REGIONAL DISTRICT OF NANAIMO

Meadowood Community Centre
1830 Galvin Place, Qualicum BC

Project Manual - Tender Specifications

Prepared for:

Regional District of Nanaimo
6300 Hammond Bay Road, Nanaimo BC V9T 6N2

Prepared by:

Herold Engineering Limited
3701 Shenton Road
Nanaimo, BC V9T 2H1

Date:
November 4, 2020

HEL Project No.:
0837-052

HEROLD ENGINEERING

OWNERS:

REGIONAL DISTRICT OF NANAIMO

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TABLE OF CONTENTS

REGIONAL DISTRICT OF NANAIMO

INVITATION TO TENDER No. 20-062

Meadowood Community Centre
1830 Galvin Place, Qualicum, B.C.

The Project consists of the construction of a new the single storey Community Centre, in form of a pre-engineered steel building with interior wood frame partitions for office, kitchen and washroom spaces, with mezzanine level above, mechanical and electrical systems and civil site services.

Bidding Documents, available in digital format only, will be posted on the BC Bid and the RDN websites.

A non-mandatory site visit for General Contractors (other trades and suppliers may attend) is scheduled at **1:00 pm (Local Time) on Tuesday, November 10, 2020** at the project site at 1830 Galvin Place, Qualicum, BC.

Direct all inquiries, in writing, to Attention Erich Streit, Arch HTL., Project Manager, Herold Engineering Limited, 3701 Shenton Road, Nanaimo, BC, V9T 2H1, Phone 250.751.8558, Fax 250.751.8559, e-mail: estreit@heroldengineering.com .

Each Tender Form Received from a Bidder must be accompanied by a Bid Bond in the amount equal to TEN PERCENT (10%) of the TOTAL AMOUNT OF TENDER. Bid Bonds shall be issued on a form approved by the Insurance Bureau of Canada and issued by a Surety acceptable to the Owner. The Successful Bidder will be required to submit a 50% Labour & Materials Bond and a 50% Performance Bond within ten (10) days after the Notice of Intent to Award the Contract.

The CCDC-2 (2008) Stipulated Price Contract, as amended by the Supplementary General Conditions will apply.

Sealed Bids for the "Meadowood Community Centre, 1830 Galvin Place, Qualicum BC" will be received before **3:00 pm (Local Time) on Wednesday, November 25, 2020** at the office of Herold Engineering Limited at 3701 Shenton Road, Nanaimo BC V9T 2H1. Faxed or e-mail tenders will not be accepted. Tenders will not be opened, in public.

Tenders may be withdrawn before the deadline upon written notice (facsimiles of notice will be accepted) delivered at least twenty-four (24) hours before closing time, to Erich Streit, Arch HTL, Project Manager, Herold Engineering Limited, 3701 Shenton Road, Nanaimo BC V9T 2H1, Phone (250) 751-8558, Fax (250) 751-8559, e-mail: estreit@heroldengineering.com .

Revisions of tender can be delivered before the indicated tender closing time: **3:00 P.M. (Local Time) on Wednesday, November 25, 2020**, by letter or to the following fax number only **(250) 751-8559** and must clearly show the project name and tender number and must be executed by an authorized signing officer of the Bidding Company. All tender revision must clearly indicate GST and any applicable taxes.

Tenders must remain valid for sixty (60) days following closing time and date.

The Regional District of Nanaimo reserves the right to reject any and all tenders for any reason or to accept any tender in whole or in part on the basis of tenders received which the Regional District of Nanaimo in its sole unrestricted discretion deems most advantageous to itself. The lowest or any tender may not necessarily be accepted. The proponent acknowledges the Regional District of Nanaimo's rights under this clause and absolutely waives any right of action against the Regional District of Nanaimo for the District's failure to accept its tender whether such right of action arises in contract, negligence, bad faith or any other cause of action. The acceptance

of any tender is subject to the funds being legally available to complete this transaction and/or approval by the Board of the Regional District of Nanaimo.

Unless otherwise requested in writing by the Regional District of Nanaimo, a proponent must not contact or communicate with any elected or appointed officer or employee of the Regional District of Nanaimo other than the designated contact identified in the tender documents in relation to the tender prior to the award by the Board of the Regional District of Nanaimo. Any such communication may result in disqualification of the tender from further consideration.

The Regional District of Nanaimo is subject to the provisions in *The Freedom of Information and Protection of Privacy Act.* As a result, while Section 20 of the *Act* does offer some protection for third party business interests, the Regional District of Nanaimo cannot guarantee that any information provided to the Regional District of Nanaimo can or will be held in confidence.

Further information regarding the specifications of this tender may be obtained from Erich Streit, Arch HTL, Project Manager, Herold Engineering Limited, 3701 Shenton Road, Nanaimo, B.C., V9T 2H1, Phone (250) 751-8558, Fax (250) 751-8559, e-mail estreit@heroldengineering.com .

Herold Engineering Limited
For

Regional District of Nanaimo
Nanaimo, BC.

Part 1 General

1.1 INVITATION

.1 Bid Call

.1 Offers signed, executed and dated will be received by Herold Engineering Limited, located at 3701 Shenton Road, Nanaimo BC, V9T 2H1 at/or before 3:00 pm local time on Wednesday, November 25, 2020.

.2 Offers submitted after above time will be returned to bidder unopened.

.3 Offers will not be opened in public.

.4 Amendments to submitted offer will be permitted if received in writing at/or prior to bid closing and if endorsed by same party or parties who signed and sealed offer.

1.2 INTENT

.1 Intent of this Bid call is to obtain an offer to perform work to complete the construction of the Meadowood Community Centre at the project site of 1830 Galvin Place in Qualicum, BC for a Stipulated Price contract, in accordance with Contract Documents.

.2 Initiate work within 2 weeks of receipt of notice of contract award.

1.3 CONTRACT DOCUMENTS IDENTIFICATION

.1 Contract Documents are identified as Meadowood Community Centre as prepared by the Consultant Team Herold Engineering Limited and listed Sub-Consultants, Consultant Team address is the office of Herold Engineering Limited, located at 3701 Shenton Road, Nanaimo, BC, V9T 2H1 as listed in the Project Manual.

1.4 CONTRACT/BID DOCUMENTS

.1 Agreement Form.

.2 Definitions

.1 Contract Documents: Defined in CCDC 2, 2008 Edition, Definitions.

.2 Bid Documents: Contract Documents supplemented with Instructions to Bidders and Bid Form Stipulated Bid Price.

.3 Bid, Offer, or Bidding: Act of submitting an offer under seal.

.4 Bid Price: Monetary sum identified in Bid Form as an offer to perform work.

.3 Availability

.1 Bid Documents are available in digital format only and will be posted on the BC Bid and the RDN websites.

.2 Bid Documents are made available only for purpose of obtaining offers for this project. Their use does not confer license or grant for other purposes.

.4 Examination

.1 Immediately notify Consultant upon finding discrepancies or omissions in Bid Documents.

.5 Queries/Addenda

.1 Direct questions in writing only to Mr. Erich Streit, RCH HTL, Project Manager, Herold Engineering Limited, 3701 Shenton Road, Nanaimo, BC, V9T 2H1 or by e-mail to estreit@heroldengineering.com

.2 Addenda may be issued during bidding period. All addenda become part of Contract Documents. Include costs in Bid Price.

.3 Verbal answers are only binding when confirmed by written addenda.

.4 Clarifications requested by bidders must be in writing not less than seven days before date set for receipt of Bids. Reply will be in form of an addendum, a copy of which will be posted on BC Bid and RDN Websites. It is the sole responsibility of vendors to check for all Addenda and include in their Tender submission.

.6 Product/System Options

.1 Where Bid Documents stipulate a particular product, substitutions will be considered by Consultant up to 10 days before receipt of Bids.

.2 When a request to substitute a product is made, Consultant may approve substitution and will issue an Addendum to known bidders.

.3 In submission of substitutions to products specified, Bidders shall include in their Bid, any changes required in work to accommodate such substitutions. A later claim by Bidder for an addition to contract price because of changes in work necessitated by use of substitutions shall not be considered.

.4 Submission shall provide sufficient information to enable Consultant to determine acceptability of such products.

.5 Provide complete information on required revisions to other work to accommodate each substitution, dollar amount of additions to or reductions from Bid Price, including revisions to other work.

.6 Unless substitutions are submitted in this manner and subsequently accepted, provide products as specified.

.7 Cash Allowances

.1 Cash Allowances as called for below shall be included in the contract price in accordance with the General Conditions of the contract.

.2 Cash Allowance of $20,000.00 for Landscape Features and Signage

.8 Separate Prices

.1 Provide separate prices for the following items and identify as such in the Stipulated Price Bid Tender form, Appendix E, Separate Prices:

.1 Exterior Insulated Liner Wall and Roof Panels as shown in the architectural drawings and specified under Section 05 12 25 Pre-engineered Steel Building

.2 Door canopies over man door exits of the Pre-engineered Steel Building as indicated in the architectural drawings

.3 Main Entrance Timber Canopy structure as detailed in architectural and structural drawings

.4 Change of concrete sidewalks around the building to crush gravel surface

.5 Concrete pedestrian access path from Galvin Place to gravel parking lot as shown on civil drawings

1.5 SITE ASSESSMENT

.1 Site Examination

.1 A Non-Mandatory visit to project site has been arranged for Bidders and their subtrades and suppliers as follows: 1810 Galvin Place, Qualicum BC, Tuesday, November 10, 2020 at 1:00 pm.

.2 Bidders Briefing

.1 The Non-Mandatory Bidders briefing will take place at the date and time set for the non-mandatory site visit.

.2 General contract and major subtrade and suppliers are invited.

.3 Representatives of Owner and Consultant will be in attendance.

.4 Information relevant to Bid Documents will be recorded in Addendum and issued.

1.6 QUALIFICATIONS

.1 Subcontractors

.1 Owner reserves right to reject a proposed subcontractor for reasonable cause.

.2 Refer to CCDC 2 Article GC 3.8 of General Conditions.

.2 Bid Ineligibility

.1 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at discretion of Owner, be declared informal.

.2 Bids with Bid Forms and enclosures which are improperly prepared may at discretion of Owner, be declared informal.

.3 Bids that fail to include security deposit, bonding or insurance requirements may at discretion of Owner, be declared informal.

.3 Submissions

.1 Bidders shall be solely responsible for delivery of their Bids in manner and time prescribed.

.2 Submit one copy of executed offer on Bid Forms provided, signed, together with required security in a sealed envelope, clearly identified with Bidders name, project name and Owners name on outside.

.3 Improperly completed information, irregularities in security deposit or bid bond, may be cause to declare the Bid informal.

.4 An abstract of submitted Bids will be made available to Bidders following Bid opening.

1.7 BID ENCLOSURES/REQUIREMENTS

.1 Security Deposit

.1 Bids shall be accompanied by security deposit as follows: Bid Bond in an amount not less than 10 percent of Bid price.

.2 Endorse Bid Bond in name of Owner as obligee, signed and sealed by principal (Contractor) and surety.

.3 Use latest edition CCDC approved bond forms.

.4 Security deposit will be returned after delivery to Owner of required Performance and Labour and Materials Payment Bond(s) by accepted bidder.

.5 If no contract is awarded, all security deposits will be returned.

.2 Consent of Surety, Agreement to Bond.

.1 Submit with Bid Form and Bid Bond, a Consent of Surety or Agreement to Bond, stating that surety providing Bid Bond is willing to supply Performance and Labour and Materials Payment Bond specified.

.2 Include cost of bonds in Bid Price.

.3 Performance Assurance

.1 Accepted Bidder must provide Performance and Labour and Materials Payment Bond as described in Supplementary Conditions.

.2 Include cost of bonds in Bid Price.

.4 Insurance

.1 Provide signed "Undertaking of Insurance" on standard form provided by insurance company stating intention to provide insurance to Bidder in accordance with insurance requirements of Contract Documents.

.5 Bid Form Requirements.

.1 State in Bid Form, time required to complete work. Completion date in Agreement must be this completion time added to commencement date.

.2 Bidder, in submitting an offer, accepts time period stated in Contract documents for performing work. Completion date in Agreement shall be this completion time added to commencement date.

.3 Bidder, in submitting an offer, agrees to complete work by date indicated in Contract Documents.

.4 Owner requires that work of this contract be completed as quickly as possible and consideration will be given to time of completion when reviewing Bids submitted.

.5 Refer to Supplementary Conditions for inclusion of taxes.

.6 Fees for Changes in Work

.1 Unless otherwise agreed between Owner and Contractor, the allowance for overhead and profit shall be calculated as follows:

.1 For Contractor, for overhead and profit, 10% of the actual cost of the Contractor's work.

.2 For Contractor, for overhead and profit, 5% of the amount for Subcontractor's work, being the actual costs of the Subcontractors' work plus the amount set out in .3 below.

.3 For Subcontractor, for overhead and profit, 10% of the actual cost of the Subcontractor's work.

.4 If a change in the Work results in a net decrease in the Contract Price, the amount of credit shall be the net cost, without deduction for overhead and profit. When both additions and deletions covering related work or substitutions are involved in a change in the Work, the allowance for overhead and profit shall be calculated on the basis of the net increase, if any, with respect to that change in the Work.

.7 Bid Signing

.1 Bid form shall be signed by Bidder.

.2 Sole Proprietorship: Signature of sole proprietor in presence of witness who will also sign. Insert words "Sole Proprietor" under signature.

.3 Partnership: Signature of all partners in presence of witness who will also sign. Insert word "Partner" under each signature.

.4 Limited Company: Signature of duly authorized signing officer(s) in normal signatures. Insert officer's capacity in which signing officer acts, under each signature. If Bid is signed by officials other than President and Secretary of company, or President-Secretary-Treasurer of company, copy of by-law resolution of Board of Directors authorizing them to do so must also be submitted with Bid in Bid envelope.

.5 Joint Venture: Each party of joint venture must execute Bid in manner appropriate to such party as described above, similar to requirements of Partnership.

.8 Appendices to Bid Form

.1 Appendix A - Contract Documents: Include a complete listing of all documents and information issued by which Bid price was derived.

.2 Appendix B - Subcontractors: Include names of all Subcontractors and portions of work Bidder will perform.

.3 Appendix C - Unit Prices: Include a listing of unit prices specifically requested in Bid Documents.

.4 Appendix D - Alternatives: Include cost variation to Bid price applicable to work described in Section 01 23 10 - Alternatives.

.5 Appendix E - Separate Prices: Include a listing of separate prices as specifically requested in Bid Documents.

1.8 OFFER ACCEPTANCE/ REJECTION

.1 Duration of Offer

.1 Bids shall remain open to acceptance and irrevocable for a period of sixty (60) days after the Bid closing date.

.2 Acceptance of Offer

.1 The Regional District of Nanaimo reserves the right to reject any and all tenders for any reason or to accept any tender in whole or in part on the basis of tenders received which the Regional District of Nanaimo in its sole unrestricted discretion deems most advantageous to itself. The lowest or any tender may not necessarily be accepted. The proponent acknowledges the Regional District of Nanaimo's rights under this clause and absolutely waives any right of action against the Regional District of Nanaimo for the Regional District's failure to accept its tender whether such right of action arises in contract, negligence, bad faith or any other cause of action. The acceptance of any tender is subject to the funds being legally available to complete this transaction and/or approval by the Board of the Regional District or the office or employee of the Regional District having authority to accept the tender.

.2 Unless otherwise requested in writing by the Regional District of Nanaimo, a proponent must not contact or communicate with any elected or appointed officer or employee of the Regional District other than the designated employee of the Regional District in relation to the tender prior to the award of such proposal by the Regional Board or the officer or employee of the Regional District having authority to accept the tender. Any such communication may result in disqualification of the tender from further consideration.

.3 The Regional District of Nanaimo is subject to the provisions in *The Freedom of Information and Protection of Privacy Act.* As a result, while Section 20 of the *Act* does offer some protection for third party business interests, the Regional District cannot guarantee that any information provided to the Regional District can or will be held in confidence.

.3 After acceptance, the Regional District of Nanaimo will issue to the successful Bidder, written Bid acceptance.

.4 After Bid has been accepted, unsuccessful Bids will be returned to respective Bidders with submitted Bid securities and other requested enclosures.

END OF SECTION

Stipulated Price Bid

STIPULATED PRICE BID

Project Number: 0837-052

Project: Meadowood Community Centre

Located At: 1830 Galvin Place, Qualicum BC

Submitted To: Regional District of Nanaimo

Bidder

Legal Name:

Address:

City: Province: Postal Code:

Bid Price

Having examined the Bid Documents as listed in Appendix "A" to this Stipulated Price Bid, and Addenda No. to No. inclusive, all as issued by Herold Engineering Limited and having visited the Place of the Work; we hereby offer to enter into a Contract to perform the Work required by the Bid Documents for the stipulated price of

_____ Dollars

($_____) in Canadian funds, which price excludes Value Added Taxes.

Interest

Should either party fail to make payments as they become due under the terms of the Contract or in an award by arbitration or court, interest at three percent (3%) per annum above the bank rate on such unpaid amounts shall also become due and payable until payment. Such interest shall be compounded on a monthly basis. The bank rate shall be the rate established by the Bank of Canada as the minimum rate at which the Bank of Canada makes short term advances to the chartered banks.

Declarations

We hereby declare that:

(a) we agree to perform the Work in compliance with the required completion schedule stated in the Bid Documents, or if no schedule is stated, to attain Substantial Performance of the Work within _____ weeks from commencement of the Work;

(b no person, firm, or corporation other than the undersigned has any interest in this Bid or in the proposed Contract for which this Bid is made;

(c) this Bid is open to acceptance for a period of 60 days from the date of bid closing.

Signatures

SIGNED AND SUBMITTED for and on behalf of:

_____

signature

Witness

_____ _____

signature *signature*

Date:

N.B. Where legal jurisdiction or Owner requirement calls for:

(a) proof of authority to execute this Bid; attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign this Bid for and on behalf of the Corporation or Partnership; or

(b) the affixing of a corporate seal, this Bid should be properly sealed.

Appendix "A" to Stipulated Price Bid

(To be prepared by the Consultant)

Project: Meadowood Community Centre
1830 Galvin Place, Qualicum BC

Bidder:

LIST OF BID DOCUMENTS

The following is the list or description of the Bid Documents referred to in the Bid for the above named Project:

- Agreement Form Between Owner and Contractor
- Definitions
- The General Conditions of the Stipulated Price Contract

See Table of Contents attached to this document

* *Insert here, attaching additional pages if required, a list identifying all other Bid Documents, eg. Supplementary Conditions; Specifications, giving a list of contents with section numbers and titles, number of pages, and date; Drawings, giving drawing number, title, date, revision date or mark; Addenda, giving title, number, date.*

Appendix "B" to Stipulated Price Bid

Project Number: 0837-052

Project: Meadowood Community Centre
1830 Galvin Place, Qualicum BC

Bidder:

LIST OF SUBCONTRACTORS

The following are the Subcontractors which we are prepared to accept for the performance of a portion of the Work.

Division or Section of Work	Name of Subcontractor

** If Appendix "B" is not used, put "Not Applicable" and initial the bottom of the page.*

Appendix "C" to Stipulated Price Bid

Project Number: 0837-052

Project: Meadowood Community Centre, 1830 Galvin Place, Qualicum BC

Bidder:

UNIT PRICES

The following are our Unit Prices for the units of work listed hereunder. The Unit Prices listed apply to performing the units of work only during the time scheduled for such work in the project schedule. These prices do **NOT** include Value Added Taxes.

Unit of Work	Unit Price ($)	
	Addition	Deletion

** If Appendix "C" is not used, put "Not Applicable" and initial the bottom of the page.*

Appendix "D" to Stipulated Price Bid

Project Number: 0837-052

Project: Meadowood Community Centre, 1830 Galvin Place, Qualicum BC

Bidder:

ALTERNATIVE PRICES

The following are our Prices for the alternative work listed hereunder. Such alternative work and amounts are **NOT** included in our Bid Price. These Prices for the alternative work do **NOT** include Value Added Taxes.

	Effect on Stipulated Price ($)	
Description of Alternative Work	Addition	Deduction

** If Appendix "D" is not used, put "Not Applicable" and initial the bottom of the page.*

Appendix "E" to Stipulated Price Bid

Project Number: 0837-052

Project: Meadowood Community Centre, 1830 Galvin Place, Qualicum BC

Bidder:

SEPARATE PRICES

The following are our Separate Prices for the work listed hereunder. Such work and amounts are included in our Bid Price. These Separate Prices do **NOT** include Value Added Taxes.

	Description of Separate Price Work	Separate Price Amount ($)
.1	Exterior Insulated Liner Wall and Roof Panels as shown in the architectural drawings and specified under Section 05 12 25 Pre-engineered Steel Building	
.2	Door canopies over man door exits of the Pre-engineered Steel Building as indicated in the architectural drawings	
.3	Main Entrance Timber Canopy structure as detailed in architectural and structural drawings	
.4	Change of concrete sidewalks around the building to crush gravel surface	
.5	Concrete pedestrian access path from Galvin Place to gravel parking lot as shown on civil drawings	

** If Appendix "E" is not used, put "Not Applicable" and initial the bottom of the page.*

Statutory Declaration of Progress Payment Distribution by Contractor

Standard Construction Document

CCDC 9A – 2018

To be made by the Contractor as a condition for either

☐ second and subsequent progress payments; or
☐ release of holdback.

Application for payment number _____ dated _____ is the last application for payment for which the Contractor has received payment.

Information Appearing in the Contract Documents

Name of Project

Date of Contract: _____.

Name of Owner

Name of Contractor

Declaration

I solemnly declare that, as of the date of this declaration, I am an authorized signing officer, partner or sole proprietor of the Contractor, and as such have authority to bind the Contractor, and have personal knowledge of the fact that all accounts for labour, subcontracts, products, services, and construction machinery and equipment which have been incurred directly by the Contractor in the performance of the work as required by the Contract, and for which the Owner might in any way be held responsible, have been paid in full as required by the Contract up to and including the latest progress payment received, as identified above, except for:

1) holdback monies properly retained,
2) payments deferred by agreement, or
3) payment withheld by reason of legitimate dispute which has been identified to the party or parties from whom payment has been withheld.

I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

Declared before me in _____ this _____ day of _____ in the year _____
City/Town and Province

_____
Name

_____
Title

_____
Signature

_____
(A Commissioner for Oaths, Notary Public, Justice of the Peace, etc.)

The making of a false or fraudulent declaration is a contravention of the Criminal Code of Canada, and could carry, upon conviction, penalties including fines or imprisonment.

Apply a CCDC 9 copyright seal here.

Part 1 General

1.1 RELATED DOCUMENTS

.1 Stipulated Price Contract CCDC 2 (2008)

1.2 GENERAL CONDITIONS

.1 The General Conditions of the Stipulated Price Contract of the Canadian Construction Document Committee CCDC 2 (2008) document together with the following amendments and supplements shall apply in their entirety and form part of the Contract.

.2 The following clause titles correspond with those of the General Conditions of the CCDC 2 (2008) document.

1.3 GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

.1 Add paragraph 5.2.8: With each and every application for payment, a WorkSafe BC Clearance Letter confirming the Firm being active and in good standing and having met WorkSafe BC's criteria for advance clearance.

.2 Add paragraph 5.2.9: With each and every application for payment subsequent to the first progress payment, a Statutory Declaration on CCDC 9A-2018 Form shall be completed and sworn before a Notary Public or a Commissioner for Oaths for the Province of British Columbia.

1.4 GC 1.1 CONTRACT DOCUMENTS

.1 Replace 1.1.7 with:

1.1.7 If there is a conflict within the* Contract Documents*:
.1 The order of priority of documents, from highest to lowest, shall be
- ***The Agreement between the* Owner *and the* Contractor,**
- ***The Definitions,***
- ***Supplementary Conditions,***
- ***The General Conditions***
- ***The Tender Documents,***
- ***The most recent Addendum followed by other Addenda. The more Recent taking precedence over earlier Addenda***
- ***The Drawings,***
- ***Technical Specifications,***
- ***The General Conditions,***
- ***Material and finishing schedules.***

.2 Paragraph 1.1.9 after the words "are and shall remain" in the first sentence, add as ***between the Consultant and the Contractor***

1.5 GC 1.4 Assignment

.1 After "*Neither party to the Contract shall assign the Contract or a portion thereof without the written consent of the other*", ***delete "which consent shall not be unreasonably withheld".***

1.6 GC 5.4 SUBSTANTIAL PERFORMANCE OF WORK

.1 Add paragraph 5.4.1.1: There will be no progressive Substantial Performance of Portions of the Work

1.7 GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK

.1 Paragraph 5.6.1: Delete entire paragraph and replace with the following: There will be no progressive release of holdback funds.

END OF SECTION

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises the general construction of the Meadowood Community Centre Building, consisting of a pre-engineered steel building, with exterior canopy add-on's, interior wood frame infill construction with open mezzanine level above, interior finishes and commercial type Kitchen, washroom facilities and associated mechanical and electrical systems, exterior civil site work and septic field disposal.

.2 The work comprises:

.1 All work as shown and detailed in the tender documents and described in respective specifications.

.3 Perform work in accordance with British Columbia Building Code 2018 Edition and any other code of provincial or local application, provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.1 Meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

1.2 CONTRACT METHOD

.1 Construct Work under stipulated price contract.

.2 Relations and responsibilities between Contractor and subcontractors and suppliers and subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors must, in addition:

.1 Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Consultant.

.2 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Consultant.

1.3 WORK SEQUENCE

.1 Construct work so as to allow for limited designated continuous use of the facility by the Owner and the public. Do not close off public usage of facility.

.2 Maintain fire access/control.

1.4 CONTRACTOR USE OF PREMISES

.1 Limit use of premises for Work and for storage and for access, to allow:

.1 Owner and Public usage of adjacent playground facility

.2 Co-ordinate use of premises under direction of Owner and Consultant.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.5 EXISTING SERVICES

.1 Notify Owner, Consultant and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Owner 48 hours notice for necessary interruption of mechanical, fire suppression or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to Owner's operations.

.3 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.

.4 Submit schedule to and obtain approval from Owner/Consultant for any shut-down or closure of active power and communications services. Adhere to approved schedule and provide notice to affected parties.

.5 Provide temporary services as required for new construction of facility.

.6 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.7 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

.8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.9 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.6 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shop Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.

END OF SECTION

Part 1 General

1.1 GENERAL CONDITIONS

.1 The General Conditions of the Canadian Construction Document Committee CCDC 2 (2008) and Supplementary Conditions shall govern the work of this Section and all other Sections of these Specifications.

.2 The Instruction to Bidders, the Agreement and General Conditions of Contract (and Addenda thereto) form an integral part of the contract and must be read in conjunction with the drawings and specifications.

1.2 LABOUR CONDITIONS

.1 It is the responsibility of the Contractor and the sub-contractors in formulating the bid to ascertain the labour conditions existing on site with particular respect to union or non-union labour and to comply with these conditions. Costs of doing so shall be included in the Contract Price.

1.3 WORK SCHEDULE

.1 Provide within ten (10) working days of contract award, schedule showing anticipated progress stages and final completion of work within time period required by Contract Documents. Prepare a horizontal bar type schedule with separate horizontal bar for each trade or operation. After review by the Consultant, make corrections as necessary and re-submit for approval.

1.4 COST BREAKDOWN

.1 Before submitting the first application for payment, submit breakdown of contract price in detail for approval by Consultant. Approved cost breakdown will be used as basis for progress payments.

1.5 CODES AND STANDARDS

.1 Execute Work in accordance with the BC Building Code 2018 and its supplements, applicable Provincial and local Acts and regulations and all codes and standards specified within the text of these specifications.

.2 Conform to the latest issue of codes and standards specified, all applicable and relevant codes, ordinances and by-laws, as amended and revised on date of receipt of bids including Workplace Hazardous Materials information System (BC) Regulations. Conform to requirements of WorkSafe BC Act, latest Edition. In the event of a conflict between codes and Standards, the most stringent provision shall apply.

.3 Meet or exceed the requirements of Contract Documents, specified standards, codes and referenced documents.

1.6 PERMITS

.1 Make application for all permits, except Building Permit, which is applied and paid for by the Owner, pay all fees and charges and make any deposits which may be required in order to complete the work.

1.7 ALTERNATIVE OR EQUIVALENT PRODUCTS

.1 Only products and methods specified shall be used or such products and methods approved as equivalent. Alternative products or methods may be used only where specified as options by the Consultant and approved in writing by the Consultant prior to the submission of the Bid Price.

.2 Application for approval of equivalent or alternative products will be received by the Consultant up to six (6) working days prior to Bid closing.

.3 Submit request for approval in duplicate to the Consultant. List specification section or drawing number, brand, model number and manufacturer specified and proposed product with full supporting technical specifications, data, colour range and samples and any other special requirements listed in the section.

.4 Approval of products does not relieve the contractor from meeting the requirements of the specifications and for all maintenance that may be required for incorporation of them into the work.

.5 If any alternative product is used, whether specified or later approved, the Contractor shall make all changes to the Work necessitated by the use of the alternative at no extra cost to the Owner or Consultant.

1.8 SAFETY AND WORKSAFE BC REQUIREMENTS

.1 Observe and enforce all construction safety measures required by WorkSafe BC and municipal and Regional District of Nanaimo statues and by-laws. In the event of a conflict between any provisions of above safety authorities, the most stringent provision will apply.

.2 Prior to commencing work and prior to receiving payment for Substantial Performance of the Work, provide evidence of compliance with all requirements of the Province of British Columbia with respect to WorkSafe BC including payments due there under.

1.9 EXAMINATION OF SITE

.1 The contractor is deemed to have ascertained all existing conditions reasonably inferable from examination on the site and its surroundings and the Contract Documents with respect to surface and subsurface conditions, access to the site, restrictions prevailing on adjacent streets, disposal of materials, municipal and Regional District of Nanaimo by-laws with respect to noise, street cleaning and pollution and other conditions having effect on the execution of the Work and is further deemed to have included in the contract Price all costs occasioned thereby.

.2 Claims for additional costs will not be determined with respect to conditions which would reasonably have been ascertained by an inspection of the site prior to Bid Closing Date.

.3 The contractor shall report promptly to the Consultant any discrepancy, inaccuracy or deviation between the information contained in the Contract Documents and the actual conditions found to be in existence during the process of the work.

1.10 ACCESS TO SITE

.1 The Contractor shall not close or obstruct streets, sidewalks, lanes or other public rights of way without having first obtained required permits from the authorities having jurisdiction.

.2 The Contractor shall maintain adequate traffic control procedures during his operations, including delivery and off-loading of materials on or adjacent streets, sidewalks, lanes, public rights of ways and parking areas available for use by the public.

.3 During the progress of the Work, the Contractor shall maintain adequate means of egress from the Project in the event of fire or other emergency and shall not cause materials to be stored in a manner that will impair such means of egress.

1.11 WORKING LIMITS

.1 Refer to Section 01 11 00 – Summary of Work for Work Sequence and Contractor Use of Premises and continuous use by Owner and Public of adjacent Playground facility.

1.12 SETTING OUT OF WORK

.1 The Contractor shall immediately upon entering the project site for the purpose of beginning to work, locate all general reference points as related to the Project and take action as necessary to prevent their destructions; lay out work and be responsible for all lines, elevations and measurements. Retain the services of a Surveyor as necessary to establish and maintain throughout the construction grid lines of buildings and location of services.

.2 Exercise proper precautions to verify figures shown on the drawings before laying out of work. Be responsible for any errors resulting from failure to exercise such precautions. Promptly notify Consultant of any discrepancy in accuracy of deviation between the information contained in the Contract Documents and actual site conditions.

.3 Location of distribution systems, equipment, fixtures and outlets indicated or specified are to be considered as approximate. Install so as to provide minimal interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance. Inform Consultant of impending installation and obtain his approval for actual location. Make any corrections required in order to avoid the work of other trades and/or as required by Consultant.

.4 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

.5 Where work involves breaking into or connecting to existing services, carry out work with minimal disturbance to operation of these services. Submit schedule and obtain approval from relevant authorities for any shut-down or closure of active services or facility.

.6 The Consultant may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract Documents.

1.13 PRE-CONSTRUCTION MEETING AND PROJECT MEETINGS

.1 Refer to Section 01 31 19 – Project Meetings for requirements with respect to pre-construction meeting and regular project meetings and attendance required.

1.14 COORDINATION AND CO-OPERATION

.1 The Contractor is responsible for the coordination of all aspects of the Work and the cost of all such coordination is included in the Contract Price.

.2 The Contractor shall provide and maintain such construction plant and equipment as is required of the proper execution of the work in accordance with the agreed progress schedule.

.3 The Contractor shall coordinate the use of construction plant and equipment including cranes, hoists, ladders, scaffolds etc. with the work of the various trades, but the cost of such use by the various trades is subject to whatever arrangement exists between the Contractor and the trades.

1.15 DEFINITION OF TRADES

.1 For convenience of reference only, the specifications are separated into Divisions and Sections.

.2 In the case of a dispute, the Contractor shall decide which sub-contractor supplies and installs required materials of equipment. Extras will not be considered on the grounds of differences in interpretation of the Specifications as to which sub-contractor does which work.

.3 Be totally responsible as to which sub-contractor provides required materials or articles and work.

1.16 PROTECTION OF WORK AND PROPERTY

.1 Protect adjacent private and public property from damage during the performance of Work.

.2 Provide adequate protection for finished and partially finished building finishes and equipment during performance of Work.

.3 Observe all laws, rules and regulations in force at the place of building with respect to the safety of the operations and protection of workers.

.4 Adequately protect all work completed as part of the Contract and new work in progress. Any work damaged or defaced due to failure in providing such protection is to be removed, replaced or repaired as directed by the Consultant.

.5 Prevent overloading of any part of the building. Do not cut, drill or otherwise sleeve any load bearing structural member unless indicated specifically on drawings or in specification, without written approval by the consultant.

1.17 QUALITY OF PRODUCTS

.1 All materials, equipment and articles incorporated in the Work shall be new, not damaged or defective and of the best quality (compatible with specifications) for the purpose intended.

.2 Should any dispute arise as to the quality or fitness of materials, equipment or articles, the decision rests strictly with the Consultant based on the requirements of the Contract Documents.

1.18 MANUFACTURER'S DIRECTIONS

.1 Unless otherwise indicated in the specifications, install or erect all products in accordance with manufacturer's written instructions and recommendations.

.2 Notify the Consultant in writing of any conflicts between specifications and manufacturer's instructions.

1.19 WORKMANSHIP

.1 Workmanship is to be of best quality, executed by workers experienced and skilled in the respective duties for which they are employed.

.2 The Consultant or his authorized representative shall have the right to reject any item that in his opinion does not conform to an acceptable standard or quality, quietness or operation, finish, appearance and performance. The Contractor must rectify unacceptable material and/or workmanship to the approval of the Consultant.

.3 Do not employ unfit persons or anyone unskilled in the duties assigned to them. The Consultant reserves the right to require removal from the site of workers deemed incompetent, careless or otherwise objectionable.

1.20 CUTTING AND PATCHING

.1 The Contractor shall do all cutting, filling or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown upon or reasonably implied by the Contract Documents. Cutting, coring and any required fire stopping shall be the responsibility of sub-trade requiring such for the performance of their work, but not patching of finished surfaces, which shall only be performed by sub-trade performing work of original finish.

.2 Make good to existing surfaces previously performed work after performing cutting and patching work.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 00 10 General Requirements

1.2 ADMINISTRATIVE

.1 Schedule and administer project meetings on a regular basis throughout the progress of the work and additional meetings as directed by the Consultant.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting five days in advance of meeting date to Consultant.

.4 Coordinate use of clients meeting space with client and make arrangements for meetings.

.5 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.6 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and affected parties not in attendance.

.7 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Consultants, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

- .1 Schedule of Work: provide Construction Progress Schedule in Bar (GANTT) Chart format.
- .2 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences.
- .4 Delivery schedule of specified equipment.
- .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Owner provided products.

.8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

.13 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to project completion, schedule regular progress meetings.

.2 Contractor, major Subcontractors involved in Work Consultants and Owner are to be in attendance.

.3 Notify parties' minimum 5 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Review proposed changes for affect on construction schedule and on completion date.

.11 Other business.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Submit to Consultant all shop drawings, product data, samples and required submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.4 Notify Consultant in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.5 Verify field measurements and affected adjacent Work are co-ordinated.

.6 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

.7 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.

.8 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to CCDC 2 GC 3.11.

.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.3 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of British Columbia, Canada.

.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Allow 5 days for Consultant's review of each submission.

.6 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.7 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.

.8 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.9 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.10 Submit digital copy or 2 prints of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

.11 Submit 2 copies or digital copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant] where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit 2 copies or digital copies of test reports for requirements requested in specification Sections and as requested by Consultant.

- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.

.13 Submit 2 copies or digital copies of certificates for requirements requested in specification Sections and as requested by Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit 2 copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Consultant.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit 2 copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.

.16 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.3 Where colour, pattern or texture is criterion, submit full range of samples.

.4 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.5 Make changes in samples which Consultant may require, consistent with Contract Documents.

.6 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.5 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.

END OF SECTION

PART 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

1.2 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 British Columbia Building Code 2018 and all Addenda thereto.

.3 Province of British Columbia

.1 WorkSafe BC - Workers Compensation Act, (Occupational Health and Safety)

1.3 SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant weekly.

.4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit Material Safety Data Sheets (MSDS) to Consultant.

.7 Owner will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 15 days after receipt of plan. Revise plan as appropriate and resubmit plan to Owner within 10 days after receipt of comments from Owner.

.8 Owner's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.9 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.

.10 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to commencement of Work.

1.5 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.6 MEETINGS

.1 Schedule and administer Health and Safety meeting with Owner prior to commencement of Work.

1.7 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Overhead power lines

.2 Underground services

.3 Public use of existing facilities

1.8 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.3 The successful Tenderer is designated as the Prime Contractor and shall fulfill the Prime Contractor responsibilities as defined in:

a) WorkSafeBC *Occupational Health and Safety Regulation*. Notice of Project, Section 20.2 and Coordination of multiple employer workplaces, Section 20.3

b) *Workers Compensation Act* (BC), Coordination at multiple employer workplaces, Section 118, Subsections (1) & (2) and

c) General Requirements, Section 3.10 WorkSafeBC

The Prime Contractor will be required to coordinate the safety of all workers on the work site, including their employees, their subcontractors, RDN work crews and their contractors and private utilities (i.e. BC Hydro, Telus, Shaw and FortisBC).

1.10 COMPLIANCE REQUIREMENTS

.1 Comply with British Columbia Building Code 2018

.2 Comply with WorkSafe BC - Workers Compensation Act, Occupational Health and Safety Regulations.

1.11 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province of British Columbia. Advise Consultant verbally and in writing.

1.12 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have minimum 2 years' site-related working experience.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of Work and report directly to site supervisor.

1.13 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of British Columbia and in consultation with Owner.

1.14 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Owner.

.2 Provide Consultant and Owner with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Consultant or Owner may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 BLASTING

.1 Blasting or other use of explosives is not permitted without prior receipt of written instruction by Consultant.

1.16 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 SUBMITTALS

.1 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.2 Environmental protection objectives to include:

- .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
- .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
- .3 Names and qualifications of persons responsible for training site personnel.
- .4 Descriptions of environmental protection personnel training program.
- .5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
- .6 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- .8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.
- .9 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- .10 Pesticide treatment plan: to be included and updated, as required.

1.3 FIRES

.1 Fires and burning of rubbish on site are not permitted.

1.4 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.5 DRAINAGE

.1 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 POLLUTION CONTROL

.1 Control emissions from equipment and plant to local authorities' emission requirements.

