

The Corporation of the City of North Vancouver
Invitation to Tender - Fire Hall 1 Dormitory Renovations



Invitation to Tender

Fire Hall 1 –Dormitory Renovations

165 East 13th Street, North Vancouver, BC

Date of Issuance: September 17, 2024
Closing Time: 4:00 pm (Local Time) Thursday, October 24, 2024

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1.0 INTRODUCTION

- 1.1 The City of North Vancouver (the “City”) is requesting responses to this Invitation to Tender for the Fire Hall 1 Dormitory Renovation.

The intent of this Project is to construct a larger and more user appropriate dormitory within the Fire Hall.

The Project will take place while the building remains occupied. It is of the highest importance that the building’s operations are not impacted during construction.

- 1.2 All enquiries regarding this Invitation to Tender must be directed to:

Sabine Zander, Purchasing Manager
Finance Department
City of North Vancouver
141 West 14th Street

Phone: 604-983-7392
Email: purchasing@cnv.org

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2.0 CONDITIONS AND INSTRUCTIONS TO BIDDERS

- 2.1 The following terms and conditions will apply to this Invitation to Tender. Submission of a Bid indicates acceptance of all the terms that follow and that are included in any addenda issued by the City.

The ITT Schedule is as follows:

ITT Issued	Tuesday, September 17, 2024
Non- Mandatory Site Visit	Wednesday, October 2, 2024 10am
Deadline for Submitting Questions	Friday, October 18, 2024
Closing Time – Thursday, October 24, 2024 - 4:00 pm (local time)	

(Non-Mandatory Site Visit at 165 East 13th Street in North Vancouver at 10am)

Bidders may submit questions or requested for clarifications, provided they are submitted no later than the date set out above. All questions will be responded to via Addendum.

Responses must be received on or before:

4:00 PM (Local Time), Thursday, October 24, 2024

- 2.2 City prefers electronic submission of responses. Submissions should be in the form of a single pdf file. Maximum file size is 20MB. Should the submission exceed 20MB multiple email submissions can be sent.

Submissions are to be sent by email to: purchasing@cnv.org

1. In the “Subject Field” enter: “Fire Hall 1 - Dormitory Renovations”.
2. Attach the file in .PDF format and Send (ensure you receive an email confirmation to confirm upload is complete).

Submissions shall be deemed to be successfully received when displayed as new email in the in-box of the City email address. The City will not be liable for any delay for any reason including technological delays, or issues by either party's network or email program, and the City will not be liable for any damages associated with Submissions not received.

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If there is no ability to submit electronically, a paper copy of the response may be submitted, on or before the closing time to:

Sabine Zander, Purchasing Manager, City of North Vancouver, 141 West 14th Street, North Vancouver, BC V7M 1H9.

Responses received after the closing time will be disqualified and no evaluation of that response shall take place.

- 2.3 All Tenders and subsequent information or material received shall become the property of the City of North Vancouver and will not be returned. The information received will be held in confidence by the City subject to the provisions of the Freedom of Information and Protection of Privacy Act.
- 2.4 Tenders may be withdrawn by written request only, to the Purchasing Manager at any time prior to the scheduled closing time. Bidders agree that their Tender will be irrevocable for a period of forty five (45) calendar days after Closing Time. No Bidder may withdraw their Tender during this irrevocability period.
- 2.5 The lowest or any Tender will not necessarily be accepted. The City reserves the full right, in its sole discretion and according to its own judgment of its best interest, to reject any and all Tenders.
- 2.6 The City is under no obligation to award a contract as a result of this Invitation to Tender and reserves the right to terminate this Invitation to Tender process for any reason, at any time. The City may then do nothing, retender, sole source or complete the work with the City's own forces.
- 2.7 Bidders are cautioned to carefully read and follow the procedures, terms and conditions required by this invitation, as any deviation, omission, as well as any inaccuracies or misstatements may be cause for rejection. However, the City reserves the right, at its sole discretion, to waive minor irregularities and defects in a submission, and proceed with that bidder.
- 2.8 Except as expressly and specifically permitted in these Instructions, no bidder shall have any claim for any compensation of any kind whatsoever as a result of participating in this tender process, including accepting a noncompliant bid, and by submitting a Tender each bidder shall be deemed to have agreed that it has no claim.
- 2.9 All amendments or further Information will be published on the BC Bid website. It is the responsibility of the proponent to monitor these web sites to

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check for updates. The City will not accept questions or requests for clarification past the deadline for submitting questions as listed in 2.1.

This Invitation to Tender, any attached specifications and the successful bidder's response will form part of any contract entered into.

- 2.10 Pricing will be fixed and firm. All prices tendered are to be, in Canadian dollars exclusive of any applicable taxes, inclusive of any duty, FOB destination and include delivery charges.
- 2.11 All materials will be new. They shall be delivered, stored, handled, and applied in accordance with the manufacturer's instructions.
- 2.12 All amendments or further Information will be posted on BC Bid. It is the responsibility of the proponent to monitor the website for updates.
- 2.13 Any dispute arising from this Invitation to Tender, or subsequent agreement, will be resolved according to the laws of the Province of British Columbia.
- 2.14 Each Bidder agrees not to bring any claim against the City or any of its employees, advisors or representatives for damages in excess of the amount equivalent to the reasonable direct costs incurred by the Bidder in preparing its bid in respect of this Invitation to Tender, even if the claim is one brought based on an allegation that the City accepted a non-compliant bid, failed to properly evaluate bids, selected a bidder based on undisclosed criteria or otherwise breached a term of this Invitation to Tender.
- 2.15 Each Bidder hereby waives any and all claims against the City or any of its employees, advisors or representatives, howsoever cause, for loss of anticipated profits or loss of opportunity.
- 2.16 Declarations: Submission of Appendixes A and B – Declarations is a mandatory requirement. Bidders shall complete, sign and include these forms with their submission. Failure to submit with the Tender may result in the Tender being rejected without further consideration. Appendixes A and B include Declaration of Environmental Practices and Declaration of Social Practices.
In addition to completing Appendixes A and B, the Proponent is encouraged to provide information regarding its organization's particular environmental and/or social impacts. The Proponent may wish to provide a statement, including any supporting documentation, that addresses how its organization minimizes: waste emissions, the use or generation of harmful substances, the use of non-renewable resources and, substitutes a renewable resource or recycled content and post consumer waste, and/or maximizes energy and materials efficiency, and/or involves actions which contribute to social

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development or assists in the conservation or development of social capital either in this community or elsewhere

- 2.17 Supplier Code of Conduct: Bidders are expected to be aware of the requirements of the City's Supplier Code of Conduct and to comply. The code of conduct is part of the City's Sustainability Purchasing Policy found here <https://www.cnv.org/city-services/bid-notices/sustainable-purchasing-policy>
- 2.18 Proponents should be aware that the City of North Vancouver is a Living Wage Employer, and expects it's contractors and service providers to comply and meet the requirements of the Living Wage for Families Campaign. <https://www.cnv.org/Your-Government/Sustainability-in-the-City/Living-Wage>
- 2.19 Fair Wage: The City of North Vancouver has a Fair Wage Policy, which is a condition of contract for all ICI (Industrial Commercial, Institutional) construction activities greater than \$250,000. The Policy states that all employees of any Contractor and Sub-contractors working on City ICI contracts with an estimated value of \$250,000 or more is subject to paying labor rates as per the published Fair Wage Schedule. Contractors will, as a minimum, pay wages as per the policy and the current Fair Wage Schedule found here <https://www.cnv.org/city-services/bid-notices/fair-wage-policy>
- 2.20 The successful proponent will enter into a CCDC 2 – 2008 Stipulated Sum Contract as modified by Supplementary General conditions. Submission of a response indicates acceptance of all the conditions unless specifically noted in a statement of departures.

3.0 GENERAL CONDITIONS

- 3.1 The successful proponent shall be required to carry insurances stipulated in GC 11.1 of the CCDC 2 2008 which includes not less than five (5) million dollars General Liability and Broad Form Property insurance, naming the City of North Vancouver and the Consultant as insureds.
- 3.2 The successful contractor shall be required to show evidence of Worksafe BC compliance by providing a 'clearance' letter issued by Worksafe BC, and supply evidence of a valid City of North Vancouver business license.
- 3.3 Within 7 days of award, the successful contractor must submit a Performance Bond and a Labour and Material Bond each in an amount equal to 50% of the estimated price. The bonds must be issued by a surety licensed in British Columbia and acceptable to the City of North Vancouver. The costs of the bonds must be included in the tendered fixed price. A consent of surety must be included with the Tender price.

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- 3.4 The successful contractor must comply with the WorkSafe BC Occupational Health and Safety Regulation, and assumes the responsibility of the “prime contractor” as outlined in Part 2 of the Workers Compensation Act SBC 2019 c1, and all applicable regulations, orders and policies and orders made under the Public Health Act and its regulations, including those relating to COVID and applicable workplace safety requirements. Specifically, the contractor will be responsible for providing notice of project when required and ensuring that the general duties of employers are upheld by all persons at the job site. The successful contractor shall attend a pre-construction site meeting where the contractor shall:
 - Provide the City with a copy of the notice of project (when required)
 - Provide the City with a copy of the prime contractors written safety program.
 - Provide the City with the name of the contractor’s qualified coordinator.
 - Request to be informed of any special hazards suspected, and take note of any site hazards the City is aware of.
- 3.5 All permits, licenses and fees (other than the Building Permit, which will be provided by the owner) are to be the responsibility of the successful contractor who shall comply with all applicable regulations of the City. For example, including but not limited to: Traffic Management Plan (TMP) and Temporary Street Use Permit (SUP).
- 3.6 It is understood and agreed by the successful contractor that the City will not be responsible for the care and custody of any materials belonging to the contractor at this jobsite.
- 3.7 The successful contractor shall supply labor and materials and equipment necessary to complete work to the fullest extent and meanings of the specifications and plans unless specifically stated otherwise.
- 3.8 This work will be subject to a ten percent (10%) holdback in accordance with the British Columbia Builders Lien Act. The holdback shall not be released until the expiry of fifty-five (55) days after substantial completion of the project, or as required by the Builders Lien Act.
- 3.9 The successful contractor shall be responsible for the maintenance of discipline and general orderliness at the site.
- 3.10 Commencement of work indicates acceptance of these conditions. Notify the Purchasing Manager of the City, in writing, prior to commencement of work of any unsatisfactory conditions.

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- 3.11 In the event of the successful contractor at any time not complying with the provision of these specifications to the satisfaction of the Purchasing Manager, the City shall be empowered to notify the contractor to discontinue the work called for by these specifications and the City shall have the right in its sole discretion to enter into a contract with some other contractor for such work. Notification for non-compliance may be effective immediately.
- 3.12 All work shall be performed in accordance with electrical, plumbing, mechanical, fire and building codes of British Columbia and trade/industry standards.
- 3.13 The successful bidder should assume that this project will be required to be completed in accordance with the City's Noise Control By-law in effect and during normal business hours. The City reserves the option of requesting or authorizing work to be performed during non-business hours should it prove advantageous for the project.
- 3.14 The successful bidder shall assume that daily presence and construction work is expected; Monday to Friday, full shift starting no later than 8:00 am. Working hours shall comply with the CNV By-Laws.

4.0 BACKGROUND

Constructed in 1971, Fire Hall 1 is a two storey plus basement facility consisting primarily of concrete/wood frame construction and minor steel elements. Main components of the building include the apparatus bay, hose tower, garage, dormitory, and office spaces. The Hall is the only fire station within the City of North Vancouver.

The Fire Hall operates 24 hours a day, seven days a week, year round. It serves as a workplace and dwelling for the first responders.

Throughout the years, the building has gone through extensive maintenance and repairs as well as some major renovations, the latest renovation being a structural upgrade in 2017. The current dormitory has not been updated. It is based in the original design concept, with an open room housing beds and lockers.

The Fire Hall now staffs more first responders than what the original design allows for, leading to the need for more beds and space.

To address the increased number of staff and the need to update the sleeping quarters to meet current day standards, the existing dormitory will be renovated and converted into 11 individual bedrooms, along with renewal of the adjacent activity room.

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Detailed design and construction documents have been prepared by the project Prime Consultant "KMBR Architects Planners Inc." and their engineering sub-consultant team. The building permit has been submitted and is being reviewed by the City. It is anticipated that it will be issued by the end of September.

5.0 PROJECT DESCRIPTION:

In order to update the sleeping quarters to meet the current day standards, the City of North Vancouver will be renovating the existing dormitory and convert it into 11 individual bedrooms. The successful proponent will undertake the renovations necessary to the dormitory to meet the current needs of the Fire Hall.

The City is seeking a construction team that is experienced in performing renovations of occupied institutional buildings. While the renovation work is in progress, firefighters will be relocated to a different building area.

The existing dormitory is on the second floor and consists of a large open room with high ceilings. The perimeter of the room is lined with built in, millwork lockers. There are also half-walls providing some privacy in select areas.

In conjunction with the renovation, the existing mechanical system is to be replaced with a new system that is dedicated to serve the renovated areas.

Contractors will not have access through the building during the renovation as to not impede building operations. Access to the construction area will be created from the rear apron on the south side of the building onto the second floor balcony and through the sliding door. This area is to be reverted into the original condition once the construction work is completed.

General Overview:

- Temporary construction hoarding and scaffolding
- Abatement and selective demolition
- Construction of interior walls and fire separations
- Removal and replacement of mechanical system
- Roofing work
- Electrical and lighting upgrades
- Data cabling and PA speakers
- Associated structural upgrades

The above is a general overview of the work. Proponents should review the above in conjunction with the Tender package, specifications, and drawings for a complete understanding of the project scope.

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Working in the Occupied Building

The City is seeking a construction team that is experienced in performing renovations of occupied institutional buildings. While the renovation work is in progress, firefighters will be relocated to a different area in the building.

The work is to be completed in a manner as not to impede regular activities in the building. Advance notice is required for any work causing high level noises.

Schedule

Due to the dwelling relocation and inconvenience to the firefighters, the schedule and sequencing are to be arranged in a manner to take the least possible time to complete the entire project.

The actual site mobilization and construction shall commence once the procurement is secured so that idle time is avoided.

Site Presence

The successful contractor shall assume that daily presence and a productive construction work with a visible progress is expected

6.0 PROJECT DELIVERABLES:

6.1 in addition to the construction work per the drawings and specifications, the successful proponent is expected to deliver the following:

- Initial project meeting with the projects stakeholders
- Project Schedule
- Construction phasing plan
- Construction hoarding plan
- Construction Fire Safety Plan
- Any additional plans/information required by the Building Department
- Weekly on-site meetings with the City representative
- Weekly construction progress reports
- Bi-weekly meetings with the consultant team and the City representative

7.0 SITE REVIEW MEETING

7.1 A non-mandatory site meeting will take place at 10:00 AM, Wednesday, October 2, 2024. (165 East 13th Street)Proponents are to meet at the front entrance of the Fire Hall. Please note, you must park off site, onsite parking is for staff and fleet only. No PPE is required for this site visit.

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8.0 TENDER PRICE

Pricing: In addition to the mandatory Sustainability Declarations, proponents must submit their Tender using the form below. The price submitted shall be inclusive of all costs, and shall be the total to complete the work outlined in this document excluding GST.

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TENDER PRICE

Project: **Fire Hall Dormitory Renovation**
165 E 13th St, North Vancouver

Proponent Identification:

Name _____

Address _____

Fax No. _____ Telephone No._____

We, the undersigned:

1. have received and carefully reviewed the ITT and the following Addenda:

Addendum No. _____ dated _____ : ____ pages

Offer:

2. to perform the services and work as follows:

Indicate the Proponent's proposed fees (excluding GST), and the basis of calculation (use the spaces provided and/or attach additional pages, if necessary) as follows (as applicable).

Having fully examined the site, existing building and all conditions affecting the Work, and having carefully read and examined the ITT documents and addenda (if any) issued, we offer to furnish all work covered by this ITT for the stipulated separate prices of:

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SCOPE:

1. Mobilization	\$ _____
2. Pre-Construction HAZMAT	\$ _____
3. Demolition, removal	\$ _____
4. Construction	\$ _____
5. Structural	\$ _____
6. Mechanical	\$ _____
7. Electrical	\$ _____
8. Fire Protection	\$ _____
9. Painting	\$ _____
10.	\$ _____
11.	\$ _____

SCOPE TOTAL: \$ _____

G.S.T. \$ _____

TOTAL: \$ _____

2. **Provide a construction schedule and completion date for the project (form attached).**
Substantial completion in weeks from notice to proceed _____
3. **Provide name and project references for subcontractors**
We confirm that the above stated prices include all applicable Federal and Provincial sales taxes and customs taxes in force at this date but exclude the Federal Goods and Services Tax (GST).

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9.0 SUBMISSION REQUIREMENTS

- Complete submission of Section 8.0, Appendix A, Appendix B;
- A corporate profile identifying office location(s), staffing levels, annual revenues, and the scope of services offered;
- Examples of recent and relevant/similar work performed showing both project cost and scope;
- Resumes of management and key personal that would perform the work. Identify who would be the City's primary contact person;
- A minimum of three references, including contact name, title and phone number;
- Examples of working in an occupied building
- Any additional relevant information that demonstrates the Contractor's capabilities and qualifications;
-

We confirm:

that the following Appendices are attached and form a part of this Proposal.

- Experience of Key Personnel;
- Proposed Schedule;
- Appendix A – Declaration of Environmental Practices
- Appendix B – Declaration of Social Practices
- Appendix C - Supplier Code of Conduct

Signature:

IN WITNESS WHEREOF a duly authorized officer(s) of the Proponent has set his or her hand this _____ day of _____, 2024.

(Name of Proponent)

(Name of Proponent)

(Signature of Authorized Signatory)

(Signature of Authorized Signatory)

(Print Name and Position of Authorized Signatory)

(Print Name and Position of Authorized Signatory)

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EXPERIENCE OF KEY PERSONNEL
(ATTACH RESUMES OF THE PROJECT MANAGER AND SITE SUPERINTENDENT
TO BE ASSIGNED TO THIS PROJECT)

Proponents should provide information on the background and experience of all key personnel proposed to undertake the Services (use the spaces provided and/or attach additional pages, if necessary):

Key Personnel (Project Manager and Superintendent at minimum)

Name: _____

Experience: _____

Dates: _____

Project Name: _____

Responsibility: _____

Dates: _____

Project Name: _____

Responsibility: _____

Dates: _____

Project Name: _____

Responsibility: _____

Name: _____

Experience: _____

Dates: _____

Project Name: _____

Responsibility: _____

Dates: _____

Project Name: _____

Responsibility: _____

Dates: _____

Project Name: _____

Responsibility: _____

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PROPOSED SCHEDULE

Proponents should provide an estimated schedule, with major work item descriptions and time indicating a commitment to perform the Contract within the time specified (use the spaces provided and/or attach additional pages, if necessary). See Section 4 of this proposal call for more information.

Proponents must be available of starting the work

Milestone Dates: _____

Substantial Performance: _____

10.0 PROJECT SPECIFICATION

All work to be performed in accordance with the scope of work detailed below and the referenced Appendixes.

NOTE: Except for the Architectural Specifications, all other Specifications are on the drawings.

ARCHITECTURAL

A0.0.0	COVER SHEET, SITE PLAN, DRAWINGS LIST
A0.4.0	CODE COMPLIANCE, PLANS SECTIONS
A0.4.1	CODE COMPLIANCE, PLANS SECTIONS
A2.0.1	SECOND FLOOR DEMOLITION PLAN
A2.1.1	SECOND FLOOR PLAN
A2.3.1	ROOF PLAN
A3.0.1	REFLECTED CEILING DEMO PLAN
A3.1.1	REFLECTED CEILING PLAN
A4.3.1	BUILDING SECTIONS
A7.0.0	INTERIOR ELEVATIONS

STRUCTURAL

S1.00	GENERAL NOTES
S2.00	SECOND FLOOR - PLAN
S2.01	ROOF LEVEL- PLAN
S3.01	SECTION AND DETAILS

MECHANICAL

M1.0	COVER PAGE
M2.0	SECOND FLOOR PLAN HVAC DEMOLITION
M2.1	ROOF HVAC DEMOLITION
M3.0	SECOND FLOOR HVAC CONSTRUCTION
M3.1	ROOF HVAC CONSTRUCTION
M3.2	SECOND FLOOR SPRINKLER CONSTRUCTION
M4.0	DETAILS
M5.0	MECHANICAL SCHEDULES

ELECTRICAL

E0.0	COVER PAGE, AND LEGEND.
E1.0	DETAILS

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E2.0	EXISTING ELECTRICAL LAYOUT
E2.1	REVISED LIGHTING LAYOUT
E2.2	REVISED POWER & SYSTEMS LAYOUT
E2.3	ROOF PLAN ELECTRICAL LAYOUT
E3.0	SPECIFICATION
E3.1	SPECIFICATION

11.0 EVALUATION

- 11.1 The City will evaluate responses based upon, but not limited to, the following from the Bidder (General Contractor and Sub-Contractors):

Quality, clarity, and measurability of the proposal	10%
Total cost	35%
Provided proposed work program and schedule and availability to commence the project on immediately after contract signing	25%
Provided project experience and references	10%
The project team and specifically the Superintendent's experience with similar projects	10%
Experience working in occupied buildings	10%
	100%

- 11.2 Proposals will be reviewed and evaluated by a selection committee comprised of City Staff and project consultants. During the evaluation process any or all of the proponents may be invited to give written or oral presentations and /or participate in interviews with the committee.

12.0 CONTRACT AWARD

- 12.1 After selection of a preferred proponent the City may request negotiations, which could include discussion of the terms and conditions in the contract and minor modifications of scope and price. Following which a signing of contract documents and the awarding of a contract will be made by the Purchasing Manager.
- 12.2 If the preferred proponent and the Purchasing Manager cannot agree on contract language in the contract document, the process will be terminated, no purchase order will be issued and the City will begin negotiations with the next preferred proponent.

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APPENDIX A
DECLARATION OF ENVIRONMENTAL PRACTICES
(must be submitted with your proposal)

The City of North Vancouver expects that each Proponent has and will comply with any applicable legislation pertaining to the environment. In Canada these include: *Canadian Environmental Protection Act, 1999 (Canada)*, *Fisheries Act (Canada)*, *Transportation of Dangerous Goods Act (Canada/BC)*, *Environmental Management Act (BC)*, *GVS&DD Municipal Solid Waste and Recyclable Material Bylaw No. 181*, *GVRD Air Quality Management Bylaw No. 937* and *GVS&DD Sewer Use Bylaw No. 164*.

I declare on behalf of, _____ that:
(Corporate Name of Proponent)

- 1) The Proponent, or any person who currently holds or has, at any time within the past three years, held the following positions or titles with the Proponent: Officer, Director or Senior Manager, has not been convicted or subject to a determination by a regulatory body, administrative body or other tribunal having jurisdiction over the Proponent, of a violation, within the past three (3) years, under the legislation applicable to the Proponent, other than those set out in the table below

- 2) All the information contained herein is true, accurate, and complete, and I understand that a false declaration may result in the disqualification of the Proposal from consideration or termination of the resulting contract, without any cost or penalty to the Corporation;
 - 3) I am authorized by the Proponent to sign this Declaration, and to submit with the Proposal, on behalf of the Proponent.

NOTE: Declaration must be completed and signed by the Proponent. Failure to do so will cause the rejection of the Proposal.

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with this schedule. Each such additional page and separate document shall be signed by the Proponent.

Corporate Name of Proponent

Signature of Proponent

Date: _____

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APPENDIX B
DECLARATION OF SOCIAL PRACTICES
(must be submitted with your proposal)

The City of North Vancouver expects that each Proponent has and will comply with internationally recognized labour conventions and recommendations of the International Labour Organization (ILO), of which Canada is a member, and any applicable legislation pertaining to the work place safety, employment and human rights. In Canada these include: the Corruption of Foreign Public Officials Act (Canada), Human Rights Act (BC), the Employment Standards Act (BC) and the Workers' Compensation Act (BC).

I declare on behalf of, _____ that:
(Corporate Name of Proponent)

- 1) The Proponent, or any person who currently holds or has, at any time within the past three years, held the following positions or titles with the Proponent: Officer, Director or Senior Manager, has not been convicted or subject to a determination by a regulatory body, administrative body or other tribunal having jurisdiction over the Proponent, of a violation, within the past three (3) years, under the legislation applicable to the Proponent, other than those set out in the table below:

- 2) All the information contained herein is true, accurate, and complete, and I understand that a false declaration may result in the disqualification of the Proposal from consideration or termination of the resulting contract, without any cost or penalty to the Corporation;
 - 3) I am authorized by the Proponent to sign this Declaration, and to submit with the Proposal, on behalf of the Proponent.

NOTE: Declaration must be completed and signed by the Proponent. Failure to do so will cause the rejection of the Proposal.

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with this schedule. Each such additional page and separate document shall be signed by the Proponent.

Corporate Name of Proponent

Signature of Proponent

Date:

APPENDIX C **SUPPLIER CODE OF CONDUCT**

Introduction

This Supplier Code of Conduct (SCC) is intended to augment and expand upon the core labour conventions of the ILO as found in Appendix A of this Sustainable Buyer Policy. The SCC sets the ethical performance expectations for suppliers of goods, services or equipment to the City of North Vancouver.

The goal of the SCC is to ensure safe and healthy workplaces for the people who make products (or provide services) for the City; to partner with suppliers who share the same values for human and civil rights conditions as does the City.

Sustainability decisions are informed and guided by measures of ecology, economy and the expectations of society. The City looks to create business relationships that recognize, respect and help reach the goals of sustainability that are defined in our Official Community Plan.

The policy is not intended to interfere with collective agreements. It is the supplier's responsibility to ensure subcontractors are compliant with the SCC.

Legal and Ethical Responsibilities

City suppliers and their sub-contractors will comply with national and other applicable laws of the country of manufacture of products including those laws relating to labour, worker health and safety, and the environment. Where the provisions of law and this SCC address the same issue, the provision that is most stringent will apply.

Child Labour

City suppliers and their sub-contractors:

- will not hire people under the age of 15, (or 14 where the International Labour Organization exemption for developing countries allows) unless local minimum age law stipulates a higher age for work or mandatory schooling, in which case the higher age would apply, as defined by the International Labour Organization.
- where local laws do not exist or where they set lower standards than the ILO, the ILO standards shall prevail.
- where a child worker must be displaced, adult family members should have the opportunity to assume the child's position in order to maintain family earnings.

Forced Labour

City suppliers and their sub-contractors shall not:

- use forced, illegal, or prison labour, including indentured or bonded labour, or any form of compulsory labour to manufacture our products. (Excluding approved and recognized work programs).

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Disciplinary Practices

City suppliers and their sub-contractors shall:

- treat workers with respect and dignity. No employee shall be subject to any form of physical, sexual, psychological, or verbal harassment or abuse.
- ensure workers are free to express their concerns about workplace conditions without fear of retribution or losing their jobs. Workers should have access to a formal avenue to express concerns directly to factory management or jurisdictional authority.

Freedom of Association

City suppliers and their sub-contractors will recognize and respect that workers, without distinction, have the right to form or join trade unions of their own choosing and to bargain collectively.

Wages and Benefits

City suppliers and their sub-contractors recognize that wages are essential to meeting the basic needs of employees. Employers shall:

- pay employees, as a minimum, at least the minimum wage required by local law or the prevailing industry wages, whichever is higher, and shall provide legally mandated benefits.
- pay workers directly and provide workers with clear, written accounting of hours worked, deductions, and regular and overtime wages in a language they can understand.

Hours of Work

City suppliers and their sub-contractors shall:

- ensure that regular working hours do not exceed forty eight (48) hours per week, and that the combination of regular hours and required overtime hours do not exceed sixty (60) hours per week except in emergency circumstances.
- ensure that overtime hours are compensated either according to the law, or where the law is silent, at premium rates for hours in excess of forty eight (48) hours and that hours worked in excess of sixty (60) hours per week are on a voluntary basis.
- ensure that workers are provided at least one day off during every seven (7) day period.

Discrimination

City suppliers and their sub-contractors shall:

- consider employees for positions on the basis of their qualifications and abilities. The City will not work with suppliers who discriminate on the basis of race, gender,

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political or religious beliefs, social, ethnic or national origin, marital status, age, union affiliation, sexual orientation, or disability.

- ensure pregnant workers are assigned work tasks appropriate for, and not threatening to, their condition.

Health and Safety

City suppliers and their sub-contractors shall:

- provide a safe and healthy working environment to prevent accidents and injury to health arising out of, linked with, or occurring in the course of work or as a result of the operation of employer facilities.
- provide health and safety training appropriate for their industry.
- ensure that any living facilities provided for personnel are safe and clean and meet the basic needs of personnel.

Environmental Commitment

City suppliers and their sub-contractors shall:

- ensure all waste materials, as a by-product of production, are disposed of properly in an environmentally responsible manner, and according to the local and international laws and regulations.
- seek out leading industry practices aimed at conserving natural resources and reducing carbon emissions.
- commit to packaging standards that reduce the amount of materials used or, have a recycled content with a minimum of 30% postconsumer waste content.
- ensure compliance with third party, bona fide, local and international standards for materials and ethical conduct.

Compliance and Implementation

The City expects all its suppliers to respect its SCC and to actively do their utmost to achieve the City's standards. The City believes in cooperation and the City is willing to work with its suppliers to improve performance where necessary. The City may require that suppliers provide details on factory and production facility locations of suppliers and subcontractors and may make this information publicly available

The City reserves the right to ask for proof of compliance with all applicable labour, health, safety, and environmental laws, and may inspect working conditions, at any time (or request independent verification of compliance). Suppliers must maintain current and sufficiently detailed records to substantiate their compliance with the SCC and the City may ask that they are independently verified at the supplier's expense.

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FAIR WAGE COMPENSATION

Fair Wage Compensation Schedule is posted on the CNV site with the link

<http://www.cnv.org/City-Services/Bid-Notices/Fair-Wage-Policy>

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ISSUED FOR TENDER DRAWINGS

The following drawings are included:

Issued for Tender Drawings and Specifications KMBR Architect
Planners Inc.

- Architectural
- Structural
- Mechanical
- Electrical

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ARCHITECTURAL SPECIFICATIONS

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PRE-CONSTRUCTION HAZMAT REPORT

GENERAL NOTES**DESIGN**

1. THIS RENOVATION HAS BEEN DESIGNED IN ACCORDANCE WITH THE BRITISH COLUMBIA BUILDING CODE 2024 EDITION.
2. THIS BUILDING HAS BEEN ASSIGNED AN IMPORTANCE CATEGORY OF "POST-DISASTER". $W = 125$ $U = 125$ $I = 15$

GRAVITY LOADS

AREA	LIVE/SNOW	SUPERIMPOSED DEAD
ROOFS	3.4 kPa + (SNOW DRIFTING)	1.0 kPa
SECOND FLOOR	4.8 kPa	1.0 kPa

3. SNOW LOADS
SPECIFIED SNOW LOAD = $Is(Sa(CbCuCsCa)+Sr) + SNOW DRIFT AS PER CODE$
 $Sa = GROUND SNOW = 3.0 \text{ kPa}$ $Cb = 1.0$ $Cu = 1.0$
 $Sr = ASSOCIATED RAIN LOAD = 0.3 \text{ kPa}$ $Cb = 0.8$ $Cu = 1.0$

4. WIND LOADS:
A. REFERENCE VELOCITY PRESSURE FOR 150 WIND = 0.45 kPa.
B. MINIMUM NET FACTORED UPLIFT = 1.0 kPa.

5. SEISMIC LOADS:
 $Rd(0.2) = 1.34$ $Sa(0.5) = 0.699$ $Sa(1.0) = 0.399$ $Sa(2.0) = 0.243$
 $Rd = 0.45$
SITE CLASS C.
CALCULATED $Rd = 1.7$ (TIMBER NAILED SHEAR WALLS)

NOTE: MODIFICATIONS TO THE EXISTING PLYWOOD SHEAR WALLS HAVE BEEN DESIGNED TO MAINTAIN THE EXISTING CAPACITY OF THE SEISMIC FORCE RESISTING SYSTEM. THE EXISTING SCOPE OF WORK FOR THIS PROJECT DOES NOT INCLUDE ANY SEISMIC UPDATES

STRUCTURAL STEEL

1. DESIGN OF STRUCTURAL STEEL MEMBERS AND CONNECTIONS TO BE IN ACCORDANCE WITH CSA S16-19.
2. WORKMANSHIP AND FABRICATION TO BE IN ACCORDANCE WITH CSA S16-19.
3. WELDING TO CONFORM TO CSA U.S.A. FABRICATOR AND ERECTORS TO BE APPROVED BY THE CANADIAN WELDING BUREAU TO CSA W41. DIVISION 1 OR DIVISION 2. ALL WELDERS TO BE CWB CERTIFIED.
4. STRUCTURAL STEEL MEMBERS TO CONFORM TO THE FOLLOWING GRADES:

PROFILE	STEEL GRADES
WIDE-FLANGE	ASTM A36/A572, 345W
CHANNELS, ANGLES, & PLATES	CSA G4021, 320W
SQUARE AND RECTANGULAR HSS	CSA G4021, 350W, CLASS C OR ASTM A1085 ($F_y = 350 \text{ MPa}$)
ROUND HSS	ASTM A500, GRADE C ($F_y = 301 \text{ MPa}$)
PIPE	ASTM A33, GRADE B ($F_y = 240 \text{ MPa}$)
HIGH TENSILE BOLTS	ASTM F3125, GRADE A325 OR A490
ANCHOR RODS	ASTM F1554, GRADE 36 UNO.
DYWIDAG ANCHORS	CSA A3010, GRADE 51/60 MPa
WELDABLE REBAR ANCHORS	CSA G3010, GRADE 400W
NELSON STUDS	ASTM A29, A36 TYPE B, GRADE 345/445 MPa.
SHEET STEEL (3mm OR LESS)	AISI A1010, GRADE 310/440 MPa
STUD RAIL PUNCHING SHEAR REINFORCEMENT	ASTM A29, A36 TYPE B, GRADE 345/445 MPa.

5. SEAL HOLLOW STRUCTURAL SECTION IN THE FABRICATION SHOP PRIOR TO SHIPPING TO SITE. PROVIDE MINIMUM 6mm CAP PLATES AND PIPE SLEEVES FOR THRU-BOLTED CONNECTIONS. PLUG ALL WEEP HOLES AFTER GALVANIZING.

6. HIGH TENSILE BOLTS DESIGNED AND DETAILED ON THESE DRAWINGS TO BE APPROVED AS 33% STRENGTH AS NOTED OTHERWISE.

7. ANCHOR RODS WITH HOOKED ENDS SHALL HAVE A 90 DEGREE BEND WITH A MINIMUM INSIDE RADIUS 3 TIMES THE ANCHOR DIAMETER, AND HOOK LENGTH, FROM THE INNER SURFACE OF THE SHAFT TO THE OUTER TIP OF THE HOOK, 4.5 TIMES THE ANCHOR DIAMETER. TYPICAL EMBEDMENT DEPTH TO BE 20 TIMES THE ANCHOR DIAMETER OR 1.5 TIMES THE BOTTOM REINFORCING SLABS AND FOOTINGS UNO.

8. PROVIDE POSITIVE DEAD LOAD CAMBER TO ALL SIMPLE SPAN FLOOR BEAMS 6m IN LENGTH OR GREATER. CAMBER TO BE $L/460$ WHERE L = THE MEMBER LENGTH. MOMENT-CONNECTED BEAMS AND ROOF BEAMS TO BE UNCAMBERED EXCEPT FOR MILL CAMBER, CAN BE PROVIDED.

9. MEMBERS NOTED AS CONTINUOUS ON THE DRAWINGS SHALL HAVE FULL-STRENGTH WELD SPLICES EXCEPT WHERE A SPLICE FORCE IS SPECIFICALLY NOTED ON THE DRAWINGS.

10. SPLICES SHALL BE AT THE LOCATIONS INDICATED ON THE DRAWINGS AS APPROVED BY BUSH BOHLMAN & PARTNERS LLP.

11. BUILT-UP MEMBERS SHALL BE DESIGNED FOR FULL STRENGTH.

12. BUILT-UP MEMBERS SHALL BE FABRICATED IN THE SHOP PRIOR TO SHIPPING TO THE SITE.

13. ALL EXPOSED STRUCTURAL STEEL SHALL CONFORM TO AESS CATEGORIES AS DEFINED BY THE CISC CODE OF STANDARD PRACTICE UNLESS NOTED OTHERWISE. CONNECTION DETAILS, LAYOUTS, WELDING, TIG WELDING, AND FIT-UP TO BE REVIEWED BY THE ARCHITECT FOR COMPLETION OF SHOP DRAWINGS AND APPROVED UPON COMPLETION OR ERECTION.

14. STRUCTURAL STEELWORK EMBEDDED IN CONCRETE OR SPRAY FIRE-PROOFED SHALL NOT BE SHOP PRIMED. ALL OTHER STRUCTURAL STEEL WORK IS TO RECEIVE ONE COAT OF SOLID PRIMER PAINT MEETING THE REQUIREMENTS OF CAN/CSA-A123.1-15, 100% EXTERIOR EXPOSED STEEL WHICH SHALL BE HOT-DIPPED GALVANIZED.

15. TEMPORARILY BRACE AND SHORE STEELWORK UNTIL ALL BRACING, BRIDGING, SUPPORTS AND DECKING HAVE BEEN INSTALLED. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT TEMPORARY BRACING IS ADEQUATE TO RESIST LATERAL LOADS AND PROVIDE STABILITY TO STRUCTURAL MEMBERS DURING CONSTRUCTION.

16. ALL FIELD APPLIED NELSON STUDS FOR COMPOSITE BEAMS AND DRAG LINES TO BE APPLIED AFTER DECKING INSTALLATION, WELDING THROUGH STEEL DECK IS ONLY PERMITTED WHEN USING A STUD WELDING MACHINE.

17. CONCRETE BASE PLATES OF COLUMNS WITH A NON-SHRINK, FLOWABLE GROUT WITH A 28-DAY COMPRESSIVE STRENGTH OF 50 MPa. ENSURE FULL AREA IS GROUTED. PROVIDE 25mm MIN. UNO.

18. ALL STANDARD AND TYPICAL DETAILS SHOWN ON THE DRAWINGS APPLY TO ALL STEELWORK WHETHER SPECIFICALLY REFERENCED ON PLANS OR NOT.

19. SHOP DRAWINGS OF STRUCTURAL STEELWORK TO BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION. PROVIDE LETTERS OF ASSURANCE AND SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA FOR CONNECTIONS AND WELDING DESIGNS.

20. THE GENERAL CONTRACTOR OR SHALL COOPERATE TO FACILITATE THIRD-PARTY INSPECTIONS OF THE WELDING AND STEELWORK. SEE STEEL TESTING AND INSPECTION NOTES. INSPECTIONS TO BE PAID FOR BY THE GENERAL CONTRACTOR.

NEW OPENING THRU EXISTING CONCRETE

1. PRIOR TO CUTTING OR CORING ANY NEW OPENINGS THROUGH THE EXISTING CONCRETE STRUCTURE, THE PROPOSED LOCATION OF PENETRATIONS SHOULD BE REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER.

2. PRIOR TO CUTTING NEW LOCATIONS OF PROPOSED PENETRATIONS TO BE DETERMINED BY THE USE OF GROUND PENETRATING RADAR TO DETERMINE THE PRESENCE OF EXISTING REINFORCEMENT OR SERVICES WITHIN THE STRUCTURE.

3. ALL OPENINGS SHALL HAVE CORNERS OF OPENING CORE DRILLED FIRST. DO NOT OVERCUT WITH CONCRETE SAW.

4. CORES OF HOLES SHOULD NOT OCCUR IN SLAB BANDS OR WITHIN 175mm OF EITHER SIDE OF SLAB BANDS.

5. CORING OF HOLES FOR PIPES SHOULD BE KEPT 1000mm AWAY FROM COLUMNS.

POST-INSTALLED CONCRETE ANCHORS

1. PROVIDE ANCHORS AT ALL DRILLED ANCHOR AND REINFORCING STEEL LOCATIONS INDICATED ON STRUCTURAL DRAWINGS TO DEPTHS OF EMBEDMENT INDICATED.
2. ADHESIVE TO BE HIT-HIT 1/8" V3 OR HIT-HIT 2/8" V3 INJECTION ADHESIVE. SEE NOTES ON DRAWINGS.
3. INJECTION OF ADHESIVE SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS ACCOMPANYING PRODUCT TO PRODUCE AN AIR-VOID FREE INJECTION. USE HITI PROFIS KIT FOR PROPER HOLE PREPARATION.
4. DRILLING SHALL BE PERFORMED WITH A ROTARY HAMMER DRILL AND A REVERSE SPIN DRILL WITH DUST REMOVAL SYSTEM IN ACCORDANCE WITH INSTRUCTIONS ACCOMPANYING ADHESIVE CARTRIDGES. ALTERNATE DRILLING METHODS, SUCH AS DIAMOND CORING, ARE NOT ACCEPTABLE.
5. SPECIAL CONDITIONS SUCH AS WATER SATURATED CONCRETE, WATER-FILLED HOLES, UNDERCAULK, AND OVERHEAD INSTALLATIONS MUST BE APPROVED BY THE CONTRACTOR.
6. OVERHEAD ANCHORS MUST BE INSTALLED USING THE HITI PROFIS ACCESSORIES TO ENSURE CORRECT ADHESIVE INJECTION.
7. THREADED ANCHORS TO BE HITI HAS-V-30 STANDARD UNLESS OTHERWISE NOTED ON DRAWINGS.
8. PRIOR TO CONSTRUCTION, TRUST ALL PERSONNEL INVOLVED IN THE FIELD TO SITE WITHIN THE DRAWINGS. ANCHORS SHALL BE INSTALLED IN STRAIGHT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. PROCEDURES SHALL INCLUDE INSTALLATION OF ADHESIVE RODS OR REINFORCING IN DOWNWARD, HORIZONTAL AND OVERHEAD CONFIGURATIONS. INSTALLERS TO PROVIDE PROOF OF TRAINING ON REQUEST.
9. ENGINEER TO BE NOTIFIED FOR SITE REVIEW OF DRILLED ANCHORS DURING INSTALLATION PROCESS.
10. INTENTIONALLY ROUGHEN THE INTERFACE BETWEEN POURS TO 6mm AMPLITUDE.
11. ALTERNATE FASTENING SYSTEMS PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW AND APPROVAL. IN ADDITION, SUBMIT THE FOLLOWING DATA FOR LOAD RESISTANCE, IN-SERVICE AND INSTALLATION TEMPERATURE CREEP TESTING, FREEZE/THAW TESTING, COMPREHENSIVE INSTALLATION INSTRUCTIONS, AND AVAILABILITY OF ONSITE TRAINING MUST BE INCLUDED IN PROPOSAL.
12. MECHANICAL ANCHORS TO BE HITI KWIK BOLT-TZ2, HSL-3 OR HUS EZ UNLESS NOTED OTHERWISE ON DRAWINGS.

ANCHOR DIAMETER	BIT DIAMETER	MINIMUM ANCHOR EMBEDMENT C.I.P. CONC. (U.N.O.)
10M REBAR	16	180
15M REBAR	20	250
20M REBAR	25	350
16 1/2" (16") ANCHOR	20	250
20 1/2" (20") ANCHOR	22	350

DEMOLITION OF EXISTING STRUCTURE

1. THE STRUCTURE OF THE EXISTING BUILDING HAS BEEN MODIFIED SINCE THE ORIGINAL CONSTRUCTION. THE EXISTING STRUCTURE SHOWN ON DRAWINGS IS BASED ON FAIR RECORD DRAWINGS AND WHERE POSSIBLE SITE OBSERVATIONS. VARIATIONS IN ACTUAL STRUCTURE IN THE FIELD ARE TO BE EXPECTED. BUSH BOHLMAN & PARTNERS LLP TAKES NO RESPONSIBILITY FOR THE ACCURACY OF FAIR RECORD DRAWINGS SHOWING THE BUILDING STRUCTURE THAT IS TO BE DEMOLISHED OR MODIFIED. AS CONSIDERED AS A RESPONSIBILITY OF THE CONTRACTOR TO ALIGN WITH THE EXISTING STRUCTURE PRIOR TO PERFORMING THE DEMOLITION OR OTHER WORK SHOWN ON THESE DRAWINGS. REPORT ANY VARIATIONS IN THE EXISTING STRUCTURE TO BUSH BOHLMAN & PARTNERS LLP PRIOR TO PROCEEDING WITH THE WORK IN THE AREA. THESE DRAWINGS SHOW STRUCTURAL WORK ONLY. REFER TO OTHER DRAWINGS AND ENGINEERING NOTES FOR HAZARDOUS MATERIALS AND WORK OF OTHER DISCIPLINES.
2. THESE DRAWINGS SHOW A PARTIAL DEMOLITION OF AN EXISTING BUILDING, AS WELL AS NEW WORK REQUIRED TO SUPPORT PORTIONS OF NEW AND EXISTING STRUCTURE. IN SOME CASES, NEW WORK IS REQUIRED TO BE INSTALLED BEFORE THE REMOVAL OF THE EXISTING BUILDING. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE SCAFFOLDING, SHORING, AND INSTALLATION OF NEW STRUCTURE REQUIRED TO SAFELY REMOVE THE PORTIONS SHOWN AS BEING REMOVED. DEMOLITION AND CONSTRUCTION METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR. WHERE SHORING IS REQUIRED, THE CONTRACTOR IS TO RETAIN PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA AND FAMILIAR WITH DESIGN CRITERIA FOR SHORING. PORTIONS OF THE EXISTING BUILDING ARE IN CLOSE PROXIMITY TO THE CONSTRUCTION SITE AND WILL BE OCCUPIED DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL CONDUCT WORK IN A WAY THAT DOES NOT REDUCE THE LOAD CARRYING CAPACITY OF OCCUPIED PORTIONS OF THE BUILDING OR ENDANGER THOSE USING THE CONTRACTOR'S WORK AREA. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF THE WORKING SITE. SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR.

GENERAL

1. CONTRACTOR TO COORDINATE LOCATION OF ALL CONCRETE REVEALS, RECESSES, CHAMFERS ETC. AND OTHER ARCHITECTURAL FEATURES WITH THE ARCHITECTURAL DRAWINGS.
2. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND OTHER DISCIPLINES DRAWINGS. REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
3. CONTRACTOR TO CONFIRM ALL EXISTING BUILDING DIMENSIONS AND DETAILS PRIOR TO THE START OF CONSTRUCTION AND PREPARATION OF SHOP DRAWINGS. REPORT ANY DISCREPANCIES TO THE CONSULTANT IMMEDIATELY.

SEATHING

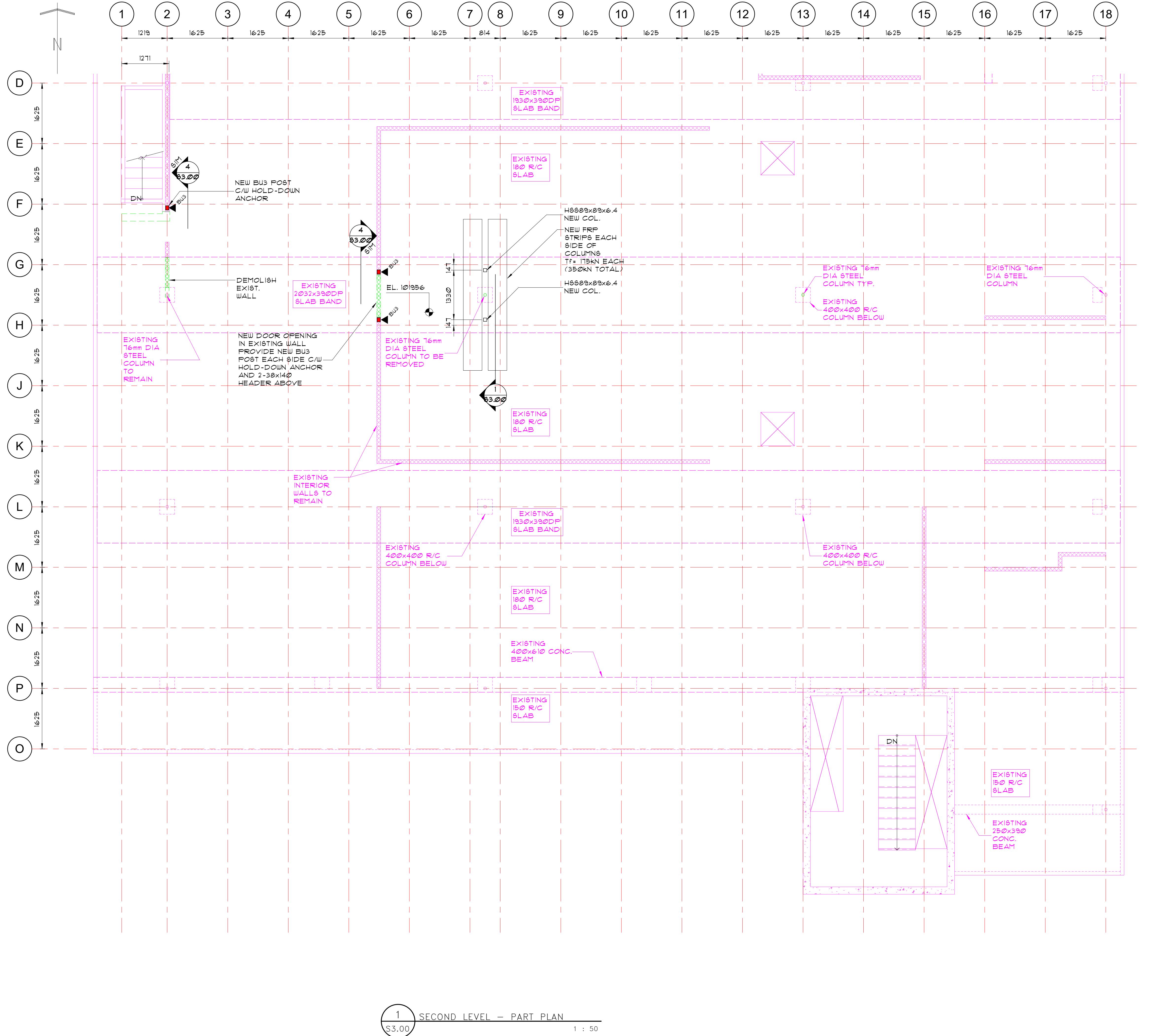
1. ROOF: DOUGLAS FIR SHEATHING GRADE (UNSanded) PLYWOOD, 13mm THICK MINIMUM OR AS NOTED.
2. FLOOR: DOUGLAS FIR SHEATHING GRADE (UNSanded) PLYWOOD, 20mm THICK OR WEYERHAEUSER EDGE GOLD PANELS 18mm THICK OR AS NOTED.
3. WALL: DOUGLAS FIR SHEATHING GRADE (UNSanded) PLYWOOD, 13mm THICK OR AS NOTED. SEE PLANS FOR LOCATIONS. SHEATH ALL EXTERIOR WALLS MINIMUM.
4. ORIENTATE FLOOR AND ROOF SHEATHING WITH FACE GRAIN PERPENDICULAR TO JOISTS. STAGGER PANEL JOINTS.

SEATHING NAILING

1. ROOF & FLOOR SHEATHING TO BE FASTENED WITH 64mm LONG COMMON NAILS AT:
 - A. 16mm OC. PANEL EDGES AND BLOCKING.
 - B. 120mm OC. AT INTERMEDIATE SUPPORT OR AS SHOWN ON DRAWINGS.
2. FLOOR SHEATHING TO BE GLUED DOWN TO SUPPORT PRIOR TO FASTENING WITH MAPEI ULTRABOND ECO 925. ALTERNATES TO BE APPROVED BY THE CONSULTANT PRIOR TO USE.
3. WALL SHEATHING TO BE FASTENED AS PER WALL SCHEDULE ON THE DRAWINGS.
4. PROVIDE DOUBLE STUDS AT PANEL JOINTS IN WALLS WHERE NAIL SPACING IS 90mm OR LESS.

LUMBER FRAMING

1. ROUGH CARPENTRY SHALL BE CONSTRUCTED IN ACCORDANCE TO THE HIGHEST INDUSTRY STANDARDS AND TO THE REQUIREMENTS OF PART 9 AND PART 4 OF THE 2024 BRITISH COLUMBIA BUILDING CODE.
2. SAWN LUMBER FOR STRUCTURAL FRAMING SHALL BE SAWN NO. 2 OR BETTER. SAWN LUMBER FOR PLATES SHALL BE SAWN NO. 1 OR BETTER.
3. ALL STRUCTURAL LOAD-BEARING WALLS, SHEAR WALLS, AND EXTERIOR WALLS TO HAVE DOUBLE TOP PLATES NAILED WITH 16mm NAILS@160mm O.C. STAGGERED. STAGGER SPLICES 1200mm MINIMUM AND NAIL WITH TWO ROWS OF 16mm NAILS@160mm O.C. STAGGERED. LAP PLATES AT WALL INTERSECTIONS.
4. PLATE JOISTS, BEAMS AND COLUMNS NOTED ON THE DRAWINGS AS TO BE BEEN MANUFACTURED BY TRUE JOIST WEYERHAEUSER BEAMS TO MEET 225 GRADE, AND COLUMNS TO MEET 180 GRADE.
5. MICROLAN LVL BEAMS NOTED ON THE DRAWINGS AS LVL TO BE MANUFACTURED BY TRUE JOIST WEYERHAEUSER BEAMS TO MEET 200 GRADE.
6. TIMBERSTRAND LSL BEAMS NOTED ON THE DRAWINGS AS LSL TO BE MANUFACTURED BY TRUE JOIST WEYERHAEUSER BEAMS TO MEET 150 GRADE.
7. FRAMING HANGERS, ANCHORS, AND CLIPS SHALL BE PRE-ENGINEERED GALVANIZED METAL FABRICATIONS TO SUIT THE LOADING AND SPAN OF THE FRAMING MEMBERS SUPPORTED. ALL SPECIFIED HARDWARE IS AS MANUFACTURED. NO SUBSTITUTE OR EQUIVALENT IS ALLOWED.
8. PLATE JOISTS, BEAMS AND COLUMNS NOTED ON THE DRAWINGS AS TO BE BEEN MANUFACTURED BY TRUE JOIST WEYERHAEUSER BEAMS TO MEET 225 GRADE, AND COLUMNS TO MEET 180 GRADE.
9. BUILT-UP SAUN LUMBER BEAMS AND POSTS SHALL BE SPIKED TOGETHER WITH 23mm COMMON NAILS IN TWO ROWS@250mm O.C. MAXIMUM IN EACH FACE.
10. ANCHOR WALLS AND FLOORS TO FOUNDATION WALLS WITH 16mm P.DA. AND 16mm BOLTS@200mm O.C. AS A MINIMUM OR AS NOTED ON THE WALL SCHEDULE. PROVIDE HOLD-DOWNS AT ENDS OF SHEATHED WALLS AS DETAILED.
11. PROVIDE SOLID BLOCKING AT ALL JOINTS BETWEEN ROOF, FLOORS, AND WALL SHEATHING FOR CONTINUITY OF SHEAR DIAPHRAGMS.
12. PROVIDE BUILT-UP POSTS UNDER BEAMS AND LINTELS TO THE FULL DEPTH OF EACH ELEVATION. NOTE ON THE DRAWINGS, BEAMS SHALL BEAR FULLY ONTO THE DEPTH OF THE POST.
13. PROVIDE SOLID BLOCKING BETWEEN JOISTS OVER BEARING WALLS AND BEAMS. TOE THE BLOCKING TO THE WALL PLATE WITH 15mm COMMON NAILS@200mm O.C. STAGGER SIDE TO SIDE AS A MINIMUM OR AS NOTED FOR WALL PLATE NAILING IN THE WALL SCHEDULE. NAIL THE PLATE TO THE BLOCKING. NAILING TO THE BLOCKING, NAIL WALL PLATES ABOVE TO THE BLOCKING.
14. PROVIDE SOLID BLOCKING IN THE JOIST SPACINGS BELOW ALL BUILT-UP POSTS TO MATCH POST DIMENSIONS.
15. ALL WALL HEADERS SHALL BE MINIMUM 200x35 UNLESS NOTED OTHERWISE AND SHALL BEAR ON A DOUBLE CRIPPLE AT EACH END.
16. PROVIDE JOIST SPACES UNDER PARTITION WALLS RUNNING PARALLEL TO JOIST SPANS.
17. TRIM OPENINGS IN FLOORS AND ROOFS WITH DOUBLE JOISTS UNLESS NOTED OTHERWISE.
18. BRIDGE FLOOR JOISTS@1000 O.C. INTERVALS OR AS REQUIRED BY THE JOIST MANUFACTURER.
19. WOOD MEMBERS IN CONTACT WITH CONCRETE OR MASONRY TO HAVE A MINIMUM 6mm FOAM GASKET MOISTURE BARRIER OR USE PRESSURE TREATED WOOD MEMBERS.
20. FASTEN STUD TO EACH SIDE OF HSS BUILT INTO STUD WALL WITH HILTIPINS@100 O.C. UNO.
21. FOR RAINSCREEN DETAILS REFER TO ARCHITECTURAL DRAWINGS INCLUDING VENTING REQUIREMENTS TO EXTERIOR WALLS AND ROOF.



L6

- INDICATES EXISTING PLYWOOD SHEAR WALLS
 - INDICATES EXISTING REINFORCED CONCRETE WALL
 - DENOTES WOOD POST ABOVE.
 - DENOTES WOOD POST BELOW.

**WALL POSTS TO BE MADE
FROM 2x STUDS. BUILT-UP
POSTS TO BE NAILED
TOGETHER AS PER BUILDING
CODE PART 9 REQUIREMENTS
WALL POSTS TO BE CONTINUOUS
DOWN TO FOUNDATIONS AND
BLOCKED AT FLOOR
FRAMING. PROVIDE MIN 'BU3'
N.O. ON PLAN**

X: BU³ - DENOTES 3-2x WALL
EMBERS. PROVIDE A BUILT-UP
COLUMN FROM A MINIMUM OF
-2x BEARING STUDS PLUS ONE
ING STUD.

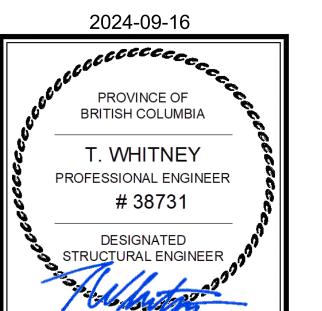
DENOTES HOLD-DOWN ANCHOR
LOCATION. SEE DETAIL ON S3.00

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ISSUED - RECORD		
NO.	DATE	DESCRIPTION
1	2022-08-31	ISSUED FOR DESIGN DEVELOPMENT
2	2023-07-13	ISSUED FOR PRICING
3	2024-01-24	PRE-TENDER REVIEW
4	2024-04-25	ISSUED FOR BUILDING PERMIT
5	2024-07-12	PRE-TENDER REVIEW
6	2024-07-26	RE-ISSUED FOR BUILDING PERMIT
7	2024-09-16	ISSUED FOR TENDER



Consulting Structural Engineers
50—1500 West Georgia St. 604 688 9861
Vancouver, BC V6G 2Z6 bushbohlman.com
GBC Permit to Practice #1000651



PROJECT TITLE:

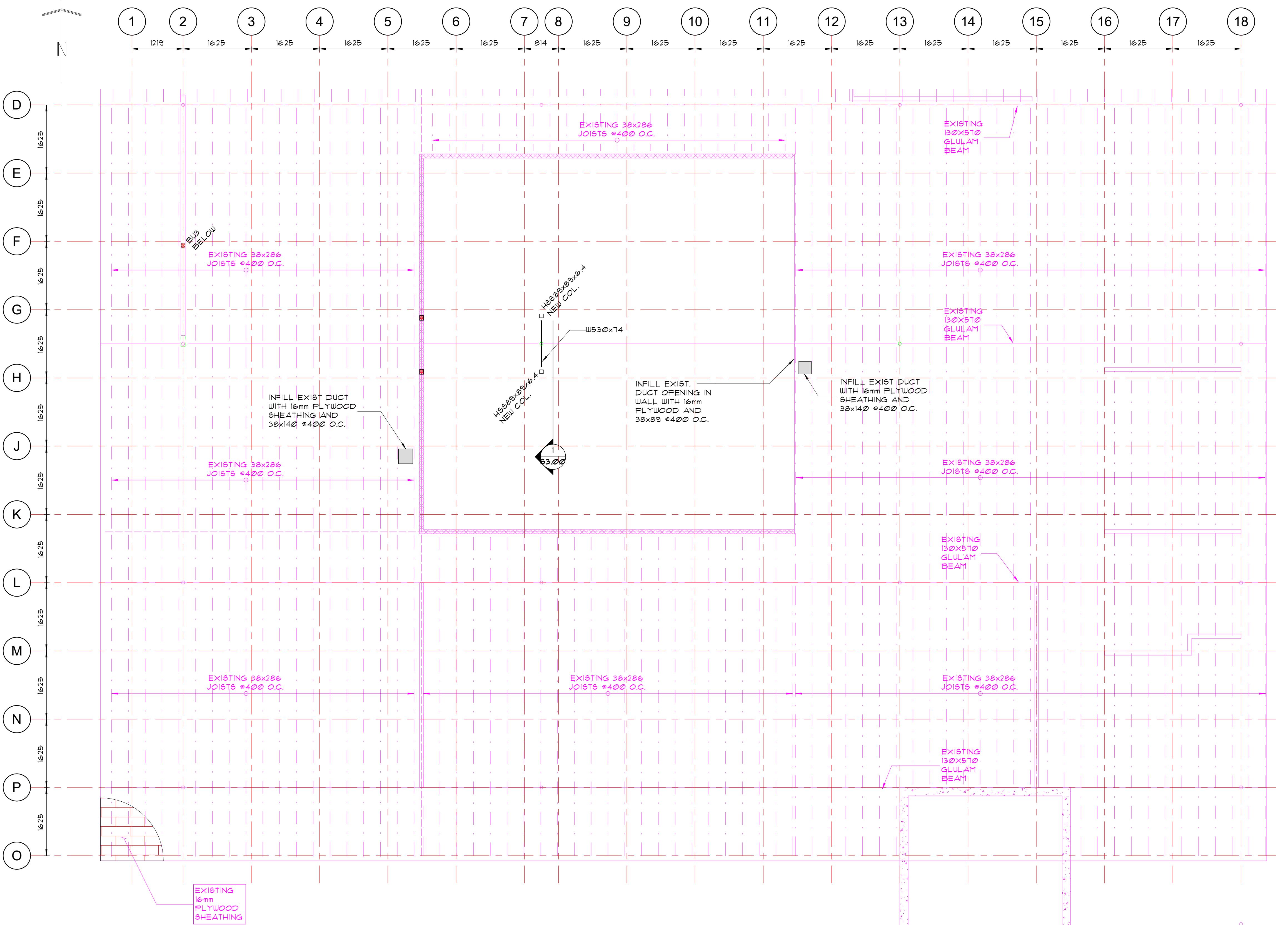
**CNV FH No. 1 -
DORMITORY
RENOVATION**

**165 EAST 13th STREET, NORTH
VANCOUVER, BC**

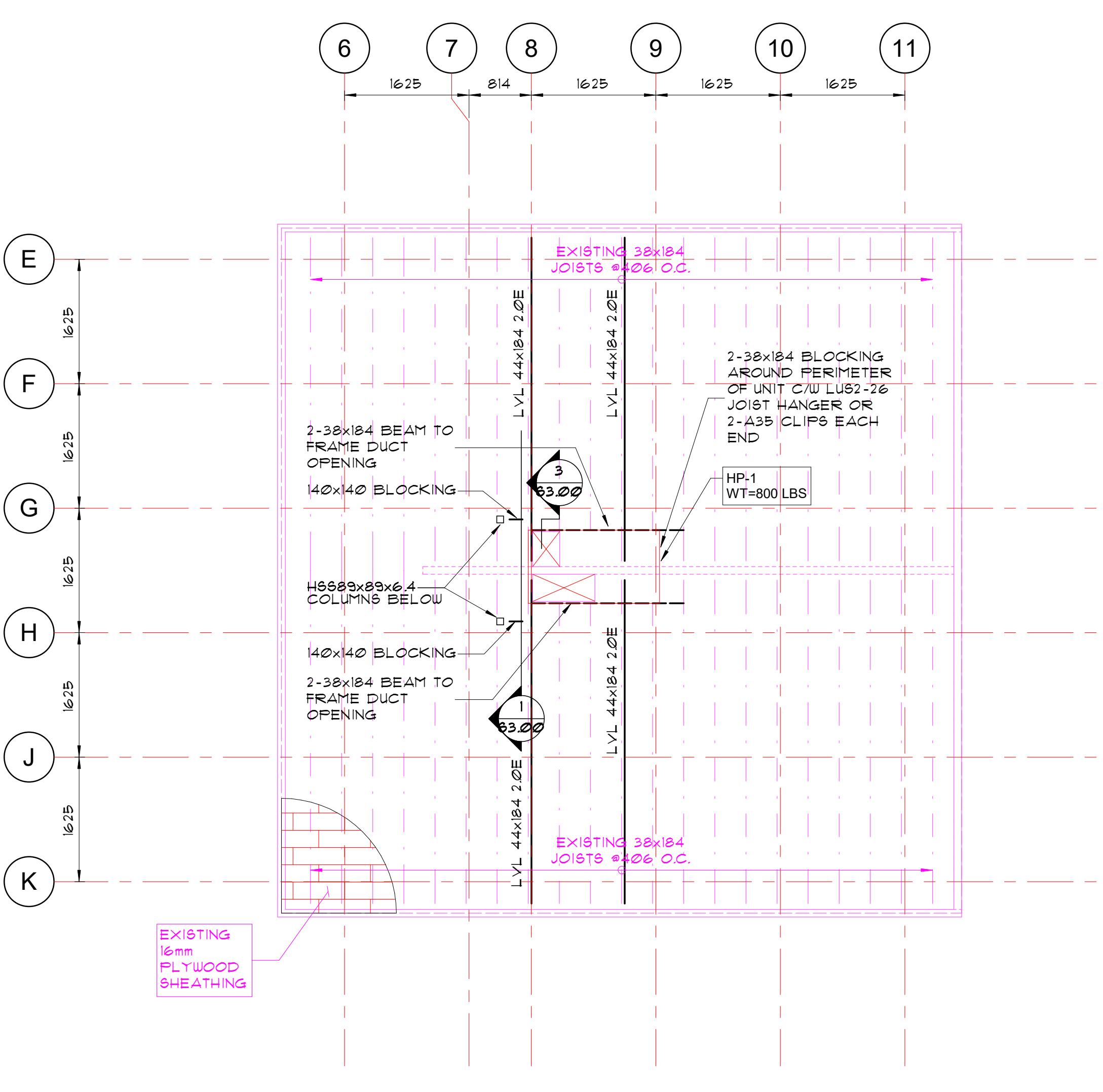
**CITY OF NORTH
VANCOUVER**

PROJECT NUMBER:
BBP 8465

DRAWING NUMBER:
S2 00



ROOF PLAN



BushBohlman & Partners

Consulting Structural Engineers
1550-1500 West Georgia St.
Vancouver, BC V6G 2Z6
604 688 9981
EGBC Permit to Practice #000651



PROJECT TITLE:
CNV FH No. 1 - DORMITORY RENOVATION

165 EAST 13TH STREET, NORTH VANCOUVER, BC

CLIENT:
CITY OF NORTH VANCOUVER

DRAWING TITLE:
ROOF LEVEL - PLAN

PROJECT NUMBER:
BP 8465

DRAWN: RR SCALE: As indicated

DRAWING NUMBER:

S2.01

1 : 50

2 UPPER ROOF PLAN

S3.00

1 : 50

S2.01

2 UPPER ROOF PLAN

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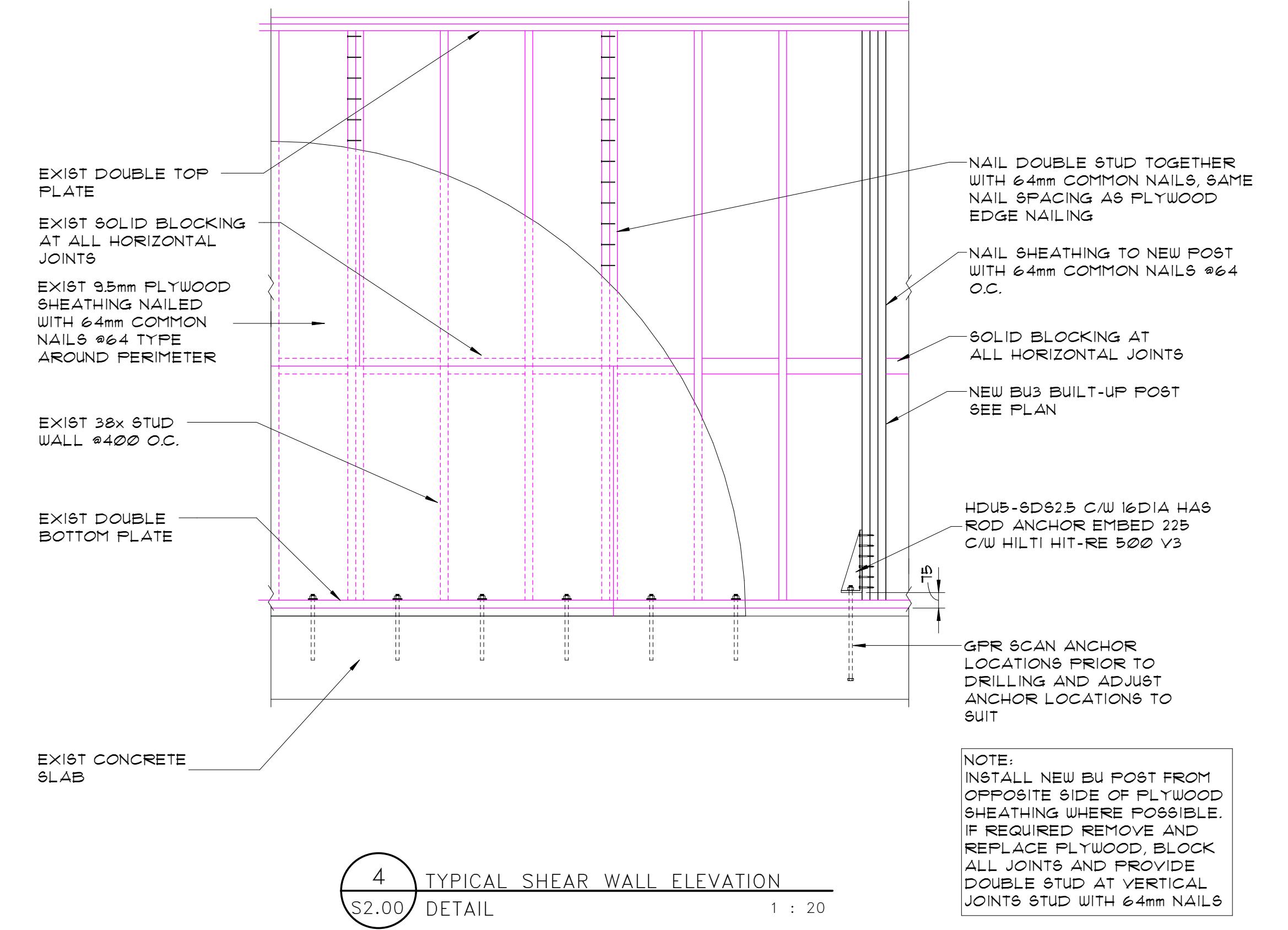
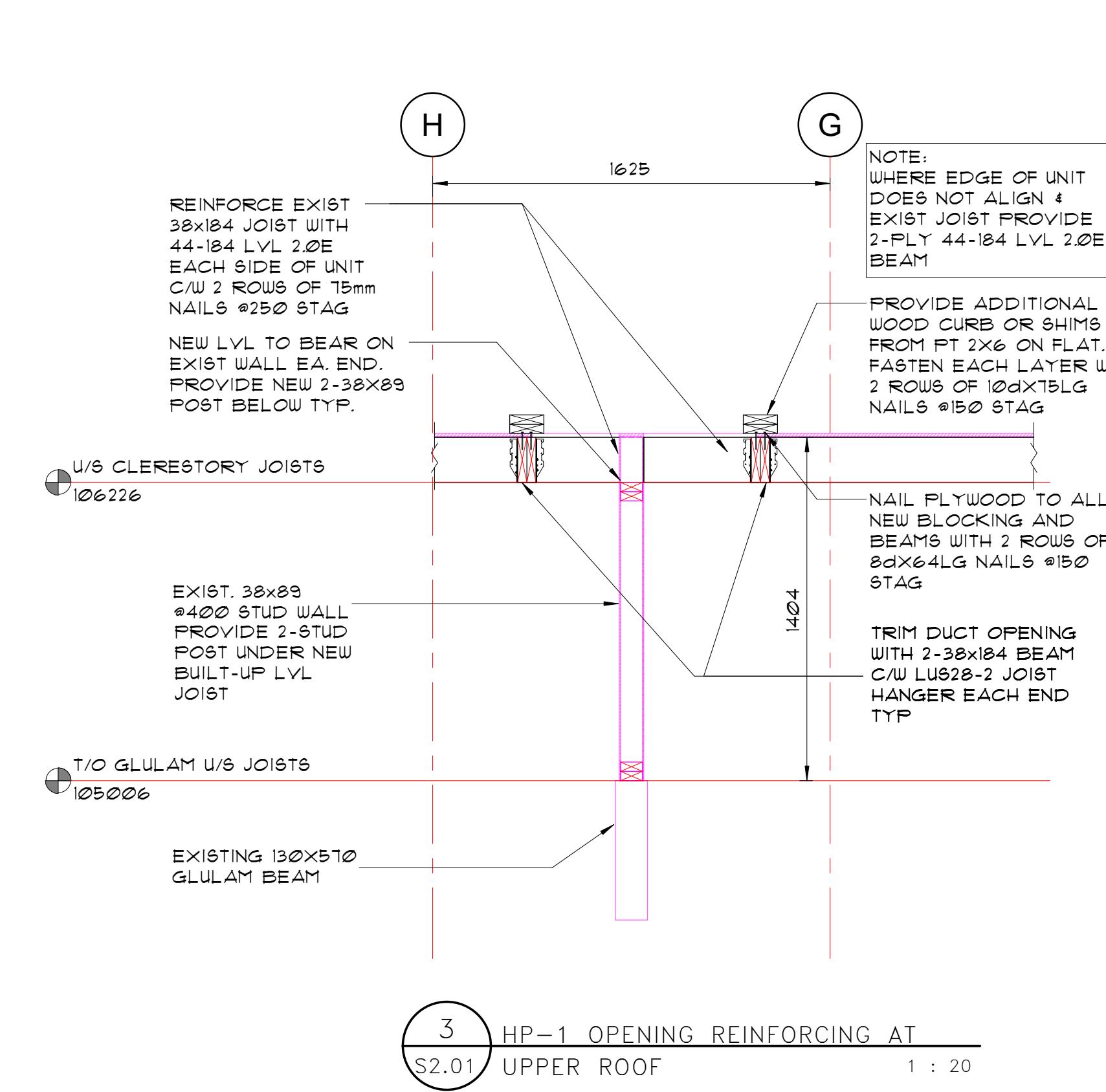
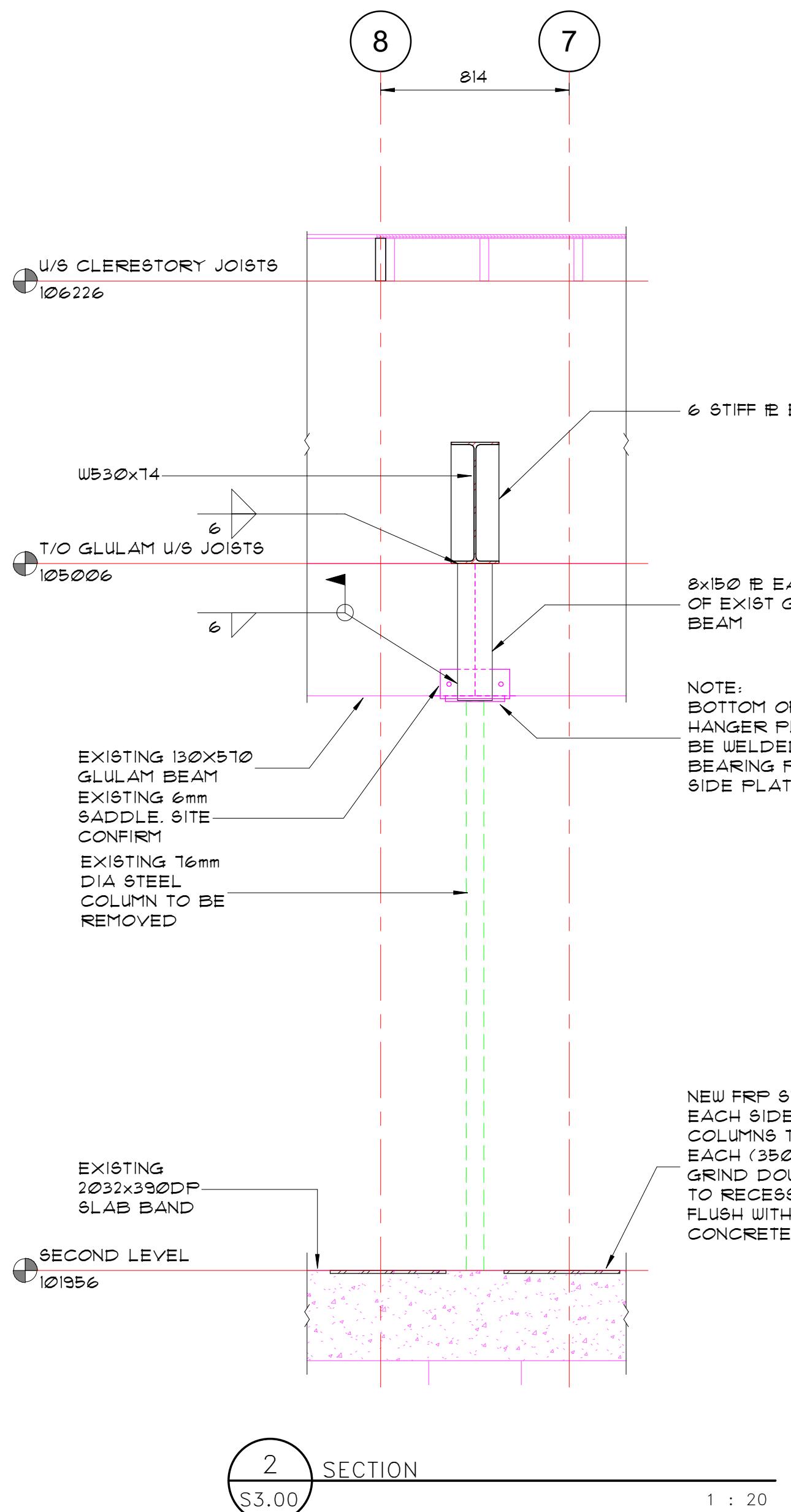
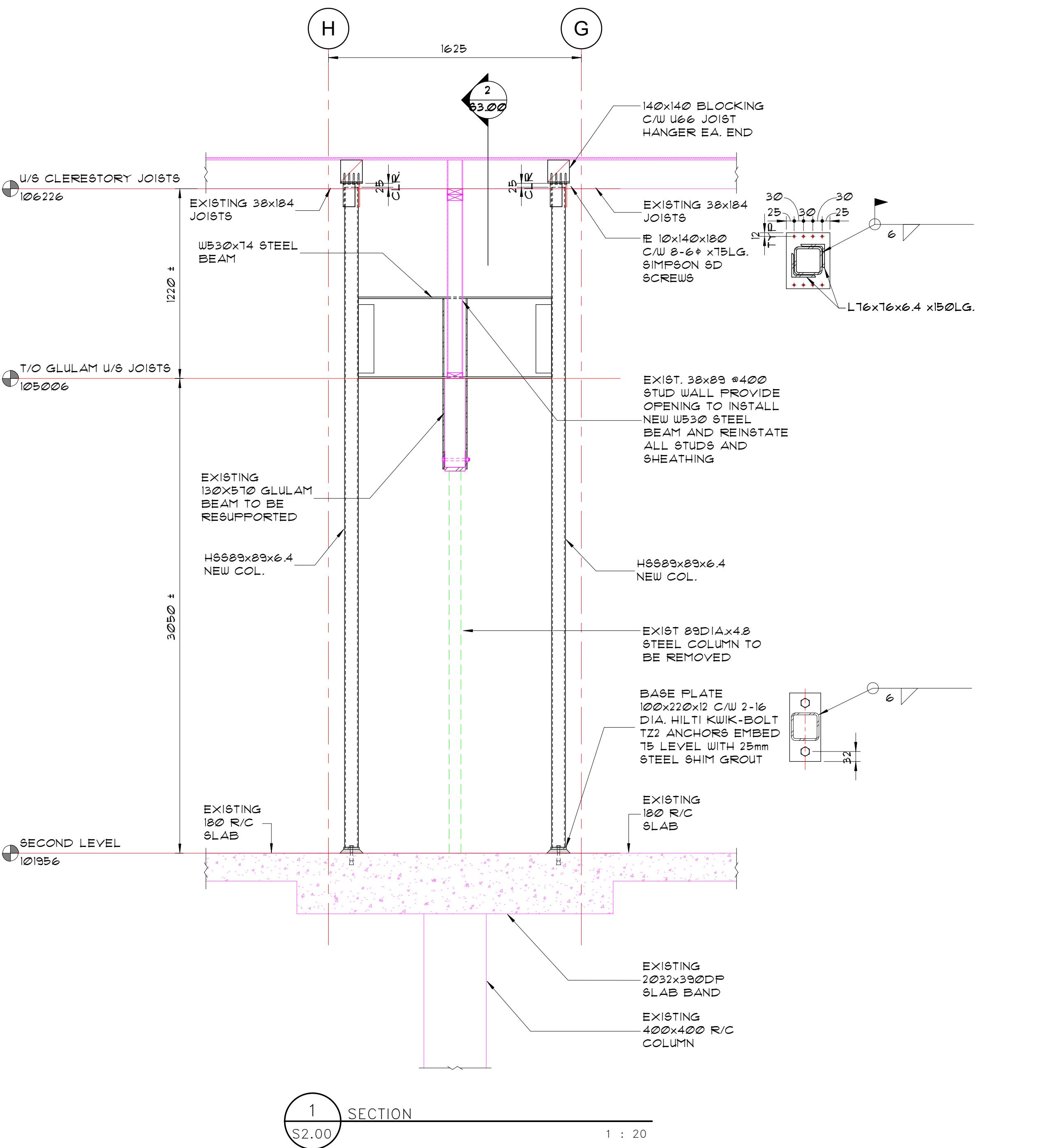
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2 UPPER ROOF PLAN

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NO.	DATE	DESCRIPTION
1	2022-08-31	ISSUED FOR DESIGN DEVELOPMENT
2	2023-07-13	ISSUED FOR PRICING
3	2024-01-24	TENDER REVIEW
4	2024-04-12	ISSUE FOR BUILDING PERMIT
5	2024-07-12	PRE-TENDER REVIEW
6	2024-07-26	BUILDING PERMIT
7	2024-09-16	ISSUED FOR TENDER

BushBohlman & Partners

 Consulting Structural Engineers
1550-1500 West Georgia St.
Vancouver, BC V6G 2Z6
604 688 9981
EGBC Permit to Practice #000051

 PROJECT TITLE:
CNV FH No. 1 - DORMITORY RENOVATION

 165 EAST 13TH STREET, NORTH
VANCOUVER, BC
CLIENT:
CITY OF NORTH VANCOUVER

 DRAWING TITLE:
SECTIONS AND DETAILS

 PROJECT NUMBER:
BP 8465

 DRAWN: RR
SCALE: As indicated

 DRAWING NUMBER:
S3.00

RE-ISSUED FOR BP SUBMISSIONPROJECT TITLE:
CNV FH NO. 1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC

CLIENT:
CITY OF NORTH VANCOUVERDRAWING TITLE:
COVER PAGEPROJECT NUMBER:
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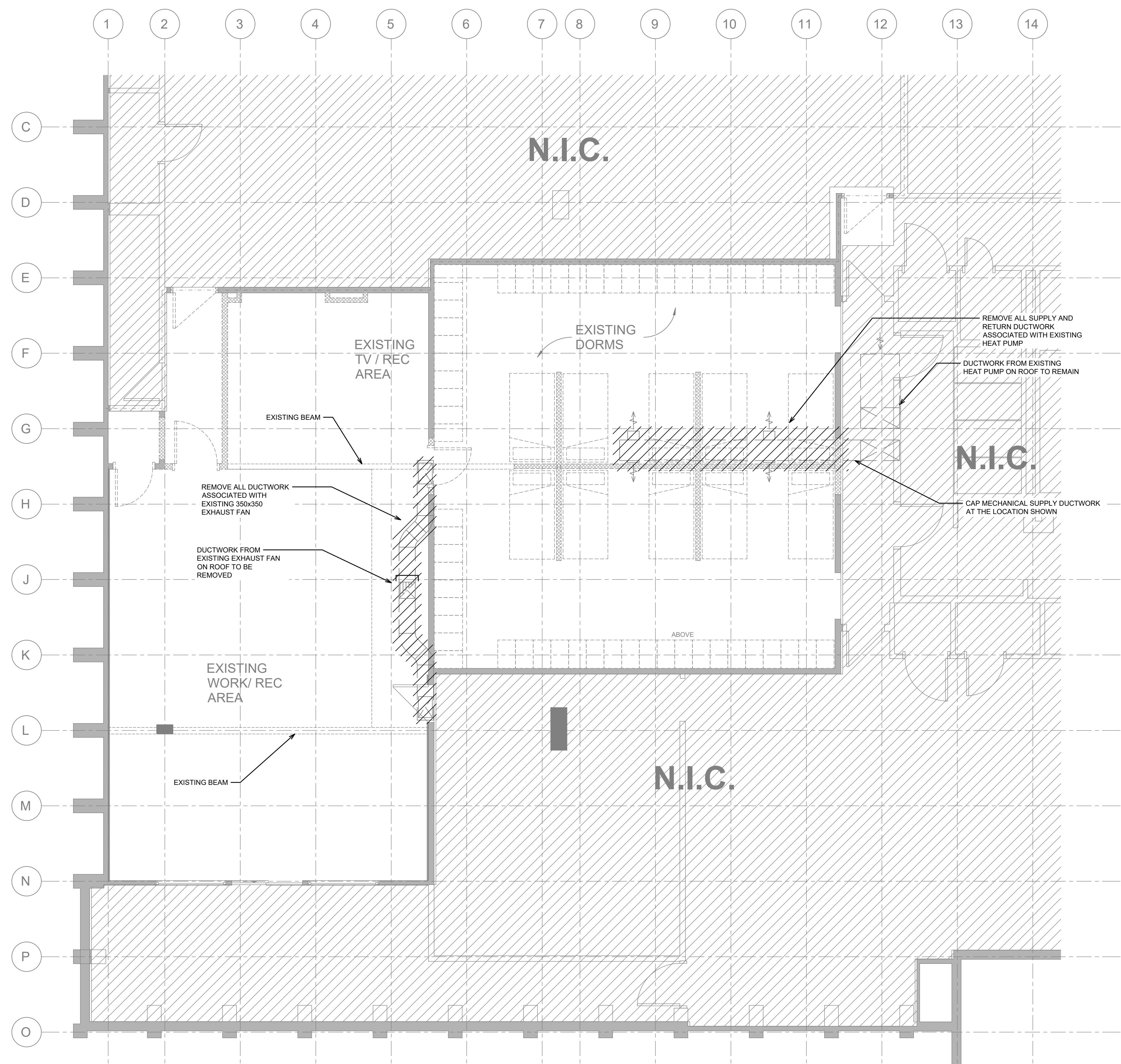
DRAWN: MLC SCALE: NTS

DRAWING NUMBER:

M1.0**MECHANICAL SPECIFICATIONS****1. GENERAL PROVISIONS**

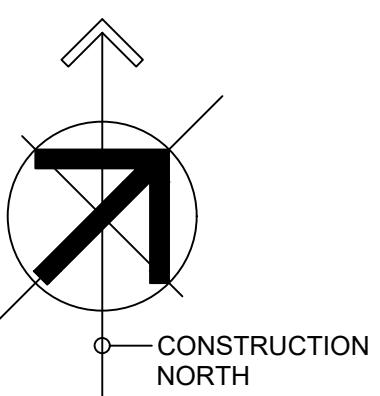
- 1.1. PERMITS AND FEES: APPLY FOR, OBTAIN AND PAY FOR ALL REQUIRED PERMITS, LICENSES, INSPECTIONS AND NEW UTILITY CONNECTION APPLICATIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL TAXES. BY WILL BE OBTAINED BY OWNER.
- 1.2. CODES CONFORM TO REQUIREMENTS OF THE LATEST BC BUILDING CODE, VARIOUS BY-LAW AND ALL OTHER AUTHORITIES HAVING JURISDICTION.
- 1.3. ALL MATERIAL INSTALLED IN NON-COMMERCIAL BUILDINGS AND IN RETAIL AIR CEILING PREMISES SHALL MEET 2020 FLAMESMOKE SPREAD/DEVELOPMENT REQUIREMENTS.
- 1.4. THE WORD "PROVIDE" SHALL MEAN "SUPPLY, INSTALL, CONNECT AND TEST".
- 1.5. **TENDER SUBMISSION**
- 1.5.1. INCLUDE ALL LABOUR AND MATERIAL REQUIRED FOR FULLY FUNCTIONING AND APPROVED MECHANICAL SYSTEMS. REFER TO OTHER SECTIONS OF THE SPECIFICATION FOR ANY ADDITIONAL REQUIREMENTS.
- 1.5.2. MECHANICAL CONTRACTOR SHALL CARRY THE COST OF ALL REQUIRED SUB-TENDERS.
- 1.5.3. THE DRAWINGS INDICATE THE INTENT OF THE DESIGN. MECHANICAL CONTRACTOR MUST VISIT THE SITE PRIOR TO TENDER BIDDING TO DETERMINE THE NEED TO DESIGN-BUILD THE EXISTING SITE CONDITIONS. ALLOW FOR TIME AND MATERIAL NECESSARY TO ACCOMMODATE INSTALLATION CHALLENGES.
- 1.5.4. REPORT TO ENGINEER OF ANY AMBIGUITIES AND DISCREPANCIES WITHIN THE TENDER DOCUMENTS MINIMUM THREE (3) DAYS PRIOR TO TENDER CLOSING. ALLOW FOR THE INSTALLATION OF THE MORE COSTLY SCENARIO OR OPTION IN THE TENDER BID.
- 1.5.5. INCLUDE ANY ALTERNATIVE ROUTING OF SYSTEMS TO ACCOMMODATE SITE CONDITIONS SUCH AS STRUCTURAL BEAMS, JOISTS, EXISTING DUCTS, EXHAUSTS, ETC. EXISTING EQUIPMENT THAT IS NOT INCLUDED IN THE TENDER BID. EXTRAS FOR TIME AND MATERIAL NECESSARY TO BE MADE FOR COORDINATE TIME AND ITEMS THAT THE CONTRACTOR SHOULD BE FAMILIAR WITH.
- 1.5.6. UNLESS NOTED OTHERWISE ON THE PLANS, GENERAL INTENT OF THE DESIGN IS TO CLEAN AND REUSE EXISTING DIFFUSERS, GRILLES, TERMINAL UNITS, THROTTLE VALVES, ETC. IN THE TENDER BID. IT IS THE CONTRACTOR'S RESPONSIBILITY TO TROUBLE MECHANICAL ITEMS THAT ARE TO BE RE-USED, RELOCATED AND/OR REINSTALLED.
- 1.5.7. ALTERNATE/SUBSTITUTION OF EQUIPMENT AND PRODUCTS OTHER THAN SPECIFIED MAY BE PROPOSED.
- 1.5.8. THE PERFORMANCE OF ANY ALTERNATE EQUIPMENT PROVIDED AS EQUAL SHALL NOT DEPART FROM THE STATED CAPACITIES, FLUID FLOW RATES, HEADS, AND ELECTRICAL POWER (WHEN SPECIFIED), ETC.
- 1.5.9. ELECTRICAL VOLTAGE AND PHASE MUST BE AS SPECIFIED. AMP DRAW MUST NOT EXCEED SPECIFIED.
- 1.5.10. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR EXAMINING THE AVAILABLE INSTALLATION SPACE AND ACCESS REQUIREMENTS OF THE PROPOSED ALTERNATE.
- 1.5.11. ACCEPTANCE OF ALTERNATE EQUIPMENT SHALL BE AT THE DISCRETION OF THE CONSULTANT AND WILL ONLY OCCUR AFTER A REVIEW OF SUBMITTED SHOP DRAWINGS AND APPROVAL BY THE CONSULTANT. PAY FOR ALL ADDITIONAL INSTALLATION COSTS INCURRED BY ALL OTHER TRADES RESULTING FROM ALTERNATES AND/OR SUBSTITUTES.
- 1.5.12. MAKE REVISIONS TO RECORD DRAWINGS, INCORPORATING ALTERNATES AND/OR SUBSTITUTES AND ALL RELATED CHANGES.
- 1.5.13. ALTERNATE EQUIPMENT AND PRODUCTS WILL NOT BE CONSIDERED SUBSEQUENT TO TENDER CLOSING.
- 1.6. **GENERAL SCOPE AND COORDINATION**
- 1.6.1. SITE AUDIT: PERFORM A THOROUGH SITE AUDIT OF THE EXISTING SYSTEM. INCLUDE ALL TRADES TO DETERMINE INSTALLATION FEASIBILITY AND COORDINATE RELOCATION OF EXISTING COMMERCIAL AND RESIDENTIAL MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS TO BECOME CONSISTENT WITH THE CONSULTANT'S REQUIREMENTS. VERIFY ROUTING OF ALL PROPOSED NEW SERVICES AND DETERMINE THE NECESSARY SHUT-DOWNS BETWEEN THE DRAWINGS AND SITE CONDITIONS. DETERMINE EXACT DIMENSIONS AND OTHER RESTRICTIVE CONDITIONS ON SITE. NOT DRAWINGS.
- 1.6.2. REPORT TO ENGINEER OF ANY EXISTING NON-CODE COMPLIANT INSTALLATIONS.
- 1.6.3. COORDINATE WITH ALL TRADES TO DETERMINE INSTALLATION FEASIBILITY AND COORDINATE RELOCATION OF EXISTING COMMERCIAL AND RESIDENTIAL MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS TO BECOME CONSISTENT WITH THE CONSULTANT'S REQUIREMENTS. VERIFY ROUTING OF ALL PROPOSED NEW SERVICES AND DETERMINE THE NECESSARY SHUT-DOWNS BETWEEN THE DRAWINGS AND SITE CONDITIONS. DETERMINE EXACT DIMENSIONS AND OTHER RESTRICTIVE CONDITIONS ON SITE. NOT DRAWINGS.
- 1.6.4. COORDINATE ALL CORE DRILLING LOCATIONS AND CHECK FOR EMBEDDED SERVICES WITH THE LANDLORD AND THE STRUCTURAL ENGINEER, X-RAY FLOOR AND FURNISH PRINTS OF THE RESULT FOR REVIEW BY THE LANDLORD AND THE STRUCTURAL ENGINEER.
- 1.6.5. FIRE STOP PIPES SHALL BE PROVIDED FOR ALL PIPES THROUGH WALLS AND FLOORS. USE 1/2" (12mm) WEIGHT STEEL PIPE WITH SMOOTH EDGE. FLOOR SLEEVE SHALL EXTEND ABOVE FINISHED FLOOR BY 2"(50mm) MINIMUM. SEALED WATER TIGHT.
- 1.6.6. FIRE STOP ALL PIPES AND DUCTS PENETRATING RATED WALLS/FLOORS WITH APPROVED AND ULC CAD 2515 LISTED MATERIALS. ACCEPTABLE MATERIALS INCLUDE: ULX, ULX-1, ULX-2, ULX-3, ULX-4, ULX-5, ULX-6, ULX-7, ULX-8, ULX-9, ULX-10, ULX-11, ULX-12, ULX-13, ULX-14, ULX-15, ULX-16, ULX-17, ULX-18, ULX-19, ULX-20, ULX-21, ULX-22, ULX-23, ULX-24, ULX-25, ULX-26, ULX-27, ULX-28, ULX-29, ULX-30, ULX-31, ULX-32, ULX-33, ULX-34, ULX-35, ULX-36, ULX-37, ULX-38, ULX-39, ULX-40, ULX-41, ULX-42, ULX-43, ULX-44, ULX-45, ULX-46, ULX-47, ULX-48, ULX-49, ULX-50, ULX-51, ULX-52, ULX-53, ULX-54, ULX-55, ULX-56, ULX-57, ULX-58, ULX-59, ULX-60, ULX-61, ULX-62, ULX-63, ULX-64, ULX-65, ULX-66, ULX-67, ULX-68, ULX-69, ULX-70, ULX-71, ULX-72, ULX-73, ULX-74, ULX-75, ULX-76, ULX-77, ULX-78, ULX-79, ULX-80, ULX-81, ULX-82, ULX-83, ULX-84, ULX-85, ULX-86, ULX-87, ULX-88, ULX-89, ULX-90, ULX-91, ULX-92, ULX-93, ULX-94, ULX-95, ULX-96, ULX-97, ULX-98, ULX-99, ULX-100, ULX-101, ULX-102, ULX-103, ULX-104, ULX-105, ULX-106, ULX-107, ULX-108, ULX-109, ULX-110, ULX-111, ULX-112, ULX-113, ULX-114, ULX-115, ULX-116, ULX-117, ULX-118, ULX-119, 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GENERAL NOTES:
1. DRAWINGS INDICATE INTENT OF DESIGN. CONTRACTOR TO PERFORM PRE-TENDER WALKTHROUGH TO SITE-VERIFY ALL EXISTING CONDITIONS. REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO TENDER SUBMISSION.



