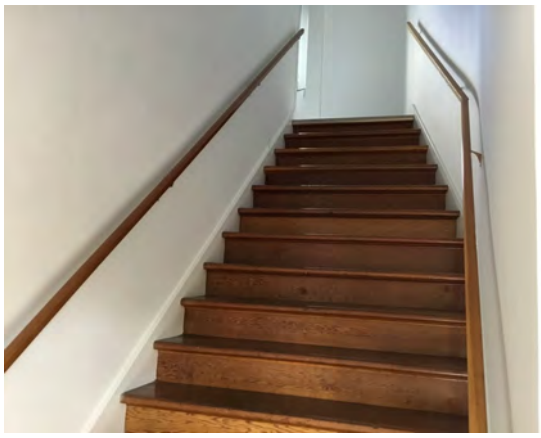
Massey Theatre - C202001



Massey Theatre - C202001



Massey Theatre - C202001



Massey Theatre - C202001

Recommendations

Recommendations #1 - Interior Stair Finishes	
Type	Life Cycle Replacement
Year	2028
Cost	$91,000.00

C30 Interior Finishes

Element Description	
Name	C301005 - Paint Wall Covering - Interior Walls Finish
Installation Year	2018
Condition	2 - Good
Expected Useful Life	10 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$40.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$317,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

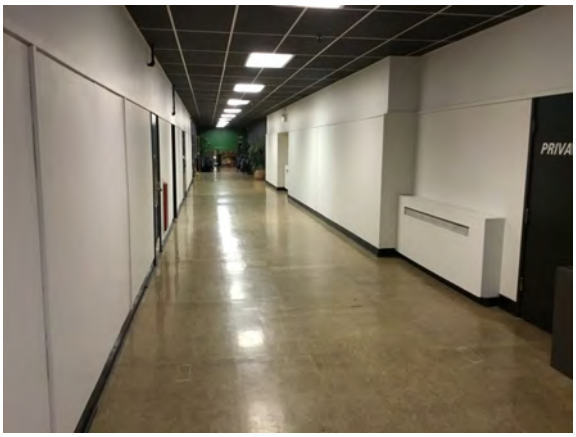
Description

The building's interior walls are provided with a painting finish, applied to the drywall and the concrete masonry block wall (CMU) partitions.

Condition Narrative

No significant deficiencies were reported or observed at the time of the assessment. However, minor wall painting damages were observed in the large gymnasium bleacher area and the first floor storage room. Repainting small damaged areas is considered part of the maintenance activities.

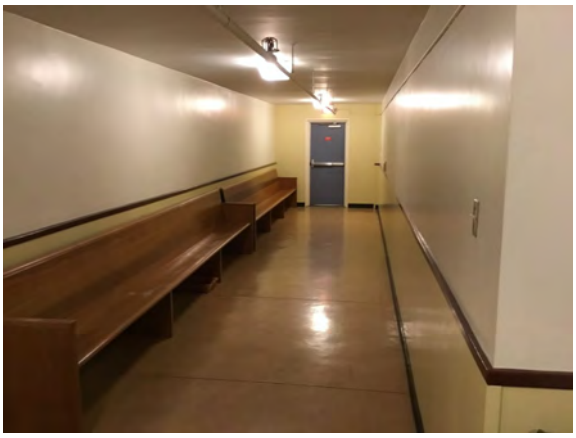
Photos



Massey Theatre - C301005



Massey Theatre - C301005



Massey Theatre - C301005



Massey Theatre - C301005



Massey Theatre - C301005



Massey Theatre - C301005

Recommendations

Recommendations #1 - Paint Wall Covering	
Type	Life Cycle Replacement
Year	2028
Cost	$317,200.00

Element Description	
Name	C301007 - Acoustic Wall Panels - Interior Walls Finish
Installation Year	2000
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	250 / SM
Unit Cost	$250.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$81,250.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Acoustic wall panels are installed on the large gymnasium walls, about 4.0 m high, and in the practice room 2D on the second floor for soundproofing.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. Replacement can be deferred.

Photos



Massey Theatre - C301007



Massey Theatre - C301007



Massey Theatre - C301007



Massey Theatre - C301007

Recommendations

Recommendations #1 - Acoustic Wall Panels	
Type	Life Cycle Replacement
Year	2028
Cost	$81,250.00

Element Description	
Name	C301023 - Ceramic Wall Tile - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	28 Years
Renewal Year	2050
Quantity / Unit of Measure	25 / SM
Unit Cost	$160.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$5,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Ceramic wall tiles are installed on the walls in the second floor Men's washrooms.

Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C301023



Massey Theatre - C301023

Recommendations

Recommendations #1 - Ceramic Wall Tile	
Type	Life Cycle Replacement
Year	2050
Cost	$5,200.00

Element Description	
Name	C301023 - Ceramic Wall Tile - 1948
Installation Year	1948
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	40 / SM
Unit Cost	$160.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$8,320.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Original ceramic wall tiles are installed on the walls in the gymnasium boys' and girls' washrooms and showers.

Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment. However, minor cracks were observed in the ceramic wall tiles. The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

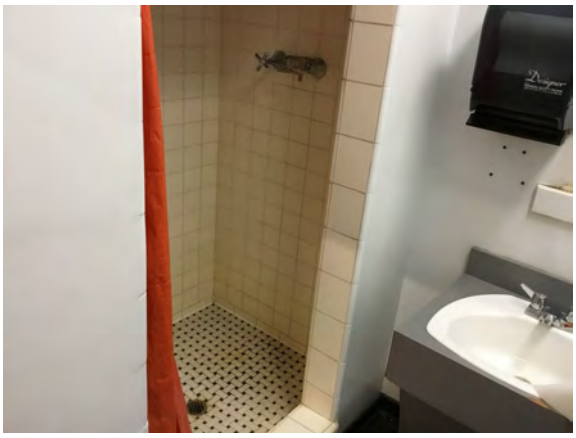
Photos



Massey Theatre - C301023



Massey Theatre - C301023



Massey Theatre - C301023

Recommendations

Recommendations #1 - Ceramic Wall Tile	
Type	Life Cycle Replacement
Year	2028
Cost	$8,320.00

Element Description	
Name	C302001 - Ceramic Tile Floor - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	28 Years
Renewal Year	2050
Quantity / Unit of Measure	70 / SM
Unit Cost	$180.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$16,380.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The floor of the public washrooms, located on the second floor, is finished with ceramic floor tiles.

Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C302001



Massey Theatre - C302001



Massey Theatre - C302001

Recommendations

Recommendations #1 - Ceramic Tile Floor	
Type	Life Cycle Replacement
Year	2050
Cost	$16,380.00

Element Description	
Name	C302001 - Ceramic Tile Floor - 1948
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	50 / SM
Unit Cost	$180.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$11,700.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The original floor of the gymnasium washrooms and showers is finished with ceramic floor tiles.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Minor cracks were observed in the ceramic floor tiles. - Mismatched repair patch for the floor ceramic tiles. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - C302001



Massey Theatre - C302001



Massey Theatre - C302001

Recommendations

Recommendations #1 - Ceramic Tile Floor	
Type	Life Cycle Replacement
Year	2028
Cost	$11,700.00

Element Description	
Name	C302003 - Hardwood Floor - Gymnasiums and Stage
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	1400 / SM
Unit Cost	$250.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$455,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The floor in the large gymnasium, the stage, and the small gymnasium is covered with hardwood flooring.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Hardwood scratches, scrabbles, and damaged painting finish were observed. Repainting of the hardwood is recommended. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies. An allowance has been included in this report for the repaint and refinishing of the hardwood flooring.

Photos



Massey Theatre - C302003



Massey Theatre - C302003



Massey Theatre - C302003



Massey Theatre - C302003

Recommendations

Recommendations #1 - Gymnasium Hardwood Flooring	
Type	Major Repair
Year	2023
Cost	$9,000.00

Recommendations #2 - Hardwood Floor	
Type	Life Cycle Replacement
Year	2028
Cost	$455,000.00

Element Description	
Name	C302003 - Hardwood Floor - Lobby, Plaskett Gallery, and Drama Room
Installation Year	2010
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	480 / SM
Unit Cost	$250.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$156,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

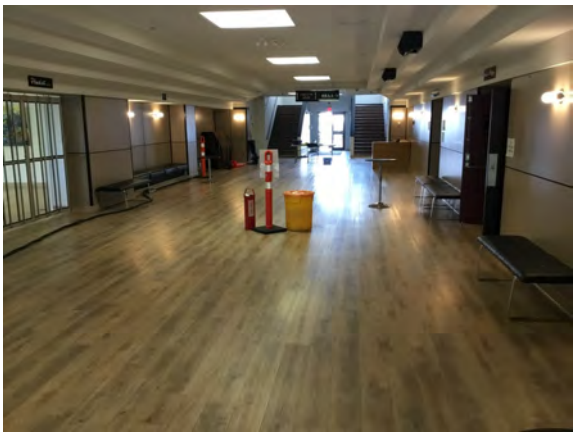
Description

The floor in the lobby, the Plaskett Gallery, and the drama room is covered with hardwood flooring.

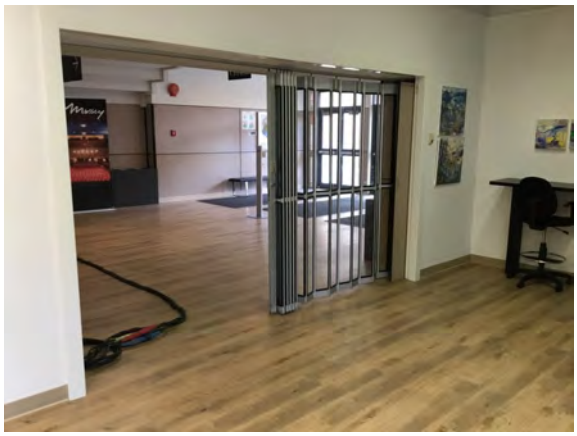
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. However, minor damaged was observed in the dance studio hardwood flooring.

Photos



Massey Theatre - C302003



Massey Theatre - C302003



Massey Theatre - C302003



Massey Theatre - C302003

Recommendations

Recommendations #1 - Hardwood Floor	
Type	Life Cycle Replacement
Year	2040
Cost	$156,000.00

Element Description	
Name	C302005 - Carpet Floor - 1990
Installation Year	1990
Condition	4 - Poor
Expected Useful Life	10 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	280 / SM
Unit Cost	$90.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$32,760.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Carpet flooring is installed in the first floor storage room, room 151, the second floor staff room, and room 2C.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Carpet edges and joints were observed to be damaged. - Carpet deterioration is consistent with its age, as the carpet has surpassed its expected useful life. Replacement is recommended.

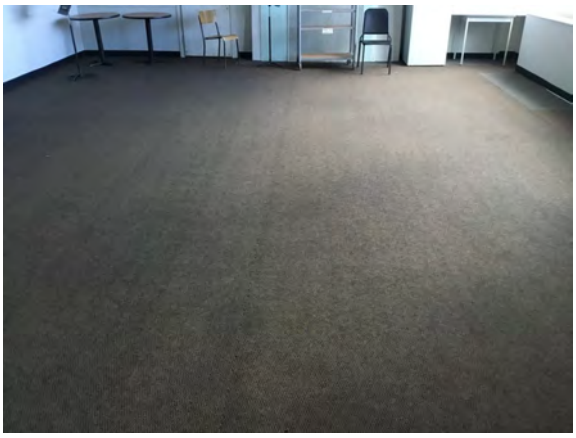
Photos



Massey Theatre - C302005



Massey Theatre - C302005



Massey Theatre - C302005

Recommendations

Recommendations #1 - Carpet Floor	
Type	Life Cycle Replacement
Year	2024
Cost	$32,760.00

Element Description	
Name	C302005 - Carpet Floor - 2010
Installation Year	2015
Condition	2 - Good
Expected Useful Life	10 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	510 / SM
Unit Cost	$90.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$59,670.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Newer carpet flooring is installed in the hallways, some offices, theatre walkways, and the Plaskett Gallery.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. Replacement can be deferred.

Photos



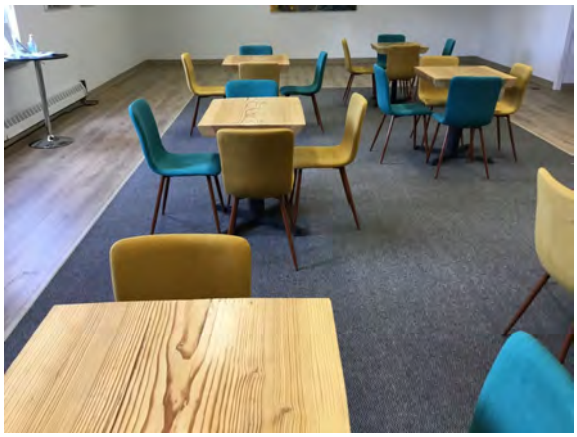
Massey Theatre - C302005



Massey Theatre - C302005



Massey Theatre - C302005



Massey Theatre - C302005

Recommendations

Recommendations #1 - Carpet Floor	
Type	Life Cycle Replacement
Year	2028
Cost	$59,670.00

Element Description	
Name	C302007 - Painted / Sealed Concrete Floor - Theatre Seating Area
Installation Year	2010
Condition	2 - Good
Expected Useful Life	15 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	250 / SM
Unit Cost	$40.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$13,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The theatre seating area exposed concrete floor slab is provided with a concrete painting finish.

Condition Narrative

No significant deficiencies were reported or observed at the time of the assessment. Replacement can be deferred.

Photos



Massey Theatre - C302007

Recommendations

Recommendations #1 - Painted / Sealed Concrete Floor	
Type	Life Cycle Replacement
Year	2028
Cost	$13,000.00

Element Description	
Name	C302022 - Vinyl Tile / Plank Floor - Floor Finishes
Installation Year	1990
Condition	4 - Poor
Expected Useful Life	15 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	970 / SM
Unit Cost	$100.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$126,100.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The floors in the concession kitchen, the basement old cafeteria, the basement washrooms, the gymnasium hallways, and the change rooms are finished with vinyl floor tiles.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Vinyl floor tiles were observed to be stained, cracked, and deteriorated which is consistent with their age and usage. - Vinyl floor tiles have surpassed their expected useful life. Replacement is recommended.

Photos



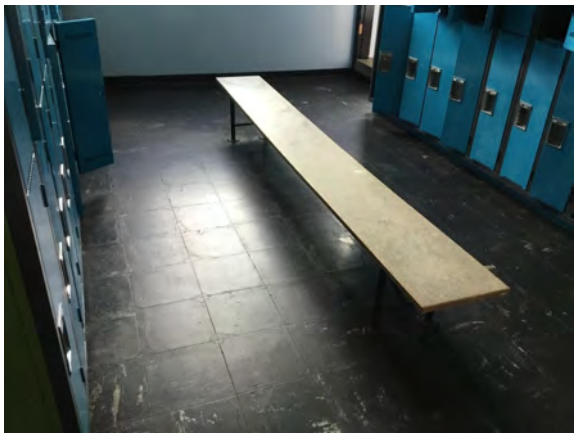
Massey Theatre - C302022



Massey Theatre - C302022



Massey Theatre - C302022



Massey Theatre - C302022



Massey Theatre - C302022

Recommendations

Recommendations #1 - Vinyl Tile / Plank Floor	
Type	Life Cycle Replacement
Year	2024
Cost	$126,100.00

Element Description	
Name	C302023 - Vinyl Sheet Floor - 2000
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	15 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	440 / SM
Unit Cost	$120.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$68,640.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

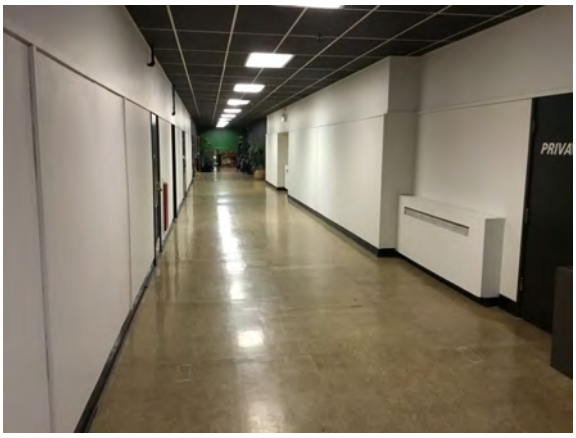
Description

The second-floor hallways are finished with vinyl sheet flooring.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Vinyl sheet flooring was observed to be patched. - Vinyl sheet flooring has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - C302023



Massey Theatre - C302023



Massey Theatre - C302023

Recommendations

Recommendations #1 - Vinyl Sheet Floor	
Type	Life Cycle Replacement
Year	2028
Cost	$68,640.00

Element Description	
Name	C302023 - Vinyl Sheet Floor - 1980
Installation Year	1980
Condition	4 - Poor
Expected Useful Life	15 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	830 / SM
Unit Cost	$120.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$129,480.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The first-floor dressing rooms and their washrooms, storage room, janitor rooms, the basement dance studio, and the large gymnasium attached rooms are finished with vinyl sheet flooring.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Vinyl sheet flooring was observed to be patched, damaged, and deteriorated which is consistent with their age and usage. - Vinyl sheet flooring has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - C302023



Massey Theatre - C302023



Massey Theatre - C302023



Massey Theatre - C302023



Massey Theatre - C302023

Recommendations

Recommendations #1 - Vinyl Sheet Floor	
Type	Life Cycle Replacement
Year	2024
Cost	$129,480.00

Element Description	
Name	C302024 - Quarry / Porcelain Tile Floor - Gymnasium Washrooms and Change Rooms
Installation Year	1948
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	140 / SM
Unit Cost	$250.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$45,500.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The floor of the gymnasium washrooms and change rooms is finished with quarry floor tiles.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Damaged floor tile base trims and floor tiles were observed. - Floor tile joints need to be re-grouted. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies. An allowance has been included in this report to repair and re-grout the quarry floor tiles.

Photos



Massey Theatre - C302024



Massey Theatre - C302024



Massey Theatre - C302024



Massey Theatre - C302024



Massey Theatre - C302024

Recommendations

Recommendations #1 - Quarry Floor Tiles	
Type	Major Repair
Year	2023
Cost	$4,500.00

Recommendations #2 - Quarry / Porcelain Tile Floor	
Type	Life Cycle Replacement
Year	2028
Cost	$45,500.00

Element Description	
Name	C303004 - Acoustic Tile Ceiling - Gymnasiums and Basement Floor
Installation Year	1980
Condition	4 - Poor
Expected Useful Life	30 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	1900 / SM
Unit Cost	$70.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$172,900.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The ceiling of the large gymnasium, the small gymnasium, the majority of the basement floor, kiln room, and room 2A are covered by acoustic ceiling panels.

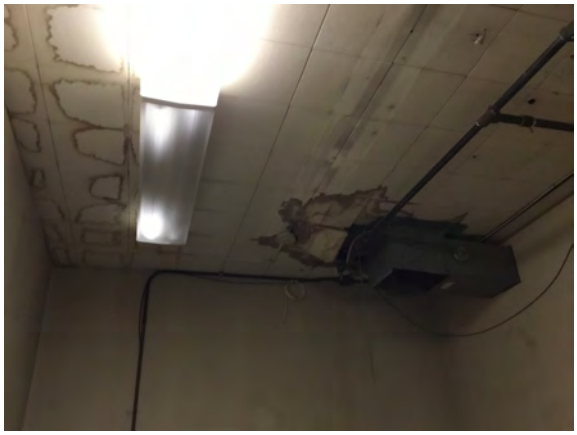
Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Stained ceiling panels in the Kiln room due to a previous water leak were observed. - Loose ceiling panels in room 2A, temporary attached by wood wafers. - The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - C303004



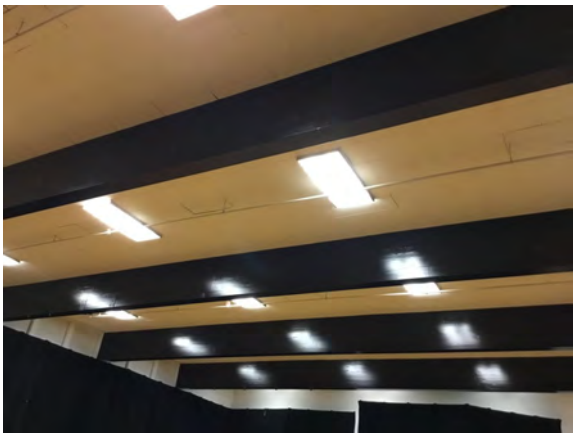
Massey Theatre - C303004



Massey Theatre - C303004



Massey Theatre - C303004



Massey Theatre - C303004



Massey Theatre - C303004

Recommendations

Recommendations #1 - Acoustic Tile Ceiling	
Type	Life Cycle Replacement
Year	2024
Cost	$172,900.00

Element Description	
Name	C303006 - Painted Ceiling Structures - Ceiling Finishes
Installation Year	2010
Condition	2 - Good
Expected Useful Life	15 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	2250 / SM
Unit Cost	$30.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$87,750.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

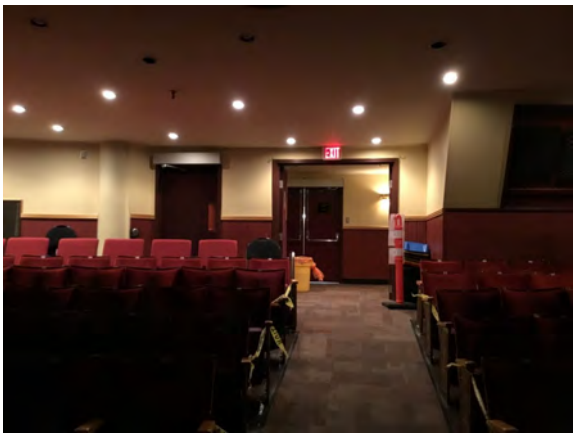
Description

The theatre ceiling, the washrooms, the change rooms, the basement hallways, and the dressing rooms' gypsum board ceilings are provided with a painting finish.

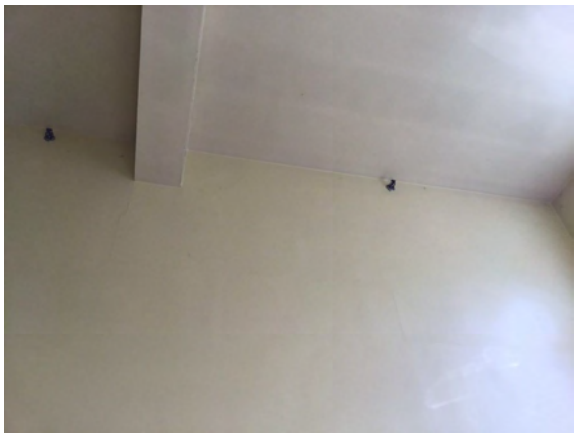
Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment. Replacement can be deferred.

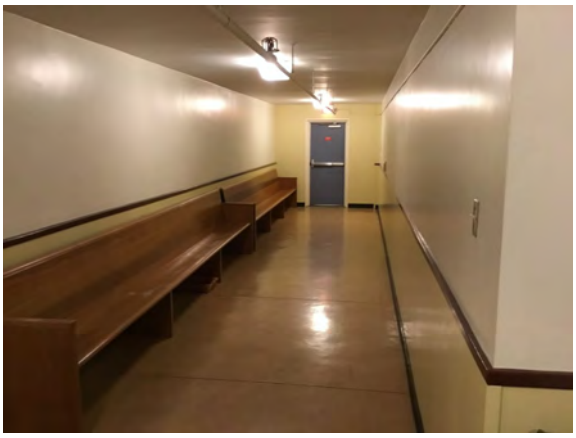
Photos



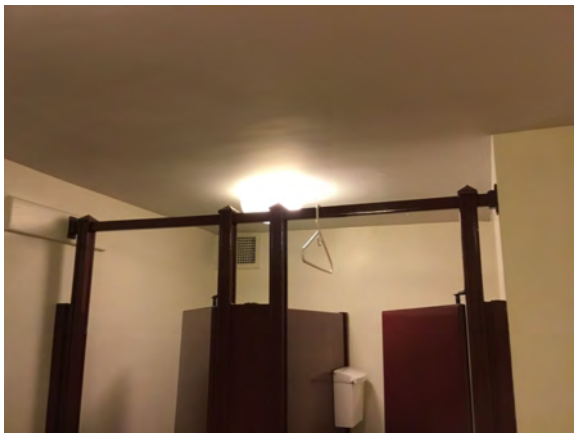
Massey Theatre - C303006



Massey Theatre - C303006



Massey Theatre - C303006



Massey Theatre - C303006

Recommendations

Recommendations #1 - Painted Ceiling Structures	
Type	Life Cycle Replacement
Year	2028
Cost	$87,750.00

Element Description	
Name	C303007 - Suspended Acoustic Ceiling Panels - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	13 Years
Renewal Year	2035
Quantity / Unit of Measure	850 / SM
Unit Cost	$90.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$99,450.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

A suspended acoustic ceiling system consisting of fiberboard ceiling tiles and metal T-bars is installed in the lobby, the hallways, the Plaskett Gallery, the public washrooms, the administration office, and the executive director's office.

Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - C303007



Massey Theatre - C303007



Massey Theatre - C303007



Massey Theatre - C303007



Massey Theatre - C303007

Recommendations

Recommendations #1 - Suspended Acoustic Ceiling Panels	
Type	Life Cycle Replacement
Year	2035
Cost	$99,450.00

Element Description	
Name	C303007 - Suspended Acoustic Ceiling Panels - 1990
Installation Year	1990
Condition	4 - Poor
Expected Useful Life	25 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	450 / SM
Unit Cost	$90.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$52,650.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

A suspended acoustic ceiling system consisting of fiberboard ceiling tiles and metal T-bars is installed on the basement floor old cafeteria.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Water damaged ceiling tiles due to a previous water leak. - Deteriorated and mismatched ceiling tiles were observed. - The component has surpassed its expected useful life. Replacement is recommended.

Photos



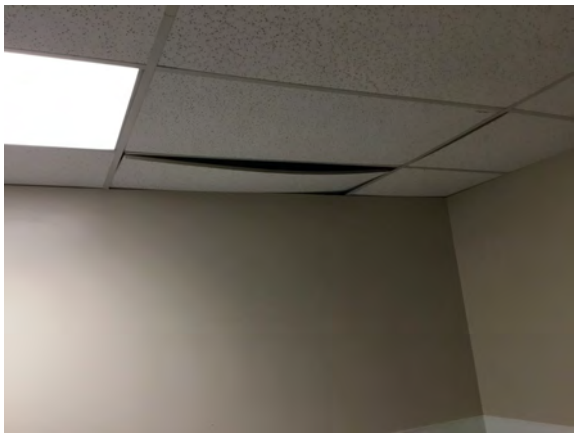
Massey Theatre - C303007



Massey Theatre - C303007



Massey Theatre - C303007



Massey Theatre - C303007



Massey Theatre - C303007

Recommendations

Recommendations #1 - Suspended Acoustic Ceiling Panels	
Type	Life Cycle Replacement
Year	2024
Cost	$52,650.00

D Services
D10 Conveying

Element Description	
Name	D101004 - Wheelchair Lifts
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	25 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$30,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$39,000.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

Description

The conveying equipment includes a hydraulic accessible elevator rated for 1000 lb (454 kg) Kg serving two floors. The elevator is manufactured by " Garaventa" (Model: N/A).

Condition Narrative

Per feedback from the client, the accessible elevator has not been working properly for a few months and it is the only elevator that serves the main floor and the second floor. The system is anticipated to reach the end of its useful life during the evaluation period. Replacement is recommended. Note: The Massey Theatre is a high occupancy public building and there is presently no barrier free elevator installed. A study for the installation of a barrier free hydraulic elevator serving all three floors is recommended.

Photos



Massey Theatre - D101004



Massey Theatre - D101004

Recommendations

Recommendations #1 - Barrier Free Elevator - Perform Study	
Type	Engineering Study
Year	2022
Cost	$10,000.00

Recommendations #2 - Wheelchair Lifts	
Type	Life Cycle Replacement
Year	2025
Cost	$39,000.00

D20 Plumbing

Element Description	
Name	D201001 - Water Closets
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	35 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	26 / Each
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$33,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The water closets comprise of standard vitreous china, one and two piece floor mounted components with manual flush valves and open one piece seats. These water closets are in the men's, women's and accessible washrooms.

Condition Narrative

No significant deficiencies were observed or reported at the time of the field review, although the system is anticipated to reach its expected useful life during the evaluation period. Replacement with low flush or dual flush water closets is recommended for water conservation

Photos



Massey Theatre - D201001



Massey Theatre - D201001

Recommendations

Recommendations #1 - Water Closets Inefficient	
Type	Major Repair
Year	2024
Cost	$34,000.00

Recommendations #2 - Water Closets	
Type	Life Cycle Replacement
Year	2025
Cost	$33,800.00

Element Description	
Name	D201002 - Urinals
Installation Year	1990
Condition	2 - Good
Expected Useful Life	35 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	10 / Each
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$13,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The plumbing fixtures include wall mounted urinals with manual flush valves installed in the men's public washrooms.

Condition Narrative

No significant deficiencies were observed or reported at the time of the field review, although the system is anticipated to reach its expected useful life during the evaluation period. Replacement has been deferred.

Photos



Massey Theatre - D201002

Recommendations

Recommendations #1 - Urinals	
Type	Life Cycle Replacement
Year	2028
Cost	$13,000.00

Element Description	
Name	D201003 - Lavatories
Installation Year	1990
Condition	2 - Good
Expected Useful Life	35 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	22 / Each
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$28,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The plumbing fixtures include countertop mounted vitreous china and stainless steel lavatories. The lavatories have manually activated hot and cold taps. The lavatories are in the men's, women's and accessible washrooms.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system is anticipated to reach the end of its useful life during the evaluation period. Replacement with low flow motion sensor activated faucets is recommended.

Photos



Massey Theatre - D201003



Massey Theatre - D201003



Massey Theatre - D201003

Recommendations

Recommendations #1 - Lavatories	
Type	Life Cycle Replacement
Year	2025
Cost	$28,600.00

Element Description	
Name	D201004 - Sinks
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	35 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	6 / Each
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$7,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

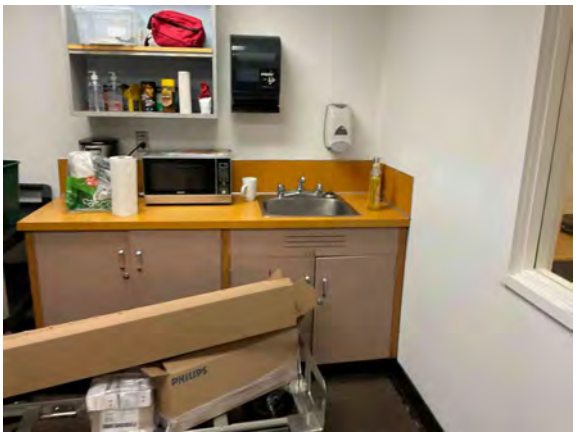
Description

There are six counter mounted single and double basin stainless steel sinks installed in the staff kitchen and break rooms.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system is anticipated to reach the end of its useful life during the evaluation period. Replacement is recommended.

Photos



Massey Theatre - D201004



Massey Theatre - D201004

Recommendations

Recommendations #1 - Sinks	
Type	Life Cycle Replacement
Year	2025
Cost	$7,800.00

Element Description	
Name	D201006 - Drinking Water Fountains - Non-refrigerated
Installation Year	2000
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	3 / Each
Unit Cost	$1,500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$5,850.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

Description

The drinking fountains comprise of wall mounted, non refrigerated, stainless steel components with a push button control. The fountains are in the hallways on the second floor and the main floor.

Condition Narrative

No major deficiencies were observed or reported during the assessment. Note: The drinking fountains protrude more than 100 mm from the wall and the bottom of the fountain is more than 680 mm above the finished floor which is not in compliance with the BCBC Sentence 3.3.1.9.(4).

Photos



Massey Theatre - D201006

Recommendations

Recommendations #1 - Drinking Water Fountains - Non-refrigerated	
Type	Life Cycle Replacement
Year	2030
Cost	$5,850.00

Element Description	
Name	D201011 - Showers (Valve Set)
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	25 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	6 / Each
Unit Cost	$1,500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$11,700.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

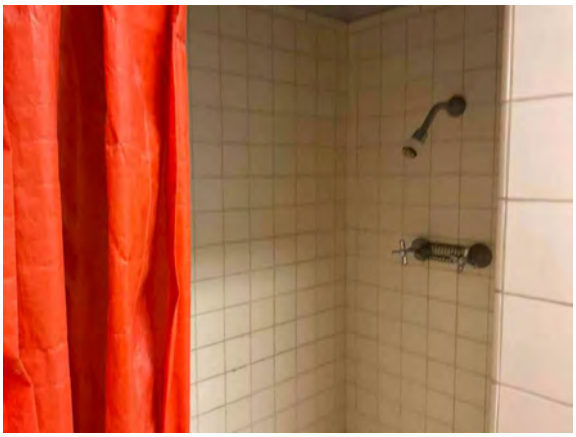
Description

There are through wall commercial grade shower valve-sets installed in the men's, women's and barrier free washrooms. Temperature controls are provided via a common mixing valve installed for each shower.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system has surpassed the end of its useful life during the evaluation period. Replacement is recommended.

Photos



Massey Theatre - D201011

Recommendations

Recommendations #1 - Showers (Valve Set)	
Type	Life Cycle Replacement
Year	2025
Cost	$11,700.00

Element Description	
Name	D201016 - Custodial Sinks
Installation Year	1970
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	3 / Each
Unit Cost	$2,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$7,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The custodial sinks comprise of wall mounted enamel on cast iron utility basins. The sink includes wall-mounted faucets with separate hot/cold water tap sets and vacuum breaker. The sinks are in the custodial rooms on all three floors.

Condition Narrative

The sink shows major signs of corrosion and staining. The system has reached the end of its expected useful life. Replacement is recommended. It would be highly recommended to replace the utility sinks with PVC floor mounted basins for improved safety.

Photos



Massey Theatre - D201016

Recommendations

Recommendations #1 - Custodial Sinks	
Type	Life Cycle Replacement
Year	2024
Cost	$7,800.00

Element Description	
Name	D202001 - Domestic Water Pipes and Fittings
Installation Year	1980
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	20 Years
Renewal Year	2042
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$40.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$317,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

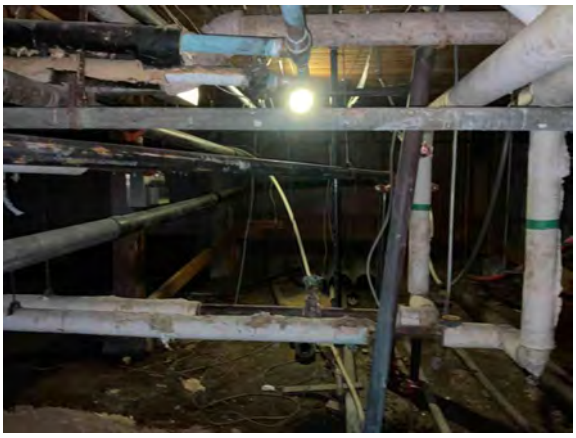
Description

The domestic water pipes consist of copper pipe with soldered fittings supplying hot and cold-water lines to the required plumbing fixtures which are mostly concealed behind finished walls. Includes pressure reducer, domestic water circulation pump, backflow preventer, bypass valves, pressure reducer, insulation and shutoff valves. The main domestic water enters through the tunnel. The domestic water backflow preventer has been listed separately.

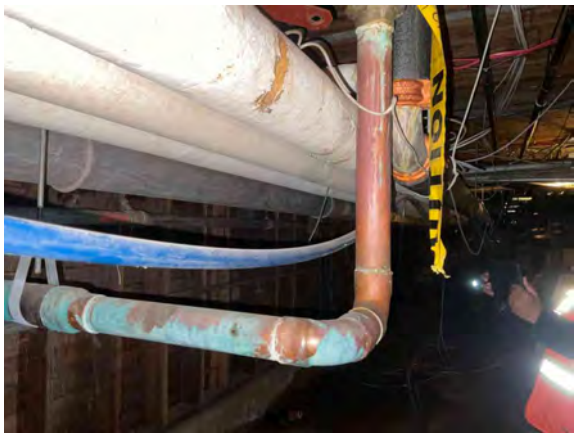
Condition Narrative

Major domestic pipe leaks were reported in the tunnel and in a number of other areas throughout the building which should be investigated. The system has surpassed the end of its useful life during the evaluation period. Replacement is recommended. The incoming water main and associated valves and other components have been replaced in 2020. Given the nature of the component, full-scale replacement is not expected to be required. However, a cost allowance for a study and partial replacement based on the outcome of the study has been carried forward in this report as a precautionary measure. Assuming the recommended study and repair will be undertaken, replacement of the remaining component can be deferred. Based on the age of this system ACM is suspected in the insulating material of the piping and its fittings.

Photos



Massey Theatre - D202001



Massey Theatre - D202001



Massey Theatre - D202001



Massey Theatre - D202001

Recommendations

Recommendations #1 - Domestic Water Pipes and Fittings	
Type	Engineering Study
Year	2022
Cost	$10,000.00

Recommendations #2 - Domestic Water Pipes and Fittings	
Type	Major Repair
Year	2023
Cost	$95,160.00

Recommendations #3 - Domestic Water Pipes and Fittings	
Type	Life Cycle Replacement
Year	2042
Cost	$317,200.00

Element Description	
Name	D202009 - Backflow Preventer - Domestic Water
Installation Year	2020
Condition	1 - Very Good
Expected Useful Life	30 Years
Remaining Useful Life	28 Years
Renewal Year	2050
Quantity / Unit of Measure	100 / mm
Unit Cost	$40.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$5,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a backflow prevention device installed on the domestic water supply line located in the tunnel. The backflow preventer size is 100 MM (4").

Condition Narrative

No major deficiencies were observed or reported at the time of field review.

Photos



Massey Theatre - D202009



Massey Theatre - D202009

Recommendations

Recommendations #1 - Backflow Preventer	
Type	Life Cycle Replacement
Year	2050
Cost	$5,200.00

Element Description	
Name	D202009 - Backflow Preventer - Firewater
Installation Year	2020
Condition	1 - Very Good
Expected Useful Life	30 Years
Remaining Useful Life	28 Years
Renewal Year	2050
Quantity / Unit of Measure	150 / mm
Unit Cost	$40.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$7,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a backflow prevention device installed on the firewater water supply line located in the tunnel. The backflow preventer size is 150 MM (6").

Condition Narrative

No major deficiencies were observed or reported at the time of field review.

Photos



Massey Theatre - D202009

Recommendations

Recommendations #1 - Backflow Preventer	
Type	Life Cycle Replacement
Year	2050
Cost	$7,800.00

Element Description	
Name	D202035 - Electric Domestic Water Heaters (Residential Tank Type)
Installation Year	2007
Condition	3 - Fair
Expected Useful Life	12 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	600 / Liter
Unit Cost	$25.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$19,500.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

Description

The domestic hot water is provided by three electric water heaters installed in the tunnel. One is manufactured by "Rheem" (Model: N/A), and rated at 6 KW, with a capacity of 260 litres; one is manufactured by "Giant" (Model: 152ETE-3F5M) and rated at 3 KW, with a capacity of 150 litre; and the third one manufactured by "John Wood" (Model: JW503DE130), and rated at 3 KW, with a capacity of 184 litres.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system has surpassed the end of its useful life during the evaluation period. Replacement is recommended.

Photos



Massey Theatre - D202035



Massey Theatre - D202035



Massey Theatre - D202035



Massey Theatre - D202035



Massey Theatre - D202035

Recommendations

Recommendations #1 - Electric Domestic Water Heaters (Residential Tank Type)	
Type	Life Cycle Replacement
Year	2025
Cost	$19,500.00

Element Description	
Name	D203001 - Sanitary Waste and Vent Piping
Installation Year	1970
Condition	2 - Good
Expected Useful Life	50 Years
Remaining Useful Life	20 Years
Renewal Year	2042
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$45.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$356,850.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Sanitary waste and vent piping is primarily cast iron with ABS and galvanized piping underneath the sinks and is primarily concealed within wall, floor, and ceiling finishes.

Condition Narrative

Some corrosion and pipe pitting, both on the inside and on the outside of the sanitary piping have been observed in a number of areas above the false ceiling and in the tunnel. The system has surpassed its expected useful life and replacement is highly recommended. Given the nature of the component, full-scale replacement is not expected to be required. However, a cost allowance for a study and partial replacement based on the outcome of the study has been carried forward in this report as a precautionary measure. Assuming the recommended study and repair will be undertaken, replacement of the remaining component can be deferred.

Photos



Massey Theatre - D203001



Massey Theatre - D203001



Massey Theatre - D203001



Massey Theatre - D203001



Massey Theatre - D203001

Recommendations

Recommendations #1 - Sanitary Waste Piping	
Type	Engineering Study
Year	2022
Cost	$10,000.00

Recommendations #2 - Sanitary Waste Piping	
Type	Major Repair
Year	2023
Cost	$107,055.00

Recommendations #3 - Sanitary Waste and Vent Piping	
Type	Life Cycle Replacement
Year	2042
Cost	$356,850.00

Element Description	
Name	D204001 - Rain Water Drainage Piping and Fittings
Installation Year	1970
Condition	2 - Good
Expected Useful Life	50 Years
Remaining Useful Life	20 Years
Renewal Year	2042
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$30.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$237,900.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The rainwater drainage for the building consists of internal cast iron rainwater leaders and drain lines connected to the municipal storm water system. The rainwater drainage piping is primarily concealed within wall, floor or ceiling finishes.

Condition Narrative

Although the system has surpassed its expected useful life no significant deficiencies were observed or reported. However some build up of debris and significant moss growth was observed around the roof drain covers. Clearing the debris moss as part of regular maintenance is recommended. Given the nature of the component, full-scale replacement is not expected to be required. However, a cost allowance for a study and partial replacement based on the outcome of the study has been carried forward in this report as a precautionary measure. Assuming the recommended study and repair will be undertaken, replacement of the remaining component can be deferred.

Photos



Massey Theatre - D204001



Massey Theatre - D204001

Recommendations

Recommendations #1 - Rain Water Drainage	
Type	Engineering Study
Year	2022
Cost	$10,000.00

Recommendations #2 - Rain Water Drainage	
Type	Major Repair
Year	2023
Cost	$71,370.00

Recommendations #3 - Rain Water Drainage Piping and Fittings	
Type	Life Cycle Replacement
Year	2042
Cost	$237,900.00

D30 HVAC

Element Description	
Name	D301002 - Gas Supply Systems
Installation Year	1985
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	3000 / SM
Unit Cost	$20.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$78,000.00
Does the Element Consume Fossil Fuels?	Yes
Water Conservation Opportunities	----

Description

The natural gas is supplied to the building via the below grade supply line through the regulator and meter entering the building where it supplies the gas fired boilers through painted steel pipes. The system enters the building via Boiler Room.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system is anticipated to reach the end of its useful life during the evaluation period. Replacement has been deferred.

Photos



Massey Theatre - D301002



Massey Theatre - D301002



Massey Theatre - D301002

Recommendations

Recommendations #1 - Gas Supply Systems	
Type	Life Cycle Replacement
Year	2028
Cost	$78,000.00

Element Description	
Name	D302002 - Hot Water Boilers less than 1000 MBH
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1800 / MBH
Unit Cost	$75.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$175,500.00
Does the Element Consume Fossil Fuels?	Yes
Water Conservation Opportunities	----

Description

There are six gas fired modular hot water boilers installed in Boiler Room. They are manufactured by "Hydrotherm" (Model: M39008) and each has a maximum heating input rating of 300 MBH. This component is understood to provide heating hot water to the force flow heaters and radiation fin tubes

Condition Narrative

Although no significant deficiencies were observed or reported at the time of the field review, the system has surpassed its expected useful life during the evaluation period. Replacement with the more energy efficient condensing boilers is recommended. Note: There were no CO detectors installed in the boiler room.

Photos



Massey Theatre - D302002



Massey Theatre - D302002

Recommendations

Recommendations #1 - Boiler Room - Install CO detectors	
Type	Major Repair
Year	2024
Cost	$5,000.00

Recommendations #2 - Hot Water Boilers less than 1000 MBH	
Type	Life Cycle Replacement
Year	2025
Cost	$175,500.00

Element Description	
Name	D302015 - Hot Water Boilers greater than 1000 MBH
Installation Year	2005
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	13 Years
Renewal Year	2035
Quantity / Unit of Measure	1024 / MBH
Unit Cost	$65.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$86,528.00
Does the Element Consume Fossil Fuels?	Yes
Water Conservation Opportunities	----

Description

There is a gas fired hot water boiler installed in Boiler Room. It is manufactured by "DeDietrich: (Model: GT307, Serial: A8553 9337 03 07 000032) and each has a maximum heating input rating of 1024 MBH. This component is understood to provide heating hot water to the force flow heaters and radiation fin tubes.

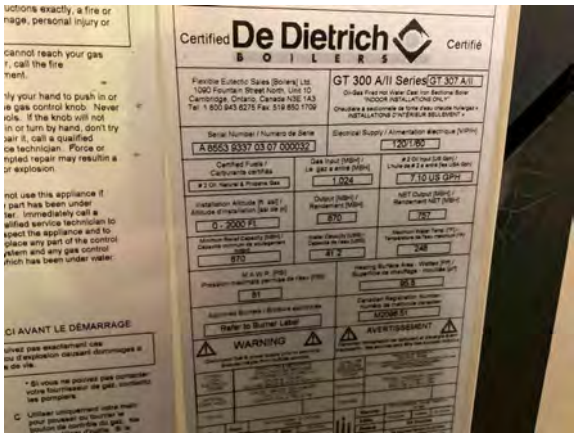
Condition Narrative

The water boiler is presently out of commission. From feedback from the client, the boiler has not been operating reliably. Some corrosion on the rear panel was also observed. Although the system has not yet reached the end of its useful life during the evaluation period, replacement or major overhaul of the boiler is recommended.

Photos



Massey Theatre - D302015



Massey Theatre - D302015



Massey Theatre - D302015

Recommendations

Recommendations #1 - Hot Water Boilers	
Type	Engineering Study
Year	2022
Cost	$5,000.00

Recommendations #2 - Hot Water Boilers greater than 1000 MBH	
Type	Life Cycle Replacement
Year	2035
Cost	$86,528.00

Element Description	
Name	D303021 - Refrigerant Condensing Units (Direct Expansion 1 to 5 Tons)
Installation Year	2000
Condition	4 - Poor
Expected Useful Life	18 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$4,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$5,200.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

Description

There is a water cooled condenser rated at about 2 tons located behind the stage. It provides cooling for the theatre change rooms. It is charged with R-22 refrigerant.

Condition Narrative

The water cooled condenser is very inefficient and is charged with R-22 refrigerant which is no longer being manufactured. The system has surpassed the end of its useful life during the evaluation period. Replacement with a 2 ton split DX heat pump is recommended.

Photos



Massey Theatre - D303021

Recommendations

Recommendations #1 - Refrigerant Condensing Units (Direct Expansion 1 to 5 Tons)	
Type	Life Cycle Replacement
Year	2025
Cost	$5,200.00

Element Description	
Name	D304001 - Air Distribution Systems
Installation Year	1970
Condition	3 - Fair
Expected Useful Life	50 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$120.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$951,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Air supply ductwork is galvanized steel and is primarily contained within ceiling, wall, and floor finishes. Ductwork is present throughout the facility and terminates in constant volume boxes and deflecting diffusers. This component was viewed throughout most of the building.

Condition Narrative

The mastic around the joints of the ductwork may have asbestos containing material (ACM). The system has surpassed the end of its useful life during the evaluation period. Upgrading the ductwork and installing VAV boxes is recommended and it would also result in significant energy savings.

Photos



Massey Theatre - D304001



Massey Theatre - D304001



Massey Theatre - D304001



Massey Theatre - D304001



Massey Theatre - D304001

Recommendations

Recommendations #1 - Air Distribution Systems	
Type	Life Cycle Replacement
Year	2025
Cost	$951,600.00

Element Description	
Name	D304003 - Heating Water Distribution Systems
Installation Year	1970
Condition	3 - Fair
Expected Useful Life	45 Years
Remaining Useful Life	20 Years
Renewal Year	2042
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$90.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$713,700.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a closed loop building water distribution system comprised of steel piping for the facility's heat generating system. Piping is primarily hidden within ceiling, wall, and floor cavities. The piping is insulated where exposed with vinyl jacket fibreglass insulation. The observed sections of the building hot water distribution system are in the Boiler Room.

Condition Narrative

Although the system has surpassed its expected useful life, no significant deficiencies were observed or reported at the time of the field review. Given the nature of the component, full-scale replacement is not expected to be required. However, a cost allowance for a study and partial replacement based on the outcome of the study has been carried forward in this report as a precautionary measure. Assuming the recommended study and repair will be undertaken, replacement of the remaining component can be deferred. Based on the age of the system ACM is suspected in the insulation of the piping and its fittings.

Photos



Massey Theatre - D304003



Massey Theatre - D304003



Massey Theatre - D304003

Recommendations

Recommendations #1 - Heating Hot Water Distribution	
Type	Engineering Study
Year	2022
Cost	$10,000.00

Recommendations #2 - Heating Hot Water Distribution	
Type	Major Repair
Year	2023
Cost	$214,110.00

Recommendations #3 - Heating Water Distribution Systems	
Type	Life Cycle Replacement
Year	2042
Cost	$713,700.00

Element Description	
Name	D304031 - Exhaust Fan - Roof/Wall Mounted Small
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	25 Years
Remaining Useful Life	4 Years
Renewal Year	2026
Quantity / Unit of Measure	8 / Each
Unit Cost	$3,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$31,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building HVAC includes approximately 8 roof mounted dome type exhaust fans that provide general and washroom exhaust. Each exhaust fan is rated at approximately 500 CFM and has a 1/3 HP fan motor

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system has surpassed the end of its useful life during the evaluation period. Replacement is recommended. Note: There is no forced exhaust in the custodial closets and the Boiler Room.. The British Columbia Building Code 2018, Section 6.3.1.1(1) states that all rooms and spaces in buildings shall have mechanical ventilation based on ASHRAE Standard 62" Ventilation for Acceptable Indoor Air Quality.

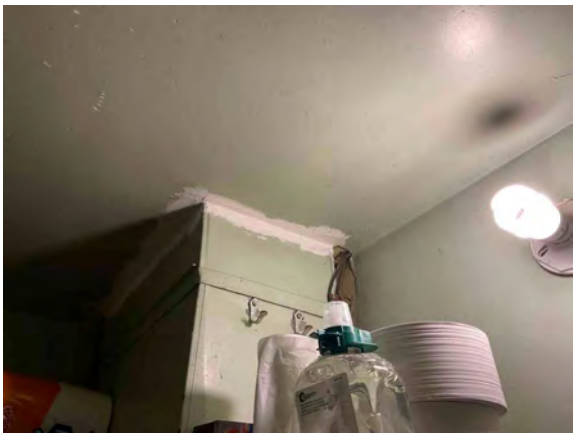
Photos



Massey Theatre - D304031



Massey Theatre - D304031



Massey Theatre - D304031



Massey Theatre - D304031

Recommendations

Recommendations #1 - Exhaust Fans - Install Forced Ventilation	
Type	Major Repair
Year	2023
Cost	$20,000.00

Recommendations #2 - Exhaust Fan - Roof/Wall Mounted Small	
Type	Life Cycle Replacement
Year	2026
Cost	$31,200.00

Element Description	
Name	D304041 - Air Handling Units - Modular - 1980
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$130,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$169,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The facility is provided by a modular air handling unit manufactured by "Mark Hot" (Model: H7-702-3). The air system is comprised of compartments containing supply/return fans, filter section and heating coils. It has an air handling capacity of about 10000 CFM. The air handling unit is located in the attic above the theatre and serves the large gym.

Condition Narrative

Much of the air handler housing and hot water coils show signs of corrosion and the insulation is peeling. The system has surpassed its expected useful life during the evaluation period. Replacement is recommended. There was no variable frequency drive installed on the supply fan motor. It would be recommended to install a VFD and new supply fan motor as a temporary energy conservation measure.

Photos



Massey Theatre - D304041



Massey Theatre - D304041

Recommendations

Recommendations #1 - Air Handling Units - Modular	
Type	Life Cycle Replacement
Year	2025
Cost	$169,000.00

Element Description	
Name	D304041 - Air Handling Units - Modular - 1970
Installation Year	1970
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$130,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$169,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The facility is provided by a modular air handling unit manufactured by "ALPHA" (Model: 1F20, Serial: D7008). The air system is comprised of compartments containing supply/return fans, filter section and heating coils. It has an air handling capacity of about 10000 CFM. The air handling unit is located in the lower mechanical penthouse and serves the small gym.

Condition Narrative

Much of the air handler housing and hot water coils show signs of corrosion and the insulation is peeling. The system has surpassed its expected useful life during the evaluation period. Replacement is recommended. There was no variable frequency drive installed on the supply fan motor. It would be recommended to install a VFD and new supply fan motor as a temporary energy conservation measure.

Photos



Massey Theatre - D304041



Massey Theatre - D304041



Massey Theatre - D304041

Recommendations

Recommendations #1 - Air Handling Units - Modular	
Type	Life Cycle Replacement
Year	2025
Cost	$169,000.00

Element Description	
Name	D304043 - Air Handling Units - Packaged (Heating and Cooling) - 1970
Installation Year	1970
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	2 / Each
Unit Cost	$60,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$156,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The facility is provided by two packaged air handling units, one manufactured by "American Air Filter (AAF)" (Model: H7-702-3) and the second one manufactured by Mark Hot (Model: N/A). The air handling system is comprised of compartments containing supply/return fans, filter section and heating coils. They are located in the basement mechanical room and each has a capacity of about 5000 CFM. One air handler serves the studios in the basement and the other serves the administration offices.

Condition Narrative

Much of the air handler components show signs of wear and corrosion and the insulation is peeling. The system has surpassed its expected useful life during the evaluation period. Replacement is recommended. There was no variable frequency drive installed on the supply fan motor. It would be recommended to install a VFD and new supply fan motor on each air handler as a temporary energy conservation measure.

Photos



Massey Theatre - D304043



Massey Theatre - D304043



Massey Theatre - D304043

Recommendations

Recommendations #1 - Air Handling Units - Packaged (Heating and Cooling)	
Type	Life Cycle Replacement
Year	2025
Cost	$156,000.00

Element Description	
Name	D305002 - Unit Heaters (Hydronic)
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	4 Years
Renewal Year	2026
Quantity / Unit of Measure	1 / Each
Unit Cost	$3,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$3,900.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

Description

The unit comprises of a suspended space heater supplied via hot water with a horizontal facing axial fan operated via a space-controlled thermostat. The observed unit heater is at the back of the stage.

Condition Narrative

No significant deficiencies were observed or reported at the time of the field review, although the system has surpassed the end of its useful life during the evaluation period. Replacement is recommended.

Photos



Massey Theatre - D305002

Recommendations

Recommendations #1 - Unit Heaters (Hydronic)	
Type	Life Cycle Replacement
Year	2026
Cost	$3,900.00

Element Description	
Name	D305004 - Fin Tube Radiation Units
Installation Year	1970
Condition	3 - Fair
Expected Useful Life	30 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	300 / LM
Unit Cost	$280.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$109,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The building heating is provided via wall mounted perimeter fin-tube radiation units supplied hydraulically. They are generally found near the widows of the perimeter offices, corridors and activity rooms.

Condition Narrative

Many of the hydronic force flow units were observed to be corroded and the metal covers damaged. The system has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - D305004

Recommendations

Recommendations #1 - Fin Tube Radiation Units	
Type	Life Cycle Replacement
Year	2025
Cost	$109,200.00

Element Description	
Name	D305007 - Force Flow Unit (Hydronic)
Installation Year	1970
Condition	4 - Poor
Expected Useful Life	30 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	20 / Each
Unit Cost	$3,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$78,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

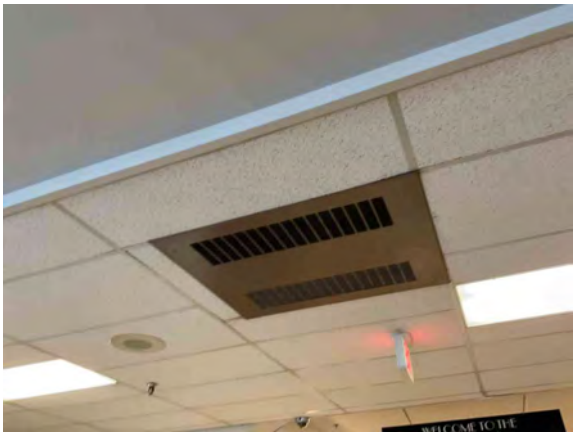
Description

The building HVAC includes cabinet style wall mounted hydronic force flow units located in the entrance vestibules, stairwell exits and near the ceiling of a number of activity rooms. There are approximately 20 force flow units.

Condition Narrative

Many of the cabinet style wall mounted hydronic force flow units were observed to be corroded and the metal covers damaged. The system has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - D305007



Massey Theatre - D305007



Massey Theatre - D305007



Massey Theatre - D305007

Recommendations

Recommendations #1 - Force Flow Unit (Hydronic)	
Type	Life Cycle Replacement
Year	2025
Cost	$78,000.00

Element Description	
Name	D305021 - Packaged rooftop heating & cooling unit, with less than 5 tons
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$5,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$6,500.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a package electric cool package unit manufactured by "YORK" (Model: D4CE048A25A Serial: NEJM058258), located on the roof. It provides conditioned air to the theatre. It is charged with R22 refrigerant and has a capacity of 4 tons.

Condition Narrative

The electric cool package unit is showing sings of corrosion and is charged with R-22 refrigerant which is no longer being manufactured. The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - D305021



Massey Theatre - D305021

Recommendations

Recommendations #1 - Packaged rooftop heating & cooling unit, with less than 5 tons	
Type	Life Cycle Replacement
Year	2025
Cost	$6,500.00

Element Description	
Name	D305022 - Packaged rooftop heating & cooling unit less than 10 Tons
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$12,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$15,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a package electric cool - electric heat unit manufactured by "YORK" (Model: N/A), located on the lower roof. It provides conditioned air to the dance studio. It is charged with R22 refrigerant and has a capacity of about 10 tons Note: There was no access package unit during the assessment. The capacity is approximate.

Condition Narrative

The electric cool package unit is showing sings of corrosion and is charged with R-22 refrigerant which is no longer being manufactured. The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - D305022

Recommendations

Recommendations #1 - Packaged rooftop heating & cooling unit less than 10 Tons	
Type	Life Cycle Replacement
Year	2025
Cost	$15,600.00

Element Description	
Name	D305023 - Packaged Rooftop Heating & Cooling Unit - Less than 20 Tons
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$30,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$39,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is an electric heat-electric cool package unit located on the roof. It is reported that it is rated at about 20 tons cooling and provides conditioned air to the theatre.

Condition Narrative

It is reported that the electric heat/electric cool package unit is showing sings of corrosion and is charged with R-22 refrigerant which is no longer being manufactured. The component has surpassed its expected useful life. Replacement is recommended. No access to the unit. No photo available.

Recommendations

Recommendations #1 - Packaged Rooftop Heating & Cooling Unit - Less than 20 Tons	
Type	Life Cycle Replacement
Year	2025
Cost	$39,000.00

Element Description	
Name	D306003 - Pneumatic Control System
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$60.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$475,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Most of the HVAC equipment is regulated by a building wide pneumatic control system. The system consists of copper and plastic tubes from controllers to field devices such as dampers or valve actuators. Remote panels control various segments of the overall control system. Feedback is provided at a central monitoring point. The compressor and air dryer are listed separately.

Condition Narrative

Although the system has surpassed its useful life, no major deficiencies were observed or reported at the time of field review. Parts are becoming difficult or impossible to come by due to obsolescence and some of the equipment is no longer functioning properly. Replacement with a DDC building automation system is highly recommended for reliability and energy savings.

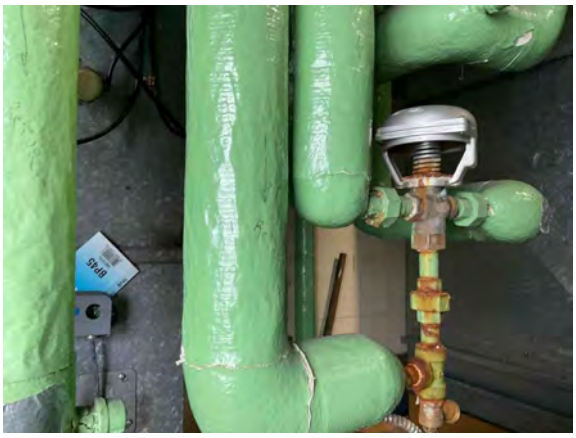
Photos



Massey Theatre - D306003



Massey Theatre - D306003



Massey Theatre - D306003

Recommendations

Recommendations #1 - Pneumatic Control System	
Type	Life Cycle Replacement
Year	2024
Cost	$475,800.00

Element Description	
Name	D306004 - Air Compressor & Air Dryer (Control System)
Installation Year	2020
Condition	2 - Good
Expected Useful Life	20 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	1 / ----
Unit Cost	$4,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$5,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The compressed air used to trigger the action of the pneumatic controls (building automation system (BAS) is provided by the air compressor and dryer located in the Main Mechanical Room in the tunnel. The air compressor and air dryer are manufactured by "Jenny Air Compressors"

Condition Narrative

No major deficiencies were observed or reported during the assessment.

Photos



Massey Theatre - D306004



Massey Theatre - D306004

Recommendations

Recommendations #1 - Air Compressor & Air Dryer (Control System)	
Type	Life Cycle Replacement
Year	2040
Cost	$5,200.00

D40 Fire Protection

Element Description	
Name	D401002 - Sprinklers
Installation Year	1985
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	5 Years
Renewal Year	2027
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$55.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$436,150.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Fire suppression is provided by a wet sprinkler system. The sprinkler system includes distribution piping, 6" backflow preventer, tamper switches, spare sprinkler heads and fire department Siamese connection. The sprinkler tree is located in the tunnel and the fire department Siamese connection is located at the exterior of the building. Note: The backflow preventer is listed separately. The sprinkler system in the tunnel also supplied the firewater for the old school.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system is anticipated to reach the end of its useful life during the evaluation period. Replacement is recommended

Photos



Massey Theatre - D401002



Massey Theatre - D401002



Massey Theatre - D401002



Massey Theatre - D401002

Recommendations

Recommendations #1 - Sprinklers	
Type	Life Cycle Replacement
Year	2027
Cost	$436,150.00

Element Description	
Name	D403002 - Fire Extinguishers
Installation Year	2014
Condition	2 - Good
Expected Useful Life	10 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$1.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$7,930.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There are wall mounted fire extinguishers installed with identifying signage. It is assumed that fire extinguishers are replaced or recharged as needed with an average install date of around 2014.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the component is anticipated to reach its expected useful life during the evaluation period. Replacement has been deferred.

Photos



Massey Theatre - D403002

Recommendations

Recommendations #1 - Fire Extinguishers	
Type	Life Cycle Replacement
Year	2028
Cost	$7,930.00

D50 Electrical

Element Description	
Name	D501001 - HV Main Power Transformers Dry Type
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1000 / kVA
Unit Cost	$100.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$130,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a 1000 kVA transformer to step down the power from 12.5 KV to 120/208V. It is manufactured by "Federal Pioneer" and is located in the High Voltage Electrical Room.

Condition Narrative

The system has surpassed the end of its useful life. The transformer can experience electrical or thermal breakdown over time which can eventually result in failure. Repair and replacement parts may be difficult or impossible to find due to obsolescence. Replacement is recommended. Note: The High Voltage Electrical Vault does not have any forced cooling and ventilation as required by the British Columbia Building Code 2018, Section 3.6.2.7(6).

Photos



Massey Theatre - D501001



Massey Theatre - D501001

Recommendations

Recommendations #1 - High Voltage Main Power Transformer - Install Ventilation	
Type	Major Repair
Year	2024
Cost	$10,000.00

Recommendations #2 - HV Main Power Transformers Dry Type	
Type	Life Cycle Replacement
Year	2025
Cost	$130,000.00

Element Description	
Name	D501003 - LV Main Service Switchboards
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	5 / Each
Unit Cost	$58,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$377,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There are five central distribution panels each rated at 120/208V, 1200A. They are manufactured by "Federal Pioneer" and are located in the High Voltage Electrical Room.

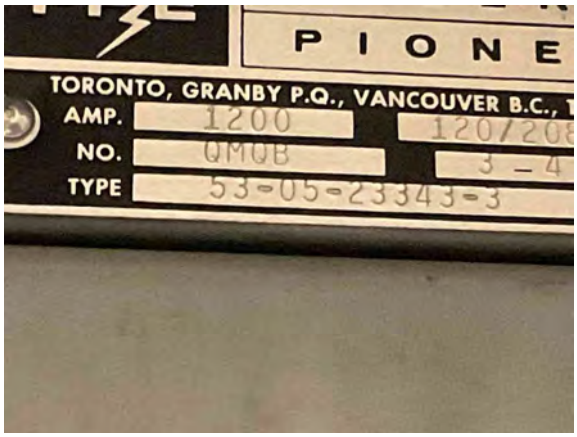
Condition Narrative

The system has surpassed the end of its useful life. The main switchboard can experience electrical or thermal breakdown over time which can eventually result in failure. Repair and replacement parts may be difficult or impossible to find due to obsolescence. Replacement is recommended. Note: The High Voltage Electrical Vault does not have a single-line diagram within site of the switchgear clearly identifying interlocks and means of isolation which is not in compliance with the Canadian Electrical Code Rule 36 006 (5).

Photos



Massey Theatre - D501003



Massey Theatre - D501003

Recommendations

Recommendations #1 - Low Voltage Main Service Switchboard - Install a Single Line Diagram	
Type	Major Repair
Year	2024
Cost	$3,000.00

Recommendations #2 - LV Main Service Switchboards	
Type	Life Cycle Replacement
Year	2025
Cost	$377,000.00

Element Description	
Name	D501005 - Panelboards up to 400A - 2000
Installation Year	2000
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	14 / Each
Unit Cost	$5,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$91,000.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

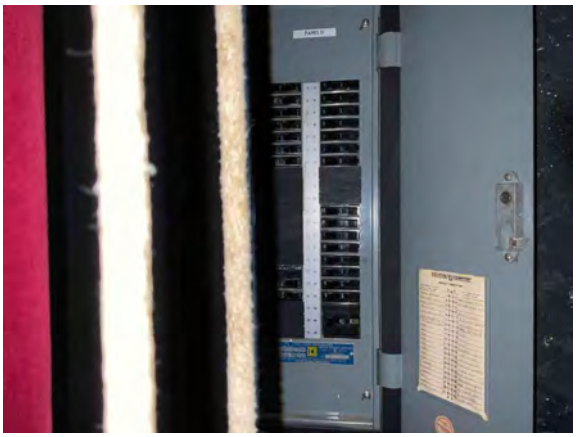
Description

There are sub distribution panelboards installed in the facility. They are manufactured by Square D and are typically rated at 225A, 120/208V each. Panelboards are located in the mechanical rooms, electrical rooms and corridors.

Condition Narrative

No major deficiencies were observed or reported during the assessment. The panelboard directories are non compliant as required per the 2018 Canadian Electric Code, Rule 2-100 (3)(a),

Photos



Massey Theatre - D501005



Massey Theatre - D501005

Recommendations

Recommendations #1 - Sub-Distribution Panelboards	
Type	Major Repair
Year	2024
Cost	$7,000.00

Recommendations #2 - Panelboards up to 400A	
Type	Life Cycle Replacement
Year	2040
Cost	$91,000.00

Element Description	
Name	D501005 - Panelboards up to 400A - 1980
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	8 / Each
Unit Cost	$5,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$52,000.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

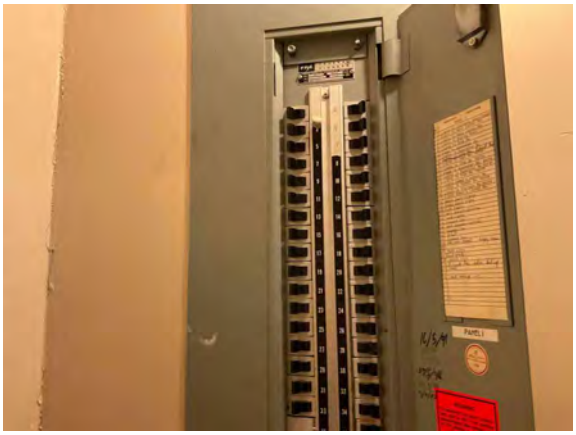
Description

There are sub distribution panelboards installed in the facility. They are manufactured by "Westinghouse" and are typically rated at 225A, 120/208V each. Panelboards are located in the mechanical rooms, electrical rooms and corridors.

Condition Narrative

The system has surpassed the end of its useful life. The panelboards can experience electrical or thermal breakdown over time which can eventually result in failure. Repair and replacement parts may be difficult or impossible to find due to obsolescence. Replacement is recommended. The panelboard directories are non compliant as required per the 2018 Canadian Electric Code, Rule 2-100 (3)(a).

Photos



Massey Theatre - D501005



Massey Theatre - D501005

Recommendations

Recommendations #1 - Upgrade Panelboard Directories	
Type	Major Repair
Year	2024
Cost	$3,000.00

Recommendations #2 - Panelboards up to 400A	
Type	Life Cycle Replacement
Year	2025
Cost	$52,000.00

Element Description	
Name	D501012 - HV Interruptor Switches
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Cell
Unit Cost	$38,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$49,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The main electrical service includes a 12.5KV, 600A interrupter switch, incoming feeders, metering and associated equipment located in the High Voltage Electrical Room. The equipment is manufactured by Westinghouse.

Condition Narrative

The system has surpassed the end of its useful life. The main switchboard can experience electrical or thermal breakdown over time which can eventually result in failure. Repair and replacement parts may be difficult or impossible to find due to obsolescence. Replacement is recommended. Note 1: The egress door from the high voltage electrical room is original to the building and is not equipped with a door latching, locking and opening mechanism as required per the BCBC Section 9.9.6.7 Note 2: Ceiling and wall penetrations within the High Voltage Electrical Room are not sealed and are not in non-compliance with the 2018 Edition of the BC Building Code 3.1.9.1.

Photos



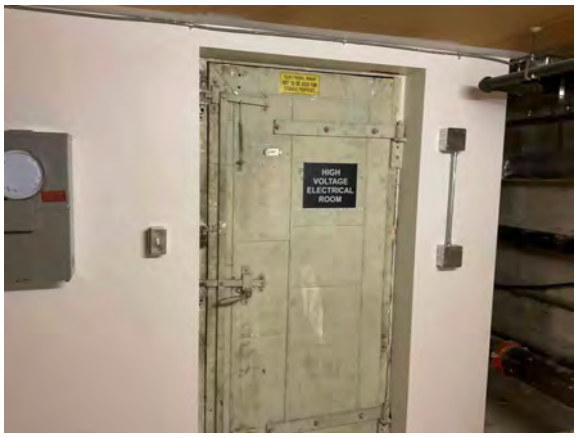
Massey Theatre - D501012



Massey Theatre - D501012



Massey Theatre - D501012



Massey Theatre - D501012

Recommendations

Recommendations #1 - High Voltage Interrupter Switches - Replace Egress Door	
Type	Major Repair
Year	2024
Cost	$20,000.00

Recommendations #2 - High Voltage Interrupter Switches - Install Firestopping	
Type	Major Repair
Year	2024
Cost	$5,000.00

Recommendations #3 - HV Interruptor Switches	
Type	Life Cycle Replacement
Year	2025
Cost	$49,400.00

Element Description	
Name	D501023 - LV Main Service Switchboards 3000A or higher
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	1 / Each
Unit Cost	$198,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$257,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a central distribution panel rated at 120/208V, 4000A. It is manufactured by "Federal Pioneer" and are located in the High Voltage Electrical Room.

Condition Narrative

The system has surpassed the end of its useful life. The main switchboard can experience electrical or thermal breakdown over time which can eventually result in failure. Repair and replacement parts may be difficult or impossible to find due to obsolescence. Replacement is recommended.

Photos



Massey Theatre - D501023



Massey Theatre - D501023

Recommendations

Recommendations #1 - LV Main Service Switchboards 3000A or higher	
Type	Life Cycle Replacement
Year	2025
Cost	$257,400.00

Element Description	
Name	D502001 - Branch Wiring and Devices
Installation Year	1970
Condition	2 - Good
Expected Useful Life	50 Years
Remaining Useful Life	20 Years
Renewal Year	2042
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$95.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$753,350.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The branch wiring includes commercial grade insulated copper wire in rigid metal conduit and armored cable, boxes, outlets, switches and receptacles. GFI receptacles have been installed near wet areas such as kitchen sinks.

Condition Narrative

The system has surpassed the end of its useful life. Given the nature of the component, full-scale replacement is not expected to be required. However, a cost allowance for a study and partial replacement based on the outcome of the study has been carried forward in this report as a precautionary measure. Assuming the recommended study and repair will be undertaken, replacement of the remaining component can be deferred. Note 1: There were no receptacles installed on the roof which is in violation of the 2018 Canadian Electrical Code, Section 26-702 and 30-1002 (2)

Photos



Massey Theatre - D502001



Massey Theatre - D502001



Massey Theatre - D502001



Massey Theatre - D502001

Recommendations

Recommendations #1 - Branch Wiring and Devices	
Type	Engineering Study
Year	2022
Cost	$10,000.00

Recommendations #2 - Branch Wiring and Devices	
Type	Major Repair
Year	2023
Cost	$226,000.00

Recommendations #3 - Install Roof Receptacles	
Type	Major Repair
Year	2024
Cost	$3,000.00

Recommendations #4 - Branch Wiring and Devices	
Type	Life Cycle Replacement
Year	2042
Cost	$753,350.00

Element Description	
Name	D502002 - Interior Lighting - 1995
Installation Year	1995
Condition	3 - Fair
Expected Useful Life	35 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	3500 / SM Building
Unit Cost	$85.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$386,750.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Interior lighting for the offices, activity rooms and hallways is provided via surface and recessed mounted 4', T8 lighting fixtures and CFL pot lights and pendant lights.

Condition Narrative

No major deficiencies were observed or reported at the time of the field review. It is recommended that the lighting be upgraded with surface and recessed mounted LED lighting for improved energy savings at the end of its EUL. Replace lighting fixtures and wiring.

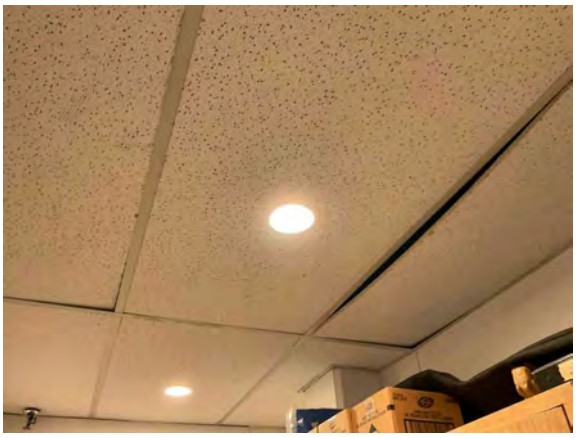
Photos



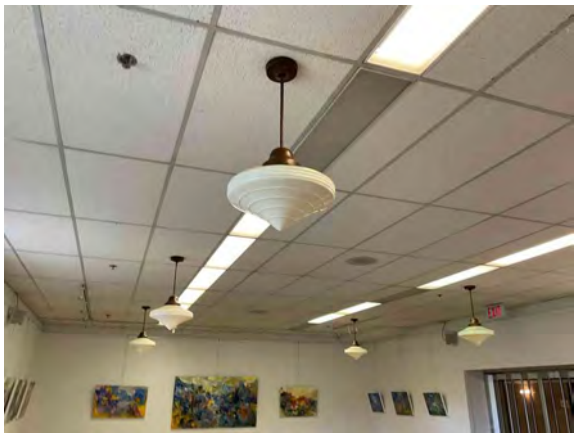
Massey Theatre - D502002



Massey Theatre - D502002



Massey Theatre - D502002



Massey Theatre - D502002

Recommendations

Recommendations #1 - Interior Lighting	
Type	Life Cycle Replacement
Year	2030
Cost	$386,750.00

Element Description	
Name	D502002 - Interior Lighting - 1980
Installation Year	1980
Condition	4 - Poor
Expected Useful Life	35 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	2600 / SM Building
Unit Cost	$85.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$287,300.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

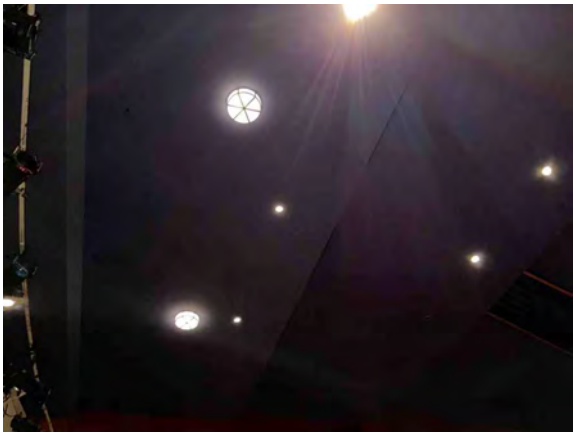
Description

Interior lighting for the Massey Theatre is provided by pendant quartz halogen lighting and lighting for the large gym is provided by pendant metal halide lighting fixtures.

Condition Narrative

The quartz lighting fixtures in the Massey theatre reach a maximum internal bulb temperature of 300C which is potentially a fire hazard. In addition, these quartz lighting fixtures and the metal halide lighting fixtures are very inefficient. The system has surpassed the end of its useful life during the evaluation period. Replacement with LED lighting is recommended.

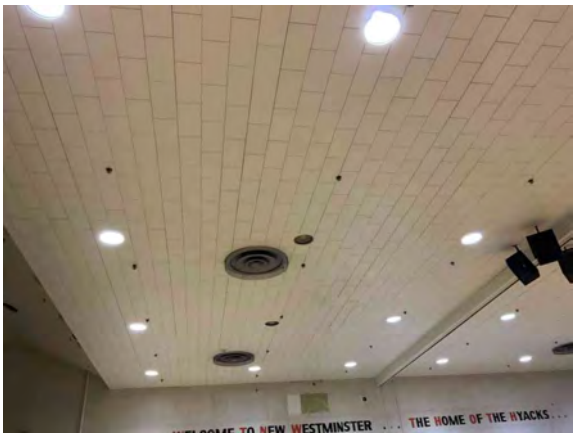
Photos



Massey Theatre - D502002



Massey Theatre - D502002



Massey Theatre - D502002

Recommendations

Recommendations #1 - Interior Lighting	
Type	Life Cycle Replacement
Year	2024
Cost	$287,300.00

Element Description	
Name	D502030 - Stage Light Fixtures
Installation Year	2000
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	70 / LM
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$91,000.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

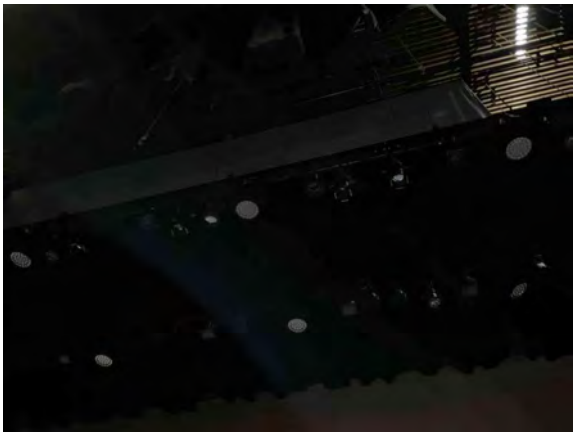
Description

There is a ceiling mounted stage lighting system located in the theatre. It includes a dimmer rack and control console. The dimmer rack is located in the basement and the control console is located in a dedicated booth at the rear of the theatre.

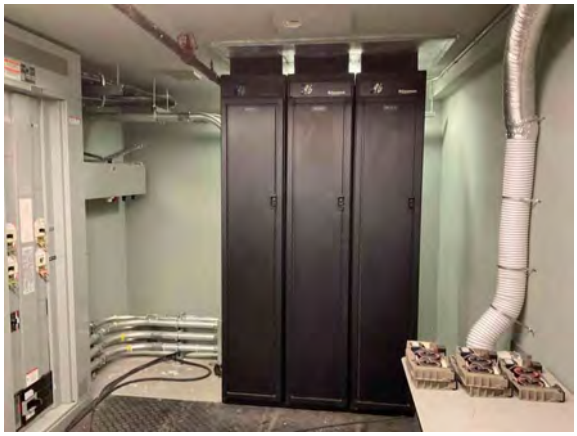
Condition Narrative

No significant deficiencies were observed or reported at the time of the field review, although the system is anticipated to reach its expected useful life during the evaluation period. Replacement has been deferred.

Photos



Massey Theatre - D502030



Massey Theatre - D502030

Recommendations

Recommendations #1 - Stage Light Fixtures	
Type	Life Cycle Replacement
Year	2028
Cost	$91,000.00

Element Description	
Name	D502041 - Exterior Lighting
Installation Year	2000
Condition	2 - Good
Expected Useful Life	20 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	16 / Each
Unit Cost	$500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$10,400.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

Exterior lighting is provided by wall mounted fixtures around the perimeter of the building.

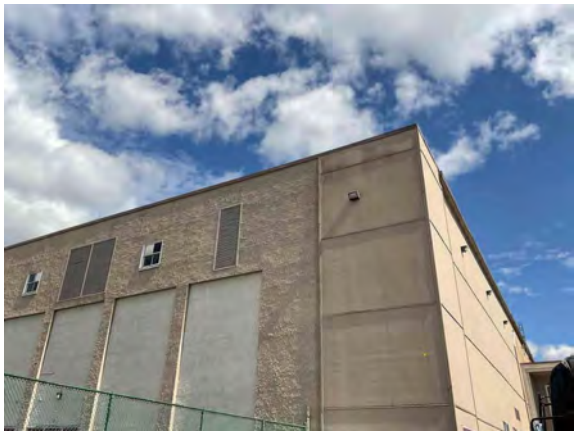
Condition Narrative

No significant deficiencies were observed or reported at the time of the field review, although the system has reached the end of its expected useful life during the evaluation period. Replacement with the more energy efficient LED lighting is recommended.

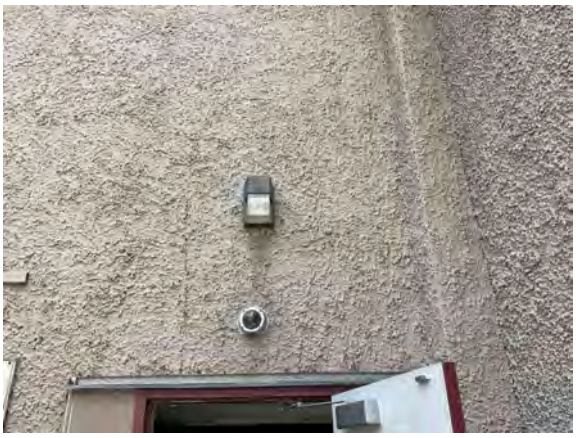
Photos



Massey Theatre - D502041



Massey Theatre - D502041



Massey Theatre - D502041

Recommendations

Recommendations #1 - Exterior Lighting	
Type	Life Cycle Replacement
Year	2025
Cost	$10,400.00

Element Description	
Name	D502051 - Exit Lighting - 1990
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	35 Years
Remaining Useful Life	3 Years
Renewal Year	2025
Quantity / Unit of Measure	3000 / SM Building
Unit Cost	$3.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$11,700.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There are wall and ceiling mounted fluorescent exit signs installed at exit points and corridors to direct the flow of emergency egress. The average install date for the exit lighting fixtures is estimated circa 1990.

Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system is anticipated to reach the end of its useful life during the evaluation period. Replacement with the newest code compliant LED pictogram exit signs is recommended.

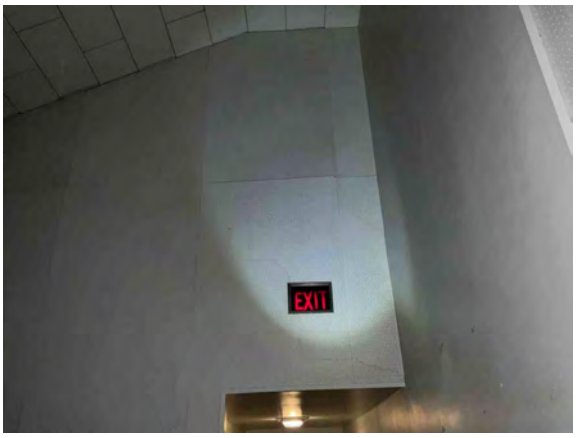
Photos



Massey Theatre - D502051



Massey Theatre - D502051



Massey Theatre - D502051

Recommendations

Recommendations #1 - Exit Lighting	
Type	Life Cycle Replacement
Year	2025
Cost	$11,700.00

Element Description	
Name	D502051 - Exit Lighting - 2012
Installation Year	2012
Condition	2 - Good
Expected Useful Life	35 Years
Remaining Useful Life	25 Years
Renewal Year	2047
Quantity / Unit of Measure	3100 / SM Building
Unit Cost	$3.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$12,090.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There are wall and ceiling mounted LED exit signs installed at exit points and corridors to direct the flow of emergency egress. Some are equipped with emergency lighting.

Condition Narrative

No major deficiencies were observed or reported during the assessment.

Photos



Massey Theatre - D502051



Massey Theatre - D502051

Recommendations

Recommendations #1 - Exit Lighting	
Type	Life Cycle Replacement
Year	2047
Cost	$12,090.00

Element Description	
Name	D503001 - Fire Alarm Systems
Installation Year	2000
Condition	2 - Good
Expected Useful Life	20 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	6100 / SM Building
Unit Cost	$50.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$396,500.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There is a zone based fire alarm and detection system installed, with a main fire panel located in the Fire Alarm Room and annunciator panel adjacent to southwest exit on Eighth Street. The fire alarm panel is manufactured by Simplex (Model: 4007) The system includes pull stations, smoke and heat detectors and alarm bells. The main fire panel was replaced in 2018.

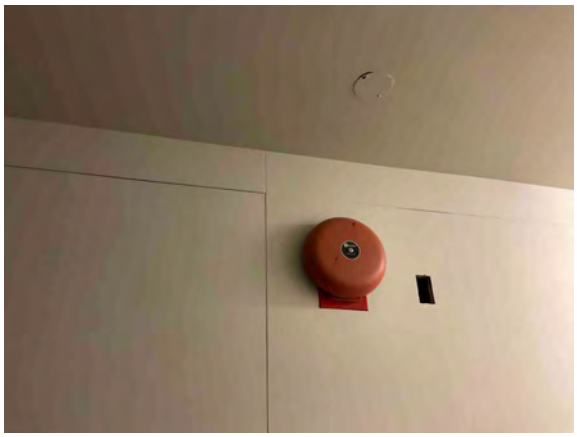
Condition Narrative

No major deficiencies were observed or reported during the assessment, although the system has surpassed the end of its useful life during the evaluation period. Replacement is recommended. There were no visual alarm components observed (i.e: strobes) in public and barrier free washrooms, the theatre and the Boiler Room which is not in compliance with the British Columbia Building Codes Sections 3.2.4.19 and 3.2.4.20.and the pull stations adjacent to the exit doors were located at 60" (1500 mm) above the finished floor which is not in compliance with the British Columbia Building Code Section 3.8.3.8; therefore any upgrade to the fire alarm system will require it to be brought up to current code. Replacement with an addressable fire alarm system is recommended.

Photos



Massey Theatre - D503001



Massey Theatre - D503001



Massey Theatre - D503001

Recommendations

Recommendations #1 - Fire Alarm System - Strobe Lights Lacking	
Type	Major Repair
Year	2024
Cost	$20,000.00

Recommendations #2 - Fire Alarm Systems	
Type	Life Cycle Replacement
Year	2024
Cost	$396,500.00

Element Description	
Name	D503004 - Public Address and Music Systems
Installation Year	2000
Condition	3 - Fair
Expected Useful Life	15 Years
Remaining Useful Life	4 Years
Renewal Year	2026
Quantity / Unit of Measure	3000 / SM Building
Unit Cost	$20.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$78,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The facility contains its own communication system between all related spaces, meeting rooms, theatre and public areas which includes conduit and wiring.

Condition Narrative

Although no significant deficiencies were observed or reported at the time of the field review, the system has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - D503004



Massey Theatre - D503004

Recommendations

Recommendations #1 - Public Address and Music Systems	
Type	Life Cycle Replacement
Year	2026
Cost	$78,000.00

Element Description	
Name	D503031 - Video Surveillance Systems
Installation Year	2010
Condition	2 - Good
Expected Useful Life	20 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	3500 / SM
Unit Cost	$10.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$45,500.00
Does the Element Consume Fossil Fuels?	N/A
Water Conservation Opportunities	----

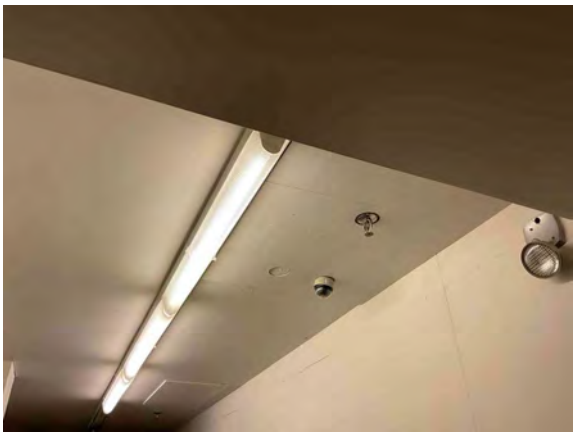
Description

The building contains a video system which includes video recorder, monitoring station, cameras, conduit and cabling. It monitors the hallways, main lobby and the exterior perimeter of the building. The system is monitored from the security office on the main floor.

Condition Narrative

No significant deficiencies were observed or reported at the time of the field review.

Photos



Massey Theatre - D503031



Massey Theatre - D503031

Recommendations

Recommendations #1 - Video Surveillance Systems	
Type	Life Cycle Replacement
Year	2030
Cost	$45,500.00

Element Description	
Name	D509003 - Emergency Lighting Systems
Installation Year	1990
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	3000 / SM Building
Unit Cost	$5.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$19,500.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

There are emergency lighting battery packs with fluorescent lights installed to illuminate the path of emergency egress. The average install date for the emergency lighting fixtures is estimated circa 2000.