.2 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.

.3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.7 NOTIFICATION

.1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Consultant of proposed corrective action and take such action for approval by Consultant.

.3 Consultant will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 INSPECTION

.1 Refer to CCDC 2, GC 2.3.

.2 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.

.4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.5 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Consultant for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Owner.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Owner. Pay costs for retesting and re-inspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Refer to CCDC, GC 2.4.

.2 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.3 Make good other Contractor's work damaged by such removals or replacements promptly.

.4 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Consultant.

1.7 REPORTS

.1 Submit copies of inspection and test reports to Consultant.

.2 Provide copies to subcontractor of work being inspected or tested.

1.8 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

1.9 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations acceptable to Consultant.

.3 Prepare mock-ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Consultant will assist in preparing schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work or when acceptable to Consultant.

.7 Mock-ups may remain as part of Work.

.8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.10 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

1.11 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 WATER SUPPLY

.1 Provide and pay for all temporary water supply and connections. Maintain in good condition until permanent supply is installed and ready to use.

.2 Owner has arranged for drilling of on-site well. Installation of pump and piping to building is specified under the mechanical and civil engineering services.

1.4 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

- .1 Facilitate progress of Work.
- .2 Protect Work and products against dampness and cold.
- .3 Prevent moisture condensation on surfaces.
- .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
- .5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.5 Ventilating:

- .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
- .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
- .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Permanent existing heating system of building may be used when available.

.7 On completion of Work for which permanent heating system is used, replace filters and clean duct work.

.8 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Consultant.

.9 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform to applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.10 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 TEMPORARY POWER AND LIGHT

.1 Provide and pay for all temporary power required during construction for temporary lighting and operating of power tools.

.2 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

.3 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Consultant provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.6 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone, fax, data hook up, lines and equipment necessary for own use and use of Consultant.

1.7 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 51 00 – Temporary Utilities.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-M1978 (R2003), Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.4 HOARDING

.1 Erect temporary construction area enclosures using appropriate barricades or fencing.

1.5 GUARD RAILS AND BARRICADES

.1 Provide secure barricades around excavations, open edges of floors as required by WorksafeBC.

1.6 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door openings as and when required.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.7 DUST TIGHT SCREENS

.1 Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public (This is also mentioned as a requirement for construction IAQ- section 01 47 18, article 1.4.6.3.- Pathway Interruption).

.2 Maintain and relocate protection until such work is complete.

1.8 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.9 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent, barricades, lights, or lanterns as required to perform Work and protect public.

1.10 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.11 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Be responsible for damage incurred due to lack of or improper protection.

1.12 WASTE MANAGEMENT AND DISPOSAL

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

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Provide and use separate marked bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.7 Dispose of waste materials and debris at designated areas as directed by Owner.

.8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

.1 Refer to CCDC 2, GC 3.14.

.2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review remove surplus products, tools, construction machinery and equipment.

.5 Remove waste products and debris other than that caused by Owner.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant or Owner. Do not burn waste materials on site.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Clean and polish glass, hardware, stainless steel, chrome and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.9 Remove stains, spots, marks and dirt from electrical and mechanical fixtures, furniture fitments, walls and floors.

.10 Clean lighting reflectors, lenses, and other lighting surfaces.

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Seal or prepare floor finishes, as recommended by manufacturer.

.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.14 Remove dirt and other disfiguration from exterior surfaces.

.15 Sweep and wash clean concrete slab and paved areas.

.16 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.17 Remove snow and ice from access to building.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

.1 Accomplish maximum control of solid construction waste.

.2 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

.1 Class III: non-hazardous waste - construction demolition waste.

.2 Inert Fill: inert waste - exclusively asphalt and concrete.

.3 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.4 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.5 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.6 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Returning reusable items including pallets or unused products to vendors.

.7 Separate Condition: refers to waste sorted into individual types.

.8 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.4 STORAGE, HANDLING AND PROTECTION

.1 Unless specified otherwise, materials for removal become Contractor's property.

.2 Protect, stockpile, store and catalogue salvaged items.

.3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.4 Protect surface drainage, mechanical and electrical from damage and blockage.

.5 Separate and store materials produced during dismantling of structures in designated areas.

.6 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off-site processing facility for separation.

.3 Provide waybills for separated materials.

1.5 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste into waterways, storm, or sanitary sewers.

.3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

1.6 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Provide temporary security measures approved by the Owner

1.7 SCHEDULING

.1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

1.8 APPLICATION

.1 Do Work in compliance with waste reduction workplan.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

1.9 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

1.10 DIVERSION OF MATERIALS

.1 On-site sale of salvaged, recovered, reusable, or recyclable materials is not permitted.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 78 00 – Close-out Submittals.

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.3 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Consultant's Inspection.

.2 Consultant's Inspection: Consultant and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Certificates required by Boiler Inspection Branch, Fire Department, Utility companies have been submitted.

.5 Operation of systems has been demonstrated to Owner's personnel.

.6 Work is complete and ready for final inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Owner and Consultant. If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Owner and Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. Refer to CCDC 2, General Conditions for specifics to application.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment: when Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed,

make application for final payment. If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with CCDC 2.

1.4 CLEANING

.1 In accordance with Section 01 74 11 - Cleaning.

.2 Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.3 Copy will be returned after final inspection with Consultant's comments.

.4 Revise content of documents as required prior to final submittal.

.5 Two weeks prior to Substantial Performance of the Work, submit to the Consultant, two final copies of operating and maintenance manuals in English.

.6 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.7 Furnish evidence, if requested, for type, source and quality of products provided.

.8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense. Pay costs of transportation.

1.2 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf Letter size 8 ½ x 11 (219 x 279 mm) with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, process flow, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.8 Provide 1:1 scaled CAD files in dwg format on CD.

1.3 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.4 AS-BUILTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Consultant one record copy of:

.1 Contract Drawings and specifications

.2 Addenda.

.3 Change Orders and other modifications to Contract.

.4 Reviewed shop drawings, product data, and samples.

.5 Field test records.

.6 Inspection certificates.

.7 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

1.5 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Consultant.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation 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, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

1.6 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions. Include sequence of operation by controls manufacturer.

.8 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.9 Provide installed control diagrams by controls manufacturer.

.10 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

.11 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.13 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.

.14 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.8 SPARE PARTS

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to [site] [location as directed]; place and store.

.4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.9 MAINTENANCE MATERIALS

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store as directed

.4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.10 SPECIAL TOOLS

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store as directed.

.4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

1.11 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.12 WARRANTIES AND BONDS

.1 Assemble warranties and bonds, including all pertinent information in binder and submit upon acceptance of work. Organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.2 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.

.3 Respond in a timely manner to oral or written notification of required construction warranty repair work.

END OF SECTION

PART 1 General

1.1 GENERAL REQUIREMENTS

.1 This contract covers the supply and erection of a new pre-engineered steel building as a complete structure, including frames, girts, purlins, bracing, metal wall panels, metal roof panels, roof and wall insulation at metal roof and wall cladding panel areas, framed openings for doors and windows and overhead door, gutters and down spouts, backing for and supply/installation of exterior canopies over man doors, insulated metal man doors.

.1 Refer to Section 08 71 00 Door Hardware for Hardware Schedule

.2 Erection of the pre-engineered steel building is to be included and to be performed under the direction of the general contractor for this project

PART 2 Products

2.1 DESIGN CRITERIA - PRE-ENGINEERED STEEL BUILDING

.1 British Columbia Building Code 2018 Edition applies. Design Location: Qualicum, BC.

.1 Building Classification Part 3, A2 - Assembly

.2 Allow for collateral roof load of 0.24 kPa (5 lbs/sq.ft.) for fire suppression, mechanical, HVAC systems and, light fixtures etc.

2.2 PRE-ENGINEERED STEEL BUILDING

.1 Supply complete building to size and shape as indicated on architectural drawings. Locate brace bays so as not to interfere with proposed openings for windows and doors and interior mezzanine structure. Manufacturer is responsible for suitable type of bracing in locations available. In lieu of bracings, steel portal frames may be used at overhead door openings for lateral loads.

.1 Allow for roof flashing connection at timber frame entrance canopy at main building entrance.

.2 Include canopy framing and metal roof cladding at man door openings as indicated on architectural drawings.

.3 Include door frames and insulated metal man doors associated with the steel building. Provide framed openings for overhead doors and windows. Provide metal trim for head and jambs of overhead door openings, colour to match adjacent wall cladding.

.4 Design and locate steel framing, girts and purlins to suit building design and door and window openings as shown in the drawings.

.2 Top of concrete is set 8" above main floor elevation

.3 Supply pre-finished metal roof and wall cladding, finished as specified in 2.3 below.

.1 Roof cladding to be of standing seam type, machine roll crimped, 24 ga thickness

.2 Wall Cladding to be 24 ga thickness

.4 Provide roof and wall insulation as follows:

.1 Material: Formaldehyde free fiberglass blanket insulation c/w white Gymguard type polypropylene vapour barrier facing laminated to interior side of insulation with flame retardant adhesive

.2 Roof Insulation: R25 + R8 or equal; U-0.037

.3 Wall Insulation: R25 + R10 or equal; U-0.047

.4 Provide appropriate thermal blocks at roof purlins maintaining intended thermal values of insulation.

2.3 SHOP PAINTING

.1 Complete building framing and fasteners to be supplied with shop applied epoxy zinc primer, 3 mil thickness.

.2 Metal roof and wall panels to be pre-finished with high build polyurethane coating, 6 mil thickness with vinyl wash primer. Acceptable product: Kynar 500 or equivalent.

.3 Wall colours to be selected by Consultant from Manufacturer's standard colour range, closely matching the following colours

.1 Roof panels: colour to be as noted on architectural drawings

.2 Wall panels: colour to be as noted on architectural drawings.

.3 Gutters and downspouts to match wall colour.

2.4 SEPARATE PRICES:

.1 Separate Price Item A: Provide a separate price for providing insulated wall and roof liner panels in lieu of metal wall and roof panels and fibreglass blanket insulation specified under para. 2.2.4 and 2.2.5 above. Colours to be as noted in 2.3.3 above.

.1 Insulated liner panel; Kingspan Insulated Panels KS Series QuadCore or equal metal wall and roof panel system. Refer to architectural drawings for panel layout, details, colours and specifications.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 09 91 23 - Interior Painting.

.3 Section 09 91 13 - Exterior Painting.

.4 Refer to Structural Specifications noted on Drawings

1.2 REFERENCES

.1 The Environmental Choice Program

.1 CCD-047a-98, Paints, Surface Coatings.

.2 CCD-048-98, Surface Coatings - Recycled Water-borne.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For finishes, coatings, primers and paints.

.2 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 QUALITY ASSURANCE

.1 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:

.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Owner.

Part 2 Products

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W.

.2 Steel pipe: to ASTM A53/A53M standard weight, galvanized finish.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM A307.

.6 Stainless steel tubing: to ASTM A269, Type 302 Commercial grade, Seamless welded with AISI No. 4 finish.

.7 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof countersunk flat headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^2 to CAN/CSA-G164.

.2 Shop coat primer: to CAN/CGSB-1.40.

.3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

.1 VOC limits for primers applied on-site as per Section 01 35 21- LEED Requirements.

2.4 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.5 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

2.6 STRUCTURAL STEEL

.1 Refer to structural steel specifications on Structural Drawings.

2.7 STEEL BOLLARDS

.1 Refer to details shown on structural drawings for size, pipe thickness and concrete embedment of steel bollards.

.2 Finish: galvanized.

Part 3 Execution

3.1 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 STEEL BOLLARDS

.1 Install Bollards at overhead door openings as indicated.

3.3 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry: refer to specifications noted on Structural Drawings

.2 Section 06 40 00 – Architectural Woodwork

.3 Section 09 91 13 – Exterior Painting

.4 Section 09 91 23 – Interior Painting

1.2 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)

.1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 2003.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-11.3-M87, Hardboard.

.3 Canadian Plywood Association (CanPly)

.1 The Plywood Handbook 2005.

.4 Canadian Standards Association (CSA International)

.1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
.2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
.3 CSA O121-M89(R2003), Douglas Fir Plywood.
.4 CAN/CSA O141-91(R1999), Softwood Lumber.
.5 CSA O151-04, Canadian Softwood Plywood.
.6 CSA Z760-94, Life Cycle Assessment.

1.3 SUBMITTALS

.1 Submit Submittal submissions: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings Submittals: in accordance with Section 01 33 00 - Submittal Procedures,

.1 Indicate details of construction, profiles, jointing, fastening and other related details.
.2 Indicate materials, thicknesses, finishes and hardware.

1.4 QUALITY ASSURANCE

.1 Lumber by grade stamp of 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.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials as noted below:

.1 Protect materials against dampness during and after delivery.

.2 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

.2 Waste Management and Disposal:

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

Part 2 Products

2.1 LUMBER MATERIAL

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 19% or less in accordance with following standards:

.1 CAN/CSA-O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.3 AWMAC custom grade, moisture content as specified.

.2 Machine stress-rated lumber is acceptable.

.3 Hardwood lumber: moisture content 10% or less in accordance with following standards:

.1 National Hardwood Lumber Association (NHLA).

.2 AWMAC custom grade, moisture content as specified.

2.2 PANEL MATERIAL

.1 Douglas fir plywood (DFP): to CSA O121, standard construction.

.1 Urea-formaldehyde free.

.2 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.1 Urea-formaldehyde free.

2.3 ACCESSORIES

.1 Nails and staples: to CSA B111; galvanized to CAN/CSA-G164 for exterior work, interior humid areas and for treated lumber; plain finish elsewhere.

.2 Wood screws: plain, brass or stainless steel, type and size to suit application.

.3 Adhesive: recommended by manufacturer.

Part 3 Execution

3.1 INSTALLATION

.1 Do finish carpentry to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.

.3 Form joints to conceal shrinkage.

3.2 CONSTRUCTION

.1 Fastening:

.1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.

.2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.

.3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.

.4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.2 Standing and running trim:

.1 Install door and window trim in single lengths without splicing.

.3 Shelving:

.1 Install shelving on shelf brackets.

3.3 SCHEDULES

.1 Standing and running trim:

.1 Exterior and Interior:

.1 Grade: Custom

.2 Solid stock: DF species.

.2 Shelving:

.1 Softwood plywood DFP or CSP G2S grade, square edge, 19 mm thick.

.2 Edge banding: provide 10 mm thick solid matching wood strip on plywood edges 12 mm or thicker, exposed in final assembly. Strips same width as plywood.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealing.

1.2 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)

.1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 (2005).

.2 Canadian Standards Association (CSA International)

.1 CSA B111-74 (R2003), Wire Nails, Spikes and Staples.
.2 CSA O112.4 Series-M1977 (R2006), Standards for Wood Adhesives.
.3 CSA O112.5-Series-M-1977 (R2006), Urea Resin Adhesives for Wood (Room- and High-Temperature Curing).
.4 CSA O112.7-Series M-1977 (R2006), Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate-Temperature Curing).
.5 CSA O121-M89 (R2003), Douglas Fir Plywood.
.6 CSA O141-05, Softwood Lumber.
.7 CSA O151-04, Canadian Softwood Plywood.

.3 International Organization for Standardization (ISO)

.1 ISO 14040-2006, Environmental Management-Life Cycle Assessment - Principles and Framework.
.2 ISO 14041-98, Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.

.4 National Hardwood Lumber Association (NHLA)

.1 Rules for the Measurement and Inspection of Hardwood and Cypress [1998].

.5 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber [2005].

1.3 SUBMITTALS

.1 Provide Submittal submissions: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.1 Indicate details of construction, profiles, jointing, fastening and other related details.

.1 Scales: profiles full size, details half full size.

.2 Indicate materials, thicknesses, finishes and hardware.
.3 Indicate locations of service outlets in casework, typical and special installation conditions and connections, attachments, anchorage and location of exposed fastenings.

1.4 QUALITY ASSURANCE

.1 Lumber by grade stamp of 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.

.3 Delivery, Storage, and Handling:

.1 Deliver, handle, store and protect materials as noted below:

.1 Protect millwork against dampness and damage during and after delivery.

.2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

.2 Waste Management and Disposal:

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

Part 2 Products

2.1 MATERIALS

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 15 % or less in accordance with following standards:

.1 CSA O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.3 AWMAC custom grade, moisture content as specified.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 The manufacturing process must adhere to Lifecycle Assessment (LCA) Standards as per ISO 14040/14041 LCA Standards, CSA Z760 94 Life Cycle Assessment.

.4 Hardwood lumber: moisture content 10 % or less in accordance with following standards:

.1 National Hardwood Lumber Association (NHLA).

.2 AWMAC custom grade, moisture content as specified.

.5 Composite wood products

.1 All composite wood products to be free of added urea-formaldehyde.

.6 Douglas fir plywood (DFP): to CSA O121, standard construction.

.1 Urea-formaldehyde free.

.7 Canadian softwood plywood (CSP): to CSA O151, standard construction.

.1 Urea-formaldehyde free.

.8 Hardwood plywood: to ANSI/HPVA HP-1.

.1 Urea-formaldehyde free.

.9 Birch plywood: to AWMAC Natural.

.1 Urea-formaldehyde free.

.10 Laminated plastic for flatwork: to NEMA LD3, Grade VGL, Type S, 1.5 mm thick; based on solid colour range with satin finish.

.11 Laminated plastic for postforming work: to NEMA LD3, Grade VGL, Type S, 0.75 mm thick, based on solid colour range with satin finish.

.12 Laminated plastic backing sheet: Grade BK, Type S not less than 0.5 mm thick or same thickness and colour as face laminate.

.13 Laminated plastic liner sheet: Grade GP, Type S, 0.5 mm thick, white colour.

.14 Nails and staples: to CSA B111.

.15 Wood screws: stainless steel, type and size to suit application.

.16 Sealant: in accordance with Section 07 92 00 - Joint Sealants

.17 Laminated plastic adhesive:

.1 Adhesive: urea resin adhesive to CSA O112.5, contact adhesive to CAN/CGSB-71.20.

2.2 MANUFACTURED UNITS

.1 Casework:

.1 Fabricate caseworks to AWMAC custom quality grade.

.2 Shelving:

.1 Softwood plywood DFP or CSP G2S grade, square edge, 19 mm thick.

.2 Edge banding: provide 10 mm thick solid matching wood strip on plywood edges 12 mm or thicker, exposed in final assembly. Strips same width as plywood.

.2 Drawers:

.1 Fabricate drawers to AWMAC custom grade supplemented as follows:

.2 Sides and Backs and Bottoms

.1 Softwood plywood DFP or CSP custom grade, square edge, 12 mm thick, no added urea-formaldehyde.

.3 Fronts: to match casework doors and fronts.

.3 Casework Doors:

.1 Fabricate doors to AWMAC custom grade supplemented as follows:

.2 Hardwood plywood:

.1 Thickness: 19 mm.

.2 Face veneer: Oak species.

.3 Grain direction vertical.

.4 No added urea-formaldehyde

2.3 CABINET HARDWARE

.1 Cabinet hinges: concealed hinges with 170° opening

.2 Shelf Standards: Knape and Vogt 120 Series

.3 Drawer Slides: Accuride full extension slide, one to each side of drawer, rated capacity 34 kg per pair.

.4 Drawer and door pulls: Richelieu No 6110, 95 mm c.c., U-shape, colour as selected by Consultant.

2.4 FABRICATION

.1 Set nails and countersink screws, apply stained wood filler to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.3 Shelving to cabinetwork to be adjustable unless otherwise noted.

.4 Provide cut-outs for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

.6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.7 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.8 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 2400 mm.

.9 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

.10 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.11 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.12 Apply laminated plastic liner sheet to interior of cabinetry where indicated.

2.5 FINISHING

.1 To AWMAC custom quality grade for all adhesives, sealants, paints and coatings applied on-site.

Part 3 Execution

3.1 INSTALLATION

.1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.

.3 Fasten and anchor millwork securely. Provide heavy duty fixture attachments for wall mounted cabinets.

.4 Use draw bolts in countertop joints.

.5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

.7 Apply water resistant building paper over wood framing members in contact with cementitious construction.

.8 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

.9 Install pre-finished millwork at location shown on drawings.

3.2 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.2 Clean millwork and cabinet work, inside cupboards and drawers and outside surfaces.

.3 Remove excess glue from surfaces.

PROTECTION

.4 Protect millwork and cabinet work from damage until final inspection.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for asphalt for use as dampproofing.

1.2 RELATED SECTIONS

.1 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-37.2-M88, Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.
- .2 CAN/CGSB 37.3-M89, Application of Emulsified Asphalts for Dampproofing or Waterproofing.
- .3 CGSB 37-GP-15M-76 (R1984), Application of Asphalt Primer for Asphalt Roofing, Dampproofing and Waterproofing.
- .4 CAN/CGSB 37.16-M89, Filled, Cutback, Asphalt for Dampproofing and Waterproofing.
- .5 CGSB 37-GP-36M-76, Application of Filled Cutback Asphalts for Dampproofing and Waterproofing.

.2 Canadian Standards Association (CSA International)

- .1 CSA A123.4-98, Bitumen for Use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems.

.3 Health Canada

- .1 Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

.4 National Research Council Canada (NRC)/Institute for Research in Construction (IRC)

- .1 Canadian Construction Materials Centre (CCMC)

1.4 DELIVERY, STORAGE AND HANDLING

.1 Provide and maintain dry, off-ground weatherproof storage.

.2 Store materials on supports to prevent deformation.

.3 Remove only in quantities required for same day use.

.4 Store materials in accordance with manufacturer's written instructions.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Ensure emptied containers are sealed and stored safely.

.5 Fold up metal banding, flatten and place in designated area for recycling.

.6 Divert unused bituminous dampproofing, sealing compounds and asphalt primer materials from landfill to recycling facility approved by Consultant.

1.6 PROJECT/SITE ENVIRONMENTAL REQUIREMENTS

.1 Temperature, relative humidity, moisture content.

.1 Apply dampproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.2 Do not proceed with Work when wind chill effect would tend to set bitumen before proper curing takes place.

.3 Maintain air temperature and substrate temperature at dampproofing installation area above 5 degrees C for 24 hours before, during and 24 hours after installation.

.4 Do not apply dampproofing in wet weather.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.

.3 Ventilation:

.1 Ventilate area of Work by use of approved portable supply and exhaust fans.

.2 Provide continuous ventilation during and after dampproofing application. Run ventilation system during installation.

Part 2 Products

2.1 MATERIALS

.1 Asphalt:

.1 For application and curing at temperatures above 5 degrees C: to CAN/CGSB-37.2.

.1 Package label or bill of lading for bulk hot liquid asphalt must indicate type, flash point, equiviscous temperature range and final blowing temperature.

.2 For application and curing at temperatures above 0 degrees C but below 5 degrees C: to CGSB 37-GP-6Ma.

.1 Package label or bill of lading for bulk hot liquid asphalt must indicate type, flash point, equiviscous temperature range and final blowing temperature.

.2 Sealing compound: plastic cutback asphalt cement to CAN/CGSB-37.5.

.3 Asphalt primer: to CAN/CGSB-37.2.

Part 3 Execution

3.1 WORKMANSHIP

.1 Keep hot asphalt:

.1 Below its flash point.

.2 At or below its final blowing temperature.

.3 Within its equiviscous temperature range at place of application.

3.2 PREPARATION

.1 Before applying dampproofing:

.1 Seal exterior joints between foundation walls and footings, joints between concrete floor slab and foundation and around penetrations through dampproofing with sealing compound.

3.3 APPLICATION

.1 Do sealing work in accordance with CGSB 37-GP-11M.

.2 Do priming of surface in accordance with CGSB 37-GP-15M.

.3 Apply dampproofing in accordance with applicable CGSB application standard.

Material		Application
CAN/CGSB-37.2	use	CAN/CGSB-37.3
CAN/CGSB-37.16	use	CGSB 37-GP-36M

3.4 SCHEDULE

.1 Apply continuous, uniform coating to entire exterior faces of foundation walls from 50 mm below finished grade level to and including tops of foundation wall footings.

.2 Apply continuous, uniform coating to exterior side of foundation walls enclosing rooms below finished grade. Include exterior portion of interior walls where floors in adjacent rooms are at different elevations.

.3 Apply two additional coats of dampproofing to vertical corners and construction joints for a minimum width of 230 mm on each side, and all around and for 230 mm along pipes passing through walls.

.4 Advise Consultant for inspection and approval of installation prior to backfilling.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 26 00 – Vapour Retarders.

.2 Section 08 11 00 – Metal Doors and Frames

1.2 QUALITY ASSURANCE

.1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.3 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.

Part 2 Products

2.1 INSULATION

.1 Batt and blanket mineral fibre: to CAN/ULC S702.

.1 Type: 1.

.2 Thickness and R-value as indicated.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSULATION INSTALLATION

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Do not compress insulation to fit into spaces.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 Type B and L vents.

.5 Do not enclose insulation until it has been inspected and approved by Consultant.

3.3 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry

.2 Section 07 92 00 – Joint Sealing

1.2 QUALITY ASSURANCE

.1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:

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

Part 2 Products

2.1 SHEET VAPOUR BARRIER

.1 Polyethylene film: to CAN/CGSB-51.34, 0.15 mm thick.

2.2 ACCESSORIES

.1 Joint sealing tape: air resistant pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.

.2 Sealant: compatible with vapour retarder materials, recommended by vapour retarder manufacturer. To Section 07 92 00 - Joint Sealing.

.3 Staples: minimum 6 mm leg.

.4 Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes.

Part 3 Execution

3.1 INSTALLATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder on warm side of exterior wall and ceiling assemblies prior to installation of gypsum board to form continuous retarder.

.3 Use sheets of largest practical size to minimize joints.

.4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

3.2 EXTERIOR SURFACE OPENINGS

.1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

3.3 PERIMETER SEALS

.1 Seal perimeter of sheet vapour barrier as follows:

.1 Apply continuous bead of sealant to substrate at perimeter of sheets.
.2 Lap sheet over sealant and press into sealant bead.
.3 Install staples through lapped sheets at sealant bead into wood substrate.
.4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.4 LAP JOINT SEALS

.1 Seal lap joints of sheet vapour barrier as follows:

.1 Attach first sheet to substrate.
.2 Apply continuous bead of sealant over solid backing at joint.
.3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
.4 Install staples through lapped sheets at sealant bead into wood substrate.
.5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.5 ELECTRICAL BOXES

.1 Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:

.1 Install moulded box vapour barrier.
.2 Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

3.6 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 46 24 – Board and Panel Siding.

1.2 REFERENCES

.1 Roofing Contractors Association of British Columbia (RCABC)

.1 Roofing Practises Manual

1.3 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:

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

Part 2 Products

2.1 SHEET METAL MATERIALS

.1 Zinc coated steel sheet: 0.61 mm thickness, commercial quality to ASTM A653/A653M, with Z275 designation zinc coating.

.2 Aluminum sheet: proprietary utility sheet plain, 0.6 mm minimum thickness.

2.2 PREFINISHED ALUMINUM SHEET

.1 Finish: factory applied coating to CAN/CGSB-93.1 supplemented as follows:

.1 Type 1.
.2 Class F2S.
.3 Colour selected by Consultant from manufacturer's standard range.
.4 Coating thickness: not less than 20 micrometres.

.2 Thickness specified for prefinished aluminum sheet applies to base metal.

2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB 37.5.

.1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168.

.3 Underlay for metal flashing: No. 15 perforated asphalt felt to CSA A123.3.

.4 Sealants: to Section 07 92 00 – Joint Sealing.

.1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168.

.5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

.6 Fasteners: of same material as sheet metal, to CSA B111, flat head roofing nails of length and thickness suitable for metal flashing application.

.7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.8 Touch-up paint: as recommended by prefinished material manufacturer.

.1 Maximum VOC limit 50 g/L to Standard GS-11.

2.4 FABRICATION

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA 'FL' series details.

.2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI-Aluminum Sheet Metal Work in Building Construction.

.3 Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.

.4 Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.

.5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 METAL FLASHINGS

.1 Form flashings and trim to profiles indicated of 0.6mm thick prefinished aluminum.

Part 3 Execution

3.1 INSTALLATION

.1 Install sheet metal work in accordance with RCABC details.

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal. Secure in place and lap joints 100 mm.

.4 Lock end joints and caulk with sealant.

3.2 CLEANING

.1 Proceed 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 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealing.

1.2 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.2 Underwriter's Laboratories of Canada (ULC)

.1 ULC-S115-1995, Fire Tests of Fire stop Systems.

1.3 DEFINITIONS

.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.

.4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of non-combustible construction or have "0" annular space in buildings of combustible construction.

.1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: person specializing in fire stopping installations with 5 years experience.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.

.2 Storage and Protection:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.3 Waste Management and Disposal:

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

Part 2 Products

2.1 MATERIALS

.1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.

.1 Asbestos free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended.

.2 Fire stop system rating: to suit required fire resistance rating of wall and ceiling/roof assembly as noted on drawings.

.2 Service penetration assemblies: systems tested to CAN-ULC-S115.

.3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.

.4 Fire resistance rating of installed fire stopping assembly in accordance with BCBC 2006.

.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed.

.10 Sealants for vertical joints: non-sagging.

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 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 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

3.3 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.

.2 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.

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.4 SEQUENCES OF OPERATION

.1 Mechanical pipe insulation: certified fire stop system component.

.1 Ensure pipe insulation installation precedes fire stopping.

3.5 FIELD QUALITY CONTROL

.1 Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.6 CLEANING

.1 Proceed 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.

3.7 SCHEDULE

.1 Fire stop and smoke seal at:

.1 Penetrations through fire resistance rated gypsum board partitions and walls.

.2 Top of fire resistance rated gypsum board partitions.

.3 Penetrations through fire resistance rated ceilings and roofs.

.4 Around mechanical and electrical assemblies penetrating fire separations.

.5 Rigid ducts: greater than 129 cm^2: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.

1.5 PROJECT CONDITIONS

.1 Environmental Limitations:

.1 Do not proceed with installation of joint sealants under following conditions:

.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

.2 When joint substrates are wet.

.2 Joint-Width Conditions:

.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and

regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

Part 2 Products

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Urethanes Two Part.

.1 Self-Levelling to CAN/CGSB-19.24, Type 1, Class B, colour as selected by Consultant.

.2 Urethanes One Part.

.1 Self-Levelling to CAN/CGSB-19.13, Type 1, colour as selected by Consultant.

.3 Urethanes One Part.

.1 Non-Sag to CAN/CGSB-19.13, Type 2, MCG-2-40, colour as selected by Consultant

.4 Silicones One Part.

.1 Mildew resistant.

.5 Acrylic Latex One Part.

.1 To CAN/CGSB-19.17.

.6 Butyl.

.1 To CGSB 19-GP-14M.

.7 Preformed Compressible and Non-Compressible back-up materials.

.1 Polyethylene, Urethane, Neoprene or Vinyl Foam.

.1 Extruded closed cell foam backer rod.

.2 Size: oversize 30 to 50 %.

.2 Neoprene or Butyl Rubber.

.1 Round solid rod, Shore A hardness 70.

.3 High Density Foam.

.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.

.4 Bond Breaker Tape.

.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior facade of building: Sealant type: non-sag.

.2 Expansion and control joints in exterior surfaces of poured-in-place concrete walls: Sealant type: non-sag.

.3 Coping joints and coping-to facade joints: Sealant type: butyl

.4 Seal interior perimeters of exterior openings as detailed on drawings: Sealant type: non-sag.

.5 Interior control and expansion joints in floor surfaces: Sealant type: self levelling.

.6 Perimeters of interior frames, as detailed and itemized: Sealant type: non-sag.

.7 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, water closets, basins, vanities): Sealant type: silicone, mildew resistant

.8 Exposed interior control joints in drywall: Sealant type: acrylic latex.

2.4 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

.1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with manufacturer's instructions prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 Sealant.

- .1 Apply sealant in accordance with manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Apply sealant in continuous beads.
- .4 Apply sealant using gun with proper size nozzle.
- .5 Use sufficient pressure to fill voids and joints solid.
- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.

- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

.3 Cleanup.

- .1 Clean adjacent surfaces immediately and leave Work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 03 30 00 – Cast-in-Place Concrete

.2 Section 06 10 00 – Rough Carpentry

.3 Section 07 21 16 – Blanket Insulation

.4 Section 07 92 00 – Joint Sealing

.5 Section 08 71 00 – Door Hardware

.6 Section 09 91 13 – Exterior Painting

.7 Section 09 91 23 – Interior Painting

1.2 SYSTEM DESCRIPTION

.1 Design Requirements:

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.

.2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware and fire rating and finishes.

.2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating, finishes.

.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:

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

Part 2 Products

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.

2.2 DOOR CORE MATERIALS

.1 Honeycomb construction:

.1 Structural small cell, 24.5 mm maximum Kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m^3 minimum sanded to required thickness.

.2 Stiffened: face sheets welded, insulated core.

.1 Polyurethane: to CAN/ULC-S704 rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m^3.

2.3 ADHESIVES

.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.2 Polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

.3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.

2.5 PAINT

.1 Field paint steel doors and frames in accordance with Sections 09 91 23 - Interior Painting and 09 91 13 - Exterior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

2.6 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior top and bottom caps: steel.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Metallic paste filler: to manufacturer's standard.

.5 Fire labels: metal riveted.

.6 Sealant: to Section 07 92 00 Joint Sealing.

.7 Glazing: to Section 08 80 50 Glazing.

.8 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.

.2 Design exterior glazing stops to be tamperproof.

2.7 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior and interior frames: 1.2 mm welded type construction.

.4 Blank, reinforce, drill and tap frames for mortised, templated hardware, using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.5 Protect mortised cut-outs with steel guard boxes.

.6 Prepare frame for door silencers, 3 for single door.

.7 Manufacturer's nameplates on frames and screens are not permitted.

.8 Conceal fastenings except where exposed fastenings are indicated.

.9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.10 Insulate exterior frame components with fibreglass insulation.

2.8 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 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.

2.9 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.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.

.7 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.10 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: Insulated construction. Interior doors: honeycomb construction.

.3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Blank, reinforce, drill doors and tap for mortised, templated hardware.

.5 Reinforce doors where required, for surface mounted hardware. Provide flush steel top and bottom caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.6 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.7 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled.

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form face sheets for exterior doors from 1.2 mm sheet steel with polyurethane core laminated under pressure to face sheets.

.2 Form face sheets for interior doors from 1.2 mm sheet steel with honeycomb or temperature rise rated core laminated under pressure to face sheets.

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 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.3 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 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.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air barrier and vapour retarder.

3.4 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.

.1 Hinge side: 1.0 mm.

.2 Latch side and head: 1.5 mm.

.3 Finished floor, non-combustible sill and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

3.6 GLAZING

.1 Install glazing for doors in accordance with Section 08 80 50 – Glazing.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 11 00 - Metal Doors and Frames.

.2 Section 08 71 00 - Door Hardware - General.

.3 Section 09 91 23 – Interior Painting.

1.2 SUBMITTALS

.1 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate door types, sizes, core construction.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:

.1 Protect doors from dampness. Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.

.2 Protect doors from scratches, handling marks and other damage.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Dispose of packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

.2 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

Part 2 Products

2.1 WOOD FLUSH DOORS

.1 Solid core: to CAN/CSA-O132.2.1. Acceptable Products: Premdor, Lambton, Baillargeon

.1 Construction:

.1 Solid wood core:

.1 Glued block core with wood edge band.

.2 Framed block non-glued core.

.3 Stile and rail core.

.4 5-ply construction.

.2 Face Panels:

.1 Hardwood; veneer grades: Grade I (Premium), Birch species.

.3 Adhesive: Type I (waterproof) for interior doors.

2.2 FABRICATION

.1 Vertical edge strips to match face veneer.

.2 Prepare doors for hardware, louvres and glazing. Provide fir species to match face wood for glazing stops with mitred corners.

.3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install doors and hardware in accordance with manufacturer's printed instructions.

.3 Adjust hardware for correct function.

.4 Install louvres and stops.

3.3 ADJUSTMENT

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking; clean doors and frames.

.3 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealing: caulking of joints between frames and other building components.

.2 Section 08 80 50 - Glazing

1.2 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, elevations of unit, anchorage details, description of related components fasteners, and caulking.

1.3 TEST REPORTS

.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:

- .1 Windows.
- .2 Air tightness.
- .3 Water tightness.
- .4 Wind load resistance.

1.4 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for windows for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused caulking material from landfill to official hazardous material collections site.

.5 Plastic caulking tubes are not recyclable and must not be diverted for recycling with other plastic materials.

Part 2 Products

2.1 MATERIALS

.1 Materials: to NAFS-08 and CSA-A440S1-09.

.2 All windows by same manufacturer.

.1 Acceptable Products: Starline Windows - 7100 Series, Centra 2900 Series, Thermoproof Series 700.

.3 Main frame, sash and glazing beads: vinyl.

.4 Glass: Insulating glass units to CAN2-18M with outer pane of 5 mm glass and inner pane of 5 mm glass with 12 mm airspace.

.5 Screens: to CAN/CGSB-79.1.

.1 Type: 1

.2 Class: A

.3 Style: 2

.4 Insect screening mesh: count 18 x 16.

.5 Fasteners: tamper proof.

.6 Screen frames: aluminum, colour to match window frames.

.7 Mount screen frames for interior replacement. Provide hinged section for access to sash operator.

.6 Exterior head and sills flashings: extruded aluminum or brake formed aluminum sheet metal of type and size as detailed; minimum 2 mm thick colour to match adjacent windows.

.7 Isolation coating: alkali resistant bituminous paint.

2.2 WINDOW TYPE AND CLASSIFICATION

.1 Types:

.1 Projected Awning: bottom projected with removable double insulating glass.

.2 Sliding: vertical, with removable double insulating glass.

.3 Fixed: with removable double insulating glass.

.4 Screens: on ventilating portion of windows.

.2 Classification rating: to NAFS-08

.1 Product Class LC PG 40

.2 Water Penetration resistance test pressure: 360 Pa.

.3 Wind load resistance: C4.

2.3 FABRICATION

.1 Fabricate in accordance with CSA-A440S1-09.

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with shop coat primer to CAN/CGSB-1.40, 380 g/m^2 zinc coating to CAN/CSA-G164.

2.4 FINISHES

.1 Unfinished vinyl framed windows.

.1 Standard PVC material

.1 Colour to be selected from Manufacturer's standard colour range

2.5 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

2.6 GLAZING

.1 Glaze windows in accordance with CSA-A440/A440.1.

2.7 HARDWARE

.1 Hardware: standard sash lock and handles to provide security and permit easy operation of units.

.2 Locks: provide operating sash with spring loading locking device, to provide automatic locking in closed position.

.3 Provide special keyed opening device for windows and patio doors normally locked.

2.8 SEALANTS

.1 Sealants to Section 07 92 00 – Joint Sealing

Part 3 Execution

3.1 WINDOW INSTALLATION

.1 Install in accordance with CSA-A440/A440.1.

.2 Install insect screens on inside of each vent opening

.3 Install head and sill flashings, lap and tape to air barrier.

3.2 CAULKING

.1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.2 Apply sealant in accordance with Section 07 92 00 - Joint Sealing.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 14 16 – Flush Wood Doors.

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

1.3 SUBMITTALS

.1 Hardware List:

.1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.2 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets, door holders and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.2 Storage and Protection:

.1 Store finishing hardware in locked, clean and dry area.

1.6 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

1.7 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Supply two sets of wrenches for door closers locksets and fire exit hardware.

Part 2 Products

2.1 HARDWARE ITEMS

.1 Use one manufacturer's products only for similar items.