1 SECOND FLOOR HVAC DEMOLITION

SCALE: 1:50



RE-ISSUED FOR BP SUBMISSION

PROJECT TITLE:
**CNV FH No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC

CLIENT:
**CITY OF NORTH
VANCOUVER**

DRAWING TITLE:
**SECOND FLOOR PLAN
HVAC DEMOLITION**

PROJECT NUMBER:
5780

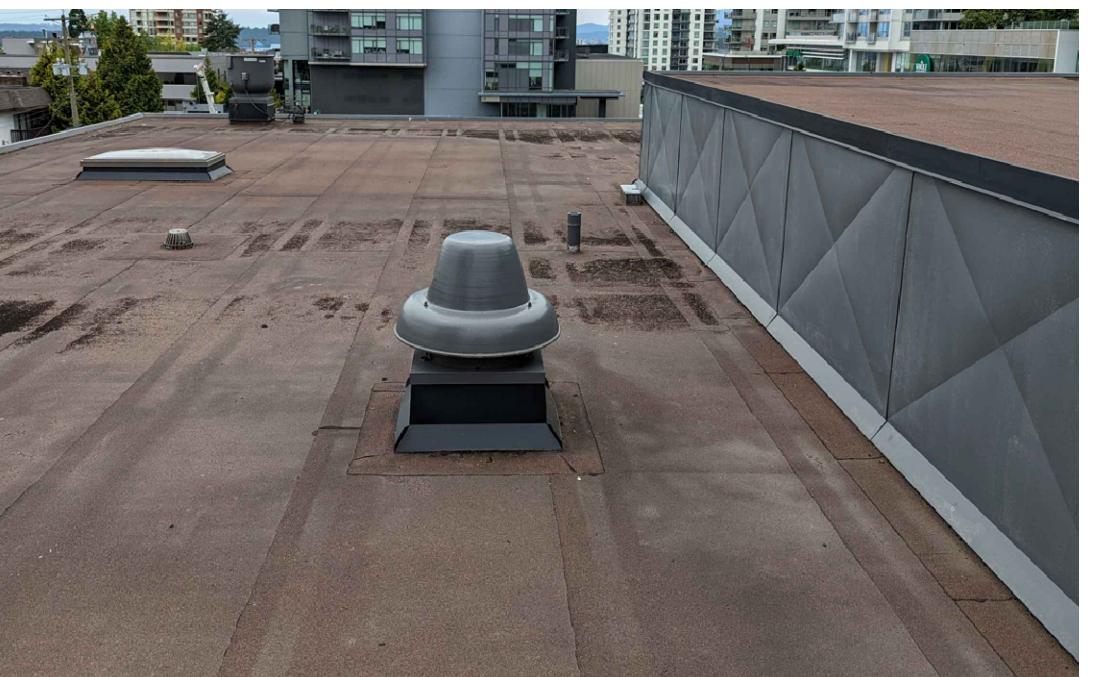
DRAWN: MLC SCALE: AS NOTED

DRAWING NUMBER:

M2.0

GENERAL NOTES:
1. DRAWINGS INDICATE INTENT OF DESIGN. CONTRACTOR TO PERFORM PRE-TENDER WALKTHROUGH TO SITE-VERIFY ALL EXISTING CONDITIONS. REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO TENDER SUBMISSION.

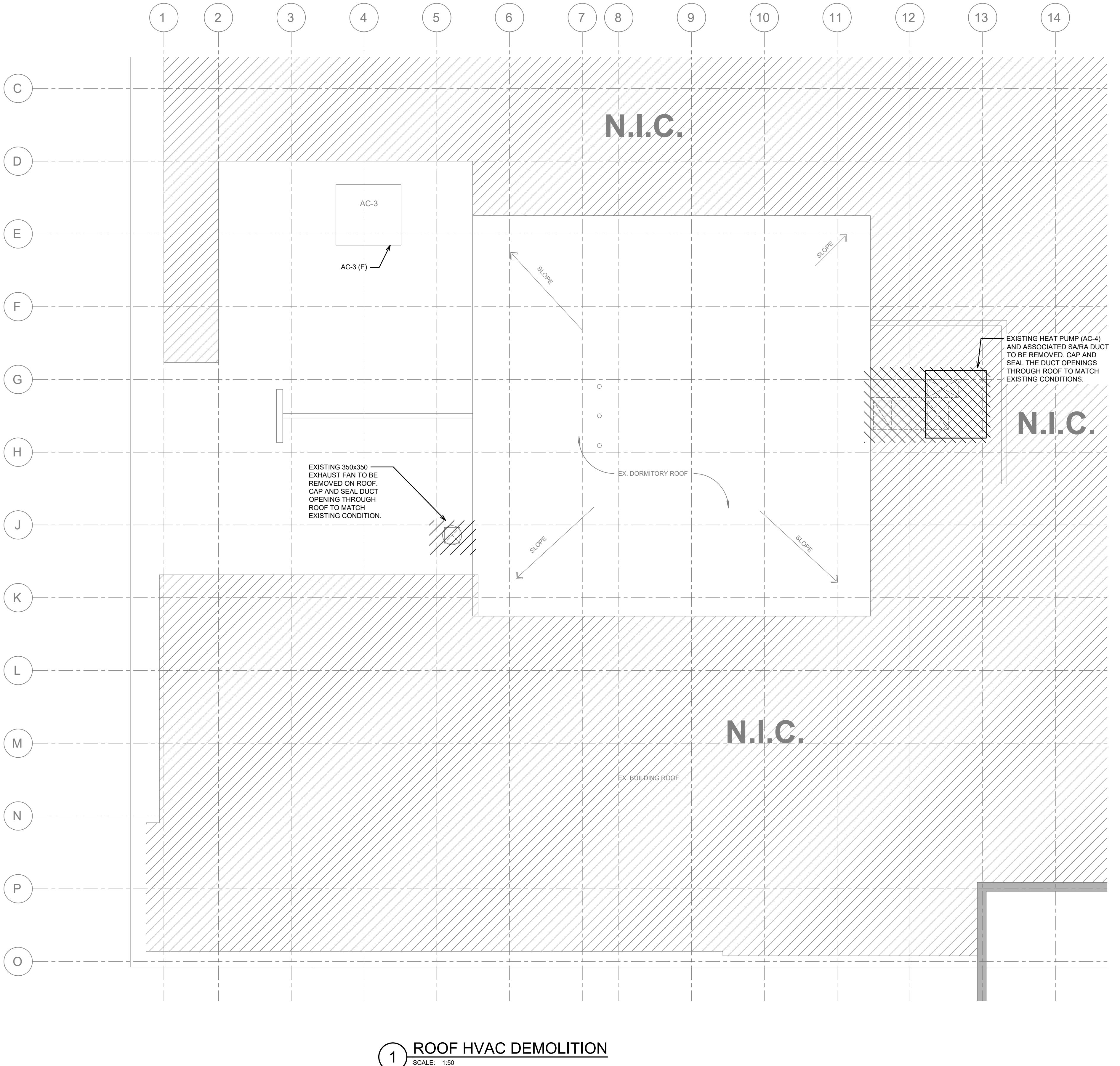
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(T) 604 - 732 - 3361 info@kmbr.com www.kmbr.com



A EXISTING EXHAUST FAN

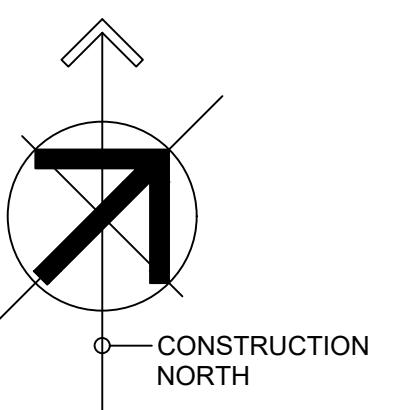


B EXISTING HEAT PUMP, AC-4



1 ROOF HVAC DEMOLITION

SCALE: 1:50



M2.1

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ISSUED - RECORD		
NO.	DATE	DESCRIPTION
1	25 APR 2024	ISSUED FOR BP
3	14 AUG 2024 16 SEP 2024	RE-ISSUED FOR BP RE-ISSUED FOR TENDER

**RE-ISSUED FOR BP
SUBMISSION**

PROJECT TITLE:
**CNV FH No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC

CLIENT:
**CITY OF NORTH
VANCOUVER**

DRAWING TITLE:
**ROOF HVAC
DEMOLITION**

PROJECT NUMBER:
5780

DRAWN: MLC SCALE: AS NOTED

DRAWING NUMBER:

M2.1

GENERAL NOTES:

- DRAWINGS INDICATE INTENT OF DESIGN. CONTRACTOR TO PERFORM PRE-TENDER WALKTHROUGH TO SITE-VERIFY ALL EXISTING CONDITIONS, REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO TENDER SUBMISSION.
- PROVIDE FIRE DAMPERS FOR ALL NEW DUCTWORK PENETRATING FIRE RATED ASSEMBLIES (IF APPLICABLE).
- RE-CALIBRATE AND VERIFY THE OPERATIONS AND POSITIONS OF EACH ZONE DAMPERS.
- ALL NEW DUCT BRANCH CONNECTIONS TO BE EITHER TOP OR SIDE TAKE-OFF FROM THE MAIN BRANCH.

CONTROLS SEQUENCE OF OPERATION:

DORMITORIES (HP-1):

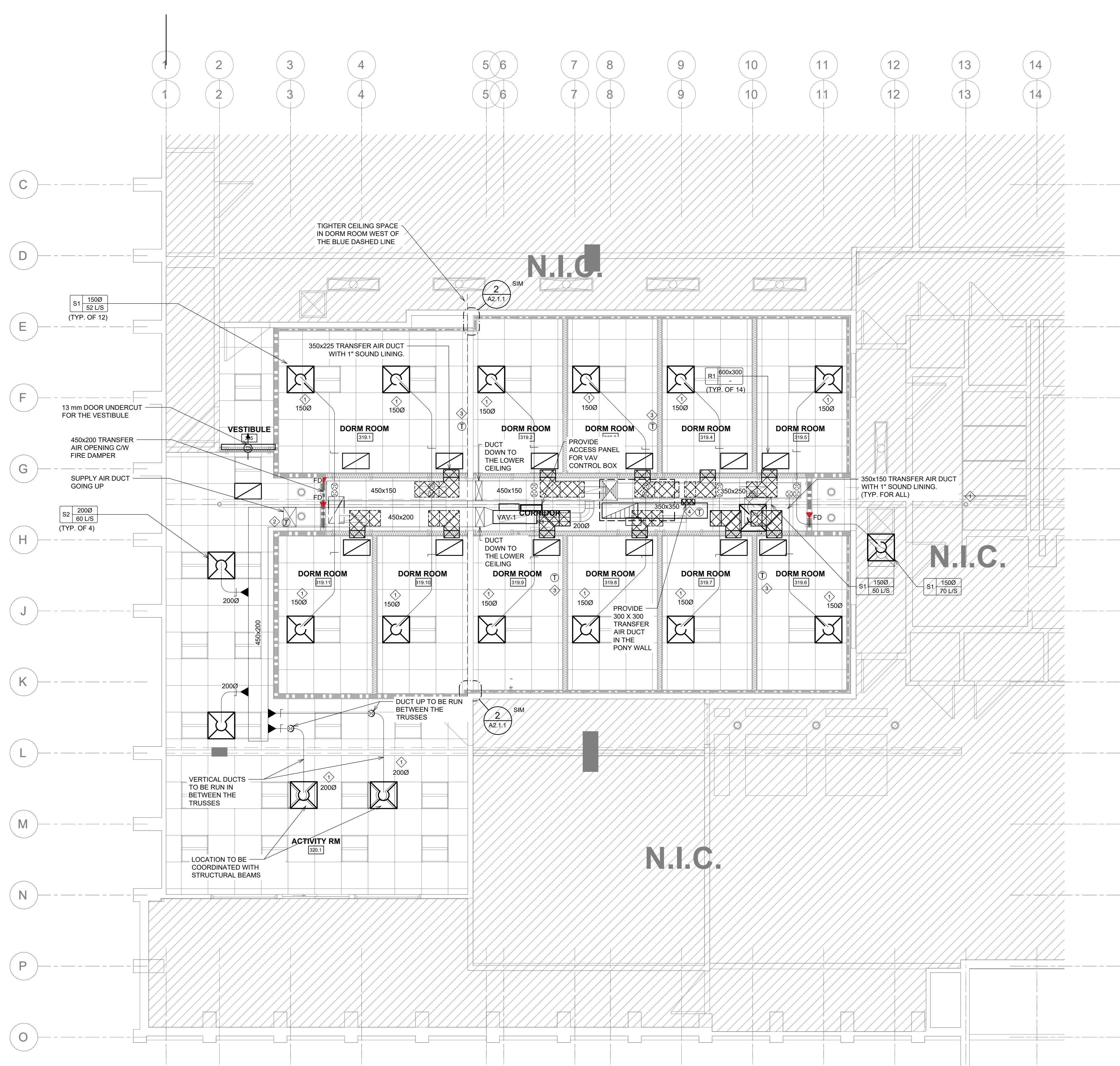
- SPD DIFFUSERS PROVIDE HEATING AND COOLING BASED ON 4 CONTROL THERMOSTATS IN DORM ROOMS. CONTROL MUST BE CAPABLE OF OPERATING BOTH HEATING AND COOLING.

HEATING MODE:

- SPD DIFFUSER TO OPERATE BETWEEN FROM 18°C TO 20°C.
- SPD DIFFUSER MUST OPERATE ON MAXIMUM SETPOINT.

DRAWING NOTES

- ① DUCT RUN IN BETWEEN JOISTS.
- ② TEMPERATURE SENSOR FOR VAV-1
- ③ TEMPERATURE SENSOR FOR DORM ROOMS
- ④ TEMPERATURE SENSOR IN RETURN DUCT



1 SECOND FLOOR HVAC CONSTRUCTION

**RE-ISSUED FOR BP
SUBMISSION**

PROJECT TITLE:
**CNV FH No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC

CLIENT:
**CITY OF NORTH
VANCOUVER**

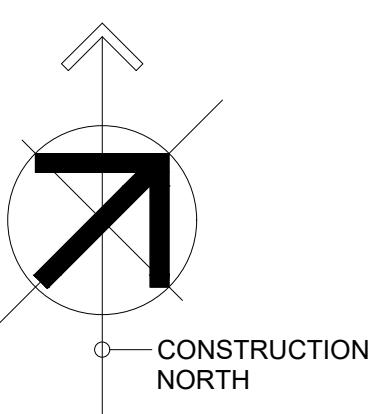
DRAWING TITLE:
**SECOND FLOOR HVAC
CONSTRUCTION**

PROJECT NUMBER:
5780

DRAWN: MLC SCALE: AS NOTED

DRAWING NUMBER:

M3.0



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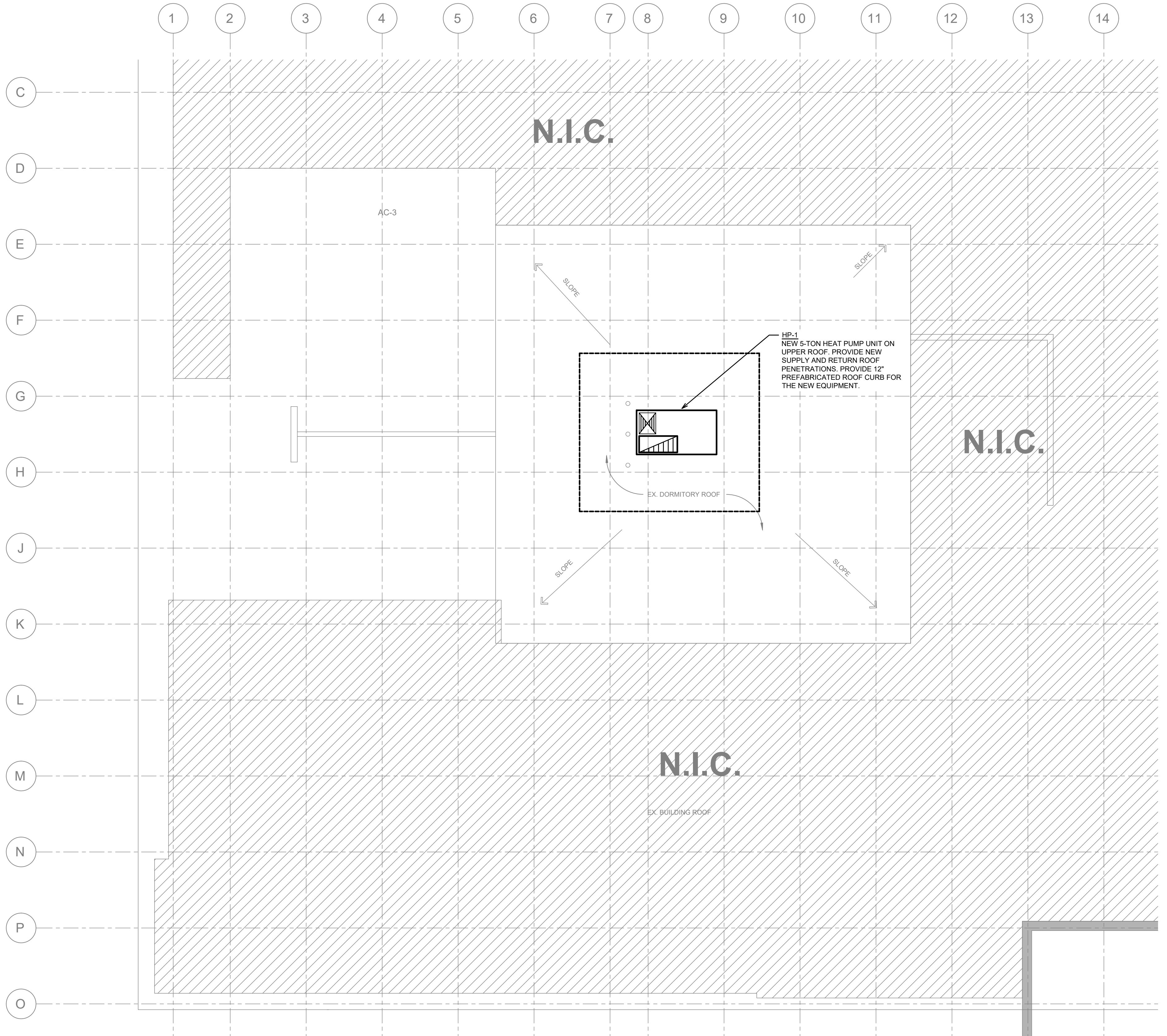
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NO.	DATE	DESCRIPTION
1	25 APR 2024	ISSUED FOR BP
2	14 AUG 2024	RE-ISSUED FOR BP
3	16 SEP 2024	RE-ISSUED FOR TENDER

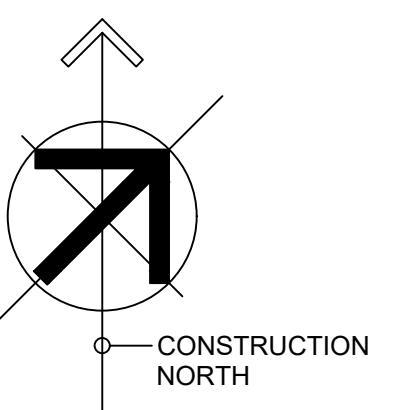
GENERAL NOTES:
1. DRAWINGS INDICATE INTENT OF DESIGN. CONTRACTOR TO PERFORM PRE-TENDER WALKTHROUGH TO SITE WHEREVER EXISTING CONDITIONS, REPORT ANY DISCREPANCIES TO ENGINEER PRIOR TO TENDER SUBMISSION.

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① ROOF HVAC CONSTRUCTION



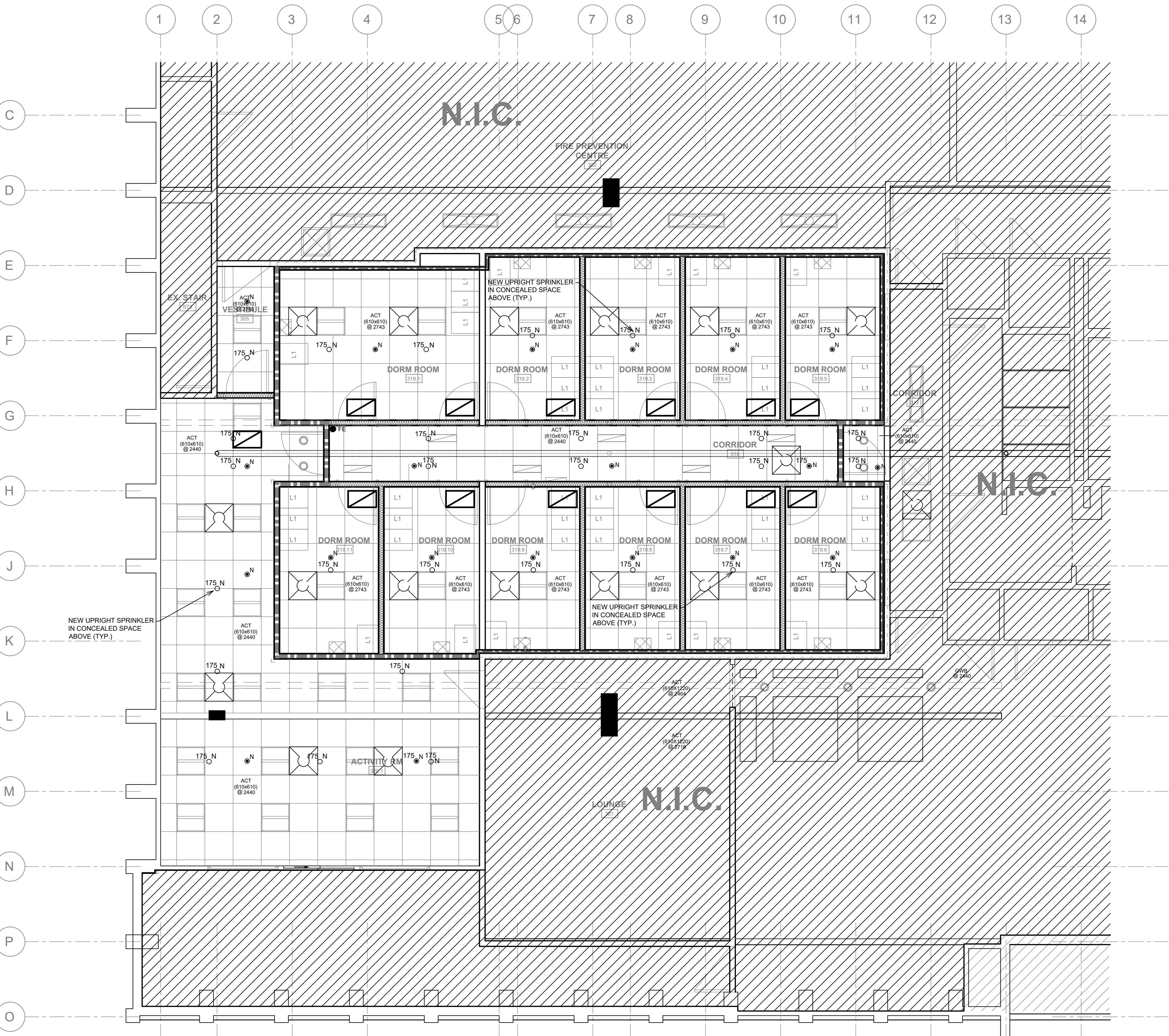
GENERAL NOTES:

- ALL SPRINKLER DRAWINGS AND DESIGNS NOTED IN THIS PACKAGE ARE PERFORMANCE-BASED SPECIFICATIONS INTENDED TO BE USED AS A BASIS FOR THE DESIGN PROVIDED BY THE RETAINED SPRINKLER ENGINEER. THE CONTRACTOR'S ENGINEER IS EXPECTED TO PROVIDE DETAILED SPRINKLER DRAWINGS AND CALCULATIONS AS REQUIRED.
- CONTRACTOR TO PERFORM A THOROUGH PRE-TENDER WALK-THROUGH OF THE EXISTING SPACE. REVIEW THE NEW DETAILED DESIGN DRAWINGS IN CONJUNCTION WITH THE EXISTING SPACE & ADVISE THE ENGINEER OF ANY DISCREPANCIES AT A TIMELY MANNER.
- ANY DAMAGED OR CORRODED SPRINKLERS SHALL BE REPLACED WITH NEW AND MATCH THE EXISTING.
- COORDINATE WITH GC AND BUILDING MANAGEMENT FOR ANY WORK THAT MAY AFFECT OPERATION OF THE REST OF THE BUILDING SUCH AS, BUT NOT LIMITED TO, SHUTDOWN, DEMOLITION, TIE-IN, AND NEW SCOPE OF WORK.
- SPRINKLER CONTRACTOR SHALL ENSURE THE SPRINKLER COVERAGE IN AREAS ADJACENT TO THE PROJECT AS PER NFPA 13, 2013 AND REPORT TO MCW FOR APPROVAL IF ANY MODIFICATION REQUIRED.
- SPRINKLER DESIGN CRITERIA - LIGHT HAZARD AND CONSISTENT WITH EXISTING, NO HYDRAULIC CALCULATIONS REQUIRED.

SPRINKLER HEAD SCHEDULE								
SYM	CNT	NPT	K	TEMP [°F]	FINISH	DESCRIPTION	MAXIMUM COVERAGE	NOTE
•N	18	1/2"	5.6	155	CHROME	PENDENT SPRINKLER MATCH W/ EXISTING SPRINKLER	225 FT ²	NEW PENDENT SPRINKLER
175 N	29	1/2"	5.6	175	CHROME	UPRIGHT SPRINKLER MATCH W/ EXISTING SPRINKLER	120 FT ²	NEW UPRIGHT SPRINKLER
175 N	2	1/2"	5.6	175	CHROME	PENDENT SPRINKLER MATCH W/ EXISTING SPRINKLER	225 FT ²	NEW PENDENT SPRINKLER
	49							TOTAL HEADS

FIRE EXTINGUISHER SCHEDULE									
SYMBOL	COUNT	MODEL	TUB DIMENSIONS (WXHxD)	MOUNTING TYPE	STANDARD TURN BACK	FRONT SECTION ADJUSTMENT	MINIMUM WALL DEPTH	MECHANICAL REMARKS	FE MAXIMUM
● FE	1	526-EL-SG	8" X 17" X 5"	FULLY RECESSED	1/2"	NONE (WELDED TO TUB)	4" (102 MM)	-	5 IBS. DRY CHEM

NOTE: INTERMEDIATE TEMPERATURE SPRINKLER REQUIRE WHEN THE ROOF IS UN-INSULATED AND CONCEALED SPACE IS UNVENTILATED.



1 SECOND FLOOR SPRINKLER CONSTRUCTION

RE-ISSUED FOR BP
SUBMISSION

PROJECT TITLE:
CNV FH No. 1 -
DORMITORY
RENOVATION

165 EAST 13th STREET, NORTH
VANCOUVER, BC

CLIENT:
CITY OF NORTH
VANCOUVER

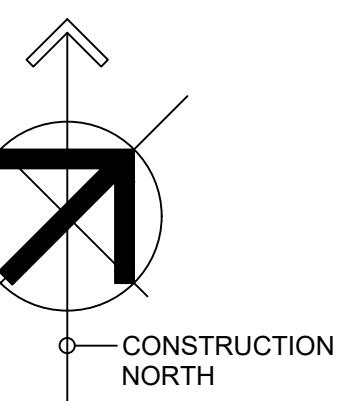
DRAWING TITLE:
SECOND FLOOR
SPRINKLER
CONSTRUCTION

PROJECT NUMBER:
5780

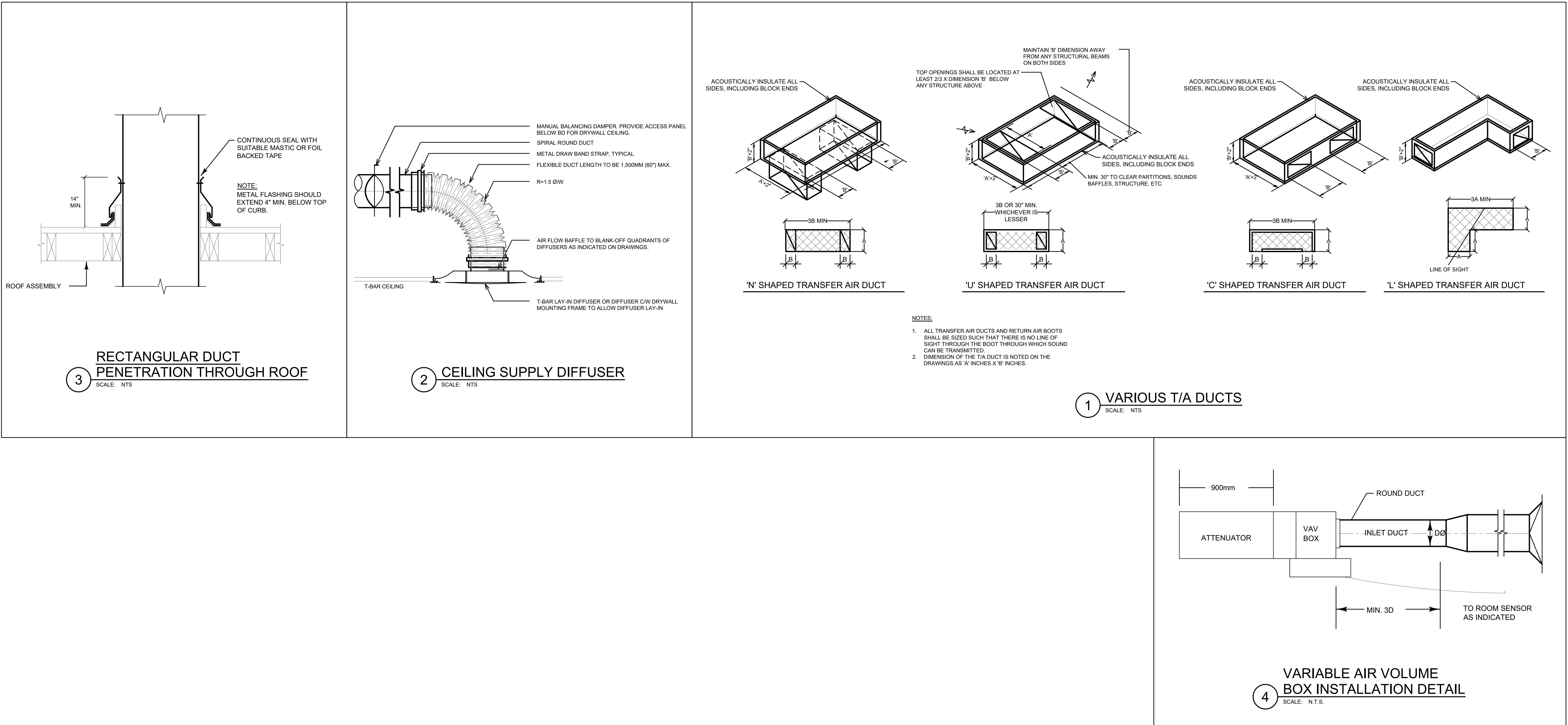
DRAWN: MLC SCALE: AS NOTED

DRAWING NUMBER:

M3.2



RE-ISSUED FOR BP SUBMISSION



PROJECT TITLE:
**CNV FH No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC
CLIENT:

**CITY OF NORTH
VANCOUVER**

DRAWING TITLE:
DETAILS

PROJECT NUMBER:
5780

DRAWN: MLC SCALE: AS NOTED

DRAWING NUMBER:

M4.0

HEAT PUMP SCHEDULE																																		
TAG	DESCRIPTION/SERVICE	LOCATION	MANUF	MODEL	SUPPLY FAN CHARACTERISTICS			COOLING PERFORMANCE			HEATING PERFORMANCE			# OF STAGES	FILTER (MERV)	PHYSICAL CHARACTERISTICS		MECHANICAL REMARKS	POWER SUPPLY			STARTER			CONTROLS			OTHER REQUIREMENTS			FED FROM	ELECTRICAL REMARKS		
					DESIGN MAX AIRFLOW (CFM)		E.S.P. (IN)	MOTOR		TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	# OF STAGES	TOTAL CAPACITY (HP MODE) (MBH)	SECONDARY HEAT (ELECTRIC) (KW)	# OF STAGES	SOUND LEVEL (SONES/dB)	WEIGHT (LBS)		MOP(A)	MCA(A)	FLA(A)	VOLTS	PHASE	HZ	EM.	NORM.	SUPPLIED BY	INSTALLED BY	TYPE	MAN	AUTO	INTERLOCK BY	W.P. DISC. AT MOTOR	DISC. AT MOTOR
HP-1	DORMITORIES	ROOF	CARRIER	50GCQJ06	2500 (1180 L/S)	1.0 (249 PA)	1.44	DIRECT	60.0	48.0	2	52.5	18.4 KW	2	8	596	1 TO 6	70	64	208	3	60	•	•	•	•	•	•	•	•	•	•	•	•

NOTES:
 1. ROOF CURB
 2. ECONOMIZER W/ BAROMETRIC RELIEF
 3. INTEGRAL STRIP FOR DDC CONTROL
 4. VIBRATION ISOLATORS
 5. SIZING BASED ON AMBIENT AIR CONDITIONS: SUMMER 95 DB/78F WB, WINTER 10F DB
 6. PROVIDE UNIT WITH A MINIMUM OF 4" PLEATED MERV 13 FILTER.
 7. UNIT SHALL INCLUDE PHASE PROTECTION. PROVIDE UNIT WITH INTEGRAL DISCONNECT SWITCH.
 8. UNIT SHALL INCLUDE STAINLESS STEEL DRAIN PAN.
 9. CONDENSATE DRAIN PIPE SHALL BE SIZED PER MANUFACTURER'S RECOMMENDATION.
 10. UNIT SHALL HAVE SELF CONTAINED CONTROL AND BACNET COMPATIBLE.
 11. PROVIDE UNIT WITH POWER EXHAUST FAN AND FAN SHALL BE SIZED FOR ECONOMIZER
 12. PROVIDE UNIT WITH 12 INCHES PLENUM CURB

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AIR OUTLET AND INLET SCHEDULE													
TAG	APPLICATION	MAKE	MODEL	DESCRIPTION				MATERIAL	FINISH	MOUNTING	MECHANICAL REMARKS		
S1	SUPPLY	EH PRICE	ASPD	SQUARE PLAQUE DIFFUSER				ALUMINUM	B12-WHITE POWDER COAT	T-BAR	REFER TO PLAN FOR NECK SIZE		
R1	RETURN	EH PRICE	80	1/2"X1/2"X1/2" ALUMINUM EGG CRATE GRILLE				ALUMINUM	B12-WHITE POWDER COAT	T-BAR	REFER TO PLANS FOR FACE DIMENSIONS		
S2	SUPPLY	EH PRICE	ASPD	SQUARE PLAQUE DIFFUSER				ALUMINUM	B12-WHITE POWDER COAT	T-BAR	REFER TO PLAN FOR NECK SIZE		

NOTES:
 1.ACCEPTABLE EQUALS: TITUS, NAILOR & TUTTLE AND BAILEY
 2. DIFFUSER SHALL BE TESTED IN ACCORDANCE WITH ANSI/AIA/AE STANDARD 70-1991.
 3. DIFFUSER SHALL BE CONSTRUCTED OF 24 GAUGE STEEL. COLOUR BY ARCHITECT
 4. ALL SUPPLY DIFFUSERS SHOULD BE PROVIDED WITH ADJUSTABLE PATTERN FOR VERTICAL AND HORIZONTAL DISCHARGE
 5. MAXIMUM LENGTH OF THE FLEXIBLE DUCT SHALL NOT EXCEED 6'-0" LONG
 6. PROVIDE OPPOSED BLADE DAMPERS ON ALL SQUARE DIFFUSERS LOCATED IN GYPSUM BOARD CEILING.
 7. PROVIDE DRYWALL MOUNTING KIT FOR AIR DEVICES LOCATED IN GYP CEILING.
 8. COORDINATE EXACT LOCATIONS OF AIR DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLAN

VAV TERMINAL UNITS SCHEDULE																															
TAG	DESCRIPTION / SERVICE	LOCATION	MANUFACTURER	MODEL	UNIT SIZE	VAV CHARACTERISTICS						ELECTRIC REHEAT COIL						CONTROLS			MECHANICAL REMARKS	ELECTRICAL REMARKS									
						SIZE (INLET DIAMETER)		MINIMUM PRIMARY SUPPLY AIR		MAXIMUM PRIMARY SUPPLY AIR		MINIMUM OPERATING P.D.		REHEAT AIRFLOW		COIL CAPACITY		E.A.T.	L.A.T.	MOP	MCA	A	V	PH	MAN.	AUTO	INTERLOCK BY				
VAV-1	ACTIVITY ROOM VAV	CORRIDOR	EH PRICE	SDV - SCR CONTROL	8	8	200	340	160	684	323	0.01	2.5	680	320	-	5	55.00	12	78.20	25	20	18.90	13.88	208	3	-	-	-	SCR CONTROLLED ELECTRIC COIL	-

NOTES:
 1. VAV BOX IS FULLY CONTROLLABLE BY DELTA DDC
 2. INSTALL UNIT AS PER MANUFACTURER'S RECOMMENDATION.
 3. PROVIDE FACTORY MOUNTED 24-VOLT DC POWER SUPPLY.
 4. VAV BOX BASED ON 100% STATIC PRESSURE DROP FROM UNIT INLET TO THE UNIT OUTLET.
 5. PROVIDE 3FT ATTENUATOR WITH FIBERGLASS LINING FOR SOUND INSULATION FOR THE UNIT.
 6. PROVIDE UNIT WITH 24V STEP DOWN TRANSFORMER
 7. PROVIDE UNIT WITH DISCHARGE AIR TEMPERATURE CONTROL

RE-ISSUED FOR BP SUBMISSION

PROJECT TITLE:
**CNV FH No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC
CLIENT:
**CITY OF NORTH
VANCOUVER**

DRAWING TITLE:
**MECHANICAL
SCHEDULES**

PROJECT NUMBER:
5780

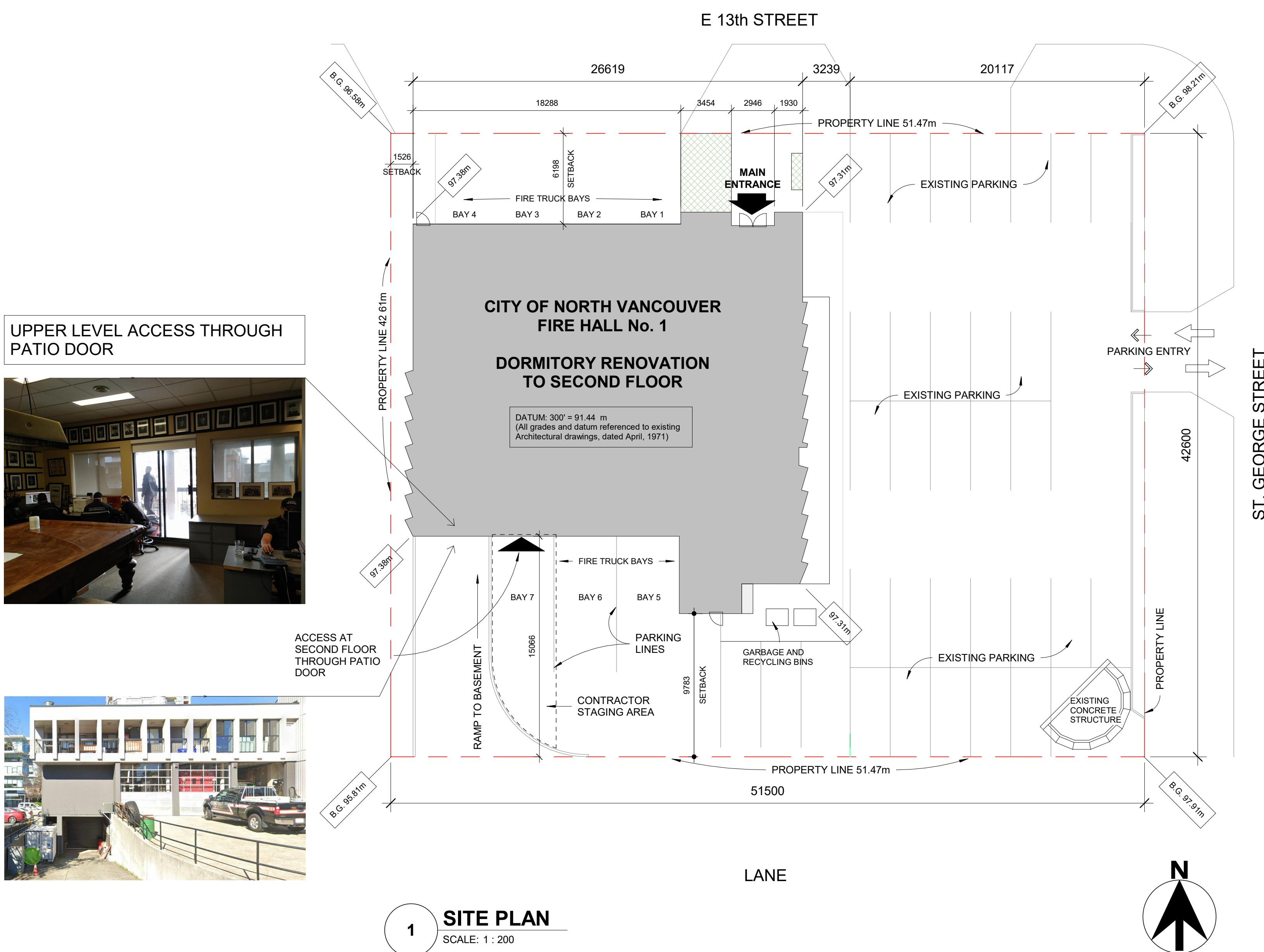
DRAWN: MLC SCALE: AS NOTED

DRAWING NUMBER:

M5.0

CITY OF NORTH VANCOUVER - FIREHALL No. 1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC


ARCHITECTURAL DRAWING LIST

- A0.0.0 COVER SHEET, SITE PLAN, DRAWINGS LIST
- A0.4.0 CODE COMPLIANCE PLANS & SECTIONS
- A0.4.1 CODE COMPLIANCE PLANS AND SECTION
- A2.0.1 SECOND FLOOR DEMOLITION PLAN
- A2.1.1 SECOND FLOOR PLAN
- A2.3.1 ROOF PLAN
- A3.0.1 REFLECTED CEILING DEMO PLAN
- A3.1.1 REFLECTED CEILING PLAN
- A4.3.1 BUILDING SECTIONS
- A7.0.0 INTERIOR ELEVATIONS

STRUCTURAL DRAWING LIST

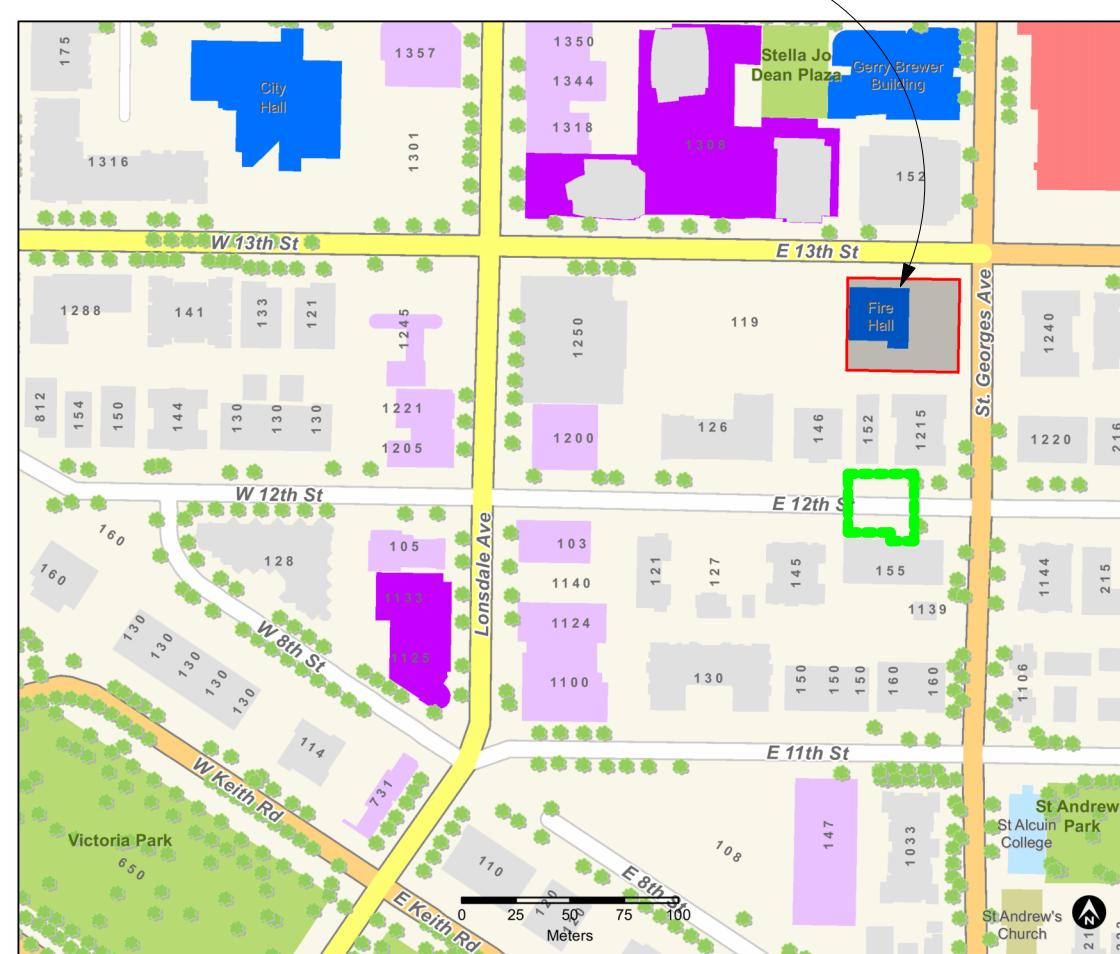
- S1.00 GENERAL NOTES
- S2.00 SECOND FLOOR - PLAN
- S2.01 ROOF LEVEL - PLAN
- S3.00 SECTIONS AND DETAILS

MECHANICAL DRAWING LIST

- M1.0 COVER PAGE
- M2.0 SECOND FLOOR PLAN HVAC DEMOLITION
- M2.1 ROOF HVAC DEMOLITION
- M3.0 SECOND FLOOR HVAC CONSTRUCTION
- M3.1 ROOF HVAC CONSTRUCTION
- M3.2 SECOND FLOOR SPRINKLER CONSTRUCTION
- M4.0 DETAILS
- M5.0 MECHANICAL SCHEDULES

ELECTRICAL DRAWING LIST

- E0.0 COVER PAGE AND LEGEND
- E1.0 DETAILS AND SCHEDULES
- E2.0 EXISTING ELECTRICAL LAYOUT
- E2.1 REVISED LIGHTING LAYOUT
- E2.2 REVISED POWER & SYSTEMS LAYOUT
- E2.3 ROOF PLAN ELECTRICAL LAYOUT
- E3.0 ELECTRICAL SPECIFICATIONS

PROJECT LOCATION


ISSUED - RECORD		
NO.	DATE	DESCRIPTION
5	2024-09-16	ISSUED FOR TENDER
4	2024-09-11	RE-ISSUED FOR BP
3	2024-08-13	RE-ISSUED FOR BP
2	2024-05-01	ISSUED FOR BP
1	2023-07-04	ISSUED FOR PRE-TENDER COSTING

LOCATION MAP - KEY PLAN

SITE LEGEND:		
PROPERTY LINES		
ENTRANCE ARROW SYMBOL: MAIN ENTRANCE		ENTRANCE ARROW SYMBOL: SECONDARY ENTRANCE
B.G. 95.59m		B.G. 97.38m
SITE SYNOPSIS		
CIVIC ADDRESS	165 EAST 13th STREET, NORTH VANCOUVER, BC	
LEGAL DESCRIPTION	Lot 7; Block 74; DL-549; Plan:10231; PID: 074027.000	
ZONE	P-1	
SITE AREA	2192.08 m ²	
BUILDING AREA	NO CHANGE TO BUILDING AREA	
GROSS FLOOR AREA	NO CHANGE TO GROSS FLOOR AREA	
BUILDING HEIGHT	MAX. ALLOWABLE	PROVIDED
SITE COVERAGE	N/A	NO CHANGE TO SITE COVERAGE
FLOOR AREA RATIO	N/A	NO CHANGE TO F.A.R.
YARD SETBACKS	REQUIRED	PROVIDED
FRONT	N/A	NO CHANGE
REAR	N/A	NO CHANGE
WEST SIDE	N/A	NO CHANGE
EAST SIDE	N/A	NO CHANGE...

RE-ISSUED FOR TENDER

PROJECT TITLE:
CNV FIREHALL No. 1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC

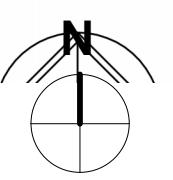
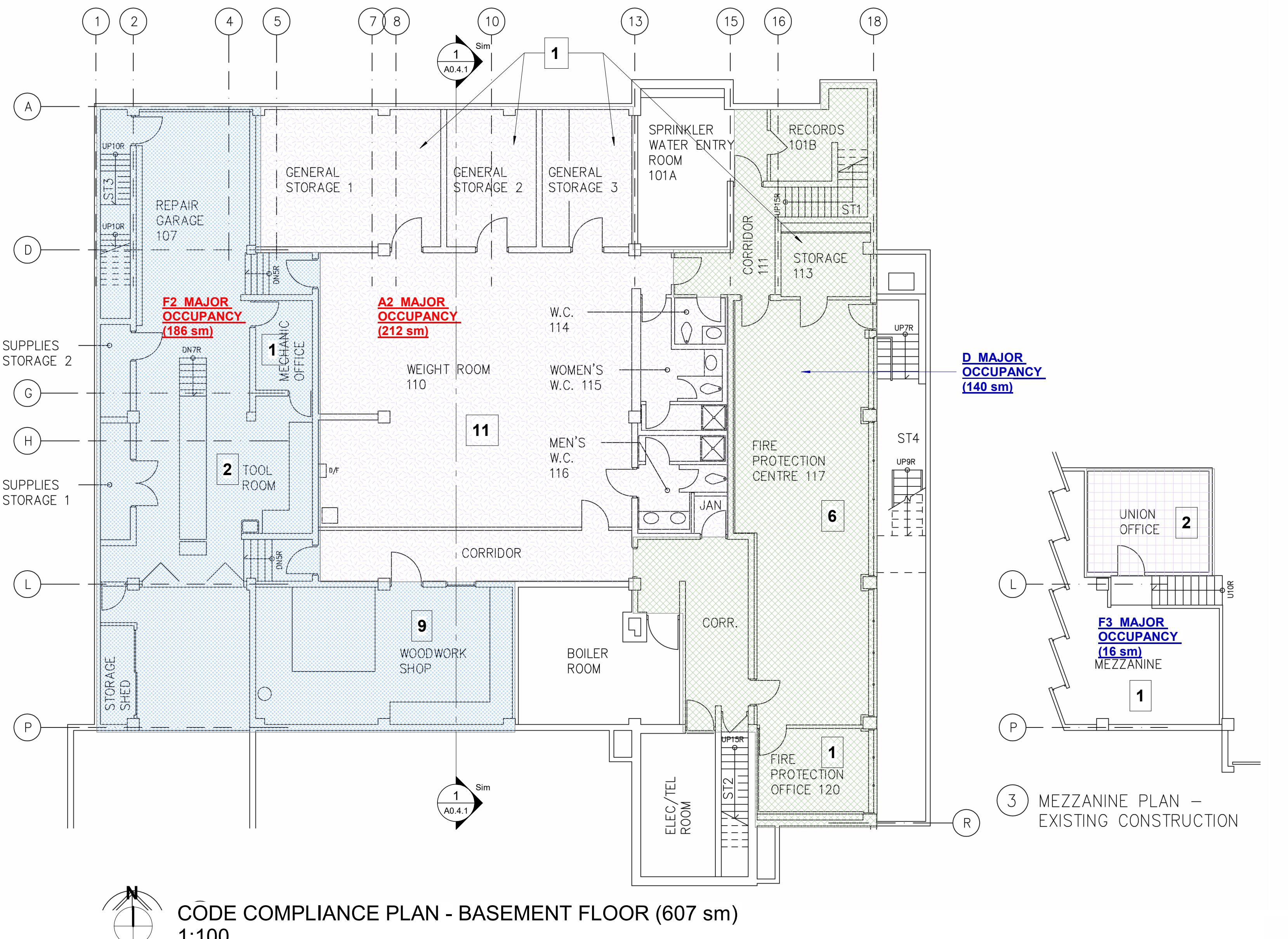
CLIENT:
CITY OF NORTH VANCOUVER

DRAWING TITLE:
COVER SHEET, SITE PLAN, DRAWINGS LIST

PROJECT NUMBER:
22396

DRAWN: SA SCALE: As indicated

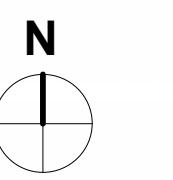
DRAWING NUMBER:
A0.0.0



CODE COMPLIANCE PLAN - BASEMENT FLOOR (607 sm)
1:100

CODE COMPLIANCE LEGEND					
EXIT	DENOTES EXIT				
TD = ...m	DENOTES TRAVEL DISTANCE TO EXIT				
—	1 hr FIRE SEPARATION				
■	AREA OF RENOVATION				
1	ROOM OCCUPANT LOAD				

CODE COMPLIANCE NOTES					
1. ALL FIRE SEPARATIONS, RATED AS WELL AS ZERO HOUR RATED TO CONTINUE TO UNDERSIDE OF FLOOR OR ROOF DECK ABOVE. SEAL TOP AND BOTTOM OF WALL AND ALL PENETRATIONS WITH APPROVED FIRESTOP ASSEMBLY TO SUIT THE RATING OF THE PARTITION.					



CODE COMPLIANCE PLAN - MAIN FLOOR (641 sm)
1:100

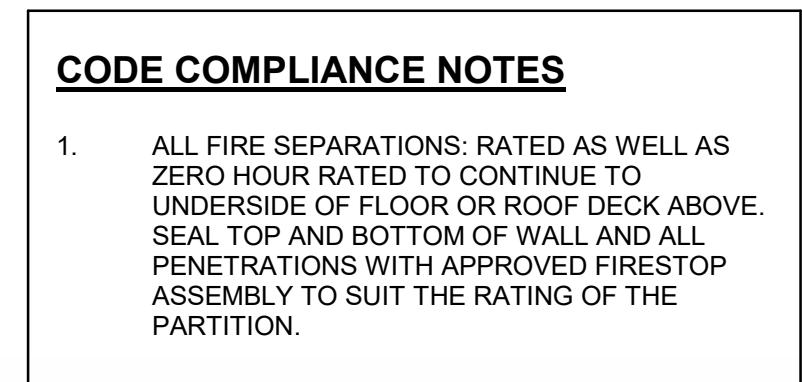
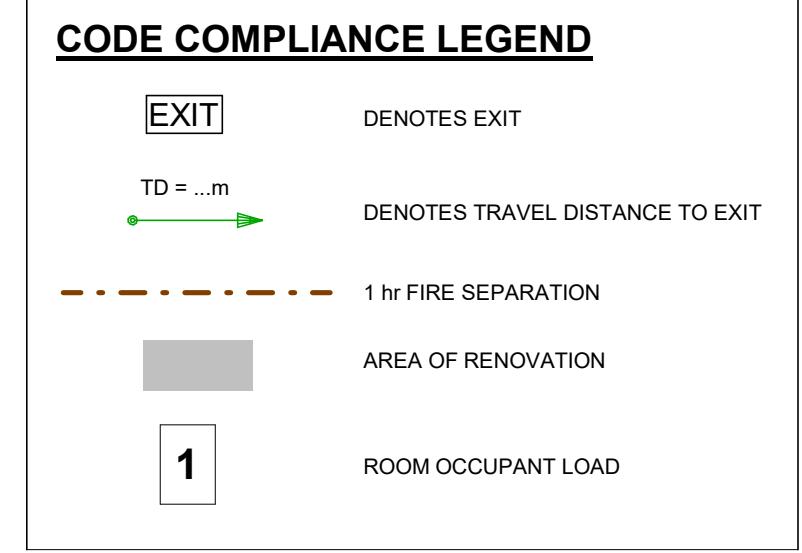
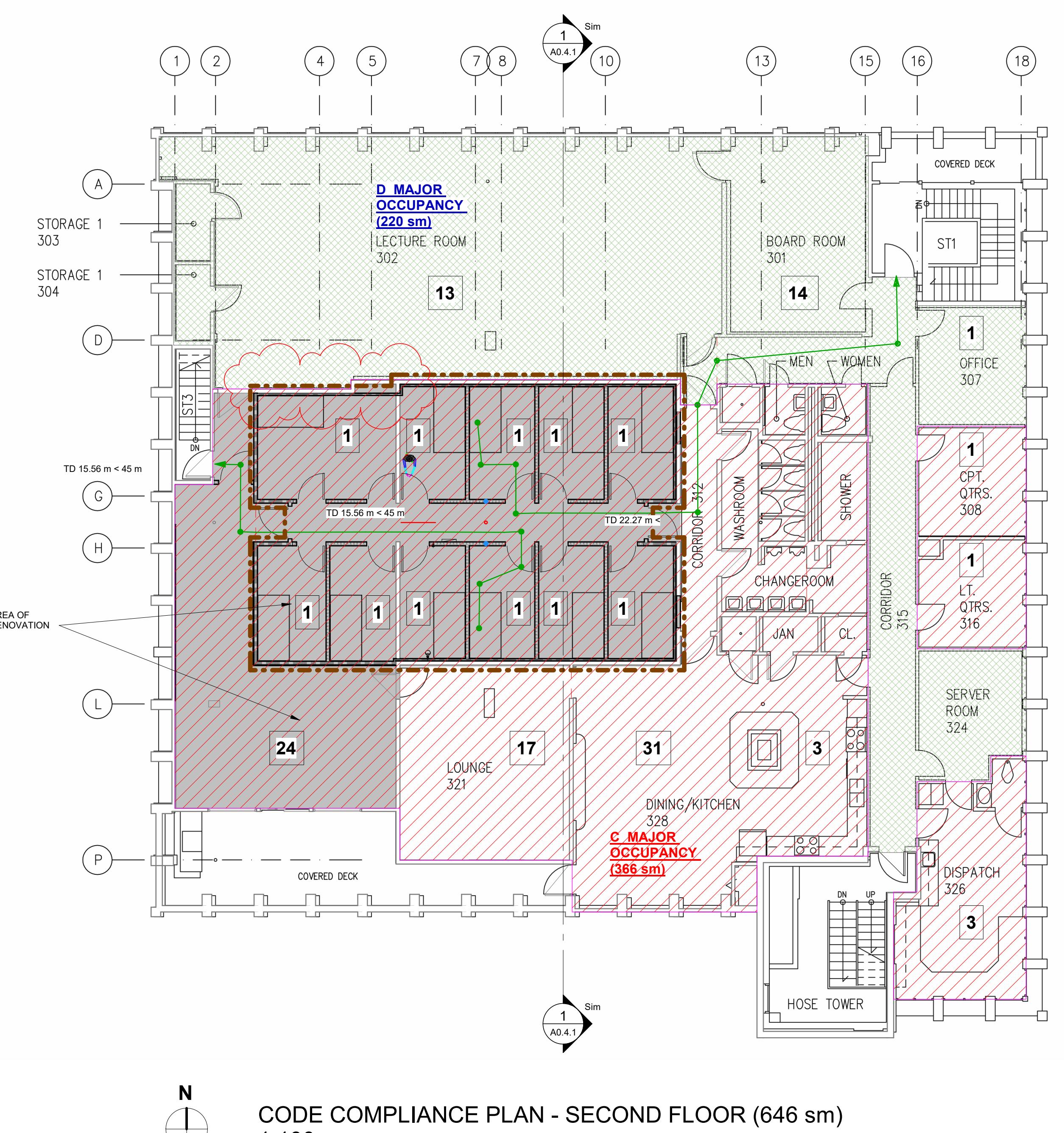
OCCUPANT LOAD SCHEDULE					
LEVEL	ROOM NAME	AREA (m²)	TYPE OF USE (per Table 3.1.17.1)	AREA PER PERSON (m²/p)	OCCUPANT LOAD
BASEMENT	REPAIR GARAGE	73	STORAGE GARAGES	4.6	2
BASEMENT	MECHANIC OFFICE	6	OFFICES	9.3	1
BASEMENT	WOODWORK SHOP	41	OTHER USES, CLEANING AND MAINTAIN.	4.6	9
BASEMENT	WEIGHT ROOM	100	BOWLING ALLEYS, POOL & BILLIARD ROOMS	9.3	11
BASEMENT	LECTURE 117 (formerly Fire Protection Ct)	61	OFFICES	9.3	6
BASEMENT	OFFICE 120	11	OFFICE	9.3	1
BASEMENT	STORAGE x 4 (A,B,CD,E, GEAR)	68	STORAGE	4.6	15
MEZZANINE	UNION OFFICE	16	OFFICE	9.3	2
MEZZANINE	MEZZANINE	20	STORAGE	4.6	1
MAIN	APPARATUS FLOOR 217	353	STORAGE GARAGES	4.6	77
MAIN	STORAGE 4 (A,B,CD,E, GEAR)	40	STORAGE	4.6	11
MAIN	RECEPTION 202	n/a	SPACE WITH NON-FIXED SEATS	Based on no. seats	3
MAIN	PHOTOCOPY ROOM 204	10	OFFICE	9.3	1
MAIN	OFFICE 1	13	OFFICE	9.3	1
MAIN	OFFICE 2	11	OFFICE	9.3	1
MAIN	OFFICE 3	10	OFFICE	9.3	1
MAIN	OFFICE 4	11	OFFICE	9.3	1
MAIN	OFFICE 5	12	OFFICE	9.3	1
MAIN	OFFICE 6	9	OFFICE	9.3	1
SECOND	BOARD ROOM 301	26	READING/WRITING/LOUNGE	1.85	14
SECOND	THREE DORMITORY CENTER 302	124	OFFICE	9.3	13
SECOND	OFFICE 307	12	OFFICE	9.3	1
SECOND	CPT QTRS 308	n/a	DORMITORY	Based on no. beds	1
SECOND	LT QTRS 316	n/a	DORMITORY	Based on no. beds	1
SECOND	DISPATCH 326	23	OFFICE	Based on no. beds	3
SECOND	DORM 319.1	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.2	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.3	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.4	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.5	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.6	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.7	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.8	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.9	n/a	DORMITORY	Based on no. beds	1
SECOND	DORM 319.10	n/a	DORMITORY	Based on no. beds	1
SECOND	ACTIVITY 320.1	45	READING/WRITING/LOUNGE	2.4	
SECOND	LOUNGE 321	32	READING/WRITING/LOUNGE	1.85	17
SECOND	DINING	37	DINING/BEVERAGE/CAFE	1.2	31
SECOND	KITCHEN	26	KITCHENS	9.3	3

NOTES					
SEPARATION OF OCCUPANCIES BETWEEN GP C AND D = 1 HR, GP C and F3 = 1 HR, GP C and D = 1 HR					

BC BUILDING CODE COMPLIANCE INFORMATION					
GOVERNING CODE					
BRITISH COLUMBIA BUILDING CODE 2024					
ENERGY STANDARD					
ASHRAE 90.1-2016					
BUILDING DESIGNED UNDER					
PART 3					
MAJOR OCCUPANCIES					
GROUP D – Business and Personal Services – lecture room, board room (565 sm)					
GROUP F3 – Low-Hazard Industrial – apparatus bay (418 sm)...					
SUBSIDIARY OCCUPANCIES					
GROUP A2 – Assembly – weight room and storage (212 sm)					
GROUP C – Residential – dormitory, lounge and dining/kitchen (366 sm)					
GROUP F2 – Medium-Hazard Industrial –woodwork shop, repair garage...					
BUILDING CLASSIFICATION					
3.2.2.65, GROUP D UP TO 2 STOREYS, SPRINKLERED, PERMITTED TO BE COMBUSTIBLE OR NON-COMBUSTIBLE. 2,400 m² IF 2 STOREYS, FLOOR ASSEMBLIES SHALL BE FIRE SEPARATIONS OR 45 MINUTE RATED IF OF COMBUSTIBLE CONSTRUCTION. WALLS/COLUMNS/ARCHES 45 MINUTE RATED OR OF NON-COMBUSTIBLE CONSTRUCTION.					
3.2.2.88 GROUP F UP TO 2 STOREYS, SPRINKLERED, PERMITTED TO BE NON-COMBUSTIBLE OR COMBUSTIBLE. 2,400 m² IF 2 STOREYS....					
REQUIREMENTS					
NUMBER OF STREETS					
N/A					
BUILDING HEIGHT					
2 STOREYS					
BUILDING AREA					
646 m²					
CONSTRUCTION TYPE					
COMBUSTIBLE OR NON-COMBUSTIBLE PERMITTED					
FIRE PROTECTION					
SPRINKLERED THROUGHOUT PER NFPA13					
FLOOR ASSEMBLIES					
AS PER 3.2.2.7.2) BASED ON OCCUPANCY OF THE FLOOR BELOW; FLOOR ASSEMBLIES SHALL BE FIRE SEPARATIONS OR 45 MINUTE RATED IF OF COMBUSTIBLE CONSTRUCTION					
OCCUPIED ROOF ASSEMBLIES					
N/A					
NON-OCCUPIED ROOF ASSEMBLIES					
NO FIRE SEPARATION REQUIRED					
LOAD-BEARING COMPONENTS					
45 MIN. F.R.R. FOR COMBUSTIBLE CONSTRUCTION OR NON-COMBUSTIBLE					
ROOF COVERING					
MINIMUM CLASS 'C' IN ACCORDANCE WITH CAN/ULC-S107 'FIRE TESTS OF ROOF COVERINGS'					
INTERCONNECTED FLOOR SPACE					
N/A					
NOTES					

SEPARATION OF OCCUPANCIES BETWEEN GP C AND D = 1 HR, GP C and F3 = 1 HR, GP C and D = 1 HR

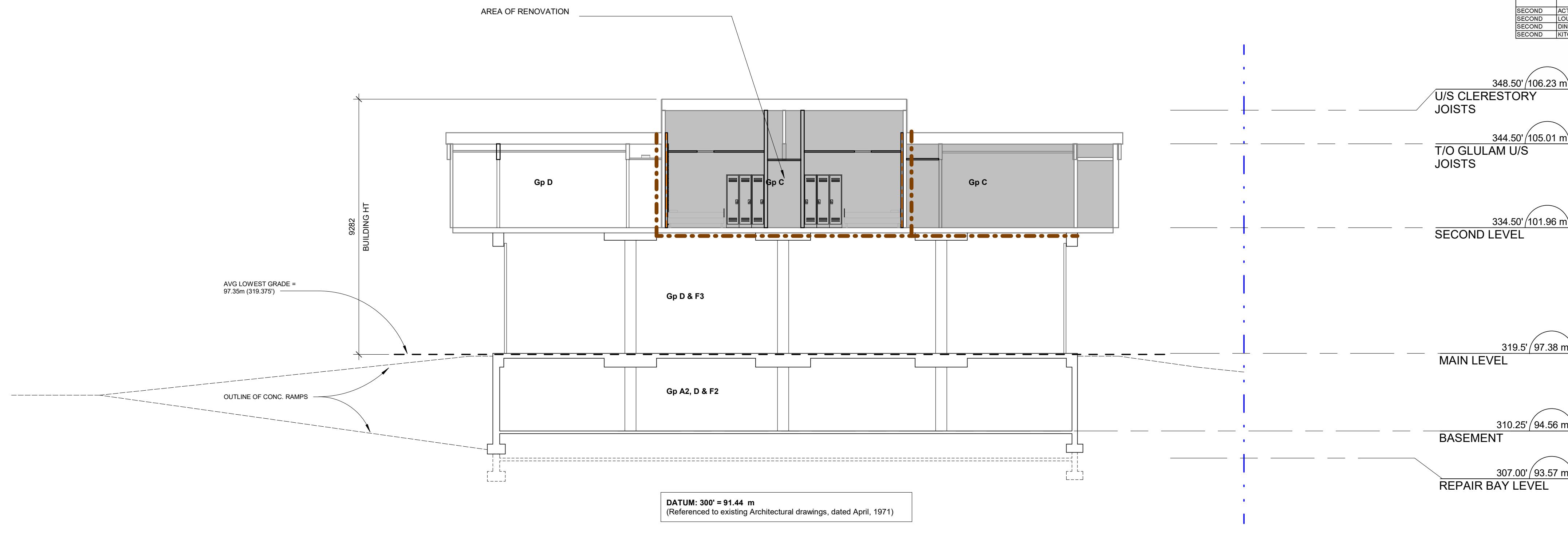
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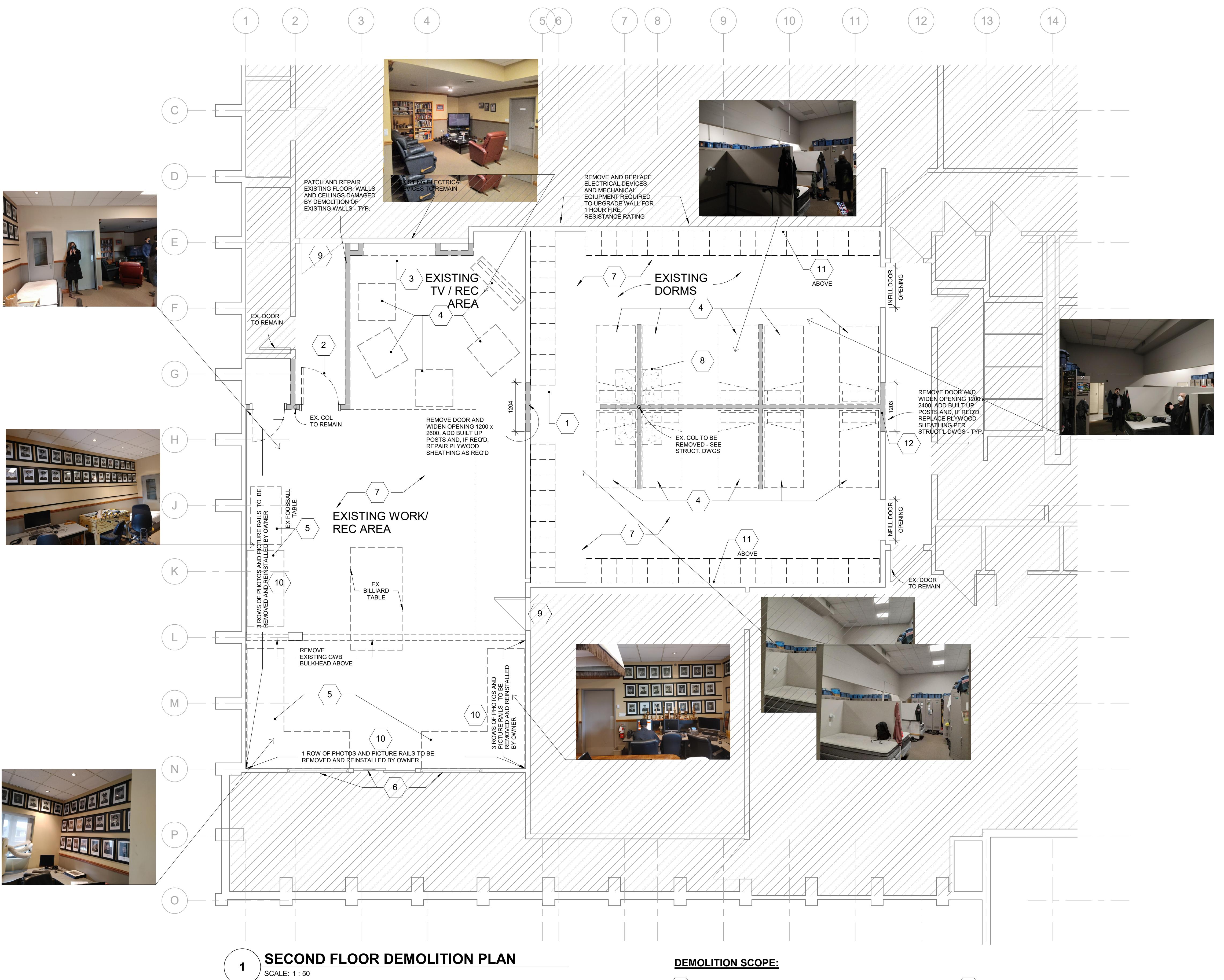


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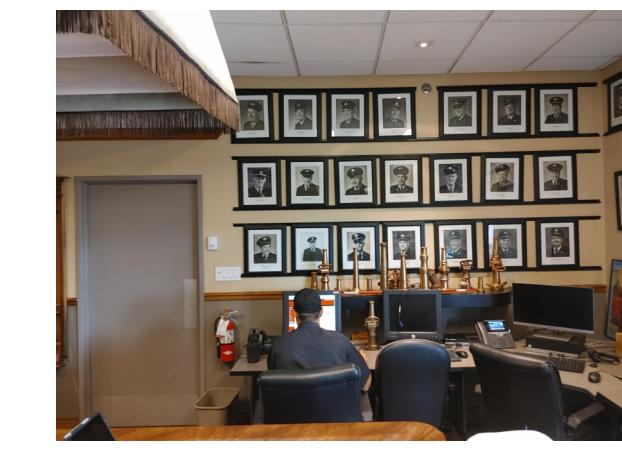
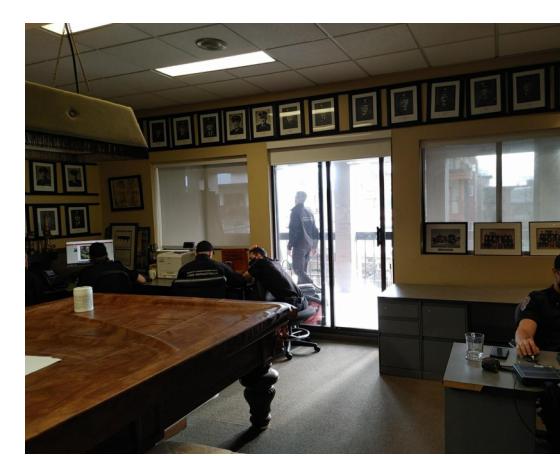
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NO.	DATE	DESCRIPTION
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2	2024-05-01	ISSUED FOR BP
1	2023-07-04	ISSUED FOR PRE-TENDER COSTING

LEVEL	ROOM NAME	AREA (m²)	TYPE OF USE (per Table 3.1.17.1)	AREA PER PERSON (m²/person)	OCCUPANT LOAD
BASEMENT	REPAIR GARAGE	73	STORAGE/GARAGES	46	2
BASEMENT	MECHANIC OFFICE	6	OFFICES	9.3	1
BASEMENT	WOODWORK SHOP	41	OTHER OFFICES, CLEANING INVENTORY, ETC.	4.6	9
BASEMENT	WEIGHT ROOM	100	BOWLING ALLEYS, POOL & BILLIARD ROOMS	9.3	11
BASEMENT	LECTURE 117 (formerly Fire Protection Ctr)	61	OFFICES	9.3	6
BASEMENT	OFFICE 120	11	OFFICE	9.3	1
BASEMENT	STORAGE x 4 (1,2,3,14)	68	STORAGE	46	1
MEZZANINE	UNION OFFICE	16	OFFICE	9.3	2
MEZZANINE	MEZZANINE	20	STORAGE	46	1
MAIN	STORAGE & FLOOR 217	333	STORAGE/GARAGES	46	7
MAIN	STORAGE & (A,B,EQUIP, GEAR)	40	STORAGE	46	1
MAIN	WAITING AREA 201	n/a	SPACE WITH NON-FIXED SEATS	Based on no. seats	Based on no. seats
MAIN	RECEPTION 202	n/a	SPACE WITH NON-FIXED SEATS	Based on no. 1 seats	Based on no. 1 seats
MAIN	PHOTOCOPY ROOM 204	10	OFFICE	9.3	1
MAIN	OFFICE 1	13	OFFICE	9.3	1
MAIN	OFFICE 2	11	OFFICE	9.3	1
MAIN	OFFICE 3	17	OFFICE	9.3	2
MAIN	OFFICE 4	11	OFFICE	9.3	1
MAIN	OFFICE 5	12	OFFICE	9.3	1
MAIN	OFFICE 6	9	OFFICE	9.3	1
SECOND	BOARD ROOM 301	26	READING/WRITING/LOUNGE	1.85	14
SECOND	ACTIVITY 302	124	OFFICE	9.3	13
SECOND	OFFICE 302	12	OFFICE	9.3	1
SECOND	CPT QTRS 308	n/a	DORMITORY	Based on no. beds	Based on no. 1 beds
SECOND	LT.QTRS 316	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DISPATCH 326	23	OFFICE	Based on no. 3 beds	Based on no. 3 beds
SECOND	DORM 319.1	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.2	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.3	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.4	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.5	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.6	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.7	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.8	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.9	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	DORM 319.10	n/a	DORMITORY	Based on no. 1 beds	Based on no. 1 beds
SECOND	ACTIVITY 320.1	45	READING/WRITING/LOUNGE	1.85	24
SECOND	LOUNGE 321	32	READING/WRITING/LOUNGE	1.85	17
SECOND	DINING	37	DINING/BEVERAGE/CAFE	1.2	31
SECOND	KITCHEN	26	KITCHENS	9.3	3





1 SECOND FLOOR DEMOLITION PLAN
SCALE: 1:50



DEMOLITION SCOPE:

- | | | | |
|---|---|----|---|
| 1 | NOT USED | 7 | REMOVE ALL EXISTING CARPET TO CONC SLAB AS INDICATED. LEVEL FLOOR AS REQUIRED TO RECEIVE NEW FLOORING AS PER SPECS. |
| 2 | REMOVE AND RELOCATE DOORS/ FRAME/ HARDWARE, SEE A2.1.1. | 8 | REMOVE EXISTING STEEL COLUMN - SEE STRUCTURAL DWGS. GRIND, PATCH AND MATCH CONCRETE FLOOR TO RECEIVE NEW FLOOR FINISH. |
| 3 | REMOVE BUILT-IN BOOK SHELF AND FURRING WALLS | 9 | EXISTING DOOR TO BE TEMPORARILY CLOSED OFF DURING CONSTRUCTION. NORTHEAST STAIRCASE TO BE USED INSTEAD. CONTRACTOR TO INCLUDE AS PART OF SAFETY PLAN AND PROVIDE APPROPRIATE SIGNAGE DIRECTING PEOPLE TO NORTHEAST STAIR. |
| 4 | EXISTING FURNITURE TO BE REMOVED AND RELOCATED BY OWNER | 10 | EXISTING PHOTOS AND PICTURE RAILS TO BE REMOVED AND REINSTATED BY OWNER. CONTRACTOR TO PATCH/MATCH AND REPAIR EXISTING SURFACES |
| 5 | CONTRACTOR TO DISPOSE OF FURNITURE U.N.O. | 11 | REMOVE AND RELOCATE PLUMBING/ RWL, REFER TO MECHANICAL. |
| 6 | PATIO DOOR MAY SERVE AS POINT OF CONSTRUCTION ACCESS. REMOVE, REINSTALL AND MAKE GOOD EXISTING SLIDING PATIO DOOR AS REQUIRED TO FACILITATE TRANSFER OF CONSTRUCTION MATERIALS. EXISTING WINDOWS TO REMAIN. | 12 | DEMO PART OF EXIST WALL AND RE-FRAME WALL OPENING - SEE A2.1.1. PATCH, MATCH AND MAKE GOOD EXISTING SURFACES. |

GENERAL DEMOLITION NOTES

- CONTRACTOR TO VERIFY ALL DRAWINGS AND DIMENSIONS IN REFERENCE TO EXISTING CONDITIONS. NOTIFY DESIGN CONSULTANT AND OWNER OF ANY MODIFICATIONS REQUIRED TO THE BASE BUILDING DEMOLITION BEFORE COMMENCEMENT OF DEMOLITION.
- KEYNOTES HIGHLIGHT GENERAL DEMOLITION REQUIREMENTS ONLY. READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND CONSULTANT DRAWINGS.
- VERIFY LOCATION OF ALL SERVICES PRIOR TO DEMOLITION.
- SEE ALSO REFLECTED CEILING PLANS, RENOVATION PLANS AND DETAILS FOR LOCATIONS WHERE DEMOLITION IS REQUIRED BY NEW CONSTRUCTION.
- REVIEW ALL ASBESTOS REPORTS AND SPECIFICATIONS FOR LOCATION, HANDLING AND DISPOSAL OF HAZARDOUS MATERIALS.
- DEMOLITION OF ANY EXISTING STRUCTURAL COLUMNS, WALLS, SLABS, FOUNDATIONS AND OPEN WEB JOISTS ARE TO BE APPROVED BY STRUCTURAL ENGINEER PRIOR TO START OF WORK. CUTTING AND CORING MAY NOT PROCEED WITHOUT X-RAYING BY A QUALIFIED CONTRACTOR.
- DEMOLISHED MATERIALS AND DEBRIS MUST BE REMOVED ON A CONTINUOUS BASIS FROM THE WORK AREA. STRUCTURES MUST NOT BE OVERLOADED OR DAMAGED.
- HOARDING TO MEET BC BUILDING CODE 2018. REFER TO MECHANICAL REQUIREMENTS FOR DUST CONTROL TO PROTECT OTHER OCCUPIED AREAS.
- ALL CUTTING/PATCHING WORK SHALL BE DONE IN A MANNER TO RECEIVE NEW WORK AND FINISHES.
- PROTECT OWN WORK, THE WORK OF OTHERS AND NEW/EXISTING/ADJACENT STRUCTURES AND SURFACES FROM DAMAGE DURING DEMOLITION.
- MATCH, PATCH AND REPAIR ADJOINING SURFACES TO REMAIN THAT ARE DAMAGED OR AFFECTED AS A RESULT OF DEMOLITION. PATCH AND REPAIR ALL FIREPROOFING AND/OR FIRE SEPARATIONS DAMAGED OR REMOVED IN THE PERFORMANCE OF THE WORK. FIRE RESISTANCE RATING SHALL MEET CODE.
- WALLS, DOORS, ROOFS, FLOORS, STAIRS, WINDOWS AND MILLWORK TO BE REMOVED ARE SHOWN WITH A DASHED LINE. DEMOLISH, SALVAGE, RE-USE AND/OR DISPOSE OF PRODUCTS AS INDICATED ON DRAWINGS OF SPECIFICATIONS.
- REMOVE ALL EXISTING INSULATION IN WALLS, CEILINGS AND ROOF SPACES TO BE DEMOLISHED OR DISRUPTED BY CONSTRUCTION.
- REMOVE ALL FLOOR FINISHES WHERE NOTED IN RENOVATED AREAS AND SCRAPE OFF GLUE OR RESIDUE SO THAT SUB-FLOOR IS CLEAN AND SMOOTH BEFORE RECEIVING NEW UNDERLAYMENT AND FINISHES SPECIFIED.]
- WHERE NOTED, ALL EXISTING EXTERIOR WINDOWS, TRIMS AND SILLS ARE TO BE REMOVED AND REPLACED WITH NEW WINDOWS AS SHOWN ON EXTERIOR ELEVATIONS.
- WHERE EXISTING MILLWORK IS REMOVED, ENSURE SERVICES ARE CAPPED OFF SAFELY PRIOR TO DEMOLITION (CO-ORDINATE WITH MECHANICAL & ELECTRICAL)
- PATCH AND REPAIR ALL ABANDONED MECHANICAL AND ELECTRICAL DEVICES INCLUDING DATA/ POWER PLUGS. DO NOT USE COVER PLATES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS.