Condition Narrative

No major deficiencies were observed or reported at the time of field review, although the system has surpassed the end of its useful life during the evaluation period. Replacement with LED emergency lights is recommended to ensure continuous safe operation.

Photos



Massey Theatre - D509003



Massey Theatre - D509003

Recommendations

Recommendations #1 - Emergency Lighting Systems	
Type	Life Cycle Replacement
Year	2024
Cost	$19,500.00

E Equipment & Furnishings
E20 Furnishings

Element Description	
Name	E201002 - Fixed Seating - Theatre Auditorium
Installation Year	1948
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	867 / Each
Unit Cost	$500.00
Difficulty / Regional / Soft Cost Factors	0.70 / 1.00000 / 1.30000
Replacement Cost	$394,485.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The theatre auditorium is provided with fixed seating that is constructed of wood and steel-framed foldable chairs. The chairs are upholstered.

Condition Narrative

No significant deficiencies were observed or reported at the time of the assessment. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies. The difficulty factor has been adjusted to reflect a more accurate cost of the component.

Photos



Massey Theatre - E201002



Massey Theatre - E201002

Recommendations

Recommendations #1 - Fixed Seating	
Type	Life Cycle Replacement
Year	2028
Cost	$394,485.00

G Building Sitework
G20 Site Improvements

Element Description	
Name	G201005 - Guardrails and Barriers - Loading Dock
Installation Year	2000
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	10 / LM
Unit Cost	$1,200.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$15,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with exterior metal guardrails located at the free edge of the loading dock. The guardrails include a removable section to be removed for truck loading and unloading.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G201005



Massey Theatre - G201005

Recommendations

Recommendations #1 - Guardrails and Barriers	
Type	Life Cycle Replacement
Year	2030
Cost	$15,600.00

Element Description	
Name	G201021 - Asphalt Paved Surface - Roadway (light duty)
Installation Year	2010
Condition	2 - Good
Expected Useful Life	25 Years
Remaining Useful Life	13 Years
Renewal Year	2035
Quantity / Unit of Measure	270 / SM
Unit Cost	$100.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$35,100.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with an asphalt paved driveway located between the old New Westminster high school and the Massey Theatre.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G201021

Recommendations

Recommendations #1 - Asphalt Paved Surface - Roadway (light duty)	
Type	Life Cycle Replacement
Year	2035
Cost	$35,100.00

Element Description	
Name	G202021 - Asphalt Paved Surfaces - Parking Area
Installation Year	1990
Condition	4 - Poor
Expected Useful Life	25 Years
Remaining Useful Life	2 Years
Renewal Year	2024
Quantity / Unit of Measure	1750 / SM
Unit Cost	$75.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$170,625.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with an asphalt paved parking lot located between the old New Westminster high school and the Massey Theatre and on the building's north side. We assumed that the parking lot is shared between the Massey Theatre and the old high school. Accordingly, half of the parking lot area was included in the assessment cost.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Crocodile cracks were observed in the parking lot asphalt pavement. - Previous repairs and patches were observed. - Asphalt potholes were observed. - The component has surpassed its expected useful life. Replacement is recommended.

Photos



Massey Theatre - G202021



Massey Theatre - G202021



Massey Theatre - G202021

Recommendations

Recommendations #1 - Asphalt Paved Surfaces - Parking Area	
Type	Life Cycle Replacement
Year	2024
Cost	$170,625.00

Element Description	
Name	G203022 - Concrete Paved Surfaces - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	220 / SM
Unit Cost	$165.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$47,190.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with cast-in-place concrete paved surfaces at the building's front main entrance and a walkway on the building's east side.

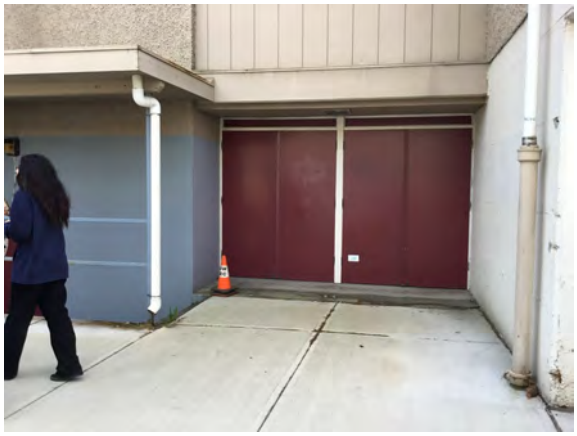
Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

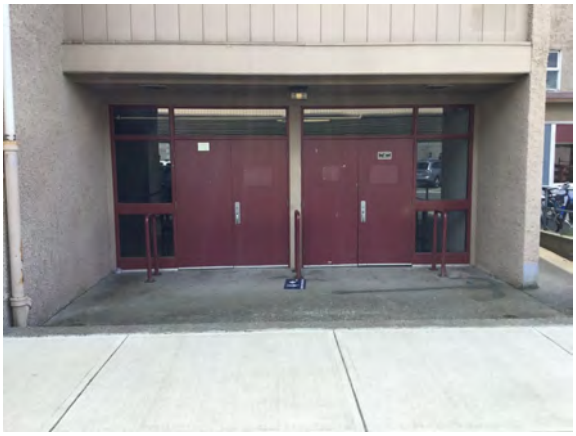
Photos



Massey Theatre - G203022



Massey Theatre - G203022



Massey Theatre - G203022

Recommendations

Recommendations #1 - Concrete Paved Surfaces	
Type	Life Cycle Replacement
Year	2040
Cost	$47,190.00

Element Description	
Name	G203023 - Precast Paved Surfaces
Installation Year	2010
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	60 / SM
Unit Cost	$175.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$13,650.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with concrete brick pavers surfaces at the building's front main entrance.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G203023



Massey Theatre - G203023

Recommendations

Recommendations #1 - Precast Paved Surfaces	
Type	Life Cycle Replacement
Year	2040
Cost	$13,650.00

Element Description	
Name	G203025 - Exterior Site Stairs - Wood - 1980
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	20 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	4 / Per Riser
Unit Cost	$500.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$2,600.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with exterior wood-framed stairs for the building's west side emergency exit. The wood-framed stairs are provided with painted handrails and an anti-slip membrane on the stairs treads and landing.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Stair framing members appear to be rotted. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - G203025



Massey Theatre - G203025

Recommendations

Recommendations #1 - Exterior Site Stairs - Wood	
Type	Life Cycle Replacement
Year	2028
Cost	$2,600.00

Element Description	
Name	G203026 - Exterior Site Stairs - Concrete - 1980
Installation Year	1980
Condition	3 - Fair
Expected Useful Life	40 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	64 / Per Riser
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$83,200.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with cast-in-place concrete stairs for the building access. The concrete stairs are provided with painted metal handrails and guardrails.

Condition Narrative

The following deficiencies were observed or reported at the time of the assessment: - Minor damage at some stairs nosings. - The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

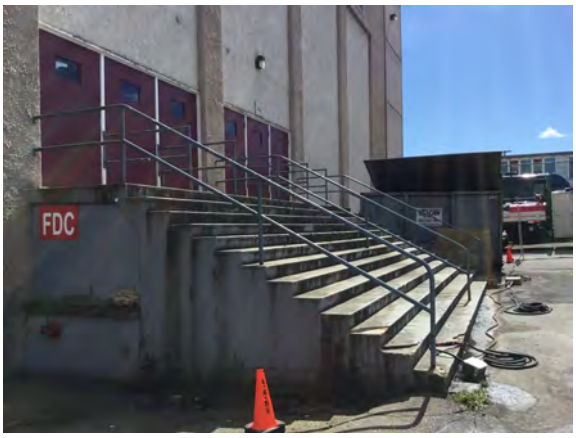
Photos



Massey Theatre - G203026



Massey Theatre - G203026



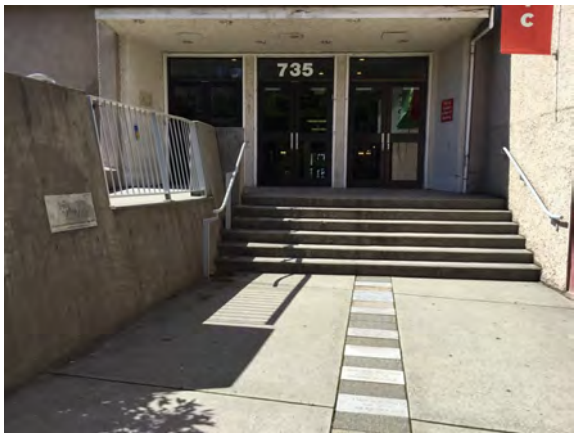
Massey Theatre - G203026



Massey Theatre - G203026



Massey Theatre - G203026



Massey Theatre - G203026

Recommendations

Recommendations #1 - Exterior Site Stairs - Concrete	
Type	Life Cycle Replacement
Year	2028
Cost	$83,200.00

Element Description	
Name	G203026 - Exterior Site Stairs - Concrete - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	28 Years
Renewal Year	2050
Quantity / Unit of Measure	16 / Per Riser
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$20,800.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with cast-in-place curved concrete stairs for the building's front main access. The concrete stairs are provided with painted metal handrails.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G203026

Recommendations

Recommendations #1 - Exterior Site Stairs - Concrete	
Type	Life Cycle Replacement
Year	2050
Cost	$20,800.00

Element Description	
Name	G203030 - Exterior Ramps - Concrete - 1980
Installation Year	1980
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	6 Years
Renewal Year	2028
Quantity / Unit of Measure	40 / SM
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$52,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with cast-in-place concrete ramps for building access. The concrete ramps are provided with painted metal railings.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. However, the painting of the metal railings is fading. Repainting is recommended. The component has surpassed its expected useful life, although its remaining useful life has been extended due to the absence of significant observed or reported deficiencies.

Photos



Massey Theatre - G203030



Massey Theatre - G203030



Massey Theatre - G203030

Recommendations

Recommendations #1 - Exterior Ramps - Concrete	
Type	Life Cycle Replacement
Year	2028
Cost	$52,000.00

Element Description	
Name	G203030 - Exterior Ramps - Concrete - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	40 Years
Remaining Useful Life	28 Years
Renewal Year	2050
Quantity / Unit of Measure	35 / SM
Unit Cost	$1,000.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$45,500.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with cast-in-place concrete ramps for the building's front main access. The concrete ramps are provided with concrete walls and painted metal railings.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G203030



Massey Theatre - G203030



Massey Theatre - G203030

Recommendations

Recommendations #1 - Exterior Ramps - Concrete	
Type	Life Cycle Replacement
Year	2050
Cost	$45,500.00

Element Description	
Name	G204021 - Fencing and Gates - Chain Link Fence - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	30 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	3 / LM
Unit Cost	$360.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$1,404.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with a chain-link fence enclosure at the gas shut-off valve.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G204021



Massey Theatre - G204021

Recommendations

Recommendations #1 - Fencing and Gates - Chain Link Fence	
Type	Life Cycle Replacement
Year	2040
Cost	$1,404.00

Element Description	
Name	G204080 - Message Sign - Post-Mounted - 2010
Installation Year	2010
Condition	2 - Good
Expected Useful Life	20 Years
Remaining Useful Life	8 Years
Renewal Year	2030
Quantity / Unit of Measure	2 / Each
Unit Cost	$1,700.00
Difficulty / Regional / Soft Cost Factors	2.00 / 1.00000 / 1.30000
Replacement Cost	$8,840.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with a post-mounted message sign and an eliminated sign located on 8th Ave by the building's main entrance.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment. The difficulty factor has been adjusted to reflect a more accurate cost of the component.

Photos



Massey Theatre - G204080



Massey Theatre - G204080

Recommendations

Recommendations #1 - Message Sign - Post-Mounted	
Type	Life Cycle Replacement
Year	2030
Cost	$8,840.00

Element Description	
Name	G205004 - Grassed Surfaces - Landscaping
Installation Year	1990
Condition	2 - Good
Expected Useful Life	50 Years
Remaining Useful Life	18 Years
Renewal Year	2040
Quantity / Unit of Measure	1500 / SM
Unit Cost	$20.00
Difficulty / Regional / Soft Cost Factors	1.00 / 1.00000 / 1.30000
Replacement Cost	$39,000.00
Does the Element Consume Fossil Fuels?	No
Water Conservation Opportunities	----

Description

The site is provided with grassed surfaces, shrubs, and trees, mostly located on the building front along 8th Ave.

Condition Narrative

No major deficiencies were observed or reported at the time of the assessment.

Photos



Massey Theatre - G205004



Massey Theatre - G205004



Massey Theatre - G205004

Recommendations

Recommendations #1 - Grassed Surfaces	
Type	Life Cycle Replacement
Year	2040
Cost	$39,000.00

ATTACHMENT 8 – TIER 1 SCOPE MODELS

Tier 1
Scenario 1
$7.6MM (on budget)

NEW EXIT STAIR + ELEVATOR SHAFT
(NO ELEVATOR)

REPLACE NORTHWEST WALL

NEW NORTH WALL

NEW ELEC, SPRINKLER ROOMS

GYM DEMO & HAZMAT
NEW PARKING LOT

Tier 1
Scenario 2
$12.2MM (+$4.6MM)

NEW EXIT STAIR + ELEVATOR SHAFT
(NO ELEVATOR)

ROOF REPLACEMENT
STRUCTURAL UPGRADES

REPLACE NORTHWEST WALL

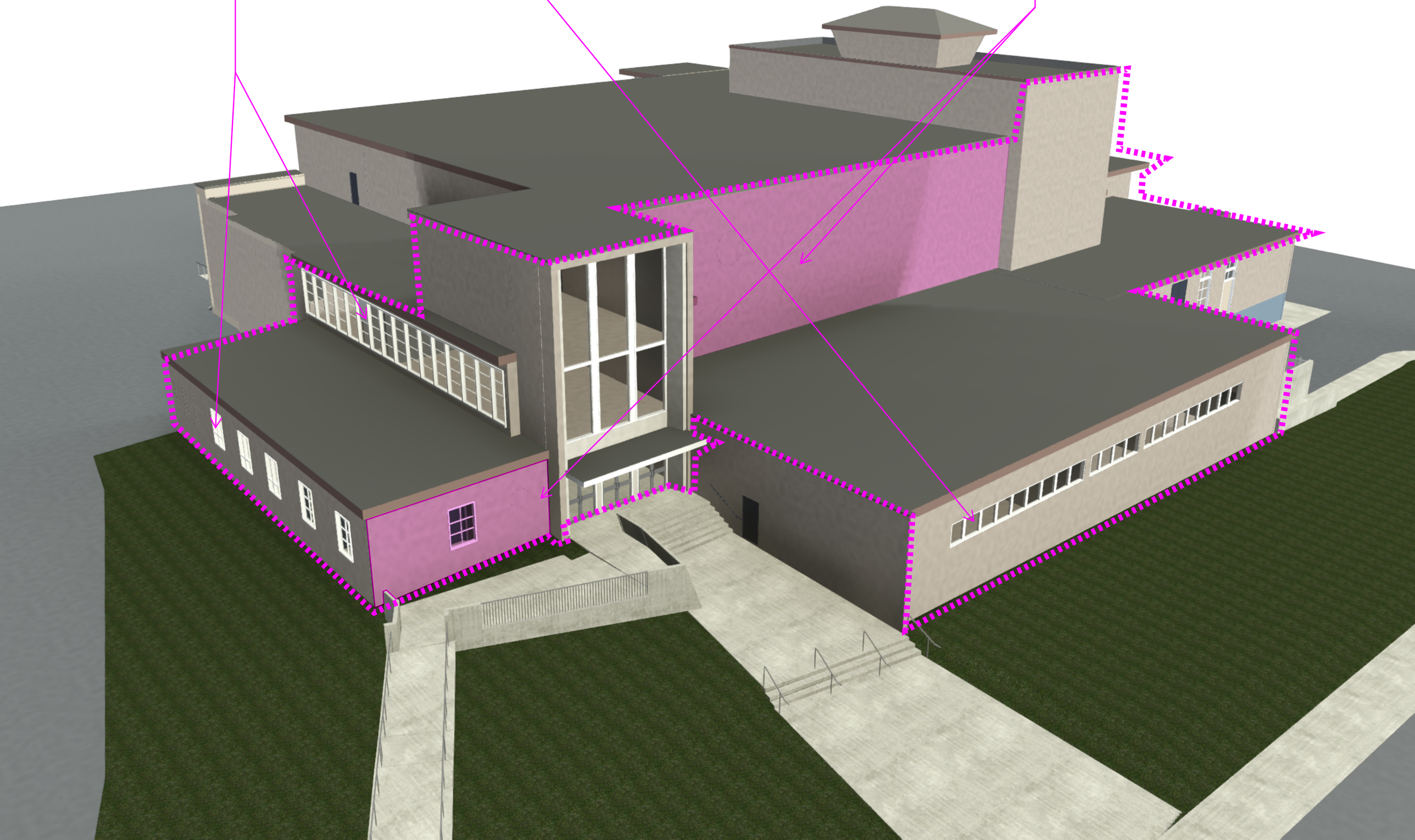
NEW NORTH WALL

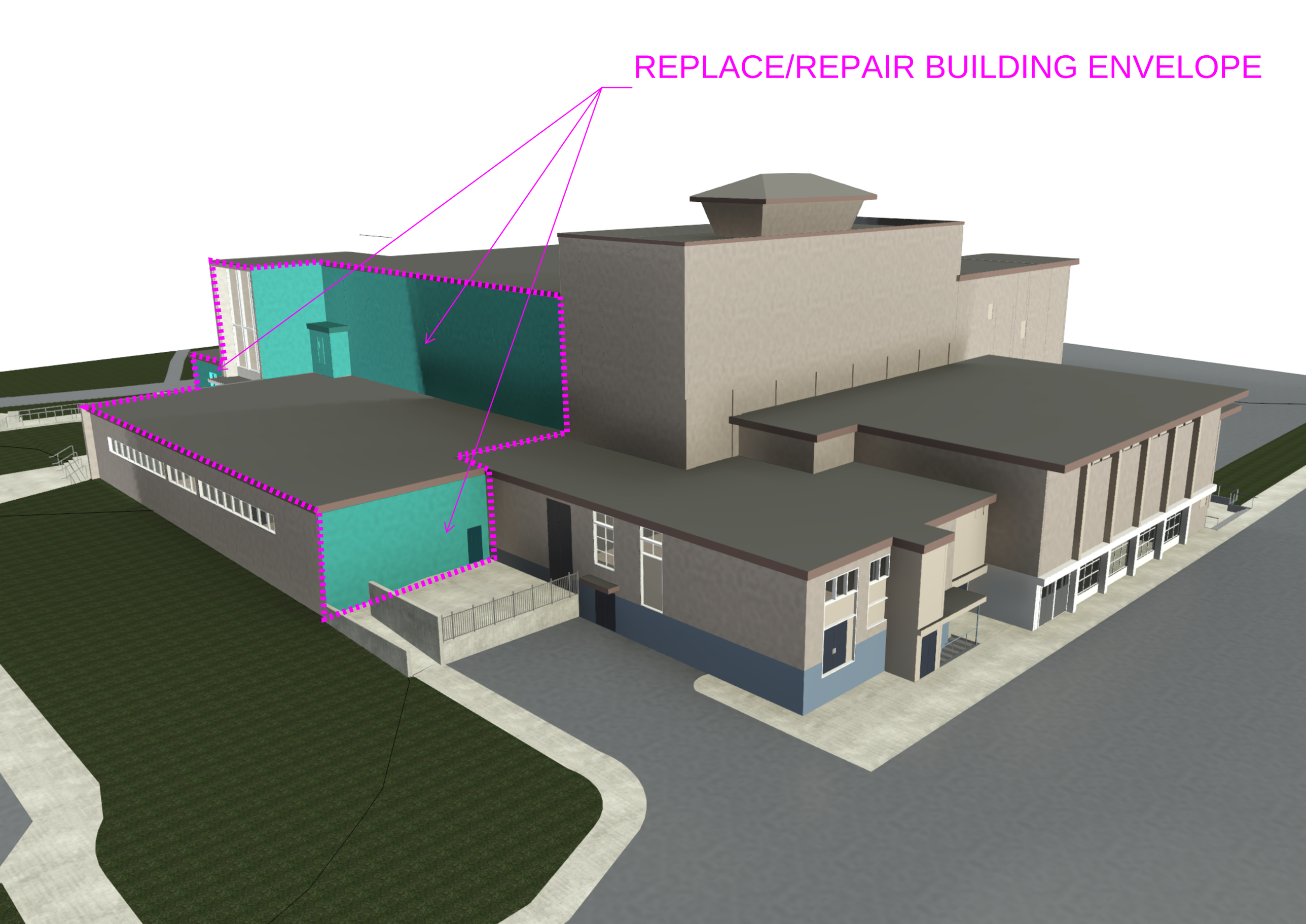
NEW ELEC, SPRINKLER ROOMS

GYM DEMO & HAZMAT
NEW PARKING LOT

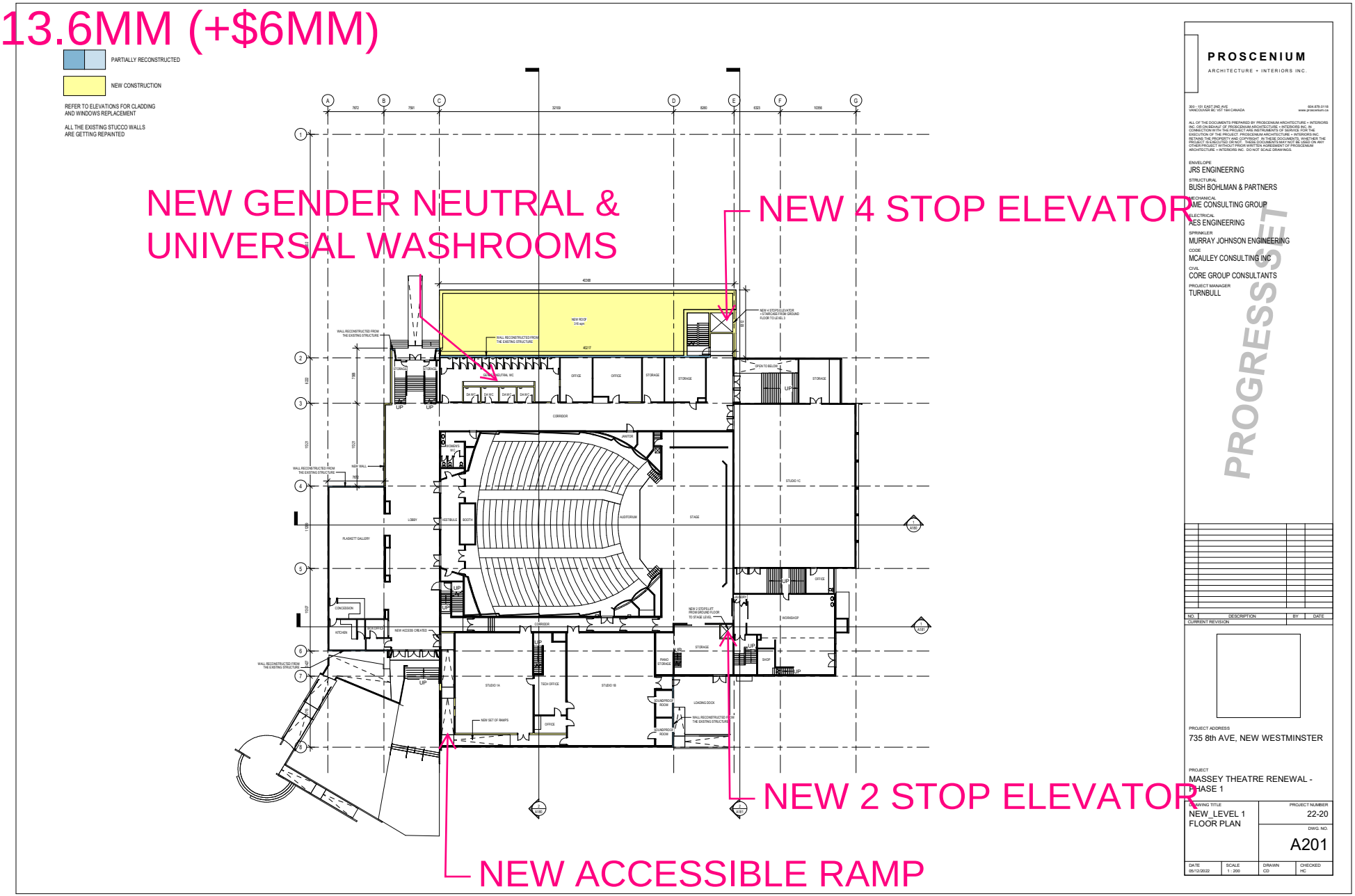
REPLACE ALL WOOD
WINDOWS & DOORS

REPLACE BUILDING ENVELOPE
REPAIR AUDITORIUM TRUSSES (int.)




REPLACE/REPAIR BUILDING ENVELOPE

Tier 1
Scenario 3
$13.6MM (+$6MM)



ATTACHMENT 9 – 2015 MVO VS 2023 TIER 1-SCENARIO 3 MVO

2015 "MINIMUM VIABLE OPTION" (MVO) SCOPE vs 2023 REVISED MVO Tier 1 – Scenario 3

	Key Items
Architectural	Gym demo + new north wall footings & wall assembly
	Accessibility upgrades – ramps, handrails & stairs, WC upgrades, auditorium built-out platform
	Repurposed green room, rehearsal rooms, wardrobe rooms
	New washrooms – public, universal and BOH
	Interior finishes upgrades – wall painting, ceiling, floor finishes
	2x elevators
	New electrical room
	New water entry room
	Mechanical room mods
	New data room
Building Envelope	North wall assembly
	Patch repair to exterior walls, windows & doors
	Roof replacement
Structural	North wall footings, studs and sheathing
	Elevators – footings, shaft walls and existing floor/roof mods
	Localized roof mods for HVAC upgrades
Mechanical	North wall drainage
	New HVAC space heating/cooling and ventilation system
	New plumbing fixtures
	Elevators – drainage system
	Fire sprinkler upgrades
	New smoke evacuation system
Electrical	New life safety system – fire alarm, smoke detectors, PA, emergency lighting and exit signage*
	Electrical room – elec and comms distribution equipment, inc. elevators
	Lighting fixture upgrades
*New life safety system limited to areas of new construction only, not whole facility.	

Red items indicate deletions from 2015 to 2023 MVO

ATTACHMENT 10 – MTS LEASE SCHEDULE C

Schedule "C"
Operational Responsibilities

Operational responsibilities are defined as follows:

- MTS to fund direct operational and organizational expenses to deliver programs and services including all direct utility servicing (the "MTS Operating Expenses").
- City is responsible for: a) the maintenance, repair and/or replacement of the building, building envelope, grounds and major systems; and b) all expenses and costs related to the Premises and the building (including expenses set out in this Schedule) other than the MTS Operating Expenses.

IT Infrastructure Responsibilities are defined as follows:

- City to provide infrastructure to support security systems, access systems (fobs), fire alarm, building systems
- MTS to obtain independent network services to support its internally managed systems.

Interior	**CNW**	**MTS**
Custodial (labour and supplies)		X
Scheduled Maintenance (building, systems, HVAC, electrical)	X	
Schedule Maintenance (specialized equipment)		X
Unscheduled Maintenance (building, systems, HVAC, electrical)	X	
Unscheduled Maintenance (tenant equipment)		X
Asset Management (building, systems, HVAC, electrical)	X	
Asset Management (tenant equipment)		X
Safety (base building, major systems)	X	
Safety (tenant equipment)		X
Security – hardware (cameras, alarms)	X	
Security – monitoring	X	
WiFi/Internet		X
Phones, Computers, POS		X
Exterior		
Landscape installation/seasonal	X	
Landscape maintenance	X	
Grounds Scheduled Maintenance	X	
Grounds Unscheduled Maintenance	X	
Grounds Asset Management	X	
Snow removal	X	
Garbage & Recycling	X	
Building Envelope	X	
Graffiti Removal	X	
Lighting	X	
Electronic Sign		X

ATTACHMENT 11 – 2015 STRUCTURAL STUDY (SEISMIC RESISTANCE) AND REPORT TO COUNCIL

Corporation of the City of
NEW WESTMINSTER

CONFIDENTIAL

REPORT
Office of the Chief Administrative Officer

To: Mayor Coté and Members of Council
Closed Council Meeting

Date: 9/28/2015

From: Lisa Spitale
Chief Administrative Officer

File: 04.1040.10

Report #: 390/2015

Subject: **Massey Theatre – Resolution for Council's Consideration**

RECOMMENDATION

THAT Council approves the following resolution and then sends the resolution to the Ministry of Education and New Westminster School District No. 40:

Resolution for the Massey Theatre – New Westminster Secondary School Replacement Capital Project

WHEREAS the New Westminster Secondary School is to be replaced with a new secondary school at the existing location;

WHEREAS the Massey Theatre is a 1260 seat theatre and is a highly valued asset in the community;

WHEREAS the Provincial Government, New Westminster School District No. 40 and the City of New Westminster have been working collaboratively on the replacement capital project for the New Westminster Secondary School; and

WHEREAS New Westminster School District No. 40 has requested that the City confirm, as an alternative to demolishing the Massey Theatre, its interest in the transfer to the City of the Theatre and the land upon which it occupies.
THEREFORE BE IT RESOLVED:

THAT the City of New Westminster hereby confirms its interest in the transfer of ownership of the Massey Theatre building to the City on the following basis:

1. New Westminster School District No. 40 will transfer to the City of New Westminster, for $1.00, good and marketable freehold title to the Massey Theatre building and surrounding land area, as shown schematically on the attached sketch plan in Attachment A.

2. As a component of the Theatre transfer, the Province will pay the estimated costs of demolishing and removing the gymnasium and of constructing a Theatre building exterior wall along the line of demolition and other renovation works necessary to leave the Theatre building as a stand-alone building, as outlined in the Massey Theatre Renovation Scope List, dated July-03-15, referenced as items "A", "53" and "69", estimated at $1,119,500 and provided as Attachment B.

3. The transfer arrangements will address, to the satisfaction of the City, any issues of concern respecting the condition of the land, including in relation to the potential presence of contaminants, heritage objects and human remains.

4. The transfer is to complete, and the City is to receive, vacant possession of the land and Theatre in 2017, or earlier if practical.

5. The Province and the City will work collaboratively to identify funding sources for future seismic upgrades to the Theatre.

ATTACHMENT A

Sketch Plan – Massey Theatre*



* The proposed property lines in red are identified only in principle at this time and will be subject to the City of New Westminster Zoning Bylaw and Building Bylaw governing property line setback requirements.

ATTACHMENT B
Project Scope /Costs Summary

JBA QS **MASSEY THEATRE RENOVATION SCOPE LIST (SCHOOL DISTRICT COSTS FOR SEPARATION)**

July-03-15
REVISION 1.0

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Demo Tag	Scope Description		Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
DEMOLITION															
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time. •It is assumed that demolition will include new footing line along this wall. •Structural to confirm at basement level.		175	LF	$660.00	**$115,500**	33,250				25,000	35,000	11,700	10,500	Wall area ~9,500SF - Cost here is temporary shoring and disconnection of services running through
OPTION 1 RENOV															
45	New Electrical Room	•Existing storage room and portion of existing corridor repurposed as new electrical room. •Refer to electrical, new 2500AMP MDC, EM & Technology, FA	414	SF	$1,016.43	**$420,800**	40,000					300,000	42,500	38,300	Incl. Unit Sub, BC Hydro Fee, Ductbank into building
53	New Wall	•New North wall and footings along north face of Massey. •Allow for water proofing , drain tile, drainage matt and insulation.	175	LF	$1,152.57	**$201,700**	7,700	11,375		128,625	15,300		20,400	18,300	New concrete stip footing, foundation wall, full length.
54	New Water Entry Room	•Refer to mechanical	406	SF	$91.63	**$37,200**					30,000		3,800	3,400	
69	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report	9500	SF	$84.45	**$802,300**	7,125	427,500		213,750			81,000	72,900	Cladding allowance $45/SF
TOTAL CONSTRUCTION						**$1,577,500**	88,075	438,875	-	342,375	70,300	335,000	159,400	143,400	

PURPOSE

The purpose of this report is to provide City Council with the formal resolution and analysis of the option which proposes that the Massey Theatre is gifted to the City as part of the NWSS Capital Project.

BACKGROUND

At the September 14, 2015 Closed meeting, staff provided Council with an update regarding the Massey Theatre. Council instructed staff to prepare a draft resolution and provide an analysis pertaining to the option where the City of New Westminster would be gifted the Theatre and its land from the School District, and the Ministry of Education would provide the funding to demolish the Theatre from the old high school and replace the exterior wall.

The Ministry of Education is presenting the NWSS Capital Project to the Treasury Board in October. The School District has asked that the City provide them with Council's resolution pertaining to the Massey Theatre by the end of September.

Previously, at the July 13, 2015, Closed meeting, Council reviewed the technical reports regarding the Massey Theatre and directed staff to provide additional information in the following areas:

i. Submit the final consultant reports to Council *(See Attachment 1 for the final report)*;
ii. Meet with the Massey Theatre Society to better understand their operating budget;
iii. Provide a summary of anticipated operating costs and revenue for the Massey Theatre; and
iv. Provide the impact of purchasing and renovating the Massey Theatre on the City five year capital expenditures plan.

ANALYSIS

On September 15, 2005, as requested by Council, staff met with the School District and obtained clarification and agreement on the following issues:

New 250-500 Theatre in the New High School

- Staff presented the concern that a new 250-500 seat theatre in the high school has the potential to adversely affect the market viability of the Massey Theatre.
- The School District 40 stated that a new theatre would function as a class room and was being built for education purposes.
- They noted that this theatre would function no differently than other specialized class rooms, such as the wood working and mechanics shops. They are not rented to commercial entities for commercial purposes.

- The School District stated that they would provide the City with a letter stating that the new theatre is going to be used for education purposes, and if rented out, would be rented to other educational institutions.

Ministry of Education Cost Allocation

- The School District agreed to provide the City with the cost responsibility that the Ministry of Education would fund as part of their responsibility to make the Massey Theatre a "stand-alone" building.
- The Ministry of Education has confirmed to City staff that their cost responsibility contribution totals **$1,119,500.**
- Council will note that this cost contribution has been added and itemized as part of the City's formal Massey Theatre Resolution *(note item 2 and Attachment B of the Resolution).*

Massey Theatre Land Transfer

- The School District agreed to recommend to the Ministry of Education that ownership of the building and related land would be transferred to the City as a part of a boundary adjustment process.
- The Solicitor recommends that the Massey Theatre Resolution reference City indemnification from potential liability found in the land *(note item 3).*
- The City's Massey Theatre resolution has assumed a boundary adjustment of the lands under and around the Theatre (*note item 1 and Attachment A of the Resolution*).

Potential Boundary Adjustment



Information from the Massey Theatre Society

With respect to the Massey Theatre Society Requirements:

- The Society has provided a preliminary list of requirements to staff.
- Staff is prepared to meet with Society representatives once Ministry approval for transferring ownership of the Massey Theatre to the City is provided.

With respect to the Massey Theatre anticipated operating costs and revenue, routine annual operating expenditures can be categorized into two major categories:

1) Program Operations (those expenditures and revenues associated with animating the facility and providing programs and services to the public); and
2) Facility Operations (those expenditures required to maintain the building on a daily basis and attend to cyclical building systems renewals).

Program Operations

The final operating model for the Massey Theatre, under the contemplated ownership of the City, has not been determined. That said, for the purpose of the City's deliberations, staff is assuming that the facility will continue to be operated by the Massey Theatre Society (MTS) through a lease agreement with the City.

Under this model (which is consistent with the existing practice between the MTS and the School District), MTS would have full operating, programming and basic maintenance responsibilities for the theatre. The City, as the landlord, would be responsible for the maintenance of facility's major building systems, exterior building features and surrounding grounds maintenance. Under the current agreement with the School District, the MTS does not pay rent for the use of facility but does pay the cost of utility services such as electricity, gas and water.

Based on the above operating model assumptions, it is prudent to understand the financial and operating stability of the MTS and, in particular, any financial reliance the MTS may have on the City as both tenant and operator of the Massey Theatre.

Based on records provided to the City by the MTS, in general, the MTS operating model is sound, as related to most non-profit, "community based" theatre operations. While Massey Theatre is 65 years old, the Society has been operating the facility since 1991 and has been able to generate annual revenues sufficient to cover its operating costs and place funds into reserves for special projects and capital & equipment upgrade and renewal undertakings.

Uncertainty surrounding the timing of the redevelopment of the New Westminster Secondary School and the associated impact on the Massey Theatre has impacted the MTS operating bottom line in recent years resulting in minor annual deficits or very modest surpluses in any given year and limited growth opportunities for the Society.

Primary revenue sources include:

- facility rental fees
- event staff billings
- concession and merchandise sales
- box office ticketing services & service charges
- grants
- fund raising

MTS's service agreement with the City for the Anvil Centre Theatre provides an additional revenue stream for the Society. Earned revenue by MTS has averaged 80% in recent years, with grants and fundraising generating the remaining 20% of annual Society income.

The City provides an annual Partnership Grant to the MTS in the average amount of approximately $70,000 to assist the Society in maintaining very low rental rates to local arts and community organizations. Approximately 10% of the City grant is also used to support MTS' youth arts programming.

Primary operating expenditures include:

- theatre operations (personnel who work directly on maintaining and operating the theatre for events and all facility related costs directly associated with operating the theatre)
- administration (primarily Executive Director and Booking Coordinator salaries and related administrative expenses)
- ticket centre operations (personnel and equipment)
- marketing & promotions
- presentations

Financial summaries for Society Operations provided by the MTS indicate the following:

Massey Theatre Society Statement of Operations

Item	**Projected June 2016 YE**	**Projected June 2015 YE**	**Actual June 2014 YE**	**Actual June 2013 YE**
Revenue	$ 823,567	$ 760,453	$ 607,110	$ 559,125
Expenses	$ 858,370	$ 737,195	$ 578,590	$ 538,908
Operating Surplus / (Deficit)	$ (34,803)	$ 23,258	$ 28,520	$ 20,217
Change in Net Capital Fund	$ 22,781	$ 19,213	$ 22,520	$ 5,176
Annual Surplus / (Deficit)	**$ (12,022)**	**$ 42,471**	**$ 51,040**	**$ 25,393**
Invested from Internally Restricted Funds	$ 12,022	$ -	$ -	$ -

Historical financial records for the Society illustrate the following trend:



Under a future new lease agreement for the Massey Theatre with the City, it can be reasonably assumed that the MTS will be able to operate the theatre in a fashion similar to the past without the expectation of increased grant funding (or operating subsidy) from the City.

Not fully understood at this time though is the respective cost sharing between the MTS and the School District for the basic maintenance and utility expenses for the theatre as the School District does provide some services such as building cleaning that would under most other circumstances be provided or fully funded by the tenant but are not in this case recovered as part of an annual lease payment. Key in considering the Society's financial position is that they are not in a position to financially participate in a substantive way in the capital renewal of the Massey Theatre now or for the foreseeable future.

The MTS does have a Business Development Plan to position the theatre for greater success in the future. This plan will be able to be fully implemented once the Society has greater certainty regarding the timing of any future service interruptions to the facility and ultimately when the Society is able to establish a long term tenancy agreement with any future theatre owner.

Life Cycle Costing for the Massey Theatre

Life Cycle Costing was developed by the Quantity Surveyor. The following Table represents the average annual building operating and maintenance costs, including escalation, required to keep the facility operational for the next 40 years:

Building Operation Category	Total Costs	Current MTS Costs (2015 dollars)	Net Cost to the City
Custodial and Supplies	$178,600	$14,200	$154,300
Energy Costs	$129,000	$6,570	$122,430
Maintenance	$153,000	$12,040	$140,960

The annual cyclical replacement costs would need to be included in the 5 year capital plan. The estimated total costs of the cyclical replacement, including escalation, for a 40 year horizon would be approximately $30.44 million.

If the direction from Council is to keep the theatre operational for the next 20 years the cyclical replacement costs would be reduced depending on the building component life cycle. A decision would then be required to either decommission the facility or replace. Using an annual escalation rate of 2.5% a new and equivalent 69,470 sq.ft. theatre would cost approximately $75.31 million.

The following are the hi-level replacement schedules for the theatre:

Flooring, painting and architectural finishes	Year 10, 20, 30, 40
Lighting Upgrade/Replacement	Year 15, 30
Electrical Major repairs and replacement	Year 20
Mechanical Major Repairs	Year 20
Roofing	Year 25
Mechanical Equipment Replacement	Year 35

Capital and Renewal Costs for the Massey Theatre

Two Massey Theatre renovation phases have been developed by the City's consultants. The first phase assumes a City budget of $8.9 M and the Ministry of Education contribution of $1.19M for demolition and reconstruction of an exterior sheer wall. This Phase includes the refurbishing of the interior and exterior of the building, which will allow the renovation to the building to improve life safety of the occupants, improve disabled access and will renew building systems that have exceeded their life expectancy.

Specifically, Phase 1will include the following components to the Massey Theatre:

- Rebuild north wall
- Provide new water, power, communications, security and fire alarms systems
- Add a public elevator
- Add handrails and ramps
- Replace HVAC equipment
- Replace roofing

- Reinforce loose stucco cladding
- Replace stage smoke exhaust system
- Replace public washroom and corridor wall and floor finishes
- Remove asbestos in renovated areas

The City's consultants have recommended that the following work be incorporated as a Phase 2 to the Theatre's renovation. These enhancements are considered over and above the building's operational and cyclical renewal costs, and in many respects, contribute to a broader vision of the Massey Theatre becoming a "Regional Civic Theatre":

Building System	**Reason for Renewal/Replacement**	**Order of Magnitude Cost (2016$)**
Seismic upgrade	The building is not sufficiently reinforced to allow occupants to safely vacate the building during a seismic event. **this item is assumed as item 5 of the Massey Theatre Resolution*	$4,100,000
Replace exterior stucco cladding, doors and windows with a rain screen cladding system	The stucco is not secured properly and in time will delaminate further. The wood window and doors are deteriorating and are contributing to water leakage.	$2,000,000
Upgrade mechanical/plumbing/sprinklers/HVAC/controls	Systems will have exceeded their life span	$1,305,000
Upgrade electrical systems	Systems will have exceeded their life span	$1,037,000
Upgrade theatre sound, lighting and rigging	All systems will be beyond their life expectancy within 10 years	$2,600,000
Develop VIP Lounge	Support marketing and promotion	$230,000
Redevelop the rehearsal spaces	New lighting, theatrical lighting, finishes & sound system in former Band & Choir rooms.	$1,232,000
Expand and reconfigure Dressing rooms, Green Room and washrooms	Rooms are too small and services do not meet the performers' needs.	$842,500
Expand the public washrooms	Washroom count is insufficient to serve a 1260 seat theatre. Provide more comfortable expanded lobby gathering spaces on the main and second floors.	$2,586,500
Refinish Audience Chamber	Cyclical repainting and refurbishment required.	$70,000
Total		**$16,030,000**

City staff contends that some of these items could form fund raising efforts for the MTS. Moreover, City staff will seek senior government funding in the years to come which may assist with these enhancements if City Council so chooses.

NEXT STEPS

If Council approves the resolution, the following is recommended as next steps:

- September 29 – City Council Resolution is sent to the Ministry of Education and School District 40
- Early October - City and School District commence with a joint communication plan
- Mid October – NWSS capital project to Treasury Board for approval
- Late October - City is informed by the Ministry of Education of Treasury Board approval
- Late October/early November – just prior to public announcement, City informs Massey Theatre Society
- Late October/early November – Province, School District and City public announcement on the new High School and retention of the Massey Theatre

Upon Treasury Board approval, it is anticipated that the City would then retain consultants to develop the tender drawings and specifications for the Massey Theatre renovation. School District 40 has advised that they plan to demolish the existing high school starting at the end of the school year July 2016.

With respect to timelines, final Government approval for the transfer of land could take up to a year. The School District is going to suspend school programs in the Theatre prior to the new secondary school being built. This would allow renovations to start on the Theatre in 2017.

The City's design and renovation schedule is assumed as follows:

- November 1, 2015 to December 1, 2015 - consultant selection
- December 1, 2015 to May 31, 2016 - tender drawings and specifications
- June 1, 2016 to July 31, 2016 – tender and award of construction contract.
- June 30, 2016 to August 31, 2016 - SD 40 demolition of the large gymnasium
- September 1, 2016 to December 31, 2017 – construction and commissioning

FINANCIAL IMPACT

With respect to the City's Capital Budget, $10 M has been allocated for the Massey Theatre. Based on the anticipated timelines for this project, staff would allocate $1.5 million (for planning and design services) in the 2016 budget and $8.5 million over the 2017 and 2018 budget cycle (for construction).

The City is currently putting funds aside in the new Facility Replacement Reserve for the renovation of the Massey Theatre. Provided the City follows through with the planned funding increments to this reserve built into the Five-Year Financial Plan, it is anticipated that approximately $3.6 million will be available to fund this project. The balance, approximately $6.4 million, would be borrowed through the Municipal Finance Authority (MFA) over a 20 year term. The annual debt repayment cost of $450,000 would be accommodated by redirecting a portion of the annual Facility Replacement Reserve contribution.

The projected Massey Theatre annual operating and maintenance costs and Phase 2 theatre renovation costs are not included in the City's current Financial Plan. It is difficult to say what the impacts will be on the City's budget; however, assuming that the Phase 2 renovations are funded by debt, the annual debt repayments would be approximately $1.1 million. This along with the projected operating and maintenance costs of $1.3 million could potentially increase the annual budget by $2.4 million - equivalent to a 3.6% tax rate increase, which would likely be phased in over two to three years.

It is important to keep in mind that the City has other high priority strategic initiatives, such as the renovation / replacement of the Canada Games Pool / CCC and the EHCC that will require significant funding resources over the next five years. The full extent of these priority initiatives have yet to be accommodated in the City's Financial Plan.

OPTIONS

There are two options for Council's consideration; they are:

Option 1 – Approve the resolution and send it to the Ministry of Education and the New Westminster School District; or

Option 2 – Provide staff with further direction.

Staff recommends Option 1

INTERDEPARTMENTAL LIAISON

Senior staff from Engineering, Parks, Culture and Recreation, Finance and IT, the City Solicitor and the CAO are working on this Strategic Priority, and have contributed to this staff report.

ATTACHMENTS:

Attachment 1 - Architectural & Market analysis Final Report

Attachment 1 - Structural Final Report
Attachment 1 - Building Envelope Final Report
Attachment 1 - Mechanical & Plumbing Systems Final Report
Attachment 1- Mechanical and Plumbing Systems Final Report Drawings

Attachment 1 - Electrical and Fire Alarm Systems Final Report
Attachment 1 - Hazardous Materials Assessment Final Report
Attachment 1 - Sprinkler System Final Report

Approved for Presentation to Council

Original Copy Signed

Lisa Spitale
Chief Administrative Officer

A STAND ALONE MASSEY

MARKET NEEDS ASSESSMENT & FACILITY ASSESSMENT

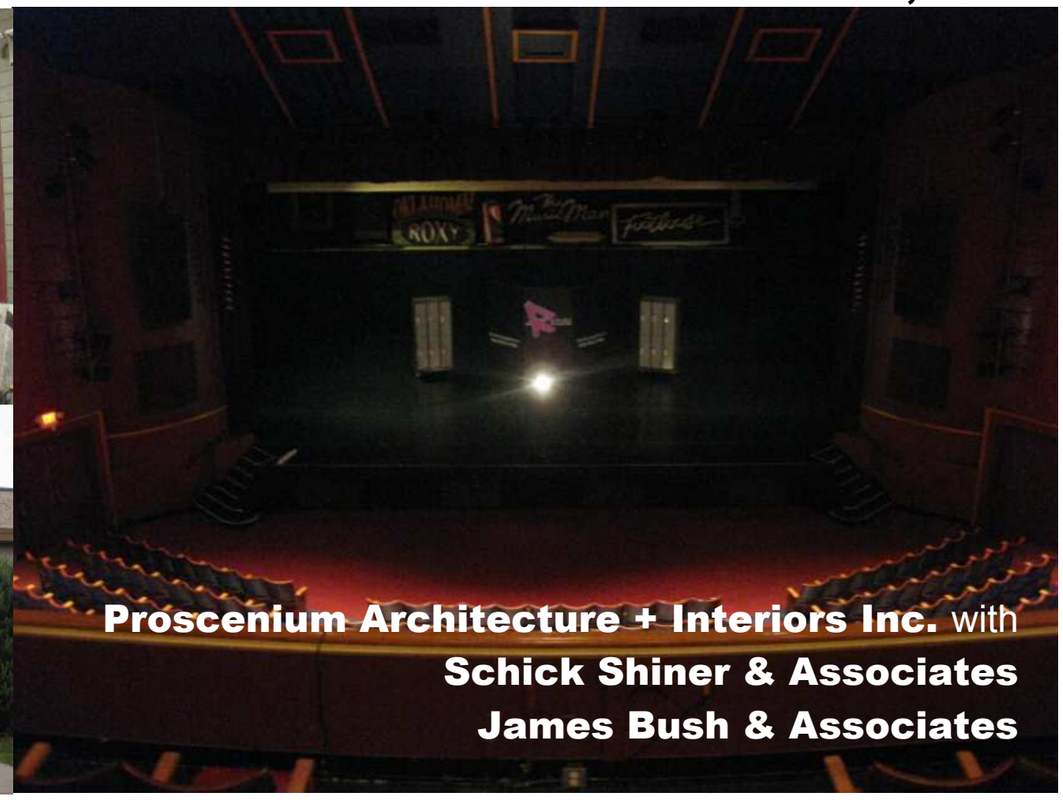
AUGUST 14, 2015











Proscenium Architecture + Interiors Inc. with
Schick Shiner & Associates
James Bush & Associates

EXECUTIVE SUMMARY

INTRODUCTION

Founded in 1949, the Massey Theatre was the largest theatre in British Columbia at the time and continues to serve the City of New Westminster and neighbouring communities as one of the few 1000+ seat live venues in the region. As confirmed by this study and previous studies, the Massey, with its 1200 seats, is vital not just to the needs of the City of New Westminster, but also to the artistic ecology of the Lower Mainland

Although attached to the New Westminster Secondary School, the theatre itself is very much an independent entity. Should the theatre be a standalone venue, as proposed by this study, this independence will grow as there will be even greater opportunities as outlined in the market analysis summary.

PURPOSE

The purpose of this study was to develop an understanding of the needs, facility assessment and costs as outlined in two scenarios:

- Option 1 – Saving the Massey Theatre: The City takes over a physically independent Massey and provides the minimal level of upgrade required.
- Option 2 – The Massey Theatre of the Future: What are the needs, facility impacts and costs should the City choose to upgrade the Massey to a level required for a Civic Theatre of significant stature within the community.

USING THIS DOCUMENT

For the purpose of this study, all disciplines will be preparing individual full reports. In addition, the team has developed a colour-coded scope series of drawings for both options that correlate with a table that describes the scope of the various required tasks. This in turn has been priced by James Bush & Associates.

STUDY TASKS

All consultants have been charged with the task of completing a full facility assessment. For the architectural team, in addition to the facility assessment, the additional task of a Market and Needs Assessment was required. To complete this task Proscenium engaged Schick Shiner and Associates as a sub-consultant.

1) Market and Needs Assessment

In this study, we have confirmed that there is a market available for a standalone Massey Theatre and reaffirmed the need for the Massey for the New Westminster and the Lower Mainland artistic community.

We also have developed an understanding of the synergy between the Massey Theatre and the Anvil Centre to discover what interconnected opportunities would exist if the Massey continued operation as a standalone facility and how the continued existence of both venues will improve the overall artistic climate of New Westminster and the Lower Mainland as a whole.

2) Faculty Assessment

We assessed the needs of the facility with two strategies: first, what would be involved should the Massey be physically separated from the School with the intent of basic code and accessibility upgrades with minor upgrades to finishes; and, second, all the items outlined previously plus the repurposing of a number of spaces in order to develop the Massey into a state-of-the-art Civic Theatre.

Under the above objectives, there are a number of common directions or areas of scope. These include the required upgrades of the north wall, the addition of elevators for accessibility, washroom upgrades and envelope repairs. (Note: Refer to all discipline executive summaries for complete breakdown.)

CONCLUSIONS AND RECOMMENDATIONS

From this review, it is apparent that the Massey Theatre is a needed and important venue. It is our recommendation that the short term solution would be to save the Massey Theatre as outlined in Option 1 with the end goal of raising the required funds over time to achieve the final full Civic Theatre repurposing as outlined in Option 2.

1) Option 1 – Saving the Massey Theatre

- Goals:
  - **i)** Minimum level of upgrades that address code requirements, building envelope repairs, plumbing replacement, equipment repair replacement and minimal finishes. (Refer to the project task spreadsheet for further details and individual disciplines' executive summaries)

2) Option 2 – The Massey Theatre of the future

- Goals:
  - **i)** All items of Option 1 plus,
  - **ii)** Repurpose the Massey Theatre to be a Civic Theatre capable of meeting the needs of the future. At a high-level overview, this is inclusive of a full exterior upgrade, repurposing of interior spaces to create a proper front-of-house lobby complete with expansion and addition of required spaces; the reinstatement of the orchestra pit, and the re-planning of the back-of-house components. (Refer to the project task spreadsheet and individual disciplines' executive summaries)

TABLE OF CONTENTS

Executive Summary

1. **Study Purpose/Introduction** **1**
2. **Background/History of the Massey** **2**
3. **Market Needs and Assessment** **3**
    - Latent Demands 3
    - Loss of the Massey 4
    - Massey and The Anvil Centre 4
        - Use Conflicts between the Anvil Centre and the Massey Theatre 4
        - Non Traditional Activity for Each Theatre 5
        - Joint Venture in Programming and Marketing 5
    - The Massey Theatre's Loss of Past Users 6
        - Rebranding Opportunities 6
    - Operating Models 6
    - Economic Impact and Cultural Tourism 7
4. **Architectural Facility Assessment** **8**
5. **Two Possible Scenarios** **9**
    - Option 1 – Save the Massey 9
        - Demolition 10
        - Demolition Plan 12
        - New Scope 17
        - New Scope Plan 27
    - Option 2 – The Massey of the Future 32
        - Demolition 34
        - Demolition Plan 37
        - New Scope 41
        - New Scope Plan 48
    - *Option 3 – Construction of a New (1200 Seat) Massey Theatre* *53*
    - Possible Upgrade Packages Moving from Option 1 Towards Option 2 54
6. **Capital Costs** **58**
7. **Strategies Moving Forward** **62**
    - Conclusions and Recommendations 62

Appendix A – List of Contributing Consultants Studies **63**
Appendix B – Detailed Order of Magnitude Cost Estimate Option 1 ..... **64**
Appendix C – Detailed Order of Magnitude Cost Estimate Option 2 ..... **72**

STUDY PURPOSE/INTRODUCTION

Founded in 1949, the Massey Theatre was the largest theatre in British Columbia at the time and continues to serve the City of New Westminster and neighbouring communities as one of the few 1000+ seat live venues in the region. As confirmed by this study and previous studies, the Massey, with its 1200 seats, is vital not just to the needs of the City of New Westminster, but also to the artistic ecology of the Lower Mainland.

Although attached to the New Westminster Secondary School, the theatre itself is very much an independent entity. As New Westminster Secondary School is slated for demolition and rebuilding, the Massey Theatre will need to function separately of the school. The demolition of the school will present challenges and opportunities for the Massey Theatre and will require a significant amount of work to ensure that the retention of the building is feasible for the immediate needs of the theatre and needs of the future.

In order to achieve the goals identified in the context of the study, the City of New Westminster needs to assess the Massey's current condition; learn what will be required to upgrade the facility to an acceptable level to function as a Civic Theatre; learn what the impacts the Massey will have on the market now that it (for the first time) will be independent of the school; and develop an understanding of the costs involved. The study scope will show two options. The first option will reflect a minimum upgrade level and the second option will bring the structure to that of a civic performing arts centre capable of acting as a regional arts centre serving the greater Lower Mainland area for years to come.

Should the theatre be a standalone venue, as proposed by this study, this independence will grow as there will be even greater opportunities as outlined in the market analysis summary.

BACKGROUND/HISTORY OF THE MASSEY

The Massey Theatre was built in 1949 and in its early days was the entertainment centre of the Royal City and surrounding region. Situated on New Westminster Secondary School property, it was operated by the school district as a rental hall for the community and a road house for touring artists and entertainers, as well as the heart of arts education for the whole school system in New Westminster. The Massey Theatre with 1260 seats was the first theatre in Metro to attract regional audiences for the stars and diva's of dance and music, as well as Broadway musicals and large stage productions of a choral and ethno-cultural nature.

The Massey Theatre is named after the first Governor General of Canada to be Canadian born and who was also instrumental in the creation of the Canada Council for the Arts. In 1982, the needs of the theatre were taken up by the Massey Theatre Improvement Society and funds were raised for technical and facility updates. This morphed into the Massey Theatre Society in 1991, a registered non-profit society governed by an independent board of directors that was given the task of operating the theatre and hired professional staff. Although the facility is owned by the school district, there is a lease agreement in place with the Society. Although, it is not a school facility it continues a close and intertwined relationship with the high school. It is not a civic theatre but as an independent operation with a strong relationship with the City of New Westminster, continues to connect with and support the large scale performing arts locally and throughout the Metro Vancouver Region and maintain the capacity and vitality of the historic theatre.

The theatre generates 85% of its operating cost from revenue and the balance through grants and fundraising.

CHRONOLOGY

The fate of theatre came into question in the mid 1990s and the first of many theatre studies was conducted in 1997 by Proscenium Architecture.

In 2005-06 the theatre was suddenly closed by School District #40 (New Westminster Secondary School). All rentals and booked dates were released. The following season the theatre reopened and began the task of rebuilding its reputation and creditability with renters and its event reliability with audiences.

The City of New Westminster commissioned a theatre study (2008) to determine if there was a need to include a theatre in the planning of the Civic Centre.

2009 an appendix was requested of Proscenium Architecture to explore a number of facility scenarios and assess the impact of each on the performing arts community in New Westminster and the region.

2010 Proscenium completed the New Westminster Theatre Facilities Room List Exercise.

2012 B. E. Beck completed the New Westminster MPAC Functional review.

In 2013 a Needs Assessment was conducted to imagine the appropriate size of a new theatre facility as a component of the planned New Westminster Secondary School.

2013 New Westminster committed to work with SD #40 to build a school and civic theatre. (RFP for architectural and theatre design consultants to support the project)

A quick survey of each study shows that keeping the Massey Theatre and/or replacing it with one of equal size is, without reservation the preferred recommendation.

The City of New Westminster has accepted the importance of the Massey Theatre. The list of studies above that have provided due diligence to Council's ongoing decision-making process to protect and support this important cultural facility speaks to a core value held by the municipality – the Massey Theatre is an asset not to be disposed of easily and if need be, then replaced with one of comparable size and placement.

A brief summary of each report's conclusions as they pertain to market and needs assessment follows:
The New Westminster Theatre Report; Cultural Planning Consultancy 2008 was a comprehensive study of theatre facilities in New Westminster. It researched and analyzed the needs of the performing arts community and assessed each of the existing theatres in the city to determine if there was a need for a theatre in the civic centre. The report outlined the importance of the Massey Theatre to the community and the region. It also confirmed the importance of the Bernie Legge Theatre for amateur theatrics. Community consultations began once the stakeholders were reassured that both facilities would continue to exist. On the basis of that assumption, could conversations about the needs be discussed.

The missing venue in the facility continuum was a 300-400 seat studio theatre. The need for a mid-sized, flexible space was identified. It was a space that could accommodate individual artists, small dance companies, professional theatre productions, independent films as well as celebratory events that included catering and refreshments.

The Gap Assessment Appendix to the Theatre Report in 2009 further analyzed a number of scenarios to identify the impact to the community of a) the loss of the Massey, b) a new school theatre with community access to replace the Massey, c) a new theatre similar in size to the Massey at the Civic Centre, and finally d) a new theatre of the same size of as the Massey in a new location. The conclusions were straightforward;

- Keep the Massey if possible,
- Build a new theatre of the same size at the Civic Centre
- Build a new facility of the same size at a different location,

But do not leave the community without an important theatre of a unique size in the region to continue to support the performing arts programming the Massey Theatre now hosts.

The Needs Assessment Report (2013) was directed to identify the ideal size of a new Massey Theatre as a civic facility in conjunction with the school. It was recommended that due to declining use and audience attendance, a theatre in 700-750 size would be appropriate.

MARKET NEEDS AND ASSESSMENT

The City of New Westminster is considering a scenario that would sever the Massey Theatre from the New Westminster High School complex and operate it as a stand-alone civic theatre. To assist the City in their decision making, this market and needs assessment has been developed. Its specific purpose is to:

- extrapolate the cost-benefit for this financial investment,
- outline the impact that the loss of the Massey would have locally and regionally,
- identify the synergy between the Massey Theatre and Anvil Centre Theatre.

Reports reviewed and research conducted:

- New Westminster Theatre Study: A Cultural Planning Consultancy (2008) - Lydia Marston Blaauw and Associates and Proscenium Architecture and Interiors Inc.
- Gap Analysis 2009 – (Appendix to Theatre Study) Proscenium Architecture and Interiors Inc. and Lamont Management and Douglas Welsh Design Associates ltd.
- *Needs Assessment 2013 - Christopher Wootten and Associates (tabled in camera)*
- Venue usage update and attendance data (from the Massey Theatre Executive Director)
- Current operating revenue and projected future budgets – Pro Forma for rental revenue of theatre use and ancillary spaces.
- Survey of theatres in Metro Vancouver, in the market area of the Massey Theatre.

This report also addressed the challenge that the current Massey has faced over the past 10 years with the uncertainty of its fate. Much of the decline in bookings and audience over the past years is a result of this uncertainty. Bookings were collated and compared for a five year period, and although there is a decline, it is more prominent in the number of commercial bookings. Community and school use has been steady or had increased over the same period of time.

LATENT DEMAND

The core question to the life of the Massey Theatre is not where it is now but where it could be if conditions were changed. The sheer tenacity of the Massey Theatre Society, its staff and the historic users, as well as the good will of the City of New Westminster bodes well for the future.

The 2013 Needs Assessment Report was generous with information about population demographics and the growing desire for arts and entertainment products. To quote from the Executive Summary:

- "The population of New Westminster is expected to grow by more than 50% between 2011 and 2041.
- This population growth places New Westminster in the geographic centre of the entire Metro Vancouver population, making it well located to draw presenters and audiences from throughout the region.
- Key predictors of arts participation are above average levels of income and education. New Westminster's population is becoming increasingly educated, with income levels comparable to the City of Vancouver.
- In short, New Westminster should expect steady growth in audiences for the arts in the future.

Other factors to consider:

- The trend towards theatre utilization and attendance in municipalities outside of Vancouver is likely to continue to expand. The population is moving east and less people are likely to make the effort to travel into downtown Vancouver preferring their entertainment closer to home."

Source: Analysis of Needs Assessment Executive Summary 2013

The trend for arts participation nationally and provincially was analyzed in a 2010 National Survey of consumption behaviors on arts and culture and heritage activities, focusing on British Columbia found that between 1992 and 2010:

- Museum attendance increased in British Columbia by 17%;
- Art Gallery attendance increased by 48%; and
- Attendance at Performances of Cultural or Heritage Music, Dance or Theatre increased by 76%.

During this period, the population of British Columbia increased by 31% to 4,497,000 people. Attendance at performances in British Columbia increased almost 2.5 times more rapidly than the population.

Source: Hill Strategies, British Columbians' Arts, Culture and Heritage Activities in 2010

The latent demand for a high quality professional performing arts facility of 1000 -1200 seats exists. The Bell Performing Arts Centre at 1056 seats is the closest size to the Massey. It is adjacent to Sullivan Heights Secondary School and serves as the professional theatre venue for the Surrey School District as well as community and school needs. As a result its schedule is full and cannot accommodate any new users for prime booking dates.

There are two Casino show theatres at +/- 1000 seats each. When interviewed, Gary Olsen, Entertainment Director of Great Canadian Gaming generously provided basic information about the Casino show theatres in two locations; the River Rock Show Theatre in Richmond and the Hot Rock Show Theatre in Coquitlam. He acknowledged that they receive regular requests for use of the theatres by the community due to their capacity and size. He was however reluctant to share exact stats and usage but indicated that about 20% of their booked days are community users generally in the prime periods of Nov/Dec and May/June. Commonly the events are graduation ceremonies, dance recitals and fundraising events.

Mr. Olsen was very clear that the show theatres are marketing tools for the Casinos and are booked approximately 200-250 dates a year with full range of professional touring bands and performers. In about 75% of cases the artists' agents and tour organizers contact the Casinos to schedule their artists for the Metro Vancouver area. Then, if available and if appropriate, the show theatres will rent their space to anyone who is interested in paying the rental fees. Outside events are most often corporate special events but they will rent to schools or community groups. The Show Theatres do not discount their rental rate for community use.

The quest to understand the latent demand and need for theatres across Metro is ongoing.

The City of Vancouver recently issued a RFP for a Review of Performing Arts Facilities. The purpose is "to determine what the supply and demand gap is for various activities within the City of Vancouver's performing arts community." The City is also looking to understand the demand for capital funds for the future because major facilities are the magnets that draw artists and creators to them.

The Civic Theatres of Vancouver, the Queen Elizabeth, the Orpheum and Vancouver Playhouse recently announced revised rental rates that include for the first time a reduced community rate for Vancouver non-profits societies. This is to allow for more use outside of the "grant program for rent" that already exists.

Studies were completed for a 1200 - 2000 seat (or even larger) theatre for City Centre Surrey, and Surrey is planning a theatre as an amenity space in a development in South Surrey. A feasibility study for a large theatre was commissioned by Langley and the possible expansion of the Evergreen Arts Centre with an 800 seat theatre is under review again.
The theatres that are in competition with the Massey Theatre are already full for all prime dates according to information gathered to update the table. Not all venues were willing to share their numbers with this study, and therefore some information has been gleaned from past work in the field and sources such as the BC Touring Council and the Canadian Association of Presenters (CAPACOA).

Venue	Capacity 500+	Booked 2014	Annual +/-	Owner Operator
Centennial Theatre - Community road house, presenter of series	660	213	55,593	North Van Rec Commission
Michael J Fox Theatre - Priority is school use. Has large list of historic users	613	272 (2013-14 school yr) 40 school events plus 300 hrs of host school	120000	Burnaby South School, SD
Bell Centre for Performing Arts Strictly Road house, 1/3 each community, commercial, school	1110	Av annual 220-230		Surrey School District
Massey Theatre Rentals: Community and school	1260	227	45,419	SD/Massey Theatre Society
Orpheum Theatre - Symphony, Opera plus	2688	180	n/a	Civic Theatre of City of Vancouver
Queen Elizabeth Theatre - Commercial, community, ballet	2781	*150*	n/a	Civic Theatre of City of Vancouver
Vancouver Playhouse - community non-profit primarily	663	*240*	n/a	Civic Theatre of City of Vancouver
Vogue Theatre (commercial)	1161	*166*	n/a	MRGGroup
River Rock Show Theatre - Prof Acts, also more corporate, fundraisers and asian community users	998	*180-200*	n/a	Richmond - Great Canadian Gaming
The Theatre at Hot Rock Casino - Prof Acts (has the most community users due to no venue of this size close by - graduations, fundraisers etc.	1000	*250-280*	n/a	Coquitlam - Great Canadian Gaming

The study team has developed 3 options for the Massey's future. The operational consequences of each are detailed below.

LOSS OF THE MASSEY THEATRE

It is unimaginable to many people that New Westminster would be without the Massey Theatre. Since the first study in 1997 through to the most recent in 2003, the recommendations and conclusions always return to the important role this large theatre plays in the community and the region.

Should it close immediately, 23 bookings by the resident companies would disappear, and an average of 27 school events that have over 600 in attendance would be crammed into other venues until the completion of the promised high school theatre. In addition numerous ethno-cultural organizations, dance schools, choirs and presenters of independent artists would be pressed to find other venues.

The Massey has filled a size niche that currently only exists at the Bell Performing Arts Centre in Surrey.

The most notable impact still in memory was the 2005-2006 shut down of the theatre. Local arts organizations felt the loss the most. They had to scramble to find another performance venue, and suffered losses at the box office. It is doubtful if many of them could survive a similar hit again.

THE MASSEY THEATRE AND THE ANVIL CENTRE

The City of New Westminster studied the needs of the performing arts community and decided that a flexible theatre should be part of the Anvil Centre. The Anvil Centre Theatre opened in 2014 and is a welcome addition to the arts facility landscape.

It was believed as early as 2008 as it is now that a flexible studio theatre (Anvil Theatre) and the Massey Theatre would not be competitors but partners that serve the performing arts community on a continuum of size and need. The Anvil Center Theatre is very new and over the next period of time will establish itself and its own artistic reputation. The professional expertise at the Massey Theatre can support the fledging Anvil Centre Theatre.

The Massey Theatre Society can also be engaged to serve as the presenting arm for the Anvil Theatre, allowing risk programming to be at arm's length from the municipality. Presenting arts events is a successful marketing tool and a model in many rental theatres.

USE CONFLICTS BETWEEN THE ANVIL CENTRE AND THE RENOVATED MASSEY

There should not be any booking or use conflicts between the Anvil Center and the Massey Theatre, unless the facilities are set up in competition with each other rather than working synergistically for the benefit of the community. By using a single booking process and contracting system, meeting the requests of users can be handled in a fair and equitable way.

Following the entrepreneurial model of the show theatres, the Massey Theatre and the Anvil Centre can use programming as a marketing tool to attract audiences and presentations to the Anvil Theatre. A programming society can present niche artistic product through risk sharing arrangements at the box office. Consistent professional programming establishes a brand for the facility that will serve as magnet to attract other producers and presenters.

This form of marketing allows the theatres to be promoted along with the events that occur there. A buzz

already exists about the Anvil Centre but until there is some consistent success, independent producers and presenters may be reluctant to take the risk. The presenting tool should establish a series of performances of different disciplines rather than individual shows scattered through the year. Promoting a season of programming with the sale of season's tickets is an efficient model of raising the profile of the facility in the community.

Theatre professionals and audience development consultants along with knowledgeable experts in the various disciplines should be brought together to develop an artistic vision, a programming strategy and implementation plan.

An example of a successful presenting theatre society is in Vernon at the Vernon and District Performing Arts Centre. The core programming for the venue is generated by the Program committee in music, dance, variety and children's stage events. Rentals and other uses then fit around that program schedule that is set up to two years in advance. This programming process allows for subscribers, supporters and occasional audience members to see the activity in their theatre. These events established an artistic sense of quality and a reputation as a top performance venue. The feeling in the community about the Vernon Theatre is one of pride and artistic excellence.

The Port Theatre in Nanaimo also follows a presenting model of programming.

Spaces to be included at the stand-alone Massey theatre will not duplicate what exists at the new anvil centre.

The Massey is a large concert – production hall. The benefits it has are large assembly spaces, music rooms for rehearsals, gathering place for individual acts in large scale variety shows, set construction, props storage etc. etc. The largest space – the small gym should be set up with power and other requirements so that in the future it could be a 75-100 seat studio theatre. Now it would serve primarily as a rehearsal space. There is never enough rehearsal space in any community. Nonetheless it is important to look into the future potential. In 8-10 years when the Anvil Theatre is fully booked, converting the rehearsal hall into a studio theatre will be a simple step.

The spaces that will be included at the Massey must complement the larger events that are held there and are necessary to support ongoing growth of the resident companies. If the theatre serves the four major users well, the magnet effect of attracting others to the facility should occur naturally. Performing arts organizations grow when they work in an enabling environment.

Notwithstanding the apparent School District's disinterest in the Massey Theatre, the relationship of the facility with all the drama, music and dance teachers in the schools most likely is quite different. This theatre will continue to be the best place to stage a major annual musical, hold graduation ceremonies and also major awards nights where students, parents and grandparents wish to be present. It will host music nights that feature school choirs from throughout the region, as well band concerts and Parent Teacher assemblies on major issues of concern.

The Anvil Centre is designed to serve a totally different artistic product than the Massey.
Some suggestions on potential performing arts use are:

Dance: modern, hip hop and contemporary, small company or soloists.
Theatre: One man shows, fringe festival events, Poetry events, literary readings, book launches, awards nights, touring theatrical productions.
Music: as a venue during the Jazz, blues, new music, or folk roots music festivals, drumming circles, musical sing-alongs, new record launches, experimental music.

Source: Theatre Study for New Westminster (2008) p. 29

NON-TRADITIONAL ACTIVITY FOR EACH THEATRE

Although it is often said that theatres can be used for "non-traditional activity", the reality is that they are few and far between. They often need the space for a short time but with a guarantee that it will be there for them consistently on a weekly or monthly basis.

Examples of non-traditional use are Church use or social service needs, like AA or AANON meetings.

Nonetheless, some potential uses are:

Massey Theatre	Anvil Theatre
Large assemblies for political or public protest.	Conference use
Church use – if limited to special guest speakers or preachers	Receptions
Key note speakers – example TED talks	Launches of products or specialty foods, wines or spirits
Launches of major products tech products/games	Council – Public Hearings

JOINT VENTURES IN PROGRAMMING AND MARKETING

There are many opportunities for joint programming but there would be a requirement for the administration of the two facilities to be linked. The Anvil Theatre as part of the Anvil Centre is operated as a Municipal facility and the Massey Theatre is operated by a non-profit society governed by a board of directors.

There are some limitations that a municipal facility has in operating something other than a rental facility. The use of volunteers can be discouraged, the budgetary process may be restricted to specific municipal direction and risk programming can be an uncomfortable fit for senior staff and council.

The biggest encumbrance may be that local sponsors and/or philanthropic supporters are not comfortable contributing funds to a municipal facility, when they already pay taxes locally or provincially for what is considered to be a municipal service.

A non-profit operating society can

- engage the willing support and effort of volunteers for various roles in the theatre,

- negotiate cost and risk sharing arrangements with artists and producers,
- establish budgets according to appropriate accounting rules but with more flexibility in assigning operating and capital funding to the overall benefit of the facility,
- establish a programming season that can be arms length from the municipality,
- approach sponsors, corporate marketers, provincial and foundation granting bodies to support the presentation of regional and touring artistic product.

Marketing and promotion is most successful when it is cooperative and in fact covers a full range of performing arts activities. The advertising world is very crowded and it is difficult to get the attention of the cultural consumer.

The promotion and marketing of the theatres can be planned and done together for the benefit of both. A workable operating model will be important to establish. In this instance, expanding the promotional effort to also include other artists organizations based in New Westminster would be beneficial. Social media and/or a portal site to arts activity would be the best cost effective way to accomplish this while still allowing groups to maintain their individuality.

THE MASSEY THEATRE'S LOSS OF PAST USERS

The question arises how the Massey Theatre can entice past renters to return to the theatre with their events. To answer this appropriately would require research with the Massey administrative staff. It is assumed that those who wanted to come back already have – and those that have not will require a sense of security for the theatre and improved facilities both technically and for their audience. Direct contact is usually the best method of finding out if users would come back.

REBRANDING OPPORTUNITIES

The Massey Theatre – once renovated and given an exterior face list can be branded as what it is with its long history in the community. The era that saw the Massey constructed is now referred to as "mid-century vintage" if not yet heritage.

It is a unique size for the region and modern in its technical and public amenities

A creative team of designers will have no problem establishing a foundation for a strong and achievable brand.

The four historic users already have a brand and building on these two together, the refurbished Massey can easily become the home of major musicals, original dance, choral competitions; and the home of excellence of community arts.

Simultaneously, the brand of New Westminster with venues of all sizes for all artistic endeavors would also grow.

The City can boast of the Bernie Legge (Vagabond Players), the Anvil Theatre as the home of niche professional programming and the Massey Theatre as the centre of major events.

OPERATING MODELS

The City of New Westminster owns theatre building and land and establishes Civic Theatres for both the Massey and the Anvil Theatre. Write operating policy and set principles for commercial and community use.

- Fee for service to Massey Theatre Society for operating both the Massey and the Anvil Theatre. Staff hired by Society. Fee covers core staff costs plus.
- Establish program committees with Massey staff support for professional series in each venue.
- Provide marketing and promotional resources for the start up of establishing artistic brand for a 3-5 year window, with the plan to reduce direct funding as sponsorship and ticket revenues begin to recoup costs.
- Expand volunteer contingent for the Anvil Theatre and establish a Friends of Anvil Theatre.

School District owns land, City of New West owns building, and 99 Year lease agreement is negotiated. New West takes up the utilities and other additional operating cost from School

Separate the duties and responsibilities of managing the facilities and programming the facilities:

- Core theatre staff – Manager, Marketing/Promotions Coordinator, Production Manager, Technical Director become municipal staff at the Massey Theatre as they are at the Anvil Centre.
- Fee for service contracts are established for the Massey Theatre Society to be the programming arm of both the Massey and Anvil Theatres.
- OR establish a separate Anvil Theatre Society and provide it with staff support to program the venue.

ECONOMIC IMPACT AND CULTURAL TOURISM

For New Westminster cultural tourism is clearly defined by those non-residents who are willing to travel to any one of the Royal City theatre facilities offering entertaining and extraordinary artistic product at an affordable price. When there is a critical mass of activity, the attraction to be part of the buzz is irresistible to artists. If there is an environment that encourages and rewards creative expression, audiences respond and want to be witness to the creativity.

New Westminster has taken the first step by building the Anvil Theatre, and with ongoing commitment can continue on the path of creating an arts and cultural hub within its boundaries. As that hub grows and is encouraged, there is a significant economic impact that can be identified for cultural tourism.

A brief report published by Heritage Canada in December 2011 on the Economic Impacts of Cultural and Sport Tourism in Canada 2007 examines the economic impact of travelers who attended cultural events, attended sporting events or participated in team sports in 2007. Regarding tourism receipts, the report indicates that tourists who attended cultural activities spent a total of $8.0 billion in 2007 while sports tourists spent $2.1 billion, about four times less than cultural tourists. Regarding net economic impact, cultural tourists generated $5.1 billion of economic activity, over 110,000 full-time jobs, and $419 million in government taxes (an estimate that does not include income taxes).
Source: The Economic Impacts of Cultural and Sport Tourism in Canada 2007, Dept of Heritage http://www.pch.gc.ca/pc-ch/org/sectr/inter/pubs-eng.cfm

Interestingly, while British Columbians spent $100 million on live sporting events in 2008, they spent $200 million on live performing arts.
Source: Hill Strategies: Consumer Spending on Culture in Canada, the Provinces, and 12 Metropolitan areas in 2008

ARCHITECTURAL FACILITY ASSESSMENT

The Massey Theatre is in need of upgrades in order to meet accessibility requirements, washroom requirements, and need for increased lobby space. There are many areas of the building that are currently used for school functions that will need to be repurposed to better function for the needs of a theatre.

The intent of this chapter outlines the options for the scope of work in two spreadsheets which correlate with the drawings. The consultants' scope of work is listed with the architectural scope and is used to determine the order-of-magnitude estimates. A third spreadsheet identifies upgrade packages taken from the Option 2 scope that could be added to the Option 1 scope should funding become available.

Two options for potential upgrades to address the needs of the theatre are given in this report:

Option 1 comprises a minimum level of upgrades that address code requirements, building envelope repairs, plumbing replacement, equipment repair replacement and minimal finishes. (Refer to the project task spreadsheet for further details and individual disciplines' executive summaries)

Option 2 comprises all of the items listed in plus repurposing the Massey Theatre to be a Civic Theatre capable of meeting the needs of the future. At a high-level overview, this is inclusive of a full exterior upgrade, repurposing of interior spaces to create a proper front-of-house lobby complete with expansion and addition of required spaces; the reinstatement of the orchestra pit, and the re-planning of the back-of-house components. (Refer to the project task spreadsheet and individual disciplines' executive summaries)

TWO POSSIBILE SCENARIOS FOR UPGRADE – OPTION 1 – SAVE THE MASSEY THEATRE

OPTION 1: SAVING THE MASSEY THEATRE FOR THE COMMUNITY

The Massey Theatre is a crucial venue for the growth of arts and culture in New Westminster. Over 40,000 people attend events there annually in a municipality of 65,976 (2011 Census).

The existence of the Massey Theatre enabled four major arts organizations to thrive; the Royal City Youth Ballet, the Royal City Musical Theatre Society, the Maple Leaf Singers and the New Westminster Symphony Orchestra. As a result, they have succeeded where others in the Metro area have not. The Massey continues to serve as a base of operations for rehearsals, set building and large-scale performances.

The 1200 seating capacity provides the extra margin of potential ticket revenue that takes events from a break even position to net profit.

The Massey Theatre with its 1200 seat capacity provides schools with a celebratory centre for graduations, school concerts, awards ceremonies and large assemblies. It provides professional technical support to enhance these events beyond a gym assembly. Generations of students have attended events at the Massey Theatre. The schools in the district have used the Massey for an average of 27 events a year.

A survey of theatre users also shows a broad base of culturally diverse organizations renting the facility on an annual basis. Audiences for these events come to the Massey from throughout the region.

BENEFITS

The immediate benefit is the security that the theatre has a long term life. This knowledge will increase the ability of both community and professional groups to plan, book and produce programming into the future. We project that this will generate an increase in rentals, community use and also the establishment of concert series. It is estimated that a 10% increase in operating revenue could be achieved in each of the first 2 years. For example; this could mean an increase of $50,000 to operating revenue of $500,000.

A repurposed facility, separated from the school complex will solve many use conflicts that arise and will enhance the ability of the operating society to serve the performing arts community and its rental clients.

The Massey Theatre as a civic theatre operated by a non-profit society can establish a brand that can rebuild its capacity to attract major touring productions and expand its reach to audiences is the region.

The Massey Theatre and the Anvil Centre Theatre can work together to establish a program of presentations and concert series that will build a great variety of arts and cultural offerings for New Westminster.

LOSS OF THE MASSEY THEATRE

It is unimaginable that New Westminster would be without the Massey Theatre. Since the first study in 1997 through to the most recent Needs Assessment (2013), the recommendations and conclusions always return to the important role a large theatre plays in the community. Should it close immediately, 23 bookings by the resident companies would disappear, an average of 27 school events that average over 600 in attendance would be crammed into other venues until the completion of the promised high school theatre.

The Massey has filled a size niche that currently only exists at the Bell Centre (1000 seats) in Surrey. That facility is full to overflowing. It has no available capacity to absorb the needs of the current users of the Massey Theatre. Additional demand is being met at the Hot Rock Casino Show Theatre (998) in Coquitlam, where about 20% of the booked days are community users. This venue is a reluctant renter to youth and children's performing arts organizations for obvious reasons.

The Needs Assessment (2013) analyzed events and attendance at the Massey from 2007-2012. It noted that there has been a decline in use and attendance. When studied closely, this decline is almost completely by commercial users; whereas community use has in fact increased over the same five year period. The most notable impact was that following the 2005-2006 shut down of the theatre it has taken the local arts organizations almost 10 years to rebuild their audiences.

The following table outlines the minimum demolition scope of the Massey Theatre (as per Option 1)

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MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Demo Tag	Task				
	Architectural	Envelope	Structural	Mechanical	Electrical
Basement					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time. •It is assumed that demolition will include new footing line along this wall. •Structural to confirm at basement level.	•No scope		•Cap off existing hot water piping to large gym and school •Remove redundant hot water piping •Remove existing domestic hot water tank •Repipe domestic hot water piping up to new system in mechanical room on 3rd floor	•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Demolition of existing unit washroom to allow for new Garavanta lift. •Demolition to include slab level to facility lift requirements.	•No scope			•Remove wiring and devices from this location
C	•Demolition of existing two stall washroom to allow for reconfiguring to unit washroom	•No scope			•No scope
D	•Demolition of storage room to allow for larger electrical room	•No scope			•No scope
E	•Partial demolition of walls and slab to allow for new elevator	•No scope			•No scope
F	•Open new wall to allow for door to future water entry room.	•No scope			•No scope
Main Floor					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time. •Demolition on ground level to also include removal of showers washrooms that formed part of gymnasium.	•Demo where decay was uncovered for maintenance to exterior walls		•No scope	•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	•No scope			•No scope
C	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	•No scope			•No scope
D	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	•No scope			•No scope
E	•Removal of showers washrooms that formed part of gymnasium	•No scope			•No scope
F	•Removal of showers washrooms that formed part of gymnasium	•No scope			•No scope
G	•Demolition of demising wall	•No scope			•No scope
H	•Removal of showers washrooms that formed part of gymnasium	•No scope			•No scope
I	•Demolition of demising wall	•No scope			•No scope
J	•Partial demolition of seating riser to allow for code compliant accessible position.	•No scope			•No scope
K	•Demo of slab for Garavanta lift	•No scope			•Remove wiring and devices from this location
L	•Demo steps for new ramp	•No scope			•No scope
M	•Partial wall removal for new corridor	•No scope			•No scope
N	•Demo wall and slab for new elevator	•No scope			•Remove wiring and devices from this location
Second Floor					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time.	•Demo where decay was uncovered for maintenance to exterior walls		•No scope	•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Demo corridor wall	•No scope			•No scope
C	•Demo corridor wall and door	•No scope			•No scope
D	•Demo gym pocket wall	•No scope			•No scope
E	•Demo corridor wall	•No scope			•No scope

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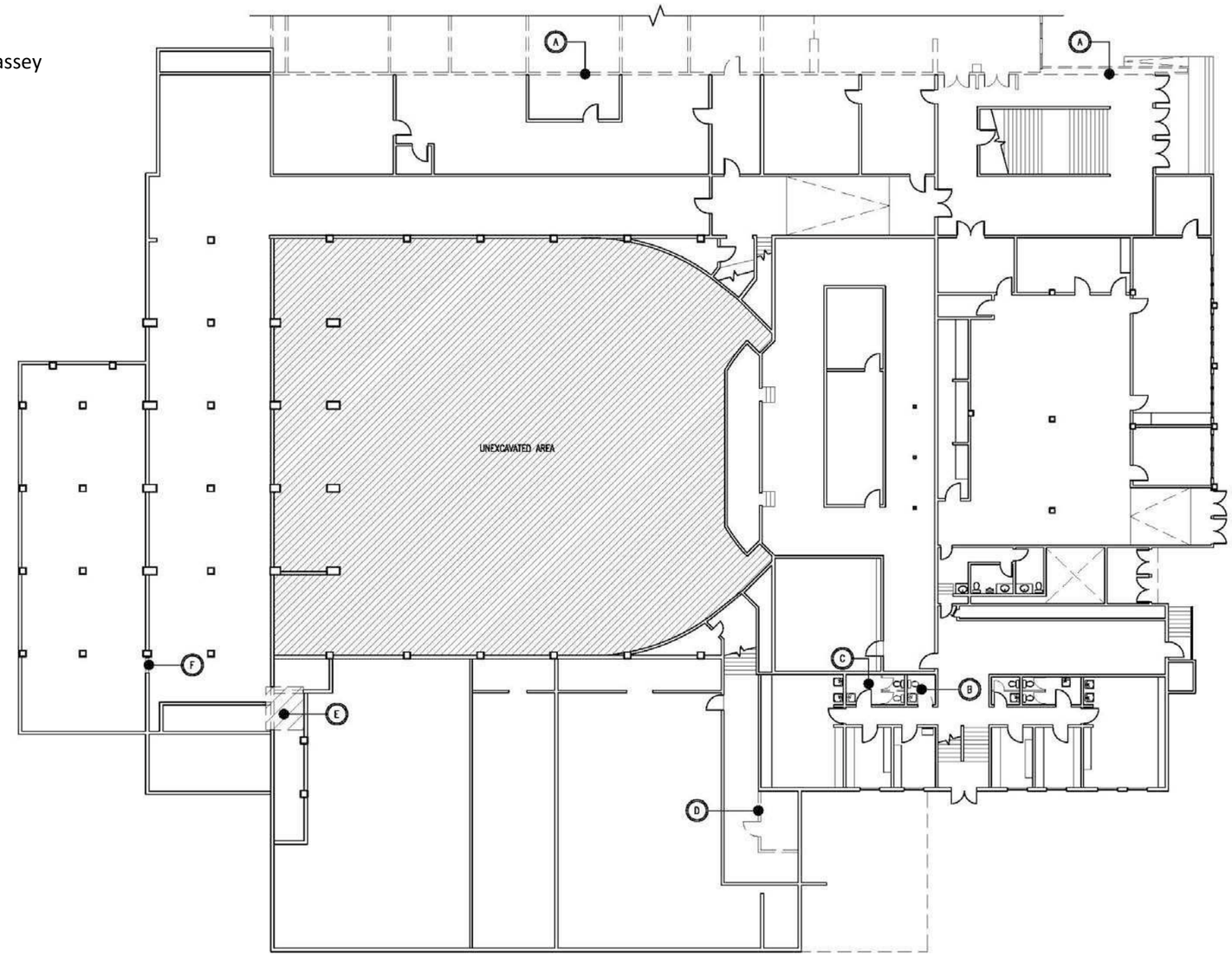
MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Demo Tag	Task				
	Architectural	Envelope	Structural	Mechanical	Electrical
F	•Demo wall to allow for elevator	•No scope			•Remove wiring and devices from this location
G	•Demo wall to allow for new corridor wall	•No scope			•No scope
Third Floor					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time.	•Demo where decay was uncovered for maintenance to exterior walls		•No scope	•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Demo gym pocket wall	•No scope			•No scope
C	•Open roof to allow for new elevator	•No scope			•No scope
Roof					
A	•Demolition of wall parapet line and removal of existing roof assembly	•Remove and dispose of existing BUR roof assemblies		•Remove existing HVAC equipment on roof	•No scope
B	•Remove smoke exhaust penthouse	•No scope			
C	•Partial roof curb demo for new elevator over run.	•No scope			
Exterior Cladding					
	Refer to the envelope report. In option 1 allow for selective demolition of building envelope in order to facilitate the required envelope repairs.				