.2 Acceptable manufacturers as listed in Hardware Schedule

.3 Hardware finishes as listed in Hardware Schedule

2.2 DOOR HARDWARE

.1 Locks and latches:

.1 Bored and preassembled locks and latches: to CAN/CGSB-69.17, series 2000 preassembled lock, grade 1, series 4000 bored lock, grade 2, designed for function and keyed as stated in Hardware Schedule.

.2 Lever handles: handicap design.

.3 Roses: round.

.4 Normal strikes: box type, lip projection not beyond jamb.

.5 Cylinders: key into keying system as noted.

.2 Butts and hinges:

.1 Butts and hinges: to CAN/CGSB-69.18, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.1 NRP hinges as noted in the Hardware Schedule.

.2 All hinges with minimum leaf thickness of 3.4 mm and either 5 knuckle 2 ball bearing or 3 knuckle concealed bearing.

.3 Non-ferrous hinges for exterior doors.

.3 Door Closers and Accessories:

.1 Door controls (closers): to CAN/CGSB-69.20, designated by letter C and numeral identifiers listed in Hardware Schedule, size in accordance with CAN/CGSB-69.20, table A1.

.4 Auxiliary locks and associated products: to CAN/CGSB-69.21, designated by letter E and numeral identifiers listed in Hardware Schedule.

.1 Dead bolt, type mortised. Key into keying system as noted.

.2 Cylinders: for installation in deadlocks provided with special doors as listed in Hardware Schedule. Key into keying system as noted.

.5 Architectural door trim: to CAN/CGSB-69.22, designated by letter J and numeral identifiers listed in Hardware Schedule.

.1 Door protection plates for metal and wood doors: kick plate type 6-321, 1.27 mm thick stainless steel, unbevelled edges, size 250 mm x door width less 50 mm.

.2 Push plates: type 6-312, 1.27 mm thick stainless steel, unbevelled edges, size 90 mm x 380 mm.

.3 Push/Pull units: type 6-332, stainless steel, size 225 mm pull size with plate thickness, size and edges to match push plates.

.6 Auxiliary hardware: to CAN/CGSB-69.32, designated by letter L and numeral identifiers listed in Hardware Schedule.

.1 Door stop to 4.2, floor mounted, with threshold or L02141 floor mounted without threshold, L02101 wall mounted concealed fastening, exterior doors: 75 mm high stops with two fasteners.

.7 Door bottom seal: medium duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom, closed ends, automatic retract mechanism when door is open.

.8 Thresholds: to indicated width x full width of door opening, extruded aluminum, mill finish, plain surface, fitted to door frame opening size and profile.

.9 Weather-stripping:

.1 Head and jamb seal:

.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

.2 Sound Gasketing:

.1 Extruded aluminum frame and closed cell neoprene insert, clear anodized finish.

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 Doors to be as noted in Hardware Schedule. Prepare detailed keying schedule in conjunction with Consultant.

.2 Provide keys in duplicate for every lock in this Contract.

.3 Match keying to existing masterkeys for each MK or GMK group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Provide construction cores.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.3 Remove construction cores and locks; install permanent cores, check operation of locks.

3.3 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

3.5 SCHEDULE

Refer to following pages for hardware schedule.

DOOR HARDWARE SCHEDULE

Manufacturers:

DS	Draftseal	CM	Camden
GA	Gallery	DI	Ditech
LC	LCN	IV	Ives
MC	McKinney	VD	Von Dupren
SC	Schlage		

Item #1	**1 PR EXT. DOORS** **2 X 3'-0" X 7'-0" X 1-3/4"**	**D101**	**Main Entrance to Hallway 13** **HMD X PSF**		**RH**
	6 EA. HINGE		**TA2314 – 4 1/2 X 4 NRP**	**32D**	**MC**
	1 EA. EXIT DEVICE		**CD-9827EO**	**26D**	**VD**
	1 EA. EXIT DEVICE		**CD-9827NL-OP**	**26D**	**VD**
	1 EA. RIM CYCLINDER		**20-021**	**26D**	**SC**
	2 EA. MORTISE CYLINDER		**20-021**	**26D**	**SC**
	2 EA. OFFSET PULL		**1180-01**	**32D**	**GA**
	1 EA. AUTOM. OPERATOR		**HA8-LP-CL**	**628**	**DI**
	2 EA. ACTIVATOR		**CM-45/A4**	**32D**	**CM**
	1 EA CLOSER		**1461-RW/PA**	**689**	**LC**
	2 EA. KICKPLATE		**80A – 10 X 34**	**32D**	**GA**
	2 EA. HD FLOOR STOP		**281**	**26D**	**GA**
	2 EA. MEETING STYLE		**DS137CS84**	**AL**	**DS**
	1 EA. THRESHOLD		**DS50000A72**	**AL**	**DS**
	2 EA. DOOR SWEEP		**DS138C36**	**AL**	**DS**
	1 SET DOOR SEAL		**DSS66D21**		**DS**
Item #2	**1 SGL. INT. DOOR**	**D102**	**EXT. FROM MULTIPURPOSE 01**		
Item #3	**1 SGL. INT. DOOR**	**D103**	**EXT. FROM MULTIPURPOSE 01**		
Item #4	**1 SGL. INT. DOOR** **3-0 X 7-0 X 1-3/4**	**D106**	**EXT. FROM MEETING 3** **HMD X PSF**		
	9 EA HINGE		**TA2314 – 4-1/2 X 4 – NRP**	**32D**	**MC**
	3 EA EXIT DEVICE		**CD-98NL X 990NL-R/V**	**26D**	**VD**
	3 EA RIM CYLINDER		**20-021**	**626**	**SC**
	3 EA MORTISE CYLINDER		**20-001**	**626**	**SC**
	3 EA CLOSER		**1461-RW/PA**	**689**	**LC**
	3 EA KICKPLATE		**80A – 10 X 34**	**32D**	**GA**
	3 EA HD FLOOR STOP		**281**	**26D**	**GA**
	3 EA THRESHOLD		**DS50000A36**	**AL**	**DS**
	3 EA SWEEP		**DS138C36**	**AL**	**DS**
	3 SET DOOR SEAL		**DSS66D17**		**DS**

Item #5	1 SGL. EXT. DOOR 3-0 X 7-0 X 1-3/4	D103	EXT. FROM ELEC/MECH. 5 HMD X PSF		
	3 EA HINGE		TA2314 – 4 4-1/2 X 4 – NRP	32D	MC
	1 EA LOCKSET		AL80PD-SAT	626	SC
	1 EA CLOSER		1461-RW/PA	689	LA
	1 EA DRAFTSEAL		DS50000A36	AL	DS
	1 EA SWEEP		DS138C36	AL	DS
	1 SET DOOR SEAL		DSS66D17		DS
Item #6	1 SGL.EXT O/H DOOR 12-0 X 14-0	D105	EXT. TO MULTIPURPOSE 1 OVERHEAD DOOR		
	OVERHEAD DOORS TO BE SUPPLIED C/W HARDWARE BY OTHERS.				
ITEM# 7	1 SGL. INT. DOOR	D107	MULTIPURPOSE 1 FROM STOR. 2		
ITEM# 8	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D108	MULTIPURPOSE 1 FROM STOR. 3 HMD X PSF		
	6 EA HINGE		TA2714 – 4-1/2 X 4 – NRP	26D	MC
	2 EA LOCKSET		AL70PD-SAT	626	SC
	2 EA CLOSER		1461-RW/PA	689	LC
	2 EA KICKPLATE		80A – 10 X 34		
ITEM# 9	1 PR. INT. DOORS 2 X 3-0 X 6-8 X 1-3/4	D109	HALLWAY 13 TO MULTIPURPOSE 1 HMD X PSF		
	6 EA HINGE		TA2714 – 4-1/2 X 4	32D	MC
	2 EA FLUSHBOLT		FB458	26D	IV
	1 EA DEADBOLT		B662	626	SC
	2 EA PUSH PLATE		81A – 4 X 16	32D	GA
	2 EA PULL PLATE		4612-1	32D	GA
	2 EA CLOSER		1461-RW/PA-DEL	689	LC
	4 EA KICKPLATE		80A – 10 X 34	32D	GA
	2 EA WALL STOP		250	32D	GA
	2 EA KICK-DOWN HOLDER		289	26D	GA
ITEM# 10	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D110	HALLWAY 3 TO KITCHEN 2 HMD X PSF		
	3 EA HINGE		TA2714 – 4-1/2 X 4	26D	MC
	1 EA LOCKSET		AL70PD-SAT	626	SC
	1 EA CLOSER		1461-RW/PA	689	LC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	1 EA FLOOR STOP		200	26D	GA
	1 EA THRESHOLD		DS5000A36	AL	DS
	1 EA SWEEP		DS138C36	AL	DS
	1 EA DOOR SEAL		DSS66D17		DS

ITEM# 11	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D111	HALLWAY 13 FROM MEETING 3 HMD X PSF		
	3 EA HINGE		TA2714 – 4-1/2 X 4 - NRP	26D	MC
	1 EA LOCKSET		AL70PD-SAT	626	SC
	1 EA WALL STOP		250	26D	GA
	1 EA THRESHOLD		DS5000A36	AL	DS
	1 EA SWEEP		DS138C36	AL	DS
	1 EA DOOR SEAL		DSS66D17		DS
ITEM# 12	1 SGL. INT. DOOR	D112	HALLWAY 13 TO MEN'S 12		
ITEM# 13	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D115	HALLWAY 13 TO WOMEN'S 11 HMD X PSF		
	6 EA HINGE		TA2714 – 4-1/2 X 4	32D	MC
	2 EA PUSH PLATE		81A – 4 X 16	32D	GA
	2 EA PULL PLATE		4612-1	32D	GA
	2 EA CLOSER		1461-RW/PA-DEL	689	LC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	2 EA WALL STOP		250	32D	GA
ITEM# 14	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D113	HALLWAY 13 TO JANITOR HMD X PSF 20 MIN. LABEL		
	3 EA HINGE		TA2714 – 4-1/2 X 4	26D	MC
	1 EA LOCKSET		AL80PD-SAT	626	SC
	1 EA CLOSER		1461-RW/PA	689	LC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	1 EA WALL STOP		250	26D	GA
	1 EA THRESHOLD		DS5000A36	AL	DS
	1 EA SWEEP		DS138C36	AL	DS
	1 EA DOOR SEAL		DSS66D17		DS
ITEM# 15	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D114	HALLWAY 13 TO OFFICE 4 HMD X PSF		
	3 EA HINGE		TA2714 – 4-1/2 X 4	26D	MC
	1 EA LOCKSET		AL53PD-SAT	626	SC
	1 EA WALL STOP		250	26D	GA
	1 EA THRESHOLD		DS5000A36	AL	DS
	1 EA SWEEP		DS138C36	AL	DS
	1 EA DOOR SEAL		DSS66D17		DS
ITEM# 16	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D116	HALLWAY 13 TO H/C WC HMD X PSF		
	3 EA HINGE		TA2714 – 4-1/2 X 4	32D	MC
	1 EA INDICATOR BOLT		B571	626	SC
	1 EA PUSH PLATE		81A – 4 X 16	32D	GA
	1 EA PULL PLATE		4612-1	32S	GA
	1 EA CLOSER		1461-RW/PA-DEL	689	LC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	1 EA WALL STOP		250	32D	GA

ITEM# 17	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D117	MULTIPURPOSE 1 FROM STOR. 8 HMD X PSF	20 MIN. LABEL	
	3 EA HINGE		TA2714 – 4-1/2 X 4 - NRP	26D	MC
	1 EA LOCKSET		AL80PD-SAT	626	SC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	1 EA WALL STOP		250	26D	GA
	1 EA THRESHOLD		DS5000A36	AL	DS
	1 EA SWEEP		DS138C36	AL	DS
	1 EA DOOR SEAL		DSS66D17		DS
ITEM# 18	1 SGL. SHUTTER 6-0 X 3-2	D118	MULTIPURPOSE 1 TO KITCHEN 2 COUNTER SHUTTER		
	1 EA MORTISE CYLINDER		20-001	626 SC	
	BALANCE OF HARDWARE BY SHUTTER SUPPLIER				

MEZZANINE

ITEM# 19	1 SGL. INT. DOOR	D119	MEZZANINE TO MEN'S 21		
ITEM# 20	1 SGL. INT. DOOR 2-8 X 6-8 X 1-3/4	D120	MEZZANINE TO WOMEN'S 22 HMD X PSF		
	6 EA HINGE		TA2714 – 4-1/2 X 4	32D	MC
	2 EA PRIVACY SET		AL40S-SAT	626	SC
	2 EA CLOSER		1461-RW/PA	689	LC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	2 EA WALL STOP		250	32D	GA
ITEM# 21	1 SGL. INT. DOOR	D121	MEZZANINE FROM STOR. 4		
ITEM# 22	1 SGL. INT. DOOR 3-0 X 6-8 X 1-3/4	D122	MEZZANINE FROM STOR. 5 HMD X PSF		
	6 EA HINGE		TA2714 – 4-1/2 X 4	26D	MC
	2 EA LOCKSET		AL70PD-SAT	626	SC
	2 EA KICKPLATE		80A – 10 X 34	32D	GA
	2 EA WALL STOP		250	26D	GA

END OF HARDWARRE SCHEDULE

Part 1 General

1.1 RELATED SECTIONS

.1 Section 08 14 16 Flush Wood Doors.

1.2 SITE CONDITIONS

.1 Environmental Requirements:

.1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.

.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Divert uninstalled materials for reuse at nearest used building materials facility or similar type facility.

.2 Divert unused caulking and sealant materials from landfill through disposal at special wastes depot.

Part 2 Products

2.1 MATERIALS: FLAT GLASS

.1 Float glass: to CAN/CGSB-12.3, Glazing quality, 5 mm thick.

.2 Safety glass: to CAN/CGSB-12.1, transparent, 5 mm thick.

.1 Type 1-laminated, Type 2-tempered.

.2 Class B-float.

2.2 ACCESSORIES

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.

.2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:

.1 Preformed butyl compound, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; size as required; black colour.

.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2 %, designed for compression of 25 %, to effect an air and vapour seal.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.2 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION: INTERIOR - DRY METHOD (TAPE AND TAPE)

.1 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.

.2 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.3 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.

.4 Place glazing tape on free perimeter of glazing in same manner described.

.5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.6 Knife trim protruding tape.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove labels after work is complete.

.4 Clean glass using approved non-abrasive cleaner in accordance with manufacture's instructions.

3.5 SCHEDULE

.1 Interior Glazing:

.1 Wood doors: Safety glass, Type 1, laminated.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 74 19 – Construction Waste Management And Disposal.

.3 Section 06 10 00 – Rough Carpentry – refer to specifications on structural drawings.

.4 Section 07 21 16 – Blanket Insulation

.5 Section 09 91 23 – Interior Painting

1.2 DELIVERY, STORAGE AND HANDLING

.1 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.2 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.3 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.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Divert unused gypsum from landfill to gypsum recycling facility for disposal.

.4 Divert unused metal materials from landfill to metal recycling facility.

.5 Divert unused wood materials from landfill to recycling facility.

.6 Divert unused paint and caulking material from landfill to official hazardous material collections site.

.7 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Standard board: to ASTM C1396/C1396M Type X, 15.9 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges squared and bevelled. Refer to Architectural drawings and Schedules for type of gypsum board indicated.

.2 Backing board and core board: to ASTM C442/C442M Type X, 15.9 mm thick, squared and bevelled edges.

.3 Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30, galvanized.

.4 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.5 Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

.6 Steel drill screws: to ASTM C1002.

.7 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, zinc-coated by hot-dip process, 0.5 mm base thickness, perforated flanges, one piece length per location.

.8 Sealants: in accordance with Section 07 92 00 - Joint Sealing.

.9 Polyethylene: to CAN/CGSB-51.34, Type 2.

.10 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

.11 Joint compound: to ASTM C475, asbestos-free.

Part 3 Execution

3.1 ERECTION

.1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.

.2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

.3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.4 Install work level to tolerance of 1:1200.

.5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles and as indicated.

.6 Furr for gypsum board faced suspended ceilings and vertical bulkheads within and at termination of ceilings.

.7 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.

.8 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.9 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.10 Erect drywall resilient furring transversely across studs, joists, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screws.

.11 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

3.2 APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical works are approved.

.2 Apply single layer gypsum board to wood or metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.

.2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.3 Install gypsum board with face side out.

.4 Do not install damaged or damp boards.

.5 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 INSTALLATION

.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.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.6 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.

.7 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:

.1 Levels of finish:

.1 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.8 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.9 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.10 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.4 SCHEDULES

.1 Construct fire rated assemblies to ULC partition assembly where indicated on architectural drawings

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 03 30 00 – Cast-in-Place Concrete: refer to specifications noted on structural drawings.

.2 Section 06 10 00 – Rough Carpentry: refer to specifications noted on structural drawings.

1.2 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit duplicate sample pieces of sheet material.

.3 Closeout Submittals:

.1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Waste Management and Disposal:

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

1.4 AMBIENT CONDITIONS

.1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees for 48 hours before, during and 48 hours after installation.

1.5 MAINTENANCE

.1 Extra Materials:

.1 Provide extra materials of resilient sheet flooring and adhesives in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 4 m^2 of each colour, pattern and type flooring material required for project for maintenance use.

.3 Extra materials: from same production run as installed materials.

.4 Identify each flooring and each container of adhesive.

.5 Deliver to Owner upon completion of the work of this section.

.6 Store where directed by Owner.

Part 2 Products

2.1 MATERIALS

.1 Sheet or plank type Vinyl Flooring: to CSA A126.6, commercial

.1 Refer to architectural drawings for floor schedule and type and use of each product.

.2 Stair Flooring:

.1 refer to architectural drawings for floor schedule and type of product.

.3 Resilient base: continuous, top set, complete with pre-moulded end stops and external corners:

.1 Type: rubber.
.2 Style: cove.
.3 Thickness: 3.17 mm.
.4 Height: 101.6 mm.
.5 Lengths: cut lengths minimum 2400 mm.
.6 Colour: selected by Consultant.

.4 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.

.5 Sub-floor filler and leveller: Portland cement based pre-mix compound for concrete floors requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.

.6 Metal edge strips:

.1 Aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.7 Sealer and wax: type recommended by resilient flooring material manufacturer location.

Part 3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

.1 Ensure concrete and/or wood flooring is clean and dry by using test methods recommended by flooring manufacturer.

3.2 PREPARATION

.1 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Prime, seal concrete slab to resilient flooring manufacturer's printed instructions.

3.3 APPLICATION: FLOORING AND STAIRS

.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 re-circulate through whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.

.2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.3 Lay flooring with seams parallel to building lines.

.4 Install sheet vinyl and stair flooring to manufacturers printed instructions; advise Consultant of deviations recommended.

.5 As installation progresses and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.

.6 Cut flooring around fixed objects.

.7 Continue flooring over areas which will be under built-in furniture.

.8 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

.9 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.4 APPLICATION: BASE

.1 Lay out base to keep number of joints at minimum.

.2 Clean substrate and prime with one coat of adhesive. Apply adhesive to back of base

.3 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.4 Install straight and level to variation of 1:1000.

.5 Scribe and fit to door frames and other obstructions. Use pre-moulded end pieces at flush door frames.

.6 Cope internal corners. Use pre-moulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.

3.5 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.2 Remove excess adhesive from floor, base and wall surfaces without damage.

.3 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

3.6 PROTECTION

.1 Protect new floors from time of final set of adhesive until final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

.3 Use only water-based coating for linoleum.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 09 65 16 – Resilient Sheet Flooring

1.2 REFERENCES

.1 Carpet and Rug Institute (CRI)

.1 IAQ Carpet Testing Program.

1.3 SUBMITTALS

.1 Submit control submittals in accordance with Section 01 33 00 - Submittal Procedures

.2 Submit proof that carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Carpet and Rug Institute (CRI) and the Canadian Carpet Institute (CCI).

.3 Submit carpet manufacturer's installation instructions: Indicate special procedures and perimeter conditions requiring special attention.

.4 Submit certification and description of carpet reclamation and recycling process.

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit product data sheet for each carpet, adhesive, carpet protection and subfloor patching compound.

.3 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health Canada for carpet adhesive and seam adhesive. Indicate VOC content.

.4 Submit data on specified products, describing physical and performance characteristics, sizes, patterns, colours, and methods of installation.

1.5 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 500 x 500 mm pieces of carpet specified, duplicate 225 x 225 mm pieces of standard colours for selection of one colour by Consultant.

1.6 CLOSEOUT SUBMITTALS

.1 Submit operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Submit maintenance data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.

1.7 REGULATORY REQUIREMENTS

.1 Indoor Air Quality: compliance with CRI/CCI Green Label Indoor Air Quality Program, CRI/CCI-IAQ requirements for maximum total volatile chemicals released into air. Label each carpet product with CRI/CCI-IAQ label.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Label packaged materials. For carpet tile products indicate nominal dimensions of tile and indicate installation direction.

.2 Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.

.3 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.

.4 Store materials in area of installation for minimum period of 48 hours prior to installation.

.5 Modular carpet: store on pallet form as supplied by Manufacturer. Do not stack pallets.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

1.10 ENVIRONMENTAL REQUIREMENTS

.1 Moisture: Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer. Prepare moisture testing and provide report to [Engineer] [Consultant].

.2 Temperature: Maintain ambient temperature of not less than 18 °C from 48hours before installation to at least 48 hours after completion of work.

.3 Relative humidity: Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.

.4 Ventilation:

.1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.

.2 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.

.5 Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

1.11 EXTRA MATERIALS

.1 Provide extra materials of carpet, carpet base, and adhesives in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 4m² of selected colour, pattern and type of carpeting.

.3 Extra materials to be from same production run as installed materials.

.4 Identify package of carpet and container of adhesive.

.5 Deliver to Owner and store where directed.

Part 2 Products

2.1 MANUFACTURERS

.1 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute IAQ requirements.

2.2 MODULAR CARPET

.1 Refer to architectural drawings for floor finish schedule and use of each product.

.2 Patterns and colours from manufacturer's standard range.

.3 Carpet Tile Dimensions: 500 x 500 mm.

.4 Carpet: to CAN/CGSB-4.129 and as follows:

.1 Certified for flammability to Health Canada regulations under "Hazardous Products (Carpet) Regulations", Part II of the Schedule.

.2 Maximum flame spread rating 300maximum smoke developed classification 500 when tested to CAN/ULC-S102.2.

.3 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute's IAQ requirements.

.5 Performance rating: to ASTM D5252or ASTM D5417

.6 Yarn Dye Method: 100% solution dyed.

.7 Colourization: multiple colour tones.

.8 Colourfastness to light: to CAN/CGSB-4.2No.18.3 or AATCC 16-E.

.9 Primary Backing: manufacturer's proprietary backing system.

.10 Adhesive: mill applied releasable dry adhesive.

2.3 SPECIAL REQUIREMENTS

.1 Permanent static control: to AATCC 134, 3000V maximum at 20%RH and 22°C.

.2 Anti-microbial: to AATCC 174, 99% reduction, 0% growth.

.3 Stain resistance: to AATCC 175, 8.

2.4 ACCESSORIES

.1 Resilient base: continuous, top set, complete with pre-moulded end stops and external corners:

.1 Type: rubber.

.2 Style: cove.

.3 Thickness: 3.17 mm.

.4 Height: 101.6 mm.

.5 Lengths: cut lengths minimum 2400 mm.

.6 Colour: selected by Consultant.

.2 Binder bars: brass finish.

.3 Adhesive:

.1 Pressure sensitive type: recommended by carpet manufacturer for direct glue down installation of modular carpet or speciality backed carpets.

.4 Carpet protection: non-staining heavy duty kraft paper.

.5 Subfloor patching compound: Portland cement base filler, mix with latex and water to form a cementitious paste.

Part 3 Execution

3.1 SUB-FLOOR TREATMENT

.1 Do not exceed manufacturer's recommendations for patch thickness.

.2 Large patch areas are to be primed with a compatible primer.

3.2 PREPARATION

.1 Prepare floor surfaces in accordance with CRI 104 Standard for Installation of Commercial Carpet.

.2 Pre-condition carpeting following manufacturer's printed instructions.

3.3 INSTALLATION

.1 Install carpeting using minimum of pieces.

.2 Install in accordance with manufacturer's printed instructions and in accordance with Carpet and Rug Institute Standard for Installation of Commercial Carpet, CRI 104.

.3 Install carpet after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.

.4 Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.

.5 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Maintain constant pile direction.

.6 Fit neatly around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.

.7 Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

.8 Install carpet smooth and free of bubbles, puckers, and other defects.

3.4 CARPET BINDER BARS

.1 Install binder bars at exposed carpet edges and centre under doors in door openings.

3.5 MODULAR CARPET

.1 Apply acrylic release type adhesive and install modular carpet in accordance with manufacturer's written instructions.

.2 Lay modular carpet with butt seams.

.3 Roll modular carpet with appropriate roller for complete contact of carpet with mill-applied adhesive to sub-floor.

3.6 SEAMS

.1 Seal edges of cut-outs with latex.

.2 Carpet visibility of seams and joints to acceptable industry standards.

3.7 BASE INSTALLATION

.1 Install resilient base in accordance with Section 09 65 16 – Resilient Sheet Flooring.

3.8 PROTECTION OF FINISHED WORK

.1 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.

.2 Prohibit traffic on carpet for a period of 24hours until adhesive is cured.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 45 00 – Quality Control

.2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.3 Section 01 78 00 – Close-out Submittals

.4 Section 05 55 00 – Metal Fabrications

.5 Section 08 11 00 – Metal Doors and Frames

.6 Section 08 14 16 – Flush Wood Doors

1.2 REFERENCES

.1 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual – current Edition.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Contractor: to have a minimum of five years proven satisfactory experience.

.2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work

.3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.

.4 Conform to latest MPI requirements for exterior painting work including preparation and priming.

.5 Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.

.6 Paint materials such as linseed oil, shellac, and turpentine to be highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and to be compatible with other coating materials as required.

.7 Standard of Acceptance:

.1 Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Soffits: 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.

1.4 PERFORMANCE REQUIREMENTS

.1 Environmental Performance Requirements:

.1 Provide paint products meeting MPI "Environmentally Friendly" E2 and E3 ratings based on VOC (EPA Method 24) content levels.

1.5 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures

.2 Upon completion, submit records of products used. List products in relation to finish system and include the following:

- .1 Product name, type and use.
- .2 Manufacturer's product number.
- .3 Colour number[s].

1.6 QUALITY CONTROL

.1 When requested by Consultant or Paint Inspection Agency, prepare and paint designated surface, area, room or item to requirements specified herein, with specified paint or coating showing selected colours, number of coats, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.7 MAINTENANCE

.1 Extra Materials:

- .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit one four litre can of each type and colour of stain and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials as follows:

- .1 Deliver and store materials in original containers, sealed, with labels intact.
- .2 Provide and maintain dry, temperature controlled, secure storage.
- .3 Observe manufacturer's recommendations for storage and handling.
- .4 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .5 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 the National Fire Code of Canada.

.2 Waste Management and Disposal:

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) 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.

.3 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.4 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:

.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 an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.5 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

.6 Set aside and protect surplus and uncontaminated finish materials: Deliver to or arrange for collection by verifiable re-use or re-manufacturing facility.

.7 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire safe area at moderate temperature.

1.9 AMBIENT CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Do not perform painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

.2 Where required, provide continuous ventilation for seven days after completion of application of paint.

.3 Provide temporary ventilating and heating equipment to meet minimum requirements.

.4 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities to be provided by General Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.4 Relative humidity is above 85 % or when dew point is less than 3 degrees C variance between air/surface temperatures.

.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.2 Perform no painting work when maximum moisture content of substrate exceeds:

.1 15 for wood.

.2 12 for plaster and gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "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 noted herein.

.3 Apply paint when previous coat of paint is dry or adequately cured.

.4 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.

.5 Do not apply paint when:

.1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.

.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.

.3 Surface to be painted is wet, damp or frosted.

.6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.

.7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.

.8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

Part 2 Products

2.1 MATERIALS

.1 Paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for paint systems: to be products of single manufacturer.

.3 Only qualified products with E2 and E3 "Environmentally Friendly" ratings are acceptable for use on this project.

.4 Use only MPI listed L rated materials.

.5 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, to be as follows:

.1 Be water based, water soluble, and water clean-up.

.2 Be non-flammable, biodegradable.

.3 Be manufactured without compounds which contribute to ozone depletion in upper atmosphere.

.4 Be manufactured without compounds which contribute to smog in the lower atmosphere.

.5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

.6 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

.7 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.8 Water-borne surface coatings must have flash point of 61.0 degrees C or greater.

.9 Water-borne surface coatings must be made by a process that does not release:

.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.10 Water-borne paints and stains and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

.1 Consultant will provide Colour Schedule after Contract award.

.2 Selection of colours will be from manufacturer's full range of colours.

.3 Where specific products are available in restricted range of colours, selection will be based on limited range.

.4 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Consultant's written permission.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Add thinner to paint manufacturer's recommendations. Do not use kerosene or organic solvents to thin water based paints.

.4 Thin paint for spraying according in accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

.1 Paint gloss: defined as sheen rating of applied paint, in accordance with following values:

Gloss Level Category/	Units @ 60 Degrees/	Units @ 85 Degrees/
G1 - matte finish	0 to 5	max. 10
G2 - velvet finish	0 to 10	10 to 35
G3 - eggshell finish	10 to 25	10 to 35
G4 - satin finish	20 to 35	min. 35
G5 - semi-gloss finish	35 to 70	
G6 - gloss finish	70 to 85	
G7 - high gloss finish	> 85	

.2 Gloss level ratings of painted surfaces as specified.

2.5 EXTERIOR PAINTING SYSTEMS

.1 Structural Steel and Metal Fabrications:

.1 EXT 5.1A - Quick dry enamel G4 finish.

.2 EXT 5.1D - Alkyd G4 finish.

.2 Galvanized Metal: not chromate passivated

.1 EXT 5.3B - Alkyd G4 finish.

.3 Dimension Lumber: columns, beams, exposed joists, underside of decking, siding, fencing, etc.

.1 EXT 6.2E - Varnish semi-gloss finish (over semi-transparent stain).

.4 Dressed Lumber: door and window frames, casings, battens, smooth facias, etc.

.1 EXT 6.3B - Alkyd G4 finish.

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 Exterior surfaces requiring repainting: inspected by both painting contractor and Paint Inspection Agency who will notify Consultant in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.

.2 Where assessed degree of surface degradation of DSD-1 to DSD-3 before preparation of surfaces for repainting is revealed to be DSD-4 after preparation, repair or replacement of such unforeseen defects discovered are to be corrected, as mutually agreed, before repainting is started.

.3 Where "special" repainting or recoating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer to provide as part of 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.

3.3 PREPARATION

.1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

.3 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and surface debris by vacuuming, wiping with dry, clean cloths.

.2 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.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to dry thoroughly. Allow sufficient drying time and test surfaces using electronic moisture meter before commencing work.

.5 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.

.6 Many water-based paints cannot be removed with water once dried. Minimize use of kerosene or such organic solvents to clean up water-based paints.

.4 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminates from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.

.5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.

.6 Do not apply paint until prepared surfaces have been accepted by Consultant.

.7 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.

3.4 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 such 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 Remove light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Store items and re-install after painting is completed.

.5 Move and cover exterior furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.6 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Consultant.

3.5 APPLICATION

.1 Apply paint by brush, roller, air sprayer, airless sprayer as recommended by manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types 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 shall be free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray Application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately runs and sags.

.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Apply coats of paint as 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 projecting ledges.

.8 Finish top, bottom, edges and cut-outs of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, duct work and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.2 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.3 Do not paint over nameplates.

3.7 FIELD QUALITY CONTROL

.1 Inspection:

.1 Field inspection of exterior painting operations to be carried out by independent inspection firm as designated by Consultant.

.2 Advise independent inspection firm when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.3 Co-operate with inspection firm and provide access to areas of work.

3.8 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

3.9 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Material and installation of site applied paint finishes to new interior surfaces, including site painting of shop primed surfaces.

.2 Related Sections:

.1 Section 01 45 00 - Quality Control.
.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
.3 Section 01 78 00 - Closeout Submittals.
.4 Section 06 20 00 – Finish Carpentry.
.5 Section 08 11 00 – Metal Doors and Frames.
.6 Section 08 14 16 – Flush Wood Doors.
.7 Section 09 21 16 – Gypsum Board Assemblies

1.2 REFERENCES

.1 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual 200 Standard GPS-1-05, MPI Green Performance Standard for Painting and Coatings.
.2 Standard GPS-1-05, MPI Green Performance Standard for Painting and Coatings.

.2 South Coast Air Quality Management District (SCAQMD), California State

.1 SCAQMD Rule 1113 (July 2007) - Paints and Coatings

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Contractor: minimum of five years proven satisfactory experience.
.2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
.3 Apprentices: working under direct supervision of qualified journeyperson in accordance with trade regulations.

1.4 PERFORMANCE REQUIREMENTS

.1 Environmental Performance Requirements:

.1 Provide paint products meeting MPI "Environmentally Friendly" E2 and E3 ratings based on VOC (EPA Method 24) content levels.

1.5 SUBMITTALS

.1 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 Submit product data for the use and application of paint thinner.

1.6 MAINTENANCE

.1 Extra Materials:

.1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.

.2 Quantity: provide one four litre can of each type and colour of stain and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Delivery, storage and protection: comply with Consultant requirements for delivery and storage of extra materials.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Pack, ship, handle and unload materials in accordance with manufacturer's written instructions.

.2 Acceptance at Site:

.1 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 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.

.6 Remove paint materials from storage only in quantities required for same day use.

.7 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.

.8 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Handle and dispose of hazardous materials in accordance with CEPA, Regional and Municipal regulations.

.3 Ensure emptied containers are sealed and stored safely.

.4 Unused paint and coating materials must be disposed of at official 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 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.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 verifiable re-use or re-manufacturing facility.

1.8 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 Paint Inspection Agency Authority 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 The relative humidity is under 85 % or when the dew point is more than 3 degrees C variance between the air/surface temperatures. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

.5 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 15 % for wood.

.2 12 % for gypsum board.

.3 Test for moisture using calibrated electronic Moisture Meter.

.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.

Part 2 Products

2.1 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Provide paint materials for paint systems from single manufacturer.

.3 Only qualified products with E2 and E3 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Conform to latest MPI requirements for interior painting work including preparation and priming.

.5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.

.6 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.

.7 Use MPI listed materials having minimum E2 and E3 rating where indoor air quality (odour) requirements exist.

.8 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:

.1 Water-based, Water soluble, Water clean-up.

.2 non-flammable, biodegradable.

.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.

.9 Flash point: 61.0 degrees C or greater for water-borne surface coatings.

.10 Ensure manufacture and process of water-borne surface coatings does not release:

.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 Consultant will provide Colour Schedule after Contract award.

.2 Selection of colours from manufacturers' full range of colours.

.3 Where specific products are available in restricted range of colours, selection based on limited range.

.4 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.4 Thin paint for spraying in accordance with paint manufacturer's instructions.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

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	

.2 Gloss level ratings of painted surfaces as indicated and as noted on Finish Schedule.

2.5 INTERIOR PAINTING SYSTEMS

.1 Dressed lumber: including doors, door and window frames, casings, mouldings:

.1 INT 6.3A - High performance architectural latex G4 finish.

.2 INT 6.3F - Lacquer G4 finish (over stain).

.2 Wood paneling and casework: partitions, panels, shelving, millwork:

.1 INT 6.4A - Latex G4 finish (over alkyd sealer).

.2 INT 6.4F - Lacquer G4 finish (over stain).

.3 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:

.1 INT 9.2A - Latex insert gloss level G4 finish (over latex sealer).

.2 INT 9.2C - Alkyd G4 finish (over latex sealer) in washrooms and change rooms.

2.6 SOURCE QUALITY CONTROL

.1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.

.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.

.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.

.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

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 data sheet.

3.2 GENERAL

.1 Perform preparation and operations for interior 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 unfavourable 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 Gypsum board: 12 %

.2 Wood: 15 %

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.

.2 Surface Preparation:

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.

.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.3 Place "WET PAINT" signs in occupied areas as painting operations progress.

.3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

.2 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.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger operated spray nozzles for water hoses.

.7 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.

.4 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 pre-treatment as soon as possible after cleaning and before deterioration occurs.

.5 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.

.6 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.

.7 Clean metal surfaces to be painted 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.

.8 Touch up of shop primers with primer as specified.

.9 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.5 APPLICATION

.1 Apply paint by brush, roller, air sprayer, airless sprayer. 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 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.

.4 Brush out immediately all runs and sags.

.5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 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.

.9 Finish closets and alcoves as specified for adjoining rooms.

.10 Finish top, bottom, edges and cut-outs 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 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 disconnect switches for fire alarm system and exit light systems in red enamel.

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 Interior painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to the specifying authority and local Painting Contractor's Association. Painting contractor shall notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.

.2 Interior surfaces requiring painting shall be inspected by Paint Inspection Agency who shall notify Consultant and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.

.3 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.

.4 Standard of Acceptance:

- .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.

.5 Field inspection of painting operations to be carried out by independent inspection firm as designated by Owner.

.6 Advise Inspection firm when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.7 Cooperate with inspection firm and provide access to areas of work.

.8 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

3.9 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry – refer to Specifications noted on Structural Drawings

.2 Section 10 28 10 - Toilet and Bath Accessories – refer to Specifications noted on Architectural Drawings

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate fabrication details, plans, elevations, hardware, and installation details.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal], and with Waste Reduction Workplan.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

Part 2 Products

2.1 MATERIALS

.1 Solid Plastic toilet partitions. Core material FSC Certified, Urea-formaldehyde free

.2 Sealer: water resistant sealer or glue as recommended by laminate manufacturer

.3 Acceptable Product: Bradmar Partitions as noted on architectural drawings.

.4 Headrails: clear anodized or extruded aluminum.

.5 Stainless steel sheet metal: to ASTM A167, Type 304 with No. 4 finish.

.6 Pilaster shoe: 0.8 mm stainless steel, 75 mm high.

.7 Attachment: stainless steel tamperproof type screws and bolts.

2.2 COMPONENTS

.1 Hinges:

.1 Heavy duty, self-lubricating.
.2 Material/finish: chrome plated casting.
.3 Swing: inward or outward as indicated on drawings.
.4 Return movement: non-rising.
.5 Adjustable door-open angle.

.2 Latch set: built-in, combination latch, door-stop, keeper and bumper, chrome plated, emergency access feature.

.3 Wall and connecting brackets: chrome plated extrusion or casting.

.4 Coat hook: combination hook and rubber door bumper, chrome plated.

.5 Door pull: Barrier-free type suited for out swinging doors, chrome plated.

2.3 FABRICATION

.1 Doors, panels and screens: 25 mm thick, two plastic sheets faces pressure bonded to honeycomb core, to sizes indicated.

.2 Pilasters: 32 mm thick, constructed same as door.

.3 Provide formed and closed edges for doors, panels and pilasters. Miter and weld corners and grind smooth.

.4 Provide internal reinforcement at areas of attached hardware and fittings. Temporarily mark location of reinforcement for tissue holders and coat hooks.

.5 Provide 0.8 mm thick type 316 stainless steel protective shields on urinal side of toilet partition panels next to urinals and on urinal screens. Make protective shields 1000 mm high with top of shield 1200 mm above finished floor. Make shields to full width of partition or screen panel. Fasten with stainless steel screws.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Ensure supplementary anchorage, if required, is in place.

.2 Do work in accordance with CAN/CSA-B651.

3.3 ERECTION

.1 Partition erection.

.1 Install partitions secure, plumb and square.

.2 Leave 12 mm space between wall and panel or end pilaster.