RE-ISSUED FOR TENDER

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DEMO FLOOR PLAN LEGEND

- [Hatched pattern] HATCH DENOTES EXISTING REMAIN, NOT IN SCOPE, UNLESS NOTED OTHERWISE
- [Solid line] EXISTING WALL TO REMAIN
- [Dashed line] EXISTING WALL TO BE DEMOLISHED
- [Dotted line] EXISTING DOOR IN EXISTING FRAME TO REMAIN
- [Dashed line with arrow] EXISTING DOOR AND FRAME TO BE REMOVED
- [Dotted line] EXISTING MILLWORK, FURNITURE & EQUIPMENT, FIXTURES TO BE REMOVED, U.N.O.
- [Cross-hatch pattern] EXTENT OF FLOOR FINISH DEMO
- [X pattern] CUT AND PATCH EXISTING FLOOR - SEE STRUCTURAL DRAWINGS FOR EXTENT

PROJECT TITLE:
CNV FIREHALL No. 1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC
CLIENT:

CITY OF NORTH VANCOUVER

DRAWING TITLE:
SECOND FLOOR DEMOLITION PLAN

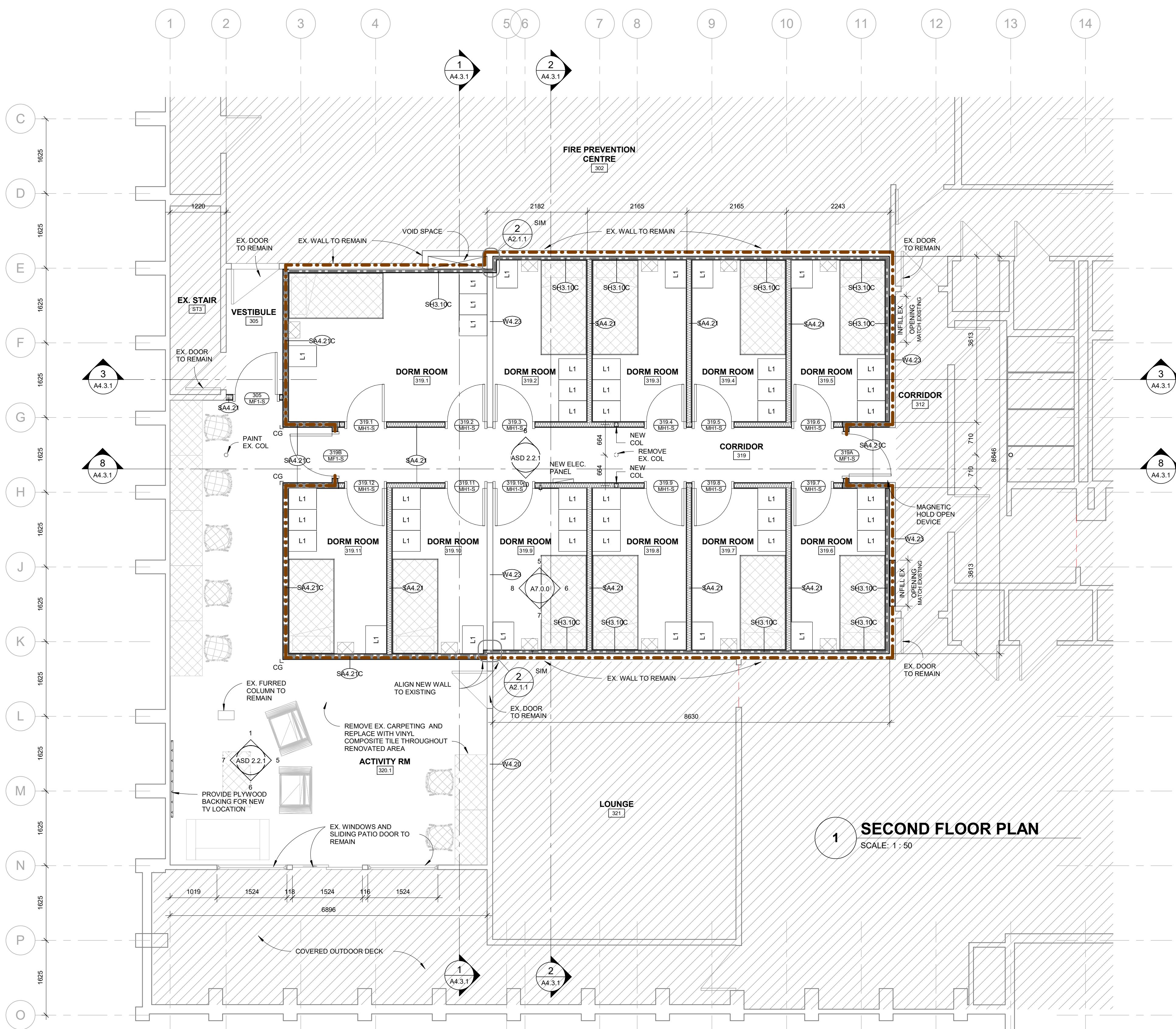
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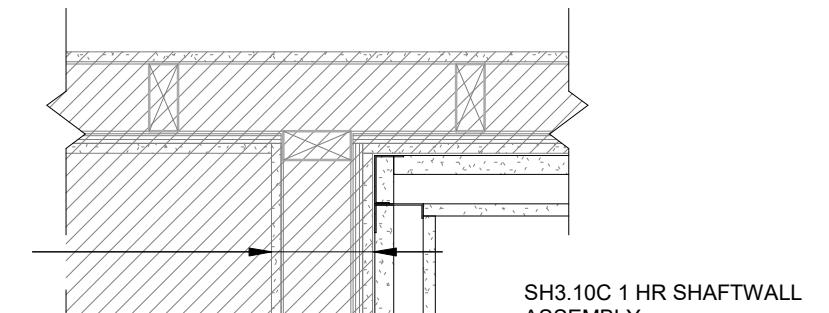
DRAWING NUMBER:



A2.0.1



W 4.23 EXISTING WALL
ASSEMBLY:
13mm GWB
38x89 WOOD STUDS @ 406 OC
13mm PLYWOOD SHEATHING
13mm GWB



SHAFTWALL THROUGH EX. WALL PLAN

SCALE: 1 : 10

INTERIOR STEEL STUD WALL ASSEMBLIES SCHEDULE (NEW)

TYPE	(Note 6) STC	(Note 4) FRR	BCBC_Ref erence	(Note 1) ULC
SA4.21				
SH3.10C 1 HR SHAFTWALL ASSEMBLY: 16mm GWB 64mm C-H STUDS @ 406mm OC 25 mm GYPSUM LINER PANEL				
SA4.21C	50	1	BCBC Div B, Table 9.10.3.1-A S4b	ULC W453
SH3.10C	50	1		ULC W452 System A

W 4.23 EXISTING WALL
ASSEMBLY:
16mm GWB
64mm C-H STUDS @ 406mm OC
25 mm GYPSUM LINER PANEL

SH3.10C 1 HR SHAFTWALL
ASSEMBLY:
16mm GWB
64mm C-H STUDS @ 406mm OC
25 mm GYPSUM LINER PANEL

TYP.
DORMITORY

2 LAYERS 16mm TYPE 'X' GYPSUM BOARD
ON WOOD BLOCKING IN
EXIST WOOD FRAMED CAVITY

FLOOR PLAN NOTES

- ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF BRITISH COLUMBIA BUILDING CODE 2018, ALL APPLICABLE CSA STANDARDS AND ALL LOCAL AND MUNICIPAL BY-LAWS AND CODES.
- ALL WORK SHALL BE EXECUTED ACCORDING TO THE BEST TRADE PRACTICES, BEING SQUARE, PLUMB AND TRUE TO LINE.
- DIMENSIONS SHOWN MAY NOT REFLECT ACTUAL EXISTING FIELD CONDITIONS. ALL DIMENSIONS TO BE SITE VERIFIED. CONTRACTOR TO NOTIFY THE ARCHITECT OF ANY SITE DISCREPANCIES BEFORE CONSTRUCTION/ FABRICATION OF ALL COMPONENTS.
- DIMENSIONS ARE TO FACE OF STUD OR TO FACE OF SHEATHING, GRID LINES, FACE OF CONCRETE AND FACE OF MASONRY WALLS EXCEPT AS NOTED. 'CLEAR' DIMENSION ARE TO FACE OF GWB (OR TO FACE OF TILE IN WASHROOM ONLY).
- GLAZING DIMENSIONS ARE FRAME DIMENSIONS U.N.O.
- REFER TO WALL SCHEDULES FOR WALL TYPES (TO BE READ IN CONJUNCTION WITH ALL DRAWINGS INCLUDING PLANS, WALL SECTIONS AND DETAILS, ETC.)
- ALL INTERIOR WALLS TO BE CONTINUOUS TO US OF FLOOR SLAB OR ROOF DECK ABOVE UNO. ACOUSTICALLY SEAL AROUND STRUCTURAL / ELECTRICAL / MECHANICAL ELEMENTS INTERRUPTING THE CONTINUITY OF THE WALL AT ANY ANGLE.
- ALL INTERIOR WALLS AND PARTITIONS AS TAGGED, ANY PARTITIONS NOT TAGGED SHALL AT A MINIMUM BE 92mm STEEL STUDS @ 600mm O/C WITH 1 LAYER 16mm TYPE 'X' GWB ON EACH SIDE.
- ITEMS CROSS-HATCHED OR MARKED "N.I.C." ARE "NOT IN CONTRACT"
- PROVIDE SOLID BLOCKING IN WALLS FOR ALL WALL MOUNTED EQUIPMENT, FIXTURES, FITTINGS AND MILLWORK.
- REFER TO CODE COMPLIANCE DRAWINGS FOR REQUIRED LOCATIONS OF FIRE RESISTANCE RATED ASSEMBLIES.
- REFER TO INTERIOR ELEVATIONS AND FINISH SCHEDULE FOR INTERIOR FINISHES.
- REFER TO WALL SCHEDULES FOR WALL TYPES (TO BE READ IN CONJUNCTION WITH ALL DRAWINGS INCLUDING PLANS, WALL SECTIONS AND DETAILS, ETC.)
- CONTINUITY OF FIRE SEPARATION I.E. CONTINUITY OF GWB TO BE MAINTAINED AT INTERVENING NON RATED PARTITIONS, BEHIND MILLWORK, SHOWERS, RECESSED ELECTRICAL PANELS & FIRE EXTINGUISHERS, ETC.
- INCLUDE LATERAL BRACING AS REQUIRED FOR SINGLE WALL STEEL STUD BULKHEAD AND WALLS.
- FOR CONCRETE HOUSEKEEPING PADS SEE STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
- FOR FLOOR AND ROOF DRAINS ALSO SEE MECHANICAL.
- TRANSITION STRIP AT ALL INTERIOR FLOOR FINISH TRANSITIONS TO MEET MINIMUM REQUIREMENTS OF BCBC 2018.
- WHERE COMPARTMENTALIZATION OF CONCEALED SPACES IS REQUIRED BY CODE, PROVIDE MIN. 0.38mm THICK METAL SHEET CLOSURES TO SUIT AT MAX. 20 m HORIZONTALLY AND AT 3 m VERTICALLY AT EACH FLOOR LEVEL. THIS INCLUDES ALL RAISSCREEN CAVITIES GREATER THAN 25mm THAT CONTAIN COMBUSTIBLE INSULATION AND OTHER ELEMENTS. CLOSURES MUST BE SUFFICIENT TO STOP THE SPREAD OF FLAME AS PER BCBC AND ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
- PROVIDE FIRE PROTECTION TO STRUCTURE AS REQUIRED PER CODE COMPLIANCE TABLE.
- PROVIDE SHOP DRAWINGS SUBMITTALS FOR ALL SECONDARY COMPONENTS & THEIR ATTACHMENTS. THE COMPONENTS SHALL BE DESIGNED; DRAWINGS SIGNED & SEALED BY THE SPECIALTY P.ENG. C/W LETTERS OF ASSURANCE.

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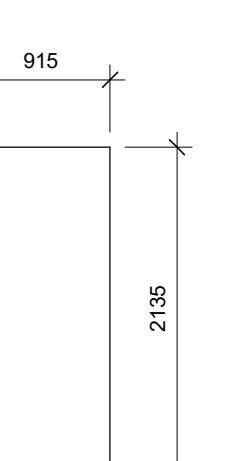
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FLOOR PLAN LEGEND

	Fire Separation - 1hr
	HATCH DENOTES EXISTING REMAIN, NOT IN SCOPE, UNLESS NOTED OTHERWISE
	GLAZING TYPE
	NEW DOOR & DOOR TAG
	DOOR NUMBER S = SINGLE DOOR; D = DOUBLE DOOR
	DOOR TYPE
	EXISTING DOOR TO REMAIN
	NEW DOOR WITH NEW FRAME
	EQUIPMENT / FURNITURE REFERENCE REFER TO SPECIFICATION REFER TO A.03.XX
	OSCI (OWNER SUPPLIED, CONTRACTOR INSTALLED)
	CSCI (CONTRACTOR SUPPLIED, CONTRACTOR INSTALLED)
	1 INTERIOR ELEVATIONS DRAWING NUMBER
	4 (A7.0.0) 2 INTERIOR ELEVATION NUMBER 3
	W/SA WALL TYPE
	EXISTING WALL
	NEW WALL
	AFF: ABOVE FINISHED FLOOR AT: ALUMINUM THRESHOLD CG: CORNER GUARD AS SPECIFIED LK: FULL HEIGHT LOCKERS

DOOR SCHEDULE



MH1-S

813 x 2135 x 45
HOLLOW METAL DOOR
PSF
STC XXX

MF1-S

915 x 2135 x 45
FIRE RATED METAL DOOR
PSF
45 MIN ULC RATING
STC XXX

PROJECT TITLE:
**CNV FIREHALL No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC

CLIENT:
**CITY OF NORTH
VANCOUVER**

DRAWING TITLE:
SECOND FLOOR PLAN

PROJECT NUMBER:
22396

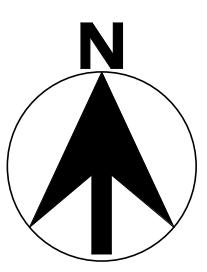
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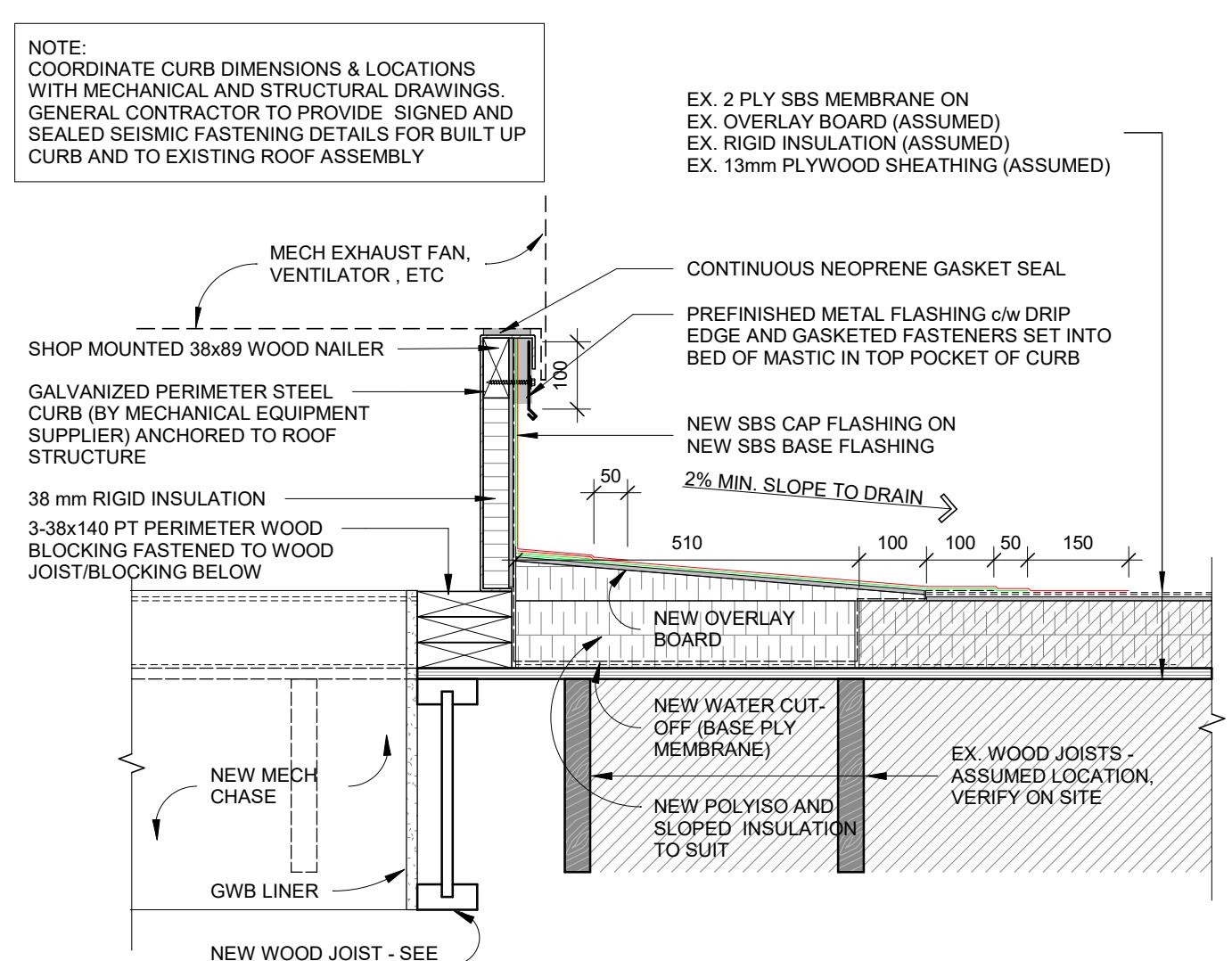
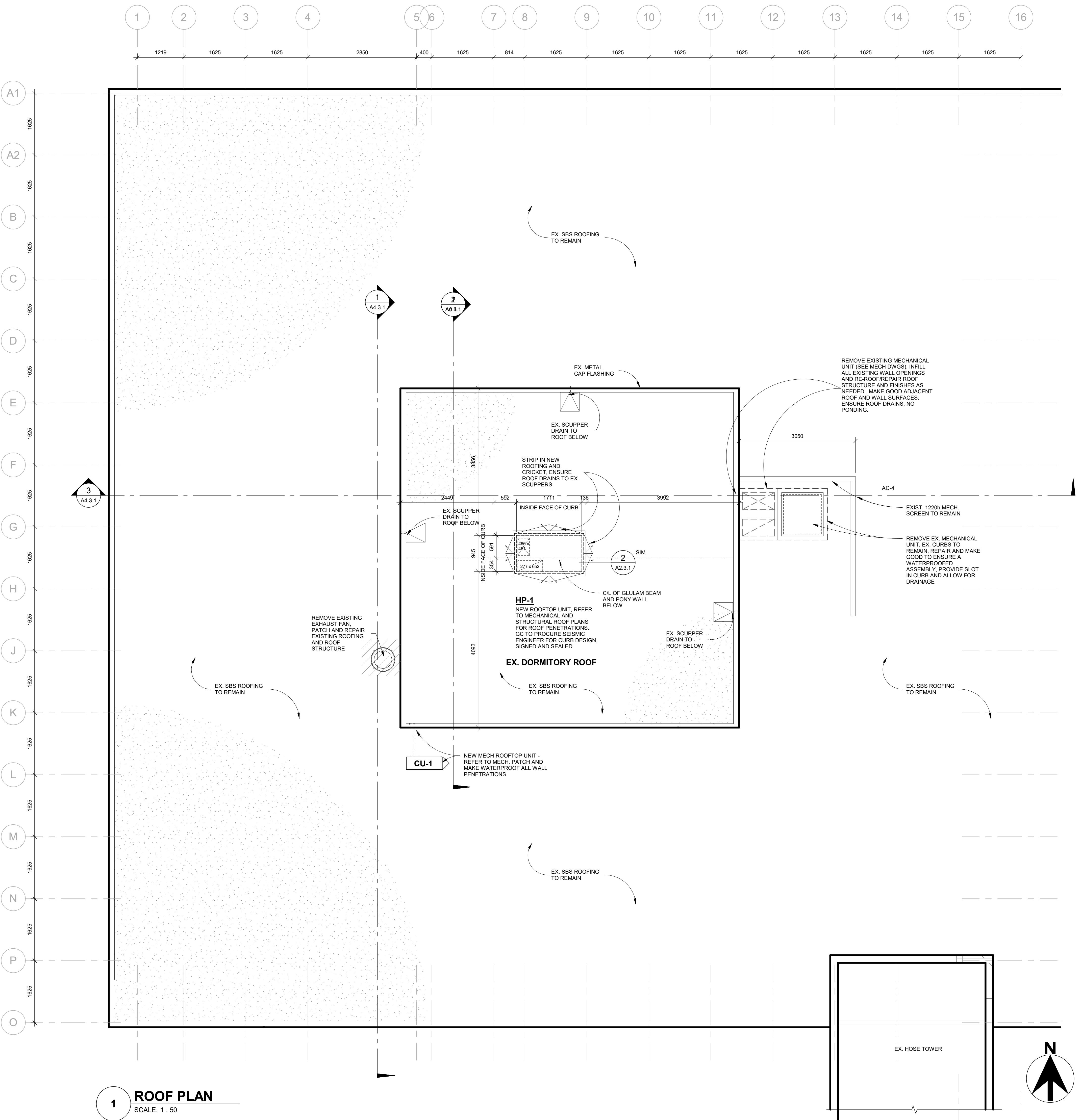
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A2.1.1

INTERIOR WOOD STUD WALL ASSEMBLIES SCHEDULE (EXISTING)

TYPE	(Note 6) STC	(Note 4) FRR	BCBC_Ref erence	(Note 1) ULC
W4.23	N/A	-		

EX. 13 MM GYPSUM BOARD (ASSUMED)
EX. 38 MM X 89 MM WOOD STUDS @ 406 MM O.C.
(ASSUMED)
EX. 1 LAYER SHEAR MEMBRANE
EX. 13 MM GYPSUM BOARD (ASSUMED)





TYP MECH UNIT CURB

SCALE: 1 : 10

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2024-05-01	ISSUED FOR BP
2023-07-04	ISSUED FOR PRE-TENDER COSTING

RE-ISSUED FOR TENDER

PROJECT TITLE:

**CNV FIREHALL No. 1 -
DORMITORY
RENOVATION**

**165 EAST 13th STREET, NORTH
VANCOUVER, BC**

DRAWING TITLE:

ROOF PLAN

BOOF PLAN NOTES

1. MECHANICAL EQUIPMENT IS SHOWN FOR CO-ORDINATION PURPOSES ONLY. REFER TO MECHANICAL DRAWINGS FOR EXACT NUMBER AND LOCATIONS OF ALL MECHANICAL ROOF PENETRATIONS.
 2. FOR RWL SEE MECHANICAL DRAWINGS.
 3. ROOFING CONTRACTOR / GENERAL CONTRACTOR TO ENSURE MINIMUM 2% ROOF SLOPE IN ALL AREAS. INSTALL CRICKETS AS REQUIRED.
 4. ROOF MEMBRANE TO BE CONTINUOUS FOR ENTIRE EXTENT OF ROOF AREA. WHERE PENETRATIONS OR INTERRUPTIONS OCCUR, CONTINUITY OF THE ROOF MEMBRANE SHALL BE MAINTAINED USING METHODS INDICATED IN THE DRAWINGS AND/OR SPECIFICATIONS.

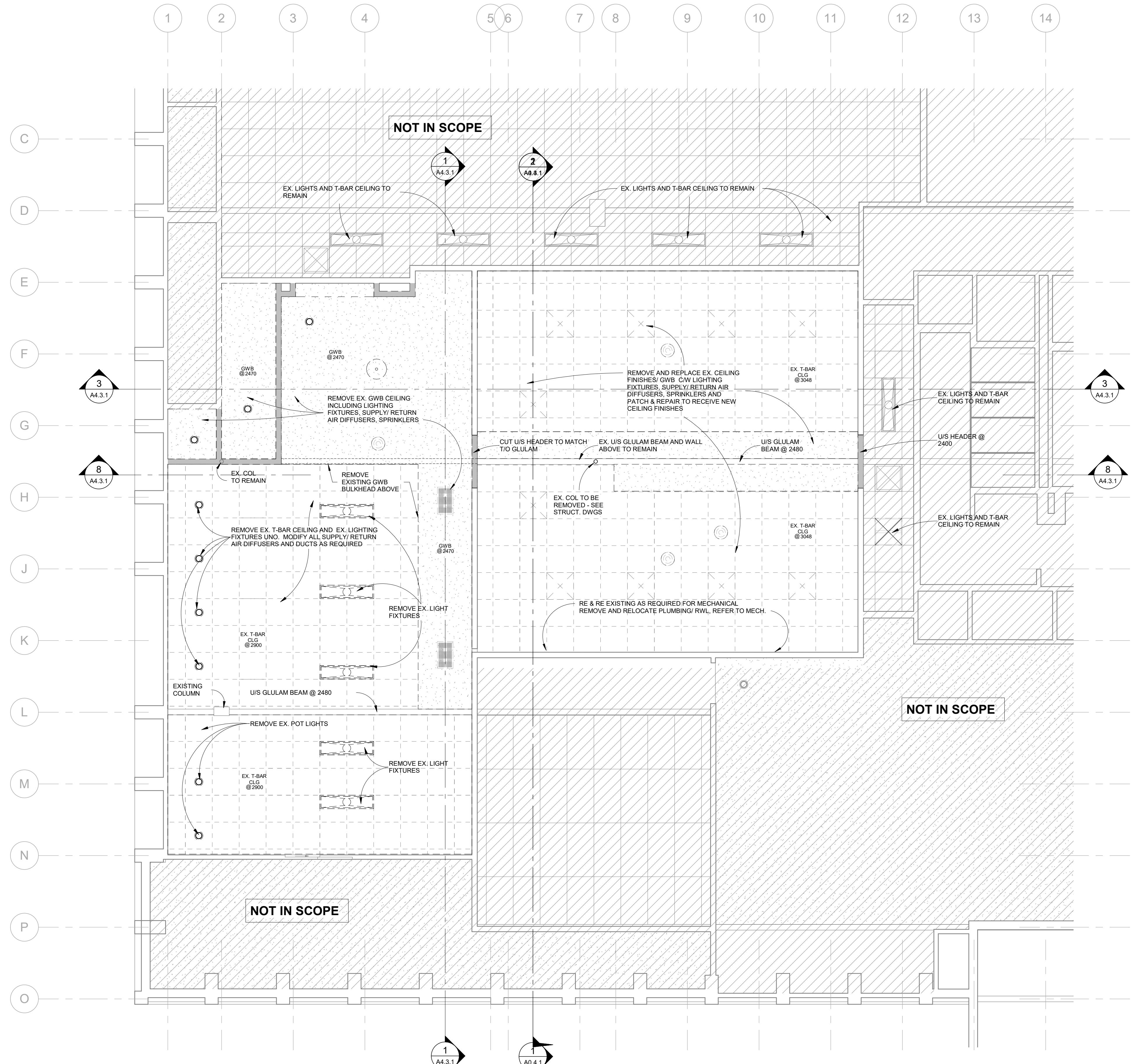
PROJECT NUMBER:
22396

DRAWN: SA SCALE: As indicated

DRAWING NUMBER:

A2.3.1

A2.3.1



**EXISTING / DEMO REFLECTED CEILING PLAN
- SECOND FLOOR**

1

SCALE: 1 : 50

REFLECTED CEILING PLAN - DEMOLITION	
LEGEND	
	HATCH DENOTES EXISTING REMAIN, NOT IN SCOPE, UNLESS NOTED OTHERWISE.
	EXISTING 610mm x 610mm ACOUSTIC CEILING TILE IN SUSPENDED T-BAR GRID, TO REMAIN
	EXISTING GYPSUM WALL BOARD CEILING TO REMAIN
	REMOVE 610mm x 610mm ACOUSTIC CEILING TILE IN SUSPENDED T-BAR GRID, UNLESS NOTED OTHERWISE
	REMOVE GYPSUM WALL BOARD CEILING
	EXISTING LIGHT FIXTURE TO BE REMOVED - SEE ELEC. DWGS.
	EXISTING LIGHT FIXTURE TO BE REMOVED AND REINSTALLED - SEE ELEC. DWGS.
	EXISTING MECHANICAL SUPPLY DIFFUSER TO BE REMOVED - SEE MECH. DWGS.
	EXISTING MECHANICAL SUPPLY DUCT RISER/ SECTION TO BE REMOVED - SEE MECH. DWGS.
	EXISTING MECHANICAL RETURN & EXHAUST GRILLE TO BE REMOVED - SEE MECH. DWGS.
	EXISTING WALL TO REMAIN
	EXISTING WALL TO BE REMOVED

RE-ISSUED FOR TENDER

PROJECT TITLE:
**CNV FIREHALL No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC

CLIENT:
**CITY OF NORTH
VANCOUVER**

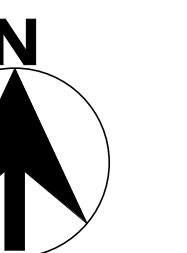
DRAWING TITLE:
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DEMO PLAN**

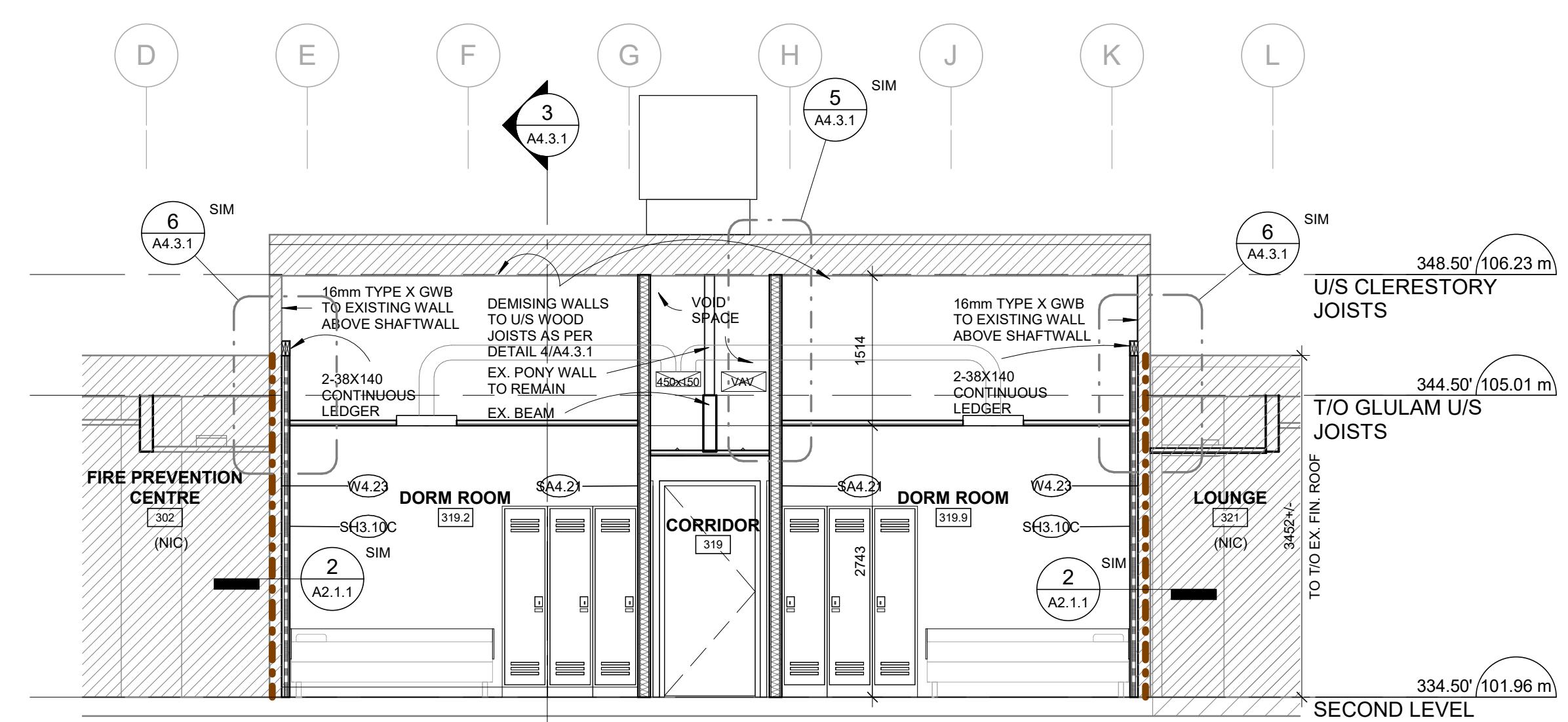
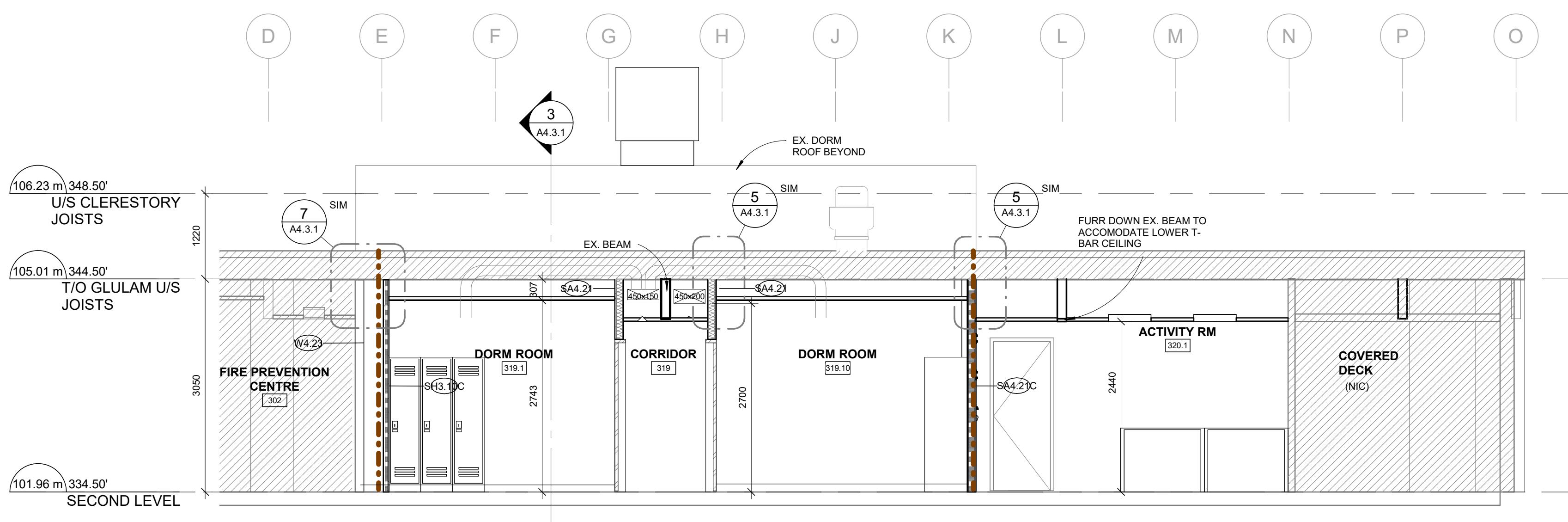
PROJECT NUMBER:
22396

DRAWN: SA SCALE: As indicated

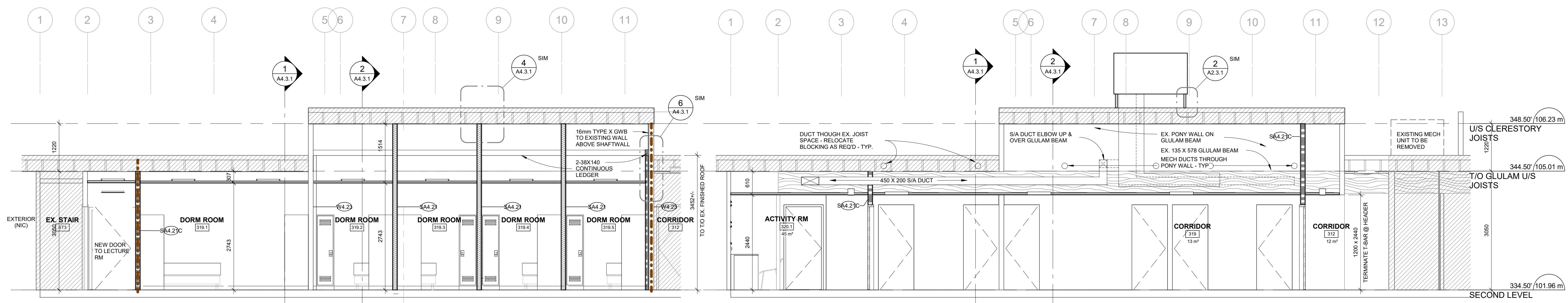
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A3.0.1



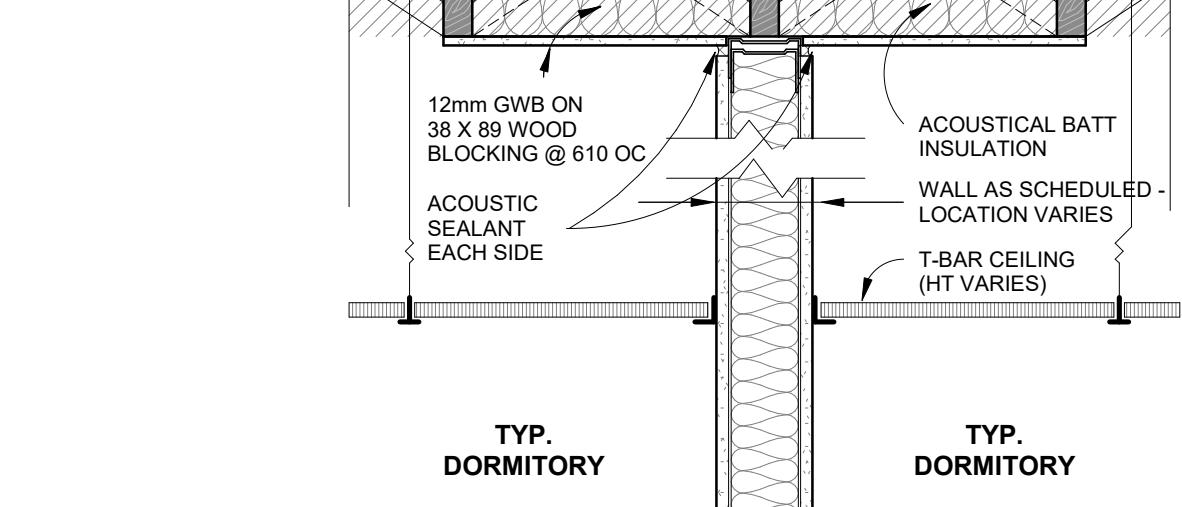


RE-ISSUED FOR TENDER



2 SECTION 2

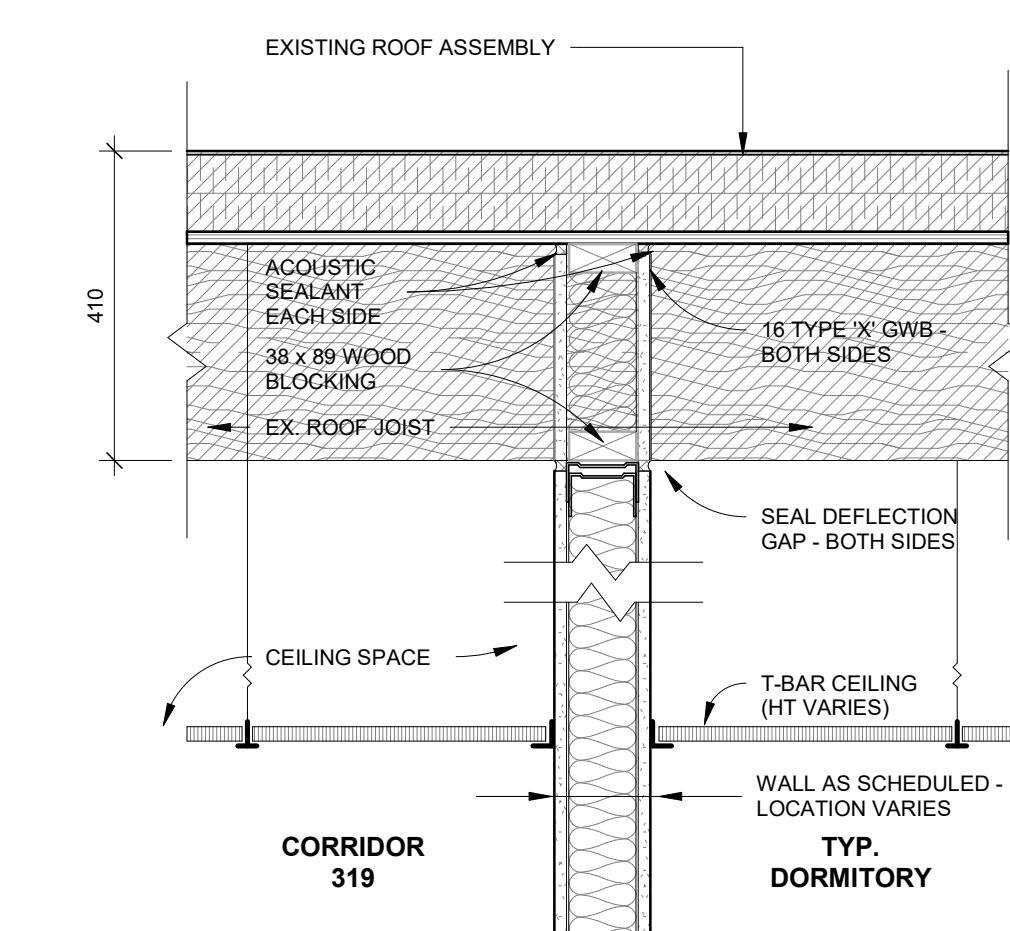
3 SECTION 3



4 TYP. NEW WALL TO U/S DECK DETAIL 1

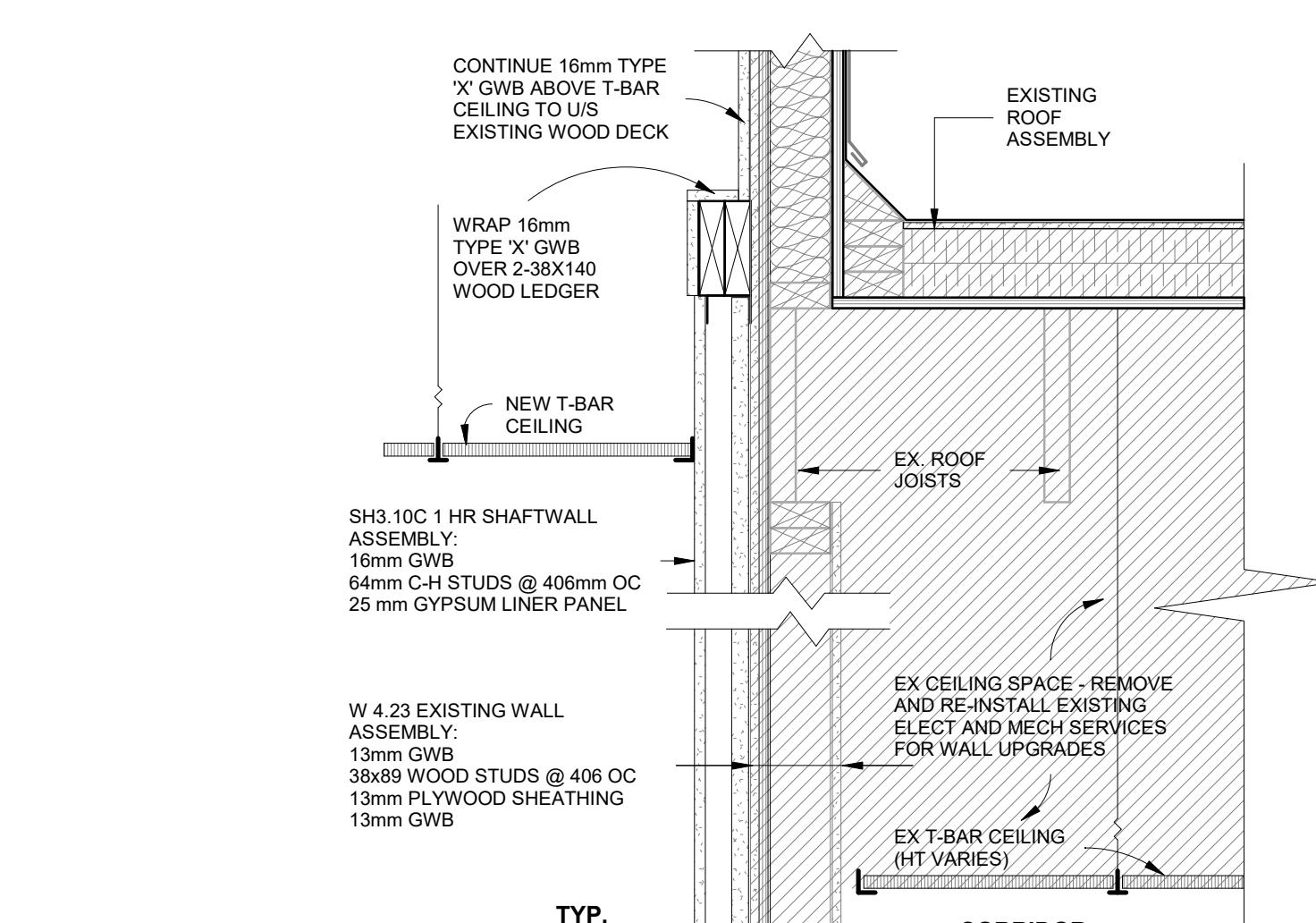
SCALE: 1:10

8 SECTION 4



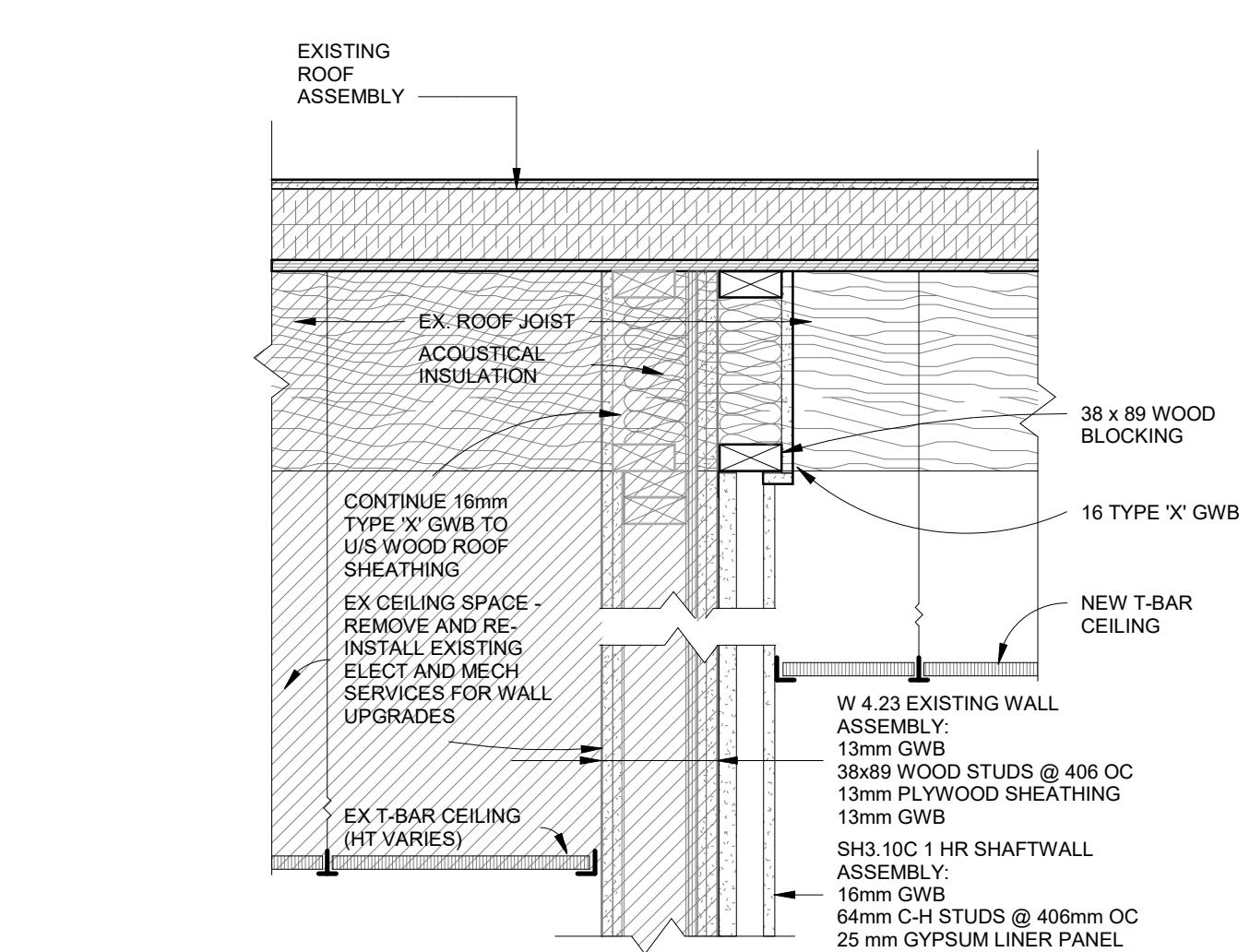
5 TYP. NEW WALL TO U/S DECK DETAIL 2

SCALE: 1:10



6 SHAFTWALL FIRESTOP AT T/O EX. ROOF DETAIL 3

SCALE: 1:10



7 TYP. EX. WALL & SHAFTWALL TO U/S DECK DETAIL 3

SCALE: 1:10

PROJECT TITLE:
**CNV FIREHALL No. 1 -
DORMITORY
RENOVATION**

165 EAST 13th STREET, NORTH
VANCOUVER, BC

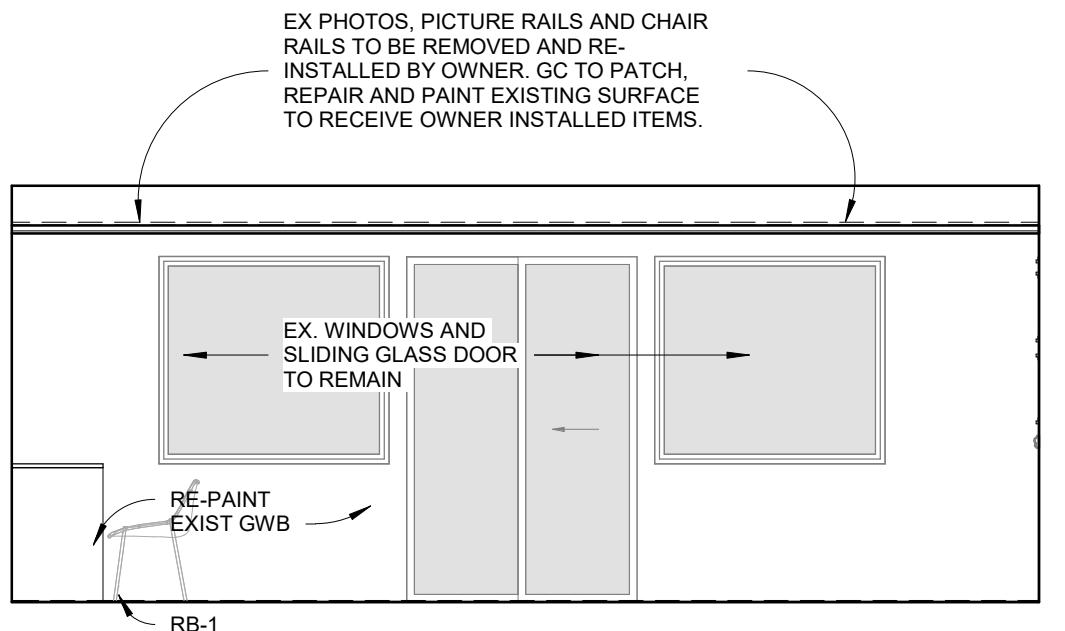
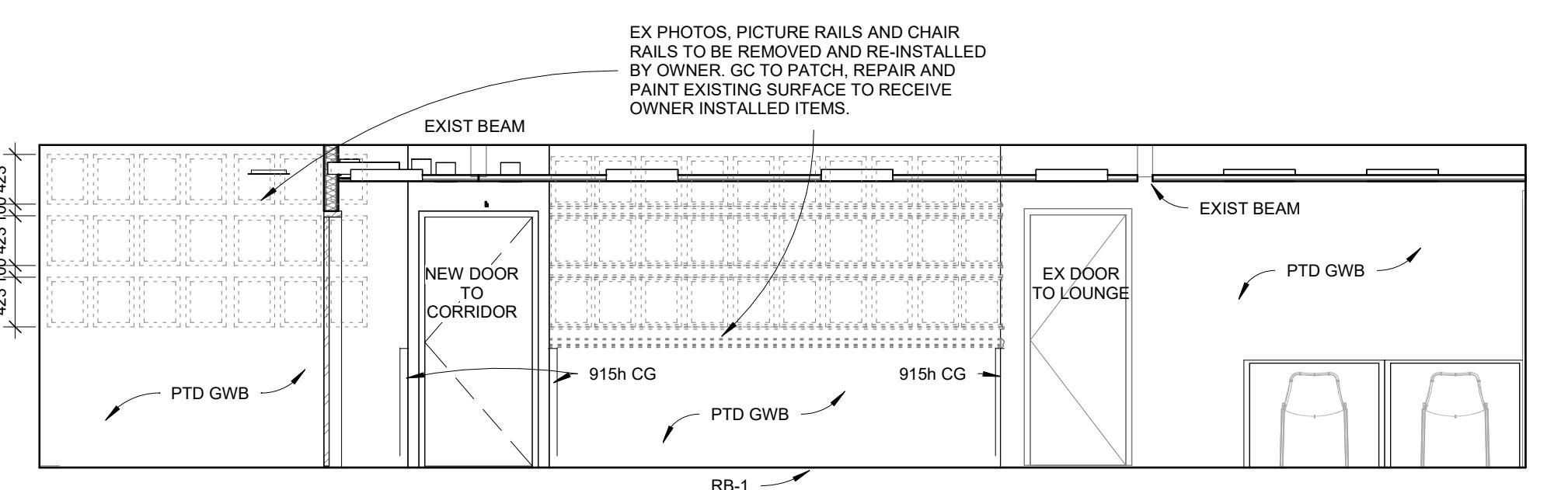
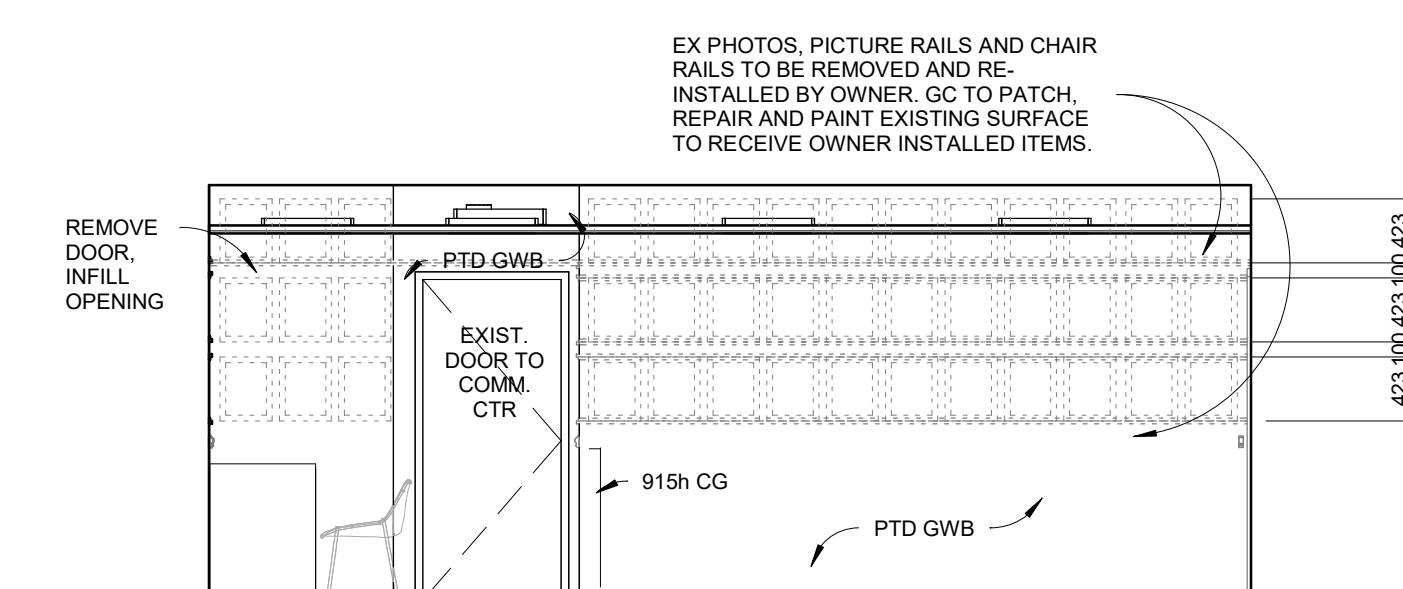
CLIENT:
**CITY OF NORTH
VANCOUVER**

DRAWING TITLE:
BUILDING SECTIONS

PROJECT NUMBER:
22396

DRAWN: SA SCALE: As indicated

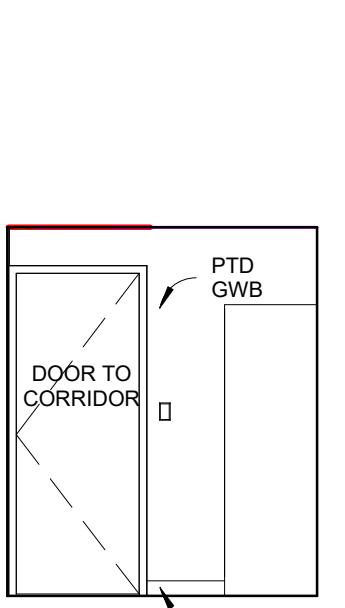
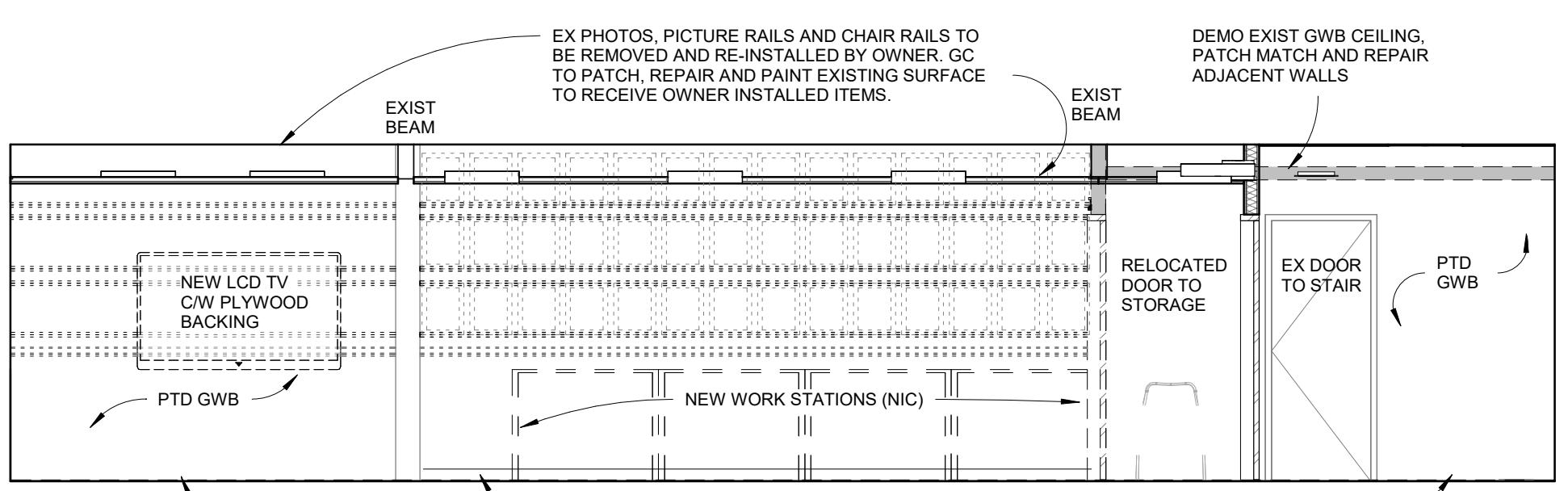
DRAWING NUMBER:
A4.3.1


1 ACTIVITY ROOM - NORTH

SCALE: 1 : 50

2 ACTIVITY ROOM - EAST

SCALE: 1 : 50


4 ACTIVITY ROOM - WEST

SCALE: 1 : 50

5 DORM ROOM - NORTH

SCALE: 1 : 50

6 DORM ROOM - EAST

SCALE: 1 : 50

7 DORM ROOM - SOUTH

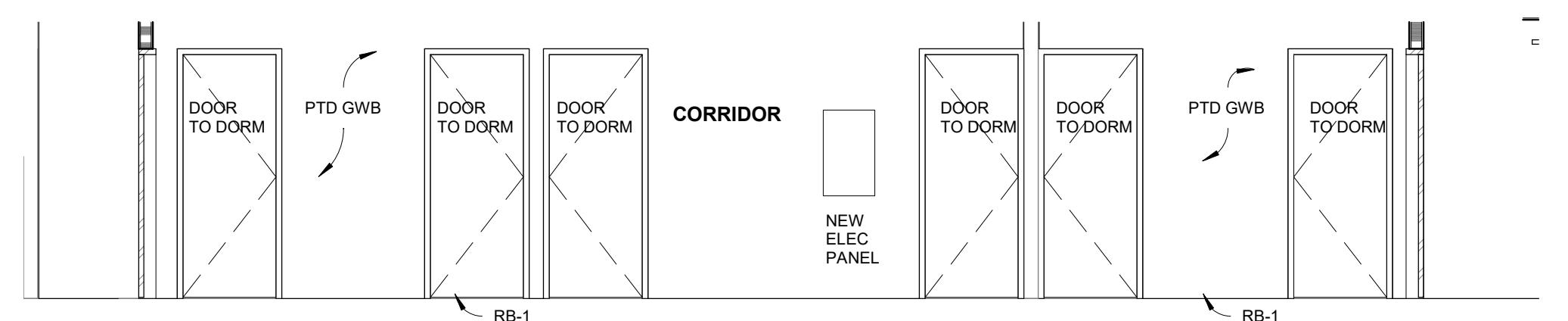
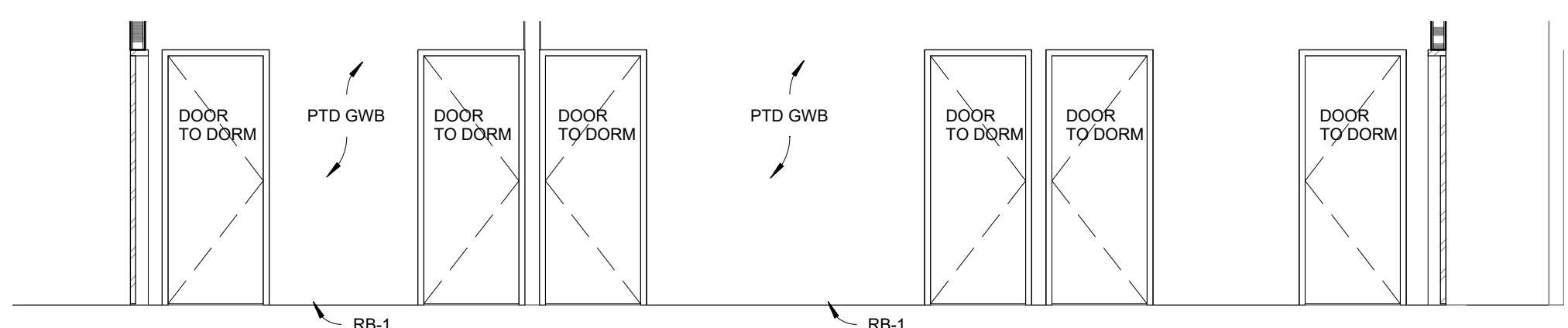
SCALE: 1 : 50

8 DORM ROOM - WEST

SCALE: 1 : 50

11 BED RAIL DETAIL

SCALE: 1 : 5


9 CORRIDOR - NORTH ELEVATION

SCALE: 1 : 50

10 CORRIDOR - SOUTH ELEVATION

SCALE: 1 : 50

13 LOCKER DETAILS

SCALE: 1 : 25

ROOM FINISH SCHEDULE										
ROOM NO.	ROOM NAME	BASE FINISH	FLOOR FINISH	NORTH WALL	EAST WALL	SOUTH WALL	WEST WALL	CEILING FINISH	CEILING HEIGHT	Finishes-Other/ Special
302	FIRE PREVENTION CENTRE	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING		
305	VESTIBULE	100mm	VT	PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	2750	
312	CORRIDOR	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING		
319	CORRIDOR	100mm	VT	PNT-2	PNT-2	PNT-2	PNT-2	ACT-1	2440	
319.1	DORM ROOM	100mm	VT	WP-1/PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	2743	
319.2	DORM ROOM	100mm	VT	WP-1/PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	2743	
319.3	DORM ROOM	100mm	VT	WP-1/PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	2743	
319.4	DORM ROOM	100mm	VT	WP-1/PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	2743	
319.5	DORM ROOM	100mm	VT	WP-1/PNT-1	PNT-1	PNT-1	PNT-1	ACT-1	2743	
319.6	DORM ROOM	100mm	VT	PNT-1	PNT-1	WP-1/PNT-1	PNT-1	ACT-1	2743	
319.7	DORM ROOM	100mm	VT	PNT-1	PNT-1	WP-1/PNT-1	PNT-1	ACT-1	2743	
319.8	DORM ROOM	100mm	VT	PNT-1	PNT-1	WP-1/PNT-1	PNT-1	ACT-1	2743	
319.9	DORM ROOM	100mm	VT	PNT-1	PNT-1	WP-1/PNT-1	PNT-1	ACT-1	2743	
319.10	DORM ROOM	100mm	VT	PNT-1	PNT-1	WP-1/PNT-1	PNT-1	ACT-1	2743	
319.11	DORM ROOM	100mm	VT	PNT-1	PNT-1	WP-1/PNT-1	PNT-1	ACT-1	2743	
320.1	ACTIVITY RM	100mm	VT	PNT-3	PNT-3	PNT-3	PNT-3	ACT-1	2440	
321	LOUNGE	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING	EXISTING			

FINISHES ABBREVIATION LEGEND

ACT	ACOUSTIC CEILING TILE
PNT	PAINT OR PAINTED
VT	VINYL COMPOSITE TILE
WP	WALL PROTECTION

INTERIOR ELEVATION NOTES

- ELEVATIONS ONLY SHOW THE LOCATION OF M&E FIXTURES, FOR TYPE AND NUMBER OF M&E FIXTURES REFER TO MECHANICAL AND ELECTRICAL DWGS
- REFER TO SPECIFICATIONS SECTION 06 40 00 ARCHITECTURAL WOODWORK FOR MILLWORK DETAILS
- FOR DOOR AND GLAZING INFORMATION REFER TO FLOOR PLANS AND A0.5.1
- FOR MILLWORK AND EQUIPMENT INFORMATION REFER TO SPECS AND FLOOR PLANS

CNV FIREHALL No. 1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC

CLIENT: CITY OF NORTH VANCOUVER

DRAWING TITLE: INTERIOR ELEVATIONS

PROJECT NUMBER: 22396

DRAWN: SA SCALE: As indicated

DRAWING NUMBER:

A7.0.0

RE-ISSUED FOR TENDER

ISSUED - RECORD		
NO.	DATE	DESCRIPTION
5	2024-09-16	ISSUED FOR TENDER
4	2024-09-11	RE-ISSUED FOR BP
3	2024-08-13	RE-ISSUED FOR BP
2	2024-05-01	ISSUED FOR BP
1	2023-07-04	ISSUED FOR PRE-TENDER COSTING

July 11, 2024



CITY OF NORTH VANCOUVER
101 West 14th Street
North Vancouver, BC V7M 19H

Attention: Gordana Askraba

Ref: CONTRACTOR VERSION - PRE-PROJECT HAZARDOUS BUILDING MATERIALS SURVEY FOR THE PLANNED DORMITORY RENOVATION AT FIRE HALL NO.1 AT 165 EAST 13TH STREET, NORTH VANCOUVER, BC

1.0 INTRODUCTION

Astech Consultants Ltd. (Astech) were retained by the City of North Vancouver to conduct a Pre-Project Hazardous Building Materials Survey and compile a detailed report on the presence and location of asbestos containing building materials, lead, polychlorinated biphenyls (PCBs), mercury, stored chemicals, and silica to be impacted by the planned Dormitory renovation at Fire Hall No.1 located at 165 East 13th Street, North Vancouver, BC.

Astech's survey and report format is designed specifically to satisfy the current applicable regulation from the Workers' Compensation Board of British Columbia (WCB) Occupational Health and Safety Regulation 20.112 regarding hazardous building material assessments by a Qualified Person for buildings and structures.

This survey was conducted on June 18 and 26, 2024 by Tom Farrell assisted by Cassandra Marshall and Sean Habkirk of Astech, and is amalgamated with information from previous surveys conducted by Astech, Pinchin, and Kinetic OHS Services Ltd. It must be emphasized that this survey was concerned exclusively with the subject areas of the building. As required for the planned renovation scope of work, the site survey was destructive in nature and thorough in investigating layered floor, wall, and ceiling systems. However, inaccessible areas which would require the actual dismantling of substantial portions of the building in order to gain access were not investigated. No attempt was made to investigate some areas of the building, underground services, or the surrounding property. Therefore, if during work activities, other hazardous materials, asbestos containing materials, or potential asbestos containing materials not included in this report are discovered, work should immediately cease in the affected area. At that time, Astech should be contacted so that they can initiate immediate appropriate action so that there are no undue delays.

2.0 BUILDING DESCRIPTION

The building is described as a two-storey plus basement fire hall building with hose tower faced with brick and concrete. According to BC Assessment, the building was originally constructed in 1971. The building has had several renovations over the years. The building is heated by a natural gas boiler and air handling unit, and rooftop natural gas HVAC units and ductwork. The subject of this report is specific areas of the building to be impacted by the planned Dormitory Renovation Project. At the time of survey, the subject areas were in good condition, except as noted in concealed wall cavities and ceiling spaces.

3.0 METHODOLOGY

3.1 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 areas. During this inspection, seventy-one (71) bulk samples of potential asbestos containing materials were collected from specific locations of the building, however, two (2) bulk samples did not require analysis. The number of samples collected during this survey are in accordance with the guidelines established by the WCB in their 2023 publication Safe Work Practices for Handling Asbestos, and as indicated by actual site conditions. The samples collected were submitted for analysis at our in-house laboratory in accordance with the WCB Occupational Health and Safety Regulation, utilizing polarized light microscopy, and dispersion staining techniques. Results of laboratory analysis of the samples collected during this survey and relevant samples previously collected are attached.

3.2 LEAD FINISHES

A visual inspection was undertaken in order to determine the type and location of paints, primers, coatings, and/or glazing finishes suspected of containing lead at the subject areas. During this inspection, nine (9) potential lead finishes were collected/analyzed from specific locations of the building. The finishes were collected/analyzed in accordance with US EPA methods and the requirements of the WCB Occupational Health and Safety Regulation. Results of the finishes collected/analyzed during this survey and relevant samples previously collected are attached.

3.3 LEAD CONSTRUCTION MATERIALS, PCBs, MERCURY, STORED CHEMICALS, AND SILICA

A visual inspection was undertaken at the subject areas in order to determine the presence of:

- construction materials suspected of containing lead and other heavy metals,
- fluorescent and high intensity discharge (HID) light fixtures suspected of containing PCB ballasts or capacitors,
- thermostats, light tubes/bulbs, and associated equipment suspected of containing mercury,
- stored chemicals suspected of being toxic, flammable, or explosive, and
- building materials suspected of containing silica in crystalline and non-crystalline forms.

4.0 INSPECTION RESULTS

4.1 ASBESTOS CONTAINING MATERIALS

GENERAL NOTES

#1 Filling Compound and Affected Gypsum Board: Although the analytical results for some of the gypsum board filling compound samples indicate non-asbestos results because of renovations conducted in the 1980s or later, site investigation and laboratory analysis of other representative samples have determined that as listed below, there is asbestos containing filling compound on older gypsum board (installed between approximately 1964 and 1979), or there is newer gypsum board with non-asbestos filling compound fastened directly to or abutting the older gypsum board with asbestos containing filling compound (some double layered and some concealed behind wood and other building materials).

As well, some of the asbestos containing filling compound and contaminated gypsum board are concealed behind and/or abutting wood, wood studs, ceramic tiles, grouts, adhesives, cove base, texture coats, acoustic ceiling panels, 2' x 2' ceiling tiles, and other building materials, and are contaminated with the asbestos containing filling compound. There is also asbestos containing filling compound and/or asbestos containing filling compound residue on and within electrical junction boxes and other building materials where finished gypsum board is located.

The removal of flooring materials, cupboards, shelving, mouldings, millwork, and other items fastened to asbestos containing building materials on floors, walls, and ceilings must be removed by the qualified Abatement Contractor following "Moderate Risk" asbestos work procedures and once decontaminated, may either be disposed of, salvaged, or retained for future use.

Additionally, there is asbestos containing filling compound residue and debris located on floors (concealed beneath layers of carpet, ceramic tiles, asbestos containing flooring adhesive residue, asbestos containing floor tiles, asbestos containing floor tile adhesive, asbestos containing floor levelling compound, potential asbestos containing ceramic floor tile grout and mortar, non-asbestos carpet adhesive, and other flooring materials, cellulose board, construction paper, wood, mouldings, plumbing fixtures, millwork, and/or other building materials) where asbestos containing filling compound on gypsum board is located, resulting in asbestos contaminated carpet, ceramic tiles, adhesives, and other building materials on all finished floors where asbestos containing filling compound on gypsum board is located.

#2 Spray Applied Texture Coat: As listed below, there is asbestos containing spray applied texture coat on gypsum board ceilings with asbestos containing filling compound (some concealed).

There is also asbestos containing spray applied texture coat overspray on and within electrical junction boxes and other building materials where asbestos containing spray applied texture coat is located.

Additionally, there is asbestos containing spray applied texture coat residues and debris located on floors (concealed beneath layers of carpet, ceramic floor tiles, asbestos containing flooring adhesive residue, asbestos containing floor tiles, asbestos containing floor tile adhesive, asbestos containing floor levelling compound, potential asbestos containing ceramic floor tile grout and mortar, non-asbestos carpet adhesive, and other flooring materials, cellulose board, construction paper, wood, mouldings, plumbing fixtures, millwork, and/or other building materials) where asbestos containing spray applied texture coat is located, resulting in asbestos contaminated carpet, sheet floorings, adhesives, and other building materials on all finished floors where spray applied texture coat is located.

#3 Potential Asbestos Containing Building Materials: The potential asbestos containing building materials listed below, must be considered as asbestos containing until laboratory results determine otherwise. These materials were either inaccessible at time of survey and/or not likely to be impacted by project. In order to sample the materials destructive testing may be required.

The visual inspection and/or analytical results determined that asbestos containing materials and/or potential asbestos containing materials are located at the following locations.

BASEMENT (SUBJECT AREAS)

Sprinkler Room

- **Asbestos** containing grey mastic (caulking) on joints of older ductwork (Pinchin).
- Non-asbestos pipe thread compound at fittings of sprinkler and mechanical piping.
- Non-asbestos green mastic on joints of newer ductwork (Pinchin).
- Non-asbestos firestop grout at ceiling penetrations (Pinchin).

MAIN FLOOR (SUBJECT AREAS)

Truck Bay

- Non-asbestos paint/coating on concrete posts and concrete ceiling.
- Non-asbestos pipe thread compound at fittings of sprinkler and mechanical piping.
- No asbestos materials observed.

SECOND FLOOR (SUBJECT AREAS)

Kitchen Area including Closets

- **Asbestos** containing filling compound and/or **asbestos** containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- **Asbestos** containing filling compound on gypsum board (see General Note #1 above).
- **Asbestos** containing spray applied texture coat on ceiling (concealed behind a layer of newer gypsum board on wood studs) (see General Note #2 above).
- Potential **asbestos** containing ceramic floor tile grout and mortar on potential **asbestos** containing building materials (see General Note #3 above).
- Potential **asbestos** containing ceramic wall tile grouts and adhesives (see General Note #3 above).
- Potential **asbestos** containing sealant in window of interior wood door (see General Note #3 above).
- Non-asbestos concrete wall block mortar.
- Non-asbestos pin adhesive behind acoustic ceiling panels.

TV Room

- **Asbestos** containing filling compound and/or **asbestos** containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- **Asbestos** containing filling compound on gypsum board (and debris above suspended ceiling tiles) (see General Note #1 above).
- **Asbestos** containing spray applied texture coat on ceiling and debris above suspended ceiling tiles (see General Note #2 above).
- Potential **asbestos** containing flooring and other building materials which may be beneath carpet (see General Note #3 above).
- Non-asbestos 2' x 2' bevelled ceiling tiles.

Games Room

- Asbestos containing flooring adhesive residue (concealed beneath a layer of carpet, non-asbestos carpet adhesive, and other building materials).
- Asbestos containing floor tiles and/or floor tile residue may also be present beneath carpet in some areas.
- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).
- Asbestos containing spray applied texture coat and/or residue on ceiling and debris above suspended ceiling tiles (see General Note #2 above).
- Asbestos containing cement board and debris above suspended ceiling tiles (some concealed).
- Non-asbestos 2' x 2' bevelled ceiling tiles.

Telephone Room

- Asbestos containing flooring adhesive residue (concealed beneath a layer of carpet, non-asbestos carpet adhesive, and other building materials).
- Asbestos containing floor tile debris and asbestos containing floor tile adhesive (concealed beneath a layer of carpet, non-asbestos carpet adhesive, and other building materials).
- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).

Dormitory

- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).
- Non-asbestos cove base and non-asbestos cove base adhesive (however, see General Note #1 above).
- Non-asbestos 2' x 2' bevelled ceiling tiles.

Hallway (east of dormitory)

- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).
- Potential asbestos containing ceramic floor tile grout and mortar on potential asbestos containing building materials (see General Note #3 above).
- Non-asbestos cove base and non-asbestos cove base adhesive (however, see General Note #1 above).
- Non-asbestos concrete wall block mortar.
- Non-asbestos paint/coating on concrete block walls.
- Non-asbestos 2' x 2' bevelled ceiling tiles.