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The following drawings outline the minimum demolition scope of the Massey Theatre (as per Option 1)

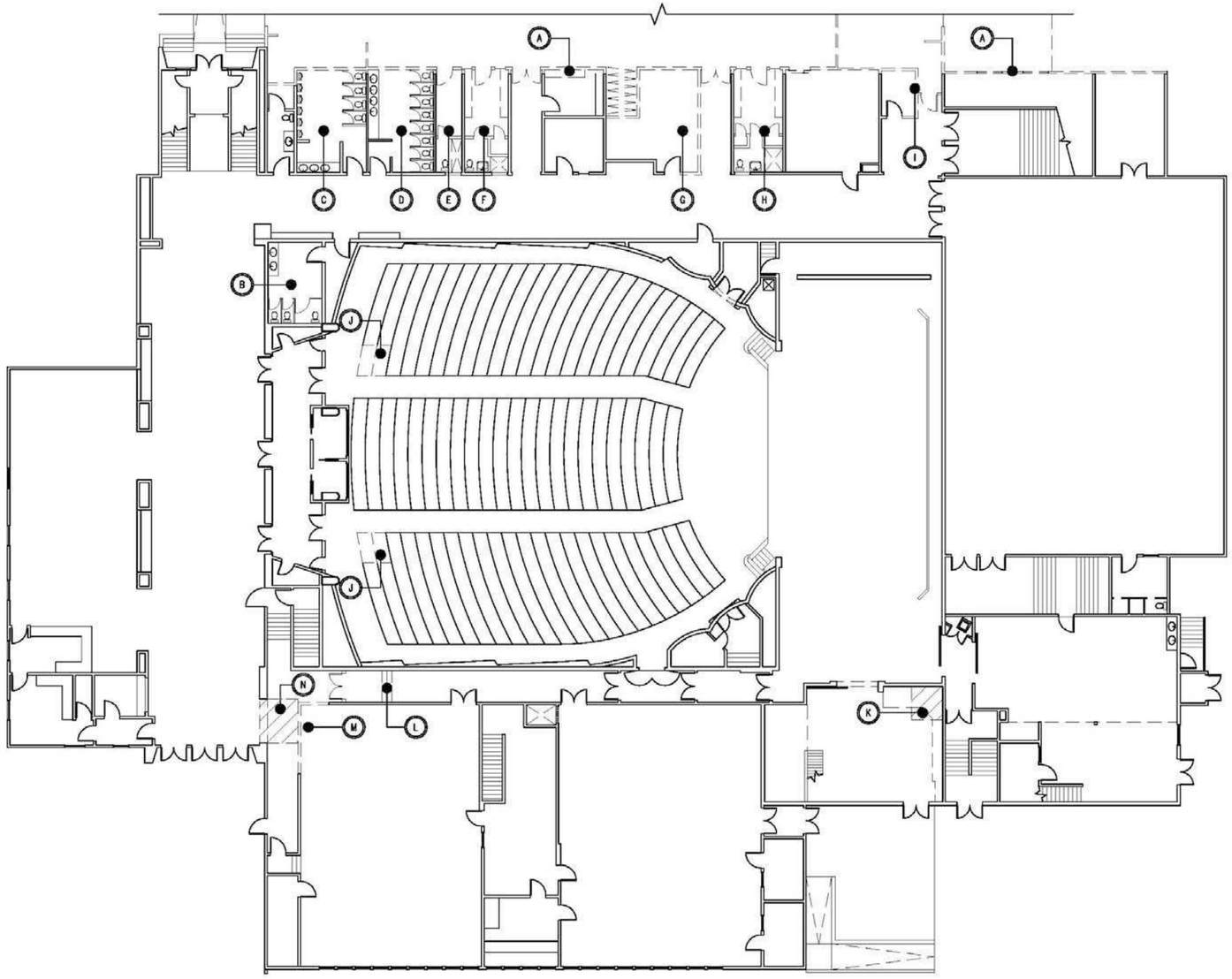


BASEMENT DEMO PLAN - OPTION 1
MASSEY THEATRE

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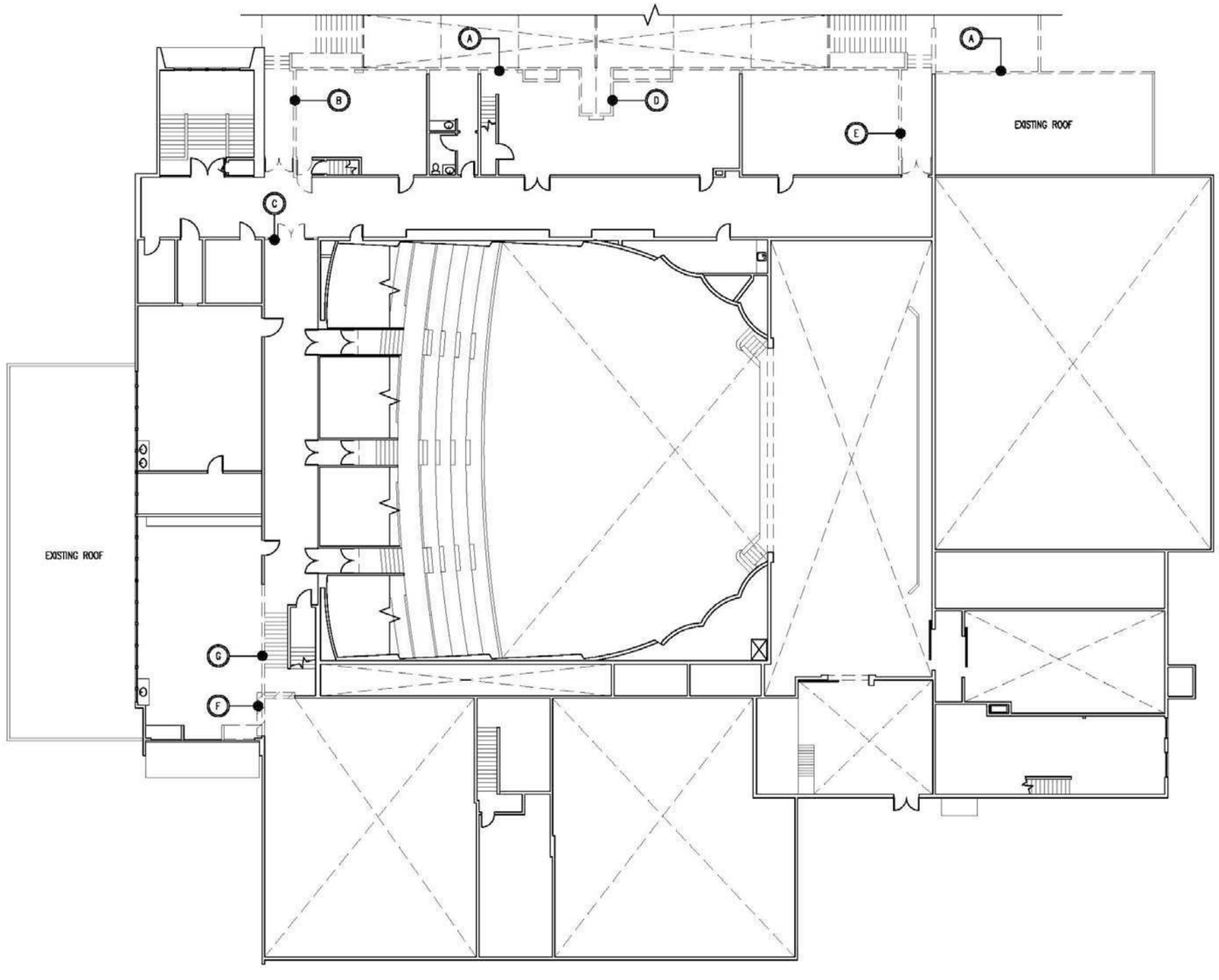


MAIN FLOOR DEMO PLAN - OPTION 1
MASSEY THEATRE

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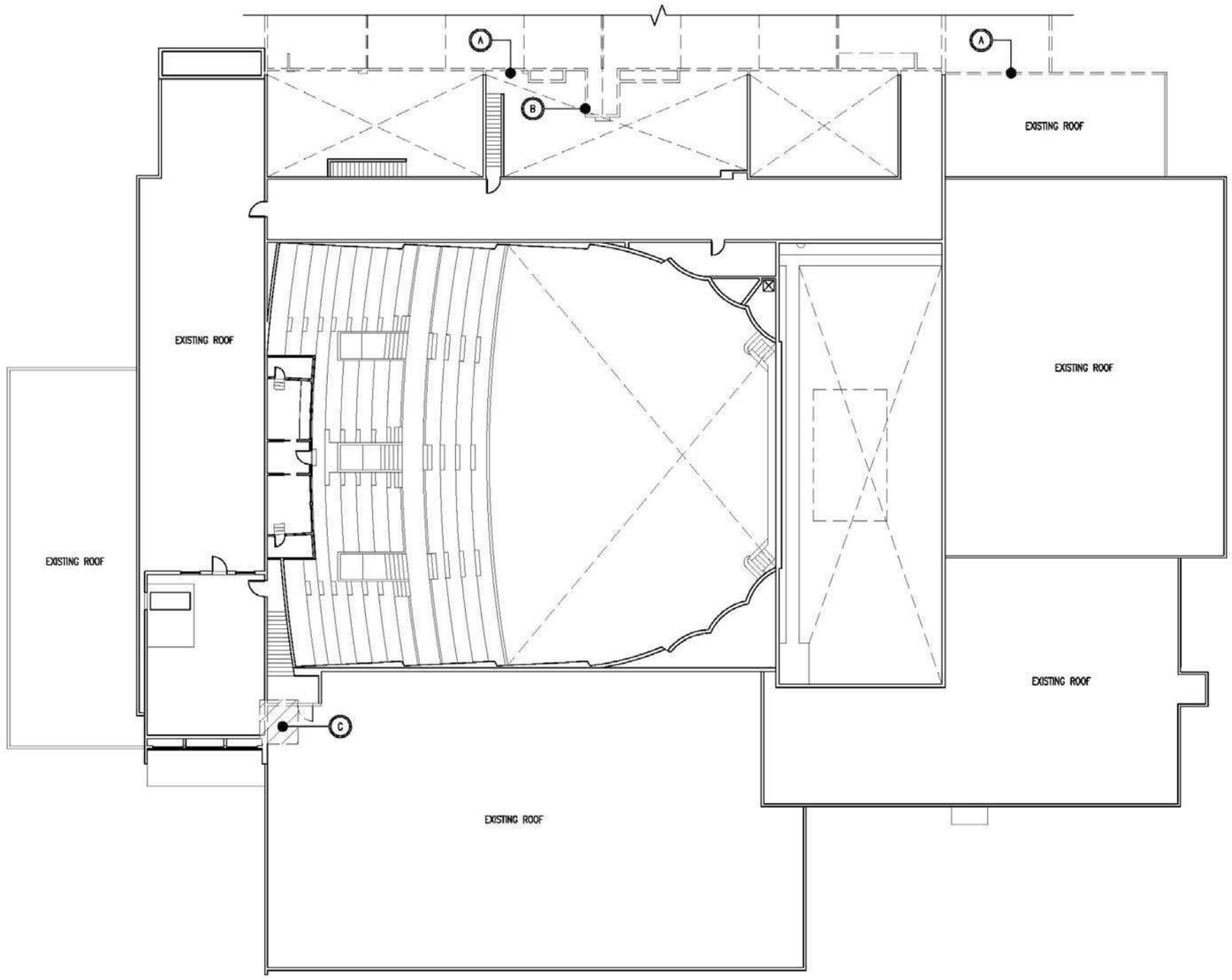


SECOND FLOOR DEMO PLAN - OPTION 1
MASSEY THEATRE

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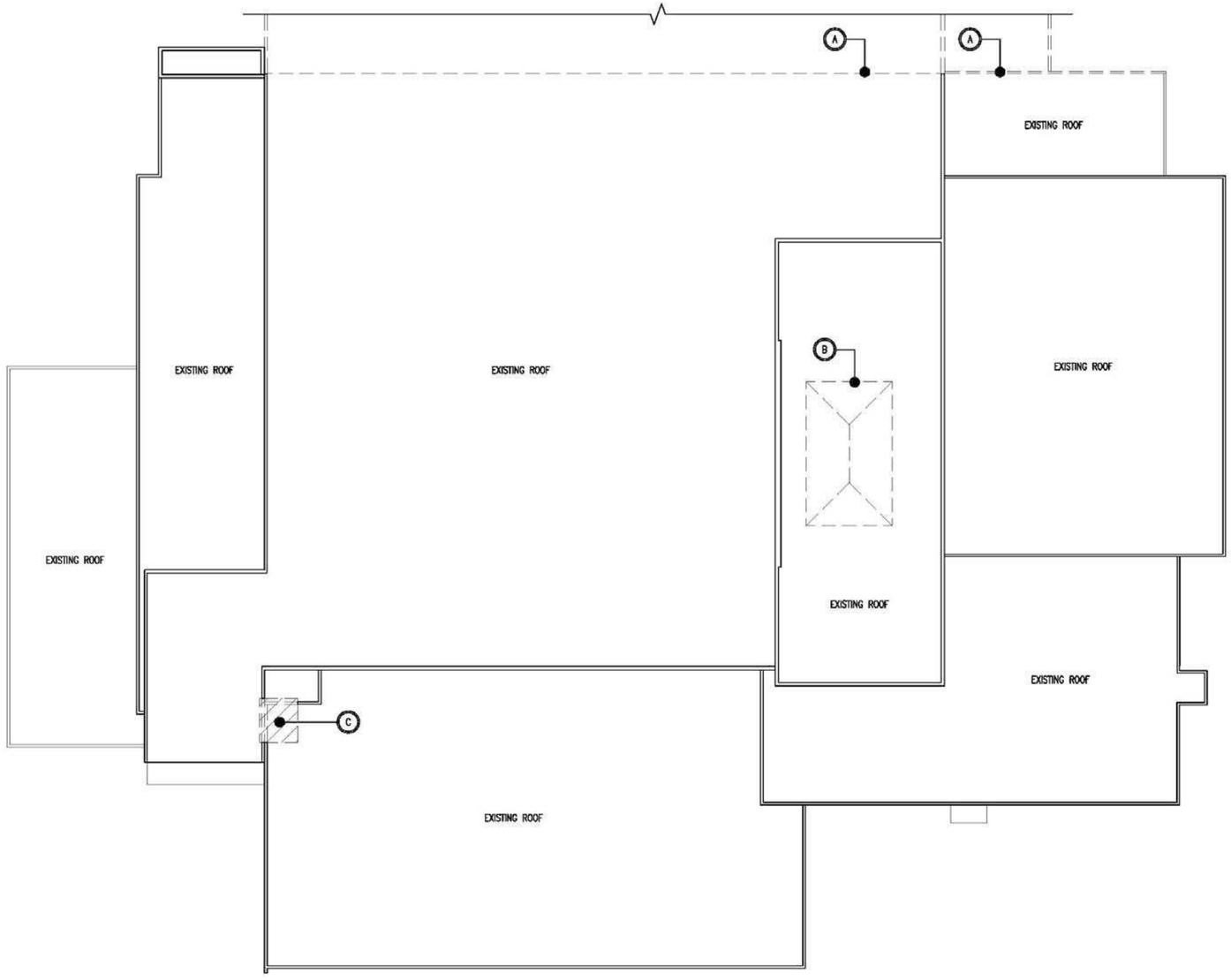


THIRD FLOOR DEMO PLAN - OPTION 1
MASSEY THEATRE

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ROOF DEMO PLAN - OPTION 1
MASSEY THEATRE

The following table outlines the minimum renovation scope of the Massey Theatre (as per Option 1)

PROSCENIUM
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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
Basement						
1	Storage (Crawlspace)	•No scope		•No scope	•No scope	•No scope
2	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•No scope	•Add hot water heat baseboard on new exterior wall •Add exhaust system	•No scope
3	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•No scope	•Add hot water heat baseboard on new exterior wall •Add exhaust system	•No scope
4	Storage	•No scope		•No scope	•No scope	•No scope
5	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•No scope	•Add hot water heat baseboard on new exterior wall •Add exhaust system	•No scope
6	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•No scope	•Add hot water heat baseboard on new exterior wall •Add exhaust system	•No scope
7	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•No scope	•Add hot water heat baseboard on new exterior wall •Add exhaust system	•No scope
8	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•No scope	•Add hot water heat baseboard on new exterior wall •Add exhaust system	•No scope
9	Corridor	•New code compliant handrails on existing ramp (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting and exit sign
10	Storage	•No scope		•No scope	•No scope	•No scope
11	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
12	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
13	Corridor	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting
14	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
15	S.L.L.	•No scope		•No scope	•No scope	•No scope
16	Storage	•No scope		•No scope	•No scope	•No scope
17	Storage	•No scope		•No scope	•No scope	•No scope
18	Green Room/Multipurpose	•Portion of existing school drama room repurposed as new green room •New wall on South side •New floor finish •New wall finish •New lighting •New ceiling finish		•No scope	•Add new heating and ventilation unit c/w new ductwork, connect into new DDC system	•Emergency lighting
19	Storage	•No scope		•No scope	•No scope	•No scope
20	Storage	•No scope		•No scope	•Add new heating and ventilation unit c/w new ductwork	•No scope
21	Storage	•No scope		•No scope	•No scope	•No scope
22	Wardrobe/Laundry	•Portion of existing school drama room repurposed as new wardrobe room •New wall on North side •New floor finish •New wall finish •New lighting •New ceiling finish		•No scope	•Add new heating and ventilation unit c/w new ductwork, connect into new DDC system	•No scope
23	Wardrobe/Laundry	•No scope		•No scope	•No scope	•No scope
24	Corridor	•New code compliant handrails on existing steps (Typical of all stairs and ramps)	•Maintenance to exterior walls and glazing where exposed to exterior	•No scope	•Replace sink with new fixture	•Smoke detector •Emergency lighting and exit sign

MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
25	Men's WC	•No scope		•No scope	•Replace plumbing fixtures with new •Add exhaust system	•Normal and emergency lighting
26	Men's WC	•Existing Women's WC repurposed as new Men's WC no fixture change		•No scope	•Replace plumbing fixtures with new •Add exhaust system	•Normal and emergency lighting
27	Theatre Shop	•No scope		•No scope	•No scope	•No scope
28	Dimmers	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting •Re-feed 1200 Amp dimmer panels
29	Drape Storage	•No scope		•No scope	•No scope	•Re-feed 1200 Amp panel
30	Orchestra Pit	•No scope, (inaccessible)		•No scope	•No scope	•Smoke detector •Emergency lighting and exit signs
31	Storage	•Existing band room repurposed as storage room. No scope		•No scope	•No scope	•No scope
32	Corridor	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting and exit signs
33	Women's WC	•No scope		•No scope	•Replace plumbing fixtures with new •Add exhaust system	•Normal and emergency lighting
34	Women's WC	•No scope		•No scope	•Replace plumbing fixtures with new •Add exhaust system	•Normal and emergency lighting
35	Women's Change Room	New wall finish (paint)		•No scope	•Replace existing sinks with new fixtures	•No scope
36	Women's Dressing Room	New wall finish (paint)		•No scope	•No scope	•No scope
37	Women's Dressing Room	New wall finish (paint)		•No scope	•No scope	•No scope
38	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting and exit signs
39	Men's Dressing Room	New wall finish (paint)		•No scope	•No scope	•No scope
40	Men's Dressing Room	New wall finish (paint)		•No scope	•No scope	•No scope

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20

Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
41	Men's Change Room	New wall finish (paint)		•No scope	•Replace sink with new fixture	•No scope
42	Universal Toilet	•Existing Men's WC repurposed as new universal toilet room •Remove WC partitions and portion of existing plumbing fixtures •New grab bars		•No scope	•Remove existing plumbing fixtures and replace with new h/c fixtures •Add new exhaust system	•Normal and emergency lighting
43	Elevator	•New Garavanta lift, to service (2) levels		•New concrete pad footing and concrete shaft wall	•Provide new ventilation system	•Heat detector, lighting and devices, elevator connection
44	Corridor	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting and exit signs
45	New Electrical Room	•Existing storage room and portion of existing corridor repurposed as new electrical room. •Refer to electrical		•No scope	•No scope	•Lighting, electrical devices, 2500 Amp main distribution panel, EM panel, Technology demark, lighting control and fire alarm panel. PA head end equipment
46	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•No scope
47	Storage	•No scope		•No scope	•No scope	•No scope
48	Storage (Crawlspace)	•No scope		•No scope	•No scope	•No scope
49	Storage (Crawlspace)	•No scope		•No scope	•No scope	•No scope
50	Storage (Crawlspace)	•No scope		•No scope	•No scope	•No scope
51	Storage	•No scope		•No scope	•No scope	•No scope
52	Loading	•No scope		•No scope	•No scope	•No scope
53	New Wall	•New North wall and footings along north face of Massey. •Allow for water proofing , drain tile, drainage matt and insulation.		•New concrete strip footing and foundation wall	•Add new perimeter drain tile along wall to service new footings and connect into storm drain tiles	•No scope
54	New Water Entry Room	•Refer to mechanical		•No scope	•No scope	
55	Elevator	•New elevator pit		•New concrete pad footing and concrete shaft wall	•No scope	•Heat detector, lighting and devices, elevator connection
Main Floor						
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package		•Concrete shaft wall. Modify floor framing.	•Provide ventilation	•No scope
2	Box Office	•No scope		•No scope	•No scope	•No scope
3	Vestibule	•No scope		•No scope	•No scope	•New power and lighting panel with feeders 200 Amp
4	Kitchen	•No scope		•No scope	•Replace existing fixtures with new	•Smoke detector
5	Bar	•No scope		•No scope	•No scope	•No scope
6	Corridor	•No scope		•No scope	•No scope	•Smoke detectors and pull stations •Emergency lighting
7	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
8	Storage	•No scope		•No scope	•No scope	•Smoke detector
9	S.L.L.	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting
10	Lobby	•New floor finish, allow for porcelain tile and floor leveling •New wall finish, allow for paint and new baseboards		•No scope	•Provide new HVAC system (packaged, gas-fired, 12.5 ton cooling unit on roof) & ducted down to lobby through storage space on floor above. Either use exposed ductwork or install in bulkheads below existing ceiling. Connect into	•Smoke detector and FA enunciator and pull station •New lighting and EM lights
11	Extended Lobby	•New floor finish, allow for porcelain tile and floor leveling •New wall finish, allow for paint and new baseboards		•No scope	•Provide new HVAC system (packaged, gas-fired, 12.5 ton cooling unit on roof) & ducted down to lobby through storage space on floor above. Either use exposed ductwork or install in bulkheads below existing ceiling. Connect into	•New lighting and EM lights
12	Control Booth	•No scope		•No scope	•No scope	•No scope
13	Storage	•No scope		•No scope	•No scope	•No scope
14	Women's WC	•New plumbing fixtures and partitions •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint		•No scope	•Replace plumbing fixtures with new •Add new exhaust system	•New lighting, EM lights and devices
15	Corridor	•No scope		•No scope	•No scope	•Emergency lighting and exit signs

MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
16	Entry	•New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards		•No scope	•No scope	•New lighting, EM lights and devices •Smoke detector and pull station
17	Stair	•New code compliant handrails, contrasting nosings and tactile warning allow for porcelain tile this stair only (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
18	Storage	•No scope		•No scope	•No scope	•No scope
19	Storage	•No scope		•No scope	•No scope	•No scope
20	Unit WC	•New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint		•No scope	•Replace plumbing fixtures with new •Add new exhaust system	•New lighting, EM lights and devices
21	Storage	•New wall on North side		•No scope		•No scope
22	Public Men's WC	•New wall on North side •New plumbing fixtures and partitions •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint		•No scope	•Replace plumbing fixtures with new •Add new exhaust system •Add new hot water heating due to new exterior wall	•New lighting, EM lights and devices
23	Public Women's WC	•New wall on North side •New plumbing fixtures and partitions •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint		•No scope	•Replace plumbing fixtures with new •Add new exhaust system •Add new hot water heating due to new exterior wall	•New lighting, EM lights and devices
24	Storage	•New wall on North side		•No scope	•Remove existing w/c, cap off piping, remove redundant piping •Add new exhaust system •Add new hot water heating due to new exterior wall	•No scope
25	Storage	•New wall on North side		•No scope	•Remove existing fixtures, cap off piping, remove redundant piping •Add new exhaust system •Add new hot water heating due to new exterior wall	•No scope
26	Office	•No scope		•No scope	•Add ventilation system	•No scope
27	First Aid	•New wall on North side		•No scope	•Add exhaust system •Add new hot water heating due to new exterior wall	•No scope
28	Office	•New wall on North side		•No scope	•Add new hot water heating due to new exterior wall	•No scope
29	Janitor	•No scope		•No scope	•No scope	•No scope
30	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
31	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
32	Storage	•New wall on North side		•No scope	•Add exhaust system •Add new hot water heating due to new exterior wall	•No scope
33	Storage	•New wall on North side		•No scope	•Add exhaust system •Add new hot water heating due to new exterior wall	•No scope
34	Storage	•New wall on North side		•No scope	•Add exhaust system •Add new hot water heating due to new exterior wall	•No scope
35	Corridor	•New floor finish, allow for porcelain tile and sub floor leveling •New wall finish, allow for paint and new baseboards		•No scope	•No scope	•Smoke detector •New lighting and emergency lighting
36	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	•Maintenance to exterior walls and windows	•No scope	•No scope	•No scope

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20

Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
37	Large Rehearsal Room	•Existing small gymnasium repurposed as large rehearsal room. Allow for painting walls and floor		•No scope	•Replace existing heating and ventilation unit, installed in small roof mechanical room, with new unit complete with 12.5 tons of cooling capacity with exterior condenser mounted on roof. Reuse existing ductwork. Connect into new DDC System.	•Smoke detector •Emergency lighting •New power and lighting panel with feeders 200 Amp
38	Storage	•No scope		•No scope	•No scope	•Smoke detector and pull station •Emergency lighting
39	Office	•No scope		•No scope	•No scope	•No scope
40	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
41	Stage	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting •New power and lighting panel with feeders 200 Amp
42	Auditorium	•New built-out platform for accessibility allow for guard •New wall finish, allow for paint •New floor finish, allow for carpet		•No scope	•Replace/upgrade existing multizone rooftop unit with new, more efficient unit. Unit to have hot water heating, 62 tons of cooling, VFD 26,000 cfm supply and 23,000 cfm return fans, demand controlled CO2 ventilation and 100% outside air capability. Reuse existing ductwork. Connect into new DDC system.	•New LED house lighting
43	Vestibule	•No scope		•No scope	•No scope	•Emergency lighting and exit sign
44	Shop	•No scope		•No scope	•No scope	•New electrical panel with feeder cable to electrical room in basement 200 Amp
45	Office	•No scope		•No scope	•No scope	•No scope

MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
46	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
47	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector and pull station •Emergency lighting
48	Storage	•No scope		•No scope	•No scope	•No scope
49	Elevator	•New Garavanta Lift, to service (2) levels		•Concrete shaft wall. Modify floor framing.	•Add ventilation system	•Smoke detector
50	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Emergency lighting
51	Corridor	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting
52	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
53	Storage	•No scope		•No scope	•No scope	•No scope
54	S.L.L.	•No scope		•No scope	•No scope	•No scope
55	Corridor	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting •New electrical panel with feeder cable to electrical room in basement 125 Amp •Data racks and security panel
56	New Ramp	•New ramp to replace old stairs for accessibility •New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•No scope
57	S.L.L.	•No scope		•No scope	•No scope	•No scope
58	Small Rehearsal Room	•Existing band room repurposed as small rehearsal room. New paint		•No scope	•Replace existing heating and ventilation unit with new. No A/C added. Reuse existing ductwork. Connect into new DDC system.	•No scope
59	Soundproof Room	•No scope		•No scope	•No scope	•No scope
60	Soundproof Room	•No scope		•No scope	•No scope	•Smoke detector •Normal and emergency lighting •New panel with feeder cable to electrical room in basement 200 Amp
61	Storage	•No scope		•No scope	•No scope	•Smoke detector
62	Office	•No scope		•No scope	•No scope	•No scope
63	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope	•No scope	•Emergency Lighting
64	Small Rehearsal Room	•Existing band room repurposed as small rehearsal room. •New paint •Partial removal/new walls to accommodate new corridor		•No scope	•Replace existing heating and ventilation unit with new. No A/C added. Reuse existing ductwork. Connect into new DDC system.	•Emergency Lighting
65	New Corridor	•Wall, floor and ceiling finishes to match existing		•No scope	•No scope	•Smoke detector •Emergency lighting
66	Corridor	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting
67	Storage	•No scope		•No scope	•No scope	•Smoke detector
68	Storage	•No scope		•No scope	•No scope	•Smoke detector
69	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report		•New stud wall with plywood sheathing	•No scope	•No scope
70	New Data Room	•Portion of existing band storage repurposed as new data room		•No scope	•No scope	
Second Floor						
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package		•Concrete shaft wall. Modify floor framing.	•No scope	•No scope

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20

Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
2	Lunch Room	???????/ No scope		•No scope	•Modify existing supply and return air ductwork to suit new floor plan (replace existing rooftop A/C unit with new). Same unit to serve Lunch and Admin spaces. Connect into DDC System. Replace existing sink with new fixture.	•Smoke detector •Emergency lighting
3	New Corridor	•Wall, floor and ceiling finishes to match existing		•No scope	•No scope	•Smoke detector and pull station •Emergency lighting
4	Stair	•see note 7 on level two		•No scope	•No scope	•Smoke detector •Emergency lighting
5	S.L.L.	•No scope		•No scope	•No scope	•Emergency lighting
6	Admin	•Partial removal/new walls to accommodate new corridor		•No scope	•No scope	•No scope
7	Upper Lobby	•No scope		•No scope	•Add new rooftop, packaged, rooftop, HVACs unit to serve entire upper lobby. Install duct distribution in attic space over. Connect into new DDC System.	•Smoke detector and pull station •Emergency lighting •New power and lighting panel with feeders 200 Amp
8	Storage	•No scope		•No scope	•No scope	•No scope
9	S.L.L.	•No scope		•No scope	•No scope	•Emergency lighting
10	Admin	•No scope		•No scope	•Modify existing supply and return air ductwork to suit new floor plan (replace existing rooftop A/C unit with new). Same unit to serve Lunch and Admin spaces. Replace existing sinks with new fixtures.	•No scope
11	S.L.L.	•No scope		•No scope	•No scope	•Emergency lighting
12	Storage	•Art kiln room repurposed as new storage room		•No scope	•Add new exhaust system to serve this room	•Smoke detector
13	Storage	•No scope		•No scope	•No scope	•Smoke detector
14	Storage	•No scope		•No scope	•No scope	•Smoke detector
15	Display	•No scope		•No scope	•No scope	•No scope

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
16	Stair	•Refer to note 17 level 2	•Maintenance to exterior walls and windows	•No scope	•No scope	•Smoke detector •Emergency lighting
17	Storage	•No scope		•No scope	•No scope	•Smoke detector
18	Storage	•New wall on North side		•No scope	•Add new HVAC system to serve this room. Served from same unit as item 7 above. Replace existing sinks with new fixtures.	•No scope
19	Stair	•New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector
20	Admin WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint		•No scope	•Replace plumbing fixtures with new •Add new exhaust system	•New lighting, EM lights and devices
21	Storage	•No scope		•No scope	•No scope	•Smoke detector
22	Stair	•New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
23	Storage	•New wall on North side		•No scope	Add new HVAC system to serve this room. Served from same unit as item 7 above.	•Smoke detector
24	Janitor	•No scope		•No scope	•No scope	•No scope
25	Mechanical Room	•New wall on North side		•No scope	•Remove existing Hydrotherm boilers. Remove all breeching •Newer De Dietrich boiler to remain, but install new breeching (not c-vent) to manufacturer's requirements •Install four new 399 MBH boilers to replace removed Hydrotherm boilers and vent up through roof with approved breeching to manufacturer's recommendations. Connect into new DDC system.	•Smoke detector •Normal and emergency lighting •Normal power, emergency power and mechanical panels
26	Balcony	•New guardrails •New wall finish, allow for paint		•No scope	•No scope	•No scope
27	Shop Mezzanine	•No scope		•No scope	•No scope	•No scope
28	Storage Mezzanine	•No scope		•No scope	•No scope	•No scope
29	Stair	•New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
30	Storage	•No scope		•No scope	•No scope	•Smoke detector
31	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer also to envelope report		•New stud wall with plywood sheathing	•No scope	•No scope
32	New Roof	•New roof. Refer to envelop report		•No scope	•No scope	•No scope
Third Floor						
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package	•Maintenance to exterior walls and windows	•Concrete shaft wall. Modify floor framing.	•No scope	•Smoke detector
2	Board Room	•No scope		•No scope	•No scope	•No scope
3	Stair	•New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
4	Storage	•No scope		•No scope	•No scope	•No scope
5	Follow Spot	•No scope		•No scope	•No scope	•Emergency lighting
6	Follow Spot Vestibule	•No scope		•No scope	•No scope	•Emergency lighting
7	Follow Spot	•No scope		•No scope	•No scope	•Emergency lighting
8	Storage	•No scope		•No scope	•No scope	•Smoke detector
9	Stair	•New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
10	Stair	•New code compliant handrails (Typical of all stairs and ramps)		•No scope	•No scope	•Smoke detector •Emergency lighting
11	Attic	•No scope		•No scope	•No scope	•Smoke detector •Emergency lighting
12	Balcony	•See level 2		•No scope	•No scope	•No scope
13	New Wall	•See Note 31 Level 2		•New stud wall with plywood sheathing	•No scope	•No scope

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
14	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.		•No scope	•No scope	•No scope

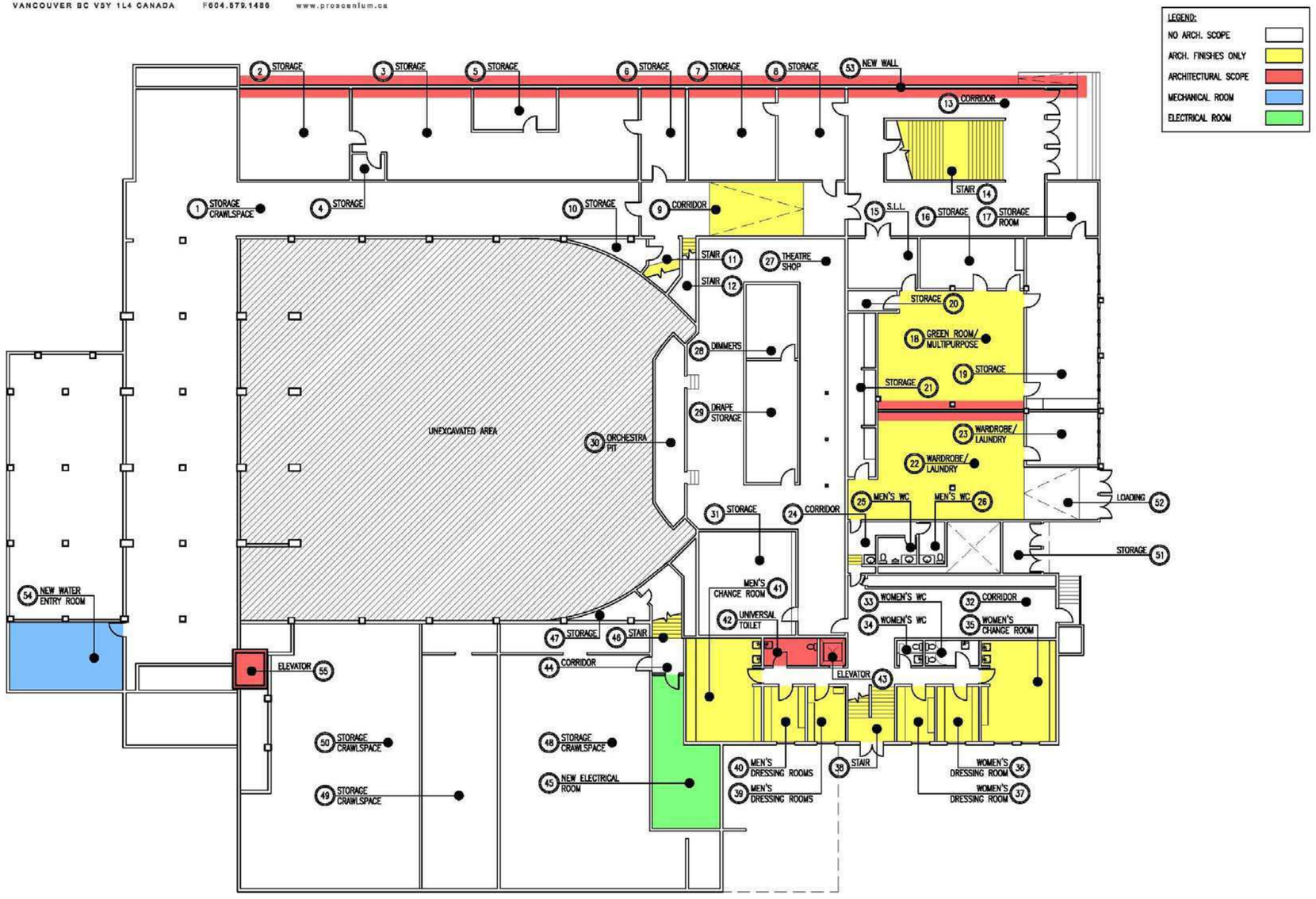
MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical
Roof						
1	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.	•Replace the existing roof with a new 2-ply SBS roof assembly with sloped tapered insulation	•Upgrade roof framing in various locations to support new RTU, see structural plans	•Replace all existing rooftop HVAC equipment with new •Install new equipment as per mechanical report •Connect all new HVAC equipment into new DDC System	•No scope
2	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.		•No scope	•Replace all existing rooftop HVAC equipment with new •Install new equipment as per mechanical report	
3	New Smoke Exhaust	•New smoke exhaust over stage, remove existing exhaust penthouse. Replace with two new horizontal exhaust louvers on built-up curbs. •Each vent should have the clear area of 14.875 sq. m. •Refer also to mechanical		•No scope	•Replace/upgrade existing smoke evacuation system with new openers and new low leakage motorized dampers. Connect into fire alarm and monitor with new DDC System. Size of openings to exceed 1/8 of stage area. The stage area is approximately 2,700 sqft, therefore the free area of smoke openings must exceed 350 sqft. The existing structure appears to achieve this free area requirement, so the dampers and openers must be sized to also exceed this area.	
4	New Roof	•New roof over new elevator shaft		•No scope	•No scope	
Exterior Cladding						
	Walls/ Windows/ Doors	Refer to envelope report. Where repair work is required allow for new cladding / window/ door remedial work. New materials to match existing finishes that neighbour the area of work. For new north wall refer to note 69 above.				

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The following drawings outline the minimum renovation plan of the Massey Theatre (as per Option 1)

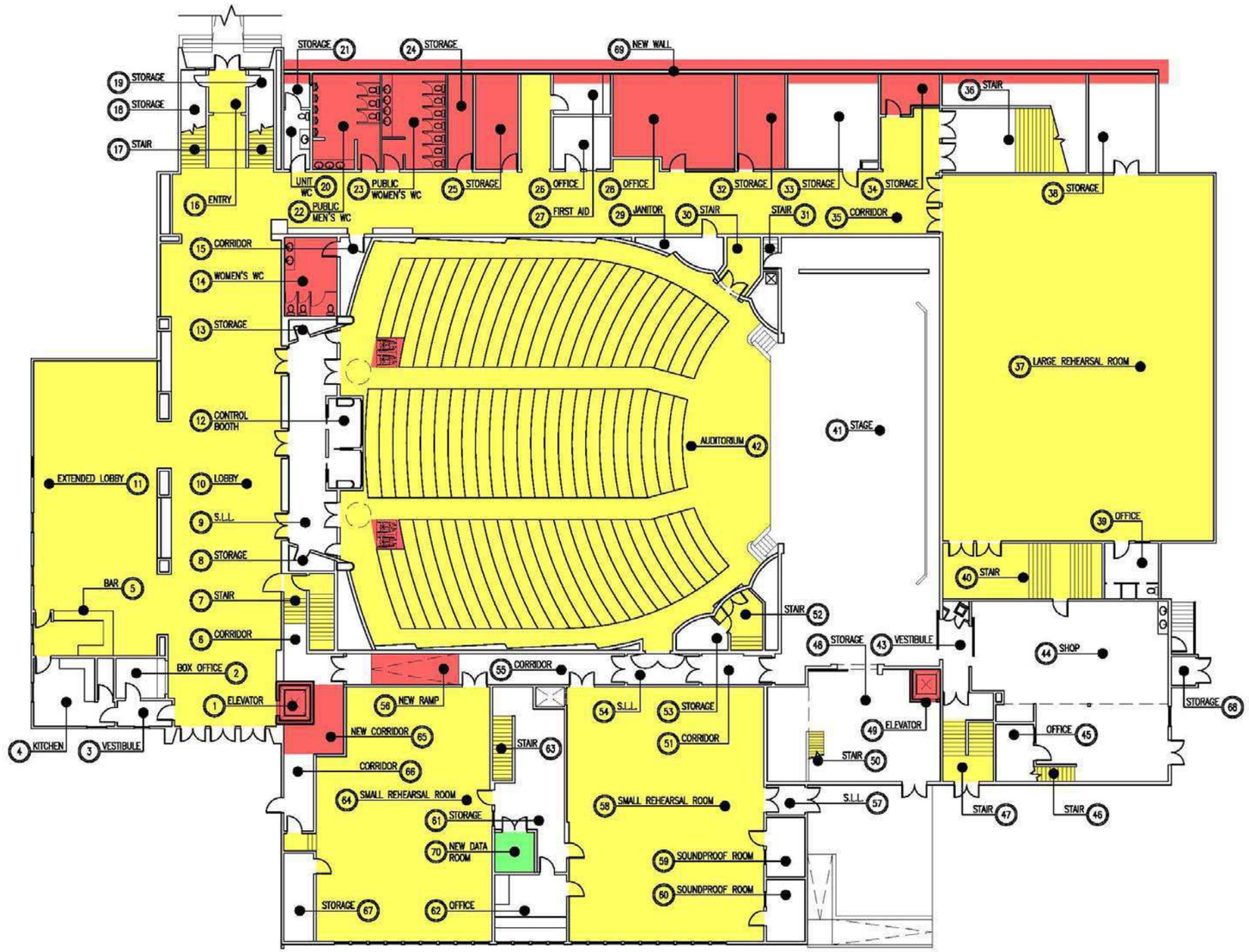


BASEMENT PLAN - OPTION 1
MASSEY THEATRE

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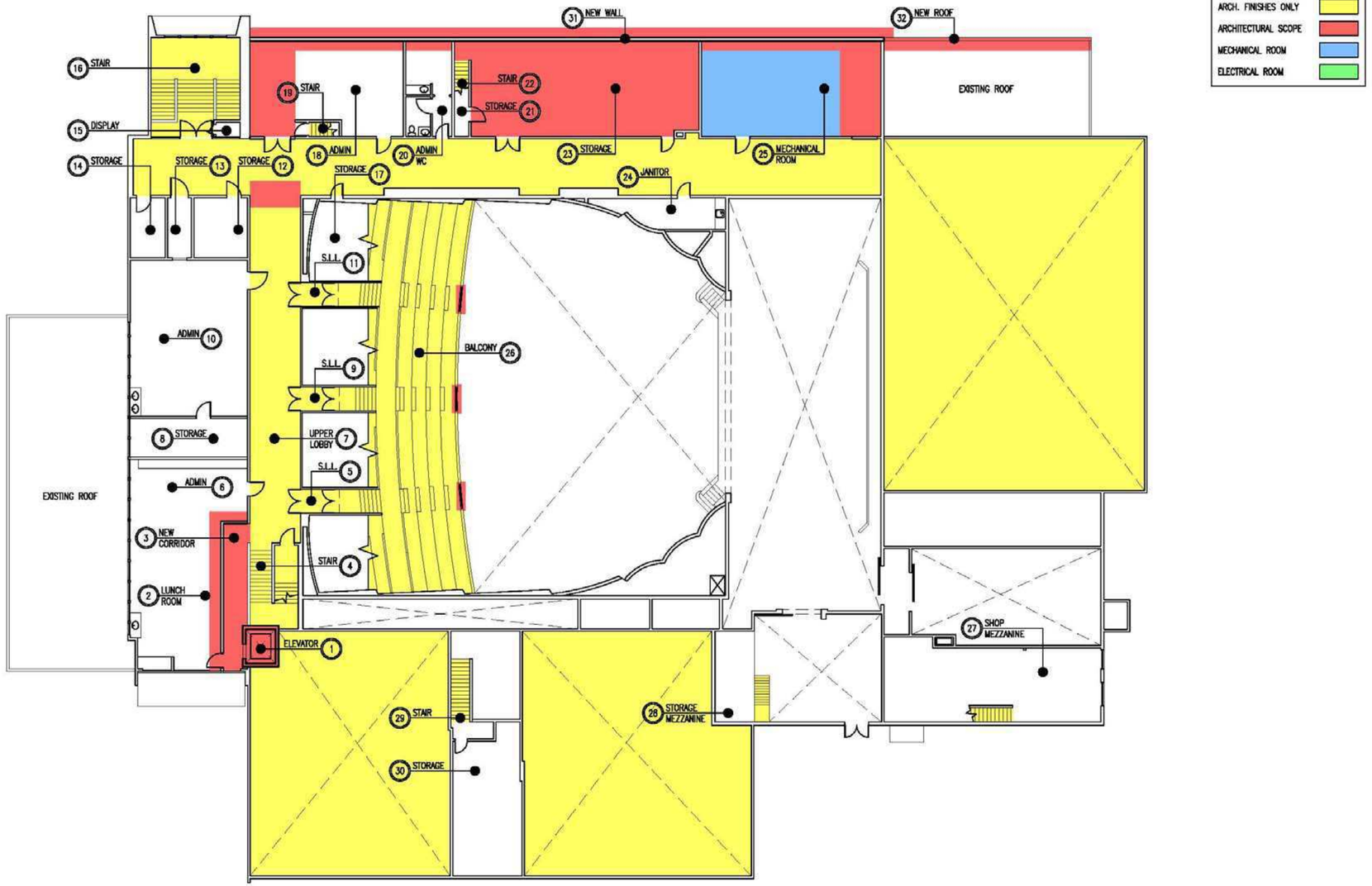
MAIN FLOOR PLAN - OPTION 1
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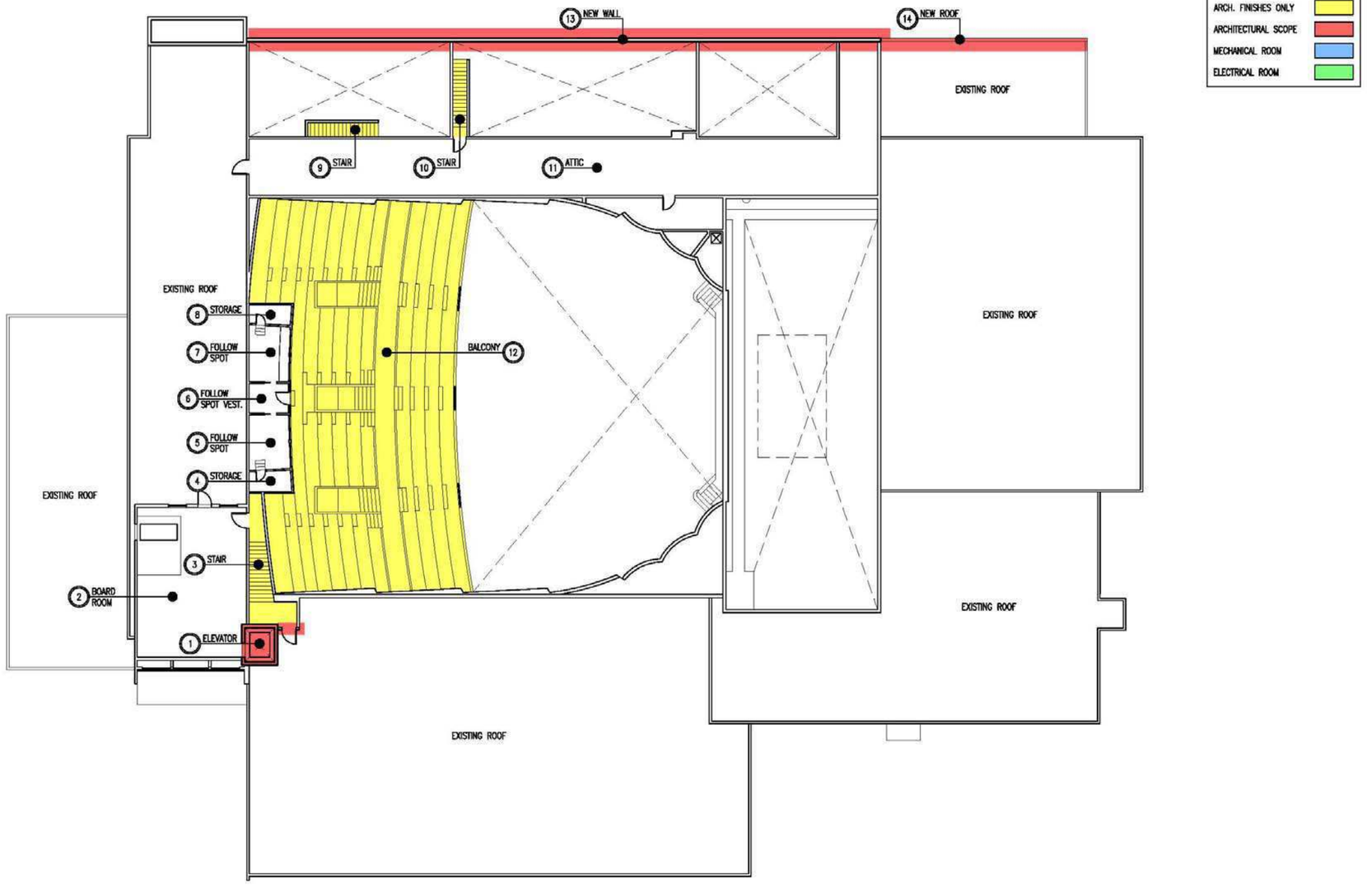
SECOND FLOOR PLAN - OPTION 1
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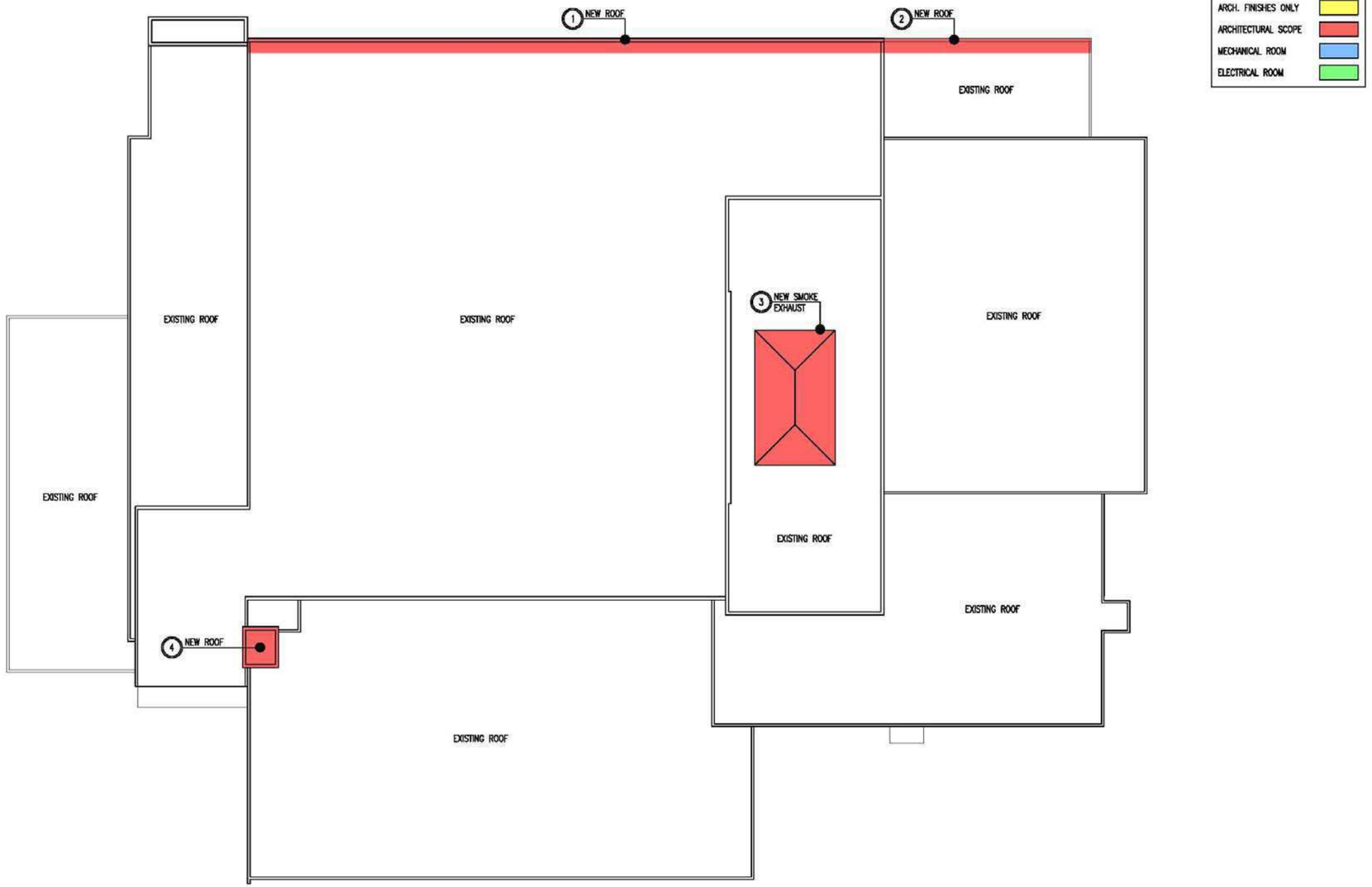
THIRD FLOOR PLAN - OPTION 1
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ROOF PLAN - OPTION 1
MASSEY THEATRE

TWO POSSIBILE SCENARIOS FOR UPGRADE – OPTION 2 – THE MASSEY OF THE FUTURE

OPTION 2 – THE MASSEY THEATRE OF THE FUTURE

It is understood that when the City of New Westminster secures the Massey Theatre for the future as a civic theatre, the job is not finished. The long range plan will require the additional enhancements that are outlined in the architectural program plan (Option 2.) Nonetheless, a commitment that secures the Massey will energize the community to engage actively to support the capital improvements that the building will require.

The City of New Westminster will be the primary trustee in an agreement with the School District (Department of Education). It will become the building owner in a land lease agreement and/or become the landowner of the theatre footprint on school property. Whatever the legal relationship established it will free the theatre of any future threats and guarantee its success.

COST BENEFIT

The next stage of refurbishment of the Massey Theatre will open up the opportunity to engage the two senior levels of government for this restorative and high profile project. Pursuing matching grants from the province and federal governments can leverage municipal investment three fold. Infrastructure grant criteria now include heritage and arts facilities.

Notwithstanding the vagaries of senior government support, once the core infrastructure work of option 1 is accomplished, the more visible elements that need improvement can be targeted for donations in a major fundraising campaign.

Renovation projects that generate interest for philanthropic donations are:

- Historic restoration and refurbishment – a beautified facade.
- Audience amenities: such as spacious lobbies, box office, accessible washrooms, refreshment and bar services, exhibit space, fixtures and furnishings.
- Accessibility to all parts of the building.

Empirically, it is known that bringing the audience amenities up to current standards will increase public enjoyment of the productions and the time spent in the building. Measuring the direct cost benefit is more difficult however, considering even a modest increase in audience numbers to each performance translates into a significant revenue boost.

The chart below is an example of small increases and their impact:

Performances	Audience increase	Ticket price (average)	Total
100 perf a year (2007)	30 more people per perf.	$20 average TX price	$60,000
140 perf a year (2011)	30 more people per perf.	$20 average TX Price	$84,000
180 perf a year (2014)	30 more people per perf.	$20 average TX price	$108,000

An average ticket price of $20 translates to $108,000 of revenue for the producers. That revenue will be multiplied by increased benefit at the theatre box office and all the ancillary revenue streams. When audience attendance increases, other renters and organizations will chose to share in that success and also bring their events to the building. This will directly increase rental days.

In a theatre of 1200 seats, when the average attendance is 60% of the house (720 people) for community or school productions, the potential for increased revenue is possible even with small increases of audience numbers.

Another way to look at direct benefit is a modest increase in audience in a select number of performances throughout the season. The chart below shows the potential total revenue for the increase among a few productions at the theatre at 75%, 85% and 95% sale of tickets for an event. If out of the total booked performances, only a small number achieve greater audience attendance, the total revenue benefit is still substantial.

Performances	Audience total	Ticket price (average)	Total
20 of 180	900 (75% of the house)	$20 average TX price	$360,000
10 of 180	1020 (85% of the house)	$20 average TX Price	$204,000

5 of 180	1140 (95% of the house)	$20 average TX price	$114,000
35 performances	**above average attendance**	**a reasonable TX price**	**$678,000**

Multiplying this annual increase over 5 years amounts to over $3,000,000 ($3 million) in revenue generated at the theatre. When that level of revenue is made by local performing arts groups and organizations, the economic multiplier for the community is enormous.

The Massey Theatre of the future will be able to welcome returning audience members as well as new people from throughout the community and region because of its high level of presentations and audience comforts.

There has been a slide in audience attendance at the Massey over its history and it is surmised that the reasons for this are:

- Threat of closure and insecurity for long term planning
- Conflict of use because part of the theatre space is used as school hallways,
- Inadequate audience amenities

For the average theatre go-er it is believed that improvement to audience amenities will quickly turn that around. The market for performance experiences is competitive.

A high profile example of the failure of audience amenities is The Centre for the Performing Arts in downtown Vancouver. It was built to house long run musicals and was a bare bones hall that expected each major production to come with all the technical gear and staging it needed. Upon opening it was immediately criticized for its awkward lobby areas, numerous stairs, lack of sufficient and convenient washrooms, as well as high parking costs. The musical theatre productions did not hold up to the audience attendance projections and within a few years it was sold as a rental road house. A second life hosting high profile international acts also did not succeed in the long term. As a commercial venture with no community pride or ownership, the facility could not survive financially. It is now a church assembly hall.

A positive conclusion of the 2013 Needs Assessment report was that the (new) Massey Theatre can compete successfully in the Metro Vancouver market, but it “must be technically advanced.” and that “For audiences, the ambience and ancillary services such as an elegant lobby, bar, prominent street visibility, good signage, easy and plentiful parking, all add a crucial element seen as essential components to draw audience out of their homes.”

This was said of a new building but it applies just as accurately to a refurbished and renovated historic Massey Theatre.

LONG TERM COST BENEFITS

Presenters and producers look for venues that provide comfort and convenience for their audiences therefore enhancements will increase rental use of the stage and house.
There will be the opportunity to assess the rental rate structure and increase rates for commercial users. Keeping the rental cost affordable for non-profit and community users but increasing the number of users is the best way to generate the additional revenues that will accrue with improvements to the theatre.

The next increase in revenue will materialize when the first phase of renovations to public amenities is complete. Over a 2-3 year period usage is expected to increase 8%-15% annually and is estimated to generate an additional $100,000. This revenue will be reflected as increased performance days as well as increased box office and other ancillary revenue centres.

Rehearsal space is always in great demand in any community. The addition of 3 – 5 (potentially more) multi-purpose spaces that will also serve as rehearsal spaces will greatly enhance the revenue picture for the theatre. An affordable rental rate that is consistent over weeks and months provides an estimated gross revenue benefit of ± $45,000 per year. The estimate is based on renting the small gym as a new rehearsal space.

Rentability and Revenue Potential

	Option 1 Completed			Option 2 (construction closures)				FOH completed			Option 2 completed	
Main Stage	**2014 Actual**	**2015 estimate**	**2016 10% incr**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	***10 yr increase***
Rentals	338,692	322,903	355,193	355,193	340,000	340,000	340,000	374,000	392,700	412,335	432,952	*94,260*
Box Office	111,783	132,549	145,804	145,804	135,000	135,000	135,000	148,500	155,925	163,721	171,907	*60,124*
Totals	*450,475*	*455,452*	*500,997*	*500,997*	*475,000*	*475,000*	*475,000*	*522,500*	*548,625*	*576,056*	*604,859*	*154,384*
New Sources of Revenue												
Presentations	*Subscription Series 6 events at 60% attendance at $25 ticket expected profit 30%*											
								33,750	33,750	45,000	56,250	*56,250*
Rehearsal	*100 days at 4 hrs uses @ $50 per hr*			*120 days*				*140 days*	*% increase in rental rates*			
Space	0	0	20,000	20,000	24,000	24,000	24,000	28,000	29,400	30,870	32,414	*32,414*
Revenue Totals with new sources												
	450,475	455,452	520,997	520,997	499,000	499,000	499,000	584,250	611,775	651,926	693,523	
Projected increase from 2014			70,522		48,525			133,775			243,048	

ECONOMIC SPIN-OFF BENEFITS

The construction project itself will have an economic spin-off benefit for employment and service provision over the 5-7 year process.

The critical mass of arts and cultural activity in New Westminster at the Massey and Anvil Centre will generate cultural tourism. Marketing to the broadest circle of arts attendees in the Metro Vancouver will provide an economic impact to local restaurants and business. The Evergreen Line when complete will open public transport into New Westminster from the north east as well as from the south west.

The following table outlines the advanced demolition scope of the Massey Theatre (as per Option 2)

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MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Demo Tag	Task				
	Architectural	Envelope	Structural	Mechanical	Electrical
Basement					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time. It is assumed that demolition will include new footing line along this wall. •Structural to confirm at basement level.	•Where the exterior wall is exposed, demo and dispose of existing cladding, glazing and doors	•		•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Remove door and wall	•No scope	•		•No scope
C	•Remove concrete slab over existing pit. Pit to be enlarged.	•No scope	•		
D	•Remove existing exterior exit stair. Allow for excavation for new stair	•No scope			
E	•Demolish existing women's washroom and women's unit washroom. Remove wall between change rooms and corridor. Demolition of finishes in women's change rooms	•No scope		•Cap off existing hot water piping to large gym and school •Remove redundant hot water piping •Remove existing domestic hot water tank •Repipe domestic hot water piping up to new system in mechanical room on 3rd floor	
F	•Demolition of existing unit washroom to allow for new Garavanta lift. •Demolition to include slab level to facility lift requirements.	•No scope			•Remove wiring and devices from this location
G	•Demolition of existing two stall washroom to allow for reconfiguring to janitor room	•No scope			
H	•Remove wall	•No scope			
I	•Demolition of men's dressing room	•No scope			
J	•Remove walls / demolition of men's dressing room	•No scope			
K	•Remove walls to allow for expanded electrical room	•No scope			
L	•Partial demolition of walls and slab to allow for new elevator	•No scope			•Remove wiring and devices from this location
M	•Open new wall to allow for door to future water entry room.	•No scope			
Main Floor					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time. Demolition on ground level to also include removal of showers washrooms that formed part of gymnasium.	•Demo and dispose of existing cladding, glazing and doors	•		•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Demolition of offices and demising walls	•No scope	•		
C	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	•No scope	•		
D	•Demolition of staff washrooms	•No scope			
E	•Demolition of men's washroom	•No scope			
F	Demolition of women's washroom	•No scope			
G	•Demolition of staff washrooms and change rooms	•No scope			
H	•Demolition of staff washrooms and change rooms	•No scope			
I	•Demolition of offices and demising walls	•No scope			
J	•Demolition of offices and demising walls	•No scope			
K	•Demolition of women's staff washrooms and change rooms	•No scope			
L	•Demolition of storage demising walls	•No scope			
M	•Removal of existing doors	•No scope		•No scope	
N	•Removal of existing on stage cross over	•No scope			
O	•Partial demolition of seating riser to allow for code compliant accessible position.	•No scope			
P	•Removal of doors to allow for new cross over	•No scope			

MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Demo Tag	Task				
	Architectural	Envelope	Structural	Mechanical	Electrical
Q	•Removal of load in doors to allow for new cross over and sound and light lock	•No scope			
R	•Demo of slab for Garavanta lift	•No scope			•Remove wiring and devices from this location
S	•Partial removal of wall. For exit corridor	•No scope			
T	•Demolition of band office	•No scope			
U	•Demolition of band storage	•No scope			
V	•Demolition of stairs and mezzanine storage	•No scope			
W	•Removal of doors to allow for new sound and light locks	•No scope			
X	•Removal of stairs for new ramp	•No scope			
Y	•Partial wall removal for new corridor	•No scope			
Z	•Demo wall and slab for new elevator	•No scope			•Remove wiring and devices from this location
A1	•Demolition of existing box office and corridor	•No scope			
B1	•Demolition of existing bar	•No scope			
C1	•Demolition of existing kitchen	•No scope			
D1	•Partial demolition of wall to allow for expanded lobby	•No scope			
E1	•Demolition of control booth to allow for expanded booth	•No scope			
F1	•Removal of doors for new vestibule	•No scope	•		
Second Floor					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time.	•Demo and dispose of existing cladding, glazing and doors	•		•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Demo corridor wall	•No scope	•		
C	•Remove stair and non code compliant mezzanine over	•No scope	•		
D	•Demolition of class room	•No scope	•		
E	•Demolition of washroom	•No scope			
F	•Remove stair and non code compliant mezzanine over	•No scope			
G	•Demo gym pocket wall	•No scope		•No scope	
H	•Demo corridor wall	•No scope			
I	•Demolition of mezzanine over band storage	•No scope			
J	•Demolition of stair to mezz. Over band storage	•No scope			
K	•Demolition of existing entry canopy for new canopy	•No scope			
L	•Demo wall to allow for elevator	•No scope			•Remove wiring and devices from this location
M	•Demo of wall to open stair to new lobby	•No scope			
N	•Demolition of existing admin space	•No scope			
O	•Demolition of existing storage	•No scope			
P	•Demolition of existing band room	•No scope			
Q	•Removal of wall and doors	•No scope			
R	•Demolition of kiln room	•No scope			
S	•Demolition of storage	•No scope			
T	•Demolition of storage	•No scope			
Third Floor					
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time.	•Demo and dispose of existing cladding, glazing and doors	•		•Remove all electrical services in this location and remove wiring to the nearest junction box
B	•Demo stairs and mezzanine space	•No scope	•	•No scope	
C	•Demo stairs and mezzanine space	•No scope	•		
D	•Demo mezzanine	•No scope	•		
E	•Open roof to allow for new elevator	•No scope			•Remove wiring and devices from this location
F	•Remove canopy and infill wall to allow for new glass line	•No scope			
G	•Demo finishes in board room	•No scope			

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MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 2

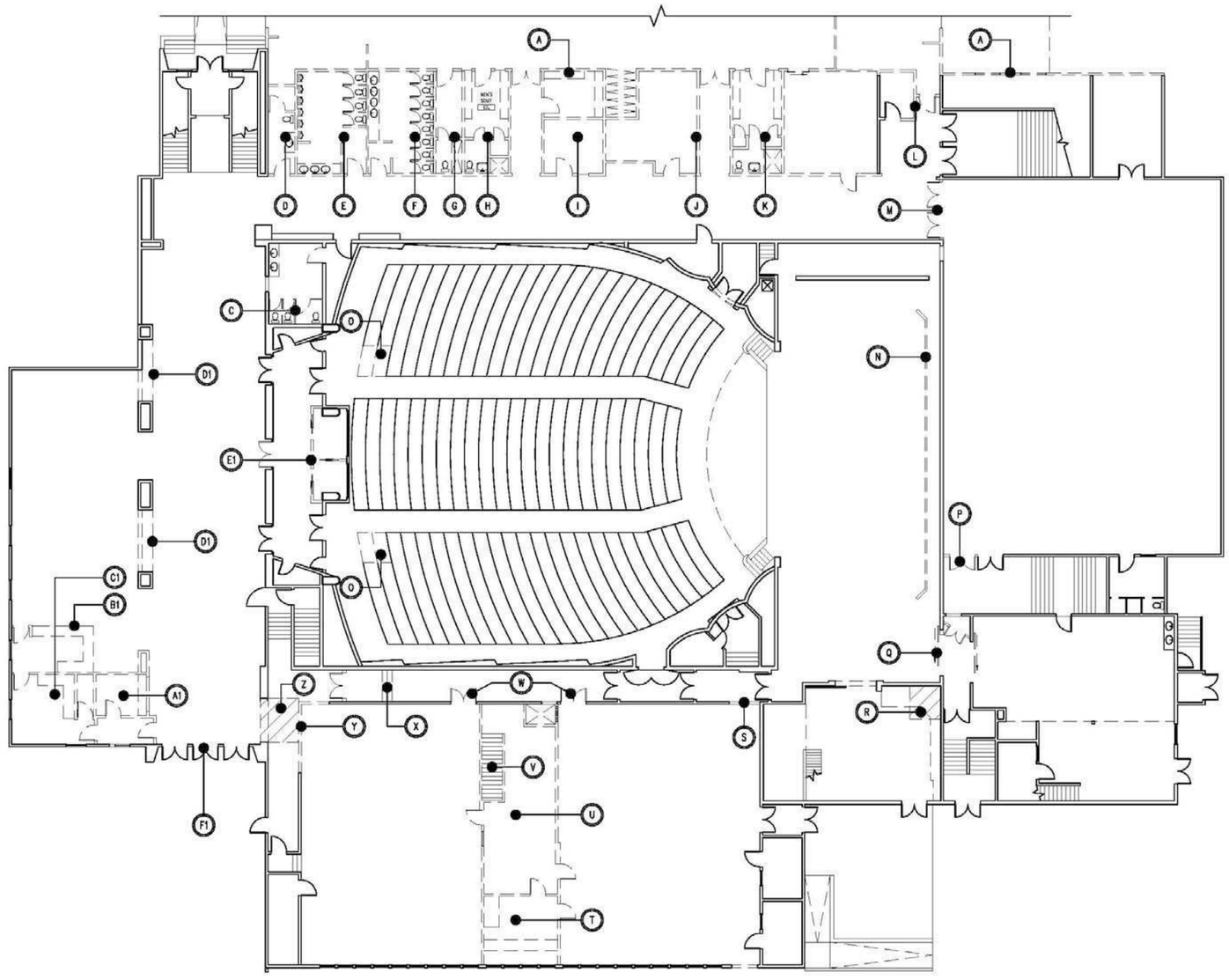
Project No: 15-20
Date Revised: June 22, 2015

Demo Tag	Task				
	Architectural	Envelope	Structural	Mechanical	Electrical
Roof					
A	•Demolition of wall parapet line and removal of existing roof assembly	•Remove and dispose of existing BUR roof assemblies	•	•Remove existing HVAC equipment on roof	•No scope
B	•Partial parapet removal for elevator	•No scope	•		
C	•Partial roof curb demo for new elevator over run.	•No scope	•		
D	•Remove smoke exhaust penthouse.	•No scope	•		
E	•Removal of all flashings etc. for new roof	•No scope	•		
Exterior Cladding					
	•Refer to envelope report. •In option 2 assume that all exterior cladding is to be removed as required for a full building envelope upgrade. Assume that all windows and doors are to be removed for replacement.				

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The following drawings outline the advanced demolition plan of the Massey Theatre (as per Option 2)

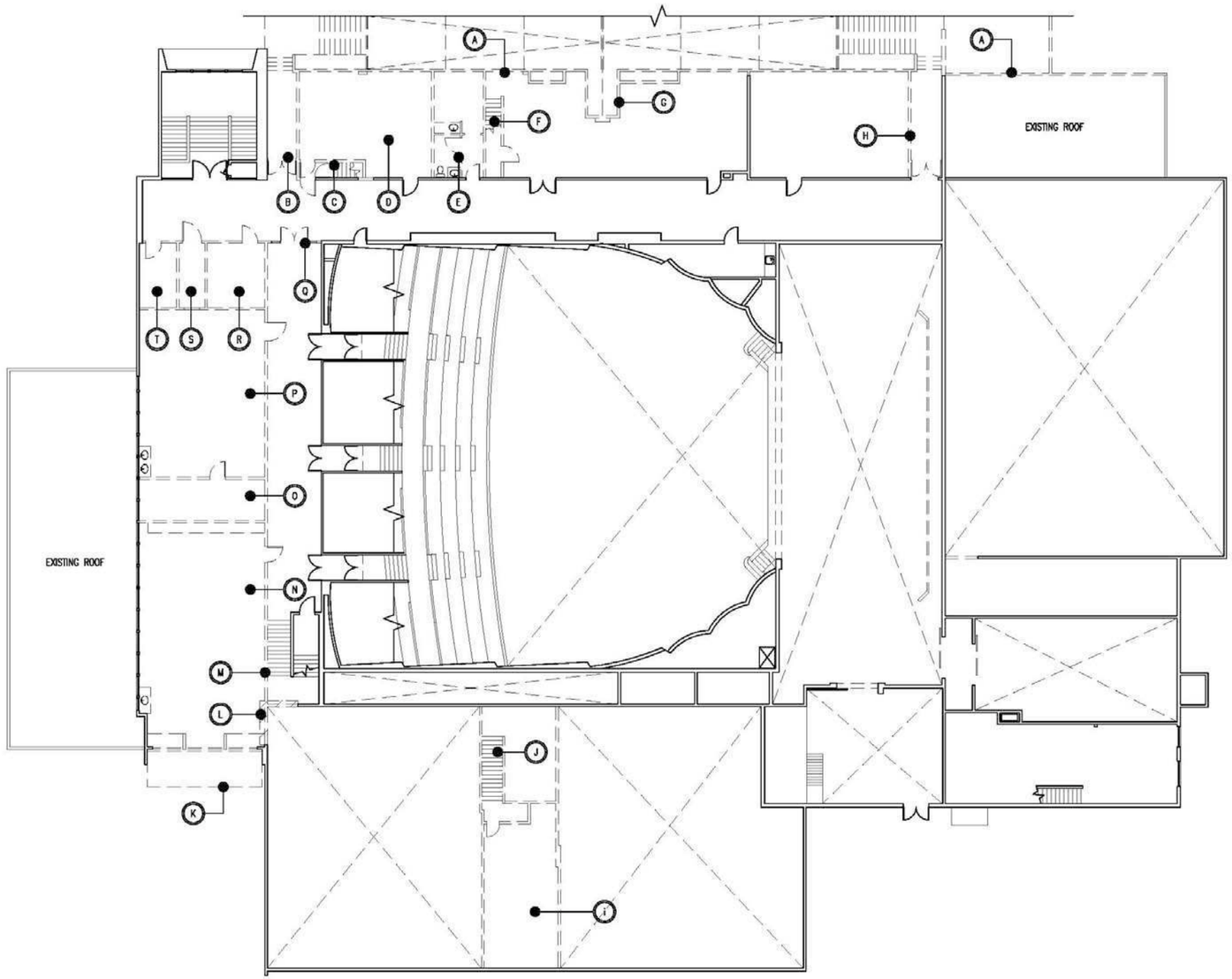


MAIN FLOOR DEMO PLAN - OPTION 2
MASSEY THEATRE

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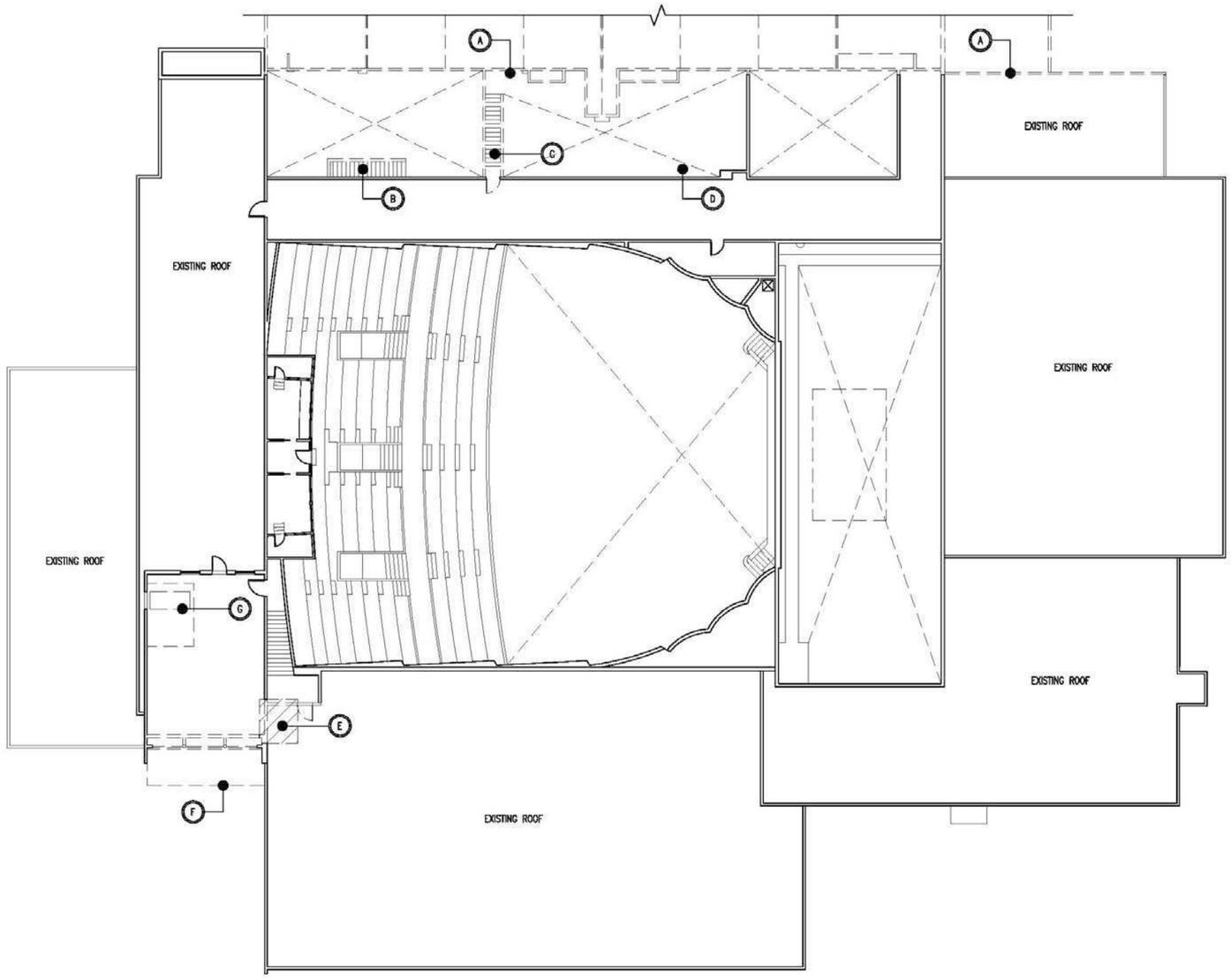


SECOND FLOOR DEMO PLAN - OPTION 2
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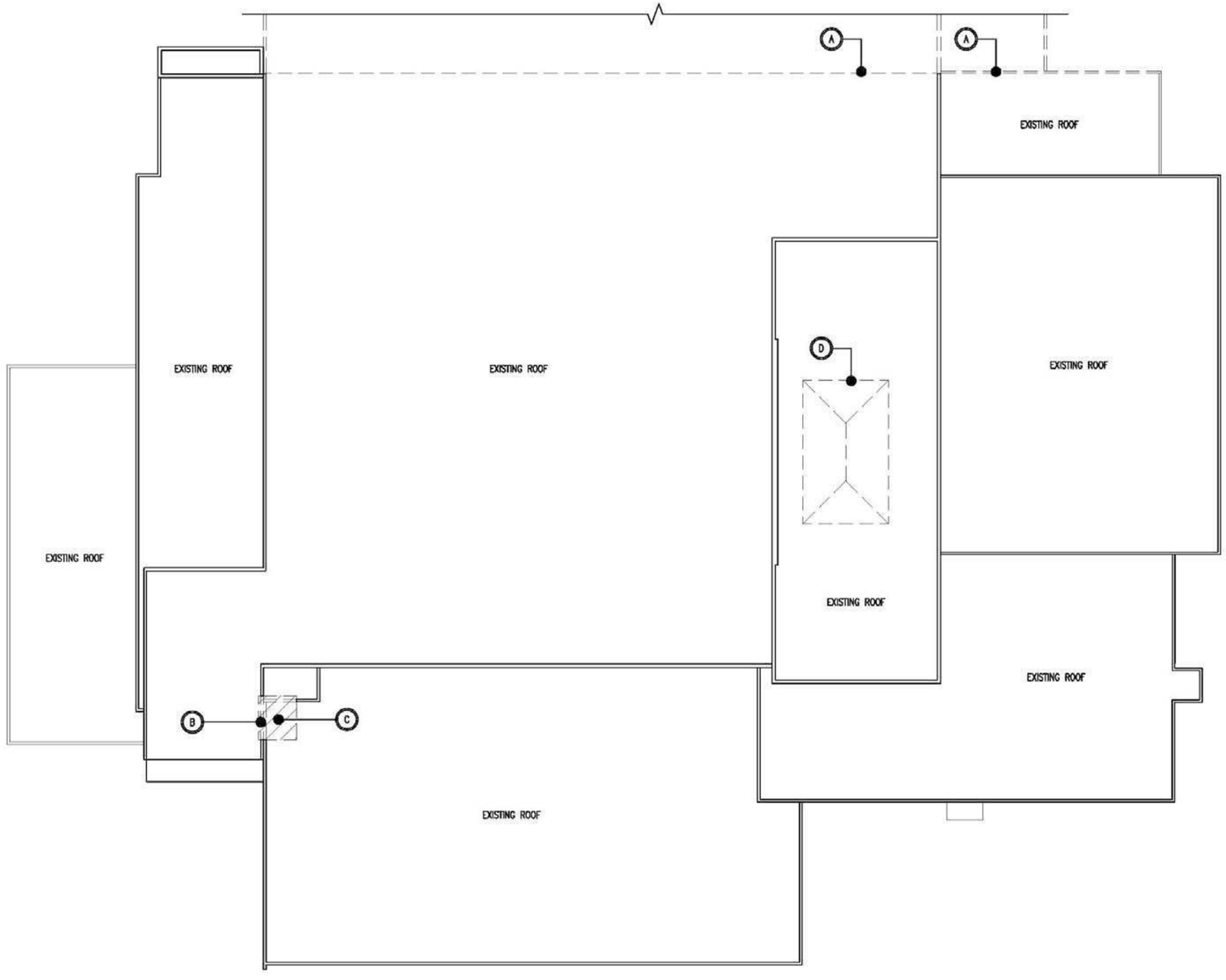
THIRD FLOOR DEMO PLAN - OPTION 2
MASSEY THEATRE

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ROOF DEMO PLAN - OPTION 2
MASSEY THEATRE

The following table outlines the advanced renovation scope of the Massey Theatre (as per Option 2)

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
Basement						
1	Storage (Crawlspace)	•No scope		•No scope	PLEASE NOTE: FOR MECHANICAL OPTION 2 UPGRADE, MECHANICAL WILL NOT LIST THE UPGRADE ITEMS ROOM BY ROOM, PLEASE REFER TO MECHANICAL REPORT FOR FURTHER INFORMATION. THE FOLLOWING IS A GENERAL OVERVIEW OF THE APPROACH FOR MECHANICAL UPGRADE FOR OPTION 2 APPLYING TO ALL AREAS OF THE BUILDING. In addition and/or instead of some of the items from the previous Minimum Mechanical Upgrades Option: •Replace the entire domestic water supply piping with new piping. The piping would be sized to present code requirements and be fully insulated. •The entire mechanical system will be upgraded to a modern, efficient HVAC system using heat recovery ventilation, an air cooled chiller providing chilled water for cooling (or similar system), low temperature hot water heating plus some gas-fired heating equipment, etc. •Install a full DDC system by ESC Automation to monitor and control all room sensors and all equipment and terminal heating and cooling equipment to the City of New Westminster standards.	•New lighting
2	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls •New concrete shear walls and foundations		•New lighting
3	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls •New concrete shear walls and foundations		•New lighting
4	Storage	•No scope		•No scope		•New lighting
5	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls •New concrete shear walls and foundations		•New lighting
6	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls •New concrete shear walls and foundations		•New lighting
7	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls •New concrete shear walls and foundations		•New lighting
8	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls •New concrete shear walls and foundations		•New lighting
9	Corridor	•New code compliant handrails on existing ramp (Typical of all stairs and ramps)		•No scope		•New lighting
10	Storage	•No scope		•No scope		•New lighting
11	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
12	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
13	Corridor	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.		•New wood shear walls		•New lighting
14	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
15	S.L.L.	•No scope		•No scope		•No additional scope
16	Storage	•No scope		•No scope		•New lighting
17	Storage	•No scope		•New wood shear walls		•New lighting
18	Wardrobe/Laundry	•Portion of existing school drama room repurposed as new wardrobe room. Allow for new floor finish and wall paint.		•No scope		•New lighting
19	Storage	•No scope		•New wood shear walls		•New lighting
20	Storage	•No scope		•No scope		•New lighting
21	Storage	•No scope		•No scope		•New lighting
22	Green Room	•Portion of existing school drama room repurposed as new green room. Allow for new floor finish and wall paint.		•New wood shear walls		•New lighting
23	Green Room Kitchen	•New millwork, plumbing floor finish and wall paint. •New kitchen appliances		•No scope		•New lighting
24	Corridor	New floor finish and wall paint		•No scope		•New lighting
25	Men's WC	•New plumbing fixtures •New wall finish, allow for paint •New floor finish		•No scope		•New lighting
26	Women's WC	•New plumbing fixtures •New wall finish, allow for paint •New floor finish		•No scope		•New lighting
27	Theatre Shop	No scope		•New reinforced concrete pilasters and horizontal FRP strips		•New lighting
28	Dimmers	No scope		•No scope		•New lighting
29	Drape Storage	No Scope		•No scope		•New lighting

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
30	Orchestra Pit	•Existing orchestra pit reopened and expanded •New wall finish •New floor finish	•Where demoed, install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•No scope		•New lighting
31	Men's Dressing Room	•Portion of existing band room repurposed as men's dressing room. Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.		•New reinforced concrete pilasters and horizontal FRP strips		•New lighting
32	Corridor	New corridor. Allow for new corridor wall and exit door. New floor finishes, painted walls, tbar ceiling and lighting.		•No scope		•New lighting
33	Women's WC	•Existing WC expanded to North •New plumbing fixtures •New shower stalls •New ceiling new lighting •New wall finish, allow for paint •New floor finish		•No scope		•New lighting
34	Women's Change Room	•Existing change room expanded to North Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.		•No scope		•New lighting
35	Women's Dressing Room	New paint and millwork		•No scope		•New lighting
36	Women's Dressing Room	New paint and millwork		•No scope		•New lighting
37	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
38	Unit WC & Shower	New code compliant unit washroom, allow for all new finishes all surfaces and all required code compliant fixturing.		•No scope		•New lighting
39	Men's WC	•Existing WC expanded to West •New plumbing fixtures •New shower stalls •New ceiling new lighting •New wall finish, allow for paint •New floor finish		•New wood shear walls		•New lighting
40	Janitor	•Existing WC repurposed as janitor's closet. Allow for janitors basin, storage and all new finishes.		•No scope		•New lighting
41	Elevator	•New Garavanta lift, to service (2) levels		•New pad footing and concrete shaft wall		•No additional scope
42	New Electrical Room	•Existing storage room repurposed as new electrical room		•No scope		•No additional scope
43	Storage (Crawlspace)	•No scope		•New wood shear walls •Add vertical reinforcement to existing masonry		•New lighting
44	Corridor	No Scope		•No scope		•New lighting
45	Men's Change Room	•Existing change room expanded to North. Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.		•New reinforced concrete pilasters and horizontal FRP strips •New wood shear walls		•New lighting
46	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
47	Storage	No scope		•No scope		•New lighting
48	Storage (Crawlspace)	•No scope		•Add vertical reinforcement to existing masonry •New reinforced concrete pilasters and horizontal FRP strips		•New lighting
49	Storage (Crawlspace)	•No scope		•New wood shear walls •Add vertical reinforcement to existing masonry		•New lighting
50	Stair	•Existing stair removed, new stair relocated to accommodate corridor changes •New stairs and handrails		•No scope		•New lighting
51	Storage	no scope		•No scope		•New lighting
52	Loading	no scope		•No scope		•No additional scope

MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
53	New Wall	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.		•New concrete strip footing and foundation wall		•New lighting
54	New Water Entry Room	refer to mechanical				•New lighting
55	Elevator	•New elevator pit		•New pad footing and concrete shaft wall		•No additional scope
Main Floor						
1	Vestibule	•New entrance vestibule added •(3) new double doors •New floor finish •New wall finish •New ceiling finish, new lighting		•No scope		•New lighting
2	Elevator	•New elevator, to service (3) levels •Basic elevator finish package		•Concrete shaft wall. Modify floor framing.		•No additional scope
3	Box Office	•New floor finish, New wall finish, New ceiling finish, allow for new exterior pass through window and interior pass through window		•No scope		•New lighting
4	F.O.H. Manager	•New floor finish •New wall finish •New t bar ceiling / lighting		•No scope		•New lighting
5	Extended Lobby	•Open walls to Lobby, allow for ~12' openings •New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards •New lighting •New ceiling finish		•New wood shear walls •Remove existing stud walls and add new Paralam beams		•New lighting
6	Bar Storage	•New floor finish, painted walls, new lighting		•No scope		•New lighting
7	Bar	•New millwork, plumbing and bar equipment.		•No scope		•New lighting
8	Corridor	new floor finish and paint		•No scope		•New lighting
9	Stair	•New porcelain tile on existing stair, new handrails, painted walls new lighting		•No scope		•New lighting
10	Storage	No scope		•No scope		•New lighting
11	S.L.L.	new wall treatment, new carpet		•No scope		•No additional scope
12	Lobby	•New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards •New lighting •New ceiling finish		•New concrete shear walls •Steel drag struts •New wood shear walls		•New lighting
13	Control Booth	•Existing control booth expanded, painted walls new floor treatment.		•No scope		•New lighting •Front of house audio mixing console and cable infrastructure
14	S.L.L.	new wall treatment, new carpet		•No scope		•No additional scope
15	Storage	no scope		•No scope		•New lighting
16	First Aid	•Portion of existing women's WC repurposed as first aid room, all new finishes		•No scope		•New lighting
17	Unit WC	•Portion of existing women's WC repurposed as unit WC, all new finishes and fixturing as req. per unit washroom.		•No scope		•New lighting
18	Entry	new porcelain tile flooring new entry doors, new painted walls		•No scope		•New lighting
19	Stair	•New handrails, porcelain tile on existing treads, stair taken to feature stair level of finish.		•Steel drag struts		•New lighting
20	Storage	No scope		•No scope		•New lighting
21	Storage	No scope		•No scope		•New lighting
22	Public Men's WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint •New ceiling finish / new lighting		•No scope		•New lighting
23	Corridor	No Scope		•No scope		•New lighting

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
24	Public Women's WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint •New ceiling finish/ new lighting		•No scope		•New lighting
25	Servery	New millwork counter with sink., plug in for catering racks, new floor and wall treatment		•No scope		•New lighting
26	Janitor	existing, no scope		•No scope		•New lighting
27	Storage	new floor finish painted walls lighting		•Steel drag struts		•New lighting
28	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
29	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
30	Corridor	•New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards •New lighting •New ceiling finish		•Steel drag struts		•New lighting
31	Storage	new floor finish painted walls lighting		•No scope		•New lighting
32	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•New wood shear wall		•New lighting
33	Storage	No scope except for new wall		•New wood shear wall		•New lighting
34	S.L.L.	New SLL all new finishes, doors and walls		•No scope		•No additional scope
35	Crossover	•New crossover behind existing stage area, all new finishes, doors and walls		•No scope		•No additional scope
36	Large Rehearsal Room	•Existing small gymnasium repurposed as large rehearsal room, new sprung floor, painted walls, ceilings, lighting new theatre hanging grid.		•New wood shear wall		•New lighting
37	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
38	Office	No Scope		•No scope		•New lighting
39	Stage	patch and repair where cross over was removed. No other scope		•New reinforced concrete pilasters and horizontal FRP strips		•New general lighting only
40	Auditorium	•New built-out platform for accessibility •New wall finish, allow for paint •New floor finish, allow for carpet		•No scope		•New lighting
41	Orchestra Pit	•Existing orchestra pit reopened and expanded •New wall finish •New floor finish		•No scope		•New lighting •Devices
42				•No scope		•No additional scope
43	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
44	Storage	No scope		•No scope		•New lighting
45	S.L.L.	New sound and light lock, allow for new over sized load in doors, new man man door all new finishes and walls.		•Steel drag struts		•No additional scope
46	Shop	No scope		•New wood shear wall •Steel drag strut		•New lighting
47	Office	No Scope		•No scope		•New lighting
48	Stair	•New handrails		•No scope		•New lighting
49	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
50	Storage	No Scope		•New wood shear wall •Steel drag strut		•New lighting
51	Elevator	•New Garavanta Lift, to service (2) levels		•Concrete shaft wall. Modify floor framing.		•No additional scope
52	Stair	•New handrails		•No scope		•New lighting
53	S.L.L.	No Scope		•No scope		•No additional scope

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
54	S.L.L.	New sound and light lock, allow for new walls new finishes.		•No scope		•No additional scope
55	Corridor	New floor and wall finishes		•No scope		•New lighting
56	New Corridor	•New walls, new floor wall and ceiling finishes. New lighting.		•No scope		•New lighting
57	Soundproof Room	No Scope		•No scope		•New lighting
58	New Data Room	•Existing soundproof room repurposed as new data room, refer to electrical		•No scope		•New lighting
59	S.L.L.	New flooring and wall finishes		•No scope		•No additional scope
60	Corridor	New flooring and wall finishes		•Add vertical reinforcement to masonry •Steel drag struts		•New lighting
61	Small Rehearsal Room	•Portion of existing band rooms and storage repurposed as small rehearsal room. Allow for sprung floor, new painted wall treatment , house lighting.		•New wood shear wall		•New lighting
62	New Ramp	•New ramp to replace old stairs for accessibility •New handrails		•No scope		•No additional scope
63	New Corridor	•New Wall, new floor, wall and ceiling finishes , new lighting		•No scope		•New lighting
64	Stair	•New stair to tech ledge.		•No scope		•New lighting
65	Storage	•Portion of existing band room repurposed as storage, new wall, new flooring painted walls and lighting.		•New wood shear wall		•New lighting
66	Corridor	•New Wall, floor and ceiling finishes		•No scope		•New lighting
67	Storage	No Scope		•New wood shear wall		•New lighting
68	Storage	No Scope		•No scope		•New lighting
69	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report		•New stud wall with plywood sheathing		•No additional scope
70	S.L.L.	New sound and light lock, allow for new walls new finishes.		•No scope		•New lighting
71	Small Rehearsal Room	•Portion of existing band rooms and storage repurposed as small rehearsal room. Allow for sprung floor, new painted wall treatment , house lighting.		•No scope		•New lighting
Second Floor						
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package		•Concrete shaft wall. Modify floor framing.		•No additional scope
2	Upper Lobby	New Upper Lobby. Allow for porcelain tile flooring , painted walls, GWB ceiling all new lighting. Allow for the reinstatement of the window over the front entry.		•New wood shear walls •New concrete shear walls •Steel drag struts		•New lighting
3	Upper Lobby Bar	•New millwork and bar equipment		•No scope		•New lighting
4	Stair	•New handrails, porcelain tile on existing treads, stair taken to feature stair level of finish.		•No scope		•New lighting
5	S.L.L.	New finishes		•No scope		•No additional scope
6	S.L.L.	New finishes		•No scope		•No additional scope
7	S.L.L.	New finishes		•No scope		•No additional scope
8	Storage	No Scope		•No scope		•New lighting
9	Display	No Scope		•No scope		•No additional scope
10	Stair	•New handrails, porcelain tile on existing treads, stair taken to feature stair level of finish.		•No scope		•New lighting
11	Women's Admin WC	•Existing classroom repurposed as women's upper lobby WC, new floor tile, new wall tile , fixtures, partitions, millwork counters		•Steel drag struts		•New lighting
12	Men's Admin WC	•Existing classroom repurposed as women's upper lobby WC, new floor tile, new wall tile , fixtures, partitions, millwork counters	•Install new exterior insulated wall/cladding	•No scope		•New lighting

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
13	Admin	•Existing WC and drama room repurposed as admin room, new carpet tile flooring, painted walls, new windows length of north wall (new wall)	assembly, new glazing assemblies and new door assemblies	•No scope		•New lighting
14	Janitor	No Scope		•No scope		•New lighting
15	Mechanical Room	•Existing mechanical room expanded. Refer to mechanical		•Steel drag struts		•New lighting
16	Balcony	•New guardrails at end of aisles. •New wall finish, allow for paint •New floor finish, allow for carpet		•No scope		•No additional scope
17	Shop Mezzanine	No Scope		•No scope		•New lighting
18	Storage Mezzanine	No Scope		•No scope		•New lighting
19	Stair	•New stairs and handrails from tech ledge		•No scope		•New lighting
20	Mezzanine	•New tech ledge mezzanine in small rehearsal room over new storage		•No scope		•New lighting
21	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report		•No scope		•No additional scope
22	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.		•No scope		•No additional scope
Third Floor						
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package	•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•Concrete shaft wall. Modify floor framing.		•No additional scope
2	VIP Lounge	•Existing board room repurposed as new VIP lounge •New wall finish, allow for paint •New carpet tile floor finish		•Steel drag strut •New wood shear walls		•New lighting
3	Stair	•New handrails, porcelain tile treads, existing		•No scope		•New lighting
4	VIP Bar	•New bar millwork. No bar equipment.		•No scope		•New lighting
5	Storage	No Scope		•No scope		•New lighting
6	Follow Spot	•New follow spot lights		•New concrete shear wall		•No additional scope
7	Follow Spot Vestibule	No Scope		•No scope		•No additional scope
8	Follow Spot	•New follow spot lights		•New concrete shear wall		•No additional scope
9	Storage	No Scope		•No scope		•New lighting
10	Attic	No Scope		•No scope		•New lighting
11	Balcony	See second floor balcony notes		•Sheath underside of balcony with plywood		•No additional scope
12	New Wall	See note 21 Level 2		•No scope		•No additional scope
13	New Roof	See Note 22 Level 2		•No scope		•No additional scope
Roof						
1	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.	•Install new 2-ply SBS roof assembly with a tapered insulation package	•All existing roofs to be sheathed with new plywood •A few roof areas to be strengthened for new mechanical equipment, see structural plans	•Replace/upgrade existing smoke evacuation system with new openers and new low leakage motorized dampers. Connect into fire alarm and monitor with new DDC System. Size of openings to exceed 1/8 of stage area. The stage area is approximately 2,700 sqft, therefore the free area of smoke openings must exceed 350 sqft. The existing structure appears to achieve this free area requirement, so the dampers and openers must be sized to also exceed this area.	•No additional scope
2	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.				
3	New Smoke Exhaust	•New smoke exhaust over stage, remove existing exhaust penthouse. Replace with two new horizontal exhaust louvers on built-up curbs. •Each vent should have the clear area of 14.875 sq. m. •Refer also to mechanical				
4	New Roof	•New roof over new elevator shaft				

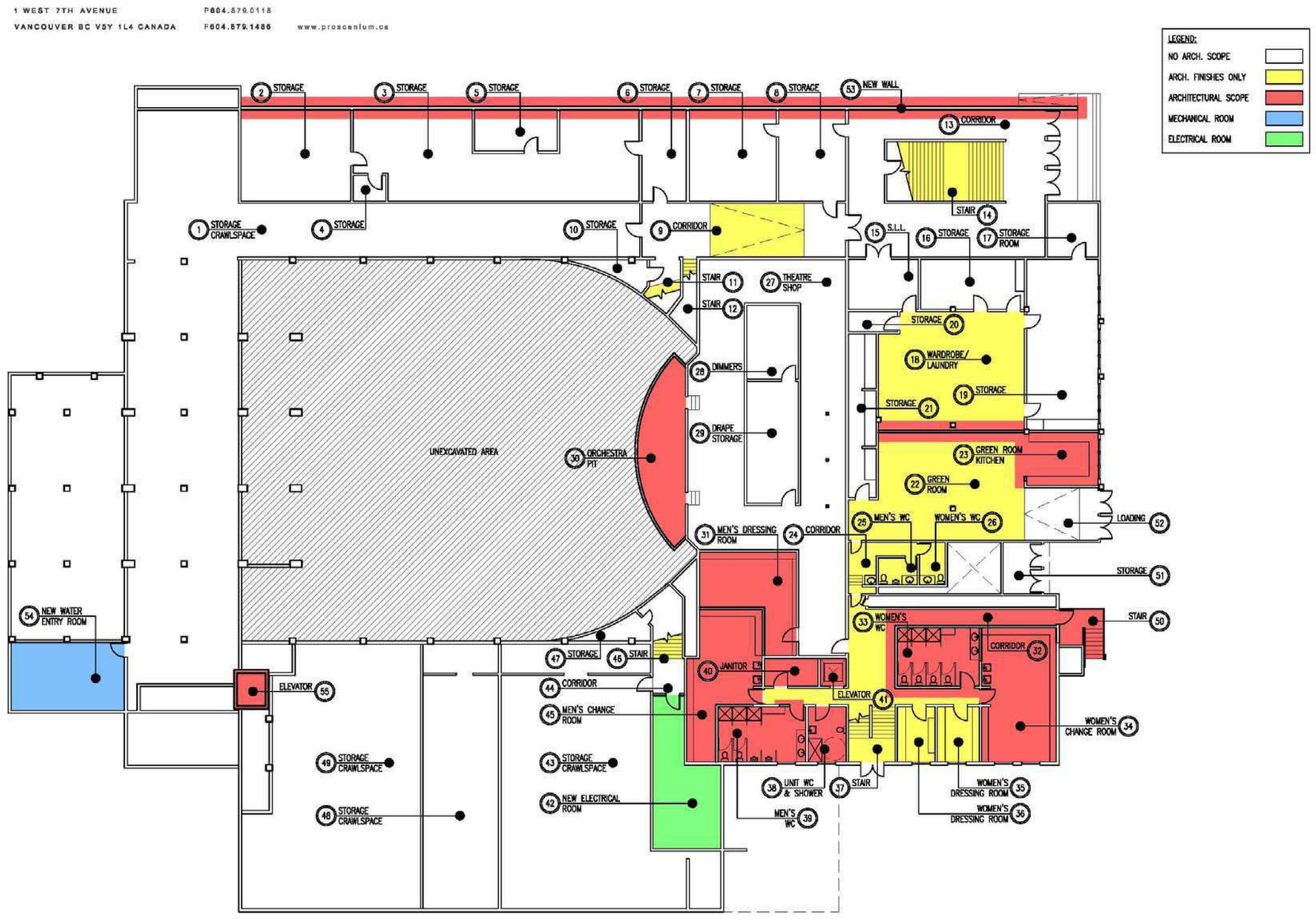
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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

Project No: 15-20
Date Revised: June 22, 2015

Rm. No.	Room Name	Task				
		Architectural	Envelope	Structural	Mechanical	Electrical (In addition to option 1)
5	New Roof	•New roof/ canopy extension over new entry vestibule				
Exterior Cladding						
	Walls/ Windows/ Doors	Refer to envelope report. Assume a full envelope upgrade. For new north wall refer to note 21 level 2 above. All walls to have new rain screen cladding system. Cladding to be mid price range. Envelope upgrade as per envelope report. All windows to be replaced. All doors to be replaced. New glass window system to be re-instated over entry and lobby stair exterior wall.				