.3 Anchor mounting brackets to hollow walls using bolts and toggle type anchors.

.4 Attach panel and pilaster to brackets with through type sleeve bolt and nut.

.5 Provide for adjustment of floor-braced pilasters variations with screw jack through steel saddles made integral with pilaster. Conceal floor fixings with stainless steel shoes.

.6 Equip doors with hinges, latch set, and each stall with coat hook mounted on door, mounting heights 1500 mm. Adjust and align hardware for easy, proper function. Set door open position at full open.

.7 Equip out-swinging doors with door pulls on inside and outside of door in accordance with CAN/CSA-B651.

.2 Floor supported and overhead braced partition erection.

.1 Attach pilasters to floor with pilaster supports and level, plumb and tighten installation with levelling device.

.1 Secure pilaster shoes in position.

.2 Secure headrail to pilaster face with no less than two fasteners per face.

.3 Set tops of doors level with top of pilaster.

.2 Floor supported partition erection.

.1 Secure pilasters to floor with pilaster supports anchored with minimum 50 mm penetration in structural floor.

.2 Level, plumb and tighten installation with levelling device.

.3 Secure pilaster shoes in position.

.4 Set tops of doors level with tops of pilasters when doors are in closed position.

.3 Screens erection:

.1 Provide urinal stall screens consisting of panel as indicated.

.2 Anchor wall-hung screen panels to walls with 2 panel brackets.

3.4 ADJUSTING

.1 Adjust doors and locks for optimum, smooth operating condition.

.2 Lubricate hardware and other moving parts.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

.3 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

APPENDIX A

GEOTECHNICAL ENGINEERING REPORT

The geotechnical engineering report as prepared by Lewkowich Engineering Associates Ltd. dated October 30, 2020 is attached hereto for information only. The Owner or the Consultants accept no responsibility for the accuracy of the report and the contractor must carry out whatever investigations necessary to determine site conditions.

Lewkowich Engineering Associates Ltd.
geotechnical • health, safety & environmental • materials testing

Architrave Design
c/o Paul Sigurdson
2404 Nanoose Station Road
Nanoose Bay, BC
V9P 9E5

File Number: F2454.01
Date: September 3, 2015

Attention: Mr. Paul Sigurdson

PROJECT: **PROPOSED MEADOWOOD COMMUNITY CENTRE – 1830 GALVIN PLACE, QUALICUM BEACH, BC**

SUBJECT: **GEOTECHNICAL ASSESSMENT**

REFERENCES: 1.

Dear Mr. Sigurdson:

1. INTRODUCTION

a. As requested, Lewkowich Engineering Associates Ltd. (LEA) has carried out a geotechnical assessment of the above referenced property. This report provides a summary of our findings and recommendations.

b. LEA understands the proposed community centre consists of four portable buildings that will be set on a prepared crawlspace type concrete foundation. The property lies at the intersection of Galvin Place and Meadowood Way, to the southwest of the town centre of Qualicum Beach, BC.

2. ASSESSMENT OBJECTIVES

Our assessment, as summarized within this report, is intended to meet the following objectives:

i. Determine whether the land is considered safe for the use intended (defined for the purposes of this report as four portable buildings on a crawlspace foundation), with the probability of a geotechnical failure resulting in property damage of less than 10 percent (10%) in 50 years, with the exception of geohazards due to a seismic event which are to be based on a 2 percent (2%) probability of exceedance in 50 years, provided the recommendations in this report are followed.

ii. Identify any geotechnical deficiency that might impact the design and construction of the development, and prescribe the geotechnical works and any changes in the standards of the design and construction of the development that are required to ensure the land, buildings, and works and services are developed and maintained safely for the use intended.

iii. Acknowledge that Approving and/or Building Inspection Officer may rely on this report when making a decision on applications for the development of the land.

3. ASSESSMENT METHODOLOGY

a. A subsurface geotechnical investigation was carried out on August 21, 2015 using a Bobcat E50 excavator provided by Fred's Trucking and Excavating. A total of five (5) test pits (TP15-01 to TP15-05) were excavated within the proposed development area. All test pits were backfilled upon completion.

b. A site plan showing the extent of the development area, as well as the approximate locations of the test pits, are shown on Figure 1 following the text of this report.

4. SITE CONDITIONS

4.1 General

a. The subject property is located southwest of the central portion of Qualicum Beach, BC, at the intersection of Galvin Place and Meadowood Way. It is bound by Meadowood Park to the east and a steep slope upwards to Meadowood Way.

b. The terrain of the proposed development area is flat, with a slight grade down towards Galvin Place.

c. Vegetation is sparse on the property as there is no topsoil, and generally consists of small weeds and bushes.

d. The subject property lies at the site of a former gravel pit, which has been subsequently

backfilled.

4.2 Soil Conditions

a. Test pits completed on the property revealed a fairly consistent sequence of approximately 1.0m of brown sandy gravel fill overlying grey, slightly sandier gravel. There was one test pit, TP-15-01, which encountered a 100mm diameter stump at this interface of fill and gravel.

b. Test pit logs can be found following the text of this report. Depths are referenced to the existing ground surface at the time of our field investigation. Soil classification terminology is based on the Modified Unified classification system. The relative proportions of the major and minor soil constituents are indicated by the use of appropriate Group Names as provided in ASTM D2488-93 and D2487 Figures 1a, 1b, and 2. Other descriptive terms generally follow conventions of the Canadian Foundation Engineering Manual.

4.3 Groundwater

There was no groundwater seepage observed in any of the five test pits, however groundwater levels can be expected to fluctuate seasonally with cycles of precipitation. Groundwater conditions at other times and locations can differ from those observed within the test pits at the time of our assessment. If groundwater flows or conditions are different than those encountered during the test pitting investigation, additional measures may be required during construction. Contact our office immediately if unanticipated conditions are encountered at any point during construction.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 General

From a geotechnical point of view, the land is considered safe for the use intended (defined for the purposes of this report as four portable buildings on a crawlspace foundation), with the probability of a geotechnical failure resulting in property damage of less than 10 percent

(10%) in 50 years, with the exception of geohazards due to a seismic event which are to be based on a 2 percent (2%) probability of exceedance in 50 years, provided the following recommendations in this report are followed.

5.3 Removal of Unsuitable Materials and General Excavation Recommendations

a. Prior to construction, all unsuitable materials should be removed to provide a suitable base of support. Unsuitable materials include any non-mineral material such as vegetation, topsoil, peat, fill or other materials containing organic matter, as well as any soft, loose, or disturbed soils.

b. Ground water ingressing into any excavations should be controlled with a perimeter ditch outside of the building areas, connected to positive drainage.

c. The Geotechnical Engineer is to confirm the removal of unsuitable materials and approve the exposed competent inorganic subgrade.

d. Any potential fill materials are subject to the review and approval of the Geotechnical Engineer prior to placement as a fill material.

5.4 Structural Fill

a. Where fill is required to raise areas that will support buildings, slabs, or pavements, structural fill should be used. The Geotechnical Engineer should first approve the exposed subgrade in fill areas, to confirm the removal of all unsuitable materials. The thickness of structural fill should be consistent in all areas below the footing elevation to minimize differential settlements.

b. Structural fill should be inorganic sand and gravel. If structural fill placement is to be carried out in the wet season, material with a fines content limited to 5% passing the 75μm sieve should be used, as such a material will not be overly sensitive to moisture, allowing compaction during rainy periods of weather.

c. Structural fill should be compacted to a minimum of 95% of Modified Proctor maximum dry density (ASTM D1557) in foundation and floor slab areas, as well as in paved roadway and parking areas.

d. Structural fills under foundations, roadways, and pavements should include the zone defined by a plane extending down and outward a minimum 0.5m from the outer edge of the foundation at an angle of 1H:1V from horizontal to ensure adequate subjacent support. This support zone is shown in the recommended footing and structural/subjacent fill configuration in Figure 2.

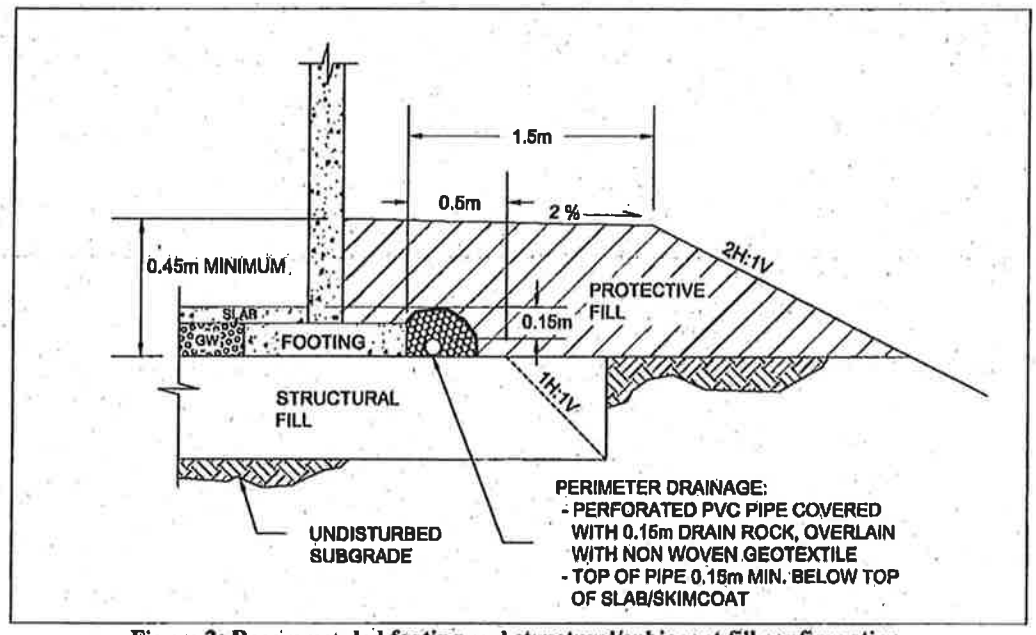

Figure 2: Recommended footing and structural/subjacent fill configuration.

e. Compaction of fill should include moisture conditioning as needed to bring the soils to the optimum moisture content and compacted using vibratory compaction equipment in lift thicknesses appropriate for the size and type of compaction equipment used.

f. A general guideline for maximum lift thickness is no more than 100mm for light hand equipment such as a "jumping-jack," 150mm for a small roller and 300mm for a large roller

or heavy (>500 kg) vibratory plate compactor or a backhoe mounted hoe-pac or a large excavator mounted hoe-pac, as measured loose.

g. It should be emphasized that the long-term performance of buildings, slabs, and pavements is highly dependant on the correct placement and compaction of underlying structural fills. Consequently, we recommend that structural fills be observed and approved by the Geotechnical Engineer. This would include approval of the proposed fill materials and performing a suitable program of compaction testing during construction.

5.5 Foundation Design & Construction

a. Prior to construction, the building areas should be stripped to remove all unsuitable materials to provide an undisturbed natural subgrade for the footing support.

b. Exterior footings should be provided with a minimum 0.45m depth of ground cover for frost protection purposes.

c. Foundation loads should be supported on natural undisturbed material approved for use as a bearing stratum by our office, or structural fill, and may be designed using the following values.

   i. For foundations constructed on structural fill, as outlined in Section 5.3 of this report, a Service Limit State (SLS) bearing pressure of 150 kPa, and an Ultimate Limit State (ULS) of 200 kPa may be used for design purposes. These values assume a minimum 0.45m depth of confinement or cover.

   ii. For foundations constructed on sandy gravel, an SLS bearing pressure of 150 kPa, and a ULS bearing pressure of 200 kPa may be used for design purposes. These values assume a minimum 0.45m depth of confinement or cover.

d. Prior to placement of concrete footings, any bearing soils that have been softened, loosened, or otherwise disturbed during the course of construction should be removed, or else compacted following our recommendations for structural fill. Compaction will only be

feasible if the soil has suitable moisture content and if there is access to heavy compaction equipment. If no structural fill is placed, a smooth-bladed clean up bucket should be used to finish the excavation.

e. The Geotechnical Engineer should evaluate the bearing soils at the time of construction to confirm that footings are based on appropriate and properly prepared founding material.

5.6 Seismic Issues

a. No compressible or liquefiable soils were encountered during the test pitting investigation.

b. Based on the 2012 British Columbia Building Code, Division B, Part 4, Table 4.1.8.4.A, "Site Classification for Seismic Site Response," the soils and strata encountered during the test pitting investigation would be classified as "Site Class D" (Stiff Soil).

5.7 Permanent Dewatering

Conventional requirements of the 2012 British Columbia Building Code pertaining to building drainage are considered suitable at this site. Once final plans and tentative elevations are determined, the Geotechnical Engineer should be consulted to provide further dewatering recommendations.

5.8 On Site Infiltration and Stormwater Disposal

a. As part of the geotechnical investigation, field observations of the subgrade soil conditions with respect to the on site infiltration and disposal of stormwater were carried out.

b. In general, subgrade soil conditions consist of sandy gravel fill overlying native sand and gravel. Given the highly permeable nature of the sandy gravel subgrade, it is the opinion of LEA that the site conditions are conducive to an on-site storm water infiltration facility.

5.9 Trenching and Utility Installation

a. Given our knowledge of subgrade soil conditions, we offer the following preliminary recommendations with respect to trenching and civil utility installation:

i. The subgrade soil conditions are expected to consist primarily of compact sand and gravel.

ii. Continuous vertical excavations of any height are not expected to be feasible given the soil conditions. Any excavation through the sandy gravel should utilize a 2H:1V slope angle. Consideration may be given for excavation slope angles exceeding 2H:1V, if required, subject to the field review and approval of the Geotechnical Engineer at the time of construction.

iii. All excavations shall be protected from environmental conditions as required during the course of construction. Surface water and seepage shall be monitored closely during construction.

iv. All excavation work shall conform to applicable criteria as outlined by Worksafe BC.

v. Any trenching or general excavation depth that exceeds the depths outlined by Worksafe BC shall be reviewed in the field by the Geotechnical Engineer.

6. GEOTECHNICAL ASSURANCE AND QUALITY ASSURANCE

The 2012 British Columbia Building Code requires that a geotechnical engineer be retained to provide Geotechnical Assurance services for the proposed development works. Geotechnical Assurance services include review of the geotechnical components of the plans and supporting documents, and responsibility for field reviews of these components during construction.

7. ACKNOWLEDGEMENTS

Lewkowich Engineering Associates Ltd. acknowledges that this report may be requested by the building inspector of the Regional District of Nanaimo as a precondition to the issuance of a building permit. It is acknowledged that the approving officers and building officials may rely on this report when making a decision on application for development of the land. We acknowledge that this report has been prepared solely for, and at the expense of Architrave Design Build. We have not acted for or as an agent of the Regional District of Nanaimo in the preparation of this report.

8. LIMITATIONS

The conclusions and recommendations submitted in this report are based upon the data obtained from a limited number of widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction or further investigation. The recommendations given are based on the subsurface soil conditions encountered during test pitting and bore hole investigations, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. Due to the geological randomness of many soil formations, no interpolation of soil conditions between or away from the test pits and/or bore holes has been made or implied. Soil conditions are known only at the test pit locations. If other soils are encountered, unanticipated conditions become known during construction or other information pertinent to the development become available, the recommendations may be altered or modified in writing by the undersigned.

9. CLOSURE

Lewkowich Engineering Associates Ltd. appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd.

Walt Rathbun, P.Eng.
Geotechnical Engineer

John Hessels, AScT
Senior Technologist

Attachments: - Figure 1: Site Plan
- Test Pit Logs (TP 15-01 to TP 15-05)

REV No.	DATE	BY	P.Eng	REVISION DESCRIPTION

DRAWING TITLE: TEST PIT LOCATIONS

PROJECT NAME: 1830 GALVIN PLACE QUALICUM BAY, BC

LEGAL DESCRIPTION:

ENGINEER'S SEAL:

PLOT DATE	DRAWN BY
27-08-2015	LC
REVIEWED BY	SCALE
WR	NTS
PROJECT No.	DRAWING No.
F2454	01

LEA
Lewkowich Engineering Associates Ltd.

Lewkowich Engineering Associates Ltd.

TEST PIT LOG

File Number: F2454 TP15-01
Project: 1930 GALVIN PLACE, MEADOWOOD COMMUNITY CENTER
Location: QUALICUM BEACH, BC

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.8m Sand and gravel, sub-rounded, dry to moist, light brown, well graded, compact, GW.
0.5		
1.0		0.8-1.5m Sand and gravel, sub-rounded, moist, brown (Fe stain towards top) to grey, loose, GW.
1.5		End of test pit at 1.5m (effective refusal)
2.0		
2.5		
3.0		
3.5		

Logged By: WR
Reviewed By: WR
Digging Method: BOBCAT E50

Date: AUGUST 21, 2015
Sheet: 1 of 1

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Nanaimo, British Columbia, V9T 3M4
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Fax: (250) 756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT LOG

File Number: F2454 TP15-02

Project: 1930 GALVIN PLACE, MEADOWOOD COMMUNITY CENTER

Location: QUALICUM BEACH, BC

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-1.0m Sand and gravel (fill), sub-rounded, dry to moist, light brown, well graded, compact, GW. Iron staining around 1.0m (possible seasonal groundwater table)
1.0		1.0-3.0m Possible native ground, Grey sand with some gravel, well graded, some moisture, loose, SW
3.0		End of test pit at 3.0m (effective refusal)
3.5		

Logged By: WR

Reviewed By: WR

Digging Method: BOBCAT E50

Date: AUGUST 21, 2015

Sheet: 1 of 1

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TEST PIT LOG

Lewkowich Engineering Associates Ltd.

File Number: F2454 TP15-03
Project: 1930 GALVIN PLACE, MEADOWOOD COMMUNITY CENTER
Location: QUALICUM BEACH, BC

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-1.0m Sand and gravel (fill), sub-rounded, dry to moist, light brown, well graded, compact, GW. Iron staining around 1.0m (possible seasonal groundwater table)
1.0		1.0-2.0m Possible native ground, grey sand with some gravel, well graded, some moisture, loose, SW
2.0		End of test pit at 2.0m (effective refusal)
3.5		

Logged By: WR
Reviewed By: WR
Digging Method: BOBCAT E50

Date: AUGUST 21, 2015
Sheet: 1 of 1

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TEST PIT LOG

Lewkowich Engineering Associates Ltd.

File Number: F2454 TP15-04
Project: 1930 GALVIN PLACE, MEADOWOOD COMMUNITY CENTER
Location: QUALICUM BEACH, BC

Depth (m)	Soil Symbol	Description
0.0		Ground Surface
		0.0-1.0m Sand and gravel (fill), sub-rounded, dry to moist, light brown, well graded, compact, GW. some organics and Iron staining around 1.0m (possible seasonal groundwater table),
1.0		1.0-2.0m Possible native ground, grey sand with some gravel, well graded, some moisture, loose, SW
2.0		End of test pit at 2.0m (effective refusal)
2.5		
3.0		
3.5		

Logged By: WR
Reviewed By: WR
Digging Method: BOBCAT E50

Date: AUGUST 21, 2015
Sheet: 1 of 1

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TEST PIT LOG

Lewkowich Engineering Associates Ltd.

File Number: F2454 TP15-05
Project: 1930 GALVIN PLACE, MEADOWOOD COMMUNITY CENTER
Location: QUALICUM BEACH, BC

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-1.0m Sand and gravel (fill), sub-rounded, dry to moist, light brown, well graded, compact, GW. Iron staining around 1.0m (possible seasonal groundwater table)
1.0		1.0-1.5m Possible native ground, grey sand with some gravel, well graded, some moisture, loose, SW
1.5		End of test pit at 1.5m (effective refusal)
3.5		

Logged By: WR
Reviewed By: WR
Digging Method: BOBCAT E50

Date: AUGUST 21, 2015
Sheet: 1 of 1

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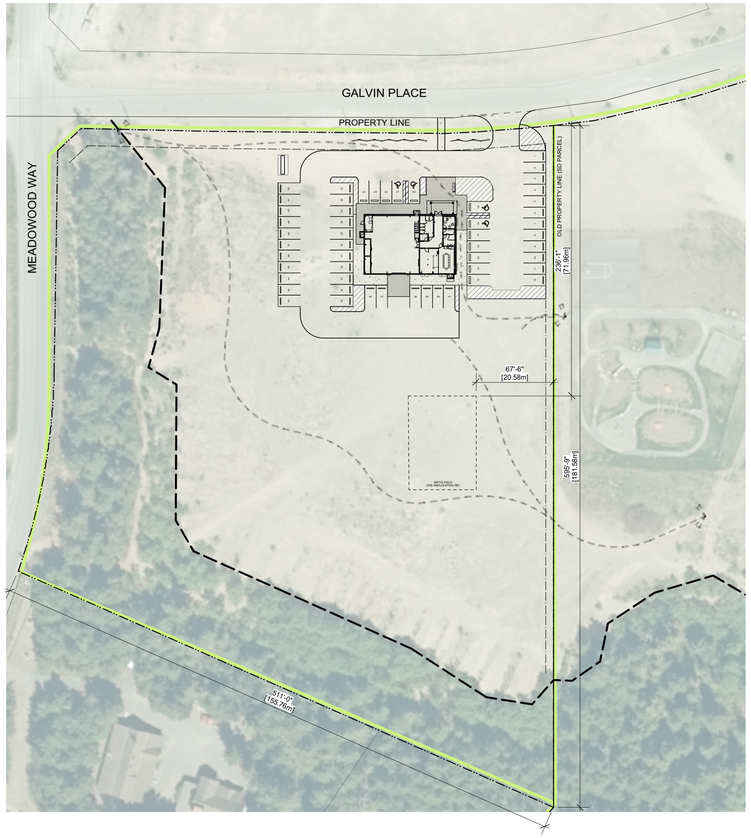
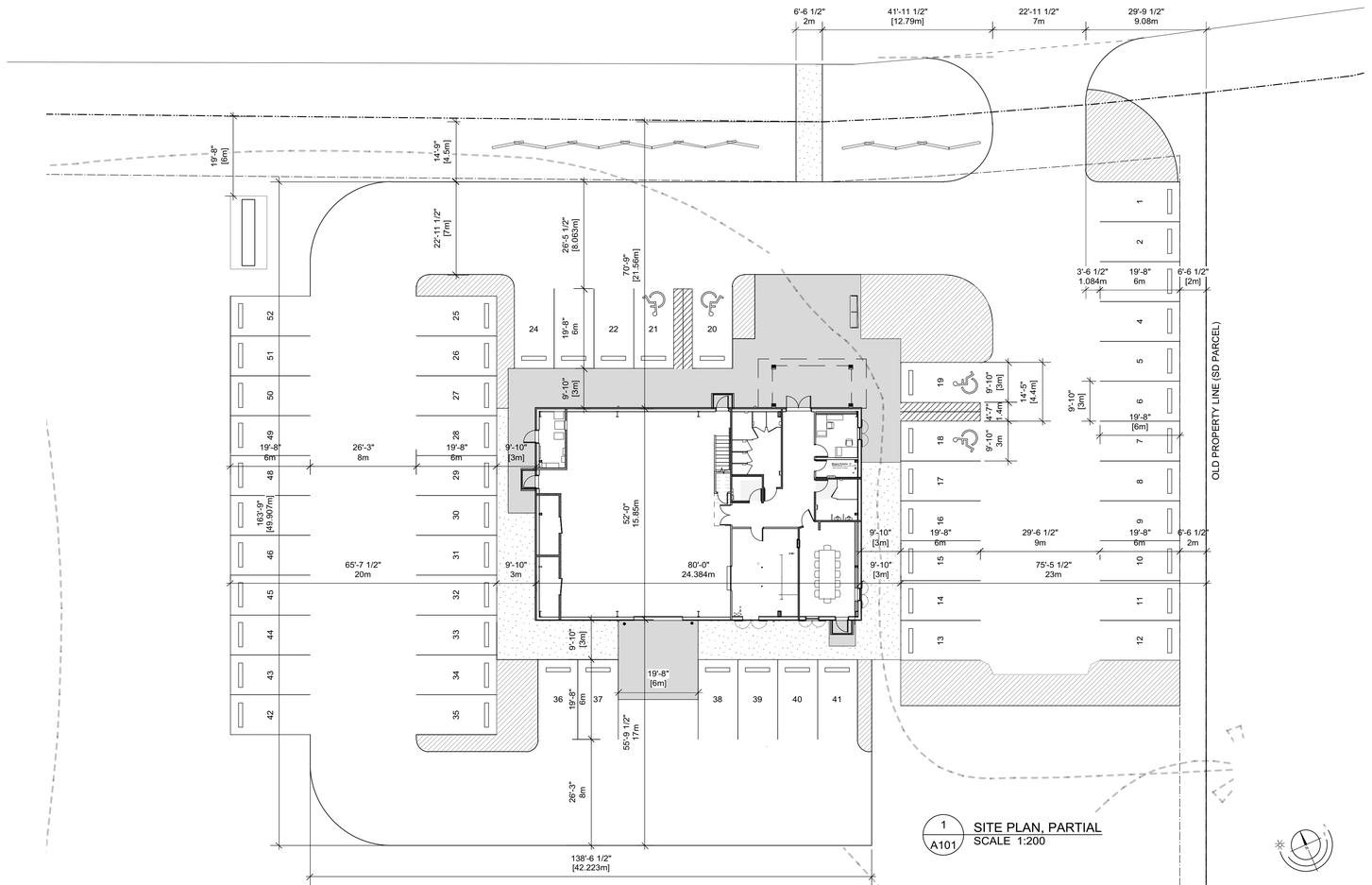


2 Site Plan and Aerial
Scale: 1:750



1 SITE PLAN, PARTIAL
A101 SCALE 1:200

LEGEND

- CONCRETE SIDEWALK, AT GRADE
- TRAIL, CART PATH SURFACE
- GRAVEL PARKING LOT, STALL AND TRAVEL LANE + ENTRANCE LANE (NO HATCH SHOWN)
- RIVER ROCK SURFACE + BOULDERS
- BOLLARD ADJACENT GARAGE DOOR
- SIGN, CONCRETE PAD MOUNTED
- BENCH, SURFACE MOUNT
- SPLIT RAIL FENCE

PARKING REQUIREMENTS:

- 1 STALL / 5 SQ.M. OF ASSEMBLY AREA
- 1 STALL / 30 SQ.M. OF OFFICE AREA
- 1 ACCESSIBLE STALL FOR FIRST 20 STALLS
- 1 ADDITIONAL H/C STALL FOR EVERY ADDITIONAL 50 STALLS

PARKING CALCULATION:

226.29 SQ.M. OF ASSEMBLY AREA = STALLS	MIN. 45
82 SQ.M. OF OFFICE SPACE = STALLS OF WHICH 2 H/C STALLS ARE REQUIRED	MIN. 3

PROVIDED

STANDARD STALLS	48
ACCESSIBLE STALLS	4
TOTAL PARKING STALLS PROVIDED	52

PARKING STALL SIZES AS DRAWN:

STANDARD STALL = 3 X 6 m. W/ CONCRETE WHEEL STOP
ACCESSIBLE STALL = 4 X 6 m. W/ CONCRETE WHEEL STOP

Rev	Date	Description
	2020-11-04	ISSUE FOR TENDER
plot date	OCTOBER 1, 2018	drawing file
drawn by	AsK	checked by
scale		project number N1814

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project name
Meadowood
1830 Galvin Place
Qualicum BC

drawing title
SITE PLAN

drawing no. A101

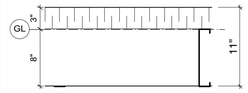
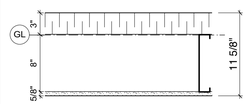
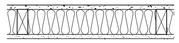
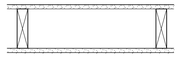
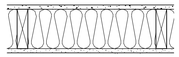
revision no.

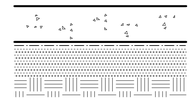
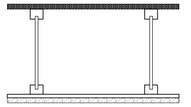
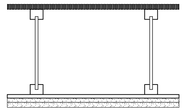
1 CODE SUMMARY

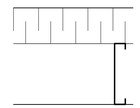
Meadowood, Code Summary			Nov 4, 2020
Article	**Code Requirements**	**BCBC 2018**	**Comments**
	Sprinklered:	No	
	Fire Walls:	No	
	No. of Storeys:	1 Storey	
3.1.2.1.	Occupancy Classification:	Part 3; A2 Assembly	
3.1.3.1.	Major Occupancy Separation	No requirement	
3.2.1.1.3)	Mezzanine	not less than 60% of horizontal plane open. 228.9m2 Open, 149.4m2 Mezz. 14.9m2 enclosed	*Mezz. space visually open above 1070mm level.*
3.2.1.1.4)	Mezzanine	*Mezzanine space visually open. With 10% exempt.*	*Enclosed spaces less than 10% in total.*
3.2.2.28.	Building Classification:	Group A, Div 2, One Storey; Max. 600 m2 Bldg Area for 2 Storeys	*Actual Bldg Area, 391 m2, One Storey*
3.2.2.28.(2)	Combustible or non-combustible construction	OK	*Combustible construction*
3.2.2.28.(2)b	Mezzanine Assembly F.R.R.	No rating required	
3.2.2.28.(2)c	Roof Assembly F.R.R.	No rating required	*Non-combustible Roof*
3.2.2.28.(2)d	Load Bearing Assembly F.R.R.	No rating required	

3.2.3.1.-B	Limiting Distance	East: 117 m2 exposing building face. 100% unprotected openings allowed at Ld of 13m.	*Limiting distance 13m* *(26m/2) No FRR required (3.2.3.7)*
		North: 159m2 at 15m – ok	*South and West ok greater then 15m LD*
3.2.3.7.	Requirements for exposing building Faces	Group A2, 100% unprotected openings allowed.	*No requirements*
3.2.4.1.	Requirement for a Fire Alarm System	*d) a total occupant load more than 300, other than in open air seating areas,*	*Fire alarm System Not Required* *Occupancy of 150 by Sign*
3.3.1.5.-A	Egress in Floor Area not Sprinklered Throughout	Group A, larger than 150m2	*2 or more egress doorways required.*
3.3.1.21.(2)	Janitors' Rooms	3/4HR FRR required	
3.1.8.12.(1b)	20 Min Closures Allowed	In 3/4HR Fire Separation and not more than 3 storeys	
3.1.17.1	Occupant Load	0.95 m2 per person, non-fixed seats/tables 9.3 m2/p office/kitchens 46 m2/p storage 219 m2 assembly > 230.5 persons 32.7 m2 Office+Kitchen > 3.5 person 160m2 Storage > 3.5 persons	*Occupancy of 150 by Sign*
	Storage Garage (46 m2/p)	453 m2 @ 46 m2 = 10	
	Personal service/office	9.85	
	Storage 46 m2	26.45	
	Personal service/Office (9.3 m2/p)	246 m2 @ 9.3 m2 = 26.4	
	Total	36	
3.4.2.2.	Egress from Mezzanine	Floor area total 147m2. Path of travel to egress stairway leading two or more exits.	*Occupancy A, 15m max.* *Occ. D, 25m max.* *Occupancy of Mezzanine <= 60.*
3.4.2.3	Distance Between Exits	1/2 of Maximum Diagonal Floor Area but Not <9 m, or Fire Separation 1/3 Floor Area	
3.4.2.5.1).f)	Travel Distance	<=30 m	
3.4.3.2.1).a)	Width of exits	6.1mm per person, total of 3600mm provided would allow for 590 persons.	*Occupancy of 150 by Sign*
3.4.3.4	Stair Headroom Clearance	2050 mm	
3.4.6.5.1)	Handrail one Side	Stair Width <1100 mm	*Stair width <1100mm.*
3.4.6.8.	Stair Rise / Run	Run: Min 280mm; Rise: 125mm – 180mm	*N/A*
3.7.2.2.2)		*"if a single universal toilet..... is permitted to be reduced by 10 before applying Sentences..*	*N/A*
3.7.2.2.3)		"if only one universal toilet room is provided....the water closet shall not taken into consideration in determination the number of water closets required....."	*1 Universal washrooms provided* *> cannot be taken into consideration for determination of water closets required.*
3.7.2.2.13)	Washrooms for an assembly occupancy	4 water closets for max 175 Male occupants, 7 water closets for max 175 Female occupants.	*Provided 4 male W/C 's and* *Provided 7 female W/C 's*
3.6.2.1.(2)	Service Room (fuel fired)	N/A	*N/A*
3.6.2.7	Floor Drains	Where Auto-Flush Urinals	*Yes*
3.8.	Accessibility: General	Exempt Storey Above or Below; (3.8.2.1)	*Exempt / NA*
		Access from Street to Main Entry;	*Yes*
		Parking;	*Yes*
		Toilet Room;	*Yes*
		Other Washroom (>150 Persons);	*Not required*
3.8.3.5.4)c)	Assembly < 500m2	Power Assisted Doors;	*Not required*
		Access to Areas Admitted to Public	*Yes*
3.8.3.6.	Interior Passageways	<=13 mm Change of Floor Level, Except as Ramp	*At main entry doors*
Ashrae.90.1 ip.2016	Climate Zone 5, Non-residential	Roof Walls Slab on Grade Fenestration (Non-metal) Metal Framing fixed / operable Entrance Door (Metal Frame)	*R-19 + R11 Ls or R-25 + R8 Ls or u-0.037 or R30 C.I.* *R19 CI or u-0.05* *R15 for 24"* *u-0.31* *u-0.38 / u-46* *u-0.68*

2 ASSEMBLIES

W1		**EXTERIOR STEEL FRAME WALL (Heated)** • 3" Exterior insulated Metal Sandwich Panel, R=>19 Air Barrier, Vapour Barrier and Moisture Barrier • 8" Steel Girts as Per Steel Manufactures Instructions
W2		**EXTERIOR STEEL FRAME WALL (Heated)** • 3" Exterior insulated Metal Sandwich Panel, R=>19 Air Barrier, Vapour Barrier and Moisture Barrier • 8" Steel Girts as Per Steel Manufactures Instructions • 5/8" Type-X GWB **STC 35**
W3 W3- W3f	 W3- GWB only one side W3f -1 Hr FRR	**STC 32** **INTERIOR WALL (BCBC 2018, W1d)** • 5/8" Gwb Type X • 2x4 Wood Studs @ 16-24" o.c. • 5/8" Gwb Type X
W4 W4f	 W4f - 1 Hr FRR	**STC 36** **INTERIOR WALL (BCBC 2018, W1a)** • 5/8" Gwb Type X • 2x4 Wood Studs @ 16-24" o.c. • 3 1/2" Rock Fibre Batt Insulation (acoustic), R13 • 5/8" Gwb Type X
W5 W5f	 W5f -1 Hr FRR	**STC 32** **INTERIOR WALL (BCBC 2018, W1d)** • 5/8" Gwb Type X • 2x6 Wood Studs @ 16-24" o.c. • 5/8" Gwb Type X
W6 W6f	 W5f - 1 Hr FRR	**STC 36** **INTERIOR WALL (BCBC 2018, W1a)** • 5/8" Gwb Type X • 2x6 Wood Studs @ 16-24" o.c. • 5 1/2" Rock Fibre Batt Insulation (acoustic), R13 • 5/8" Gwb Type X

F1		**MAIN FLOOR SLAB** • CONCRETE SLAB ON GRADE (see structural) • POLY VAPOUR BARRIER • COMPACTED GRAVEL + R15 XPS INSULATION FOR 24" AT BUILDING PERIMETER
F2		**MEZZANINE FLOOR** • 3/4" PLYWOOD (see structural) • 11 7/8" TGI FLOOR JOISTS • 1/2" RESILIENT CHANNEL • 5/8" TYPE-X GWB
F2f		**MEZZANINE FLOOR (3/4 FRR, GA-file fc5011)** • 3/4" PLYWOOD (see structural) • 11 7/8" TGI FLOOR JOISTS • 1/2" RESILIENT CHANNEL • 2 layers 5/8" TYPE-X GWB

R1		**SLOPED METAL ROOF OVER HEATED SPACE** • 5" Standing Seam Metal Roof Sandwich panel c/w Polyisocyanurate Rigid Insulation (=>R30) Air, Vapour Barrier • Structral steel as per Prefam Steel Building Design

Rev.	Date 2020-11-04	Description	ISSUE FOR TENDER
pkt date	OCTOBER 1, 2018	drawing file	
drawn by	AsK	checked by	
scale		project number	N1814

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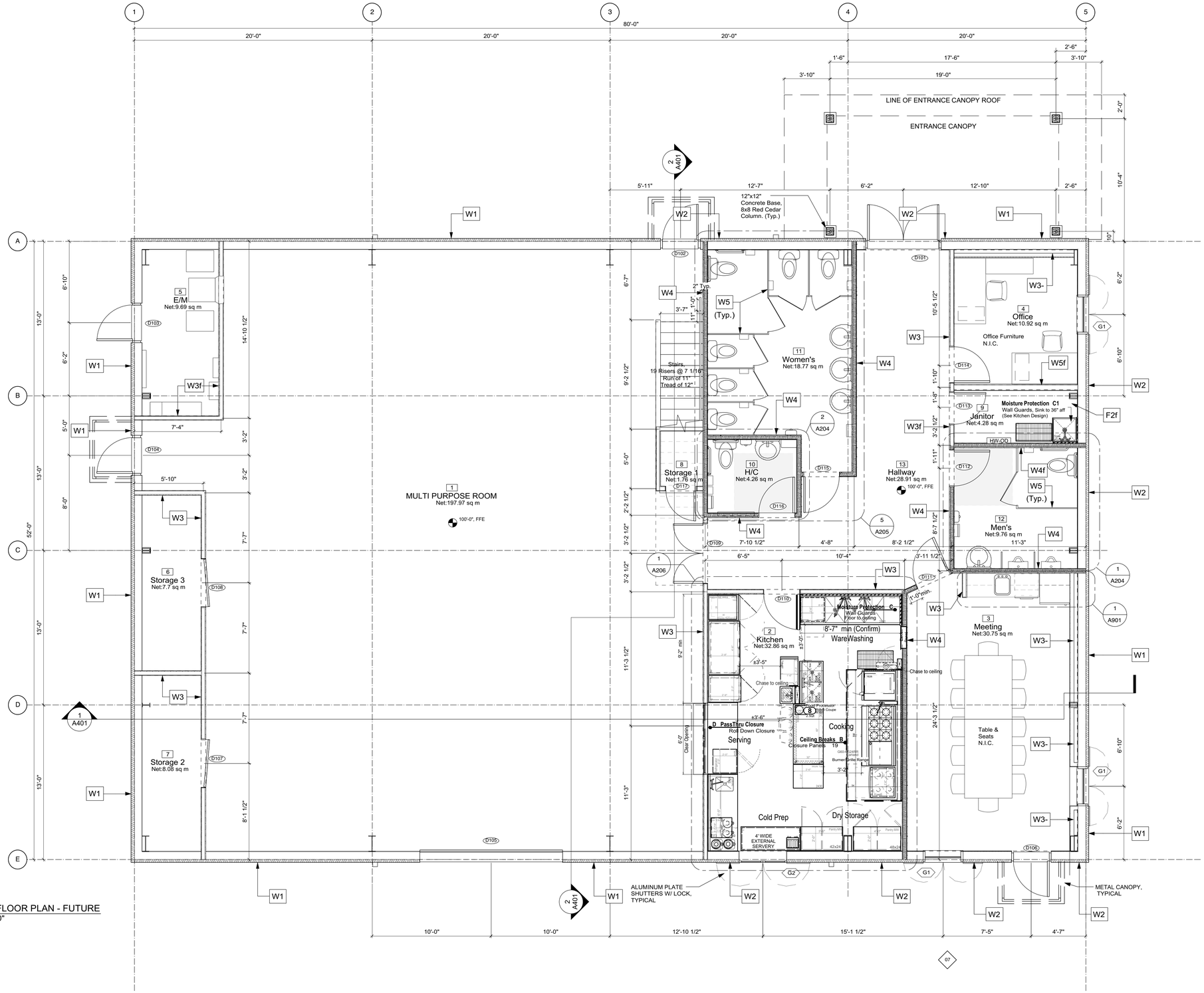
project name
Meadowood
1830 Galvin Place
Qualicum BC

drawing title
CODE SUMMARY & ASSEMBLIES

drawing no. A102

revision no.