Office Area (affected south wall area only)

- Asbestos containing flooring adhesive residue (concealed beneath a layer of carpet, non-asbestos carpet adhesive, and other building materials).
- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).
- Non-asbestos 2' x 2' bevelled ceiling tiles and non-asbestos 1' x 2' bevelled ceiling tiles.

Hallway to Office Area (affected northwest area only)

- Asbestos containing grey floor levelling compound (concealed beneath a layer of carpet, non-asbestos carpet adhesive, and other building materials).
- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).
- Non-asbestos cove base and non-asbestos cove base adhesive (however, see General Note #1 above).
- Non-asbestos 2' x 2' bevelled ceiling tiles.

Vestibule (north of Games Room)

- Asbestos containing floor levelling compound on asbestos containing floor tile adhesive residue (concealed beneath a layer of carpet, non-asbestos carpet adhesive, and other building materials).
- Asbestos containing filling compound and/or asbestos containing spray applied texture coat residue and/or debris beneath flooring materials (see General Notes #1 and #2 above).
- Asbestos containing filling compound on gypsum board (see General Note #1 above).
- Non-asbestos cove base and non-asbestos cove base adhesive (however, see General Note #1 above).

Wall Cavities and Ceiling Spaces including above Suspended Ceiling Systems

- Asbestos containing filling compound on gypsum board and debris (see General Note #1 above).
- Asbestos containing spray applied texture coat on ceilings and debris (see General Note #2 above).
- Asbestos containing spray applied texture coat overspray in electrical junction boxes, portions of ductwork, on wood, and/or on other building materials, in areas where asbestos containing spray applied texture coat is located (see General Note #2 above).
- Asbestos containing cement board and debris (some concealed).
- Asbestos containing grey mastic (caulking) on joints of older ductwork. **Note:** The newer grey and green duct mastics are non-asbestos.
- Asbestos containing pipe thread compound at fittings of natural gas piping (mostly concealed).
- Non-asbestos kraft paper on non-asbestos adhesive on non-asbestos fibreglass batt insulation, however, where the insulation is in contact with asbestos containing filling compound on gypsum board, asbestos containing spray applied texture coat, cement board, or associated debris, the insulation must be considered as asbestos contaminated.
- Non-asbestos pipe thread compound at fittings of sprinkler piping.

EXTERIOR (SUBJECT AREAS)**Sundeck (south of Games Room)**

- Potential asbestos containing ceramic floor tile grout and mortar on potential asbestos containing building materials (see General Note #3 above).
- Non-asbestos stucco on walls and ceiling.

Walls

- Potential asbestos containing building materials that may be present (see General Note #3 above).

Doors and Windows

- Potential asbestos containing sealants/putties in and caulking around exterior brown metal-framed windows and sliding glass doors, including windows concealed at Upper Rooftop (see General Note #3 above).
- Potential asbestos containing sealant in exterior vinyl-framed windows (see General Note #3 above).
- Potential asbestos containing sealant in window of exterior wood door (see General Note #3 above).

Main Rooftop

- Asbestos containing pipe thread compound at fittings of natural gas piping (mostly concealed).
- Potential asbestos containing building materials which may be behind metal wall panels at Upper Rooftop (see General Note #3 above).
- Non-asbestos rolled roofing shingles and mastics atop ductwork.
- Non-asbestos firestop caulking at natural gas wall pipe penetration.
- Non-asbestos firestop caulking at metal flashing around exhaust fan/diffuser.
- Non-asbestos firestop caulking at electrical wall penetration on air handling unit 4.
- Non-asbestos mastic on ductwork at air handing unit 4.
- Non-asbestos caulkings at joints of metal flashing around ductwork.
- Non-asbestos pipe thread compound at fittings of natural gas piping.
- Non-asbestos black and silver coatings on fittings of natural gas piping.

Upper Rooftop (at centre)

- Non-asbestos layered roofing felts, mastics, papers, and membranes.
- No asbestos materials observed.

4.2 LEAD

The visual inspection and/or laboratory analytical results determined the following at the subject areas:

Interior

- grey on off-white paint containing 1,500 parts per million (PPM) of **lead** was used on concrete block walls,
- grey paint containing 709 PPM of **lead** was used on wood surfaces,
- grey paint containing 601 PPM of **lead** was used on wood lockers in Dormitory,
- cream paint containing 286 PPM of **lead** was used on gypsum board surfaces,
- pink paint containing 139 PPM of **lead** was used on gypsum board surfaces,
- beige on blue paint containing 63 PPM of **lead** was used on concrete surfaces,
- beige and grey paints containing 6 PPM of **lead** (in 2 samples) were used on wood surfaces,
- off-white paint containing 6 PPM of **lead** was used on gypsum board surfaces,
- light grey paint containing less than (<)5 PPM of **lead** was used on gypsum board surfaces (Kinetic),
- brown paint containing <5 PPM of **lead** was used on gypsum board surfaces (Kinetic), and
- glazing finishes likely containing **lead** were used on ceramic tiles.

Exterior

- there are **lead** roof vents and caps located on the Main Rooftop.

4.3 PCBs

The visual inspection determined that there are approximately seventeen (17) fluorescent light fixtures at the subject areas suspected of having one or more PCB containing ballasts. PCB ballast identification requires the disassembly of the light fixture in order to locate the manufacturer's identification code.

4.4 MERCURY

The visual inspection determined that there are no wall mounted thermostats at the subject areas that contain mercury. However, there are numerous fluorescent light tubes/bulbs at the subject areas that contain mercury.

4.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

The following list of materials were present in and around the subject areas at time of inspection (some of which may be retained for ongoing/future use):

- a few containers of cleaners,
- a few fire extinguishers,
- compressors and piping with suspect ozone depleting substances (CFC's) in two refrigerators an air handling unit, and HVAC units,
- smoke detector(s) with a radioactive component within,
- a few areas with rodent droppings in concealed spaces, and
- piping containing natural gas leading to heating equipment.

4.6 SILICA

All concrete, cement, ceramic tiles, gypsum board, stucco, grouts, mortars, and any other cementitious building materials are suspected of containing silica in crystalline and non-crystalline forms.

4.7 GYPSUM BOARD

The visual inspection and/or laboratory analytical results determined the following:

- there is **asbestos** containing filling compound on gypsum located throughout most of the subject areas (see Section 4.1 including General Note #1 above), and therefore would be disposed of as mixed asbestos and gypsum waste, and
- there is non-asbestos filling compound on gypsum board located in a few areas, however, refer to General Note #1 in Section 4.1 above.

5.0 RECOMMENDATIONS

5.1 ASBESTOS CONTAINING MATERIALS

Prior to the renovation or demolition of a building or its components, the asbestos (or potential asbestos) containing materials that are **directly impacted by the work or are damaged and require remedial action** must first be either enclosed or encapsulated, or removed and disposed of by a qualified hazardous materials abatement contractor's trained and authorized personnel. If repaired (enclosed or encapsulated) prior to renovations, the asbestos containing materials may be left in place in an undisturbed stable condition.

Asbestos and potential asbestos containing materials not impacted by renovation work and not requiring remedial action may remain in place as long as they are in a stable condition (not damaged) in which they would be considered to be safely enclosed or encapsulated. Workers must be advised in writing of their presence and location so that the asbestos and potential asbestos containing materials are not inadvertently disturbed. Removing, enclosing, encapsulating, or otherwise disturbing (e.g. drilling, abrading, etc.) asbestos or potential asbestos containing materials must be performed by a qualified contractor's trained personnel in accordance with the WCB Occupational Health and Safety Regulation. Disposal of asbestos containing materials must be performed in accordance with the BC Ministry of Environment and Climate Change Strategy - *Environmental Management Act* - Hazardous Waste Regulation.

5.2 LEAD

Paints/Primers

Where lead (or potential lead) based paints and/or primers are affected by a project, the work must be performed by a qualified contractor in accordance with the WCB Occupational Health and Safety Regulation and their 2020 publication entitled Safe Work Practices For Handling Lead.

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 by the contractor, in accordance with the 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 **metal building materials** may be transported as normal construction waste to a metal recycling facility. Lead containing paints which remain attached to **concrete, wood, and/or other non-metal 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 LBP's are sampled intact, fastened directly to the base substrate, and representative of the waste stream created by demolition. The contractor shall have the representative sample 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, welding/torch cutting, 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 and Climate Change Strategy - Environmental Management Act - Hazardous Waste Regulation.

Glazing Finishes

Where ceramic tiles with lead (or potential lead) glazing finishes are to be removed, the ceramic tile and glazing finish should be removed intact. 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 removal contractor's risk assessment and site specific work procedures. Ceramic tiles and glazing finishes that are removed intact may be disposed of as normal construction waste.

If the lead glazing finishes are to be separated or removed from the ceramic tiles by means of sanding, scraping, abrading, blasting, etc., more stringent work procedures by a qualified abatement contractor would apply in order to satisfy the WCB Occupational Health and Safety Regulation and their 2020 publication entitled Safe Work Practices For Handling Lead.

Lead Construction Materials

Where affected by a renovation project, the lead roof jacks must first be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment and Climate Change Strategy - Environmental Management Act - Hazardous Waste Regulation.

5.3 PCB CONTAINING BALLASTS

It is recommended that the identification of affected PCB ballasts be performed by qualified personnel prior to or in conjunction with the renovation of a building, at a time when it becomes feasible to isolate

electrical power and disassemble/disconnect the light fixtures. The ballasts that are identified as PCB containing must be removed in accordance with the WCB Occupational Health and Safety Regulation and disposed of in accordance with the BC Ministry of Environment and Climate Change Strategy - Environmental Management Act - Hazardous Waste Regulation.

5.4 MERCURY

Where affected by a renovation project, the mercury containing light tubes/bulbs must first be removed, and be salvaged, recycled or disposed of, in accordance with the BC Ministry of Environment and Climate Change Strategy - Environmental Management Act - Hazardous Waste Regulation.

5.5 STORED CHEMICALS AND OTHER HAZARDOUS MATERIALS

Stored Chemicals

Where affected by a renovation project, stored chemicals, ozone depleting substances within refrigeration equipment, and radioactive equipment must first be removed, and be recycled or disposed of, in accordance with the BC Ministry of Environment and Climate Change Strategy - Environmental Management Act - Hazardous Waste Regulation.

Rodent Droppings

Rodent droppings which can cause infectious disease and/or respiratory disease in humans should be removed as biohazardous waste by a qualified abatement contractor in accordance with the WCB Occupational Health and Safety Regulation, prior to unprotected trades performing work in or conducting selective demolition of a building. In lieu of removing droppings, workers shall wear respirators and protective clothing while in contaminated areas of a building, and while conducting selective demolition of a building.

Natural Gas

The natural gas must be shut off and purged by Fortis BC or a qualified trades person prior to work that would affect the gas, and prior to building renovation.

5.6 SILICA

Where cementitious building materials that are suspected of containing silica in crystalline form are directly impacted by the project (i.e. drilling, cutting, abrading, etc.), the work should be performed in a controlled manner to avoid the release of crystalline silica dust. Cutting, drilling, or otherwise disturbing these building materials must be performed by a qualified contractor's trained personnel in accordance with the WCB Occupational Health and Safety Regulation.

6.0 OWNER'S AND ABATEMENT CONTRACTOR'S RESPONSIBILITIES

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 the work and project air monitoring be performed by a qualified and properly insured (with proof of necessary asbestos inclusion rider) Hazardous Materials Abatement Contractor.

Abatement Contractor's Responsibilities

The Abatement Contractor upon completing the work shall have their "Qualified Person" inspect the worksite in its entirety to confirm that asbestos and other hazardous building materials have been properly removed, then promptly provide the Owner with a signed Letter of Completion.

As well, prior to transport of hazardous waste, the Abatement Contractor shall assist the Owner by completing and submitting the BC Ministry of Environment Waste Generator Number Registration Form (Schedule 5 Form 1), once signed by the Owner, if no BC Generator number exists. If a BC Generator number exists and requires updating for this specific project, the Abatement Contractor shall assist with completing and submitting the update.

Project Documentation should also be provided to the Owner including, but not necessarily limited to, a Notice of Project for work involving Asbestos and/or Lead Paint, 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 APPROXIMATE QUANTITIES FOR HAZARDOUS MATERIALS

The following approximate quantities for hazardous materials **that may be impacted in the subject areas of the building** are provided as a means to satisfy the requirements of the WCB, and are provided for reference only. Contractors shall be responsible for verifying exact quantities to be impacted by the project for the purpose of bidding the work.

ASBESTOS CONTAINING MATERIALS AND POTENTIAL ASBESTOS CONTAINING MATERIALS	APPROXIMATE QUANTITIES
Confirmed Asbestos Containing Materials	
Asbestos Filling Compound on Gypsum Board, Asbestos Contaminated Gypsum Board, Residue, & Other Building Materials, Asbestos and/or Asbestos Contaminated Flooring Materials and Debris, and Concealed Filling Compound and Spray Applied Texture Coat Residue and Debris on Floors (including necessary work area enclosure and air monitoring by abatement contractor)	2,565 square feet of floors and 4,500 square feet of walls and ceilings
Asbestos Spray Applied Texture Coat on Gypsum Board Ceilings including Asbestos Filling Compound and Residue, Overspray, Debris, and Asbestos Contaminated Gypsum Board and Other Building Materials (including necessary work area enclosure and air monitoring by abatement contractor)	1,985 square feet
Asbestos Cement Board and Debris, and Asbestos Contaminated Building Materials	100 square feet
Asbestos Grey Mastic (caulking) on Joints of Older Ductwork	150 lineal feet
Asbestos Pipe Thread Compound at Fittings of Natural Gas Piping	3 fittings at rooftop
Potential Asbestos Containing Materials	
Potential Asbestos Ceramic Floor Tile Grout and Mortar on Potential Asbestos Building Materials (see General Note #3 in Section 4.1 above)	Not Determined
Potential Asbestos Flooring and Other Building Materials Which May Be Beneath Carpet (see General Note #3 in Section 4.1 above)	Not Determined
Potential Asbestos Ceramic Wall Tile Grout and Adhesive (see General Note #3 in Section 4.1 above)	Not Determined
Potential Asbestos Building Materials That May Be Present at Exterior Walls (excluding non-asbestos stucco at Sundeck (south of Games Room)) (see General Note #3 in Section 4.1 above)	Not Determined
Potential Asbestos Sealant in Window of Interior Wood Door (see General Note #3 in Section 4.1 above)	1 door
Potential Asbestos Sealants/Putties in Exterior Brown Metal-framed Windows and Sliding Glass Doors, including Windows Concealed at Upper Rooftop (see General Note #3 in Section 4.1 above)	Not Determined
Potential Asbestos Sealant in Exterior Vinyl-Framed Windows (see General Note #3 in Section 4.1 above)	Not Determined
Potential Asbestos Sealant in Window of Exterior Wood Door (see General Note #3 in Section 4.1 above)	Not Determined

OTHER HAZARDOUS MATERIALS	APPROXIMATE QUANTITIES
Lead Paint Remaining Attached to Building Materials for Recycle/Disposal, Dependent on TCLP Lead Testing (if deemed necessary by receiving site)	Not Determined
Lead Products for Recycle (lead roof vents and caps)	Not Determined
Potential PCB Containing Ballasts	17 fixtures
Mercury Containing Light Tubes and Bulbs	34 tubes / 2 bulbs

We hope you have found the above information useful. If you have any questions, or require clarification please contact this office.

Tom Farrell / Rob Kingsley
Astech Consultants Ltd.
Ref: 27475HE01.AEH



ASBESTOS BULK SAMPLE REPORT

Date: July 11, 2024

Client: CITY OF NORTH VANCOUVER

Location: Fire Hall No.1
165 East 13th Street
North Vancouver, BC

-
- Comments:
- 1) Asbestos (bulk) by PLM analyzed as per NIOSH 9002 Issue 2.
 - 2) Workers' Compensation Board of British Columbia (WCB) defines asbestos containing material as 0.5% or more asbestos, with the exception of Vermiculite Insulation which is defined as "any asbestos".
 - 3) Samples will be disposed of after 90 days, unless the Client requests otherwise.
-

Sample(s) Collected on June 26, 2024

Sample	Location	Description	Non-Asbestos		Asbestos
			Layer: Colour	% Type	% Type
27475 BS01	Second Floor - Kitchen Area	Pipe Thread Compound (at Fitting of Sprinkler Piping)	1: Beige	100% Non-Fibrous	None Detected
27475 BS02	Second Floor - Kitchen Area	2' X 2' Ceiling Tile (Bevelled)	1: Grey	70% Cellulose 15% Glass 15% Non-Fibrous	None Detected
27475 BS03a	Second Floor - Kitchen Area	Paint Spray Applied Texture Coat Debris (above Ceiling Tile)	1: White 2: White	99% Non-Fibrous	1% Chrysotile
27475 BS03b	Second Floor - Kitchen Area	Filling Compound on Gypsum Board Debris (above Ceiling Tile)	3: Grey	97% Non-Fibrous	3% Chrysotile
27475 BS04	Second Floor - Kitchen Area	Adhesive (on Kraft Faced Paper on Fibreglass Batt Insulation above Ceiling Tile)	1: Black	100% Non-Fibrous	None Detected
27475 BS05	Second Floor - Kitchen Area	Paint Filling Compound on Gypsum Board (North Wall above Gypsum Board Ceiling)	1: Off-White 2: Grey	97% Non-Fibrous	3% Chrysotile

Sample	Location	Description	Non-Asbestos		Asbestos	
			Layer: Colour	% Type	%	Type
27475 BS06	Second Floor - Kitchen Area	Paint Spray Applied Texture Coat (Ceiling above Gypsum Board)	1: White 2: White	99% Non-Fibrous	1%	Chrysotile
27475 BS07	Second Floor - Kitchen Area	Filling Compound on Gypsum Board (Ceiling above Gypsum Board)	3: Grey	97% Non-Fibrous	3%	Chrysotile
27475 BS08	Second Floor - Kitchen Area	Pin Adhesive (behind Acoustic Ceiling Panel)	1: Beige	100% Non-Fibrous	None Detected	
27475 BS09	Second Floor - Telephone Room	Carpet Adhesive	1: Beige	100% Non-Fibrous	None Detected	
27475 BS10	Second Floor - Telephone Room	Adhesive Residue (beneath Carpet on Concrete Floor)	2: Black	99% Non-Fibrous	1%	Chrysotile
27475 BS11	Second Floor - Telephone Room	Floor Tile Debris (beneath Carpet & Adhesive)	1: Cream	99% Non-Fibrous	1%	Chrysotile
27475 BS12	Second Floor - Telephone Room	Floor Tile Adhesive (beneath Carpet & Adhesive)	2: Black	99% Non-Fibrous	1%	Chrysotile
27475 BS13	Second Floor - Telephone Room	Paint Filling Compound on Gypsum Board (West Wall)	1: Beige 2: White	100% Non-Fibrous	None Detected	
27475 BS14	Second Floor - Games Room	Cement Board (on Wood Ceiling above Ceiling Tile)	1: Grey	10% Cellulose 10% Non-Fibrous	80%	Chrysotile
27475 BS15a	Second Floor - Telephone Room	Paint Spray Applied Texture Coat Debris (above Gypsum Board Ceiling)	1: White 2: White	99% Non-Fibrous	1%	Chrysotile
27475 BS15b	Second Floor - Telephone Room	Filling Compound on Gypsum Board Debris (above Gypsum Board Ceiling)	3: Grey	97% Non-Fibrous	3%	Chrysotile
27475 BS16	Second Floor - Telephone Room	Adhesive (on Kraft Faced Paper on Fibreglass Batt Insulation)	1: Black	100% Non-Fibrous	None Detected	
27475 BS17	Second Floor - Games Room	Paint Filling Compound on Gypsum Board (North Wall)	1: Beige 2: Grey	97% Non-Fibrous	3%	Chrysotile
27475 BS18	Second Floor - Games Room	Duct Mastic (above Gypsum Board Ceiling)	1: Grey	100% Non-Fibrous	None Detected	
27475 BS19	Second Floor - Games Room	Filling Compound on Gypsum Board (West Wall above T-Bar)	1: Grey	97% Non-Fibrous	3%	Chrysotile
27475 BS20	Second Floor - Games Room	Duct Mastic (within Gypsum Board Bulkhead)	1: Green	100% Non-Fibrous	None Detected	
27475 BS21	Second Floor - Dormitory	Carpet Adhesive	1: Beige	100% Non-Fibrous	None Detected	
27475 BS22	Second Floor - Dormitory	Cove Base (West)	1: Black	100% Non-Fibrous	None Detected	

Sample	Location	Description	Non-Asbestos		Asbestos
			Layer: Colour	% Type	% Type
27475 BS23	Second Floor - Dormitory	Cove Base Adhesive (West)	2: Cream	100% Non-Fibrous	None Detected
27475 BS24	Second Floor - Dormitory	2' X 2' Ceiling Tile (Bevelled, dated 2004)	1: Grey	70% Cellulose 15% Glass 15% Non-Fibrous	None Detected
27475 BS25	Second Floor - Dormitory	Paint Filling Compound on Gypsum Board (East Wall above Ceiling Tile) (Two Types Mixed)	1: Grey 2: White & Grey	97% Non-Fibrous	3% Chrysotile
27475 BS26	Second Floor - Dormitory	Paint Filling Compound on Gypsum Board (Partition Wall at Centre)	1: Grey 2: Grey	97% Non-Fibrous	3% Chrysotile
27475 BS27	Second Floor - Hallway (East of Dormitory)	2' X 4' Ceiling Tile (Bevelled, dated 2002)	1: Grey	70% Cellulose 15% Glass 15% Non-Fibrous	None Detected
27475 BS28	Second Floor - Hallway (East of Dormitory)	Filling Compound on Gypsum Board (West Wall above T-Bar)	1: Grey	97% Non-Fibrous	3% Chrysotile
27475 BS29	Second Floor - Hallway (East of Dormitory)	Cove Base (West)	1: Brown	100% Non-Fibrous	None Detected
27475 BS30	Second Floor - Hallway (East of Dormitory)	Cove Base Adhesive (West)	2: Cream	100% Non-Fibrous	None Detected
27475 BS31	Second Floor - Hallway (East of Dormitory)	Paint/Coating (on Concrete Block Wall, East)	1: Grey on Off-White	100% Non-Fibrous	None Detected
27475 BS32	Second Floor - Hallway (East of Dormitory)	Concrete Block Mortar (East Wall)	2: Grey	100% Non-Fibrous	None Detected
27475 BS33	Second Floor - Office Area	Carpet Adhesive	1: Beige	100% Non-Fibrous	None Detected
27475 BS34	Second Floor - Office Area	Adhesive Residue (on Concrete Floor)	2: Black	99% Non-Fibrous	1% Chrysotile
27475 BS35	Second Floor - Office Area	1' X 2' Ceiling Tile (Bevelled, dated 2006)	1: Grey	70% Cellulose 15% Glass 15% Non-Fibrous	None Detected
27475 BS36	Second Floor - Office Area	Filling Compound on Gypsum Board (South Wall)	1: White	100% Non-Fibrous	None Detected
27475 BS37	Second Floor - East Hallway to Office Area	Floor Levelling Compound (beneath Carpet & Adhesive)	1: Grey	95% Non-Fibrous	5% Chrysotile
27475 BS38	Second Floor - East Hallway to Office Area	Floor Levelling Compound (beneath Carpet & Adhesive)	1: Grey		Analysis Not Required - See Sample BS37
27475 BS39	Second Floor - East Hallway to Office Area	Floor Levelling Compound (beneath Carpet & Adhesive)	1: Grey		Analysis Not Required - See Sample BS37

Sample	Location	Description	Non-Asbestos		Asbestos	
			Layer: Colour	% Type	%	Type
27475 BS40	Second Floor - Vestibule (North of Games Room)	Cove Base (East)	1: Grey	100% Non-Fibrous		None Detected
27475 BS41	Second Floor - Vestibule (North of Games Room)	Cove Base Adhesive (East)	2: Cream	100% Non-Fibrous		None Detected
27475 BS42	First Floor - Truck Bay	Paint/Coating (on Concrete Post near Centre, North)	1: Beige on Blue	100% Non-Fibrous		None Detected
27475 BS43	Basement - Sprinkler Room	Pipe Thread Compound (at Fitting of Mechanical Piping)	1: Blue	2% Cellulose 98% Non-Fibrous		None Detected

Analyst(s): Jessica Young

Sample(s) Collected on June 18, 2024

Sample	Location	Description	Non-Asbestos		Asbestos	
			Layer: Colour	% Type	%	Type
27475R BS01a	Exterior - Upper Rooftop	Roofing Membrane (near Centre)	1: Brown	65% Synthetic 35% Non-Fibrous		None Detected
27475R BS01b	Exterior - Upper Rooftop	Roofing Mastic (near Centre)	2: Black	100% Non-Fibrous		None Detected
27475R BS01c	Exterior - Upper Rooftop	Roofing Felt (near Centre)	3: Black	85% Synthetic 15% Non-Fibrous		None Detected
27475R BS01d	Exterior - Upper Rooftop	Roofing Mastic (near Centre)	4: Black	100% Non-Fibrous		None Detected
27475R BS01e	Exterior - Upper Rooftop	Donnaconna Roofing Mastic (near Centre)	5: Brown 6: Black	100% Non-Fibrous		None Detected
27475R BS01f	Exterior - Upper Rooftop	Roofing Paper (near Centre)	7: Brown	98% Cellulose 2% Non-Fibrous		None Detected
27475R BS02a	Exterior - Main Rooftop	Roofing Membrane (near Centre South)	1: Brown	65% Synthetic 35% Non-Fibrous		None Detected
27475R BS02b	Exterior - Main Rooftop	Roofing Mastic (near Centre South)	2: Black	100% Non-Fibrous		None Detected
27475R BS02c	Exterior - Main Rooftop	Roofing Felt (near Centre South)	3: Black	85% Synthetic 15% Non-Fibrous		None Detected
27475R BS02d	Exterior - Main Rooftop	Roofing Mastic (near Centre South)	4: Black	100% Non-Fibrous		None Detected
27475R BS02e	Exterior - Main Rooftop	Donnaconna Roofing Paper (near Centre South)	5: Brown 6: Brown	98% Cellulose 2% Non-Fibrous		None Detected
27475R BS03	Exterior - Main Rooftop	Mastic (on Ductwork at Air Handling Unit 4)	1: Grey	5% Cellulose 95% Non-Fibrous		None Detected
27475R BS04	Exterior - Main Rooftop	Mastic (on Ductwork at Air Handling Unit 4)	1: Grey	5% Cellulose 95% Non-Fibrous		None Detected

Sample	Location	Description	Non-Asbestos		Asbestos
			Layer: Colour	% Type	% Type
27475R BS05	Exterior - Main Rooftop	Mastic (on Ductwork at Air Handling Unit 4)	1: Grey	5% Cellulose 95% Non-Fibrous	None Detected
27475R BS06	Exterior - Main Rooftop	Caulking (at Metal Flashing Over Ductwork)	1: Grey	100% Non-Fibrous	None Detected
27475R BS07a	Exterior - Main Rooftop	Pipe Thread Compound (at Fitting of Natural Gas Piping)	1: Grey	100% Non-Fibrous	None Detected
27475R BS07b	Exterior - Main Rooftop	Pipe Thread Compound (at Fitting of Natural Gas Piping)	1: Black	99% Non-Fibrous 1% Chrysotile	
27475R BS08	Exterior - Main Rooftop	Coating (on Natural Gas Piping)	1: Black	100% Non-Fibrous	None Detected
27475R BS09	Exterior - Main Rooftop	Coating (on Natural Gas Piping)	2: Silver	100% Non-Fibrous	None Detected
27475R BS10	Exterior - Main Rooftop	Firestop Caulking (at Natural Gas Pipe Wall Penetration)	1: Light Grey	100% Non-Fibrous	None Detected
27475R BS11	Exterior - Main Rooftop	Rolled Roofing Shingle (atop Ductwork, East)	1: Black	65% Glass 35% Non-Fibrous	None Detected
27475R BS12	Exterior - Main Rooftop	Firestop Caulking (at Electrical Wall Penetration on Air Handling Unit 4)	1: Grey	100% Non-Fibrous	None Detected
27475R BS13	Exterior - Main Rooftop	Caulking (at Joint of Metal Flashing around Ductwork)	1: Grey	100% Non-Fibrous	None Detected
27475R BS14	Exterior - Main Rooftop	Firestop Caulking (at Metal Flashing around Exhaust Fan/Diffuser, West)	1: Grey	100% Non-Fibrous	None Detected
27475R BS15	Second Floor - Sundeck (South of Games Room)	Paint Wall Stucco (Outer Layer, at Concrete Column)	1: Grey 2: White	100% Non-Fibrous	None Detected
27475R BS16	Second Floor - Sundeck (South of Games Room)	Wall Stucco (Inner Layer, at Concrete Column)	3: Grey	100% Non-Fibrous	None Detected

Analyst(s): Lolita Santos

American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT)
 Astech Consultants Ltd. Laboratory Participant ID# 200542



LEAD BULK SAMPLE REPORT

Date: July 11, 2024

Client: CITY OF NORTH VANCOUVER

Location: Fire Hall No.1
165 East 13th Street
North Vancouver, BC

-
- Comments:
- 1) The Workers' Compensation Board of British Columbia (WCB) no longer allows reference to Health Canada's definition of a lead-containing surface coating material.
 - 2) WCB does not define a safe level for a lead-containing surface coating material.
 - 3) Analyzed by X-Ray Fluorescence (XRF) with direct read parts per million (PPM).
 - 4) Sample results report lead only.
 - 5) < means less than, > means more than.
 - 6) Samples will be disposed of after 90 days, unless the Client requests otherwise.
-

Sample(s) Analyzed on June 26, 2024

Sample	Location	Description	Colour	Lead PPM
27475 LS01	Second Floor - Telephone Room	Paint (on Gypsum Board Wall, West)	Cream	286 PPM
27475 LS02	Second Floor - Telephone Room	Paint (on Wood Wall Panel, West)	Beige	6 PPM
27475 LS03	Second Floor - Telephone Room	Paint (on Wood Door Trim)	Grey	6 PPM
27475 LS04	Second Floor - Telephone Room	Paint (on Gypsum Board Ceiling)	Off-White	6 PPM
27475 LS05	Second Floor - Dormitory	Paint (on Wood Locker)	Grey	601 PPM
27475 LS06	Second Floor - Hallway (East of Dormitory)	Paint/Coating (on Concrete Block Wall, East)	Grey on Off-White	1,500 PPM

Analyst(s): Brian Tang

Sample(s) Collected on June 26, 2024

Sample	Location	Description	Colour	Lead PPM
27475 LS07	Second Floor - South Wall of Office Area	Paint (on Gypsum Board Wall, South)	Pink	139 PPM
27475 LS08	Second Floor - South Wall of Office Area	Paint (on Horizontal Ceiling Beam)	Grey	709 PPM
27475 LS09	First Floor - Truck Bays	Paint/Coating (on Concrete Post near Centre, North)	Beige on Blue	63 PPM

Analyst(s): Jessica Young



Certified to ISO:20807; and Health Canada's and Natural Resources Canada's requirements for compliance with Health Canada Safety Code 32 & 34

Appendix A – Asbestos Analysis Results

ASBESTOS BULK SAMPLE RESULTS

KINETIC PROJECT NO.: 9633-SM
CLIENT: City of North Vancouver
SITE ADDRESS: 165 13th Street East, North Vancouver, BC
DATE COLLECTED: July 14, 2022

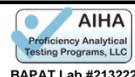
COLLECTED BY: DD
BULK ANALYST: KS
DATE ANALYZED: July 18, 2022

Sample ID	Sample Description	Layer	Asbestos Type	%	Other Fibres
9633-1	2 nd Floor East Hallway South Wall Material: Drywall Joint Compound	Grey paint Grey chalky mix Paper Gypsum	None Detected Chrysotile None Detected None Detected	2%	Non-fibrous 100% Non-fibrous 98% Cellulose 100% Cellulose 5%, Non-fibrous 95%
9633-2	2 nd Floor East Hallway North Wall Material: Drywall Joint Compound	Grey paint Grey chalky mix Paper Gypsum	None Detected Chrysotile None Detected None Detected	2%	Non-fibrous 100% Non-fibrous 98% Cellulose 100% Non-fibrous 100%
9633-3	2 nd Floor East Hallway 2'x2' Textured Material: Ceiling Tile	White paint Light grey fibrous mat	None Detected None Detected		Non-fibrous 100% Cellulose 40%, Fibreglass 30%, Non-fibrous 30%
9633-4	2 nd Floor Dormitory Divider Wall – South Wall Material: Drywall Joint Compound	Grey paint Grey chalky mix Paper Gypsum	None Detected Chrysotile None Detected None Detected	2%	Non-fibrous 100% Non-fibrous 98% Cellulose 100% Cellulose 5%, Non-fibrous 95%
9633-5	2 nd Floor Dormitory West Wall Material: Drywall Joint Compound	Grey paint White chalky mix Paper Gypsum	None Detected None Detected None Detected None Detected		Non-fibrous 100% Non-fibrous 100% Cellulose 100% Cellulose 2%, Non-fibrous 98%
9633-6	2 nd Floor Dormitory Black Material: Vinyl Baseboard & Adhesive	Black vinyl Beige adhesive	None Detected None Detected		Non-fibrous 100% Non-fibrous 100%

Analyzed in accordance with NIOSH Method 9002 – Asbestos (Bulk) by PLM and supplemented with EPA/600/R-93/116 Test Method (excluding point count)



Kinetic OHS Services Ltd.
#202 – 1520 Barrow Street, North Vancouver, BC V7J 1B7 Tel: 604-988-0099



Page 1 of 3

BAPAT Lab #213222

ASBESTOS BULK SAMPLE RESULTS

KINETIC PROJECT NO.: 9633-SM

CLIENT: City of North Vancouver

SITE ADDRESS: 165 13th Street East, North Vancouver, BC

DATE COLLECTED: July 14, 2022

COLLECTED BY: DD

BULK ANALYST: KS

DATE ANALYZED: July 18, 2022

Sample ID	Sample Description	Layer	Asbestos Type	%	Other Fibres
9633-7	2 nd Floor West Hallway West Wall Material: Drywall Joint Compound	White paint White chalky mix Paper Gypsum	None Detected None Detected None Detected None Detected		Non-fibrous 100% Non-fibrous 100% Cellulose 100% Fibreglass 3%, Cellulose 2%, Non-fibrous 95%
9633-8	2 nd Floor Lounge South Wall Material: Drywall Joint Compound	White paint White chalky mix Paper Gypsum	None Detected None Detected None Detected None Detected		Non-fibrous 100% Non-fibrous 100% Cellulose 100% Non-fibrous 100%
9633-9	2 nd Floor Lounge North Wall Material: Drywall Joint Compound	Beige paint White chalky mix Paper Grey chalky mix	None Detected None Detected None Detected Chrysotile	2%	Non-fibrous 100% Non-fibrous 100% Cellulose 100% Non-fibrous 98%
9633-10	2 nd Floor Lounge 2'x2' Textured Material: Ceiling Tile	White paint Light grey fibrous mat	None Detected None Detected		Non-fibrous 100% Cellulose 40%, Fibreglass 30%, Non-fibrous 30%
9633-11	2 nd Floor Lounge 2'x2' Textured Material: Ceiling Tile	White paint Light grey fibrous mat	None Detected None Detected		Non-fibrous 100% Cellulose 40%, Fibreglass 30%, Non-fibrous 30%
9633-12	2 nd Floor Dormitory Above Bulkhead Material: Drywall Joint Compound	Grey paint Grey chalky mix White paper	None Detected Chrysotile	2%	Non-fibrous 100% Non-fibrous 98% Cellulose 100%

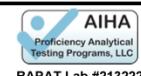
Total Number of Samples: 12

Samples Collected By: Kinetic OHS

Analyzed in accordance with NIOSH Method 9002 – Asbestos (Bulk) by PLM and supplemented with EPA/600/R-93/116 Test Method (excluding point count)



Kinetic OHS Services Ltd.
#202 – 1520 Barrow Street, North Vancouver, BC V7J 1B7 Tel: 604-988-0099



Page 2 of 3

BAPAT Lab #213222

ASBESTOS BULK SAMPLE RESULTS

KINETIC PROJECT NO.: 9633-SM

CLIENT: City of North Vancouver

SITE ADDRESS: 165 13th Street East, North Vancouver, BC

DATE COLLECTED: July 14, 2022

COLLECTED BY: DD

BULK ANALYST: KS

DATE ANALYZED: July 18, 2022

Sample ID	Sample Description	Layer	Asbestos Type	%	Other Fibres
-----------	--------------------	-------	---------------	---	--------------

Final Report Reviewed by: Karen Soothill, Analyst

Notes:

- "None Detected" means no asbestos fibres observed or detected in the sample.
- Six regulated forms of asbestos are: Chrysotile, Amosite, Crocidolite, Actinolite, Tremolite and Anthophyllite. Samples highlighted in "**YELLOW**" contain asbestos.
- Definition of "asbestos containing material" is any material that contains 0.5% or greater of asbestos (refer to Part 6, Section 6.1 of the WorkSafeBC Occupational Health & Safety Regulation for further information). Vermiculite containing materials are defined as asbestos containing if any asbestos is detected.
- Limit of Detection is less than 1% using NIOSH 9002 and supplemented with EPA/600/R-93/116 as required (excluding point count).
- Samples with less than 1% asbestos are recommended for 400-point count plus gravimetric reduction or 1,000-point count.
- All samples will be disposed of 30 days after submittal unless samples are requested for return upon receipt of the results.

Analyzed in accordance with NIOSH Method 9002 – Asbestos (Bulk) by PLM and supplemented with EPA/600/R-93/116 Test Method (excluding point count)



Kinetic OHS Services Ltd.
#202 – 1520 Barrow Street, North Vancouver, BC V7J 1B7 Tel: 604-988-0099



Page 3 of 3

Appendix D – Lead Analysis Results



Lead Analysis Report

ATTN: Harvey Wong
Kinetic OHS Services Ltd.
202-1520 Barrow St, North Vancouver, BC V7J 1B7
harvey@kineticohs.com

Report Date: 2022-07-19
Report No: PbSafe_gmk_220719b
Client Project ID: 9633-SM
Project Address: 165 E 13th St, North Vancouver

Lead (Pb) Safe Testing Services Ltd.
6939 Hasting Street, Burnaby BC V5B 1S9
Ph: 604-790-6006
E: info@pbsafe.ca

PbSafe participates in the AIHA Environmental Lead Proficiency Analytical Testing Program, Participant Number PAT-227541.

General Notes: Lead results only relate to samples submitted. Client assumes all responsibilities relating to sample collection. PbSafe reserves the right to dispose of samples after 90 days. Results report total lead (leachable and non-leachable) as determined by x-ray fluorescence (EPA Method 6200). Limit of Detection (LOD) for lead is determined to be 5 ppm.

QA/QC Notes: PbSafe (Lab ID: 227541) participates in the AIHA ELPAT program for paint. Daily, weekly, and monthly calibration checks are performed against various lab standards to ensure accuracy. For the current week, matrix blank tested <LOD, and the coefficient of determination (R^2) for the 9 sample matrix calibration suite is tested to be 0.997.

Sample Notes: Sample(s) tested were clean and sufficient in size (greater than or equal to 2.5 cm by 2.5 cm).

The following results were obtained on analysis:

Sincerely

Kristina Ahn, Lab Manager



Lead (Pb) Safe Testing Services Ltd.
6939 Hastings St, Burnaby BC V5B 1S9

Client Information

Company: Kinetic OHS Services Ltd.

Address: #202 – 1520 Barrow Street, North Vancouver, BC V7J 1B7

Company Contact: Desiree D'sa

Phone: 604-816-1290 Email: desiree @kineticohs.com

Site Address: 165 13th St E, NVan

Chain of Custody Record

Description of Samples

Chain of Custody

Chain of Custody				
Released By (Signature):	Date:	Time:	Received by (Signature):	Comments:
Melvin Foy	July 18, 2022	16:46		

Please TEXT 604-790-6006 if sample is dropped off

PAGE 1 OF 1



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E



Customer: Pinchin Ltd.
Suite 200, 13775 Commerce Parkway
Richmond, BC V6V 2V4

Project: 314505

Attn: Alec Grose

Lab Order ID: 10010999
Analysis: PLM
Date Received: 11/28/2022
Date Reported: 12/01/2022

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0001A	Wall,All,Drywall And Joint Compound,Loc:1,Server Room	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0001					Crushed
S0001B	Wall,All,Drywall And Joint Compound,Loc:2,Dispatch	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0002					Crushed
S0001C	Wall,All,Drywall And Joint Compound,Loc:6,Perimeter Office Area	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0003					Crushed
S0001D	Wall,All,Drywall And Joint Compound,Loc:12,Corridor To Dining Area	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0004					Crushed
S0001E	Wall,Drywall And Joint Compound,Loc:15,Small Stairwell West	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0005					Crushed
S0001F	Wall,All,Drywall And Joint Compound,Loc:18,Offices	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0006					Crushed
S0001G	Wall,All,Drywall And Joint Compound,Loc:35,Lecture Room	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0007					Crushed
S0002A - A	Floor,All,Vinyl Floor Tile And Mastic,12"×12" Dark Grey Streaked,Loc:1,Se	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0008	tile				Crushed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.5%.

Lachlan Krenz (40)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E



Customer: Pinchin Ltd.
Suite 200, 13775 Commerce Parkway
Richmond, BC V6V 2V4

Project: 314505

Attn: Alec Grose

Lab Order ID: 10010999
Analysis: PLM
Date Received: 11/28/2022
Date Reported: 12/01/2022

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0002A - B	Floor,All,Vinyl Floor Tile And Mastic,12"×12" Dark Grey Streaked,Loc:1,Se	3% Chrysotile		97% Other	Black Non-Fibrous Homogeneous
10010999_0038	mastic				Dissolved
S0002B - A	Floor,All,Vinyl Floor Tile And Mastic,12"×12" Dark Grey Streaked,Loc:1,Se	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0009	tile				Crushed
S0002B - B	Floor,All,Vinyl Floor Tile And Mastic,12"×12" Dark Grey Streaked,Loc:1,Se	Not Analyzed			
10010999_0039	mastic				
S0002C - A	Floor,All,Vinyl Floor Tile And Mastic,12"×12" Dark Grey Streaked,Loc:1,Se	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0010	tile - ashed				Ashed
S0002C - B	Floor,All,Vinyl Floor Tile And Mastic,12"×12" Dark Grey Streaked,Loc:1,Se	Not Analyzed			
10010999_0040	mastic				
S0003A	Ceiling,Acoustic Tile,Ceiling Tiles (lay-in) ,24"×48" Pinhole Amd Fissure,Loc:1,Server Ro	None Detected	40% Fiber Glass 40% Cellulose	20% Other	Gray, Tan Fibrous Homogeneous
10010999_0011					Teased
S0003B	Ceiling,Acoustic Tile,Ceiling Tiles (lay-in) ,24"×48" Pinhole Amd Fissure,Loc:1,Server Ro	None Detected	40% Cellulose 40% Fiber Glass	20% Other	Gray, Tan Fibrous Homogeneous
10010999_0012					Teased
S0003C	Ceiling,Acoustic Tile,Ceiling Tiles (lay-in) ,24"×48" Pinhole Amd Fissure,Loc:1,Server Ro	None Detected	40% Cellulose 40% Fiber Glass	20% Other	Gray, Tan Fibrous Homogeneous
10010999_0013					Teased

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Lachlan Krenz (40)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E



Customer: Pinchin Ltd.
Suite 200, 13775 Commerce Parkway
Richmond, BC V6V 2V4

Project: 314505

Attn: Alec Grose

Lab Order ID: 10010999
Analysis: PLM
Date Received: 11/28/2022
Date Reported: 12/01/2022

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0004A	Duct,Mastic, Grey,Loc:2,Dispatch	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0014					Ashed
S0004B	Duct,Mastic, Grey,Loc:11,Washrooms	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0015					Ashed
S0004C	Duct,Mastic, Grey,Loc:25,Gym	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0016					Ashed
S0005A	Ceiling,Drywall And Joint Compound,Loc:3,Dispatch Washroom	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0017					Crushed
S0005B	Ceiling,Drywall And Joint Compound,Loc:6,Perimeter Office Area	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0018					Crushed
S0005C	Ceiling,Drywall And Joint Compound,Loc:15,Small Stairwell West	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0019					Crushed
S0005D	Ceiling,Drywall And Joint Compound,Loc:17,Office	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0020					Crushed
S0005E	Ceiling,Bulkhead,Drywall And Joint Compound,Loc:25,Gym	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0021					Crushed

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Lachlan Krenz (40)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E



Customer: Pinchin Ltd.
Suite 200, 13775 Commerce Parkway
Richmond, BC V6V 2V4

Project: 314505

Attn: Alec Grose

Lab Order ID: 10010999
Analysis: PLM
Date Received: 11/28/2022
Date Reported: 12/01/2022

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0005F	Ceiling,Drywall And Joint Compound,Loc:37,Washrooms And Changerooms	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0022					Crushed
S0005G	Ceiling,Bulkhead,Drywall And Joint Compound,Loc:27,General Storage	None Detected		100% Other	White Non-Fibrous Homogeneous
10010999_0023					Crushed
S0006A	Duct,Mastic,Green,Loc:4,Corridor	None Detected		100% Other	Green Non-Fibrous Homogeneous
10010999_0024					Ashed
S0006B	Duct,Mastic,Green,Loc:4,Corridor	None Detected		100% Other	Green Non-Fibrous Homogeneous
10010999_0025					Ashed
S0006C	Duct,Mastic,Green,Loc:23,Sprinkler Room	None Detected		100% Other	Green Non-Fibrous Homogeneous
10010999_0026					Ashed
S0007A	Duct,Caulking,Hard Grey,Loc:23,Sprinkler Room	5% Chrysotile		95% Other	Gray Non-Fibrous Homogeneous
10010999_0027					Crushed
S0007B	Duct,Caulking,Hard Grey,Loc:24,General Storage	Not Analyzed			
10010999_0028					
S0007C	Duct,Caulking,Hard Grey,Loc:28,Boiler Room	Not Analyzed			
10010999_0029					

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Lachlan Krenz (40)

Analyst

Approved Signatory



Bulk Asbestos Analysis

By Polarized Light Microscopy
EPA Method: 600/R-93/116 and
40 CFR, Part 763, Subpart E, App.E



Customer: Pinchin Ltd.
Suite 200, 13775 Commerce Parkway
Richmond, BC V6V 2V4

Project: 314505

Attn: Alec Grose

Lab Order ID: 10010999
Analysis: PLM
Date Received: 11/28/2022
Date Reported: 12/01/2022

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0008A	Conduit,Firestopping (friable),Grey Cementitious,Loc:24,General Storage	None Detected		100% Other	Gray, White Non-Fibrous Heterogeneous
10010999_0030					Crushed
S0008B	Conduit,Firestopping (friable),Grey Cementitious,Loc:23,Sprinkler Room	None Detected		100% Other	White, Gray Non-Fibrous Heterogeneous
10010999_0031					Crushed
S0008C	Conduit,Firestopping (friable),Grey Cementitious,Loc:25,Gym	None Detected		100% Other	White, Gray Non-Fibrous Heterogeneous
10010999_0032					Crushed
S0009	Floor,Mastic,Loc:23,Sprinkler Room	None Detected		100% Other	Black Non-Fibrous Homogeneous
10010999_0033					Dissolved, Ashed
S0010	Duct,Mastic,Gold,Loc:28,Boiler Room	None Detected		100% Other	Gray Non-Fibrous Homogeneous
10010999_0034					Ashed
S0011A	Debris,Unidentified Material,Brown Black Non-friable,Loc:2,Dispatch	None Detected	75% Cellulose	25% Other	Black Fibrous Homogeneous
10010999_0035					Teased, Ashed
S0011B	Debris,Unidentified Material,Brown Black Non-friable,Loc:2,Dispatch	None Detected	75% Cellulose	25% Other	Black Fibrous Homogeneous
10010999_0036					Teased, Ashed
S0011C	Debris,Unidentified Material,Brown Black Non-friable,Loc:2,Dispatch	None Detected	75% Cellulose	25% Other	Black Fibrous Homogeneous
10010999_0037					Teased, Ashed

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogenous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.5%.

Lachlan Krenz (40)

Analyst

Approved Signatory

10010 999

Client: Contact: Address: Phone: Fax: Email:	Pinchin Ltd. Alec Grose 200-13775 Commerce Parkway, Richmond, BC 604.219.3490 agrose@pinchin.com lbraunneville@pinchin.com	"Instructions: Use Column "B" for your contact info To See an Example Click the bottom Example Tab.
Project:	314505	37
Client Notes:	Do not run stop positive on any dry wall samples please	
P.O. #: Date Submitted:	314505.000 11-25-2022	Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.
Analysis: Turn Around Time:	PLM BULK EPA 600 3 day	

Version 1-15-2012

Scientific
Analytical
Institute



4604 Dundas Dr.
Greensboro, NC 27407
Phone: 336.292.3888
Fax: 336.292.3313
Email: lab@sailab.com

Sample Number	Data 1 (Lab use only)	Sample Description	Data 2 (Lab use only)
<<			
S0001A		Wall,All,Drywall And Joint Compound,Loc:1,Server Room	No stop positive
S0001B		Wall,All,Drywall And Joint Compound,Loc:2,Dispatch	No stop positive
S0001C		Wall,All,Drywall And Joint Compound,Loc:6,Perimeter Office Area	No stop positive
S0001D		Wall,All,Drywall And Joint Compound,Loc:12,Corridor To Dining Area	No stop positive
S0001E		Wall,Drywall And Joint Compound,Loc:15,Small Stairwell West	No stop positive
S0001F		Wall,All,Drywall And Joint Compound,Loc:18,Offices	No stop positive
S0001G		Wall,All,Drywall And Joint Compound,Loc:35,Lecture Room	No stop positive
S0002A		Floor,All,Vinyl Floor Tile And Mastic,12"x12"; Dark Grey Streaked,Loc:1,Server Room	
S0002B		Floor,All,Vinyl Floor Tile And Mastic,12"x12"; Dark Grey Streaked,Loc:1,Server Room	
S0002C		Floor,All,Vinyl Floor Tile And Mastic,12"x12"; Dark Grey Streaked,Loc:1,Server Room	
S0003A		Ceiling,Acoustic Tile,Ceiling Tiles (lay-in),24"x48"; Pinhole Amd Fissure,Loc:1,Server Room	
S0003B		Ceiling,Acoustic Tile,Ceiling Tiles (lay-in),24"x48"; Pinhole Amd Fissure,Loc:1,Server Room	
S0003C		Ceiling,Acoustic Tile,Ceiling Tiles (lay-in),24"x48"; Pinhole Amd Fissure,Loc:1,Server Room	
S0004A		Duct,Mastic, Grey,Loc:2,Dispatch	
S0004B		Duct,Mastic, Grey,Loc:11,Washrooms	
S0004C		Duct,Mastic, Grey,Loc:25,Gym	
S0005A		Ceiling,Drywall And Joint Compound,Loc:3,Dispatch Washroom	No stop positive
S0005B		Ceiling,Drywall And Joint Compound,Loc:6,Perimeter Office Area	No stop positive
S0005C		Ceiling,Drywall And Joint Compound,Loc:15,Small Stairwell West	No stop positive
S0005D		Ceiling,Drywall And Joint Compound,Loc:17,Office	No stop positive
S0005E		Ceiling,Bulkhead,Drywall And Joint Compound,Loc:25,Gym	No stop positive
S0005F		Ceiling,Drywall And Joint Compound,Loc:37,Washrooms And Changerooms	No stop positive
S0005G		Ceiling,Bulkhead,Drywall And Joint Compound,Loc:27,General Storage	No stop positive
S0006A		Duct,Mastic,Green,Loc:4,Corridor	
S0006B		Duct,Mastic,Green,Loc:23,Sprinkler Room	
S0006C		Duct,Caulking,Hard Grey,Loc:23,Sprinkler Room	
S0007A		Duct,Caulking,Hard Grey,Loc:24,General Storage	
S0007B		Duct,Caulking,Hard Grey,Loc:28,Boiler Room	
S0007C		Conduit,Firestopping (friable),Grey Cementitious,Loc:24,General Storage	
S0008A		Conduit,Firestopping (friable),Grey Cementitious,Loc:23,Sprinkler Room	
S0008B		Conduit,Firestopping (friable),Grey Cementitious,Loc:25,Gym	
S0008C		Floor,Mastic,Loc:23,Sprinkler Room	
S0009		Duct,Mastic,Gold,Loc:28,Boiler Room	
S0010		Debris,Unidentified Material,Brown Black Non-friable,Loc:2,Dispatch	
S0011A		Debris,Unidentified Material,Brown Black Non-friable,Loc:2,Dispatch	
S0011B		Debris,Unidentified Material,Brown Black Non-friable,Loc:2,Dispatch	
S0011C			
>>			

Accepted
Rejected

M. Shad
11/28
10:30

CITY of NORTH VANCOUVER FIREHALL No. 1



BID DOCUMENTS

DORMITORY RENOVATION

165 EAST 13TH STREET, CITY of NORTH VANCOUVER

Bid Closing

Date: Friday October 25, 2024
4:00:00 pm (local time)

Location: by email

FIREHALL 1 – DORMITORY RENOVATION
165 East 13th St, City of North Vancouver
City of North Vancouver

Section 00 00 00
Project Directory
Page 1 of 2

CITY OF NORTH VANCOUVER FIREHALL 141 WEST 14th STREET CITY OF NORTH VANCOUVER, BC V7M 1H9 (P) 604-982-3986, Gordana Askraba, PMP (E) gaskraba@cnv.org	OWNER
KMBR ARCHITECTS PLANNERS INC. 300-152 W. HASTINGS ST., VANCOUVER, B.C. V6B 1G8 (P) 604 - 732 – 3361 Simon Lim AIBC, Associate (E) slim@kmbr.com	ARCHITECTURAL
BUSH BOHLMAN & PARTNERS 1550 – 1500 West Georgia St. Vancouver, BC V6G 2Z6 (P) 604-688-9861 Trevor Whitney, P.Eng., Struct.Eng. Partner (E) TWhitney@bushbohlman.com	STRUCTURAL
MCW CONSULTANTS LTD. 1400 - 1185 WEST GEORGIA STREET VANCOUVER BC V6E 4E6 (P) 604 687 1821 Anantha Simhan, Mechanical Project Manager (E) Asimhan@mcw.com	MECHANICAL
APPLIED ENGINEERING SOULUTIONS LTD. 1330 GRANVILLE STREET VANCOUVER, BC V6Z 1M7 (P) 604 569 6500 PAUL LUHMAN, LEED AP BD+C Principal (E) pluhman@appliedengineering.ca	ELECTRICAL

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Section 01 10 00 - Summary

PART 1 GENERAL

1.1 PROJECT

- .1 Project Name: CNV Firehall 1 Dormitory Renovation
- .2 Owner's Name: City of North Vancouver.
- .3 Architect's Name: KMBR Architects Planners Inc..
- .4 The Project consists of the furnishing of all labour, materials, and equipment required for the construction of the work shown or described on the drawings, including but not limited to the construction of 12 dormitory rooms, renovations to the Activity Room as well as related Structural, Mechanical and Electrical works.

1.2 CONTRACT DESCRIPTION

- .1 Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

1.3 DESCRIPTION OF ALTERATIONS WORK

- .1 Extent of demolition and removal work is indicated on Drawings and specified in Section 02 41 00.
- .2 Extent of alterations work is indicated on drawings.
- .3 Owner will remove the following items before start of work:
 - .1 All furniture, wall mounted picture rails, equipment and decorative picture frames.

1.4 WORK BY OWNER

- .1 Owner's own forces shall demolish various existing millwork. Coordinate work with Owner's forces. General Contractor to match, patch and repair existing surfaces as a result of work by Owner.
- .2 Cooperate with other contractors in carrying out their respective works and carry out instructions from Consultant.
- .3 Coordinate Work with that of other contractors. If any part of the work under this contract depends for its proper execution or result upon work of another contractor, report promptly to Consultant in writing, any defects, which may interfere with proper execution of the Work.
- .4 Items noted NIC (Not in Contract) will be supplied and installed by Owner .

1.5 OWNER OCCUPANCY

- .1 Owner intends to continue to occupy adjacent portions of the existing building and site areas during the entire construction period.
- .2 Owner intends to occupy the Project by the date stated in the Agreement as the contract completion date.
- .3 Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- .4 Schedule the Work to accommodate Owner occupancy.

1.6 CONTRACTOR USE OF SITE AND PREMISES

- .1 Construction Operations: Limited to areas noted on Drawings.
 - .1 Locate and conduct construction activities in ways that will limit disturbance to site.
 - .2 Schedule all work, deliveries and associated clean-up during normal working day hours: Monday to Friday between the hours of 8am and 8pm.
 - .3 Make special arrangements for access on Saturdays, Statutory holidays, or after normal hours by arranging a minimum of 3 days in advance.
- .2 Arrange use of site and premises to allow:
 - .1 Owner occupancy.
 - .2 Work by Others.
 - .3 Work by Owner.
- .3 Provide access to and from site as required by law and by Owner:
 - .1 Emergency Building Exits During Construction: Keep exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - .2 Do not obstruct roadways, sidewalks, or other public ways without permit.
- .4 Existing building spaces may not be used for storage. Obtain and pay for use of additional storage or work areas needed for operations under this contract.
- .5 Utility Outages and Shutdown:
 - .1 Limit disruption of utility services to hours the building is unoccupied.
 - .2 Coordinate outages and shutdowns with the owner.

- .3 Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
- .4 Limit shutdown of utility services to 3 hours hours at a time, arranged at least 48 hours in advance with Owner.
- .5 Prevent accidental disruption of utility services to other facilities.

1.7 WORK SEQUENCE

- .1 Sequencing is to accommodate the Owner's use of the existing facilities.
- .2 Coordinate construction schedule and operations with Owner.

1.8 REQUIREMENTS OF OTHER AUTHORITIES

- .1 Except where specifically stated otherwise, the Contractor shall be responsible to obtain and ascertain that all required permits are in place prior to commencing the Work.
- .2 Building Permit:
 - .1 The Owner will make application and pay for the Building Permit.
- .3 Trade Permits:
 - .1 The Contractor is responsible for all required trade permits.
- .4 Other Permits:
 - .1 The Contractor is responsible for any and all additional permits that are required to perform the work.
- .5 Construction Fire Safety Plan
 - .1 The contractor shall submit a Construction Fire Safety Plan to meet the requirements of the local/municipal Building Authority.
- .6 Construction Traffic Management Plan
 - .1 The Contractor shall submit a Construction Traffic Management Plan to meet the requirements of the local/municipal Building Authority.
- .7 Submission of Engineered Fire Protection Documentation:
 - .1 The Contractor is required to complete and submit the engineered sprinkler fire protection shop drawings and hydraulic calculations to the local Building

Authority for its review and approval. For additional information see Division 21 - Fire Suppression.

1.9 PROVINCIAL REQUIREMENTS

.1 Apprentices on Public Projects

- .1** The Contractor is required to comply with the Province of British Columbia's Apprentices on Public Projects Policy. See Section 01 35 00. Apprentices on Public Projects in BC - Policy Procedures and Guidelines.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01 25 00 - Substitution Procedures

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Procedural requirements for proposed substitutions.

1.2 RELATED REQUIREMENTS

- .1 Section 00 21 13 - Instructions to Bidders: Restrictions on timing of substitution requests.
- .2 Section 00 43 25 - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).
- .3 Section 00 63 25 - Substitution Request Form - During Construction: Required form for substitution requests made after award of contract (During construction).

1.3 DEFINITIONS

- .1 Substitutions: Changes from Contract Documents requirements proposed by CCDC2 Contractor to materials, products, assemblies, and equipment.
 - .1 Substitutions for Cause: Proposed due to changed Project circumstances beyond the contractor's control.
 - .1 Unavailability.
 - .2 Regulatory changes.
 - .2 Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
 - .1 Substitution requests offering advantages solely to the contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- .1 A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - .1 Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.

- .2 Agrees to provide the same warranty for the substitution as for the specified product.
 - .3 Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - .4 Waives claims for additional costs or time extension that may subsequently become apparent.
- .2 Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- .1 Note explicitly any non-compliant characteristics.
- .3 Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
- .1 No specific form is required. Substitution Request documentation must include the following:
- .1 Project Information:
 - .1 Official project name and number, and any additional required identifiers established in Contract Documents.
 - .2 Substitution Request Information:
 - .1 Discrete and consecutive Substitution Request number, and descriptive subject/title.
 - .2 Issue date.
 - .3 Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
 - .4 Description of Substitution.
 - .5 Reason why the specified item cannot be provided.
 - .6 Differences between proposed substitution and specified item.
 - .7 Description of how proposed substitution affects other parts of work.
 - .3 Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
 - .1 Physical characteristics.

- .2 In-service performance.
 - .3 Expected durability.
 - .4 Visual effect.
 - .5 Sustainable design features.
 - .6 Warranties.
 - .7 Other salient features and requirements.
 - .8 Include, as appropriate or requested, the following types of documentation:
 - .1 Product Data:
 - .2 Samples.
 - .3 Certificates, test, reports or similar qualification data.
 - .4 Drawings, when required to show impact on adjacent construction elements.
 - .4 Impact of Substitution:
 - .1 Savings to Owner for accepting substitution.
 - .2 Change to Contract Time due to accepting substitution.
 - .4 Limit each request to a single proposed substitution item.
 - .1 Submit one digital copy, combining the request form with supporting data into single document.
- ### **3.2 SUBSTITUTION PROCEDURES DURING PROCUREMENT**
- .1 Owner will consider requests for substitutions only if submitted at least 7 working days prior to the date for receipt of bids.
 - .1 Refer to City of North Vancouver tender documents.
 - .2 Architect will manage requests for substitution on behalf of the Owner during the procurement period.
 - .3 Do not present requests for substitution directly to the Owner, such requests will not be considered valid and will be rejected.

3.3 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- .1 Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- .2 Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - .1 In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
 - .2 Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
 - .3 Bear the costs associated with the proposed substitution:
 - .1 Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
 - .2 Other unanticipated project considerations.
- .3 Substitutions will not be considered under one or more of the following circumstances:
 - .1 When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 - .2 Without a separate written request.

3.4 RESOLUTION

- .1 Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

3.5 ACCEPTANCE

- .1 Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.6 CLOSEOUT ACTIVITIES

- .1 See Section 01 78 00 - Closeout Submittals, for closeout submittals.

END OF SECTION

Section 01 29 00 - Payment Procedures

Part 1 - General

1.1 SCHEDULE OF VALUES

- .1 Prior to the first application for payment, submit for Consultant's review an initial schedule of values. Modify the initial schedule of values if and as requested by Consultant. Obtain Consultant's written acceptance of the initial schedule of values prior to the first application for payment.
- .2 Together with the first and all subsequent applications for payment, submit updated versions of the schedule of values to indicate the values, to the date of application for payment, of work performed and Products delivered to Place of the Work.
- .3 Provide the schedule of values in an electronic spreadsheet format that provides for inclusion of the following information:
 - .1 Identifying information including title and location of the Work, name of Contractor, number and date of application for payment, and period covered by the application for payment.
 - .2 A work breakdown structure that is sufficiently detailed and comprehensive to facilitate Consultant's evaluation of applications for payment at an appropriate level of detail.
 - .3 Provisions for approved Change Orders so that the breakdown amounts indicated in the schedule of values aggregate to the current total Contract Price. Also provide for indicating the estimated value of Change Directives within the schedule of values, separately from the current total Contract Price.
- .4 For each item in the work breakdown structure, provide as a minimum the following information, under headings as indicated:
 - .1 Breakdown Amount: A dollar amount, including an appropriate pro rata portion of Contactor's overhead and profit.
 - .2 Performed to Date: The value of Work performed and Products delivered to Place of the Work up to the date of the application for payment, stated as a percentage of the Contract Price and in dollars.
 - .3 Previously Performed: The value of Work performed and Products delivered to the Place of the Work for which payment has been previously certified, stated as a percentage of the Contract Price and in dollars.
 - .4 Current Period: The value of Work performed and Products delivered to Place of the Work for which Contractor is currently applying for payment,

stated in dollars.

- .5 Balance to Complete: The value of Work not yet performed and Products not yet delivered to Place of the Work, stated in dollars.

1.2 CASH FLOW PROJECTION

- .1 Prior to the first application for payment submit, for Consultant's review, a forecast of approximate monthly progress payments for each month of the Contract Time.
- .2 Submit revised cash flow forecasts [when required due to significant changes in rate of progress of the Work or significant changes in the Contract Price] [monthly] [when requested by Consultant].

1.3 WORKERS' COMPENSATION CLEARANCE

- .1 Submit proof of workers' compensation clearance with each application for payment.

1.4 STATUTORY DECLARATIONS

- .1 Submit a statutory declaration in the form of CCDC 9A – Statutory Declaration of Progress Payment Distribution by Contractor with each application for payment except the first.

1.5 PAYMENT FOR PRODUCTS STORED OFF SITE

- .1 Owner may, due to extraordinary circumstances and at Owner's sole discretion, make payments for Products delivered to and stored at a location other than Place of the Work, subject to:
 - .1 a request submitted by Contractor in writing, with appropriate justification, and
 - .2 whatever conditions Owner or Consultant may establish for such payments, as required to protect Owner's interests.
 - .3 At a minimum the conditions will include a signed agreement with the following terms:
 - .1 Products will be stored at a location and in conditions that are to the satisfaction of the Owner.
 - .2 Storage will be secure and safe and may be either at a bonded facility or at the place of the Product's manufacture, and in either case, the Products shall be held apart, singly and solely for the purposes of the Project and protected from the weather.

- .3 Products shall be clearly, legibly and appropriately labelled as the property of the Owner, and with the name of the Project.
- .4 Each Product will be assigned and labelled with a unique identifier code that will correlate to the Product's shop drawings and construction documents such that the Consultant and the Payment Certifier may be able to identify the Product in the Contractor's application for payment.
- .5 Product labelling shall not damage, permanently deface or harm the Product in any way.
- .6 The Contractor will provide a written summary of any Products not installed or stored at the Place of Work for which prior agreement has been reached for payment, and the Contractor shall provide this to the Consultant and the Payment Certifier prior to the inspection of the Products.
- .7 The Contractor shall provide the Owner, the Consultant and the Payment Certifier such reasonable, unfettered and safe access reasonably necessary to view or identify any Products not delivered to the Place of Work with 1 Business Day advance notice.
- .8 Payment for Products not delivered to the Place of Work does not imply or infer that the Product has been inspected, verified, or accepted in any way, and the Contractor shall retain the entire responsibility and expense for securing and protecting any Product that has not been delivered to the Place of Work, irrespective of whether or not the Owner has made any payment in respect of the Product.
- .9 The Contractor shall not charge the Owner for any costs associated with storing Products for which payment has been certified, including, but not limited to costs for storage, packing, unpacking, re-packing, demurrage, handling, re-handling, shipping or fuel surcharges.
- .10 Evidence will be provided by the Contractor to the Owner within 1 Business Day of a written request that the storage location and conditions meet the terms and conditions of the Contract and any additional agreement reached with the Owner.
- .11 The agreement, including photographic evidence of proper labeling and storage, signed by the owner, must be submitted before or at the time of submitting the contractor's application for progress payment
- .12 The contractor shall be responsible for ensuring ready access to and timely delivery of such products to the site.

END OF SECTION

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Section 01 30 00 - Administrative Requirements

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 General administrative requirements.
- .2 Communications
- .3 Digital document submittal service.
- .4 Preconstruction meeting.
- .5 Progress meetings.
- .6 Contractor's daily reports.
- .7 Progress photographs.
- .8 Number of copies of submittals.
- .9 Requests for Information (RFI) procedures.
- .10 Submittal procedures.

1.2 RELATED REQUIREMENTS

- .1 Section 01 32 16 - Construction Progress Schedule: Form, content, and administration of schedules.
- .2 Section 01 60 00 - Product Requirements: General product requirements.
- .3 Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.3 GENERAL ADMINISTRATIVE REQUIREMENTS

- .1 Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- .2 Make the following types of submittals to Architect:
 - .1 Requests for Information (RFI).
 - .2 Requests for substitution.
 - .3 Shop Drawings, product data, and samples.

- .4 Test and inspection reports.
- .5 Design data.
- .6 Manufacturer's instructions and site reports.
- .7 Applications for payment and change order requests.
- .8 Progress schedules.
- .9 Coordination Drawings.
- .10 Correction Punch List and Final Correction Punch List for Substantial Performance.
- .11 Closeout submittals.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 COMMUNICATIONS

- .1 All formal project communication must be in writing. Verbal discussions must be followed up with written confirmation or recorded in the official meeting minutes.
- .2 Communications by electronic means must be by e-mail or using a digital contract administration App as agreed by all parties. The use of Texting, Whatsapp, and similar apps will not be considered as formal project communication.
- .3 All communication between the Owner and the Contractor must be made through the Architect's office unless prior arrangements are made.
- .4 All instructions to sub-trades must be through the Contractor and must be in writing or verbal confirmed by writing.
- .5 Sub-trades shall communicate with Architect and Consultants through the Contractor unless directed otherwise.
- .6 Instructions, clarifications, memos, and similar given to the Contractor Superintendent at the Site are considered to be the same as delivered to the Contractor's office. Similarly it is considered that instructions given to the Contractor's office will be conveyed to the site without delay.

3.2 DIGITAL DOCUMENT SUBMITTAL SERVICE

- .1 All documents transmitted for purposes of administration of the contract are to be in digital (PDF, MS Word, or MS Excel) format, as appropriate to the document, and
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transmitted via an Internet-based submittal service that receives, logs and stores documents, provides digital stamping and signatures, and notifies addressees via email.

- .1 Besides submittals for review, information, and closeout, this procedure applies to Requests for Information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, site reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 - .2 General Contractor Contractor and Architect are required to use this service.
 - .3 It is the Contractor's responsibility to submit documents in allowable format.
 - .4 Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 - .5 Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply digital stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 - .6 Paper document transmittals will not be reviewed; emailed digital documents will not be reviewed.
 - .7 All other specified submittal and document transmission procedures apply, except that digital document requirements do not apply to samples or colour selection charts.
- .2 Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.3 PRECONSTRUCTION MEETING

- .1 Schedule meeting after Notice of Award.
- .2 Attendance Required: Senior Representatives of
 - .1 Owner.
 - .2 Architect.
 - .3 Contractor
 - .4 _____.

- .3 Agenda:
 - .1 Execution of Owner- Contractor Agreement.
 - .2 Submission of executed bonds and insurance certificates.
 - .3 Distribution of Contract Documents.
 - .4 Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - .5 Submission of initial Submittal schedule.
 - .6 Designation of personnel representing the parties to Contract and Architect.
 - .7 Procedures and processing of site decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - .8 Scheduling.
- .4 Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.4 CONSTRUCTION START-UP MEETING

- .1 Promptly after *Contract* award, *Contractor* shall contact the Consultant to establish the time and location of a construction start-up meeting to review and discuss administrative procedures and responsibilities. *Contractor* shall notify *Consultant* at least 5 *Working Days* before the meeting.
- .2 Attendance Required: Senior representatives of *Owner*, *Consultant*, subconsultants, and *Contractor*, including *Contractor*'s project manager and site superintendent, and major *Subcontractors*, shall be in attendance.
 - .1 *Owner*
 - .2 *Consultant*
 - .3 Subconsultants
 - .4 *Contractor*, including *Contractor*'s project manager and site superintendent, and
 - .5 major *Subcontractors*
- .3 *Contractor*'s representative will chair the meeting and record and distribute the minutes.

.4 Agenda will include following:

- .1 Appointment of official representatives of *Owner, Contractor, Subcontractors, Consultant*, and subconsultants.
 - .2 *Project* communications.
 - .3 *Contract Documents* for construction purposes.
 - .4 Documents at the site.
 - .5 *Contractor's* use of premises.
 - .6 *Owner-supplied Products*.
 - .7 Work restrictions.
 - .8 Cash allowances.
 - .9 Substitution procedures.
 - .10 *Contract* modification procedures.
 - .11 Payment procedures.
 - .12 Construction progress meetings.
 - .13 Construction progress schedule, including long lead time items.
 - .14 Submittals schedule and procedures.
 - .15 Special procedures.
 - .16 Quality requirements, including testing and inspection procedures.
 - .17 Contractor's mobilization.
 - .18 Temporary utilities.
 - .19 Existing utility services.
 - .20 Construction facilities.
 - .21 Temporary barriers and enclosures.
 - .22 Temporary controls.
 - .23 Field engineering and layout of work.
 - .24 Site safety.
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- .25 Site security.
- .26 Cleaning and waste management.
- .27 Closeout procedures and submittals.
- .28 [Commissioning].
- .29 Other items.

3.5 PROGRESS MEETINGS

- .1 Schedule and administer meetings throughout progress of the work at maximum bi-weekly intervals.
- .2 Make arrangements and provide physical space for meetings, prepare agenda with copies for participants, preside at meetings.
- .3 Attendance Required:
 - .1 Contractor' Project Manager.
 - .2 Owner.
 - .3 Architect.
 - .4 Major Sub-Consultants.
 - .5 Special consultants as and when needed.
 - .6 Contractor's superintendent.
 - .7 Major subcontractors.
- .4 Agenda:
 - .1 Review minutes of previous meetings.
 - .2 Review of work progress.
 - .3 Site observations, problems, and decisions.
 - .4 Identification of problems that impede, or will impede, planned progress.
 - .5 Review of submittals schedule and status of submittals.
 - .6 Review of RFIs log and status of responses.
 - .7 Review of off-site fabrication and delivery schedules.

- .8 Maintenance of progress schedule.
 - .9 Corrective measures to regain projected schedules.
 - .10 Planned progress during succeeding work period: 3-week look-ahead.
 - .11 Coordination of projected progress.
 - .12 Maintenance of quality and work standards.
 - .13 Effect of proposed changes on progress schedule and coordination.
 - .14 Other business relating to work.
- .5 Record minutes and distribute copies within three working days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made who may not be in attendance.
- .6 Ensure sub-contractors attend as and when appropriate to the progress of the Work.
- .7 Agenda for each meeting shall include the following, as a minimum:
- .1 Approval of minutes of previous meeting.
 - .2 Work progress since previous meeting.
 - .3 Work scheduled for the week.
 - .4 Two-week look-ahead.
 - .5 Construction progress schedule review.
 - .6 Field observations, including any problems, difficulties, or concerns.
 - .7 Submittals schedule.
 - .8 Proposed changes in the *Work*.
 - .9 Requests for information.
 - .10 Site safety issues.
 - .11 Other business.

3.6 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 32 16

3.7 DAILY CONSTRUCTION REPORTS

- .1 Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- .2 In addition to transmitting a digital copy to Owner and Architect, submit two printed copies at monthly intervals.
 - .1 Submit in format acceptable to Owner.
- .3 Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 - .1 Date.
 - .2 High and low temperatures, and general weather conditions.
 - .3 List of subcontractors at Project site.
 - .4 Approximate count of personnel at Project site.
 - .5 Major equipment at Project site.
 - .6 Material deliveries.
 - .7 Safety, environmental, or industrial relations incidents.
 - .8 Meetings and significant decisions.
 - .9 Unusual events (submit a separate special report).
 - .10 Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 - .11 Meter readings and similar recordings.
 - .12 Emergency procedures.
 - .13 Directives and requests of Authority(s) Having Jurisdiction (AHJ).
 - .14 Change Orders received and implemented.
 - .15 Testing and/or inspections performed.
 - .16 Signature of Contractor's authorized representative.

3.8 PROGRESS PHOTOGRAPHS

- .1 Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- .2 Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- .3 Photography Type: Digital; electronic files.
- .4 In addition to periodic, recurring views, take photographs of each of the following events:
 - .1 Structural framing in progress and upon completion.
 - .2 Enclosure of building, upon completion.
 - .3 Final completion, minimum of ten (10) photos.
- .5 Take photographs as evidence of existing project conditions as follows:
 - .1 Interior views: existing lounge, dormitory and adjacent spaces.
 - .2 Exterior views: rooftop.
- .6 Views:
 - .1 Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Performance.
 - .2 Consult with Architect for instructions on views required.
 - .3 Provide factual presentation.
 - .4 Provide correct exposure and focus, high resolution and sharpness, maximum depth of site, and minimum distortion.
- .7 Digital Photographs: 24 bit colour, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - .1 Delivery Medium: Via email.
 - .2 File Naming: Include project identification, date and time of view, and view identification.
 - .3 PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.

3.9 REQUESTS FOR INFORMATION (RFI)

- .1 Definition: A request seeking one of the following:
 - .1 An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in the Contract Documents.
 - .2 A resolution to an issue which has arisen due to site conditions and affects design intent.
- .2 Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- .3 Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of the Contract Documents. Review documents well in advance of the Work. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - .1 Prepare a separate RFI for each specific item.
 - .1 Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - .2 Do not forward requests which solely require internal coordination between subcontractors.
 - .2 Prepare in a format and with content acceptable to Consultant.
 - .3 Prepare using software provided by the Digital Document Submittal Service.
 - .4 Combine RFI and its attachments into a single digital file. PDF format is preferred.
- .4 Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 - .1 Unacceptable Uses for RFIs: Do not use RFIs to request the following:
 - .1 Approval of submittals (use procedures specified elsewhere in this section).
 - .2 Approval of substitutions (see Section - 01 60 00 - Product Requirements)

- .2 Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 - .3 Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, the Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
 - .1 The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.
 - .5 Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - .1 Official Project name and number, and any additional required identifiers established in Contract Documents.
 - .2 Discrete and consecutive RFI number, and descriptive subject/title.
 - .3 Issue date, and requested reply date.
 - .4 Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 - .5 Annotations: Site dimensions and/or description of conditions which have engendered the request.
 - .6 Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
 - .6 Attachments: Include sketches, coordination Drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
 - .7 RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
 - .1 Indicate current status of every RFI. Update log promptly and on a regular basis.
 - .2 Note dates of when each request is made, and when a response is received.
 - .3 Highlight items requiring priority or expedited response.
-

- .4 Highlight items for which a timely response has not been received to date.
- .5 Remove improper or frivolous RFIs.
- .8 Review Time: Architect will aim to respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
 - .1 Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- .9 Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in the Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Consultant.
 - .1 Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 - .2 Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 - .3 Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
 - .4 Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.10 SUBMITTALS SCHEDULE

- .1 Submit to Architect for review a schedule for submittals in tabular format.
 - .1 Submit at the same time as the preliminary schedule .
 - .2 Coordinate with construction schedule and schedule of values.
 - .3 Format schedule to allow tracking of status of submittals throughout duration of construction.
 - .4 Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.

- .5 Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - .1 For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.11 NUMBER OF COPIES OF SUBMITTALS

- .1 Digital Documents: Submit one digital copy in PDF format; a digitally-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

3.12 SUBMITTAL PROCEDURES

- .1 General Requirements:
 - .1 Use a separate transmittal for each item.
 - .2 Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - .3 Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - .4 Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, site dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - .1 Submittals from sources other than the Contractor, or without the Contractor's stamp will not be acknowledged, reviewed, or returned.
 - .5 Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - .1 Deliver submittals to Architect at business address.
 - .6 Schedule submittals to expedite the Project, and coordinate submission of related items.
 - .1 For each submittal for review, allow up to 15 calendar days excluding delivery time to and from the ContractorGeneral Contractor .

- .2 For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
 - .3 For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 days.
 - .7 Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - .8 Provide space for Contractor and Architect review stamps.
 - .9 When revised for resubmission, identify all changes made since previous submission.
 - .10 Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 - .11 Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
 - .12 Submittals not requested will not be recognized or processed.
- .2 Product Data Procedures:
- .1 Submit only information required by individual specification sections.
 - .2 Collect required information into a single submittal.
 - .3 Submit concurrently with related shop drawing submittal.
 - .4 Do not submit (Material) Safety Data Sheets for materials or products.
 - .5 Submit sustainable design reporting submittals under separate cover.
- .3 Shop Drawing Procedures:
- .1 Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related work.
 - .2 Generic, non-project-specific information submitted as Shop Drawings do not meet the requirements for Shop Drawings.
- .4 Samples Procedures:
- .1 Transmit related items together as single package.

- .2 Identify each item to allow review for applicability in relation to Shop Drawings showing installation locations.

3.13 SUBMITTAL REVIEW

- .1 Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- .2 Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- .3 Architect's actions will be reflected by marking each returned submittal using virtual stamp on digital submittals.
- .1 Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- .4 Architect's and consultants' actions on items submitted for review:
- .1 Authorizing purchasing, fabrication, delivery, and installation:
- .1 Reviewed: Indicates that submittal has no notes, marks or changes; work affected by submittal can proceed.
- .2 Reviewed as Noted: Indicates that submittal has notes, marks or changes that do not affect the submittal review process; work affected by submittal can proceed without resubmission.
- .2 Not Authorizing fabrication, delivery, and installation:
- .1 Revise and Resubmit: Indicates that there is an error or concern within the submittal of a significant nature; work affected by the submittal cannot proceed and requires resubmission except as follows:
- .1 Resubmit revised item, with review notations acknowledged and incorporated.
- .2 Non-responsive resubmittals may be rejected.
- .2 Rejected: Indicates that submittal is not appropriate for Consultant's review; work affected by submittal is at Contractor's risk if relied upon during the course of the Work.
- .1 Submit item complying with requirements of Contract Documents.

3.14 COORDINATION OF TRADES

- .1 Neither the Consultant nor the Owner's representative are responsible to coordinate the trades. Their regular attendance at job meetings and site inspections does not relieve the Contractor from his responsibility to coordinate the trades and properly schedule the stages of work.
- .2 Job meetings called for the purpose of meeting with consultants and the Owner's representative are to review the quality and progress of the work and to respond to Contractor questions, and are not to be construed as trade coordination meetings. These meetings .
- .3 The Contractor shall call separate trade meetings, as required for the purpose of coordinating and scheduling the work. These trade meetings should be called prior to the consultant meetings to have questions prepared for the consultants.
- .4

END OF SECTION

Section 01 32 16 - Construction Progress Schedule

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Preliminary schedule.
- .2 Construction progress schedule, bar chart type.

1.2 RELATED SECTIONS

- .1 Section 01 10 00 - Summary: Work sequence.

1.3 REFERENCE STANDARDS

- .1 AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.
- .2 CCDC 14 - Design-Build Stipulated Price Contract; 2013.

1.4 SUBMITTALS

- .1 Within 5 working days after date of Agreement, submit preliminary schedule.
- .2 If preliminary schedule requires revision after review, submit revised schedule within 5 working days.
- .3 Within 5 working days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- .4 Within 5 working days after joint review, submit complete schedule.
- .5 Submit updated schedule with each Application for Payment.
- .6 Submit via e-mail in PDF format.

1.5 SCHEDULE FORMAT

- .1 Prepare schedule in the form of a Critical Path Method (CPM) Gantt Chart using appropriate software.
 - .2 Provide a work breakdown structure identifying key activities, work packages, and major milestones, including long delivery Products, inspection and testing activities, preparation and review of mock-ups, owner decisions for cash allowances, shutdown or closure activities, delivery of Owner supplied products, demonstration and training activities, municipal occupancy permit process, and similar items at a sufficient level of detail to effectively manage construction progress.
-

- .3 Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- .4 Indicate milestone dates for
 - .1 phase commencement and completion date.
 - .2 Substantial Performance
 - .3 Occupancy Permit and Ready-for-Takeover
 - .4 Total completion

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 PRELIMINARY SCHEDULE

- .1 Prepare preliminary schedule in the form of a Gantt chart.

3.2 CONTENT

- .1 Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- .2 Identify each item by specification section number.
- .3 Identify work of separate stages and other logically grouped activities.
- .4 Provide sub-schedules for each stage of Work identified in Section 01 10 00 - Summary.
- .5 Provide sub-schedules to define critical portions of the entire schedule.
- .6 Include conferences and meetings in schedule.
- .7 Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- .8 Provide separate schedule of submittal dates for Shop Drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- .9 Indicate delivery dates for owner-furnished products.
- .10 Coordinate content with schedule of values specified in Section 01 20 00 - Price and Payment Procedures.

- .11 Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

- .1 Include a separate bar for each major portion of Work or operation.
- .2 Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

- .1 Participate in joint review and evaluation of schedule with Architect at each submittal.
- .2 Evaluate project status to determine work behind schedule and work ahead of schedule.
- .3 After review, revise as necessary as result of review, and resubmit within 5 days.

3.5 UPDATING SCHEDULE

- .1 Maintain schedules to record actual start and finish dates of completed activities.
- .2 Indicate progress of each activity to date of revision, with projected completion date of each activity.
- .3 Annotate diagrams to graphically depict current status of Work.
- .4 Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- .5 Indicate changes required to maintain Date of Substantial Completion.
- .6 Submit reports required to support recommended changes.
- .7 Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

3.6 DISTRIBUTION OF SCHEDULE

- .1 Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- .2 Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

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Section 01 35 00 - SPECIAL PROJECT PROCEDURES

Part 1 General

1.1 COMMUNICATIONS

- .1 All communication between the Owner and their Consultants, and the Contractor and their sub-trades must be made through the Architect's office unless prior arrangements are made. All parties affected must be informed.
- .2 All instructions to sub-trades must be through the Contractor and must be in writing or verbal confirmed by writing.
- .3 Sub-trades shall communicate with Architect and Consultants through the Contractor unless directed otherwise.

1.2 LIST OF SUPPLIERS AND SUB-TRADES

- .1 Contractor to provide the Architect with a complete list of sub-trades and suppliers with names, addresses, and phone numbers of key personnel.
- .2 Contractor to provide list of manufacturers' and suppliers' materials to be used on the project. This information will be required prior to preparation of the Colour Schedule.

1.3 SITE MEETINGS

- .1 Regular bi-weekly site meetings shall be convened by the Contractor. Contractor to notify and have critical sub-trades attend. All consultants shall attend unless prior arrangements made.
- .2 Supplementary site meetings will be held every second week. Attendance to be on an "as needed" basis.
- .3 The Contractor shall take minutes of the meeting for record purposes, and to have written confirmation of same. This does not relieve all concerned parties from making their own minutes and noting their own responsibilities and action to be taken immediately.

1.4 COORDINATION OF TRADES

- .1 Neither the Consultant nor the Owner's representative are responsible to coordinate the trades. Their regular attendance at job meetings and site inspections does not relieve the Contractor from his responsibility to coordinate the trades and properly schedule the stages of work.

- .2 Job meetings called for the purpose of meeting with consultants and the Owner's representative are to review the quality and progress of the work and to respond to Contractor questions, and are not to be construed as trade coordination meetings. These meetings .
- .3 The Contractor shall call separate trade meetings, as required for the purpose of coordinating and scheduling the work. These trade meetings should be called prior to the consultant meetings to have questions prepared for the consultants.

1.5 CLARIFICATIONS AND INSTRUCTIONS

- .1 Instructions, clarifications, memos, and similar given to the Contractor Superintendent at the Site are considered to be the same as delivered to the Contractor's office.
 - .1 Similarly it is considered that instructions given to the Contractor's office will be conveyed to the site without delay.
- .2 The Contractor shall immediately advise the Consultant and immediately confirm in writing whether additional instructions will specifically affect either the Contract Price or the Contract Time.
- .3 The Contractor shall be responsible for requesting any additional instruction or clarifications that may be required from the Consultant which are needed for the performance of the work and shall request such instructions or clarifications in time to avoid any delay of the work.