The following drawings outline the advanced renovation plans (per Option 2)

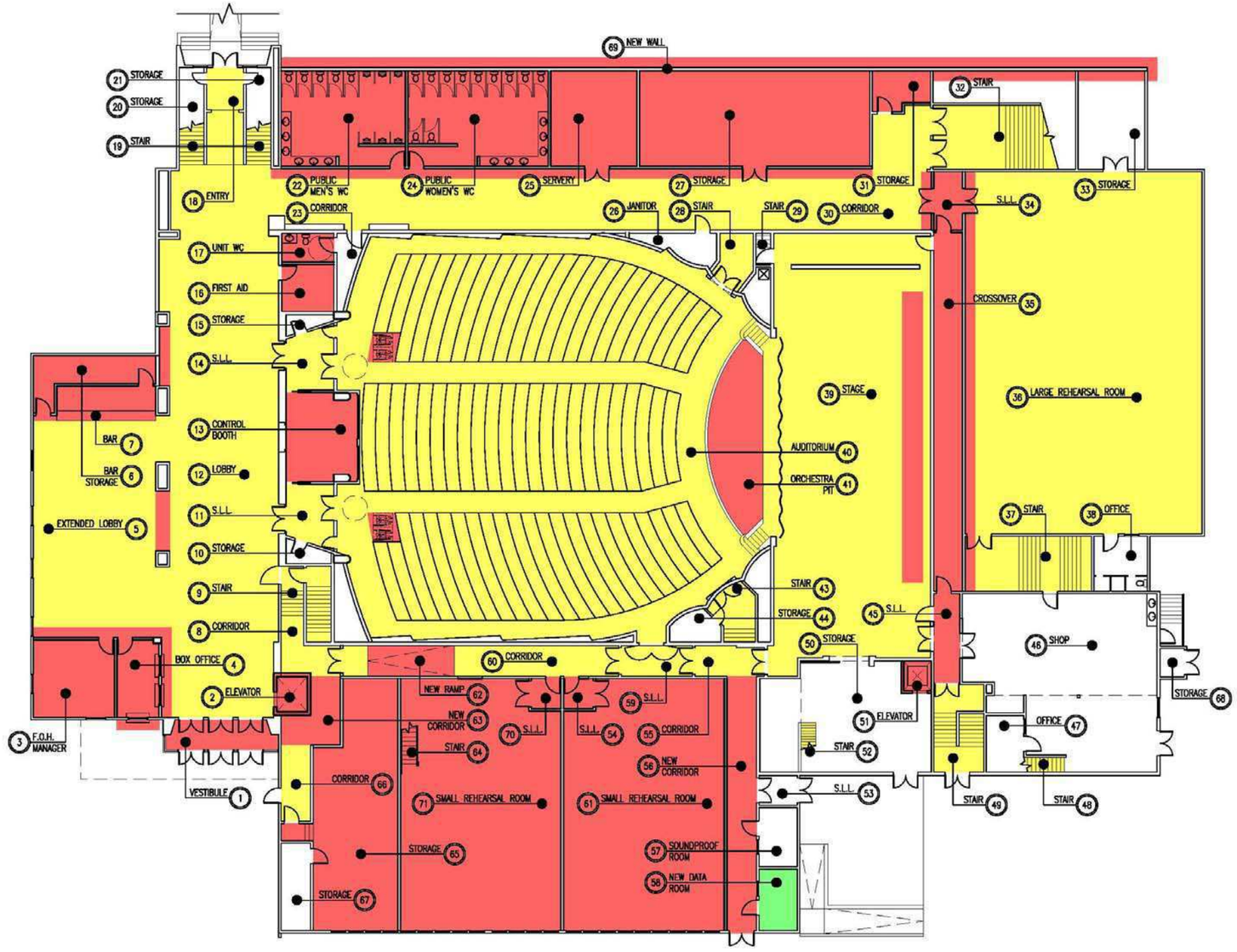


BASEMENT PLAN - OPTION 2
MASSEY THEATRE

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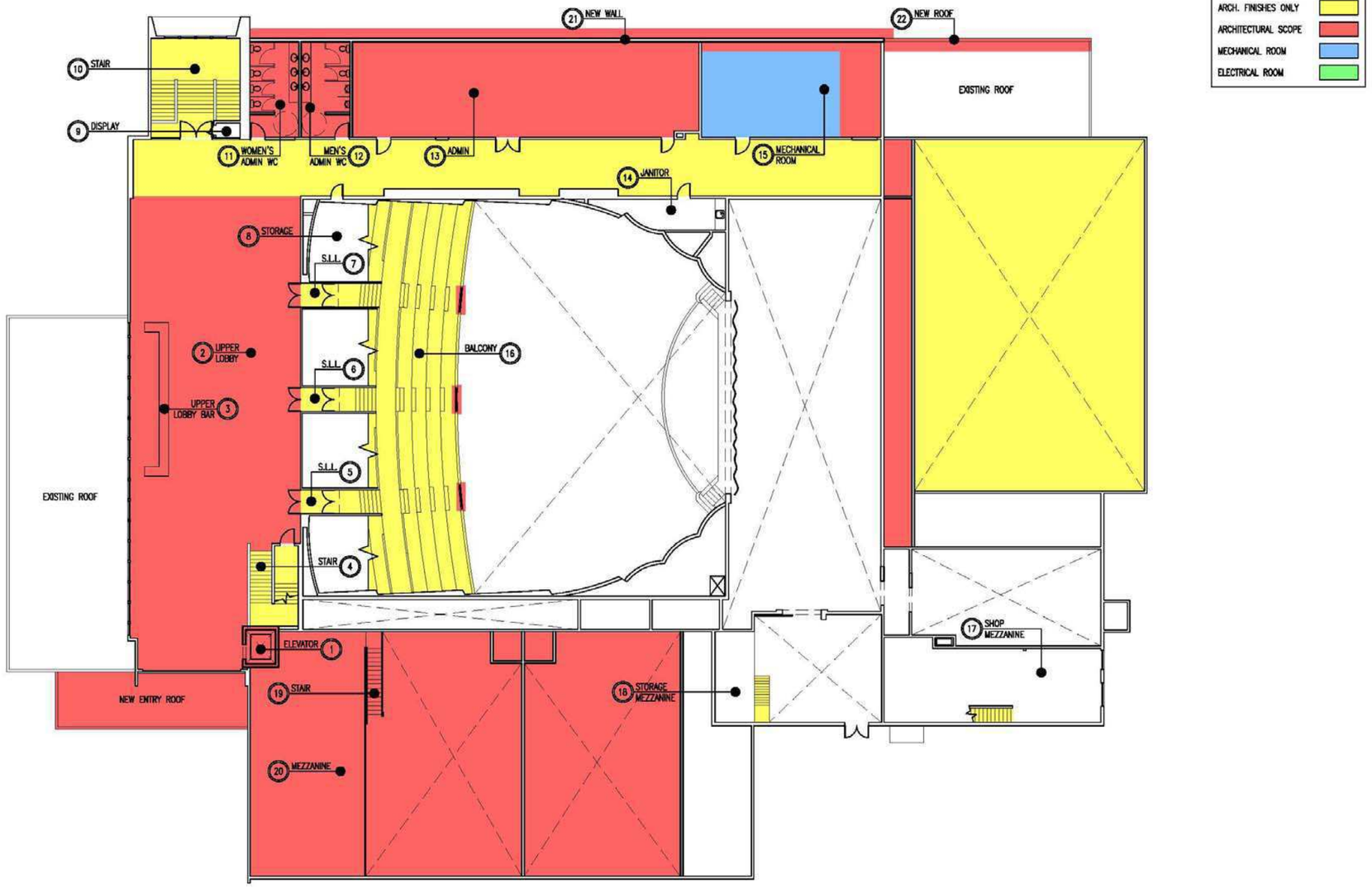
MAIN FLOOR PLAN - OPTION 2
MASSEY THEATRE

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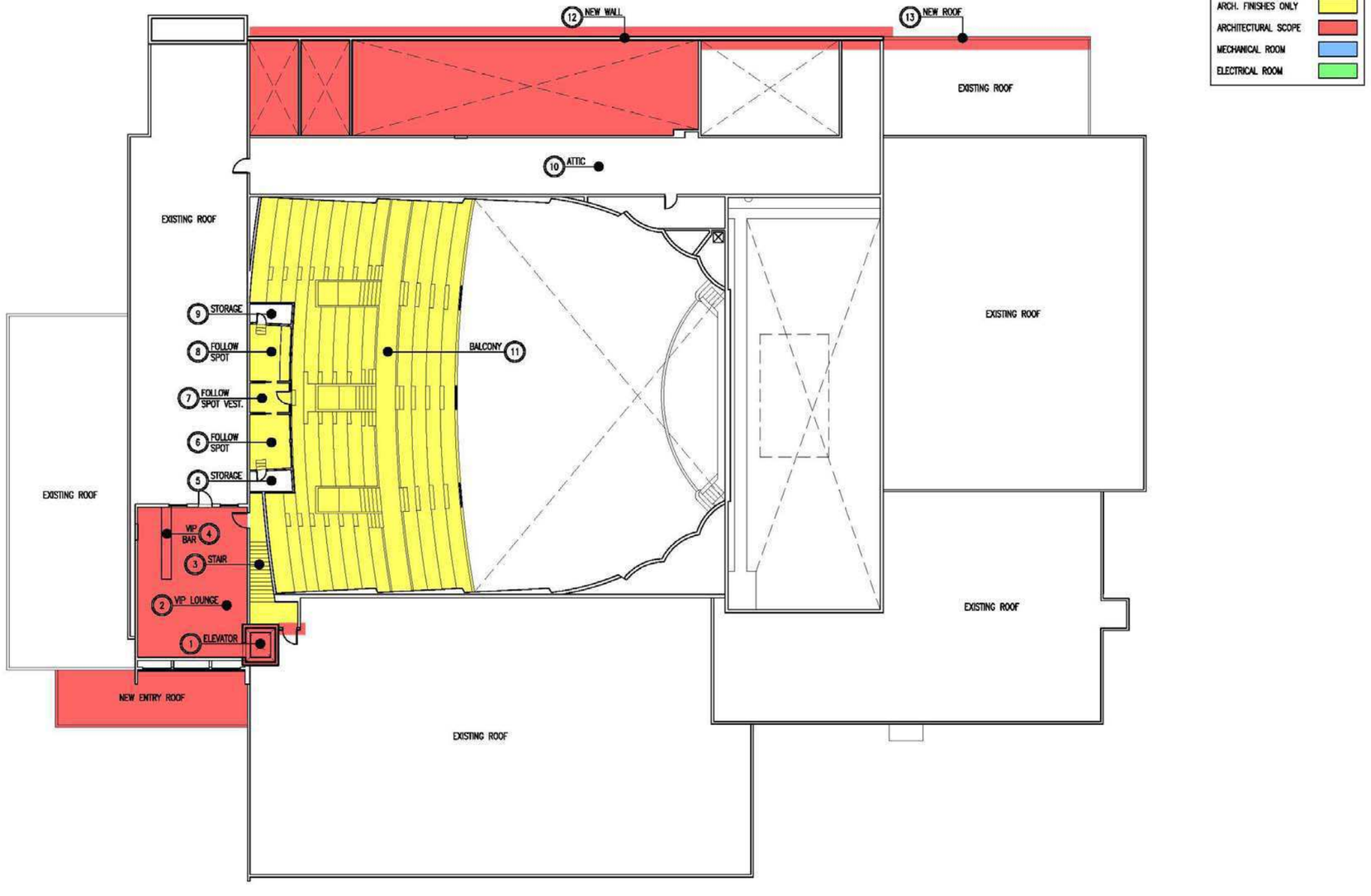
SECOND FLOOR PLAN - OPTION 2
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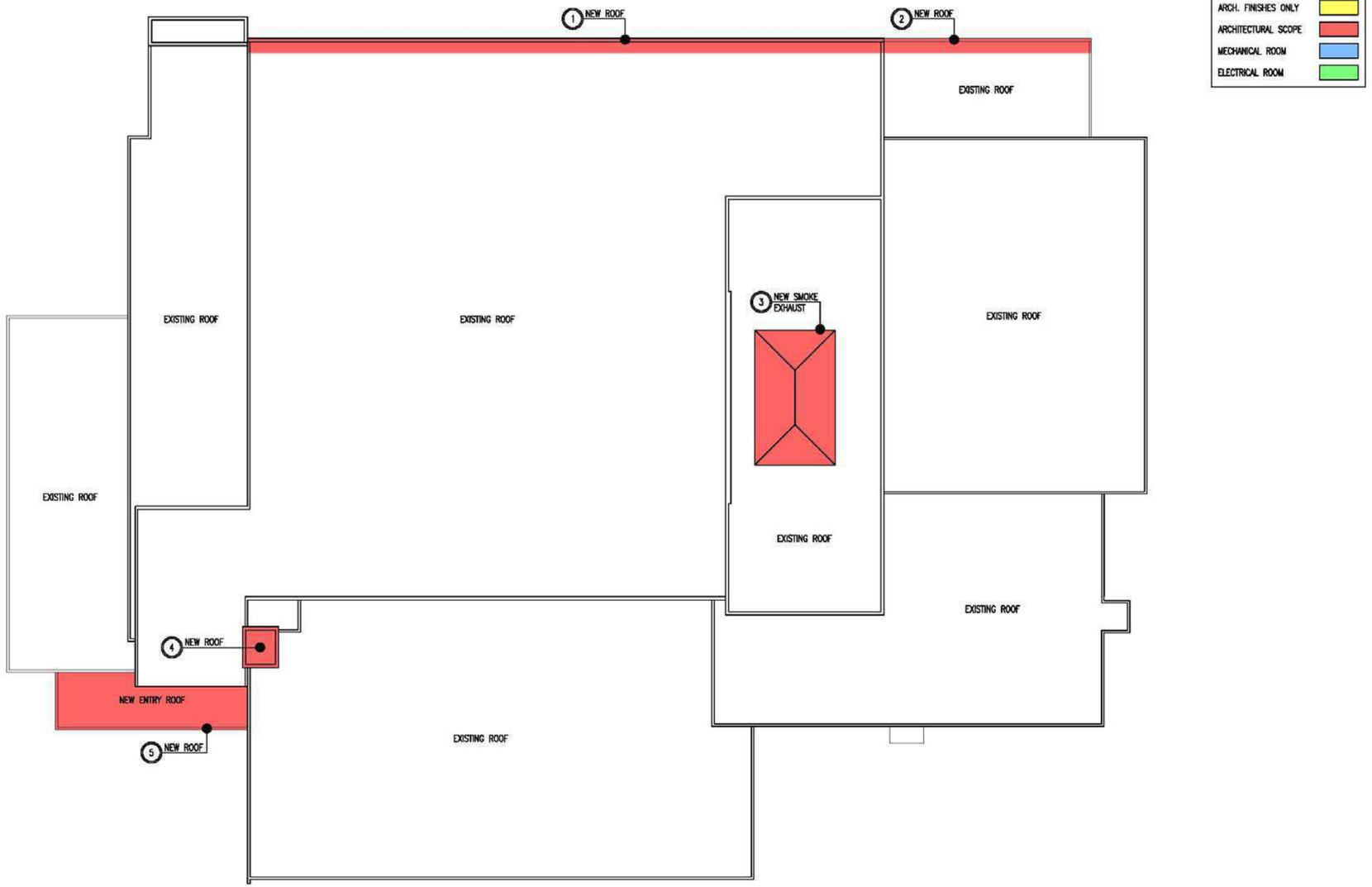
THIRD FLOOR PLAN - OPTION 2
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ROOF PLAN - OPTION 2
MASSEY THEATRE

OPTION 3: CONSTRUCTION OF A NEW (1200 SEAT) MASSEY THEATRE

A new purpose built facility can be a very positive and exciting prospect. The cost is significant and planning can be a complex and long process. If this is the final decision, consideration should be given to maintain the current facility until the project is completed because the arts organizations that historically use the Massey Theatre would not survive an extended period without a home and the cultural richness of New Westminster would be diminished.

For costing purposes this study includes for a generic new build theatre (refer to Capital Cost chapter). For this study, we have not developed a program for a stand-alone new build theatre. This program can be easily demonstrated by reviewing past studies for a purpose built 1000 seat Massey Theatre.

UPGRADE PACKAGES MOVING FROM OPTION 1 TO OPTION 2

Due to the added cost necessary to complete Option 2, we recognize that it may not be economically viable to go beyond the Option 1 mininum upgrade scope. Should the funds become availble to allow for some advanced upgrades beyond Option 1 (yet not to the full extent of Option 2 upgrade goals), a possible scenerio would be to supplement Option 1 with parcelled out upgrade packages. These can be individually priced (see Capital Cost chapter). For this study, we have identified eight individual renovation packages.

MASSEY THEATRE RENOVATION PACKAGES

	Rm No.	Room Name	Task				
			Architectural	Envelope	Structural	Mechanical	Electrical
Front of House							
Package 1: Washroom Upgrades	**MAIN FLOOR**			•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies		PLEASE NOTE: FOR MECHANICAL OPTION 2 UPGRADE, MECHANICAL WILL NOT LIST THE UPGRADE ITEMS ROOM BY ROOM, PLEASE REFER TO MECHANICAL REPORT FOR FURTHER INFORMATION. THE FOLLOWING IS A GENERAL OVERVIEW OF THE APPROACH FOR MECHANICAL UPGRADE FOR OPTION 2 APPLYING TO ALL AREAS OF THE BUILDING	
	16	First Aid	•Portion of existing women's WC repurposed as first aid room, all new finishes		•No Scope		•New lighting
	17	Unit WC	•Portion of existing women's WC repurposed as unit WC, all new finishes and fixturing as req. per unit washroom		•No Scope		•New lighting
	22	Public Men's WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint •New ceiling finish / new lighting		•No Scope		•New lighting
	24	Public Women's WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint •New ceiling finish/ new lighting		•No Scope		•New lighting
Package 2: Upper Lobby Upgrades	**SECOND FLOOR**			•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies			
	2	Upper Lobby	New Upper Lobby. Allow for porcelain tile flooring, painted walls, GWB ceiling all new lighting. Allow for the reinstatement of the window over the front entry.		•New wood shear walls •New concrete shear walls •Steel drag struts		•New lighting
	3	Upper Lobby Bar	•New millwork and bar equipment		•No scope		•New lighting
	11	Women's Admin WC	•Existing classroom repurposed as women's upper lobby WC, new floor tile, new wall tile , fixtures, partitions, millwork counters		•Steel drag struts		•New lighting

	12	Men's Admin WC	•Existing classroom repurposed as women's upper lobby WC, new floor tile, new wall tile , fixtures, partitions, millwork counters		•No scope		•New lighting
	13	Admin	•Existing WC and drama room repurposed as admin room, new carpet tile flooring, painted walls, new windows length of north wall (new wall)		•No scope		•New lighting
	21	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield, peel and stick, spray insulation rain screen cladding system. •Refer to envelope report		•No scope		•New lighting
Package 3: Box Office Entry		**MAIN FLOOR**					
	1	Vestibule	•New entrance vestibule added •(3) new double doors •New floor finish •New wall finish •New ceiling finish, new lighting	•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•No scope		•New lighting
	3	Box Office	•New floor finish, New wall finish, New ceiling finish, allow for new exterior pass through window and interior pass through window		•No scope		•New lighting
	4	F.O.H Manager	•New floor finish •New wall finish •New t bar ceiling / lighting		•No scope		•New lighting
Package 4: Bar		**MAIN FLOOR**					
	6	Bar Storage	•New floor finish, painted walls, new lighting	•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•No scope		•New lighting
	7	Bar	•New millwork, plumbing and bar equipment.		•No scope		•New lighting
Back of House							
Package 1: Washroom Upgrades		**BASEMENT**					
	31	Men's Dressing Room	•Portion of existing band room repurposed as men's dressing room. Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.	•Where demoed, install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•New reinforced concrete pilasters and horizontal FRP strips		•New lighting
	32	Corridor	New corridor. Allow for new corridor wall and exit door. New floor finishes, painted walls, tbar ceiling and lighting.		•No scope		•New lighting

	33	Women's WC	•Existing WC expanded to North •New plumbing fixtures •New shower stalls •New ceiling new lighting •New wall finish, allow for paint •New floor finish		•No scope		•New lighting
	34	Women's Change Room	•Existing change room expanded to North Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.		•No scope		•New lighting
	35	Women's Dressing Room	New paint and millwork		•No scope		•New lighting
	36	Women's Dressing Room	New paint and millwork		•No scope		•New lighting
	37	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)		•No scope		•New lighting
	38	Unit WC & Shower	New code compliant unit washroom, allow for all new finishes all surfaces and all required code compliant fixturing.		•No scope		•New lighting
	39	Men's WC	•Existing WC expanded to West •New plumbing fixtures •New shower stalls •New ceiling new lighting •New wall finish, allow for paint •New floor finish		•New wood shear walls		•New lighting
	41	Elevator	•New Garavanta lift, to service (2) levels		•New pad footing and concrete shaft wall		•New lighting
	45	Men's Change Room	•Existing change room expanded to North. Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.		•New reinforced concrete pilasters and horizontal FRP strips •New wood shear walls		•New lighting
	50	Stair	•Existing stair removed, new stair relocated to accommodate corridor changes •New stairs and handrails		•No scope		•New lighting
Rehearsal Space							
Package 1: Small Rehearsal Rooms	**MAIN FLOOR**						
	54	S.L.L	New sound and light lock, allow for new walls, new finishes	•Install new exterior insulated wall/cladding assembly, new glazing	•No scope		•New lighting
	55	Corridor	New Floor and wall finishes		•No scope		•New lighting

	56	New Corridor	•New walls, new floor wall and ceiling finishes. New lighting.	assemblies and new door assemblies	•No scope	•New lighting
	57	Soundproof Room	No Scope		•No scope	•New lighting
	58	New Data Room	•Existing soundproof room repurposed as new data room, refer to electrical		•No scope	•New lighting
	59	S.L.L	New Floor and wall finishes		•Add vertical reinforcement to masonry •Steel drag struts	•No additional Scope
	61	Small Rehearsal Room	•Portion of existing band rooms and storage repurposed as small rehearsal room. Allow for sprung floor, new painted wall treatment, house lighting.		•New wood shear wall	•New lighting
	62	New Ramp	•New ramp to replace old stairs for accessibility •New handrails		•No scope	•New lighting
	63	New Corridor	•New Wall, new floor, wall and ceiling finishes , new lighting		•No scope	•New lighting
	64	Stair	•New stair to tech ledge.		•No scope	•New lighting
	65	Storage	•Portion of existing band room repurposed as storage, new wall, new flooring painted walls and lighting.		•New wood shear wall	•New lighting
	70	S.L.L	New sound and light lock, allow for new walls new finishes.		•No scope	•New lighting
	71	Small Rehearsal Room	•Portion of existing band rooms and storage repurposed as small rehearsal room. Allow for sprung floor, new painted wall treatment, house lighting.		•No scope	•New lighting
Audience Chamber						
Package 1: Pit		**MAIN FLOOR**				
	40	Auditorium	•New built-out platform for accessibility •New wall finish, allow for paint •New floor finish, allow for carpet	•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•No scope	•New lighting
	41	Orchestra Pit	•Existing orchestra pit reopened and expanded •New wall finish •New floor finish		•No scope	•New lighting •Devices
Package 2: Control Booth		**MAIN FLOOR**				
	13	Control Booth	•Existing control booth expanded, painted walls new floor treatment.	•Install new exterior insulated wall/cladding assembly, new glazing assemblies and new door assemblies	•No scope	•New lighting •Front of house audio mixing console and cable infrastructure

CAPITAL COSTS

An Order of Magnitude Cost Estimate was prepared by James Bush and Associated Ltd, Professional Quantity Surveyors.

For Option 1, the following Project Cost Summary has allowed for a construction cost of $9,945,100.

For Option 2, the following Project Cost Summary has allowed for a construction cost of $24,244,00.

For the individual package upgrades to Option 1, the following Project Cost Summary has allowed for a construction cost of:

Front of House

1. Washroom Upgrades - $383,500
2. Upper Lobby Upgrades – $1,106,800
3. Box Office, Entry - $313,100
4. Bar - $88,700

Back of House

1. Washroom Upgrades - $616,300

Rehearsal Rooms

1. Small Rehearsal Rooms - $901,400

Audience Chamber

1. Auditorium – Same Scope included in Option 1
2. Orchestra Pit - $50,900

MASSEY THEATRE FEASIBILITY STUDY July 8, 2015

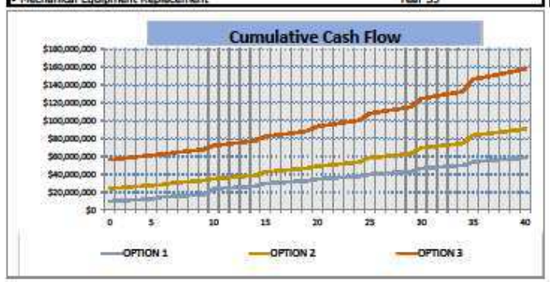
LIFE CYCLE COST ANALYSIS

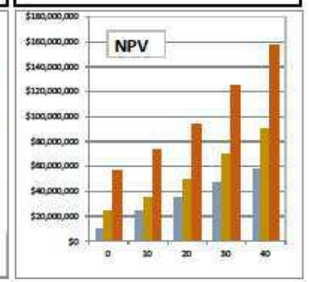
LIFE CYCLE COSTS SUMMARY	OPTION 1 REQUIRED UPGRADE TO MAINTAIN USE	OPTION 2 FULL UPGRADE	OPTION 3 NEW 1200 SEAT THEATRE
Initial Capital Expenditure (Estimate Project Costs)	**$9,945,100**	**$24,244,000**	**$56,235,000**
Gross Floor Area (Total Construction - New/Renov) m2	6,454	6,454	7,897
Average Yearly Custodial, Maintenance, Cyclical Replacement	$321,685	$321,685	$373,913
Escalation Rate for Custodial & Annual Maintenance	2.0%	2.0%	2.0%
Escalation Rate for Cyclical Renewals (Construction)	3.0%	3.0%	3.0%
Annual Energy Cost	$129,147	$119,461	$158,016
Escalation Rate for Energy Cost (GAS/Electrical COMBINED)	4.32%	4.27%	4.30%
Escalation Rate for Energy Cost (GAS)	5.00%	5.00%	5.00%
Escalation Rate for Energy Cost (Electric)	3.50%	3.50%	3.50%
Interest Rate for Investment	2.5%	2.5%	2.5%
LIFE CYCLE Study Period	40	40	40
TOTAL NET ANNUAL CASH FLOW (Future Value Yr 40)	**$94,167,673**	**$147,800,428**	**$245,892,039**
NET PRESENT VALUE OF CUMULATIVE COSTS at Yr 40	**$58,404,359**	**$90,558,381**	**$157,347,263**
NET PRESENT VALUE OF CUMULATIVE COSTS at Operating Years			
Year 0	$9,945,100	$24,244,000	$56,235,000
Year 10	$23,859,736	$34,908,006	$73,160,728
Year 20	$34,720,354	$49,071,466	$93,340,793
Year 30	$46,657,201	$69,501,735	$124,456,078
Year 40	$58,404,359	$90,558,381	$157,347,263
DIFFERENCE (AT YEAR 20) - NPV (Over Upgrade Option 1)		**$14,351,111**	**$58,620,439**
DIFFERENCE (AT YEAR 40) - NPV (Over Upgrade Option 1)		**$32,154,022**	**$98,942,904**
ANNUAL COST (excluding initial building cost)	**$1,211,481**	**$1,657,860**	**$2,527,807**
ANNUAL COST DIFFERENCE (Over Upgrade OPTION 1)		**$446,378**	**$1,316,325**
ENERGY ONLY OPERATING COSTS			
Annual Energy Cost	$129,147	$119,461	$158,016
ANNUAL COST SAVINGS (Over Current Energy Bill)		**($9,686)**	**$38,555**

DATA INPUTS		
GROSS FLOOR AREA (m2)	EXISTING TOTAL (m2)	6,454
Energy Cost	$20.01 $/m2	$129,147
Janitorial / Custodial	$26.11 $/m2	$168,502
Maintenance staff (Dist. Average)	$23.73 $/m2	$153,183
CYCLICAL REPLACEMENTS & UPGRADES		
Ten Year Requirement for $2.2mil Envelope Upgrade and $1.9m Theatre Equipmment upgrade has been factored into Option 1.		
Cyclical Replacement Schedules:		
• Flooring / Painting & misc Upgrades		Year 10, 20, 30, 40
• Lighting Upgrade/Replacement		Year 15, 30
• Electrical Major Repairs/Upgrades		Year 20
• Mechanical Major Repairs		Year 20
• Roofing		Year 25
• Mechanical Equipment Replacement		Year 35

COMMENTARY - CONCLUSION from LCC

The Upgrade Option 1 includes significant additional capitial expenditures over the first 10 years to deal with rectifying current defficiencies with Building Envelope and the Theatre Equipment.





James Bush & Associates Ltd.,
Professional Quantity Surveyors

JBA QS

MASSEY THEATRE
RENOVATION OPTIONS
design by PROSCENIUM ARCHITECTURE & INTERIORS

08-Jul-15
Revision 3

EXECUTIVE SUMMARY OF COSTS			OPTION 1
SELECTIVE DEMOLILITION SCOPE			**$693,200**
Demolition & Alterations		$482,800	
Structural		$4,200	
Mechanical		$34,500	
Electrical		$14,100	
GC Overheads & Fee		$67,100	
Design & Existing Building Contingnecy	15%	$90,500	
RENOVATION SCOPE			**$6,498,500**
Demolition & Alterations		$127,700	
Architectural Work		$1,577,400	
Envelope		$1,077,500	
Structural		$549,700	
Mechanical		$1,269,700	
Electrical		$449,600	
GC Overheads & Fee		$631,700	
Design & Existing Building Contingnecy	15%	$815,200	
Market Escalation to start of construction - 12 months		5%	**$359,600**
TOTAL Reasonable Bid Price Construction *(SUMMER 2016 dollars, excl. GST)*			**$7,551,300**
SOFT COSTS & FF&E (Allowance)			
Change Orders & Unforeseen Conditions During Construction		15%	**$1,132,700**
Design Fees & Expenses		16%	**$1,208,200**
Furniture, Furnishings & Equipment Allowance			N/A
Project Management, City Admin Costs			N/A
City Permits, BP, Insurance		0.7%	**$52,900**
Payable Taxes		0.0%	**$0**
TOTAL PROJECT COST			**$9,945,100**

TOTAL: Floor Area (m2)	*80,531 SF*
TOTAL: Floor Area (SF)	*7,482 m2*
Unit Cost per SF floor area (CONSTRUCTION)	*$93.77 /SF*

SEPARATE PRICES (add to construction cost estimate above, excl. soft costs)

1 Full Envelope Upgrade Required within 5 to 10 years	$2,200,000 ADD
2 Performance Lighting & Sound System/Equipment (Address Immediate Concerns)	$180,000 INCLUDED
3 Performance Lighting & Sound System/Equipment, Drapes, Rigging (10 yrs)	$1,820,000 ADD
4 SD40 COSTS to separate Massey from GYM incl. exterior wall, elect service, water	$536,300 Not Incl.

NOTES & CLARIFICATIONS

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Priced in SUMMER 2015 dollars, with an allowance of 5% for Escalation to start of construction in Summer 2016.

This estimate represents a fair and reasonable construction cost of the work based on an understanding of the work as outlined on the design drawings and reports by PROSCENIUM ARCHITECTURE & INTERIORS, June 23, 2015

It is assumed that the adjacent areas will be VACATED during the construction. Nominal Hoarding is not required.

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MASSEY THEATRE
RENOVATION OPTIONS
design by PROSCENIUM ARCHITECTURE & INTERIORS

08-Jul-15
Revision 3

EXECUTIVE SUMMARY OF COSTS			OPTION 2
SELECTIVE DEMOLILITION SCOPE			**$1,158,000**
Demolition & Alterations		$780,100	
Architectural Work		$0	
Envelope		$0	
Structural		$2,100	
Mechanical		$71,600	
Electrical		$41,500	
GC Overheads & Fee		$112,100	
Design & Existing Building Contingnecy	15%	$150,600	
RENOVATION SCOPE			**$14,473,600**
Demolition & Alterations		$412,000	
Architectural Work		$2,695,100	
Envelope		$2,617,400	
Structural		$1,637,000	
Mechanical		$2,661,600	
Electrical		$1,193,400	
GC Overheads & Fee		$1,402,300	
Design & Existing Building Contingnecy	15%	$1,854,800	
Theatre Equipment			**$1,900,000**
Market Escalation to start of construction - 12 months		5%	**$876,600**
TOTAL Reasonable Bid Price Construction *(SUMMER 2016 dollars, excl. GST)*			**$18,408,200**
SOFT COSTS & FF&E (Allowance)			
Change Orders & Unforeseen Conditions During Construction		15%	**$2,761,200**
Design Fees & Expenses		16%	**$2,945,300**
Furniture, Furnishings & Equipment Allowance			**$0**
Project Management, City Admin Costs			N/A
City Permits, BP, Insurance		0.7%	**$129,300**
Payable Taxes		0.0%	**$0**
TOTAL PROJECT COST			**$24,244,000**

TOTAL: Floor Area (m2)	*81,732 SF*
TOTAL: Floor Area (SF)	*7,593 m2*
Unit Cost per SF floor area (CONSTRUCTION)	*$225.23 /SF*

SEPARATE PRICE (add to construction cost estimate above, excl. soft costs)

1 Full Envelope Upgrade Required within 5 to 10 years	$2,200,000 INCLUDED
2 Performance Lighting & Sound System/Equipment (Address Immediate Concerns)	N/A Option 1 Cost
2 Performance Lighting & Sound System/Equipment, Drapes, Rigging (10 yrs)	$1,820,000 INCLUDED
4 SD40 COSTS to separate Massey from GYM incl. exterior wall, elect service, water	$536,300 Not Incl.

NOTES & CLARIFICATIONS

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MASSEY THEATRE
RENOVATION OPTIONS
design by PROSCENIUM ARCHITECTURE & INTERIORS

03-Jul-15
Revision 2.0

EXECUTIVE SUMMARY OF COSTS

Summary of Package Enhancements to OPTION 1

	Demol	Renovation	TOTAL	
Front of House				**$1,892,100**
1 Washroom Upgrades	$63,900	$319,600	$383,500	
2 Upper Lobby Upgrades	$74,300	$1,032,500	$1,106,800	
3 Box Office, Entry	$31,300	$281,800	$313,100	
4 Bar		$88,700	$88,700	
Back of House				**$616,300**
1 Washroom Upgrades	$31,600	$584,700	$616,300	
Rehearsal Space				**$901,400**
1 Small Rehearsal Rooms	$30,200	$871,200	$901,400	
Audience Chamber				**$50,900**
1 Auditorium		Same Scope included in Option 1		
2 Orchestra Pit		$50,900	$50,900	
Market Escalation to start of construction - 12 months			5%	**$173,000**
TOTAL Reasonable Bid Price Construction *(SUMMER 2016 dollars, excl. GST)*				**$3,633,700**

SOFT COSTS & FF&E (Allowance)

Change Orders & Unforeseen Conditions During Construction	10%	**$363,400**
Design Fees & Expenses	16%	**$581,400**
Furniture, Furnishings & Equipment Allowance		**$0**
Project Management, City Admin Costs		N/A
City Permits, BP, Insurance	0.7%	**$25,400**
Payable Taxes	0.0%	**$0**
TOTAL PROJECT COST		**$4,603,900**

MASSEY THEATRE
RENOVATION OPTIONS - Reconcile Scope Add-on's from Option 1

08-Jul-15

EXECUTIVE SUMMARY OF COSTS

Option 1			**$6,673,900**
Demolition		$693,200	
Renovations		$5,662,900	
Escalation		$317,800	
Option 2(a) - Infrastructure & Renewal	Net cost	Incl. GC's/Conting	**$8,100,600**
Cladding Replacement	$2,300,000	$2,975,600	
Theatre Equipment (Sound, Lighting, Rigging, Drapes)		$1,900,000	
Additional Demolition		$183,700	
Additional Asbestos/lead Paint	$301,600	$390,200	
Mechanical / Plumbing / Sprinklers / HVAC, DDC Controls	$1,010,000	$1,306,700	
Electrical Upgrades	$610,758	$790,200	
VIP Lounge		$168,300	
Escalation		$385,900	
Option 2(b) - Enhancements			**$3,633,700**
Front of House (Washrooms, Upper Lobby, Box Office, Bar)		$1,892,100	
Back of House (Washrooms)		$616,300	
Rehearsal Space (Small rehearsal Rooms)		$901,400	
Audience Chamber		$50,900	
Escalation		$173,000	
TOTAL Reasonable Bid Price Construction *(SUMMER 2016 dollars, excl. GST)*			**$18,408,200**

SOFT COSTS & FF&E (Allowance)

Change Orders & Unforeseen Conditions During Construction	15%	**$2,761,200**
Design Fees & Expenses	16%	**$2,945,300**
Furniture, Furnishings & Equipment Allowance		**$0**
Project Management, City Admin Costs		N/A
City Permits, BP, Insurance	0.7%	**$129,300**
Payable Taxes	0.0%	**$0**
TOTAL PROJECT COST		**$24,244,000**

TOTAL: Floor Area (m2)	*85,000 SF*
TOTAL: Floor Area (SF)	*7,897 m2*
Unit Cost per SF floor area (CONSTRUCTION)	*$216.57 /SF*

SEPARATE PRICES (add to construction cost estimate above, excl. soft costs)

NOTES & CLARIFICATIONS

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MASSEY THEATRE

03-Jul-15

PROFORMA NEW 1200 SEAT THEATRE

based in Functional Program Information from another project.

EXECUTIVE SUMMARY OF COSTS	OPTION 3: NEW 1200 SEAT THEATRE			
SITE WORK & DEMOLITION			**$1,250,000**	
Demolish exsiting Building (incl. Haz Mat)		$550,000		
Exterior Paving/Plaza Entry & Canopies		$350,000		
Soft Landscaping		$150,000		
Utilities - Connections		$200,000		
NEW 1200 SEAT THEATRE	85,000 SF		**$41,975,000**	$493.82
Building Shell		$24,225,000		
Interior Construction		$12,750,000		
Theatre Equipment (Sound, Lighting, Rigging, Drapes)		$5,000,000		
Parking			**Not Included**	
Market Escalation to start of construction - 12 months		5%	**$2,161,000**	
TOTAL Reasonable Bid Price Construction *(SUMMER 2016 dollars, excl. GST)*			**$45,386,000**	
SOFT COSTS & FF&E (Allowance)				
Change Orders & Unforeseen Conditions During Construction		5%	**$2,269,000**	
Design Fees & Expenses		16%	**$7,262,000**	
Furniture, Furnishings & Equipment Allowance			**$1,000,000**	
Project Management, City Admin Costs			N/A	
City Permits, BP, Insurance		0.7%	**$318,000**	
Payable Taxes		0.0%	**$0**	
TOTAL PROJECT COST			**$56,235,000**	

TOTAL: Floor Area (m2)	*85,000 SF*
TOTAL: Floor Area (SF)	*7,897 m2*
Unit Cost per SF floor area (CONSTRUCTION)	*$533.95 /SF*

SEPARATE PRICES (add to construction cost estimate above, excl. soft costs)

NOTES & CLARIFICATIONS

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Priced in SUMMER 2015 dollars, with an allowance of 5% for Escalation to start of construction in Summer 2016.

This estimate represents a fair and reasonable construction cost of the work based on an understanding of the work as outlined on the FUNCTIONAL PROGRAM INFORMATION from another project.

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James Bush Associates Ltd.,
Professional Quantity Surveyors

OPTION 3 NEW 1200 SEAT THEATRE
Page: 1

JBA|QS

STRATEGY MOVING FORWARD – CONCLUSIONS & RECOMMENDATIONS

CONCLUSIONS & RECOMMENDATIONS

The Massey Theatre is an important artistic facility for the New Westminster and the Lower Mainland communities. However, the current Massey facility is in dire need of updating. The ultimate goal would be to raise the necessary funds over time to achieve a modern and updated Civic Theatre (as outlined in Option 2). In the mean time, it is recommended that a short term plan be implemented to complete the necessary upgrades as outlined in Option 1.

Recommendations for the Massey Theatre:

1. Update necessary items as listed in Option 1, moving towards the ultimate goal of achieving all items of Option 2 and transforming the Massey into a Civic Theatre
2. Research and create cross-promotional opportunities between the Massey And the Anvil Centre
3. Expand the Massey's use to include non-traditional theatre activities
4. Rebrand the Massey to emphasize its long history in the community and updated features

APPENDIX A – LIST OF CONTRIBUTING CONSULTANTS' STUDIES

- **Pre-Renovation Hazardous Building Materials Survey**
  - Rob Kingsley: Astech Consultants Ltd. Tel: 604 575 1122

- **Massey Theatre Electrical and Fire Alarm System Condition Assessment**
  - Leon Britz: Acumen Engineering, Tel: 60 525 4601

- **Building Envelope Follow-Up Condition Assessment**
  - David Evans: Levelton Consultants Ltd. Tel: 604 533 2992

- **Massey Theatre Mechanical Systems Assessment**
  - John Makepeace: Jade West Engineering Co. Ltd. Tel: 604 538 0764

- **Sprinkler System Review – Massey Theatre**
  - Murray Johnson: Murray Johnson Engineering Ltd. Tel: 604 526 3335

- **Massey Theatre Condition Assessment – Structural Systems**
  - Andy Metten and Tim White: Bush, Bohlman & Partners LLP, Tel: 604 688 9861

APPENDIX B – DETAILED ORDER-OF-MAGNITUDE COST ESTIMATE: OPTION 1

JBA QS **MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 1**

July-08-15
REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Demo Tag	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Basement														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium.				SD40 cost									
B	•Demolition of existing unit washroom to allow for new Garavanta lift. •Demolition to include slab level to facility lift requirements.	48	SF	$164.58	**$7,900**	1,200			2,100	1,600	1,200	800	1,000	
C	•Demolition of existing two stall washroom to allow for reconfiguring to unit washroom	80	SF	$105.00	**$8,400**	1,800				3,200	1,500	800	1,100	
D	•Demolition of storage room to allow for larger electrical room	20	LF	$120.00	**$2,400**	1,090					800	200	300	
E	•Partial demolition of walls and slab to allow for new elevator.	90	SF	$107.78	**$9,700**	3,800			2,100	800	800	900	1,300	
F	•Open new wall to allow for door to future water entry room.	1	No.	$1,200.00	**$1,200**	900						100	200	
					$29,600									
Main Floor														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium.													See Basement
B	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	172	SF	$54.65	**$9,400**	2,500				3,750	1,000	900	1,200	
C	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	276	SF	$69.93	**$19,300**	4,140				9,750	1,000	1,900	2,500	
D	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	276	SF	$66.30	**$18,300**	4,140				9,000	1,000	1,800	2,400	
E	•Removal of showers washrooms that formed part of gymnasium	120	SF	$52.50	**$6,300**	2,800				1,600	500	600	800	
F	•Removal of showers washrooms that formed part of gymnasium	175	SF	$50.86	**$8,900**	3,600				2,400	800	900	1,200	
G	•Demolition of demising wall	60	LF	$73.33	**$4,400**	2,970					400	400	600	
H	•Removal of showers washrooms that formed part of gymnasium	195	SF	$45.64	**$8,900**	3,600				2,400	800	900	1,200	
I	•Demolition of demising wall	35	LF	$82.86	**$2,900**	1,800					400	300	400	
J	•Partial demolition of seating riser to allow for code compliant accessible position.	50	SF	$26.00	**$1,300**	1,000						100	200	
K	•Demo of slab for Garavanta lift	46	SF	$50.00	**$2,300**	1,800						200	300	
L	•Demo steps for new ramp				**$1,600**	1,200						200	200	
M	•Partial wall removal for new corridor	15	LF	$120.00	**$1,800**	990					400	200	200	
N	•Demo wall and slab for new elevator	80	SF	$43.75	**$3,500**	1,800					900	300	500	
					$88,900									

Page 2

JBA QS

MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 1

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Demo Tag	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Second Floor														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium.													See Basement
B	•Demo corridor wall	20	LF	$90.00	**$1,800**	1,200					200	200	200	
C	•Demo corridor wall and door	10	LF	$120.00	**$1,200**	900						100	200	
D	•Demo gym pocket wall	53	LF	$92.45	**$4,900**	3,498					300	500	600	
E	•Demo corridor wall	20	LF	$90.00	**$1,800**	1,200					200	200	200	
F	•Demo wall to allow for elevator	15	LF	$120.00	**$1,800**	990					400	200	200	
G	•Demo wall to allow for new corridor wall	24	LF	$100.00	**$2,400**	1,584					300	200	300	
					$13,900									
Third Floor														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium.													See Basement
B	•Demo gym pocket wall	53	LF	$92.45	**$4,900**	3,498					300	500	600	
C	•Open roof to allow for new elevator	76	SF	$57.89	**$4,400**	3,400						400	600	
					$9,300									
Roof														
A	•Demolition of wall parapet line and removal of existing roof assembly												-	See Basement
B	•Remove smoke exhaust penthouse .	448	SF	$50.67	**$22,700**	16,610					900	2,200	3,000	
C	•Partial roof curb demo for new elevator over run.	18	LF	$111.11	**$2,000**	1,530						200	300	
					$24,700									
Exterior Cladding														
	Refer to the envelope report. In option 1 allow for selective demolition of building envelope in order to facilitate the required envelope repairs.	27,000	SF	$1.68	**$45,300**	35,000						4,400	5,900	
					$45,300									
ASBESTOS & LEAD PAINT														
A	Refer to the Asbestos Report.				**$352,200**	272,300						34,000	45,900	
B	LEAD PAINT - Existing Stucco & other finishes				**$129,400**	100,000						12,500	16,900	
					$481,600									
TOTAL CONSTRUCTION					**$693,300**	482,840	-	-	4,200	34,500	14,100	67,100	90,500	

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Basement															
1	Storage (Crawlspace)	•No scope	5456	SF	$0.00	**$0**							-	-	
2	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.	456	SF	$9.87	**$4,500**					3,500		400	600	See 53 for work to new wall
3	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.	986	SF	$6.29	**$6,200**					4,800		600	800	See 53 for work to new wall
4	Storage	•No scope	50	SF	$0.00	**$0**							-	-	
5	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.	186	SF	$15.59	**$2,900**					2,200		300	400	See 53 for work to new wall
6	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.	191	SF	$15.18	**$2,900**					2,200		300	400	See 53 for work to new wall
7	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.	358	SF	$12.57	**$4,500**					3,500		400	600	
8	Storage	•Scope only relating to new footings and new wall along north face of Massey. Allow for water proofing , drain tile, drainage matt and insulation.	285	SF	$13.68	**$3,900**					3,000		400	500	
9	Corridor	•New code compliant handrails on existing ramp (Typical of all stairs and ramps)	483	SF	$20.91	**$10,100**		6,000				1,800	1,000	1,300	
10	Storage	•No scope	69	SF	$0.00	**$0**							-	-	
11	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	75	SF	$77.33	**$5,800**	800	2,500				1,100	600	800	
12	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	12	SF	$483.33	**$5,800**	800	2,500				1,100	600	800	
13	Corridor	•No scope	990	SF	$0.00	**$0**							-	-	
14	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	348	SF	$34.77	**$12,100**	1,500	6,000				1,800	1,200	1,600	
15	S.L.L.	•No scope	160	SF	$0.00	**$0**							-	-	
16	Storage	•No scope	262	SF	$0.00	**$0**							-	-	
17	Storage	•No scope	132	SF	$0.00	**$0**							-	-	
18	Green Room/Multipurpose	•Portion of existing school drama room repurposed as new green room •New wall on South side •New floor finish •New wall finish •New lighting •New ceiling finish	846	SF	$104.26	**$88,200**	2,500	25,890			29,610	10,152	8,500	11,500	
19	Storage	•No scope	569	SF	$0.00	**$0**							-	-	
20	Storage	•No scope, - New HVAC	48	SF	$37.50	**$1,800**	300				1,100		200	200	
21	Storage	•No scope	212	SF	$0.00	**$0**							-	-	
22	Wardrobe/Laundry	•Portion of existing school drama room repurposed as new wardrobe room •New wall on North side •New floor finish •New wall finish •New lighting •New ceiling finish	842	SF	$98.69	**$83,100**	2,500	22,230			29,470	10,104	8,000	10,800	
23	Wardrobe/Laundry	•No scope	181	SF	$0.00	**$0**							-	-	
24	Corridor	•New code compliant handrails on existing steps (Typical of all stairs and ramps)	96	SF	$77.08	**$7,400**	300	1,200			3,000	1,200	700	1,000	
25	Men's WC	•Replace Plumbing Fixtures	47	SF	$223.40	**$10,500**	600				6,300	1,200	1,000	1,400	

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
26	Men's WC	•Existing Women's WC repurposed as new Men's WC no fixture change	52	SF	$178.85	**$9,300**	600	1,200			4,200	1,200	900	1,200	
27	Theatre Shop	•No scope	1839	SF	$0.00	**$0**							-	-	
28	Dimmers	•No scope, Refeed 1200A elec panel	168	SF	$97.02	**$16,300**						12,600	1,600	2,100	
29	Drape Storage	•No scope, Refeed 1200A elec panel	283	SF	$57.60	**$16,300**						12,600	1,600	2,100	
30	Orchestra Pit	•No scope, (inaccessible), add elect	286	SF	$8.04	**$2,300**						1,800	200	300	
31	Storage	•Existing band room repurposed as storage room. No scope	506	SF	$0.00	**$0**							-	-	
32	Corridor	•No scope	623	SF	$4.65	**$2,900**						2,200	300	400	
33	Women's WC	•No scope	63	SF	$166.67	**$10,500**	600				6,300	1,200	1,000	1,400	
34	Women's WC	•No scope	30	SF	$260.00	**$7,800**	600				4,200	1,200	800	1,000	
35	Women's Change Room	New wall finish (paint)	350	SF	$14.86	**$5,200**	400	1,500			2,100		500	700	
36	Women's Dressing Room	New wall finish (paint)	119	SF	$37.82	**$4,500**	300	1,100			2,100		400	600	
37	Women's Dressing Room	New wall finish (paint)	119	SF	$37.82	**$4,500**	300	1,100			2,100		400	600	
38	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	130	SF	$111.54	**$14,500**	800	8,200				2,200	1,400	1,900	
39	Men's Dressing Room	New wall finish (paint)	98	SF	$21.43	**$2,100**	600	1,000					200	300	
40	Men's Dressing Room	New wall finish (paint)	104	SF	$20.19	**$2,100**	600	1,000					200	300	
41	Men's Change Room	New wall finish (paint)	376	SF	$24.20	**$9,100**	800	1,950			4,200		900	1,200	
42	Universal Toilet	•Existing Men's WC repurposed as new universal toilet room •Remove WC partitions and portion of existing plumbing fixtures •New grab bars	79	SF	$216.46	**$17,100**	1,200	5,400			5,400	1,200	1,700	2,200	
43	Elevator	•New Garavanta lift, to service (2) levels	55	SF	$1,198.18	**$65,900**	2,500	41,912			3,500	3,000	6,400	8,600	Lift included here
44	Corridor	•No scope	60	SF	$38.33	**$2,300**						1,800	200	300	
45	New Electrical Room	•Existing storage room and portion of existing corridor repurposed as new electrical room. •Refer to electrical, new 2500AMP MDC, EM & Technology, FA				**SD 40 COST**									
46	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	105	SF	$55.24	**$5,800**	800	2,500				1,100	600	800	
47	Storage	•No scope	69	SF	$0.00	**$0**							-	-	
48	Storage (Crawlspace)	•No scope	1800	SF	$0.00	**$0**							-	-	
49	Storage (Crawlspace)	•No scope	937	SF	$0.00	**$0**							-	-	
50	Storage (Crawlspace)	•No scope	1958	SF	$0.00	**$0**							-	-	
51	Storage	•No scope	64	SF	$0.00	**$0**							-	-	
52	Loading	•No scope	180	SF	$0.00	**$0**							-	-	
53	New Wall	•New North wall and footings along north face of Massey. •Allow for water proofing , drain tile, drainage matt and insulation.	175	LF	$1,152.57	**$201,700**	7,700	11,375		128,625	15,300		20,400	18,300	New concrete stip footing, foundation wall, full length.
54	New Water Entry Room	•Refer to mechanical	406	SF	$91.63	**$37,200**					30,000		3,800	3,400	
55	Elevator	•New elevator pit & shaft wall	77	SF	$768.83	**$59,200**	1,800	3,000		32,820	6,000	2,200	5,700	7,700	See Main Floor for Elevator
			24,451	SF		**$746,300**									

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 1

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Main Floor															
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package	77	SF	$2,298.70	**$177,000**	4,500	107,000		25,290			17,100	23,100	
2	Box Office	•No scope	105	SF	$0.00	**$0**							-	-	
3	Vestibule	•No scope	78	SF	$117.95	**$9,200**	600					6,500	900	1,200	
4	Kitchen	•No scope	188	SF	$34.04	**$6,400**	300				3,500	1,200	600	800	
5	Bar	•No scope	140	SF	$0.00	**$0**							-	-	
6	Corridor	•No scope	120	SF	$15.00	**$1,800**	200					1,200	200	200	
7	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	124	SF	$94.35	**$11,700**	400	7,500				1,200	1,100	1,500	
8	Storage	•No scope	40	SF	$17.50	**$700**						500	100	100	
9	S.L.L.	•No scope	390	SF	$4.62	**$1,800**	200					1,200	200	200	
10	Lobby	•New floor finish, allow for porcelain tile and floor leveling •New wall finish, allow for paint and new baseboards	2517	SF	$92.41	**$232,600**	8,810	67,760			80,544	22,653	22,500	30,300	
11	Extended Lobby	•New floor finish, allow for porcelain tile and floor leveling •New wall finish, allow for paint and new baseboards	1372	SF	$94.61	**$129,800**	4,802	38,647			43,904	13,034	12,500	16,900	
12	Control Booth	•No scope	133	SF	$0.00	**$0**							-	-	
13	Storage	•No scope	32	SF	$0.00	**$0**							-	-	
14	Women's WC	•New plumbing fixtures and partitions •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint	155	SF	$260.65	**$40,400**	1,200	14,221			14,375	1,395	3,900	5,300	
15	Corridor	•No scope		SF	$0.00	**$0**							-	-	
16	Entry	•New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards	164	SF	$98.78	**$16,200**	1,066	4,660			5,248	1,558	1,600	2,100	
17	Stair	•New code compliant handrails, contrasting nosings and tactile warning allow for porcelain tile this stair only (Typical of all stairs and ramps)	200	SF	$98.00	**$19,600**	1,200	12,100				1,800	1,900	2,600	
18	Storage	•No scope	100	SF	$0.00	**$0**							-	-	
19	Storage	•No scope	100	SF	$0.00	**$0**							-	-	
20	Unit WC	•New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint	62	SF	$320.97	**$19,900**	400	7,987			7,000		1,900	2,600	
21	Storage	•New wall on North side	60	SF	$18.33	**$1,100**		864					100	100	
22	Public Men's WC	•New wall on North side •New plumbing fixtures and partitions •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint	250	SF	$322.40	**$80,600**	1,800	27,437			30,100	3,000	7,800	10,500	
23	Public Women's WC	•New wall on North side •New plumbing fixtures and partitions •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint	268	SF	$379.85	**$101,800**	1,800	43,262			30,424	3,216	9,800	13,300	
24	Storage	•New wall on North side	87	SF	$87.36	**$7,600**		1,008			4,900		700	1,000	
25	Storage	•New wall on North side	160	SF	$51.88	**$8,300**		1,512			4,900		800	1,100	
26	Office	•New Ventilation	126	SF	$47.62	**$6,000**	800				3,780		600	800	
27	First Aid	•New wall on North side	83	SF	$112.05	**$9,300**		3,192			4,000		900	1,200	
28	Office	•New wall on North side	438	SF	$28.31	**$12,400**		4,200			5,400		1,200	1,600	
29	Janitor	•No scope	67	SF	$0.00	**$0**							-	-	
30	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	90	SF	$70.00	**$6,300**	500	3,200				1,200	600	800	
31	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	20	SF	$315.00	**$6,300**	500	3,200				1,200	600	800	
32	Storage	•New wall on North side	186	SF	$37.63	**$7,000**		2,184			3,200		700	900	
33	Storage	•New wall on North side	348	SF	$23.28	**$8,100**		3,024			3,200		800	1,100	

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
34	Storage	•New wall on North side	86	SF	$33.72	**$2,900**		2,184					300	400	
35	Corridor	•New floor finish, allow for porcelain tile and sub floor leveling •New wall finish, allow for paint and new baseboards	1858	SF	$96.07	**$178,500**	6,503	55,273			59,456	16,722	17,200	23,300	
36	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	392	SF	$41.33	**$16,200**	800	8,500				3,200	1,600	2,100	
37	Large Rehearsal Room	•Existing small gymnasium repurposed as large rehearsal room. Allow for painting walls and floor	3976	SF	$61.09	**$242,900**	4,771	27,831			135,184	19,880	23,500	31,700	
38	Storage	•No scope	258	SF	$6.20	**$1,600**						1,200	200	200	
39	Office	•No scope	100	SF	$0.00	**$0**							-	-	
40	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	360	SF	$39.72	**$14,300**	800	8,000				2,200	1,400	1,900	
41	Stage	• Electrical • Sound/Lighting Systems	2840	SF	$94.40	**$268,100**	7,200	180,000				20,000	25,900	35,000	Includes $180K for Sound & Lighting Immediate Priority. Stage curtain remains
42	Auditorium	•New built-out platform for accessibility allow for guard •New wall finish, allow for paint •New floor finish, allow for carpet	6420	SF	$94.35	**$605,700**	3,500	90,870			263,220	110,620	58,500	79,000	Includes Allowance $40,000 for PA
43	Vestibule	•No scope	150	SF	$12.00	**$1,800**	200					1,200	200	200	
44	Shop	•No scope	1232	SF	$8.44	**$10,400**						8,000	1,000	1,400	
45	Office	•No scope	120	SF	$0.00	**$0**							-	-	
46	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	40	SF	$132.50	**$5,300**	300	2,600				1,200	500	700	
47	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	188	SF	$49.47	**$9,300**	600	4,800				1,800	900	1,200	
48	Storage	•No scope	694	SF	$0.00	**$0**							-	-	
49	Elevator	•New Garavanta Lift, to service (2) levels	44	SF	$336.36	**$14,800**	800	9,450				1,200	1,400	1,900	See basement 43 for Lift
50	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	40	SF	$120.00	**$4,800**	300	2,600				800	500	600	
51	Corridor	•No scope	97	SF	$16.49	**$1,600**						1,200	200	200	
52	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	90	SF	$83.33	**$7,500**	600	4,000				1,200	700	1,000	
53	Storage	•No scope	67	SF	$0.00	**$0**							-	-	
54	S.L.L.	•No scope	88	SF	$0.00	**$0**							-	-	
55	Corridor	•Electrical work	320	SF	$54.06	**$17,300**	800					12,500	1,700	2,300	
56	New Ramp	•New ramp to replace old stairs for accessibility •New code compliant handrails (Typical of all stairs and ramps)	112	SF	$104.46	**$11,700**	300	4,234		2,800		1,800	1,100	1,500	
57	S.L.L.	•No scope	60	SF	$0.00	**$0**							-	-	
58	Small Rehearsal Room	•Existing band room repurposed as small rehearsal room. New paint & HVAC	2052	SF	$58.82	**$120,700**	2,200	9,100			77,976	4,000	11,700	15,700	
59	Soundproof Room	•No scope	120	SF	$0.00	**$0**							-	-	
60	Soundproof Room	•Electrical work	120	SF	$144.17	**$17,300**	800					12,500	1,700	2,300	
61	Storage	•Electrical work	390	SF	$2.56	**$1,000**						800	100	100	
62	Office	•No scope	203	SF	$0.00	**$0**							-	-	
63	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	92	SF	$80.43	**$7,400**	400	3,500				1,800	700	1,000	
64	Small Rehearsal Room	•Existing band room repurposed as small rehearsal room. •New paint, HVAC •Partial removal/new walls to accommodate new corridor	1690	SF	$64.14	**$108,400**	4,500	11,100			64,220	4,000	10,500	14,100	
65	New Corridor	•Wall, floor and ceiling finishes to match existing	115	SF	$146.09	**$16,800**	1,200	9,645				2,200	1,600	2,200	
66	Corridor	•No scope	93	SF	$13.98	**$1,300**	200					800	100	200	

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
67	Storage	•No scope	112	SF	$11.61	**$1,300**	200					800	100	200	
68	Storage	•No scope		SF	$0.00	**$1,300**	200					800	100	200	
69	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report	9500	SF	$62.80	**$596,600**	7,125	332,500		142,500			60,300	54,200	Cladding allowance $45/SF
70	New Data Room	•Portion of existing band storage repurposed as new data room	76	SF	$744.74	**$56,600**	1,500	7,188			10,000	25,000	5,500	7,400	
			42,475	SF		**$3,265,300**									
Second Floor															
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package	77	SF	$697.40	**$53,700**	2,500	26,950		12,000			5,200	7,000	See Main Floor item 1 for Elevator Equipment
2	Lunch Room	•replace HVAC unit	450	SF	$52.89	**$23,800**	1,500				14,400	2,500	2,300	3,100	
3	New Corridor	•Wall, floor and ceiling finishes to match existing	170	SF	$162.35	**$27,600**	2,200	11,168			5,100	2,800	2,700	3,600	
4	Stair	•see note 7 on level two				**$0**							-	-	
5	S.L.L.	•No scope	80	SF	$16.25	**$1,300**	200					800	100	200	
6	Admin	•Partial removal/new walls to accommodate new corridor, replace HVAC unit	450	SF	$52.89	**$23,800**	1,500				14,400	2,500	2,300	3,100	
7	Upper Lobby	•replace HVAC unit plus electrical	731	SF	$51.85	**$37,900**	1,500				23,392	4,386	3,700	4,900	
8	Storage	•No scope	213	SF	$0.00	**$0**							-	-	
9	S.L.L.	•No scope	80	SF	$16.25	**$1,300**	200					800	100	200	
10	Admin	•replace HVAC unit plus electrical	765	SF	$51.76	**$39,600**	1,500				24,480	4,590	3,800	5,200	
11	S.L.L.	•No scope	80	SF	$16.25	**$1,300**	200					800	100	200	
12	Storage	•Art kiln room repurposed as new storage room	140	SF	$50.00	**$7,000**	600				4,000	800	700	900	
13	Storage	•No scope	64	SF	$20.31	**$1,300**	200					800	100	200	
14	Storage	•No scope	94	SF	$13.83	**$1,300**	200					800	100	200	
15	Display	•No scope				**$0**							-	-	
16	Stair	•Refer to note 17 level 2				**$0**							-	-	
17	Storage	•No scope	200	SF	$7.00	**$1,400**	200					900	100	200	
18	Storage	•New wall on North side	628	SF	$16.08	**$10,100**	300	6,336				1,200	1,000	1,300	
19	Stair	•New code compliant handrails (Typical of all stairs and ramps)	40	SF	$112.50	**$4,500**		3,500					400	600	
20	Admin WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint	193	SF	$180.83	**$34,900**		13,936			10,800	2,200	3,400	4,600	
21	Storage	•No scope	60	SF	$21.67	**$1,300**	200					800	100	200	
22	Stair	•New code compliant handrails (Typical of all stairs and ramps)	40	SF	$135.00	**$5,400**	600	2,800				800	500	700	
23	Storage	•New wall on North side	998	SF	$22.75	**$22,700**	800	9,984			4,500	2,200	2,200	3,000	
24	Janitor	•No scope	112	SF	$0.00	**$0**							-	-	
25	Mechanical Room	•New wall on North side , Boiler Replacement	727	SF	$325.86	**$236,900**	2,100	5,000	6,000	12,000	140,000	18,000	22,900	30,900	
26	Balcony	•New guardrails •New wall finish, allow for paint	3200	SF	$19.84	**$63,500**	2,500	46,600					6,100	8,300	
27	Shop Mezzanine	•No scope	740	SF	$2.43	**$1,800**	200					1,200	200	200	
28	Storage Mezzanine	•No scope	156	SF	$8.33	**$1,300**	200					800	100	200	
29	Stair	•New code compliant handrails (Typical of all stairs and ramps)				**$0**							-	-	See Main Floor item 63
30	Storage	•No scope	441	SF	$2.95	**$1,300**	200					800	100	200	
31	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer also to envelope report				**$0**							-	-	See Main Floor item 69
32	New Roof	•New roof. Refer to envelop report		SF	$0.00	**$0**							-	-	See ENVELOPE Section
			10,929	SF		**$605,000**									

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Third Floor															
1	Elevator	•New elevator, shaft and enclosure incl. exterior finish	77	SF	$998.70	**$76,900**	2,500	40,990		16,000			7,400	10,000	See Main Floor item 1 for Elevator Equipment
2	Board Room	•No scope	710	SF	$0.00	**$0**							-	-	
3	Stair	•New code compliant handrails (Typical of all stairs and ramps)	140	SF	$57.86	**$8,100**	800	4,200				1,200	800	1,100	
4	Storage	•No scope	35	SF	$0.00	**$0**							-	-	
5	Follow Spot	•No scope	90	SF	$14.44	**$1,300**	200					800	100	200	
6	Follow Spot Vestibule	•No scope	46	SF	$28.26	**$1,300**	200					800	100	200	
7	Follow Spot	•No scope	100	SF	$13.00	**$1,300**	200					800	100	200	
8	Storage	•No scope	39	SF	$33.33	**$1,300**	200					800	100	200	
9	Stair	•New code compliant handrails (Typical of all stairs and ramps)				**$0**							-	-	See 2nd Floor Item
10	Stair	•New code compliant handrails (Typical of all stairs and ramps)				**$0**							-	-	See 2nd Floor Item
11	Attic	•No scope	1439	SF	$1.25	**$1,800**	200					1,200	200	200	
12	Balcony	•See level 2				**$0**							-	-	
13	New Wall	•See Note 31 Level 2				**$0**							-	-	
14	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.				**$0**							-	-	see ROOF section
			2,676	SF		**$92,000**									
Roof															
1	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.	33056	SF	$38.27	**$1,265,100**			829,116	148,752			122,200	165,000	
2	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.	860	SF	$45.70	**$39,300**			26,480	3,870			3,800	5,100	
3	New Smoke Exhaust	•New smoke exhaust over stage, remove existing exhaust penthouse. Replace with two new horizontal exhaust louvers on built-up curbs. •Each vent should have the clear area of 14.875 sq. m. •Refer also to mechanical				**$221,800**		132,000	12,000	25,000		2,500	21,400	28,900	
4	New Roof	•New roof over new elevator shaft	77	SF	$66.23	**$5,100**			3,854				500	700	
			33,993	SF		**$1,531,300**									
Exterior Cladding															
1	Walls/ Windows/ Doors	Refer to envelope report. Where repair work is required allow for new cladding / window/ door remedial work. New materials to match existing finishes that neighbour the area of work. For new north wall refer to note 69 above.				**$258,800**			200,000				25,000	33,800	
						$258,800									
TOTAL CONSTRUCTION WORK						**$6,498,700**	127,677	1,577,354	1,077,450	549,657	1,269,683	449,610	631,700	815,200	

APPENDIX C – DETAILED ORDER-OF-MAGNITUDE COST ESTIMATE: OPTION 2

JBA QS **MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 2**

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Demo Tag	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Basement														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time. It is assumed that demolition will include new footing line along this wall.				**SD40 COST**									Wall area ~9,500SF - Cost here is temporary shoring and disconnection of services running through
B	•Remove door and wall	11	LF	$72.73	**$800**	605						100	100	
C	•Remove concrete slab over existing pit. Pit to be enlarged.	80	SF	$105.00	**$8,400**	1,800				3,200	1,500	800	1,100	
D	•Remove existing exterior exit stair. Allow for excavation for new stair				**$1,600**	1,200						200	200	
E	•Demolish existing women's washroom and women's unit washroom. Remove wall between change rooms and corridor. Demolition of finishes in women's change rooms	129	SF	$73.64	**$9,500**	4,500				2,100	800	900	1,200	
F	•Demolition of existing unit washroom to allow for new Garavanta lift. •Demolition to include slab level to facility lift requirements.	43	SF	$76.74	**$3,300**	1,500				800	300	300	400	
G	•Demolition of existing two stall washroom to allow for reconfiguring to janitor room	78	SF	$42.31	**$3,300**	1,500				800	300	300	400	
H	•Remove wall	17	LF	$94.12	**$1,600**	1,000					200	200	200	
I	•Demolition of men's dressing room	532	SF	$23.68	**$12,600**	7,980				600	1,200	1,200	1,600	
J	•Remove walls / demolition of men's dressing room	106	SF	$24.53	**$2,600**	1,800					200	300	300	
K	•Remove walls to allow for expanded electrical room	20	LF	$120.00	**$2,400**	1,090					800	200	300	
L	•Partial demolition of walls and slab to allow for new elevator	90	SF	$107.78	**$9,700**	3,800			2,100	800	800	900	1,300	
M	•Open new wall to allow for door to future water entry room.	1	No.	$1,200.00	**$1,200**	900						100	200	
					$57,000									
Main Floor														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium.													See Basement
B	•Demolition of offices and demising walls		SF	$0.00	**$0**							-	-	
C	•Removal of fixtures and, partitions, millwork and floor finishes to allow for washroom upgrade.	172	SF	$54.65	**$9,400**	2,500				3,750	1,000	900	1,200	
D	•Demolition of staff washrooms		SF	$0.00	**$13,900**	-				9,750	1,000	1,300	1,800	
E	•Demolition of men's washroom	276	SF	$69.93	**$19,300**	4,140				9,750	1,000	1,900	2,500	
F	Demolition of women's washroom	276	SF	$66.30	**$18,300**	4,140				9,000	1,000	1,800	2,400	
G	•Demolition of staff washrooms and change rooms	120	SF	$52.50	**$6,300**	2,800				1,600	500	600	800	
H	•Demolition of staff washrooms and change rooms	175	SF	$50.86	**$8,900**	3,600				2,400	800	900	1,200	
I	•Demolition of offices and demising walls	242	LF	$28.93	**$7,000**	4,500					900	700	900	
J	•Demolition of offices and demising walls	314	SF	$32.17	**$10,100**	4,500				2,400	900	1,000	1,300	
K	•Demolition of women's staff washrooms and change rooms	195	SF	$45.64	**$8,900**	3,600				2,400	800	900	1,200	
L	•Demolition of storage demising walls	35	LF	$82.86	**$2,900**	1,800					400	300	400	
M	•Removal of existing doors	2	Pair	$650.00	**$1,300**	1,000						100	200	
N	•Removal of existing on stage cross over	60	LF	$145.00	**$8,700**	6,750						800	1,100	

Page 2

JBA QS

MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 2

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Demo Tag	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
O	•Partial demolition of seating riser to allow for code compliant accessible position.	50	SF	$26.00	**$1,300**	1,000						100	200	
P	•Removal of doors to allow for new cross over	1	Pair	$700.00	**$700**	500						100	100	
Q	•Removal of load in doors to allow for new cross over and sound and light lock	2	Set	$1,600.00	**$3,200**	2,500						300	400	
R	•Demo of slab for Garavanta lift	46	SF	$50.00	**$2,300**	1,800						200	300	
S	•Partial removal of wall. For exit corridor	6	LF	$116.67	**$700**	500						100	100	
T	•Demolition of band office	223	SF	$38.57	**$8,600**	3,345				2,200	1,200	800	1,100	
U	•Demolition of band storage	491	SF	$29.94	**$14,700**	7,365				2,500	1,500	1,400	1,900	
V	•Demolition of stairs and mezzanine storage				**$2,600**	2,000						300	300	
W	•Removal of doors to allow for new sound and light locks	2	Set	$700.00	**$1,400**	1,100						100	200	
X	•Removal of stairs for new ramp				**$1,600**	1,200						200	200	
Y	•Partial wall removal for new corridor	15	LF	$120.00	**$1,800**	990					400	200	200	
Z	•Demo wall and slab for new elevator	80	SF	$43.75	**$3,500**	1,800					900	300	500	
A1	•Demolition of existing box office and corridor	150	SF	$34.00	**$5,100**	2,200				800	900	500	700	
B1	•Demolition of existing bar	175	SF	$30.86	**$5,400**	2,500				800	900	500	700	
C1	•Demolition of existing kitchen	230	SF	$28.70	**$6,600**	2,800				1,200	1,100	600	900	
D1	•Partial demolition of wall to allow for expanded lobby	26	LF	$150.00	**$3,900**	2,200					800	400	500	
E1	•Demolition of control booth to allow for expanded booth	135	SF	$62.22	**$8,400**	3,820				1,200	1,500	800	1,100	
F1	•Removal of doors for new vestibule	80	SF	$43.75	**$3,500**	1,800					900	300	500	
					$190,300									
Second Floor														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time.													See Basement
B	•Demo corridor wall	20	LF	$90.00	**$1,800**	1,200					200	200	200	
C	•Remove stair and non code compliant mezzanine over				**$3,900**	2,500					500	400	500	
D	•Demolition of class room	495	SF	$16.16	**$8,000**	3,713				1,200	1,238	800	1,000	
E	•Demolition of washroom	214	SF	$35.05	**$7,500**	3,210				1,500	1,070	700	1,000	
F	•Remove stair and non code compliant mezzanine over			$0.00	**$3,900**	2,500					500	400	500	
G	•Demo gym pocket wall	53	LF	$92.45	**$4,900**	3,498					300	500	600	
H	•Demo corridor wall	20	LF	$90.00	**$1,800**	1,200					200	200	200	
I	•Demolition of mezzanine over band storage	455	SF	$27.03	**$12,300**	6,825				1,200	1,500	1,200	1,600	
J	•Demolition of stair to mezz. Over band storage											-	-	See Main Floor
K	•Demolition of existing entry canopy for new canopy	165	SF	$36.97	**$6,100**	4,125					600	600	800	
L	•Demo wall to allow for elevator	15	LF	$120.00	**$1,800**	990					400	200	200	
M	•Demo of wall to open stair to new lobby	24	LF	$100.00	**$2,400**	1,584					300	200	300	
N	•Demolition of existing admin space	1057	SF	$16.75	**$17,700**	7,928				3,171	2,643	1,700	2,300	
O	•Demolition of existing storage	230	SF	$20.00	**$4,600**	2,300				690	575	400	600	
P	•Demolition of existing band room	835	SF	$17.49	**$14,600**	6,680				2,505	2,088	1,400	1,900	
Q	•Removal of wall and doors	10	LF	$230.00	**$2,300**	1,200					600	200	300	
R	•Demolition of kiln room	149	SF	$32.21	**$4,800**	1,800				1,000	900	500	600	
S	•Demolition of storage	85	SF	$23.53	**$2,000**	1,500						200	300	
T	•Demolition of storage	128	SF	$17.19	**$2,200**	1,584					300	200	100	
					$102,600									

MASSEY THEATRE RENOVATION SCOPE LIST (DEMOLITION) - OPTION 2

July-08-15
REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Demo Tag	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Third Floor														
A	•Demolition of existing wall running along the north face of the Massey theatre and the adjoining gymnasium. •Note that the demolition of the gymnasium and adjoining school functions will likely occur at the same time.													See Basement
B	•Demo stairs and mezzanine space				**$0**							-	-	See 2nd Floor
C	•Demo stairs and mezzanine space				**$0**							-	-	See 2nd Floor
D	•Demo mezzanine				**$0**							-	-	See 2nd Floor
E	•Open roof to allow for new elevator	53	LF	$92.45	**$4,900**	3,498					300	500	600	
F	•Remove canopy and infill wall to allow for new glass line				**$0**							-	-	See 2nd Floor
G	•Demo finishes in board room	772	SF	$17.49	**$13,500**	6,176				2,316	1,930	1,300	1,800	
					$18,400									
Roof														
A	•Demolition of wall parapet line and removal of existing roof assembly													See Basement
B	•Partial parapet removal for elevator				**$1,600**	1,200						200	200	
C	•Partial roof curb demo for new elevator over run.	18	LF	$111.11	**$2,000**	1,530						200	300	
D	•Remove smoke exhaust penthouse .	448	SF	$50.67	**$22,700**	16,610					900	2,200	3,000	
E	•Removal of all flashings etc. for new roof				**$0**							-	-	See Roof Replacement
					$26,300									
Exterior Cladding														
	•Refer to envelope report. •In option 2 assume that all exterior cladding is to be removed as required for a full building envelope upgrade. Assume that all windows and doors are to be removed for replacement.	27,000	SF	$0.00	**$0**							-	-	See new construction
					$0									
ASBESTOS & LEAD PAINT														
A	Refer to the Asbestos Report.				**$352,200**	272,300						34,000	45,900	
B	LEAD PAINT - Existing Stucco - include shrinkwrap exterior & remove windows	27,000	SF		**$346,500**	267,750						33,500	45,200	
B	LEAD PAINT - Other finishes				**$64,700**	50,000						6,300	8,400	
					$763,400									
TOTAL CONSTRUCTION					**$1,158,000**	780,100	-	-	2,100	71,600	41,500	112,100	150,600	