1 / A201 MAIN FLOOR PLAN - FUTURE
1/4"=1'-0"

Rev	Date	Description
	2020-11-04	ISSUE FOR TENDER
job date	OCTOBER 1, 2018	drawing file
drawn by	AsK	checked by
scale		project number N1814

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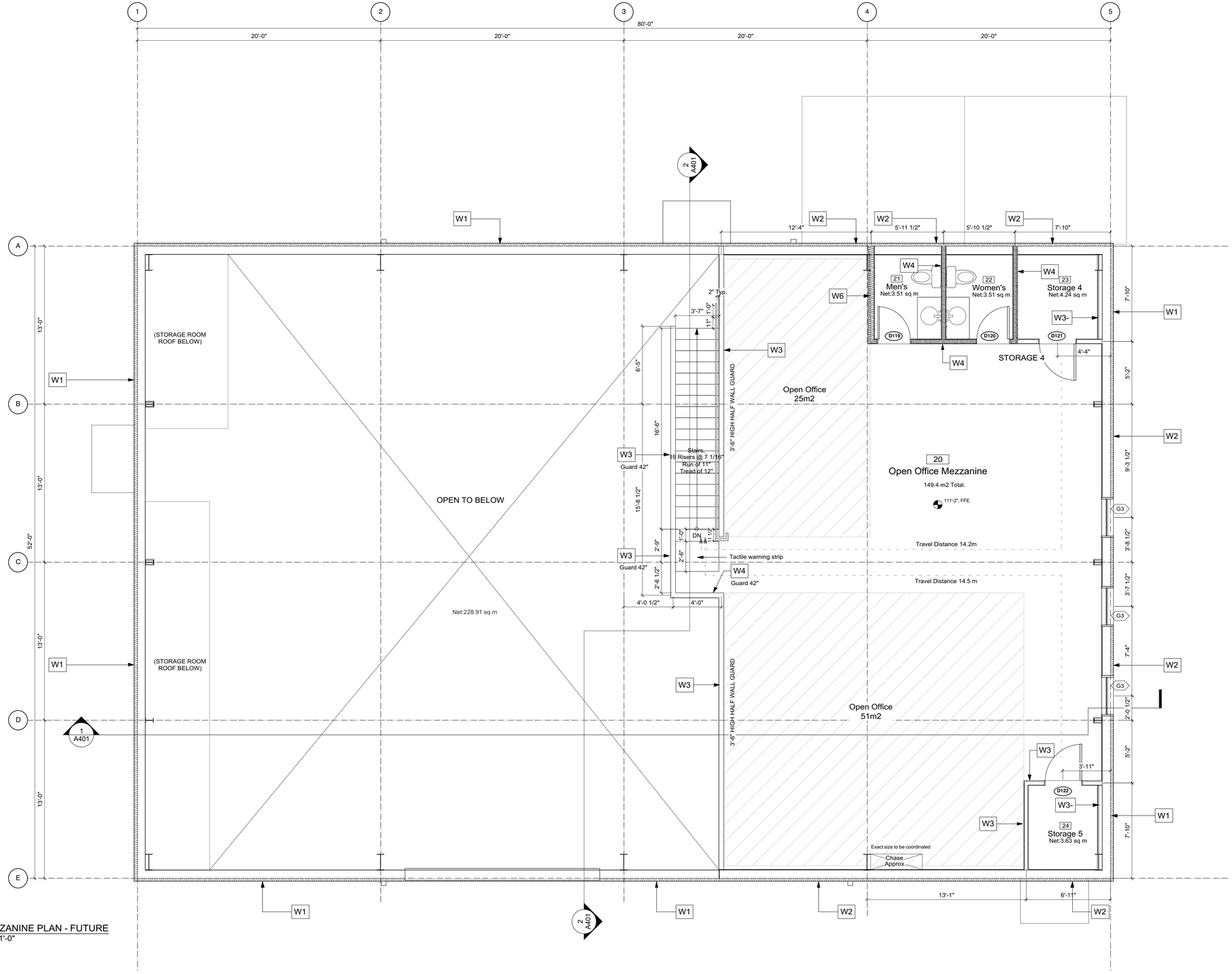
project name
Meadowood
1830 Galvin Place
Qualicum BC

drawing title
MAIN FLOOR PLAN

drawing no. A201

revision no.



1 A202 MEZZANINE PLAN - FUTURE
1/4"=1'-0"

Rev.	Date 2020-11-04	Description ISSUE FOR TENDER
plot date	OCTOBER 1, 2018	drawing file
drawn by	AsK	checked by
scale		project number N1814

de Hoog & Kierulf architects

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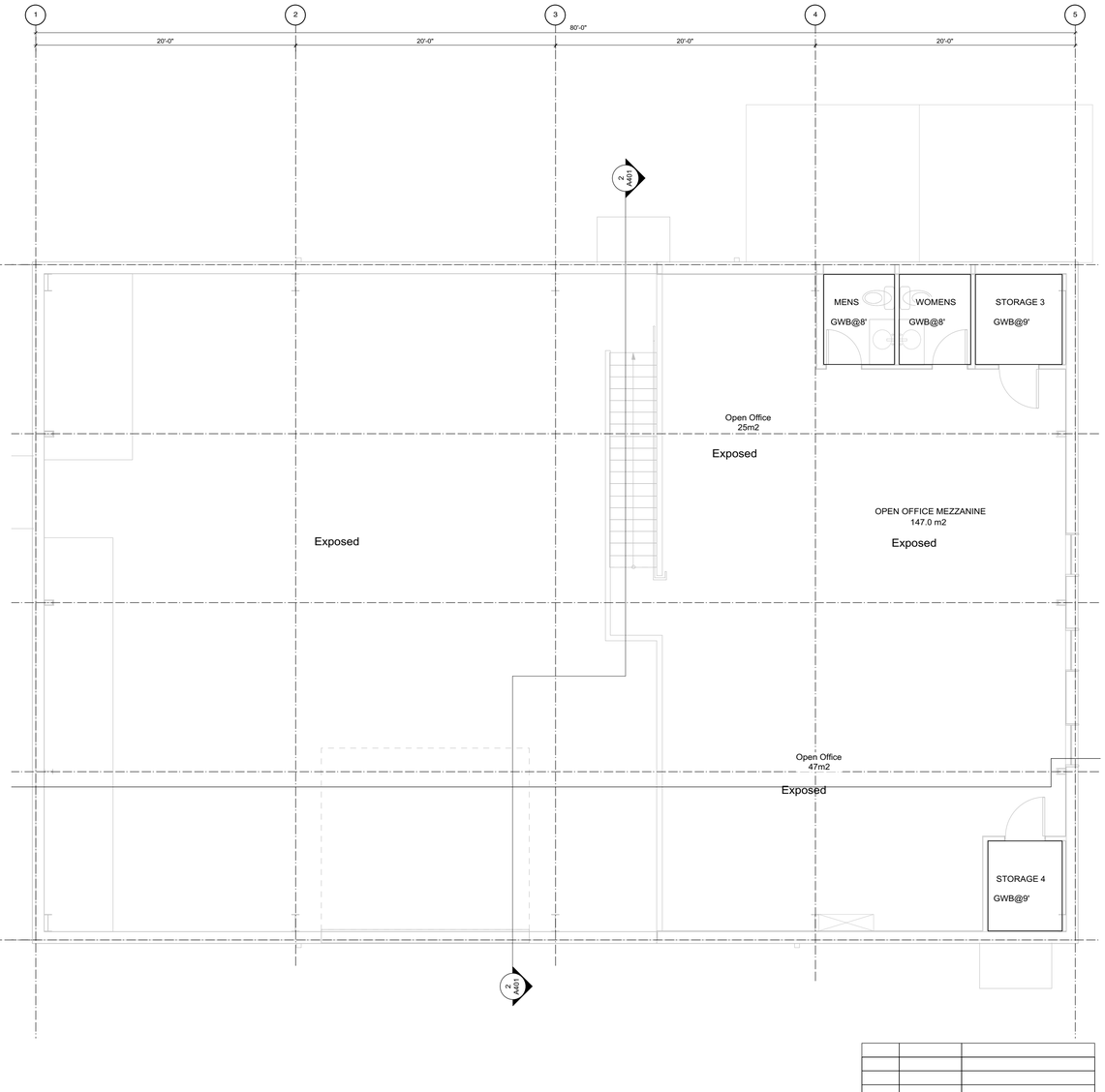
project name
Meadowood
1830 Galvin Place
Qualicum BC

drawing title
MEZZANINE PLAN

drawing no. A202

revision no.

1 RCP Main Floor
Scale: 3/16" = 1'-0"



2 RCP Mezzanine
Scale: 3/16" = 1'-0"

Rev.	Date 2020-11-04	Description ISSUE FOR TENDER
plot date OCTOBER 1, 2018		drawing file
drawn by AsK		checked by
scale		project number N1814

de Hoog & Kierulf architects

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project name
Meadowood
1830 Galvin Place
Qualicum BC

drawing title
REFLECTED CEILING PLAN

drawing no. A203

revision no.

1 Hand Dryer, Dyson Arrblade AB14
or acceptable proposed alternative

2 Mirror, Bobrick B-290 2430

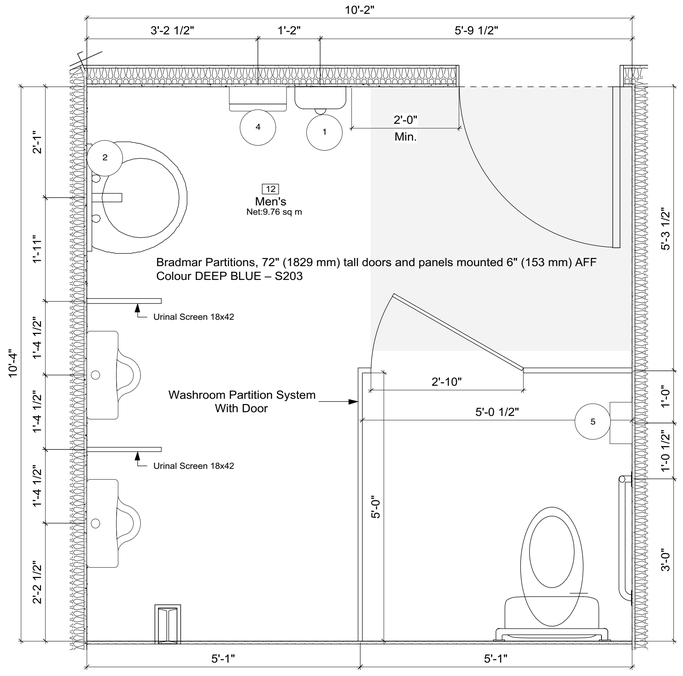
3 Change Table, Koala Kare KB110-SSRE (Recessed)

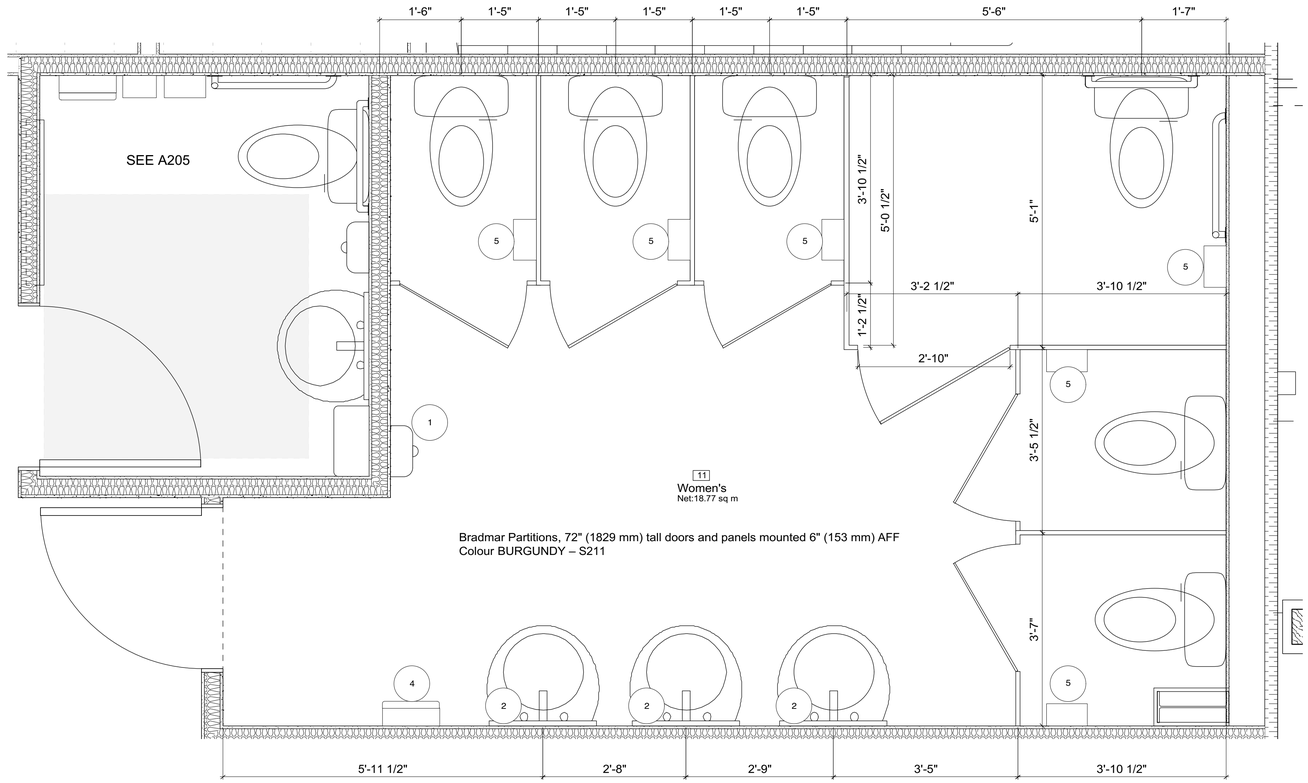
4 Waste receptacle, Bobrick B-4369

5 Toilet Paper dispenser, Bobrick B-4288

6 Sanitairy Napkin Disposal, Bobrick B-270

General; Sinks or Faucets with soap dispenser





Rev	Date 2020-11-04	Description ISSUE FOR TENDER
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project name

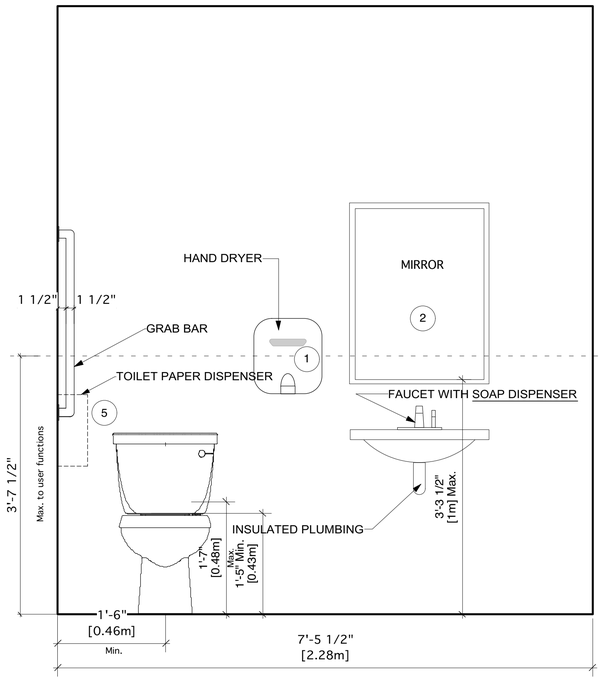
Meadowood
1830 Galvin Place
Qualicum BC

drawing title

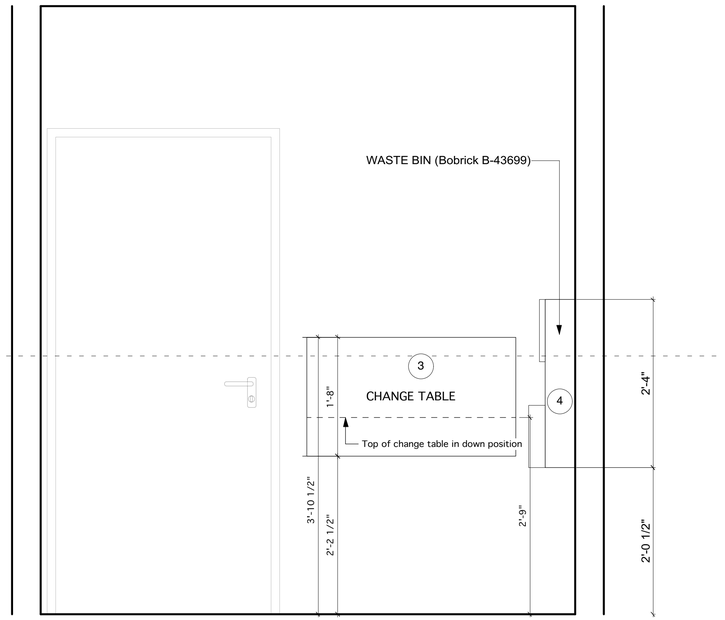
WASHROOM DETAIL PLAN

drawing no. A204

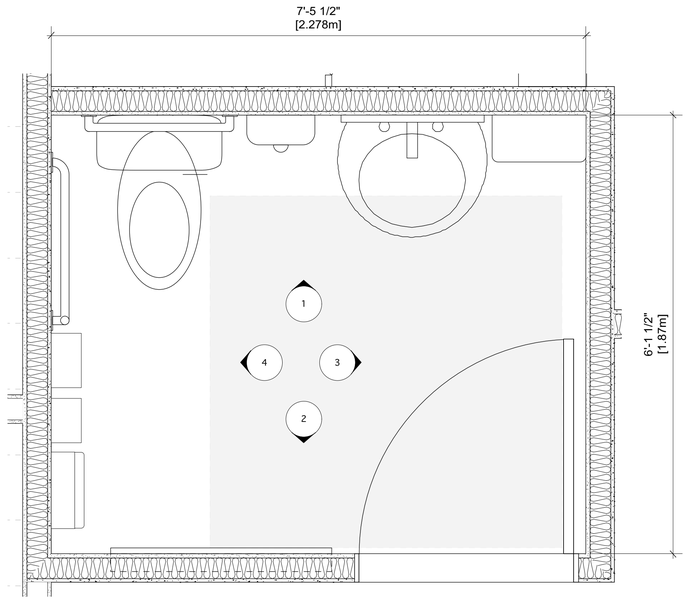
revision no.



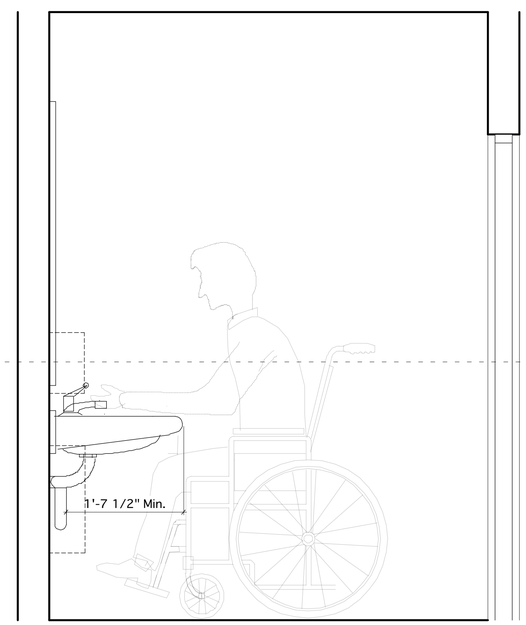
1 Elevation 1
Scale: 1" = 1'-0"



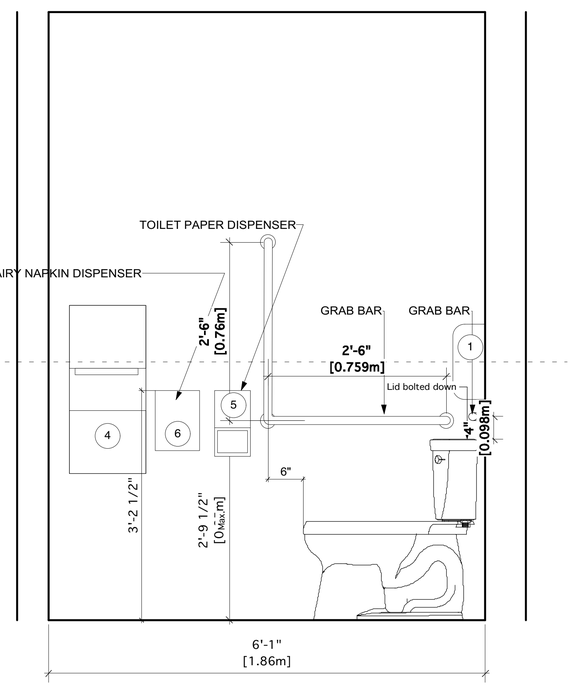
2 Elevation 2
Scale: 1" = 1'-0"



5 H/C Washroom Floor Plan
Scale: 1" = 1'-0"



3 Elevation 3
Scale: 1" = 1'-0"



4 Elevation 4
Scale: 1" = 1'-0"

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project name
Meadowood
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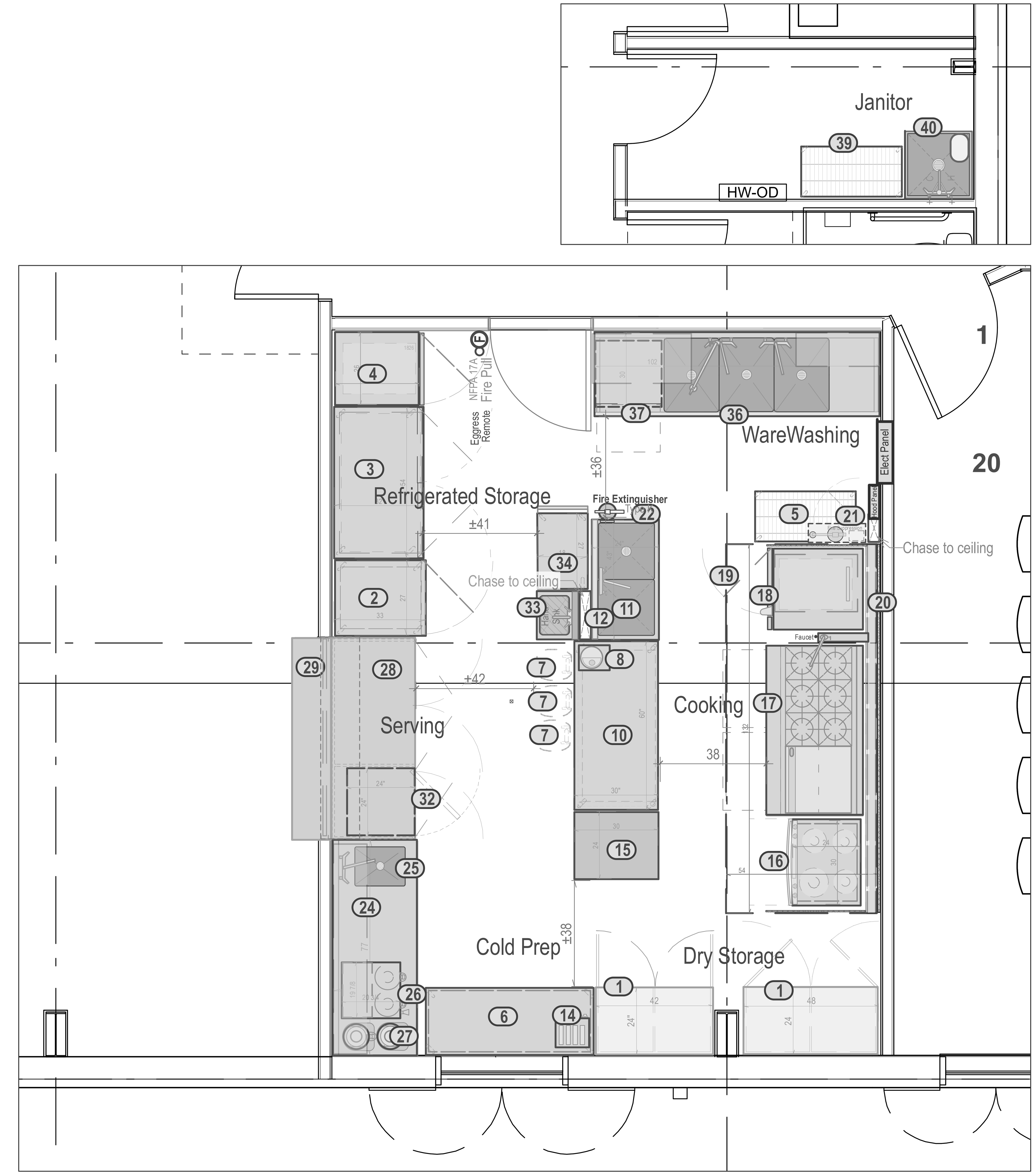
Qualicum BC

drawing title
H/C WASHROOM

drawing no. A205

revision no.



A **Main Floor - Kitchen**
Scale: 1/4" = 1'-0"

Food Service Equipment					MEADOWOOD COMMUNITY CENTRE				Community Kitchen			
EQUIPMENT LIST					Design	Ev 4	Services Dwgs	Services	Services Dwgs	Date 20/10/13	a	Page 1
1	Pantry Cupboard		KEC	2	Millwork	Upright Cabinet	2 Door	Floor Mount	Rm# Custom (MW)	PCm2448		
2	Reach-in Freezer	Ex	KEC	1	Upright Reachin	1 Sect	Bottom Mount	Glass Doors	Everest	EBGR1		
3	Reach-in Refrigerator	Ex	KEC	1	Upright Reachin	2 Door	Bottom Mount	Glass Doors	Everest	EBGR2		
4	Reach-in Freezer		KEC	1	Upright Reachin	1 Sect	Top Mount	Solid Doors	Beverage-Air	EF24	a	10/06
5	Pot Rack		KEC	1	Prefab Modular	Wire Shelves	Chrome Plated	Mobile	Metropolitan	5N356BC		
6	Work Table		KEC	1	Stainless Steel	Flat Top	Open base	Mobile	Custom Fab	WTsso3060odc	a	10/06
7	Recycling Containers		KEC	3	Medium Duty	Rectangular	Mobile	Low Profile	Orbis	NPL 280A		
8	Food Processor		KEC	1	Combination	Bowl/Continuou	Light Duty	Countertop	Waring	WFP14SC		
9	Spare Item Number											
10	Work Table	Ex	KEC	1	Stainless Steel	Flat Top	Open base	Stationary	Custom Fab	WTsso3060odc		
11	Preparation Sink	Ex	KEC	1	Stainless Steel	Rolled top	Open base	2 Sinks	Custom Fab	PS2442-2S		
12	Spare Item Number											
13	Spare Item Number											
14	Toaster		KEC	1	Pop-up	Bagel/Bread	Four Slice	Wide Slot	Waring	WTC825B		
15	Equipment Stand	Ex	KEC	1	Stainless Steel	Flat Top	Slide Base	Mobile	Custom Fab	ESM2430SB		
16	Domestic Range	Ex	KEC	1	Electric	Domestic	InfraRed Top	Oven Base	GE	Range		
17	Multi-Purpose Range		KEC	1	Gas(Natural)	Medium Duty	6B/24GB2OB	2 Oven Base	Garland	U60-6R24RR		
18	Convection Oven		KEC	1	Gas(Natural)	Full Size	2 Deck	Stacked	TurboFan	G32D5/2C		
19	Exhaust Hood		KEC	1	NFPA96/UL List	Dry Filter	Low Flow CJ	Box Canopy	Halton	KVE-11		
20	Services Enclosure		KEC	1	Stainless	Wall Mount	Single Sided	Cantilevered	Custom Fab	SE-WM4-132	a	10/06
21	Fire Suppression System		KEC	1	PreEngineered	Wet Chemical	Mech Gas Valve	Automatic	Ansul	R-102		
22	Spare Item Number											
23	Spare Item Number											
24	Spare Item Number											
25	Beverage Counter		KEC	1	Stainless	Splash Top	Cabinet Base	Open front	Custom Fab	BCss3060		
26	Coffee Maker		KEC	1	ThermalServers	Infusion Brewer	Dual Head	Programmable	Bunn	ICB Twin Tall		
27	Coffee Dispenser		KEC	4	Thermal Server	Insulated	Gravity Type	Portable	Bunn	TF Server		
28	Service Counter		KEC	1	Millwork	Flat Top	Cabinet Base	Pass Over	Custom MW	SCmf3072c	a	10/06
29	Pass-thru Shelf		KEC	1	Millwork	Floor Mount	Cabinet Base	Enclosed	Custom Fab	PSm1496c		
30	Spare Item Number											
31	Spare Item Number											
32	Undercounter Cooler	Ex	KEC	1	SC Refrig	Undercounter	2 Door		Beverage Air	UCR 24		
33	Hand Sink		KEC	1	Stainless	Wall Mount	Gooseneck	Wide	Vollrath	K1410-C		
34	Utility Cart		KEC	1	Stainless	Light Duty	3 Shelf	Open Base	Lakeside	422		
35	Spare Item Number											
36	Pot Sink		KEC	1	Stainless Steel	Rolled top	3 sinks	Coved Corners	Custom Fab	PS3s9027r		
37	Dishwasher	Ex	KEC	1	Undercounter	Single Tank	High Temp	Builtin Booster	Hobart	LXeH		
38	Spare Item Number											
39	Chemical Shelving		KEC	1	Prefab Modular	Modular Wire	Poly Coated	Mobile	Metropolitan	SuperErecta	a	10/06
40	Janitor's Sink		Mech	1	Prefabricated	Composite	Skirted	Floor Mount	Fiat	MSB-2424	a	10/06

For Further Details See Separate Kitchen Drawings FSE-2, 3 & 4

Rev	Date 2020-11-04	Description ISSUE FOR TENDER
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scale		project number N1814

GALLEYWORKS
Email: design@galleyworks.com
Ph: 604-514-1777

DESIGN DRAWING Revised

Project: Meadowood Community Center Community Kitchen	File: 703	Dwg No.: FSE-1	
	Scale: 1:48		
Title: Food Service Equipment Equipment Layout	Dr. EB	Sheet: 1 of	Rev: a
	Date: 20/10/06		

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project name
Meadowood
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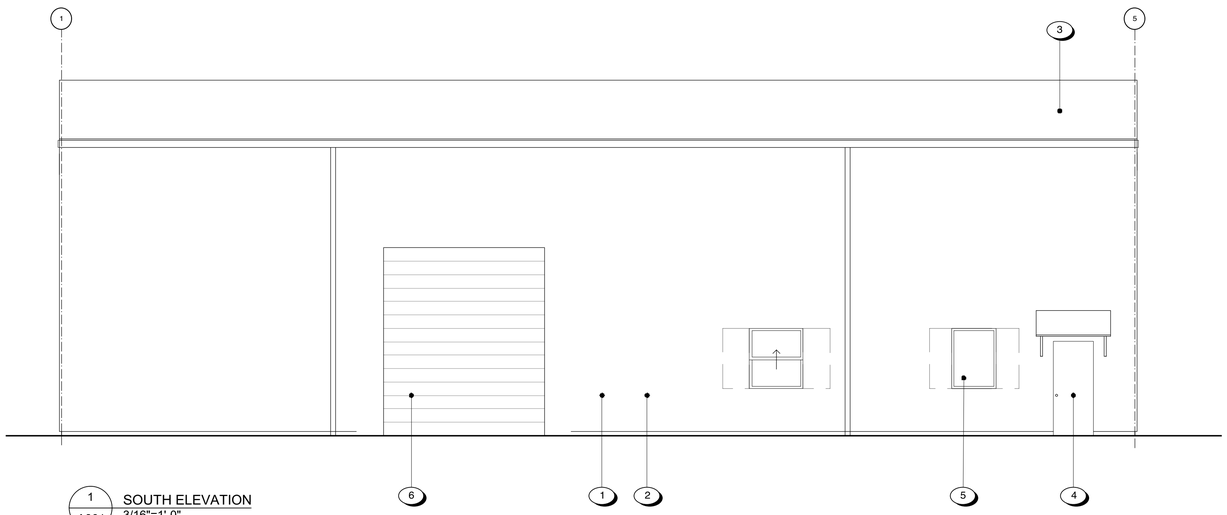
Qualicum BC

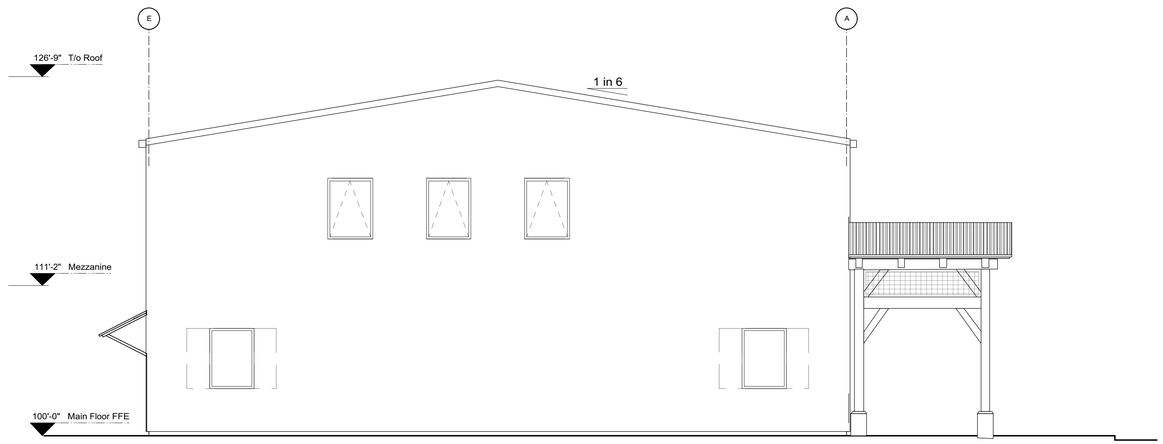
drawing title
KITCHEN EQUIPMENT PLAN

drawing no. A206

revision no.



1 A301 SOUTH ELEVATION
3/16"=1'-0"

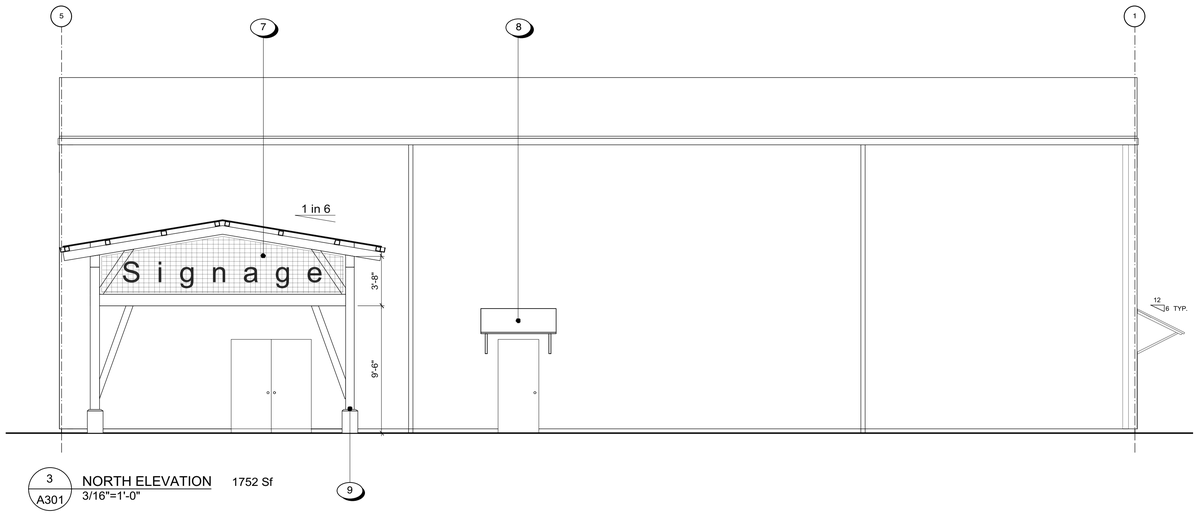


2 A301 EAST ELEVATION
3/16"=1'-0"

Wall, 1257 Sf
Roof Total 4285 Sf

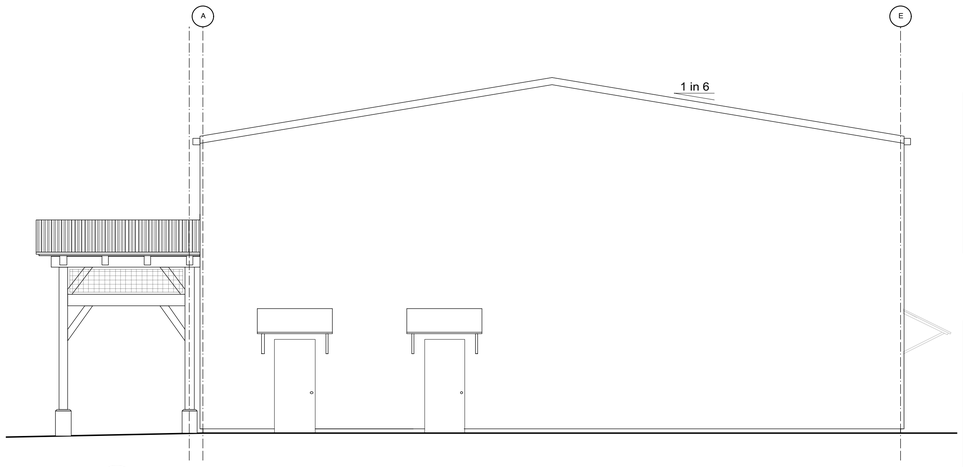
TYPICAL FINISHES

1. PREFINISHED METAL VERTICAL SIDING (Slate Blue)
2. RAINWATER LEADER (Slate Blue)
3. PREFINISHED STANDING SEAM ROOF (Light Beige)
4. METAL DOOR & FRAME (Painted to match vinyl windows, beige)
5. VINYL WINDOW ASSEMBLY (Standard Beige/Bone)
6. PREFINISHED METAL OVERHEAD DOOR (Color to match siding)
7. TIMBER CANOPY WITH RAFTERS & WOOD SIDING (Stained)
8. PREFINISHED METAL ROOF ON ALUMINUM FRAME (Slate Blue)
9. 8X8 RED CEDAR COLUMN



3 A301 NORTH ELEVATION
3/16"=1'-0"

1752 Sf



4 A301 WEST ELEVATION
3/16"=1'-0"

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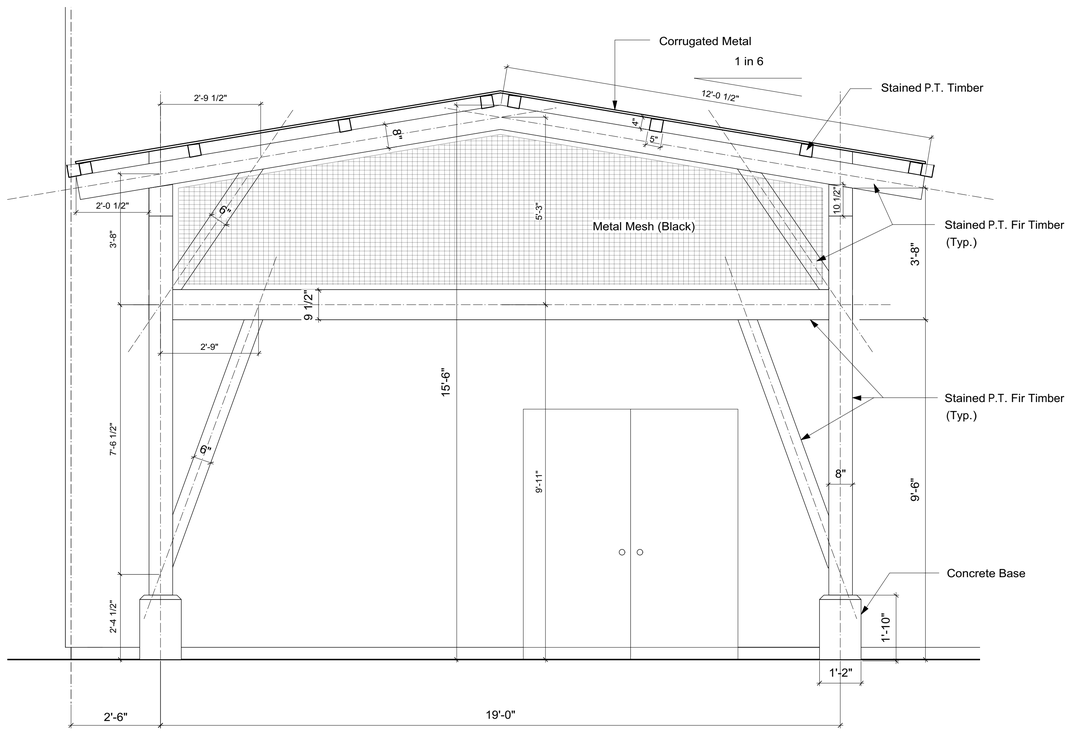
project name
Meadowood
1830 Galvin Place
Qualicum BC

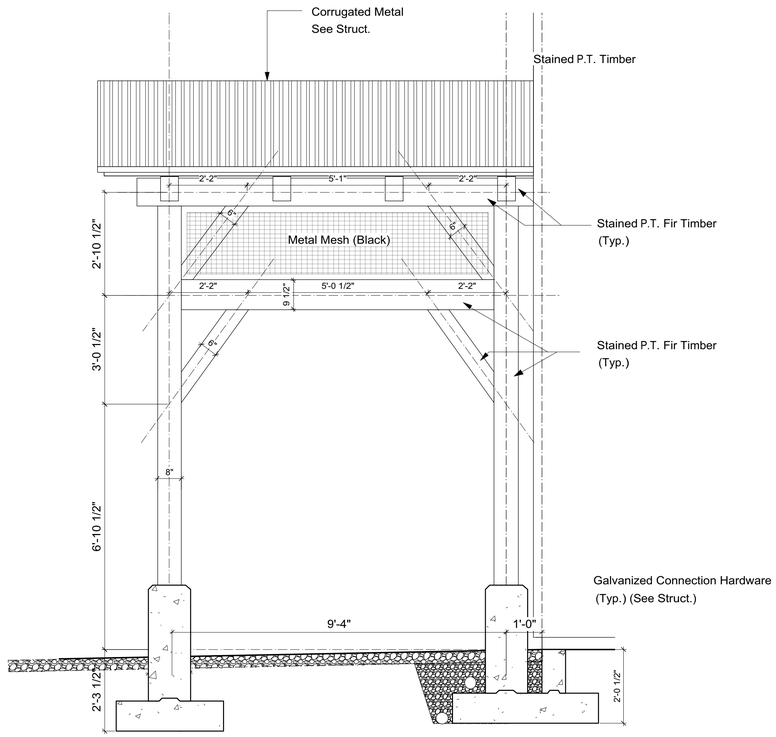
drawing title
BUILDING ELEVATIONS

drawing no. A301

revision no.