1.6 CONTRACTOR'S USE OF SITE

- .1 Work areas shall be fenced and maintained to ensure the safety of the users and contractor's forces.
- .2 See drawings outlining contractor's staging area.
- .3 Coordinate and make arrangements with owner in construction areas where users require access.
- .4 Existing facilities including washrooms and kitchen facilities are not to be used by the Contractor's forces.

1.7 JOB SITE SECURITY AND SAFETY

- .1 Be aware of site security requirements by the Municipality. Obtain all relevant permits.(only the building permit will be paid for by the Owner).
 - .2 The Contractor shall schedule activities to ensure that the safety of the staff, students and public is maintained.
-

- .3 The Contractor shall be responsible for the security of the site at all times for the duration of the project until owner take-over.
- .4 The contractor shall have a foreman or other responsible person on site at all times when sub-trades or his own personnel are working.
- .5 Special care and attention shall be taken regarding access and exit of trucks and all other machinery to and from the Site.
- .6 The Contractor shall comply with the Owner's requirements in regard to protection and security of the Owner's property and operations during the work. Notify all parties involved in construction activities of the requirements and ensure enforcement. Confine all work activities to immediate areas, and within bounds determined by the Owner. No fires, explosions or similar activities will be permitted without Owner's written authorization.
- .7 Identification of Employees: all employees of the Contractor and the Sub-Contractors shall wear badges clearly identifying their name and the name of their employer when they are working outside the area designated solely for the use of the Contractors.

1.8 NO SMOKING AND SUBSTANCE USE POLICY

- .1 Smoking, vaping, cannabis use and consumption of any kind of intoxicants are not permitted on the Owner's properties. The ban extends to all of the Owner's property 24 hours a day, 7 days a week. The ban also includes vehicles, parking lots, sports fields, driveways, courtyards, private vehicles parked on the Owner's property, and areas abutting the Owner's property.
- .2 All construction personnel must conform to this policy.
- .3 Enforce construction personnel conformance to this policy.

1.9 PROVINCIAL REQUIREMENTS

- .1 Apprentices on Public Projects
 - .1 The Contractor is required to comply with the Province of British Columbia's Apprentices on Public Projects Policy: Apprentices on Public Projects in BC - Policy Procedures and Guidelines.

1.10 REVIEW & INSPECTION OF THE WORK

- .1 See separate sections of the specifications for more specific references as to payments by Owner or Contractor for testing of items. If the work and/or material does not meet specifications the Contractor shall pay for the tests and pay for all work to meet specifications and subsequent tests to confirm conformance. The Contractor shall

also pay for examination of similar building elements that may be suspect as to conformance.

- .2 Should the Consultant be required to make more than one re-inspection of rejected work or should the Consultant perform re-inspection due to failure of the Work to comply with the claims of status of completion made by the Contractor, the Owner will compensate the Consultant for such additional services including expenses incurred and the Owner will deduct the amount of such compensation to the Consultant from the final payment to the Contractor. Costs will be based on Consultant's or Sub-consultant's rates in place at time of re-inspection.
- .3 The Contractor is responsible for the organization, notifications and arrangements as required to assure inspections, tests and related approvals required by authorities having jurisdiction, and/or the Contract Documents.
- .4 The Contractor shall ensure reasonable notification of the consultant in relation to ongoing work. The Consultant will be responsible only for responding to such reasonable notice.

1.11 DOCUMENTS AT THE SITE

- .1 Shall include:
 - .1 Municipal Permit Drawings
 - .2 Issued for Construction Specifications and Drawings
 - .3 Specifications and Drawings used for marking up record drawing information.
 - .4 RFI Log
 - .5 Site Instructions
 - .6 Contemplated Change Orders
 - .7 Change Orders
 - .8 Other clarifications to Contract
 - .9 Field Test Reports
 - .10 Copy of the approved Work Schedule
 - .11 Manufacturers' installation and application instructions.

1.12 PRE-SUBSTANTIAL PERFORMANCE REQUIREMENTS

- .1 Conditions that must precede the Contractor's application for Substantial Performance include:
 - .1 The project site shall be cleaned of unnecessary construction debris.

END OF SECTION

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Section 01 40 00 - Quality Requirements

Part 1 - General

1.1 REFERENCE STANDARDS

- .1 "Reference standards" means consensus standards, trade association standards, guides, and other publications expressly referenced in Contract Documents.
- .2 Where an edition or version date is not specified, referenced standards shall be deemed to be the latest edition or revision issued by the publisher at the time of bid closing. However if a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the regulatory referenced edition or version shall apply.
- .3 Reference standards establish minimum requirements. If Contract Documents call for requirements that differ from a referenced standard, the more stringent requirements shall govern.
- .4 If compliance with two or more reference standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to Consultant for clarification.
- .5 Within the Specifications, reference may be made to the following standards writing, testing, or certification organizations by their acronyms or initialisms:
 - .1 AA - Aluminum Association
 - .2 ACI - American Concrete Institute
 - .3 AISC - American Institute of Steel Construction
 - .4 ANSI - American National Standards Institute
 - .5 ASME - American Society of Mechanical Engineers
 - .6 ASTM - American Society for Testing and Materials
 - .7 AWMAC - Architectural Woodwork Manufacturers Association of Canada
 - .8 AWPA - American Wire Producers Association
 - .9 CaGBC - Canadian Green Building Council
 - .10 CGSB - Canadian General Standards Board

- .11 CISC - Canadian Institute of Steel Construction
- .12 CPCI - Canadian Prestressed Concrete Institute
- .13 CSA - Canadian Standards Association
- .14 CSSBI - Canadian Sheet Steel Building Institute
- .15 CWB – Canadian Welding Bureau
- .16 ICEA - Insulated Cable Engineers Association
- .17 IEEE - Institute of Electrical and Electronics Engineers
- .18 IGMAC – Insulating Glass Manufacturers Association of Canada
- .19 LEED - Leadership in Energy and Environmental Design
- .20 MPP – Master Painters Institute
- .21 MSS - Manufacturers Standardization Society of the Valve and Fittings Industry
- .22 NAAMM - National Association of Architectural Metal Manufacturers
- .23 NEMA - National Electrical Manufacturers Association
- .24 NFPA - National Fire Protection Association
- .25 NHLA - National Hardwood Lumber Association
- .26 NLGA - National Lumber Grades Authority
- .27 SSPC – The Society for Protective Coatings
- .28 TTMAC - Terrazzo, Tile and Marble Association of Canada
- .29 ULC - Underwriters' Laboratories of Canada

1.2 INDEPENDENT INSPECTION AND TESTING AGENCIES

- .1 Except as otherwise specified, Owner will retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the Work.
 - .2 Retain and pay for inspection and testing that is for Contractor's own quality control or is required by regulatory requirements.
-

- .3 Employment of inspection and testing agencies by Contractor or Owner does not relieve Contractor from responsibility to perform the Work in accordance with Contract Documents.
- .4 Allow and arrange for inspection and testing agencies to have access to the Work, including access to off site manufacturing and fabrication plants.
- .5 For inspection and testing required by Contract Documents or by authorities having jurisdiction, provide Consultant and inspection and testing agencies with timely notification in advance of required inspection and testing.
- .6 Submit test samples required for testing [in accordance with submittals schedule specified in Section 01 32 00 – Construction Progress Documentation].

1.3 INSPECTION AND TESTING AGENCY REPORTS

- .1 For inspection and testing required by Contract Documents or by regulatory requirements, and performed by Contractor retained inspection and testing agencies, submit to Consultant copies of reports. Submit within 5 days after completion of inspection and testing.
- .2 For inspection and testing performed by Owner retained inspection and testing agencies, copies of inspection and testing agency reports will be provided to Contractor.

1.4 MOCK-UPS

- .1 Prepare mock-ups of Work as specified in the technical Specifications. If a mock-up location is not indicated in the Drawings or Specifications, locate where directed by Consultant.
- .2 Modify mock-up as required until Consultant approval is obtained.
- .3 Approved mock-ups establish an acceptable standard for the Work.
- .4 Protect mock-ups from damage until the Work they represent is complete.
- .5 Unless otherwise specified in the technical Specifications, approved mock-ups forming part of the Work may remain as part of the Work.
- .6 Remove mock-ups only when the Work they represent is complete or when otherwise directed by Consultant.

END OF SECTION

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Section 01 50 00 - Temporary Facilities and Controls

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Temporary utilities.
- .2 Temporary telecommunications services.
- .3 Temporary sanitary facilities.
- .4 Temporary Controls: Barriers, enclosures, and fencing.
- .5 Security requirements.
- .6 Vehicular access and parking.
- .7 Waste removal facilities and services.
- .8 Site offices.

1.2 RELATED REQUIREMENTS

- .1 Section 01 51 00 - Temporary Utilities.

1.3 TEMPORARY UTILITIES - SEE SECTION 01 51 00

- .1 Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- .2 Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.4 TELECOMMUNICATIONS SERVICES

- .1 Except wifi services, provide, maintain, and pay for telecommunications services to site office at time of project mobilization.
- .2 Telecommunications services shall include:
 - .1 Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
 - .2 Telephone Land Lines: One line, minimum; one handset per line.
 - .3 Email: Account/address reserved for project use.
- .3 Owner shall provide access to on-site wifi for internet use by the Contractor.

1.5 TEMPORARY SANITARY FACILITIES

- .1 Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- .2 Use of Owner's existing sanitary facilities is not permitted.
- .3 Maintain daily in clean and sanitary condition.

1.6 BARRIERS

- .1 Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- .2 Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.7 FENCING

- .1 Provide industry-standard panelized construction fencing of heavy-gauge welded wire mesh, 1.8 m high, around entire construction site; equip with vehicular and pedestrian gates with locks.

1.8 INTERIOR ENCLOSURES

- .1 Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
- .2 Construction: Framing and plywood sheet materials with closed joints and sealed edges at intersections with existing surfaces:

1.9 SECURITY

- .1 Provide security and facilities to protect Work, and where applicable existing facilities, and Owner's operations, from unauthorized entry, vandalism, or theft.
- .2 Coordinate with Owner's security program.

1.10 VEHICULAR ACCESS AND PARKING

- .1 Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
 - .2 Coordinate access and haul routes with governing authorities and Owner.
 - .3 Provide and maintain access to fire hydrants, free of obstructions.
-

- .4 Provide means of removing mud from vehicle wheels before entering streets.
- .5 Designated existing on-site roads may be used for construction traffic.
- .6 Existing parking areas located on site may be used for construction parking.

1.11 WASTE REMOVAL

- .1 See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.
- .2 Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- .3 Provide containers with lids. Remove trash from site periodically.
- .4 If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- .5 Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 SITE OFFICES

- .1 Office: if owner cannot provide a room for use as an office by the contractor within the existing facility, then construction space may need to act as both.
- .2 Provide space for Project meetings, with table and chairs to accommodate up to 8 persons on a bi-weekly basis.
- .3 Locate offices a minimum distance of 10 m from existing and new structures.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- .1 Remove temporary utilities, equipment, facilities, materials, prior to Occupancy inspection.
- .2 Clean and repair damage caused by installation or use of temporary work.
- .3 Restore existing facilities used during construction to original condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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Section 01 51 00 - Temporary Utilities

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Temporary Utilities: Provision of electricity, lighting, heat, ventilation, and water.

1.2 REFERENCE STANDARDS

- .1 WorkSafeBC - WorkSafeBC; current edition.

1.3 TEMPORARY ELECTRICITY

- .1 Cost: By Owner.

- .2 Connect to Owner's existing power service.

- .1 Do not disrupt Owner's need for continuous service.

- .2 Exercise measures to conserve energy.

- .3 Provide temporary electric feeder from existing building electrical service at location as directed. Coordinate with Owner.

- .4 Complement existing power service capacity and characteristics as required.

- .5 Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

- .6 Provide main service disconnect and over-current protection at convenient location and meter.

1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- .1 Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of WorkSafeBC and authorities having jurisdiction.

- .2 Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

- .3 Maintain lighting and provide routine repairs.

1.5 TEMPORARY HEATING

- .1 Cost of Energy: By Contractor.

- .2 Provide heating devices and heat as needed to maintain specified conditions for construction operations.
- .3 Maintain minimum ambient temperature of 10 degrees C in areas where construction is in progress, unless indicated otherwise in specifications.
- .4 Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.6 TEMPORARY COOLING

- .1 Cost of Energy: By General Contractor .
- .2 Provide cooling devices and cooling as needed to maintain specified conditions for construction operations.
- .3 Maintain maximum ambient temperature of 26 degrees C in areas where construction is in progress, unless indicated otherwise in specifications.

1.7 TEMPORARY WATER SERVICE

- .1 Cost of Water Used: By Owner.
- .2 Provide and maintain suitable quality water service for construction operations at time of project mobilization.
- .3 Connect to existing water source.
 - .1 Exercise measures to conserve water.
 - .2 Coordinate with Owner.
- .4 Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

Section 01 61 00 - Common Product Requirements

Part 1 - General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to Reference Standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested or to receive test data.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
 - .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until
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required in Work.

- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber, on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.

1.5 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

1.7 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Consultant of conflicting installation. Install as directed.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.

- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.14 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 - Products

2.1 NOT USED

- .1 Not Used.

Part 3 - Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Section 01 70 00 - Execution and Closeout Requirements

PART 1 GENERAL

1.1 SUMMARY

- .1 Except where otherwise specified in technical *Specifications* or otherwise indicated on *Drawings*, comply with requirements of this Section.

1.2 SECTION INCLUDES

- .1 Examination, preparation, and general installation procedures.
- .2 Pre-installation meetings.
- .3 Cutting and patching.
- .4 Surveying for laying out the work.
- .5 Cleaning and protection.
- .6 Starting of systems and equipment.
- .7 Demonstration and instruction of Owner personnel.
- .8 Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- .9 General requirements for maintenance service.

1.3 RELATED REQUIREMENTS

- .1 Section 01 10 00 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- .2 Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- .3 Section 013500 - Special Procedures.
- .4 Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
- .5 Section 01 50 00 - Temporary Facilities and Controls: Temporary interior partitions.
- .6 Section 01 51 00 - Temporary Utilities: Temporary heating, cooling, and ventilating facilities.
- .7 Section 017700 - Closeout Procedures

- .8 Section 07 84 00 - Firestopping.

1.4 MANUFACTURER'S INSTRUCTIONS

- .1 Install, erect, or apply *Products* in strict accordance with manufacturer's instructions.
- .2 Notify *Consultant*, in writing, of conflicts between *Contract Documents* and manufacturer's instructions where, in *Contractor's* opinion, conformance with *Contract Documents* instead of the manufacturer's instructions may be detrimental to the *Work* or may jeopardize the manufacturer's warranty.
- .3 Do not rely on labels or enclosures provided with *Products*. Obtain written instructions directly from manufacturers.
- .4 Provide manufacturer's representatives with access to the *Work* at all times. Render assistance and facilities for such access so that manufacturer's representatives may properly perform their responsibilities.

1.5 CONCEALMENT

1.6 CONCEAL PIPES, DUCTS, AND WIRING IN FLOORS, WALLS AND CEILINGS IN FINISHED AREAS:

- .1 after review by *Consultant* and authority having jurisdiction, and
- .2 where locations differ from those shown on *Drawings*, after recording actual locations on as-built drawings.
- .2 Provide incidental furring or other enclosures as required.
- .3 Notify *Consultant* in writing of interferences before installation.

1.7 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials.
- .2 Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to avoid direct contact.
- .3 Use non-corrosive fasteners and anchors for securing exterior work [and in spaces where high humidity levels are anticipated].
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.

- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.

1.8 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Bolts shall not project more than one diameter beyond nuts.

1.9 FIRE RATED ASSEMBLIES

- .1 When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with fire-stopping materials, smoke seals, or both, in full thickness of the construction element as required to maintain the integrity of the fire rated assembly.

1.10 LOCATION OF FIXTURES, OUTLETS AND DEVICES

- .1 Consider location of fixtures, outlets, and devices indicated on *Drawings* as approximate.
- .2 Locate fixtures, outlets, and devices to provide minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements.
- .3 Promptly notify *Consultant* in writing of conflicting installation requirements for fixtures, outlets, and devices. If requested, indicate proposed locations and obtain approval for actual locations.

1.11 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - .1 Structural integrity of any element of Project.
 - .2 Integrity of weather exposed or moisture resistant element.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight exposed elements.
 - .5 Work of Owner or separate Contractor.

- .3 Project Record Documents: Accurately record actual locations of capped and active utilities.

1.12 QUALIFICATIONS

- .1 For surveying work, employ a land surveyor registered in British Columbia and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.13 PROJECT CONDITIONS

- .1 Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapours, or gases.
- .2 Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - .1 Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- .3 Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - .1 At all times coordinate excessively noisy activities with owner to minimize disturbance to Owner's operations in adjacent occupied areas. Whenever possible, schedule for after hours when building is not occupied.
- .4 Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, provincial, and local regulations.

1.14 COORDINATION

- .1 Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
 - .2 Notify affected utility companies and comply with their requirements.
 - .3 Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such
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equipment.

- .4 Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- .5 In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- .6 Coordinate completion and clean-up of work of separate sections.
- .7 After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

- .1 New Materials: As specified in product sections; match existing products and work for patching and extending work.
- .2 Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- .3 Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- .2 Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- .3 Examine and verify specific conditions described in individual specification sections.
- .4 For additions and alterations to existing buildings, verify all existing conditions and promptly report any discrepancies to drawings to the Architect. Take site measurements.

- .5 Take site measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- .6 Verify that utility services are available, of the correct characteristics, and in the correct locations.
- .7 Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 VERIFICATION OF EXISTING CONDITIONS

- .1 Where work specified in any Section is dependent on the work of another Section or Sections having been properly completed, verify that work is complete and in a condition suitable to receive the subsequent work. Commencement of work of a Section that is dependent on the work of another Section or Sections having been properly completed, means acceptance of the existing conditions.
- .2 Verify that ambient conditions are suitable before commencing the work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of *Products* used.
- .3 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.
- .4 Notify Architect in writing of unacceptable conditions.

3.3 EXISTING UTILITIES AND STRUCTURES

- .1 Before commencing excavation, drilling or other earthwork, establish or confirm location and extent of all existing underground utilities and structures in work area.
- .2 Promptly notify *Architect* if underground utilities, structures, or their locations differ from those indicated in *Contract Documents* or in available project information. Architect will provide appropriate direction.
- .3 Record locations of maintained, re-routed and abandoned utility lines.

3.4 PREPARATION

- .1 Clean substrate surfaces prior to applying next material or substance.
 - .2 Seal cracks or openings of substrate prior to applying next material or substance.
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- .3 Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.5 PREINSTALLATION MEETINGS

- .1 When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- .2 Require attendance of parties directly affecting, or affected by, work of the specific section.
- .3 Notify Architect four days in advance of meeting date.
- .4 Prepare agenda and preside at meeting:
 - .1 Review conditions of examination, preparation and installation procedures.
 - .2 Review coordination with related work.
- .5 Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.6 LAYING OUT THE WORK

- .1 Verify locations of survey control points prior to starting work.
- .2 When adding to existing buildings, verify all existing levels, including basements, floors above grade, and roofs.
- .3 Promptly notify Architect of any discrepancies discovered.
- .4 Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- .5 Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- .6 Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- .7 Utilize recognized engineering survey practices.
- .8 Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - .1 Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations; and _____.

- .2 Grid or axis for structures.
- .3 Building foundation, column locations, ground floor elevations.
- .9 Periodically verify layouts by same means.
- .10 Maintain a complete and accurate log of control and survey work as it progresses.

3.7 GENERAL INSTALLATION REQUIREMENTS

- .1 Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- .2 Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- .3 Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- .4 Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- .5 Make neat transitions between different surfaces, maintaining texture and appearance.

3.8 ALTERATIONS

- .1 Drawings showing existing construction and utilities are based on casual site observation and existing record documents only.
 - .1 Verify that construction and utility arrangements are as indicated.
 - .2 Report discrepancies to Architect before disturbing existing installation.
 - .3 Beginning of alterations work constitutes acceptance of existing conditions.
- .2 Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - .1 Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on Drawings.
 - .3 Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

- .1 Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
- .2 Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- .4 Remove existing work as indicated and as required to accomplish new work.
 - .1 Remove items indicated on Drawings.
 - .2 Relocate items indicated on Drawings.
 - .3 Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish and at no additional cost to the Owner.
 - .4 Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible and at no additional cost to the Owner.
- .5 Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - .1 Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - .2 Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - .3 Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - .1 Disable existing systems only to make switchovers and connections; minimize duration of outages. Coordinate with Owner for outage times.
 - .2 Provide temporary connections as required to maintain existing systems in service.
 - .4 Verify that abandoned services serve only abandoned facilities.

- .5 Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction and at no additional cost to the Owner.
- .6 Protect existing work to remain.
 - .1 Prevent movement of structure; provide shoring and bracing if necessary.
 - .2 Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - .3 Repair adjacent construction and finishes damaged during removal work.
- .7 Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- .8 Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting at no additional cost to the Owner. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- .9 Refinish existing surfaces as indicated:
 - .1 Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 - .2 If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- .10 Clean existing systems and equipment.
- .11 Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- .12 Do not begin new construction in alterations areas before demolition is complete.
- .13 Comply with all other applicable requirements of this section.

3.9 CUTTING AND PATCHING

- .1 Whenever possible, execute the work by methods that avoid cutting or patching.
 - .2 See Alterations article above for additional requirements.
 - .3 Perform whatever cutting and patching is necessary, at no additional cost to the Owner, to:
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- .1 Complete the work.
 - .2 Fit products together to integrate with other work.
 - .3 Provide openings for penetration of mechanical, electrical, and other services.
 - .4 Match work that has been cut to adjacent work.
 - .5 Repair areas adjacent to cuts to required condition.
 - .6 Repair new work damaged by subsequent work.
 - .7 Remove samples of installed work for testing when requested.
 - .8 Remove and replace defective and non-complying work.
 - .4 Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition unless specified to be re-finished.
 - .5 Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
 - .6 Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
 - .7 Restore work with new products in accordance with requirements of Contract Documents.
 - .8 Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
 - .9 At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material 07 84 00 - Firestopping, to full thickness of the penetrated element.
 - .10 Patch as per the following and at no additional cost to the Owner:
 - .1 Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - .2 Match colour, texture, and appearance.
 - .3 Repair patched surfaces that are damaged, lifted, discoloured, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
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3.10 PROGRESS CLEANING

- .1 Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- .2 Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- .3 Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- .4 Do not permit waste materials, debris, and trash/rubbish to accumulate on site. Remove periodically as required and dispose off-site; do not burn or bury.

3.11 PROTECTION OF INSTALLED WORK

- .1 Adequately protect installed work and work in progress from damage by construction operations.
- .2 Provide special protection where specified in individual specification sections.
- .3 Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- .4 Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- .5 Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- .6 Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- .7 Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- .8 Promptly remove, replace, clean, or repair, as directed by *Consultant*, work damaged as a result of inadequate protection.
- .9 Do not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety or integrity of the *Work*.
- .10 Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.12 REMEDIAL WORK

- .1 Notify *Consultant* of, and perform remedial work required to, repair or replace defective or unacceptable work. Ensure that properly qualified workers perform remedial work. Coordinate adjacent affected work as required.

3.13 SYSTEM STARTUP

- .1 Coordinate schedule for start-up of various equipment and systems.
- .2 Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- .3 Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- .4 Verify that wiring and support components for equipment are complete and tested.
- .5 Execute start-up under supervision of applicable Contractor personnel, and manufacturer's representative where appropriate, in accordance with manufacturers' instructions.
- .6 When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- .7 Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.14 DEMONSTRATION AND INSTRUCTION

- .1 Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Onwer takeover.
- .2 Owner will provide list of personnel to receive training and will coordinate their attendance at agreed upon times.
- .3 Coordinate and schedule demonstration and training provided by *Subcontractors* and *Suppliers*.
- .4 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.

- .5 For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- .6 Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
- .7 Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- .8 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- .9 Submittals:
 - .1 Submit proposed dates, times, durations, and locations for demonstration and training of each item of equipment and each system for which demonstration and training is required. Allow sufficient time for training and demonstration for each item of equipment or system, or time as may be specified in technical *Specifications*.
 - .2 *Consultant and Owner* will review submittal and advise *Contractor* of any necessary revisions.
 - .3 Submit report(s) within 5 *Working Days* after completion of demonstration and training:
 - .1 identifying time and date of each demonstration and training session,
 - .2 summarizing the demonstration and training performed, and
 - .3 including a list of attendees.
- .10 Prerequisites to Demonstration and Training:
 - .1 Testing, adjusting, and balancing has been performed in accordance with *Contract Documents*.
 - .2 Equipment and systems are fully operational.
 - .3 Copy of completed operation and maintenance manual is available for use in demonstration and training.
 - .4 Conditions for demonstration and training comply with requirements specified in technical *Specifications*.

3.15 ADJUSTING

- .1 Adjust operating products and equipment to ensure smooth and unhindered operation.
- .2 See Division 25 for testing, adjusting and balancing HVAC systems.

3.16 FINAL CLEANING

- .1 Execute final cleaning prior to occupancy inspection..
- .2 Use cleaning materials that are nonhazardous.
- .3 Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- .4 Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- .5 Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- .6 Clean filters of operating equipment.
- .7 Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
- .8 Clean site; sweep paved areas, rake clean landscaped surfaces.
- .9 Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.17 CLOSEOUT PROCEDURES - SEE 01 77 00

3.18 MAINTENANCE

- .1 Provide service and maintenance of components indicated in specification sections.
 - .2 Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Performance or the length of the specified warranty, whichever is longer.
 - .3 Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
 - .4 Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the
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original component.

- .5 Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

Section 01 74 19 - Construction Waste Management and Disposal

PART 1 GENERAL

1.1 WASTE MANAGEMENT REQUIREMENTS

- .1 Owner requires that this project generate the least amount of trash and waste possible.
- .2 Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- .3 Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- .4 Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, incineration, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
- .5 Methods of trash/waste disposal that are not acceptable are:
 - .1 Burning on the project site.
 - .2 Burying on the project site.
 - .3 Dumping or burying on other property, public or private.
 - .4 Other illegal dumping or burying.

1.2 RELATED REQUIREMENTS

- .1 Section 01 30 00 - Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- .2 Section 01 50 00 - Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- .3 Section 01 60 00 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- .4 Section 01 70 00 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.3 DEFINITIONS

- .1 Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

- .2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
- .3 Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity or reactivity.
- .4 Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity, or reactivity.
- .5 Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- .6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- .7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- .8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .9 Return: To give back reusable items or unused products to vendors for credit.
- .10 Reuse: To reuse a construction waste material in some manner on the project site.
- .11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- .12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- .13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- .14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- .15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- .16 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
-

PART 2 PRODUCTS

2.1 REGULATORY REQUIREMENTS

- .1 General Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, provincial and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

2.2 PRODUCT SUBSTITUTIONS

- .1 See Section 01 60 00 - Product Requirements for substitution submission procedures.

PART 3 EXECUTION

3.1 WASTE MANAGEMENT PROCEDURES

- .1 See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- .2 See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- .3 See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- .4 See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.2 WASTE MANAGEMENT PLAN IMPLEMENTATION

- .1 Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- .2 Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.
- .3 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.
- .4 Meetings: Discuss trash/waste management goals and issues at project meetings.
 - .1 Pre-bid meeting.
 - .2 Pre-construction meeting.
 - .3 Regular job-site meetings.

- .5 Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - .1 Provide containers as required.
 - .2 Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - .3 Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- .6 Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- .7 Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- .8 Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- .9 Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

END OF SECTION

Section 01 77 00 - Closeout Procedures

Part 1 - General

1.1 READY-FOR-TAKEOVER

- .1 The prerequisites to attaining Ready-for-Takeover of the Work are described in the General Conditions of the Contract.

1.2 INSPECTION AND REVIEW BEFORE READY-FOR-TAKEOVER

- .1 Contractor's Inspection: Before applying for the Consultant's review to establish Ready-for-Takeover of the Work:
 - .1 Ensure that the specified prerequisites to Ready-for-Takeover of the Work are completed.
 - .2 Conduct an inspection of the Work to identify defective, deficient, or incomplete work.
 - .3 Prepare a comprehensive and detailed list of items to be completed or corrected.
 - .4 Provide an anticipated schedule and costs for items to be completed or corrected.
- .2 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant and the Contractor shall arrange a mutually satisfactory agreed date and time to jointly review the Work. The Consultant will advise the Contractor whether or not the Work is Ready-for-Takeover. Add additional items, if any, to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the revised list.
- .3 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until no items remain on the Contractor's list of items to be completed or corrected.
- .4 When the Consultant determines that the Work is Ready-for-Takeover, the Consultant will notify the Contractor and the Owner in writing to that effect.

1.3 PREREQUISITES TO FINAL PAYMENT

- .1 After Ready-for-Takeover of the Work and before submitting an application for final payment in accordance with the General Conditions of Contract:
 - .2 Correct or complete all remaining defective, deficient, and incomplete work.

- .3 Remove from the Place of the Work all remaining surplus Products, Construction Equipment, and Temporary Work.
- .4 Perform final cleaning and waste removal necessitated by the Contractor's work performed after Ready-for-Takeover, as specified in Section 01 74 00 – Cleaning and Waste Management.

1.4 SUBSTANTIAL PERFORMANCE OF THE WORK

- .1 The prerequisites to, and the procedures for, attaining Substantial Performance of the Work, or similar such milestone as provided for in the lien legislation applicable to the Place of the Work, shall be:
 - .1 independent of those for attaining Ready-for-Takeover of the Work, and
 - .2 in accordance with the lien legislation applicable to the Place of the Work.

END OF SECTION

Section 01 78 00 - Closeout Submittals

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Project Record Documents.
- .2 Operation and Maintenance Data.
- .3 Warranties and bonds.

1.2 RELATED REQUIREMENTS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- .3 Individual Product Sections: Specific requirements for operation and maintenance data.
- .4 Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Project Record Documents: Submit documents, including as-built drawings mark-ups, to Architect with claim for final Application for Payment.
- .3 Operation and Maintenance Data:
 - .1 Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - .2 For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - .3 Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - .4 Submit two sets of revised final documents in final form within 10 days after final inspection.

- .5 In addition to the above, submit one set in digital format.
- .4 Warranties and Bonds:
 - .1 For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - .2 Make other submittals within 10 days after Date of Substantial Performance, prior to final Application for Payment.
 - .3 For items of Work for which acceptance is delayed beyond Date of Substantial Performance, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- .1 Maintain on site one set of the following record documents; record actual revisions to the Work:
 - .1 Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed Shop Drawings, product data, and samples.
 - .6 Manufacturer's instruction for assembly, installation, and adjusting.
 - .7 Digital progress photographs.
- .2 Ensure entries are complete and accurate, enabling future reference by Owner.
- .3 Store record documents separate from documents used for construction.
- .4 Record information concurrent with construction progress.
- .5 Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - .1 Manufacturer's name and product model and number.

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- .2 Changes made by Addenda and modifications.
 - .6 As-Built Drawings: Drawings prepared and updated by the Contractor throughout the Work, indicating a compilation of construction changes indicated in the original Contract Documents: Legibly mark each item to record actual construction including:
 - .1 Measured depths of foundations in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - .4 Site changes of dimension and detail.
 - .5 Details not on original Contract Drawings.

3.2 OPERATION AND MAINTENANCE DATA

- .1 Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- .2 Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- .3 Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance Drawings.
- .4 Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- .1 For Each Product, Applied Material, and Finish:
 - .1 Product data, with catalog number, size, composition, and colour and texture designations.
 - .2 Information for re-ordering custom manufactured products.
- .2 Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

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- .3 Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
 - .4 Additional information as specified in individual product specification sections.
 - .5 Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- .1 For Each Item of Equipment and Each System:
 - .1 Description of unit or system, and component parts.
 - .2 Identify function, normal operating characteristics, and limiting conditions.
 - .3 Complete nomenclature and model number of replaceable parts.
- .2 Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- .3 See Divisions 21 through 28 for requirements related to plumbing, HVAC, and electrical systems.

3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- .1 Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- .2 Where systems involve more than one specification section, provide separate tabbed divider for each system.
- .3 Binders: Commercial quality, 216 by 280 mm three D side ring binders with durable plastic covers; 50 mm maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- .4 Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- .5 Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, General Contractor and subcontractors, with names of responsible parties.

- .6 Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- .7 Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- .8 Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
- .9 Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.

3.6 WARRANTIES AND BONDS

- .1 Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .2 Verify that documents are in proper form, contain full information, and are notarized.
- .3 Co-execute submittals when required.
- .4 Retain warranties and bonds until time specified for submittal.
- .5 Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

END OF SECTION

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Section 02 26 00 - Hazardous Materials Survey

Part 1 General

1.1 SUMMARY

- .1 Section includes
 - .1 Pre-demolition Hazardous Materials Survey
 - .2 Risk Assessments and Safe Work Procedures

1.2 RELATED SECTIONS

- .1 Section 02 80 00 – Hazardous Materials Abatement

1.3 ATTACHMENTS

- .1 Appendix A - Pre-Demolition Hazardous Materials Survey, April 26, 2021, by Peak Environmental Ltd.
- .2 Appendix B - Risk Assessment and Safe Work Procedures.

END OF SECTION

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Section 02 41 00 - Demolition

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Selective demolition of building elements for alteration purposes.
- .2 Abandonment and removal of existing utilities and utility structures.

1.2 RELATED REQUIREMENTS

- .1 Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- .2 Section 01 10 00 - Summary: Sequencing and staging requirements.
- .3 Section 01 10 00 - Summary: Description of items to be removed by Owner.
- .4 Section 01 10 00 - Summary: Description of items to be salvaged or removed for re-use by General Contractor .
- .5 Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- .6 Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- .7 Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- .8 Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- .9 Section 31 23 23 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.3 REFERENCE STANDARDS

- .1 CEPA - Canadian Environmental Protection Act; 1999.
- .2 NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
 - .2 Site Plan: Showing:
-

- .1 Areas for temporary construction and site offices.
- .2 Areas for temporary and permanent placement of removed materials.
- .3 Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - .1 Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - .2 Identify demolition firm and submit qualifications.
 - .3 Include a summary of safety procedures.
- .4 Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.5 REGULATORY REQUIREMENTS

PART 3 EXECUTION

2.1 SCOPE

- .1 Remove paving and curbs as required to accomplish new work.
- .2 Remove concrete slabs on grade as indicated on Drawings.
- .3 Remove other items indicated, for salvage, relocation, recycling, and disposal.
- .4 Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 22 00.

2.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- .1 Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - .1 Obtain required permits.
 - .2 Provide, erect, and maintain temporary barriers and security devices.
 - .3 Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - .4 Do not close or obstruct roadways or sidewalks without permit.
 - .5 Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

- .6 Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- .2 Do not begin removal until receipt of notification to proceed from Owner.
- .3 Protect existing structures and other elements that are not to be removed.
 - .1 Provide bracing and shoring.
 - .2 Prevent movement or settlement of adjacent structures.
 - .3 Stop work immediately if adjacent structures appear to be in danger.
- .4 Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- .5 Hazardous Materials: Comply with Regulatory Requirements.
- .6 Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

2.3 EXISTING UTILITIES

- .1 Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- .2 Protect existing utilities to remain from damage.
- .3 Do not disrupt public utilities without permit from authority having jurisdiction.
- .4 Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- .5 Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- .6 Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- .7 Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- .8 Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

2.4 SELECTIVE DEMOLITION FOR ALTERATIONS

- .1 Drawings showing existing construction and utilities are based on casual site observation and existing record documents only.
 - .1 Verify that construction and utility arrangements are as indicated.
 - .2 Report discrepancies to Architect before disturbing existing installation.
 - .3 Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- .2 Separate areas in which demolition is being conducted from other areas that are still occupied.
 - .1 Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 .
- .3 Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- .4 Remove existing work as indicated and as required to accomplish new work.
 - .1 Remove items indicated on Drawings.
- .5 Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
 - .1 Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 - .2 Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - .3 Verify that abandoned services serve only abandoned facilities before removal.
 - .4 Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- .6 Protect existing work to remain.
 - .1 Prevent movement of structure; provide shoring and bracing if necessary.
 - .2 Perform cutting to accomplish removals neatly and as specified for cutting new work.

- .3 Repair adjacent construction and finishes damaged during removal work.
- .4 Patch as specified for patching new work.

2.5 DEBRIS AND WASTE REMOVAL

- .1 Remove debris, junk, and trash from site.
- .2 Remove from site all materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.
- .3 Leave site in clean condition, ready for subsequent work.
- .4 Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

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Section 02 41 16 - Structure Demolition

Part 1 General

1.1 SUMMARY

- .1 Methods and procedures for demolition of structures, basements and foundation walls.
- .2 Be responsible to ensure Sub-Contractors review drawings and specifications and existing site conditions. Pay costs for permits and utilities Work related to their trades affected by demolition. Be responsible for co-ordination of Sub-Contractor activities.
- .3 Repair damage to other areas made directly or indirectly by Contractor or Sub-Contractors. Make good to requirements of Contract. Perform Work immediately in accordance with General Conditions.

1.2 RELATED REQUIREMENTS

- .1 Section 01 35 00 - Special Project Procedures
- .2 Section 01 56 00 - Temporary Barriers and Enclosures
- .3 Section 01 74 21 - Construction Waste Management and Disposal
- .4 Section 02 26 00 - Hazardous Materials Survey
- .5 Section 02 80 00 – Hazardous Materials Abatement
- .6 Existing Building Drawings

1.3 REFERENCES

- .1 CSA S350 - Code of Practice for Safety in Demolition of Structures; 2003.
- .2 British Columbia Building Code 2018: Part 8, Safety Measures at Construction and Demolition Sites.

1.4 DEFINITIONS

- .1 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:

- .1 Be responsible for reviewing full extent of contract documents including demolition and new Work indicated on drawings.
- .2 Coordination for shutoff, capping, and continuation of services.
- .2 Meetings:
 - .1 Prior to start of Work arrange for site visit with Consultant to examine existing site conditions adjacent to demolition work.

1.6 SUBMITTALS

- .1 Provide submittals in accordance with 01 33 00 Submittal Requirements.
- .2 Submit copies of weigh bills from authorized disposal sites and reuse and recycling facilities for material removed from site.
- .3 Submit for approval Demolition and Safety Plan, Demolition Waste Management Plan, Demolition Traffic Management Plan, and Demolition Fire Safety Plan. , including drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning.
- .4 Provide all necessary documentation as required by local municipal authorities.
- .5 Provide drawings, diagrams and details showing sequence of demolition work and supporting structures and underpinning.
 - .1 Submit drawings stamped and signed by qualified professional engineer licensed in British Columbia.

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with applicable Provincial/Territorial and Municipal regulations and in accordance with WorkSafeBC requirements.
- .2 Demolition Contractor: minimum 10 years' experience demolishing building structures.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling and disposal in accordance with Section 01 74 19.
- .2 Divert a minimum of 75% of demolition materials from landfill to licensed recycling facility.

1.9 ENVIRONMENTAL PROTECTION

- .1 Ensure Work is performed in accordance with Municipal, Regional and Provincial regulations.
- .2 Fires and burning of waste or materials is not permitted on site.
- .3 Do not bury rubbish waste materials.
- .4 Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
 - .1 Ensure proper disposal procedures are maintained throughout project.
- .5 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .6 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction.
- .7 Protect trees, plants and foliage on site and adjacent properties where indicated.
- .8 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
- .9 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

1.10 EXISTING CONDITIONS

- .1 Existing Building Drawings are for reference purposes only. As-built site conditions shall take precedence.
 - .2 Should substances listed as hazardous be encountered in course of demolition, stop work, take preventative measures, and notify Consultant immediately. Do not proceed until written instructions have been received.
 - .3 Structures to be demolished to be based on their condition at time of examination during Bidding, except as noted in 3.7 "Owner Salvaged Materials" in this section.
 - .4 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.
 - .5 Ensure continuous operation of adjacent facility while demolition and removal procedure Work is taking place.
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- .6 Provide and maintain temporary chutes, walkways, bridges, barricades, covers and detours, required for vehicular and pedestrian traffic, in accordance with applicable by-laws and regulations and General Requirements.

Part 2 Products - not used Part 3 Execution

2.1 PROTECTION

- .1 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades.
 - .1 Provide bracing, shoring and underpinning as required.
 - .2 Repair damage caused by demolition as directed by Consultant.
- .2 Prevent debris from blocking surface drainage system.

2.2 PREPARATION

- .1 Disconnect and decommission electrical and telephone services.
- .2 Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
- .3 Disconnect, decommission and removal of underground services.
 - .1 Natural gas supply lines: remove in accordance with gas company requirements.
 - .2 Sewer and water lines: remove to property line in accordance with authority having jurisdiction or as shown on drawings.
 - .3 Other underground services: decommission, remove and dispose.
- .4 Do not disrupt active or energized utilities traversing premises designated to remain undisturbed.

2.3 REMOVAL OF HAZARDOUS WASTES

- .1 Remove contaminated or dangerous materials as defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal – See Section 02 80 00.
- .2 Review Appendix A - Pre-Demolition Hazardous Materials Survey for Work related to removal of Hazardous Materials.
- .3 Prior to start of demolition work remove contaminated and Hazardous Materials from site and dispose of in licensed facilities in a safe manner and in accordance with WorkSafeBC requirements and municipal, regional and provincial regulations

governing handling of Hazardous Waste. See Section 02 80 00.

2.4 DEMOLITION

- .1 Perform Work in accordance with WorkSafe BC, Part 8 of BCBC 2012 and CSA S350.
 - .1 Demolish existing elements and services as indicated in drawings.
- .2 Demolish structures indicated.
- .3 Either remove concrete pieces for crushing and recycling or crush concrete generated due to demolition of foundations to size suitable for recycling.
- .4 Demolish foundations and remove completely.
- .5 Upon approval from Consultant use crushed concrete as backfill, and/or remove any excess material from site if not needed.
- .6 At end of each day's work, leave Work in safe and stable condition.
- .7 Demolish to minimize dusting. Keep materials wetted.
- .8 Remove structural framing.
- .9 Contain fibrous materials (e.g. Insulation) to minimize release of airborne fibres while being transported within facility.
- .10 Coordinate removal of existing carpet for disposal through carpet reclamation program.
- .11 Do not dispose materials in landfill or waste stream destined for landfill.
- .12 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

2.5 STOCKPILING

- .1 Label stockpiles, indicating material type and quantity.
- .2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.
- .3 Locate stockpiled materials convenient for use in new construction. Eliminate double handling wherever possible.
- .4 Stockpile materials designated for Substitution disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

- .5 Separate from general waste stream each of following materials. Stockpile materials in neat and orderly fashion in location and as directed by Consultant for Substitution disposal. Stockpile materials in accordance with applicable fire and safety regulations.
 - .1 Concrete and concrete block.
 - .2 Glass fibre ceiling tiles.
 - .3 Wood fibre ceiling tiles.
 - .4 Wiring and conduit.
 - .5 Outlets/switches/receptacles.
 - .6 Wood.
 - .7 Metal duct work, baffles, HVAC equipment.
 - .8 Demountable partitions.
 - .9 Tracks and blinds.
 - .10 Insulation batts.
 - .11 Miscellaneous metals.
 - .12 Carpet.
- .6 Supply separate, clearly marked disposal bins for categories of waste material.

2.6 REMOVAL FROM SITE

- .1 Remove stockpiled material from site.
 - .2 Remove stockpiles of like materials by Substitution disposal option once collection of materials is complete.
 - .3 Transport material designated for Substitution disposal using approved haulers and receiving organizations and in accordance with applicable regulations municipal, regional and provincial regulations.
 - .4 Dispose of materials not designated for Substitution disposal at licensed facilities and accordance with applicable regulations municipal, regional and provincial regulations.
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2.7 OWNER-SALVAGED MATERIALS

- .1 Contractor shall provide Owner with an opportunity to selectively salvage existing items for re-purposing prior to start of demolition.

END OF SECTION

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Section 02 80 00 - Hazardous Materials Removal

PART 1 General

1.1 SECTION INCLUDES

- .1 The disturbance, handling, removal, and disposal of hazardous materials from the specified areas. It is the intent of this Scope of Work to show the work necessary to complete the removal of all hazardous materials as identified in the Pre-demolition Hazardous Materials Survey.
 - .1 The disturbance, handling, removal and disposal of hazardous materials will be performed in strict compliance with this specification and with all applicable regulatory requirements.

1.2 RELATED SECTIONS

- .1 Section 01 74 21 - Construction Waste Management
- .2 Section 02 26 00 - Hazardous Materials Survey
- .3 Section 02 41 16 - Structure Demolition

1.3 DOCUMENTATION

- .1 The Hazardous Materials Removal Contractor will maintain the following documentation on site.
 - .1 Worksafe BC Occupational Health & Safety Regulation (current edition).
 - .1 Worksafe BC core manual (current edition).
 - .2 WorkSafe BC "Notice of Project for Employment involving Asbestos and Lead" (NOPAL) and, attached to the NOPA, the site-specific hazardous materials (asbestos and lead abatement work procedures intended for use.
 - .2 The Contractor's Corporate Occupational Health & Safety Program.
 - .3 The Contractor's Exposure Control Plan.
 - .4 Material Safety Data Sheets (MSDS) for regulated products used on the project.
 - .5 Canadian Standards Association, CSA Z-190, "Selection, Care and Use of Respirators" (current edition).

1.4 QUALIFICATIONS

- .1 Supervisors and workers for the hazardous materials removal project work must have successfully completed a recognized course or equivalent training, in hazardous materials (asbestos and lead) awareness and abatement.

1.5 PROCEDURE AND REQUIREMENTS

- .1 Hazardous materials removal for this project must be conducted following work procedures as defined by the Worksafe BC (WSBC) Occupational Health & Safety Regulation and these specifications.
- .2 The Prime Consultant and the Owners representative must be notified prior to any disturbance, removal, handling and disposal of asbestos containing materials in addition to those hazardous materials identified within this Scope of Work.
- .3 A copy of the site-specific work procedures intended for use on this project must also be submitted to the WorkSafe BC with the NOPAL.

Part 2 Description of Work

2.1 GENERAL

- .1 The work specified herein shall be the disturbance, removal, handling and disposal of known asbestos-containing materials, and other specified hazardous materials, by competent persons trained, knowledgeable and qualified in Moderate Risk and High Risk work procedures.
- .2 Access to areas of the site where hazardous materials are being removed is to be restricted to, the Prime Contractor, the Hazardous Materials Removal Contractor, the Consultant, the Owner's representative, and representatives of regulatory agencies who may have jurisdiction. The Hazardous Materials Removal Contractor will instruct and train any visitors requiring access to the work areas on; entry and exit procedures and the use of any appropriate personal protective equipment for the type of work being performed at the time of entry. Any worker deemed by the Consultant or the Owner's representative to be inadequately trained or unfit to perform their duties will be removed from the project.
- .3 All platforms used to access the hazardous materials will be constructed and used in accordance with the requirements of the WorkSafe BC Occupational Health & Safety Regulation. All elevated platforms for this project i.e. both rolling and fixed scaffolding, will be engineered, supplied, installed, cleaned and dismantled by the Contractor.
- .4 All required documentation is the responsibility of the Contractor. Site-specific emergency procedures will be provided by the Hazardous Materials Removal Contractor and posted on site.

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- .5 The health and safety of Contract employees in the areas affected during hazardous material removal work will be the sole responsibility of the Hazardous Materials Removal Contractor and that Contractor's supervisor must remain on site at all times during abatement work. Should the Hazardous Materials Removal Contractor require the assistance of any other trade during the performance of the work of this project, that Contractor will be responsible for providing all necessary equipment and training required to affect that assistance. Any specific trade documentation requirements for items such as lock out procedures must be provided by a qualified tradesperson.
 - .6 Observe Owner's building and building site no smoking policies.
 - .7 The Hazardous Materials Removal Contractor will assume total responsibility for the erection and maintenance of all signs and the integrity of all enclosures and barriers related to the hazardous material removal work.
 - .8 The Hazardous Materials Removal Contractor will provide all necessary labour, materials, insurance, permits and equipment necessary to carry out the work in accordance with all applicable regulations and this documentation.
 - .9 The Hazardous Materials Removal Contractor will provide all necessary labour and equipment (GFCI electrical panel, hoses, valves, connections, etc.) to secure the required utilities for all hazardous materials removal work.
 - .10 All air monitoring and inspections will be conducted by the Hazardous Materials Consultant. If air-monitoring results show areas outside the enclosure to be contaminated the Hazardous Materials Removal Contractor will clean these identified areas immediately under direction of the Hazardous Materials Consultant at no additional cost to the Owner.
 - .11 The Hazardous Materials Removal Contractor will not demobilize from an area of removal until the Hazardous Materials Consultant has inspected the completed area. The Hazardous Materials Removal Contractor will allow sufficient time for fiber settling prior to final air clearance following encapsulation of the work areas before dismantling the work area enclosures. The dismantling of previously contaminated work areas will be conducted following Moderate Risk work procedures.
 - .12 The Hazardous Materials Removal Contractor will allow sufficient time for inspection of the site after set up and before commencement of abatement activities and must not begin work in a new area without informing the Hazardous Materials Consultant.
 - .13 All HEPA vacuums and negative-air units to be used on the project are to be D.O.P. (dioctyl phthalate) tested at the beginning of the project, and from that point on, at the discretion of the Hazardous Materials Consultant.
 - .14 Asbestos containing materials impacted by this project
-

- .15 The following lists the type of hazardous materials with their known location and the Risk Level appropriate for the nature of their disturbance in compliance with the current Workers' Compensation Board of British Columbia Occupational Health & Safety Regulation.
- .16 If any asbestos containing materials not specified herein are to be impacted by the scheduled demolition, the Hazardous Materials Removal Contractor is to receive direction from the Project Manager and the Owner's Representative.

2.2 ASBESTOS-CONTAINING MATERIALS

- .1 All specified areas of asbestos removal include the removal of all settled dust, debris, overspray and all generated waste materials, in accordance with Moderate Risk and High Risk asbestos abatement procedures, from the areas identified in the Pre-Demolition Hazardous Material Survey.

2.3 LEAD CONTAINING PAINTS

- .1 All areas of known lead-content on building material will include the removal of all settled dust, and debris and all generated waste materials, in accordance with Moderate Risk and High Risk lead abatement procedures, from the areas identified in the Pre-Demolition Hazardous Material Survey.

2.4 MERCURY

- .1 All mercury-content fluorescent light tubes will be separated and stored in a secured location on-site for later final disposal. The light tubes will be found in the following areas:
 - .1 Throughout the facility; in surface-mount, wall-mount and suspended light fixtures

2.5 PCB'S (POLYCHLORINATED BIPHENYLS)

- .1 All PCB-content light ballasts will be removed, separated and stored in a secured location on-site for later final disposal. All ballasts will be individually identified and segregated according to the manufacturer's product number / code. The light ballasts will be found in the areas identified in the Pre-Demolition Hazardous Material Survey.

2.6 OZONE DEPLETING SUBSTANCES

- .1 All ozone vapour, gas and/ or liquid-content equipment will be removed, separated and stored in a secured location on-site for later final disposal. The equipment / appliances are found in the areas identified in the Pre-Demolition Hazardous Material Survey.

2.7 OTHER MATERIALS – CHEMICALS, CLEANING PRODUCTS, MISCELLANEOUS

- .1 All chemicals-containing or coated products will be removed, separated and stored in a secured location on-site for later final disposal. All containers, boxes, bins or drums will be identified, listed and segregated into categories for final disposal.

2.8 AVIAN (BIRD) GUANO / DEAD INSECTS / MOULD

- .1 Any biological contaminated building materials must be handled and disposed of while wearing appropriate Personal Protective Equipment (HEPA filtered mask, impermeable coveralls, eye protection and work gloves).

Part 3 Execution

3.1 WASTE HANDLING AND DISPOSAL

- .1 Disposal of all hazardous waste will be performed in accordance with the Ministry of Environment, Waste Management Branch and TDGA regulations pertaining to hazardous waste.
- .2 The Owner will provide to the Contractor a British Columbia waste generator number that must appear on all waste transfer manifests, if required.

3.2 MANAGEMENT SERVICES

- .1 The Occupational Health and Safety (OH&S) Consultant for this project will be Peak Environmental Ltd, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, and _____ contact: _____ Tel: _____ ; e-mail:Peak Environmental Ltd, _____, _____, _____, _____, _____, _____, _____, _____, and _____
- .2 All air monitoring and inspections will be conducted by the OH&S Consultant.
- .3 The OH&S Consultant will have full access to all documentation.
- .4 No hazardous materials removal work will be undertaken without prior communication with the OH&S Consultant.

END OF SECTION

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Section 06 10 00 - Rough Carpentry

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Structural dimension lumber framing.
- .2 Non-structural dimension lumber framing.
- .3 Rough opening framing for doors, windows, and roof openings.
- .4 Sheathing.
- .5 Underlayment.
- .6 Roof-mounted curbs.
- .7 Roofing nailers.
- .8 Roofing cant strips.
- .9 Preservative treated wood materials.
- .10 Miscellaneous framing and sheathing.
- .11 Communications and electrical room mounting boards.
- .12 Concealed wood blocking, nailers, and supports.
- .13 Miscellaneous wood nailers, furring, and grounds, backing support for wall mounted materials, fixtures, and assemblies

1.2 RELATED REQUIREMENTS

- .1 Section 03 30 00 - Cast-in-Place Concrete: Setting anchors in concrete.
- .2 Section 054000 - Cold-formed Metal Framing
- .3 Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
- .4 Section 06 17 33 - Wood I-Joists.
- .5 Section 06 17 53 - Shop-Fabricated Wood Trusses.
- .6 Section 06 18 00 - Glued-Laminated Construction.
- .7 Section 07 25 00 - Weather Barriers: Air barrier over sheathing.

- .8 Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
- .9 Section 07 62 00 - Sheet Metal Flashing and Trim: Sill flashings.
- .10 Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.
- .11 Section 10 11 00 - Visual Display Surfaces
- .12 Section 10 28 10 - Washroom Accessories

1.3 REFERENCE STANDARDS

- .1 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- .2 CAN/CGSB 71.26-M88 - Standard for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems; 1988.
- .3 CAN/CSA O80 Series - Wood Preservation; 2015.
- .4 CAN/CSA O121 - Douglas Fir Plywood; 2017 (Reaffirmed 2022).
- .5 CAN/CSA O141 - Softwood Lumber; 2005 (Reaffirmed 2019).
- .6 CAN/CSA O151 - Canadian Softwood Plywood; 2017 (Reaffirmed 2022).
- .7 CAN/ULC S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials; 2014.
- .8 CSA O153 - Poplar Plywood; 2019.
- .9 CSA O325 - Construction Sheathing (Adopted NIST PS 2-18 , with Canadian Deviations); 2021.
- .10 CWC - Wood Design Manual; 2017.
- .11 NLGA (SGRNL) - Standard Grading Rules for Canadian Lumber; 2017.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination of concealed wood backing:
 - .1 Coordinate installation of wood backing with wall-fastened and wall-supported products and systems scheduled in this section and otherwise indicated on drawings.
 - .2 Owner-supplied and installed products: coordinate with Owner location and size of backing requirements.

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets.
 - .2 Submit MSDS sheets or official manufacturer literature stating no urea-formaldehyde was used in the manufacturing of composite wood.
- .3 Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

1.6 QUALITY ASSURANCE

- .1 Lumber shall be graded and stamped by an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 – Common Product Requirements
- .2 Deliver wood products bundled or crated to provide adequate protection during transit. Inspect wood products for damage upon delivery and remove and replace damaged materials.
- .3 Protect sheet materials to prevent breaking of corners and damage to surfaces.
- .4 Store materials a minimum of 150 mm off the ground on blocking. Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation. Provide for air circulation within and around stacks and under temporary coverings.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- .1 Dimension Lumber: CAN/CSA - O141, softwood, S-P-F, S4S, graded and stamped in accordance with National Lumber Grading Association (NLGA) Standard Grading Rules for Canadian Lumber and as follows:

- .1 Moisture Content: maximum 19% at time of installation.
 - .2 Maximum moisture content when used for attachment of drywall: 16%.
 - .3 Meeting requirements of the BC Building Code.
 - .4 Grade: No. 2 or better.
 - .5 Species: Spruce-Pine-Fir, unless otherwise indicated.
 - .6 If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - .7 Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
- .2 Low Emitting Materials:
- .1 NAUF: wood materials and products shall contain No Added Urea Formaldehyde.
 - .3 Lumber fabricated from old growth timber is not permitted.
- 2.2 DIMENSION LUMBER**
- .1 Grading Agency: National Lumber Grading Authority NLGA (SGRNL)
 - .2 Sizes: Nominal sizes as indicated on Drawings, S4S.
 - .3 Moisture Content: S-dry or MC19.
 - .4 Stud Framing (38 by 38 mm through 38 by 140 mm):
 - .1 Species: See Structural Drawings..
 - .2 Grade: See Structural Drawings.
 - .5 Joist, Rafter, and Small Beam Framing (38 by 140 mm through 89 by 390 mm):
 - .1 Species: Refer to Structural Drawings.
 - .2 Grade: Refer to Structural.
 - .6 Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - .1 Lumber: S4S, No. 2 or Standard Grade.
 - .2 Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

- .1 General use panel material:
 - .1 Plywood: Douglas Fir (DFP) or Canadian Softwood (CSP), Sheathing Grade, to CSA O121 or CSA O151, thickness as indicated on drawings.
 - .2 Fire rated panel material shall be ULC labelled fire resistant, provide grade stamp or certification as noted for fire retardant pressure treated lumber.
 - .1 Fire-Retardant Treatment: to CAN/CSA O80 Series 15 and CAN/CSA O80 Series 15, pressure impregnated, and as follows:
 - .1 Flame Spread Classification: FSC 25 maximum.
 - .2 Smoke developed of not more than: 75.
- .2 Other Applications:
 - .1 Plywood Concealed from View, Located within Exterior Enclosure: Douglas Fir Plywood, CAN/CSA O121, Grade SHG, Exterior.
 - .2 Plywood Exposed to View, Not Exposed to Weather: Douglas Fir Plywood, CAN/CSA O121, Grade G1S, Exterior.
 - .3 Other Locations: Douglas Fir Plywood, CAN/CSA O121, Grade G1S, Exterior.

2.4 ACCESSORIES

- .1 Fasteners and Anchors:
 - .1 Metal and Finish: Galvanized to CAN/CSA G164 M92 for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - .2 Nails, spikes and staples: to CSA B111, hot dipped galvanized for exterior work and pressure preservative and fire retardant treated materials.
 - .3 Rough Hardware (bolts, nuts, washers, etc.): Hot dip galvanized in conformity to CAN/CSA G164 M92 or Grade A low carbon steel, conforming to ASTM A307.
 - .4 Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
 - .5 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

- .6 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, fibre, formed to prevent dishing. Bell or cup shapes not acceptable.
- .2 Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
 - .1 For contact with preservative treated wood in exposed locations, provide minimum Z550 galvanizing complying with ASTM A653/A653M.
- .3 Sill Flashing: As specified in Section 07 62 00.
- .4 Subfloor Adhesives: Waterproof, air cure type, cartridge dispensed, meeting requirements of CAN/CGSB 71.26-M88.
- .5 General purpose adhesive: to CSA O112 Series
- .6 Water-Resistive Barrier: As specified in Section 07 25 00.
- .7 Sealants: in accordance with Section 07 92 00 - Sealants.

PART 3 EXECUTION

3.1 PREPARATION

- .1 Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- .2 Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL

- .1 Select material sizes to minimize waste.
- .2 Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- .3 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .4 Countersink bolts where necessary to provide clearance for other work.
- .5 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.3 FRAMING INSTALLATION

- .1 Set structural members level, square, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
-

- .2 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .3 Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- .4 Install continuous members from pieces of longest practical length without splices unless otherwise specifically detailed.
- .5 Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and CWC Wood Design Manual .
- .6 Install horizontal spanning members with crown edge up and not less than 38 mm of bearing at each end.
- .7 Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- .8 Provide bridging at joists in excess of 2.3 m span at mid-span. Fit solid blocking at ends of members.
- .9 Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.4 BLOCKING, NAILERS, AND SUPPORTS

- .1 Provide framing, furring, and blocking members as indicated or as required to support casework, cabinets, washroom accessories, wall and ceiling finishes, fixtures, specialty items, facings, fascia, soffit, electrical equipment mounting boards, trim, and other work as required.
 - .2 In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
 - .3 In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
 - .4 Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
-

- .5 Schedule for Installation of Concealed Backing of Wall-mounted Items:
 - .1 Notwithstanding the generality of sentence 3.4.1, provide the following specific non-structural framing and blocking using minimum 19mm plywood and as required:
 - .1 Wall fastened and mounted systems and products indicated on drawings including:
 - .1 Wall-mounted brackets and handrails
 - .2 Wall-mounted sports equipment
 - .3 Audio/Visual equipment
 - .4 Joints of rigid wall coverings that occur between studs.
 - .2 Materials and assemblies in the following sections:
 - .1 Section 06 20 00 - Finish Carpentry
 - .2 Section 06 40 00 - Architectural Woodwork
 - .3 Section 08 71 00 - Hardware; wall mounted door stops and similar devices.
 - .4 Section 10 11 00 - Visual Display Surfaces
 - .5 Section 10 14 00 - Signage (except adhesive-mounted signs)
 - .6 Section 10 28 10 - Washroom Accessories
 - .7 Section 10 44 13 - Fire Protection Cabinets

3.5 INSTALLATION OF CONSTRUCTION PANELS

- .1 Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails or screws.
 - .1 Use plywood or other acceptable structural panels at building corners, for not less than 2440 mm, measured horizontally.
 - .2 Place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.
- .2 Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 406 mm on center on all edges and into studs in field of board.

- .1 At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
- .2 Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
- .3 Install adjacent boards without gaps.

3.6 TOLERANCES

- .1 Framing Members: 6 mm from true position, maximum.
- .2 Variation from Plane (Other than Floors): 2 mm/m maximum, and 7 mm in 10 m maximum.

3.7 SITE QUALITY CONTROL

- .1 See Section 01 40 00 - Quality Requirements, for additional requirements.

3.8 CLEANING

- .1 Waste Disposal: Comply with the requirements of Section 01 74 19 - Construction Waste Management and Disposal.
 - .1 Comply with applicable regulations.
 - .2 Do not burn scrap on project site.
 - .3 Do not burn scraps that have been pressure treated.
 - .4 Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.
- .2 Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- .3 Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

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Section 07 01 50.19 - Preparation for Re-Roofing

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Partial replacement of existing roofing system in preparation for replacement roofing system in designated areas as indicated on Drawings.
- .2 Removal of existing flashing and counterflashings.
- .3 Temporary roofing protection.

1.2 RELATED REQUIREMENTS

- .1 Section 07 51 00 - Built-Up Bituminous Roofing.
- .2 Section 07 52 00 - Modified Bituminous Membrane Roofing.
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim: Replacement of flashing and counterflashings.

1.3 REFERENCE STANDARDS

- .1 ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- .2 CAN/CSA O151 - Canadian Softwood Plywood; 2017 (Reaffirmed 2022).
- .3 CAN/ULC S701.1 - Standard for Thermal Insulation, Polystyrene Boards; 2017.
- .4 CAN/ULC S702.1 - Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification; 2021.
- .5 CSA O325 - Construction Sheathing (Adopted NIST PS 2-18 , with Canadian Deviations); 2021.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordinate with affected mechanical and electrical work associated with roof penetrations.

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
 - .2 Product Data: Submit for each type of material.
-

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.7 SITE CONDITIONS

- .1 Existing Roofing System: Modified bituminous roofing.
- .2 Do not remove existing roofing membrane when weather conditions threaten the integrity of building contents or intended continued occupancy.
- .3 Maintain continuous temporary protection prior to and during installation of new roofing system.
- .4 Provide notice at least three days before starting activities that will affect normal building operations.
- .5 Verify that occupants have been evacuated from building areas when work on structurally impaired roof decking is scheduled to begin.

1.8 WARRANTY

- .1 See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.1 COMPONENTS

- .1 Refer to following sections for additional information on components relating to this work:
 - .1 Partial removal of existing roofing system in preparation for new roofing system in designated areas as indicated on Drawings, refer to Section 07 51 00.
 - .2 Remove existing flashing and counterflashings in preparation for replacement of these materials as part of this work, refer to Section 07 62 00 for material requirements.

2.2 MATERIALS

- .1 Patching Materials: Provide necessary materials in accordance with requirements of existing roofing system.
- .2 Temporary Roofing Protection Materials:
 - .1 General Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.

.3 Roofing Recover Materials:

- .1 General Contractor's responsibility to select appropriate materials for roofing recover as determined necessary for this work.

2.3 ACCESSORIES

- .1 Fasteners: Type and size as required and compatible with existing and new roofing system to resist local wind uplift.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.

3.2 PREPARATION

- .1 Sweep roof surface clean of loose matter.
.2 Remove loose refuse and dispose of properly off-site.

3.3 MATERIAL REMOVAL

- .1 Remove metal counter flashings.
.2 Scrape roofing gravel from membrane surface without causing serious damage to membrane felts.
.3 Remove damaged portions of roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets.
.4 Cut and lay flat any membrane blisters.
.5 Remove damaged insulation and fasteners, cant strips, blocking, and _____.
.6 Remove vapour retarder.
.7 Repair existing wood deck surface to provide smooth working surface for new roof system.

3.4 INSTALLATION

- .1 Coordinate scope of this work with requirements for installation of new roofing system, refer to Section 07 51 00 for additional requirements.

3.5 SITE QUALITY CONTROL

- .1 Independent agency inspection and testing will be provided under provisions of Section 01 40 00.
- .2 Inspection firm will identify the exact limits to material removal.
- .3 Testing will identify the condition of existing materials and their reuse, repair or removal.
- .4 Test Reports: Indicate existing insulation moisture content and existing bitumen quality.

3.6 PROTECTION

- .1 Provide protection of existing roofing system that is not having work performed on it.
- .2 Provide temporary protective sheeting over uncovered deck surfaces.
- .3 Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
- .4 Provide for surface drainage from sheeting to existing drainage facilities.
- .5 Do not permit traffic over unprotected or repaired deck surface.
- .6 Install recover board over existing membrane.

END OF SECTION

Section 07 25 00 - Weather Barriers

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Vapour Retarders: Materials to make exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls water vapour resistant and air tight.
- .2 Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, joints around frames of openings in exterior walls, and similar conditions, and as indicated on drawings..

1.2 RELATED REQUIREMENTS

- .1 Section 07 26 00 - Vapour Barrier Polyethylene Film.
- .2 Section 07 52 00 - Modified Bituminous Membrane Roofing: Vapour retarder installed as part of roofing system.
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- .4 Section 07 92 00 - Joint Sealants: Sealing building expansion joints.
- .5 Section 09 21 16 - Gypsum Board Assemblies: Water-resistive barrier under exterior cladding.

1.3 DEFINITIONS

- .1 Weather Barrier: Assemblies that form either, air barriers, or vapour retarders.
- .2 Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapour permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapour impermeable air barriers are classified as vapour retarders.
- .3 Vapour Retarder: Air tight barrier made of material that is relatively water vapour impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
 - .1 Water Vapour Permeance: For purposes of conversion, $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$.
- .4 NABA: National Air Barrier Association

1.4 REFERENCE STANDARDS

- .1 ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
- .2 ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.
- .3 ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials; 2022.
- .4 ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.
- .5 CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.
- .6 CAN/ULC S134 - Standard Method of Fire Test of Exterior Wall Assemblies; 2013 (Reaffirmed 2018).

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Product Data: Provide manufacturer's printed product literature including specifications and data on material characteristics for each product specified.
- .3 Submit manufacturer's installation instructions including joint treatment recommendations.
- .4 Manufacturer's Qualification Statement.
- .5 Installer's Qualification Statement.

1.6 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant:
 - .1 Manufacturer: Obtain weather barrier materials through one source from a single manufacturer or using materials from a secondary source that are acceptable to the manufacturer.
 - .2 Installer: Use an installation company that is acceptable to the manufacturer, using workers who are trained and approved by the weather barrier manufacturer having experience with projects of similar complexity and area.

- .2 Contact manufacturer's designated representative prior to weather barrier assembly installation, to perform required mock-up visual inspection and analysis as required for warranty.

1.7 MOCK-UPS

- .1 Install air barrier materials in accordance with Section 01 45 00 - Quality Control.
- .2 Construct typical exterior wall approximately 3 m long by 4 m wide, incorporating window openings with frame and sill installed, building corner condition; illustrating materials interface and seals.
- .3 Mock-up may remain as part of Work.
- .4 Allow 24 hours for inspection of mock-up by Consultant before proceeding with air/vapour barrier work.

1.8 WARRANTY

- .1 Special Warranty
 - .1 Weather barrier manufacturer's warranty for weather barrier for a period of ten (10) years from date of purchase.
 - .2 Pre-installation meetings and jobsite observations by weather barrier manufacturer for warranty is required prior to assembly installation.

1.9 SITE CONDITIONS

- .1 Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.1 WEATHER BARRIER ASSEMBLIES

- .1 Air Barrier:
 - .1 On outside surface of sheathing of exterior walls use air barrier sheet, self-adhesive type.
- .2 Interior Vapour Retarder:
 - .1 On inside face of studs of exterior walls, use mechanically fastened vapour retarder sheet.

2.2 AIR BARRIER MATERIALS (WATER VAPOUR PERMEABLE AND WATER-RESISTIVE)

- .1 Air Barrier Sheet, Self-Adhered:
 - .1 Air Permeance: 0.0025 L/s/sq m, maximum, when tested in accordance with ASTM E2178.
 - .2 Water Vapour Permeance: 627 ng/(Pa s sq m), minimum, when tested in accordance with ASTM E96/E96M Procedure A (desiccant procedure).
 - .3 Water Penetration Resistance Around Nails: Pass, when tested in accordance with ASTM D1970/D1970M (modified).
 - .4 Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 90 days of weather exposure.
 - .5 Seam and Perimeter Tape: As recommended by sheet manufacturer.
 - .6 Acceptable Materials:
 - .1 Soprema - Sopraseal Stick VP
 - .2 VaproShield, LLC; WrapShield SA Self-Adhered:
www.vaproshield.com#sle.
 - .3 Substitutions: See 012500 - Substitution Procedures.

2.3 AIR BARRIER MATERIALS (AIR AND VAPOUR BARRIER)

- .1 Air and Vapour Barrier Sheet, Self-Adhered to CGSB 37-GP-56M or ASTM D1970/D1970M; SBS modified bitumen, self-adhering sheet membrane with polyethylene facer, for application temperature above 5°C, and as follows:
 - .1 Air Permeance: 0.02 L/s/sq m, maximum, when tested in accordance with ASTM E2178.
 - .2 Water Vapour Permeance: 1.14 ng/(Pa s sq m), maximum, when tested in accordance with ASTM E96/E96M.
 - .3 Air permeability: <0.0003 L/sec. m²
 - .4 Thickness: 1 mm to 1.5 mm
 - .5 Tensile strength: minimum 6 kN/m
 - .6 Ultimate elongation: 25% to 40%

- .7 Tear resistance: 375 to 400 N
- .8 Lap adhesion: minimum 1750 N/m
- .9 Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to 30 days of weather exposure.
- .10 Low Temperature Flexibility: Less than -20 degrees Celsius.
- .11 Complies with CAN/ULC S134 wall assembly requirements.
- .12 Seam and Perimeter Tape: As recommended by sheet manufacturer.
- .13 Acceptable Materials:
 - .1 Blueskin SA; Bakor.
 - .2 AquaBarrier AVB; IKO
 - .3 Exoair 110; Tremco Inc
 - .4 Sopraseal Stick 1100 T; Soprema.
 - .5 Air Shield; W.R. Meadows
 - .6 Substitutions: 01 25 00 - Substitution Procedures

2.4 VAPOUR RETARDER MATERIALS

- .1 As specified in Section 07 26 00 - Vapour Barrier Polyethylene Film.

2.5 ACCESSORIES

- .1 Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.
- .2 Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
- .3 Thinners and Cleaners: As recommended by material manufacturer.
- .4 Attachment Battens: Galvanized steel bars with anchors of same material.
- .5 Roof-to-Wall Transition Membranes: reinforced self adhesive, compatible with roofing air and vapour membranes and wall materials specified in this Section.
- .6 Through Wall Membranes: reinforced self adhesive, compatible with air and vapour membrane and that will not become plastic and extrude onto finished surfaces when

exposed to high wall temperatures.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

- .1 Verify that surfaces and conditions are ready to accept the work of this section.
- .2 Examine surfaces to receive sheet material. Notify consultant if surfaces are not acceptable. Do not begin installation until unacceptable conditions have been corrected.
- .3 Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories.

3.3 PREPARATION

- .1 Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- .2 Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.4 INSTALLATION

- .1 Install materials in accordance with manufacturer's instructions.
- .2 Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- .3 Vapour Retarders: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- .4 Apply sealants and adhesives within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.
- .5 Mechanically Fastened Sheets - Vapour Retarder On Interior:
 - .1 When insulation is to be installed in assembly, install vapour retarder over insulation.

- .2 Anchor to wood framing using large-headed nails or staples at 300 to 460 mm on center along each framing member covered; cover fasteners with seam tape.
 - .3 Seal seams, laps, perimeter edges, penetrations, tears, and cuts with self-adhesive tape, making air tight seal.
 - .4 Locate laps at a framing member; at laps fasten one sheet to framing member then tape overlapping sheet to first sheet.
 - .5 Seal entire perimeter to structure, window and door frames, and other penetrations.
 - .6 Where conduit, pipes, wires, ducts, outlet boxes, and other items are installed in insulation cavity, pass vapour retarder sheet behind item but over insulation and maintain air tight seal.
 - .6 Self-Adhered Sheets:
 - .1 Prepare substrate in manner recommended by sheet manufacturer; fill and tape joints in substrate and between dissimilar materials.
 - .2 Lap sheets shingle-fashion to shed water and seal laps air tight.
 - .3 Once sheets are in place, press firmly into substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
 - .4 Use same material, or other material approved by sheet manufacturer for the purpose, to seal to adjacent construction and as flashing.
 - .5 At wide joints, provide extra flexible membrane allowing joint movement.
 - .7 Openings and Penetrations in Exterior Weather Barriers:
 - .1 Install flashing over sills, covering entire sill frame member, extending at least 125 mm onto weather barrier and at least 150 mm up jambs; mechanically fasten stretched edges.
 - .2 At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 100 mm wide; do not seal sill flange.
 - .3 At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 230 mm wide, covering entire depth of framing.
 - .4 At head of openings, install flashing under weather barrier extending at least 50 mm beyond face of jambs; seal weather barrier to flashing.
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- .5 At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
- .6 Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.5 SITE QUALITY CONTROL

- .1 See Section 01 40 00 - Quality Requirements, for additional requirements.
- .2 Do not cover installed weather barriers until required inspections have been completed.
- .3 Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.
- .4 Take digital photographs of each portion of the installation prior to covering up.

3.6 PROTECTION

- .1 Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

Section 07 52 00 - Modified Bituminous Membrane Roofing

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Modified bituminous roofing membrane, conventional application.
- .2 Insulation, flat and tapered.
- .3 Vapour retarders.
- .4 Deck sheathing.
- .5 Base flashings.
- .6 Roofing accessories.
- .7 RCABC Roof Guarantee.

1.2 RELATED REQUIREMENTS

- .1 Section 06 10 00 - Rough Carpentry: Wood nailers, curbs cant strips.
- .2 Section 061000 - Rough Carpentry: Plywood roof sheathing.
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashings, reglets.
- .4 Section 079513 - Expansion Joint Cover Assemblies: for supply of roof expansion joint materials for installation by roofing trade.
- .5 Section 22 10 06 - Plumbing Piping Specialties: Roof drains.

1.3 REFERENCE STANDARDS

- .1 ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
 - .2 CAN/CSA A123.21 - Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane Roofing Systems; 2020.
 - .3 CAN/ULC S107 - Methods of Fire Tests of Roof Coverings; 2010 (R2016).
 - .4 CAN/ULC S701.1 - Standard for Thermal Insulation, Polystyrene Boards; 2017.
 - .5 CAN/ULC S704 - Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced; 2017.
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- .6 CCOHS - Canadian Centre for Occupational Health and Safety - Fire Extinguisher Fact Sheet; Current Edition.
 - .7 CGSB 37-GP-56M - Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing; 1980.
 - .8 CRCA Roofing Specifications Manual - Roofing Specifications Manual; Current Edition.
 - .9 RCABC - Roofing Practices Manual; Current Edition.
 - .10 ULC (FRD) - Fire Resistance Directory; Current Edition.
 - .11 RCABC - Roofing Practices Manual (RPC) latest edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordinate with installation of associated flashings and counterflashings installed by other sections.
- .2 Preinstallation Meeting: Convene one week before starting work of this section.
 - .1 Review preparation and installation procedures and coordinating and scheduling required with related work.

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements for submittal procedures.
- .2 Product Data: Provide manufacturer's current technical data for membrane and bitumen materials, base flashing materials, insulation, vapour retarder, surfacing, and accessories, describing physical properties, product characteristics, and performance criteria.
- .3 Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, mechanical fastener layout, roof penetrations, and flashings, and the following:
 - .1 Provide plans of sloped insulation package. Include roof crickets to roof drains with min 2% slope.
 - .2 Submit roof plan showing securement patterns for mechanical fasteners corresponding to CSA A123.21. Plan shall be provided by membrane roofing manufacturer. Indicate Field, Perimeter and Corners.
- .4 Samples: Submit two samples 200 by 200 mm in size illustrating granule surfaced sheet.

- .5 Manufacturer's Installation Instructions: Indicate special procedures.
- .6 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- .7 Manufacturer's Site Reports: Indicate procedures followed.
- .8 Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- .1 Installer Qualifications: Use an installation company that is a member in good standing of the Roofing Contractors Association of British Columbia (RCABC) with a minimum five years documented experience.
- .2 Comply with Roofing Practice Manual as published by Roofing Contractors Association of British Columbia RCABC as a reference.
- .3 Installer must provide the following personnel on each crew on the Work at all times:
 - .1 Superintendent: minimum 10 years demonstrated experience.
 - .2 Journeyman roofer, one journeyman per each two apprentices
 - .3 and as follows:
 - .1 Roofing Subcontractor and sub-subcontractors must have "Approved Contractor" status by roofing product manufacturer. Only skilled and certified trade persons, officially employed by a roofing Subcontractor operating adequate and necessary equipment, must be authorized to perform all roofing work.
 - .2 Crew members using torches must be trained under a recognized training program and certified from the manufacturer of materials being installed.
 - .3 Execution of the Work of this Section by competent, qualified tradespeople, using adequate plant and equipment.

1.7 FIRE PROTECTION

- .1 Protect roof junctions at parapets, roof curbs and upstands with a fire-resistant tape or barrier to prevent combustible materials within assemblies from ignition arising from the use of torches. Install prior to installation of base sheets.
 - .2 Use a heat detector gun to spot any smouldering or concealed fire at the end of each work day. Establish a minimum one-hour fire watch after torch application.
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- .3 Do not apply torch directly to dry or unprotected wood surfaces.
- .4 Maintain a clean site and have one approved ABC fire extinguisher in compliance with CCOHS within 6 metres of each roofing torch. Respect all safety measures described in manufacturer's technical data sheets. Do not place torches near combustible or flammable products.

1.8 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.
- .2 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance
- .3 Store materials in weather protected environment, clear of ground and moisture; ballast materials may be stored outdoors.
- .4 Store rolls of membrane in upright position. Store membrane rolls with selvage edge up.
- .5 Store sealants at +5 degrees C minimum.
- .6 Place plywood runways over completed Work to enable the movement of materials and other traffic during construction of roofing.
- .7 Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
- .8 Protect foam insulation from direct exposure to sunlight.
- .9 In the event of materials damage by the elements, improper handling or other causes, such materials will be rejected and will be replaced at no extra cost to the Owner. Remove rejected materials promptly from the site.

1.9 SITE CONDITIONS

- .1 Do not apply roofing membrane when environmental conditions are outside the ranges recommended by manufacturer.
 - .2 Do not apply roofing membrane during unsuitable weather.
 - .3 Do not apply roofing membrane when ambient temperature is below negative 23 degrees C.
 - .4 Minimum temperature for solvent based adhesive is 5 degrees C.
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- .5 Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- .6 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- .7 Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.10 WARRANTY

- .1 See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- .2 Correct defective Work within a two year period after Date of Substantial Performance.
- .3 Provide manufacturer's warranty stating that they will repair or replace defective roofing (including labour) and base flashing materials that do not remain watertight, that split, tear, or separate at the seams or from the substrate within the specified warranty period and as follows:
 - .1 Warranty Period: Ten year, materials Warranty, starting from Substantial Performance for the Project.
 - .2 Name of Warrantee: Warrantor shall issue a written and signed warranty identifying the Owner's name as the warrantee and stating that executed work will remain in place and be free of any defects in materials for the stated warranty period.

1.11 SPECIAL WARRANTY

- .1 Provide a Roofing Contractors Association of British Columbia (RCABC) five (5) year RoofStar Guarantee.
- .2 Include cost of Guarantee and inspections under Work of this section.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Membrane Materials: (Acceptable manufacturer designation does not limit a Contractor's ability to submit Proposed Substitutions during bidding.)
 - .1 IKO; TorchFlex TP - 180 Cap: www.iko.com/#sle.
 - .2 Soprema; Sopralene Flam 250 Gr: www.soprema.ca/#sle.
 - .3 Substitutions: 01 25 00 - Substitution Procedures.

.2 Insulation:

- .1 Soprema
- .2 IKO
- .3 Atlas.
- .4 Substitutions: 01 25 00 - Substitution Procedures.

2.2 PERFORMANCE REQUIREMENTS

- .1 Compatibility between components of roofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.
- .2 Uplift Performance: Provide roofing systems that meet wind uplift performance requirements for conventional roofing assemblies in accordance with CAN/CSA A123.21 as follows:
 - .1 Building Geometry: Low rise, based on building height, width and length indicated on Drawings, and having parapets 200 mm high.
 - .3 ULC Roof Class A.
 - .4 Roof slope: design tapered package with minimum 2% slope including crickets sloped to drain locations at 2%.

2.3 ROOFING

- .1 Modified Bituminous Roofing: Two-ply membrane, with vapour retarder and insulation.
- .2 Roofing Assembly Requirements:
 - .1 Roof System - to match existing:
 - .1 Deck - existing or infill wood deck
 - .2 Underlay Board: 6mm (1/4").
 - .3 Vapour Retarder Membrane.
 - .4 Thermal Insulation: match existing to minimum RSI 5.3 (R30)
 - .5 Tapered Insulation: where shown on drawings, minimum thickness 13mm to thicknesses as required to attain 2% slope to drains.
 - .6 Overlay board: 6mm (1/4")

- .7 Membrane: 2-Ply SBS; 3mm base sheet; 4mm cap sheet.
- .8 Base Sheet Flashing: composite 3mm self adhesive. On walls and perimeters tied into VB.
- .3 External Fire Exposure Classification: CAN/ULC S107 Class A, ULC (FRD) listed.
- .4 Insulation Long Term Thermal Resistance (LTTR RSI-Value): 0.73 per 25 mm, minimum; provide insulation of thickness required.
- .5 Surfacing: Mineral granules.

2.4 MEMBRANE AND SHEET MATERIALS

- .1 Base Sheet: Membrane for Self-Adhesive application and as follows:
 - .1 Roofing membrane composed of SBS modified bitumen and composite reinforcement. Top face marked for proper roll alignment.
 - .2 Thickness: 3mm
 - .3 Reinforcement: composite.
 - .4 Surface: sanded.
 - .5 Underface: self-adhesive, covered with a silicone release film.
 - .6 Side laps: 100mm Selvedge.
 - .7 Acceptable Materials:
 - .1 Sopraply Stick Duo, by Soprema
 - .2 Substitutions: See 01 25 00 Substitution Procedures.
- .2 Membrane Base Sheet Flashing (stripping):
 - .1 Roofing membrane with non-woven polyester reinforcement and glass grid and elastomeric bitumen. Top face covered with thermofusible plastic film, underside self-adhesive and protected by silicone release paper in accordance with CGSB 37-GP-56M type 2, class C, grade 1.
 - .2 Components:
 - .1 Reinforcement: Non-woven polyester and glass grid.
 - .2 Elastomeric bitumen: Mix of selected bitumen and SBS polymer.

- .3 Mark top face with lines to ensure proper roll alignment.
- .3 Characteristics:
 - .1 Cold bending at minimum negative 25 degrees C: No cracking.
 - .2 Softening point: Greater than or equal to 110 degrees C.
 - .3 Reinforcing weight: 180 g per sq m.
 - .4 Membrane thickness: Minimum 2.5 mm.
- .4 Acceptable Materials:
 - .1 Torchflex TP-FF-Base; IKO
 - .2 Sopralene Flam Stick; Soprema.
 - .3 Substitutions: 01 25 00 - Substitution Procedures
- .3 Roof Membrane Cap Sheets
 - .1 Field area and flashing cap sheets:
 - .1 Roofing membrane with non-woven polyester reinforcement and elastomeric bitumen with flame-retarding agent. Top face protected by coloured ceramic coated granules, underside covered with a thermofusible plastic film, in accordance with CGSB 37-GP-56M type 1, class A, grade 2.
 - .1 Components:
 - .1 Reinforcement: Non-woven polyester.
 - .2 Elastomeric bitumen: Mix of selected bitumen and SBS polymer.
 - .3 Protection: Coloured granules - light grey.
 - .2 Characteristics:
 - .1 Cold bending at minimum negative 25 degrees C: No cracking.
 - .2 Softening point: Greater than or equal to 110 degrees C.
 - .3 Reinforcing weight: 180 g per sq m.
 - .4 Membrane thickness: Minimum 4 mm.