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Basement															
1	Storage (Crawlspace)	•No scope	5456	SF	$0.00	**$0**							-	-	
2	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	456	SF	$9.87	**$4,500**					3,500		400	600	See 53 for work to new wall
3	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	986	SF	$6.29	**$6,200**					4,800		600	800	See 53 for work to new wall
4	Storage	•No scope	50	SF	$0.00	**$0**							-	-	
5	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	186	SF	$79.03	**$14,700**	1,488	1,860		4,092	2,200	1,800	1,400	1,900	See 53 for work to new wall
6	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	191	SF	$79.06	**$15,100**	1,528	1,910		4,202	2,200	1,800	1,500	2,000	See 53 for work to new wall
7	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	358	SF	$70.95	**$25,400**	2,864	3,580		7,876	3,500	1,800	2,500	3,300	
8	Storage	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	285	SF	$73.33	**$20,900**	2,280	2,850		6,270	3,000	1,800	2,000	2,700	
9	Corridor	•New code compliant handrails on existing ramp (Typical of all stairs and ramps)	483	SF	$64.80	**$31,300**	2,800	6,000		10,626	3,000	1,800	3,000	4,100	
10	Storage	•No scope	69	SF	$0.00	**$0**							-	-	
11	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	75	SF	$77.33	**$5,800**	800	2,500				1,100	600	800	
12	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	12	SF	$483.33	**$5,800**	800	2,500				1,100	600	800	
13	Corridor	•Scope only relating to new footings and new wall along north face of Massey. Refer to note 53.	990	SF	$0.00	**$0**							-	-	
14	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	348	SF	$34.77	**$12,100**	1,500	6,000				1,800	1,200	1,600	
15	S.L.L.	•No scope	160	SF	$0.00	**$0**							-	-	
16	Storage	•No scope	262	SF	$0.00	**$0**							-	-	
17	Storage	•No scope	132	SF	$52.27	**$6,900**	1,056	1,320		2,904			700	900	
18	Wardrobe/Laundry	•Portion of existing school drama room repurposed as new wardrobe room. Allow for new floor finish and wall paint. •New wall on South side	846	SF	$104.26	**$88,200**	2,500	25,890			29,610	10,152	8,500	11,500	
19	Storage	•No scope	569	SF	$46.05	**$26,200**	2,100	5,690		12,518			2,500	3,400	
20	Storage	•No scope	48	SF	$37.50	**$1,800**	300				1,100		200	200	
21	Storage	•No scope	212	SF	$0.00	**$0**							-	-	
22	Green Room	•Portion of existing school drama room repurposed as new green room. Allow for new floor finish and wall paint. •New wall on North side	842	SF	$98.69	**$83,100**	2,500	22,230			29,470	10,104	8,000	10,800	
23	Green Room Kitchen	•New millwork, plumbing floor finish and wall paint. •New kitchen appliances	181	SF	$262.98	**$47,600**	21,615				11,335	3,801	4,600	6,200	
24	Corridor	New floor finish and wall paint	96	SF	$77.08	**$7,400**	300	1,200			3,000	1,200	700	1,000	
25	Men's WC	•New plumbing fixtures •New wall finish, allow for paint •New floor finish	47	SF	$223.40	**$10,500**	600				6,300	1,200	1,000	1,400	
26	Women's WC	•New plumbing fixtures •New wall finish, allow for paint •New floor finish	52	SF	$178.85	**$9,300**	600	1,200			4,200	1,200	900	1,200	
27	Theatre Shop	No scope	1839	SF	$0.00	**$0**							-	-	
28	Dimmers	No scope	168	SF	$97.02	**$16,300**						12,600	1,600	2,100	
29	Drape Storage	No Scope	283	SF	$57.60	**$16,300**						12,600	1,600	2,100	
30	Orchestra Pit	•Existing orchestra pit reopened and expanded •New wall finish •New floor finish	286	SF	$204.90	**$58,600**	5,790			35,000	2,500	2,000	5,700	7,600	
31	Men's Dressing Room	•Portion of existing band room repurposed as men's dressing room. Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.	506	SF	$150.00	**$75,900**	2,500	12,650		17,710	15,180	10,626	7,300	9,900	
32	Corridor	New corridor. Allow for new corridor wall and exit door. New floor finishes, painted walls, tbar ceiling and lighting.	308	SF	$131.17	**$40,400**	7,746	7,700			9,240	6,468	3,900	5,300	

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
33	Women's WC	•Existing WC expanded to North •New plumbing fixtures •New shower stalls •New ceiling new lighting •New wall finish, allow for paint •New floor finish	248	SF	$295.97	**$73,400**	21,600	3,000			26,938	5,208	7,100	9,600	
34	Women's Change Room	•Existing change room expanded to North Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.	475	SF	$168.00	**$79,800**	30,975	1,500			19,225	9,975	7,700	10,400	
35	Women's Dressing Room	New paint and millwork	119	SF	$37.82	**$4,500**	300	1,100			2,100		400	600	
36	Women's Dressing Room	New paint and millwork	119	SF	$37.82	**$4,500**	300	1,100			2,100		400	600	
37	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	130	SF	$47.69	**$6,200**	800	1,800				2,200	600	800	
38	Unit WC & Shower	New code compliant unit washroom, allow for all new finishes all surfaces and all required code compliant fixturing.	113	SF	$259.29	**$29,300**	6,325	2,200			11,753	2,373	2,800	3,800	
39	Men's WC	•Existing WC expanded to West •New plumbing fixtures •New shower stalls •New ceiling new lighting •New wall finish, allow for paint •New floor finish	251	SF	$367.73	**$92,300**	23,775	3,500		6,275	32,531	5,271	8,900	12,000	
40	Janitor	•Existing WC repurposed as janitor's closet. Allow for janitors basin, storage and all new finishes.	86	SF	$33.72	**$2,900**	600	800				800	300	400	
41	Elevator	•New Garavanta lift, to service (2) levels	55	SF	$1,714.55	**$94,300**	2,500	41,912		22,000	3,500	3,000	9,100	12,300	Lift included here
42	New Electrical Room	•Existing storage room repurposed as new electrical room	414	SF	$1,062.56	**$439,900**	40,000					300,000	42,500	57,400	Incl. Unit Sub, BC Hydro Fee, Ductbank into building
43	Storage (Crawlspace)	•No scope	1800	SF	$19.44	**$35,000**				27,000			3,400	4,600	Lift included here
44	Corridor	No Scope	60	SF	$38.33	**$2,300**						1,800	200	300	
45	Men's Change Room	•Existing change room expanded to North. Allow for new floor finish, paint, tbar ceiling lighting and millwork countertops.	360	SF	$156.94	**$56,500**	9,000	1,500		14,400	11,160	7,560	5,500	7,400	
46	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	105	SF	$55.24	**$5,800**	800	2,500				1,100	600	800	
47	Storage	No scope	69	SF	$0.00	**$0**							-	-	
48	Storage (Crawlspace)	•No scope	937	SF	$55.28	**$51,800**				40,000			5,000	6,800	
49	Storage (Crawlspace)	•No scope	1958	SF	$27.12	**$53,100**				41,118			5,100	6,900	
50	Stair	• New stair relocated to accommodate corridor changes •New stairs and handrails				**$54,400**	14,000			24,000	2,500	1,500	5,300	7,100	
51	Storage	no scope	64	SF	$0.00	**$0**							-	-	
52	Loading	no scope	180	SF	$0.00	**$0**							-	-	
53	New Wall	•New North wall and footings along north face of Massey. •Allow for water proofing , drain tile, drainage matt and insulation.	175	LF	$1,152.57	**$201,700**	7,700	11,375		128,625	15,300		20,400	18,300	New concrete stip footing, foundation wall, full length.
54	New Water Entry Room	•Refer to mechanical	406	SF	$91.63	**$37,200**					30,000		3,800	3,400	
55	Elevator	•New elevator pit	77	SF	$768.83	**$59,200**	1,800	3,000		32,820	6,000	2,200	5,700	7,700	See Main Floor for Elevator
			24,983	SF		**$2,014,400**									

JBA|QS

MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Main Floor															
1	Vestibule & Canopy	•New entrance vestibule added & Canopy •(3) new double doors •New floor finish •New wall finish •New ceiling finish, new lighting	155	SF	$1,427.74	**$221,300**	3,500	116,875		38,950	6,200	5,425	21,400	28,900	
2	Elevator	•New elevator, to service (3) levels	77	SF	$2,298.70	**$177,000**	4,500	107,000		25,290			17,100	23,100	
3	Box Office	•New floor finish, New wall finish, New ceiling finish, allow for new exterior pass through window and interior pass through window	144	SF	$295.14	**$42,500**		24,800			4,464	3,600	4,100	5,500	
4	F.O.H. Manager	•New floor finish	287	SF	$107.32	**$30,800**	300	8,610			8,897	6,027	3,000	4,000	
5	Extended Lobby	•Open walls to Lobby, allow for ~12' openings •New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards •New lighting •New ceiling finish	1180	SF	$155.25	**$183,200**	3,500	76,700			36,580	24,780	17,700	23,900	
6	Bar Storage	•New floor finish, painted walls, new lighting	168	SF	$110.12	**$18,500**	200	5,880			5,208	3,024	1,800	2,400	
7	Bar	•New millwork, plumbing and bar equipment.	124	SF	$598.39	**$74,200**	800	26,580			19,340	10,600	7,200	9,700	
8	Corridor	new floor finish and paint	120	SF	$15.00	**$1,800**	200					1,200	200	200	
9	Stair	•New porcelain tile on existing stair, new handrails, painted walls new lighting	124	SF	$153.23	**$19,000**	1,500	12,000				1,200	1,800	2,500	
10	Storage	No scope	40	SF	$17.50	**$700**						500	100	100	
11	S.L.L.	new wall treatment, new carpet	122	SF	$184.43	**$22,500**	800	11,490			3,904	1,159	2,200	2,900	
12	Lobby	•New floor finish, allow for porcelain tile•New wall finish,	2517	SF	$141.24	**$355,500**	8,810	67,760		95,000	80,544	22,653	34,300	46,400	
13	Control Booth	•Existing control booth expanded, painted walls new floor treatment.	265	SF	$200.75	**$53,200**	250	29,925			8,480	2,518	5,100	6,900	
14	S.L.L.	new wall treatment, new carpet	122	SF	$183.61	**$22,400**	800	11,490			3,904	1,098	2,200	2,900	
15	Storage	no scope		SF	$0.00	**$0**							-	-	
16	First Aid	•Portion of existing women's WC repurposed as first aid room, all new finishes	108	SF	$44.44	**$4,800**	200	1,620			1,296	540	500	600	
17	Unit WC	•Portion of existing women's WC repurposed as unit WC, all new finishes and fixturing as req. per unit washroom.	72	SF	$337.50	**$24,300**	900	8,560			7,804	1,512	2,300	3,200	
18	Entry	new porcelain tile flooring new entry doors, new painted walls	164	SF	$98.78	**$16,200**	1,066	4,660			5,248	1,558	1,600	2,100	
19	Stair	•New handrails, porcelain tile on existing treads, stair taken to feature stair level of finish.	200	SF	$153.00	**$30,600**	1,200	12,100		8,500		1,800	3,000	4,000	
20	Storage	No scope	100	SF	$0.00	**$0**							-	-	
21	Storage	No scope	100	SF	$0.00	**$0**							-	-	
22	Public Men's WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint •New ceiling finish / new lighting	530	SF	$275.28	**$145,900**	2,100	48,117			51,450	11,130	14,100	19,000	
23	Corridor	No Scope	268	SF	$379.85	**$101,800**	1,800	43,262			30,424	3,216	9,800	13,300	
24	Public Women's WC	•New wall on North side •New plumbing fixtures •New floor finish, allow for porcelain tile •New wall finish, allow for tile and paint •New ceiling finish/ new lighting	576	SF	$276.39	**$159,200**	2,100	56,192			52,600	12,096	15,400	20,800	
25	Servery	New millwork counter with sink., plug in for catering racks, new floor and wall treatment	341	SF	$187.98	**$64,100**	800	31,095			14,412	3,240	6,200	8,400	
26	Janitor	existing, no scope	67	SF	$0.00	**$0**							-	-	
27	Storage	new floor finish painted walls lighting	936	SF	$93.16	**$87,200**	1,800	23,400		4,800	23,400	14,040	8,400	11,400	
28	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	90	SF	$70.00	**$6,300**	500	3,200				1,200	600	800	
29	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	20	SF	$315.00	**$6,300**	500	3,200				1,200	600	800	

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
30	Corridor	•New floor finish, allow for porcelain tile •New wall finish, allow for paint and new baseboards •New lighting •New ceiling finish	1858	SF	$114.05	**$211,900**	8,361	55,273		24,000	59,456	16,722	20,500	27,600	
31	Storage	new floor finish painted walls lighting	86	SF	$51.16	**$4,400**		2,184				1,200	400	600	
32	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	392	SF	$57.40	**$22,500**	2,200	8,500		3,500		3,200	2,200	2,900	
33	Storage	No scope except for new wall	258	SF	$16.67	**$4,300**				2,100		1,200	400	600	
34	S.L.L.	New SLL all new finishes, doors and walls	74	SF	$275.68	**$20,400**	800	11,234			2,220	1,480	2,000	2,700	
35	Crossover	•New crossover behind existing stage area, all new finishes, doors and walls	630	SF	$192.38	**$121,200**	2,205	62,550			20,160	8,820	11,700	15,800	
36	Large Rehearsal Room	•Existing small gymnasium repurposed as large rehearsal room, new sprung floor, painted walls, ceilings, lighting new theatre hanging grid.	3976	SF	$64.36	**$255,900**	4,771	27,831		10,125	135,184	19,880	24,700	33,400	
37	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	360	SF	$39.72	**$14,300**	800	8,000				2,200	1,400	1,900	
38	Office	No Scope	100	SF	$16.00	**$1,600**						1,200	200	200	
39	Stage	patch and repair where cross over was removed. No other scope	2840	SF	$64.19	**$182,300**	7,500	14,000		99,400		20,000	17,600	23,800	
40	Auditorium	•New built-out platform for accessibility •New wall finish, allow for paint •New floor finish, allow for carpet	6420	SF	$94.35	**$605,700**	3,500	90,870			263,220	110,620	58,500	79,000	Includes Allowance $40,000 for PA
41	Orchestra Pit	•Existing orchestra pit reopened and expanded •New wall finish •New floor finish	360	SF	$95.56	**$34,400**	1,200	5,400				20,000	3,300	4,500	
42													-	-	
43	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	90	SF	$83.33	**$7,500**	600	4,000				1,200	700	1,000	
44	Storage	No scope	67	SF	$0.00	**$0**							-	-	
45	S.L.L.	New sound and light lock, allow for new over sized load in doors, new man man door all new finishes and walls.	111	SF	$257.66	**$28,600**	800	15,759			3,330	2,220	2,800	3,700	
46	Shop	No scope	40	SF	$0.00	**$0**							-	-	
47	Office	No Scope	188	SF	$0.00	**$0**							-	-	
48	Stair	•New handrails	40	SF	$132.50	**$5,300**	300	2,600				1,200	500	700	
49	Stair	•New code compliant handrails, contrasting nosings and tactile warning (Typical of all stairs and ramps)	188	SF	$63.83	**$12,000**	600	6,800				1,800	1,200	1,600	
50	Storage	No Scope	40	SF	$590.00	**$23,600**	1,200	2,800		12,000	1,000	1,200	2,300	3,100	
51	Elevator	•New Garavanta Lift, to service (2) levels	44	SF	$336.36	**$14,800**	800	9,450				1,200	1,400	1,900	See basement 43 for Lift
52	Stair	•New handrails	40	SF	$120.00	**$4,800**	300	2,600				800	500	600	
53	S.L.L.	No Scope	60	SF	$0.00	**$0**							-	-	
54	S.L.L.	New sound and light lock, allow for new walls new finish	88	SF	$242.05	**$21,300**	800	10,975			2,816	1,848	2,100	2,800	
55	Corridor	New floor and wall finishes	97	SF	$108.25	**$10,500**	800	2,425			3,104	1,746	1,000	1,400	
56	New Corridor	•New walls, new floor wall and ceiling finishes. New lighting.	320	SF	$110.94	**$35,500**	1,200	11,600			9,920	4,800	3,400	4,600	
57	Soundproof Room	No Scope	120	SF	$0.00	**$0**							-	-	
58	New Data Room	•Existing soundproof room repurposed as new data room, refer to electrical	120	SF	$360.00	**$43,200**	800	3,000			4,560	25,000	4,200	5,600	
59	S.L.L.	New flooring and wall finishes	88	SF	$189.77	**$16,700**		9,400			2,200	1,320	1,600	2,200	
60	Corridor	New flooring and wall finishes	320	SF	$191.88	**$61,400**	1,500	11,200		22,000	8,000	4,800	5,900	8,000	
61	Small Rehearsal Room	•Portion of existing band rooms and storage repurposed as small rehearsal room. Allow for sprung floor, new painted wall treatment , house lighting.	1585	SF	$179.68	**$284,800**	2,500	85,063		28,838	55,475	48,285	27,500	37,100	
62	New Ramp	•New ramp to replace old stairs for accessibility•New ha	112	SF	$330.36	**$37,000**	300	4,234		2,800	3,920	17,352	3,600	4,800	
63	New Corridor	•New Wall, new floor, wall and ceiling finishes , new lighting	115	SF	$362.61	**$41,700**	1,200	9,645			4,025	17,415	4,000	5,400	
64	Stair	•New stair to tech ledge.	92	SF	$80.43	**$7,400**	400	3,500				1,800	700	1,000	
65	Storage	•Portion of existing band room repurposed as storage, new wall, new flooring painted walls and lighting.	815	SF	$129.57	**$105,600**	1,200	17,625		2,160	28,525	32,115	10,200	13,800	
66	Corridor	•New Wall, floor and ceiling finishes	93	SF	$284.95	**$26,500**	200				3,255	16,953	2,600	3,500	
67	Storage	No Scope	112	SF	$248.21	**$27,800**	200				3,920	17,352	2,700	3,600	

MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
68	Storage	No Scope		SF	$0.00	**$0**							-	-	
69	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report	9500	SF	$62.80	**$596,600**	7,125	332,500		142,500			60,300	54,200	Cladding allowance $45/SF
70	S.L.L.	New sound and light lock, allow for new walls new finishes.	88	SF	$242.05	**$21,300**	800	10,975			2,816	1,848	2,100	2,800	
71	Small Rehearsal Room	•Portion of existing band rooms and storage repurposed as small rehearsal room. Allow for sprung floor, new painted wall treatment , house lighting.	1615	SF	$176.90	**$285,700**	1,500	81,495		32,325	56,525	48,915	27,600	37,300	
			42,559	SF		**$5,067,800**									
Second Floor															
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package	77	SF	$697.40	**$53,700**	2,500	26,950		12,000			5,200	7,000	See Main Floor item 1 for Elevator Equipment
2	Upper Lobby	New Upper Lobby. Allow for porcelain tile flooring , painted walls, GWB ceiling all new lighting. Allow for the reinstatement of the window over the front entry.	2989	SF	$165.61	**$495,000**	2,200	117,325		104,615	95,648	62,769	47,800	64,600	
3	Upper Lobby Bar	•New millwork and bar equipment	270	SF	$293.33	**$79,200**	800	34,150			15,600	10,670	7,700	10,300	
4	Stair	•New handrails, porcelain tile on existing treads, stair taken to feature stair level of finish.	1	Flt		**$23,100**	2,100	15,800					2,200	3,000	
5	S.L.L.	New finishes	80	SF	$16.25	**$1,300**	200					800	100	200	
6	S.L.L.	New finishes	80	SF	$16.25	**$1,300**	200					800	100	200	
7	S.L.L.	New finishes	80	SF	$16.25	**$1,300**	200					800	100	200	
8	Storage	No Scope	740	SF	$0.00	**$0**							-	-	
9	Display	No Scope											-	-	
10	Stair	•New handrails, porcelain tile on existing treads, stair taken to feature stair level of finish.				**$26,700**	2,100	18,500					2,600	3,500	
11	Women's Admin WC	•Existing classroom repurposed as women's upper lobby WC, new floor tile, new wall tile , fixtures, partitions, millwork counters	215	SF	$489.30	**$105,200**	1,800	31,115		18,000	25,915	4,515	10,200	13,700	
12	Men's Admin WC	•Existing classroom repurposed as women's upper lobby	215	SF	$489.30	**$105,200**	1,800	31,115		18,000	25,915	4,515	10,200	13,700	
13	Admin	•Existing WC and drama room repurposed as admin room, new carpet tile flooring, painted walls, new windows length of north wall (new wall)	1401	SF	$210.35	**$294,700**	3,000	105,075	39,900		44,832	35,025	28,500	38,400	
14	Janitor	No Scope	112	SF	$0.00	**$0**							-	-	
15	Mechanical Room	•Existing mechanical room expanded. Refer to mechanical	727	SF	$352.54	**$256,300**	2,100	5,000	6,000	27,000	140,000	18,000	24,800	33,400	
16	Balcony	•New guardrails at end of aisles. •New wall finish, allow for paint •New floor finish, allow for carpet	3200	SF	$19.84	**$63,500**	2,500	46,600					6,100	8,300	M/E with Aucitorium
17	Shop Mezzanine	No Scope	740	SF	$2.43	**$1,800**	200					1,200	200	200	
18	Storage Mezzanine	No Scope	156	SF	$8.33	**$1,300**	200					800	100	200	
19	Stair	•New stairs and handrails from tech ledge				**$9,400**	800	6,500					900	1,200	
20	Mezzanine	•New tech ledge mezzanine in small rehearsal room over new storage	441	SF	$2.95	**$1,300**	200					800	100	200	
21	New Wall	•New exterior wall on North side of building. •Allow for new structure (refer to structural) steel stud infill, dens shield , peel and stick, spray insulation rain screen cladding system. •Refer to envelope report											-	-	See Main Floor
22	New Roof	•New roof. Refer to envelop report		SF	$0.00	**$0**							-	-	See ENVELOPE Section
			11,524	SF		**$1,520,300**									

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MASSEY THEATRE RENOVATION SCOPE LIST - OPTION 2

July-08-15

REVISION 3

DETAILED ORDER OF MAGNITUDE COST ESTIMATE

Rm #	Room Name	Scope Description	Area/Quantity		Unit Cost	TOTAL	Demol/Alt	Architectural	Envelope	Structural	Mechanical	Electrical	OH&P	Contingency	JBA Notes
Third Floor															
1	Elevator	•New elevator, to service (3) levels •Basic elevator finish package	77	SF	$998.70	**$76,900**	2,500	40,990		16,000			7,400	10,000	See Main Floor item 1 for Elevator Equipment
2	VIP Lounge	•Existing board room repurposed as new VIP lounge •New wall finish, allow for paint •New carpet tile floor finish	710	SF	$220.14	**$156,300**	3,000	57,190		18,000	24,850	17,750	15,100	20,400	
3	Stair	•New handrails, porcelain tile treads, existing walls painted.	140	SF	$142.14	**$19,900**	2,200	12,000				1,200	1,900	2,600	
4	VIP Bar	•New bar millwork. No bar equipment.	15	LF	$1,533.33	**$23,000**		11,250			4,000	2,500	2,200	3,000	
5	Storage	No Scope	39	SF	$33.33	**$1,300**	200					800	100	200	
6	Follow Spot	•New follow spot lights	100	SF	$363.00	**$36,300**	1,200	6,500		14,400	3,500	2,500	3,500	4,700	
7	Follow Spot Vestibule	No Scope	46	SF	$28.26	**$1,300**	200					800	100	200	
8	Follow Spot	•New follow spot lights	100	SF	$363.00	**$36,300**	1,200	6,500		14,400	3,500	2,500	3,500	4,700	
9	Storage	No Scope				**$0**							-	-	See 2nd Floor Item
10	Attic	No Scope				**$0**							-	-	See 2nd Floor Item
11	Balcony	See second floor balcony notes	1439	SF	$1.25	**$1,800**	200					1,200	200	200	
12	New Wall	See note 21 Level 2				**$0**							-	-	
13	New Roof	See Note 22 Level 2				**$0**							-	-	
			2,666	SF		**$353,100**									
Roof															
1	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.	33056	SF	$43.12	**$1,425,400**			829,116	272,712			137,700	185,900	incl. snow load upgrade
2	New Roof	•New 2 ply SBS roof assembly with sloped tapered insulation allow for new curbs at all mechanical units, new penetrations and new flashings at all parapets. Typical.	860	SF	$45.70	**$39,300**			26,480	3,870			3,800	5,100	
3	New Smoke Exhaust	•New smoke exhaust over stage, remove existing exhaust penthouse. Replace with two new horizontal exhaust louvers on built-up curbs.				**$221,800**		132,000	12,000	25,000		2,500	21,400	28,900	
4	New Roof	•New roof over new elevator shaft	77	SF	$66.23	**$5,100**			3,854				500	700	
5	New Roof	•New roof/ canopy extension over new entry vestibule		SF	$0.00	**$0**							-	-	
			33,993	SF		**$1,691,600**									
Exterior Cladding															
1	Walls/ Windows/ Doors	Refer to envelope report. Assume a full envelope upgrade. F	27000	SF	$88.71	**$2,395,100**		50,000	1,700,000	101,250			231,400	312,400	Inlcuded structural remediation and $50K allowance for mold remediation
			27,000	SF		**$2,395,100**									
Mechanical															
1	Domestic Water Supply	•Replace the entire domestic water supply piping with new piping.	81,732	SF	$8.41	**$687,300**	61,299	102,165			367,794		66,400	89,600	
2	HVAC System	•The entire mechanical system will be upgraded to a modern, efficient HVAC system using heat recovery ventilation	81,732	SF	$7.12	**$582,200**					450,000		56,300	75,900	Cost here is for upgrades to equipment. Costs are also included in Room Areas/Renovations above
3	DDC Controls	•Install a full DDC system by ESC Automation	81,732	SF	$1.98	**$161,700**					125,000		15,600	21,100	
			81,732	SF		**$1,431,200**									
Theatre Equipment															
1	Sound					**$40,000**									
2	LED Fixtures					**$140,000**									
3	Drapes					**$60,000**									
4	Video					**$80,000**									
5	Rigging/Grid					**$1,200,000**									
6	Micell					**$380,000**									
						$1,900,000									
TOTAL CONSTRUCTION WORK						**$14,473,500**	412,000	2,695,100	2,617,400	1,637,000	2,661,600	1,193,400	1,402,300	1,854,800	

June 22, 2015 **Project No.: 6455**



Wayne Werbovetski, B. Arch., MAIBC
The Corporation of The City of New Westminster
511 Royal Avenue
New Westminster BC V3L 1H9

RE: MASSEY THEATRE CONDITION ASSESSMENT
735 EIGHTH AVENUE NEW WESTMINSTER
STRUCTURAL SYSTEMS

Introduction

As the request of the City of New Westminster we have been retained to do a structural condition assessment of the Massey Theatre in New Westminster. On May 19, 2015 we visited the Massey Theatre for the purpose of viewing the building and being briefed on the structural condition assessment and determining the structural work necessary in the building both from a short term and long term basis. Our mandate was to identify structural items that will need to be addressed in the short term and those that should be addressed in the long term.

Our work has consisted of a site visit on May 19th, 2015 and a review of available drawings and during the visit of May 19th, 2015 we toured the building on all levels including basement, main floor, upper levels, attic space including the truss area over the gym and theatre and the roof. Much of the structure is hidden by finishes and our review did not involve any non-destructive or destructive testing or removal of finishes. We also had access and reviewed a report that was done by Bush, Bohlman & Partners on June 11, 2009 portions of which are included in this report. We had access to drawings but the drawings are very limited.

Architectural drawing Sheet 2, 3, 15 of the original "Junior High School", drawings are undated. Drawing 1/9, 2/9 3/9 and 4/9 of the 1963 addition to "Massey High School", these are dated November 1963. Our review has been hampered by not having complete drawings. Additional work on the building will need to allow for field review and survey of structure as part of the design, there will also be more uncertainty with the resulting design as even with survey work including localized removal of finishes not having sufficient drawings increases the chances of finding areas of structure that differ from the areas tested. With the limited duration of this study we have not attempted to measure the existing structure to verify if it agrees with the limited drawings that we have or establish the structural system in areas that we do not have drawings for.

Our review is for structural issues only, our review in no way covers membrane issues or results of those issues, however, we note that the membrane is not a rain-screen type and with a building of this vintage there may be areas where leaks in the exterior membrane have led to deterioration of some of the load bearing structure. Similarly our review does not cover hazardous materials including but not limited to asbestos, lead paint and mercury, however, in a building of this vintage these materials would be expected to have been used in its construction.
The desire is to look at two cases:

a) Base Case – minimum work to "get the doors open" this will include
b) Upgrade Case – Do upgrading on the building to improve seismic and snow resistance.

Background to the Existing Building

The existing Theatre building and surrounding structure was built around 1950. The existing building consists of two parts, the Theatre portion, including the auditorium and fly tower, and the one, two and three storey structure surrounding the Theatre. The surrounding structure includes the lobby, concession, and offices, and the Plaskett Gallery to the south of the auditorium, as well as the classrooms to the west of the auditorium and stage area and the washrooms, storage areas and dressing rooms to the north-west of the stage. Also surrounding and directly connected into the Theatre structure is a large gymnasium to the west of the Theatre and classrooms, and a small gymnasium to the north-west of the stage area, as well as the band rooms to the east of the auditorium. These portions of the building will be removed and have not been reviewed as part of this report. See attached photos 1-7 for exterior views of the structure. The Massey Theatre and surrounding structure is a roughly rectangular building with flat roofs at different levels. The building has an approximate length of 56m in the north-south direction and a width of 36m in the east-west direction.

Present Condition of the Structure

The building is currently fully occupied. The Theatre is in operation with the lower basement areas used for storage. The two-storey block with attic and basement to the west of the auditorium is fully occupied as part of the school with classrooms. The west basement is used for storage. To the south of the Theatre is the main entry with the concession and lobby at the ground floor level, offices and the balcony entry at the second floor level and a partial third floor level housing the board room. South of the lobby and concession is the single storey Plaskett Gallery above a crawl space. The area to the north-west of the stage area is fully occupied with washrooms and dressing rooms in the basement and storage at the first floor level with a partial mezzanine below the roof.

The existing timber roof, floors, and walls as well as the load-bearing concrete and timber columns, and the infill masonry walls appear to be performing as intended for the loads presently imposed and imposed over the past years. There are no signs of structural distress including fire or sagging floors or cracking of the exterior stucco finish and interior sheathing. The timber trusses, joists, and studs are exposed in the attic space and this timber appears to be in good condition. The last re-roofing of the building was in the early 1990s and there is now considerable moss growth on the roof.

The basements/crawl spaces are dry and no rot, deterioration, or structural distress were visible during the site visits. Building foundations appear to be performing well with no signs of excessive settlement or cracking.

Structural System

The structural system across the Theatre and surrounding structure is varied.

Inside the Theatre above the auditorium the roof structure consists of roofing over laminated 2"x 4" lumber spanning to 12"x 8" wood beams at 3.0m on centre. The 12"x 8" beams are supported by wood trusses with 12"x10" timber top and bottom chords and timber and steel rod web members (see photo 9). These roof trusses span in the east-west direction and are supported on the west wall line by wood columns and on the east wall line by 300mm deep x 400mm wide concrete pilasters/columns. Concrete pilasters/columns are supported at basement level by concrete foundations. The infill wall between the load bearing wood columns on the west wall is 2"x 6" at 400mm on centre to foundation level. The infill wall between the load-bearing concrete columns on the east wall is 200mm unreinforced masonry block to the foundation level.

The south wall is 2"x 6" wood studs at 400mm on centre. At ground level in the auditorium there is concrete slab-on- grade. Concrete foundation walls enclosing the auditorium are supporting the above structure and also retaining the un-excavated area below the slab-on-grade from the adjacent crawl spaces.

The balcony structure was not visible on site but we expect the structure to consist of wood flooring spanning to wood joists supported by concrete beams. The concrete beams span to concrete columns and transfer loads into reinforced concrete footings. Existing architectural drawings show the balcony structure is supported by reinforced concrete cantilever beams at approximately 5.0m on centre in the north-south direction spanning to concrete columns on pad footings.

The Theatre fly tower structure is comprised of roofing over shiplap spanning to 3"x 8" wood joists at 400mm on centre supported by steel wide flange beams spanning in the north-south direction supported by 200mm reinforced concrete walls with 1OOmm x 400mm wide pilasters at beam locations (see photo 10).

Concrete walls extend to foundation level and are supported by concrete foundation walls. The stage is wood construction.

Above the classroom block the roof structure consists of roofing above diagonal shiplap spanning to wood roof joists at 400mm on centre. Roof joists span in the east-west direction. The wood joists are supported by wood stud walls on each side. There is a partial attic floor above the corridor and consists of laminated 2"x 4" lumber spanning to the load-bearing wood stud corridor walls. We expect the second and ground floor structure consists of shiplap on wood joists spanning in the east- west direction to the load-bearing corridor, auditorium, and west gymnasium wood stud walls. Load- bearing wood stud walls are supported by concrete foundation walls on the east wall at ground floor level, and elsewhere in the block, wood stud walls extend through the crawl space/basement to foundation level and are supported by concrete footings. The classroom block is located over a basement/crawl space area.

The roof structure above the lobby, concession, and offices, and above the Plaskett Gallery was only visible above the board room. We expect the structure will consist of roofing over shiplap spanning to wood joists spanning in the north-south direction. We expect the ground floor level and second floor level to consist of shiplap spanning to wood joists. Wood joists will be supported by load- bearing wood stud walls or wood beams and columns supported by concrete walls or footings. The lobby, concession, and offices, and the Plaskett Gallery are located above a crawl space.

Due to the lack of existing drawings for both the Theatre and surrounding structures, a significant amount of investigation into the existing building structure will be required prior to preparing a seismic upgrade design and construction documents for the structure.

Options

The desire is to look at two cases:

a) Base Case – minimum work to “get the doors open”
b) Upgrade Case – Do upgrading on the building to improve

Base Case

The base case is to maintain the building as it is now addressing critical items that need to be addressed while relying on the historical resistance for seismic and snow load so no upgrading for increased Code loading requirements.

- Facility will become a City of New Westminster facility and not a school.
- No Seismic upgrading
- No upgrading for snow load
- Add an elevator
- Make building no worse
- Large gym to the west gets cut off and will need wall created at this side.
- Envelope Upgrade
- Mechanical / Electrical refurbishment requiring local strengthening of the roof if located on the roof.
- Open lobby by removal of wall between lobby and present gallery / reception space.

Base case structural work is as follows:

Item	Structural Implications
Add two elevators	For costing allow for cutting holes in floor and adding footing below and concrete shaft.
Large Gym Cut off	This requires considerable work to existing wall that presently divides the theatre portion of the building from the gym. Add columns at location where trusses are cut off to support the beam on the gym side of the wall that carries the joists on the theater side. Convert the interior wall to an exterior wall. In some locations this wall is to be a seismic wall – do seismic wall activities in these locations. See Appendix C for photos and discussion.
Envelope Upgrade	Allow for replacement of any rotten members. Extent of this not yet known. If new plywood is to be added will nail appropriate for seismic loads and add anchors to wall base. Walls that are identified on our seismic upgrade drawings as being part of the seismic system are to be upgraded as seismic walls.
Re-Roof	Add new plywood to upgrade diaphragms if re-roofing is called for. See discussion of seismic upgrading. Aim is to do any work now that would require removal of roofing later.
New Generator and Transformer outside Building	Provide concrete pads and fencing and screening.
Mechanical units on roof	Allow for local strengthening of existing roof. Extent of upgrading to include snow drift area near the equipment.
Handrails and Guards	There are a variety of areas where handrails and guards are not up to Code either from a capacity standpoint or from failing to meet a variety of dimensional requirements. The fixing of these is a joint architectural / structural activity.

Review of Seismic System Capacity

The seismic system within the structure consists of a number of different seismic load-resisting elements. Within the fly tower lateral loads at the roof level are transferred through shiplap into 200mm thick concrete walls. Lateral loads in the 200mm concrete walls are transferred through the wall into concrete foundations. The seismic system in the auditorium consists of a laminated 2"x4" lumber roof deck which transfers lateral loads into each wall. Lateral loads are transferred from the roof deck into the reinforced concrete proscenium arch and 200mm thick reinforced concrete walls which form the south face of the fly tower. Lateral loads are transferred through the concrete wall into the concrete foundations. Along the south and the west wall of the auditorium, lateral loads from the roof deck are transferred into 2"x 6" wood stud walls. Walls are sheathed with shiplap and drywall however the sheathing is not continuous to the underside of the roof deck. Lateral loads are transferred through the wood stud walls into the concrete foundations. Along the east wall, lateral loads are transferred from the roof deck into 200mm thick unreinforced masonry block walls and into the below concrete foundation wall. The building has very little resistance in both the north-south and east-west directions. Lateral forces induced by the retaining of earth below the auditorium slab are transferred into the soils below by the reinforced concrete foundation walls surrounding the auditorium.

To the west of the Theatre, in the alongside two-storey classroom block, loads are transferred from the shiplap roof deck into drywall or shiplap sheathed wood stud walls and into the foundations below.

To the south of the Theatre portion of the building in the three-storey lobby, concession, office block and in the one-storey Plasket Gallery loads are transferred from the shiplap roof deck into sheathed wood stud walls and into the foundations below. At the second floor level, lateral forces are transferred through shiplap flooring and into the concrete beams and columns which form part of the balcony. These reinforced concrete beams and columns transfer a small amount of lateral force through moment-resisting beam column joints.

The sheathed wood stud walls resisting lateral forces in both the lobby, concession, office block, and in the classroom block are not located directly above one another and therefore lateral forces are not directly transferred from one level into the lower level. Forces are first transferred from the terminated sheathed wood stud wall through the floor diaphragm and into the below lateral force resisting elements.

To the north-west of the stage area in the single-storey with basement portion of the structure, housing washrooms, dressing rooms and storage areas, the structure was not visible during the site visit. We expect loads to be transferred from shiplap roof deck into sheathed wood stud walls and into the concrete foundations below.

The expected overall seismic performance of the building in its present state is very poor. The Theatre, including the auditorium and the fly tower will provide a combined lateral resistance of less than 60% of the seismic forces prescribed by the BCBC 2006 in the east-west direction, and less than 20% in the north-south direction. Due to the layout of the auditorium and fly tower, a large amount of torsion is introduced into the structure effectively reducing the overall lateral resistance of the building and specifically the resistance in the east-west direction.

The classroom block to the west of the auditorium will provide a lateral resistance of less than 20% of the seismic forces prescribed by the BCBC 2006.

The lobby, concession, office block to the south of the auditorium have a lateral resistance less than 20% of the seismic forces prescribed by the BCBC 2012. The Plaskett Gallery to the south of the lobby/concession/offices will provide a lateral resistance less than 30% of the seismic forces prescribed by the BCBC 2012.

Overall the structure is highly non-Code compliant with an effective seismic resistance of less than 20% current Code levels and is therefore a high risk building. The existing roof and floor diaphragms within the structure are either shiplap, or 2"x 4" laminated lumber with no plywood. Neither of these systems is recognised by the BCBC 2006 as a suitable mechanism to transfer lateral forces. In the lobby, concession and office block, and in the classroom block, the shiplap floor diaphragms are incapable of transferring the shear carried by the terminated wood stud walls into the below lateral force resisting systems.

There are no existing drawings of the masonry wall along the east wall of the auditorium which we expect to be unreinforced. Unreinforced masonry walls are not permitted by the current Code. Typically unreinforced masonry, especially tall walls, have performed poorly under moderate to high seismic loading, with the masonry walls collapsing out-of-plane.

The connections between the roof and the masonry exterior wall and the reinforced concrete walls of the fly tower are not fully visible, however, typical connections between diaphragms and exterior walls in buildings of this vintage have performed poorly under seismic loading permitting the exterior masonry to fall away from the building and, in the case of the fly tower, a gap to form between the roof diaphragm and the reinforced concrete walls.

Review Roof Snow Resistance Capacity

Since the Massey theatre was constructed the snow load has increased and requirements in drift areas have become more defined. We have only limited drawings to go off and these drawings do not include all areas of either the original building or its subsequent additions. The drawings we have do not show design loading assumptions and we must assume that the building was designed to snow loads that were Code mandated in 1960. There have been three increases in the Code required snow loading that will affect this building:

a) After the 2006 edition of the British Columbia Building Code the snow load increased by 10% to account for going from a 1 in 30 year return period for snow that was used in design to a 1 in 50 year return period. In 1961 the roof snow load regularly by code was 32 psf (1.53 kPa) under the current code we are required to design for a snow roof of 2.04 kPa (42.6 psf) an increase of 33%.
b) The 2006 edition of the British Columbia Building Code included the requirement that wind effects be considered in conjunction with snow loading this increased the required roof loading by 0.2 kPa which increases the required design load to 2.24 kPa the existing roof of the theatre designed for a load that is only 68% of the current code requirements.
c) The requirements for snow drift are now much better defined in the Code than they were when the Massey Theatre was designed and while we do not have drawings showing loading there does not seem to be any evidence that snow drifting was considered in the original design as joist size and spacing in snow drift areas appears to be the same as in non-drift areas.

On a Code comparison basis we find that if the existing roof was designed efficiently for the snow loads present in the day it would be capable of resisting 68% of the snow load currently required by Code in the non-drift areas and 17% of the snow load currently required by Code in the drift areas. The building has been performing well for snow loads to date and this is sometimes used as a reason not to upgrade the snow loading capacity of a non-conforming roof. However, if we are doing anything which makes worse a non-conforming situation such as adding rooftop equipment or roof-top obstructions that would cause increases in snow load from drifting then upgrading of the roof would be required both for the increased load from the mechanical equipment and from the associated snow drift load.

Upgrading Case – Option 2

The upgrading case is to take the "Base Case" to a higher level extending the life of the building and providing for increased compliance with current Codes.

- Do a "life-safety" Seismic upgrading
- Upgrade for areas of the roof that are deficient for current snow load.
- Remove cladding to the bones of the building and provide a modern skin on the building which would not only change the appearance but improve durability and energy efficiency of the building.
- Additional mechanical equipment would be expected.

Upgrading case structural work is as follows:

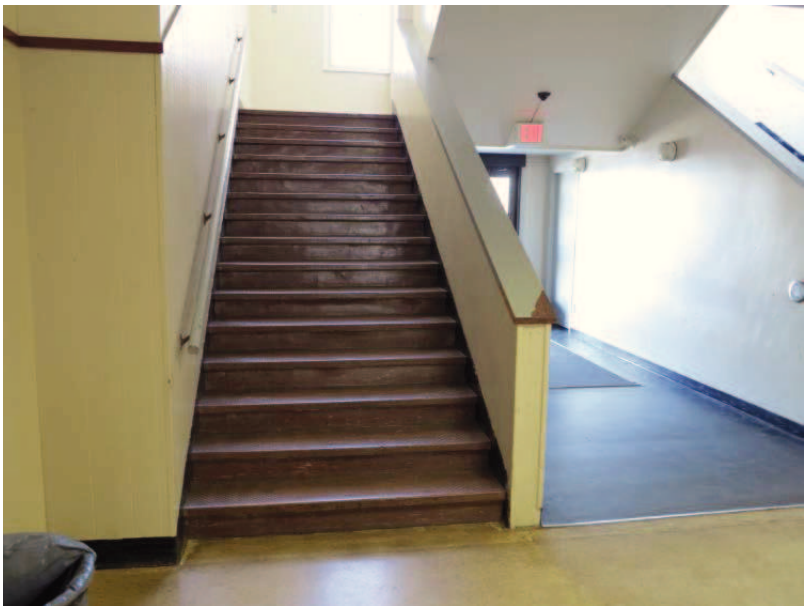
Item	Structural Implications
Life safety seismic upgrade	Seismic upgrade items (See Appendix A for typical details): • Sheath existing roofs with new plywood (WD#1) • Sheath existing stud walls with plywood (WSW#1) • Add vertical reinforcing to existing Masonry (MW#1) • Add horizontal FRP to existing masonry or concrete (MW#2) • Add new interior concrete shearwalls (CSW#1) • Provide new structural steel drag struts and chords
Envelope Upgrade	Allow for replacement of any rotten members. Extent of this not yet known. If new plywood is to be added will nail appropriate for seismic loads and add anchors to wall base.
Snow Upgrade	Upgrade roof particularly in the snow drift areas.
Open up lobby	Remove existing walls between the columns. Assume that the existing walls are load bearing and add beam over and strengthen columns. Improved seismic capacity of walls that are not removed.
Additional Mechanical units on roof	Location and number unknown at this point. Allow for local strengthening of existing roof.



Left: Existing roof – re-roofing is expected with extensive moss present. When re-roofing add plywood that is shown on the seismic upgrading drawings.



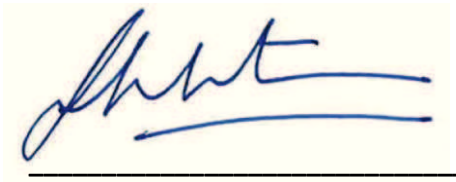
Left: Existing Membrane/Exterior Envelope



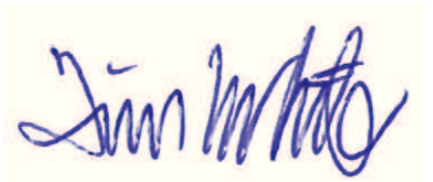
Left: Existing stairs have a variety of issues with handrails and guards. At first stage "get doors open" there will need to be upgraded to current code.

Conclusion:

We have evaluated two options for upgrading the Massey Theatre – the first being a "get the doors open" option and the second being doing structural work that is more long term including a life safety level of seismic upgrading. Our report has been an attempt to identify these items and give a rough indication of scope. There needs to be a large contingency attached to the pricing of this work to account for the lack of drawings, finishes hiding much of the structure and uncertainly with respect to future revisions.



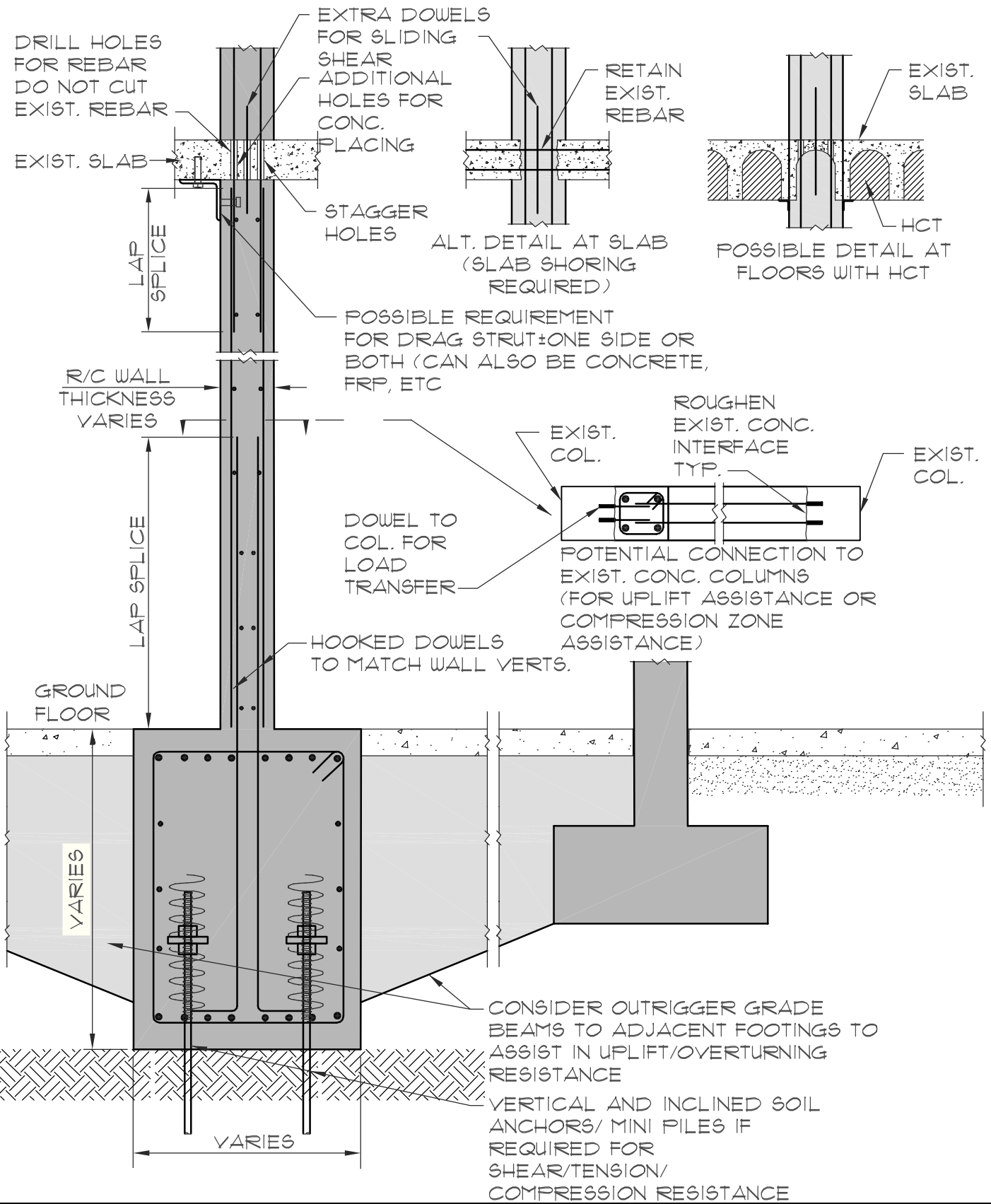
Andy Metten, P.Eng., Struct.Eng.
Partner: Bush, Bohlman and Partners LLP



Reviewed by: Tim White, PhD, P.Eng.
Bush, Bohlman and Partners LLP

Appendix A

Typical Seismic Retrofit Details



SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

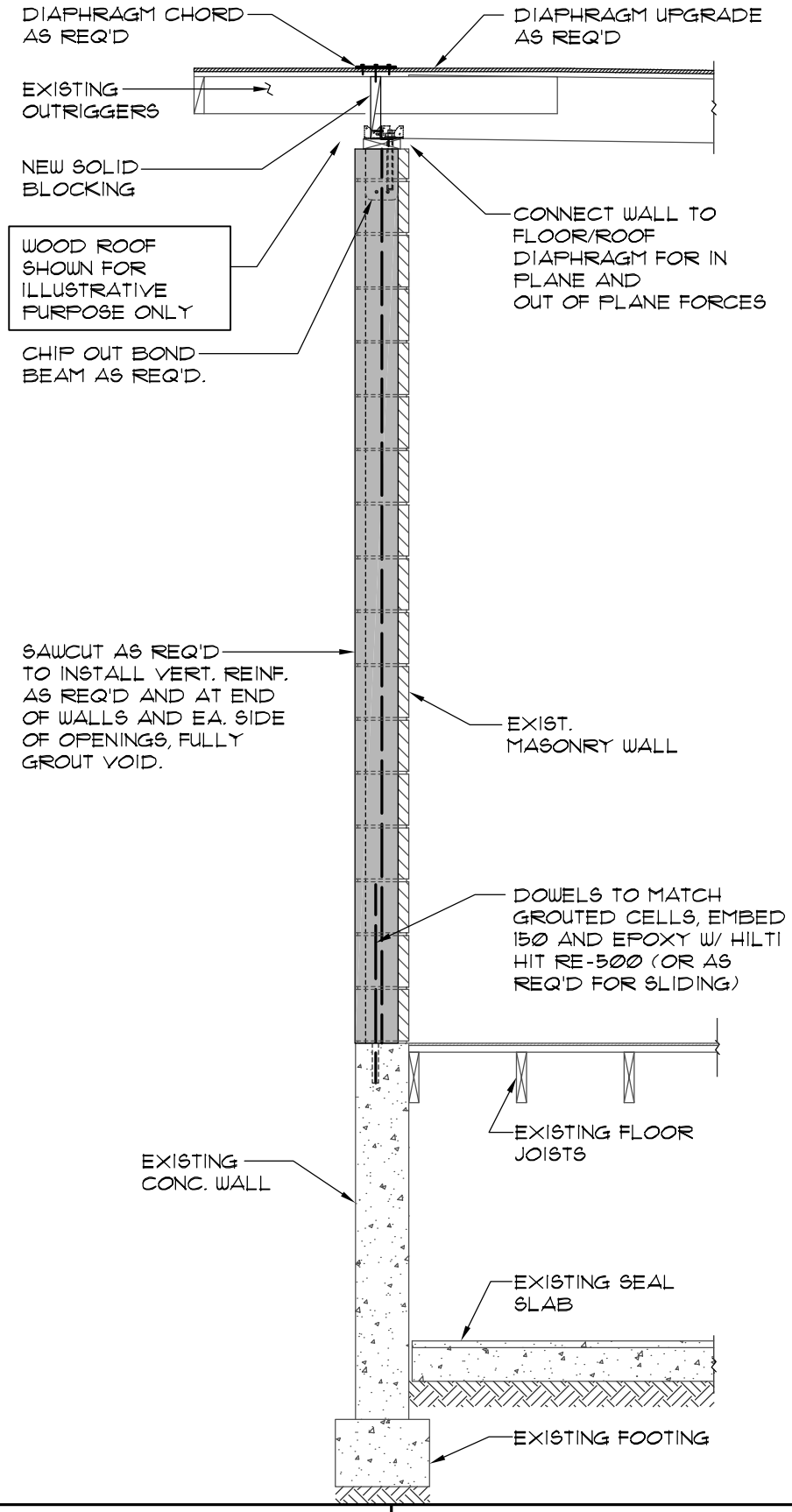
CONCRETE SHEAR WALL #1

NON-ROCKING FOUNDATION
EXISTING CONCRETE FRAME

SCALE 1:20

SHEET No.

CSW #1



SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

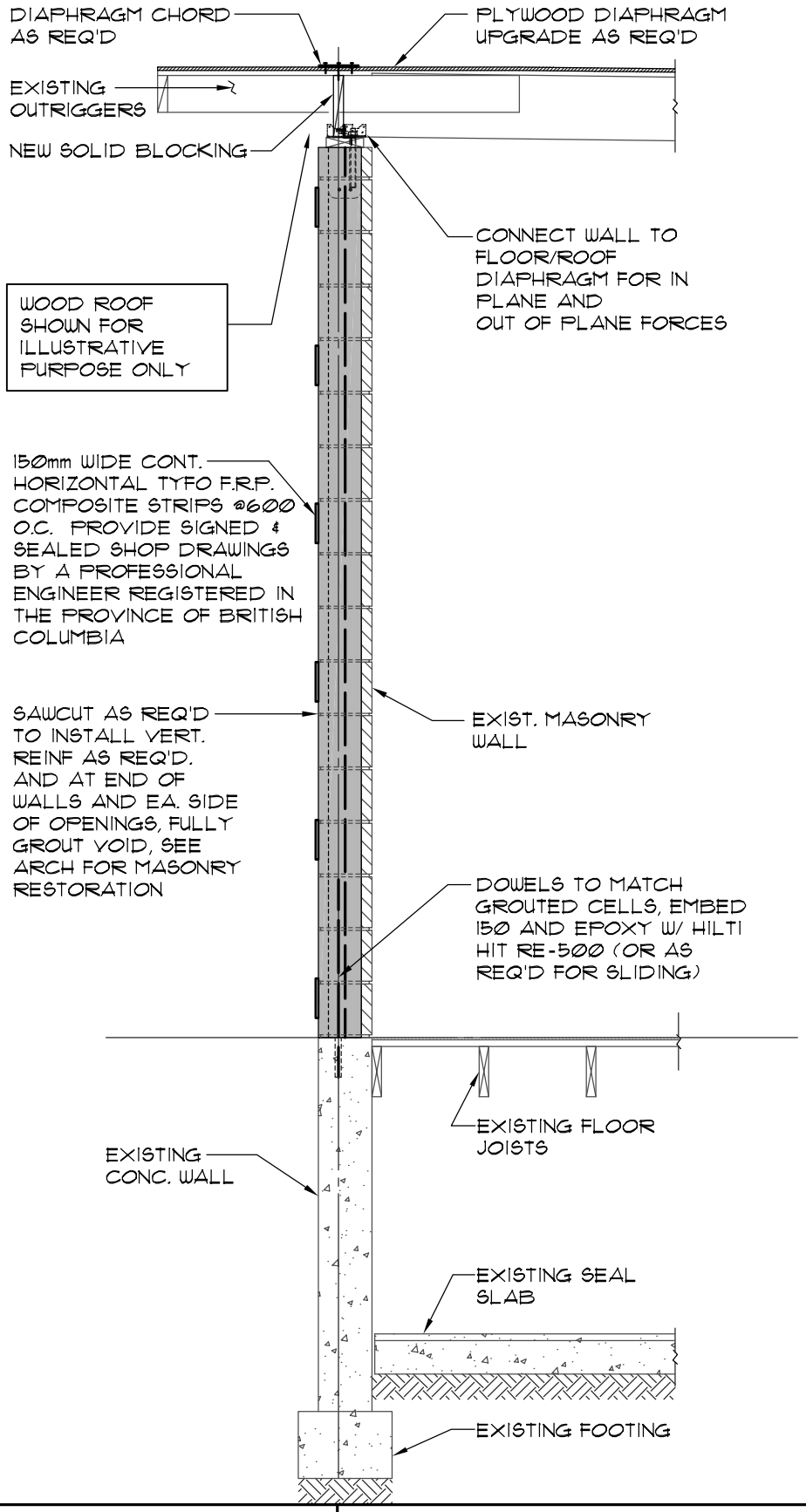
MASONRY WALLS #1

ADD VERTICAL REINFORCING TO EXISTING MASONRY

SCALE 1:25

SHEET No.

MW #1



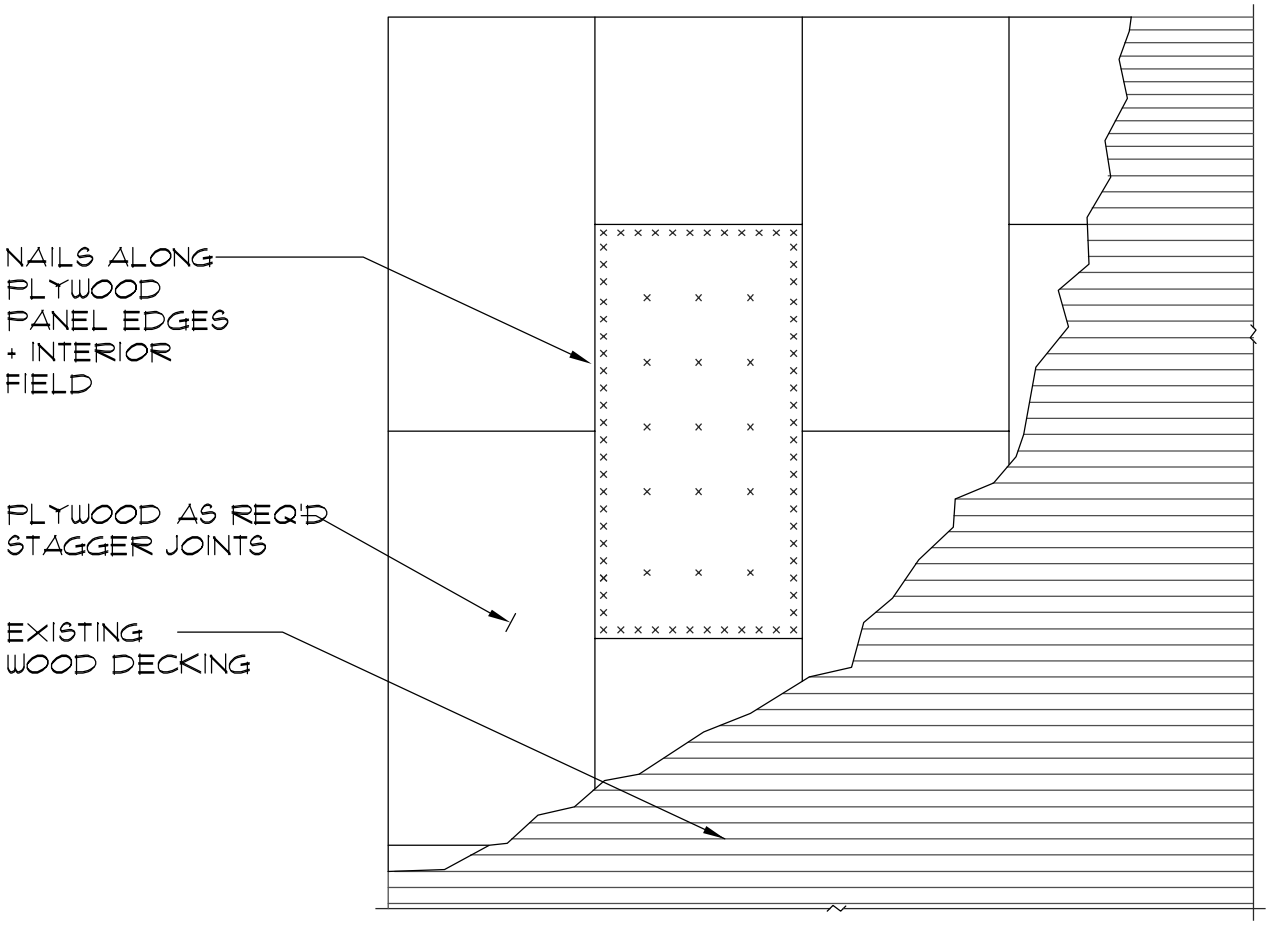
SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

MASONRY WALLS #2

ADD HORIZONTAL FRP
REINFORCING TO MASONRY WALL

SCALE
1:25

SHEET No.
MW
#2



NOTES

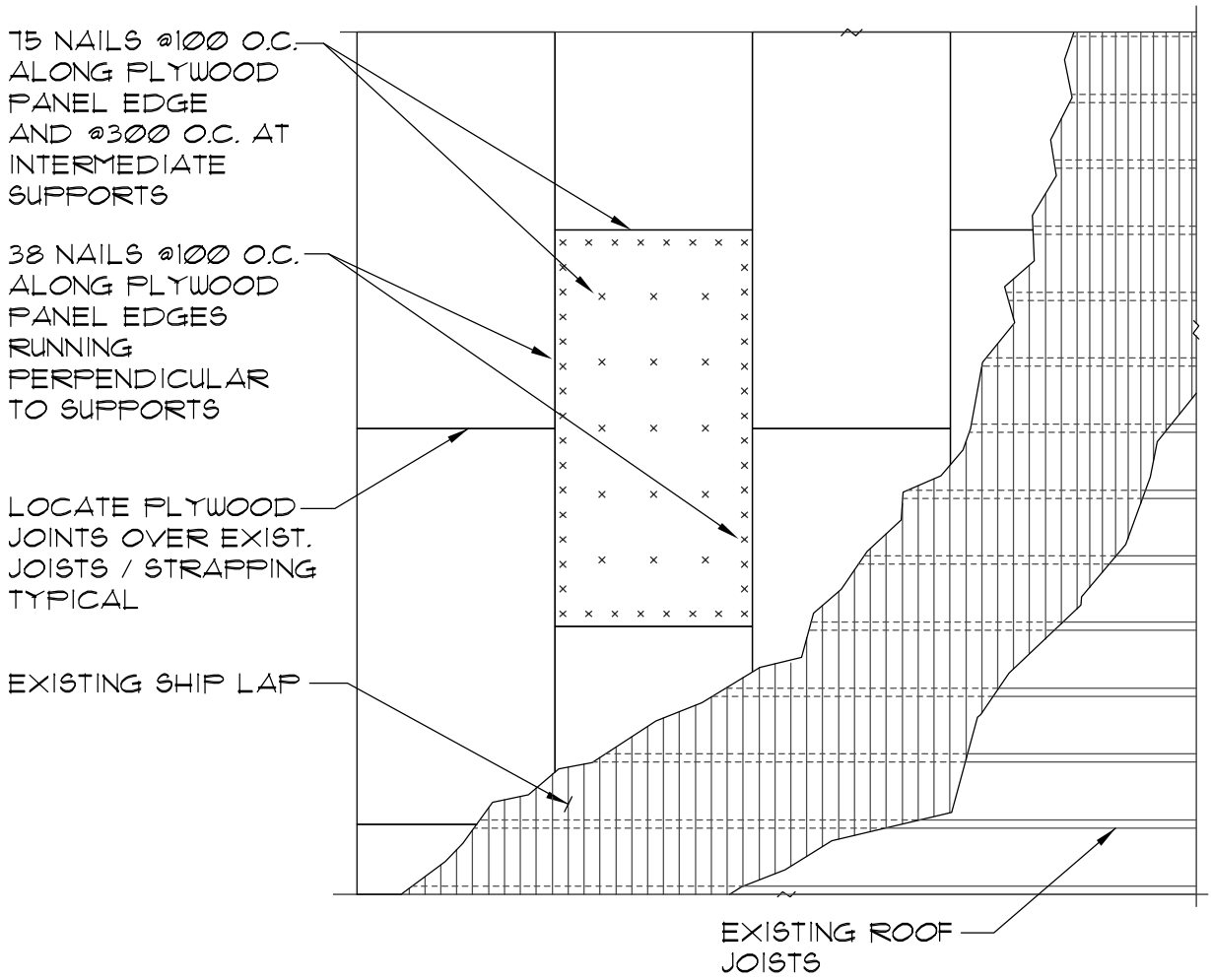
1. ROOF SHEATHING TO BE NAILED WITH 64 NAILS (3.3mm?). DO NOT USE THIN GAUGE GUN NAILING STAPLES OR NAILS. NOTCHED HEAD NAILS ARE NOT ACCEPTABLE.
2. DO NOT NAIL THROUGH EXISTING JOINTS IN TONGUE AND GROOVE DECKING.
3. STAGGER JOINTS AND ORIENT PLYWOOD PANELS PERPENDICULAR TO DIRECTION OF TONGUE AND GROOVE DECKING.
4. NAIL TO CHORDS, DRAG STRUTS AND SHEAR WALLS

SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

WOOD DIAPHRAGM #1
SHEATH EXISTING ROOF WITH NEW PLY AND ADD SHEET METAL STRAPS

SCALE N.T.S

SHEET No.
WD #1 (1/3)



NOTE:

NAILING FOR ILLUSTRATION ONLY, DESIGN TO SUIT SPECIFIC REQMT'S

SEE SHT 1/3 FOR ADDITIONAL NOTES

SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

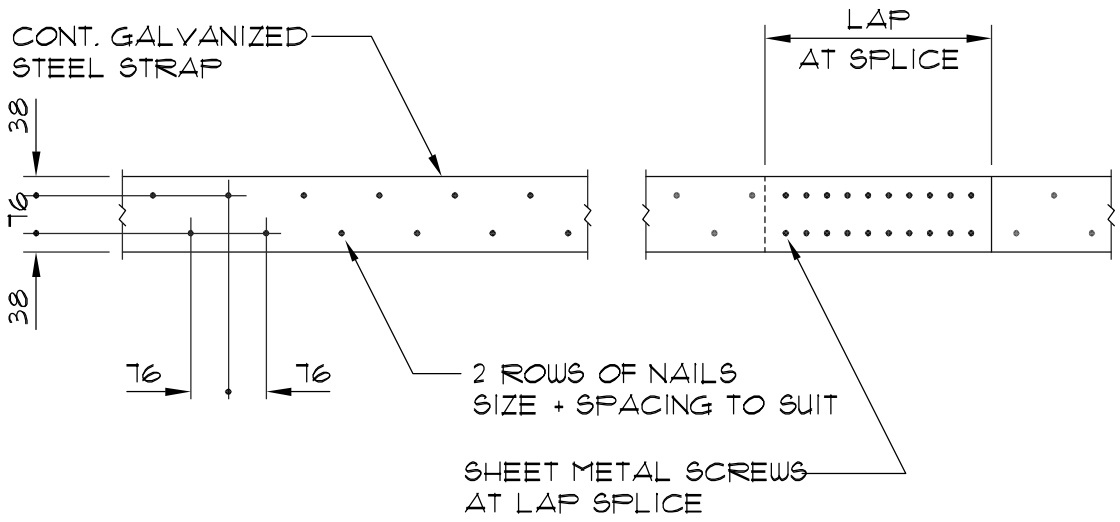
WOOD DIAPHRAGM #1

SHEATH EXISTING ROOF WITH NEW PLY AND ADD SHEET METAL STRAPS

SCALE N.T.S

SHEET No.

WD #1 (2/3)



NOTES

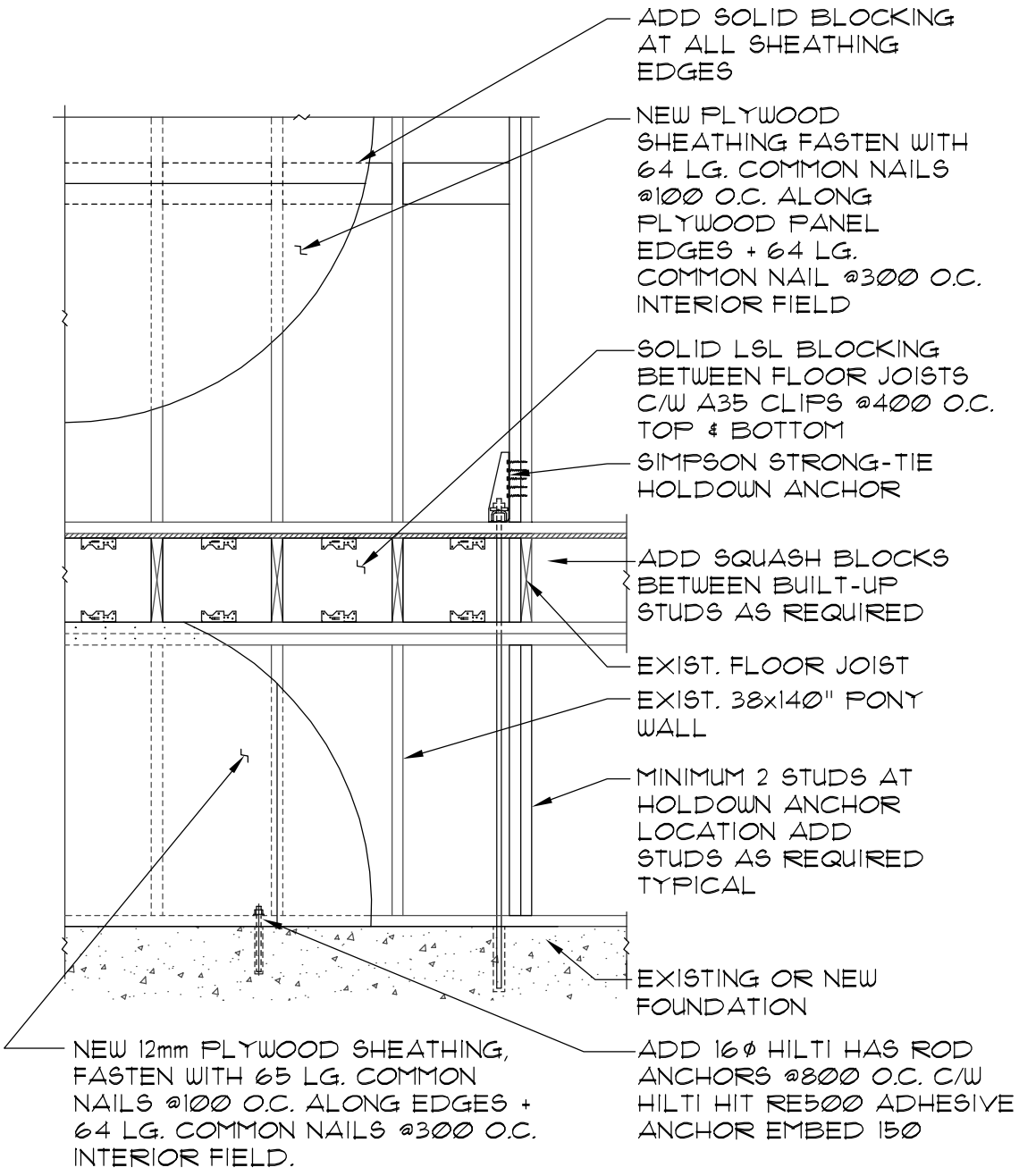
1. CONTINUOUS GAUGE STEEL STRAP TO BE CENTRED OVER WALLS OR BLOCKI
2. FASTEN TO PLYWOOD SHEATHING WITH 2 ROWS OF NAILS AND SPLICE AS PER DETAILS.

SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

WOOD DIAPHRAGM #1
SHEATH EXISTING ROOF WITH NEW PLY AND ADD SHEET METAL STRAPS

SCALE
N.T.S

SHEET No.
WD
#1 (3/3)



NOTE: DETAILS SHOWN FOR ILLUSTRATIVE PURPOSES DESIGN WALL AND ANCHORAGES/CONNECTIONS TO SUIT

SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

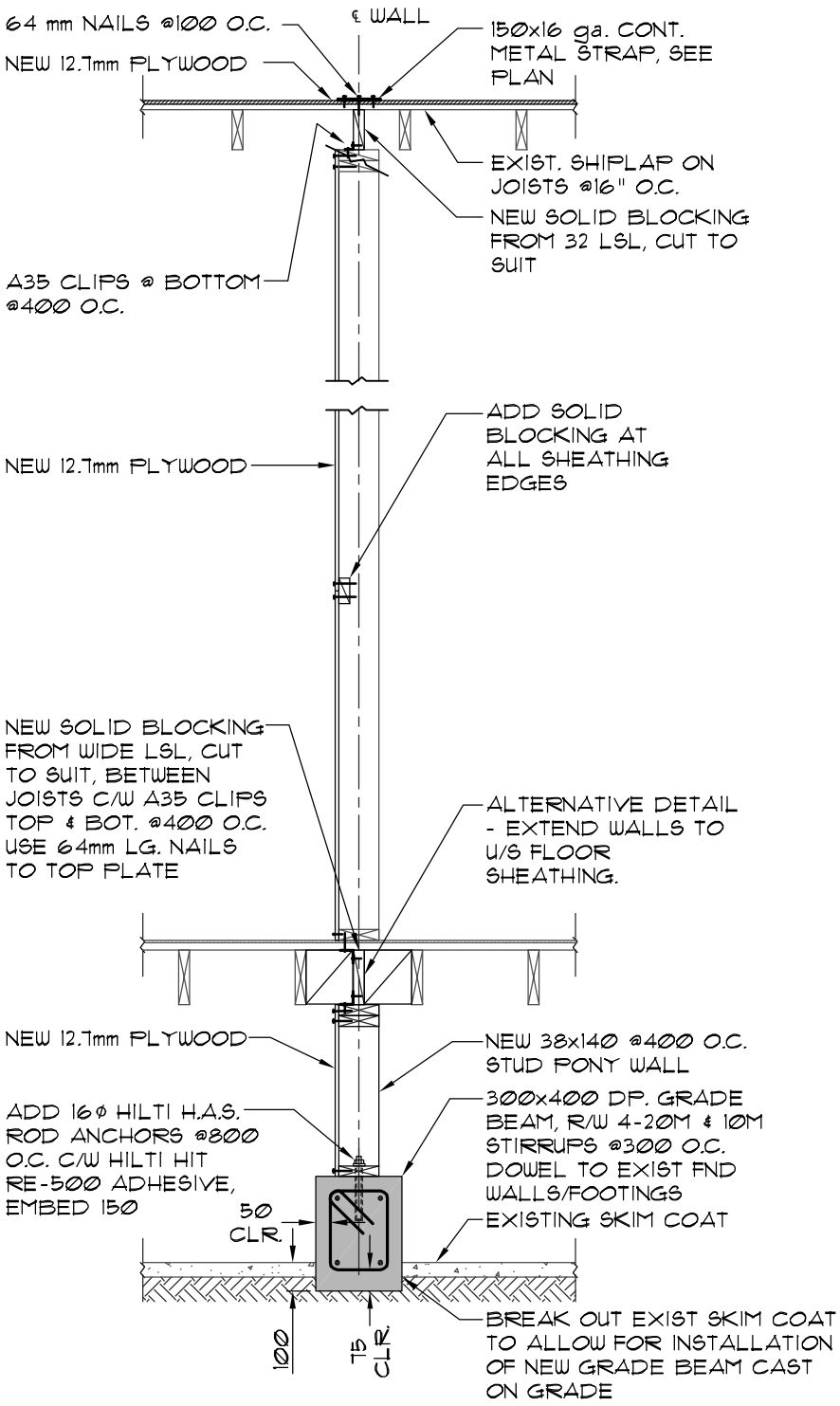
WOOD SHEARWALLS #1

NEW WOOD SHEARWALLS POSSIBLY WITH NEW PONY WALL AND GRADE BEAM

SCALE 1:20

SHEET No.

WSW #1 (1/2)



NOTE: DETAILS SHOWN FOR ILLUSTRATIVE PURPOSES DESIGN WALL AND ANCHORAGES/CONNECTIONS TO SUIT

SEISMIC RETROFIT GUIDELINES
SECOND EDITION
LIBRARY OF RETROFIT DETAILS
NOVEMBER, 2013

WOOD SHEARWALLS #1

NEW WOOD SHEARWALLS POSSIBLY WITH NEW PONY WALL AND GRADE BEAM

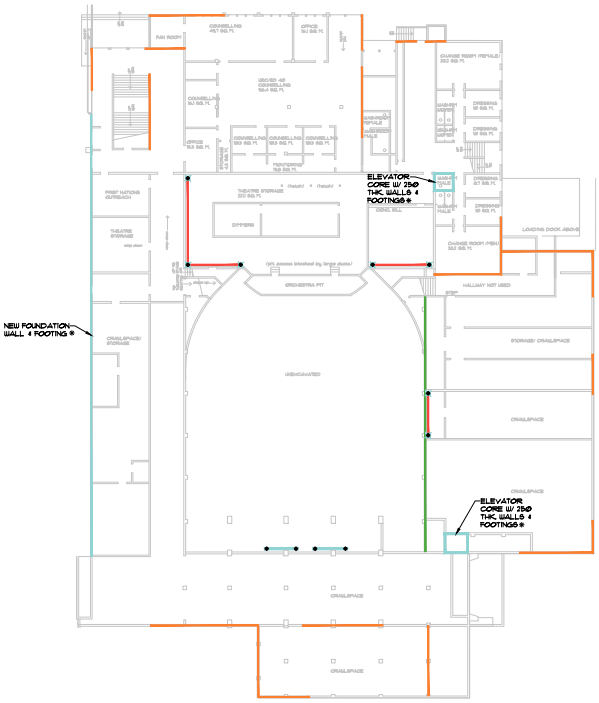
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SHEET No.

WSW #1 (2/2)

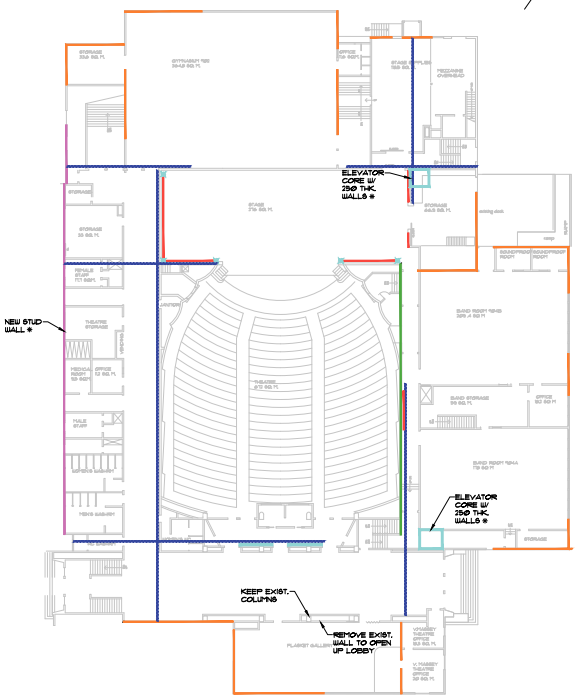
Appendix B

Structural Plans



BASEMENT/CRAWL SPACE – PLAN

1:200



GROUND FLOOR – PLAN

1:200

LEGEND

- DRAG STRUT BELOW
- DRAG STRUT
- NEW PLYWOOD SHEARWALL W/ HOLDDOWNS
- NEW PLYWOOD SHEARWALL W/ HOLDDOWNS
- ADD SIMPSON VERTICAL REINFORCEMENT TO EXISTING MASONRY WALL
- HORIZONTAL FRP STRIPS
- SOIL ANCHOR / MINI PILE
- R/C PILASTER
- R/C WALL
- NEW PARALAM BEAM ABOVE
- NEW LOAD BEARING STUD WALL WITH PLYWOOD SHEATHING ON EXTERIOR

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No.	Description	Date
02	ISSUED FOR TOR PROGRESS	2015/06/22
01	ISSUED FOR REVIEW	2015/06/11

Revisions: Read Up

MASSEY THEATRE
SEISMIC RETROFIT
ASSESMENT 2015

735 EIGHTH AVENUE
NEW WETMINSTER, BC

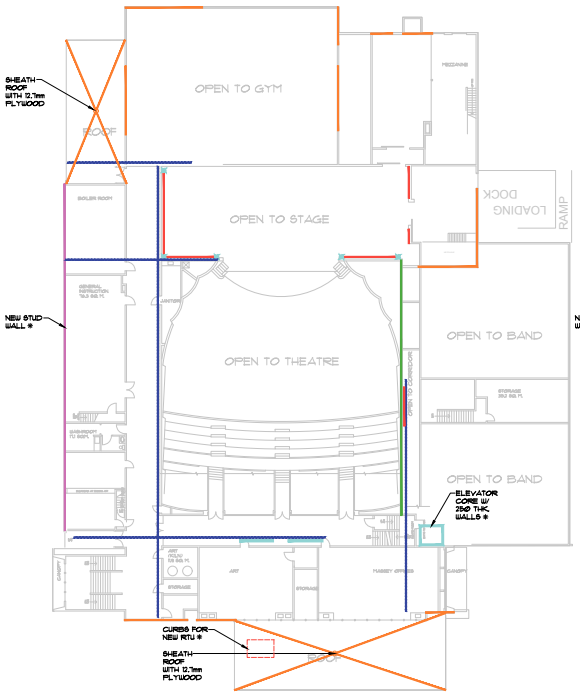
Sheet Title

BASEMENT &
GROUND FLOOR
PLANS

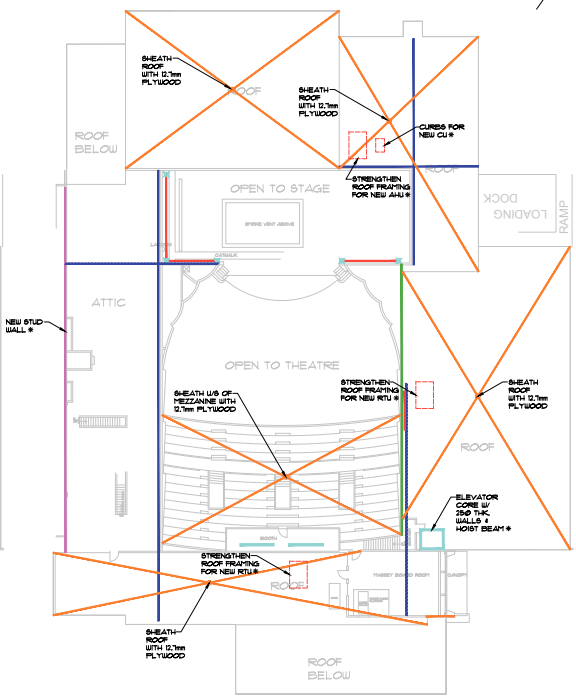
NOTE:
ITEMS DENOTED WITH AN ASTERIX (*) ARE FOR OPTIONS 1 & 2. ALL OTHER ITEMS ARE FOR OPTION 2 ONLY

Job No.	6455	Sheet No.	S1
Scale	AS NOTED		
Drawn	SAL		
Checked	TW		
Approved	TW		
Date	2015/06/08	Revision	–

6455 – Structural.dwg Jun 22, 2015 – 2:19pm



2ND FLOOR – PLAN
1:200



3RD FLOOR – PLAN
1:200

LEGEND

- DRAG STRUT BELOW
- DRAG STRUT
- NEW PLYWOOD SHEARWALL W/ HOLDDOWNS
- NEW PLYWOOD SHEARWALL W/ HOLDDOWNS
- ADD SIMPSON VERTICAL REINFORCEMENT TO EXISTING MASONRY WALL
- HORIZONTAL FRP STRIPS
- SOIL ANCHOR / MINI PILE
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- NEW PARALAM BEAM ABOVE
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01	ISSUED FOR REVIEW	2015/06/11

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ASSESMENT 2015

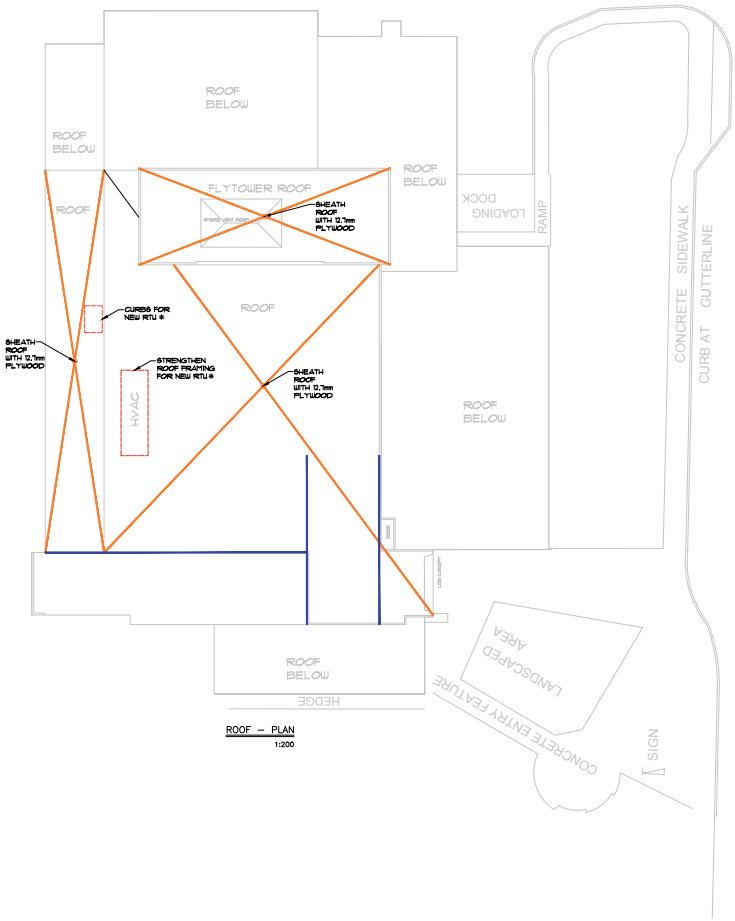
735 EIGHTH AVENUE
NEW WETMINSTER, BC

Sheet Title

2nd & 3rd
FLOOR PLANS

Job No.	6455
Scale	AS NOTED
Drawn	SAL
Checked	TW
Approved	TW
Date	2015/06/08
Sheet No.	S2
Revision	–

6455 – Structural.dwg Jun 22, 2015 – 2:19pm



ROOF – PLAN
1:200

LEGEND

- DRAG STRUT BELOW
- DRAG STRUT
- NEW PLYWOOD SHEARWALL W/ HOLDDOWNS
- NEW PLYWOOD SHEARWALL W/ HOLDDOWNS
- ADD SIMPSON VERTICAL REINFORCEMENT TO EXISTING MASONRY WALL
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No.	Description	Date
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01	ISSUED FOR REVIEW	2015/06/11

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MASSEY THEATRE
SEISMIC RETROFIT
ASSESMENT 2015

735 EIGHTH AVENUE
NEW WETMINSTER, BC

Sheet Title

ROOF PLAN

Job No.	6455	Sheet No.	S3
Scale	AS NOTED		
Drawn	SAL		
Checked	TW		
Approved	TW		
Date	2015/06/08	Revision	-

6455 - Structural.dwg Jun 22, 2015 - 2:22pm

Appendix C

Removal of gym – structural effects on wall that separates the gym from Massey Theatre

The removal of the gym requires some re-working of the wall and the support for the roof of the Massey Theatre along this line. In part the issue is the roof of the existing gym is supported on deep timber trusses that are picked up by columns on the Massey Theatre side of the wall while the roof joists for the Massey Theatre are picked up by a beam that is supported on the trusses on the Gym side of the wall. We have assumed that removal of the Gym will require removal of the beam that is supporting the Massey theatre roof on the Gym side of the wall.

The removal of the gym should have pricing that includes the following:

A) Introduce a new beam on the Massey Theatre side of the wall to pick up the roof joists of the Massey Theatre. Allow for new columns to support this beam to ease construction sequencing and reduce shoring required. New footings should be allowed for in pricing.
B) Remove gym roof and roof trusses on Gym side of wall. Allow for some shoring being required in the truss / wall region.
C) Once truss is fully removed introduce new column in the former truss region and remove shoring.
D) Sheath wall – this wall will become a seismic wall and pricing should include for plywood sheathing, appropriate blocking and seismic nailing and hold-downs.
E) New footings under wall should be allowed for in the pricing.

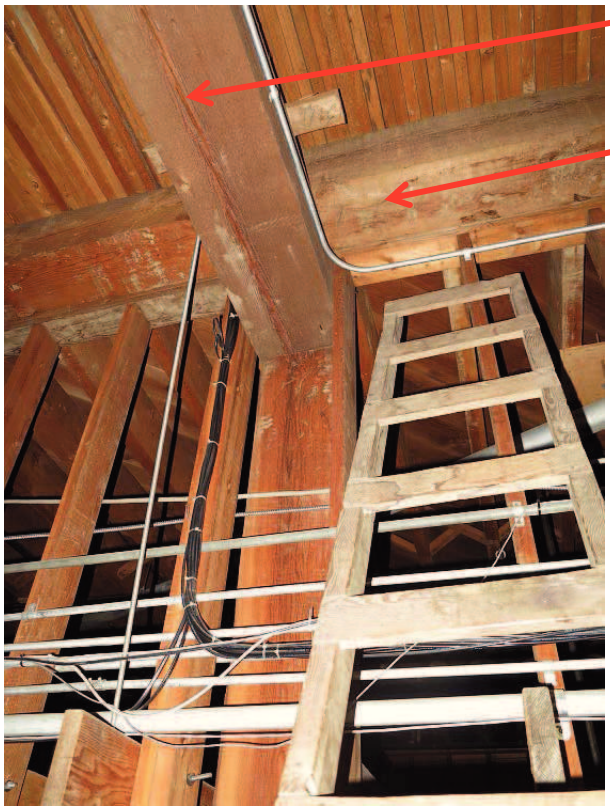
Photos below show some of this.



Existing wall at the level below roof seen from Gym Side. Note the solid lam roof on the Gym side. Also note the large timber beam that is on the Gym side supports both the solid lam roof of the gym and the joists from the Massey Theatre side. Removal of existing mechanical and electrical would be required.