1 Canopy Front Elevation
Scale: 1/2" = 1'-0"



2 Canopy Side Elevation / Section over Base
Scale: 1/2" = 1'-0"

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scale		project number N1814

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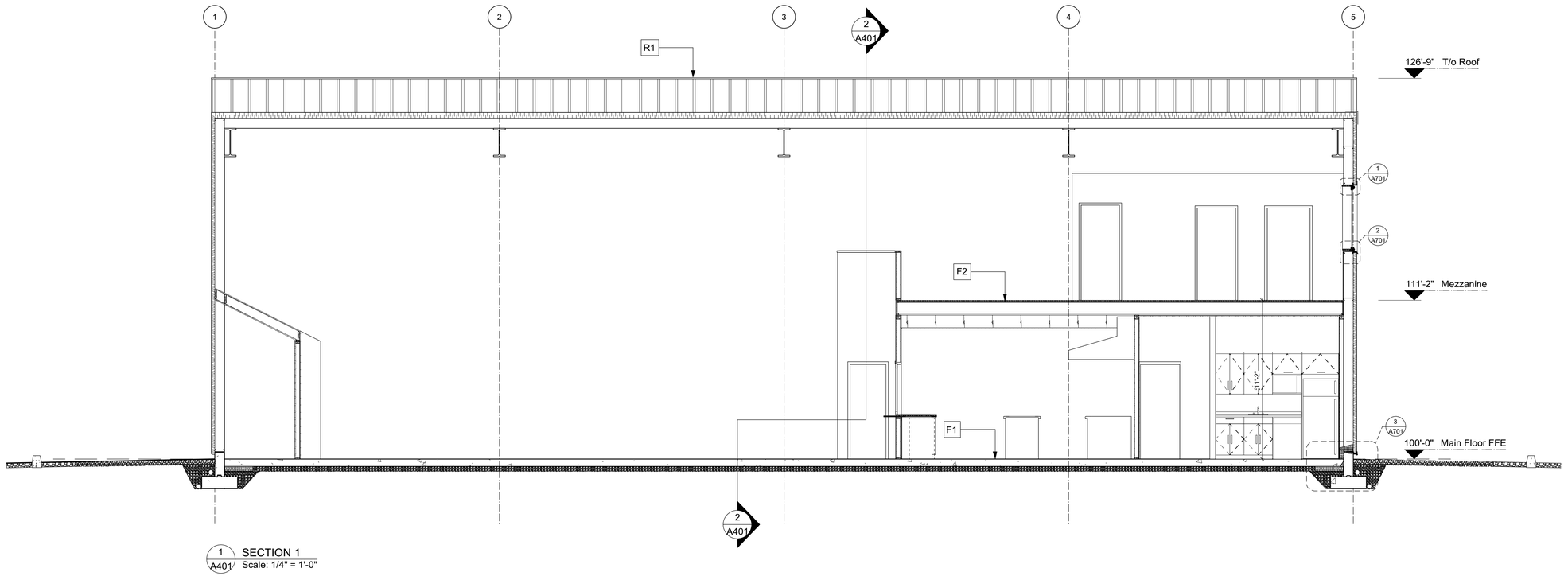
project name
Meadowood
1830 Galvin Place
Qualicum BC

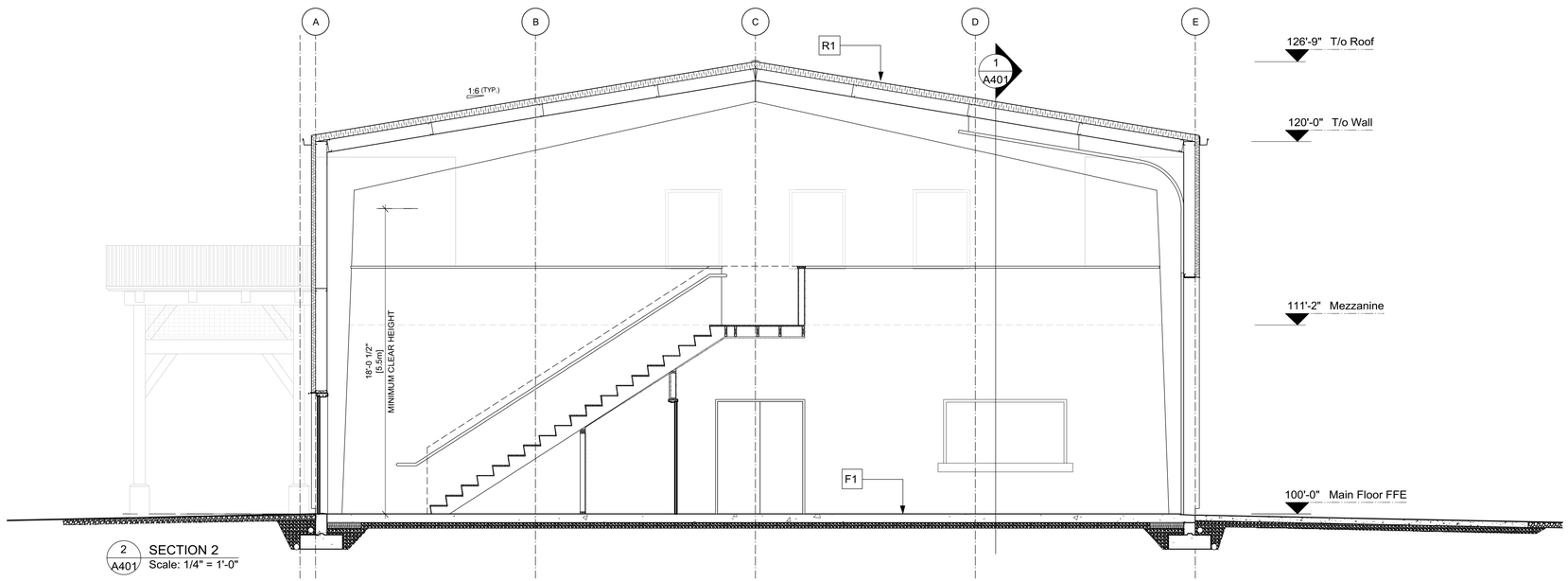
drawing title
BUILDING ENTRANCE CANOPY

drawing no. A302

revision no.



1 A401 SECTION 1
Scale: 1/4" = 1'-0"



2 A401 SECTION 2
Scale: 1/4" = 1'-0"

Rev.	Date 2020-11-04	Description ISSUE FOR TENDER
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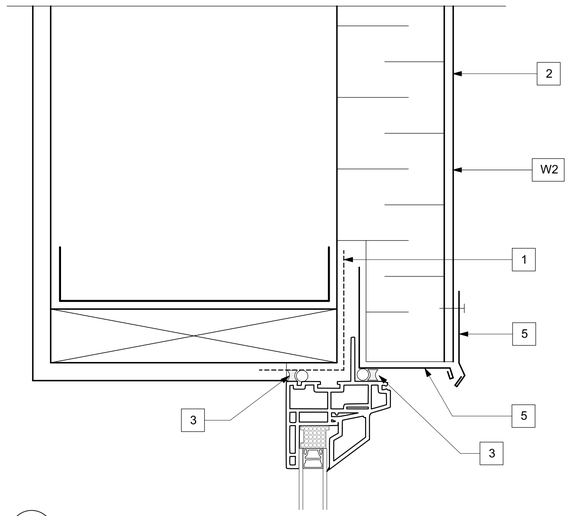
project name
Meadowood
1830 Galvin Place
Qualicum BC

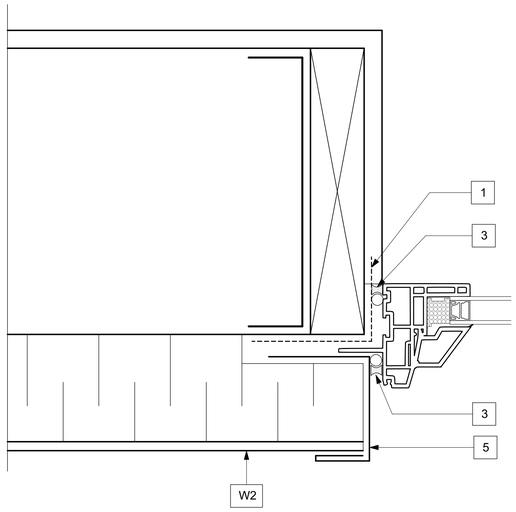
drawing title
BUILDING SECTIONS

drawing no. A401

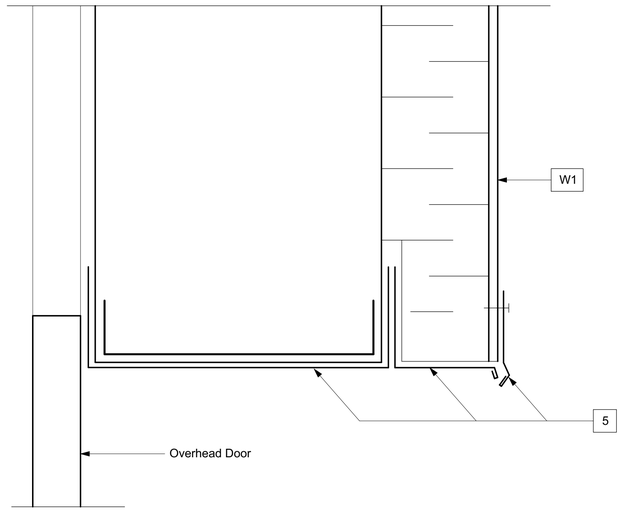
revision no.



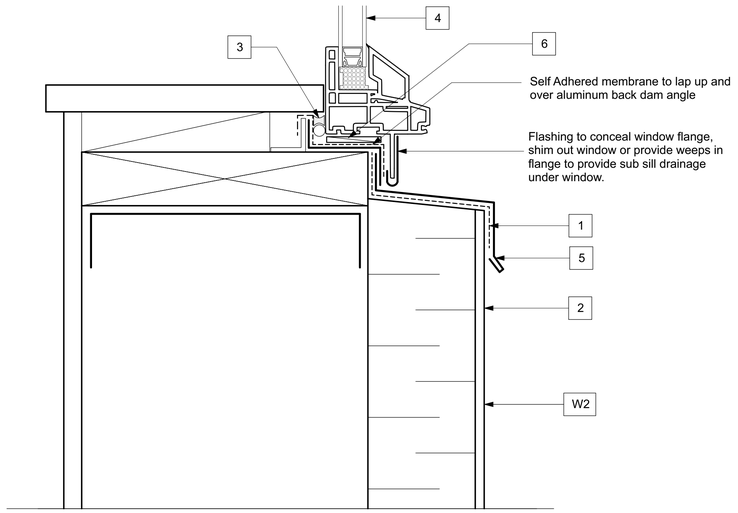
1 A701 HEAD DETAIL
SCALE: 6" = 12"



2 A701 JAMB DETAIL
SCALE: 6" = 12"

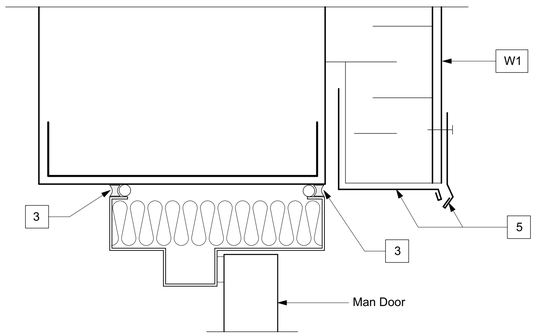


6 A701 OVERHEAD DOOR DETAIL
SCALE: 6" = 12"

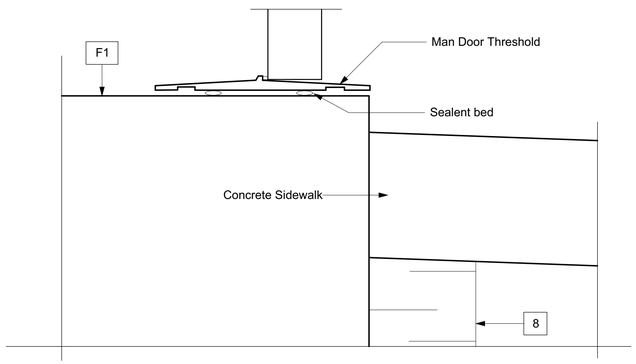


3 A701 SILL DETAIL
SCALE: 6" = 12"

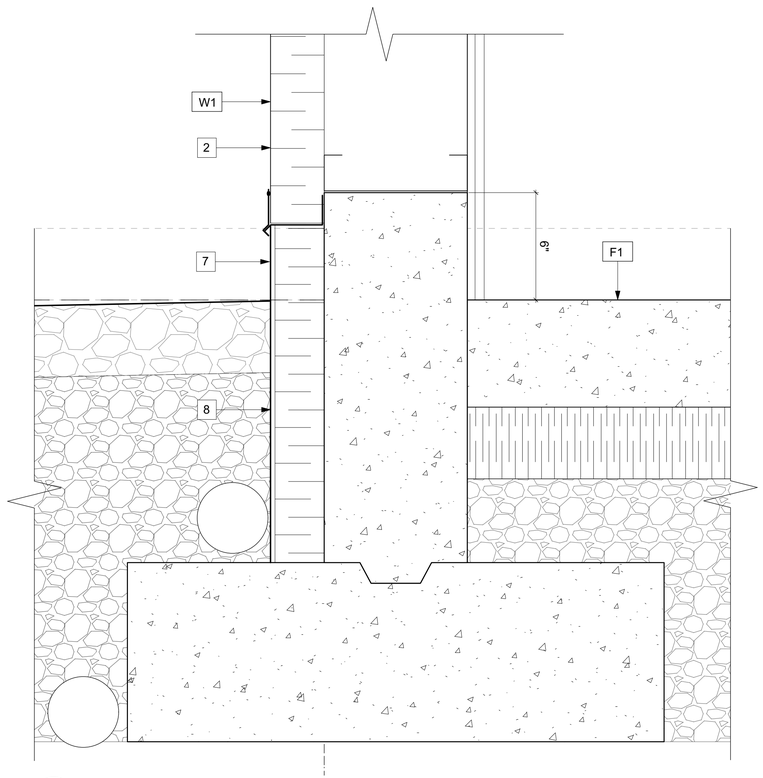
Mock-up Required for review by Consultant



4 A701 DOOR HEAD DETAIL
SCALE: 3" = 12"



5 A701 DOOR THERSHOLD DETAIL
SCALE: 3" = 12"



7 A701 BASE OF WALL DETAIL
SCALE: 3" = 12"

Legend:

1 - Self Adhered Membrane
2 - Insulated Metal Panel
3 - Rod and Caulk
4 - Vinyl Window
5 - Flashing
6 - Intermittent shims
7 - CT Board 3" Foundation Insulation
8 - XPS 3" Foundation Insulation (Below Grade)

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project name
Project Name
Project Address
Qualicum BC

drawing title
DETAILS

drawing no. A701

revision no.

				DOORS								Frame						2020-11-04
DOOR	ROOM	ROOM	AMOUNT	TYPE	WIDTH	HEIGHT	Header	MAT	FRR	FIN	MAT	F FIN	Closer	Keyed	Thres	HARDWARE	REMARKS
NO	NO	NAME			Ft	Ft	to FFE								hold	SET	
	into																
D101	13	HALLWAY	2	1	3'-0"	7'-0"		HMI		PT	HMI	PT	X	X	X	Panic h/w	Weather Stripping
D102	01	MULTI PURPOSE AREA / EXTERIOR	1	2	3'-0"	7'-0"		HMI		PT	HMI	PT	X	X	X	Panic h/w	Weather Stripping
D103	05	MECH./ ELEC. / EXTERIOR	1	2	3'-0"	7'-0"		HMI		PT	HMI	PT	X	X	X	Stand./w lever	Weather Stripping
D104	01	MULTI PURPOSE AREA / EXTERIOR	1	2	3'-0"	7'-0"		HMI		PT	HMI	PT	X	X	X	Panic h/w	Weather Stripping
D105	01	MULTI PURPOSE AREA / EXTERIOR	1	5	12'-0"	14'-0"		HMI		PT	ST	Galv	-	Lock	X	Overhead Dr	Weather Stripping, locking on inside
D106	03	MEETING RM. / EXTERIOR	1	2	3'-0"	7'-0"		HMI		PT	HMI	PT	X	X	X	Panic h/w	Weather Stripping
D107	07	STORAGE 2	1	2	3'-0"	6'-8"		HM		PT	HMI	PT	-	X	-	Stand./w lever	Kick plate inside
D108	06	STORAGE 3	1	2	3'-0"	6'-8"		HM		PT	HMI	PT	-	X	-	Stand./w lever	Kick plate inside
D109	01	MULTI PURPOSE ROOM	2	2	3'-0"	6'-8"		HM		PT	HM	PT	X	X	-	Stand./w lever	Kick plate 2 sided
D110	02	KITCHEN	1	2	3'-0"	6'-8"		HM		PT	HM	Galv	X	X	X	Stand./w lever	Weather Stripping, Kick plate 2 sided
D111	03	MEETING RM.	1	3	3'-0"	6'-8"		HM		PT	HM	Galv	-	X	X	Stand./w lever	Weather Stripping
D112	12	MENS	1	2	3'-0"	6'-8"		HM		PT	HMI	PT	X	-	X	Privacy/w lever	Weather Stripping
D113	09	HWOD / JANITORS CLOSET	1	2	3'-0"	6'-8"		HM	20min.	PT	HMI	PT	X	X	X	Stand./w lever	Weather Stripping, Kick plate outside
D114	04	OFFICE	1	2	3'-0"	6'-8"		HM		PT	HM	PT	-	X	-	Stand./w lever	Weather Stripping
D115	11	WOMENS	1	2	3'-0"	6'-8"		HM		PT	HM	PT	X	-	X	Privacy/w lever	Weather Stripping
D116	10	HC WASHROOM	1	2	3'-0"	6'-8"		HM		PT	HM	PT	X	-	X	Access	Weather Stripping
D117	08	STORAGE 1	1	2	3'-0"	6'-8"		HM	20min.	PT	HM	PT	-	X	-	Stand./w lever	Kick plate inside
D118	02	KITCHEN PASS THRU ROLL CLOSURE	1	4	6'-0"	3'-2"		ST		Galv	ST	Galv	-	Lock	X	Manual	Narrow profile, Between Jamb mount
D119	21	MENS	1	2	2'-8"	6'-8"		HM		PT			X	-	X	Privacy/w lever	Weather Stripping
D120	22	WOMENS	1	2	2'-8"	6'-8"		HM		PT	HM	PT	X	-	X	Privacy/w lever	Weather Stripping
D121	23	STORAGE 4	1	2	3'-0"	6'-8"		HM		PT	HM	PT	-	X	-	Stand./w lever	Kick plate inside
D122	24	STORAGE 5	1	2	3'-0"	6'-8"		HM		PT	HM	PT	-	X	-	Stand./w lever	Kick plate inside

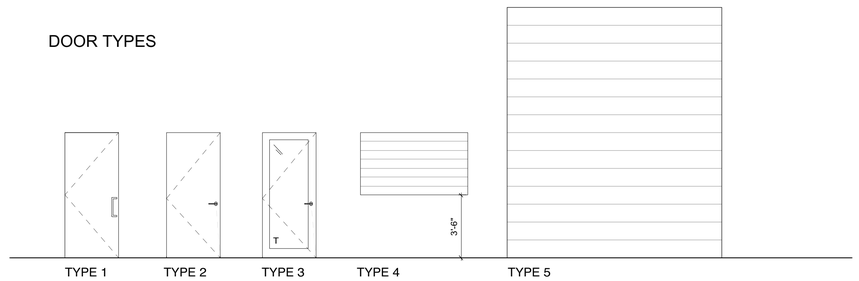
NOTES:

1. DOORS SHALL CONFORM TO THE REQUIRMENTS OF BCBC 5.10.2.
2. REFER TO FLOOR PLANS FOR HANDING.
3. PROVIDE WEATHERSTRIPPING FOR ALL EXTERIOR DOORS AND ALL INTERIOR RATED DOORS.

THE CONTRACTOR (THROUGH THE MANUFACTURER) TO PROVIDE THE FOLLOWING:

A. MANUFACTURER'S INDEPENDENT LAB TESTING REPORTS TO ENSURE COMPLIANCE TO NAFS-08 AND ITS CANADIAN SUPPLEMENT - CSA A440S1-09 AND NFRC RATINGS.
B. PROVIDE ENGINEER SEALED SHOP DRAWINGS FOR REVIEW PRIOR TO WINDOW FABRICATION.
C. ALLOW FOR A MINIMUM OF 1% OF THE WINDOWS AND DOORS TO BE FIELD TESTED BY A THIRD PARTY TESTING AGENCY.

DOOR TYPES



WINDOW SCHEDULE

WINDOW TYPE	WIDTH x HEIGHT	FRAME MATERIAL	RATING	FINISH	REMARKS
G1	3'-4" x 4'-6"	VINYL	-	PREFINISHED	SEALED UNIT
G2	4'-0" x 4'-6"	VINYL	-	PREFINISHED	DOUBLE HUNG W/ OPENER
G3	3'-4" x 4'-6"	VINYL	-	PREFINISHED	AWNING WINDOW

NOTES:

1. WINDOWS AND SKYLIGHTS SHALL CONFORM TO THE REQUIRMENTS OF BCBC 5.10.2.
2. PROVIDE REMOVABLE BUG SCREEN FOR ALL OPERABLE WINDOWS, EXCEPT WINDOW TYPE G1.
3. WINDOW FRAME COLOR TO BE CONFIRMED.

THE CONTRACTOR (THROUGH THE MANUFACTURER) TO PROVIDE THE FOLLOWING:

A. MANUFACTURER'S INDEPENDENT LAB TESTING REPORTS TO ENSURE COMPLIANCE TO NAFS-08 AND ITS CANADIAN SUPPLEMENT - CSA A440S1-09 AND NFRC RATINGS.
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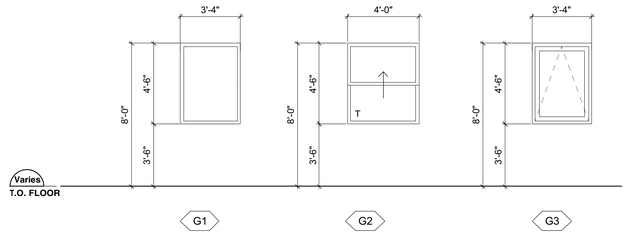
WINDOW TYPES



Notes to Window Schedule

1. Refer to Plans for window locations & handing.
2. Locate frames within walls as indicated on floor plans.
3. All exterior Glazing ,Double glazing in compliance with BCBC 2018, Climate zone 5.
4. Confirm dimensions on Site.

Notes to Door Schedule

1. Refer to Plans for door locations & handing.
2. Locate frames within walls as indicated on floor plans.

Rev	Date 2020-11-04	Description ISSUE FOR TENDER
job date	OCTOBER 1, 2018	drawing file
drawn by	AsK	checked by
scale		project number N1814

de Hoog & Kierulf architects

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project name

Meadowood
1830 Galvin Place
Qualicum BC

drawing title

DOOR & WINDOW SCHEDULE

drawing no. A801

revision no.

FINISHES SCHEDULE 04-11-20

CODE	MATERIAL	SPECIFICATION/ COLOUR	SUPPLIER
10 – PAINT			
11	PAINT WHITE	PURE WHITE, SW 7005	SHERWIN-WILLIAMS
12	PAINT SNAPPY DRESSER	P5221-24 SPAPPY DRESSER	PARA PAINTS
20 - FLOORING			
21	SPORTS FLOORING	METRO BEIGE F06	DINOFLEX
22	KITCHEN FLOOR	GRAPHITE X2546R11 / LRV 21	ALTRO
23	MEZANNINE	FLOTEX METRO	FORBO
24	MEZANNINE	FLOTEX AMERICAN WOOD, 151004	FORBO
25	MEZANNINE	FLOTEX GREY WOOD, 151002	FORBO
26	MEZZANINE/ WASHROOMS	SPHERA EVOLUTION, 50400 AQUA PEARL	FORBO
27	MEZZANINE / STORAGES	MARMOLEUM COCOA, 3582235 EARL GREY CHOCOLATE, 2.5MM	FORBO
28	MAIN FLOOR	COLORART ACCOLADE PLUS SPICE WHITE 5A056 2MM	ARMSTRONG
29	MAIN FLOOR	105660 MORNING MIST	INTERFACE
30 – WALL			
31	DRYWALL FINISH, NOT ADRESSED ELSEWHERE	SEE (11)	
32	WALL COVERING KITCHEN	DUNE P1 TEXTURE, COLOUR FOG(73)	KOROGUARD WALL COVERINGS
33	PROVIDE 24" HIGH STAINLESS STEEL SHEET TO WALLS BEHIND MOP SINK		
40 – BASE			
41	VINYL BASEBOARDS IN GENERAL	C86 OYSTER MOUNTAIN	FORBO
42	KITCHEN BASE / COVE DETAIL C4	GRAPHITE X2546R11 / LRV 21	ALTRO
50 – CEILING			
51	KITCHEN ZONE (672) (24"x48")	WHITE (WH)	ARMSTRONG
52	ALL GWB CEILINGS	SEE (11)	
60 – MISCELLANEOUS			
61	BACKSPLASH, KITCHEN	BARNWOOD GREY DBWEM40	JULIAN TILE
62	DOOR TRIMS, PAINTED DOORS	SEE (12)	
63	CABINETS	SUNDAY BRUNCH M2005(Y)	TAFISA
64	CABINETS	WEEKEND GETAWAY M2003 (Y)	TAFISA
65	COUNTERTOPS WASHROOMS	P382 CLOUDY TWILL	ARBORITE
66	COUNTERTOP KITCHENETTE	P381 SILVER TWILL	ARBORITE
67	SEALED CONCRETE		
70 – STAIRS			
71	STAIR TREAD / RISER	PLATINUM GRAY RTH-134 HAMMERED PROFILE: SQUARE NOSING, W RISER, W BLACK CARBORUNDUM STRIP	AMERICAN BILTRITE
72	TACTILE WARNING STRIP	3172, GRIS FONCE	FORBO
	NOTES;		

1) WALLS: EGGSHELL

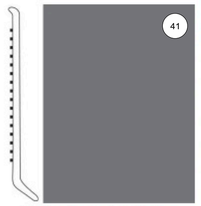
2) INTERIOR DOORS AND TRIM: SATIN

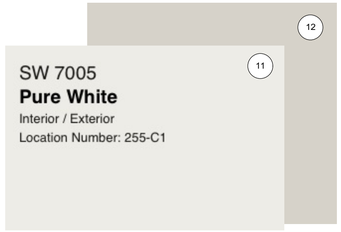
3) CEILINGS: FLAT

ROOM FINISH SCHEDULE

RM#	ROOM NAME	FLOOR		WALLS	CEILING		HEIGHT	COMMENTS
		FLOOR	BASE		TYPE	FINISH		
01	MULTI PURPOSE AREA	21	41	11	EXPOSED	STANDARD	VAR.	
02	KITCHEN	22	32	32	51	-	9'-2"	
03	MEETING ROOM	29	41	11	52	11	10'	
04	OFFICE	29	41	11	52	11	10'	
05	ELEC. / MECH. ROOM	67	41	11	52	11	10'	FINISHED CONCRETE WITH SEALER
06	STORAGE 3	21	41	11	52	11	10'	
07	STORAGE 2	21	41	11	52	11	10'	
08	STORAGE 1	21	41	11	52	11	10'	
09	HWOD / JANITORS CLOSET	43	41	11	52	11	10'	
10	H/C WASHROOM	26	41	11	52	11	10'	
11	WOMENS	26	41	11	52	11	10'	
12	MENS	26	41	11	52	11	10'	
13	HALLWAY	26	41	11	52	11	10'	
20A	OPEN OFFICE MEZZANINE (25M2)	25	41	11	52	11	VAR.	
20B	OPEN OFFICE MEZZANINE (51M2)	24	41	11	52	11	VAR.	
20C	OPEN OFFICE MEZZANINE (REMAINDER)	23	41	11	52	11	VAR.	
21	MENS	26	41	11	52	11	8'	
22	WOMENS	26	41	11	52	11	8'	
23	STORAGE 4	27	41	11	52	11	9'	
24	STORAGE 5	27	41	11	52	11	9'	

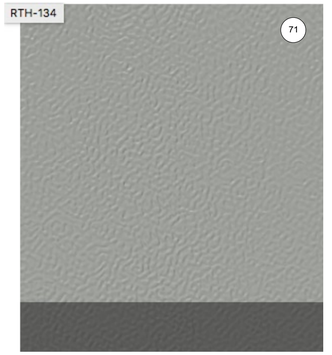
GENERAL



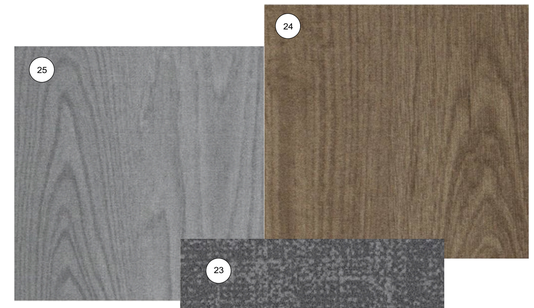


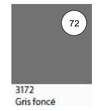
MULTI PURPOSE ROOM

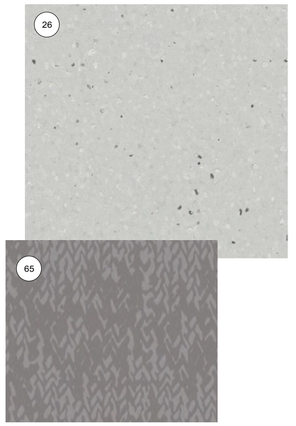
STAIRS

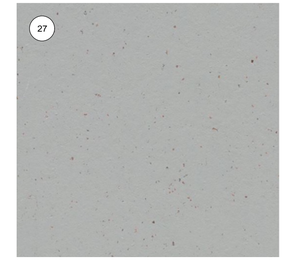


MEZZANINE

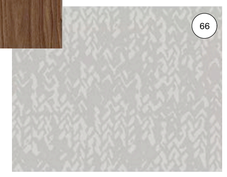




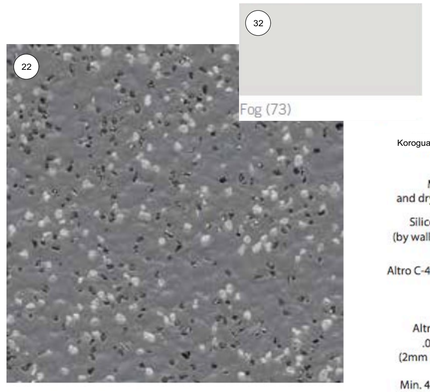


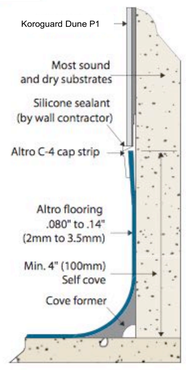


MEETING ROOM



KITCHEN





Rev.	Date 2020-11-04	Description ISSUE FOR TENDER
plot date	OCTOBER 1, 2018	drawing file
drawn by	AsK	checked by
scale		project number N1814

de Hoog & Kierulf architects

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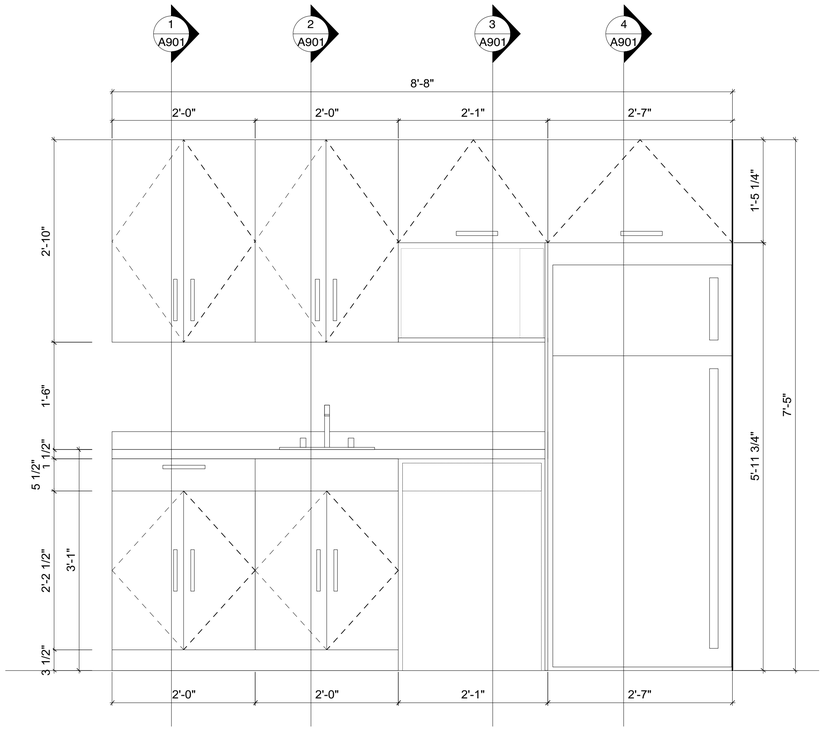
project name
Meadowood
1830 Galvin Place
Qualicum BC

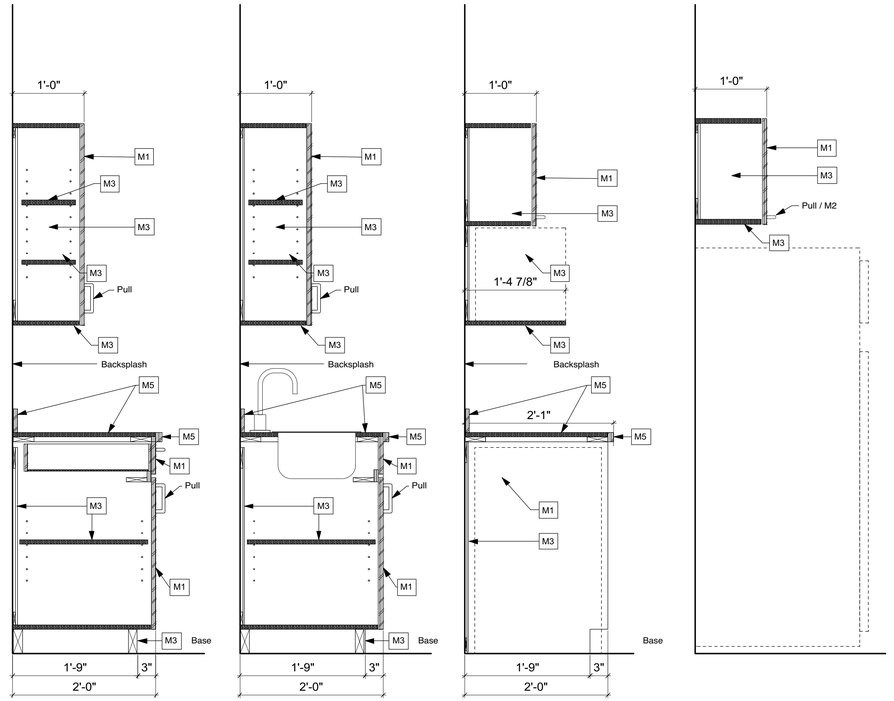
drawing title
INTERIOR FINISHING SCHEDULE

drawing no. A900

revision no.