- .5 Selvage width: 76mm (3")
- .6 End lap: 152mm (6")
- .7 Roll weight: 53.5kg (118lbs)
- .8 Application: torch-on
- .9 ULC Class: A.
- .3 Acceptable Materials:
 - .1 Sopralene Flam 250; Soprema.
 - .2 Torchflex TP-250 Cap; IKO
 - .3 Substitutions: 01 25 00 - Substitution Procedures
- .4 Self Adhesive Vapour Retarder: Modified bituminous, self adhering roof membrane.
 - .1 Top Face: tri-laminated woven polyethylene facer with non-slip surface.
 - .2 Underface: silicone release film.
 - .3 Thickness: 0.8mm
 - .4 Water vapour permeance: To ASTM E96 (Procedure B), <2.5ng/Pa.s.m².
 - .5 Air permeability: to ASTM E2178, <0.001 L/s.m².
 - .6 Acceptable Products:
 - .1 IKO.
 - .2 Sopravap'r by Soprema.
 - .3 Substitutions" 01 25 00 - Substitution Process.
- .5 Vapour retarder continuity strip: SBS membrane with non woven polyester reinforcement, glass grid and elastomeric bitumen. Sanded upper surface; underside self adhesive, compatible with wall and roof air/vapour retarder membranes as recommended by accepted membrane manufacturers below.
- .6 Flexible Flashing Material: Same material as membrane.
- .7 Flame stop membrane:

- .1 Description: Self-adhesive membrane composed of a reinforced SBS modified bitumen designed to prevent flames from penetrating into empty spaces and openings while installing heat-welded membranes.
- .2 Acceptable Materials:
 - .1 Modified Tape; IKO.
 - .2 Sopraguard; Soprema.
 - .3 Substitutions: 01 25 00 - Substitution Procedures
- .8 Base Stripping - self adhesive type:
 - .1 Acceptable Materials:
 - .1 Armourbond Flash; IKO.
 - .2 Sopraflash Flam stick; Soprema.
 - .3 Substitutions: 01 25 00 - Substitution Procedures
- .9 End lapping cover stripping:
 - .1 Acceptable materials:
 - .1 Torchtape 180-FF; IKO
 - .2 Sopralap; Soprema.
 - .3 Substitutions: 01 25 00 - Substitution Procedures

2.5 DECK SHEATHING AND COVER BOARDS

- .1 Vapour Barrier Underlay Board (Deck Sheathing):
 - .1 Glass mat faced gypsum panels, ASTM C1177/C1177M, fire resistant type, and as follows:
 - .1 Dimensions: w 1.22m (4ft) x 1.22m (4ft) and 2.44m (8ft).
 - .2 Thickness: 6 mm
 - .3 Weight: 5.8kg/m² (1.2lb/ft²)
 - .4 Surfacing: Primed Fiberglass Mat
 - .5 Flute span: 67mm (2-5/8")

- .6 Water Absorption: less than 5% of weight
 - .7 Compressive Strength: nominal 6205 kPa (900psi).
 - .8 Fire Safety: Flame Spread/Smoke Defelopment (ASTM E108) Class A
 - .9 Mold Resistance: (ASTM D3273): 10
 - .10 Installation: mechanically attached.
- .2 Acceptable Materials:
- .1 DensDeck Prime: Georgia Pacific
 - .2 Securerock Glass-Mat Roof Board; CGC
 - .3 Substitutions" 01 25 00 - Substitution Process
- .2 Insulation Overlay Board:
- .1 Fiberglass matt gypsum board:
 - .1 Thickness: 6mm (1/4")
 - .2 Dimensions: w 1.22m (4ft) x 1.22m (4ft) and 2.44m (8ft).
 - .3 Weight: 5.8kg/m² (1.2lb/ft²)
 - .4 Surfacing: Primed Fiberglass Mat
 - .5 Flute span67mm (2-5/8")
 - .6 Water Absorption: less than 5% of weight
 - .7 Compressive Strength: nominal 6205 kPa (900psi).
 - .8 Fire Safety: Flame Spread/Smoke Defelopment (ASTM E108) Class A
 - .9 Mold Resistance: (ASTM D3273): 10
 - .10 Installation: mechanically attached.
 - .11 Acceptable Materials:
 - .1 DensDeck Prime: Deorgia Pacific
 - .2 Securerock Glass-Mat Roof Board; CGC
 - .3 Substitutions: 01 25 00 - Substitution Process

- .2 SBS Membrane and Asphaltic Support Panel: base sheet panel composed of SBS modified bitumen membrane factory-laminated on asphaltic board.
 - .1 Properties: per CSA A123.23-15, Type B, Grade 3.
 - .2 Surface: sanded.
 - .3 Underface: semi-rigid asphaltic board.
 - .4 Total thickness: 7mm
 - .5 Membrane Reinforcement: non-woven polyester
 - .6 Side lap joints: Duo-Selvedge.
 - .7 Acceptable Materials:
 - .1 2-1 Soprasmart Board Sanded by Soprema
 - .2 Substitutions: See 01 25 00 Substitution Procedures.

2.6 INSULATION

- .1 Polyisocyanurate (ISO) Board Insulation: Closed-cell rigid cellular foam, integrally bonded to inorganic coated glass facers, complying with CAN/ULC S704.
 - .1 Classifications: Class 2, Type II (20psi)
 - .2 Thermal Resistance: (CAN/ULC S770) RSI-value: 1.0 RSI at 25 mm thick at 24 degrees C.
 - .3 Board Size: 1220 by 2440 mm.
 - .4 Board Thickness: as required to meet specified thermal value.
 - .5 Tapered Board: Slope as indicated; minimum thickness 13 mm; fabricate of fewest layers possible.
 - .6 Board Edges: Square.
 - .7 Acceptable Materials:
 - .1 Atlas, ACFoam III.
 - .2 Soprema, Sopra-Iso Plus.
 - .3 IKO, IKOtherm III.

.4 Substitutions: 01 25 00 - Substitution Procedures

- .2 Extruded Polystyrene (XPS) Board Insulation: Complies with CAN/ULC S701.1 with natural skin surfaces.
- .1 Board Size: 1220mm by 1220 mm.
- .2 Tapered Board: Slope as indicated; minimum thickness 13 mm; fabricate of fewest layers possible.

2.7 ACCESSORIES

- .1 Flashing and sheet metal: in accordance with section 07 62 00 – Sheet Metal Flashing and Trim.
- .2 Cover Strip: SBS modified bitumen and composite reinforcement with sanded surface and self-adhesive underface.
- .1 Acceptable Materials:
- .1 Sopralap Stick by Soprema
- .2 Substitutions: See 01 25 00 Substitution Procedures.
- .3 Self-Adhesive Membrane Primer: Primer composed of SBS rubbers, adhesive enhancing resins, and volatile solvents, designed to enhance the adhesion of self-adhesive membranes.
- .1 Acceptable Materials:
- .1 Elastocol Stick by Soprema
- .2 Substitutions: See 01 25 00 Substitution Procedures.
- .4 Insulation Adhesive: Manufacturers standard adhesives specifically formulated for installation of plastic insulation to roofing materials:
- .1 Acceptable Materials:
- .1 Millennium adhesive.
- .2 Duotack Adhesive.
- .3 Substitutions: 01 25 00 - Substitution Procedures
- .5 Insulation Joint Tape: Glass fibre reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 150 mm wide; self adhering.

.6 **Fasteners:**

- .1 Use appropriate fasteners and plates as recommended by the roofing manufacturer for the specific product and application, and to meet wind uplift criteria.
- .2 Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
- .3 Roofing fasteners and plates: hardened coated steel screws with anti-corrosion coating, and 50mm and 75 mm diameter 20 ga Galvalume plate.
 - .1 Acceptable materials:
 - .1 Trufast plates and fasteners; IKO.
 - .2 Soprafix Fasteners/ Plates; Soprema.
 - .3 HP-X Fasteners and Piranha Plates; Carlisle.
 - .4 Substitutions: 01 25 00 - Substitution Procedures

.7 **Sealants:** As recommended by membrane manufacturer.

- .8 **Trowel-applied Flashing:** one-component polyurethaneébitumen resin. Dedicated to roof flashing where it is difficult to apply waterproofing membranes.
- .1 Acceptable materials:
 - .1 Alsan Flashing by Soprema
 - .2 Substitutions: See 01 25 00 Substitution Procedures.

PART 3 EXECUTION

3.1 QUALITY OF WORK

- .1 Examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual.
- .2 Roofing work shall be performed to RCABC Roofing Practices Manual to RGC Guarantee Standards.
- .3 Priming: in accordance with manufacturers written recommendations.
- .4 Assembly, component and material connections will be made in consideration of appropriate design loads.

3.2 TIE-INS TO EXISTING ROOFS

- .1 Refer to Section 02 41 13 - Selective Demolition

3.3 EXAMINATION OF ROOF DECKS

- .1 Verify that surfaces and site conditions are ready to receive work.
- .2 Verify deck is supported and secure.
- .3 Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- .4 Verify deck surfaces are dry and free of snow or ice.
- .5 Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.
- .6 Roofing Inspector shall verify deck conditions including parapets, construction joints, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

3.4 WOOD DECK PREPARATION

- .1 Verify flatness and tightness of joints of wood decking. Fill knot holes with latex filler.
- .2 Seal joints of plywood with tape.
- .3 Confirm dry deck by moisture meter with 12 percent moisture maximum.

3.5 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover walls, walks and adjacent work where materials hoisted or used.
 - .2 Use warning signs and barriers. Maintain in good order until completion of Work.
 - .3 Clean off drips and smears of bituminous material immediately.
 - .4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.
 - .5 Protect roof from traffic and damage. Comply with precautions deemed necessary by Contractor and Roofing Inspector.
 - .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
 - .7 Metal connectors and decking shall be treated with rust proofing or galvanization.
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3.6 WOOD INSTALLATION

- .1 Install wood material as indicated on drawings and in accordance with RCABC Roofing Practices Manual. Use materials specified in Section 06 10 00..

3.7 PRIMING DECK

- .1 Surfaces to be primed must be free of rust, dust or any residue that may hinder adherence.
- .2 Cover primed surfaces with vapour within time limits recommended by roofing membrane system manufacturer.

3.8 DECK BOARD INSTALLATION

- .1 Adhere deck board with mechanical fasteners, using 4-6 screws and plates per 1.2m x 2.4m board.
- .2 Install roof boards with long edges bearing on and parallel to top flutes, so that eges are supported.

3.9 VAPOUR RETARDER INSTALLATION

- .1 Self-Adhesive Vapour Retarder: Apply to deck surface with adhesive in accordance with roofing and vapour retarder manufacturers' instructions.
- .2 Extend vapour retarder under cant strips and blocking.
- .3 Install flexible flashing from vapour retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

3.10 INSULATION INSTALLATION - CONVENTIONAL APPLICATION

- .1 Ensure vapour retarder is clean and dry, continuous, and ready for application of roofing system.
- .2 Attachment of Insulation: Mechanically or adhesive fasten each layer of insulation to deck in accordance with roofing manufacturer's instructions and RCABC requirements.
 - .1 Use fastener type and fastening pattern as required to achieve wind resistance specified.
- .3 Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions RCABC requirements.
- .4 Install in minimum two (2) layers. Stagger all joints minimum 300 mm at ends and sides. Maximum thickness per layer not to exceed 68mm.

- .5 Lay subsequent layers of insulation with joints staggered minimum 150 mm from joints of preceding layer.
- .6 Place tapered insulation to the required slope pattern in accordance with shop drawings and manufacturer's instructions.
- .7 Provide crickets to slope roof surfaces to drain locations at 2%.
- .8 Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- .9 Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- .10 At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 450 mm.
- .11 Do not apply more insulation than can be covered with membrane in same day.

3.11 MEMBRANE APPLICATION

- .1 Apply modified bituminous membrane roofing system in accordance with manufacturer's recommendations, best practices, and CRCA Roofing Specifications Manual applicable requirements.
- .2 Apply membrane; lap and seal edges and ends permanently waterproof.
- .3 Apply smooth, free from air pockets, wrinkles, fish-mouths, or tears. Ensure full bond of membrane to substrate.
- .4 At end of day's operation, install waterproof cut-off. Remove cut-off before resuming roofing.
- .5 At intersections with vertical surfaces:
 - .1 Extend membrane over cant strips and up a minimum of 200 mm onto vertical surfaces.
 - .2 Apply flexible flashing over membrane.
- .6 At gravel stops, extend membrane and base sheet under gravel stop and to the outside face of the wall.
- .7 Around roof penetrations, mop in and seal flanges and flashings with flexible flashing.
 - .1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with manufacturer's recommendations and

details.

- .2 Tapered insulation drain sumps: install minimum 600 mm x 600 mm area at drains with minimum 2% slope.

3.12 FLASHINGS

- .1 Flashing work in accordance with RCABC Roofing Practices Manual.
- .2 Complete installation of flashing base sheet stripping prior to installing membrane cap sheet.
- .3 Torch base and cap sheet onto substrate in 1 metre wide strips.
- .4 Lap flashing base sheet to membrane base sheet minimum 150 mm and seal by torch welding.
- .5 Lap flashing cap sheet to membrane cap sheet 250 mm minimum and torch weld.
- .6 Provide 75 mm minimum side lap and seal.
- .7 Properly secure flashings to their support, without sags, blisters, fishmouths or wrinkles.

3.13 SITE QUALITY CONTROL

- .1 See Section 01 40 00 - Quality Requirements for general requirements for site quality control and inspection.
- .2 Require site attendance of roofing and insulation material manufacturers as required to meet manufacturer's warranty requirements. during installation of the Work.
- .3 Require roofing inspector to inspect installation.

3.14 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled by bitumen or other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- .3 Repair or replace defaced or damaged finishes caused by work of this section.

3.15 PROTECTION

- .1 Protect installed roofing and flashings from construction operations.
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- .2 Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

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Section 07 62 00 - Sheet Metal Flashing and Trim

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Fabricated sheet metal items, including flashings, counterflashings, gutters, and downspouts.
- .2 Sealants for joints within sheet metal fabrications.
- .3 Precast concrete splash pads.

1.2 RELATED REQUIREMENTS

- .1 Section 04 20 00 - Unit Masonry: Metal flashings embedded in masonry.
- .2 Section 06 10 00 - Rough Carpentry: Wood nailers for sheet metal work.
- .3 Section 06 10 00 - Rough Carpentry: Field fabricated roof curbs.
- .4 Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.3 REFERENCE STANDARDS

- .1 AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2020.
- .2 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- .3 ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.
- .4 ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- .5 ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).
- .6 SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.
- .7 RCABC Roofing Practices Manual - latest edition

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordinate work of this Section with interfacing and adjoining Work for sequencing of each installation and to provide positive weather resistance, durability of work, and
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protection of materials and finishes.

- .2 Preinstallation Meeting: Convene one week before starting work of this section.

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- .3 Data sheets for sealant products.
- .4 Samples: Submit two samples, 100 by 100 mm in size illustrating material and fabrication details of typical conditions of sheet metal work.
- .5 Samples: Submit two samples 100 by 100 mm in size illustrating metal finish colour.

1.6 QUALITY ASSURANCE

- .1 Perform work in accordance with SMACNA (ASMM) and RCABC Roofing Practices Manual requirements and standard details, except as otherwise indicated.
- .2 Maintain one copy of each document on site.
- .3 Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- .2 Provide protection for galvanized surfaces.
- .3 Prevent contact of dissimilar metals during storage and protect from acids, flux, and other corrosive materials and elements
- .4 Protect prefinished surfaces from scratches and from rust staining.
- .5 Prevent contact with materials that could cause discolouration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- .1 Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.61 mm thick base metal, shop pre-coated with PVDF coating.
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- .1 PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - .2 Finish:
 - .1 Series 12,000 Series PVDF/Kynar.
 - .3 Colour: As selected by Architect from manufacturer's standard colours.
 - .4 Acceptable Material:
 - .1 Cascadia Metal.
 - .2 VicWest.
 - .3 Substitutions: 01 25 00 - Substitution Procedures

2.2 FABRICATION

- .1 Fabricate sheet metal flashing and trim in accordance with the applicable recommendations of SMACNA's Architectural Sheet Metal Manual and the RCABC Roofing Practices Manual as they apply to the design and specified warranty.
- .2 Fabricate sheet metal flashing and trim to fit substrates, and result in waterproof and weather resistant performance once installed.
- .3 Form sections true to shape, accurate in size, square, and free from distortion or defects.
- .4 Fabricate cleats of same material as sheet, minimum 25 mm wide, interlocking with sheet.
- .5 Form pieces in longest possible lengths.
- .6 Hem exposed edges on underside 13 mm; miter and seam corners.
- .7 Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- .8 Fabricate corners from one piece with minimum 450 mm long legs; seam for rigidity, seal with sealant.
- .9 Fabricate vertical faces with bottom edge formed outward 6 mm and hemmed to form drip.
- .10 Sealed Joints: Form non-expansion movable joints in metal to accommodate elastomeric sealant in accordance with SMACNA standards.

- .11 Fabricate flashings to allow toe to extend 50 mm over roofing surface. Return and brake edges.
- .12 Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- .13 Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to view.
- .14 Fabricate cleats and attachment devices from same material as sheet metal component being anchored and as follows:
 - .1 Size as recommended by SMACNA manual or sheet metal manufacturer for application, but not less than thickness of metal being secured.
- .15 Scuppers:
 - .1 Form scuppers from sheet metal copper
 - .2 Sizes and profiles as indicated.
 - .3 Provide necessary fastenings.

2.3 GUTTER AND DOWNSPOUT FABRICATION

- .1 Downspouts: Rectangular profile.
- .2 Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with SMACNA (ASMM).
- .3 Accessories: Profiled to suit gutters and downspouts.
 - .1 Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
 - .2 Gutter Supports: Brackets.
 - .3 Downspout Supports: Brackets.
- .4 Splash Pads: Precast concrete type, of size and profiles indicated; minimum 21 MPa at 28 days, with minimum 5 percent air entrainment.
- .5 Downspout Boots: Steel.
- .6 Downspout Extenders: Same material and finish as downspouts.
- .7 Seal metal joints.

2.4 ACCESSORIES

- .1 Metal Accessories: Provide non-corrosive sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work. Accessories shall match material being installed; size and thickness as required.
- .2 Fasteners: Galvanized steel, with soft neoprene washers.
- .3 Flashing screws:
 - .1 Pan head, 316 Series stainless steel suitable for metal flashing application, #8 x minimum 1"(25mm) long. For exposed locations provide hex-head with neoprene washer, and colour to match flashing.
- .4 Sheet metal flashing underlay:
 - .1 High service temperature self-adhering membrane flashing as specified in Section 07 65 00 for other than roof applications.
- .5 Primer: Zinc chromate type.
- .6 Isolation coating: alkali resistant bituminous paint.
- .7 Concealed Sealants: Non-curing butyl sealant.
- .8 Roofing Cement: to ASTM D4586/D4586M, asphalt-based, asbestos-free.
- .9 Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; colour as selected by Architect.
- .10 Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
 - .2 Check mounting and counterflashing of mechanical items and report defects to the Consultant.
 - .3 Verify that solid wood blocking or sheathing provided to back-up all flashings and that all nails, screws set and wood provides a smooth flat plane.
 - .4 Verify roofing termination and base flashings are in place, sealed, and secure.
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3.2 PREPARATION

- .1 Install starter and edge strips, and cleats before starting installation.
- .2 Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.
- .3 Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 0.4 mm.

3.3 INSTALLATION

- .1 Install sheet metal flashing and trim in accordance with the Quality Assurance requirements specified.
- .2 Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted. Install flashing to meet wind strength conditions of minimum 150 kph.
- .3 Anchor units of work securely in place, providing for thermal expansion of metal units. Conceal fasteners where possible and set units true to line and level.
- .4 Apply plastic cement compound between metal flashings and felt flashings.
- .5 Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- .6 Seams:
 - .1 Fabricate non-moving seams in sheet metal with flat lock seams.
 - .2 Cap flashing: standing seams.
- .7 Seal metal joints watertight:
 - .1 Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant.
 - .2 Fill joint with sealant and form metal to conceal sealant completely.
 - .3 Use joint adhesive for non-moving joints specified as not being soldered.
- .8 Install exposed sheet metal work that is without oil canning, buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weatherproof performance.
- .9 Roof Edge Flashing: Secure metal flashing at roof edges at a maximum of 610 mm o.c. unless smaller spacing is required to meet wind strength conditions of 150 kph. Use

hidden fastener methods.

.10 Expansion Provisions:

- .1 Provide for the thermal expansion of exposed sheet metal Work.
- .2 Space movement joints at maximum of 3050 mm, with no joints allowed within 610 mm of a corner or intersection.
- .3 Form expansion joints of intermeshing hooked flanges, not less than 25 mm deep, filled with mastic sealant (concealed within joints) where lapped or bayonet type expansion provisions in the work cannot be used or are not sufficiently weatherproof and waterproof.

.11 Separations:

- .1 Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with bituminous paint or other permanent separation as recommended by the manufacturer.
- .2 Bed flanges of work in a thick coat of roofing cement where required for waterproof performance.

.12 Counter Flashing:

- .1 Coordinate installation of counter flashing with installation of assemblies being protected by counter flashing.
- .2 Secure in a waterproof manner.
- .3 Lap counter flashing joints a minimum of 50 mm and bed with sealant.

.13 Equipment Support Flashing:

- .1 Coordinate equipment support flashing installation with roofing and equipment installation.

.14 Roof Drainage System:

- .1 Install drainage items fabricated from sheet metal, with straps, adhesives and anchors as required, to drain the roof in the most efficient manner.
- .2 Coordinate roof drain flashing installation with roof drainage system installation.

.15 Secure gutters and downspouts in place with concealed fasteners.

.16 Connect downspouts to downspout boots, and grout connection watertight.

- .17 Set splash pads under downspouts.

3.4 SITE QUALITY CONTROL

- .1 See Section 01 40 00 - Quality Requirements, for site inspection requirements.
- .2 Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

Section 07 84 00 - Fire Stopping and Smokeseals

General

1.1 SUMMARY

- .1 Work of this section includes provision of fire stopping requirements for the project inclusive of mechanical and electrical, by one qualified Sub-Contractor.
- .2 Work of this section includes through penetration firestopping and smokeseal systems for penetrations through the following fire resistance rated assemblies, including both empty openings and openings containing penetrating items:
 - .1 Horizontal Fire Separations such as floors (FT rating).
 - .2 Walls, partitions and floors (F rating).
 - .3 Smoke barriers.
- .3 This Section includes fire resistive joint systems for the following:
 - .1 Floor-to-floor joints.
 - .2 Floor to wall, wall to wall, and other similar construction joints (JF).
 - .3 Head of wall joint systems (HW).
- .4 Work of this section includes provision of:
 - .1 General Firestopping and Smokeseals.
 - .2 Fill Materials.
 - .3 Accessories.
 - .4 Mixing.
- .5 Engineering services by Sub-Contractor.
- .6 This specification section includes requirements for Rated Systems or systems requiring custom system for conditions where there are no Listed systems and products.
 - .1 Manufacturer of product and system shall employ an Engineer registered in the province of British Columbia to design, sign and seal shop drawings and evaluate and provide field reviews.
 - .2 Use of materials that have not been tested in a system or that are not capable of obtaining an custom engineered system will not be acceptable for use on this

Project.

1.2 RELATED REQUIREMENTS

- .1 Section 03 31 00 - Cast-in-Place Concrete
- .2 Section 06 10 00 - Rough Carpentry
- .3 Section 09 21 16 - Gypsum Board Assemblies
- .4 Mechanical Specifications
- .5 Electrical Specifications

1.3 REFERENCES

- .1 ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.
- .2 ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; 2014b.
- .3 ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).
- .4 CAN/ULC S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials; 2014.
- .5 CAN/ULC S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies; 2011.
- .6 CAN/ULC S115 - Standard Method of Fire Tests of Firestop Systems; 2018.
- .7 Firestop Contractors International Association (FCIA): Manual of Practice
- .8 Health Canada/Workplace Hazardous Materials Information System (WHMIS): Material Safety Data Sheets (MSDS).
- .9 International Firestop Council (IFC): IFC Recommended Guidelines for Performing Destructive Testing for Installed Penetration Firestop Systems, Fire-Resistive Joint Systems, or Perimeter Fire Barrier Systems, April 2012.
- .10 National Fire Protection Agency (NFPA): NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials, 2006 Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meeting: convene pre-installation meeting one week prior to beginning work of this Section, with sub-contractor's representative, Certified Professional, General Contractor, and Consultant to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Coordination with other specification sections.
 - .5 Review manufacturer's installation instructions and warranty requirements.
- .2 The sub-contractor shall ensure the personnel performing the fire-stopping work are in attendance at the pre-installation meeting.

1.5 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Field Review Reports: provided by professional engineer providing Schedules S-B and S-C.
- .3 Schedules from trade contractor's Engineer:
 - .1 Provide Schedules S-B and S-C to Consultant (CRP – Coordinating Registered Professional).
- .4 Submit Product data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Provide two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with WHMIS acceptable to Labour Canada, and Health and Welfare Canada.
- .5 Quality assurance submittals:.
 - .1 Test reports: in accordance with CAN/ULC S101 for fire endurance and CAN/ULC S102 for surface burning characteristics.
 - .1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with

specifications for specified performance characteristics and physical properties.

- .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

1.6 QUALITY ASSURANCE

- .1 One Sub-Contracting firm shall provide all firestopping on the project.
- .2 Engage a professional engineer, registered in the province of BC and familiar with installations of similar scope and complexity to seal Schedule of Firestopping and Smokeseals and perform field reviews.
- .3 Sub-Contractor and Installer Qualifications: shall have both the following:
 - .1 Company or person specializing in fire stopping installations and approved by manufacturer with 5 years documented experience.
 - .2 Shall comply with at least one of the following:
 - .1 Company or person having successfully completed the ULC Qualified Firestop Contractor Program and holder of valid certificate.
 - .2 FCIA Member in Good Standing.
 - .3 FM 449 Approved Contractor.
 - .4 Hilti Accredited Fire Stop Specialty Contractor when Hilti products are used.
- .4 Use materials and methods of determining required thickness of application that have the full acceptance of Authority Having Jurisdiction.
- .5 Use materials tested to CAN/ULC S115. Assemblies containing the materials shall be in accordance with assemblies tested and approved by agencies acceptable to authority having jurisdiction.
- .6 Source Responsibility: Obtain through penetration firestop and joint systems, for each kind of penetration and construction condition indicated, from a single source of installation responsibility.
- .7 Single Manufacturer's services: Manufacturer's Representative shall attend the site as follows:

- .1 Prior to beginning of Work of this section to:
 - .1 Verify Project requirements.
 - .2 Review installation and substrate requirements.
 - .3 Coordination with other project Subcontractors.
 - .4 Review Manufacturer's installation and instructions and warranty requirements.
- .2 During installations: Manufacturer's Field Reports.
 - .1 Perform periodic field reviews and submit Field Reports.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 – Common Product Requirements
- .2 Packing, shipping, handling and unloading:
 - .1 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, and Testing Agency markings.
- .3 Storage and Protection:
 - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.
 - .3 Use stock before its expiration date.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling and disposal in accordance with Section 01 74 21 Construction Waste Management And Disposal.

1.9 PROJECT CONDITIONS

- .1 Install firestopping and smokeseals materials only when the areas in which they are scheduled are closed-in and protected from dampness.
 - .2 Environmental Limitations: Install firestopping and smokeseals systems when ambient or substrate temperatures are within temperature and moisture limits permitted by firestopping and smokeseals system manufacturers or when substrates are not wet
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due to rain, frost, condensation, or other causes.

- .3 Ventilate firestopping and smokeseals systems in accordance with manufacturer's written instructions by natural means or forced air circulation where natural means are not adequate.

Products

2.1 MANUFACTURERS

- .1 Acceptable Manufacturers:
 - .1 Hilti (Canada) Corporation, Mississauga, Ontario
 - .2 Substitutions: 01 25 00 Substitution Procedures.
- .2 Materials for project to be from one manufacturer only.

2.2 PERFORMANCE/DESIGN CRITERIA

- .1 Design firestopping and smokeseals required by the Contract Documents to withstand fire ratings indicated and in accordance with requirements of the Building Code.
- .2 Fire stopping sealants and coatings shall not re-emulsify.
- .3 Performance Requirements: Manufacturer shall design proprietary assemblies to withstand the listed ratings in accordance with the Building Code, Underwriters Laboratories Canada, and authorities having jurisdiction, and as follows:
 - .1 Provide through penetration firestop and joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire resistance rating of assembly penetrated:
 - .1 Fire resistance rated load bearing walls, including partitions, with fire protection rated openings.
 - .2 Fire resistance rated non-load bearing walls, including partitions, with fire protection rated openings.
 - .3 Fire resistance rated floor assemblies.
 - .2 FT Rated Systems: penetrations of a firewall or horizontal fire separation this is required to have a fire-resistance rating shall be sealed at the penetration by a fire stop when subjected to test method CAN/ULC S115 has an FT rating not less than the fire-resistant rating for the fire separation of the assembly.

- .3 F-Rated Systems: Provide through penetration firestop systems with F-ratings indicated, as determined by CAN/ULC S115 or ASTM E814, but not less than that equalling or exceeding fire resistance rating of constructions penetrated.
 - .4 T-Rated Systems: For the following conditions, provide through penetration firestop systems with T-ratings indicated, as well as F-ratings, as determined per by CAN/ULC S115 or ASTM E814, where systems protect penetrating items exposed to potential contact with adjacent materials:
 - .1 Penetrations located outside wall cavities.
 - .2 Penetrations located outside fire resistive shaft enclosures.
 - .3 Penetrations located in construction containing fire protection rated openings.
 - .4 Penetrating items larger than 100 mm diameter nominal pipe or 100 cm² in overall cross sectional area.
 - .5 Provide a round fire-rated cable management device whenever cables penetrate fire rated walls, where frequent cable changes and additions may occur. The fire-rated cable management device shall consist of a corrugated steel tube with zinc coating, contain an inner plastic housing, intumescent material rings, and inner fabric smoke seal membrane. The length of the sleeve shall be 12.4 inches. The fire-rated cable management device shall contain integrated intumescent firestop wrap strip materials sufficient to maintain the hourly rating of the barrier being penetrated. The fire-rated cable management device shall contain a smoke seal fabric membrane or intumescent firestop plugs sufficient to achieve the L-Rating requirements of the barrier type. Install device per the manufacturer's published installation instructions.
 - .6 Firestopping and Smokeseals Systems Exposed To View: Systems exposed to view, traffic, moisture, and physical damage; provide products that after curing do not deteriorate when exposed to these conditions both during and after construction, and as follows:
 - .1 Provide moisture resistant through penetration firestop systems for piping penetrations for plumbing and wet pipe sprinkler systems.
 - .2 Provide firestopping and smokeseals systems capable of supporting floor loads involved either by installing floor plates or by other means for floor penetrations with annular spaces exceeding 100 mm in width and exposed to possible loading and traffic.
 - .3 Provide firestopping and smokeseals systems not requiring removal of insulation for penetrations involving insulated piping.
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- .4 Provide products with flame spread ratings of less than 25 and smoke developed ratings of less than 50 for firestopping and smokeseals and joint systems exposed to view.
 - .5 Colour of exposed to view systems shall be grey.
 - .6 Mold Resistance: Provide penetration firestopping with mold and mildew resistance rating of 0 as determined by ASTM G21.
 - .7 Rain and water resistance: provide perimeter joint sealant tested in accordance with ASTM D 6904 with less than 1 hour tack free time as tested in accordance with ASTM C 679.
 - .7 Penetrations in Smoke Barriers: Provide firestopping with ratings determined in accordance with CAN/ULC-S115:2018:
 - .1 L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures.
 - .8 Fire Resistance of Joint Systems: Assembly ratings and movement capabilities indicated, but with assembly ratings not less than that equalling or exceeding fire resistance rating of constructions in which joints are located.

2.3 FIRESTOPPING AND SMOKESEALS: GENERAL

- .1 Compatibility: Provide firestopping and smokeseals systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating firestopping and smokeseals systems, under conditions of service and application, as demonstrated by firestopping and smokeseals system manufacturer based on testing and field experience, and as follows:
 - .1 Service penetration assemblies: certified by ULC in accordance with CAN/ULC S115 and listed in ULC-FS Firestop Systems and Components 2019 Edition.
 - .2 Service penetration firestopping and smokeseals components: certified by ULC in accordance with CAN/ULC S115 and listed in ULC-FS Firestop Systems and Components 2019 Edition.
 - .3 Fire resistance rating of installed firestopping and smokeseals assembly not less than the fire resistance rating of surrounding floor and wall assembly.
 - .4 Firestopping and Smokeseals at openings intended for ease of re-entry such as cables: elastomeric seal; do not use cementitious or rigid seal at such locations.
 - .5 Firestopping and Smokeseals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal; do not use a cementitious or rigid seal at such locations.

Exemption to fire dampers.

2.4 FILL MATERIALS

- .1 General:
 - .1 Provide firestopping and smokeseals systems containing the types of fill materials indicated in the Firestopping and Smokeseals System Schedule below by reference to the types of materials described in this Article. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.
 - .2 Firestopping and smoke seal systems shall be tested in accordance with ULC S115, and be comprised of asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases, and not to exceed opening sizes for which they are intended for the ratings as indicated on drawings.
 - .2 Pre-formed firestop devices for use with non-combustible and combustible pipes (closed and open systems), conduit and/or cable bundles penetrating concrete floors and/or gypsum walls, the following products are acceptable:
 - .1 Hilti Tub Box Kit (CP 681) for use with tub installations.
 - .2 Hilti Cast-In Place Firestop Device (CP 680-PX) for use with XFR pipe or Hilti Cast-In Place Firestop Device (CP 680-P) for use with combustible penetrants
 - .3 Hilti Cast-In Place Firestop Device (CP 680-M) for use with noncombustible penetrants.
 - .4 Hilti Speed Sleeve (CP 653) for use with cable penetrations.
 - .5 Hilti Firestop Drop-In Device (CFS-DID) for use with noncombustible and combustible penetrants.
 - .6 Hilti Firestop Block (CFS-BL)
 - .3 Sealants or caulking materials for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT), the following products are acceptable:
 - .1 Hilti Intumescent Firestop Sealant (FS-ONE MAX)
 - .2 Hilti Fire Foam (CP 620)/CP 660
 - .3 Hilti Flexible Firestop Sealant (CP 606)

- .4 Hilti Firestop Silicone Sealant Gun Grade (CFS-S SIL GG)
 - .5 Hilti Firestop Silicone Sealant Self Leveling (CFS-S SIL SL)
 - .4 Sealants or caulking materials for use with sheet metal ducts, the following products are acceptable:
 - .1 Hilti Firestop Silicone Sealant Gun Grade (CFS-S SIL GG)
 - .2 Hilti Firestop Silicone Sealant Self Leveling (CFS-S SIL SL)
 - .3 Hilti Flexible Firestop Sealant (CP 606)
 - .4 Hilti Intumescent Firestop Sealant (FS-ONE MAX)
 - .5 Sealants, sprays, or pre-formed materials for use with fire-rated construction joints and other gaps, the following products are acceptable:
 - .1 Hilti Top Track Seal (CFS-TTS)
 - .2 Hilti Firestop Joint Spray (CFS-SP WB)
 - .3 Hilti Firestop Silicone Joint Spray (CFS-SP SIL)
 - .4 Hilti Flexible Firestop Sealant (CP 606)
 - .5 Hilti Firestop Silicone Sealant Gun Grade (CFS-S SIL GG)
 - .6 Hilti Firestop Silicone Sealant Self Leveling (CFS-S SIL SL)
 - .7 Hilti Bottom of Wall sealant (CP 605)
 - .6 Pre-formed mineral wool designed to fit flutes of metal profile deck; as a backer for spray material.
 - .1 Hilti Speed Plugs (CP 777)
 - .2 Hilti Speed Strips (CP 767)
 - .7 Intumescent sealants or caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe, the following products are acceptable:
 - .1 Hilti Intumescent Firestop Sealant (FS-ONE MAX)
 - .8 Foams, intumescent sealants, or caulking materials for use with flexible cable or cable bundles, the following products are acceptable:
 - .1 Hilti Intumescent Firestop Sealant (FS-ONE MAX)
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- .2 Hilti Fire Foam (CP 620)/660
 - .3 Hilti Flexible Firestop Sealant (CP 606)
 - .4 Hilti Firestop Silicone Sealant Gun Grade (CFS-S SIL GG)
 - .5 Hilti Firestop Silicone Sealant Self Leveling (CFS-S SIL SL)
 - .9 Non-curing, re-penetrable intumescent putty or foam materials for use with flexible cable or cable bundles, the following products are acceptable:
 - .1 Hilti Firestop Putty Stick (CP 618)
 - .2 Hilti Firestop Plug (CFS-PL)
 - .10 Wall opening protective materials for use with cUL. / ULC listed metallic and specified nonmetallic outlet boxes, the following products are acceptable:
 - .1 Hilti Firestop Putty Pad (CFS-P PA)
 - .2 Hilti Firestop Putty Pad (CP 617)
 - .3 Hilti Firestop Box Insert
 - .11 Firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping systems) tested to 50 Pa. pressure differential, the following products are acceptable:
 - .1 Hilti Firestop Collar (CP 643N)
 - .2 Hilti Wrap Strips (CP 648E/648S)
 - .12 Materials used for large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:
 - .1 Hilti Firestop Block (CFS-BL)
 - .2 Hilti Composite Sheet (CFS-COS)
 - .3 Hilti Firestop Mortar (CP 637)
 - .4 Hilti Fire Foam (CP 620)/660
 - .5 Hilti Firestop Board (CP 675T)
 - .13 Non-curing, re-penetrable materials used for large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:
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- .1 Hilti Firestop Block (CFS-BL)
- .2 Hilti Firestop Board (CP 675T)
- .14 Re-penetrable, round cable management devices for use with new or existing cable bundles penetrating gypsum or masonry walls, the following products are acceptable:
 - .1 Hilti Speed Sleeve (CP 653) with integrated smoke seal fabric membrane.
 - .2 Hilti Firestop Cable Collar (CFS-CC)
 - .3 Hilti Firestop Sleeve (CFS-SL SK)
 - .4 Hilti Retrofit Sleeve (CFS-SL RK) for use with existing cable bundles.
 - .5 Hilti Gangplate (CFS-SL GP) for use with multiple cable management devices.
 - .6 Hilti Gangplate Cap (CFS-SL GP CAP) for use at blank openings in gangplate for future penetrations.
- .15 Sealants or caulking materials used for openings between structurally separate sections of wall and floors, the following products are acceptable:
 - .1 Hilti Firestop Joint Spray (CFS-SP WB)
 - .2 Hilti Flexible Firestop Sealant (CP 606)
 - .3 Hilti Firestop Silicone Sealant Gun Grade (CFS-S SIL GG)
 - .4 Hilti Firestop Silicone Sealant Self Leveling (CFS-S SIL SL)
- .16 For blank openings made in fire-rated wall or floor assemblies, where future penetration of pipes, conduits, or cables is expected, the following products are acceptable:
 - .1 Hilti CFS-BL Firestop Block (for walls and floors)
 - .2 Hilti CFS-PL Firestop Plug (for walls and floors)
 - .3 Hilti CP 680 Cast-In Place Firestop Device (for floors only)
- .17 For single or cable bundles up to one inch diameter penetrating gypsum, masonry, concrete walls or wood floor assemblies the following product is acceptable:
 - .1 Hilti CFS-D Firestop Cable Disc
- .18 For joints and penetrations in non-rated fire separations the following products are acceptable:

- .1 Hilti CP 506 Smoke and Acoustic sealant
- .2 Hilti CP 572 Smoke and Acoustic Spray

2.5 ACCESSORIES

- .1 Provide components for each firestopping and smokeseals systems that are needed to install fill materials. Use only components specified by firestopping and smokeseals system manufacturer and approved by the qualified testing and inspecting agency for firestopping and smokeseals systems indicated. Accessories include, but are not limited to, the following items:
 - .1 Permanent forming, damming and backing materials, including the following:
 - .1 High density slag or rock wool fibre insulation.
 - .2 Sealants used in combination with other forming, damming or backing materials to prevent leakage of fill materials in liquid state.
 - .3 Fire-rated form board.
 - .4 Fillers for sealants.
 - .2 Temporary forming materials.
 - .3 Substrate primers.
 - .4 Collars.
 - .5 Steel sleeves.
 - .6 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
 - .7 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
 - .8 Metal fire stop: Commercial galvanized steel, to ASTM A1008/A1008M, zinc coating 260 g/m², minimum metal core thickness 0.912 mm.
 - .9 Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels::
 - .1 The words: "Warning -Through Penetration Firestop System-Do Not Disturb. Notify Building Management of Any Damage."

- .2 Contractor's Name, address, and phone number.
 - .3 Through-Penetration firestop system designation of applicable testing and inspecting agency.
 - .4 Date of Installation.
 - .5 Through-Penetration firestop system manufacturer's name.
 - .6 Installer's Name.
- .10 Contact telephone number for repair or replacement of firestopping materials.

2.6 MIXING

- .1 For those products requiring mixing before application, comply with firestopping and smokeseals system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

- .1 Examine surfaces, components, materials to receive firestopping and smokeseals material; report any conditions which would detrimentally affect the application of the material or the proper firestopping and smokeseals of the system.
- .2 Commence Work when conditions of surfaces and the working conditions are suitable.
- .3 Where penetration sealants or caulking are required, ensure all service lines are in place, tested and approved.
- .4 Verify all proper blocking, framing (using non-combustible materials) are properly installed and prepared to receive firestopping and smokeseals. Notify Consultant in writing of any deficiencies affecting the proper performance of the firestopping and smokeseals, do not proceed until deficiencies are corrected.

3.3 PREPARATION

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
 - .1 Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- .3 Prime surfaces as required.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.4 INSTALLATION

- .1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- .2 Apply firestopping and smokeseals materials/systems to maintain the fire separations in the project as indicated on drawings.
- .3 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .4 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .5 Tool or trowel exposed surfaces to neat finish.
- .6 Remove excess compound promptly as work progresses and upon completion.
- .7 Install specified Warning Labels at location of firestop systems. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems.

3.5 FIELD QUALITY CONTROL

- .1 Field Reviews: notify Consultant and Sub-Contractor's engineer when ready for Field Review and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
- .2 Where custom designs are required Sub-Contractor's engineer shall review each firestop and smokeseal installation and provide report to Prime Consultant. When Work

has been performed to the acceptance of the engineer, submit Schedule S-C.

- .3 Field Reviews shall be in accordance with IFC Recommended Guidelines for Inspection of Firestopping and ASTM E2174. Cut tests may be made at random by Sub-Contractor's engineer. Frequency of cut tests shall be determined by the engineer.
- .4 Make necessary repairs and correct all deficiencies noted after completion of cut tests.
- .5 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports.
 - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .6 Schedule regular site visits, to review Work.

3.6 CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

Section 07 92 00 - Joint Sealants

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Nonsag gunnable (NS Grade) joint sealants .
- .2 Self-levelling pourable (P Grade) joint sealants .
- .3 Joint backings and accessories.

1.2 RELATED REQUIREMENTS

- .1 Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapour retarders.
- .2 Section 076200 - Sheet Metal Flashing and Trim
- .3 Section 07 84 00 - Firestopping: Firestopping sealants.
- .4 Section 08 11 14 - Metal Doors and Frames
- .5 Section 08 71 00 - Door Hardware: Setting exterior door thresholds in sealant.
- .6 Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.
- .7 Section 09 22 16 - Non-Structural Metal Framing: Sealing between framing and adjacent construction in acoustical and sound-rated walls and ceilings.
- .8 Section 23 31 00 - HVAC Ducts and Casings: Duct sealants.

1.3 REFERENCE STANDARDS

- .1 ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
 - .2 ASTM C834 - Standard Specification for Latex Sealants; 2017.
 - .3 ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.
 - .4 ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
 - .5 ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
 - .6 ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.
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- .7 ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.
 - .8 ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.
 - .9 ASTM D2240 - Standard Test Method for Rubber Property-Durometer Hardness; 2015 (Reapproved 2021).
 - .10 SCAQMD 1168 - Adhesive and Sealant Applications; 1989 (Amended 2017).

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - .1 Physical characteristics, including movement capability, VOC content, hardness, cure time, and colour availability.
 - .2 List of backing materials approved for use with the specific product.
 - .3 Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - .4 Substrates the product should not be used on.
 - .5 Substrates for which use of primer is required.
 - .6 Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - .7 Sample product warranty.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for sealants. Indicate VOC content.
- .3 Colour Cards for Selection: Where sealant colour is not specified, submit manufacturer's colour cards showing standard colours available for selection.
- .4 Installer's Qualification Statement.

1.5 QUALITY ASSURANCE

- .1 Maintain one copy of each referenced document covering installation requirements on site.

- .2 Installer Qualifications: Company specializing in performing the work of this section and with at least five years of documented experience.
- .3 Do not begin Work until the following has been submitted and written authorization to proceed has been granted by Consultant:
 - .1 Submit the names of proposed materials.
 - .2 Submit documentation of contractor training and experience.

1.6 WARRANTY

- .1 See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- .2 Correct defective work within a five year period after Date of Substantial Performance.
- .3 Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Nonsag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - .1 Master Builders Solutions by BASF: www.master-builders-solutions.bASF.com/#sle.
 - .2 Sika Canada Inc: can.sika.com/#sle.
 - .3 Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
 - .4 Chemtron Manufacturing Ltd.
 - .5 Dow Corning Canada Inc.
 - .6 GE Silicones Limited.
 - .7 Substitutions: 01 25 00 - Substitution Procedures

2.2 JOINT SEALANT APPLICATIONS

- .1 Scope:
 - .1 Exterior Joints: Seal open joints, whether or not the joint is indicated on Drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.

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- .1 Wall expansion and control joints.
 - .2 Joints between door, window, and other frames and adjacent construction.
 - .3 Joints between different exposed materials.
 - .4 Openings below ledge angles in masonry.
 - .5 Other joints indicated below.
- .2 Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
- .1 Joints between door, window, and other frames and adjacent construction.
 - .2 In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - .1 Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
 - .2 Exception: Reveal joints indicated to be left
 - .3 Other joints indicated below.
- .3 Do not seal the following types of joints.
- .1 Intentional weepholes in masonry.
 - .2 Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - .3 Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - .4 Joints where installation of sealant is specified in another section.
 - .5 Joints between suspended panel ceilings/grid and walls.
- .2 Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.
- .1 Vertical surfaces, provide non-staining ASTM C920, Type S or M, Grade NS, Class 25, Use NT.
 - .2 Horizontal surfaces, provide ASTM C920, Type S or M, Grade P, Class 25, Use T.

- .3 Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
 - .1 Vertical and Horizontal Surfaces: ASTM C920, Type S or M, Grade NS, Class 25, Use NT.
- .4 Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".
 - .1 Conforming to ASTM C919; flame spread of 25 or less; and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Acoustical sealant have a consistency of 250 to 310 when tested in accordance with ASTM D217; remain flexible and adhesive after 500 hours of accelerated weathering as specified in ASTM C734; and be non-staining.
- .5 Floor Joints:
 - .1 ASTM C920, Type S or M, Grade P, Class 25, Use T.
 - .2 Provide location(s) of floor joint sealant as follows.
 - .1 Seats of metal thresholds exterior doors.
 - .2 Control and expansion joints in floors, slabs, ceramic tile, and walkways.

2.3 JOINT SEALANTS - GENERAL

- .1 Sealants and Primers: Unless otherwise specified, VOC content limits of sealants shall be as follows:
 - .1 Architectural Materials:
 - .1 Sealants: VOC content limit 250 g/L.
 - .2 Sealant Primers for Non-Porous Surfaces: VOC content limit 250 g/L.
 - .3 Sealant Primers for Porous Surfaces: VOC content limit 775 g/L.
 - .2 Roofing:
 - .1 Non-Membrane Related Sealants: VOC content limit 300 g/L.
 - .2 Single Ply Roofing Sealants: VOC content limit 450 g/L.
 - .3 SBS Membrane Sealant Primer: VOC content limit 500 g/L.
 - .3 All Other Applications:
 - .1 Sealants: VOC content limit 420 g/L.

.2 Sealant Primers: VOC content limit 750 g/L.

2.4 NONSAG JOINT SEALANTS (GRADE NS)

- .1 Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - .1 Movement Capability: Plus 100 percent, minus 50 percent, minimum.
 - .2 Non-Staining To Porous Stone: Non-staining to light-coloured natural stone when tested in accordance with ASTM C1248.
 - .3 Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 - .4 Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 - .5 Colour: To be selected by Architect from manufacturer's standard range.
 - .6 Cure Type: Single-component, neutral moisture curing.
 - .7 Service Temperature Range: Minus 54 to 82 degrees C.
 - .8 Manufacturers:
 - .1 Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com/#sle.
 - .2 Tremco Commercial Sealants & Waterproofing; Spectrem 2: www.tremcosealants.com/#sle.
 - .3 Tremco Commercial Sealants & Waterproofing; Spectrem 3: www.tremcosealants.com/#sle.
 - .4 Tremco Commercial Sealants & Waterproofing; Spectrem 4-TS: www.tremcosealants.com/#sle.
 - .5 Tremco Commercial Sealants & Waterproofing; Tremsil 200: www.tremcosealants.com/#sle.
 - .6 Tremco Commercial Sealants & Waterproofing; Tremsil 400: www.tremcosealants.com/#sle.
 - .2 Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - .1 Movement Capability: Plus and minus 25 percent, minimum.

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- .2 Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 - .3 Colour: To be selected by Architect from manufacturer's standard range.
 - .4 Cure Type: Single-component, neutral moisture curing
 - .5 Service Temperature Range: Minus 54 to 82 degrees C.
 - .3 Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single-component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 - .1 Colour: White.
 - .2 Acceptable materials:
 - .1 795 Silicone, Dow Corning.
 - .2 Spectrum 2 Silicone, Tremco Inc.
 - .4 Silicone Sealant for structural glazing: ASTM C920: type S; grade NS; class 25; use NT, A, G, O.
 - .1 Acceptable materials:
 - .1 995 Silicone, Dow Corning.
 - .2 Proglaze SSG, Tremco Inc.
 - .3 SSG4000, General Electric.
 - .4 Substitutions: 01 25 00 - Substitution Procedures
 - .5 (Interior and Exterior Weather Sealing Applications): Polymer Sealant: ASTM C920; single-component, cured sealant is paintable and mold/mildew resistant, low odor and VOC, and ultraviolet (UV) resistant.
 - .1 Adheres to wet surfaces.
 - .6 Hybrid Urethane Sealant: ASTM C920, Grade NS, Uses M and A; single-component; not expected to withstand continuous water immersion or traffic.
 - .1 Movement Capability: Plus and minus 35 percent, minimum.
 - .2 Hardness Range: 20 to 40, Shore A, when tested in accordance with ASTM C661.
 - .3 Service Temperature Range: Minus 40 to 82 degrees C.
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- .4 Acceptable materials:
- .1 Tremco Commercial Sealants & Waterproofing; Dymonic FC:
www.tremcosealants.com/#sle.
- .2 Substitutions: See Section 012500 - Substitutions.
- .7 Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single-component; not expected to withstand continuous water immersion or traffic.
- .1 Movement Capability: Plus and minus 12-1/2 percent, minimum
- .2 Hardness Range: 25 to 30, Shore A, when tested in accordance with ASTM C661.
- .3 Service Temperature Range: Minus 40 to 82 degrees C.
- .8 Acoustic Sealant: to ASTM E90; grade NS; uses M,G,A,O:
- .1 Acceptable materials:
- .1 Tremco, Acoustical Curtainwall Sealant; single-component, non-skimming, non-hardening synthetic rubber sealant.
- .2 Chemtron Metaseal, non-staining, one-component, non-skimming butyl sealant.
- .3 Substitutions: See Section 012500 - Substitutions
- .9 Polyurethane Sealant: ASTM C920, Grade NS, Uses NT; M, A, and O; single- or multi-component; not expected to withstand continuous water immersion or traffic.
- .1 Movement Capability: Plus and minus 25 percent, minimum.
- .2 Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
- .3 Acceptable materials:
- .1 Tremco Commercial Sealants & Waterproofing; Dymonic 100:
www.tremcosealants.com/#sle.
- .2 Tremco Commercial Sealants & Waterproofing; Dymeric 240 FC:
www.tremcosealants.com/#sle.
- .3 Tremco Commercial Sealants & Waterproofing; Vulkem 116:
www.tremcosealants.com/#sle.
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- .10 Butyl Sealant: Solvent-based; ASTM C1311; single-component, nonsag; not expected to withstand continuous water immersion or traffic.
 - .1 Hardness Range: 10 to 30, Shore A, when tested in accordance with ASTM C661.
 - .2 Service Temperature Range: Minus 25 to 82 degrees C.
 - .11 Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single-component, nonsag, non-skimming, non-hardening, non-bleeding; vapour-impermeable; intended for fully concealed applications.

2.5 SELF-LEVELLING SEALANTS (GRADE P)

- .1 Self-Levelling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
 - .1 Movement Capability: Plus and minus 25 percent, minimum.
- .2 Rigid Self-Levelling Polyurethane Joint Filler: Two-part, low viscosity, fast-setting; intended for cracks and control joints not subject to significant movement.
 - .1 Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.
- .3 Flexible Polyurethane Foam Joint filler for around windows and doors): Single-component, gun-grade, and low-expanding.
 - .1 Colour: White.
 - .2 Acceptable materials:
 - .1 Tremco Commercial Sealants & Waterproofing; ExoAir Flex Foam: www.tremcosealants.com/#sle.
- .4 Semi-Rigid Self-Levelling Epoxy Joint Filler (for slab control joints): Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
 - .1 Composition: Multi-component, 100 percent solids by weight.
 - .2 Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
 - .3 Joint Width, Minimum: 3 mm.

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- .4 Joint Depth: Provide product suitable for joints from 3 mm to 51 mm in depth including space for backer rod.
 - .5 Acceptable materials:
 - .1 .1 Loadflex, Sika..
 - .5 Semi-Rigid Self-Levelling Polyurea Joint Filler: Two-component, 100 percent solids; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
 - .1 Durometer Hardness, Type A: 75, minimum, after seven days when tested in accordance with ASTM D2240.

2.6 ACCESSORIES

- .1 Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 - .1 Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open-Cell Polyurethane.
 - .2 Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 - .3 Open-Cell: 40 to 50 percent larger in diameter than joint width.
 - .4 Closed-Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- .2 Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- .3 Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- .4 Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- .5 Primers: Type recommended by sealant manufacturer to suit application; non-staining.

2.7 COLOUR

- .1 Colour for all sealants where exposed to view to be selected by Architect from manufacturers' full standard selection of colours.

2.8 SUBSTITUTIONS

- .1 Unless specifically noted otherwise, see Section 012500 - Substitution Procedures.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that joints are ready to receive work.
- .2 Verify that backing materials are compatible with sealants.
- .3 Verify that backer rods are of the correct size.

3.2 PREPARATION

- .1 Remove loose materials and foreign matter that could impair adhesion of sealant.
- .2 Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- .3 Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- .4 Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.3 INSTALLATION

- .1 Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- .2 Perform installation in accordance with ASTM C1193.
- .3 Perform acoustical sealant application work in accordance with ASTM C919.
- .4 Install joint sealant in a neat and tidy manner, with straight lines and uniform, smooth surface. Apply masking tape to prevent sealant to spill onto adjacent finishes.
- .5 Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- .6 Install bond breaker backing tape where backer rod cannot be used.
- .7 Employ only proven installation techniques, which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.

- .8 Spillage: Do not allow sealants to overflow from confines of joints, or to spill onto adjoining work. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
- .9 Where horizontal joints are between a horizontal surface and vertical surfaces, fill joint to form a slight cove, so that joint will not trap moisture and dirt. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- .10 Recess exposed edges of gaskets and exposed joint fillers slightly behind adjoining surfaces, except as otherwise shown or specified so that compressed units will not protrude from joints.
- .11 Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- .12 Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- .13 Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.4 SITE QUALITY CONTROL

- .1 Perform site quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- .2 Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

3.5 POST-OCCUPANCY

- .1 Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION

Section 08 11 13 - Hollow Metal Doors and Frames

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Non-fire-rated hollow metal doors and frames.
- .2 Fire-rated hollow metal doors and frames.

1.2 RELATED REQUIREMENTS

- .1 Section 07 92 00 - Sealants
- .2 Section 08 71 00 - Door Hardware.
- .3 Section 09 91 23 - Interior Painting: Site painting.

1.3 ABBREVIATIONS AND ACRONYMS

- .1 CSDMA - Canadian Steel Door Manufacturers Association
- .2 NFPA - National Fire Protection Association.
- .3 ULC - Underwriters Laboratories of Canada.

1.4 REFERENCE STANDARDS

- .1 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
 - .2 ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2022.
 - .3 ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2021a.
 - .4 ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
 - .5 CAN/ULC S104 - Standard Method for Fire Tests of Door Assemblies; 2010.
 - .6 CSA/ASC B651 - Accessible Design for the Built Environment; 2023.
 - .7 CSDMA Commercial Steel Doors and Frames - Canadian Steel Door Manufacturers Association Commercial Steel Doors and Frames Recommended Specification; 2009.
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- .8 CSDMA Storage and Installation Guide - Guide Specification for Installation and Storage of Hollow Metal Doors and Frames; 2012.
- .9 ITS (DIR) - Intertek Testing Services, Directory of Listed Products; current edition.
- .10 NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- .11 ULC (DIR) - Online Certifications Directory (Canada); Current Edition.

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes, test and engineering data; and one copy of referenced standards/guidelines.
- .3 Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, fire ratings, jointing methods, mortises, reinforcements, anchors, and any indicated finish requirements.
 - .1 Reference door and frame types to Door Schedule. Indicate door numbers where applicable.
- .4 Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

1.6 QUALITY ASSURANCE

- .1 Manufacturer: Obtain hollow metal doors and frames from single source of supply and from a single manufacturer, and as follows:
 - .1 Fabricator: Member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).
- .2 Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.
- .3 Maintain at project site copies of reference standards relating to installation of products specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Delivery and Acceptance Requirements: doors and frames to project site; provide protection during transit and site storage to prevent distortion or indentation, and any additional protection required to prevent damage to finish of doors and frames and as follows:

-
- .1 Inspect doors and frames on delivery for damage, and notify shipper and supplier if damage is found.
 - .2 Remove and replace damaged items that cannot be repaired as directed by the Architect, at no additional cost to the Owner.
 - .2 Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Hollow Metal Doors and Frames:
 - .1 Access SMT.
 - .2 Substitutions: See 012500 Substitution Requirements.

2.2 DESIGN CRITERIA

- .1 Requirements for Hollow Metal Doors and Frames:
 - .1 Steel used for fabrication of doors and frames shall comply with one or more of the following requirements; Galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, Commercial Steel (CS) Type B for each.
 - .2 Accessibility: Comply with CSA/ASC B651.
 - .3 Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
 - .4 Door Edge Profile: Manufacturers standard for application indicated.
 - .5 Typical Door Face Sheets: Flush.
 - .6 Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
 - .1 Interior Doors and Frames (Normal Humidity): Electrolytic zinc coated steel sheets in accordance with ASTM A879/A879M, Commercial Steel (CS), Type B coating, ZF75; mill phosphatized; suitable for unexposed

applications; stretcher levelled standard of flatness.

- .2 Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.
- .3 Nominal Base Metal Thickness Requirements:
 - .1 Frames: refer to frame fabrication requirements specified in this section.
 - .2 Hardware Reinforcement for Doors and Frames: Carbon steel, welded in place, prime painted, to the following minimum nominal thicknesses:

Hardware Reinforcement	Door (mm)	Frame (mm)
Pivot Hinge:	4.20	4.20
Mortise Hinge:	3.51	3.51
Mortise or Bored Lock or Deadbolt	1.98	1.98
Flush or Surface Bolt Front	1.98	1.98
Surface or Concealed Closer	2.74	2.74
Strike Reinforcements:	1.98	1.98
Hold Open Arm	1.98	1.98
Electronic Hardware Reinforcements	1.98	1.98
Pull Plates and Bars	1.30	1.30
Mortar Box	0.84	
Surface Exit Devices	1.98	1.98
Door Surface Hardware Reinforcements	1.30	1.30
Frame Surface Hardware Reinforcements	2.74	2.74

- .4 Door Core Materials:
 - .1 Honeycomb (interior doors): Structural small cell 25 mm maximum. kraft paper honeycomb:
 - .1 Weight: 36.3 kg/ream minimum.
 - .2 Density: 16.5 kg/m³ minimum.
 - .3 Sanded to required thickness.

2.3 FABRICATION GENERAL

- .1 Welded construction: assemble units by welding in accordance with CSA W59 to produce a finished unit square, true and free of distortion. Welding shall be continuous unless specified otherwise. Welding shall be undertaken only by a fabricator fully

approved by the Canadian Welding Bureau to the requirements of CSA W47.1.

- .2 Make provisions in doors and frames to suit requirements of trade or section providing electrically operated hardware or security devices. Provide removable plates or knock outs for electrical contacts. Provide junction boxes on security door frames as required for door strikes, mag locks and door contacts. Ensure frames arrive on site prepared for wiring.
- .3 Fabricate galvanized steel channels to reinforce frames and screens as required for size, and for fire protection rating requirements. Extend reinforcements from floor to structure above. Design top connection to accommodate structural deflection. Conceal reinforcements in frames and screens.
- .4 Exterior and interior doors shall have flush faced construction.

2.4 HOLLOW METAL DOORS

- .1 Door Finish: Factory primed and site finished.
- .2 Fabricate steel doors rigid, neat in appearance, and free from defects including warp and buckle; 45 mm thickness of types and sizes indicated in Door, and Frame Schedule on Drawings, and as follows:
 - .1 Fabricate door faces of all steel doors without visible seams, free of scale, pitting, coil brakes, buckles and waves.
 - .2 Form edges true and straight with minimum radius suitable for thickness of steel used.
 - .3 Bevel lock and hinge edges 3 mm in 50 mm; confirm requirement with builder's hardware or door swing that could dictate a different bevel.
 - .4 Provide top and bottom of doors with inverted, recessed, nominal 1.60 mm steel end channels; nominal 2.74 mm steel end channels for acoustic doors, welded to each face sheet at 150 mm on center.
 - .5 Provide flush top and bottom steel edge on exterior doors and doors to stair shafts.
 - .6 Fabricate interior doors with longitudinal edges locked seam and spot welded. Seams: visible.
 - .7 Fabricate exterior doors with fully welded seams. Grind welding smooth. Bevel both stiles of single doors 1 in 16.
 - .8 Provide fixed transoms, side panels and base panels where indicated or scheduled, of same materials, gauge, thickness, construction and finish as door.

Reinforce transoms and panels to prevent oil canning. Install transoms and panels with concealed fastenings, and reinforce to accommodate hardware as required. Seal joint between transom or panel airtight. Provide accurately formed ship lap joint between door and transom panel where no transom rail occurs.

- .9 Mortise, reinforce, drill and tap doors to receive templated hardware, security and electrical devices.
 - .10 Reinforce doors where required, for surface mounted hardware. Provide flush metal top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
 - .11 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
 - .12 Cutouts: Where openings are required, provide integrally formed cut outs with steel framing, and closely fitted steel glass and grille stops, as required. Mitre corners of stops. Drill and countersink fasteners symmetrically at 150 mm o.c. Supply and install coated steel stops, with same coating type and thickness as doors. Screw stops in place.
 - .13 Supply and install steel vent grilles in doors where indicated.
 - .14 Fabricate doors with a clearance of 3 mm to the frame and 6 mm to completed floor finish or threshold, except at openings in non-fire rated separations where undercuts are indicated.
 - .15 Provide touch-up primer at areas where zinc coating has been removed or damaged during fabrication.
 - .16 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN/ULC S104 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.
 - .17 Manufacturer's nameplates on doors are not permitted.
- .3 Interior Doors, Non-Fire Rated:
- .1 Flush, lock seam construction, hollow steel doors fabricated in accordance with CSDMA Commercial Steel Doors and Frames Manufacturing Specifications for Doors and Frames, and as follows:
 - .1 Face sheets: Minimum 1.30 mm base steel sheet thickness.

- .2 Stiffened and sound deadened with honeycomb core laminated under pressure to each face sheet.
- .3 Longitudinal Edges: Mechanically interlocked, edge seams spot welded, filled with automotive body filler and sanded flush.
- .4 Fill voids in stile and rail type doors, including stiles, transom head and rails in glazed doors, with core material.
- .2 Door Thickness: 44.5 mm, nominal.
- .3 Door Face Sheets: Flush.
- .4 Door Finish: Factory primed and site finished.
- .4 Fire-Rated Doors: Flush, lock seam construction, hollow steel doors fabricated in compliance with CAN/ULC S104 and NFPA 80, and as follows:
 - .1 Face sheets: Minimum nominal 1.60 mm base steel sheet thickness.
 - .2 Stiffened and sound deadened with honeycomb core laminated under pressure to each face sheet.
 - .3 Longitudinal Edges: Mechanically interlocked, edge seams spot welded, filled with automotive body filler and sanded flush.
 - .4 Equip pairs of fire labelled doors with minimum 2.74 mm steel surface mounted flat bar astragal, welded to door face; plug welded on face and stitch welded to butt edge of door.
 - .5 Fire Rating: As indicated on Door Schedule, tested in accordance with CAN/ULC S104.
 - .6 Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction.
 - .7 Provide units listed and labeled by ULC (DIR) or ITS (DIR).
 - .1 Attach fire rating label to each fire rated unit.
 - .8 Door Thickness: 44.5 mm, nominal.
 - .9 Door Face Sheets: Flush.
 - .10 Door Finish: Factory primed and site finished.

2.5 HOLLOW METAL FRAMES

- .1 General Requirements:
 - .1 Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements. Fabricate frames in accordance with CSDMA specifications.
 - .2 Accurately form frames to profiles indicated. Construct frames straight and free from twist or warp.
 - .3 Blank, drill, reinforce and tap frames to receive mortised, templated hardware, security and electrical devices, using templates provided by finish hardware supplier. Reinforce frames for installation of closers. Install stiffener plates or two angle spreaders where required to prevent bending of frame and to maintain alignment when setting. Weld reinforcement in place.
 - .4 Provide removable portion of stop and frame where required for overhead concealed door closers, properly connected to frame, and prepare for attachment of closer prior to shipment.
 - .5 Frame profile: 50mm face standard, throat and frame width to suit wall construction.
 - .6 Conceal fastenings except where exposed fastenings are indicated.
 - .7 Floor anchors: securely attached to inside of each jamb.
 - .8 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
 - .9 Manufacturer's nameplates on frames and screens are not permitted.
 - .10 Frame Finish: Factory primed and site finished.
- .2 Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
 - .1 Frame Metal Thickness: 1.6 mm (16 ga.) minimum for single doors; 1.98 mm for frames with opening width in excess of 1220 mm,.
 - .2 Frame Finish: Factory primed and site finished.
- .3 Door Frames, Fire-Rated: Full profile/continuously welded type.
 - .1 Fire Rating: Same as door, labeled.
- .4 Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

- .5 Provide mortar guard boxes for hardware cut-outs in frames.
- .6 Door Silencers: Provide three resilient bumpers per single door at the strike jamb. Provide two resilient bumpers per door leaf at the head of double doors.

2.6 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Where frames terminate at finished floor, supply floor plates for anchorage to slab. Check depth of extension of finished floor to structural slab and provide jamb extension anchorage as required. Provide 50 mm minimum adjustment
- .3 Locate wall anchors immediately above or below each hinge reinforcement on the hinge jamb, and directly opposite on the strike jamb. Provide three anchors per jamb for frames up to 2300 mm. Add one anchor per jamb for each additional 760 mm or fraction thereof in frame height.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.7 FRAMES - WELDED CONSTRUCTION

- .1 Welding in accordance with CSA W59.
- .2 Cut frame mitres accurately and weld on inside of frame profile. Fill frame corners, exposed surface depressions and butted joints with air drying paste filler. Sand to a smooth uniform finish. Touch up damaged galvanized finish with zinc rich primer.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.8 ADHESIVES

- .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
 - .2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.
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- .3 Interlocking Edge Seam Adhesive: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.9 FINISHES

- .1 Remove weld slag and splatter from exposed surfaces.
- .2 Fill and sand smooth tool marks, abrasions, and surface blemishes to present smooth uniform surfaces.
- .3 Primer: Shop apply zinc rich primer to repair damaged zinc coatings arising from fabrication; cure primer fully before shipping to site; include compatible primer for site finishing and correction of surface abrasions to zinc coatings and factory applied primer.
- .4 ULC labels shall not be painted over.

2.10 ACCESSORIES

- .1 Floor anchors: 3.5 mm minimum adjustable floor clip angles with 2 holes for anchorage to floor.
- .2 Silencers: Resilient Black neoprene, to BHMA A156.16 Type 6-180, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- .3 Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.
- .4 Metallic paste filler: to manufacturer's standard.
- .5 Fasteners: tamperproof type 304 stainless steel screws with countersunk flat head.
- .6 Touch-up primer: to ASTM A780/A780M and SSPC PS 12.01.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify that opening sizes and tolerances are acceptable.
- .3 Verify that finished walls are in plane to ensure proper door alignment.

3.2 PREPARATION

- .1 Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
-

- .2 Prepare doors and frames to receive hardware specified and supplied in Section 08 71 00.

3.3 INSTALLATION

- .1 Install doors and frames in accordance with reviewed Shop Drawings, CSDMA Storage and Installation Guide, manufacturer's instructions, related requirements of specified door and frame standards, and custom guidelines indicated.
- .2 Set frames plumb, square, level and at correct elevation.
- .3 Install fire rated units in accordance with NFPA 80.
- .4 Coordinate frame anchor placement with wall construction.
- .5 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- .6 Secure anchorages and connections to adjacent construction.
- .7 Install door hardware as specified in Section 08 71 00.
- .8 Coordinate installation of electrical connections to electrical hardware items.
- .9 Touch up damaged factory finishes.

3.4 TOLERANCES

- .1 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .2 Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with CSDMA Storage and Installation Guide.
- .3 Maximum Diagonal Distortion: 1.6 mm measured with straight edge, corner to corner.

3.5 ADJUSTING

- .1 Adjust for smooth and balanced door movement.

3.6 SCHEDULE

- .1 Refer to Door and Frame Schedule on Drawings.

END OF SECTION

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Section 08 71 00 - Door Hardware

PART 1 – GENERAL

1.1 WORK INCLUDED

- .1 Furnish, deliver and install finish hardware.
 - .1 It is intended that the following list of hardware will cover finish hardware to complete the project. Bring to the Consultants attention any omissions, discrepancies that will affect work in this section during the bidding period.

1.2 RELATED SECTIONS

- .1 General Requirements Division 1
- .2 08 11 13 00 Hollow Metal Doors and Frames
- .3 Division 26 Electrical
- .4 Division 28 Electronic Safety and Security

1.3 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION

- .1 Power supplies, compressor/control boxes, junction boxes installed by Division 26.

1.4 REFERENCES

- .1 Door and Hardware Institute - Recommended locations for Architectural Hardware for Standard Steel Doors and Frames
- .2 Door and Hardware Institute - Recommended locations for Architectural Hardware for Flush Wood Doors
- .3 CSDMA-Recommended Dimension Standards for Commercial Steel Doors and Frames (Hardware Locations)
- .4 NFPA 80-Standard for Fire Doors and Windows, 1999 Edition
- .5 Door and Hardware Institute - Sequence Format for Hardware Schedule
- .6 Door and Hardware Institute - Key Systems and Nomenclature
- .7 Door and Hardware Institute - Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications
- .8 Door and Hardware Institute – Installation Guide for Doors and Hardware
- .9 BC Building Code, current edition

1.5 SUBMITTALS

- .1 Updated Finish Hardware Schedule:
 - .1 Submit submittals in accordance with Section 01 30 00 Submittal Procedures. Prepare detailed hardware schedules in Door and Hardware (DHI) vertical format as detailed in Reference 1.4.4.
- .2 Product Data:
 - .1 Submit in a three-ring binder two (2) copies of product data sheets with the finish hardware schedule showing items of hardware to be used on the project.
- .3 Samples:
 - .1 When requested in writing, provide (to the Consultants Site Office) one sample of each hardware item complete with fasteners, within thirty (30) calendar days of award of a purchase order. Samples to be clearly labeled with their hardware schedule designation and manufacturers' name and model number. Samples will be incorporated into the work.
- .4 Templates:
 - .1 Submit templates within to related trades when requested.
- .5 Keying Schedule:
 - .1 After a keying meeting between representatives of the Owner, furnish a keying schedule listing the levels of keying as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. Utilize "Door and Hardware Institute - Key Systems and Nomenclature" as a guideline for nomenclature, definitions, and approach for selecting the optimal keying system. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
- .6 Wiring Diagrams

- .1 Co-ordinate with related trades, meet with the owner and security provider and submit a written description of the functional use (mode of operation) of electrical hardware products specified. Include operation for ingress, egress, fire alarm, and after hours use where applicable. Include door and frame elevations showing the location of each item of electrical hardware to be installed, mode of operation including a diagram showing number and size of conductors. Indicate on elevation drawing items provided by related trades, include for back boxes, and 120V power sources. Provide point to point drawings showing terminal connections necessary for a complete installation.

.7 Operations and Maintenance Data

- .1 Prior to Substantial Completion, furnish to the owner, two (2) copies of an owner's operation and maintenance manuals in a three-ring binder with the following information:
 - .1 Name of hardware distributor, address and contact name
 - .2 Copy of final "as-built" finish hardware schedule
 - .3 As installed "wiring diagrams, elevations, risers, point to point"
 - .4 Copy of final keying schedule
 - .1 Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
 - .5 Catalogue cut sheets and product specifications for each product
 - .6 Parts list for each product
 - .7 Installation instructions and templates for each product

1.6 QUALITY ASSURANCE

- .1 Review installation procedures with the Contractor's Designated Installers. Hold instruction meetings with installers prior to installation and subsequent review meetings during the installation period. Submit minutes of meetings to the Consultant.
- .2 Substitutions
 - .1 Only approved products specified are accepted. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the project.

.3 Supplier Qualifications

- .1 Successful hardware distributor to have a minimum of five (5) years' experience in the door and hardware industry. Distributor will be responsible for scheduling, detailing, (see Reference 1.5.4) ordering and co-ordination of the finishing hardware for this project. If requested by the Consultant and or installer, the distributor will be required to visit the jobsite for any installation problems that may occur.

.4 Designated Installers

- .1 Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. Installers to attend review meetings with the Hardware Distributor.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Marking and Packaging

- .1 Mark cartons with heading number, door number, and key-set symbol where applicable in original packaging provided by the manufacturer. Pack packaged hardware in suitable wrappings and containers to protect it from damage during shipping and storage.
- .2 Enclose accessories, fastening devices and other loose items with each applicable item of hardware.

.2 Delivery

- .1 Deliver hardware to related trades.

.3 Storage

- .1 Store in a clean, dry room with lockable man door and adequate shelving to permit organization so item numbers are readily visible.

1.8 WARRANTY

.1 Furnish warranties by the accepted manufacturers:

Hardware Item	Length of Warranty
Mortise Hinges	1 year
Continuous Hinges	Lifetime
Locks (ND Series)	10 years
Exit Devices	3 years

Door Closers - Mechanical	30 years
Door Operators - Electro Mechanical	2 years
Overhead Stops/Holders	1 year
Floor/Wall stops	1 year

1.9 MAINTENANCE

.1 Maintenance Service

- .1 After the building is occupied arrange an appointment with the maintenance staff from the City for instruction of proper use, servicing, adjusting and lubrication of hardware furnished. Submit to the consultant a list of attendees and meeting date.

.2 Extra Materials

- .1 Furnish the following items in proper manufacturer's cartons once the job has been completed:

- .1 1 of each installation tool used for locks/passage/privacy, type of door closers, and exit devices.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- .1 Products listed in the hardware groups are from the manufacturers listed below:

ITEM	MANUFACTURER NAME
Full Mortise Hinges	Ives
Continuous Hinges	Ives
Locksets, Latchsets/Deadbolts	Schlage
Cylinders	Schlage
Exit Devices	Von Duprin
Surface/Flush Bolts	Ives
Door Closers	LCN
Overhead Door Holders/Stops	Glynn Johnson
Door Pulls/Flatware	Ives, Gallery Specialty Hardware
Wall/Floor Stops	Ives
Weather/Smoke/Sound Seals	Zero
Door Sweeps/Thresholds	Zero
Automatic Door Operators/Actuators	LCN
Power Supplies	Schlage Electronics, Von Duprin

2.2 MATERIALS

.1 Screws and Fasteners:

- .1 Screws and fasteners to be matching finish to their product and to be manufacturer's standard. Door closers, door holders and exit devices installed on fire rated wood doors and hollow metal doors to be attached with fasteners to meet NFPA 80 requirements.

2.3 MATERIALS - ACCEPTABLE MANUFACTURERS (NOTE: SUPPLY PRODUCTS IN A GIVEN CATEGORY FROM THE SAME MANUFACTURER):

.1 Mortise Hinges

- .1 Provide five knuckle bearing hinges with NRP option on reverse bevel doors with locking hardware. Hinge width to accommodate door closer projection, door trim and allow for 180-degree swing. Doors up to 2286mm (90") in height, supply 3 hinges, doors greater than 2286mm in height add one hinge for every additional 760mm of door height. Doors 915mm (36") wide and less furnish 114mm (4-1/2") high hinges, doors greater than 915mm (36") wide furnish 127mm (5") high hinges, heavy weight or standard weight as specified. Supply ferrous (steel), stainless steel material for all interior and/or fire-rated doors and stainless steel for exterior doors.

- .2 As Specified: Ives Hinges, 5BB1

.2 Locksets/Deadlocks/Privacy Sets:

- .1 Cylindrical:

- .1 Extra heavy duty residential, commercial, institutional and industrial applications. Latch bolts to be steel with minimum 13mm (1/2") throw deadlocking on keyed functions. 19mm (3/4") throw anti-friction latchbolt on pairs of fire doors. Provide manufacturer's standard wrought box strike for each latch or lock, with curved lip extended to protect frame. Locks and latchsets tested to exceed 8,000,000 cycles. Provide molex connections for electrified functions as a standard. Lock case to be steel, incorporate one-piece spring cage and spindle. Precision solid brass 6-pin cylinder with nickel silver keys available in Schlage keyways. Levers to be solid with no plastic inserts.

- .2 Supply as Specified: Schlage "ND" series

.3 Overhead Door Stops/Holders:

- .1 Heavy Duty Concealed Mounting:

-
- .1 Concealed overhead stops/holders to be stainless steel base, non-handed for single or double-acting doors with a low-profile channel, mortised in the door and jamb bracket is mortised in the doorframe. Unit to be fully concealed when door is in the closed position. Units to be field adjustable for function changes if required.
 - .2 Supply as Specified: Glynn-Johnson 100 series

.4 **Floor/Wall Stops:**

.1 **Wall Stops (No Button on Locking Hardware):**

- .1 Wall stops to be constructed of stainless-steel base with special retainer cup that makes the rubber stop tamper resistant. Convex design of rubber bumper.
- .2 Supply as Specified: Ives WS406/407CVX

.3 **Wall Stops (Projecting Button on Locking Hardware):**

- .1 Wall stops to be constructed of stainless-steel base with special retainer cup that makes the rubber stop tamper resistant. Concave rubber bumper to avoid damage to locks with projecting buttons.
- .2 Supply as Specified: Ives WS406/407CCV

.5 **Sound Seals:**

- .1 Supply as Specified: Zero 870AA

.6 **Thresholds/Weatherstrip/Door Sweeps:**

- .1 Zero 626A-223(Threshold)

2.4 FINISHES

- .1 Unless otherwise specified, finishes to be brushed chrome (BHMA 626/652).
- .2 Finishes are specified as follows:

ITEM	BHMA#	DESCRIPTION	BASE MATERIAL
Hinges	652	satin chrome plated	steel
Continuous Hinges	628	anodized aluminum	aluminum
Pivots	689	powder coat aluminum	steel
Lock Trim	626	satin chrome plated	brass/bronze
Door Closer	689	powder coat	steel

		aluminum	
Door Pulls	630	satin stainless steel	stainless steel
Protective Plate	630	satin stainless steel	stainless steel
Door Stops			
Overhead	630	satin stainless steel	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze
Thresholds	628	anodized aluminum	aluminum
Miscellaneous			
Electric Strikes	630	satin stainless steel	stainless steel

2.5 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

- .1 Meet with the Owner to finalize keying requirements and obtain keying instructions in writing as outlined in Division 1.
- .2 Provide temporary construction keying system during construction period. Permanent keys will be furnished to the Owner's Representative prior to occupancy. The Owner or Owner's Security Agent will void the operation of the construction keys.
- .3 Permanent cylinders to be keyed by factory, combined in sets or subsets, master keyed or great grand master keyed, as directed by Owner. Permanent keys, keyblanks and cylinders are to be stamped with the keyset symbol for identification. Stamp cylinders with concealed visual keying for added security. These visual key control marks or codes will not include the actual key cuts.
- .4 Deliver permanent key blanks and High Security cylinders and other security keys direct to Owner's representative from factory by secure courier, return receipt requested. Failure to properly comply with these requirements may be cause to require replacement of cylinders and keys involved as deemed necessary at no additional cost to the Owner.
- .5 Provide complete cross-index system, place keys on markers and hooks in the cabinet as determined by the final key schedule. Provide one each key cabinet, hinged panel type cabinet for wall mounting. See hardware groups for model number.
- .6 Keying requirements to be confirmed by Owner.

PART 3 – EXECUTION

3.1 EXAMINATION

- .1 Ensure that doors and frames are prepared and reinforced to receive finish hardware prior to installation.

- .2 Ensure that door frames and finished floor are plumb and level to permit proper engagement and operation of hardware.
- .3 Verify power is run to door opening requiring electrified hardware.
- .4 Submit in writing a list of deficiencies determined as part of inspection required in 3.1.1 and 3.1.2 to supervising consultant prior to installation of finished hardware. Correct door frame installation before proceeding with finish hardware installation.

3.2 INSTALLATION

- .1 Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. Installers to attend review meetings conducted by the hardware distributor.
- .2 Install hardware at mounting heights as specified in the manufacturer's templates or specific references in approved hardware schedule or approved elevation drawings.
- .3 Where mounting height is not otherwise specified, install hardware at mounting heights as indicated in 1.4.1, 1.4.2.
- .4 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.
- .5 Ensure locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. Handing is part of installation procedure.
- .6 Ensure that exit devices are of the correct hand and adjust device cam/drive screw for proper outside trim function prior to installation. Handing is part of installation procedure.
- .7 Follow manufactures installation instructions. Adjustment of door closers is inclusive of spring power, closing speed, latching speed and back-check, valve screws to achieve backcheck (4040, 4040XP series) at the time of installation.
- .8 Adjust delayed action door closers to forty (40) second delay for barrier free accessibility and movement of materials. Time period to be approved by Owner.
- .9 Install head seal weatherstrip prior to installation of soffit mounted hardware. Trim cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.
- .10 Counter sink through bolt of door pull under push plate during installation.

- .11 Install blocking material in cavities of metal and wood stud walls and partitions. Located concave and convex type door bumpers at the appropriate height to properly contact protruding door trim.
- .12 Outlet back boxes, provisions for power, conduit complete with pull strings for security systems power and control boxes for integrating of security system with fire alarm system and coordination of complete system to be furnished under the Electrical Division for the project.
- .13 The Contract Hardware Distributor shall install hardware using Factory Trained / Approved Installers. At project completion, prior to turn over, the Contract Hardware Distributor and Security Integrator will jointly inspect each opening, make final adjustments to insure a complete functional installation and turn over to Owner.
- .14 The authorized system Integrator shall be responsible for mounting card readers, controllers, master controllers, input panels and interface with EAC hardware and power supplies. They are also responsible for low voltage wiring, wire terminations, final hookup, testing, system setup, warranty and owner turnover with training.

3.3 FIELD QUALITY CONTROL

- .1 Verify each door leaf opens closes and latches. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation with owner to sign off on verification of operation. Verify electric door release hardware operates to close the door upon activation of the fire alarm system.
- .2 Perform bi-weekly on-site inspections during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.
- .3 Before completion of the work but after the hardware has been installed, submit a certificate to the Consultant stating that final inspection has been made and that hardware has been checked for installation and operation.

3.4 ADJUSTING AND CLEANING

- .1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.
 - .1 Adjust doors with self-closing devices or automatic closing devices for operation after the HVAC system is balanced and adjusted. Adjust spring power of non sized door closers to close and latch the door.
- .2 Hardware to be left clean and free of disfigurements.

- .3 Instruct owner personnel in the operation, adjustment and maintenance of hardware.
- .4 Check locked doors against approved keying schedule.

3.5 PROTECTION

- .1 Protect hardware from damage during construction. Wrap locks, panic hardware, and fire exit hardware, door pull trim with kraft paper or plastic bubble materials to protect finish from damage until date of substantial completion. Remove and reinstall or where necessary, use temporary hardware to maintain finish in new condition and maintain manufacturer's warranty.

3.6 DOOR INDEX

- .1 Appended to this section.

3.7 HARDWARE GROUPS

- .1 Appended to this section.

END OF SECTION

HARDWARE SCHEDULE

ITEM 1

- 319.1 CORRIDOR 319 FROM DORM ROOM 319.1
- 319.2 CORRIDOR 319 FROM DORM ROOM 319.2
- 319.3 CORRIDOR 319 FROM DORM ROOM 319.3
- 319.4 CORRIDOR 319 FROM DORM ROOM 319.4
- 319.5 CORRIDOR 319 FROM DORM ROOM 319.5
- 319.6 CORRIDOR 319 FROM DORM ROOM 319.6
- 319.7 CORRIDOR 319 FROM DORM ROOM 319.7
- 319.8 CORRIDOR 319 FROM DORM ROOM 319.8
- 319.9 CORRIDOR 319 FROM DORM ROOM 319.9
- 319.10 CORRIDOR 319 FROM DORM ROOM 319.10
- 319.11 CORRIDOR 319 FROM DORM ROOM 319.11
- 319.12 CORRIDOR 319 FROM DORM ROOM 319.12

813 x 2135 x 45 MH1-S x PSF

To each door:

- 3 BUTTS
- 1 PASSAGE SET
- 1 WALL STOP

ITEM 2

- 319A CORRIDOR 312 FROM CORRIDOR 319
- 319B ACTIVITY ROOM 320.1 FROM CORRIDOR 319

915 x 2135 x 45 MH1-S (45 MIN. RATED) x PSF

To each door:

- 3 BUTTS
- 1 PASSAGE SET
- 1 CLOSER
- 1 KICKPLATE
- 1 WALL STOP
- 1 MAGNETIC HOLD OPEN DEVICE
- 1 SET OF SMOKE SEALS
- 1 MAGNETIC HOLD OPEN DEVICE (to door 319A only) – SEE ELECTRICAL SPECIFICATIONS.

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Section 09 05 61 - Common Work Results for Flooring Preparation

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
 - .1 Resilient tile and sheet.
 - .2 Thin-set ceramic tile and stone tile.
- .2 Removal of existing floor coverings.
- .3 Preparation of new and existing concrete floor slabs for installation of floor coverings.
- .4 Testing of concrete floor slabs for moisture and alkalinity (pH).
- .5 Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
 - .1 Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.
- .6 Patching compound.
- .7 Remedial floor coatings.
- .8 Remedial floor sheet membrane.
- .9 Preparation of new and existing wood-based floors and subfloors for installation of new floor coverings.

1.2 RELATED REQUIREMENTS

- .1 Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.
- .2 Section 06100 - Rough Carpentry.

1.3 REFERENCE STANDARDS

- .1 ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2021.
-

- .2 ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.
- .3 ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2021.
- .4 ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2022.
- .5 ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
- .6 NFCA (FCRM) - National Floor Covering Association, Floor Covering Reference Manual; Current Edition.
- .7 NFCA (TQ) - National Floor Covering Association, Trade Qualifications; Current Edition.
- .8 RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.5 SUBMITTALS

- .1 Visual Observation Report: For existing floor coverings to be removed.
- .2 Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
 - .1 Moisture and alkalinity (pH) limits and test methods.
 - .2 Manufacturer's required bond/compatibility test procedure.
- .3 Testing Agency's Report:
 - .1 Description of areas tested; include floor plans and photographs if helpful.
 - .2 Summary of conditions encountered.
 - .3 Moisture and alkalinity (pH) test reports.
 - .4 Copies of specified test methods.