Wall between gym and theatre viewed from theatre side. Note the diagonal shiplap and wood joists that forms the roof of the theatre side as opposed to the solid lam structure in the Gym side. Note the top chord of the truss poking through the wall and sitting on the column which is on the Massey Theatre side of the wall. We suspect that the joists for the roof of the Massey Theatre side were meant to be supported on the beam that is on the Gym side of the wall and that the wall may or may not have been designed as load bearing



Top chord of truss

Beam on gym side that appears to support the joists on the Theatre side.

Wall between gym and theatre viewed from gym side. Note the solid lam structure of the roof in the Gym side. Note the large beam sitting on the top chord of the truss. We suspect that the joists for the roof of the Massey Theatre side were meant to be supported on this beam. A beam and column system on the Massey Theatre side would be required to support the joists on the Massey Theatre side.



Bottom chord of the gym trusses where it is picked up by a column which we suspect is partly in the wall of the gym and partly protruding from the wall of the theatre. Truss is removed during the demolition.



Large trusses that form the roof of the gym are a combination of heavy timber and steel rods. The roof is solid lam timber while the ceiling is wood joists. Everything shown in this picture is removed during the removal of the gym.



Roof framing in gym. Solid lam roof supported on beams which are picked up at the panel points of the heavy timber trusses. Everything shown in this picture is removed during the removal of the gym.



In addition to the timber trusses on the gym side there are also some steel trusses that are connected with rivets and are therefore assumed to be original. Everything shown in this picture is removed during the removal of the gym. Steel is primed and for pricing should be assumed to be lead containing.



Existing wall at the level below roof seen from Gym Side. Removal of existing mechanical and electrical would be required.

BUILDING ENVELOPE FOLLOW-UP CONDITION ASSESSMENT
MASSEY THEATRE
735 8TH AVENUE,
NEW WESTMINSTER, B.C.



Presented to:

Corporation of the City of New Westminster

511 Royal Avenue

New Westminster, BC V3l 1H9

Attention: Wayne Werbovetski, BArch, MAIBC.

PRIVILEGED & CONFIDENTIAL

Prepared by:
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Building Science Division

Reviewed by:

Per: David Evans, P.Eng.
Manager, Building Science Division

July 7, 2015

File: R515-1021-00

EXECUTIVE SUMMARY

BACKGROUND

The Corporation of the City of New Westminster retained Levelton Consultants Ltd. ("Levelton") to perform a follow-up Building Envelope Condition Assessment of the Massey Theatre building (the "Building") located in at 735 8th Avenue, New Westminster, BC.

SCOPE OF SERVICES

The assessment entailed a review of the roofs and exterior walls of the Building. The School gymnasium located at the East portion of the Building, was not included. Levelton performed additional moisture probes and exploratory openings. The exploratory openings were made through the stucco cladding. A roofing contractor (Design Roofing) was also on-site to perform openings through the roofing assemblies. The roofing and stucco samples were gathered and will be tested for hazardous materials by another consultant (Aztech). The openings enabled Levelton to verify the as-built construction details and to assess whether damage had occurred within the wall and roof assemblies.

OBSERVATIONS

EXTERIOR WALLS

The exterior walls are primarily clad with stucco. Vertical ship-lap wood cladding, metal panels and SBS roofing membrane are also used to clad some of the walls of the Building. Roof overhangs are provided at some of the exterior walls. The remainder of the exterior walls are fully exposed to the weather. Levelton took moisture probe readings in the ship-lap wood sheathing within the exploratory openings immediately behind the stucco cladding. The results of the openings indicated generally dry conditions, but decay was observed at some of the openings indicating that some of the walls are allowing water ingress to occur. Levelton also observed that vine was growing within the wall assembly at the base of the front elevation. The outer layer of mortar between the masonry blocks behind the stucco cladding at the roof level front elevation appears to be weak and "powdery". The stucco is loose and bulging outward at some locations.

Moisture content (M.C.) readings in the ship-lap sheathing and wood framing behind the cladding varied from 7.7% M.C. to 40.0% M.C. A moisture content reading equal to, or below 19% in wood sheathing is considered to be dry.

The stucco cladding appeared to be inadequately supported in some areas. The nails used to fasten the stucco mesh to the wood sheathing were only 1 1/4" long. Surface corrosion was also observed on the nails at some areas. Both horizontal and vertical cracks were observed at the stucco clad walls. The condition of the mortar and the fastening of the stucco was reviewed by Levelton's structural engineer and this will be discussed in a separate report located in Appendix C.

It is Levelton's opinion that the stucco cladding has reached the end of its service life. Levelton would also recommend upgrading the thermal efficiency of the building envelope as the walls and roofs are un-insulated at several locations. Levelton would recommend replacing the

existing face-sealed stucco cladding wall assembly with an inverted exterior insulated wall assembly. The owner could decide to keep or change the appearance of the Building at that time. Metal and/or composite panels would be possible cladding choices that would modernize the appearance of the building.

GLAZING

The building features different types of glazing assemblies. The windows are a mix of aluminum and wood framed assemblies. All of the windows are single-glazed. Several deficiencies were observed with regards to the windows. The wood frames are decayed at several locations. The glazing stops at the metal-framed windows are broken at several locations. The windows are in poor condition and have reached the end of their service life. Levelton would recommend upgrading the windows to double-glazed more energy efficient windows. The new glazing assemblies could be a combination of aluminum-framed and curtain wall type glazing systems.

ROOFS

The roofs of the Building are low-sloped roof and waterproofed with a built-up roofing system. Active leakage was reported and several patches/repairs can be observed at the roofs. Maintenance has likely not been performed routinely as moss is prevalent on the roofs. The drain baskets are also missing at many locations. The current roofing system has reached the end of its service life. The roofs are uninsulated at many locations. Where insulation was present, it was minimal. Levelton would recommend replacing the current roofing system with a new 2-ply SBS roofing system with an acceptable level of insulation.

CONCLUSIONS

The findings by Levelton indicate that the building envelope at the Massey Theatre requires the remediation and upgrade of several components which includes the cladding, windows and roofs.

Levelton's recommendations are summarized in section 5.

Table 4 provides the estimated costs for the recommendations provided.

TABLE OF CONTENTS

PAGE NO.

EXECUTIVE SUMMARY i

1. INTRODUCTION 1

1.1 Terms of Reference 1
1.2 Scope of Investigation 1
1.3 Report Organization 2
1.4 Building Description 2

2. DOCUMENT REVIEW 3

2.1 Documents Reviewed 3

3. DETAILED ASSESSMENT OF BUILDING ENVELOPE CONDITION 4

3.1 Building Exposure 4
3.2 Indoor Conditions 5
3.3 Exterior Walls 5
3.3.1 Wall Construction 5
3.3.2 Exploratory Openings in the Exterior Walls 6
3.3.3 Exterior Wall Observations and Comments 7
3.4 Windows 10
3.5 Roofs 13
3.5.1 Low-Sloped (Flat) Roofs 13

4. SUMMARY OF RECOMMENDATIONS 16

5. SUMMARY OF OPTIONS 17

LIST OF TABLES

PAGE NO.

Table 1 - Documents Reviewed.....3

Table 2 – Summary of Moisture Content Readings.....6

Table 3 - Summary of Options.....18

Table 4 – Summary of Exploratory Openings.....C-2

APPENDICES

APPENDIX A Glossary of Terms

APPENDIX B Exploratory Opening Results and Elevations Showing Locations of Exploratory Openings

APPENDIX C Structural Report

1. INTRODUCTION

1.1 TERMS OF REFERENCE

The Corporation of the City of New Westminster retained Levelton Consultants Ltd. ("Levelton") to perform a Follow-up Building Envelope Condition Assessment of the Massey Theatre (the "Building"). The Building is located at 735 8th Avenue, New Westminster, BC.

Levelton has prepared this report solely for the use of the Client. Levelton accepts no responsibility for damages suffered by third parties as a result of decisions or actions based on this report.

Levelton does not claim to have uncovered all of the building envelope deficiencies at the Building during the course of this review.

Levelton performed the initial building envelope condition assessment in 2010. The site work for the follow-up review was performed on June 4, 2015.

1.2 SCOPE OF INVESTIGATION

The investigation fieldwork included:

- a visual review of the building envelope including walls, windows, roofs, flashings, sealants, and at-grade conditions;
- moisture content readings obtained from the exterior side of the exterior walls; and
- Exploratory openings made from the exterior of the Building.

The purpose of the exploratory openings was to verify the as-built construction details and to assess whether water damage has occurred within the wall assemblies.

The most significant rainfall immediately prior to the intrusive portion of the assessment occurred on June 3, 2015. Temperatures fluctuated between approximately 13°C and 22°C prior to and during the investigation period.

The recommendations for building envelope remediation contained in this report are based upon an analysis of current conditions, the expected future envelope performance, cost considerations, construction feasibility, and long-term durability.

1.3 REPORT ORGANIZATION

Sections 1 and 2 of this report provide general information regarding the Building, the scope of the assessment and the building history.

Section 3 of the report provides observations, discussion and recommendations for remediation based on the results of the testing and review processes. Section 3 is organized into sections by building component categories (e.g. walls, windows, roof, etc.) to facilitate future discussion of the observations and recommendations. Throughout Section 3, recommendations for various

building elements have been written in **bold** at the end of each section for easy reference. The recommendations have been further sub-divided into maintenance and remediation categories.

The recommendations and cost information are summarized in Sections 5 and 6.

Although every effort has been made to ensure that the report is appropriate for a non-technical audience, some readers may not be familiar with the terminology used in building science; therefore, Appendix A contains a glossary of technical terms related to the building envelope.

The results of the moisture content readings and exploratory openings are presented graphically and tabulated in Appendix B. The Structural Engineering report is located in Appendix C.

1.4 BUILDING DESCRIPTION

The Massey Theatre was constructed in 1949. The Building consists of a two and four-storey structure.

Figure 1 below shows the site plan indicating the layout of the Building. The red rectangle indicates the portion of the Building that was included in this review.

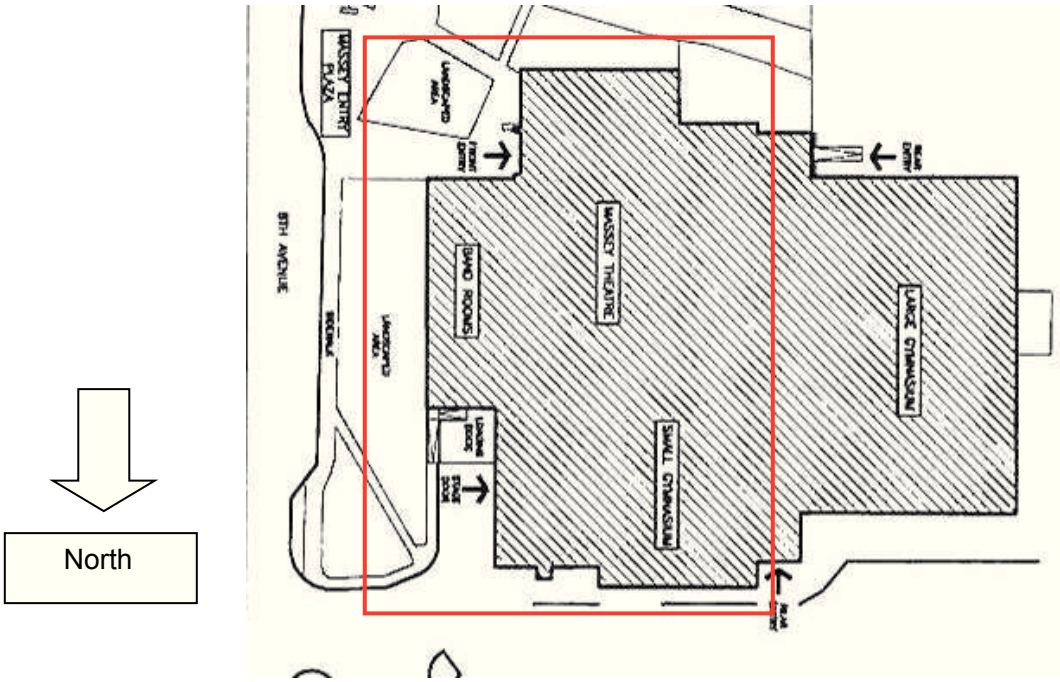


Figure 1: Site Plan

The primary cladding is stucco. Portions of the exterior walls are clad with a combination of vertical wood cladding, vertical metal cladding and painted SBS torched-on membrane. The roofing consists of low-sloped roofs waterproofed with a built-up roofing system.

The Building features a mix of wood and aluminum framed windows. The windows throughout the Building are single-glazed. Parking is provided along the North and West sides of the Building.

2. DOCUMENT REVIEW

2.1 DOCUMENTS REVIEWED

In the course of this assessment, Levelton reviewed the following documents:

Documents/Drawings Reviewed	Prepared by	Date
Architectural Drawings (1,2,3,15,20)	E. Evans & Son & WM Bow Associate Architects	N/A
Architectural Drawings (2,3,4)	J Lovatt Davies Architects	N/A

Table 1 – Documents Reviewed

Levelton reviewed the Drawings and provided by the Client. These drawings included site plans, floor plans, elevations and some sections and details. Levelton was not provided with additional original drawings and specifications. The drawings were basic in nature.

3. DETAILED ASSESSMENT OF BUILDING ENVELOPE CONDITION

3.1 BUILDING EXPOSURE

An examination of the building's exposure level is an important factor in the assessment of the building envelope's expected performance. An envelope design that could be expected to perform sufficiently in a low-exposure location, could fail in a highly exposed location.

Factors that influence the building's exposure level include:

- the presence or lack of overhangs at the roof level, and their projection length;
- the orientation of the building with respect to the prevailing winds;
- the building height and configuration;
- the proximity to water; and
- the surrounding topography, vegetation and buildings.

The Building is a two and four storey structure that provides a moderate profile to wind-driven rain. Roof overhangs are generally provided to the lower level walls. The upper level walls are typically without roof overhangs. The absence of roof overhangs exposes the facade of the exterior walls to rain. The Building is located on a relatively flat site. Parking lots are provided along the North and West sides. There are no significant bodies of water in the immediate area.

For the purposes of this assessment, Levelton is of the opinion that the exterior walls of the School are subject to a moderate level of exposure to wind-driven rain.

3.2 INDOOR CONDITIONS

During the initial building envelope condition assessment, Levelton was informed of the following:

- Repairs were made to the South Elevation. The stucco cladding was not supported properly to the sheathing. The nails securing the stucco had corroded.

- Several roof patches were performed.

During this follow-up review, Levelton was informed of the following active leak:

- An active leak is located above the stage in the theatre. Water appeared to be migrating through a cold joint in the concrete. The exterior wall assembly at this location is concrete clad with stucco. This leak was also active during the initial condition assessment.

3.3 EXTERIOR WALLS

The "moisture management strategy" of a wall refers to those aspects of the exterior wall design that control water penetration.

The exterior walls of the Building are generally face-sealed. The face-seal design approach requires that the exterior face of the wall prevent water penetration into the inner wall assembly. Moisture penetrating though the cladding at joints, cracks, fastener holes, etc., can eventually penetrate porous materials behind the cladding and wet the inner wall assembly. If the materials are unable to dry, premature deterioration can occur.

3.3.1 Wall Construction

The different wall assemblies are as follows (as per Levelton's site observations):

<u>Exterior Walls (Wood Framing):</u>

- Interior finish
- 2" x 6" wood studs
- Ship-lap wood sheathing
- Tar impregnated paper
- Stucco or ship-lap vertical wood cladding or vertical metal cladding

Exterior Walls (South Elevation remediated area)

- Interior finish
- 2” x 6” wood studs
- Ship-lap wood sheathing
- Plywood
- Cladding (Stucco or Painted SBS torched-on membrane)

Exterior wall (Concrete)

- Concrete (Poured in place or Concrete Masonry Units)
- Stucco cladding

3.3.2 Exploratory Openings in the Exterior Walls

An additional five exploratory openings were made through the stucco cladding. In the initial condition assessment, twenty exploratory openings were made. Some of the old openings were re-opened to review if there had been any changes. The openings are made by cutting 100 mm diameter holes through the exterior walls. The additional openings revealed the following:

- Three openings revealed deterioration or decay to the wood sheathing and/or framing,
- Soft and powdery mortar between the concrete masonry unit back-up wall behind stucco cladding,
- Vine growing in the wall assembly behind the stucco cladding, and,
- Inadequately secured stucco cladding at some locations.

The moisture probes in the ship-lap sheathing revealed generally dry conditions. The sheathing was wet at one of the openings and decayed at three of the openings. The Client informed Levelton during the initial building envelope assessment that plywood had been installed at some walls during seismic upgrades. Some walls have poured-in-place concrete or concrete masonry unit back-up walls behind the stucco.

The purpose of the exploratory openings was to review the condition of the wall assemblies. The findings from the exploratory openings are documented in detail with photographs in Appendix B.

MOISTURE CONTENT TAKEN FROM WOOD SHEATHING

LOCATION	Number of Readings			
	Equal to or below 19.0%	Between 19.1% and 27.9%	Equal to or above 28.0%	TOTAL
North Elevation	4	0	0	4
South Elevation	5	0	0	5
East Elevation	3	0	1	4
Total	12	0	1	13

Table 2 – Summary of Moisture Content Readings

Exploratory Opening #1 revealed soft mortar between the concrete masonry units at the back-up wall. Several cracks were also observed in the stucco cladding at these locations. The mortar was also reviewed by the Structural Engineer and will be discussed in a separate report.

Exploratory Openings #2, #4 and #5 revealed deteriorated and/or decayed sheathing. The framing was also extensively decayed and wet and exploratory Opening #2. This area will need structural repairs. The plate at the base of wall at exploratory Opening #5 was in the early stages of decay.

Exploratory Opening #3 revealed that ivy plants are growing inside the wall assembly behind the stucco cladding at the ground level of the East (front) elevation.

The interpretations of the moisture content risk categories and results of the intrusive investigation are provided in Appendix B.

Levelton installed temporary vents to cover the exploratory openings. Levelton understands that the exterior openings will be permanently repaired by the Client if required.

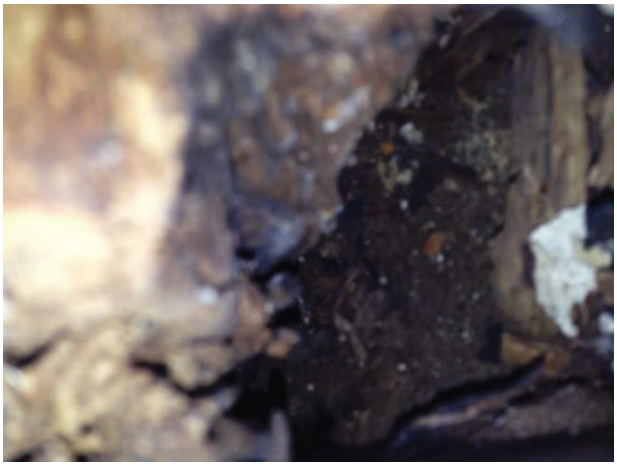
3.3.3 Exterior Wall Observations and Comments

Stucco cladding

The stucco cladding appears to be a three coat stucco with a painted textured finish. The stucco thickness varies throughout the Building from ½" to over 1 ¼". Typically, stucco has a thickness of 7/8". The stucco mesh was 2" X 2" and the nails fastening the stucco mesh to the sheathing were 1 1/4" (or 1 3/8") in length. Levelton observed surface corrosion on the nails and mesh at some of the openings.

The stucco is generally without control joints to allow for expansion and contraction. Levelton observed several areas where the stucco is bulging outwards. Vertical, diagonal and horizontal cracks have developed through the stucco at several locations.

Levelton observed several areas where there is a significant gap between the sheathing and the stucco. This gap varies from 0 to 2 ½". The stucco is inadequately secured at some locations. The stucco has dropped at some locations which would also indicate that the stucco is not properly secured. Levelton's structural engineer also reviewed these stucco clad areas and will address these concerns in a separate report. Some of Levelton's observations are provided in the photographs below:

1		**Stucco** Holes and cracks were observed at several locations. These are paths for potential water ingress. The wood framing at this corner (South-East) at the base of wall is extensively decayed.
2		**South-East corner** **Stucco** View of decayed framing.

3		**Stucco wall penetrations** Previous mechanical penetrations have been covered up. The detailing appears to be vulnerable to potential water ingress.
4		**Stucco** The detailing at the top of these pilasters is suspect and vulnerable to water ingress. These should be properly capped during the cladding replacement project.
5		**Stucco** View of unsealed joint between wood window frame and stucco cladding. These unsealed joints are vulnerable to water ingress.

6		**Stucco clad walls** View of the area that has an active leak through the masonry block wall. Efflorescence can be observed at several locations on the inside of the block walls.
7		**Previous smoke stack** There is a structure at the upper roof level that was once intended to allow smoke to escape during a fire. The hinged panels have been nailed shut and spray foam was installed at the joints. The roof of the structure consists of metal panels with an asphalt based underlayment.

Levelton's observations and exploratory openings indicate that the stucco cladding appears to have reached the end of its service life. Levelton would recommend replacing the stucco cladding. During the cladding replacement, Levelton also recommends upgrading the thermal efficiency of the wall assemblies. Levelton would recommend installing the insulation on the exterior of the sheathing.

The North "tower" walls consist of stucco installed over poured-in-place concrete. Levelton believes in may be difficult to remove the stucco at this location as it appears to be well bonded to the concrete. The solution at these walls may be to over-clad the existing walls.

<u>Secondary claddings</u>

The Building features small wall areas that have vertical metal cladding and vertical wood cladding. At some locations, these claddings were installed at locations where previous glazing was in place. Should the client decide to undergo a building envelope remediation project, these areas should be replaced with modern glazing or cladding systems.

RECOMMENDATION 1

OPTION 1 – MAINTENANCE REPAIRS

As discussed above, there are a number of issues that need to be addressed to extend the service life of the existing cladding system. These include:

a) *Providing adequate support for the loose and bulging stucco. This will be dealt with in the structural portion of this report.*

b) *Replace all failed sealant and joints between dissimilar materials that are missing sealant.*

c) *Route and seal all cracks in the stucco to prevent further water ingress.*

d) *Repair all localized areas where water ingress has occurred, resulting in decay.*

e) *Monitor the walls on a regular basis.*

This option will extend the service life of the existing wall assemblies. Levelton cannot predict how much longer it will last but it is likely that over time, maintenance requirements will increase. Based on the changes in the condition since our last review of the building, a remaining service life of 5 to 7 years can be expected (with immediate maintenance repairs, regular maintenance and review). It should be noted that it is impossible to identify every location where water ingress is occurring (or may start to occur in the future). Should decay occur over that time, the cost to repair the decayed framing may add significant cost to a re-cladding project, if that is planned for the future.

OPTION 2 – REPLACEMENT OF CLADDING

a) *Replace the existing stucco cladding with an exterior insulated, rainscreen wall assembly. The owner would have a number of cladding options for the replacement. This assembly will provide long term envelope performance along with improved thermal properties.*

This option will address both the structural issues with the cladding as well as the building envelope performance. Improved thermal resistance, by adding insulation will prevent heat loss and lower heating costs. Various cladding options are available for the owner to consider. With regular maintenance, the new cladding system should have a service life of 40 years plus.

3.4 WINDOWS

Windows

The building features several types of glazing assemblies. The windows are a mix of aluminum and wood framed assemblies. All of the windows are single-glazed. The wood frames of the windows are deteriorated and/or decayed at several locations.

The aluminum-framed windows are exterior glazed and have sill flashings. The aluminum windows have awning operable vents. Levelton did not observe any weep holes at the aluminum

framed windows located on the ground level of the North Elevation. Several of the glazing stops at these windows are broken.

Some of the windows appear to be metal framed windows that were inserted into existing wood frames. These windows are located on the East Elevation. These windows have head flashings but no sill flashings. The metal frames have weep holes at the sill to drain water out of the glazing assembly. Our observations are shown below:

8		**Metal framed windows** Several of the glazing stops at the metal framed windows are broken.
9		**Wood-framed windows** The wood-framed windows are in poor condition. The frames are decayed at several locations.

10		**Wood-framed windows** Decayed wood frame.

The windows at the Massey Theatre are judged to have reached the end of their service life and are not energy efficient. Levelton recommends upgrading the windows to energy efficient double glazed windows. Some of the larger glazed areas could be replaced with curtain wall or storefront type glazing systems.

RECOMMENDATION 2

OPTION 1 – MAINTENANCE REPAIRS

As discussed above, the existing windows offer poor thermal performance. Maintenance cannot improve this issue. The other deficiencies can be addressed by maintenance repairs such as:

a) *Repair all decayed wooden window frames, sills etc and paint for protection.*

b) *Replace all damaged glazing stops.*

c) *Seal all joints between the window frames and the surrounding cladding.*

Maintenance type repairs may extend the service life of some of the windows. Some of the wood-framed windows may be too deteriorated to repair, replacement will be required at these locations. It is difficult to predict how long the existing windows can stay in service, and it may be dependent on the owners tolerance to heat loss (heating costs), and the amount of maintenance required.

OPTION 2 – REPLACEMENT OF CLADDING

a) *Replace the existing single-glazed windows with energy efficient double-glazed windows or curtain wall assemblies.*

The estimated service life of new aluminum framed windows is 40 years plus.

3.5 ROOFS

The existing roofs have been waterproofed with a Built-Up Roofing (BUR) system. This is probably one of the oldest roofing systems available. It has been used for over 100 years in North America. It typically consists of 3 to 4 plies of organic felts laid in hot applied asphalt. The top layer of asphalt is covered with granular material to protect it from ultra-violet radiation.

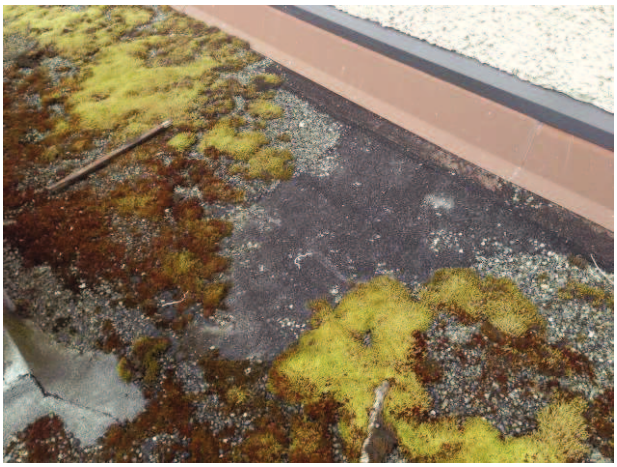
Levelton made the following observations:

1. Levelton observed several areas where there was evidence of previous ponding. Ponding water indicates poor drainage of the roof and can also cause premature aging of the roofing membrane.

2. Extensive moss growth was observed. Moss growth can cause premature aging of the roofing membrane.

3. Some roof areas were patched with two-ply SBS membrane.

4. Sealant at the gum-lip flashings has failed or is missing at several locations.

11		**Roofs** Most roofs consist of a BUR (Built-up roofing) system over fiberboard and kraft paper. Most roofs do not have insulation.
12		**Roofs** Several roof areas have been patched/repaired overtime to address localized leaks.

13		**Roofs** The sealant at the gum-lip flashings has failed at several locations.
14		**Roofs** Extensive moss growth.
15		**Roofs** Missing sealant at the gum-lip flashing.

The low-sloped roofs of the Building appear to be in poor condition. The roofing system appears to have reached the end of its service life. Levelton recommends replacing the existing BUR roof with a new 2-ply SBS roofing assembly. Levelton would also recommend upgrading the insulation of the new roofing assembly to meet the current Building Code.

RECOMMENDATION 3

Levelton recommends the following:

a) Replace the existing BUR roof with a new 2-ply SBS roofing assembly.

b) Upgrade the insulation of the roofing assembly to meet the current Building Code.

4. SUMMARY OF RECOMMENDATIONS

RECOMMENDATION 1

OPTION 1 – MAINTENANCE REPAIRS

Levelton recommends the following:

a) ***Providing adequate support for the loose and bulging stucco. This will be dealt with in the structural portion of this report.***

b) ***Replace all failed sealant and joints between dissimilar materials that are missing sealant.***

c) ***Route and seal all cracks in the stucco to prevent further water ingress.***

d) ***Repair all localized areas where water ingress has occurred, resulting in decay.***

e) ***Monitor the walls on a regular basis.***

OPTION 2 – REPLACEMENT OF CLADDING

a) ***Replace the existing stucco cladding with an exterior insulated, rainscreen wall assembly. The owner would have a number of cladding options for the replacement. This assembly will provide long term envelope performance along with improved thermal properties.***

RECOMMENDATION 2

OPTION 1 – MAINTENANCE REPAIRS

a) ***Repair all decayed wooden window frames, sills etc. and paint for protection.***

b) ***Replace all damaged glazing stops.***

c) ***Seal all joints between the window frames and the surrounding cladding.***

OPTION 2 – REPLACEMENT OF CLADDING

a) ***Replace the existing single-glazed windows with energy efficient double-glazed windows or curtain wall assemblies.***

RECOMMENDATION 3

Levelton recommends the following:

a) ***Replace the existing BUR roof with a new 2-ply SBS roofing assembly.***

b) ***Upgrade the insulation of the roofing assembly to meet the current Building Code.***

5. SUMMARY OF OPTIONS

The following table summarizes options recommended by Levelton to either;

- mitigate failures and damage by conducting maintenance repairs and improvements; or
- remediate the envelope deficiencies and the damaged components.

The costs of construction for the various options are order of magnitude estimates only. The estimates are based on unit prices (2015 dollars). Actual prices may vary due to market forces beyond Levelton's control; therefore, accurate pricing is best obtained closer to the time of construction and by following a competitive tendering process.

Contingency, GST and engineering fees are not included in these cost estimates.

Table 3 - Summary of Options

Construction Unit / Building Envelope Assembly	Description of Options	Recommended (Yes/No)	Reasons Option Recommended or Not	Cost Assumptions (Materials, Approach)	Ongoing item Frequency	Estimated Cost of Recommended Option
Walls	Maintain the existing claddings such as the stucco.	No	The stucco cladding does not appear to be properly secured to the sheathing at some locations. Several deficiencies such as bulging and cracks were observed at the stucco clad walls. Decayed sheathing and framing was observed at some locations.	1. Labour and materials	Yes	$125,000
	Replace the wall claddings.	Yes	For long term performance of the exterior walls.	1. Labour and materials	No	$1,250,000
	Provide insulation to the exterior walls	Yes	To improve energy efficiency.	1. Labour and materials	No	$250,000
Glazing	Maintain the existing windows.	No	The existing windows are not energy efficient and could be a source of possible water ingress and condensation.	1. Labour and materials	Yes annually	$50,000
	Replace the existing windows with new energy efficient glazing systems.	Yes	For long term performance. To improve energy efficiency.	1. Labour and materials	No	$200,000
Low-sloped roofing	Maintain the existing roofs	No	Risk of roofing failures and water ingress. The roofs also have no to little insulation.	1. Labour and materials	Yes annually	$25,000
	Replace the roof with a new 2-ply SBS roofing assembly with new insulation.	Yes	For long term performance. To improve energy efficiency.	1. Labour and materials	No	$650,000

Maintenance options	**$200,000**
Remediation/Replacement (Claddings, glazing and roofs)	**$2,350,000**

APPENDIX A

GLOSSARY OF TERMS

Glossary of Terms [1]

Air Barrier	Materials and components that together control the flow of air through an assembly and thus limit the potential for heat loss and condensation due to air movement.
Assembly	The collective layers of components and materials which together comprise the complete cross-section of the wall or roof.
Balcony	A horizontal surface exposed to outdoors, and intended for pedestrian use, but projected from the building so that it is not located over a living space or is acting as a roof.
Base Flashing	The part of the roofing that is turned up at the intersection of a roof with a wall or another roof penetration. It may be made of the same material as the main roofing membrane or of a compatible material.
Building Envelope	Now called an environmental separator in Building Codes, refers to those parts of the building which separate inside, conditioned space from unconditioned or outside space, and includes windows, doors, walls, roofs, and foundations
Cap Flashing	Component that sheds water from the tops of walls. It is difficult to make metal cap flashing waterproof at joints and intersections, and it therefore requires a secondary, continuous and waterproof membrane below it.
Cladding	A material or component of the wall assembly which forms the exterior surface of the wall and is exposed to the environment forces.
Concealed Barrier	A strategy for rain penetration control that relies on the elimination of holes through a combination of the cladding and a secondary plane further into the assembly.
Counter Flashing	Prevents water from penetrating behind the top edge of base flashing, and consists of a separate piece of flashing placed over the top of the base flashing. It is usually made of sheet metal.
Cross Cavity Flashing	Flashing that intercepts and directs water flowing down the cavity of a wall assembly to the outside of the building.
Deck	A horizontal surface exposed to outdoors, located over a living space, and intended for pedestrian use in addition to performing the function of a roof.
Drainage	Using surfaces of the assembly to drain water away from the assembly.
Drip Flashing	A component that directs water flowing down the face of vertical elements, such as walls or windows, away from the surface.

Durability	Terminology describing the capacity of a material to tolerate environmental forces.
Efflorescence	A white powdery deposit on the surface indicating moisture ingress through the concrete. This is caused when water traveling through the concrete reacts with calcium hydroxide.
EIFS	EIFS wall system is a barrier type cladding that consists of insulation (Lamella) adhesively or mechanically attached directly to the exterior substrate. The insulation is covered with a lamina, which consists of a cementations base coat, embedded fiberglass reinforcing mesh and synthetic finish coat.
Element	A material or component within the assembly.
Face Seal	A strategy for rain penetration control that relies on the elimination of holes through the cladding.
Flashing	Materials used to deflect water and make waterproof connections at interfaces and joints within and between wall and roof assemblies.
Horizontal Joint	A horizontal joint on a wall which provides capability for differential movement of portions of the building structure (expansion joint) or prevents or localizes cracking of brittle materials such as stucco (control joint).
Housewrap	A sheet plastic material used as a breather type sheathing membrane. It is generally installed between the wall sheathing and the exterior cladding. Although at one time used as a proprietary term, housewrap is now used to represent a generic group of materials. One common type of housewrap consists of Spun-bonded Polyolefin (SBPO); another is made of perforated polyethylene.
Maintenance	A scheduled process of periodic inspection and minor repairs to the building envelope.
Moisture Barrier	Any material used to retard the passage or flow of moisture into the assembly, thus preventing condensation.
Moisture Content	With respect to wood: The weight of water contained in wood expressed as a percentage of the weight of oven-dry wood.
Penetration	An intentional opening through an assembly.
Pressure Treatment	A process for treatment of wood to provide greater durability against moisture.
Rainscreen	A wall designed to prevent rain penetration by providing a cavity between the cladding and the backup wall and vents the wall to allow moisture drainage.
Saddle	The junction of small horizontal surfaces, such as the top of a balcony guardrail or parapet wall, with a vertical surface, such as a wall.

Sheathing Sheet material attached to the wall framing to provide structural backing for the cladding and sheathing paper. Can be designed to provide structural lateral stiffness for the wall.

Sheathing Membrane Sheet material in an exterior wall assembly used to retard penetration of water further into the structure once past the cladding. Waterproof type sheathing membranes can also perform the function of the air barrier and the vapour barrier. These materials include both breather type sheathing membranes such as sheathing paper and housewraps, and waterproof sheathing membranes.

Sheathing Paper Asphalt-impregnated organic sheet material (breather-type sheathing membrane) attached to the sheathing exterior which creates a water-shedding surface.

Stepped Flashing The material installed at the junction between a sloping roof and a wall running parallel to the slope. Both base and counter flashing are overlapped and installed in pieces following the slope to form the complete stepped flashing.

Through-wall Flashing A waterproof membrane or metal flashing that 1) allows water behind the cladding to shed away from the building, 2) prevents water from entering the wall at joints, and 3) prevents capillary transfer of moisture though porous materials such as concrete or masonry if the moisture source is below grade.

Valley Flashing Flashing installed in the valleys of sloping shingled roofs to give continuity to the roofing system.

Vapour Barrier A material with low vapour permeability that is located within the assembly to control the flow of vapour and limit the potential for condensation due to diffusion.

Walkway A pedestrian corridor exposed to outdoors which provides access between suites and stairwells or elevators. It may also be a roof.

(1) Acknowledgement is given to Canada Mortgage and Housing Corporation for the use of the glossary from their “Best Practice Guide Wood Frame Envelopes in The Coastal Climate of British Columbia” 1st Edition, September 1998 as a basis for this glossary.

APPENDIX B

EXPLORATORY OPENING RESULTS, MOISTURE PROBE TABLE

AND

ELEVATIONS SHOWING LOCATIONS OF EXPLORATORY OPENINGS

INTERPRETATION OF MOISTURE PROBE INFORMATION

Levelton's investigation of the building wall assemblies involved measurement of moisture content of the wall sheathing behind the cladding, and exploratory openings to observe the interior of the walls and the condition of wall components.

The moisture-content readings represent a 'snapshot' view of the moisture levels behind the wall cladding at the time of the survey at the location of the probe. The survey does not provide information as to the source of water, when the water ingress occurred, or whether the pattern or severity of wetting had changed with time. The moisture readings must be interpreted with reference to the weather conditions in the days/week preceding the survey. This allows the readings to be interpreted as representative of conditions at the beginning, middle or end of a wetting or drying cycle behind the cladding.

Locations selected for exploratory opening and moisture probing were based on our experience regarding wall details traditionally susceptible to water ingress. Some examples include: wall penetrations, such as windows and doors, below horizontal cracks in the stucco, and flashing terminations.

The procedure for these locations involved providing an exploratory opening on the outside of the wall assembly and inserting probes into the surface of the sheathing. The electrical conductance of the ship-lap or plywood is measured and converted to moisture content ("MC") readings of the sheathing. The physical resistance to the probe when it is pushed against the sheathing also provides an indication of the integrity of the sheathing. A low MC reading with a firm resistance to the probe penetration is evidence of no moisture problems at the probe location. A low or high MC reading and little resistance to the probe may be evidence of deterioration.

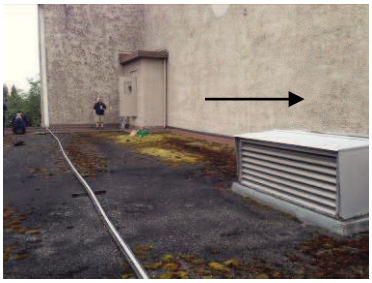
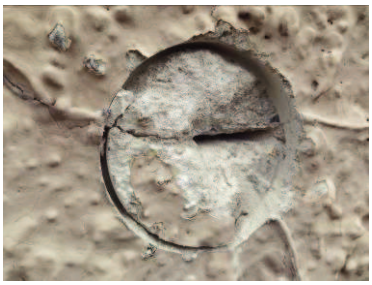
Moisture readings, illustrated on the elevation drawings included in this Appendix are grouped into three risk categories: Low Risk, Medium Risk, and High Risk, as follows:

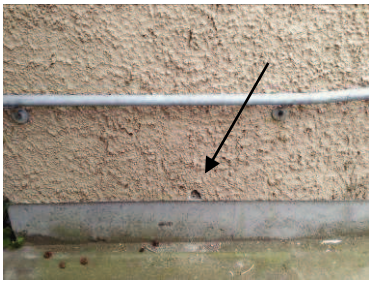
Ship-lap and Plywood

- **Low Risk** - A low risk moisture reading indicates moisture content equal to or below 19.0% (i.e. not exceeding normally acceptable levels).
- **Medium Risk** – A medium risk moisture reading indicates moisture content between 19.1% and 28% (i.e. enough moisture to reduce the strength of the sheathing and promote mould growth after a mould colony has been established).
- **High Risk** – A high risk moisture reading indicates moisture content above 28.1% (i.e. enough moisture to seriously affect the integrity of the sheathing and establish mould colonies).

SUMMARY OF EXPLORATORY OPENING OBSERVATIONS

Table 4 – Summary of Exploratory Opening (EO) Observations

EXPLORATORY OPENING #	OBSERVATIONS	PHOTOGRAPH
EO # 1	**East Elevation – level 2** The opening was made from the exterior, by drilling a 4" diameter core through the stucco cladding. Levelton did not observe a sheathing membrane between the concrete masonry unit (CMU) substrate and the stucco cladding. The stucco appeared to be well bonded to the concrete (CMU). The mortar between the concrete masonry units appeared to be soft, moist and powdery.	 
EO # 2	**East Elevation – level 1** The opening was made from the exterior, by drilling a 4" diameter core through the stucco cladding. The building paper was wet, the sheathing was decayed and portion of the framing was decayed. Levelton measured a moisture content of 40% in the ship-lap wood sheathing.	 

EO # 3	**East Elevation – level 1** The opening was made from the exterior, by drilling a 4" diameter core through the stucco cladding. The building paper was weathered. The ship-lap sheathing appeared to be in good condition. Levelton measured a moisture content of 16.3% in the ship-lap wood sheathing. Levelton observed vines growing in the wall assembly (in front and behind the building paper) behind the stucco cladding.	 
EO # 4	**North Elevation – level 1** The opening was made from the exterior, by drilling a 4" diameter core through the stucco cladding. The building paper was weathered. The sheathing was generally in acceptable condition, except at the base of the opening where the sheathing was decayed. Levelton measured a moisture content of 13.5% in the ship-lap wood sheathing.	 N/A

EO # 5	**North Elevation – level 1** The opening was made from the exterior, by drilling a 4” diameter core through the stucco cladding. The building paper was deteriorated, the sheathing was decayed and the sill plate was at the early stages of decay. Levelton measured a moisture content of 17.9% in the ship-lap wood sheathing.	 

APPENDIX C

STRUCTURAL REPORT

LEVELTON CONSULTANTS LTD.
Select Address

June 11, 2015

Levelton File # R515-1021-00

Corporation of the City of New Westminster
738 8th Ave.
New Westminster, BC

Attention: Wayne Werbovetski

Project: Massey Theatre
Subject: Structural Review of Stucco Cladding

Dear Mr. Werbovetski:

1. INTRODUCTION

As requested, a Structural Engineer from Levelton attended a site meeting on June 4, 2015 to review the problematic stucco cladding of the Massey theatre at the above-captioned address. Based on field observations, recommendations will be given at the end of this report to facilitate the City to make a decision on course of action.

2. OBSERVATIONS

While we were on site, we observe the following:

a) Two different kinds of substrates were noticed behind the stucco: concrete masonry units (CMU) and shiplaps (Photos 1 & 2). The stucco is firmly adhered to the CMUs, but the mortar appears to be weak.
b) Where the backing support is CMU walls, bulges of stucco were generally not observed. However, cracks and/or signs of previous repair were noticed (Photos 3 & 4).
c) Photo 5 shows a SW-facing wall in which the lower half of almost the entire wall bulges and laterally unsupported. Some small bulges of the stucco were also observed at various locations throughout the building (Photo 6).



Photo 1: Stucco over CMU



Photo 2: Stucco over Shiplaps



Photo 3: Crack & Signs of Repair

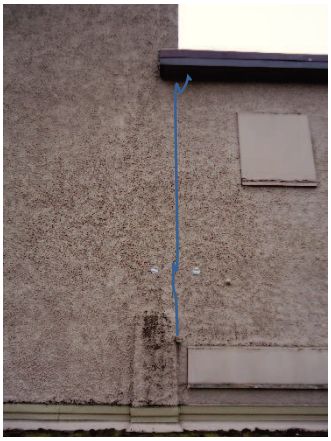


Photo 4: Vertical Crack along Right Face of Pilaster



Photo 5: Bulging Stucco - Extensive



Photo 6: Bulging Stucco - Local

d) A visual review of the gap behind the stucco revealed that the nails are small and short, detached from the wood elements (Photos 7 - 8). There are two different kinds of nails observed: 0.072"x1" (Photo 9) and 0.083"x1¼" (Photo 10) [Note: The diameters of the nails were estimated, to the best of our knowledge, based on our observation of the fasteners and an online research of the 1" and 1¼" long nails.]

e) The stucco appears to be ⅝" - ¾" thick, and the gap (i.e. clearance) between the shiplap sheathing and the stucco varies, with a maximum value of 3" observed (Photo 11).

f) The wire lath inside the stucco, albeit experiencing minor surface corrosion, is in fair condition (Photo 12).



Photo 7: Stucco w/ Detached Nails from Framing



Photo 8: Stucco w/ Detached Nails from Framing



Photo 9: A Cored Sample of Stucco



Photo 10: Fastener Extracted from Stucco



Photo 11: A Variable Gap



Photo 12: Wire Lath

3. DISCUSSION

Stucco to CMU: This portion of the stucco cladding is in good condition in general. Even though some cracks occurred here and there on the wall finish and the mortar shows signs of aging, the cladding is well bonded to the CMU walls. In fact, it required a great effort to core a sample of stucco out of the wall. We suggest sealing all the cracks to prevent water ingress in to any voids between the wall and the cladding regardless of the intended remaining service life of the structure. In other words, any attempt to replace the stucco is not recommended, as, by doing so, the structural integrity of the masonry wall would likely be affected due to the strong adhesion of the cladding to the rough surface of the block walls.

Stucco to Shiplaps: This field review reveals that a significant portion of the stucco cladding was poorly fastened to wood stud walls due to the undersized nails. That is, the nails are both too short and too small. The shallow penetration of the nails into wood elements has rendered the fasteners' holding power gradually lost under the influence of wind suction. Once a nail succumbs, its neighbouring nails will be subjected to a greater suction force, thereby causing more and more nails to be ultimately detached from the framing members. The extensive separation of the stucco from the wall, as shown in Photo 5, is evident of this chain reaction. Fix to this problem can either be temporary or permanent, depending on the intended remaining service life of this building. Regardless, some structural remediation of the stucco should be performed and as soon as possible.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the previous discussion, it is Levelton's position that it is not recommended to replace the stucco cladding adhered to CMU walls. However, the stucco, which was installed over wood stud walls may or may not require replacement, depending on how much longer the City would keep the building in service. As such, we would recommend the following options of remediation for the Client to consider.

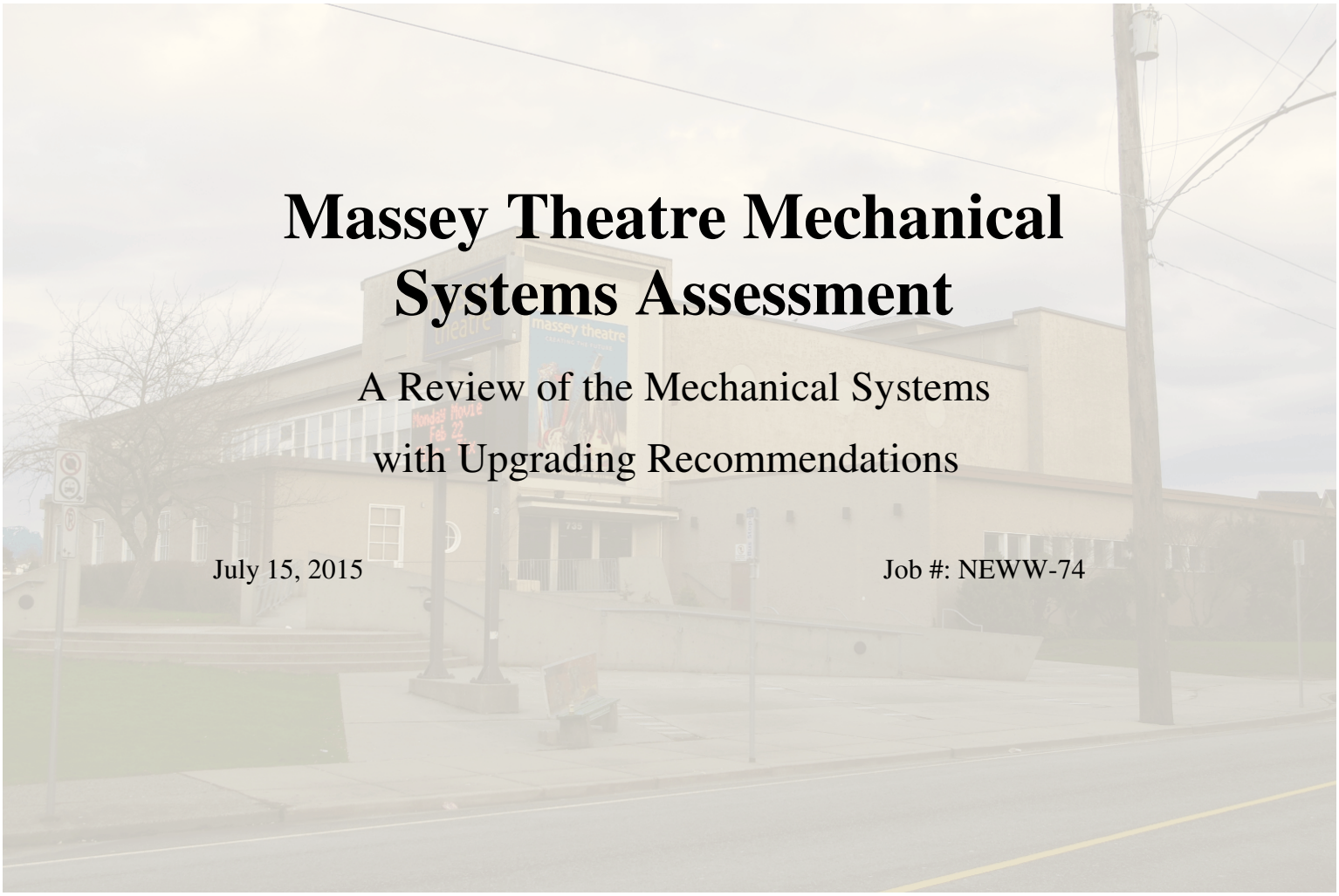
a) **Stucco over CMUs**: Seal all cracks with cementitious material to prevent water from migrating in to any voids behind the cladding.

b) **Stucco over Shiplaps**:

- In the case that the remaining service life of the building is 7 years or less, install one row of Simpson SDS ¼"x3" screws @ 12" o/c along each stud line through the stucco and shiplaps, penetrating into stud. Position the fasteners with a 5-degree inclination to prevent water ingress and apply an effective sealant at the interface between the fasteners and the stucco. In addition, repair good all holes present in the stucco and seal all noticeable cracks with a cementitious material.
- If the intended service life is more than 7 years, replace the stucco as per Levelton's Building Envelope.

Yours truly,
Levelton Consultants Ltd.

	Reviewed by
[Original Signed by Kenny Yip]	***[Original Signed by David Evans]***
Per: (Kenny) H. Y. Yip, P.Eng., P.E., S.E.	Per: David Evans, P.Eng.
Structural Group Leader	Manager, Building Science Division



Massey Theatre Mechanical Systems Assessment

A Review of the Mechanical Systems with Upgrading Recommendations

July 15, 2015 Job #: NEWW-74

Prepared for: Mr. Wayne Werbovetski, BArch, AIBC
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INTRODUCTION

Mr. Wayne Werbovetski, Project Manager for the City of New Westminster, engaged a consultant team to review the Massey Theatre at 735 Eighth Street in New Westminster to determine how to maintain the facility when the adjoining school is demolished. Jade West Engineering Co. Ltd. has been retained as part of this consultant team to review the mechanical systems.

The information is based on a site visit on June 19, 2015, and a review of a mechanical assessment report dated June 15, 2009 by Rocky Point Engineering Ltd. I will be updating my earlier mechanical systems report from January of 2010 to suit the new proposed scope of work.

Unfortunately, limited information about the equipment installed on site is available. The planned demolition and re-construction of a new high school will involve demolition of buildings adjacent to and interconnected with the Massey Theatre structure. Demolition of these buildings will involve many mechanical, plumbing and fire protection connections that currently serve both the school and the Theatre.

The scope of work of this report includes a description of the current Mechanical systems and the following:

- Option 1: Recommendations for upgrading the existing mechanical systems to allow the building to remain open and operate, but with minimal upgrades and capital expenditures.

- Option 2: Recommendations for upgrading the theatre building including improved mechanical systems so that the facility is more modern, with improved comfort, efficiency and reliability.

No detailed analysis of the Mechanical systems is included (i.e. calculations to determine if existing equipment is adequately sized.) This report pertains only to the Mechanical equipment serving the Theatre, and does not address any systems beyond the Theatre envelope.

TABLE OF CONTENTS

INTRODUCTION 2

BUILDING DESCRIPTION 4
General 4
Mechanical Systems 4
General 4
Heating and Air Conditioning 4
Boilers 7
Ventilation and Exhaust 8
Plumbing Systems 9
Water Service 9
Domestic Hot Water System 10
Fixtures 11
Drainage Systems 11
Gas Service 11
Fire Protection Systems 12
Sprinklers 12
Stage Emergency Smoke Exhaust 12
Seismic 13

Mechanical Conclusions and Recommendations 13

BUILDING DESCRIPTION

General

The Massey Theatre was constructed around 1949 and is a 1,260 seat auditorium used for live theatre and other productions.

The Theatre is attached to portions of New Westminster Secondary School, which is an amalgamation of Vincent Massey Junior High School and Lester Pearson Senior Secondary School. The construction of a new school is proposed, which would necessitate the demolition of the buildings and structures around the Massey Theatre.

The City proposes to retain Massey Theatre, but as a building separate from the School, with new independent services (e.g. heating system, sprinkler system, etc.)

Mechanical Systems

General

This section assesses the general condition of the Mechanical systems and does not attempt to check the adequacy of the installed systems with respect to heating/cooling equipment sizes, pump sizes, heating and ventilation requirements, etc.

Heating and Air Conditioning

Main Theatre:

The Main Theatre is primarily heated, air conditioned and ventilated with a packaged, rooftop, multizone unit (4 zones) located on the roof. The unit (RTU-1), installed in 1979, is a Climate Master Model FLMR-70-547 HW. The manufacturer is no longer in operation but apparently was bought out by Engineered Air (EngA).

Maintenance work to keep this equipment operating has included a major compressor replacement around 2007. The equipment has exceeded its service life, is undersized for both cooling capacity and ventilation air capacity and is need of upgrade/replacement.

This unit is controlled by a very basic standalone DDC system located in the Boiler Room. The four zones served by RTU-1 are: the mezzanine, two zones on the main theatre area, and the former lighting booth located on the mezzanine level. The lighting booth is no longer in use for lighting control so it may not need to be considered a separate zone in the future.

A new multizone unit should be installed, equal to:

Engineered Air FWE624/C/M/O/R packaged rooftop multizone replacement unit.

Supply : 26,000 CFM at 2.5" ESP, 30 HP motor & VFD
Return : 23,000 CFM at 1" ESP, 15 HP motor & VFD
Cooling : nominal 62 ton, (4) compressor - see attached
Heating : 850 MBH with 75 GPM, 160 F EWT
MCA=399 A at 208/3/60 with 450A fuse & breaker*

c/w - (4) zone multizone head with modulating zone operator ; 0-10vDC by others

- packaged DX cooling; (4) compressors; EngA CTRAC controller with DDC temperature reset
- 2" MERV 8 filters; mixing section with modulating operator
- full return fan section with 100% relief
- hot water heating coil section
- new Z-bar curb sealing strip
- electrical power connection location to match existing
- sized to fit existing roof curb, match S/A zone head and R/A ductwork
- dimensions are field verified by EngA prior to fabrication

Proposed Green Room/Laundry (existing Drama Room) and Proposed Large Rehearsal Room (existing Small Gymnasium):

Air handlers located in an adjacent mechanical room supply warm air heating to the existing Drama Room and two existing band rooms. An air handling unit located in a mechanical room on the roof serves the existing small Gymnasium. These units are also past their expected service life, require considerable maintenance to remain operational, have different controls (some DDC, some pneumatic) and should be replaced with new equipment.

The proposed Large Rehearsal Room (existing Small Gymnasium) should have a 12-1/2 ton cooling unit with hot water heating section and an outside air economizer controlled with a CO2 sensor, so that when more people enter the space, the increased concentration of CO2 signals the outside air damper and return fan to introduce more outside air to reduce the concentration of CO2.

In the future, the existing ductwork distribution system can be upgraded to a larger, quieter distribution system more suitable for rehearsal use.

The heating system for the proposed small Green Room/Laundry Room (existing Drama Room) should be replaced with a heating only unit sized to match the existing unit. We have no specifications on this equipment.

The heating system for the proposed Small Rehearsal Room (existing Band Rooms) should be replaced with a packaged heating and cooling unit on the roof. The existing duct shafts and distribution system can be re-used. In the future, this ductwork distribution system can be upgraded to a larger, quieter distribution system more suitable for rehearsal use.

Gallery:

The Gallery has no ventilation or cooling system.

A new four (4) ton (48,000 btu's of cooling), packaged, heating and cooling unit should be installed on the roof above the Gallery.

This four ton unit would have gas heating, a return fan section and an economizer. The economizer would have a carbon dioxide (CO2) control. The duct distribution system will be located under the existing ceiling.

Lobby:

The main Theatre Lobby has no ventilation or cooling system.

A ten (10) ton (120,000 btu's of cooling), packaged, heating and cooling unit should be installed on the roof above the music rooms which are over the Lobby. (i.e., Install supply and return ductwork through the storage area above the Lobby to the A/C unit installed on the roof on the floor above the Lobby.)

This ten ton unit would have gas heating, a return fan section and an economizer. The economizer would have CO2 control. The duct distribution system will be located under the existing ceiling.

Administration Offices:

A small, packaged air conditioning unit, model YORK Model D4CE048A25A, was installed around 2000 on the roof overtop of the Massey Administration offices located on the Southern End of the building to serve the offices. It is approaching its estimated service life and should be scheduled for replacement by a packaged gas heating and cooling unit.

Upper Floor Corridor

This area currently has no ventilation or cooling system.

A four (4) ton (48,000 btu's of cooling), packaged heating and cooling unit should be installed on the roof to serve this area.

Boilers

A boiler room is located on the third floor adjacent to the large gymnasium providing hot water for RTU-1 as well as various perimeter hot water heaters and some air handlers located throughout the building.

In 1982, 12 Multitherm, modular boilers were installed to provide heat for both the Theatre and portions of the adjacent school. Six of these boilers were removed in early 2007 prior to the installation of the new, more efficient boiler. The six boilers that remained are Multitherm, Model MR900B (x

two), with a total combined rating for all six boilers of 1,800MBH input and 1,440 MBH output (total combined output).

The boiler installed in 2007 was a De Detrich GT300 (tagged as installed on Sept. 24.07) boiler with a Weishaupt Burner. This boiler is rated at 1,024 MBH input, 870 MBH output and is considerably more efficient then the old Multitherm boilers.

Apparently, during cold weather, all the boilers must operate during cold and there is, at times, not enough capacity to keep all areas served by these boilers "at temperature."

With the planned demolition and replacement of areas outside of the Massey Theatre, the area served by these boilers, and thus the heating load, would be reduced. Upgrades to the building envelope would further reduce the heating load. Changes to the building's ventilation systems could further impact the load. The total heating load should be re-assessed in the future.

Due to the age and inefficiency of the older Multitherm boilers, however, they should be replaced immediately with new high efficiency, condensing boilers and the De Detrich boiler should remain as backup and to assist with peak heating demands.

At a minimum, we would recommend installing approximately 1,500 MBH of heating capacity using new boilers to provide the base heating for the building and ventilation systems. We would assume that likely four, 399 MBH modular boilers (Triangle Tube, IBC or similar) will be required and they should be connected into a new DDC system with the existing De Detrich boiler to remain for peak heating.

The new boilers will need to be vented to the roof with approved venting material. All of the existing c-vent and b-vent serving the existing boilers will need to be removed and new venting will need to be installed to serve the De Dietrich boiler as per the manufacturer's recommendations. (No C-vent material is to be used on this boiler.)

Ventilation and Exhaust

Ventilation air (outside air) for the Theatre is provided primarily by the main

rooftop HVAC unit. There is inadequate free cooling and insufficient capability to introduce enough outside air during performances to achieve current recommended air quantities. A demand controlled ventilation system using CO2 sensors, which would modulate the amount of outside air brought into the building, would be very useful. It would allow more outside air into the building during heavy occupant loads and would reduce the amount of outside air during unoccupied hours. It could significantly increase air quality while reducing energy costs.

Members of the maintenance staff have said that to the best of their knowledge, the washrooms serving the Theatre are naturally ventilated: there is no mechanical exhaust. They should be ventilated according to the recommendations of the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) using new mechanical exhaust fans.

All existing exhaust and supply fans in the Theatre should be replaced with new to match the existing capacity. All fans should be connected into a new DDC system.

Plumbing Systems

Water Service

There is an 8" combined fire/domestic water service which enters into the crawlspace of the adjacent High School (Massey Wing). There is very limited access to this area. Ths water main splits in the crawlspace to a 6" fire line and a 3" domestic water main.

As the demolition of the School will involve demolition of this water service, a new service, with a minimum 6" main, will be necessary to serve the Massey Theatre for domestic water and fire protection. The size should be confirmed by the sprinkler and the mechanical engineer during reconstruction. The new water main should enter into a Water Entry Room within the Massey Theatre Building and will require a water entry station with all double check valves, pressure reducing valves, etc. as required by the local authorities having jurisdiction.

It is likely that the majority of the domestic water piping within the building

would be considered undersized by the current building code requirements. Due to the age of the piping, it can be assumed that it has exceeded its expected service life and could leak in the near future. The entire domestic piping system should be replaced with new piping sized to the current code requirements. I would recommend using Aquatherm and PEX tubing as a replacement for the existing copper piping due to the improveed longetivity of these products compared to copper. This would be considered part of Option 2 and should be scheduled concurrently with the building's seismic upgrading.

Domestic Hot Water System

Domestic hot water is currently provided by a small electric domestic hot water tank located in the crawlspace under the Theatre. Apparently, this was installed as a temporary measure and serves the washroom lavatories only. It is a Giant, Model 172ETE-3F7M, electric tank with 4.5 kW heating and 60 Imperial Gallon capacity. The piping to and from this tank is undersized according to current code requirements.

A new domestic hot water system should be installed in the mechanical boiler room and connected to the new boiler heating system. A re-circulation system on a timer should also be installed to energize during occupied hours.

This new system would be sized adequately to serve any future showers and other fixtures that might be added at a later date.

Fixtures

The plumbing fixtures in the existing Theatre washrooms appear to be in reasonable condition. However, as part of Option 1, we would recommend replacing them. All new fixtures will be lower flow units meeting current code requirements.

Maintaining the use of flush valve urinals and flush valve water closets is recommended.

Drainage Systems

The building has a tar and gravel roof system that has moss growing on it and an accumulation of water in ponds. The condition of the roof is being assessed by others.

The building's storm drain system has two drains: one line is located underground on the east side and the second is on the west side of the building and flows to the North of the site. These connect into a combined storm/sanitary City main that also collects water from the adjacent Civic Arena building. The sanitary sewer for the Massey Theatre flows underground approximately through the centre of the building from South to North and connects into the same combined storm/sewer drainage system.

Gas Service

The building is supplied with natural gas. The gas meter is located a considerable distance from the Theatre on 8th Street. It serves the school buildings and the Theatre. Gas piping from the meter is piped through the school buildings to serve the mechanical room in the Massey Theatre.

To allow for the future demolition of the existing school buildings, a new gas meter will be required that serves just the Theatre and is located adjacent to the Massey Theatre building.

Fire Protection Systems

Sprinklers

This building is fully sprinklered. The water service for the sprinkler system is supplied from a combined domestic/fire main from 8th Street that serves both the school buildings and the Theatre. There is a fire department siamese connection located on 8th Street in front of the school where the water service enters the buildings.

To allow for demolition of the existing school buildings a new water service will be required to serve the Theatre, located adjacent to the Theatre building. It will need to be installed from 8th Avenue instead of the existing 8th Street location. A water entry room will need to be provided for this purpose and a new fire department connection will be required (installed in the South East Corner, close to the main entry).

For more information and recommendations for the sprinkler and fire protection systems review the report prepared by Murray Johnson Engineering Ltd., "Sprinkler System Review - Massey Theatre".

Stage Emergency Smoke Exhaust

There is an existing stage smoke exhaust system that was decommissioned years ago and has been rendered inoperable. The existing system was a passive smoke exhaust system using openable louvres installed at high level which would allow smoke to exhaust when opened.

The size of the smoke exhaust system must exceed 1/8 of the stage area. Since the area of the stage is approximately 2,750 sqft, the free area of the smoke exhaust must exceed 350 sqft. The existing structure exceeds this area so it appears that possibly only new smoke openings c/w low leakage motorized dampers must be installed that also exceed 350 sqft in free area. These must be designed and installed to be able to operate during a fire alarm without main power.

Seismic

In general, it is likely that none of the installed mechanical and plumbing systems meet the seismic requirements of the current Building Code. A major upgrade of the building and the systems within the building would be required in order to meet current these requirements.

Mechanical Conclusions and Recommendations

For Minimum Mechanical Upgrade, Option 1:

1. A new combined water service (minimum 6") will be required to the Theatre from 8th Avenue. This will supply both domestic (4") and fire protection (6") systems. A water entry room will be required to enclose the new service where it enters the building and the new lines must be connected into the existing sprinkler and domestic water system. A likely location for this room would be in the basement under the Box Office.

2. A new fire department siamese will be required at the front of the Theatre on 8th Avenue.

3. The existing combined sanitary and storm system located to the North of the Theatre will remain as is until the City upgrades this system and separates the sanitary and storm systems. No changes are required for the Theatre's sanitary and storm drainage piping.

4. When the school buildings are removed, new perimeter draintile will be needed around sections of the Massey Theatre footings where the school building has been removed and new structural footings are likely to be installed. This should be reviewed at the time of the demolition.

5. A new gas meter supplied from 8th Avenue and connected into the existing mechanical/boiler room on the Theatre's third floor will be required. This meter will need to be sized for the increased capacity to serve the new packaged rooftop equipment being installed and be piped to each new gas-fired piece of equipment.

6. The existing mechanical/boiler room should have the older Hydrotherm

boilers replaced with new high efficiency condensing boilers. Approximate capacity required is 4 boilers at 399 MBH each. A storage domestic hot water tank will need to be installed in this room, served by the boilers, and this tank will replace the existing storage tank located in the crawlspace. The piping to the removed tank will need to be re-piped to the mechanical room. The new domestic storage tank should be sized for any possible future domestic hot water loads (showers, dishwashers, etc).

7. Rebuild the existing Theatre smoke exhaust system to meet current code requirements. The free area of the smoke openings must exceed 350 sqft. The new smoke openings and the new motorized dampers must all be connected into the fire alarm system and operate (in emergency mode) with the main building power off.

8. Install a new multizone, packaged rooftop unit to serve the Theatre. Unit to be 62 ton, 26,000 cfm supply, 23,000 cfm return, c/w VFD drives, hot water heat and demand controlled ventilation.

9. Replace the following air handlers with new:
.1 Basement Green Room/Wardrobe Rooms (existing Drama Room) Heating and Ventilation Unit. Replace with similar heat/vent unit with no a/c (no a/c as it would be expensive to install refrigerant lines to this location and would involve many wall penetrations).
.2 2nd Floor Small Rehearsal Rooms (existing Band Room) heating and ventilation unit. Replace with a packaged rooftop unit c/w a/c. The ductwork can remain as is, but in the future a better duct distribution system would be recommended to provide a quieter system that would be more suitable for rehearsal use instead of gymnasium use.
.3 Large Rehearsal Room (existing Small Gymnasium). Replace with new complete with 12.5 tons of a/c and with hot water heating. The ductwork can remain as is, but in the future a better duct distribution system would be recommended to provide a quieter system that would be more suitable for rehearsal use.

10. Install new packaged rooftop equipment for the following areas.
.1 Gallery: install a packaged, gas-fired heating unit with 4 tons of a/c.
.2 Foyer: install a packaged gas-fired heating unit with 10 tongs of a/c.
.3 2nd Floor Corridor: install a packaged, gas-fired rooftop unit with 4 tons of a/c.

12. Replace all building exhaust fans with new equipment and add exhaust systems to washrooms and storage areas that presently do not have a proper exhaust system. There are multiple small exhaust fans serving washrooms and various utility and storage rooms. These fans are not recorded on any drawings available to us. A full building survey would be needed to record the number of fans there are, their capacities, and how to best replace them.

13. Replace all plumbing fixtures with new low flow, sensored and with flush valve water closets and urinals.

14. Upgrade the entire building control system to a central DDC system installed by ESC Automation as per the majority of the City of New Westminster buildings. For this option, the DDC system should monitor and provide control of all air handlers, boilers and any room sensors for controlling any new air handlers. Miscellaneous room sensors and heating equipment will not be upgraded to DDC control at this time.

15. Replace the existing packaged rooftop 4 ton a/c cooling only unit serving the administration offices. This unit is 15 years old and approaching the end of its service life. It should be replaced with a packaged gas-fired heating and cooling unit and the existing hot water perimeter heating system serving this space can be capped off.

16. All new mechanical equipment being installed to be seismically restrained to current building code requirements.

Upgrade Option 2: For Improved Upgrading of the Massey Theatre Systems:

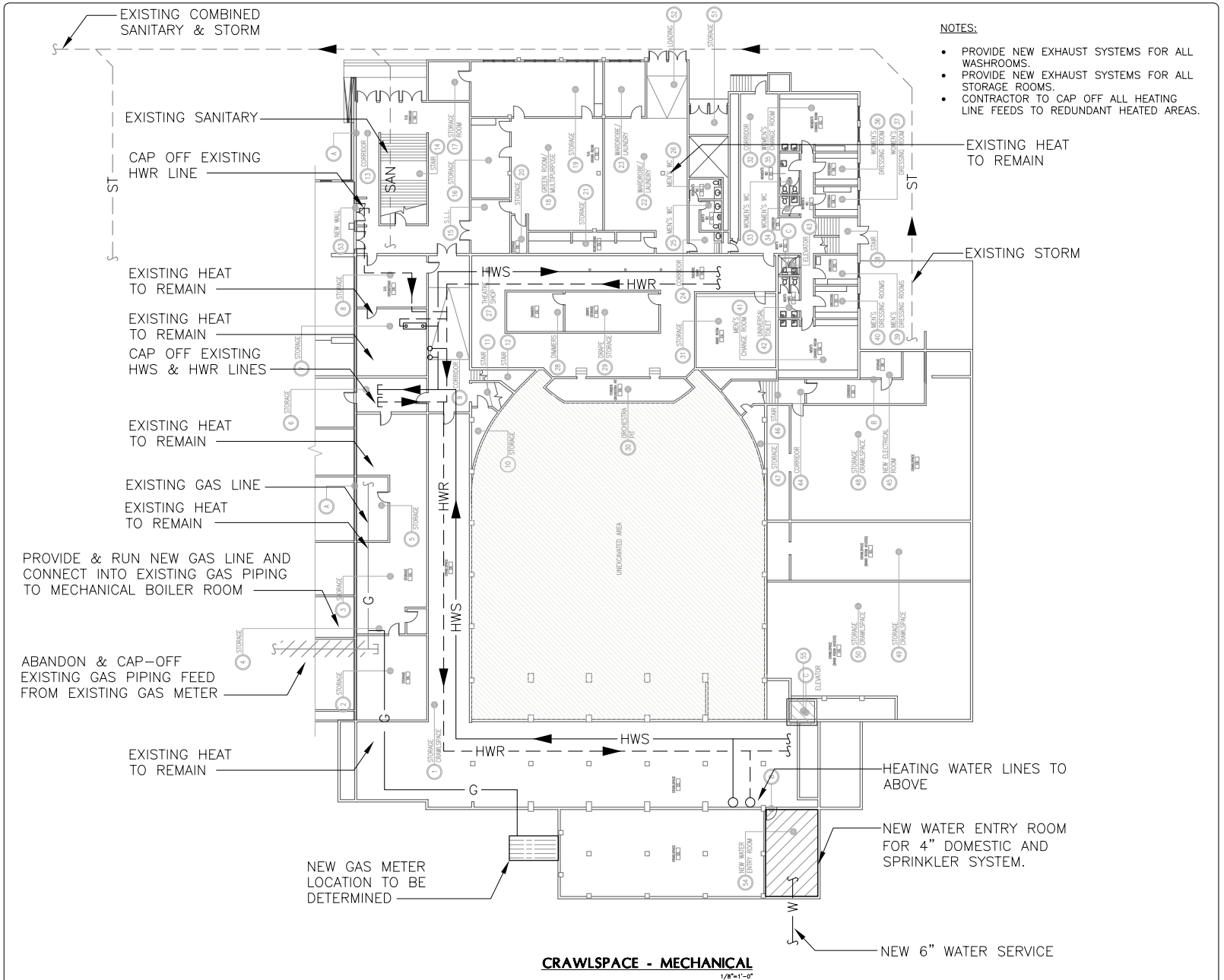
In addition to/instead of some of the items from the previous Minimum Mechanical Upgrades Option:

1. Replace the entire domestic water supply piping with new piping sized to current code requirements and fully insulated.

2. Upgrade the entire mechanical system to a modern, efficient HVAC system using heat recovery ventilation, an air cooled chiller providing chilled water for cooling (or similar system), low temperature hot water heating plus some gas-fired heating equipment, etc.

3. Install a full DDC system by ESC Automation to monitor and control all room sensors and all equipment and terminal heating and cooling equipment to the City of New Westminster standards.

4. All new and existing mechanical and plumbing equipment to be seismically restrained to current building code requirements.



NOTES:

- PROVIDE NEW EXHAUST SYSTEMS FOR ALL WASHROOMS.
- PROVIDE NEW EXHAUST SYSTEMS FOR ALL STORAGE ROOMS.
- CONTRACTOR TO CAP OFF ALL HEATING LINE FEEDS TO REDUNDANT HEATED AREAS.

CRAWLSPACE - MECHANICAL

1/8"=1'-0"

NO.	ISSUE	DATE
01	ISSUED	17/06/15
02	ISSUE FOR REPORT	19/06/15

VINCENT MASSEY THEATRE - RENOVATION

735 EIGHT AVENUE

NEW WESTMINSTER, BC

ENGINEERING CO. LTD.

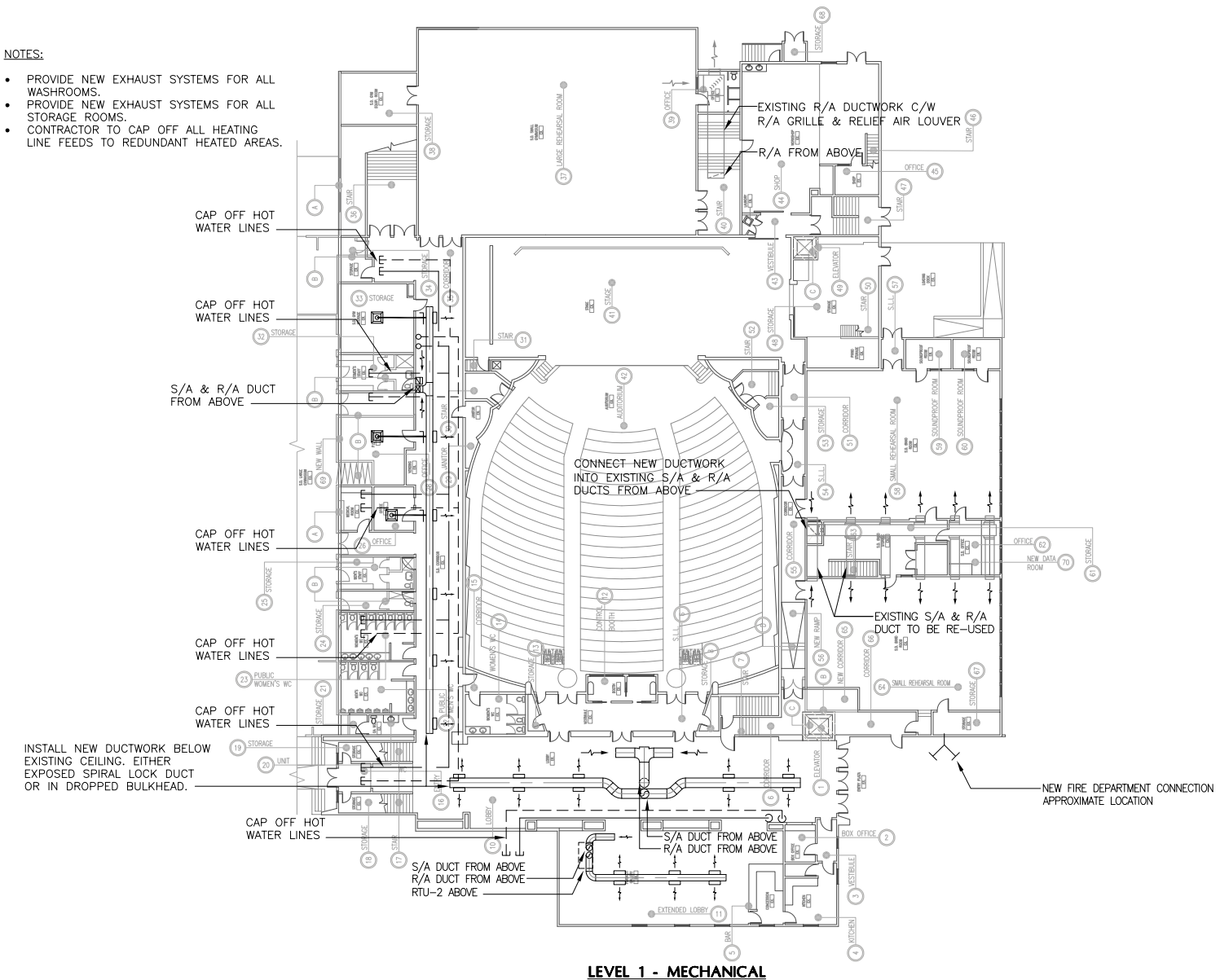
Professional Mechanical Engineering Services

- TITLE: CRAWLSPACE MECHANICAL
- SCALE: AS SHOWN
- DATE: JUNE 2015
- DRAWN: NS
- CHECKED: JM
- JOB #: NEWM–74
- DWG. NO.

M-01

NOTES:

- PROVIDE NEW EXHAUST SYSTEMS FOR ALL WASHROOMS.
- PROVIDE NEW EXHAUST SYSTEMS FOR ALL STORAGE ROOMS.
- CONTRACTOR TO CAP OFF ALL HEATING LINE FEEDS TO REDUNDANT HEATED AREAS.



LEVEL 1 - MECHANICAL

1/8"=1'-0"

NO	ISSUE	DATE
01	ISSUED	17/06/15
02	ISSUE FOR REPORT	19/06/15

VINCENT MASSEY THEATRE - RENOVATION

735 EIGHT AVENUE

NEW WESTMINSTER, BC

ENGINEERING CO. LTD.

Professional Mechanical Engineering Services

TITLE: LEVEL 1 MECHANICAL

SCALE: AS SHOWN

DATE: JUNE 2015

DRAWN: NS

CHECKED: JM

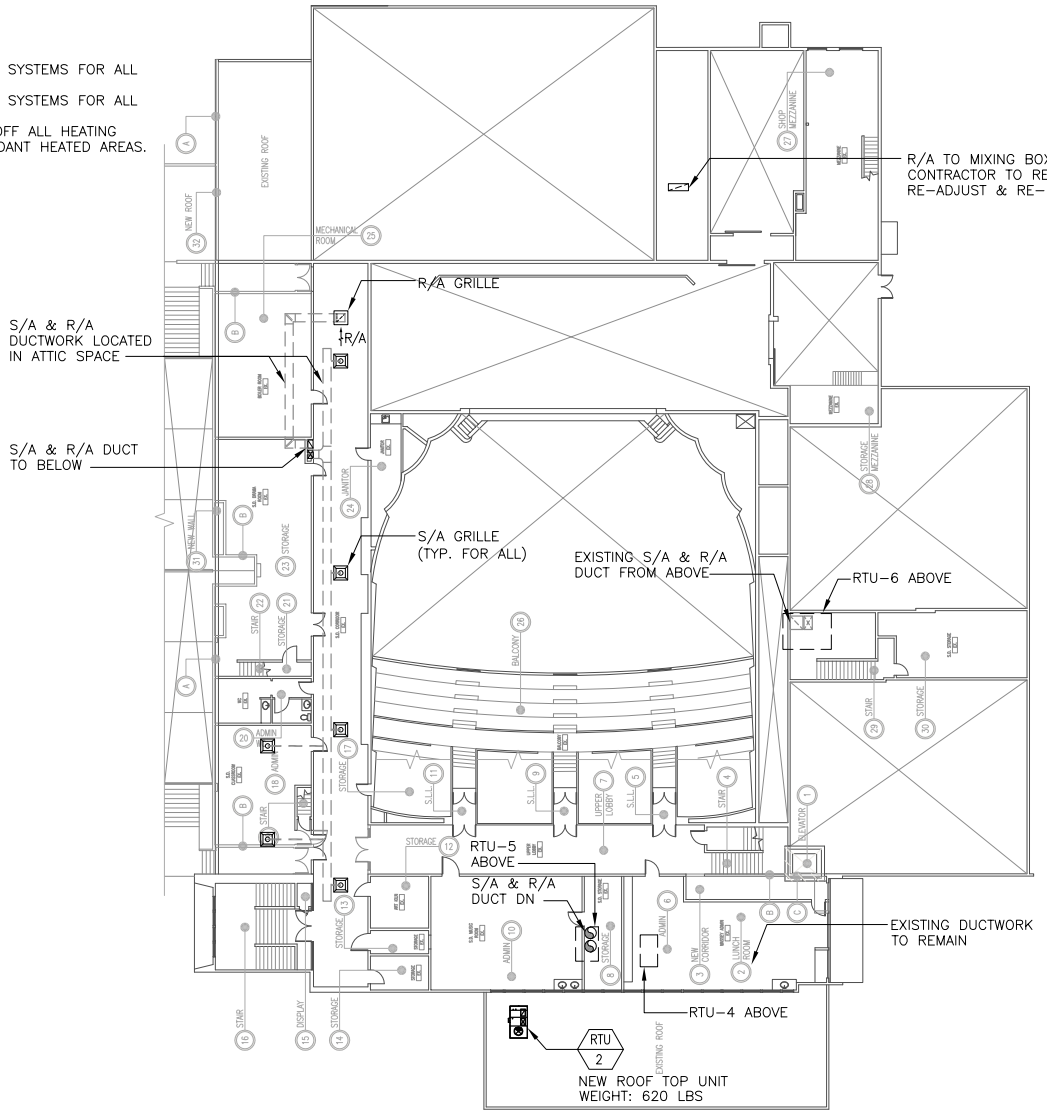
JOB #: NEWM-74

DWG. NO.

M-02

NOTES:

- PROVIDE NEW EXHAUST SYSTEMS FOR ALL WASHROOMS.
- PROVIDE NEW EXHAUST SYSTEMS FOR ALL STORAGE ROOMS.
- CONTRACTOR TO CAP OFF ALL HEATING LINE FEEDS TO REDUNDANT HEATED AREAS.



LEVEL 2 - MECHANICAL

1/8"=1'-0"

NO	ISSUE	DATE
01	ISSUED	17/06/15
02	ISSUE FOR REPORT	19/06/15

VINCENT MASSEY THEATRE - RENOVATION

735 EIGHT AVENUE

NEW WESTMINSTER, BC

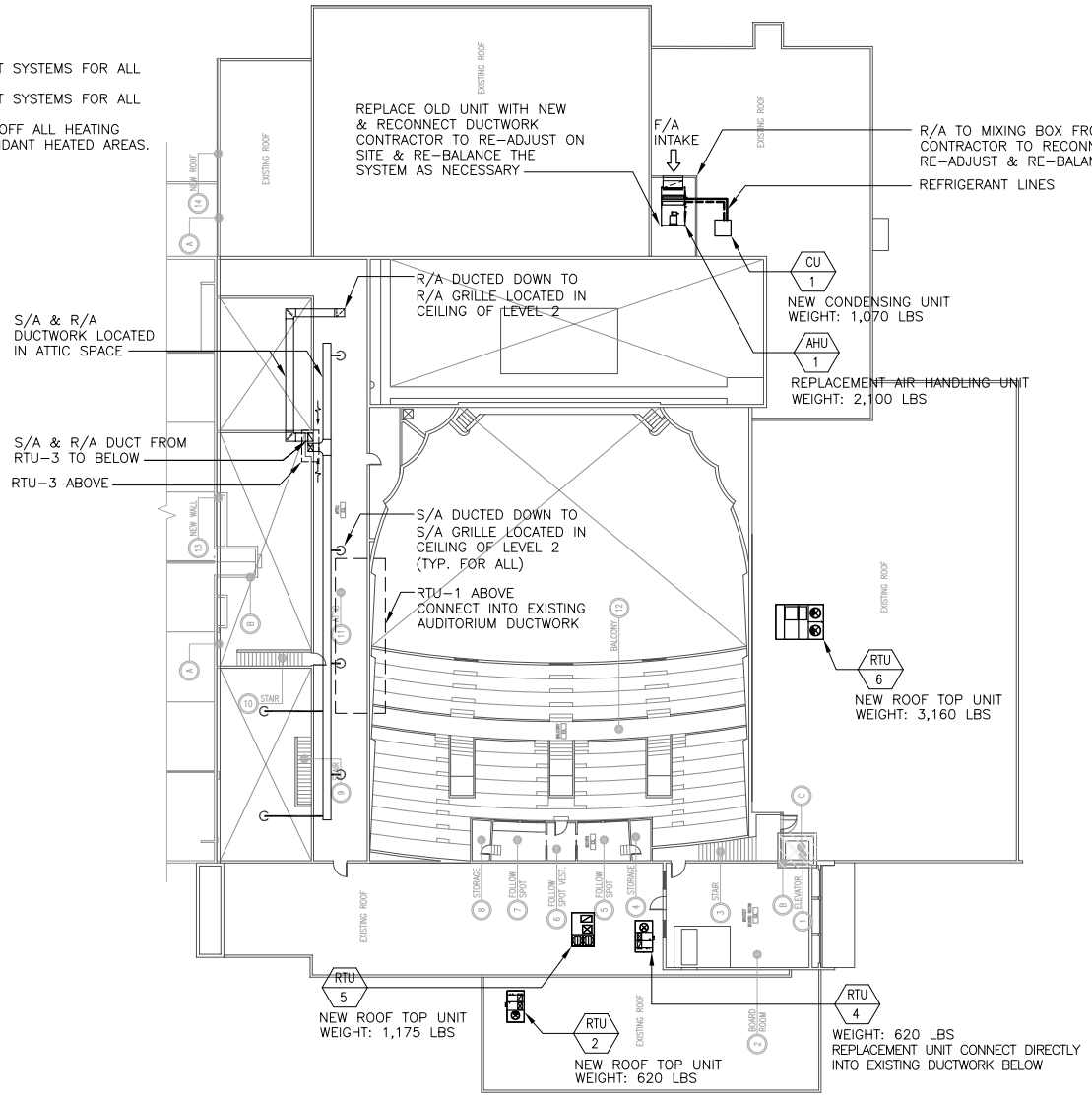
ENGINEERING CO. LTD.
Professional Mechanical Engineering Services

- TITLE: LEVEL 2 MECHANICAL
- SCALE: AS SHOWN
- DATE: JUNE 2015
- DRAWN: NS
- CHECKED: JM
- JOB #: NEWM-74
- DWG. NO.

M-03

NOTES:

- PROVIDE NEW EXHAUST SYSTEMS FOR ALL WASHROOMS.
- PROVIDE NEW EXHAUST SYSTEMS FOR ALL STORAGE ROOMS.
- CONTRACTOR TO CAP OFF ALL HEATING LINE FEEDS TO REDUNDANT HEATED AREAS.



LEVEL 3 - MECHANICAL

1/8"=1'-0"

NO	ISSUE	DATE
01	ISSUED	17/06/15
02	ISSUE FOR REPORT	19/06/15

VINCENT MASSEY THEATRE - RENOVATION

735 EIGHT AVENUE
NEW WESTMINSTER, BC

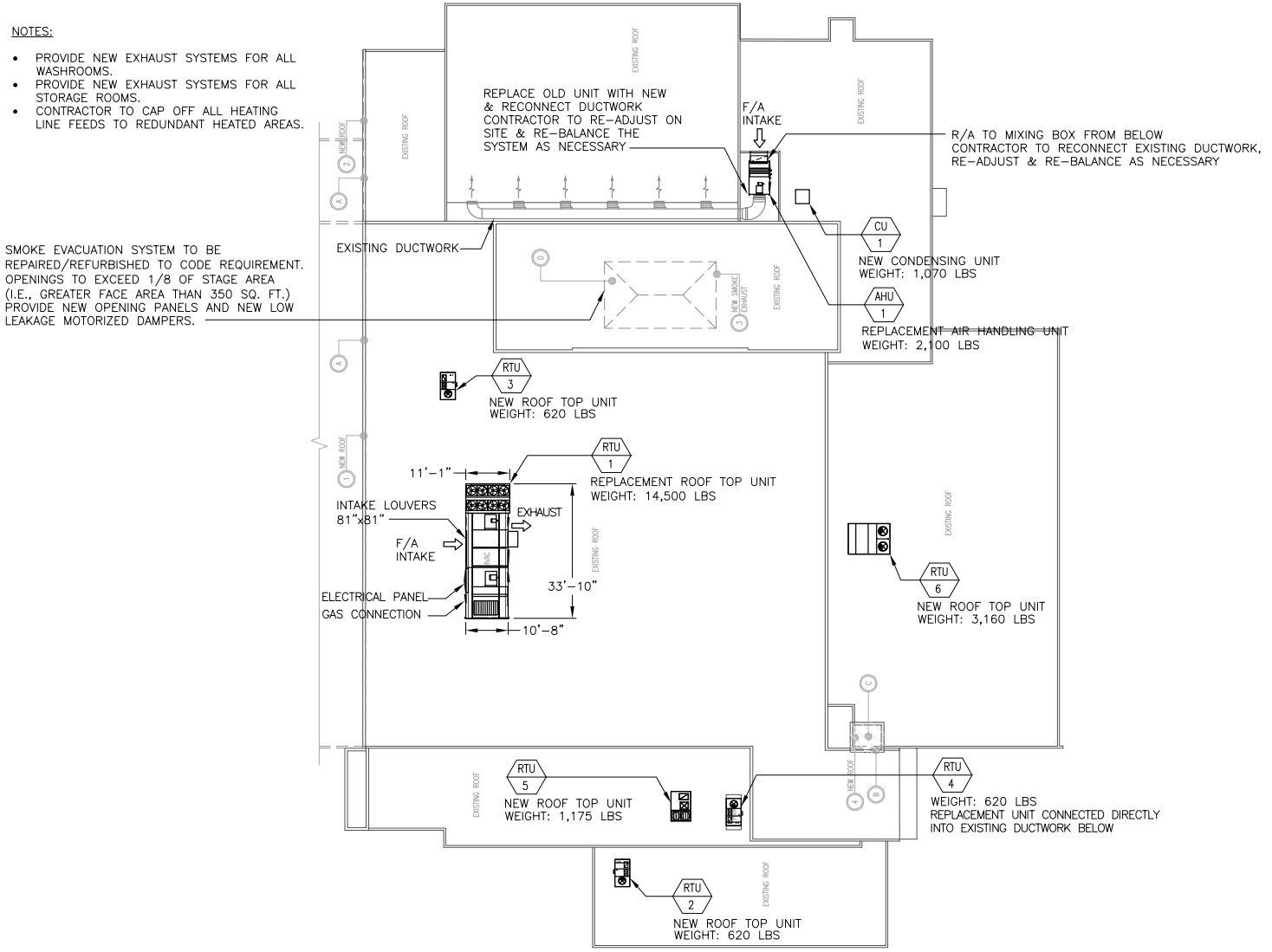
ENGINEERING CO. LTD.
Professional Mechanical Engineering Services

- TITLE: LEVEL 3 MECHANICAL
- SCALE: AS SHOWN
- DATE: JUNE 2015
- DRAWN: NS
- CHECKED: JM
- JOB #: NEWM-74
- DWG. NO.