5 Kitchenette Elevation
Scale: 1" = 1'-0"

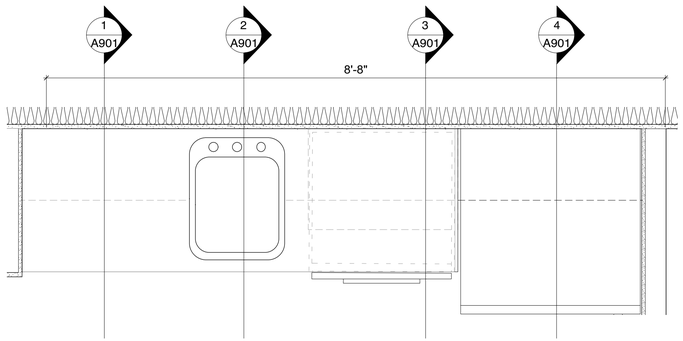


1 Section 1
Scale: 1" = 1'-0"

2 Section 2
Scale: 1" = 1'-0"

3 Section 3
Scale: 1" = 1'-0"

4 Section 3
Scale: 1" = 1'-0"



6 Plan View
Scale: 1" = 1'-0"

Board Room Finishing Schedule;

Style name: Solitude Style # 0648v Colour: Smoke 48506
M1 - Tafisa Viva Sunday Brunch M2005(Y)
M2 - Hardware Richilieu contempory metal pull 873 Brushed oil-rubbed bronze
M3 - Tafisa Viva Weekend Getaway M2003(Y)
M5 - Arborite High wear Silver Twill P381
P2 - Julian Tile Barnwood Grey DBWEM40
P3 - Sherwin-Williams, Pure White, SW 7005, (Wall Paint colour in General)
P4 - Johnsonite colour 121 Cement CB (Vinyl Baseboards)(in General)

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project name
Meadowood
1830 Galvin Place
Qualicum BC

drawing title
BOARD ROOM KITCHENETTE

drawing no. A901

revision no.

PLUMBING SYMBOL SCHEDULE

- GATE VALVE
- PRESSURE REDUCING VALVE
- GLOBE VALVE
- VALVE CHECK
- BALANCING VALVE
- PIPE ELBOW DOWN
- PIPE ELBOW/TEE UP
- PIPE TEE DOWN
- PIPE CAP
- PIPE BREAK
- PIPE UNION
- PIPE FLOW DIRECTION ARROW
- PIPE TRAP
- PIPE CLEANOUT TO GRADE
- HOSE BIB
- FLOOR DRAIN
- PLUMBING VENT

HVAC SYMBOL SCHEDULE

- SUPPLY DUCT
- RETURN DUCT
- EXHAUST DUCT
- MITERED DUCT ELBOW W/ VANES
- ANGLED DUCT ELBOW W/ VANES
- DUCT ELBOW 1R
- DUCT ELBOW 1.5R
- DUCT WITH EXTERNAL INSULATION
- DUCT TRANSITION
- DUCT TAKEOFF
- RETURN GRILLE
- EXHAUST GRILLE
- SUPPLY AIR DIFFUSER SQUARE

CIRCULAR RECTANGULAR

- DUCT BREAK
- FLOW DIRECTION ARROW
- BALANCE DAMPER
- DOOR UNDERCUT

FIXTURES CONNECTION SCHEDULE

TAG	FIXTURE	TYPE	DOMESTIC COLD WATER		DOMESTIC HOT WATER		COMBINED	SANITARY		SANITARY VENT	
			FU	SIZE	FU	SIZE	FU	FU	SIZE	FU	SIZE
DW-1	DISHWASHER - DOMESTIC	PUBLIC	-	-	1.40	1/2"Ø	1.40	-	1-1/2Ø	-	-
FD-1	FLOOR DRAIN	-	-	-	-	-	-	-	3"Ø	-	-
HB-1	HOSE BIBB	PUBLIC	2.50	1/2"Ø	-	-	2.50	-	-	-	-
HD-1	HUB DRAIN	PUBLIC	-	-	-	-	-	-	1-1/2"Ø	-	-
JS-1	SINK - SERVICE	PUBLIC	2.25	1/2"Ø	2.25	1/2"Ø	3.00	3.00	1-1/2"Ø	3.00	1-1/2"Ø
LAV-1	LAVATORY - 8.3LPM OR LESS	PUBLIC	1.50	1/2"Ø	1.50	1/2"Ø	2.00	1.50	1-1/2Ø	1.50	1-1/2Ø
SK-1	SINK - KITCHEN DOMESTIC, 8.3LPM	PUBLIC	1.00	1/2"Ø	1.00	1/2"Ø	1.40	1.50	1-1/2Ø	1.50	1-1/2Ø
UR-1	URINAL - DIRECT FLUSH VALVE	PUBLIC	*	3/4"Ø	-	-	*	4.00	2"Ø	4.00	1-1/2Ø
WC-1	WATER CLOSET - FLUSH TANK	PUBLIC	2.20	1/2"Ø	-	-	2.20	4.00	4"Ø	4.00	-
WC--2	WATER CLOSET - FLUSH TANK	PUBLIC	2.20	1/2"Ø	-	-	2.20	4.00	4"Ø	4.00	-

GRILLE & DIFFUSER SCHEDULE

TAG	MANUFACTURER	MODEL	SERVICE	FINISH	MOUNTING	REMARKS
DG-1	EH PRICE	530	TRANSFER	B-12	DOOR	-
E-1	EH PRICE	500	EXHAUST	B-12	SURFACE	-
L-1	AIROLITE	K6744	OUTDOOR	B-12	SURFACE	-
R-1	EH PRICE	530	RETURN	B-12	SURFACE	-
S-1	EH PRICE	500	SUPPLY	B-12	SURFACE	-
S-2	EH PRICE	RCD	SUPPLY	B-12	DUCT	-
T-1	EH PRICE	530	TRANSFER	B-12	SURFACE	-

STORM LOAD SUMMARY - BASED ON 10MM/15 MIN RAIN FALL

DESCRIPTION	AREA: m² (ft²)	LITERS
MAIN ROOF	395 (4230)	3,926
LARGE CANOPY	30 (320)	300
N.W. SMALL CANOPY	2 (19)	18
W. SMALL CANOPY	2 (19)	18
S. SMALL CANOPY	2 (19)	18
TOTAL	430 (4610)	4,280 - 6"Ø @ 1% SLOPE

BUILDING WATER SERVICE

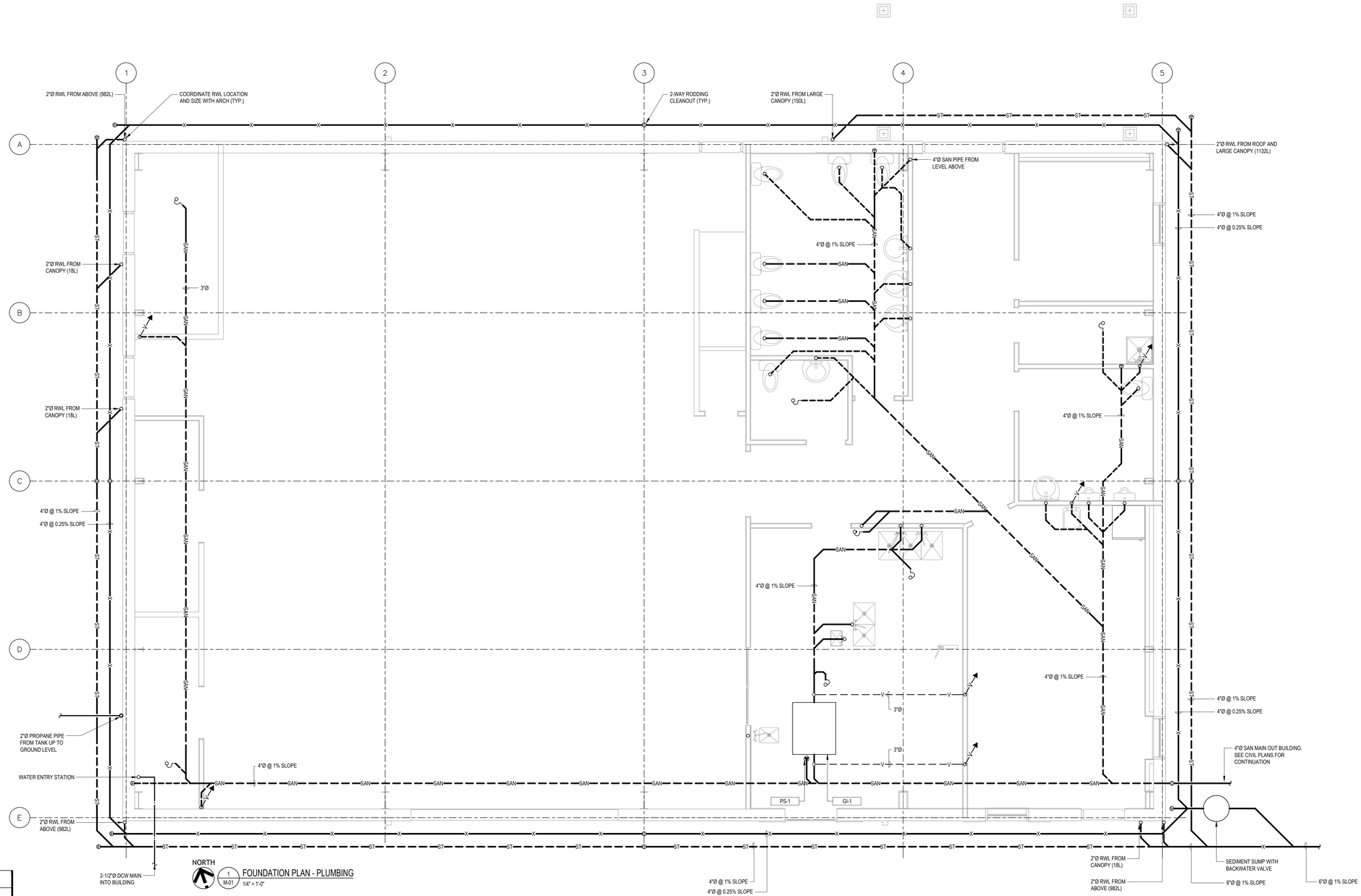
DESCRIPTION	SPACE TYPE	DOMESTIC LOAD	PIPE SIZE REQ.
TOTAL LOAD	COMMERCIAL	134 FU	2"Ø

SANITARY LOAD SUMMARY

DESCRIPTION	SPACE TYPE	SANIARY LOAD	PIPE SIZE REQ.
TOTAL LOAD	COMMERCIAL	75 FU	4"Ø

PROPANE LOAD SUMMARY

DESCRIPTION	SPACE TYPE	LOAD (BTUH)	PIPE SIZE REQ.
TOTAL LOAD	COMMERCIAL	1,191,000	2"Ø



DRAWING LIST

DWG #	TITLE	SCALE
M-01	FOUNDATION PLAN - PLUMBING	1/4" : 1'-0"
M-02	MAIN FLOOR PLAN - SANITARY	1/4" : 1'-0"
M-03	MAIN FLOOR PLAN - DOMESTIC WATER	1/4" : 1'-0"
M-04	MEZZANINE FLOOR PLAN - PLUMBING	1/4" : 1'-0"
M-05	MAIN FLOOR PLAN - HVAC	1/4" : 1'-0"
M-06	MEZZANINE FLOOR PLAN - HVAC	1/4" : 1'-0"
M-07	ROOF PLAN - MECHANICAL	1/4" : 1'-0"
M-08	MECHANICAL SCHEDULES	N.T.S.
M-09	MECHANICAL DETAILS	N.T.S.
M-10	MECHANICAL SPECIFICATIONS	N.T.S
M-11	MECHANICAL SPECIFICATIONS	N.T.S

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SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	04 NOV 2020	ISSUED FOR TENDER	TB
3	03 NOV 2020	TENDER REVISION	TB
2	29 OCT 2020	TENDER COORDINATION	TB
1	22 SEP 2020	COORDINATION	TB

REVISIONS:

SEAL:

CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:

MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

FOUNDATION PLAN - PLUMBING

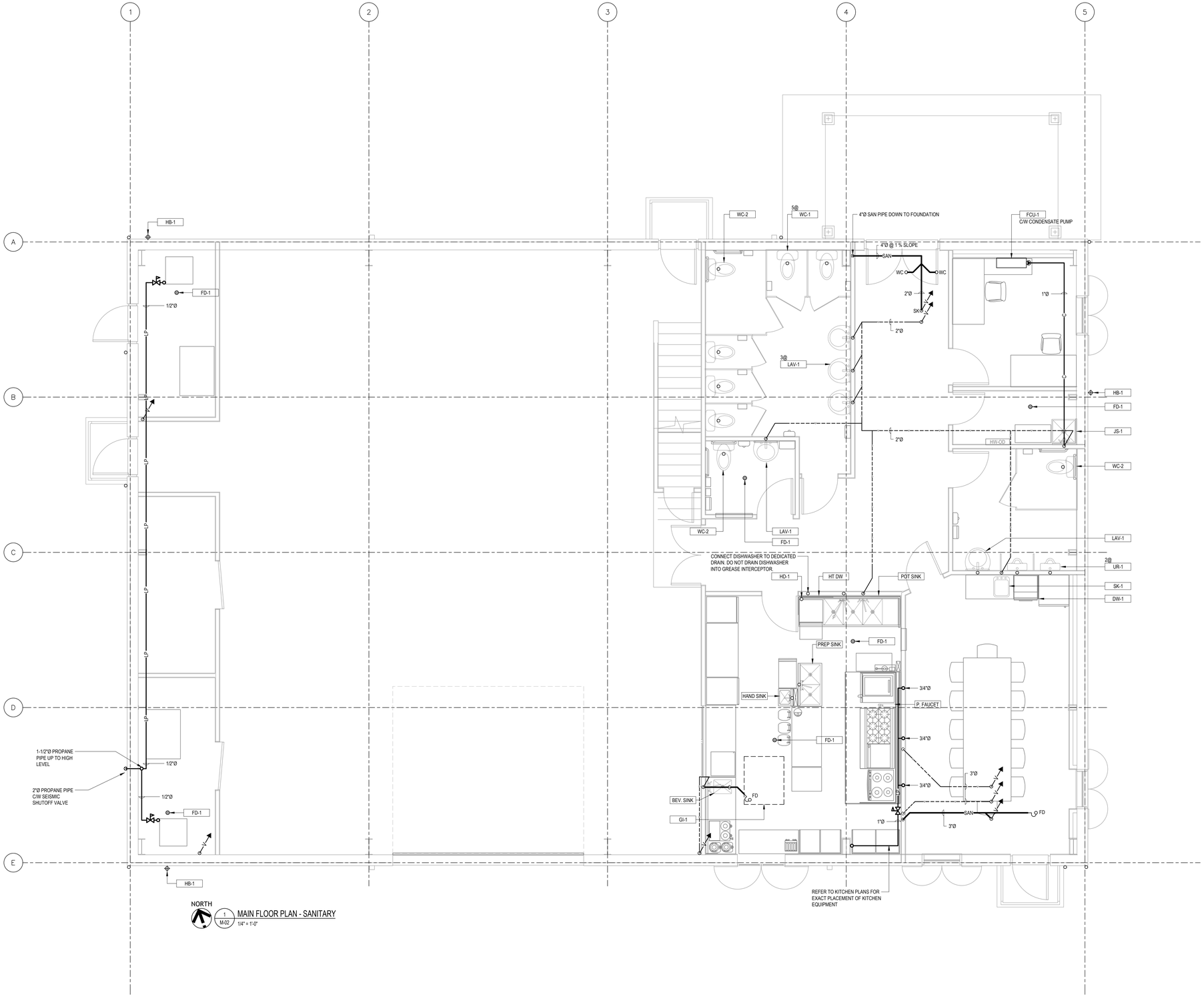
PROJECT NUMBER:

20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-01



NORTH

1 / M-02 MAIN FLOOR PLAN - SANITARY

1/4" = 1'-0"

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102 - SENTON ROAD

NANAIMO, BC - V9T 2H1

SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	04 NOV 2020	ISSUED FOR TENDER	TB
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1	22 SEP 2020	COORDINATION	TB

REVISIONS:

SEAL:

CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:

MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

MAIN FLOOR PLAN - SANITARY

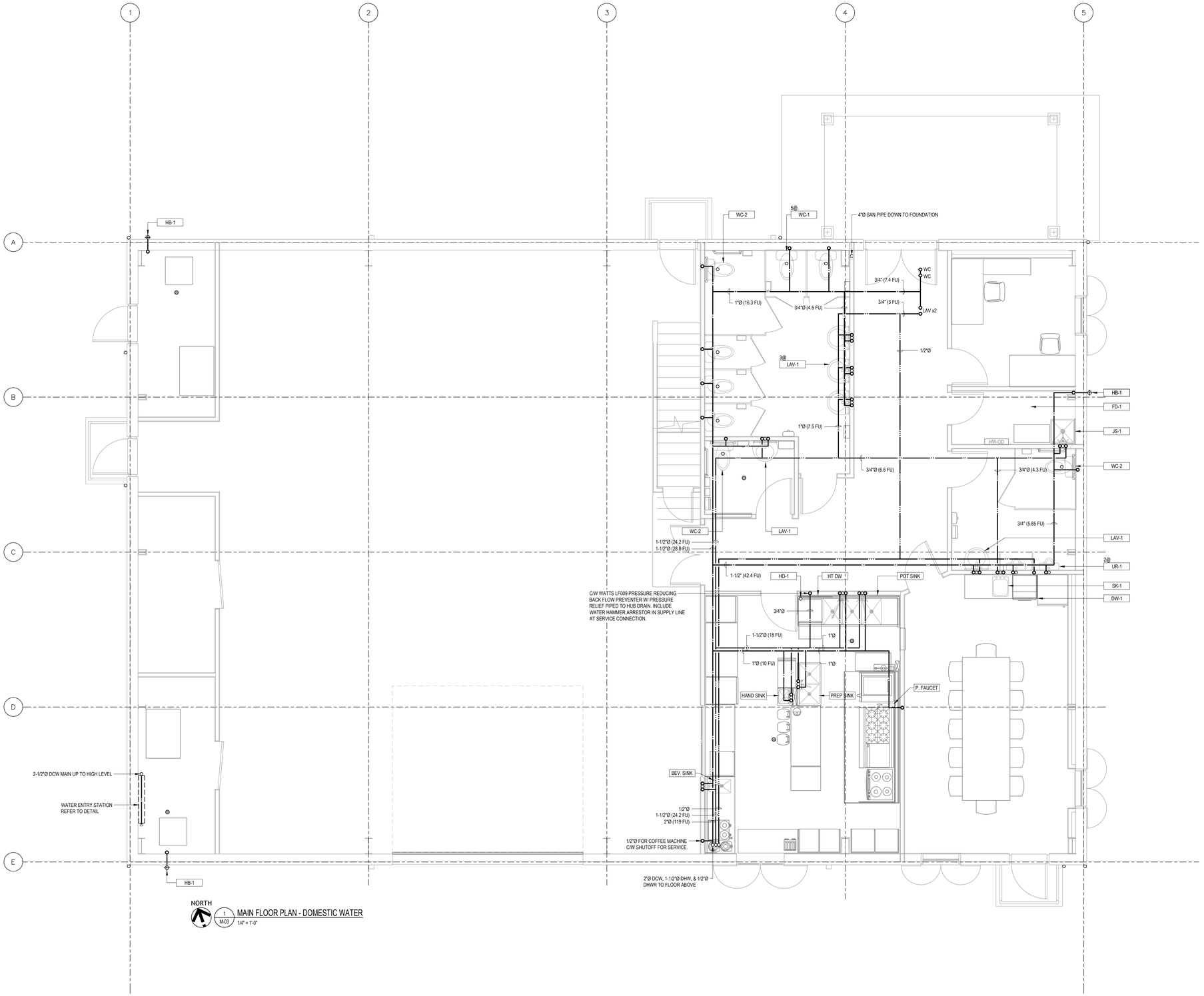
PROJECT NUMBER:

20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-02



1 M-03 MAIN FLOOR PLAN - DOMESTIC WATER
1/4" = 1'-0"

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SUB-CONSULTANT:

KEYPLAN:

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1	22 SEP 2020	COORDINATION	TB

REVISIONS:

SEAL:

CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:

MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

MAIN FLOOR PLAN - DOMESTIC WATER

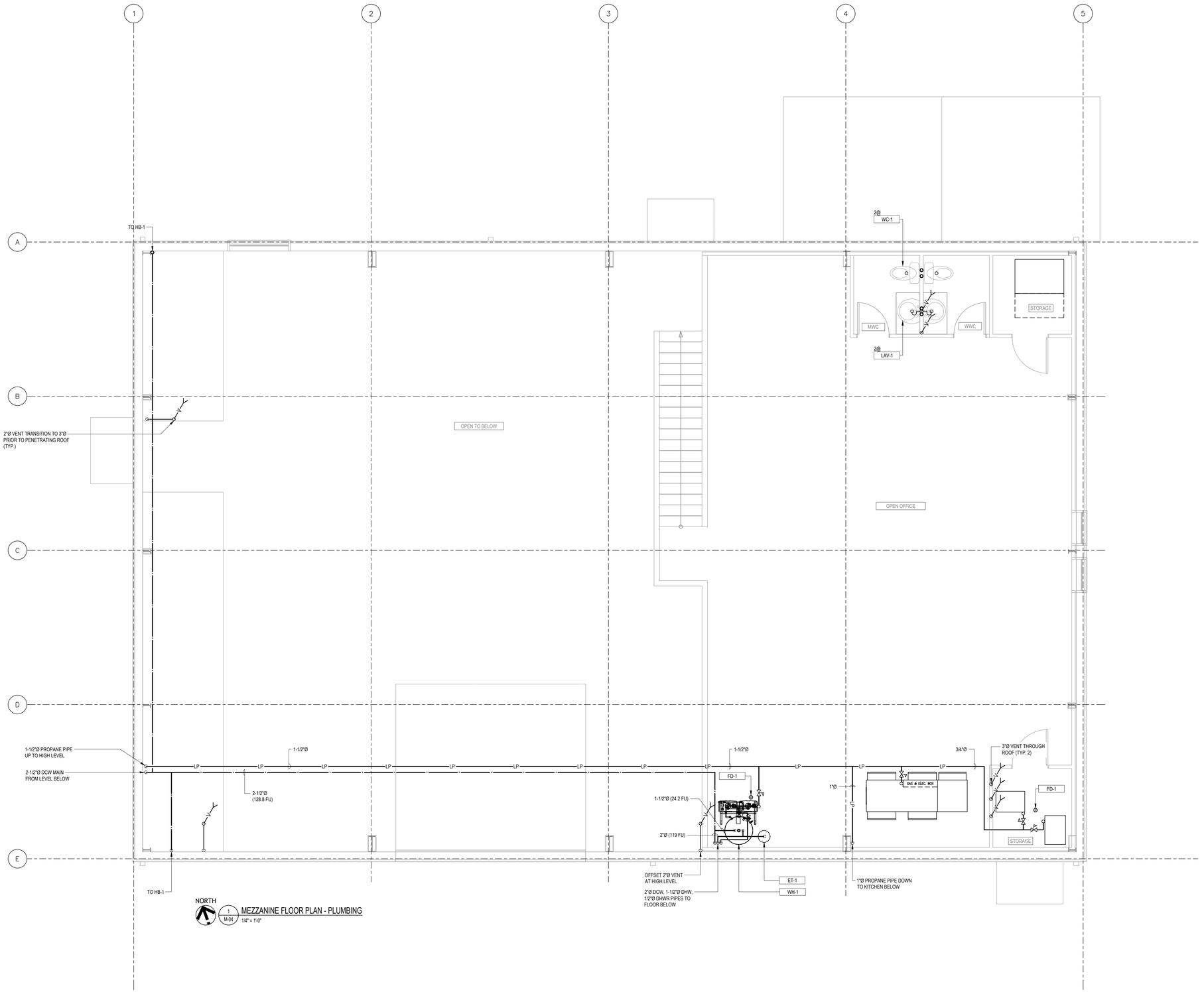
PROJECT NUMBER:

20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-03



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KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	04 NOV 2020	ISSUED FOR TENDER	TB
3	03 NOV 2020	TENDER REVISION	TB
2	29 OCT 2020	TENDER COORDINATION	TB
1	22 SEP 2020	COORDINATION	TB

REVISIONS:

SEAL:

CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:

MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

MEZZANINE FLOOR PLAN - PLUMBING

PROJECT NUMBER:

20437-N

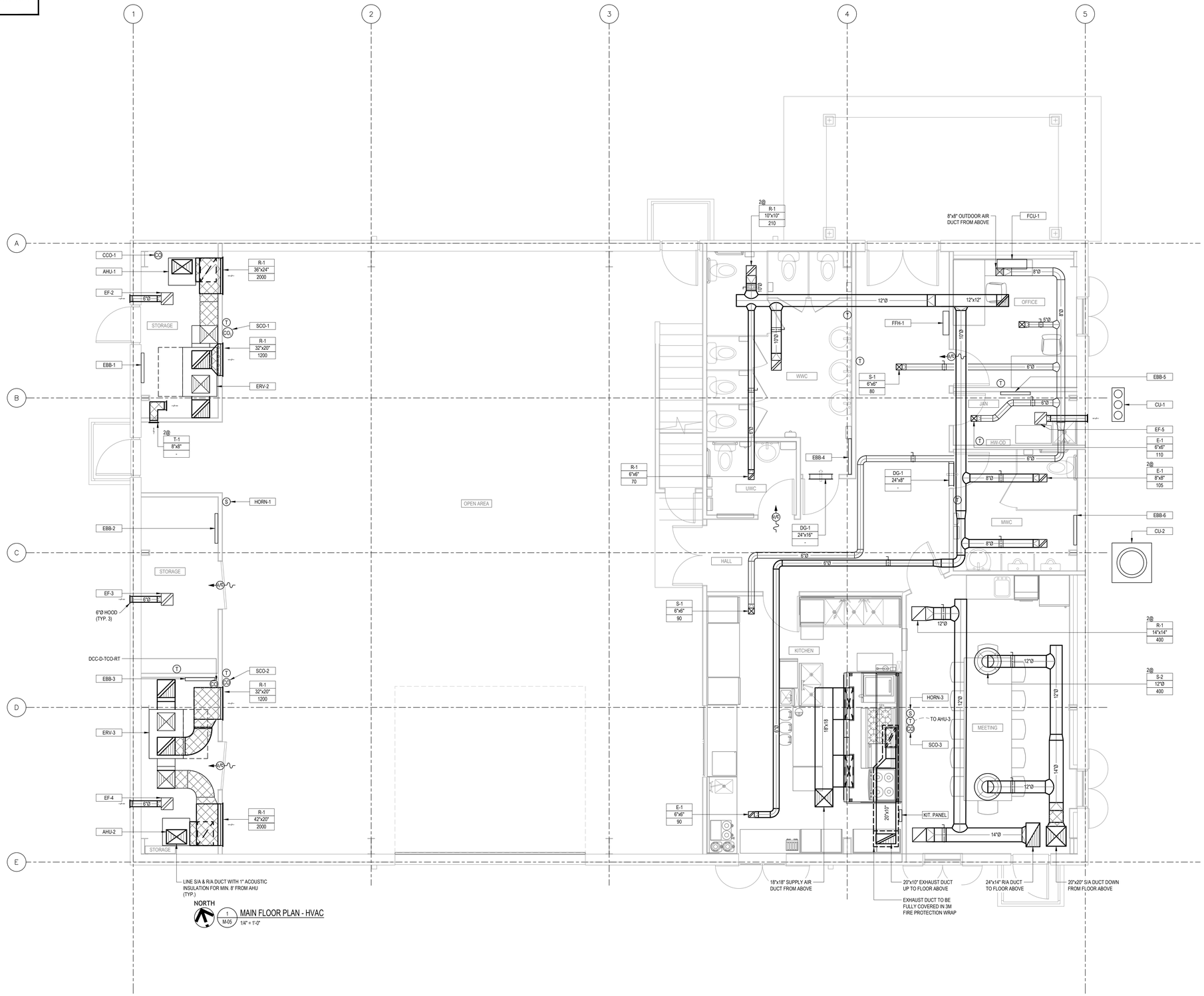
DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-04

DRAWING NOTE:

1. GAS SOLENOID VALVE TO BE INSTALLED ON PROPANE SUPPLY PIPE TO KITCHEN BY CONTRACTOR RESPONSIBLE FOR PROPANE PIPING INSTALLATION.
2. INSTALLATION OF KITCHEN HOOD AND ASSOCIATED DUCT WORK TO COMPLY WITH NFPA-96-2014.



NORTH

1 / M-05 MAIN FLOOR PLAN - HVAC
1/4" = 1'-0"

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CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:

MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

MAIN FLOOR PLAN - HVAC

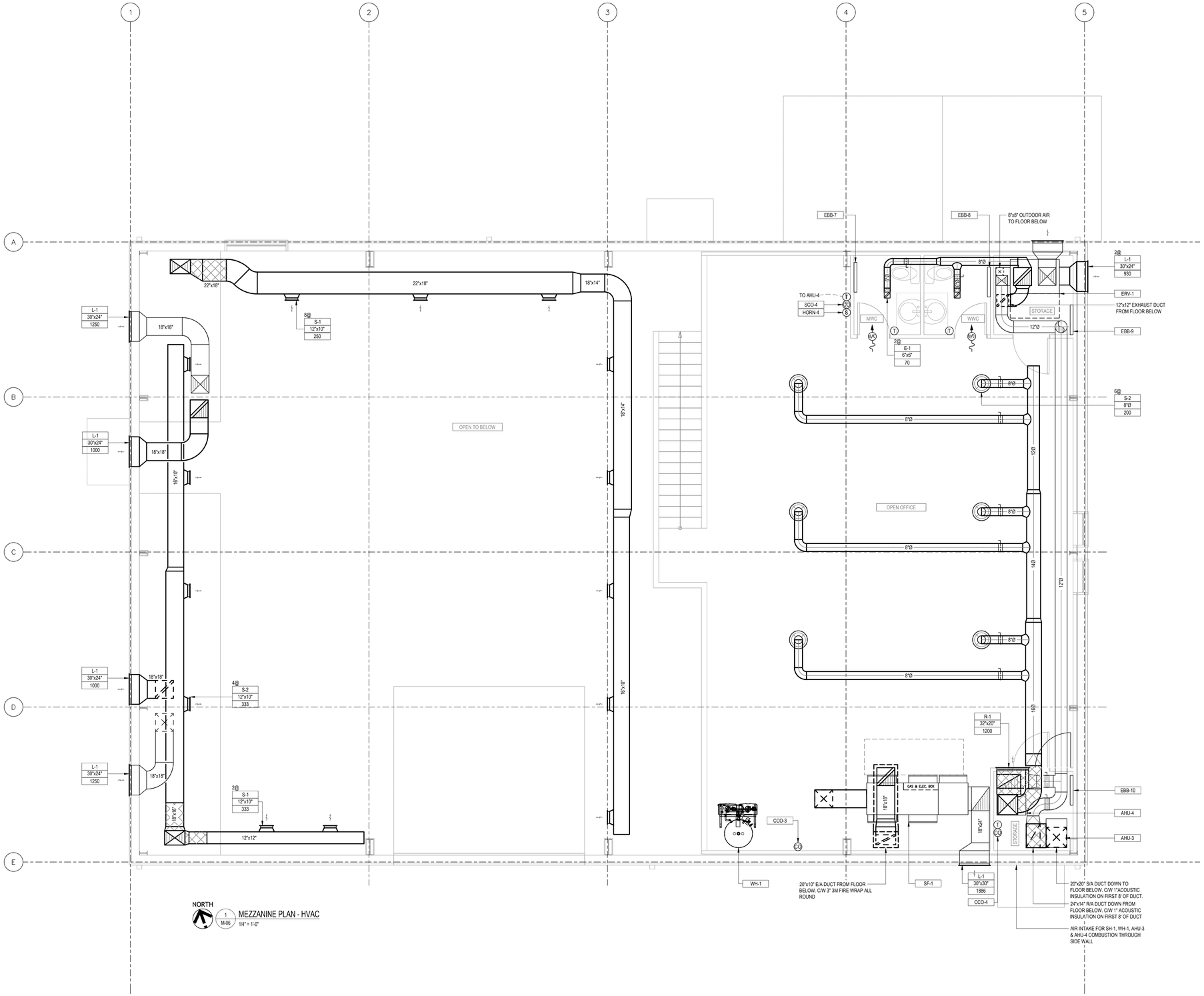
PROJECT NUMBER:

20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-05



1 M-06 MEZZANINE PLAN - HVAC
1/4" = 1'-0"

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PROJECT:

MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

MEZZANINE FLOOR PLAN - HVAC

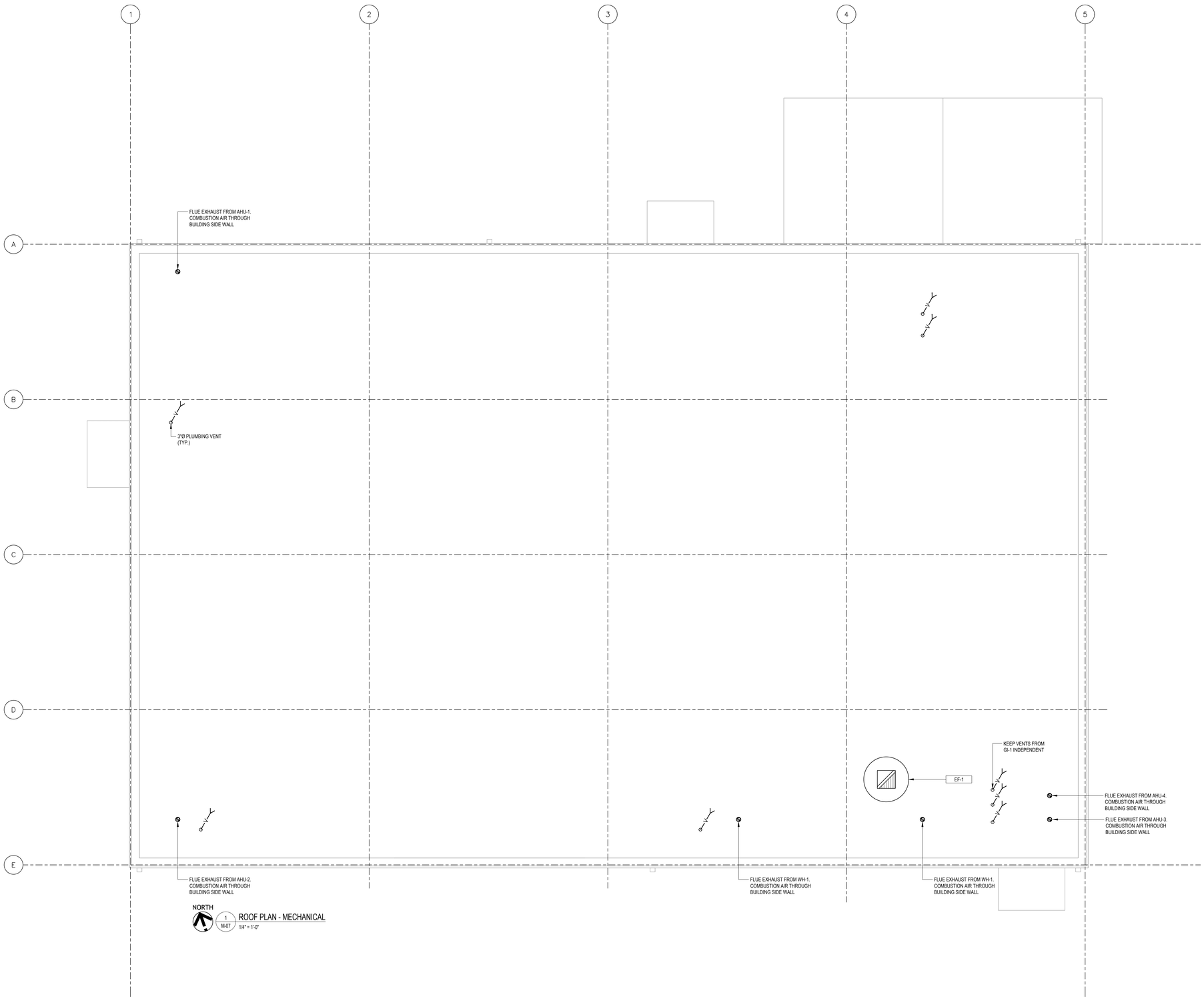
PROJECT NUMBER:

20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-06



1 M-07 ROOF PLAN - MECHANICAL
1/4" = 1'-0"

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MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:

ROOF PLAN - MECHANICAL

PROJECT NUMBER:

20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-07

HOT WATER TANK SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	EFF (%)	CAPACITY (USG)	FIRST HOUR DELIVERY (USG)	FUEL (N/P/E)	BURNER MIN. INPUT (BTUH)	BURNER MAX. INPUT (BTUH)	PROPANE SUPPLY PRESSURE	ELECTRICAL			MCA	MOP	SHIPPING WEIGHT	CONTROL	COMMENTS
WH-1	RINNAI	DEMAND DUO 2	MEZZANINE	DOMESTIC WATER	97	119	543	9	30,400	398,000	8.0-13.5	120V	1 PH	60Hz	5.5	-	530 LBS	AUQUASTAT	1,2,3,4

COMMENTS:

1. ELECTRONIC BY-PASS FLOW CONTROL
2. C/W GRUNDFOS UPS 26-250 (S)F; 3 SPEED RECIRC. PUMP
3. INCLUDE SEISMIC RESTRAINTS
4. PROVIDE DEDICATED WALL OUTLET TO SUPPLY POWER TO UNIT

EXPANSION TANK SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	SIZE (DIA. x HEIGHT)	CAPACITY (USG)	MAX PRESSURE (PSI)	SHIPPING WEIGHT	COMMENTS
ET-1	AMTROL	ST-12-C	MEZZANINE	DEMAND DUO 2	12"x18"	6.4	150	26 LBS	1,2

COMMENTS:

1. C/W ALL REQUIRED OPENINGS AND TAPPINGS, ASME RATED
2. C/W HEAVY DUTY REMOVABLE/REPLACEABLE BLADDER

GREASE INTERCEPTOR SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	SIZE (W x L x H)	INLET/OUTLET SIZE	FLOW RATE (GPM)	GREASE CAPACITY (LBS)	APPROX. WEIGHT	NO. OF COVERS	REMARKS
GI-1	ZURN	Z11272-UN	KITCHEN	KITCHEN	40" x 48.25" x 30.125"	4" DIA.	125	250	536 LBS	2	1,2,3

COMMENTS:

1. C/W SENSOR AND DISPLAY BOX TO ALERT HIGH GREASE LEVEL
2. DO NOT CONNECT DISHWASHER TO GREASE INTERCEPTOR
2. C/W SUMP PUMP IN KITCHEN PIT

AIR HANDLING UNIT SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	VENT & INTAKE PIPE SIZE (IN)	FUEL (N/P)	INPUT (BTUH)	OUTPUT (BTUH)	AIR FLOW (CFM)	ESP ("wc)	ELECTRICAL			MOTOR FLA	COOLING COIL (TONS)	SHIPPING WEIGHT	CONTROL	COMMENTS
AHU-1	LENNOX	SLP98UH110XV60C	NORTH L1 STORAGE	MP ROOM	2/2	P	110,000	106,000	2000	0.8	120V	1 PH	60Hz	13	5	175 LBS	T'STAT	1,3,4
AHU-2	LENNOX	SLP98UH110XV60C	SOUTH L1 STORAGE	MP ROOM	2/2	P	110,000	106,000	2000	0.8	120V	1 PH	60Hz	13	5	175 LBS	T'STAT	1,3,4
AHU-3	LENNOX	SLP98DF070XV36B	SOUTH L2 STORAGE	MEETING	2/2	P	66,000	64,000	800	0.8	120V	1 PH	60Hz	8	2	138 LBS	T'STAT	2,3,5
AHU-4	LENNOX	SLP98UH090XV36C	SOUTH L2 STORAGE	MEZZANINE	2/2	P	88,000	85,000	12,000	0.8	120V	1 PH	60Hz	8	3	155 LBS	T'STAT	1,3,4

COMMENTS:

1. UPFLOW ORIENTATTION
2. DOWNFLOW ORIENTATION
3. C/W 2" FILTER RACK
4. PROVIDE COIL FOR FUTURE AC/HP INSTALLATION
5. C/W HEAT PUMP COIL

SUPPLY AIR FAN SCHEDULE

NOTE:

1. FOR ADDITIONAL INFORMATION ON SF-1 CONSULT SPRING AIR DETAILS
2. MINIMUM CLEARANCE FOR MAINTENANCE AT THE UNIT INLET 36".