- .5 Recommendations for remediation of unsatisfactory surfaces.
- .6 Product data for recommended remedial coating.
- .7 Submit report to Architect.
- .8 Submit report not more than two business days after conclusion of testing.
- .4 Adhesive Bond and Compatibility Test Report.
- .5 Copy of RFCI (RWP).
- .6 Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.

1.6 QUALITY ASSURANCE

- .1 Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by the Contractor.
- .2 Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
 - .1 Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
- .3 Contractor's Responsibility Relating to Independent Agency Testing:
 - .1 Provide access for and cooperate with testing agency.
 - .2 Confirm date of start of testing at least 10 days prior to actual start.
 - .3 Allow at least 4 business days on site for testing agency activities.
 - .4 Achieve and maintain specified ambient conditions.
 - .5 Notify Architect when specified ambient conditions have been achieved and when testing will start.
- .4 Installation Requirements: Install floor preparation materials and flooring products in accordance with NFCA (FCRM) and manufacturer's written instructions.
- .5 Installer Qualifications: Install using personnel that have completed a registered floorcovering installer apprentice program or meet requirements of NFCA (TQ), and who are experienced with installation of flooring preparation Products required for the project.

- .6 Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
- .2 Deliver materials in manufacturer's packaging; include installation instructions.
- .3 Keep materials from freezing.

1.8 SITE CONDITIONS

- .1 Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 18 degrees C or more than 30 degrees C.
- .2 Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
 - .1 Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
 - .2 Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
- .2 Alternative Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

- .3 Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapour transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
 - .1 Thickness: As required for application and in accordance with manufacturer's installation instructions.
 - .2 Use product recommended by testing agency.
- .4 Remedial Floor Sheet Membrane: Pre-formed multi-ply sheet membrane installed over concrete subfloor and intended by its manufacturer to resist water vapour transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
 - .1 Thickness: 0.711 mm.
 - .2 Tape: Types recommended by underlayment manufacturer to install membrane and cover seams.

PART 3 EXECUTION

3.1 CONCRETE SLAB PREPARATION

- .1 Follow recommendations of testing agency.
- .2 Perform following operations in the order indicated:
 - .1 Existing concrete slabs (on-grade and elevated) with existing floor coverings:
 - .1 Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
 - .2 Removal of existing floor covering.
 - .2 Preliminary cleaning.
 - .3 Moisture vapour emission tests; 3 tests in the first 100 square metres and one test in each additional 100 square metres, unless otherwise indicated or required by flooring manufacturer.
 - .4 Internal relative humidity tests; in same locations as moisture vapour emission tests, unless otherwise indicated.
 - .5 Alkalinity (pH) tests; in same locations as moisture vapour emission tests, unless otherwise indicated.

- .6 Specified remediation, if required.
 - .7 Patching, smoothing, and leveling, as required.
 - .8 Other preparation specified.
 - .9 Adhesive bond and compatibility test.
 - .10 Protection.
- .3 Remediations:
- .1 Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
 - .2 Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
 - .3 Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.2 REMOVAL OF EXISTING FLOOR COVERINGS

- .1 Comply with local, provincial, and federal regulations and recommendations of RFCI (RWP) for Removal of Resilient Floor Coverings, as applicable to floor covering being removed.
- .2 Dispose of removed materials in accordance with local, provincial, and federal regulations and as specified.

3.3 PRELIMINARY CLEANING

- .1 Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mould, mildew, and other materials that might prevent adhesive bond.
 - .2 Do not use solvents or other chemicals for cleaning.
-

3.4 MOISTURE VAPOUR EMISSION TESTING

- .1 Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- .2 Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- .3 Test in accordance with ASTM F1869 and as follows.
- .4 Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
- .5 In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 1.4 kg per 93 square metres per 24 hours.
- .6 Report: Report the information required by the test method.

3.5 INTERNAL RELATIVE HUMIDITY TESTING

- .1 Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- .2 Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- .3 Test in accordance with ASTM F2170 Procedure A and as follows.
- .4 Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
- .5 In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
- .6 Report: Report the information required by the test method.

3.6 ALKALINITY TESTING

- .1 Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

- .2 The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
- .3 Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
- .4 Place several drops of water on a clean surface of concrete, forming a puddle approximately 25 mm in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
- .5 In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.7 PREPARATION

- .1 See individual floor covering section(s) for additional requirements.
- .2 Comply with recommendations of testing agency.
- .3 Comply with requirements and recommendations of floor covering manufacturer.
- .4 Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- .5 Do not fill expansion joints, isolation joints, or other moving joints.

3.8 ADHESIVE BOND AND COMPATIBILITY TESTING

- .1 Comply with requirements and recommendations of floor covering manufacturer.

3.9 APPLICATION OF REMEDIAL FLOOR COATING

- .1 Comply with requirements and recommendations of coating manufacturer.

3.10 INSTALLATION OF REMEDIAL FLOOR SHEET MEMBRANE

- .1 Install in accordance with sheet membrane manufacturer's instructions.

3.11 PROTECTION

- .1 Cover prepared floors with building paper or other durable covering.

END OF SECTION

Section 09 21 16 - Gypsum Board Assemblies

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Performance criteria for gypsum board assemblies.
- .2 Metal stud wall framing.
- .3 Acoustic insulation.
- .4 Gypsum board.
- .5 Joint treatment and accessories.
- .6 Engineering by Sub-Contractor.

1.2 RELATED REQUIREMENTS

- .1 Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- .2 Section 07 84 00 - Firestopping: Top-of-wall assemblies at fire rated walls.
- .3 Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- .4 Section 09 22 16 - Non-Structural Metal Framing.
- .5 Section 099100 - Painting

1.3 REFERENCE STANDARDS

- .1 ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
 - .2 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
 - .3 ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
 - .4 ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).
 - .5 ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
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- .6 ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
 - .7 ASTM C834 - Standard Specification for Latex Sealants; 2017.
 - .8 ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2020.
 - .9 ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.
 - .10 ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
 - .11 ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
 - .12 ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.
 - .13 ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel; 2017.
 - .14 ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022.
 - .15 ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
 - .16 ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2019, with Editorial Revision (2020).
 - .17 ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
 - .18 ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).
 - .19 ASTM E413 - Classification for Rating Sound Insulation; 2022.
 - .20 ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
 - .21 CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.
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- .22 CAN/ULC S114 - Test for Determination of Non Combustibility in Building Materials; 2018.
- .23 CAN/ULC S702.1 - Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification; 2021.
- .24 CSSBI 57-02 - Lightweight Steel Framing Architectural Design Guide; 2002.
- .25 GA-216 - Application and Finishing of Gypsum Panel Products; 2016.
- .26 ULC (FRD) - Fire Resistance Directory; Current Edition.

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
 - .1 Submit engineered signed and sealed Shop Drawings by a structural engineer registered in British Columbia indicating interior wall and ceiling framing conforms to British Columbia Building Code requirements for seismic and imposed loading.
- .3 Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- .4 Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
- .5 Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.5 QUALITY ASSURANCE

- .1 Perform Work to ASTM C754 and AWCC/WCI Specifications Standards Manual, latest edition.
- .2 Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum five years of experience.
- .3 Engineering by Sub-Contractor: as required by British Columbia Building Code

1.6 DELIVERY STORAGE AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 – Common Product Requirements

- .2 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
- .3 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.
- .4 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.7 SITE ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- .1 Manufacturers:
 - .1 CertainTeed Gypsum Canada.
 - .2 CGC Inc.
 - .3 Georgia Pacific Canada.
- .4 Substitutions: 01 25 00 - Substitution Procedures
- .2 Provide completed assemblies complying with ASTM C840 and GA-216.
 - .1 See PART 3 for finishing requirements.
- .3 Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
 - .1 Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- .4 Performance/Design Criteria for Suspended Gypsum Board Ceilings:
 - .1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.

- .2 Seismic Response Characteristics: based on a full uniform ceiling load acceleration in accordance with ASTM E580/E580M; ceilings areas less than 13m² and surrounded by walls connected to structure above do not require seismic restraints
- .5 Fire Rated Assemblies: Provide completed assemblies, and as shown on drawings.

2.2 METAL FRAMING MATERIALS

- .1 Manufacturers - Metal Framing, Connectors, and Accessories:
 - .1 Bailey Metal Products: www.bmp-group.com/#sle.
 - .2 Substitutions: See 012500 - Substitution Procedures.
- .2 Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 240 Pa. Stud sizes as indicated on Drawings, roll formed from hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres
- .3 Stud Gauges: as engineered by Sub-Contractor's engineer, **and** to meet acoustic and fire ratings as scheduled on drawings. Steel Stud engineer to coordinate with acoustic requirements for acceptable solutions.
 - .1 Studs: "C" shaped with flat or formed webs.
 - .2 Runners: U shaped, sized to match studs and as follows:
 - .1 Double Runner Deflection Track: Outside runner using 50 mm flanges; inner runner 33 mm; maintaining 25 mm minimum deflection space.
 - .2 Slotted Deflection Track for Fire Separations: Premanufactured slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm O/C along length of runner; tested and certified for use in fire rated wall construction:
 - .3 Acceptable materials:
 - .1 Brady Construction Innovations, Sliptrack Systems
 - .2 Dietrich Metal Framing, SLP-TRK
 - .3 Substitutions: 01 25 00 - Substitution Procedures
- .4 Base Runner: Bottom track with 33 mm upstanding legs.
- .3 Furring: Hat-shaped sections, minimum depth of 22 mm.

- .4 Resilient Furring Channels: 12 mm depth, for attachment to substrate through one leg only.
- .5 Metal channel stiffener: sizes as required, 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
- .4 Shaft Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
 - .1 Products:
 - .1 Same manufacturer as other framing materials.
 - .5 Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
 - .1 Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with CSSBI 57-02.
 - .2 Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
 - .3 Deflection and Firestop Track:
 - .1 Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-rating of the wall assembly.

2.3 BOARD MATERIALS

- .1 Manufacturers - Gypsum-Based Board:
 - .1 CertainTeed Corporation; ProRoc Wallboard (Type X):
www.certainteed.com/#sle.
 - .2 CGC Interiors, a USG Company; Sheetrock (Firecode), :
www.usg.com/content/usgcom/en_CA_east.html/#sle.
 - .3 Georgia Pacific Canada Inc.; Toughrock Gypsum Wallboard (Fireguard).
 - .4 Substitutions: 012500 - Substitution Procedures
 - .2 **Gypsum Board:** Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut and as follows:
-

- .1 Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
 - .2 Surface burning characteristics tested to CAN/ULC S102.
 - .3 Glass mat faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 - .4 Type: Fire-resistant (Type X) throughout, unless noted otherwise.
 - .5 Size: 1200 mm x maximum practical length.
 - .6 Thickness:
 - .1 Vertical Surfaces: 16 mm.
 - .2 Ceilings: 16 mm.
 - .3 Multi-Layer Assemblies: Thicknesses as indicated on Drawings.
 - .3 **Shaftwall and Coreboard:** Type X; 25 mm thick by 610 mm wide, beveled long edges, ends square cut.
 - .1 Paper Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C1396/C1396M; water-resistant faces.
 - .2 Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C1658/C1658M.
 - .3 Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - .4 Testing: to CAN/ULC S114, cUL Classified and ULC Listed.
 - .5 Faces: fibreglass.
 - .6 Size: maximum permissible length and width.
 - .7 Thickness: 25 mm or thickness to suit manufacturers standard system and fire rating indicated on Drawings
 - .8 Ends: square.
 - .9 Products:
 - .1 DensGlass Shaftliner, Georgia-Pacific Canada, Inc..
 - .2 GlasRoc Shaftliner, CertainTeed..
 - .3 Sheetrock Glass-Mat Liner Panel, CGC Inc..
-

.4 Substitutions: 01 25 00 - Substitution Procedures

2.4 ACCESSORIES

- .1 Acoustic Insulation for Non Rated Assemblies: Meeting the requirements of CAN/ULC S702.1, ASTM E90; mineral wool or glass fibre acoustic sound batts, Type 1 for all properties other than thermal, width to friction fit steel studs; unfaced. Thickness: as scheduled and to fill a minimum of 90% of the cavity width, nominal density 40kg/m³ minimum; STC ratings as indicated on Drawings:
 - .1 Products:
 - .1 Safe 'N' and Sound: Roxul Inc.
 - .2 Substitutions: 01 25 00 - Substitution Procedures
- .2 Acoustic Insulation for Fire and Smoke Rated Assemblies: Meeting the requirements of CAN/ULC S702.1, mineral fibre acoustic sound batts, Type 1 for all properties except thermal performance, width to friction fit steel studs; unfaced. Thickness 92 mm to fill a minimum of 90% of the cavity width, nominal density 40 kg/m³ minimum; STC ratings as indicated on Drawings; having maximum flame spread and smoke developed of 0/0 in accordance with CAN/ULC S102 and being non-combustible in accordance with CAN/ULC S114:
 - .1 Products:
 - .1 Safe 'N' and Sound: Roxul Inc
 - .2 Substitutions: 01 25 00 - Substitution Procedures.
- .3 Acoustic Sealants for Fire Rated Assemblies: Use only fire rated materials as final seal in fire rated assemblies; apply acoustic sealants prior application of fire seals; provide materials specified in Section 07 8400.
- .4 Acoustic Sealants for Smoke Rated Assemblies: Lightweight low trigger resistance, non-sag, smooth surface finishing smoke and acoustic sealant in accordance with ASTM C834:
- .5 Acoustic Sealant for Exposed Joints: Lightweight low trigger resistance, non-sag, paintable, non-staining, latex sealant in accordance with ASTM C834 that effectively reduces airborne sound transmission through perimeter joints and openings in building construction:
- .6 Acoustic Sealant for Concealed Joints: Lightweight low trigger resistance, non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission:

- .7 Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 - .1 Rigid Corner Beads: Low profile, for 90 degree outside corners.
 - .2 Strippable Edge Trim: Extruded PVC with pre-masked L-shaped tape on trim with tear away protective serrated strip for removal after compound and paint is applied. Use at areas where gypsum butts aluminum frames and where gypsum butts concrete or concrete block.
 - .1 Application: Use at areas where gypsum butts aluminum frames and where gypsum butts concrete or concrete block, and where shown.
 - .3 Architectural Reveal Beads:
 - .1 Reveal Depth: 12 mm.
 - .2 Reveal Width: 12 mm.
 - .3 Shapes: As indicated on Drawings.
- .8 Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 - .1 Tape: 50 mm wide, creased paper tape for joints and corners, except as otherwise indicated.
 - .1 Interior Mould Resistant Gypsum Board: Fibreglass mesh tape.
 - .2 Joint Compound: Ready-mixed vinyl-based for Interior Gypsum Board, compatible with other compounds applied on previous or for successive coats, and as follows:
 - .1 Pre-filling: Setting type taping compound.
 - .2 Embedding and First Coat: Drying type compound.
 - .3 Fill Coat: Drying type compound.
 - .4 Finish Coat: Drying type, sandable topping compound.
 - .5 Skim Coat: Drying type, sandable topping compound.
 - .3 Chemical hardening type compound.
- .4 Products:
 - .1 CertainTeed Dust Away

- .2 CGC Dust Control
- .3 Substitutions: 01 25 00 - Substitution Procedures
- .9 Acoustical Closure:
 - .1 Acceptable Materials:
 - .1 Quiet Joint: Emseal.
 - .2 Substitutions: 01 25 00 - Substitution Procedures.
- .10 High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
- .11 Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.84 mm in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.
- .12 Screws for Fastening of Gypsum Panel Products to Steel Members from 0.84 to 2.84 mm in Thickness: ASTM C954; steel drill screws, corrosion resistant.
- .13 Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that project conditions are appropriate for work of this section to commence.

3.2 SHAFT WALL INSTALLATION

- .1 Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
- .2 Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.
 - .1 On walls over sixteen feet high, screw-attach studs to runners top and bottom.
 - .2 Seal perimeter of shaft wall and penetrations with acoustical sealant.

3.3 FRAMING INSTALLATION

- .1 Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
 - .2 Studs: Space studs at 406 mm on center.
-

- .1 Extend partition framing to structure where indicated and to ceiling in other locations.
- .2 Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
- .3 Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- .4 Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- .5 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
- .6 Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 100 mm from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 600 mm on center.
- .7 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
- .8 Furr gypsum board faced vertical bulkheads within and at termination of ceilings.
- .9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .10 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- .11 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .12 Acoustic Furring: Install resilient channels at maximum 600 mm on center. Locate joints over framing members.
- .13 Blocking: Install wood blocking for support of:
 - .1 Framed openings.
 - .2 Wall mounted cabinets.
 - .3 Plumbing fixtures.
 - .4 Toilet partitions.

- .5 Toilet accessories.
- .6 Wall mounted door hardware.
- .7 Any other wall-mounted fixtures, fittings, or equipment.
- .13 Apply 90 mm high pressure treated plywood, thickness of GWB at wall/floor interface, except for fire rated assemblies.

3.4 SUSPENDED CEILINGS AND SOFFITS

- .1 Erect hangers and runner channels in accordance with ASTM C840 except where specified otherwise.
- .2 Rigidly secure drywall ceiling system including integral mechanical and electrical components with maximum deflection of 1:240 and meeting the requirements of ASTM C636C/636M and ASTM E580 for seismic design category D, E, & F.
- .3 Install metal clips, concrete inserts, steel bar joist or steel deck using chemical or mechanical fasteners, or power actuated fasteners; coordinate placement of clips, inserts and supports to suit hanger wire layout as required for expected ceiling loads and layout.
- .4 Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- .5 Suspend hangers from building structure as follows:
 - .1 Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - .2 Install hanger wire as required to support ceiling load requirements; provide additional wires at light fixtures, grilles, and access doors; tie wire using a pigtail knot with three tight wraps at top and bottom fastening locations.
 - .3 Add additional wire as needed when using clips and accessories. Main beams shall be suspended from the overhead construction with hanger wire, spaced as required for expected ceiling loads, along the length of the main beams.
 - .4 Main beams shall be suspended from the overhead construction with hanger wire, spaced as required for expected ceiling loads, along the length of the main beams.
- .6 Install suspension system components in sizes and spacings indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated. Typical cross tee spacing:

- .1 406 mm on center with 13 mm gypsum board.
- .2 610 mm on center with 16 mm gypsum board.
- .7 For light fixtures, use secondary framing cross tees as required to frame opening.
- .8 Movement Joints: Roll formed zinc alloy, aluminum or plastic as required for expansion and contraction as show on Drawings.
- .9 Use channel moulding or angle moulding to interface with suspended grid system to provide perimeter attachment or to obtain drop soffits, vertical, slopes, etc.
- .10 To suspend a second ceiling beneath a new or existing gypsum ceiling, without breaching the integrity of the upper ceiling, use gypsum board clip system.
- .11 Interior Applications:
 - .1 Install main beams and cross tees at on centre spacing required for ceiling loading, and location of in-ceiling services.
 - .2 Provide additional bracing as required by Authorities Having Jurisdiction.
- .12 Exterior Applications:
 - .1 Use vertical bracing as required by codes to prevent wind uplift in accordance with Authorities Having Jurisdiction.

3.5 ACOUSTIC ACCESSORIES INSTALLATION

- .1 Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- .2 Acoustic Sealant: Install as follows:
 - .1 Place one bead continuously on substrate before installation of perimeter framing members.
 - .2 Place 12mm continuous bead at perimeter of each layer of gypsum board.
 - .3 Apply acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components.
 - .4 Seal full perimeter of all penetrations including conduit, pipe, ducts, rough-in boxes, and cut-outs, except where firestopping is provided.

3.6 BOARD INSTALLATION

- .1 Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- .2 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- .3 Do not install damaged or damp boards.
- .4 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.
- .5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .6 Install gypsum board on walls vertically to avoid end-butt joints.
- .7 At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.
- .8 Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- .9 Installation on Metal Framing: Use screws for attachment of gypsum board.
- .10 Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For non-rated assemblies, install as follows:
 - .1 Single-Layer Applications: Screw attachment.
 - .2 Double-Layer Application: Install base layer using screws. Install face layer using screws.
- .11 Apply gypsum board to concrete block surfaces, where indicated, using laminating adhesive.
 - .1 Comply with gypsum board manufacturer's recommendations.
 - .2 Brace or fasten gypsum board until fastening adhesive has set.
 - .3 Mechanically fasten gypsum board at top and bottom of each sheet.

3.7 INSTALLATION OF TRIM AND ACCESSORIES

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre

and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.

- .2 Control Joints: Place control joints consistent with lines of building spaces and as follows:
 - .1 Construct control joints of preformed units two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
 - .2 Provide continuous polyethylene dust barrier behind and across control joints.
 - .3 Not more than 10 metres apart on walls and ceilings over 16 metres long.
 - .4 Install control joints straight and true.
- .3 Corner Beads: Install at external corners, using longest practical lengths.
- .4 Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.
- .5 Install access doors to electrical and mechanical fixtures specified in respective sections. Rigidly secure frames to furring or framing systems.

3.8 JOINT TREATMENT

- .1 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- .2 Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, bedded and finished with chemical hardening type joint compound.
- .3 Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- .4 Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - .1 Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
 - .2 Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - .3 Level 3: Walls to receive textured wall finish.
 - .4 Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.

- .5 Level 1: Areas hidden from view, areas above finished ceilings, whether or not accessible in the completed construction, and where indicated.
- .6 Level 0: Temporary partitions.
- .5 Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - .1 Feather coats of joint compound so that camber is maximum 0.8 mm.
 - .2 Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
 - .3 Taping, filling and sanding is not required at base layer of double layer applications.
- .6 Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- .7 Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.9 TOLERANCES

- .1 Maximum Variation of Finished Gypsum Board Surface from True Flatness: 3 mm in 3 m in any direction.

END OF SECTION

Section 09 51 00 - Acoustical Ceilings

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Suspended metal grid ceiling system.
- .2 Acoustical units.
- .3 Accessories

1.2 RELATED REQUIREMENTS

- .1 Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- .2 Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.

1.3 REFERENCE STANDARDS

- .1 ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.
- .2 ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.
- .3 ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2022.
- .4 ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.
- .5 CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.
- .6 CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
 - .2 Do not install acoustical units until after interior wet work is dry.
-

1.5 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Shop Drawings: Indicate grid layout and related dimensioning.
 - .1 Submit shop drawings, signed and sealed by Sub-Contractor's engineer, detailing fabrication and location of seismic restraint system. Engineer shall be registered in the Province of British Columbia.
- .3 Product Data: Provide data on suspension system components.
- .4 Samples: Submit two samples 150 by 150 mm in size illustrating material and finish of acoustical units.
- .5 Maintenance Materials: Supply the following for Owner's use in maintenance of project.
 - .1 See Section 01 60 00 - Product Requirements, for additional provisions.
 - .2 Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.6 SITE CONDITIONS

- .1 Maintain uniform temperature of minimum 16 degrees C, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Acoustic Tiles/Panels:
 - .1 CGC.
 - .2 Substitutions: See 012500 - Substitution Procedures.
- .2 Suspension Systems:
 - .1 Same as for acoustical units.

2.2 ACOUSTICAL UNITS

- .1 Acoustical Panels - General: Type III
 - .1 Thickness: 19 mm 3/4".
 - .2 Size: 610 by 1220 mm.

- .3 Light Reflectance: 0.86 percent, determined in accordance with ASTM E1264.
- .4 NRC Range: 0.70 to 0.80, determined in accordance with ASTM E1264.
- .5 Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
- .6 Panel Edge: Square.
- .7 Surface Pattern: Smooth.
- .8 Surface Colour: White.
- .9 Suspension System: Exposed grid.
- .10 Products:
 - .1 CGC "Eclipse"
 - .2 Substitutions: 01 25 00 - Substitution Procedures

2.3 SUSPENSION SYSTEM(S)

- .1 Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- .2 Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; heavy-duty.
 - .1 Profile: Tee; 24 mm wide face.
 - .2 Construction: Double web.
 - .3 Finish: White painted.
- .4 Products:
 - .1
 - .2 15/16" Classic, CertainTeed
 - .3 Prelude XL, Armstrong
 - .4 Substitutions: 01 25 00 - Substitution Procedures

2.4 ACCESSORIES

- .1 Support Channels, Clips, Wire Ties, Retainers, and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- .2 Hanger wire: 3.6mm dia. galvanized soft annealed steel wire:
- .3 Sound isolation hangers: Vibron.
- .4 Perimeter Moldings: Same material and finish as grid.
 - .1 At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- .5 Acoustical Insulation: Specified in Section 07 21 00.
- .6 Touch-up Paint: Type and colour to match acoustical and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - SUSPENSION SYSTEM

- .1 Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions, and as supplemented in this section.
- .2 Installation to meet seismic restraint requirements in conformance with the applicable Building Code.
- .3 Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- .4 Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size, unless specifically noted otherwise on ceiling plan.
- .5 Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- .6 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

- .7 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- .8 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- .9 Support fixture loads using supplementary hangers located within 150 mm of each corner, or support components independently.
- .10 Do not eccentrically load system or induce rotation of runners.
- .11 Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - .1 Use longest practical lengths.
 - .2 Overlap corners.
- .12 Finished ceiling system to be square with adjoining walls and level within 1:1000.

3.3 INSTALLATION - ACOUSTICAL UNITS

- .1 Install acoustical units in accordance with manufacturer's instructions.
- .2 Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- .3 Fit border trim neatly against abutting surfaces.
- .4 Install units after above-ceiling work is complete.
- .5 Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- .6 Cutting Acoustical Units:
 - .1 Cut to fit irregular grid and perimeter edge trim.
 - .2 Make field cut edges of same profile as factory edges.
 - .3 Double cut and site paint exposed reveal edges.
- .7 Where round obstructions occur, provide preformed closures to match perimeter molding.
- .8 Lay acoustical insulation for a distance of 1200 mm either side of acoustical partitions as indicated.

3.4 TOLERANCES

- .1 Maximum Variation from Flat and Level Surface: 3 mm in 3 m.
- .2 Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

Section 09 65 00 - Resilient Flooring

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Resilient tile flooring.
- .2 Resilient base.
- .3 Installation accessories.

1.2 RELATED REQUIREMENTS

- .1 Section 09 05 61 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.

1.3 REFERENCE STANDARDS

- .1 ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2021.
- .2 ASTM F970 - Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading; 2017.
- .3 ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2018).
- .4 ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.
- .5 ASTM F1913 - Standard Specification for Vinyl Sheet Floor Covering Without Backing; 2019.
- .6 ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015 (Reapproved 2020).
- .7 CAN/ULC S102.2 - Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies; 2018.
- .8 NFCA (FCRM) - National Floor Covering Association, Floor Covering Reference Manual; Current Edition.
- .9 NSF 332 - Sustainability Assessment for Resilient Floor Coverings; 2015.

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
-

- .2 Product Data:
- .1 Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colours available; and installation instructions.
 - .2 Submit WHMIS Material Safety Data Sheets (MSDS) for flooring adhesive and seam welding. Indicate VOC content.
 - .3 Shop Drawings: Indicate seaming plans and floor patterns.
 - .4 Selection Samples: Submit manufacturer's complete set of colour samples for Architect's initial selection.
 - .5 Verification Samples: Submit two samples, 300 by 300 mm in size illustrating colour and pattern for each resilient flooring product specified.
 - .6 Sustainable Design Submittal: Submit VOC content documentation for flooring and adhesives.
 - .7 Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of sub-floor is acceptable.
 - .8 Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
 - .9 Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - .1 See Section 01 60 00 - Product Requirements, for additional provisions.
 - .2 Extra Flooring Material: five (5) square metres of each type and colour.
 - .3 Extra Wall Base: five (5) linear metres of each type and colour.

1.5 QUALITY ASSURANCE

- .1 Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.
- .2 Mock-up:
 - .1 Install mock-up of flooring and flash cove base in area designated by Consultant. Purpose of mock-up is to establish quality of installation and shall set the standard for the remainder of Work. Do not proceed until mock-up is reviewed by Consultant and written authorization to proceed is granted.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, colour, quantity and run numbers.
- .2 Store all materials off of the floor in an acclimatized, weather-tight space.
- .3 Maintain temperature in storage area between 13 degrees C and 40 degrees C.
- .4 Protect roll materials from damage by storing on end.
- .5 Do not double stack pallets.

1.7 SITE CONDITIONS

- .1 Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 21 degrees C to achieve temperature stability. Thereafter, maintain conditions above 16 degrees C.

PART 2 PRODUCTS

2.1 TILE FLOORING

- .1 Vinyl Composition Tile: to ASTM F 1066, Class 2, through-pattern. Homogeneous, with colour extending throughout thickness. Tile composed of polyvinyl chloride resin, plasticizers, fillers, stabilizers and pigments with colors and texture dispersed uniformly throughout its entire thickness.
 - .1 Acceptable Materials:
 - .1 Standard Excelon, Imperial Texture Tile Flooring manufactured by Armstrong Flooring, Inc..
 - .2 Substitutions: 01 25 00 - Substitution Procedures.
- .2 Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
- .3 Size: 300 by 300 mm.
- .4 Thickness: 3.2 mm.
- .5 Colour: To be selected by Architect from manufacturer's full range. Allow up to 3 field and accent colours.

2.2 RESILIENT BASE

- .1 Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
 - .1 Environmental: Phthalate-free
 - .2 Manufacturers:
 - .1 Johnsonite Baseworks DC-XX Thermoset Rubber by Tarkett.
 - .2 Substitutions: 01 25 00 - Substitution Procedures
 - .3 Height: 100 mm.
 - .4 Thickness: 3.2 mm.
 - .5 Finish: Satin.
 - .6 Length: Roll.
 - .7 Colour: To be selected by Architect from manufacturer's standard range.
 - .8 Accessories: Premolded external corners and internal corners.

2.3 ACCESSORIES

- .1 Subfloor Filler: Ardex K-55 Fast Setting Concrete Underlayment Patch; type recommended by adhesive material manufacturer.
- .2 Sub-floor Cleaner: Envirochem Resilient Tile Coating.
- .3 Reducer Strips, Carpet to Concrete or Resilient Flooring: 45 mm wide, tapered rubber, to suit thickness of flooring.
 - .1 Acceptable Materials:
 - .1 Tarkett CT A-XX series
 - .2 Substitutions: 01 25 00 - Substitution Procedures
 - .4 Seam Sealer: Waterproof; types recommended by flooring manufacturer, and as required to suit environmental conditions of substrate.
 - .5 Sealer and Wax: Types recommended by flooring manufacturer.
 - .6 Primers and Adhesives: type to be acceptable to and recommended by the flooring manufacturer for specific material on applicable substrate concrete (concrete slab on grade and/or suspended slab)

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- .2 Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- .3 Verify that required floor-mounted utilities are in correct location.

3.2 ENVIRONMENTAL CONDITIONS

- .1 Provide moisture testing and submit report to Consultant.
 - .1 Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer. Moisture shall not exceed 2.27kg/92.9 m²/24 hours (10.0lbs/1000 ft²/24 hrs).
- .2 Alkalinity: for concrete substrates conduct testing for alkalinity values and submit report to Consultant. Acceptable values are be between 5.0 and 12.0.
- .3 Temperature:
 - .1 Ambient air temperature: maintain ambient temperature of not less than 20 degrees Celsius prior to, during, and for 72 hours post installation.
 - .2 Subfloor temperature:
 - .1 Floor substrates other than concrete slab-on-grade must be a minimum of 16 degrees Celsius (60 degrees Fahrenheit) a minimum of 24 hours before and continually after installation.
 - .3 Manufacturer's proprietary adhesive shall be at room temperature 24 hours before use.
- .4 Relative humidity: Maintain relative humidity between 55% and 65% RH for 48 hours before, during and 48 hours after installation.

3.3 PREPARATION

- .1 Prepare floor substrates for installation of flooring in accordance with Section 09 05 61.

3.4 INSTALLATION - GENERAL

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 Install flooring and accessories after the other finishing operations, including painting, have been completed. Close spaces to traffic during the installation of the flooring. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond and moisture tests.
- .3 Starting installation constitutes acceptance of sub-floor conditions.
- .4 Install in accordance with NFCA standards manual, and in accordance with manufacturer's written instructions.
- .5 Spread only enough adhesive to permit installation of materials before initial set.
- .6 Fit joints and butt seams tightly.
- .7 Set flooring in place, press with heavy roller to attain full adhesion.
- .8 Where type of floor finish, pattern, or colour are different on opposite sides of door, terminate flooring under centerline of door.
- .9 Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
- .10 Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- .11 Install flooring in recessed floor access covers, maintaining floor pattern.
- .12 At movable partitions, install flooring under partitions without interrupting floor pattern.
- .13 Install flooring wall to wall prior to installing floor-set millwork, casework, cabinets, equipment, etc., without interrupting floor pattern.

3.5 INSTALLATION - TILE FLOORING

- .1 Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

3.6 INSTALLATION - RESILIENT BASE

- .1 Fit joints tightly and make vertical. Maintain minimum dimension of 45 mm between joints.
- .2 Use pre-molded units at internal and external corners and exposed end.
- .3 Install base on solid backing. Bond tightly to wall and floor surfaces.
- .4 Scribe and fit to door frames and other interruptions.

3.7 INSTALLATION: SEALANT

- .1 Apply sealant to every edge of flooring; at locations such as flooring/base transitions and flooring / floor frame transitions.

3.8 CLEANING

- .1 Remove excess adhesive from floor, base, and wall surfaces without damage.
- .2 Clean in accordance with manufacturer's written instructions.

3.9 PROTECTION

- .1 Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

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Section 09 91 00 - Painting

General

1.1 SUMMARY

- .1 Work of this section includes provision of site applied finishes to:
 - .1 3rd Party Guarantee
 - .2 General Painting Materials
 - .3 Colours
 - .4 Mixing and tinting
 - .5 Gloss and Sheen Ratings
 - .6 Interior Surfaces.

1.2 RELATED REQUIREMENTS

- .1 Section 08 11 14 - Metal Doors and Frames
- .2 Section 09 21 16 - Gypsum Board Assemblies
- .3 Other technical sections that contain field painting requirements.

1.3 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS): Material Safety Data Sheets (MSDS).
- .2 Master Painters Institute (MPI) Architectural Painting Specifications Manual and 2017 Updates to 2007 MPI Manual.
- .3 MPI Green Performance Standard GPS-1-08 and GPS-2-08
- .4 SSPC Painting Manual, 2011 Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meeting:
 - .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations in accordance with Construction Progress Schedule.
 - .1 Verify project requirements.

- .2 Review installation and substrate conditions.
 - .3 Coordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
- .2 Scheduling:
- .1 Submit work schedule for various stages of painting to Consultant for review.
Submit schedule minimum of 48 hours in advance of proposed operations.
 - .2 Obtain written authorization from Consultant for changes in work schedule.
 - .3 Schedule painting operations to prevent disruption of and by other trades.
- .3 Health and Safety:
- .1 Perform Work in accordance with Health and Safety Requirements and WorkSafeBC.
- .4 Coordination with metal fabrications:
- .1 Prime coated steel need not be primed under this section.

1.5 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Make available, and keep up to date, the Material Safety Data Sheets (MSDS) for paints and solvents used on the site, and provide materials to the Owner at or prior to Substantial Completion.
 - .3 Submit product data for the use and application of paint thinner.
- .3 Samples:
 - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
 - .2 Submit paint draw-down samples of each paint colour in each sheen for verification and acceptance.
 - .3 Submit stain and clear finish on 300 mm x 300 mm wood sample; same species as specified, for verification and acceptance.

- .4 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
- .4 Manufacturer's Instructions:
 - .1 Submit manufacturer's application instructions.
- .5 Closeout Submittals:
 - .1 Submit closeout data in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Submit Material Safety Data Sheets (MSDS).
 - .3 Submit maintenance data for incorporation into Operation and Maintenance manual, include following:
 - .1 Product name, type and use.
 - .2 Manufacturer's product number.
 - .3 Colour numbers.
 - .4 MPI Environmentally Friendly classification system rating.
- .6 Maintenance Materials Submittals:
 - .1 Deliver to extra materials from same production run as products installed.
Package products with protective covering and identify with descriptive labels.
 - .2 Quantity: provide one - one litre can of each type and colour of finish coating.
Identify colour and paint type in relation to established colour schedule and finish system.
 - .3 Delivery, storage and protection: comply with Construction Manager's requirements for delivery and storage of extra materials.

1.6 QUALITY ASSURANCE

- .1 Contractor: minimum of five (5) years proven satisfactory experience. Provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
- .2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
- .3 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.

- .4 Provide the inspection procedure in the MPI Architectural Painting Specification Manual, and ensure that the frequency of inspections is sufficient to ensure adequate quality control procedures in accordance with the manual.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 – Common Product Requirements
- .2 Deliver, handle, store and protect materials in accordance with manufacturer's written requirements.
 - .1 Acceptance at Site:
 - .2 Identify products and materials with labels indicating:
 - .1 Manufacturer's name and address.
 - .2 Type of paint or coating.
 - .3 Compliance with applicable standard.
 - .4 Colour number in accordance with established colour schedule.
 - .3 Remove damaged, opened and rejected materials from site.
 - .4 Storage and Protection:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.
 - .5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
 - .6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.
 - .7 Remove paint materials from storage only in quantities required for same day use.
 - .8 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

- .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling and disposal in accordance with Section 01 74 21 Construction Waste Management And Disposal.
- .2 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal, regulations.
- .3 Ensure emptied containers are sealed and stored safely.
- .4 Unused paint materials must be disposed of at official provincially licensed hazardous material collections site.
- .5 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
- .6 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .7 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
- .8 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

- .9 Set aside and protect surplus and uncontaminated finish materials. Deliver to or arrange collection by individuals or organizations for verifiable re-use or re-manufacturing.

1.9 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ventilate enclosed spaces.
 - .2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - .3 Provide continuous ventilation for seven days after completion of application of paint.
 - .4 Coordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.
 - .5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
 - .6 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Unless pre-approved written approval by Consultant and product manufacturer, perform no painting when:
 - .1 Ambient air and substrate temperatures are below 10 degrees C.
 - .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.
 - .3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
 - .4 Relative humidity is above 85% or when the dew point is less than 5° F (3° C) variance between the air / surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.
 - .5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

- .6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
- .2 Perform painting work when maximum moisture content of the substrate is below:
 - .1 12% for concrete and masonry (clay and concrete brick/block).
 - .2 15% for wood.
 - .3 12% for plaster and gypsum board.
 - .4 Allow new concrete and masonry to cure minimum of 28 days.
- .3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
 - .3 Apply paint when previous coat of paint is dry or adequately cured.
- .4 Additional interior application requirements:
 - .1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

1.10 3RD PARTY GUARANTEE

- .1 Furnish the local MPI Accredited Quality Assurance Association's two (2) year guarantee, in accordance with MPI Painting Manual requirements.
 - .2 Painting and decorating work shall be in accordance with MPI Painting Manual requirements and shall be inspected by the local MPI Accredited Quality Assurance Association's Paint Inspection Agency (inspector).
 - .3 The guarantee will cover making good any defects in work of this trade due to faulty workmanship or defective materials which appear during the two year period following certified date of Substantial Performance of the Work.
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Products

2.1 MATERIALS

- .1 Materials and systems shall be to MPI Premium Grade paint systems unless otherwise indicated.
- .2 Unless otherwise indicated paint materials listed in the MPI Approved Products List (APL) shall be used on this project.
- .3 Provide paint materials for paint systems from single manufacturer. Do not mix manufacturer's products.
- .4 Unless specified otherwise only qualified products with E2 "Environmentally Friendly" ratings are acceptable for use on this project, Use E3 rated products where available.
- .5 Conform to latest MPI requirements for painting work including preparation and priming.
- .6 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI - Architectural Painting Specification Manual "Approved Product" listing.
- .7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:
 - .1 Use water-based coatings where available.
 - .2 Non-flammable.
 - .3 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - .4 Manufactured without compounds which contribute to smog in the lower atmosphere.
 - .5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .8 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .9 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .10 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:

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- .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
 - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
 - .11 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

- .1 Provide colours as scheduled in Interior Design Drawings, Specifications and colour key.

2.3 MIXING AND TINTING

- .1 Unless otherwise specified or pre-approved, paint and stain shall be ready-mixed and pre-tinted. Re-mix all paint in contained prior to and during application to ensure break-up of lumps, completed dispersion of settled pigment, and colour and gloss uniformity.
- .2 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- .3 Thin paint for spraying in accordance with paint manufacturer's instructions.

2.4 GLOSS/SHEEN RATINGS

- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max. 10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	

Gloss Level 7 - High Gloss Finish	More than 85	
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- .2 Gloss level ratings of painted surfaces: unless specified below, as indicated on Interior Design Drawings and Specifications.

2.5 INTERIOR PAINTING

GLOSS LEVELS	ROOM	CEILINGS	WALLS	DOORS AND FRAMES	TRIMS AND CABINETS
DORMITORY AND ACTIVITY ROOMS	FLAT LATEX	EGGSHELL	SEMI-GLOSS	SEMI-GLOSS	
CORRIDORS	FLAT LATEX	EGGSHELL	SEMI-GLOSS	SEMI-GLOSS	

- .1 Unless otherwise specified, all interior painting work to be in accordance with MPI Premium Grade finish requirements.
- .2 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts:
- .1 INT 5.3M – High Performance Architectural Latex.
- .3 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, and textured finishes:
- .1 INT 9.2B – High Performance Architectural Latex

Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

- .1 Perform preparation and operations for interior and exterior painting in accordance with MPI - Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavorable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- .3 Maximum moisture content as follows:
 - .1 Stucco, plaster and gypsum board: 12%.
 - .2 Concrete: 12%.
 - .3 Wood: 12%.
 - .4 Clay and Concrete Block/Brick: 12%

3.4 PREPARATION

- .1 Protection:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant.
 - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - .3 Protect factory finished products and equipment.
 - .4 Protect passing pedestrians, and general public in and about the building.
- .2 Surface Preparation:
 - .1 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual requirements and coating manufacturer's recommendations. Refer to MPI Manual in regard to specific requirements and as follows:
 - .2 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
 - .3 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface

contaminants.

- .4 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - .5 Allow surfaces to drain completely and allow to dry thoroughly.
 - .6 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
 - .7 Use trigger operated spray nozzles for water hoses.
 - .8 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
 - .9 Wash any areas of high gloss with trisodium phosphate and scuff sanded to remove gloss prior to painting
 - .10 Preparation of concrete floors for porch and floor paint coating; INT 3.2A: sweep abrasive blast to be used to create an anchor pattern in surface for adhesion.
 - .11 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
 - .12 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .3 Tint filler to match stains for stained woodwork.
 - .4 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
 - .13 Clean metal surfaces to be painted including sprinkler piping by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air or vacuum cleaning.
 - .14 Touch up of shop primers with primer as specified.
 - .15 Do not apply paint until prepared surfaces have been accepted by Consultant.
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3.5 APPLICATION

- .1 Apply paint by brush or roller. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
 - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - .2 Work paint into cracks, crevices and corners.
 - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
 - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
 - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- .4 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .6 Sand and dust between coats to remove visible defects.
- .7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .8 Finish closets and alcoves as specified for adjoining rooms.
- .9 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
 - .2 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and
-

marks.

- .3 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .4 Do not paint over nameplates.
- .5 Keep sprinkler heads free of paint.
- .6 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .7 Paint fire protection piping: refer to Mechanical drawings and specifications.
- .8 Paint natural gas piping yellow: refer to Mechanical drawings and specifications.
- .9 Paint both sides and edges of backboards for telephone and electrical equipment before installation with intumescent paint. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .10 Do not paint interior transformers and substation equipment.

3.7 SITE TOLERANCES

- .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
- .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
- .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 FIELD QUALITY CONTROL

- .1 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer shall provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Consultant.
- .2 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .3 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

- .4 Complete paint air vapour test procedures in occupied spaces on a daily or shift basis.
- .5 Measure air quality during painting in accordance with the WorkSafeBC Regulations.

3.9 CLEANING

- .1 Clean in accordance with Section 1 74 11 – Cleaning.
- .2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces

END OF SECTION

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Section 09 91 23 - Interior Painting

PART 2 PRODUCTS

1.1 PAINTS AND FINISHES - GENERAL

- .1 Paints and Finishes: Ready mixed, unless intended to be a site-catalyzed paint.
 - .1 Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - .2 Supply each paint material in quantity required to complete entire project's work from a single production run.
 - .3 Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

PART 3 EXECUTION

2.1 PREPARATION

- .1 Clean surfaces thoroughly and correct defects prior to application.
- .2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- .3 Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- .4 Seal surfaces that might cause bleed through or staining of topcoat.

2.2 APPLICATION

- .1 Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- .2 Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- .3 Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- .4 Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

- .5 Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

END OF SECTION

PART 1 - GENERAL

- 1.1 Work Included:** Prepare and repaint all previously painted surfaces within the spaces Identified on the drawings, to include existing:

Gypsum Wallboard, Wood Sills, Wood and Metal Doors and frames

- .1 Section Includes: All labor, materials, tools and other equipment, services and supervision required to complete all interior repainting work as indicated on Finish Schedules and to the full extent of the drawings and specifications.
- .2 Work under this Contract shall also include, but not necessarily be limited to:
- .1 Surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to the limits defined under MPI Repainting Manual Preparation requirements.
 - .2 Specific pre-treatments noted herein or specified in the **MPI** Repainting Manual.
 - .3 Sealing / priming surfaces for repainting in accordance with **MPI** Repainting Manual requirements including, but not limited to:
 - .4 Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.
 - .5 Moisture testing, air and surface temperature, Ph tests
- .3 Include all incidental items not specifically noted above but considered part of the finished surface.
- .4 Refer to drawings and schedules (e.g., Finish Schedule) for type, location and extent of interior repainting required scheduled or specified.
- .5 This Section along with the Finish Schedule forms part of the Contract documents and is to be read, interpreted and coordinated with all other parts.
- .6 Division 0, and Division 1, General Requirements form an integral part of this Section of Work. The Painting Contractor shall refer to these and all other related parts.

1.2 Related Sections – Work Excluded:

- .1 Unless otherwise noted, the following work is not included under this Section of work
 - .a Condition of substrates, correction of DSD-4 defects and deficiencies in substrates which may adversely affect repainting work, except for minimal work performed by this trade and preparation of surfaces to receive paint and finishes under this section of work.
 - .b Factory finishes, clear coated door/window surfaces, wood paneling

1.3 Quality Assurance:

- .1 This Painting Contractor shall have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the work. When requested, the Painting Contractor shall provide a list of the last three comparable interior repainting jobs including, name, location, Specifying Authority / Project Manager/ Property Management, start / completion dates and value of the work.
- .2 Only trades qualified journeypersons, as defined by local jurisdiction, shall be engaged in interior repainting work. Registered apprentices may be employed provided they work under the direct supervision of a qualified journeyperson in accordance with trade regulations.

- .3 All materials, preparation and workmanship shall conform to the standards contained in the latest edition of the Master Painters Institute (**MPI**) Maintenance and Repainting Manual (herein referred to as the **MPI** Repainting Manual) as issued by the local **MPI** Accredited Quality Assurance Association having jurisdiction.
- .4 All interior repainting work shall be inspected by the MPDA Inspection Agency acceptable to the local **MPI** Accredited Quality Assurance Association. The Painting Contractor shall notify the MPDA Inspection Agency a minimum of one week prior to commencement of work and provide all documents defined in Section 1300 Submittals.
- .5 **All surfaces requiring repainting shall be inspected** by the Painting Contractor who shall notify the MPDA Inspection Agency, Owner or Authorized Representative in writing of any defects as defined by MPI (DSD4 assessment) or other problems relating to the execution of the work, prior to commencing repainting or after preparation work.

1.4 Inspection

- .1 The MPDA Technical Representative will not be responsible for and will not have control, or supervise the Painting Contractor or Subcontractors in performance of the Work.
- .2 The MPDA Technical Representative will be responsible to observe and report and shall not be responsible for the Painting Contractor or Subcontractors failure to carry out the Work in accordance with the Contract Documents.

1.5 Regulatory Requirements:

- .1 Conform to work place safety regulations for storage, mixing, application and disposal of all paint related materials to requirements of those authorities having jurisdiction.
- .2 Conform to safety precautions in accordance with the latest requirements to Industrial Health and Safety Regulations, latest edition, of authorities having jurisdiction.
- .3 Notify the MPDA Inspection Agency on award of contract and make application for assignment of an MPDA Technical Representative using appropriate forms supplied by the Agency as well as, finish schedule and list of MPI Approved Products Intended for Use on the Project for verification purposes prior to commencement of work.
- .4 Fully cooperate at all times with the requirements of the MPDA Paint Inspection Agency in the performance of their duties, including providing access and assistance as required to complete inspection work.
- .5 To reduce the number of contaminants entering waterways, sanitary / storm drain systems or into the ground the following procedures shall be strictly adhered to but not limited to:
 - .a Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .b Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .c Return solvent and oil-soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .d Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
 - .e Empty paint cans are to be dry prior to disposal or recycling (where available).
 - .f Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

- .g Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

1.6 Mock-Ups:

- .1 When requested by the Owner, Authorized Representative or MPDA Technical Representative, prepare and repaint a designated interior surface area or item to requirements specified herein, with specified paint or coating showing selected colors, gloss / sheen, texture and workmanship to **MPI** Repainting Manual standards for review and approval. When approved, the interior surface area and/or item shall become the acceptable standard of finish quality and workmanship for similar on-site repainting work.

1.7 Submittals:

- .1 All submittals shall be in accordance with the requirements of Section 01300 - Submittals.
- .2 Submit written proof of ability to supply a 100% two (2) year Maintenance Bond.
- .3 Submit two sets of Material Safety Data Sheets (MSDS) prior to commencement of work for review and for posting at job site as required.
- .4 Submit certification reports for ecologo paint products used.
- .5 If requested submit an invoice list of all paint materials ordered for the Work to the Paint Inspection Agency indicating manufacturer, types and quantities for verification and compliance with specification.
- .6 Submit work schedule for various stages of the Work to the Owner or Authorized Representative's approval if requested.
- .7 At project completion provide an itemized list complete with manufacturer, paint type and color coding for all colors used for Owner's later use in maintenance.
- .8 At project completion provide a minimum of 4 liters (1 gallon) of each type and color of paint from same production run (batch mix) used in unopened cans, properly labeled and identified for Owner's later use in maintenance.

1.8 Product Delivery, Storage and Handling:

- .1 Deliver all painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and color designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.
- .2 Store all paint materials in original labeled containers in a secure (lockable), dry, heated and well ventilated single designated area meeting the minimum requirements of both paint manufacturer and authorities having jurisdiction and at a minimum ambient temperature of 45 F (7 C). Only materials used on this project are to be stored on site.
- .3 Where toxic and/or volatile / explosive / flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings (e.g. no smoking) as required.
- .4 Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Materials that constitute a fire hazard

- (paints, solvents, drop clothes, etc.) shall be stored in suitable closed and rated containers and removed from the site on a daily basis.
- .5 Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

1.9 Project /Environmental Requirements:

- .1 It is the Painting Contractor's responsibility to conduct all required tests such as moisture content, pH tests, air and surface temperature and all other testing prior to the application of any coatings.
- .2 UNLESS specifically pre-approved by the Owner, Authorized Representative, MPDA Inspection Agency and the applied product manufacturer, perform no interior repainting work when the ambient air and substrate temperatures exceeds manufacturer's stated limits.
- .3 Perform no interior repainting work unless adequate continuous ventilation and sufficient heating facilities are in place to maintain minimum ambient air and substrate temperatures for 24 hours before, during and after paint application. Provide supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements. Because of moisture generation and potential fire hazard, the use of gas fired heating units is not advised, unless otherwise approved by the Owner Authorized Representative and authorities having jurisdiction.
- .4 Test suspect surfaces (concrete, masonry, plaster and wood surfaces) for moisture and alkalinity as required. Conduct all moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".
- .5 Perform no repainting work unless a minimum lighting level of 323 Lux (30 foot candles) is provided on surfaces to be repainted. Adequate lighting facilities shall be provided by the Owner.
- .6 Apply paint only to dry, clean, and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

1.10 Protection

- .1 The Painting Contractor shall guard or otherwise protect the Work including all material, plant and real property related to the Work against loss or damage from any cause.
- .2 All ladders, scaffolds, lift equipment and general plant shall be securely locked when not in use to prevent access to the balconies, roofs or through windows by other parties than the Contractor.
- .3 Protect all interior surfaces and areas (including glass, aluminum surfaces, etc.) and equipment and any labels and signage from repainting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

1.11 Scheduling:

- .1 Schedule interior repainting operations to prevent disruption of and by other trades when applicable.
- .2 Schedule interior repainting operations to prevent disruption of occupants in and about the building. Obtain written authorization from the Owner, or Authorized Representative for changes in work schedule.
- .3 Repainting in occupied facilities to be carried out during hours in accordance with Owner's operating requirements. Schedule work such that painted surfaces will have dried before occupants are affected.

1.12 Guarantee:

- .1 Furnish a two (2) year local Painting Association Guarantee or a 100% two (2) year Maintenance Bond both in accordance with **MPI** Repainting Manual requirements. The Maintenance Bond shall be obtained from an approved bonding company and shall warrant that all repainting work has been performed in accordance with **MPI** Repainting Manual requirements.
- .2 All interior repainting work shall be in accordance with **MPI** Repainting Manual requirements and shall be inspected by the Painting Association.
- .3 The cost for such Painting Association inspections as well as either the Painting Association Guarantee or Maintenance Bond shall be included in the Base Bid Price and any Separate Pricing or Cost Plus items awarded to the Painting Contractor.
- .4 Painting Subcontractors choosing the Maintenance Bond option shall provide written proof of their ability to supply same at time of bidding.

1.13 Maintenance Materials:

- .1 At project completion provide a minimum of 4 liters (1 gallon) of each type and color of paint from same production run (batch mix) used in unopened cans, properly labeled and identified for Owner's later use in maintenance.

PART 2 - PRODUCTS

2.1 Materials:

- .1 All materials (primers, paints, coatings, varnishes, stains, etc.) shall be products specified on the finish schedule.
- .2 Other paint sundries such as linseed oil, shellac, solvents, shall be the highest quality product and shall be compatible with other coating materials as recommended by the MPI Approved product manufacturer.
- .3 All materials and paints shall be lead and mercury free.
- .4 Where required, paint products shall meet **MPI** Environmentally Friendly" [E1] [E2] [E3] ratings based on VOC (EPA Method 24) content levels.

- .5 Where required, paints and coatings shall meet flame spread and smoke developed ratings designated by local Code requirements and/or authorities having jurisdiction.
- .6 Caulking and filling compounds shall be as recommended by the Painting Contractor's chosen paint manufacturer.
- .7 All paint materials shall have good flowing and brushing properties and shall dry or cure free of blemishes, sags, air entrapment, etc. Refer to 3.5, Field Quality Control / Standard of Acceptance requirements.
- .8 Slip Resistant Additives (SRA): rubber aggregate or clean / washed silica sand for use with or as a component part of paint (usually floor / porch / stair enamel) on interior horizontal surfaces as required to provide slip resistance. Where site applied, material to either mixed into paint and mixed constantly to keep material in suspension.

2.2 Equipment:

- .1 Painting Equipment: to best trade standards for type of product and application.
- .2 Spray-Painting Equipment: of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

2.3 Mixing and Tinting:

- .1 Unless otherwise specified or pre-approved, all paints shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.
- .2 Paste, Powder or Catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations.

2.4 Finish and Colors:

- .1 Unless otherwise specified herein, all interior repainting work shall be done in accordance with **MPI** Premium Grade requirements.
- .2 Colors shall be as selected by the Owner or Authorized Representative from a manufacturer's full range of colors. Refer to the Finish Schedule for identification and location.
- .3 Color selection will be based on three (3) base colors and three (3) accent colors with a maximum of one (1) deep or bright color. No more than six (6) colors will be selected for the entire project and no more than three (3) colors will be selected in each area. Note that this does not include factory-finished items unless specifically scheduled.
- .4 Provide a slip resistant additive to interior painted stair treads, landings, etc.
- .5 Unless otherwise noted, repaint walls within a given area using the same color as selected.
- .6 Ceilings including those having a spray textured coating, unless otherwise noted shall be repainted.

- .7 Designated rooms / spaces shall be repainted using different colors or more than one color than typical rooms in accordance with Finish Schedule requirements with a minimum of [two (2)] colors required.
- .8 Except as noted herein or indicated on the Finish Schedule, walls and ceiling surfaces shall be repainted in accordance with the following criteria:
 - .a All areas (except as noted) Benjamin Moore Ultra Spec Scuff-X Eggshell
 - .b Wet areas (washrooms) Benjamin Moore Ultra Spec Scuff-X Satin
 - .b All doors and frames will be repainted with Sherwin Williams All Surface Enamel Semi-Gloss
- .9 Access doors, registers, radiators and covers, exposed piping and electrical panels shall be repainted to match adjacent surfaces (i.e. color, and sheen), unless otherwise noted or where factory-finished.

2.5 Gloss / Sheen:

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following **MPI** gloss / sheen standard values:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 maximum
G2	Velvet finish	10 maximum	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	35 minimum
G5	Semi-Gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-Gloss finish	> 85	

- .2 Gloss level ratings of all painted surfaces shall be as specified herein and as noted on Finish Schedule.

PART 3 - EXECUTION

3.1 Condition of Surfaces:

- .1 Prior to commencement of repainting work, thoroughly examine (and test as required) all interior conditions and surfaces scheduled to be repainted and report in writing to the Owner, Authorized Representative and MPDA Inspection Agency where applicable; any conditions or surfaces that will adversely affect work of this section.
- .2 The degree of surface deterioration (DSD) shall be assessed using the assessment criteria indicated in the **MPI** Maintenance Repainting Manual. In general the **MPI** DSD ratings and descriptions are as follows:

Condition	Description
DSD-0	Sound Surface (may include visual (aesthetic) defects that do not affect films protective properties).
DSD-1	Slightly Deteriorated Surface (may show fading; gloss reduction, slight surface contamination, minor pin holes scratches, etc.) / Minor cosmetic defects (runs, sags, etc.).
DSD-2	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, staining, etc.).
DSD-3	Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges).
DSD-4	Substrate Damage (repair or replacement of surface required by others).

- .3 No repainting work shall commence until all such DSD-4 adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Painting Contractor. The Painting Contractor shall not be responsible for the condition of the substrate or for correcting defects and deficiencies in the substrate, which may adversely affect the painting work except for minimal work normally performed by the Painting Contractor and as, indicated herein. It shall always, however, be the responsibility of the Painting Contractor to see that surfaces are properly prepared before any paint or coating is applied.
- .4 It shall also be the Painting Contractor's responsibility to paint the surface as specified providing that the Owner accepts responsibility for uncorrected DSD-4 substrate conditions.

3.2 Preparation of Surfaces:

- .1 Prepare all interior surfaces for repainting in accordance with ***MPI*** Repainting Manual requirements. Refer to the ***MPI*** Repainting Manual in regard to specific requirements for the following:
- .2 Wash all surfaces requiring paint application prior to sanding and filling with an appropriate cleaning agent, such as TSP. All surfaces specified for coatings require full sanding to de-gloss the surface.
- .3 Metal surfaces are to be cleaned using Hi-Lite Solutions Aero Green 4110 Paint Prep Cleaner.
- .4 Remove and securely store all miscellaneous hardware and surface fittings / fastenings (e.g. electrical plates, mechanical louvers, door and window hardware (e.g. hinges, knobs, locks, trim, frame stops), removable rating / hazard / instruction labels, washroom accessories, light fixture trim, etc. from wall and ceiling surfaces, doors and frames, prior to repainting and replace upon completion. Carefully clean and replace all such items upon completion of repainting work in each area. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes). Doors shall be removed before repainting to paint bottom and top edges and then re-hung.
- .5 Protect all adjacent interior surfaces and areas, including rating and instruction labels on doors, frames, equipment, piping, etc., from repainting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.
- .6 Caulk and fill any dents, voids or cracks on the surface and spot prime prior to the application of the intermediate finish coat.

- .7 All areas exhibiting staining will require the application of an MPI Approved stain blocking, material prior to the application of the specified paint system.
- .8 Metal handrails worn to bare metal require abrading prior to application of the prime coat.
- .9 Galvanized doors exhibiting heavy peeling shall require complete stripping, galvanized to be cleaned using MPI # 25 Etch & Clean. Prime surface using manufacturers approved primer.
- .10 All doors, handrails and other high contact surfaces are to be sanded using minimum 240 grit sandpaper top degloss the surface.
- .11 All Vinyl wallcoverings to be painted shall be hand cleaned prior to priming

3.3 Application:

- .1 Do not commence repainting unless substrates are acceptable and until all environmental conditions (heating, ventilation, lighting and completion of other subtrade work, if applicable) are acceptable for applications of products.
- .2 Apply primer, paint or stain in accordance with **MPI** Painting Manual Premium Grade finish requirements.
- .3 Apply primer, paint or stain in a workmanlike manner using skilled and trade qualified applicators as noted under Quality Assurance.
- .4 Apply primer, paint or stain within an appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or the manufacturer's paint specifications require earlier applications.
- .5 Primer, paint or stain coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.
- .6 Tint each coat of paint progressively lighter to enable confirmation of number of coats.
- .7 Unless otherwise approved by the painting inspection agency, apply a minimum of four coats of paint where deep or bright colors are used to achieve satisfactory results.
- .8 Sand and dust between each coat to provide an anchor for next coat and to remove defects in previous coat (runs, sags, etc.) visible from a distance up to 1000 mm (39").
- .9 Do not apply finishes on interior surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, each coat shall be sufficiently dry and hard before a following coat is applied.
- .10 To avoid air entrapment in applied coats, apply materials in strict accordance with manufacturer's spread rates and application requirements.
- .11 Where touch-up painting is undertaken and found to be noticeable, the entire surface will require repainting from break to break or corner to corner.

3.4 Priming and Back Priming

- .1 Interior new woodwork, which is to receive a paint finish, shall be primed with an MPI Approved primer compatible with the finish system.
- .2 Top and bottom edges of wood doors shall be coated with the finish system.

- .3 Factory-finished metals and PVC piping shall be primed with an MPI Approved solvent based bonding primer where applicable.

3.5 Field Quality Control / Standard of Acceptance:

- .1 All surfaces, preparation and paint applications shall be inspected by the MPDA Inspection Agency.
- .2 Repainted interior surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent to the MPDA Technical Representative and not limited to:
- .a brush / roller /tracking, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
 - .b damage due to touching before paint is sufficiently dry or any other contributory cause.
 - .c damage due to application on moist surfaces.
 - .d damage and/or contamination of paint due to contaminants (dust, sand blast materials, roller lint etc.)
- .3 Repainted interior surfaces shall be considered unacceptable if any of the following are evident under natural lighting conditions:
- .a visible defects are evident on vertical surfaces when viewed at 90 degrees to the surface from a distance not less than 1000 mm (39").
 - .b visible defects are evident on horizontal surfaces when viewed at 45 degrees to the surface from a distance not less than 1000 mm (39").
 - .c visible defects are evident on other overhead surfaces when viewed at 45 degrees to the surface
 - .d when the final coat on any surface exhibits a lack of uniformity of sheen across full surface area.
- .4 Repainted surfaces rejected by the Owner or Authorized Representative or MPDA Technical Representative shall be made good at the expense of the Painting Contractor.

3.6 Clean-up:

- .1 Remove all paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that will not cause damage to the finished surfaces.
- .2 Keep work area free from any unnecessary accumulation of tools, equipment, surplus materials and debris.
- .3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.
- .4 Clean equipment and dispose of wash water / solvents as well as all other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with the safety requirements of authorities having jurisdiction.

3.7 Interior Finish Schedule:

- .1 Repaint Interior surfaces in accordance with the following **MPI** Repainting Manual premium grade requirements.

RIN 5.1 Interior Metal Surfaces Subject to High Contact		
RIN 5.1R High Performance Architectural Latex	Doors and frames	
Full Prime	Acrylic Metal Primer #107	
1st Coat	BM Scuff X #454	G5 Semi-Gloss
2 nd Coat	BM Scuff X #454	G5 Semi-Gloss
RIN 6.3 Dressed Lumber /MDF		
RIN 6.3T High Performance Architectural Latex	Doors, door and window frames, casings, mouldings	
Full Prime	Latex Primer	
1st Coat	BM Scuff X #454	G5 Semi-Gloss
2 nd Coat	BM Scuff X #454	G5 Semi-Gloss
REX 9.2 Plaster and Gypsum Board		
REX 9.2B High Performance Architectural Latex	Ceilings, Bulkheads	
Full Prime	Latex Primer	
1st Coat	BM Scuff X #454	G3 Eggshell
2 nd Coat	BM Scuff X #454	G3 Eggshell
REX 9.2B High Performance Architectural Latex	Walls (General)	
Full Prime	Latex Primer	
1st Coat	BM Scuff X #454	G3 Eggshell
2 nd Coat	BM Scuff X #454	G3 Eggshell

Section 10 26 00 - Wall and Door Protection

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Bumper rails.
- .2 Corner guards.

1.2 RELATED REQUIREMENTS

- .1 Section 06 10 00 - Rough Carpentry: Blocking for wall and corner guard anchors.
- .2 Section 09 21 16 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.3 REFERENCE STANDARDS

- .1 ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010 (Reapproved 2018).
- .2 ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 2021.
- .3 ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies; 2014.
- .4 ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
- .5 CAN/ULC S101 - Standard Methods of Fire Endurance Tests of Building Construction and Materials; 2014.
- .6 CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements for submittal procedures.
- .2 Product Data: Indicate physical dimensions, features, and anchorage details.
- .3 Shop Drawings: Include plans, elevation, sections, and attachment details.
- .4 Samples: Submit samples illustrating component design, configurations, joinery, colour and finish.
 - .1 Submit two sections of corner guards, bumper rails, and protective corridor handrails, 150 mm long.

- .5 Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.
- .2 Store products in either horizontal or vertical position, in conformance with manufacturer's instructions.

1.6 WARRANTY

- .1 See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- .2 Provide Limited Lifetime Systems Warranty - includes all recommended components and accessories related to manufacturer's products.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Corner Guards:
 - .1 CS Construction Specialties, Acrovyn LG Series.
 - .2 Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE CRITERIA

- .1 Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for conformance to applicable provisions of ASTM D256 and/or ASTM F476.
- .2 Chemical and Stain Resistance: Unless otherwise noted, provide protection products and assemblies with chemical and stain resistance conforming to applicable provisions of ASTM D543.
- .3 Fungal Resistance: Unless otherwise noted, provide protection products and assemblies which pass ASTM G21 testing.

2.3 PRODUCT TYPES

- .1 Bumper Rails: Factory- or shop-fabricated, with preformed end caps and internal and external corners:
 - .1 Performance of Installed Assembly:

- .2 Material: High impact vinyl, colour as selected from manufacturer's standard colours.
- .3 Mounting: Surface.
- .2 Corner Guards - Surface Mounted, Transparent Plastic:
 - .1 Thickness: 1.9 mm.
 - .2 Width of Wings: 20 mm, with radius corner and rounded wing tips.
 - .3 Corner Angle: 90 degrees.
 - .4 Length: One piece, 1220 mm.
- .3 Adhesives and Primers: As recommended by manufacturer.

2.4 FABRICATION

- .1 Fabricate components with tight joints, corners and seams.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
- .2 Verify that site measurements are as indicated on Drawings.
- .3 Verify that substrate surfaces for adhered items are clean and smooth.
 - .1 Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by manufacturer. Follow adhesive manufacturer's recommendations for remedial measures at locations and/or application conditions where adhesion test's results are unsatisfactory.
- .4 Start of installation constitutes acceptance of project conditions.

3.2 INSTALLATION

- .1 Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.
 - .2 Position top of bumper rail 914 mm from finished floor.
 - .3 Position corner guards as shown on drawings.
 - .4 Terminate rails 25 mm short of door openings and intersecting walls.
-

3.3 CLEANING

- .1 Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

END OF SECTION

Section 10 51 13 - Metal Lockers

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Metal lockers.

1.2 RELATED REQUIREMENTS

- .1 Section 06 10 00 - Rough Carpentry: Wood base construction.
- .2 Section 06 10 00 - Rough Carpentry: Wood blocking and nailers.

1.3 REFERENCE STANDARDS

- .1 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.

1.4 SUBMITTALS

- .1 See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- .2 Product Data: Manufacturer's published data on locker construction, sizes and accessories.
- .3 Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.
- .4 Manufacturer's Installation Instructions: Indicate component installation assembly.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Protect locker finish and adjacent surfaces from damage.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Metal Lockers:
 - .1 Hadrian; _____: www.hadrian-inc.com/#sle.
 - .2 Substitutions: See Section 01 60 00 - Product Requirements.

2.2 LOCKER APPLICATIONS

- .1 Wardrobe Lockers: Metal lockers, wall mounted with matching closed base.

- .1 Configuration: Single tier.
- .2 Fittings: Size and configuration as indicated on Drawings.
 - .1 Hat shelf and lockable drawer
 - .2 Single shoe shelf.
 - .3 Coat rod.
- .3 Ventilation: Louvres at top and bottom of door panel.
- .4 Locking: Padlock hasps, for padlocks provided by Owner.
- .5 Finish: polyester baked enamel; colour to be selected by Consultant from manufacturer's full colour range; Anti-Graffiti Colours by Hadrian.
- .6 Provide sloped top.

2.3 METAL LOCKERS

- .1 Lockers: Factory assembled, made of formed sheet steel, ASTM A653/A653M SS Grade 230, with Z180 coating, stretcher leveled; metal edges finished smooth without burrs; baked enamel finished inside and out.
 - .1 Colour: To be selected by Architect.
- .2 Locker Body: Formed and flanged; with steel stiffener ribs; electric spot welded.
 - .1 Body and Shelves: 1.6 mm.
 - .2 Base: 1.6 mm.
 - .3 Metal Base Height: 100 mm.
- .3 Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
 - .1 Door Frame: 1.5 mm, minimum.
- .4 Doors: Channel edge; welded construction, manufacturer's standard stiffeners, grind and finish edges smooth.
 - .1 Door Thickness: 1.9 mm, minimum.
 - .2 Form recess for operating handle and locking device.
- .5 Hinges: Continuous piano hinge with powder coat finish to match locker colour.

- .6 Sloped Top: 0.9 mm, with closed ends.
- .7 Trim: 0.9 mm.
- .8 Coat Hooks: Stainless steel or zinc-plated steel.
- .9 Number Plates: Provide oval shaped aluminum plates. Form numbers _____ mm high of block font style _____, in contrasting colour.
- .10 Locks: Locker manufacturer's standard type indicated above.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verify that prepared bases are in correct position and configuration.

3.2 INSTALLATION

- .1 Install in accordance with manufacturer's instructions.
- .2 Place and secure on prepared base.
- .3 Install lockers plumb and square.
- .4 Install fittings if not factory installed.
- .5 Replace components that do not operate smoothly.

3.3 CLEANING

- .1 Clean locker interiors and exterior surfaces.

END OF SECTION

CNV FIREHALL NO.1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC.

RE - ISSUED FOR TENDER

DATE: SEPTEMBER 16th, 2024

GENERAL NOTES (TYPICAL TO ALL DRAWINGS)

A. ALL ELECTRICAL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE AS AMENDED AND ADOPTED BY THE PROVINCE OF BC AND TO THE SATISFACTION OF THE ELECTRICAL INSPECTION AUTHORITY HAVING JURISDICTION, EXCEPT WHERE SPECIFIED OR SPECIFICALLY STATED OTHERWISE. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE BRITISH COLUMBIA BUILDING CODE (2024) INCLUDING ALL LOCAL AMENDMENTS, TO THE SATISFACTION OF LOCAL BUILDING INSPECTOR AUTHORITY HAVING JURISDICTION.

LIGHTING GENERAL NOTES (APPLY TO ALL LIGHTING DRAWINGS)

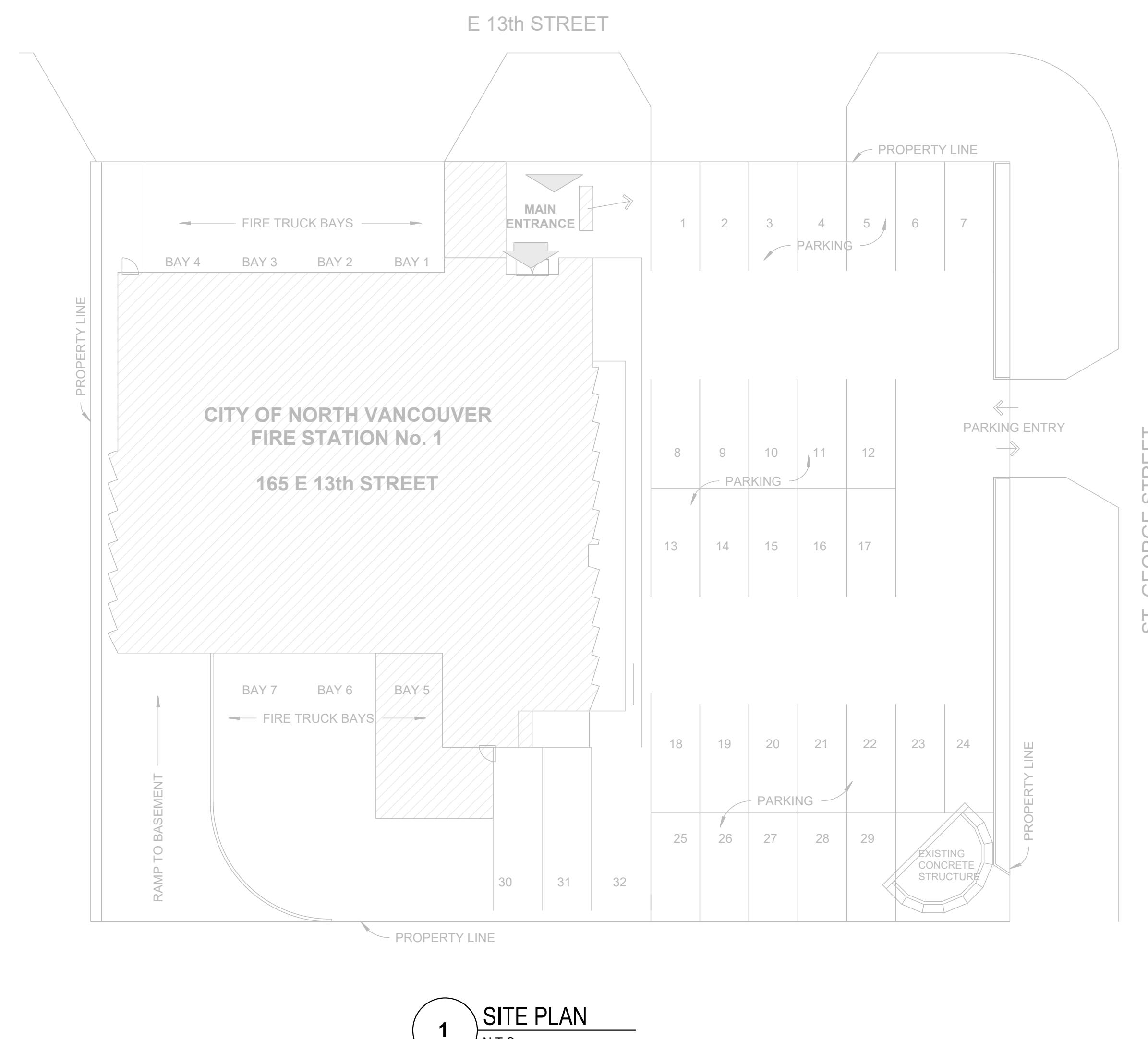
- A. CONTRACTOR TO CO-ORDINATE ALL MOUNTING HEIGHTS & LOCATIONS WITH THE ARCHITECT PRIOR TO ROUGH-IN.
- B. SUPPLY AND INSTALL PULLSTRINGS IN ALL NEW EMPTY CONDUIT.
- C. ALL NEW AND RELOCATED 120V/347V LIGHTING IS TO BE CONNECTED TO 120V/347V LIGHTING CIRCUIT. 80% CIRCUIT LOADING IS NOT TO BE EXCEEDED. PROVIDE NEW CIRCUITS AND BREAKERS AS REQUIRED.
- D. PROVIDE NEW LED GREEN RUNNING MAN EXIT CONNECT TO EXISTING LOCAL FLOOR EXIT SIGN CIRCUIT. PROVIDE NEW 15A CIRCUIT IF CONNECTING TO EXISTING CIRCUIT IS NOT FEASIBLE. NEW EXIT SIGNS TO BE LED AND ASHRAE 9.1-2016 COMPLIANT (LESS THAN 5 WATTS PER FACE).
- E. THIS CONTRACTOR IS TO PROVIDE LIGHTING CONTROL COMMISSIONING REPORT. THIS CONTRACTOR IS TO CARRY ANY COST ASSOCIATED WITH THIS COMMISSIONING. COMMISSIONING REPORT TO BE PROVIDED TO AES. ALLOW FOR FOLLOW UP SITE VISIT BY COMMISSIONING AGENT TO MAKE ANY NECESSARY ADJUSTMENTS.
- F. CONNECT ALL NEW & RELOCATED FIRE ALARM DEVICES TO LOCAL ZONE. ALL NEW DEVICES ARE TO MATCH EXISTING MANUFACTURER, EXTEND CONDUIT & WIRING AS REQUIRED FOR ALL RELOCATED DEVICES. PROVIDE WRITTEN VERIFICATION FOR ALL NEW, RELOCATED, AND EXISTING DEVICES IN THE AFFECTED ZONE(S). BASE BUILDING CONTRACTOR TO TIE IN ANY NEW FIRE ALARM INTO EXISTING SYSTEM AS PER BASE BUILDING GUIDELINES. CONTRACTOR MAY PERFORM FIRE ALARM WORK BUT MUST HIRE THE BASE BUILDING CONTRACTOR/ TESTING VENDOR FOR ALL VERIFICATIONS.

POWER GENERAL NOTES (APPLY TO ALL POWER DRAWINGS)

- A. CONTRACTOR TO CO-ORDINATE ALL MOUNTING HEIGHTS & LOCATIONS WITH THE ARCHITECT PRIOR TO ROUGH-IN.
- B. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATIONS FOR ALL MECHANICAL UNIT LOCATIONS PRIOR TO ROUGH-IN.
- C. SUPPLY AND INSTALL PULLSTRINGS IN ALL NEW EMPTY CONDUIT.
- D. FOR ALL 5-20R T-SLOT RECEPTACLES, CONTRACTOR IS TO PROVIDE A 20A-1P BREAKER IN THE PANEL.
- E. CIRCUIT NUMBERS SHOWN ARE FOR GROUPING PURPOSES ONLY. CONTRACTOR TO UTILIZE THE NEXT AVAILABLE CIRCUIT IN THE PANEL. PROVIDE AND INSTALL NEW BREAKERS AS REQUIRED.
- F. ALL NEW WIRING TO BE CONCEALED. CONDUITS ARE TO BE RUN IN A NEAT AND TIDY MANNER IN ORDER TO GET TO LUMINAIRE/DEVICE LOCATIONS. ALL WIRING AND CABLES INSTALLED IN OPEN CEILINGS MUST BE INSTALLED IN CONDUIT. FOR AREAS WITH HARD (NON ACCESSIBLE) CEILINGS, PROVIDE CONDUIT.
- G. ALL RECEPTACLES TO BE MOUNTED TO CABINETRY/MILLWORK WHERE THERE IS NO WALL PRESENT. ALLOW FOR FLOOR CORE AND RECESS RECEPTACLES IN MILLWORK.
- H. ALL RECEPTACLES DENOTED WITH A 'D' ARE TO BE DEDICATED CIRCUITS AND BREAKERS.
- I. WHERE RECEPTACLES ARE MOUNTED BACK-TO-BACK IN WALLS, STAGGER THE MOUNTING OF THESE DEVICES TO MINIMIZE THE SOUND TRANSMISSION.
- J. CONTRACTOR TO REVIEW ARCHITECT'S DRAWINGS AND NOTES AND BECOME FAMILIAR WITH THE REQUIREMENTS THOSE DRAWINGS INDICATE. CONFIRM WITH CONSULTANT AND/OR ARCHITECT IF ANY DISCREPANCIES.
- K. PROVIDE 1 METER CLEARANCE IN FRONT OF ALL ELECTRICAL PANELS.
- L. PROVIDE 20A BREAKERS FOR ALL KITCHEN RECEPTACLES AND COPIERS. PROVIDE 20A RATED T-SLOT RECEPTACLES.
- M. FIRE STOP ALL UNUSED PENETRATIONS IN ALL FIRE RATED WALLS, FLOORS AND CEILINGS. FIRE STOP NEW PENETRATIONS IN RATED WALLS, FLOORS AND CEILINGS. FIRE STOPPING MATERIAL SHALL BE HILTI FIRESTOP. LABEL FIRE STOP PENETRATIONS WITH PRODUCT USED AND JUL SYSTEM NUMBER WITH STICKER.
- N. A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE AND THE ELECTRICAL INSPECTION DEPARTMENT. ALL METAL PARTS NOT CARRYING CURRENT, INCLUDED BUT NOT LIMITED TO SECONDARY FEEDER CIRCUITS, EQUIPMENT AND PANELBOARD ENCLOSURES, METAL RACEWAYS, PULL AND JUNCTION BOXES, SHALL BE PROPERLY GROUNDED. METAL RACEWAYS SHALL UTILIZE DOUBLE LOCKNUTS AND OTHER FITTINGS WHERE NECESSARY TO PROVIDE GROUND CONTINUITY. A SEPARATE GROUND CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAY FEEDER RUNS, FLEXIBLE CONDUIT.

DEMOLITION NOTES (APPLY TO ALL DEMOLITION DRAWINGS)

- A. ALL REDUNDANT AND UNUSED WIRING INCLUDING ANY WIRING IN THE CEILING SPACE IS TO BE REMOVED BY THIS CONTRACTOR.
- B. FOR ALL EXISTING DEVICES INDICATED TO REMOVE, OR NOT INDICATED TO REMOVE, REINSTALL TO ALLOW CONSTRUCTION AS NECESSARY.
- C. FOR ALL ITEMS INDICATED AS REMOVE, REMOVE ITEMS INCLUDING CONDUIT AND WIRING ALL THE WAY TO THE SOURCE AND MAKE IT SAFE. DISPOSE OF ALL WASTE MATERIALS. FIRE STOP ALL OPENINGS. THE CONTRACTOR IS TO ALLOW FOR SITE VISITS, PRIOR TO SUBMITTING TENDER, TO VERIFY ALL ITEMS THAT ARE TO BE REMOVED.
- D. THE INTENT OF THESE DRAWINGS IS TO AID BIDDING CONTRACTORS IN DETERMINING THE APPROXIMATE EXTENT OF THE EXISTING EQUIPMENT TO BE REMOVED AND THE EQUIPMENT TO BE RE-USED. EXACT COUNTS AND EXTENT OF WIRING TO BE REMOVED, RE-USED, RELOCATED WHICH ARE NOT SHOWN ON DRAWINGS BUT WHICH MAY BE FOUND AS WORK PROCEEDS. CONTRACTOR TO USE HIS EXPERIENCE AND BEST JUDGMENT FROM TENDER WALKTHROUGH AND WORK OF A SIMILAR NATURE TO DETERMINE HOW MUCH WORK THIS WILL ENTAIL. MAKE ALLOWANCE IN TENDER PRICE AS NECESSARY.
- E. CONTRACTOR IS TO BE AWARE THAT CONSIDERABLE COORDINATION WITH OTHER TRADES IS REQUIRED AND TO THAT END PRIOR TO COMMENCE WORK IN AN AREA, A SITE MEETING SHALL BE HELD ATTENDED BY ALL MAJOR TRADES TOGETHER WITH THE OWNER TO DEAL WITH COORDINATION, CEILING HEIGHTS, STRUCTURE, WALL TYPES, DUCT DROPS/RUNS ETC. BEFORE THEY BECOME AN ISSUE AT TIME OF INSTALLATION. PRIOR TO THIS MEETING, CONTRACTOR IS TO CHECK AVAILABLE CEILING SPACE FOR CONFLICT BETWEEN SERVICES REQUIRED TO BE INSTALLED AND AVAILABLE SPACE FOR LUMINAIRES, DUCTS, ETC. & INFORM THE GENERAL CONTRACTOR IN ADVANCE OF THE WORK OF OTHER TRADES.
- F. CONTRACTOR SHALL LAY OUT CAREFULLY FOR TRADESMAN ON SITE, WHAT IS TO BE DONE WITH EACH AND EVERY EXISTING OUTLET, DEVICE, ETC. TO PRECLUDE MISUNDERSTANDINGS REGARDING EQUIPMENT TO BE RETAINED IN OPERATION, RE-FED, RELOCATED, ETC. FURTHER, OUTLETS TO BE INSTALLED IN EXISTING WALLS RETAINED SHALL BE INDICATED TO ENSURE COMPLETE UNDERSTANDING OF CONCEALMENT OF WIRING ETC. PER SPECIFICATION AND THE NEED TO CUT AND PATCH EXISTING WALLS.
- G. CONTRACTOR SHALL REVIEW THE MECHANICAL DRAWINGS & BE AWARE OF REQUIREMENTS FOR THE REVISED LAYOUT ESPECIALLY WITH REGARD TO INSTALLATION OF MECHANICAL DUCTS IN CEILING SPACES. WHERE EXISTING CONDUITS OBSTRUCT THE PROPOSED ROUTING THESE OBSTRUCTING CONDUITS SHALL BE RELOCATED IF IT IS DESIRED TO RE-USE THEM. THAT IS, LAYOUTS FOR RENOVATIONS TO THE AREA SHALL GOVERN AND EXISTING CONDUITS SHALL BE RELOCATED TO SUIT RENOVATIONS. THIS WORK SHOULD BE ALLOWED FOR IN THE CONTRACT.
- H. THIS CONTRACTOR SHALL VERIFY IF EXISTING LUMINAIRES BEING REMOVED ARE TO BE HANDED OVER TO THE LANDLORD PRIOR TO DISPOSING OF THEM.