M-04

NOTES:

- PROVIDE NEW EXHAUST SYSTEMS FOR ALL WASHROOMS.
- PROVIDE NEW EXHAUST SYSTEMS FOR ALL STORAGE ROOMS.
- CONTRACTOR TO CAP OFF ALL HEATING LINE FEEDS TO REDUNDANT HEATED AREAS.



ROOF PLAN - MECHANICAL

1/8"=1'-0"

NO	ISSUE	DATE
01	ISSUED	17/06/15
02	ISSUE FOR REPORT	19/06/15

VINCENT MASSEY THEATRE - RENOVATION

735 EIGHT AVENUE

NEW WESTMINSTER, BC

ENGINEERING CO. LTD.

Professional Mechanical Engineering Services

TITLE: ROOF PLAN MECHANICAL

SCALE: AS SHOWN

DATE: JUNE 2015

DRAWN: NS

CHECKED: JM

JOB #: NEWM-74

DWG. NO.

M-05

ROOFTOP AIR CONDITIONING UNIT SCHEDULE

TYPE	SERVICE	MANUFACTURER	MODEL	ELECTRICAL				CAPACITY (CFM)	E.S.P. SA/RA (IN)	EER	COOLING CAPACITY (TONS)	HEATING CAPACITY (MBH)	HEATING COIL @ 180F EWT (GPM)	WEIGHT (Lbs)	NOTES
				MCA	MOCP	VOLTAGE	FAN HP SA/RA								
RTU- 1	AUDITORIUM	ENGINEERED AIR	FWE624/C/M/O/R	399	450	208/3/60	30/15	S/A 26,000 R/A 23,000	2.5/1.0	–	62.0	850	75	14,500	SEE NOTE 1-11
RTU- 2	GALLERY	YORK	ZF048N10N2AZZ40003	21.5	30	208/3/60	1.5	2,000	0.75	13.0	4.0	125/100	–	620	SEE NOTE 1,12,13 & 15
RTU- 3	GYMNASTICS & CORR.	YORK	ZF048N10N2AZZ40003	21.5	30	208/3/60	1.5	2,000	0.75	13.0	4.0	125/100	–	620	SEE NOTE 1,12,13,14 & 15
RTU- 4	OFFICE & ADMIN.	YORK	ZF048N10N2AZZ40003	21.5	30	208/3/60	1.5	2,000	0.75	13.0	4.0	125/100	–	620	SEE NOTE 1,12,13 & 15
RTU- 5	FOYER	YORK	ZF120N20N2AAA7	48.5	60	208/3/60	3.0	4000	0.60	11.2	10.0	240/192	–	1,175	SEE NOTE 1,12,13 & 15
RTU- 6	BAND ROOM #1 & #2	YORK	ZJ210N32G2AAA3	85.7	100	208/3/60	5.0	7,000	0.75	12.1	17.5	400/320	65/52	3,160	SEE NOTE 1,12,13, 14 & 15

NOTES:

1. SINGLE POINT POWER CONNECTION
2. C/W 4 ZONE MULTIZONE HEAD WITH MODULATING ZONE OPERATOR; 0-10vDC BY OTHERS
3. C/W PACKAGED DX COOLING: 4 COMPRESSORS; EnvA CTRAC CONTROLLER WITH DDC TEMPERATURE REST
4. C/W 2" MERV 8 FILTERS; MIXING SECTION WITH MODULATING OPERATOR
5. C/W FULL RETURN FAN SECTION WITH 100% RELIEF
6. C/W HOT WATER HEATING COIL SECTION
7. C/W NEW Z-BAR CURB SEALING STRIP
8. C/W ELECTRICAL POWER CONNECTION LOCATION TO MATCH EXISTING
9. SIZED TO FIT EXISTING ROOF CURB, MATH S/A ZONE HEAD R/A DUCTWORK
10. DIMENSIONS TO BE FIELD VERIFIED PRIOR TO FABRICATION
11. REPLACES EXISTING CM@LMR-70-547 HW, SERIAL #11470
12. ROOF CURB C/W SEISMIC CLIPS
13. C/W DRY BULB ECONOMIZER, CO2 ECONOMIZER CONTROL & BAROMETRIC RELIEF DAMPER WITH HOOD KIT
14. C/W POWER EXHAUST OPTION
15. 7 DAY, 24 HOUR PROGRAMMABLE THERMOSTAT C/W MINIMUM 10 HOUR BATTERY BACK-UP POWER
16. HORIZONTAL SUPPLY & RETURN CONNECTIONS
15. VERTICAL DOWN DISCHARGE SUPPLY & RETURN CONNECTIONS

SPLIT SYSTEM UNIT SCHEDULE

TYPE	SERVICE	MANUFAC-TURER	MODEL	NOMINAL COOLING TONS	AIRFLOW (CFM)	E.S.P. (IN.WG.)	FAN MOTOR (HP)	ELEC. REHEAT (KW)	ELECTRICAL			REFRIG-ERANT	DIMENSIONS (LxWxH)	WEIGHT (LBS)	NOTES
									(V/PH/HZ)	MCA	MOCP				
AHU-1	GYMNASIUM	ENGINEERED AIR	LM6/C	12	5,000	1.0	5	N/A	208/3/60	20	30	R-410A	98"x62"x34"	2,100	SEE NOTES 1 TO 5

NOTES:

1: SEISMICALLY RESTRAIN AIR CONDITIONING UNIT TO STRUCTURE.

2: UNITS c/w FILTERS AND INTEGRATED PROGRAMMABLE THERMOSTAT.

3. C/W REFRIGERANT PIPING BETWEEN CONDENSING UNIT AND FAN COIL UNIT.
DIV. 15 SHALL PROVIDE LOW VOLTAGE WIRING BETWEEN CONDENSING UNIT AND FAN COIL UNIT.

4: UNIT SUPPLIED WITH SINGLE POINT POWER CONNECTION C/W STARTER AND DISCONNECT SWITCH.

5: INTERLOCKED WITH CU-1.

CONDENSING UNIT SCHEDULE

TYPE	SERVICE	LOCATION	MANUFACTURER	MODEL	ELECTRICAL			FAN MOTOR (HP)	COOLING CAPACITY NOM. TONS	CHARGE	DIMENSIONS (LxWxH)	WEIGHT (LBs)	NOTES
					V/PH/HZ	MCA	MOCP						
CU-1	GYMNASIUM	ROOF	YORK	CUE122/0	208/3/60	58.2	60	1/5	5	R-410A	37.25"x34.25"x37.12"	1,070	SEE NOTES 1 TO 3

NOTES:

1: C/W SUPPLY & RETURN REFRIGERANT PIPING TO AIR CONDITIONING UNIT. SIZING OF REFRIGERANT PIPING BY REFRIGERATION CONTRACTOR.

2: CONTRACTOR TO SEISMICALLY RESTRAIN CONDENSING UNIT TO STRUCTURE TO APPROVAL OF THEIR RETAINED STRUCTURAL ENGINEER.

3: C/W UNIT DISCONNECT SWITCH.

4: C/W LOW AMBIENT KIT

HEATING BOILER SCHEDULE

TYPE	LOCATION	SERVICE	MANUFACTURER	MODEL	INPUT (MBH)	OUTPUT (MBH)	FLOW L/S (GPM)	HEAD LOSS (FT W.C.)	ELECTRICAL CONNECTION	OPERATING WEIGHT (LB)	NOTES
B-1	BOILER ROOM	WATER HEATER	TRIANGLE TUBE	PRESTIGE SOLO	399	382	38	28	120V/1PH, 15A	346	SEE NOTE 1 TO 5
B-2	BOILER ROOM	WATER HEATER	TRIANGLE TUBE	PRESTIGE SOLO	399	382	38	28	120V/1PH, 15A	346	SEE NOTE 1 TO 5
B-3	BOILER ROOM	WATER HEATER	TRIANGLE TUBE	PRESTIGE SOLO	399	382	38	28	120V/1PH, 15A	346	SEE NOTE 1 TO 5
B-3	BOILER ROOM	WATER HEATER	TRIANGLE TUBE	PRESTIGE SOLO	399	382	38	28	120V/1PH, 15A	346	SEE NOTE 1 TO 5

NOTES:

1: PACKAGED BOILER WITH PRESSURE RELIEF VALVE, PRESSURE & TEMP GAUGE, HIGH LIMIT TEMPERATURE SAFETY CONTROL, OUTDOOR TEMPERATURE RESET CONTROL, AIR VENT, 24 VOLT TERMINAL STRIP WITH REMOVABLE JUMPERS FOR MANUAL RESET OR AUTOMATIC RESET, AUTOMATIC LOW WATER CUTOFF FEATURE, VARIABLE SPEED BLOWER

2: C/W CONDENSATE ACID NEUTRALIZER

3: DIV. 16 SHALL SUPPLY AND INSTALL DISCONNECT SWITCH.

4: REPLACEMENT BOILER. 4 TRIANGLE TUBE PRESTIGE SOLO 399 TO REPLACE EXISTING HYDROTHERM BOILERS. CONTRACTOR TO INSTALL 4 TRIANGLE TUBE BOILERS IN A CASCADE SYSTEM C/W RACK & HYDRAULIC SEPARATION.

5: SEISMICALLY RESTRAIN BOILERS TO STRUCTURE.

NO	ISSUE	DATE
01	ISSUED	17/06/15
02	ISSUE FOR REPORT	19/06/15

VINCENT MASSEY THEATRE - RENOVATION

735 EIGHT AVENUE

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TITLE:

MECHANICAL SCHEDULES

SCALE: AS SHOWN

DATE: JUNE 2015

DRAWN: NS

CHECKED: JM

JOB #: NEWM-74

DWG. NO.

M-06

Massey Theatre Electrical and Fire Alarm System Condition Assessment

Division 26 Electrical Systems Condition Assessment

Prepared for:
City of New Westminster

Prepared by:
Acumen Engineering
Contact: Leon Britz, CAPM, Electrical IPTQ, FSR, Associate

Date: September 22, 2015

Contents

Executive Summary....3
Introduction....4
Background....4
Division 26 Electrical Systems....4
Division 27 Communications and Audio-visual Systems....5
Division 28 Electronic Safety & Security....5
Objective....6
Option 1....6
Division 26 Electrical Systems....6
Mechanical Equipment....7
Division 27 Communications and Audio-visual Systems....7
Division 28 Electronic Safety & Security....8
Option 2....8
Mechanical Equipment....8
Division 26 Electrical Systems....8
Methodology & Approach....10
Option 1....10
Division 26 Electrical Systems....10
Mechanical Equipment....11
Division 27 Communications and Audio-visual Systems....11
Division 28 Electronic Safety & Security....12
Option 2....12
Division 26 Electrical Systems....12
Mechanical Equipment....14
Expected Life Cycle....14
Appendices....166
Division 26 Electrical Appendix A – Drawings....166

Acumen Engineering

Executive Summary

The City of New Westminster has contracted Acumen Engineering to review the Massey Theatre's existing power distribution, fire alarm system, communications, Audio Visual (AV), and emergency and exit lighting. The purpose of this report is to provide an assessment and recommendation of the existing electrical, life safety, communications and AV systems.

The intent of the review is to highlight renovation and upgrade changes that will be required to the above listed systems to allow the Massey Theatre to function as a standalone building, separate from the school to which its systems are currently joined.

This report will outline options for the upgrade and or replacement of the power distribution, fire alarm, emergency and exit lighting, security system, public address system and voice and data system to achieve this intent.

The assessment is based on visual observations made during walk-through surveys of the facility and a review of existing record drawings which were available. The findings, condition assessment, recommendations and opinions contained herein are representative of the observed conditions; no exploratory or destructive testing was performed.

Acumen Engineering

Introduction

The Massey Theatre is situated on the corner of 8th street and 8th Avenue in New Westminster. The building houses a theatre, administration offices, workshop, cafeteria, small gym and general rooms.

Background

Division 26 Electrical Systems

Distribution

Due to the age of the distribution equipment it is anticipated that replacement parts will become increasingly difficult to obtain. This will eventually impact the operation of the facility.

The existing electrical unit substation and main distribution panel is located in the basement under the gymnasium. The vault that houses the unit sub is not code compliant and, in particular, the room dimensions are not sufficient for the existing installation. The 120/208 Volt distribution panel is located in the same room as the unit substation, oriented to the rear behind the unit substation itself. In order to separate the theater, this electrical room will be demolished with the large gym and associated rooms.

High voltage power is sub fed from the main electrical vault that is located in the library basement in the main school building. The current panel feeder paths could not be determined. The assumption is that all panel feeders will require replacement or relocation. The feeders to the theatre dimmers could be removed from the current distribution and re-used.

The Building Electrical Systems will be designed with the fundamental objective of maintaining operation of the existing facility during construction. A new electrical distribution will be provided for the facility in concert with maintaining the existing electrical distribution.

Fire Alarm

The fire alarm system is a Simplex 4009 and the panel is located in a storage room on level 1to the north side of the auditorium. The existing fire alarm system is not code compliant. There are 11 zones fed from the addressable fire alarm panel that is located in the main school building.

There are bells located in various locations in the corridors, backstage, basement and auditorium. Some areas in the building are not covered by any audible signaling devices. There is no smoke detection in the corridors and there are no strobes in high noise areas.

The LED type annunciator panel is located at the south entrance in the main lobby.

Emergency Lighting

There are emergency lights and battery packs located throughout the facility. The lights and battery packs vary in age and some lights and battery packs might be nearing their end of life. There are emergency lights in corridors, washrooms, gymnasium and the auditorium. The coverage of the emergency lighting is not adequate to satisfy current code requirements.

Exit Signs

There are various types of exit lighting installed throughout the facility. Some units are LED and some are incandescent, other units have internal batteries with emergency heads integral to the units. The exit signs are placed at all exit doors and in various locations along the exit path. The coverage of exit signs are not adequate to satisfy the current building code requirements. Current building code requirements call for pictogram or 'running man' exit signs, the existing exit signs do not meet this standard.

Division 27 Communications and Audio-visual Systems

The present building communication point with bix blocks are located in the crawlspace on the north side of the building. It appears that the main communication demark is in the main school building and could not be reviewed during the site review.

There are data and telephone access point located throughout the building in rooms and office spaces. It appears that the theatre society has their own data and telephone system independent from the main school system

There are digital clocks and PA speakers in the rooms. It appears that the clocks and speakers are tied into an existing PA system. The PA head end equipment could not be reviewed at the time of the review.

Division 28 Electronic Safety & Security

The present security system is fed from New West Senior Secondary and will therefore need to be reworked to remain functional. The security system must remain functional during construction.

Acumen Engineering

Objective

Option 1

Division 26 Electrical Systems

Distribution

In order to separate the theater, a new utility supplied unit substation would be installed on the outside of the building. This unit sub will feed power to a new distribution panel located in the new electrical room. A new electrical distribution will be provided for the theatre building that will feed existing building electrical panels. All feeder cables to the existing panels will be new.

The Building Electrical Systems will be designed with the fundamental objective of maintaining operation of the existing facility during construction. Fire alarm system, electrical power and technology system in the existing building to be operational during the construction period. Arrangements for cut-over outages will be required. After hours contracting work must be allowed for in order to avoid interruptions to active areas during normal working hours.

All electrical loads within the Facility and the corresponding source of power will be identified in accordance with City of New Westminster standards. Circuit labels will include full panel name and circuit number.

Currently, all mechanical loads are fed at 208/120V, this requires larger electrical conductors to feed and larger primary switchgear. If a substantial amount of mechanical load could be fed at 600V, it may be an economical option to introduce 600V as well as 208/120V to the revised distribution system.

Fire Alarm System

A new addressable Fire Alarm system will be installed throughout the facility, with the panel located in the new electrical room. New fire alarm zones will be serviced by this panel as required. The fire alarm system will be installed in accordance with CAN/ULC-S524 standards. The system will be notably comprise of:

Pull Stations installed at final exit points and along exit routes of the facility.

Audible and Visual annunciation devices installed to provide alarm identification in high noise and handicap areas. Areas w will include but will not be limited to Auditorium, public washrooms and construction workshop.

Smoke detectors will be installed in compliance with building code and as per good industry practice, in areas of high importance including but not limited to electrical rooms, mechanical rooms, top of elevator shafts, and in stairwells.

The Fire Alarm system will be interlinked with the sprinkler system in the new sprinkler room, elevators, mechanical equipment as indicated by the mechanical and/or code consultant, and any other life safety systems.

New monitoring equipment for the fire alarm panel will be installed in the new electrical room, the system will be monitored for alarm, sprinkler flow, supervisory, trouble via fire alarm relays.

A new fire alarm graphic annunciator will be installed at the main entry lobby. Exact location will be confirmed with the architect, code consultant, and Authority Having Jurisdiction.

Emergency Lighting

Remote Emergency Lighting heads will be provided to illuminations levels as defined by BC Building Code. Emergency Lighting heads will be ceiling mounted at the wall except in designated areas as defined on the drawings.

Emergency Battery Units will be provided per building code and as per good engineering practice in critical areas of the building including: the Main Electrical Room, Sub Electrical & Telecommunication Rooms, and Mechanical Rooms.

Zoned Emergency Battery Packs will be provided throughout the public and staff spaces of the facility. Packs will be strategically located to minimize visual impact to public spaces, minimize potential vandalism and improve maintenance procedures.

All battery units and heads shall be certified to C.S.A. standard C22.2 No. 141 and recognized by Section 46, C.E.C. Part I.

Emergency power for Emergency Lighting and EXIT signage throughout the facility will be provided by local emergency battery packs, there will be no emergency power generator serving the site.

Exit Signs

New running man exit signs will be placed at all exit pathways as indicated by the code consultant or Architect. The signs will be back and/or ceiling mounted.

Emergency power for EXIT signage throughout the facility will be provided by local emergency battery packs provided with the following features:

Public Washrooms

Remove all existing light fixtures, electrical devices and fire alarm devices. Install new lighting as required to support the Architectural design. Install new electrical devices, emergency lighting and fire alarm devices as required by code.

Supply new power to plumbing fixtures, hand dryers and soap dispensers if required.

Elevators

Supply cable feeders to new elevator controller disconnects. The new elevators will be located as per architectural floorplan. The main disconnects for the unit will be located in the elevator rooms or as close to the unit as possible. The main circuit breakers for both elevators will be installed in the main electrical room distribution panel.

Mechanical Equipment

Hvac Units

Supply cable feeders to new HVAC units. The main disconnects for these units will be located at the units, with a main circuit breaker installed in the new MCC in the proposed new electrical room.

Supply and install all required conduit and cable infrastructure to interconnect the HVAC system to the fire alarm system. The Mechanical consultant will supply the required sequence of operation.

Boilers

Supply cable feeders to new boiler in the mechanical room. The main disconnects for the unit will be located at the unit, with a main circuit breaker installed in the new MCC in the proposed new electrical room.

Install emergency shut off for boiler system if required.

Division 27 Communications and Audio-visual Systems

A new telephone demark will be installed in the proposed electrical room in the basement. 2 x 103mm ducts will be installed from the demark to the property line.

Fire rated plywood will be installed on the wall at the demark location. Adequate power will be installed at the demark point. 2 x 78mm ducts will be installed from the demark to a new communication room on the main level.

The communication room on the main level must have lockable doors that open outwards and have adequate lighting. This room will house 2 floor standing racks, AV equipment, wall mounted equipment and cable terminations. This room will have a new power panel to supply power to all data, telephone and AV equipment.

This room must have fire rated plywood on the walls. This room must have adequate ventilation and lighting installed in it.

Provide telecommunications grounding bar in room.

A new public address system will be installed for the facility.

As required to meet performance requirements the system new devices will include a paging system head end, amplifiers and ceiling flush and surface mount speakers. Wherever applicable speakers shall be flush mounted in the ceiling space (T-Bar) and where building conditions do not permit speakers shall be in surface mounted enclosures painted to match the architectural environment.

As determined by the user the system shall have the capability to address the facility in an all-call and/or zone capability. At a minimum the system shall be zoned so that the performance area can be addressed separately and distinct from other areas of the facility. This will allow staff to provide public address announcements as required without interrupting performances.

Additional zoning areas would include the lobby, washrooms and outdoor and or foyer areas if applicable.

User access to paging shall be through the facility phone system and in addition the box office area will have a separate local push to talk microphone for ticketing and performance announcements.

Division 28 Electronic Safety & Security

Due to the size of the building it will likely be more advantageous to install a new system within the building using the crawl space to route new cabling.

All perimeter doors will need to be alarmed with door position switches as a first line of defense and motion detectors in the entrance corridors and lobby to form a second line of defense.

It is recommended that there be only one main point of entry. This point could have a card reader added as part of the intrusion system which would allow the building manager to audit the access of the building as well as allow users to arm/disarm the intrusion system from the main entry point. This approach helps to minimize false alarms, a keypad would be located inside the main access door and would be used for annunciation and arming.

It is recommend that the same approach be used for the CCTV cameras. This would involve installing new cameras at entry/exit points on the exterior of the building and in the main lobby. The cameras should be high resolution colour day/night cameras to have the ability to see in low light conditions. The exterior cameras also become a visible deterrent to prevent vandalism on or near the property.

Option 2

All items listed in option one will be included in option 2 with addition of the following:

Mechanical Equipment

Administration HVAC

Supply cable feeders to new HVAC system for the administration offices on the third floor. The main disconnect for this unit will be located at the unit with a main circuit breaker installed in the new MCC in the proposed new electrical room.

Supply and install all required conduit and cable infrastructure to interconnect the smoke exhaust system or other mechanical units to the fire alarm system. The Mechanical consultant will supply the list of mechanical units to be interconnected and the required sequence of operations.

Division 26 Electrical Systems

Lighting Replacement

Remove all existing lighting in all areas except the theatre and level 2 lobby. The intent of the proposed lighting design is to provide a comfortable level of illumination throughout the facility to allow staff and the public to circulate and perform tasks safely. All luminaires will be selected to meet lighting level and construction standards of the facility.

The existing Low voltage control system and switching will be removed and replaced. A new low voltage control system will be installed to satisfy the requirements of ASHRAE 90.1 - 2010 and the owner/user.

Lighting levels will be designed to current BC Building code and ASHREA standards and will utilize current energy efficient technologies. Lighting Power Density throughout the facility will be designed to conform to ASHRAE 90.1-2010 standards.

Interior Lighting

Interior lighting will provide illumination throughout all interior spaces to allow staff to circulate safely at all times.

Illumination levels will be designed to allow staff to perform required tasks.

Interior lighting sources will comprise of direct and indirect lighting sources for the majority of the complex with combined direct/indirect lighting in rooms.

Luminaires utilizing long life fluorescent lamps or LED technology will be provided throughout the majority of the facility. Fluorescent lamps will be instant start T8 or T5 lamps with 3500K colour temperature, and a minimum CRI of 80.

Interior ballasts will be 120V and capable of operating at lamps at full output. Non-dimming and dimming ballasts will be used throughout the facility as required.

Each luminaire will be constructed to suit the area served. Minimum lighting construction standard will be commercial grade.

Lighting controls will be provided in accordance with ASHRAE 90.1 - 2010 standards.

Interior Lighting Luminance

Well-designed illumination levels throughout the facility will enhance the overall appearance and create a comfortable atmosphere for all users. Lighting levels will be designed to create a safe and secure area for staff to circulate and perform required tasks. Lighting for each area of the facility will be based on the function of that area and the requirements of the facility program. The Illuminating Engineering Society of North America (IESNA) standards will be used to provide illumination level baselines for the design.

Methodology & Approach

Option 1

Division 26 Electrical Systems

New Outdoor Unit Substation

The existing high voltage connection from the school will stay active until the construction of the new electrical rom is complete.

Meet with user and consulting team to establish accurate power loads to determine service size. Apply to the City for new high voltage service to the site. City of New Westminster power distribution division will supply and install a new 1,000 KVA high voltage Unit Substation on the south side of the building. 120/208V ducts will be installed from this unit substation to the new electrical room and terminate in the new 2500 Amp distribution panel.

Provision of 600V from the secondary of the high voltage unit substation is an option should a substantial amount of the mechanical loads in the facility be able to change to 600V. If this is the case, the feed from the utility substation would terminate in a 600V distribution board and a 600V-120/208V transformer would be added inside the building to distribute to other non-mechanical loads. In general, 600V allows loads to be fed more economically than 120/208V, however, the cost and space requirements for an interior 600-120/208V transformer and corresponding 120/208V distribution must be considered against the savings of using 600V to distribute to mechanical loads.

Main Electrical Distribution Switchboard and Feeders

Existing electrical distribution serving the existing theatre will remain operational until the completion of construction of the new electrical room and new hydro service.

Electric power for the new theatre will be provided via a new outdoor unit substation with underground ducts install to the new main distribution panel in the new electrical room. The new distribution panel will feed a new MCC, new fire alarm panel, 2 new elevators and all existing panels throughout the facility. The following items will be completed.

1. Existing cables to the 1200 Amp theatrical dimmers will be disconnected and rerouted to the new distribution.
2. New panel feeders will be installed from the new electrical room to all existing panels located throughout the facility.
3. 2 New feeder cables will be installed from the electrical room to the 2 new elevators as indicated on the architectural drawings.
4. All mechanical equipment will be fed from the new MCC, this will include but not limited to HVAC equipment, smoke extraction, boilers, exhaust fans and all associated pumps. This MCC can be installed either in the electrical room or in the new mechanical room (this is all depending on available footprint space in either room).

Emergency Lighting

All existing emergency lights and battery packs will be removed and tested. The existing, reasonably new in good condition emergency lights and battery packs will be re-used. Existing wiring will be relocated and extended to new locations.

New conduit and wiring will be installed to new emergency light and battery pack locations as required by code to achieve minimum code requirements. Emergency Lighting heads will be ceiling mounted at the wall except in designated areas as defined on the drawings. Emergency Lighting heads will be a minimum of 12 watt micro quartz or equivalent MR16 LED lamp type. Wiring shall be sized to insure a maximum voltage drop of 5%.

Emergency Battery Units will be provided in critical areas of the building including the Main Electrical Room, Sub Electrical and Telecommunication Rooms, and Mechanical Rooms.

Zoned Emergency Battery Packs will be provided throughout the public and staff spaces of the facility. Packs will be strategically located to minimize visual impact to public spaces, minimize potential vandalism and improve maintenance procedures.

Exit Lighting

All existing exit signs will be removed. Existing sign wiring will be relocated and extended to new location.

New conduit and wiring will be installed to new exit signs locations as required by code.

Exit signs will be provided to indicate the evacuation route as directed by the code consultant and or Architect.

Exit signs will be LED units with internal battery backup power.

Public Washrooms

Remove all existing light fixtures, electrical devices and fire alarm devices. Install new lighting as required to support the Architectural design. Install new electrical devices, emergency lighting and fire alarm devices as required by code.

Supply new power to plumbing fixtures, hand dryers and soap dispensers if required. All this electrical equipment will be fed from the nearest existing electrical panel.

Elevators

Supply cable feeders to new disconnects for elevators at dressing room and main lobby. The main disconnects for the elevators will be located in the elevator rooms or as close to the unit as possible. The main circuit breakers for both elevators will be installed in the main electrical room distribution panel.

Mechanical Equipment

Hvac Units

Supply cable feeders to new HVAC units from the new MCC either in the electrical or mechanical room. Install the main disconnects for these units at the units, install a main circuit breaker in the new MCC in the proposed new electrical room or mechanical room.

Supply and install all required conduit and cable infrastructure to interconnect the HVAC system to the fire alarm system. The Mechanical consultant will supply the required sequence of operation.

Boilers

Supply cable feeders from the new MCC in the electrical or mechanical room to new boiler in the mechanical room. The main disconnects for the unit will be installed at the unit, install a main circuit breaker in the new MCC.

Install emergency shut off for boiler system if required.

Division 27 Communications and Audio-visual Systems

Meet with user to determine their individual needs. Apply for new Telus and Shaw services. Install 2 new 103mm ducts from the property line to the new demark location in the proposed electrical room. Install plywood backing and 2 x 15 amp receptacles feeding from a new house panel in the electrical room.

Supply 2 x 78mm ducts to the new AV/Communication room on the second floor. This room will be lockable with doors opening outwards. Install 2 data racks in this room. This room will have a new 125 Amp 3 phase panel for AV and communication equipment power.

This room will have fire rated plywood on all the walls to mount equipment too. Supply and install 2 floor standing racks and wall mounted equipment as required. The following requirements must be met:

Room shall not contain or allow pass-through of water or drainage pipes.

Fire treated 19mm plywood from floor to ceiling, painted white, on all walls.

Provide minimum 4 x 15A/120V duplex receptacles on wall

Provide adequate light (measured at 500 lux at 1mm AFF) in space

Provide a 45RU rack for Comms/Data equipment and cabling termination.

Provide a 45RU rack for Security/ AV.

Provide three 20A/120V duplex receptacles dedicated to each rack.

Provide two 20A/120V duplex receptacles on each wall in room.

Provide a vertical power bar installed on each rack.

Provide adequate ventilation in room and maintain a temperature range of 18 – 27 degrees C.

Provide telecommunications grounding bar in room.

Division 28 Electronic Safety & Security

Install all conduit and backbone wiring to all doors position switches, motion detector and key pad locations from the main demark in the electrical room.

It is recommended that there be only one main point of entry this point could have a card reader added as part of the intrusion system which would audit the access to the building as well as disarm the intrusion system at the same time. Install a keypad inside the main access door.

Supply and install conduit and wiring from all camera points to security demark in main electrical room. New cameras locations will be at all entry/exit points on the exterior of the building and in the main lobby. The cameras will be high resolution colour day/night cameras that have the ability to see in low light conditions. The exterior cameras also become a visible deterrent to prevent vandalism.

Option 2

Division 26 Electrical Systems

Lighting Design

The intent of the proposed lighting design is to provide a comfortable level of illumination throughout the facility to allow staff and the public to circulate and perform tasks safely. All luminaires will be selected to meet lighting level and construction standards of the facility.

The existing Low voltage control system and switching will be removed and a new low voltage control system will be installed to meet the requirements of ASHRAE 90.1 - 2010 and the owner/users.

Lighting levels will be designed to current BC Building Code and ASHREA standards and will utilize current energy efficient technologies.

Lighting Power Density throughout the facility will be designed to conform to ASHRAE 90.1 - 2010 standards.

Interior Lighting

Interior lighting will provide illumination throughout all interior spaces to allow staff and the public to circulate safely at all times.

Illumination levels will be designed to allow staff to perform required tasks.

Interior lighting sources will comprise of direct and indirect lighting sources for the majority of the complex with combined direct/indirect lighting in rooms.

Luminaires utilizing long life fluorescent lamps or LED technology will be provided throughout the majority of the facility. Fluorescent lamps will be instant start T8 or T5 lamps with 3500K colour temperature, and a minimum CRI of 80.

Interior ballasts will be 120V and capable of operating at lamps at full output. Non-dimming and dimming ballasts will be used throughout the facility as required.

Each luminaire will be constructed to suit the area served. Minimum lighting construction standard will be commercial grade.

Lighting controls will be provided in accordance with ASHRAE 90.1 - 2010 standards.

Well-designed Illumination levels throughout the facility will enhance the overall appearance and create a comfortable atmosphere for all users. Lighting levels will be designed to create a safe and secure area for staff to circulate and perform required tasks. Lighting for each area of the facility will be based on the function of that area and the requirements of the facility program. The Illuminating Engineering Society of North America (IESNA) standards will be used to provide illumination level baselines for the design.

26 51 13 Interior Lighting Fixtures, Lamps and Ballasts

All luminaires will comprise of energy efficient components, such as ballasts and lamps of high efficacy and lighting quality.

Classroom lighting will generally consist of two lamp linear fluorescent or LED luminaires with direct/indirect lighting components. Luminaire to be Ledalite Sync for suspended applications, Ledalite Vectra for recessed applications – Refer to Appendix A. Wall wash linear fluorescent luminaires will be utilized for illumination of whiteboards. Luminaire to be Litecontrol R-WWD-44-2-8-T8-ELB-120. Adjustable lighting levels will available by utilizing local multilevel controls as well as daylight harvesting.

Administration and Office lighting will consist of recessed or suspended two (2) lamp linear fluorescent or LED fixtures with indirect/direct components. Luminaire to be Ledalite Verge Series for suspended applications and Ledalite Vectra for recessed applications – Refer to Appendix A.

Multi-purpose and additional teaching spaces will be provided with similar to the standard rooms. Additional lighting will consist of recess mounted LED downlights incorporating dimming drivers for flexibility in setting lighting levels for particular functions.

Corridor lighting will be linear fluorescent mounted perpendicular to corridor. Luminaire will be recessed or surface mounted dependent of final design details. Luminaire to be similar to Litecontrol SD-66 Series.

Gymnasium lighting will consist of multi-level switched multi-lamp T-5HO fluorescent high bay luminaires with appropriate guards. Gymnasium will be provided with control system to facilitate space separation into 2 partitions with individual controls for each. Automatic controls will be provided to enable the partition of the lighting zones, while maintaining a single point of control during single event use.

Washroom lighting will consist of LED downlights or linear strip fluorescent lighting coordinated with architectural valances.

Luminaires will be controlled by a Low Voltage Control System, centralized or distributed architecture to be determined during design. The control system will provide controls in accordance with ASHRAE 90.1-2010, most notably with respect to daylighting, vacancy sensing, occupant controls, office space dimming, and stairwell sensing. Daylight harvesting capabilities will be provided and dimming ballasts/drivers will be required for many of the spaces. Astronomical timeclock and photocell control will be incorporated.

26 56 00 Exterior Lighting

Exterior lighting will provide illumination of exterior spaces to create a safe environment.

Lamps will standardize on LED fixtures wherever possible. Exterior drivers will be rated for temperature zone usage. Luminaires to be Guardco 100 series or McGraw Edison Impact Elite series.

All luminaires shall be listed for wet locations and constructed with neoprene gaskets to keep moisture out of the optical system. Full cutoff optics will be used as required to reduce high angle brightness and prevent light pollution.

Low voltage lighting control will provide controllability to meet the operational requirements and reduce energy consumption. This system will include manual on/off override control from a designated central location.

Photocell and astronomic time clock sensors and controls will be used to take advantage of the natural light in an effort to reduce energy consumption by reducing or shutting-off the exterior lighting when not required.

Lighting will be designed to industry standards of energy efficiency (ASHRAE 90.1-2010) with provision for increasing efficiency methods.

Exterior Lighting Luminance

It is important to maintain high quality of lighting around the exterior of the facility to enhance the overall appearance and also to create a secure environment for everyone. IESNA illumination levels to be used as a baseline, Workers Compensation Board (WCB) requirements will take precedence where applicable.

Mechanical Equipment

Administration HVAC

Supply cable feeders to new HVAC system for the administration offices on the third floor. The main disconnect for this unit will be installed at the unit with a main circuit breaker installed in the new MCC in the electrical room or mechanical room.

Install all required conduit and cable infrastructure to interconnect the smoke exhaust system and any other mechanical units as indicated by the mechanical and code consultants to the fire alarm system. The Mechanical consultant will supply the required sequence of operation.

Expected Life Cycle

Different pieces of electrical equipment have different factors which affect, positively or negatively, their expected lifespan. Some typical elements of electrical systems are examined below with respect to their anticipated lifespans and the factors that can affect those lifespans.

Lighting

The major factor behind lifespan of lighting systems becomes the ability of the manufacturer to support the lights.

For lighting fixture, support often ends between 15 - 20 years, or it becomes prohibitively expensive to source an original fixture, rather than purchasing a new one.

For individual lamps, life expectancy revolves around the light source inside the fixture, which are sensitive to the operational environment, switching frequency, ballast type, and lamp life. Long life T8 lamps can operate at or around a 40,000 hour life expectancy.

LED fixtures, lamps and fixture are now often one unit, the entire assembly typically currently operates at 50,000 - 60,000 hours.

Lighting control systems

Depending on the system and manufacturer, life expectancy can be estimated at 15-20 years. This is partly driven by the fact that new codes, standards, and technologies for lighting control progress rapidly. This means that older systems become increasingly incapable of controlling modern lighting, limiting renovation/MAC capabilities.

Fire Alarm Devices

The two main drivers are, manufacturer support of the system and current codes. Code, in particular, can be an unpredictable factor as installations which require few upgrades can be grandfathered, while installations that require frequent upgrades, may trigger requirements for overall system replacement. A typical estimate will be 15-25 years.

Structure cabling

Typical pro-rated warranties expire around 25 years. The trend, however, has been that because of the rapid advances of data transmission requiring additional bandwidth and speed, that cabling systems frequently become outdated and are partly or wholly replaced before reaching their 25 year warrantee mark.

Transformers

Typically, it is the insulation in transformers which determines the lifespan. Temperature (either from the ambient environment, or as a result of internal loading of the transformer), moisture, and airborne contaminants can all de-grade the insulation of a transformer. A typical estimate of lifespan is 20-30 years.

Switchgear

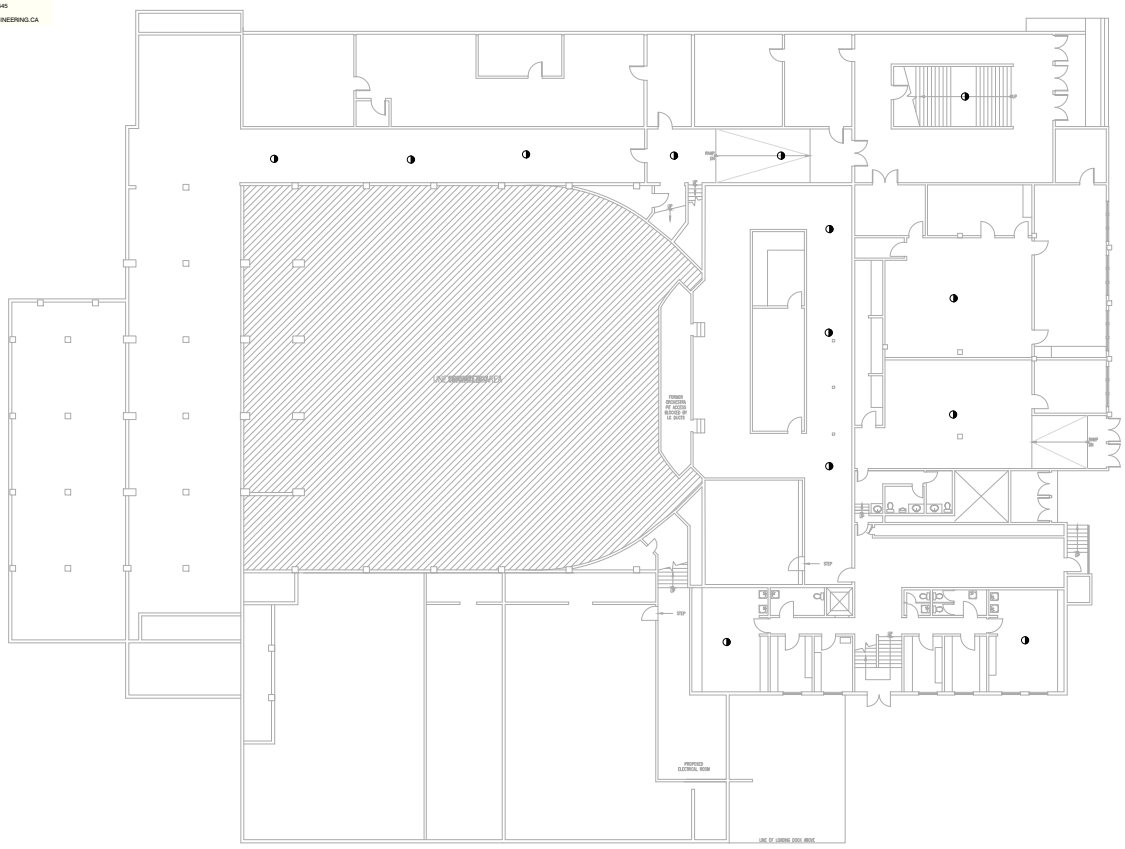
There are commonly two lifespan terms used to describe the cumulative lifespan of this equipment, mechanical lifespan and electrical lifespan. The mechanical lifespan relates to the total number of operations the mechanical mechanisms inside the switchgear are rated to perform. Electrical lifespan refers to the number of switching operations the device can make under the conditions it is operating under. This is an important distinction, because a switching device that is mechanically rated to operate many times may degrade faster if the electrical conditions it switches under cause more degradation to the device than the simple mechanical force needed to perform the switching. For this reason, there is no specific rule to reference that will give a specific lifespan as the lifespan depends on the number of mechanical operations and the electrical conditions those operations happen in. However, this being said, a typical estimate of lifespan is 20-25 years.

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Appendices

Division 26 Electrical Appendix A – Drawings

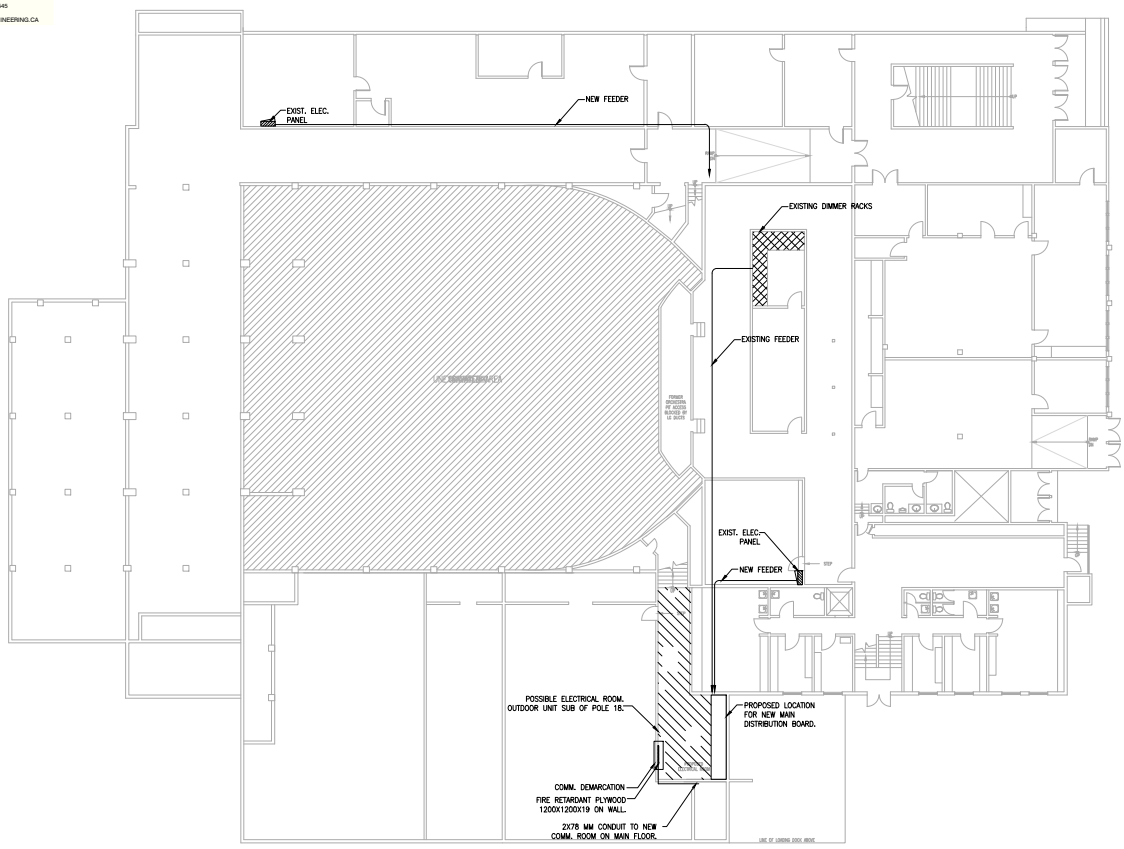
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BASEMENT DATA AND P.A. SYSTEM PLAN - OPTION 1

MASSEY THEATRE

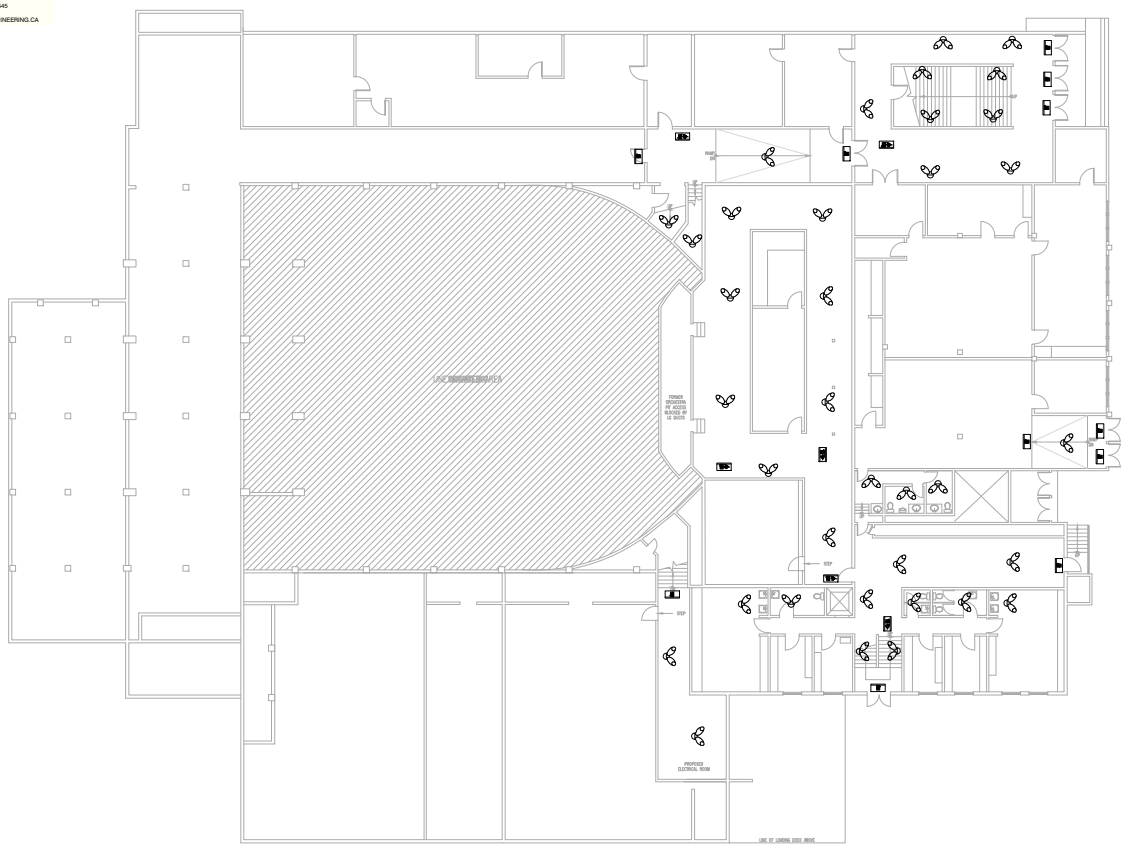
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BASEMENT POWER DESTRIBUTION PLAN - OPTION 1

MASSEY THEATRE

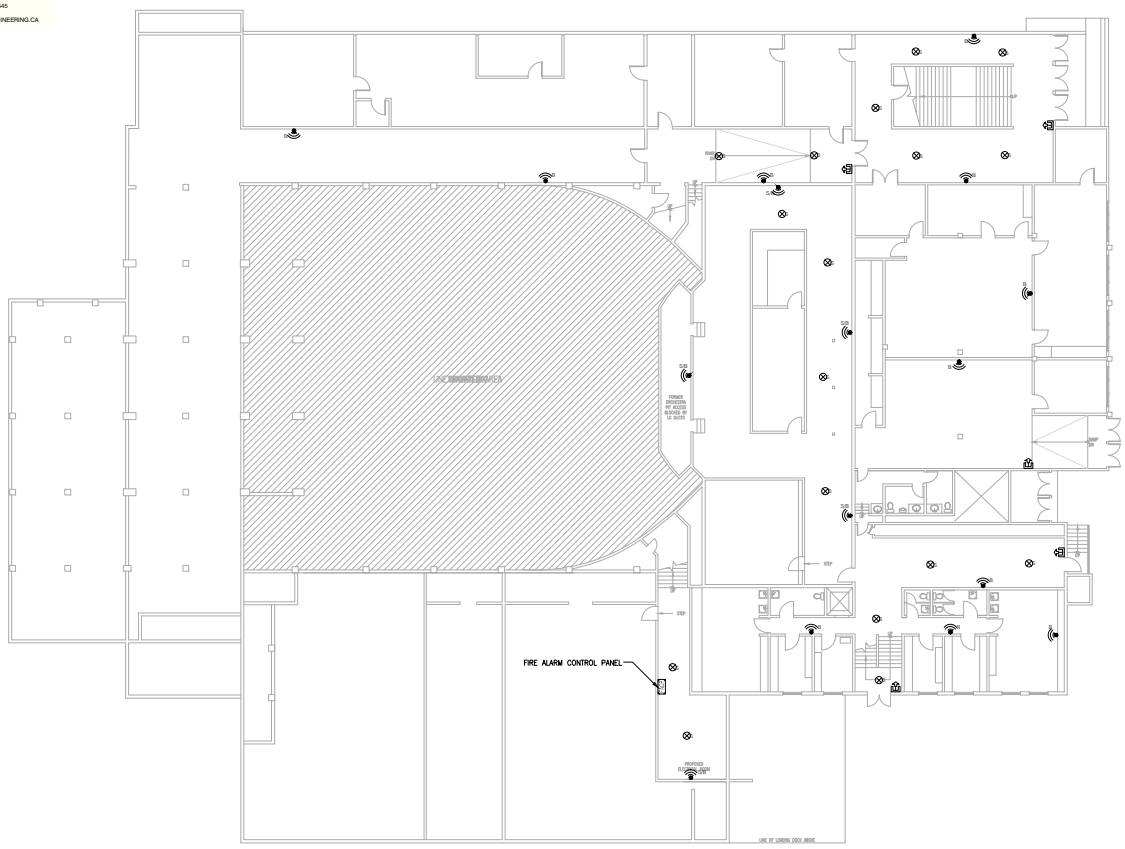
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BASEMENT EXIT AND EMERGENCY LIGHTING PLAN - OPTION 1

MASSEY THEATRE

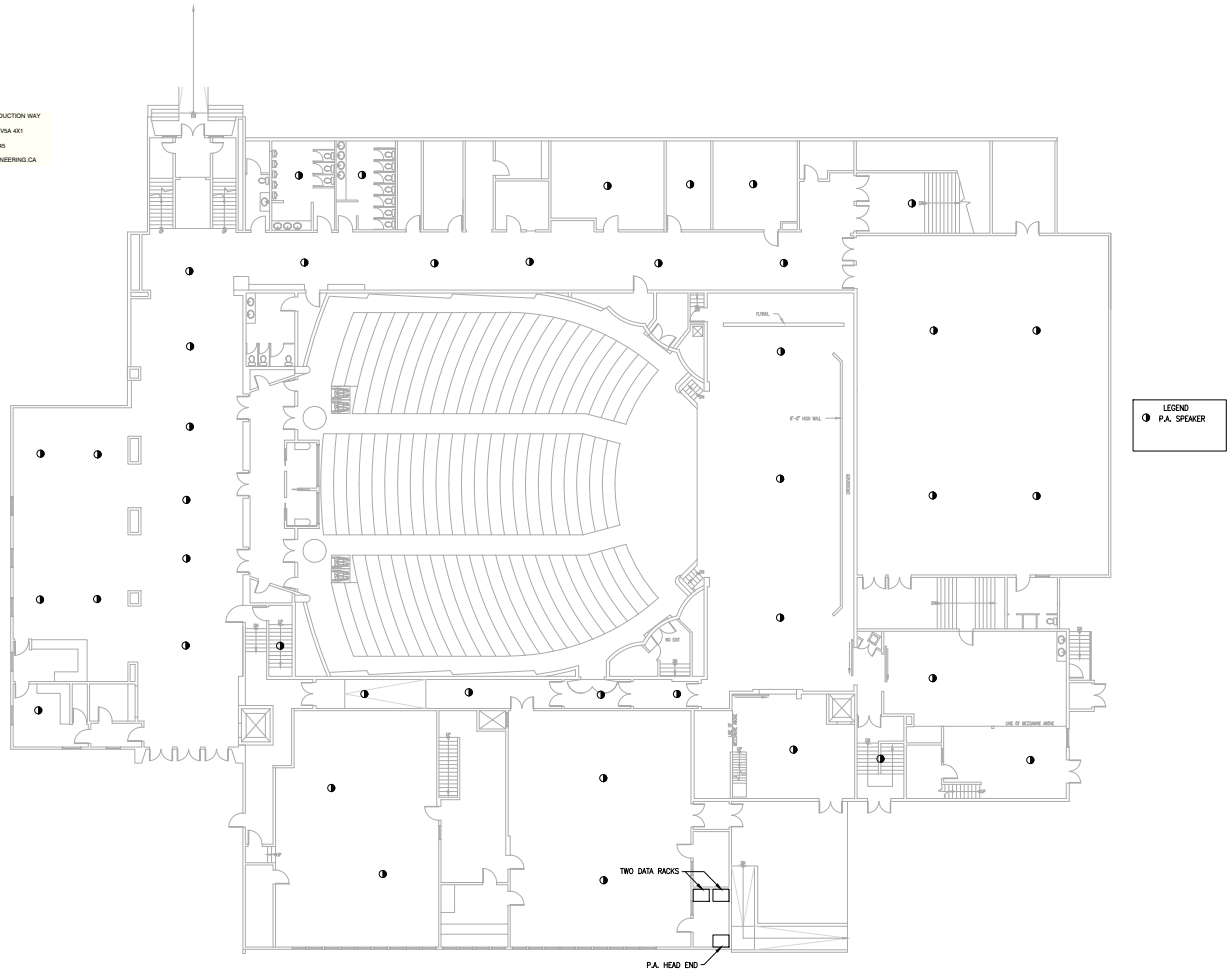
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BASEMENT FIRE ALARM PLAN - OPTION 1

MASSEY THEATRE

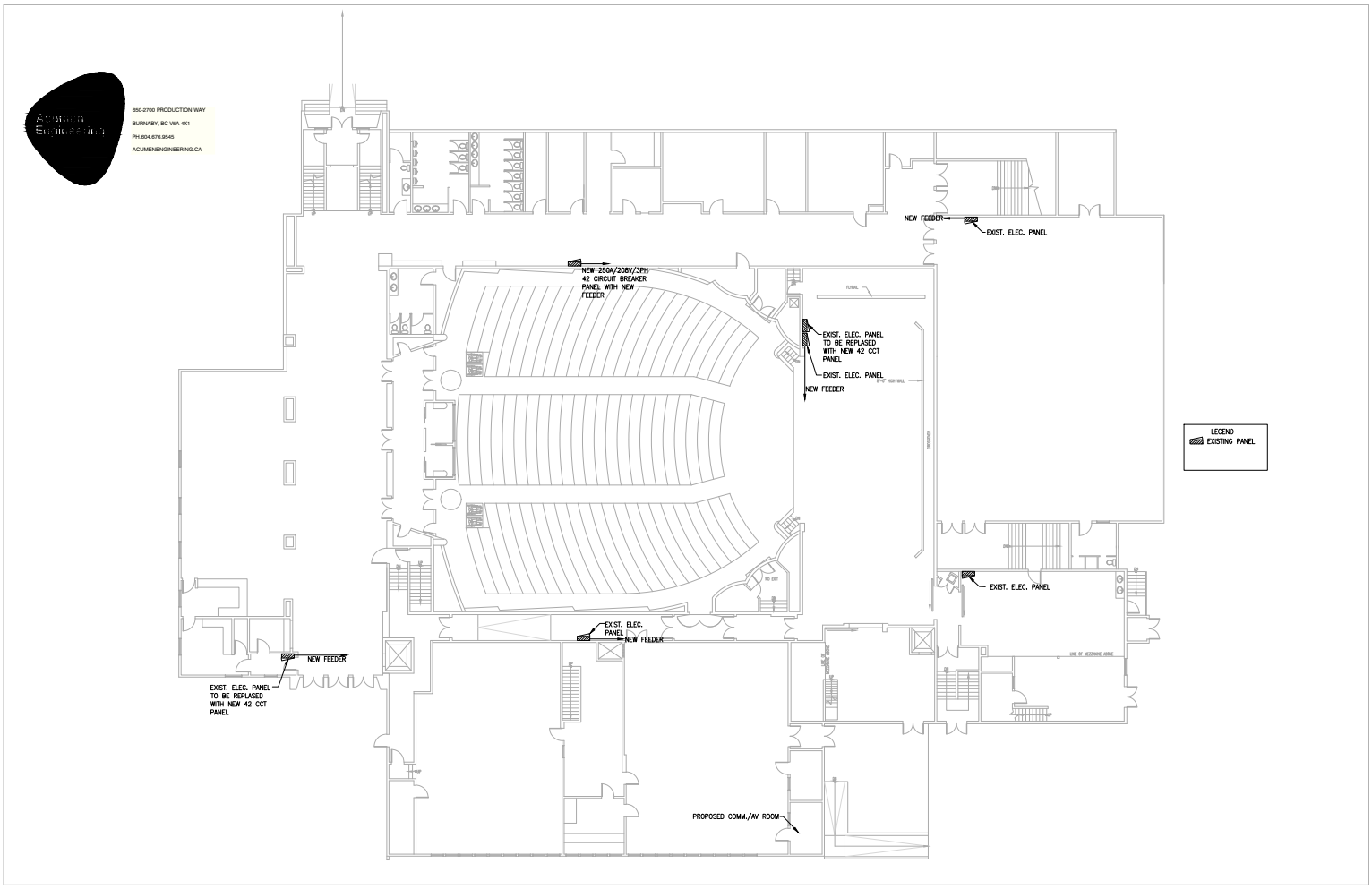
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MAIN FLOOR DATA AND P.A. SYSTEM PLAN - OPTION 1

MASSEY THEATRE

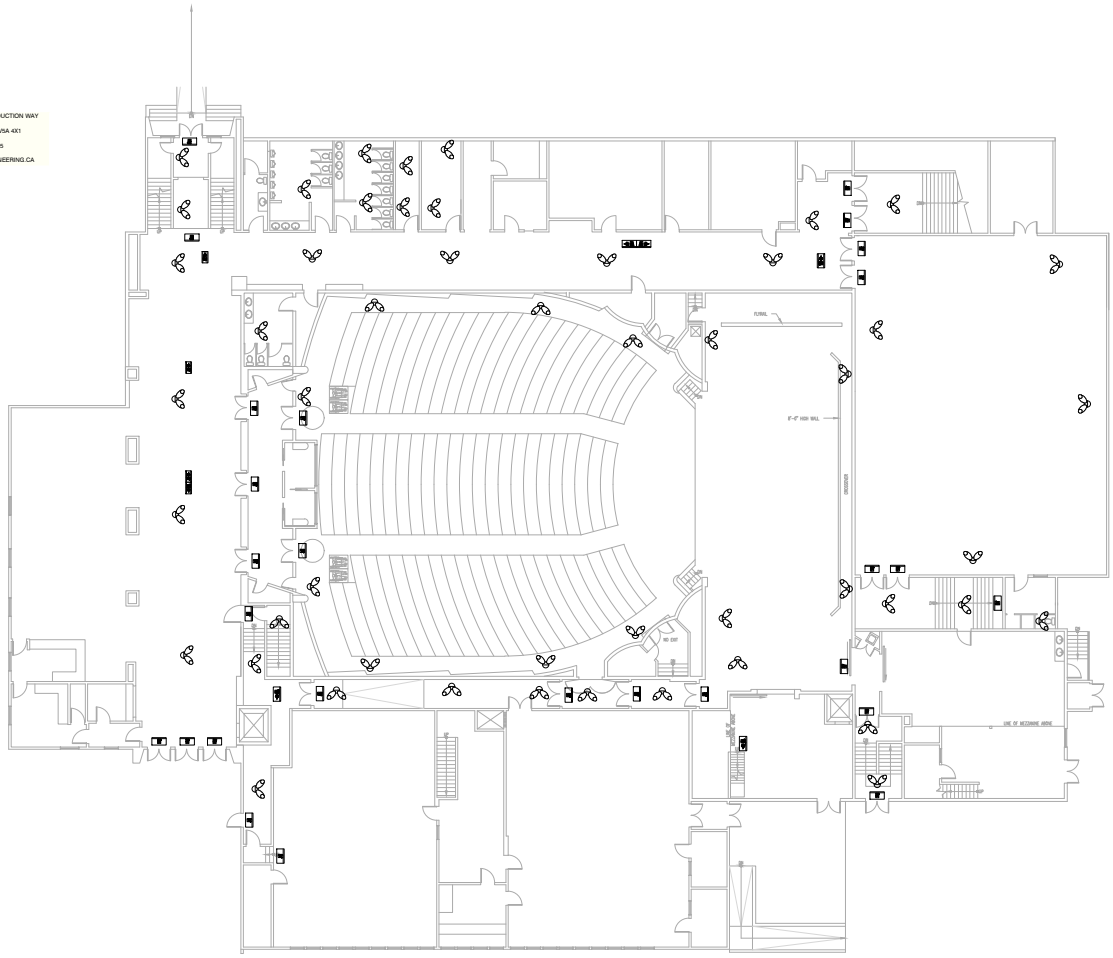
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MAIN FLOOR POWER DISTRIBUTION PLAN - OPTION 1

MASSEY THEATRE

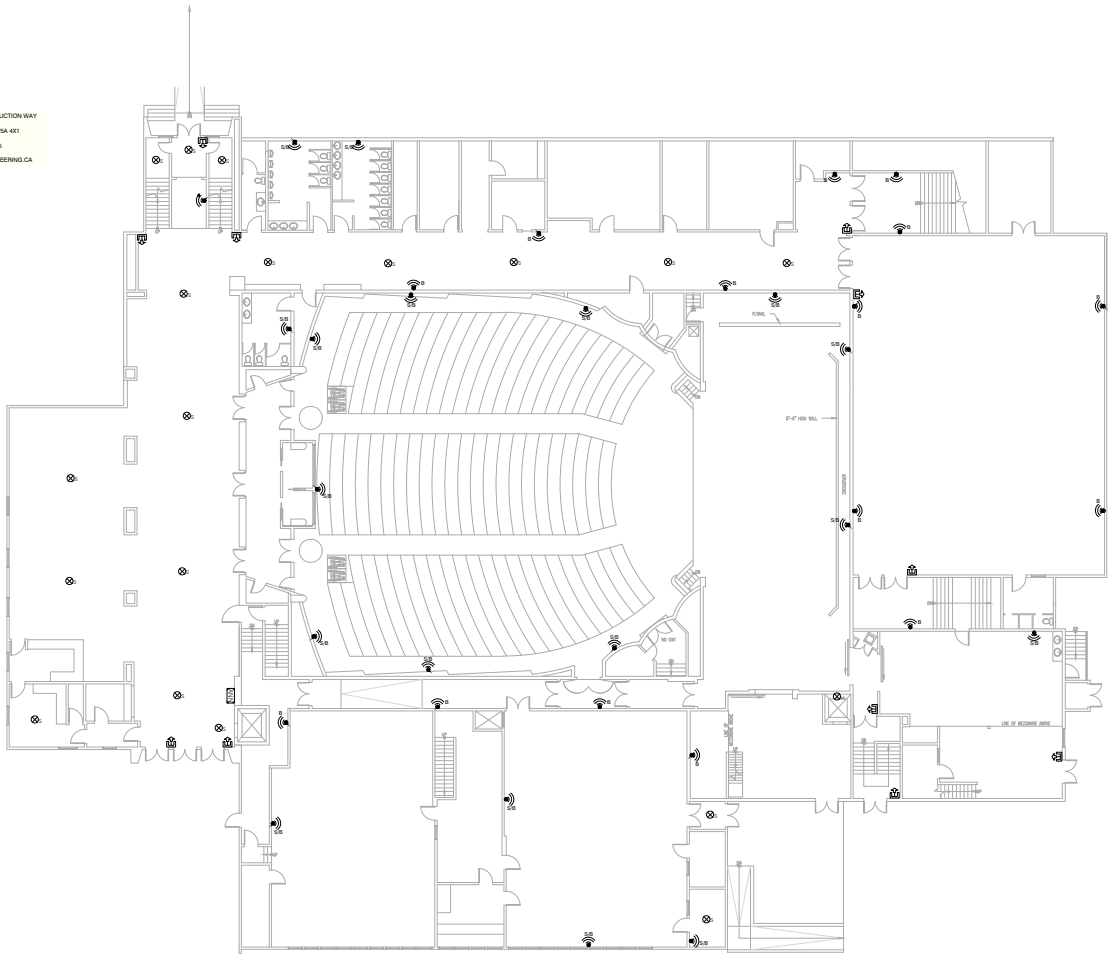
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MAIN FLOOR EXIT AND EMERGENCY LIGHTING PLAN - OPTION 1

MASSEY THEATRE

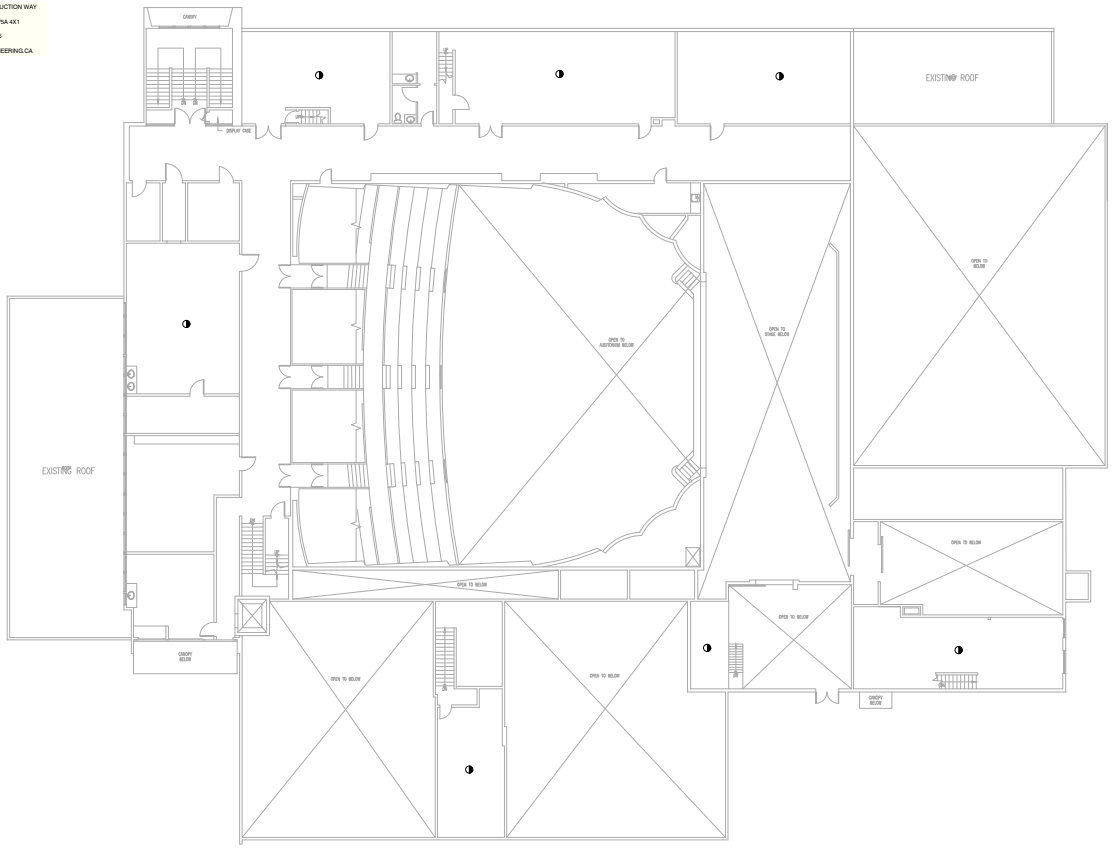
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MAIN FLOOR FIRE ALARM PLAN - OPTION 1

MASSEY THEATRE

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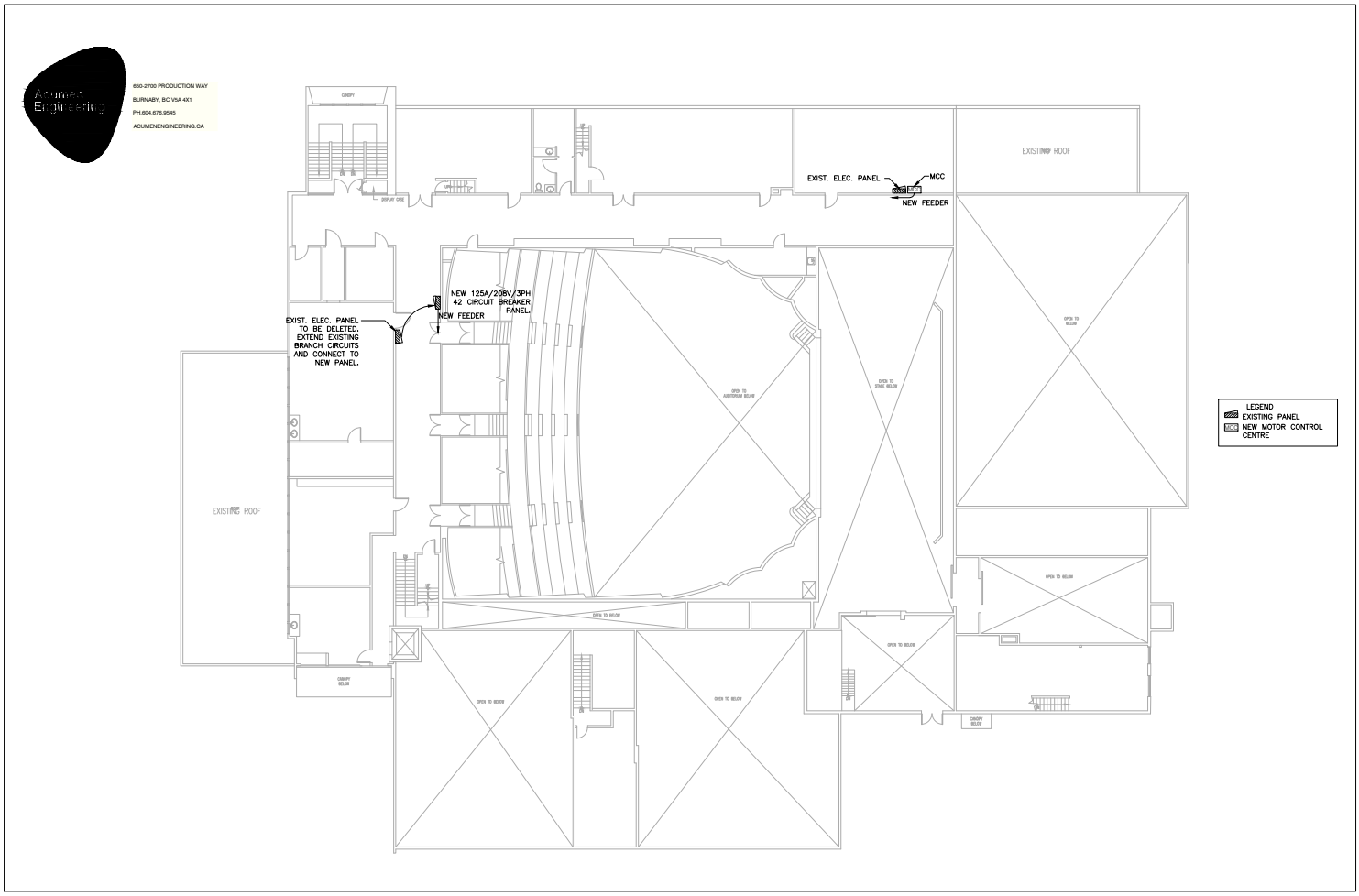


LEGEND
P.A. SPEAKER

SECOND FLOOR DATA AND P.A. SYSTEM PLAN - OPTION 1

MASSEY THEATRE

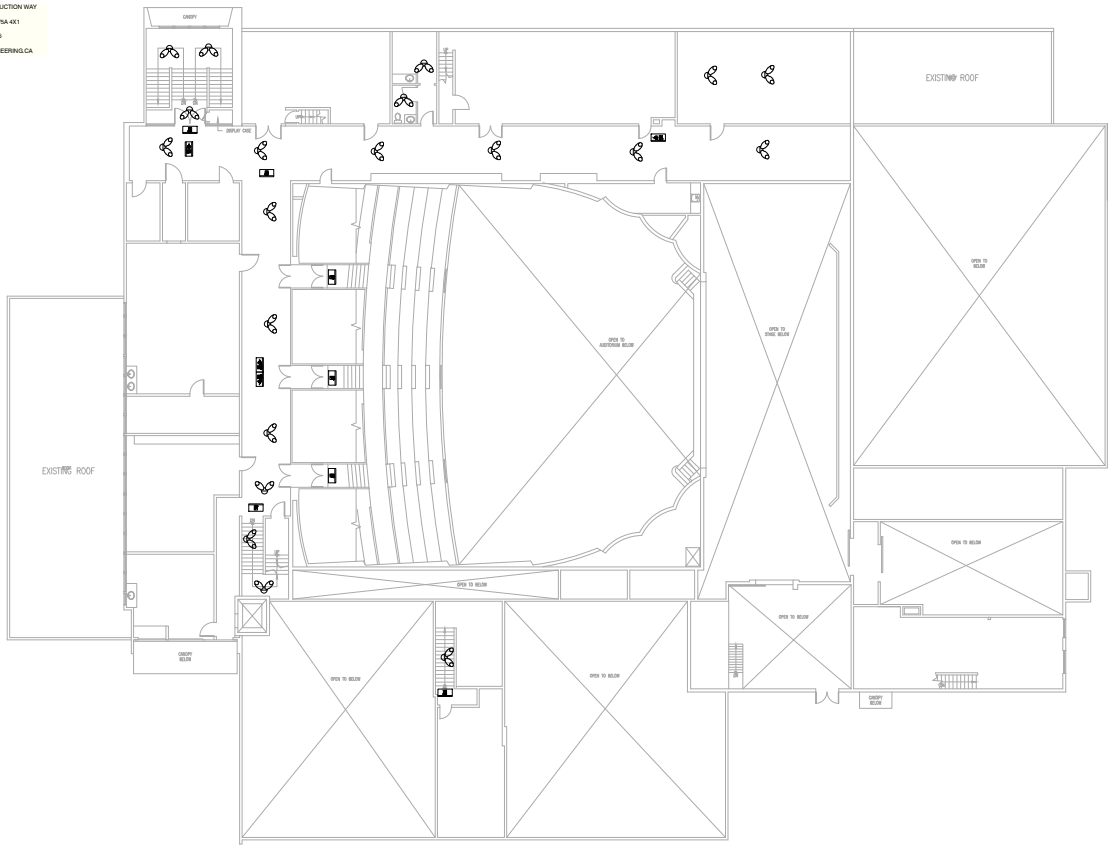
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SECOND FLOOR POWER DISTRIBUTION PLAN - OPTION 1

MASSEY THEATRE

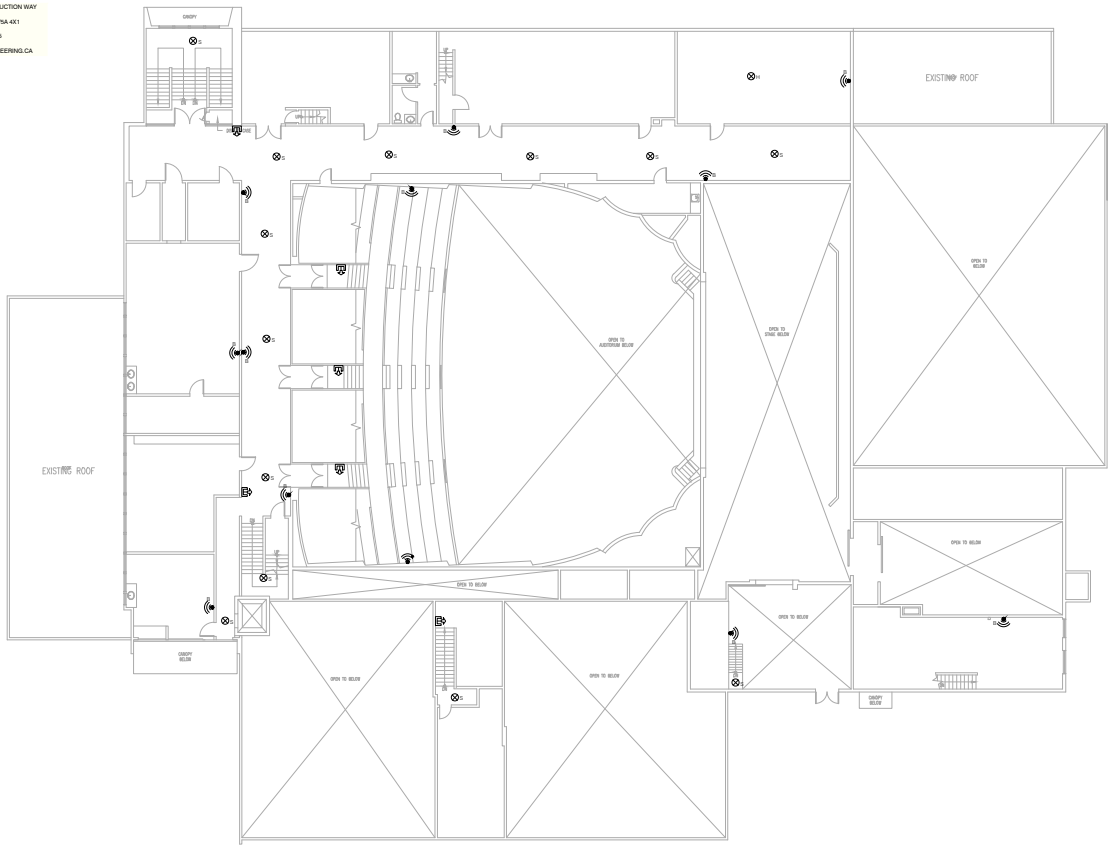
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SECOND FLOOR EXIT AND EMERGENCY LIGHTING PLAN - OPTION 1

MASSEY THEATRE

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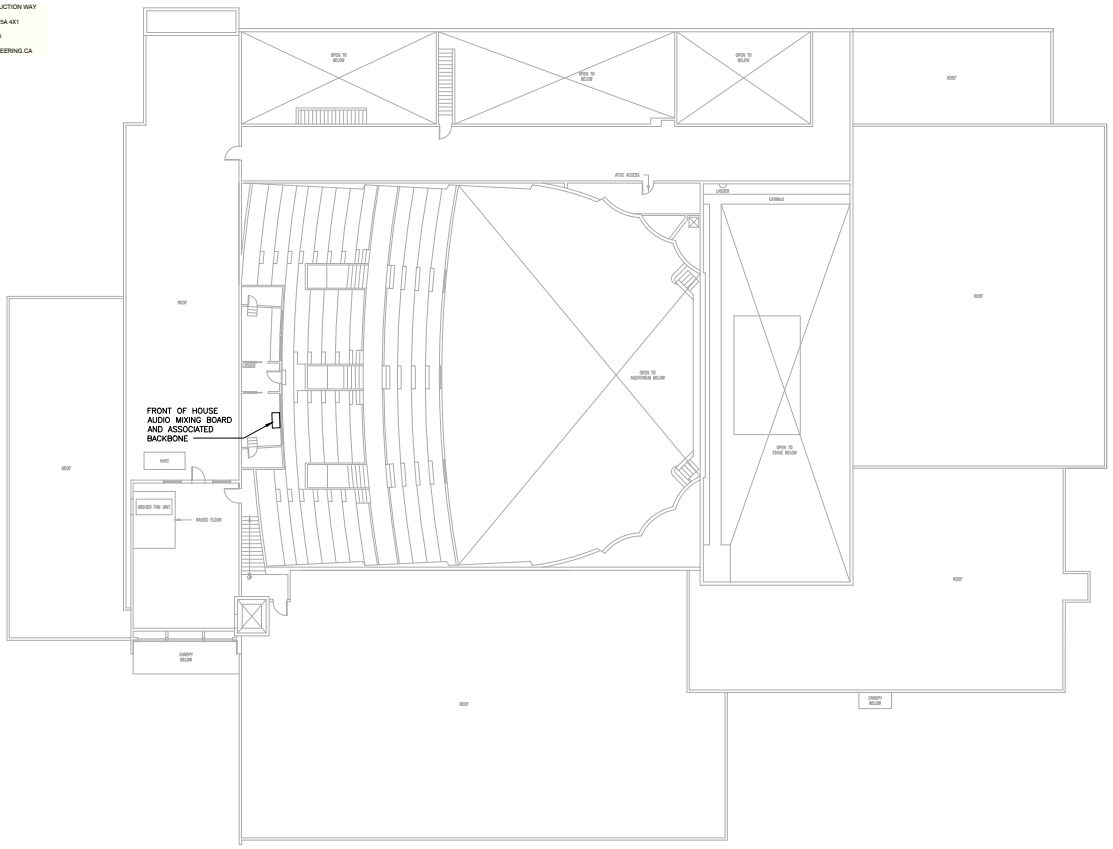


LEGEND
- F.A. PULL STATION
- F.A. SMOKE DETECTOR
- F.A. HEAT DETECTOR
- F.A. STROBE/BUZZER
- F.A. BUZZER

SECOND FLOOR FIRE ALARM PLAN - OPTION 1

MASSEY THEATRE

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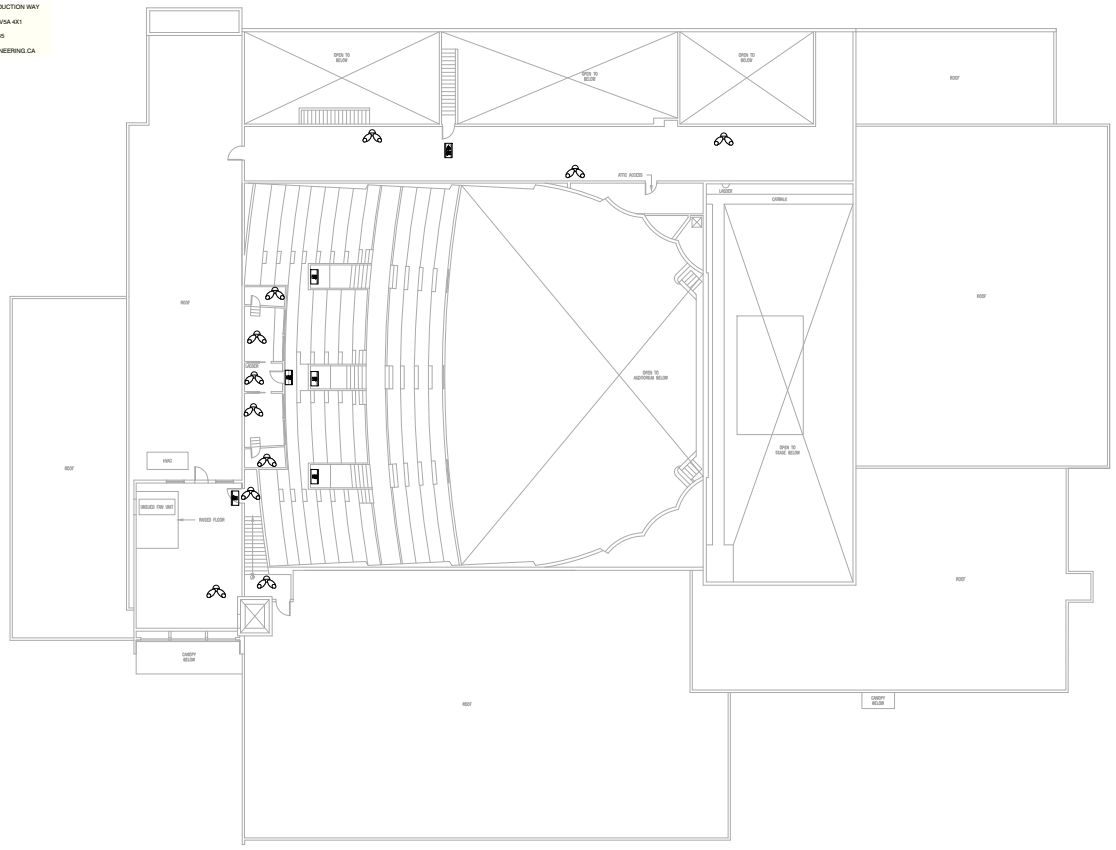


LEGEND
P.A. SPEAKER

THIRD FLOOR DATA AND P.A. SYSTEM PLAN - OPTION 1

MASSEY THEATRE

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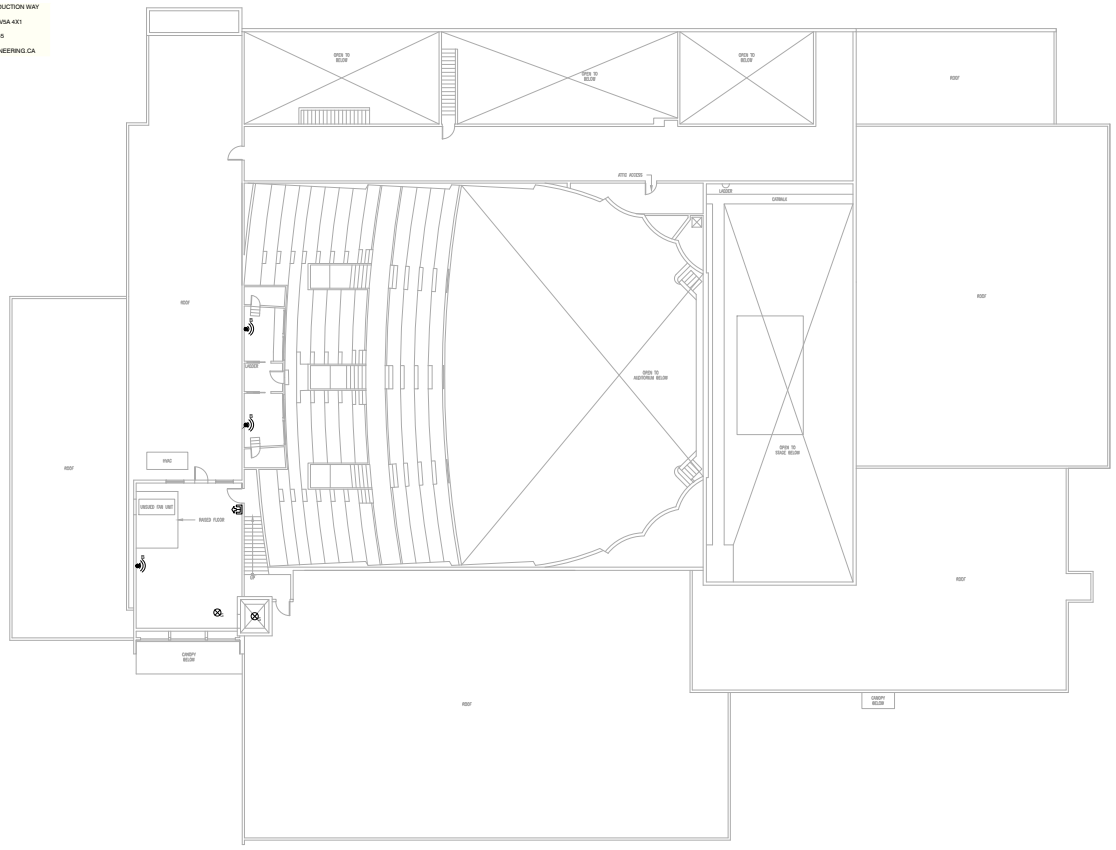


LEGEND
EXIT SIGNS
EMERGENCY LIGHTS

THIRD FLOOR EXIT AND EMERGENCY LIGHTING PLAN - OPTION 1

MASSEY THEATRE

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LEGEND
F.A. PULL STATION
S F.A. SMOKE DETECTOR
S/B F.A. STROBE/BUZZER
B F.A. BUZZER

THIRD FLOOR FIRE ALARM PLAN - OPTION 1

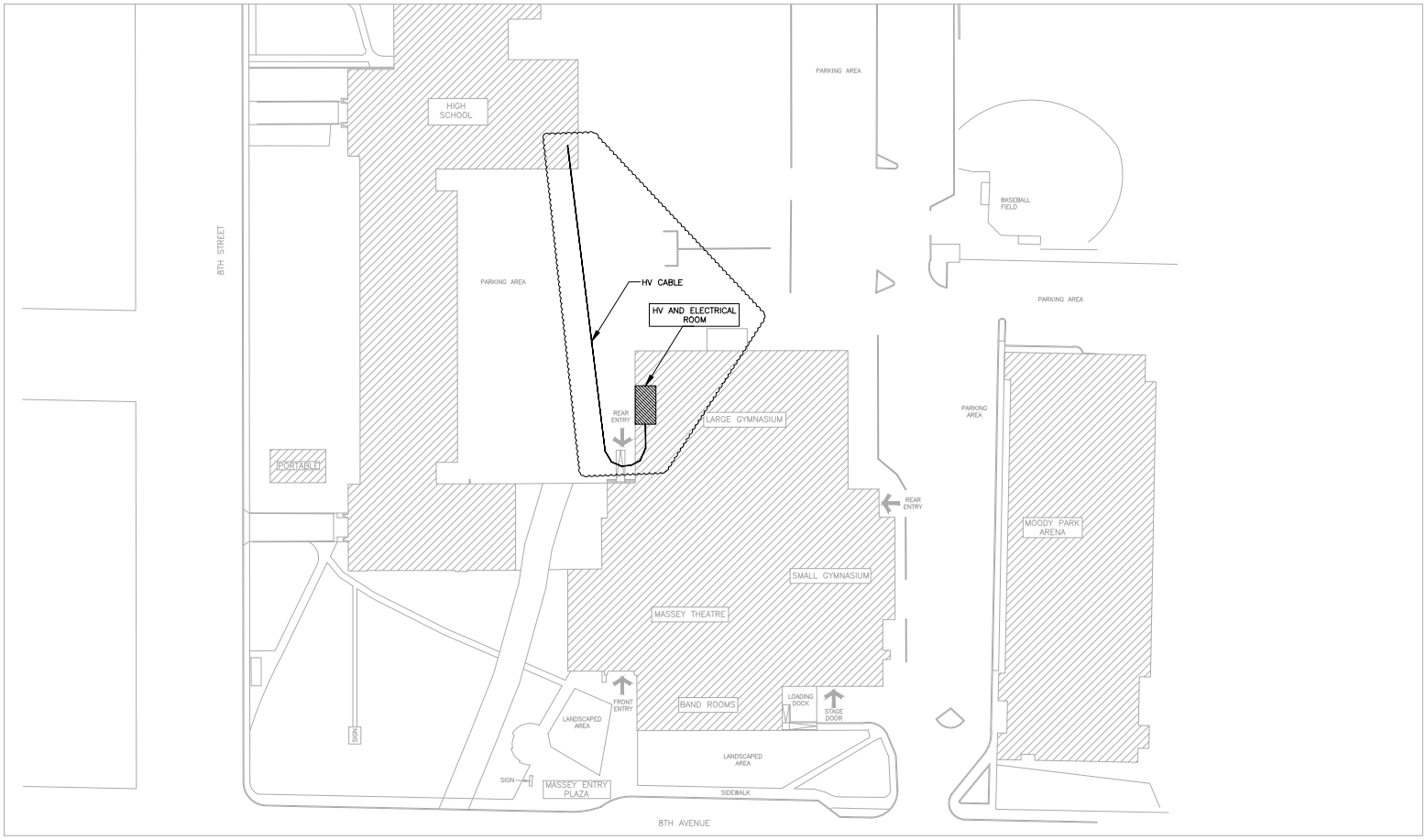
MASSEY THEATRE

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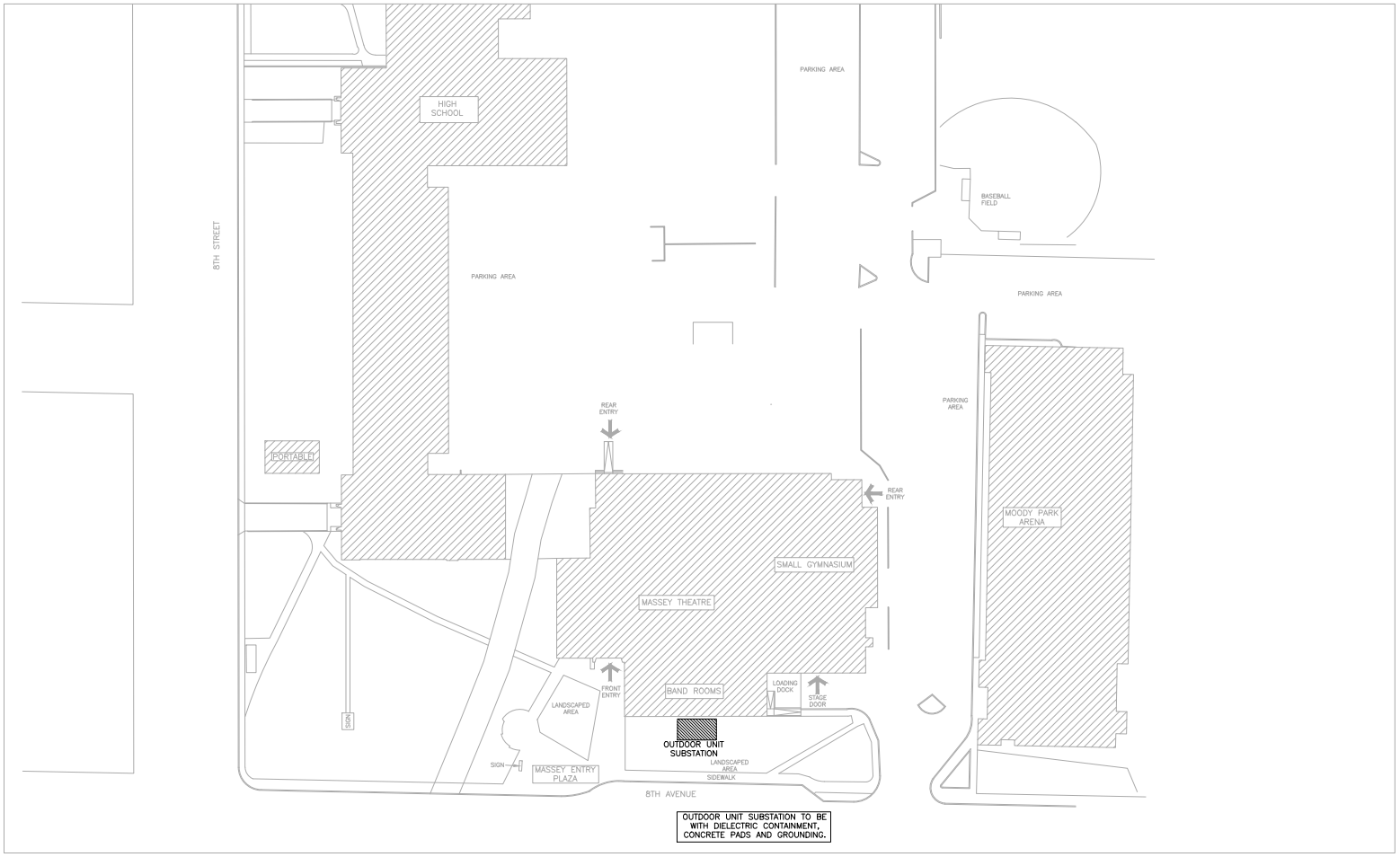
ROOF POWER DISTRIBUTION PLAN - OPTION 1

MASSEY THEATRE



EXISTING POWER DISTRIBUTION PLAN

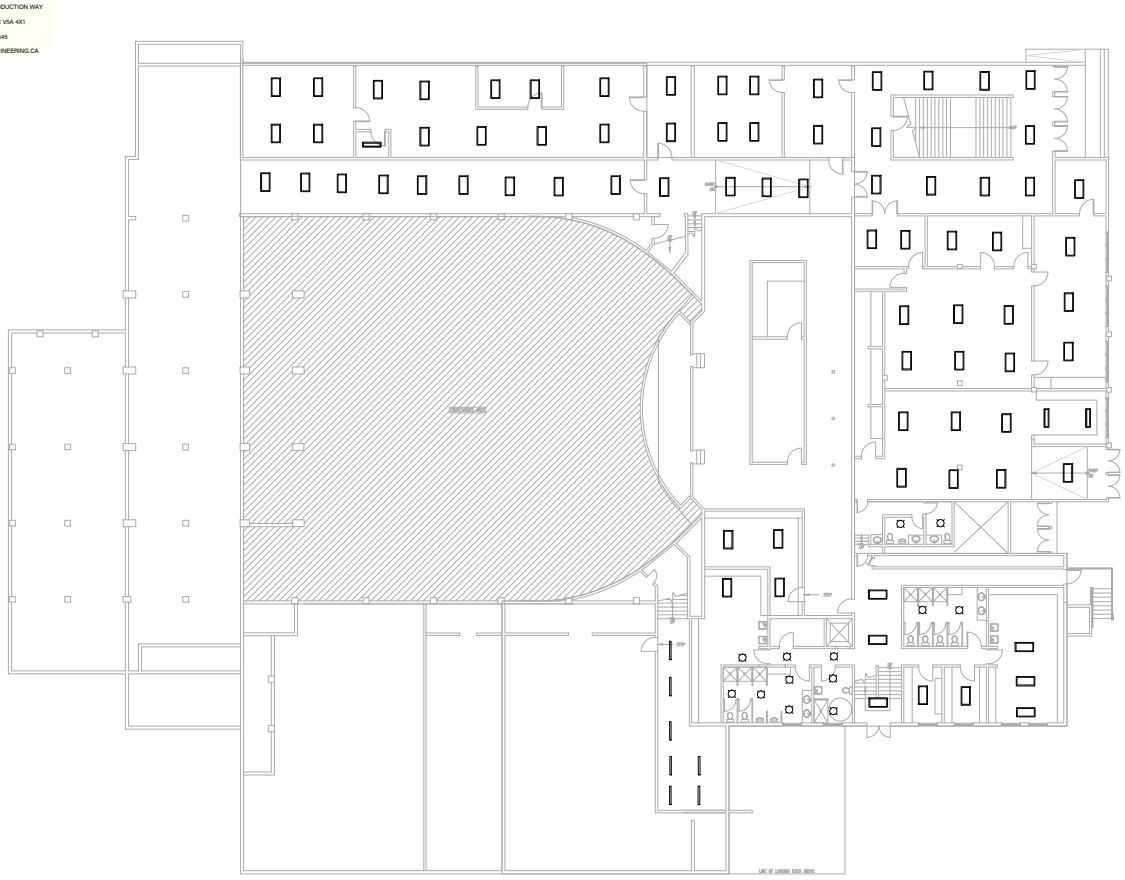
MASSEY THEATRE



POWER DISTRIBUTION SITE PLAN

MASSEY THEATRE

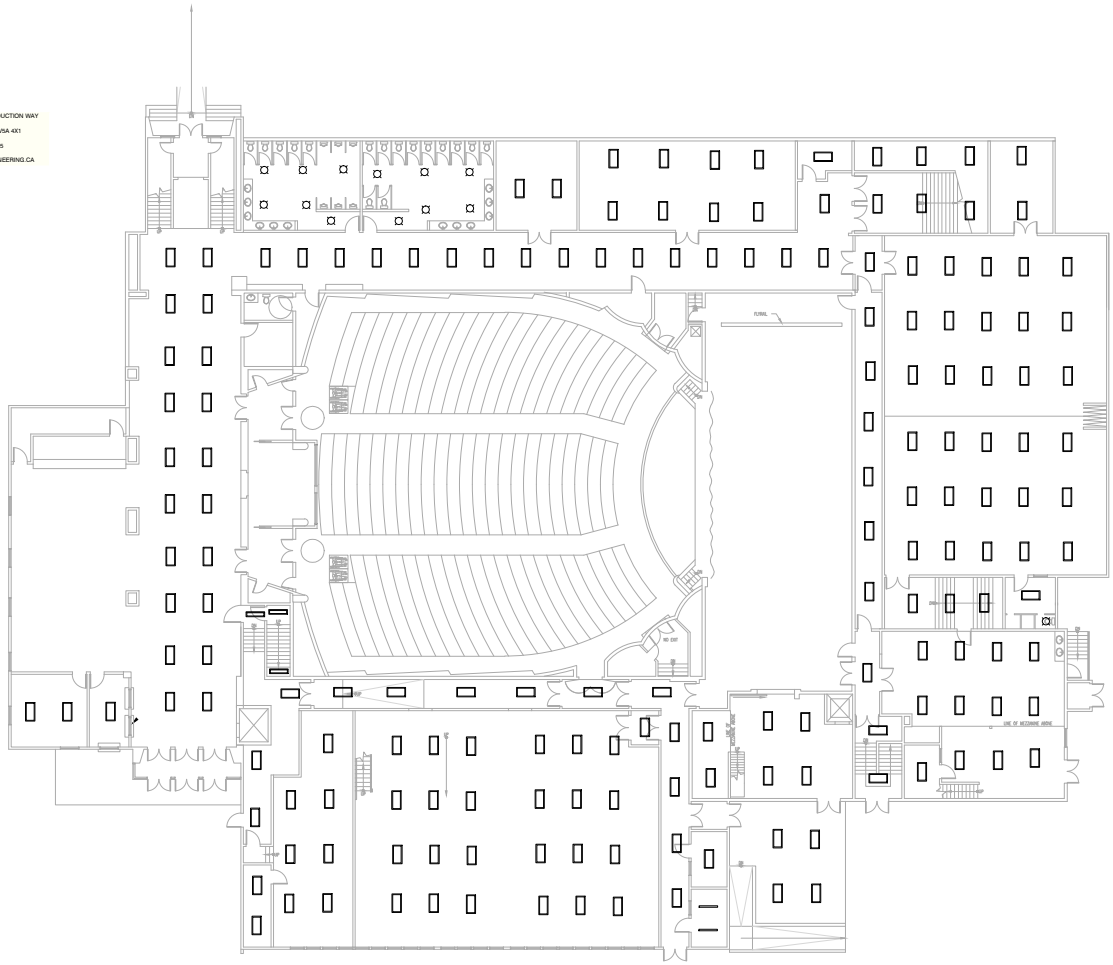
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BASEMENT LIGHTING PLAN - OPTION 2

MASSEY THEATRE

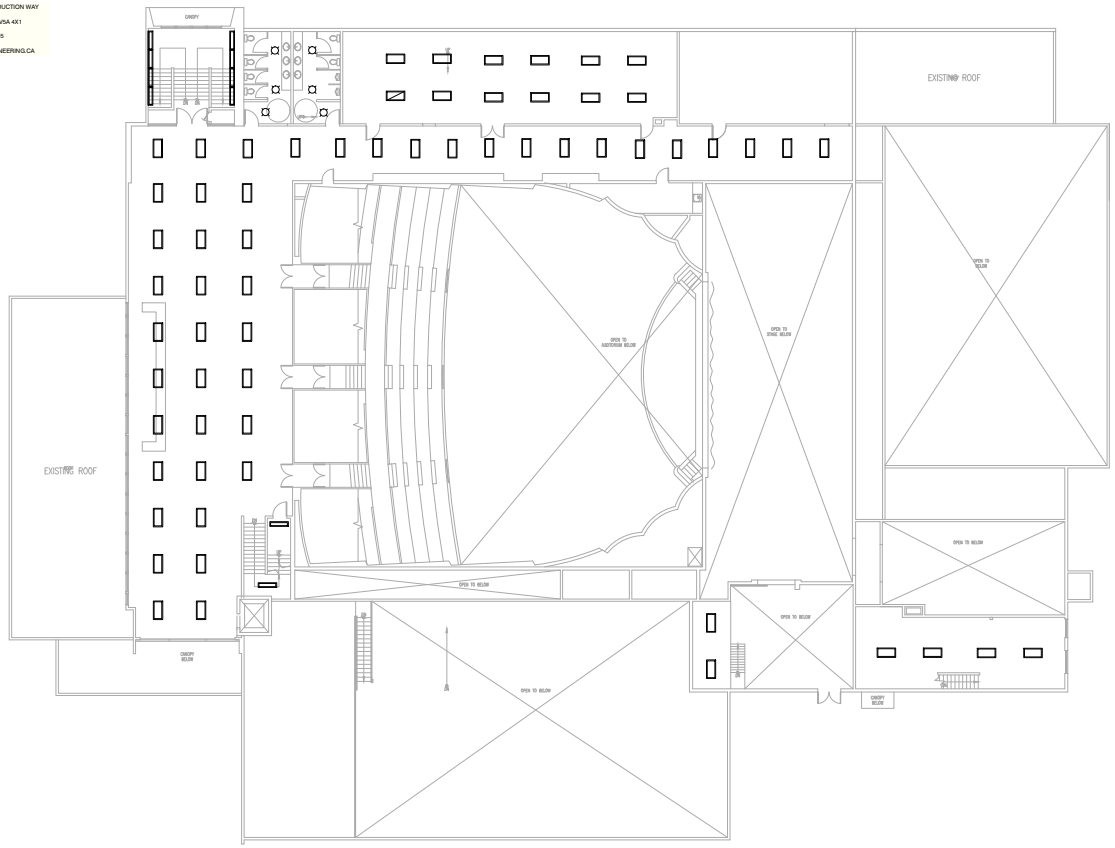
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MAIN FLOOR LIGHTING PLAN - OPTION 2

MASSEY THEATRE

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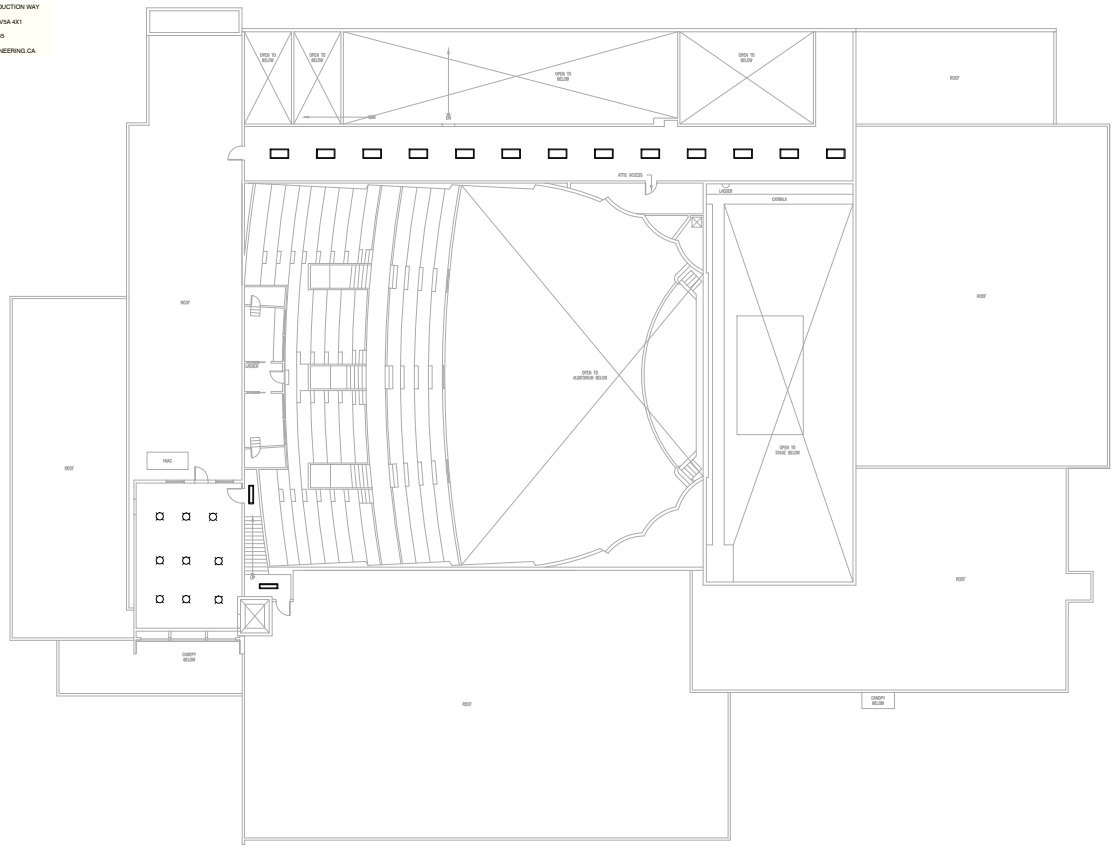
LEGEND

- POT LIGHT
- 2'x4' LIGHT
- 1'x4' LIGHT
- STRIP LIGHT

SECOND FLOOR LIGHTING PLAN - OPTION 2

MASSEY THEATRE

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LEGEND
- POT LIGHT
- 2'x4' LIGHT
- 1'x4' LIGHT

THIRD FLOOR LIGHTING PLAN - OPTION 2

MASSEY THEATRE

August 20, 2015

CITY OF NEW WESTMINSTER
511 Royal Avenue
New Westminster, BC V3L 1H9

Attention: Mr. Wayne Werbovetski, BArch, AIBC
Project Manager

Ref: PRE-RENOVATION HAZARDOUS BUILDING MATERIALS SURVEY OF THE MASSEY THEATRE BUILDING LOCATED AT 735 - 8TH AVENUE, NEW WESTMINSTER, BC

1.0 INTRODUCTION

Astech Consultants were retained by the City of New Westminster to conduct a Pre-Renovation Hazardous Building Materials Survey and compile a detailed report on the presence and location of asbestos containing building materials, PCB containing ballasts, lead, mercury, and stored chemicals at the Massey Theatre Building located at 735 - 8th Avenue, New Westminster, BC. This survey report does not include the Large Gymnasium including areas above and below the Gymnasium.

Astech Consultants Ltd. survey and report format is designed specifically to satisfy the current applicable regulation from the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation 20.112 regarding hazardous building material assessments by a Qualified Person for buildings and structures constructed year 1989 and prior, which is listed below.

PART 20: CONSTRUCTION, EXCAVATION AND DEMOLITION

Hazardous materials 20.112 Before work begins on the demolition or salvage of machinery, equipment, buildings or structures, the employer or owner must

(a) ensure that a qualified person inspects the site to identify any asbestos-containing materials, lead or other heavy metal or toxic, flammable or explosive materials that may be handled, disturbed or removed,

(b) have the inspection results available at the worksite, including any drawings, plans or specifications, as appropriate, to show the locations of any hazardous substances,

(c) ensure that any hazardous materials found are safely contained or removed, and

(d) if hazardous materials are discovered during demolition work that were not identified in the inspection required by paragraph (a), ensure that all work ceases until such materials are contained or removed.

This survey was conducted on June 3, 4, 8, 9, 18, & 22, 2015 by Rob Kingsley and Stephen Price of Astech Consultants, and is amalgamated with information obtained from our previous survey completed in June 2009, and from the provided Survey and Risk Assessment of Asbestos Containing Materials report by ACM Environmental Corporation dated June 8, 2007 and the Hazardous Building Materials Assessment report by Golder Associates Ltd. dated June 1, 2012. Areas such as inaccessible floor cavities, wall

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cavities, and ceiling cavities which would require dismantling or damaging portions of the building in order to gain access were not investigated. No attempt was made to investigate the Large Gymnasium, areas above and below the Large Gymnasium, exterior of the Large Gymnasium, underground services, or the surrounding property.

2.0 METHODOLOGY

2.1 ASBESTOS CONTAINING MATERIALS

A visual inspection was undertaken in order to determine the type, location, and homogeneous nature of asbestos and potential asbestos containing building materials located at the subject building. During this inspection, one hundred thirty-three (133) bulk samples of potential asbestos containing materials were collected from specific locations of the subject building. The samples collected were submitted for analysis at our in-house laboratory in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation, utilizing polarized light microscopy, and dispersion staining techniques. Results of laboratory analysis of samples collected during this survey and results of Astech's previously collected samples are attached.

2.2 LEAD PAINTS

A visual inspection was undertaken in order to determine the type and location of paints suspected of containing lead at the subject building. During this inspection, three (3) bulk samples of potential lead paint were collected from specific locations of the subject building. The samples collected were submitted for laboratory analysis in accordance with US EPA methods and the requirements of the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation. Results of laboratory analysis of samples collected during this survey are attached.

Once laboratory analytical results indicated the presence of lead paint, a return visit was undertaken to collect potential leachate lead paint samples of the affected paint which was sampled intact on the base substrate of wood at the exterior of the smoke vent and exterior stucco. The return visit was conducted June 22, 2015 and three (3) bulk samples of potential leachate lead paint were collected from where lead paints were previously identified. The samples collected were submitted for laboratory analysis in accordance with US EPA methods and the requirements of the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation. Results of laboratory analysis of samples collected during this return visit are attached.

2.3 PCB CONTAINING MATERIALS, LEAD, MERCURY, AND STORED CHEMICALS

A visual inspection was undertaken in order to determine the presence of:

- fluorescent light fixtures & HID light fixtures suspected of containing PCB ballasts or capacitors,
- construction materials suspected of containing lead and other heavy metals,
- thermostats and associated equipment suspected of containing mercury, and
- stored chemicals suspected of being toxic, flammable, or explosive.

3.0 INSPECTION RESULTS

3.1 ASBESTOS CONTAINING MATERIALS

LOWER/MAIN FLOOR

Northeast Lobby, and
Northeast Stairwell to Second Floor
- **Asbestos** containing floor tiles (some concealed).

Storage beneath Northeast Stairwell,
Operations Office, Conference Room, and Storage Room (3 rooms), and
Drama Room Northwest Entrance Foyer/Storage
- No asbestos materials observed.

Drama Area Ceiling Spaces
- **Asbestos** containing ceiling tile adhesive on walls and/or ceilings (above suspended ceiling).

Small Storage Room (adjacent to Northwest Entrance Foyer/Storage, accessed from Drama Room),
Large Storage Room (north, accessed from Drama Room, formerly 2 rooms),
Drama Lounge (east, accessed from Drama Room),
Fan Room (accessed from Drama Lounge at northeast corner),
Office (accessed from Drama Room),
Drama Room including Entrance Ramp, and
Wardrobe Storage Room (accessed from Drama Room)
- No asbestos materials observed.

Washroom Hallway (at rear of Drama Room)
- **Asbestos** containing paper backed sheet flooring (some concealed). **Note:** The newer sheet flooring beneath the washup sink is non-asbestos.
- **Asbestos** containing insulating cement at fittings of the mechanical piping system (mostly concealed above suspended ceiling and wall enclosure).

Boys' and Girls' Washroom (1 room, at rear of Drama Room), and
Staff Washroom (at rear of Drama Room)
- **Asbestos** containing paper backed sheet flooring (some concealed).

Northeast Corridor/Ramp to Crawlspaces (accessed from Northeast Lobby)
- **Asbestos** containing insulating cement may be on some fittings of the mechanical piping system.

Hallway to North Crawlspace/Storage and Large Gymnasium Crawlspace, and
North Crawlspace/Storage including Two Rooms within (below Rooms North of Main Corridor)
- No asbestos materials observed.

Centre North (below Main Corridor) and West (below Theatre Lobby & Plasket Gallery) Crawlspaces
- **Asbestos** containing preformed insulation on mechanical piping system (near west end of Centre North Crawlspace).

Maintenance/Fire Control Room (adjacent to Stairwell to Stage Left)
Stairwell to Stage Left
- No asbestos materials observed.

Storage Area beneath Stage including Three Rooms within
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing insulating cement on fittings of small diameter mechanical piping system (near entrance door).
- **Asbestos** containing mastic on joints of ductwork (some concealed).

Dressing Room Corridor and Exit Corridor
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).
- **Asbestos** containing insulating cement on fittings of mechanical piping system.

Fan Room 1 beneath Stairwell including Wall Cavity behind
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing mastic on joints of ductwork (some concealed).

Dressing Room 2,
Dressing Room 3, and
Men's Change Room 4
- **Asbestos** containing insulating cement on fittings of mechanical piping system.

Male Washroom 5,
Male Washroom 6,
Women's Washroom 7, and
Women's Washroom 8
- No asbestos materials observed.

Female Change Room 9,
Dressing Room 10, and
Dressing Room 11
- **Asbestos** containing insulating cement on fittings of mechanical piping system.

Janitor Room (near Dressing Rooms)
- No asbestos materials observed.

Southeast Stairwell to Second Floor Stage
- **Asbestos** containing filling compound on gypsum board (some concealed).

Old Hallway (east of South Crawlspaces) including Stairwell to Theatre
- No asbestos materials observed.

Storage/Crawlspace (accessed from Old Hallway) (beneath Band Room 104B)
Southwest Crawlspaces (accessed from floor hatch in Band Storage Room)
- **Asbestos** containing cementitious drain pipe (some concealed including beneath floor slab).

Wall Cavities and Ceiling Spaces
- **Asbestos** containing mastic on joints of ductwork (some concealed). Note: The black duct mastic is non-asbestos.
- **Asbestos** containing preformed insulation and/or insulating cement on mechanical piping (mostly in inaccessible wall cavities and ceiling spaces).
- **Asbestos** containing cementitious drain pipe (some concealed).

Second Floor

Main Corridor
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).
- **Asbestos** containing filling compound on some gypsum board and feathered onto adjoining plaster (some concealed).
- **Asbestos** containing ceiling tile adhesive on ceiling (above suspended ceiling).

Small Gymnasium 102, and
Storage Room (accessed from Small Gymnasium 102)
- No asbestos materials observed.

Office, Washroom, and Shower Room (3 rooms, accessed from Small Gymnasium 102)
- **Asbestos** containing floor tiles (some concealed).

Fire Exit Stairwell (from Small Gymnasium 102 to exterior)
- No asbestos materials observed.

Fan Room (accessed from Small Gymnasium 102 wall hatch)
- **Asbestos** containing mastic on joints of ductwork (some concealed including within ductwork).

Football Lounge (adjacent to Northeast Stairwell)
- No asbestos materials observed.

Small Storage Room (at east end of Main Corridor)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).

Large Storage Room
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring, wood, and other building materials).
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).

Female Staffroom including Closet, Washroom, and Shower (accessed from Large Gymnasium)
- **Asbestos** containing floor tiles in Washroom (some concealed).
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).

Large Gymnasium Partition Wall Storage Room (accessed from Drama Room wall hatch and Large Gymnasium)
- No asbestos materials observed.

Short Hallway to Large Gymnasium (adjacent to Large Storage Room)
- **Asbestos** containing floor tiles (concealed beneath carpet and other building materials).
- **Asbestos** containing ceiling tile adhesive on ceiling (above suspended ceiling).

Janitor Room including Closet (across from Custodian Room),
Custodian Room, and
Office
- No asbestos materials observed.

Short Hallway to Large Gymnasium (adjacent to Office)
- **Asbestos** containing floor tiles (concealed beneath carpet and other building materials).
- **Asbestos** containing ceiling tile adhesive on ceiling (above suspended ceiling).

Medical Room
- **Asbestos** containing paper backed sheet flooring (some concealed).

Male Staffroom including Closet, Washroom, and Shower (accessed from Large Gymnasium)
- **Asbestos** containing paper backed sheet flooring in Washroom (some concealed).
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).

Women's Washroom,
Men's Washroom, and
Women's Washroom (across from Handicap Washroom)
- Non-asbestos flooring materials.
- Non-asbestos filling compound on gypsum board.
- No asbestos materials observed.

Handicap Washroom including Janitor Room within
- **Asbestos** containing ceiling tile adhesive on ceiling (some above suspended ceiling and some above non-asbestos 12" ceiling tiles).
- Non-asbestos flooring materials.
- Non-asbestos filling compound on gypsum board.

Northwest Entrance Foyer
- **Asbestos** containing filling compound on gypsum board (some concealed).

Two Storage Rooms (beneath Northwest Stairwell)
- **Asbestos** containing vinyl tread (some concealed).
- **Asbestos** containing floor tiles (some concealed beneath a layer of **asbestos** containing vinyl tread and other building materials).
- **Asbestos** containing filling compound patches on some plaster walls and ceilings (some concealed).

Theatre Lobby
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).

Plasket Gallery,
Plasket Gallery Concession, and
Plasket Gallery Kitchen including Usher Jacket Storage Room
- No asbestos materials observed.

Hallway (from Theatre Lobby to Plasket Gallery Kitchen)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos paper backed sheet flooring and other building materials).

Massey Theatre Ticket Sales Office
- No asbestos materials observed.

Theatre Entrance Hallway including Two Storage Rooms
- **Asbestos** containing ceiling tile adhesive on walls (behind non-asbestos 12" tiles) in Storage Rooms.

Theatre Control Room, and
Theatre Seating Area
- No asbestos materials observed.

Stage including Laundry Closet
- Non-asbestos woven textile fire safety curtain. The curtain is a CSC-G1PC Proscenium Fire Safety Curtain manufactured by Canvas Specialty Company and can be described as a high temperature coated fibreglass fabric with vertical double-stitched seams.
- No asbestos materials observed.

Storage Room including Mezzanine (Stage Right)
- **Asbestos** containing filling compound on gypsum board (some concealed).

Stage Supplies/Workshop including Mezzanine, Mezzanine Stairwell, and Room within
- No asbestos materials observed.

Southwest Stairwell to Third Floor
- **Asbestos** containing vinyl stair tread (some concealed).

Wall Cavity/Ceiling Space (accessed from Southwest Stairwell wall hatch)
- No asbestos materials observed.

South Corridors including Steps (from Theatre Lobby to Stage)
- **Asbestos** containing paper backed sheet flooring (some concealed beneath carpet and other building materials).
- **Asbestos** containing vinyl stair tread (some concealed).
- **Asbestos** containing filling compound on gypsum board (some concealed).

Band Room 104A including Steps and Rear Vestibule
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing 2' x 4' ceiling tiles and contaminated track system. **Note:** The newer ceiling tiles that are distributed throughout the ceiling system should also be considered as **asbestos** contaminated.

Storage Room (accessed from Band Room 104A),
Band Storage Room/Office (between Band Rooms), and
Office (Lunchroom) (accessed from Band Storage Room/Office)
- **Asbestos** containing filling compound on gypsum board (some concealed).

Stairwell to Third Floor (from Band Storage Room/Office)
- **Asbestos** containing floor tiles (some concealed).
- **Asbestos** containing filling compound on gypsum board (some concealed).

Band Room 104B including Closets
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing 2' x 4' ceiling tiles and contaminated track system. **Note:** The newer ceiling tiles that are distributed throughout the ceiling system should also be considered as **asbestos** contaminated.

Two Soundproof Rooms (accessed from Band Room 104B)
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing ceiling tile adhesive on ceilings (above non-asbestos 12" ceiling tiles).

Vestibule (from exterior to Band Room 104B)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos paper backed sheet flooring, wood, and other building materials).
- **Asbestos** containing filling compound on gypsum board (some concealed).

Floor Cavities, Wall Cavities, and Ceiling Spaces
- **Asbestos** containing mastic on joints of ductwork (some concealed).
- **Asbestos** containing preformed insulation and/or insulating cement on mechanical piping (mostly in inaccessible wall cavities and ceiling spaces).
- **Asbestos** containing cementitious drain pipe (some concealed).

THIRD FLOOR

Main Corridor
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).
- **Asbestos** containing filling compound on some gypsum board and feathered onto adjoining plaster (some concealed).
- **Asbestos** containing ceiling tile adhesive on ceiling (above suspended ceiling).

Short Hallway to Large Gymnasium Balcony (at east end of Main Corridor)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).
- **Asbestos** containing filling compound on gypsum board at former doorway and feathered onto adjoining plaster (some concealed).

Boiler Room including Mezzanine
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing mastic/grout between sections of heat exchangers (3 in each boiler) behind outer metal casings of the 2 older boilers.
- **Asbestos** containing gaskets and packing materials at valves and flanges of mechanical piping systems is assumed to be present in the Boiler Room and likely in other areas of the building. Destructive testing on operating mechanical systems not conducted at this time.

Janitor Room (across from Boiler Room)
- **Asbestos** containing floor tiles (some concealed).

Drama Room including Stairwell to Fourth Floor Attic/Fan Room
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos floor tiles and other building materials).
- **Asbestos** containing filling compound on gypsum board (some concealed).

Storage beneath Stairwell (accessed from Drama Room)
- No asbestos materials observed.

Foyer, Office, and Washroom (between Art Room and Drama Room)
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing filling compound patches on plaster (some above suspended ceiling).
- **Asbestos** containing aluminized paper insulation within incandescent light fixture in Washroom.

Art Room (formerly 2 rooms)
- **Asbestos** containing floor tiles (concealed beneath carpet and other building materials, and may be multi-layered).
- **Asbestos** containing filling compound on gypsum board (some concealed).

Stairwell to Fourth Floor Storage Room (above Art Room)
- **Asbestos** containing filling compound on gypsum board (some concealed).

Janitor Room (across from Art Room), and
Short Hallway to Large Gymnasium Balcony (adjacent to Northwest Stairwell)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).

Northwest Stairwell to Second Floor including Display Room atop Stairwell
- **Asbestos** containing vinyl stair tread (some concealed).
- **Asbestos** containing filling compound on gypsum board (some concealed).

Kiln Room, and
Office (at west end of Main Corridor)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing ceiling tile adhesive on ceiling (behind non-asbestos 12" ceiling tiles).

Music Room including Short Hallway to Main Corridor
- **Asbestos** containing floor tiles (concealed beneath a layer of carpet, non-asbestos sheet flooring, and other building materials).
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing ceiling tile adhesive on ceiling (behind non-asbestos 12" ceiling tiles).

Storage Room (accessed from Music Room)
- **Asbestos** containing floor tiles (concealed beneath a layer of non-asbestos sheet flooring and other building materials).
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing ceiling tile adhesive on ceiling (behind non-asbestos 12" ceiling tiles).

Balcony Lobby
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).

Massey Theatre Administration Office including Closets
- **Asbestos** containing ceiling tile adhesive on ceiling (behind non-asbestos 12" ceiling tiles).

Theatre Balcony including Three Entrance Foyers
- **Asbestos** containing mastic on joints of ductwork (some concealed).

Stairwell to Fourth Floor Massey Theatre Boardroom
- **Asbestos** containing filling compound on gypsum board and feathered onto adjoining plaster (some concealed).

Hallway (above Band Storage Room/Office)
- **Asbestos** containing floor tiles (some concealed).
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing mastic on joints of ductwork (some concealed).

Storage Room (above Band Storage Room/Office)
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing mastic on joints of ductwork (some concealed).
- **Asbestos** containing insulating cement on fittings of mechanical piping system.

Mechanical Room (above Band Storage Room/Office)
- **Asbestos** containing floor tiles (loose near doorway).
- **Asbestos** containing filling compound on gypsum board (some concealed).
- **Asbestos** containing mastic on joints of ductwork (some concealed).
- **Asbestos** containing insulating cement on fittings of mechanical piping system, and debris.

Floor Cavities, Wall Cavities, and Ceiling Spaces
- **Asbestos** containing mastic on joints of ductwork (some concealed).
- **Asbestos** containing preformed insulation and/or insulating cement on mechanical piping (mostly in inaccessible wall cavities and ceiling spaces).

FOURTH FLOOR

Storage Room (above Art Room)
- **Asbestos** containing filling compound on gypsum board (some concealed).

Theatre Control Room (5 rooms, accessed from Theatre Balcony)
- **Asbestos** containing ceiling tile adhesive on ceiling (behind non-asbestos 12" ceiling tiles).

Massey Theatre Boardroom
- No asbestos materials observed.

Wall Cavities and Ceiling Spaces including Stage and Theatre Catwalks
- **Asbestos** containing mastic on joints of ductwork (some concealed).
- **Asbestos** containing preformed insulation and/or insulating cement on mechanical piping (mostly in inaccessible wall cavities and ceiling spaces).

Attic Space (above Main Corridor)
- **Asbestos** containing mastic on joints of ductwork (some concealed).

Attic Space (between Drama Room and Storage Room above Art Room)
- **Asbestos** containing mastic on joints of ductwork (some concealed).
- **Asbestos** containing preformed insulation and insulating cement on mechanical piping.

EXTERIOR

Loading Dock and Ramp, and
Walls and Canopies
- No asbestos materials observed.

Windows
- **Asbestos** containing cement board covering 2 former exterior windows at the Plasket Gallery (some concealed).
- **Asbestos** containing sealant in aluminum-framed windows at the south side Band Rooms addition (mostly concealed).

Rooftops
- **Asbestos** containing black mastic on rectangular ventilation duct on Centre South Rooftop (some concealed and some on adjoining building materials).
- **Asbestos** containing grey caulking on boiler exhaust vent on Main Upper Rooftop.
- **Asbestos** containing brown caulking on perimeter metal flashings on Theatre Stage Rooftop and on metal flashings at base of smoke vent walls (some concealed and some on adjoining building materials).

3.2 PCB CONTAINING MATERIALS

The visual inspection determined that there are approximately five hundred (500) fluorescent light fixtures (including some in display cases and signs) at the building that are both old and new. The older light fixtures are suspected of having PCB containing ballasts. PCB ballast identification requires the disassembly of the light fixture in order to locate the manufacturer's identification code.

3.3 LEAD

The visual inspection and/or laboratory analytical results (current and previous) determined the following:

- non-leachable paints/primers containing lead were used on the exterior wood and metal surfaces of the smoke vent (some of which is in a deteriorated condition and flaking),
- non-leachable paints containing lead were used on exterior stucco surfaces,
- paints and/or primers containing lead were used on plaster surfaces, wood mouldings/trim, doors, door frames, wood window frames and sills, and other wood surfaces, and some mechanical systems/equipment (some of which is in a deteriorated condition and flaking),
- primers containing lead were used on structural steel components,
- glazing finishes of ceramic tiles are likely lead containing,
- connection bells of cast iron drain pipes contain a lead packing material (including below ground) both inside and outside the building and there are lead sleeves at toilets, and
- there are lead roof vents and caps on the rooftops of the building.

3.4 LIQUID MERCURY

The visual inspection determined that there is a mercury containing thermostat in the Lower/Main Floor Dressing Room Area Fan Room 1 at the building. There are also numerous fluorescent light tubes/bulbs at the building that contain mercury.

3.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

The following list of materials were present inside and outside the building at time of inspection (including items likely to be retained for future use):

- containers of paint, solvents, cleaners, petroleum products, rodent poison, and boiler chemicals,
- compressor bearing petroleum products,
- batteries in emergency lighting,
- numerous fire extinguishers,
- compressors with suspect ozone depleting substances (CFC's) in a few refrigerators, coolers, vending machines, air conditioners, and air handling units,
- smoke/heat/fire detectors with a radioactive component within, and
- piping containing natural gas leading to heating equipment.

4.0 RECOMMENDATIONS

4.1 ASBESTOS CONTAINING MATERIALS

Prior to the renovation of a building or it's components, asbestos containing materials that are directly impacted by the work must first be removed and disposed of by a qualified hazardous materials abatement contractor's trained and authorized personnel. The asbestos containing materials not impacted by the work may remain in place in their existing stable condition in which they are considered to be safely enclosed or encapsulated. Workers must be advised in writing of their presence and location so that the asbestos containing materials are not inadvertently disturbed. Removing, enclosing, encapsulating, or otherwise disturbing (e.g. drilling) asbestos containing materials must be performed by a qualified hazardous materials abatement contractor's trained personnel in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation. Disposal of asbestos containing materials must be performed in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.2 POLYCHLORINATED BIPHENYL (PCB) CONTAINING BALLASTS/CAPACITORS

Where affected by a renovation project, it is recommended that the identification of PCB ballasts/capacitors be performed by qualified personnel prior to or in conjunction with the project, at a time when it becomes feasible to isolate electrical power and disassemble/disconnect the light fixtures. The ballasts/capacitors that are identified as PCB containing must be removed in accordance with the Workers' Compensation Board of British Columbia Occupational Health and Safety Regulation, and disposed of in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.3 LEAD BASED PAINTS

Lead based paints on building materials not impacted by the renovation project may remain in place as long as they are in a stable condition in which the lead is considered to be safely encapsulated within the paint, however, there are a number of areas where the lead based paints are in a deteriorated condition and flaking/delaminating from the base substrate, therefore requiring repair in order to negate the potential skin absorption and other hazards related to damaged lead based paints. Lead based paints that are in good repair (stable condition) do not pose a hazard to building occupants.

Where lead or potential lead based paints and/or primers are affected by a project, the work must be performed by a qualified person or contractor in accordance with the Workers' Compensation Board of

British Columbia Occupational Health and Safety Regulation and the WCB publication entitled Lead-Containing Paints and Coatings - Preventing Exposure in the Construction Industry.

Where the base substrate material is to be removed in conjunction with lead paint removal, the base substrate and lead based paints and/or primers should be removed intact, in accordance with the worker's/ contractor's risk assessment and site specific work procedures. The workers conducting the work and workers in close proximity to the work being performed, should be protected with personal protective equipment as determined by the contractor's risk assessment and site specific work procedures.

Lead containing paints which remain attached to concrete, wood, and/or other building materials must be labelled as lead based paints (LBP) for transporting to a licensed/approved disposal site or recycling facility. A licensed/approved facility receiving the waste must be informed of the lead content of these materials and be agreeable to receiving these materials. Prior to acceptance of waste with lead paints at a licensed/ approved disposal facility, the contractor generating the waste must ensure that all waste materials containing LBPs are sampled intact, fastened directly to the base substrate, and representative of the waste stream created by demolition. Astech Consultants has collected three samples for analysis utilizing a Toxicity Characteristic Leachate Procedure for lead (TCLP lead) test to determine the potential for soil and/or groundwater contamination. The contractor shall have any additional samples analyzed utilizing a Toxicity Characteristic Leachate Procedure for lead (TCLP lead) test to determine the potential for soil and/or groundwater contamination, if deemed necessary by the site receiving the waste.

If the lead paints are to be separated or removed from the building materials by means of sanding, scraping, abrading, blasting, etc., more stringent work procedures would apply. The removed lead paints, depending on lead concentrations and leachate results, may become a Hazardous Waste and therefore must be disposed of in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

If affected by a renovation project, the lead in bells of drain pipes, lead sleeves at toilets, and lead roof jacks must first be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.4 MERCURY

Where affected by the renovation project, the mercury containing thermostats and light tubes/bulbs must first be removed, and be relocated for future use, recycled or disposed of, in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

4.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

Stored Chemicals
Prior to a project that affects the listed materials, stored chemicals, ozone depleting substances within refrigeration equipment, and radioactive equipment must first be relocated for future use, or be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment - Environmental Management Act - Hazardous Waste Regulation.

Natural Gas
The natural gas that is contained in some piping must be shut off and purged by Terasen Gas or a qualified trades person prior to work that would affect the gas.

5.0 ESTIMATED CONTRACTOR BUDGETS FOR HAZARDOUS MATERIALS ABATEMENT

The following estimated budgets for complete removal and disposal of hazardous building materials are based on current market conditions with the site work being performed by a qualified abatement contractor during a single phase project.

ASBESTOS CONTAINING MATERIALS	UNIT PRICING	BUDGETS
Asbestos Floor Tiles, Vinyl Stair Treads, and Contaminated Building Materials	$2.50 to $3.25 per square foot	$ 35,200.00
Asbestos Paper Backed Sheet Flooring and Contaminated Building Materials	$3.00 to $3.50 per square foot	$ 4,200.00
Asbestos Filling Compound, Affected Gypsum Board & Plaster, and Contaminated Building Materials	$3.00 to $3.25 per square foot	$ 76,000.00
Asbestos Ceiling Tile Adhesive and Associated Contaminated Building Materials	$2.50 to $3.00 per square foot	$ 21,150.00
Asbestos 2' x 4' Ceiling Tiles and Contaminated Track System (including scaffold/lift equipment and enclosure system for access and containment)	$4.50 to $5.00 per square foot	$ 18,000.00
Asbestos Insulating Cement on Fittings of Mechanical Piping (accessible)	$60.00 per fitting	$ 4,500.00
Asbestos Insulations and/or Insulating Cement on Mechanical Piping (small amount in crawlspace and attic, but mostly concealed in inaccessible wall cavities and ceiling spaces)	$20.00 to $30.00 per lineal foot or fitting	$ 9,000.00
Asbestos Cementitious Drain Pipe (excluding underground)	$15.00 to $20.00 per lineal foot	$ 6,000.00
Asbestos Aluminized Paper Insulation within Incandescent Light Fixtures	$10.00 each	$ 10.00
Asbestos Mastic on Joints of Ductwork/Plenums (differing sizes both exposed and concealed)	$6.00 to $24.00 per lineal foot of ductwork	$ 44,000.00
Asbestos Mastic/Grout Between Sections of Heat Exchangers (3 in Each Boiler) behind Outer Metal Casings of the 2 Older Boilers (based on dismantling the boilers and removing the heat exchangers intact for disposal)	$2,800.00 each	$ 5,600.00
Asbestos Cement Board Covering Former Exterior Windows	$4.00 to $6.00 per square foot	$ 200.00
Asbestos Sealant in Exterior Aluminum-Framed Windows	$100.00 each	$ 1,800.00
Potential Asbestos Gaskets and Packing Materials at Flanges and Valves of Mechanical Piping Systems	$60 to $100 each	$ 3,000.00
Asbestos Black Mastic on Rectangular Ventilation Duct and Contaminated Building Materials	Not Applicable	$ 600.00
Asbestos Grey Caulking on Boiler Exhaust Vent and Contaminated Building Materials	Not Applicable	$ 100.00
Asbestos Brown Caulking on Perimeter Metal Flashings and Contaminated Building Materials	$2.50 to $3.00 per square foot	$ 1,200.00
HAZARDOUS BUILDING MATERIALS	**UNIT PRICING**	**BUDGETS**
Determination and Disposal of PCB containing Ballasts (estimated at 40% containing PCBs)	$22.00 to $24.00 each	$ 8,400.00
Lead Paint/Primer (some Flaking/Delaminating) to be Removed from Wood or Concrete Surfaces in Preparation for Refinishing/Repainting (unit price is depending upon extent and quantity of removal to satisfy the requirements for refinishing/repainting), and from Structural Steel Components (where cutting or welding to the steel is necessary)	$4.00 to $10.00 per square foot	Not Determined
Non-Leachable Lead Paint remaining attached to building materials for recycle/disposal	Not Applicable	No Extra Cost
Lead and Potential Lead Paint remaining attached to building materials for recycle/ disposal, dependent on TCLP (lead leachate) results (if deemed necessary by receiving site)	Not Applicable	Not Yet Determined
Lead Products for recycle (lead in bells of drain pipes, lead sleeves, and lead roof vents)	$20.00 each	$ 2,400.00
Mercury containing thermostats for recycle	$15.00 each	$ 15.00
Mercury containing light bulbs/tubes for recycle, if not retained for future use	$2.50 each	$ 3,800.00
Stored Chemicals including refrigeration equipment and radioactive equipment for recycle or disposal	Not Applicable	$ 2,400.00
SUBTOTAL		**$ 247,575.00**
10% CONTINGENCY		**$ 24,757.50**
ESTIMATED TOTAL (excluding GST)		**$ 272,332.50**

BUDGET NOTES:

1. The unit prices listed above are based on a minimum of 500 sq.ft. per application of removal.

2. Based on the substantial impact to hazardous building materials listed above in order to conduct necessary renovation work including, but not limited to, fire safety, electrical, mechanical, seismic, structural, and building envelope upgrades throughout the building, it is recommended that most, if not all, hazardous building materials be considered for complete removal and disposal.

6.0 OWNER'S RESPONSIBILITIES

For the remediation of hazardous building materials, contract specifications, quality control, and final acceptance of the work remain the responsibility of the Owner. In order to ensure that the Owner has acted in a responsible manner, and to ensure regulatory board compliance, it is recommended that a detailed hazardous materials abatement specification be provided to a select group of qualified and properly insured (with proof of necessary asbestos inclusion rider) hazardous materials abatement contractors. As well, the performance of the asbestos abatement work by the contractor's trained and authorized personnel should be inspected and air monitored on a daily basis. Project Documentation should also be provided including, but not necessarily limited to, a Notice of Project for work involving Asbestos, Risk Assessment, Exposure Control Plan, and Site Specific Work Procedures, Worker Respirator Fit Test Forms/Logs and Training Acknowledgement Forms, Certification of DOP Testing of HEPA Filtered Equipment used on site, Air Sample Results, Material Safety Data Sheets (MSDS) for products used on site, Transportation Waybills, and Waste Manifest Forms.

7.0 ASTECH CONSULTANTS' PROJECT CONSULTING SERVICES

PROJECT SCOPE OF WORK & TENDER PROCESS:

a) **Scope of Work** - Interface with Owner and Project Planning Team to determine project bid options and preparation of detailed Hazardous Building Materials Abatement Specification Section 02080 for inclusion with Front End Contract Documents to be issued to a select group of qualified and insured (with asbestos inclusion rider) Hazmat Abatement Contractors.

b) **Mandatory Pre-Bid Site Walk-Through** - Once the documents are prepared and approved, Astech Consultants would assist in organizing and conducting a mandatory pre-bid meeting and site inspection for the select group of qualified Hazmat Abatement Contractors. Astech would assist with any clarifications or interpretations as may arise before, during, and after the close of tenders.

c) **Bid Review** - We could also assist in reviewing the bids received and make recommendations for contract award.

PROJECT SITE INSPECTIONS:

a) **Asbestos Pre-Contamination Inspections** - Very critical third party inspections that determine if all preparation work is complete, in compliance with regulatory board requirements and the Contract Specifications, before the actual asbestos abatement can begin. Inspections ensure enforcement of safe work procedures, and review of relevant project documentation, including worker training, and respirator fit testing.

b) Asbestos Abatement Inspections - Once actual asbestos abatement is in progress Astech Consultants will conduct inspections inside the work areas. The perimeter of the work areas, and adjacent areas of the building, will also be inspected and air monitored.

c) Asbestos Visual Clearance Inspections - Perhaps the most critical of all inspections. The visual clearance inspections are a comprehensive and meticulous inspection of the work areas at the conclusion of removal activities to ensure that asbestos abatement is complete, and that asbestos materials have been properly cleaned up and disposed of.

d) Other Hazardous Materials Inspections - Visual inspections will be conducted on an ongoing basis to ensure that other hazardous materials have been properly removed and either recycled, salvaged, or disposed of.

PROJECT AIR SAMPLING (ASBESTOS AND LEAD):

a) ambient asbestos air samples adjacent to the work areas, to verify that airborne asbestos fibres have not migrated outside the work areas.

b) occupational asbestos air samples inside the work areas to establish and assess work procedures, and ensure that work procedures do not create unnecessarily high asbestos fibre concentrations.

c) clean room asbestos air samples in the worker decontamination facility to verify that airborne asbestos fibres have not migrated outside the “High Risk” work areas, as applicable.

d) air clearance asbestos air samples at the conclusion of visual clearance inspection of the "High Risk" work areas, as applicable.

e) ambient lead air samples adjacent to the work area, to verify that airborne lead has not migrated outside the work area, if necessary.

f) occupational lead air samples inside the work area to establish and assess work procedures, and ensure that work procedures do not create unnecessarily high lead concentrations, if necessary.

g) air sample results are documented, and submitted to the abatement contractor for posting on site daily.

PROJECT REPORTS:

Inspections requiring action by the Hazmat Abatement Contractor will be in written form and be submitted for immediate action. A Substantial and/or Final Completion letter will be submitted to the Client at the conclusion of the project. Once the project is completed, copies of all relevant documentation are retained in a comprehensive Final Report that will be submitted to the Client.

ASTECH FEE SCHEDULE FOR PROJECT CONSULTING SERVICES:

Astech Consultants Ltd. has estimated that a single phase project for complete removal and disposal of hazardous materials can be scheduled to be completed in forty to forty-five shifts, dependent upon the contractor's crew size and the extent of lead paint abatement required. Our consulting services fee schedule for a forty shift project can be estimated as follows:

Service	Hours	Lab	Unit	Extension
Interface/Meetings with Owner & Project Planning Team, and Preparation of Hazmat Abatement Specification Section 02080	32		$ 75.00	$ 2,400.00
Mandatory and Second Pre-Bid Site Meetings with Project Team and Bidders	12		$ 75.00	$ 900.00
Assist with Clarifications, Review of Bids, and Written Recommendations for Contract Award	2		$ 75.00	$ 150.00
Start-Up Meeting with Client/Contractor, Project Site Inspections, Collection of Air Samples (Asbestos and Lead), and Written Documentation	240		$ 75.00	$ 18,000.00
Laboratory Analysis of Air Samples (Asbestos)		120	$ 30.00	$ 3,600.00
Laboratory Analysis of Air Samples (Lead) with Rush 24 Hour Turnaround Times, if Required		16	$120.00	$ 1,920.00
Review of Contractor Submittals and Final Report	8		$ 75.00	$ 600.00
Surcharge (5%), for Asbestos Inclusion Insurance				$ 1,378.50
TOTAL (excluding GST)				**$ 28,948.50**

IMPORTANT ITEMS FOR CONSIDERATION:

a) Astech's Fee Schedule for project consulting services should be considered as an upset maximum price for a **forty shift project**. Should fewer hours or samples be required, the applicable savings will be passed on. Conversely, should the abatement contractor's work schedule be greater than forty shifts and still require inspections and air monitoring by Astech, additional fees would be applicable.

b) Astech Consultants does not charge out materials and equipment that are required for this project.

We hope you have found the above information useful. If you have any questions, or require clarification please contact this office.

Sincerely,

Rob Kingsley
Astech Consultants Ltd.
Ref: 14058HE01.RK

ASBESTOS BULK SAMPLE REPORT

Date: June 26, 2015

Client: **CITY OF NEW WESTMINSTER**

Location: **Massey Theatre Building**
735 - 8th Avenue
New Westminster, BC

Comments:
1) Analysed as per NIOSH 9002, except for Vermiculite as per EPA/600/R-04/004.
2) WCB defines asbestos containing material as 0.5% or more asbestos, with the exception of Vermiculite which is defined as "any asbestos".
3) Sample(s) will be disposed of after 90 days, unless the Client requests otherwise.

Sample Collected on June 3, 2015

				Non-Asbestos	Asbestos
Sample	**Location**	**Description**	**Layer: Colour**	**% Type**	**% Type**
14058BS01	Third Floor - Boiler Room	Mastic/Grout (at Joints of Older Sectional Boiler behind Metal Casing	1: Black	85% Non-Fibrous	**15% Chrysotile**

Analyst(s): Jesse James

Samples Collected on June 4, 2015

				Non-Asbestos	Asbestos
Sample	**Location**	**Description**	**Layer: Colour**	**% Type**	**% Type**
14058BS02a	Exterior - Centre South Rooftop (Centre Area)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS02b	Exterior - Centre South Rooftop (Centre Area)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS02c	Exterior - Centre South Rooftop (Centre Area)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS02d	Exterior - Centre South Rooftop (Centre Area)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS02e	Exterior - Centre South Rooftop (Centre Area)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS03a	Exterior - Centre South Rooftop (West End)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected

#101-Bldg.C-17802-66th Avenue
Cloverdale, BC, Canada V3S 7X1
Tel: 604-575-1122 Fax: 604-575-1152

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS03b	Exterior - Centre South Rooftop (West End)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS03c	Exterior - Centre South Rooftop (West End)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS03d	Exterior - Centre South Rooftop (West End)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS03e	Exterior - Centre South Rooftop (West End)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS04a	Exterior - Southeast Rooftop	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS04b	Exterior - Southeast Rooftop	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS04c	Exterior - Southeast Rooftop	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS04d	Exterior - Southeast Rooftop	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS04e	Exterior - Southeast Rooftop	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS05	Exterior - Centre South Rooftop	Caulking (at Metal Wall Flashing)	1: Grey	100% Non-Fibrous	None Detected
14058BS06a	Exterior - Centre South Rooftop	Coating Wall Stucco (Outer Layer)	1: Beige 2: White	100% Non-Fibrous	None Detected
14058BS06b	Exterior - Centre South Rooftop	Wall Stucco (Inner Layer)	3: Grey	100% Non-Fibrous	None Detected
14058BS07	Exterior - Southeast Rooftop	Mastic (at Exhaust Vent)	1: Black	2% Cellulose 98% Non-Fibrous	None Detected
14058BS08a	Exterior - East Rooftop (South Area)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS08b	Exterior - East Rooftop (South Area)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS08c	Exterior - East Rooftop (South Area)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS08d	Exterior - East Rooftop (South Area)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS08e	Exterior - East Rooftop (South Area)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS09	Exterior - East Rooftop	Caulking (at Metal Wall Flashing)	1: Off-White	100% Non-Fibrous	None Detected
14058BS10a	Exterior - East Rooftop (North Area)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS10b	Exterior - East Rooftop (North Area)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS10c	Exterior - East Rooftop (North Area)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS10d	Exterior - East Rooftop (North Area)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS10e	Exterior - East Rooftop (North Area)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS11a	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS11b	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS11c	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS11d	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS11e	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS12a	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Coating Wall Stucco (Outer Layer)	1: Beige 2: Light Grey	100% Non-Fibrous	None Detected
14058BS12b	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Wall Stucco (Inner Layer)	3: Dark Grey	100% Non-Fibrous	None Detected
14058BS13	Exterior - Northeast Rooftop (above Northeast Lobby & Stairwell)	Caulking (at Sill of Former Window)	1: White	100% Non-Fibrous	None Detected
14058BS14	Exterior - East Rooftop	Caulking (at Perimeter Metal Flashing)	1: Brown	100% Non-Fibrous	None Detected
14058BS15	Exterior - Centre South Rooftop	Mastic (on Rectangular Ventilation Duct)	1: Black	75% Non-Fibrous	**25% Chrysotile**
14058BS16a	Exterior - Rooftop above Stairwell to Fourth Floor Massey Theatre Boardroom	Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS16b	Exterior - Rooftop above Stairwell to Fourth Floor Massey Theatre Boardroom	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS16c	Exterior - Rooftop above Stairwell to Fourth Floor Massey Theatre Boardroom	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS16d	Exterior - Rooftop above Stairwell to Fourth Floor Massey Theatre Boardroom	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS16e	Exterior - Rooftop above Stairwell to Fourth Floor Massey Theatre Boardroom	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS17a	Exterior (at Ground Level)	Coating Wall Stucco (Outer Layer) (at Southwest Corner)	1: Beige 2: Light Grey	100% Non-Fibrous	None Detected
14058BS17b	Exterior (at Ground Level)	Wall Stucco (Inner Layer) (at Southwest Corner)	3: Dark Grey	100% Non-Fibrous	None Detected
14058BS18a	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (Centre Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS18b	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (Centre Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS18c	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (Centre Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS18d	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (Centre Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS18e	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (Centre Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS19a	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (North Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS19b	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (North Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS19c	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (North Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected

				Non-Asbestos	Asbestos
Sample	**Location**	**Description**	**Layer: Colour**	**% Type**	**% Type**
14058BS19d	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (North Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS19e	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office (North Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS20a	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Coating Wall Stucco (Outer Layer)	1: Beige 2: Light Grey	100% Non-Fibrous	None Detected
14058BS20b	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Wall Stucco (Inner Layer)	3: Dark Grey	100% Non-Fibrous	None Detected
14058BS21	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Wall Construction Felt (behind Stucco)	4: Black	80% Cellulose 10% Animal 10% Non-Fibrous	None Detected
14058BS22	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Caulking (on Wood Sill at Metal Door)	1: Off-White	100% Non-Fibrous	None Detected
14058BS23	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Mastic (on Screw Holes of Exhaust Vent)	1: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS24	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Caulking (at Exhaust Vent Base Flashing)	1: Grey	2% Synthetic 98% Non-Fibrous	None Detected
14058BS25	Exterior - West Rooftop above Third Floor Massey Theatre Administration Office	Mastic (at Exhaust Vent Base)	1: Black	2% Cellulose 98% Non-Fibrous	None Detected
14058BS26a	Exterior - Main Upper Rooftop (Southwest Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS26b	Exterior - Main Upper Rooftop (Southwest Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS26c	Exterior - Main Upper Rooftop (Southwest Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS26d	Exterior - Main Upper Rooftop (Southwest Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS26e	Exterior - Main Upper Rooftop (Southwest Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS27a	Exterior - Main Upper Rooftop (Centre Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS27b	Exterior - Main Upper Rooftop (Centre Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS27c	Exterior - Main Upper Rooftop (Centre Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS27d	Exterior - Main Upper Rooftop (Centre Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS27e	Exterior - Main Upper Rooftop (Centre Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS28a	Exterior - Main Upper Rooftop (Northeast Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS28b	Exterior - Main Upper Rooftop (Northeast Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS28c	Exterior - Main Upper Rooftop (Northeast Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS28d	Exterior - Main Upper Rooftop (Northeast Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS28e	Exterior - Main Upper Rooftop (Northeast Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS29	Exterior - Main Upper Rooftop	Mastic (at Air Handling Unit Electrical Conduit Roof Penetration)	1: Black	2% Cellulose 98% Non-Fibrous	None Detected
14058BS30	Exterior - Main Upper Rooftop	Caulking (on Boiler Exhaust Vent)	1: Grey	75% Non-Fibrous	**25% Chrysotile**
14058BS31a	Exterior - Theatre Stage Rooftop	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS31b	Exterior - Theatre Stage Rooftop	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS31c	Exterior - Theatre Stage Rooftop	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS31d	Exterior - Theatre Stage Rooftop	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS31e	Exterior - Theatre Stage Rooftop	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS32	Exterior - Smoke Vent Rooftop	Felt (beneath Metal Roof Cladding)	1: Black	45% Synthetic 55% Non-Fibrous	None Detected
14058BS33	Exterior - Theatre Stage Rooftop	Caulking (at Perimeter Metal Flashing)	1: Brown	95% Non-Fibrous	**5% Chrysotile**
14058BS34	Exterior (at Fourth Floor Massey Theatre Boardroom)	Window Sealant (in Metal-Framed Window)	1: Black	5% Cellulose 95% Non-Fibrous	None Detected

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS35a	Exterior - Lower West Rooftop (North Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS35b	Exterior - Lower West Rooftop (North Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS35c	Exterior - Lower West Rooftop (North Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS35d	Exterior - Lower West Rooftop (North Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS35e	Exterior - Lower West Rooftop (North Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS36a	Exterior - Lower West Rooftop (South Section)	Tar & Gravel Roofing Membrane	1: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS36b	Exterior - Lower West Rooftop (South Section)	Roofing Mastic	2: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS36c	Exterior - Lower West Rooftop (South Section)	Roofing Membrane	3: Black	65% Synthetic 35% Non-Fibrous	None Detected
14058BS36d	Exterior - Lower West Rooftop (South Section)	Roofing Mastic	4: Black	5% Cellulose 95% Non-Fibrous	None Detected
14058BS36e	Exterior - Lower West Rooftop (South Section)	Vapour Barrier	5: Black	99% Cellulose 1% Non-Fibrous	None Detected
14058BS37	Exterior (West Side)	Paint Cement Board (in Former Wood-Framed Window Location)	1: Blue 2: Grey	25% Non-Fibrous	**75% Chrysotile**
14058BS38	Exterior (West Side)	Paint Window Putty (at Wood-Framed Window)	1: White 2: Tan	100% Non-Fibrous	None Detected
14058BS39	Exterior (West Side)	Paint Window Putty (at Wood-Framed Window)	1: White 2: Tan	100% Non-Fibrous	None Detected
14058BS40	Exterior (West Side)	Paint Window Putty (at Wood-Framed Window)	1: White 2: Tan	100% Non-Fibrous	None Detected

Analyst(s): Brittany Ford, Jesse James

Samples Collected on June 8, 2015

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS41	Second Floor - Women's Washroom (Theatre)	Gypsum Board Filling Compound (North Wall)	1: White	100% Non-Fibrous	None Detected
14058BS42	Second Floor - Women's Washroom (Theatre)	Ceramic Tile Grout	1: White	2% Cellulose 98% Non-Fibrous	None Detected
14058BS43	Second Floor - Women's Washroom (Theatre)	Ceramic Tile Mortar	2: Grey	5% Cellulose 95% Non-Fibrous	None Detected

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS44	Second Floor - Women's Washroom (Theatre) Ceiling Space	Gypsum Board Filling Compound (Wall at Duct Enclosure)	1: White	100% Non-Fibrous	None Detected
14058BS45	Second Floor - Men's Washroom (Theatre) Ceiling Space	Duct Mastic (on Joint of Washroom Exhaust Duct)	1: Grey	2% Synthetic 98% Non-Fibrous	None Detected
14058BS46	Second Floor - Janitor Room (accessed from Handicap Washroom (Theatre))	8" Ceramic Tile Grout	1: White	2% Cellulose 98% Non-Fibrous	None Detected
14058BS47	Second Floor - Janitor Room (accessed from Handicap Washroom (Theatre))	8" Ceramic Tile Mortar	2: Grey	2% Cellulose 98% Non-Fibrous	None Detected
14058BS48	Second Floor - Janitor Room (accessed from Handicap Washroom (Theatre))	Sheet Flooring Wear Surface	3: Cream	10% Cellulose 90% Non-Fibrous	None Detected
		Jute Backing	4: Brown	95% Cellulose 5% Non-Fibrous	None Detected
14058BS49	Second Floor - Janitor Room (accessed from Handicap Washroom (Theatre))	Floor Levelling Compound	5: Black	100% Non-Fibrous	None Detected
14058BS50	Third Floor - Massey Theatre Administration Office	Sheet Flooring Wear Surface	1: Brown	100% Non-Fibrous	None Detected
		Jute Backing (beneath Carpet)	2: Brown	95% Cellulose 5% Non-Fibrous	None Detected
14058BS51	Third Floor - Massey Theatre Administration Office	Flooring Felt (beneath Jute Backed Sheet Flooring)	3: Black	60% Cellulose 10% Synthetic 10% Animal 20% Non-Fibrous	None Detected
14058BS52	Lower/Main Floor - Female Change Room 9	Insulating Cement (Pipe Elbow)	1: Grey	65% Glass 35% Non-Fibrous	None Detected

Analyst(s): Brittany Ford, Jesse James

Samples Collected on June 9, 2015

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS53	Lower/Main Floor - Drama Room	Paint 2' X 4' Ceiling Tile	1: White 2: Grey	65% Cellulose 30% Glass 5% Non-Fibrous	None Detected
14058BS54	Lower/Main Floor - Drama Area Ceiling Space	Fibrous Material and Concrete Residue	1: Grey	8% Cellulose 92% Non-Fibrous	None Detected
14058BS55	Lower/Main Floor - Washroom Hallway (at Rear of Drama Room)	Insulating Cement (Pipe Elbow)	1: Grey	40% Glass 45% Non-Fibrous	**15% Chrysotile**

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS56	Lower/Main Floor - Northeast Stairwell to Second Floor	Vinyl Stair Tread	1: Grey	100% Non-Fibrous	None Detected
14058BS57	Lower/Main Floor - Northeast Stairwell to Second Floor	Vinyl Stair Riser	1: Black	8% Cellulose 925 Non-Fibrous	None Detected
14058BS58	Second Floor - Vestibule (from exterior to Band Room 104B)	Sheet Flooring Wear Surface	1: Mosaic Grey	100% Non-Fibrous	None Detected
		Paper Backing	2: Grey	65% Synthetic 35% Non-Fibrous	None Detected
14058BS59	Second Floor - Southwest Stairwell to Third Floor	12" Floor Tile	1: Beige	100% Non-Fibrous	None Detected
14058BS60	Second Floor - Theatre Lobby	12" Floor Tile	1: Purple	100% Non-Fibrous	None Detected
14058BS61	Second Floor - Theatre Lobby	Floor Tile Adhesive	2: Black	3% Cellulose 97% Non-Fibrous	None Detected
14058BS62	Third Floor - Drama Room	12" Floor Tile	1: Black	100% Non-Fibrous	None Detected
14058BS63	Third Floor - Drama Room	12" Floor Tile	2: Brown	98% Non-Fibrous	**2% Chrysotile**
14058BS64	Third Floor - Drama Room	Floor Tile Adhesive	3: Black	3% Cellulose 97% Non-Fibrous	None Detected
14058BS65	Third Floor - Theatre Balcony Entrance Foyer	12" Floor Tile	1: Beige	100% Non-Fibrous	None Detected

Analyst(s): Jesse James, Brittany Ford

Samples Collected on June 18, 2015

Sample	Location	Description	Layer: Colour	Non-Asbestos % Type	Asbestos % Type
14058BS66	Second Floor - Stage	Woven Textile Fire Curtain	1: White	99% Glass 1% Non-Fibrous	None Detected
14058BS67	Exterior (at South Band Rooms Addition)	Window Sealant (in Aluminum-Framed Window)	1: Grey	85% Non-Fibrous	**15% Chrysotile**
14058BS68a	Exterior (at South Band Rooms Addition)	Paint Wall Stucco (Outer Layer)	1: Beige 2: Grey	2% Cellulose 98% Non-Fibrous	None Detected
14058BS68b	Exterior (at South Band Rooms Addition)	Wall Stucco (Inner Layer)	3: Light Grey	2% Cellulose 98% Non-Fibrous	None Detected

Analyst(s): Jesse James

AIHA PAT Programs LLC

American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT)
Astech Consultants Ltd. Laboratory Participant ID# 200542

Samples Collected on May 29, 2009

Bulk Sample # 8599BS01 : **Third Floor - Boiler Room**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **5 - 10% Chrysotile Asbestos**

Bulk Sample # 8599BS02 : **Third Floor - Boiler Room**
Sample Type : Wall Plaster (Outer Layer)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS03 : **Third Floor - Boiler Room**
Sample Type : Wall Plaster (Inner Layer)
Result : 5 - 10% Animal Fibres
: 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS04 : **Third Floor - Boiler Room**
Sample Type : Insulating Cement (HWS Flange)
Result : 35 - 40% Glass Fibres
: 25 - 30% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS05 : **Third Floor - Main Corridor**
Sample Type : Jute Backed Sheet Flooring (Beige & Pink) (Top Layer)
Result : 10 - 15% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS06 : **Third Floor - Main Corridor**
Sample Type : Sheet Flooring Adhesive (Off-White) (Second Layer)
Result : 5 - 10% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS07 : **Third Floor - Main Corridor**
Sample Type : Floor Tile (Black) (Third Layer)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS08 : **Third Floor - Main Corridor**
Sample Type : Floor Tile Adhesive (Black) (Bottom Layer)
Result : 10 - 15% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS09 : **Third Floor - Main Corridor**
Sample Type : 2' X 4' Ceiling Tile
Result : 60 - 65% Cellulose Fibres
: 20 - 25% Glass Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS10 : **Third Floor - Main Corridor**
Sample Type : Ceiling Tile Adhesive (Brown) (above Suspended Ceiling System)
Result : **25 - 30% Chrysotile Asbestos**

Bulk Sample # 8599BS11 : **Third Floor - Main Corridor**
Sample Type : Ceiling Plaster (above Suspended Ceiling System)
Result : 1 - 5% Cellulose Fibres
: 1 - 5% Animal Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS12 : **Third Floor - Main Corridor**
Sample Type : Gypsum Board Filling Compound (West Wall)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS13 : **Third Floor - Main Corridor**
Sample Type : Sealant Tape (Black) (at Interior Window)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS14 : **Third Floor - Northwest Stairwell to Second Floor**
Sample Type : Vinyl Stair Tread (Rust)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS15 : **Third Floor - Northwest Stairwell to Second Floor**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS16 : **Second Floor - Main Corridor Wall Cavity**
Sample Type : Insulating Cement (Pipe Elbow)
Result : **65 - 70% Chrysotile Asbestos**

Samples Collected on June 11, 2009

Bulk Sample # 8599BS17 : **Second Floor - Northwest Entrance Foyer**
Sample Type : Jute Backed Sheet Flooring (Black)
Result : 20 - 25% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS18 : **Second Floor - Men's Washroom Ceiling Space**
Sample Type : Insulating Cement (Grey) (Pipe Elbow)
Result : 65 - 70% Glass Fibres
: 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS19 : **Second Floor - Men's Washroom**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS20 : **Second Floor - Short Hallway to Large Gymnasium**
Sample Type : Duct Mastic (Black)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS21 : **Second Floor - Medical Room**
Sample Type : Paper Backed Sheet Flooring (Brown Mosaic)
Result : **40 - 45% Chrysotile Asbestos**
: 1 - 5% Cellulose Fibres

Bulk Sample # 8599BS22 : **Second Floor - Office**
Sample Type : 2' X 4' Ceiling Tile (Tan with Salmon Backing)
Result : 65 - 70% Cellulose Fibres
: 25 - 30% Glass Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS23 : **Second Floor - Janitor Room**
Sample Type : Wall Plaster (Grey) (Inner Layer)
Result : 1 - 5% Animal Fibres
: 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS24 : **Second Floor - Janitor Room**
Sample Type : Wall Plaster (White) (Outer Layer)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS25 : **Second Floor - Large Storage Room**
Sample Type : Gypsum Board Filling Compound (Ceiling at Bulkhead)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS26 : **Second Floor - Northeast Stairwell**
Sample Type : 9" Floor Tile (Beige)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS27 : **Second Floor - Northeast Stairwell**
Sample Type : Floor Tile Adhesive (Black)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS28 : **Second Floor - Fan Room (accessed from Small Gym Wall Hatch)**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS29 : **Second Floor - Fan Room (accessed from Small Gym Wall Hatch)**
Sample Type : Insulating Cement (Pipe Elbow)
Result : 60 - 65% Glass Fibres
: 5 - 10% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS30 : **Fourth Floor - Ceiling Space (above Theatre Control Room and Balcony)**
Sample Type : Duct Mastic (Red)
Result : **25 - 30% Chrysotile Asbestos**

Bulk Sample # 8599BS31 : **Second Floor - Wall Cavity (accessed from SW Stairwell Wall Hatch)**
Sample Type : Wall Stucco (Outer Layer)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS32 : **Second Floor - Wall Cavity (accessed from SW Stairwell Wall Hatch)**
Sample Type : Wall Stucco (Inner Layer)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS33 : **Second Floor - Wall Cavity (accessed from SW Stairwell Wall Hatch)**
Sample Type : Wall Construction Paper (Black) (Bottom Layer)
Result : 90 - 95% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS34 : **Fourth Floor - Massey Theatre Board Room**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS35 : **Third Floor - Short Music Room Hallway (from Main Corridor)**
Sample Type : Gypsum Board Filling Compound (Wall Patch at New Entranceway)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS36 : **Third Floor - Music Room**
Sample Type : Gypsum Board Filling Compound (South Wall)
Result : **5 - 10% Chrysotile Asbestos**

Bulk Sample # 8599BS37 : **Third Floor - Music Room**
Sample Type : Jute Backed Sheet Flooring (Beige) (Top Layer)
Result : 20 - 25% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS38 : **Third Floor - Music Room**
Sample Type : Floor Tile (Beige) (Bottom Layer)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS39 : **Third Floor - Kiln Room**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **5 - 10% Chrysotile Asbestos**

Samples Collected on June 15, 2009

Bulk Sample # 8599BS40 : **Lower/Main Floor - Centre North Crawlspace**
Sample Type : Insulating Cement (White) (Pipe Elbow)
Result : 55 - 60% Cellulose Fibres
: 25 - 30% Glass Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS41 : **Lower/Main Floor - Storage Area Beneath Stage**
Sample Type : Insulating Cement (Grey) (Small Diameter Pipe Elbow)
Result : **60 - 65% Chrysotile Asbestos**
: **5 - 10% Amosite Asbestos**

Bulk Sample # 8599BS42 : **Lower/Main Floor - Storage Area Beneath Stage**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS43 : **Lower/Main Floor - Fan Room (accessed from Drama Lounge)**
Sample Type : Insulating Cement (Grey & White) (Pipe Elbow)
Result : 60 - 65% Glass Fibres
: 20 - 25% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS44 : **Lower/Main Floor - Drama Room**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS45 : **Lower/Main Floor - Washroom Hallway (at Rear of Drama Room)**
Sample Type : Paper Backed Sheet Flooring (Brown & Beige)
Result : **40 - 45% Chrysotile Asbestos**

Bulk Sample # 8599BS46 : **Lower/Main Floor - Storage/Crawlspace (Beneath Band Room Area) (Accessed from Old Hallway)**
Sample Type : Duct Mastic (Black)
Result : 1 - 5% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS47 : **Second Floor - Theatre Storage Room (Stage Right)**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS48 : **Second Floor - Massey Theatre Ticket Sales Office**
Sample Type : 12" Floor Tile (Blue)
Result : No Asbestos Fibres Observed

Bulk Sample # 8599BS49 : **Second Floor - Massey Theatre Ticket Sales Office**
Sample Type : Floor Tile Adhesive (Black)
Result : 5 - 10% Cellulose Fibres
: No Asbestos Fibres Observed

Bulk Sample # 8599BS50 : **Second Floor - Male Staff Washroom (Accessed from Large Gym)**
Sample Type : Paper Backed Sheet Flooring (Green)
Result : **40 - 45% Chrysotile Asbestos**

Samples Collected on June 16, 2009

Bulk Sample # 8599BS51 : **Second Floor - Storage Room (Accessed from Band Room 104A)**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS52 : **Second Floor - Soundproof Room (Accessed from Band Room 104B)**
Sample Type : Ceiling Tile Adhesive (Brown)
Result : **1 - 5% Tremolite Asbestos**

Bulk Sample # 8599BS53 : **Second Floor - Stairwell to Third Floor (Acc. from Band Storage/Office)**
Sample Type : 12" Floor Tile (Beige)
Result : **5 - 10% Chrysotile Asbestos**

Bulk Sample # 8599BS54 : **Third Floor - Storage Room (Above Band Storage/Office)**
Sample Type : Gypsum Board Filling Compound (Ceiling)
Result : **1 - 5% Chrysotile Asbestos**
: 5 - 10% Cellulose Fibres

Bulk Sample # 8599BS55 : **Third Floor - Mechanical Room (Above Band Storage/Office)**
Sample Type : Insulating Cement (Pipe Elbow)
Result : **15 - 20% Chrysotile Asbestos**
: 25 - 30% Glass Fibres
: 10 - 15% Cellulose Fibres

Bulk Sample # 8599BS56 : **Third Floor - Mechanical Room (Above Band Storage/Office)**
Sample Type : Duct Mastic (Aluminized, Painted Blue)
Result : **20 - 25% Chrysotile Asbestos**

Bulk Sample # 8599BS57 : **Third Floor - Mechanical Room (Above Band Storage/Office)**
Sample Type : Gypsum Board Filling Compound (Wall)
Result : **1 - 5% Chrysotile Asbestos**

Bulk Sample # 8599BS58 : **Second Floor - South Corridor**
Sample Type : Paper Backed Sheet Flooring (Brown Mosaic)
Result : **30 - 35% Chrysotile Asbestos**

LEAD (in Paint) BULK SAMPLE REPORT

Date: June 26, 2015

Client: **CITY OF NEW WESTMINSTER**

Location: **Massey Theatre Building**
735 - 8th Avenue
New Westminster, BC

Comments:
1) Submitted samples were digested in accordance with EPA Analytical Method 3051 modified and analyzed in accordance with EPA Analytical Method 200.15.
2) Sample results report lead only.
3) WCB defines lead-containing surface coating material as a paint or other similar material that dries to a solid film that contains over 90 mg/kg (90 μg/g or 90 PPM or 0.009%) dry weight of lead.
4) Samples will be disposed of after 25 days, unless the client requests otherwise.

Samples Collected on June 4, 2015

Bulk Sample # 14058LS01 : **Exterior (East Side at Third Floor)**
Sample Type : Paint (Brown & Cream, Mixed) (on Wood Trim at Former Window)
Result : **3,120 mg/kg**

Bulk Sample # 14058LS02 : **Exterior (at Smoke Vent)**
Sample Type : Paint (Brown & Cream, Mixed) (on Underside of Wood Roof Overhang)
Result : **15,400 mg/kg**

Bulk Sample # 14058LS03 : **Exterior (West Side at Third Floor)**
Sample Type : Paint (White) (on Wood Windowsill)
Result : **2,280 mg/kg**

#101-Bldg.C-17802-66th Avenue
Cloverdale, BC, Canada V3S 7X1
Tel: 604-575-1122 Fax: 604-575-1152

LEACHATE LEAD SAMPLE REPORT

Date: June 26, 2015

Client: **CITY OF NEW WESTMINSTER**

Location: **Massey Theatre Building**
735 - 8th Avenue
New Westminster, BC

Comments:
1) Samples were analyzed in accordance with EPA Analytical Methods 6020A & 1311.
2) Sample results report leachate lead only.
3) Reportable Detection Limit is 0.10 mg/L.
4) Ministry of Environment defines lead leachate hazardous waste level as 5.0 mg/L or greater.
5) Samples will be disposed of after 30 days, unless the client requests otherwise.

Samples Collected on June 22, 2015

Bulk Sample # 14058LLS01 : **Exterior (at Smoke Vent)**
Sample Type : Paint (Brown & Cream, Mixed) (on Underside of Wood Roof Overhang)
Result : 3.54 mg/L

Bulk Sample # 14058LLS02 : **Exterior (above Plasket Gallery)**
Sample Type : Paint (Brown & Others, Mixed) (on West Stucco Wall)
Result : <0.10 mg/L

Bulk Sample # 14058LLS03 : **Exterior (at South Band Rooms Addition)**
Sample Type : Paint (Brown & Others, Mixed) (on South Stucco Wall)
Result : <0.10 mg/L

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Cloverdale, BC, Canada V3S 7X1
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Murray Johnson Engineering Ltd.
Specialising in Codes, Fire & Life Safety,
and Fire Protection Systems

212 5th Ave.,
New Westminster, B.C V3L 1R4
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May 20, 2015 Our File No.: 15-203

City of New Westminster
511 Royal Avenue
New Westminster, BC V3L 1H9

Attention: Wayne Werbovetski

Dear Sirs:

RE: SPRINKLER SYSTEM REVIEW - MASSEY THEATRE
735 EIGHTH AVENUE, NEW WESTMINSTER, B.C.

As part of the replacement of the adjacent School, the sprinkler system at Massey Theatre will undergo significant changes. In the following, the Theatre is considered to include the structure that will remain after the School is demolished, including the Massey Theatre itself, the classrooms to the south, and the corridors to the west and north of the Massey Theatre. At the request of the City, Murray Johnson Engineering Ltd. has been retained to review the sprinkler system at the Theatre and make recommendations based on two options:

Option 1 - Minimalist

- New sprinkler valve station (new water service will be required)
- Sprinkler head testing (allowance to replace sprinkler heads if found to be deficient)

Option 2 - More Substantial upgrade

Same scope as Option One but add:
- Revision to sprinkler layout due to deficient coverage under the current Building and Fire Codes

Project Description

The Massey Theatre was originally constructed in the early 1950's and was at least partially (if not fully) sprinkler at that time. It appears to be currently sprinklered in general accordance with NFPA 13(NFPA), the Standard for the Installation of Sprinkler Systems. A musical classroom wing to the south was added more recently and, though not part of the Theatre, will be retained for School use.

The sprinkler system for the Theatre is fed from a water supply coming into the School off 8th St. It follows a rather circuitous route involving some above ground and extensive amounts of underground pipe before reaching the Theatre from the water entry location on 8th St. This feed will be abandoned and a new supply required.

Minimum Code Upgrade requirements

Before going into the Options, a brief review of the requirements of the 2012 British Columbia Building Code is appropriate. Existing conditions are acceptable provided they are not deemed unsafe. When undergoing work on a building, there is usually a sliding scale where more items are upgraded as more work is being done.

While the currently referenced edition of NFPA 13 is the 2013 edition, the system was installed under earlier editions and, while they appear to generally comply with the installation at the time they were installed, there have been revisions to NFPA which the existing system does not comply with. NFPA specifically deems existing systems installed in accordance with the Standard of the time to comply with the current Standard. However, any deviations from the original installation to the current NFPA will be reviewed.

Site Observations:

As noted above, the entire Theatre and coverage is generally excellent throughout. The following are observations based on non-compliant features of the existing system:

1. The basement sprinklers are too close to the cowall in the basement corridor and need to be offset.closer to the centre of the wall. In some cases, it may be possible to use sidewalls to correct this problem.
2. Some of the sprinklers in the stage and workshop areas are old style sprinklers over 50 years old. NFPA 25 (referenced by the Fire Code) as well as NFPA 13 mandate that these sprinklers must be spot tested to confirm adequate operation. While not all sprinklers were counted, it appears that there are between 70 and 100 old style sprinklers.
3. Most sprinklers in the seating and attic areas appear to be dated 1974 so are not within the replacement requirement. Similarly, the classroom area are also newer. Some newer sprinklers were noted in corridors.
4. There is poor sprinkler coverage at the upper balcony area near the old control box.
5. One additional sprinkler is required in the lounge area beside the workshop.
6. A few sprinklers are more than 6" below joists.
7. A single zone protects the entire Theatre, There are no alarm devices in the Theatre.

Fire safety item unrelated to sprinklers:

8. The proscenium fire curtain requires manual action to lower it. A common option if it is desired to replace it is

Option 1 Recommendations

A) A new water entry is required for the Theatre. In reviewing the basement / crawl space area, the water entry location would likely be best in the crawl space under the classroom area SW of the abandoned exit corridor at the SE corner of the Theatre. It is likely that this corridor will be used for the electrical services but the new water connection could also be in this corridor, although the feed to the area appears to be under a raised concrete floor which would make the provision of underground piping more difficult.

B) It is standard for new water connections to be 150 mm in diameter, While a 100 mm connection may work if it can be proven to be sufficient from a hydraulic performance perspective, we recommend that a 150 mm connection be provided for common sprinkler / domestic use. . A double check backflow preventer (DCBP) would be required for the sprinkler system. The domestic connection would take off before the DCBP.

C) At least one floor zone control (FZC) including a flow switch, test and drain valve, and drain (likely to the exterior, possibly under the raised exterior concrete platform) is required.

D) The current Code requires zoning on a storey by storey basis but the stage and seating area are the main floor with mezzanines, and the basement is relatively small. Only a single zone would be provided with this option at this time.

E) A new feed from the new FZC to the existing water supply in the basement area under the crawl space under north corridor is required. This feed appears to be approximately 150 mm in size so unless it can be demonstrated that a smaller size works with hydraulic calculations then the new feed should be 150 mm also. Note that smaller pipes feed the sprinkler system.

F) The Old Style older sprinklers could be tested but we strongly recommend against this. Collection and testing would cost a substantial amount of money and negative test results would necessitate replacement in any event and also require periodic testing throughout the life of the building. We recommend that the old style sprinklers be replaced with modern fast response sprinklers rather than testing.

G) Lines to the gym to the north will have to be removed and capped off.

Option 2

I) Approximately 6 additional or relocated sprinklers would be required for proper coverage.

II) Approximately 10 sprinklers that are slightly more than 6" below the joists would need to be raised. Note that not all areas were closely reviewed.

While not part of the Scope of work:

III) The stage area was installed using a pipe schedule system since hydraulic calculations were not in NFPA when the system was installed. The riser piping feeding it is relatively small and if hydraulic calculations were undertaken it may not work. However, it appears to have complied when originally installed so is deemed to comply now.

IV) While the basement is not zoned separately from the rest of the Theatre, it is very small and, in my opinion, does not warrant a separate zone. The basement is essentially just under the stage; the remaining lower areas are

V) Most of the piping is not seismically braced. There is minimal purpose in upgrading this if the building itself is not seismically capable of withstanding a major earthquake but some consideration about this is warranted depending on the seismic capabilities of the building.

We trust that you find the following in order, but should you have any questions, please do not hesitate to contact our office.

Yours very truly,
Murray Johnson Engineering Ltd.

Per:
Murray Johnson, M.Sc., P.Eng., CP

NW-Massey Theatre-15208-J09.wpd