ELECTRICAL SYMBOL LEGEND	
ABBREVIATIONS	FIRE ALARM
NOTE EQUIPMENT SHOWN DOTTED IS EXISTING AND TO REMAIN UNLESS INDICATED OTHERWISE	
R EXISTING DEVICE TO BE REMOVED	
RR EXISTING DEVICE TO BE REMOVED AND RELOCATED	
RE EXISTING DEVICE IN NEW RELOCATED POSITION	
B BLANK	
EM DENOTES EMERGENCY LIGHTING	
LIGHTING	
CEILING RECESSED LUMINAIRE	
CEILING SUSPENDED LINEAR LUMINAIRE	
SURFACE MOUNTED LUMINAIRE	
RECESSED DOWN LIGHT	
WALL MOUNTED LUMINAIRE	
RECESSED WALL WASHER	
PENDANT LUMINAIRE	
\$3 THREE-WAY SWITCH	
SINGLE POLE TOGGLE SWITCH, GANGED AS SHOWN	
OCCUPANCY SENSOR, CEILING MOUNTED	
OCCUPANCY SENSOR, WALL MOUNTED	
DAYLIGHT SENSOR	
DIMMER SWITCH	
DIMMER SWITCH C/W OCCUPANCY SENSOR	
EXIT SIGN - DIRECTION AS INDICATED ON PLANS	
COMMUNICATIONS	
COMBINATION DATA/TEL OUTLET (x0x) NUMBER OF DATA AND TEL PORTS AS INDICATED ON PLANS	
FLOOR MOUNTED COMBINATION DATA/TEL OUTLET (x0x) NUMBER OF DATA AND TEL PORTS AS INDICATED ON PLANS	
WIRELESS ACCESS POINT	
COMBINATION TELEPHONE AND DATA OUTLET CEILING	
CEILING MOUNTED PA SPEAKER	
AV# # GANG RECESSED AV BOX (NUMBER OF GANG AS NOTED)	
SYSTEMS FURNITURE COMMUNICATION WHIP CONNECTION	
JUNCTION BOX	
12" x 12" JUNCTION BOX	
PANEL BOARD	
MECHANICAL MOTOR CONNECTION	
DISCONNECT	
MECHANICAL DIRECT CONNECTION	
KITCHEN DIRECT CONNECTION	
GROUND BUS	
BASEBOARD HEATER	

Electrical Power, Lighting, Other Equipment Design (Energy)
British Columbia Building Code 2018
Electrical Design:
Energy Standard/Code: ASHRAE 90.1-2016
Power Compliance Path: N/A
In accordance with: N/A
Lighting Compliance Path:
Lighting Design Method: Prescriptive
In accordance with: Space by Space Method
Section 9
Other Equipment Path:
N/A (no other equip. work)
In accordance with: N/A

*THE DESIGN IS IN FULL COMPLIANCE WITH ASHRAE 90.1-2016.

DRAWING LIST
E0.0 COVER PAGE AND LEGEND
E1.0 DETAILS AND SCHEDULES
E2.0 EXISTING ELECTRICAL LAYOUT
E2.1 REVISED LIGHTING LAYOUT
E2.2 REVISED POWER & SYSTEMS LAYOUT
E2.3 ROOF PLAN ELECTRICAL LAYOUT
E3.0 ELECTRICAL SPECIFICATIONS
E3.1 COMMUNICATION SPECIFICATIONS

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NO.	DATE	DESCRIPTION
1	12-12-2022	ISSUED FOR BP COORDINATION
2	12-12-2022	ISSUED FOR BP COORDINATION
3	01-12-2023	ISSUED FOR BP COORDINATION
4	02-08-2023	ISSUED FOR REVIEW
5	03-07-2023	ISSUED FOR REVIEW
6	04-07-2023	ISSUED FOR REVIEW
7	05-12-2023	ISSUED FOR REVIEW
8	07-04-2023	ISSUED FOR PRE-TENDER COSTING
9	08-07-2023	ISSUED FOR PRE-BUILDING PERMIT
10	04-07-2024	ISSUED FOR TENDER REVIEW
11	18-07-2024	RE-ISSUED FOR BUILDING PERMIT
12	31-07-2024	RE-ISSUED FOR BUILDING PERMIT
13	16-09-2024	RE-ISSUED FOR TENDER



PRODUCTION DRAWINGS BY:
CNV FIREHALL No. 1 - DORMITORY RENOVATION

165 EAST 13th STREET, NORTH VANCOUVER, BC

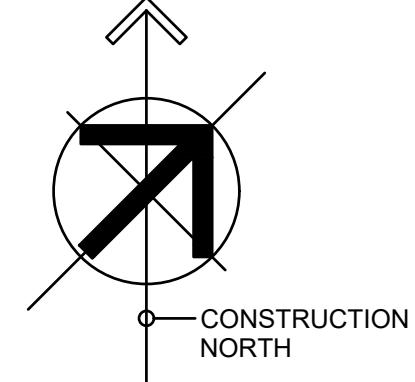
CLIENT: CITY of NORTH VANCOUVER

DRAWING TITLE: COVER PAGE AND LEGEND

PROJECT NUMBER: 0222.0339

DRAWN: VP SCALE: As indicated

DRAWING NUMBER: E0.0



MECHANICAL SCHEDULE															STARTER							DISC.		PILOT DEVICE		E	S	T
UNIT No.	UNIT DESCRIPTION	LOCATION	V	Ph	HP	KW	(A)	(MCA)	Breaker	Feeder	Conduit	PANEL	STARTER							DISC.		PILOT DEVICE		E	S	T		
													T	S	I	W	S	I	W	M	A	N	O	P	NOTE			
VAV-1	VAV UNIT	SECOND FLOOR CORRIDOR	208	1		5 KW	-		30A-2P	3c	2	3/4"	Z2-8.10														2	
HP-1	HEAT PUMP	ROOF	208	3		25 KW	-	64	70A-3P	3c	4	1-1/2"	Z2-2.4.6	M	M	E	E	-	M	M	M						2	

1 NOT USED
2 ALL EQUIPMENT IS TIED INTO THE CONTROL SYSTEMS.

GENERAL NOTES FOR MECH EQUIPMENT SCHEDULE:
 A. CONTRACTOR TO OBTAIN AND REVIEW MECHANICAL DRAWINGS AND SCHEDULES DURING TENDER TO ENSURE ALL SCOPE REQUIRED FOR ELECTRICAL CONNECTION TO MECHANICAL UNITS HAS BEEN ALLOWED FOR. NO EXTRAS WILL BE ALLOWED FOR STARTERS, DISCONNECTS, OR ANY OTHER EQUIPMENT IF IT IS SHOWN ON THE MECHANICAL TENDER DRAWINGS TO BE SUPPLIED BY ELECTRICAL.
 B. CONTRACTOR TO REVIEW MECH SHOP DRAWINGS AND CONFIRM ALL EQUIPMENT LOADS, OVERCURRENT PROTECTION, WIRE AND CONDUIT SIZES AND MOUNTING HEIGHTS PRIOR TO ROUGH-IN.
 C. CONTRACTOR TO INSPECT ALL MECH EQUIPMENT LABELS ON SITE PRIOR TO INSTALLATION AND INFORM THE CONSULTANT OF ANY DISCREPANCIES. FOLLOW THE MECH LABELS FOR FINAL SIZE OF THE BREAKERS AS PER C.E.C.
 D. ALL MOTORS LOCATED OUTSIDE TO BE C/W WEATHER PROOF DISCONNECT SWITCHES & RAIN TIGHT CONNECTIONS.
 E. ELECTRICAL INFORMATION ON THIS SCHEDULE IS BASED ON MCW CONSULTANTS LTD. DRAWINGS.

MECH MOTOR SCHEDULE ABBREVIATIONS:
 (a) Supplied By:
 E = Electrical
 M = MECH
 (b) Starter Type:
 PCS = Packaged Control System
 INT = Integral to Unit
 MRR = Motor Rated Relay C/W 24VAL Coil , HOA switch, and Motor Protection Switch
 VFD = Variable Frequency Drive Complete with Bypass and HOA Magnetic Starter.
 MG = Magnetic Starter Complete with HOA switch and aux status contact
 PCS = Packaged Control System
 (c) Control Device:
 T = Low Voltage Thermostat
 DDC = Direct Digital Control System
 C = Continuous Operation
 SW = Switch
 FAP = Fire alarm panel
 RT = Reverse Acting Thermostat
 BMS = Building Management System
 BA = DDC System

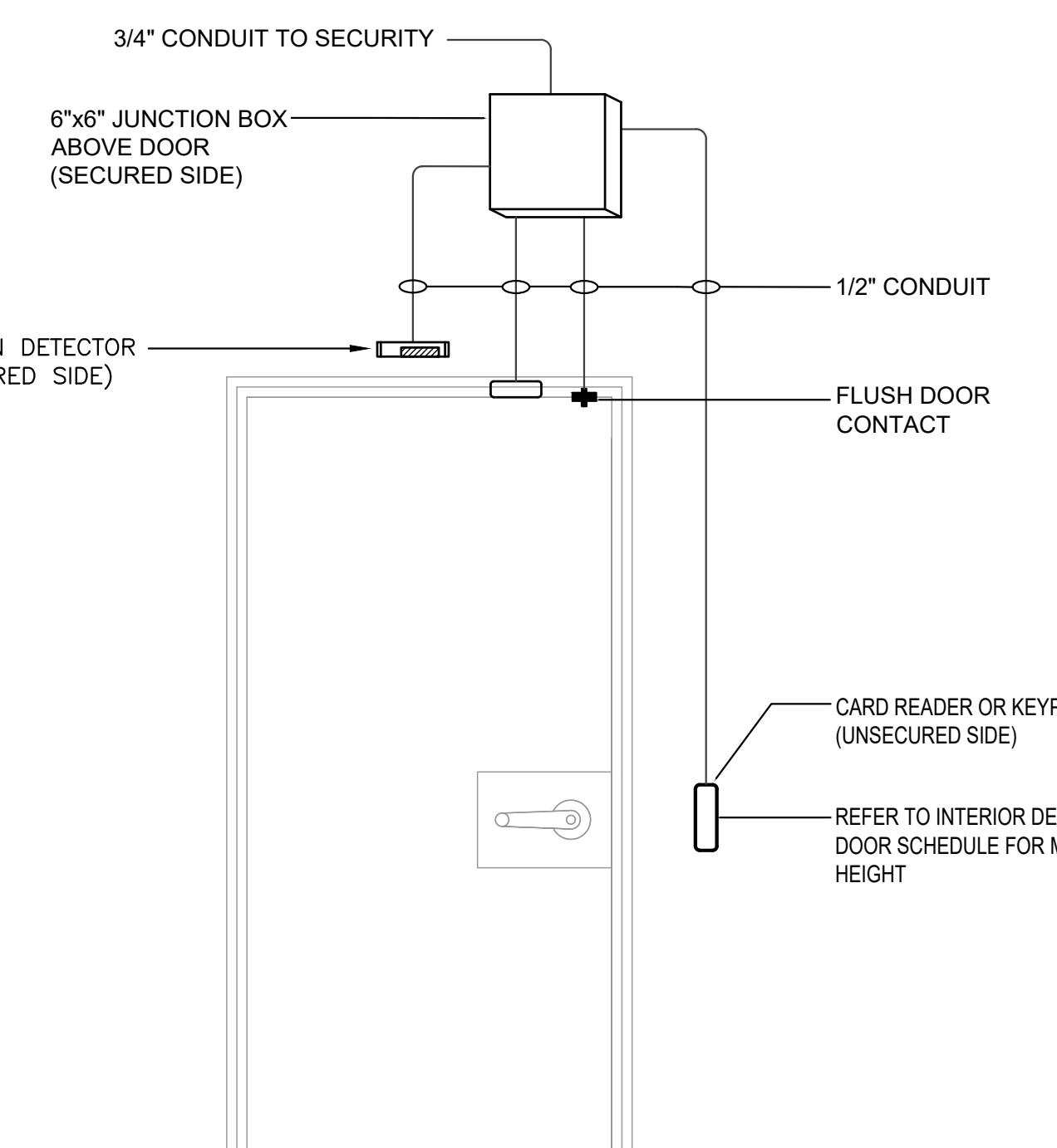
2-22-168 DATE: 2022-01-21

LUMINAIRE SCHEDULE														
TYPE	DESCRIPTION	PRODUCT	MOUNTING	LED PERFORMANCE				CONTROL	VOLTAGE	REMARKS			NOTES	
				WATTS (W)	LUMENS	COLOUR (K)	CRI							
L1	2X2 LIGHT	COLUMBIA LIGHTING CBT CBT2-L535	RECESSED	28	3358	3500	80	0-10V	120					
L2	SURFACE MOUNTED LINEAR	3G-4SLI 3G-4SLI-D500-H80-35K-UNV-DIM-FL-XX-2	CEILING	3.9/FT	500/FT	3500	80	0-10V	120	ID TO CONFIRM FINISH				
L3	ADJUSTABLE RECESSED DOWNLIGHT	FOCAL POINT ID-4.5" FLCS4-RT-1500-3500K-B0-WFL-UNV-Z1-IC LC54-RDT-SP40-CD-XX	RECESSED	16.8	1500	3500	80	0-10V	120	ID TO CONFIRM FINISH				
L4	WALL SCONCE	ETON WS18901	WALL	3	245	3000	90	ELV	120					

GENERAL NOTES

- A. DUE TO CONSTANT CHANGES IN CATALOGUE NUMBERS, ALL NUMBERS INDICATED MUST BE VERIFIED WITH THE MANUFACTURER PRIOR TO ORDERING.
- B. ALL LUMINAIRE FINISHES TO BE APPROVED BY ARCHITECT PRIOR TO ORDERING.
- C. TYPE OF CONSTRUCTION FOR ALL CEILINGS TO BE COORDINATED WITH ARCHITECTURAL DRAWINGS PRIOR TO ORDERING MOUNTING KITS. CONTRACTOR TO OBTAIN A SET OF IFC ARCHITECTURAL DRAWINGS AND COORDINATE MOUNTING WITH CEILING TYPES SHOWN. NO EXTRAS WILL BE ALLOWED FOR RE-ORDERING OF LUMINAIRES OR MOUNTING KITS TO MATCH CEILING TYPES SHOWN ON ARCHITECTURAL PLANS. MOUNTING HEIGHT OF ALL SUSPENDED LUMINAIRES TO BE ADJUSTABLE ON SITE, AND CONTRACTOR TO COORDINATE ON SITE UNDER DIRECTION OF CONSULTANT.
- D. CONTRACTOR TO ALLOW A MINIMUM 2 WEEKS FOR INITIAL REVIEW OF ENTIRE LIGHTING SHOP DRAWING PACKAGE. NO DELAY CLAIMS WILL BE ALLOWED FOR ANY SUBSEQUENT REVIEW TIME REQUIRED DUE TO INCORRECT SHOP DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE LUMINAIRES ARE DELIVERED IN A TIMELY MANNER TO THE SITE. NO EXTRAS WILL BE ALLOWED FOR SUBSTITUTIONS OR RUSH CHARGES REQUIRED TO MEET PROJECT SCHEDULE AND MUST BE ALLOWED FOR IN TENDER PRICE.
- E. ALL CONTROLS INTEGRATED WITH LUMINAIRES TO BE COMMISSIONED ON SITE AFTER INSTALL. CONTRACTOR TO ENSURE THAT ALLOWANCE IS MADE FOR ADJUSTING AND COMMISSIONING OF ALL CONTROLS AS REQUIRED.
- F. COORDINATE MOUNTING HEIGHT OF ALL WALL MOUNTED LUMINAIRES WITH ARCHITECT PRIOR TO ROUGH-IN. COORDINATE SUSPENSION HEIGHT OF ALL SUSPENDED LUMINAIRES WITH ARCHITECT PRIOR TO INSTALLATION.
- G. ALL JUNCTION BOXES FOR SURFACE MOUNT LUMINAIRES SHALL NOT BE WIDER THAN THE LUMINAIRE MOUNTING PLATE.
- H. ALL LED LUMINAIRES ARE INCLUDED WITH CONSTANT CURRENT DRIVERS UNLESS SPECIFIED.
- I. DEVIATIONS FROM THE SPECIFIED LUMINAIRE INDICATED IN THE LUMINAIRE SCHEDULE AND CONTROLS PACKAGE WILL REQUIRE ASHRAE 90.1 COMPLIANCE FORMS AND THE LIGHTING DESIGN TO BE REVISED AND RESUBMITTED TO THE AUTHORITY HAVING JURISDICTION BY THE ELECTRICAL ENGINEER OF RECORD. IF A REQUEST TO APPROVE AN ALTERNATE PACKAGE IS MADE AT DURING TENDER/BIDDING, THE COST OF REVISING AND RESUBMITTING THE FORMS AND DRAWINGS WILL BE AT THE EXPENSE OF THE LIGHTING SALES AGENCY. ALLOW FOR THE FOLLOWING TO BE PAID UP-FRONT TO THE ELECTRICAL CONSULTANT, FOR THE RE-DESIGN WORK. SHOULD THIS PROCEDURE NOT BE FOLLOWED, ALTERNATE PRODUCTS WILL BE REJECTED. CONTRACTORS WILL NOT BE ALLOWED ADDITIONAL COMPENSATION FOR REJECTED PRODUCT ALTERNATES. ALL APPROVALS PRODUCTS WILL BE CONFIRMED BY ADDENDUM. \$5,000 PER ALTERNATE PACKAGE SUBMISSION TO REVIEW AND ENSURE ENERGY AND CONTROL TARGETS ARE NOT DEVIATED FROM.
- J. \$8,000 TO COMPLETE THE COMPLIANCE FORMS AND REVISED THE PLANS WITH THE ACCEPTED ALTERNATE LUMINAIRES/CONTROL PACKAGE.

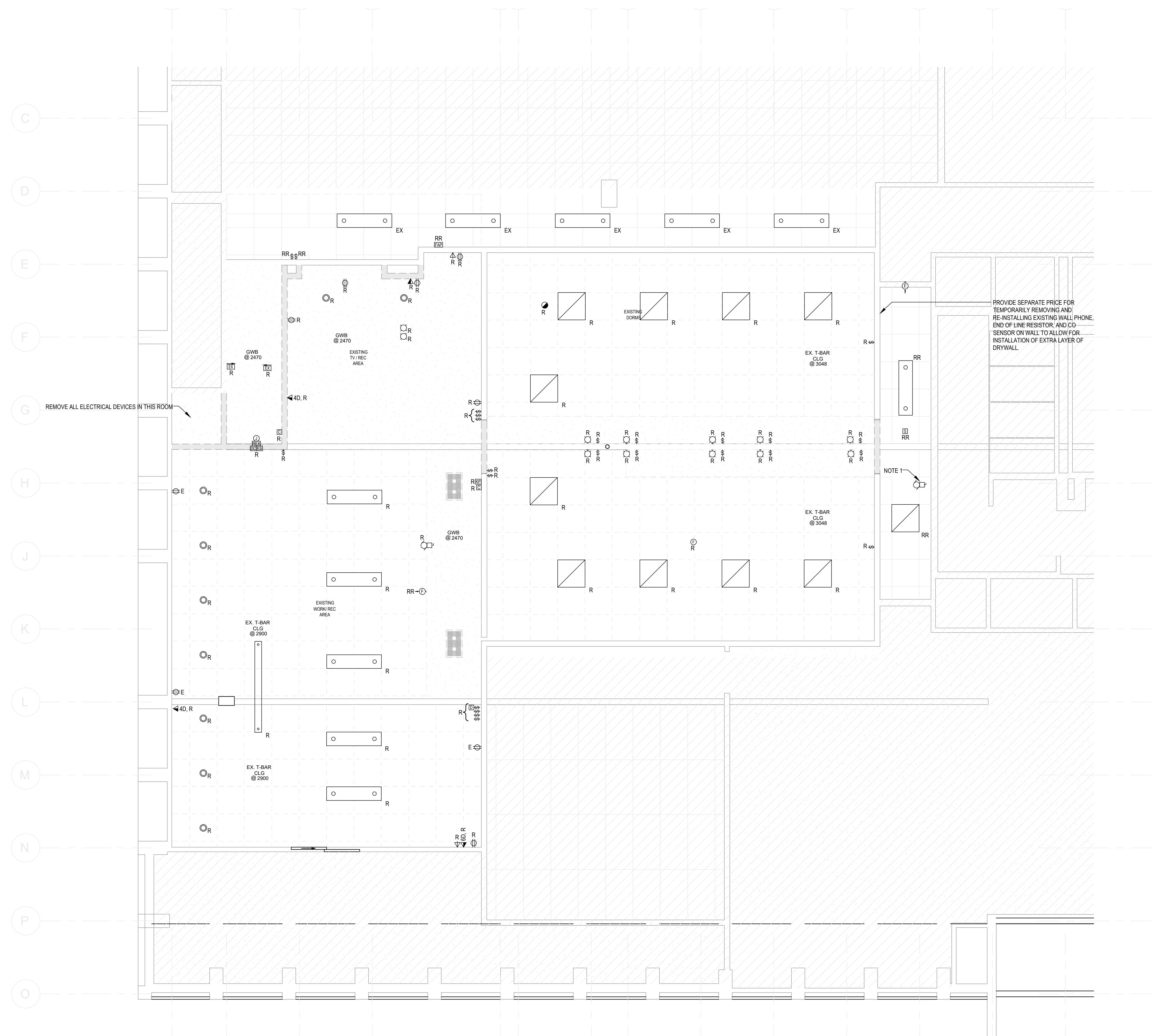
PANELBOARD SCHEDULE									
JOB NO./NAME	CNV Firehall No.1 - Dormitory Renovation								
PANEL	Z2								
SYSTEM	120/208V, 3PH, 4W								
MOUNTING	RECESSED								
NO. CIRCUITS	42								
BUS SIZE	250A								
DESCRIPTION	BRK	CIRC	CIRC	BRK	DESCRIPTION				
WORKSTATION	15A	1	2						
WORKSTATION	15A	3	4		70A3P				
TV	15A	5	6		HP-1				
HOUSEKEEPING	20A	7	8		30A2P				
USB RECEPTACLES	15A	9	10		VAV-1				
CONVENIENCE RECEPTACLES	15A	11	12		15A, LIGHTING				
USB RECEPTACLES	15A	13	14		15A, LIGHTING				
CONVENIENCE RECEPTACLES	15A	15	16						
		17	18						
		19	20						
		21	22						
		23	24						
		25	26						
		27	28						
		29	30						
		31	32						
		33	34						
		35	36						
		37	38						
		39	40						
		41	42						
GFCI BREAKER	*								
ACFI BREAKER	**				REFER TO SINGLE LINE DIAGRAM				



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12-12-202



KEY NOTES:

1. EXISTING HEAT PUMP ON ROOF TO BE REMOVED. REMOVE ALL ASSOCIATED CONDUIT/WIRING.

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE TO REVIEW SITE CONDITIONS AND EXISTING DEVICES DURING TENDER STAGE AND REPORT ANY DISCREPANCIES DURING TENDER, OR ALLOW FOR THE WORK IN THEIR PRICE.

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2	12-15-2022	ISSUED FOR BP COORDINATION
3	01-12-2023	ISSUED FOR BP COORDINATION
4	03-04-2023	ISSUED FOR PRE-TENDER REVIEW
5	03-07-2023	ISSUED FOR REVIEW
6	04-04-2023	ISSUED FOR REVIEW
7	04-07-2023	ISSUED FOR PRE-TENDER REVIEW
8	07-04-2023	ISSUED FOR PRE-TENDER COSTING
9	30-04-2024	ISSUED FOR BUILDING PERMIT
10	23-05-2024	RE-ISSUED FOR BUILDING PERMIT
11	18-07-2024	RE-ISSUED FOR BUILDING PERMIT
12	31-07-2024	RE-ISSUED FOR BUILDING PERMIT
13	16-09-2024	RE-ISSUED FOR TENDER

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PROJECT TITLE:
**CNV FIREHALL No. 1 -
DORMITORY
RENOVATION**

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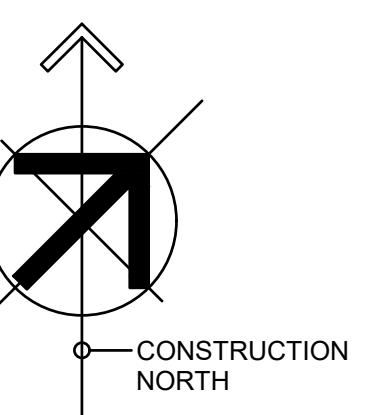
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DRAWING TITLE:
**EXISTING ELECTRICAL
LAYOUT**

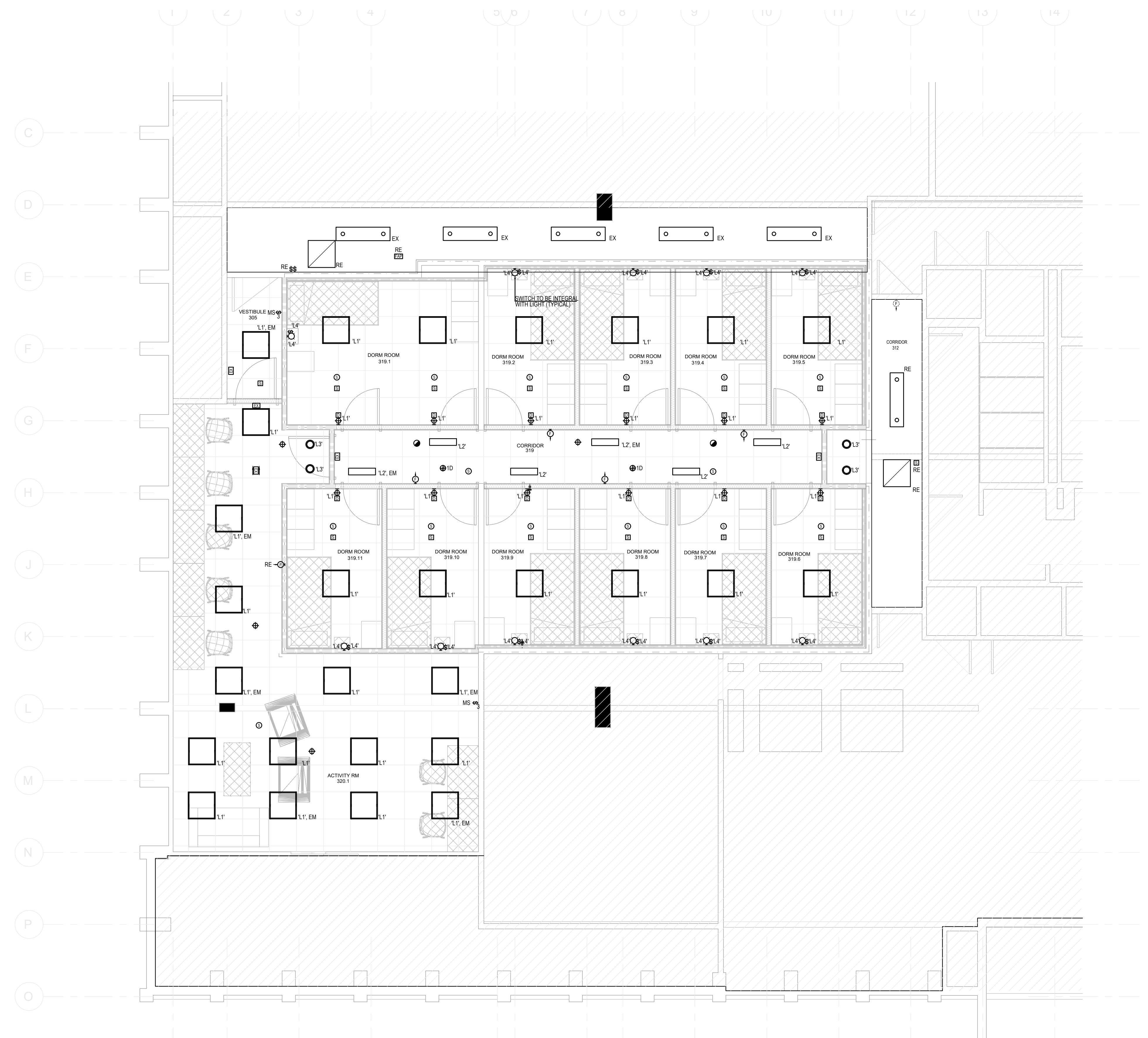
PROJECT NUMBER: **0222.0339**

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1 EXISTING ELECTRICAL LAYOUT
E2.0 1:50



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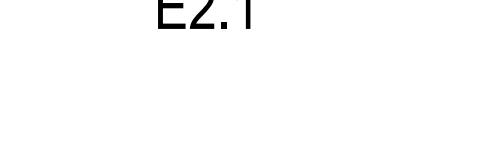
DRAWING TITLE:
**REVISED LIGHTING
LAYOUT**

PROJECT NUMBER:
0222.0339

DRAWN: VP SCALE: As indicated

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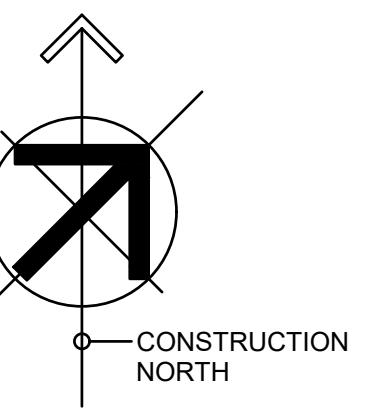
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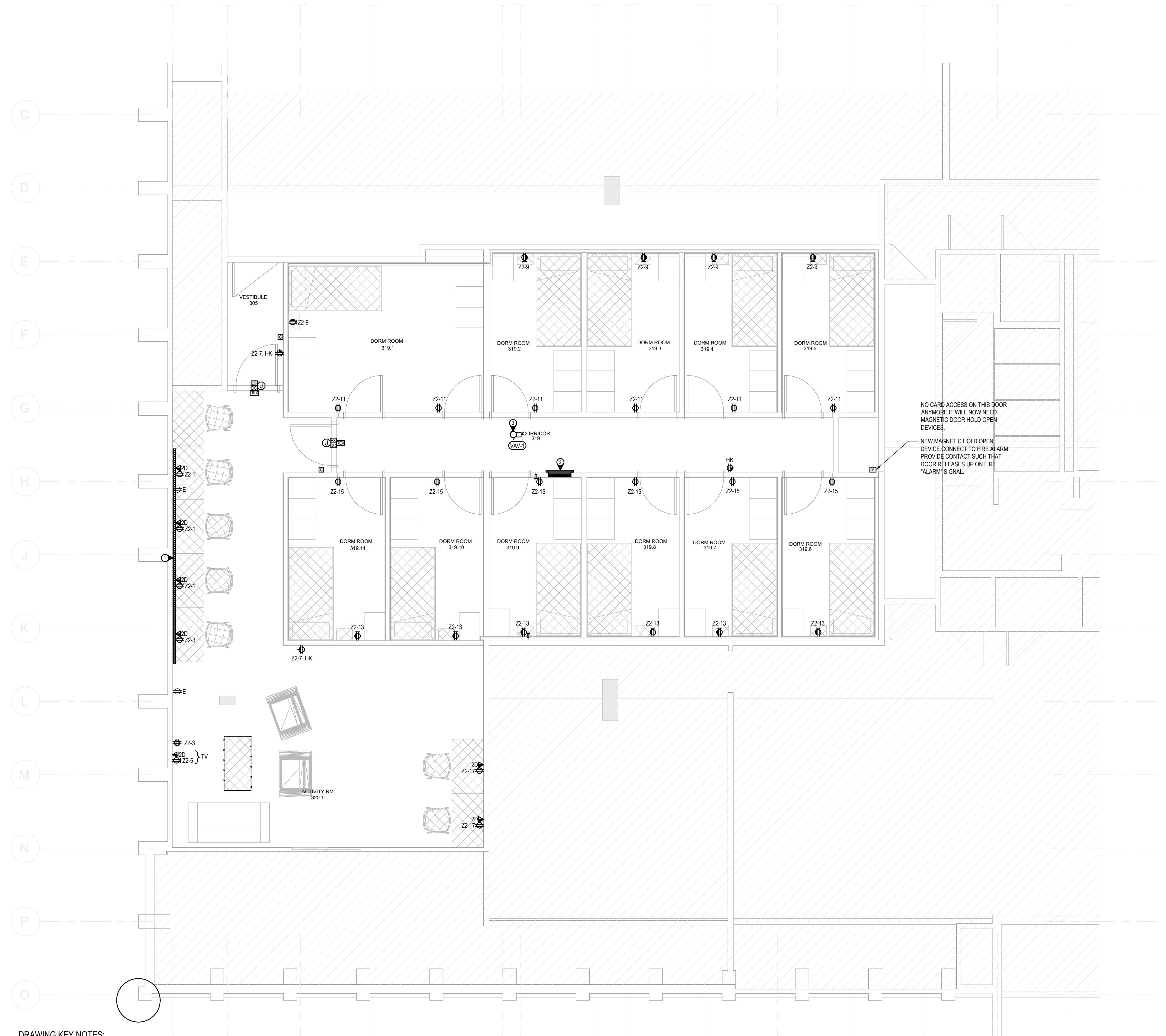


GENERAL NOTES:

- A. CONTRACTOR TO TIE NEW EMERGENCY LIGHTING AND EXIT SIGNS TO EXISTING EM CIRCUIT.
- B. THIS CONTRACTOR TO ALLOW FOR ALL COST ASSOCIATED WITH HIRING BASE BUILDING FIRE ALARM CONTRACTOR/COMMUNITY FIRE ALARM CONTRACTOR TO PERFORM ALL WORK RELATED TO FIRE ALARM SYSTEM. FIRE ALARM SYSTEM IS MONITORED BY PALADIN TECHNOLOGIES. ANY MODIFICATION TO THE SYSTEM MUST BE RE-VERIFIED. EXISTING FIRE ALARM GRAPHIC SHALL BE UPDATED WHERE REQUIRED UNDER THIS SCOPE OF WORK.
- C. LIGHTING CONTROLS TO BE WATERTIGHT QUANTITIES PER PLAN. COORDINATE SCHEDULE AND LIGHTING LEVELS ON SITE WITH CLIENT.
- DT-355 DUAL TECHNOLOGY OCCUPANCY SENSOR
- ANY NECESSARY COMPONENTS FOR COMPLETE INSTALLATION
- D. PROVIDE NEW PA SPEAKER FOR SCOPE AREA PA SPEAKERS IN COMMON AREAS ARE TO BE TIE INTO EXISTING PA ZONE. NEW PA SPEAKERS IN DORM ROOMS ARE TO BE TIE INTO THE NEW LOOP TO TIE BACK TO THE HEAD END UNIT LOCATED IN THE SAN ROOM. PROVIDE VOLTAGE CONTROL ON THIS NEW LOOP SO THAT VOLUME CAN BE SET INDEPENDENT OF THE OTHER SPEAKERS IN THE COMMON AREAS. PROVIDE ALL NECESSARY WIRING. NEW SPEAKER SO BE EQUAL TO SPEED 8" CEILING SPEAKER WITH TRANSFORMER 10W/70/24V - WHITE.

1 REVISED LIGHTING LAYOUT
E2.1 0 1000 2000 3000 1:50





DRAWING KEY NOTES:

1. SUPPLY AND INSTALL DUAL CHANNEL WIREMOLD 4000 SERIES. POWER AND DATA TO BE FED FORM WITHIN THE CLOSEST COLUMN OR WALL AND TRANSITION INTO WIREMOLD. PROVIDE BARRIER BETWEEN POWER AND COMMUNICATION CABLES. PROVIDE ALL NECESSARY ACCESSORIES FOR CONCRETE MOUNT WIREMOLD. CONTRACTOR TO BE MOVED EXISTING BASEMENT HEATER MOUNT WIREMOLD ON THE FLOOR IF BASEMENT HAS TO REMAIN.
2. NEW SUB PANEL Z2, 120/208V, 3PH, 4W, 42 CIRCUITS, 250A RATED C/W 200A MAIN BREAKER TO BE FED FROM THE MAIN DISTRIBUTION CDP LOCATED IN THE ELECTRICAL ROOM ON THE LOWER LEVEL. PROVIDE NEW 200A-3P BREAKER IN EXISTING ELECTRICAL ROOM CDP. PROVIDE BEW 250A RATED FEEDER UP TO NEW PANEL Z2 LOCATION. CONTRACTOR TO PROVIDE SEPARATE PRICE FOR SP-1.
3. CONTRACTOR IS TO ALLOW FOR ELECTRICAL CONNECTION TO VAV-1 LOCATED IN THE CORRIDOR. CONTRACTOR IS TO COORDINATE WITH MECHANICAL FOR EXACT POWER REQUIREMENTS. LOCATION AND MOUNTING HEIGHT. CONTRACTOR IS TO USE NEXT AVAILABLE CIRCUIT ON PANEL 'Z2' FOR VAV-1.

SEPARATE PRICE NOTES:

- SP-1 - CONTRACTOR TO CARRY ALL COSTS FOR LIVE BREAKER INSTALLATION IN THE EVENT THE CLIENT ADVISES THE MAIN DISTRIBUTION CAN'T BE DE-ENERGIZED. CONTRACTOR TO INCLUDE ALL FOR PROTECTIVE EQUIPMENT, ARC-FLASH STUDY AND ALL NECESSARY INSURANCE COSTS.

1 REVISED POWER AND SYSTEMS LAYOUT
E2.2

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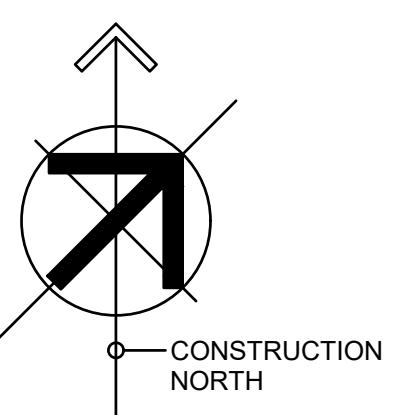
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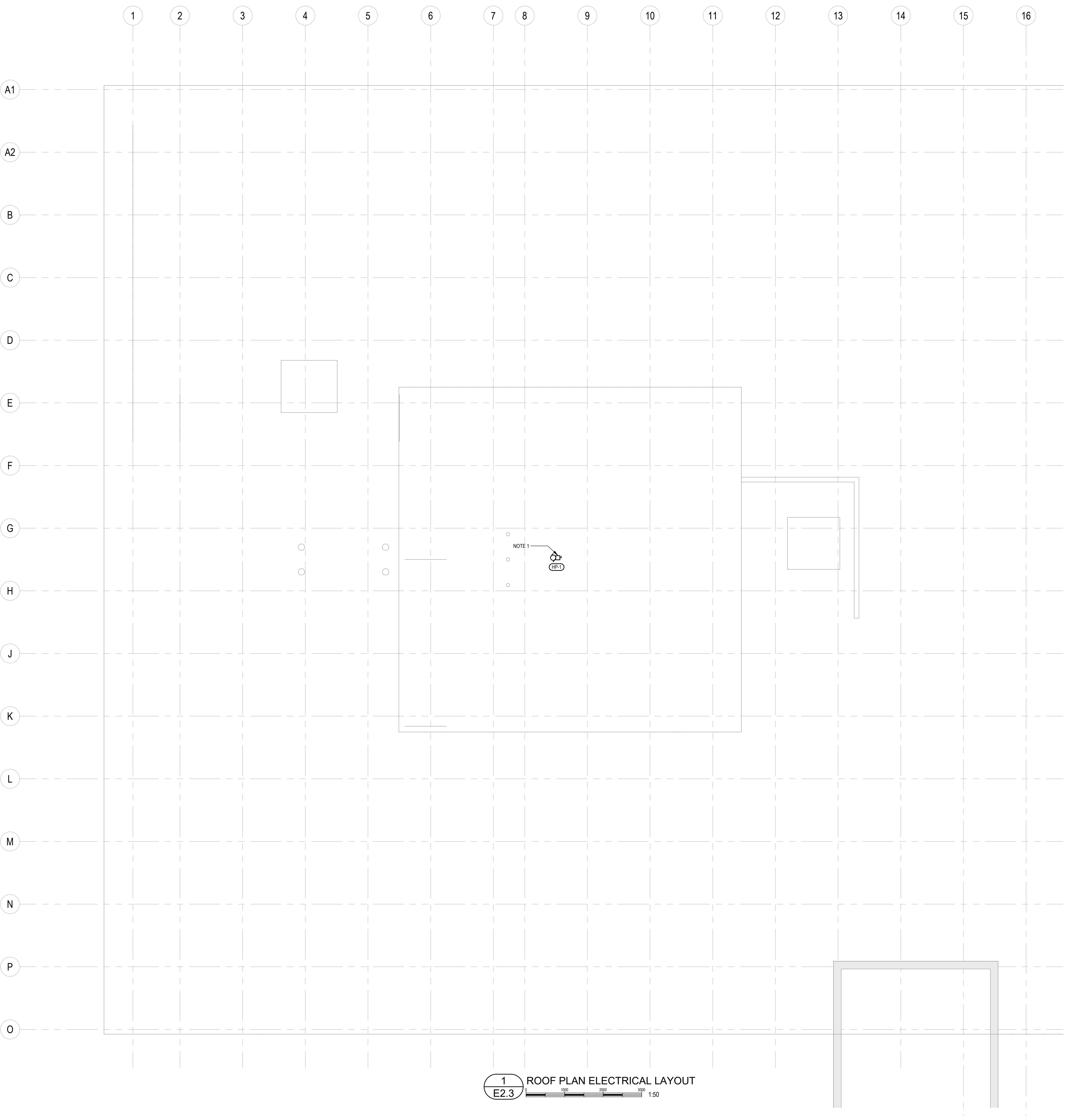
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PROJECT NUMBER:
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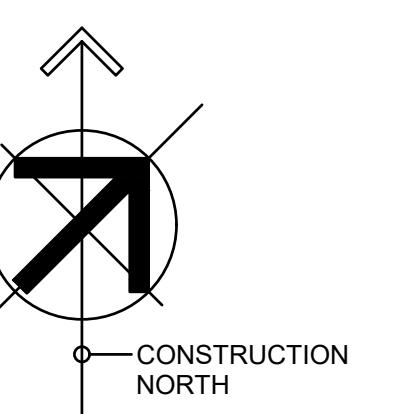
ELECTRICAL SPECIFICATION

1. GENERAL
.1 GENERAL REQUIREMENTS, INSTRUCTIONS TO BIDDERS. THIS SPECIFICATION AND ANY ADDENDA HERETO FORM PART OF THE CONTRACT DOCUMENTS AND SHALL BE READ IN CONJUNCTION WITH THEM. WORK TO INCLUDE THE FURNISHING OF ALL LABOR AND MATERIALS, UNLESS SPECIFIED OTHERWISE, TO COMPLETE AND PUT INTO OPERATING CONDITION ALL ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.
2. IT IS THE INTENT OF THE WORK TO PROVIDE COMPLETE, NEATLY FINISHED, AND OPERATIONAL SYSTEMS AND ANY LABOR, MATERIAL PERMITS, LICENSES, APPROVALS AND INSPECTIONS REQUIRED FOR COMPLETION OF THE WORK, WHETHER SPECIFICALLY MENTIONED IN THE DRAWINGS OR SPECIFICATIONS OR NOT, ARE TO BE INCLUDED IN THE TENDERED PRICE.
3. RESPONSIBILITY AS TO WHICH TRADE PROVIDED REQUIRED ARTICLES OR MATERIALS RESTS SOLELY WITH THE GENERAL CONTRACT TRADE. EXTRAS WILL NOT BE CONSIDERED BASED ON GROUNDS OF DIFFERENCE OF INTERPRETATION OF SPECIFICATIONS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIFICATIONS OR MATERIALS.
4. THE DRAWINGS AND SPECIFICATIONS FOR COMPLETE WORKS, INCLUDING ALL OF THOSE RELATED TO OTHER TRADES ARE TO BE EXAMINED BEFORE SUBMITTING TENDERS. ALL ELECTRICAL AND COMMUNICATIONS REQUIREMENTS INDICATED ARE TO BE INCLUDED IN THE SCOPE OF THE WORK.
5. CLEAN UP AND REMOVE ALL UNUSED WIRING AND CONDUITS.
6. REMOVE AND REINSTALL EXISTING DEVICES TO FACILITATE CONSTRUCTION AS REQUIRED.
7. CONFIRM OUTLET LOCATIONS AND MOUNTING HEIGHT WITH ARCHITECT/GENERAL CONTRACTOR ON SITE PRIOR TO INSTALLATION.
8. FIRE PROOF ALL FIRE RATED PENETRATIONS AFTER INSTALLATION AS PER SECTION 37.
9. COORDINATE WITH AND GET APPROVAL FROM LANDLORD FOR ALL DRILLING, CORING AND CUTTING OF BUILDING STRUCTURE. COORDINATE LOCATIONS ON SITE PRIOR TO CARRYING OUT THE WORK. ALLOW FOR ALL COSTS FOR X-RAY SCANNING. CONTRACTOR MUST OBTAIN WRITTEN APPROVAL FROM THE LANDLORD STRUCTURAL ENGINEER PRIOR TO COMMENCEMENT OF THE WORK.
10. PROVIDE ALL NECESSARY TEMPORARY POWER AND LIGHTING.
11. WHERE TENANT SPACES ARE OCCUPIED BY THE CLIENT, ALL NOisy WORK SUCH AS (BUT NOT RESTRICTED TO) WIRING AND CABLING PULLING, INSTALLATION OF CONDUIT SHOULD BE DONE AFTER HOURS.
2. DRAWINGS AND SPECIFICATIONS
.1 DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR BY ONE IS TO BE BINDING AS IF CALLED FOR BY BOTH.
2. SHOULD ANY DISCREPANCY APPEAR BETWEEN DRAWINGS AND SPECIFICATIONS THAT LEAVES THE ELECTRICAL TRADE IN DOUBT AS TO TRUE INTENT OR MEANING, OBTAIN RULING FROM THE ENGINEER BEFORE SUBMITTING TENDER, OR ALLOW FOR THE MOST EXPENSIVE ALTERNATIVE.
3. EXAMINATION OF OTHER DRAWINGS
.1 THE ELECTRICAL CONTRACTOR IS TO EXAMINE CAREFULLY STRUCTURAL, ARCHITECTURAL AND MECHANICAL DRAWINGS, AND THE WORK OF OTHER TRADES AND SATISFY HIMSELF THAT THE WORK UNDER THIS CONTRACT CAN BE SATISFACTORILY CARRIED OUT WITHOUT CHANGES TO THE BUILDING AS SHOWN ON THE PLANS. SHOULD ANY DIFFICULTY ARISE SHOWING CONFLICT WITH, OR REQUIRING ADDITIONAL WORK BEYOND THE WORK OF THESE DRAWINGS, BRING THIS MATTER TO THE ATTENTION OF THE ENGINEER BEFORE SUBMITTING TENDER.
4. UNIFORMITY OF EQUIPMENT
.1 UNLESS OTHERWISE SPECIFIED, UNIFORMITY OF MANUFACTURE IS TO BE MAINTAINED FOR ANY PARTICULAR ITEM THROUGHOUT.
5. STANDARDS OF MATERIAL AND WORKMANSHIP
.1 ALL MATERIALS ARE TO BE NEW AND OF THE QUALITY SPECIFIED, AND SHALL BE APPROVED BY CSA OR EQUIVALENT AGENCY RECOGNIZED IN BRITISH COLUMBIA.
2. ALL WORK SHALL BE EXECUTED IN A NEAT AND WORKMANLIKE MANNER BY QUALIFIED TRADESMEN. THE ELECTRICAL CONTRACTOR SHALL KEEP A COMPETENT FOREMAN AND NECESSARY ASSISTANTS ON THE SITE DURING THE PROGRESS OF THE WORK.
3. ALL MATERIAL AND INSTALLATION SHALL MATCH EXISTING OR APPROVED ALTERNATE UNLESS IT IS NOTED OTHERWISE ON THE DRAWINGS.
6. RECORD PLANS & MAINTENANCE MANUALS
.1 THE ENGINEER WILL FURNISH TO THE ELECTRICAL TRADE ONE SET OF DRAWINGS TO BE USED FOR RECORD PURPOSES. THE ELECTRICAL TRADE IS TO ACCURATELY RECORD ON THESE PRINTS ALL REVISIONS TO THE ORIGINAL PLANS THAT ARE MADE ON SITE DURING CONSTRUCTION.
2. THE ELECTRICAL TRADE IS TO PRODUCE AT HIS OWN EXPENSE A SET OF RED LINE MARKUP DRAWINGS, INCLUDING ALL CHANGES TO THE ORIGINAL TENDER DRAWINGS COVERED BY ADDENDA, CHANGE ORDERS, FIELD CHANGES, AND JOB CONDITIONS, AND TURN THESE OVER TO THE ENGINEER IN HARD COPY FORM. COMPLETED RECORD DRAWINGS ARE TO BE CLEARLY MARKED "RECORD DRAWINGS". REFER TO LINE ITEM 3.
3. THIS CONTRACTOR SHALL ALLOW FOR A COST OF \$350 PER DRAWING FOR TRANSFERRING RED LINE MARK-UPS TO ELECTRONIC AUTOCAD RECORD DRAWINGS AND THIS AMOUNT SHALL BE INCLUDED IN THE TENDER BID. CONTRACTOR MAY HIRE AES TO PRODUCE THE RECORD CAD DRAWINGS IF DESIRED.
4. THIS CONTRACTOR SHALL PROVIDE 3 THREE-RING BINDERS FOR MAINTENANCE MANUALS. MANUALS SHALL CONTAIN ALL WARRANTIES, SHOP DRAWINGS, INSPECTION LETTERS, PANEL SCHEDULES, ETC. PROVIDE ONE DIGITAL COPY OF MAINTENANCE MANUALS AND A PDF OF RECORD DRAWINGS.
7. SHOP DRAWINGS
.1 THE ELECTRICAL CONTRACTOR IS TO SUBMIT TO THE ENGINEER, FOR REVIEW, SHOP DRAWINGS OF ALL ELECTRICAL EQUIPMENT. SUCH EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO SWITCHGEAR, PANELBOARDS, SERIES-RATED BREAKER COMBINATIONS, FIXTURES AND FITTINGS NOT PROVIDED BY THE OWNER.
2. ALL DRAWINGS ARE TO BE SUBMITTED IN TRIPPLICATE AND TWO COPIES WILL BE RETURNED TO THE ELECTRICAL TRADE. SUBMIT ADDITIONAL COPIES FOR APPROVAL AS MAY BE REQUIRED.
3. THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS TO BE FOR GENERAL DESIGN ONLY AND WILL NOT RELIEVE THE ELECTRICAL TRADE OR SUBCONTRACTORS OF LIABILITY FOR ERRONEOUS PRACTICE, CONSTRUCTION OF WORK, AND FURNISHING OF MATERIALS. REVIEW WILL NOT BE CONSIDERED AS APPROVING DRAWINGS FROM CONTRACT DOCUMENT REQUIREMENTS IF SUCH DEPARTURES ARE NOT SPECIFICALLY NOTED. THE ELECTRICAL TRADE IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS.
4. DEVIATIONS FROM THE SPECIFIED LUMINAIRE AND CONTROL PACKAGE WILL REQUIRE ASHRAE 90.1-2010 COMPLIANCE FORMS TO BE REVISED AND RESUBMITTED TO THE AUTHORITY HAVING JURISDICTION BY THE ELECTRICAL ENGINEER OF RECORD FOR THE PROJECT. THE COST OF REVISING AND RESUBMITTING THESE FORMS WILL BE AT THE EXPENSE OF THE CONTRACTOR. ALLOW FOR THE FOLLOWING TO BE PAYABLE TO THE ELECTRICAL CONSULTANT, FOR THE WORK TO BE COMPLETED:
- \$5,000 PER ALTERNATE PACKAGE SUBMISSION TO REVIEW AND ENSURE ENERGY AND CONTROL TARGETS ARE NOT DEViated FROM
- \$8,000 TO COMPLETE THE COMPLIANCE FORMS WITH THE ACCEPTED ALTERNATE LUMINAIRE/CONTROL PACKAGE
8. GUARANTEE WARRANTY
.1 THE ELECTRICAL TRADE SHALL FURNISH A WRITTEN GUARANTEE WARRANTY, SIGNED BY AUTHORIZED PERSONNEL, STATING:
.1.1 THAT ALL WORK EXECUTED UNDER THIS CONTRACT WILL BE FREE FROM DEFECTS OF MATERIAL AND WORKMANSHIP FOR A PERIOD OF 1 YEAR FROM DATE OF FINAL ACCEPTANCE.
.2.2 THE ABOVE PARTIES FURTHER AGREE TO, AT THEIR OWN EXPENSE, REPAIR AND REPLACE ALL SUCH DEFECTIVE WORK, AND OTHER WORK DAMAGED THEREBY WHICH FAILS OR BECOMES DEFECTIVE DURING THE TERM OF THE GUARANTEE WARRANTY PROVIDED THAT SUCH FAILURE IS NOT DUE TO IMPROPER USAGE.
.3.3 THE PERIOD OF THE GUARANTEE SPECIFIED WILL IN NO WAY SUPPLANT ANY OTHER GUARANTEE OF A LONGER PERIOD BUT BE BINDING ON WORK NOT OTHERWISE COVERED.
9. SETTING OUT OF THE WORK
.1.1 THE ELECTRICAL TRADE IS RESPONSIBLE FOR CORRECTING ALL WORK COMPLETED CONTRARY TO THE INTENT OF DRAWINGS AND SPECIFICATIONS AND SHALL bear ALL COSTS INVOLVED IN MAKING THE CORRECTIONS. WHERE INTENT OF DRAWINGS AND SPECIFICATIONS IS NOT CLEAR, OBTAIN CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH WORK.
.2.2 THE ELECTRICAL TRADE IS TO GIVE HIS PERSONAL SUPERVISION, LAY OUT HIS OWN WORKS, DO ALL NECESSARY LEVELING AND MEASURING OR EMPLOY A COMPETENT ENGINEER TO DO SO. FIGURES, FULL SIZE AND DETAIL DRAWINGS TO TAKE PRECEDENCE OVER SCALE MEASUREMENTS.
.3.3 THE ELECTRICAL TRADE SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE OWNER OR ANY OTHER TRADE BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK.
.4.4 THE ELECTRICAL TRADE, IN THE SETTING OUT OF HIS WORK, IS TO MAKE REFERENCE TO ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DRAWINGS. HE SHALL CONSULT WITH ALL RELEVANT TRADES IN SETTING OUT LOCATIONS FOR CONDUIT RUNS, LIGHTING FIXTURES, PANEL ASSEMBLIES, AND ALL OTHER ELECTRICAL EQUIPMENT, SO THAT CONFLICTS ARE AVOIDED AND SYMMETRICAL SPACING IS MAINTAINED.
.5.5 THE ELECTRICAL TRADE SHALL CONFIRM OUTLET LOCATIONS AND MOUNTING HEIGHTS WITH THE ARCHITECT ON SITE PRIOR TO INSTALLATION.
.6.6 WHERE RECEPTACLES ARE MOUNTED ABOVE COUNTERS, BENCHES, SPLASHBACKS, OR OTHER FIXTURES, THEIR LOCATIONS AND MOUNTING HEIGHTS ARE TO BE COORDINATED WITH THE BUILT-IN UNITS. REFER TO ARCHITECTURAL DETAILS WHERE RECEPTACLES OCCUR IN OUTSIDE WALLS WHERE HEATING UNITS ALSO OCCUR. RECEPTACLE HEIGHT TO BE ADJUSTED TO COORDINATE WITH THE HEATING UNITS.
.7.7 SWITCH MOUNTING HEIGHTS ARE TO BE COORDINATED WITH ARCHITECTURAL DETAILS AND SHALL BE ADJUSTED, IF REQUIRED, TO COORDINATE WITH PANELING, DADOES, MASONRY COURSE LINES, OR OTHER RELEVANT BUILDING FEATURES.
.8.8 WHERE OUTLET BOXES OCCUR IN EXTERIOR WALLS, THE ELECTRICAL TRADE IS TO ENSURE THAT THERE IS INSULATION BEHIND THE OUTLET BOXES TO PREVENT CONDENSATION THROUGH THE BOXES.
.9.9 ALLOW FOR WORK AFTER HOURS AS REQUIRED AND COORDINATE WITH OWNERS/TENANTS IF APPROPRIATE.
.10.10 CONTRACTOR TO COORDINATE ANY INTERRUPTIONS TO ADJOINING TENANTS IN ORDER TO AVOID ANY INCONVENiences TO SAID TENANT.
10. EXAMINATION OF THE SITE
11. CUTTING AND PATCHING
.1.1 PRIOR TO SUBMITTING TENDER, THE ELECTRICAL TRADE SHALL CAREFULLY EXAMINE THE SITE AND ASCERTAIN ALL CONDITIONS WHICH MAY AFFECT HIS TRADE. NO ADDITIONAL MONEY WILL BE ALLOWED FOR WORK RESULTING FROM CONDITIONS THAT SHOULD HAVE BEEN NOTICED AND ACCOUNTED FOR DURING A THOROUGH EXAMINATION OF THE SITE.
2. WHERE WORK DONE BY THE ELECTRICAL TRADE DAMAGES THE WORK OF OTHER TRADES, THE ELECTRICAL TRADE SHALL REPAIR AND MAKE GOOD SUCH DAMAGE TO THE SATISFACTION OF EACH TRADE CONCERNED AND THE ENGINEER.
3. ALL PENETRATIONS SHALL BE SEALED WITH APPROVED FIRE STOP MATERIAL.
12. CLEANUP
.1.1 THE ELECTRICAL TRADE AND HIS SUB-TRADES ARE TO KEEP THE SITE FREE DURING CONSTRUCTION OF DEBRIS, BOXES, PACKING, AND OTHER MATERIALS ASSOCIATED WITH THE WORK OF THIS TRADE. ALL WASTE MATERIAL IS TO BE DISPOSED OF IN A SAFE AND ENVIRONMENTALLY RESPONSIBLE MANNER.
2. UPON COMPLETION OF WORK, THE ELECTRICAL INSTALLATION SHALL BE LEFT IN A CLEAN AND FINISHED CONDITION TO THE SATISFACTION OF THE ENGINEER.
13. ACCESS DOORS
.1.1 THE ELECTRICAL TRADE IS TO SUPPLY AND INSTALL ACCESS DOORS AS REQUIRED FOR PROPER SERVICING OF ALL ELECTRICAL WORK. ACCESS DOORS SHALL BE COMPLETE WITH NECESSARY FRAMES AND HINGED DOORS HELD WITH CAPTIVE STUDS. ACCESS PANEL TO BE OF NOT LESS THAN 14 GAUGE STEEL, PRIME COAT PAINTED AND FINISHED ON THE JOB TO MATCH THE WALL OR CEILING FINISH.
2. THE NUMBER OF ACCESS DOORS SHALL BE KEPT TO A MINIMUM.
3. THE ELECTRICAL TRADE SHOULD PROVIDE ACCESS PANELS IN THE DRYWALL CEILINGS FOR ALL ELECTRICAL JUNCTION BOXES AND EQUIPMENT IN ACCORDANCE WITH APPLICABLE CODES.
14. CODES, PERMITS AND INSPECTION
.1.1 THE ENTIRE INSTALLATION, INCLUSIVE OF MATERIAL AND LABOR, IS TO COMPLY WITH ALL THE REQUIREMENTS OF ALL BUILDING CODES AND AUTHORITIES HAVING JURISDICTION, THE CANADIAN ELECTRICAL CODE, AND REGULATIONS OF THE LOCAL INSPECTION DEPARTMENT.
2. THE ELECTRICAL TRADE IS TO OBTAIN ALL PERMITS REQUIRED FOR EACH STAGE OF WORK, AND AFTER COMPLETION OF THE ENTIRE INSTALLATION FURNISH TO THE ENGINEER A CERTIFICATE OF FINAL INSPECTION AND APPROVAL FROM THE ELECTRICAL INSPECTION DEPARTMENT OF THE LOCAL AUTHORITY.
15. MECHANICAL EQUIPMENT
.1.1 UNLESS SPECIFIED OTHERWISE, THE ELECTRICAL CONTRACTOR IS TO SUPPLY AND INSTALL ALL REQUIRED CONDUIT, WIRING, ELECTRICAL FITTINGS AND CONNECTIONS FOR ALL MOTORS AND OTHER ELECTRICAL EQUIPMENT, EVEN THOUGH SUCH MOTORS AND OTHER ELECTRICAL EQUIPMENT MAY BE SUPPLIED BY OTHERS. WHERE REQUIRED BY THE DRAWINGS OR APPLICABLE REGULATIONS, DISCONNECT SWITCHES, STARTERS, OVERLOAD RELAYS, AND OTHER NECESSARY PROTECTIVE DEVICES ARE TO BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL CONDUIT, WIRING, AND CONNECTIONS SHALL BE COATED WITH INSULATION. THE ELECTRICAL CONTRACTOR SHALL INCLUDE ALL WORK AND CONNECTIONS REQUIRED TO MAKE THE SYSTEM COMPLETE AND OPERATIONAL.
2. THE ELECTRICAL EQUIPMENT MAY INCLUDE BUT NOT BE LIMITED TO SUCH ITEMS AS GRILLE MOTORS AND INTERLOCKS, STOREFRONT AND INTERIOR SIGNAGE, STARTING DEVICES, MOTOR CONTROLLERS, FLOAT SWITCHES, ALARM DEVICES OR SYSTEMS, PUSH BUTTONS, EXHAUST FANS, DATA SYSTEMS, INTERCOMS AND STEREO SYSTEMS.
3. THE ELECTRICAL CONTRACTOR IS TO CONFIRM MOTOR (OR OTHER EQUIPMENT) LOCATION AND SIZES WITH THE TRADE SUPPLYING THE MOTOR (OR OTHER EQUIPMENT) BEFORE COMMENCING ANY ASSOCIATED ELECTRICAL WORK.
16. TESTS
.1.1 ALL PORTIONS OF ELECTRICAL WORK ARE TO BE TESTED FOR SATISFACTORY OPERATION.
2. BEFORE ENERGIZING ANY PORTION OF THE ELECTRICAL SYSTEM, THE ELECTRICAL TRADE SHALL PERFORM MEGGER TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. ANY PROBLEMS DISCOVERED BY SUCH TESTING ARE TO BE CORRECTED BY THE ELECTRICAL TRADE AND THE CIRCUITS IN QUESTION RETESTED. THE RESULTS OF ALL FINAL TESTING SHALL BE PROVIDED TO THE ENGINEER IN REPORT FORM.
3. UPON PROJECT COMPLETION, AND IMMEDIATELY PRIOR TO FINAL INSPECTION AND TAKEOVER, THE ELECTRICAL TRADE SHALL CHECK THE LOAD BALANCE ON ALL FEEDERS AND AT DISTRIBUTION CENTRES, LOAD CENTRES, AND PANELS. THESE CHECKS ARE TO BE CARRIED OUT BY TURNING ON ALL LOADS AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15 %, THE CIRCUITS ARE TO BE RECONFIGURED AS NECESSARY TO BALANCE THE LOADS.
17. PAINTING AND FINISHES
.1.1 ALL ELECTRICAL FITTINGS, SUPPORTS, HANGER RODS, PULLBOXES, CHANNEL FRAMES, CONDUIT RACKS, OUTLET BOXES, BRACKETS, AND CLAMPS ARE TO HAVE A GALVANIZED FINISH OR A PAINT FINISH OVER CORROSION-RESISTANT PRIMER.
2. ALL PANELS ARE TO BE FACTORY-FINISHED WITH SPRAY-ON AIR DRY ENAMEL. ALL ENAMEL IS TO BE APPLIED OVER CORROSION-RESISTANT PRIMER. MATTE OR FLAT TYPE FINISH PAINT WILL NOT BE ACCEPTED. ALL PANELS OR SIMILAR FINISH-UNITED ITEMS THAT ARE SCRATCHED OR MARRED DURING INSTALLATION ARE TO BE TOUCHED UP WITH MATCHING SPRAY-ON AIR DRY LACQUER AND, IF REQUIRED TO PROVIDE A SATISFACTORY JOB, TO BE COMPLETELY REFRESHED.
3. ALL 120/208 V PANELBOARDS, PULLBOXES, AND OTHER ELECTRICAL CABINETS AND BOXES ARE TO BE FINISHED IN GRAY ENAMEL.
18. EMT CONDUIT
.1.1 WHERE REQUIRED BY THE CANADIAN ELECTRICAL CODE, ALL WIRE AND CABLE IS TO BE INSTALLED IN EMT CONDUIT.
2. UNLESS OTHERWISE NOTED, EMT CONDUIT IS TO BE CONCEALED IN ALL FINISHED AREAS. IN SERVICE AREAS, CONDUIT AND EMT SHALL BE RUN ON SURFACE UNLESS INDICATED OTHERWISE.
3. SURFACE MOUNTED EMT CONDUIT ARE TO BE INSTALLED PARALLEL TO STRUCTURAL LINES, AND, WHERE BENDS OCCUR IN PARALLEL RUNS, THEY SHALL BE CONCENTRIC.
4. RACEWAYS ARE TO BE INSTALLED FREE FROM DENTS AND BRUISES AND SHALL HAVE THEIR ENDS CAPPED, PLUGGED, OR SEALED AS NECESSARY TO PREVENT ENTRANCE OF DIRT OR MOISTURE.
5. IN ALL AREAS SUBJECT TO MOISTURE, WATERTIGHT FITTINGS MUST BE USED.
6. ALL RACEWAY, EXCEPT WHERE OTHERWISE INDICATED, SHALL BE SIZED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE.
7. TECK90 OR SEAL TIGHT FLEXIBLE CONDUIT IS TO BE UTILIZED FOR CONNECTIONS TO MOTORS AND MOTOR CONTROLLERS.
8. ALL UNDERGROUND CONDUIT SYSTEMS ARE TO BE OF APPROVED RPVC SCHEDULE 40 CONDUIT, COMPLETE WITH INSTALLED BONDING CONDUCTOR, AND INSTALLED AT OR BELOW THE DEPTH REQUIRED BY CODE. PROVIDE 15mm CLEAN SAND BEDDING ABOVE AND 75mm BELOW CONDUITS AND CONTINUOUS MARKING TAPE 300mm BELOW GRADE. PROVIDE SUITABLE BACKFILL AND COMPACTION.
19. EXPANSION JOINTS
.1.1 WHERE CONDUITS ARE INSTALLED IN CONCRETE SLABS OR CROSS STRUCTURAL EXPANSION JOINTS, AN APPROVED EXPANSION FITTING SHALL BE INSTALLED.
20. WIRE AND CABLE
.1.1 ALL BUILDING WIRING IS TO BE RW90, 600V, COPPER, EXCEPT WHERE NOTED OTHERWISE.
2. A MINIMUM CONDUCTOR SIZE OF #12 AWG COPPER IS TO BE USED, EXCEPT WHERE NOTED OTHERWISE.
3. ALL CONDUCTORS ARE TO BE COLOR CODED THROUGHOUT THE INSTALLATION AS FOLLOWS:
- EQUIPMENT GROUNDING CONDUCTOR - GREEN
- NEUTRAL CONDUCTOR - WHITE
- 120/208 V PHASE WIRES - RED, BLACK, AND BLUE
- 347/600 V PHASE WIRES - RED, BLACK, AND BLUE
4. ALL WIRING AND CABLING IN EXPOSED OR OPEN CEILING AREAS IS TO BE INSTALLED IN EMT CONDUIT.
21. WIRING DEVICES & BOXES
.1.1 ALIGN ALL DEVICES AND PLATES PLUMB AND LEVEL WITH BUILDING STRUCTURAL LINES.
2. ALL OUTLET BOXES ARE TO BE FLUSH MOUNTED EXCEPT WHERE SPECIFIED OTHERWISE.
3. ALL JUNCTION BOXES ARE TO HAVE VISIBLE P-TOUCH LABELS INDICATING THE CIRCUIT NUMBERS UTILIZED; PEN OR FELT IS NOT ACCEPTABLE.
4. SUPPLY AND INSTALL BLANK COVER PLATES FOR ALL UNLISTED JUNCTION BOXES, INCLUDING EXISTING.
22. LOCATION OF OUTLETS
.1.1 THE ENGINEER RESERVES THE RIGHT TO CHANGE THE LOCATION OF OUTLETS TO WITHIN 3 M OF POINTS INDICATED ON PLANS WITHOUT EXTRA CHARGE. PROVIDED THE ELECTRICAL CONTRACTOR IS ADVISED BEFORE INSTALLATION IS MADE.
2. ELECTRICAL TRADE REFER TO ARCHITECTURAL ROOM ELEVATIONS FOR POSITIONS, AND MOUNTING HEIGHTS OF ALL OUTLETS, SWITCHES, INTERCOMMUNICATION, TELEPHONES, SPEAKERS, CLOCKS, ETC. POSITIONS SHOWN ON ARCHITECTURAL PLANS TO TAKE PREFERENCE OVER POSITIONS OR MOUNTING HEIGHTS SHOWN ON ELECTRICAL PLANS.
23. PULL BOXES
.1.1 THE ELECTRICAL TRADE SHALL SUPPLY AND INSTALL PULLBOXES AS REQUIRED TO SUIT Job CONDITIONS. PULLBOXES SHALL CONFORM TO CANADIAN ELECTRICAL CODE REQUIREMENTS. PULLBOXES TO BE FINISHED IN ENAMEL OVER CORROSION-RESISTANT PRIMER WITH SCREW-ON OR HINGED COVER. IN REMOVABLE CEILING AREAS, PULLBOXES ARE TO BE INSTALLED ABOVE THE CEILING.
24. SWITCHES AND RECEPTACLES
.1.1 ALL SWITCHES AND RECEPTACLES SHALL BE COMMERCIAL GRADE. MATCH EXISTING EXISTING OR APPROVED EQUAL. WHERE NO STANDARD IS
- 1.1 PROVIDE WHITE DECORA SWITCHES AND RECEPTACLES AND WHITE DECORA FACEPLATES.
2. PROVIDE P-TOUCH LABELS FOR ALL RECEPTACLE LABELS.
3. FOR ALL RECEPTACLES OTHER THAN STANDARD 15A DUPLEX RECEPTACLES, PROVIDE LAMACOID NAMETAGS GIVING AMP RATING, PHASE AND VOLTAGE.
4. GROUND FAULT CIRCUIT INTERRUPTING (GFI) DUPLEX RECEPTACLES SHALL BE COMMERCIAL GRADE.
5. ISOLATED GROUND (IG) RECEPTACLES SHALL BE COMMERCIAL GRADE.
25. SUPPORTS
.1.1 ALL CONDUIT, RACEWAYS, AND OTHER ELECTRICAL EQUIPMENT SHALL BE SECURELY AND ADEQUATELY SUPPORTED, IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE.
2. WHERE INSERTS ARE REQUIRED IN CONCRETE, EXPANSION INSERTS, LEAD INSERTS OR PLASTIC INSERTS ARE TO BE USED IN DRILLED HOLES. SHOT DRIVEN PINNIS ARE TO BE USED IN STRUCTURAL CONCRETE ONLY WITH THE PERMISSION OF THE ENGINEER.
26. GROUNDING AND BONDING
.1.1 A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE AND THE ELECTRICAL INSPECTION DEPARTMENT.
27. PANELS
.1.1 ALL METAL PARTS NOT CARRYING CURRENT, INCLUDING BUT NOT LIMITED TO, SECONDARY FEEDER CIRCUITS, EQUIPMENT AND PANELBOARD END CONDUIT, SHALL BE PROPERLY GROUNDED. PANEL AND JUNCTION BOXES SHALL BE PROPERLY GROUNDED. METAL RACEWAYS SHALL UTILIZE DOUBLE LOCKNUTS AND OTHER FITTINGS WHERE NECESSARY TO PROVIDE GROUND CONTINUITY.
2. WHERE INSERTS ARE REQUIRED IN CONCRETE, EXPANSION INSERTS, LEAD INSERTS OR PLASTIC INSERTS ARE TO BE USED IN DRILLED HOLES. SHOT DRIVEN PINNIS ARE TO BE USED IN STRUCTURAL CONCRETE ONLY WITH THE PERMISSION OF THE ENGINEER.
3. A SEPARATE GROUND CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAY FEEDER RUNS, FLEXIBLE CONDUIT, AND IN CONDUIT INSTALLED IN SUS OF UNDERGROUND.
4. THIS CONTRACTOR IS RESPONSIBLE FOR THE GROUNDING OF ALL THE EQUIPMENT RACKS IN THE SERVER ROOM, THE CABLE TRAY, ELECTRICAL EQUIPMENT, AND ANY CONDUIT. ALL GROUNDING OF SERVER RACKS MUST BE IN ACCORDANCE TO MANUFACTURERS GUIDELINES AND RECOMMENDATIONS.
28. ACCESSORIES
.1.1 REFER TO COMMUNICATION SPECIFICATIONS.
29. FIRE STOP
.1.1 FIRE STOPPING MATERIAL SHALL BE HILTI FIRESTOP.
2. AFTER INSTALLATION OF THE ELECTRICAL, ALL PENETRATIONS OF FIRE ZONES FOR CONDUITS, SLEEVES, CABLE TRAYS, POKETHRUS ETC. SHALL BE SEALED USING MATERIAL AND METHODS THAT MEET THE REQUIREMENTS OF ILC STANDARDS CAN/ULC-S115 AND INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS. THE FIRE STOP MATERIAL SHALL ALLOW FOR RE-ENTERABLE ACCESS. CSA T530 APPENDIX B SHALL BE USED AS A GUIDE. BEFORE INSTALLATION, CONTRACTOR SHALL IDENTIFY A FIRE STOPPING SYSTEM SUITABLE FOR THE PROJECT. CONTRACTOR WILL OBTAIN SHOP DRAWINGS OF THE FIRE STOP SYSTEM FROM MANUFACTURER AND SHOULD ON SITE, UPON REQUEST, BE ABLE TO PRODUCE FIRE STOP DRAWINGS FOR CONSULTANT. ALLOW FOR 2% DESTRUCTIVE TESTING OF THE FIRE STOPPING INSTALLATION.
30. TENANT METERING
.1.1 CONTRACTOR TO COORDINATE WITH LANDLORD WITH REGARDS TO ANY UPDATES, INCLUDING INSTALLATION OR REPROGRAMMING OF METERING SYSTEM.

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COMMUNICATION SPECIFICATIONS

1. SCOPE OF WORK
.1 SUPPLY AND INSTALLATION OF NEW HORIZONTAL CABLEING SYSTEM, DATA CAT. 6 UTP CABLE, CONNECTORS AND COVER PLATES AS OUTLINED ON THE DRAWINGS.
2. STANDARDS AND CODES
.1 CAN/CSA-T527-99 CAN/CSA-T530-99 TIA/EIA-568-C.0 TO C.4
3. CONTRACTOR QUALIFICATION
.1 THE CABLING CONTRACTOR MUST BE CERTIFIED BY THE MANUFACTURER OF THE CABLING SYSTEM TO BE INSTALLED AND TO INSTALL COMPONENTS AND/OR CABLE BEING BID. USE ONLY TECHNICIANS FULLY TRAINED AND QUALIFIED ON INSTALLATION AND TESTING OF THE COMPONENTS TO BE INSTALLED. UPON REQUEST FROM THE ENGINEER, THE CONTRACTOR SHALL PROVIDE CERTIFIED DOCUMENTATION OF THE QUALITY AND PERFORMANCE OF THESE TESTS. PROVIDE SUBMISSIONS OF ALL TESTS TO THE CONSULTANT FOR APPROVAL. THE CABLING CONTRACTOR, OR ALL STAFF PERFORMING ANY TYPE OF WORK CONTAINED IN THIS SPECIFICATION MUST BE CERTIFIED IN THE INSTALLATION, TERMINATION AND TESTING OF ALL ASPECTS OF UTP CABLE SYSTEMS BY A RECOGNIZED EDUCATION INSTITUTION, OR A MAJOR CABLE MANUFACTURER, OR BEING THE DESIGNER OF REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER (RCD).
4. CABLING
.1 CAT 6 UTP CABLE FOUR PAIR, UNSHELDED, TWISTED, 22 AWG TO 24 AWG, 100 OHM FT6, SOLID COPPER. TRANSMISSION REQUIREMENTS SHALL MEET OR EXCEED ALL REQUIREMENTS OF TIA/EIA-568 FOR CATEGORY 6A CABLING AND COMPONENTS. CABLE COLOUR TO BE WHITE.

FIBER OPTIC CABLE

- .1 N/A
6. CONNECTORS/COUPLERS/ADAPTERS
.1 CATEGORY 6 UTP CABLE CONNECTORS: 8P8W MODULAR FEMALE CONNECTORS AT BOTH ENDS OF HORIZONTAL CABLING; 8P8W MODULAR MALE CONNECTORS AT BOTH ENDS OF PATCH CORDS. IDC CONNECTORS FOR INSTALLATION IN CONSOLIDATION POINTS. ALL CONNECTORS SHALL MEET OR EXCEED ALL REQUIREMENTS OF TIA/EIA-568 NON-KEYED, 4-PAIR, 8P8W MODULAR JACKS. TS8A WIRE USE SNAG-LITE TYPE CONNECTORS AT BOTH ENDS OF CABLES FOR ALL CABLES TERMINATING AT WORKSTATIONS. 8P8W UTP CABLE CONNECTORS: 8P8W MODULAR JACKS FOR VOICE RISER CABLES ONLY (CLIENT TO CONFIRM); 8P8W MODULAR JACKS, NON-KEYED, CAT. 3, TS8A (ISDN) WIRING; IF 8P8W CAT. 3 JACKS ARE NOT AVAILABLE, THEN INSTALL CAT. 6 8P8W JACKS. ALL CONNECTORS SHALL MEET OR EXCEED ALL REQUIREMENTS OF TIA/EIA-568-B.1 AND TIA/EIA-568-B.2. JACK COLOR IS TO MATCH PATCH CABLE COLOR.

RACK UNIT

- .1 N/A
8. UPS
.1 N/A
9. POWER BAR
.1 N/A
10. PATCH CORDS
.1 OWNER TO PROVIDE ALL PATCH CODES. THIS CONTRACTOR TO PROVIDE ALL PATCH CORDS AT THE WORKSTATION END.
11. PATCH PANEL
.1 ALL PATCH PANELS TO BE PROVIDED BY THIS CONTRACTOR UNLESS NOTED OTHERWISE.

FACEPLATES

- .1 FLUSH FACEPLATES FOR WALL MOUNTED OUTLETS: FOR USE ON ALL FLUSH MOUNTED, SUPPLY 4-PORT DOUBLE GANG FACE PLATE. INSTALL BLANKS ON ALL UNUSED DOUBLE GANG, FLUSH MOUNTED - COLOR WHITE. PROVIDE 6 PORT FACEPLATE IN APPLICATIONS WHERE UP TO 6 CABLES ARE REQUIRED IN A SINGLE OUTLET.

TESTING CAT 6 CABLE

- .1 THE CABLING CONTRACTOR MUST PERFORM A PERMANENT LINK TO VERIFY AND ENSURE FULL FUNCTIONAL CAPABILITIES. TESTING OF EACH CABLE MUST BE PERFORMED ON A PAIR-TO-PAIR BASIS. TESTING MUST BE PERFORMED ON ALL CABLES TERMINATED AT WORKSTATIONS. ALL TESTING MUST BE IMPLEMENTED IN BOTH DIRECTIONS. TESTS TO BE DONE AT A LEVEL HE TESTED IN ACCORDANCE WITH TIA/EIA-568-B.1 AND TIA/EIA-568-B.2. TESTS TO BE DONE AT A LEVEL WHERE INSERTION LOSS (END-TO-END) IS EQUAL TO NEXT (NEXT) LOSS POWER ATTENUATION (NEXTLOSS) EQUAL-LEVEL, FAR-END CROSSTALK (FEXT) POWERLOSS EQUAL-LEVEL, FAR-END CROSSTALK (NEXTFEXT) RETURN LOSS PROPAGATION DELAY DELAY SKEW

NOT USED

15. ABBREVIATIONS
.1 ETL ELECTRONIC TESTING LABORATORIES
.2 IDC INSULATION DISPLACEMENT CONNECTORS
.3 NEXT-FAR-END CROSSTALK
.4 FEXT FAR-END CROSSTALK
.5 UTP UNSHIELDED TWISTED PAIR

GENERAL REQUIREMENTS

- .1 THE PRODUCTS, WORKMANSHIP AND INSTALLATION SHALL CONFORM WITH ALL CURRENT CODES, GUIDELINES AND EIA/TIA STANDARDS. CABLING SYSTEM SHALL BE OF ONE MANUFACTURER AND CERTIFIED BY THAT MANUFACTURER.

GROUNDING AND BONDING

- .1 A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE SUPPLIED AND INSTALLED IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE AND THE ELECTRICAL INSPECTION DEPARTMENT.
2. ALL METAL PARTS NOT CARRYING CURRENT, INCLUDING BUT NOT LIMITED TO, SECONDARY FEEDER CIRCUITS, EQUIPMENT AND PANEL BOARD ENCLOSURES, METAL RACEWAYS, PULL AND JUNCTION BOXES, SHALL BE PROPERLY GROUNDED. METAL RACEWAYS SHALL UTILIZE DOUBLE LOCKNUTS AND OTHER FITTINGS WHERE NECESSARY TO PROVIDE GROUND CONTINUITY.
3. A SEPARATE GROUND CONDUCTOR SHALL BE INSTALLED IN ALL RACEWAY FEEDER RUNS, FLEXIBLE CONDUIT, AND IN CONDUIT INSTALLED IN SLAB OR UNDERGROUND.

HORIZONTAL CABLING DISTRIBUTION

- .1 WHERE MOUNTED IN CEILING SPACES, HANG CABLES WITH CAT. 6 APPROVED J-HOOKS EVERY 3' WHERE NOT INSTALLED IN CONDUIT OR IN CABLE TRAY. THE 3' APARTMENT TO BE USED. VELCRO STRAPS SHALL BE USED. ALL CABLE MUST BE RUN PARALLEL TO BUILDING LINES. SHORTEST ROUTE IS NOT ACCEPTABLE.

DOCUMENTATION/BUILT/RECORDS

- .1 ONE COPY OF THE FLOOR PLAN, TYPICALLY REFERRED TO AS IN-BUILD DRAWINGS AND DETAILING THE ITEMS BELOW, IS TO BE PROVIDED UPON COMPLETION OF THE PROJECT WITHIN 2 WEEKS OF SUB-TRADE COMPLETION. PROVIDE THE DRAWING USING AUTOCAD 2000 OR NEWER. PROVIDE 2 HARD COPIES AND AN AUTOCD DISK OF ALL BUILT DRAWINGS. REQUIRED DETAILS LOCATION AND LABEL OF EACH INSTALLED BRYN TS8A JACK. PROVIDE HARD AND SOFT COPIES OF ALL TEST RESULTS. PROVIDE A CAT. 6 CERTIFICATE DOCUMENT ISSUED BY THE CABLE/COMPONENT MANUFACTURER GUARANTEEING TRANSITION CAPABILITIES OF THE CABLING SYSTEM TO SUPPORT 1000 MBPS DEVICES FOR A PERIOD OF 25 YEARS. PROVIDE A COPY OF THE CABLE/COMPONENT MANUFACTURER'S CERTIFICATION DOCUMENT ISSUED BY THE CABLE/COMPONENT MANUFACTURER. EVIDENCE OF THEIR TRAINING CERTIFICATION, CONTRACTOR MUST SUPPLY DOCUMENTATION VERIFYING THEIR CURRENT PARTICIPATION IN THE MANUFACTURER'S CERTIFICATION PROGRAM. MANUFACTURER'S CERTIFICATION: THE MANUFACTURER'S CERTIFICATION MUST GUARANTEE THAT DESIGN OR INSTALLATION OF THE PARTS OF THE CERTIFIED CONTRACTOR WILL NOT NEGATE OR VOID ANY PORTION OF THE CERTIFIED SYSTEM. MANUFACTURER'S CERTIFICATION: THE MANUFACTURER'S CERTIFICATION MUST GUARANTEE THAT THE CONTRACTOR WILL NOT NEGATE OR VOID ANY PORTION OF THE CERTIFIED SYSTEM. AND IN THE EVENT THAT THE CONTRACTOR IS NO LONGER IN BUSINESS, THE FULL CERTIFICATION REMAINS VALID. THE INSTALLED STRUCTURED CABLING SYSTEM MUST BE COVERED BY A WARRANTY WHICH INCLUDES, AS A MINIMUM: 25 YEAR COVERAGE. WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FROM THE DATE OF INSTALLATION, REPAIR OR REPLACEMENT OF A FAILED COMPONENT, COVERING PARTS AND LABOR, AT NO CHARGE TO THE OWNER. SINGLE POINT OF CONTACT FOR ALL WARRANTY SERVICE.
2. PROVIDE MANUALS IN NO COPY ALSO.

SUBMITTALS

- .1 PRODUCT DELIVERY SCHEDULE WITHIN SEVEN (7) DAYS OF AWARD OF CONTRACT. A SCHEDULE MUST BE SUBMITTED BY THE CONTRACTOR TO THE CONSULTANT SHOWING PROJECTED ORDERING AND DELIVERY DATES OF ALL PRODUCTS TO MEET REQUIRED CONSTRUCTION SCHEDULE. PROVIDE ALL NECESSARY INFORMATION REGARDING ORDERING AND DELIVERY FOR ELECTRICAL PRODUCTS AS REQUIRED FOR SCHEDULING. SAMPLES SUBMIT SAMPLES AS REQUIRED WHERE SPECIFIED IN DIVISION 17. SHOP DRAWINGS AFTER RECEIVING APPROVAL OF LIST OF PRODUCTS, AND PRIOR TO DELIVERY OF ANY PRODUCTS TO JOB SITE AND SUFFICIENTLY ADVANCE OF REQUIREMENTS TO ALLOW AMple TIME FOR CHECKING. PROVIDE APPROVED MANUFACTURERS' DRAWINGS, SPECIFICATIONS, AND DIRECTION SHEETS. APPROVED MANUFACTURERS' DRAWINGS, OPERATING CLEARANCES, PERFORMANCE CHARACTERISTICS AND CAPACITIES OF PRODUCTS AND THE WORK. MANUFACTURE AGREEMENT OF PRODUCTS SHALL CONFORM TO REVIEWED SHOP DRAWINGS. KEEP ONE COMPLETE SET OF SHOP DRAWINGS AT JOB SITE DURING CONSTRUCTION. SHOP DRAWINGS FOLLOWED BY APPROVAL OF THE CONSULTANT. APPROVAL OF THE SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR FROM OBTAINING AN APPROVED ITEM PROJECT RECORD DRAWINGS. CONTRACTOR OBTAIN TWO SETS OF APPROVED PRINTS OF ALL DRAWINGS PERTAINING TO THE WORK. KEEP DRAWINGS ON SITE AND, DAILY OR WEEKLY AS NECESSARY, RECORD IN COLOURED PENCIL ALL CHANGES, ALTERATIONS, OR ADDITIONS THAT OCCUR DURING PROGRESS OF THE WORK. BEFORE REQUESTING FINALLY CERTIFIED DRAWINGS, CONTRACTOR SHALL SUBMIT A DRAFT COPY OF THE DRAWINGS TO THE CONSULTANT FOR REVIEW. CONTRACTOR AND CONSULTANT CAN COMPACT DISKS TO THE CONSULTANT. THE CONTRACTOR SHALL SUBMIT A DRAFT COPY IF APPROVED, THE CONTRACTOR WILL SUPPLY ELECTRONIC DIGITAL MANUAL COMPLETE WITH INDEX AND TABBED TITLE SHEETS FOR EACH SECTION. FINAL COPIES OF MANUALS TO BE RECEIVED BY CONSULTANT. APPROVED MANUFACTURERS' DRAWINGS, SPECIFICATIONS, AND DIRECTION SHEETS. 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