SF-1 ENGINEERING DATA:		
	MODEL NO.:	SAA10-DFBIH
2.	DESIGN:	INDOOR
3.	WEIGHT:	501 lbs
4.	ARRANGEMENT:	HORIZONTAL DISCHARGE
5.	SUPPLY VOLUME:	1886 CFM
6.	EXTERNAL STATIC PRESSURE:	0.45" W.C.
7.	SUPPLY FAN:	DELHI 810
8.	SUPPLY FAN MOTOR: TEFC	1.5 HP 220V/1/60
9.	SUPPLY FAN RPM:	1109 RPM
10.	SUPPLY FILTERS:	2" REPLACEABLE
	REPLACEABLE MEDIA IN INLET COWL:	N/A
11.	GAS HEATER:	MAXON
	MODEL:	DIRECT GAS FIRED
11A	DESIGN INPUT:	102000 BTU/HR
11B	MAXIMUM INPUT RATING:	155000 BTU/HR
11C	INLET PIPE:	1/2" INLET PIPE
11D	FUEL:	PROPANE
11E	FUEL PRESSURE:	7-14" W.C.
11F	FUEL VOLUME:	62 SCFH
11G	APPROVAL:	ETL
12.	TEMPERATURE CONTROL:	FULL MODULATION
	TURNDOWN RATIO:	30:1
	ELECTRONIC:	MAXITROL
	ROOMSTAT:	N/A
	AMBIENSTAT:	N/A
	INTERLOCKS:	TO RPD-PA11-MW-CT-ML-AS-BC PANEL
13.	REMOTE STATION:	
	FAN ON/OFF SWITCH:	YES
	SUMMER/WINTER SWITCH:	YES
	FAN ON LIGHT:	YES
14.	ELECTRICAL:	
	DISCONNECT SWITCH:	30 AMP
	MOTOR STARTERS & O / L: SHIP LOOSE:	UNIT MOUNTED
	CONTROL TRANSFORMER:	LINE VOLTAGE / 120V / 24V
15.	DAMPERS:	
	RETURN AIR:	N/A
	FRESH AIR INLET:	MOTORIZED INLET
16.	HEATED SUPPLY AIR DISCHARGE:	15.44" x 17.63"
17.	UNHEATED SUPPLY AIR DISCHARGE:	N/A
18.	DAMPER MOTOR CONTROL:	N/A
19.	INLET COWL AND FILTERS:	NO
20.	V BANK FILTERS:	2" ALUMINUM
21.	FAN ISOLATORS:	RUBBER PADS
22.	HEATED AIR TO THE HOOD:	N/A
23.	UNHEATED FRESH AIR:	N/A
24.	ACCESSORIES:	N/A

EXHAUST FAN SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	AIR FLOW (CFM)	TOTAL STATIC ("wc)	REV (RPM)	SONES	MOTOR POWER	ELECTRICAL			FLA	SHIPPING WEIGHT	COMMENTS
EF-1	SPRING AIR SYSTEMS INC.	XF-B2210 VCR210XP	ROOF	KITCHEN HOOD	1982	1.68	1472	17.3	1.5 HP	220V	1 PH	60Hz	10	381 LBS	1
EF-2	GREENHECK	SP-B70	NORTH L1 STORAGE	NORTH L1 STORAGE	55	0.22	675	0.9	0.01 HP	115V	1 PH	60Hz	-	11 LBS	2,3
EF-3	GREENHECK	SP-B50	WEST L1 STORAGE	WEST L1 STORAGE	45	0.19	625	2.0	0.02 HP	115V	1 PH	60Hz	-	11 LBS	2,3
EF-4	GREENHECK	SP-B50	SOUTH L1 STORAGE	SOUTH L1 STORAGE	45	0.19	625	2.0	0.02 HP	115V	1 PH	60Hz	-	11 LBS	2,3
EF-5	GREENHECK	SP-A125	JANITOR CLOSET	JANITOR CLOSET	120	0.19	1,100	0.5	0.01 HP	115V	1 PH	60Hz	-	19 LBS	2,3

COMMENTS:

1. CONSULT SPRING AIR DETAILS FOR MORE INFORMATION ON EF-1
2. C/W 24 HOUR TIMECLOCK, TO RUN DURING NORMAL OPERATING HOURS
3. PROVIDE SERVICE SWITCH ON FAN

FAN COIL UNIT SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	AIR FLOW (CFM)	NOMINAL COOLING (BTUH)	NOMINAL HEATING (BTUH)	SEER/EER	HIGH SIDE PIPE SIZE (IN)	LOW SIDE PIPE SIZE (IN)	CONDENSATE CONNECTION (IN)	REFRIGERANT TYPE	SHIPPING WEIGHT	COMMENTS
FCU-1	SAMSUNG	AC012MNADCH/AA	L1 OFFICE	L1 OFFICE	194/247/300	12,000	14,000	18 / 9.8	1/4	3/8	11/16 OD	R410A	17 LBS	1,2,3

COMMENTS:

1. POWERED BY OUTDOOR UNIT CU-1
2. C/W PROGRAMMABLE T'STAT
3. C/W CONDENSATE PUMP TO TIE INTO NEAREST CONVENIENT STACK
4. C/W INLINE CONDENSATE NEUTRALIZER

CONDENSER SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SERVING	NOM. CAPACITY (TONS)	REFRIGERANT TYPE	HIGH SIDE PIPE SIZE (IN)	LOW SIDE PIPE SIZE (IN)	ELECTRICAL			MOP	MCA	SHIPPING WEIGHT	COMMENTS
CU-1	SAMSUNG	AC012KXADCH/AA	OUTDOOR	FCU-1	1	R410A	1/4	3/8	203/230 V	1 PH	60Hz	15	10.7	381 LBS	1,2,3
CU-2	LENNOX	XP20-024-230	OUTDOOR	AHU-3	2	R410A	3/8	3/4	208/203 V	1 PH	60Hz	30	19.1	247 LBS	1,2

COMMENTS:

1. PROVIDE PAD FOR OUTDOOR MOUNTING
2. PROVIDE DISCONNECT SWITCH ON BUILDING EXTERIOR
3. CU-1 PROVIDES POWER TO FCU-1

ENERGY RECOVERY VENTILATOR SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	SUPPLY AIR FLOW (CFM)	EXHAUST AIR FLOW (CFM)	S/A ESP ("wc)	E/A ESP ("wc)	O/A TEMP	ELECTRICAL			MOP	MCA	SHIPPING WEIGHT	COMMENTS
ERV-1	RENEW AIRE	1.5XINV	L2 NORTH STORAGE	840	820	1.46	1.43	15.8°F	208/230 V	1 PH	60Hz	15	8	571 LBS	1,2,3,4,6
ERV-2	RENEW AIRE	1.5XINV	L1 NORTH STORAGE	1250	1200	0.75	0.80	15.8°F	208/230 V	1 PH	60Hz	15	8	571 LBS	1,2,3,4,6
ERV-3	RENEW AIRE	1.5XINV	L1 SOUTH STORAGE	1250	1200	0.75	0.80	15.8°F	208/230 V	1 PH	60Hz	15	8	571 LBS	1,2,3,5,6

COMMENTS:

1. C/W 4 OF 2" MERV-13 FILTERS
2. C/W 2 OF 1 HP ECM MOTORS
3. C/W BACKDRAFT DAMPERS
4. C/W 24 HOUR DIGITAL TIME CONTROLLER
5. ACTIVATED BY CO2 DETECTOR
6. C/W DISCONNECT SWITCH FOR SERVICING

PUMP SCHEDULE

DESIGNATION	MANUFACTURER	MODEL	LOCATION	PUMP CAPACITY (GPM)	PUMP HEAD (FT)	MOTOR POWER (HP)	RPM	O/A TEMP	ELECTRICAL			AMPS	OPERATION	SHIPPING WEIGHT	COMMENTS
PS-1	ZOELLER	M-49	KITCHEN GI PIT	32	5	1/4	3450	15.8°F	115 V	1 PH	60Hz	4	FLOAT	11 LBS	1,2,3

COMMENTS:

1. MAX OPERATING TEMPERATURE OF 104°F

GAS DETECTION SYSTEM SCHEDULE

Gas Detection System Target Carbon Monoxide (CO) and Methane (CH4)

GDS-1	Provide a wall mount, field programmable control panel with back-lit, LCD digital display, LED alarm indication, and door mounted 90 dB audible alarm with silence / acknowledge switch. There shall be an LCD display of gas type, concentration measured, and alarm status. System controller shall be capable of supporting up to 128 digital transmitters on an RS485 Modbus network. The controller shall have 4 on board relays and shall support analog output modules (four only 4 - 20 mA outputs per module) and relay output modules (four or eight 5 A SPDT relays per module) if required. The system RS485 Modbus network wiring shall be 4-wire (2 low voltage power wires and a shielded twisted pair for the communication bus). The controller shall be CSA / UL / CE / FCC / IP tested and certified, and powered by 90 to 240 VAC, 47 to 63 Hz. The controller should be installed in a dry area if it does not have the optional key lock. If it is to be installed in an area that requires a water/dust tight enclosure the key lock version must be requested. If communication to a DDC/BMS is required, the FCS comes standard with Modbus output **Model FCS-8-M-DL** Provide remote mount digital sensor transmitters with capability for Carbon Monoxide (CO) from gas engine exhaust, with an electrochemical sensor for CO with a detection range of 0 - 200 ppm. The sensor transmitter shall be housed in a rugged, water/dust tight, wall mount, polycarbonate junction box with a secured, hinged door. The remote mount sensor transmitter shall operate on power supplied by the control panel and shall provide a Modbus digital output signal to the control panel. **Model CGAS-DP-CO for multi-purpose and offices area in white enclosure (CCO-1, CCO-2, CCO-3, & CCO-4)** Provide remote mount digital sensor transmitters with capability for Carbon Monoxide (CO) from gas engine exhaust, with an electrochemical sensor for CO with a detection range of 0 - 200 ppm. The sensor transmitter shall be housed in a rugged, water/dust tight, wall mount, polycarbonate junction box with a secured, hinged door. The remote mount sensor transmitter shall operate on power supplied by the control panel and shall provide a Modbus digital output signal to the control panel. **Model LTP-TCO, (SCO-1, SCO-2, SCO-3, & SCO-4)** The electrochemical CO gas sensors shall be capable of meeting government Occupational Health and Safety measurement standards for workplace exposure to toxic gases and vapors. Supply one sensor / transmitter for every 5000 to 7000 sq. ft. of area to be monitored. Install the sensor transmitters at 4' to 6' from the floor (breathing zone). Optionally, provide remote mount audible, visual (strobe/siren) alarm to be mounted at higher elevations, activated upon any high alarm condition to alert of gas build up beyond high alarm concentration. Provide remote mount sensor **Model CGAS-D-CCH4-100 (MH-1 and MH-2)** with a catalytic combustible sensor for methane with a detection range of 0 – 100% LEL. Supply one transmitter for every 5000 sq. ft of area to be monitored. The sensor / transmitter shall be housed in a rugged, wall mount, water/dust tight ABS/polycarbonate junction box with a secured, hinged door with a built-in gasket. The remote mount sensor mount at or near the ceiling (detecting lighter than air gases). Provide remote mount audible, visual (strobe/siren) alarm to be mounted at higher elevations, activated upon any high alarm condition to alert of gas build up beyond high alarm concentration. **Model RSA-24V (HORN-1, HORN-2, HORN-3, & HORN-4)** System operation shall be as follows: System relays are normally energized in non-gas-alarm state, so they act in fail-safe operation. System operation shall be as follows: Upon detection of 25 ppm CO, 10% LEL Combustibles (Propane/Methane) the system shall illuminate the Low alarm LED, the Low alarm relays (exhaust and/or make up air fans) will be activated immediately. The system shall keep the fans running for a minimum of 10 minutes to avoid cycling. Upon detection of 50 ppm CO, 15% LEL Combustibles (Methane) the system shall illuminate the Mid alarm LED and the Mid alarm relays will be activated, (only if any relays are assigned to mid alarm). The system shall keep the Mid relays active for a minimum of 10 minutes. Upon detection of 100 ppm CO, 20% LEL Combustibles (Methane) the system shall illuminate the High alarm LED, the High alarm relays and audible alarm will be activated. The system shall keep the High relays active for a minimum of 10 minutes. Audible alarm can be silenced from the front panel, silence button is imbedded in the Lexan label surrounding the display. Any remote alarm devices shall be activated at this alarm level as well. In all cases use liquid tight conduit hubs when entering any watertight enclosure types to maintain watertight status in any areas subject to potential wash down. Failure to do so voids any damage from any water intrusion. The contractor shall provide all wiring, conduit and interconnection required for a successful installation.

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SCHEDULES

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20437-N

DRAWN BY: TB
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SCALE: REFER TO VIEWS

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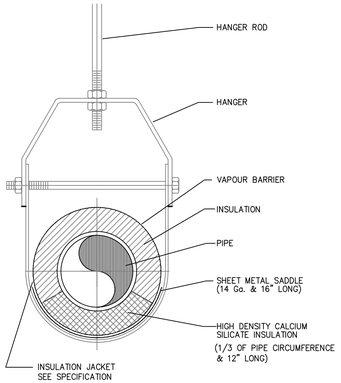
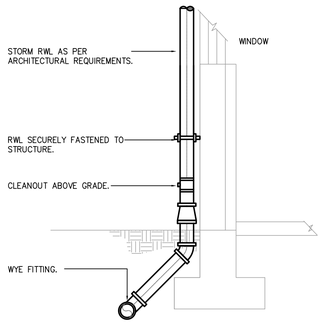
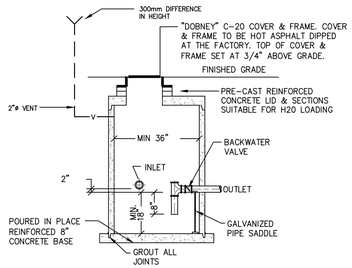


1 / M-9 INSULATED PIPE HANGER DETAIL
SCALE: N.T.S.

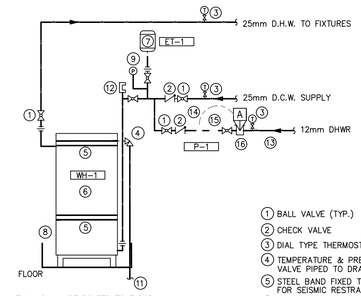


NOTE:
- DOWNSPOUTS LOCATIONS MUST BE COORDINATED BETWEEN GENERAL CONTRACTOR, PLUMBING CONTRACTOR AND CIVIL CONTRACTOR, SUCH THAT DOWNSPOUTS DROP STRAIGHT DOWN FROM BUILDING FACE TO BELOW GRADE WITH NO OFFSETS.
- ANY OFFSETS REQUIRED SHALL BE LOCATED AT HIGH LEVEL AND COORDINATED WITH CONSULTANT PRIOR TO INSTALLATION.
- THERE SHALL BE NO UNSAFE PROTRUSIONS FROM RISER CLAMPS, INSTALL IN A SAFE MANNER.

2 / M-9 EXPOSED RAIN WATER LEADER DETAIL
SCALE: N.T.S.



3 / M-9 SEDIMENT SUMP DETAIL
Scale: N.T.S.

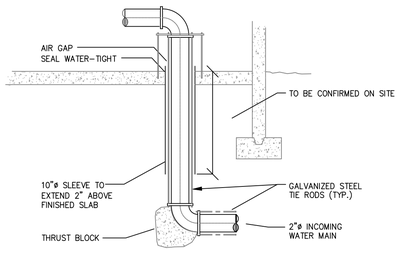


1. TANK SHALL BE BOLTED TO FLOOR

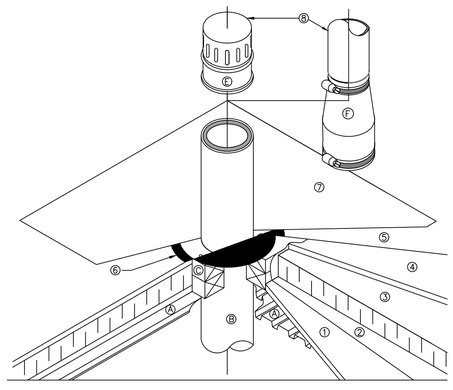
1. BALL VALVE (TYP.)
2. CHECK VALVE
3. DIAL TYPE THERMOSTAT
4. TEMPERATURE & PRESSURE VALVE PIPED TO DRAIN
5. STEEL BAND FIXED TO STRUCTURE FOR SEISMIC RESTRAINT
6. ELECTRIC DOMESTIC HOT WATER HEATER
7. NEW EXPANSION TANK (AMTROL – THERM-X-TROL MODEL ST-12C)
8. DRAIN PAN
9. PRESSURE GAUGE
10. SUPPORT RODS BOLTED OR WELDED TO STRUCTURE (SEISMICALLY RATED)
11. EXTEND DRAIN TO DRAIN TO FLOOR DRAIN
12. WATER HAMMER ARRESTOR WHA-1
13. CIRCUIT BALANCING VALVE
14. PUMP
15. STRAINER
16. AQUASTAT

4 / M-9 ELECTRIC DOMESTIC HOT WATER TANK DETAIL
Scale: N.T.S.

NOTES
1. REFER TO DRAWINGS FOR LOCATION AND PIPE SIZES.
2. REFER TO SPRINKLER STATION DETAIL FOR FIRE SYSTEM INFORMATION.
3. PROVIDE ALL BRACKETS, SUPPORTS & HANGERS AS REQUIRED.



5 / M-4 TYPICAL WATER ENTRY PIPE DETAIL
N.T.S.

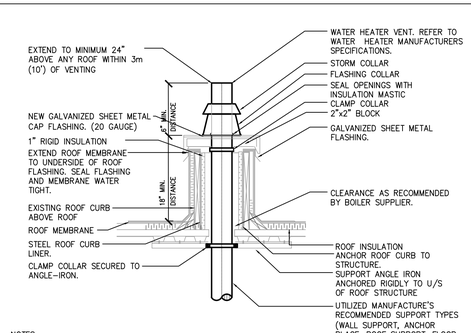


DETAIL NOTES
1. GYPSUM OVERLAY BOARD
2. VAPOUR RETARDER
3. INSULATION: SEE LIST OF ACCEPTED MATERIALS IN RGC STANDARD
4. INSULATION OVERLAY: SEE RGC STANDARD B4.1, B4.2 AND C4.1
5. PRIMARY MEMBRANE AND MEMBRANE PROTECTION
6. MASTIC: AS APPROVED BY MANUFACTURER
7. MEMBRANE FLASHING: ONTO PRIMED METAL FLASHING FLANGE OR ADHESIVE COATED FOR NON-BITUMINOUS FLEXIBLE MEMBRANE SYSTEMS.
8. STORM COLLAR, TYPICAL LEAD CAP OR TYPICAL ALUMINUM CAP: REROOFING ONLY. NON-BITUMINOUS FLEXIBLE MEMBRANE SKIRT COLLAR, SEALED WITH COMPATIBLE SEALANT AND STAINLESS STEEL HOSE CLAMPS FOR USE WITH PIPES THAT EXTEND ABOVE FLASHINGS.

RELATED WORK FOR COORDINATION BY TRADES
A. ACCEPTABLE DECK
B. PLUMBING STACK: EXTEND TO MATCH TOP OF METAL FLASHING. 3"ø DIA. UNLESS OTHERWISE NOTED
C. WOOD BLOCKING: OPTIONAL
D. METAL FLASHING: APPLY IN A BED OF MASTIC. FASTENED OVER MEMBRANE TO ROOF DECK.
E. TYPICAL ALUMINUM CAP: FOR USE WITH ALUMINUM FLASHINGS.
F. STORM COLLAR: NON-BITUMINOUS FLEXIBLE MEMBRANE SKIRT COLLAR, SEALED WITH COMPATIBLE SEALANT AND STAINLESS STEEL HOSE CLAMP. USE WITH PIPES THAT EXTEND ABOVE FLASHINGS.

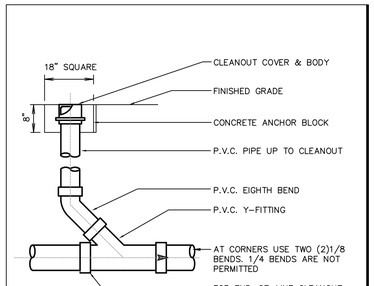
NOTE: REFER TO RGC GUARANTEE STANDARDS FOR ADDITIONAL REQUIREMENTS. ALUMINUM FLASHINGS REQUIRED FOR TORCH-APPLIED ROOF SYSTEMS.

6 / M-9 METAL PLUMBING VENT FLASHING
SCALE: N.T.S.

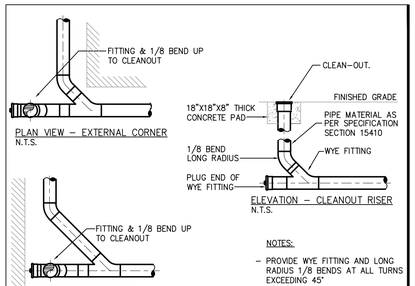


NOTES:
1. CONTRACTOR TO REMOVE EXISTING CHIMNEY PENETRATION THROUGH ROOF AND ALL CHIMNEY ABOVE ROOF. CONTRACTOR TO CONSTRUCT NEW ROOF CURB FOR NEW VENTS AS PER DETAIL.
2. TERMINATE VENT A MINIMUM OF 3 METERS (10') FROM ANY MECHANICAL VENTS OR BUILDING OPENINGS.
3. SEAL CURB AND INSTALL AS PER RCABC STANDARDS.

7 / M-9 MULT-VENT DETAIL
Scale: N.T.S.

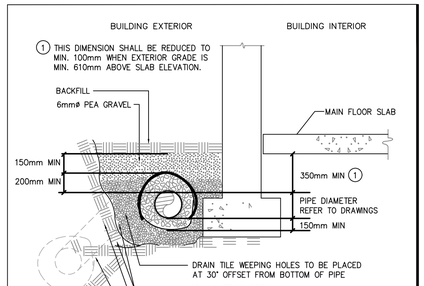


8 / M-9 CLEANOUT TO GRADE DETAIL
NT.S.

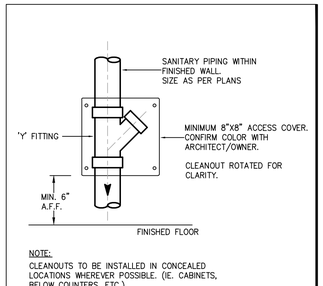


NOTES:
- PROVIDE WYE FITTING AND LONG RADIUS 1/8 BENDS AT ALL TURNS EXCEEDING 45°
- MECHANICAL CONTRACTOR SHALL DEMONSTRATE & TEST RUN ALL CLEANOUTS TO ARCHITECT.

9 / M-9 DRAINTILE CLEANOUT DETAIL
NT.S.



10 / M-9 PERIMETER DRAIN TILE DETAIL
NT.S.



NOTE:
CLEANOUTS TO BE INSTALLED IN CONCEALED LOCATIONS WHEREVER POSSIBLE. (IE. CABINETS, BELOW COUNTERS, ETC.) IN FINISHED ARERAS WHERE THIS IS NOT ACHIEVABLE,CONSULT WITH MECHANICAL ENGINEER PRIOR TO INSTALLATION.

11 / M-9 WALL CLEANOUT DETAIL
NT.S.

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NANAIMO, BC - V9T 2H1
ph. 250.585.0222

SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	04 NOV 2020	ISSUED FOR TENDER	TB
3	03 NOV 2020	TENDER REVISION	TB
2	29 OCT 2020	TENDER COORDINATION	TB
1	22 SEP 2020	COORDINATION	TB

REVISIONS:

SEAL:

CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:
MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:
MECHANICAL DETAILS

PROJECT NUMBER:
20437-N

DRAWN BY: TB
DESIGNED BY: TB
APPROVED BY: AM
SCALE: REFER TO VIEWS

DRAWING:
M-09

1 GENERAL INSTRUCTIONS, & BASIC MATERIALS & METHODS

1.1 References

.1 The General Conditions of the Contract, the Supplementary Conditions, and all Sections of Division 01 apply to and are a part of this Section of the Specification.

1.2 Submittals

.1 Prior to supplying products to the site, submit for review, digital copies of shop drawings and/or product data sheets indicating in detail the design, construction & performance of mechanical equipment, & all mechanical products except pipe & fittings, sleeves, escutcheon plates, ductwork, & similar items. Endorse shop drawings & product data sheets with "Certified to be in Accordance with all Requirements". Provide for:

.1 Furnaces
.2 Fan Coil Units
.3 Cooling Coils
.4 Condensing Units
.5 Mode Control Units
.6 Energy Recovery Ventilators
.7 Plumbing Fixtures
.8 Grilles, Registers, Diffusers and Louvres
.9 Water Heater
.10 Expansion Tank
.11 Gas Detection
.12 Controls
.13 Fire Stopping

.2 Read the following in conjunction with the wording on the Consultant's review stamp applied to shop drawings for product data sheets submitted:

"This review is for the sole purpose of ascertaining conformance with the general design concept. This review does not approve the detail design inherent in the shop drawings, responsibility for which remains with the Contractor & such review does not relieve the Contractor of the responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. Be responsible for dimensions to be confirmed & correlated at the job site, for information that pertains solely to fabrication process or to techniques of construction & installation, and for coordination of the work of all sub-trades."

.3 Submit the following to the Consultant:

.1 Project close-out documentation: O & M Manuals, record as-built drawings, and all associated data
.2 Progress payment breakdown: a detailed breakdown of the mechanical work cost suitable for evaluation of progress payments
.3 Extended warranties: copies of all extended warranties

1.3 Definitions

.1 The following are definitions of words found in this mechanical work Specification and on associated drawings:

.1 "Provide" (and tenses of provide) - means supply and install complete
.2 "Install" (and tenses of install) - means install and connect complete
.3 "Supply" - means supply only
.4 "Consultant" - means the Architect or Consulting Engineer who has prepared the Contract Documents on behalf of the Owner
.5 "Equal to"- means that a product proposed for installation, other than the specified product, must be equal to the specified product in size, materials of construction, performance, durability, & warranty requirements, & the final decision in this matter rests with the Consultant.

1.4 Codes, Regulations, and Standards

.1 Abide by the latest edition all Codes, Regulations, and Standards referred to and/or applied by governing authorities.
.2 Install to the requirements of the 2018 British Columbia Building Code, Authorities Having Jurisdiction, SMACNA Guidelines and as per the written instructions of the equipment manufacturers and suppliers.

1.5 Examination of Site

.1 Prior to submitting a bid, visit the site & review & include for existing site conditions.

1.6 Coordination of Work

.1 Coordinate all mechanical work with the work of other sections to avoid conflict.
.2 Locate distribution systems, equipment and materials to eliminate interference, conserve headroom and leave maximum usable space.
.3 Route piping and ductwork in an orderly manner, as indicated on the drawings. Generally follow routes parallel and perpendicular to building structure.
.4 If interference shou occur, the Consultant will review relocation of equipment and materials regardless of installation order. No installation shall proceed without complete coordination between all trades.
.5 Alter location of ducts or pipes at the direction from the Consultant without charge to the Owner, so long as the change is made before installation and does not necessitate additional materials.

1.7 Drawings and Specification

.1 Mechanical drawings are performance drawings, diagrammatic, show approximate locations of equipment & services, are intended to convey scope of work, & do not show architectural and structural details. Provide offsets, fittings, transformations, & similar products required as a result of obstructions & other architectural & structural details but not shown on drawings.

1.8 Planning and Layout of the Work

.1 Properly plan, coordinate, & establish locations & routing of services with subcontractors such that services will clear each other as well as any obstructions.
.2 Conceal work in partially finished or unfinished areas to the extent made possible by area construction. Install piping, to each other.

1.9 General Re: Installation of Equipment

.1 Unless otherwise specified install equipment in accordance with equipment manufacturers' recommendations & instructions. Governing Codes, Standards, & Regulations take precedence over manufacturer's instructions.

1.10 Permits, Fees, and Certificates

.1 Unless otherwise specified, apply for, obtain & pay for all permits required to complete the mechanical work. Furnish certificates and inspection certificates received from Authorities Having Jurisdiction, verifying that work installed conforms to necessary codes and standards.

1.11 Inspections of the Work

.1 Do not conceal any installation prior to review by the consultant or the appropriate inspection authority. Ensure 72 hours written notice is provided to each of these parties prior to requirement for an inspection of the work. This includes pressure tests of piping, drainage systems, ductwork, safety devices etc.

1.12 Workplace Safety

.1 Comply with requirements of the Workplace Hazardous Materials Information System (WHMIS). Submit WHMIS MSDS (Material Safety Data Sheets) for products where required, & maintain 1 copy at the site.
.2 Comply with requirements of Occupational Health & Safety Regulations & all other regulations pertaining to health and safety, including worker's compensation/ insurance board & fall protection regulations.
.3 If, during the course of work, asbestos containing materials, black mould, lead paint, or any other such materials are encountered or suspected, immediately report the discovery to the Consultant & cease all work in the area in question. Do not resume work in affected areas until the situation has been properly corrected & without written approval from the Owner.

1.13 Scaffolding, Rigging, and Hoisting

.1 Erect and operate scaffolding, rigging, hoisting equipment & associated hardware required for your work.

1.14 Closeout Submittals

.1 Prior to application for Substantial Performance, submit all required items & documentation specified, including Operating & Maintenance Manuals, as-built record drawings, extended warranties, test certificates, final commissioning report, & TAB report.
.2 Operating and Maintenance Manuals: Submit 3 hard copies of operating & maintenance manuals in hardcover 3 "D" ring binders, & identified with Project name, & "MECHANICAL OPERATING AND MAINTENANCE MANUAL" wording. Manuals are to include an Introduction sheet listing the Consultant's, Contractor's, and Subcontractor names, street addresses, telephone & fax numbers, and e-mail addresses, a Table of Contents sheet & corresponding index tab sheets, a copy of each "Reviewed" or "Reviewed As Noted" shop drawing or product data sheet, with the email address for local source of parts & service, & all required operating & maintenance data.
.3 Record "As-Built" Drawings: As work progresses, clearly mark on white prints of the Contract Drawings, significant changes from the routing of services & locations of equipment shown on the Contract Drawings. Keep the set up-to-date at all times, & available for periodic review. When work is complete, transfer as-built information from as-built drawings to a recordable and identified CAD disc with CAD work of equal quality to the Contract Drawings. CAD discs will be supplied free of charge by the Consultant.

1.15 Phasing of The Work

.1 Phasing of the work is required to maintain the existing building in operation. Include all costs for phasing including "off hours" premium time labour costs.

1.16 Equipment and System Manufacturer's Certification

.1 Prior to equipment & system start-up procedures, pay for equipment/system manufacturers' authorized representatives to examine the installation, & when any required corrective measures have been made, to certify in writing to the Consultant that the equipment/system installation is complete & in accordance with the equipment/system manufacturer's instructions.

1.17 Equipment and System Start-Up

.1 Prior to commissioning, & under supervision of equipment/system manufacturers' representatives, start-up equipment/systems, make required adjustments, document procedures, leave equipment/systems in proper operating condition, & submit start-up documentation sheets signed by the manufacturer/supplier & the Contractor

1.18 Equipment and System Commissioning

.1 After successful start-up and prior to Substantial Performance, commission the mechanical work in accordance with requirements of CSA Z320, Building Commissioning. Use commissioning sheets included with the CSA Standard, & any supplemental commissioning sheets required.

1.19 Cleaning

.1 Any dirt, rubbish or grease on walls, floor or fixtures for which this Division is responsible must be removed and the premises left in first class condition in every respect.

1.20 O & M Demonstration & Training

.1 Train the Owner's designated personnel in all aspects of operation & maintenance of equipment & systems using technicians employed by the equipment/system manufacturer/supplier. The number of hours of training are to be sufficient for the Owner's personnel to completely understand operation & maintenance of the equipment/system.

1.21 Standard of Acceptance

.1 Base bid means an item is specified by manufacturer and model number meets the specifications in all respected regarding performance, quality of material and workmanship and is acceptable to the Consultant without qualification. Base bid equipment is as listed in the Specifications and Mechanical Equipment Schedules and on the Drawings.
.2 Request for review from manufacturers of materials, fixtures and equipment who are not listed as equal and wish to be accorded "equal" status, shall be made a least seven (7) days prior to close of tender. Such material, fixtures , and equipment shall meet the requirements for an equal as described in the Standard of Acceptance.
.3 All information required by the Consultant to evaluate proposed manufacturer shall furnish the proposal at the time of the request.
.4 Approved Equal Manufacturers

.1 Access Doors - Acudor, EH Price, Maxam, Milcor, Steel Brothers
.2 Ductless Split Heat Pump Systems - Trane, Mitsubishi, Samsung, Fujitsu, Daikin
.3 Furnaces - Trane
.4 ERV - Life Breath, Aldes, RenewAire, Nu-Air
.5 Flexible Air Duct - Thermoflex, Wiremold, Flexmaster
.6 Ductwork (round) - Spiro-Lock, Ecco
.7 Ductwork Canvas Flexible Connectors - Durodyne, Ventlan
.8 Grilles, Registers and Diffusers - Titus, EH Price, Nailor
.9 Louvres - Airolite, Ruskin, Nailor Industries, Titus, EH Price
.10 Insulation (Pipe and Duct) - Fiberglas, Knauf, Johns Manville, Atlas, PPG, Manson, Certainteed
.11 Insulation Jacketing - Childers, Fiberglas, Johns Manville
.12 Insulation (Refrigerant Pipe) - Armaflex, Armstrong, Nomaco
.13 Fixture Water Supply and Drain Fittings - American Standard, Delta Faucet Co., Zurn Industries Ltd, Chicago Faucet, Moen Inc,
.14 Vitreous China Fixtures - American Standard, Toto Ltd, Nameek's
.15 Stainless Steel Sinks - Franke Kindred Canada Ltd.
.16 Water Closet Seats - Bemis Manufacturing Co, Centoco Plastics Ltd, Toto Ltd.
.17 Valves (Ball) - Red and White, Grinnell, Watts, Kitz
.18 Valves (Circuit Balancing) - Tour & Anderson, Bell & Gossett, Armstrong, Griswald, Hattersley
.19 Pressure Reducing Valves - Watts, Singer
.20 Pressure Relief Valves - Watts, Singer, Braukmann
.21 Water Hammer Arrestors - Jay R Smith, Ancon, Zurn
.22 Dampers (Fire) -Maxam, Ruskin, Nailor Industries
.23 Domestic Water Heaters - A.O. Smith, Rheem, John Wood
.24 Expansion Tanks - Amtrol, Wessels, Armstrong
.25 Fire Stopping and Smoke Seals - 3M, Tremco, Hilti
.26 Gas Pressure Regulating Valves - Fisher, Rockwell
.27 Gas Detection Systems - CET
.28 Pumps (In-line Circulators) - Grundfos, Taco, Armstrong, Bell & Gossett, WILO
.29 Slack Cable Restraints - Square M, Vibra Sonic, VMC-Korfund
.30 Testing, Adjusting and Balancing Agency - Arrow Flow, Flotech

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1.22 Installation of Pipe Sleeves

.1 Where pipes penetrate new concrete and/or masonry surfaces provide pipe sleeves, minimum #16 gauge flanged galvanized steel or, where permitted, factory fabricated plastic sleeves in poured concrete construction, & Schedule 40 galvanized steel pipe or Class 3000 cast iron pipe in concrete or masonry walls. Sleeves in waterproofed slabs or walls are to be c/w a water stop plate.
.2 Size sleeves to leave 12 mm (½") clearance around the pipes, or where the pipe is insulated, a 12 mm (½") clearance around pipe insulation. Pack & seal the void between pipe sleeves & the pipe or pipe insulation in interior non-fire rated construction for the length of the sleeves with mineral wool & seal both ends of the sleeve with silicone base caulking. Pack seals in fire rated construction as above but use rock wool & leave space at sleeve ends for fireproofing. Seal sleeves in exterior walls below grade (& any other wall where water leakage may be a problem) with Thunderline Corp. (Power Plant Supply Co.) "LINK SEAL" Model S-316 or equal mechanical seals.
.3 Terminate sleeves for exposed so that the sleeve is flush at both ends with the building surface concerned & provide chrome plated brass or brushed stainless steel escutcheon plates tight against the building surface to completely cover both ends.

1.23 Duct Openings

.1 Duct openings, air inlet and outlet openings, fire damper & similar openings will be provided in new poured concrete work, masonry, drywall & other building surfaces by the trade responsible for the particular construction in which the opening is required.

1.24 Firestopping and Smoke Seals

.1 Unless otherwise specified, where mechanical work penetrates fire rated construction, provide ULC listed & labelled firestopping & smoke seal materials installed in accordance with requirements of CAN4-S115 (ratings F, FT, FH, & FTH as required), CAN/ULC-S101, & other governing authorities to seal the penetrations.

1.25 Pipe Hangers and Supports

.1 Provide pipe hangers and supports. Provide additional structural steel channels, angles, inserts, beam champs & similar accessories required for hanging or supporting pipe. All ferrous hanger & support products are to be galvanized.
.2 For Insulated Pipe: Size the hanger or support to suit the dia. of the insulated pipe & install the hanger or support on the outside of the insulation & insulation finish.
.3 Horizontal Above Ground Piping: Hangers for suspended pipe to & including 25 mm (1") dia. are to be clevis type or adjustable ring type, & hangers for suspended pipe 40 mm (1½") diameter & larger are to be adjustable clevis type. Space hangers & supports in accordance with Code requirements.
.4 Vertical Piping: Support vertical piping by means of steel offset pipe clamps or heavy-duty steel brackets or soil pipe brackets spaced at maximum 3 m (10') intervals or at least once for piping less than 3 m (10') in height.
.5 Isolation for Bare Copper Tubing: Isolate hangers, support or securements for horizontal copper tubing from the pipe by means of strips of flexible rubber inserts.
.6 Insulation Protection Shields: For insulated horizontal piping to & including 40 mm (1½") dia., provide galvanized steel insulation protection shields between the insulation & the hanger or support. Install shields immediately after the pipe is insulated.
.7 Pipe Support from Steel Deck: Do not support piping from steel deck without written consent from the Consultant.
.8 Hanger Rods: Electro-galvanized carbon steel (unless otherwise specified), round, threaded, complete with captive machine nuts with washers at hangers, sized to suit the loading in accordance with Table 3 in MSS SP-58.

1.26 Supply of Access Doors

.1 Supply prime coated steel access doors for mechanical work which may need maintenance or repair but which is concealed in inaccessible construction. Access doors are to be c/w mounting & finishing features to suit the construction in which they are to be installed, & sizes are to suit the concealed work. Access doors in fire rated construction are to be ULC listed and labelled and of a rating to maintain the fire separation integrity. Recessed door type access doors located in surfaces where special finishes are required are to be constructed of stainless steel with a #4 finish.

1.27 Electric Motors

.1 Motors are to conform to EEMAC Standard MG1, applicable IEEE Standards, & applicable CSA C22.2 Standards, & meet NEMA standards for maximum sound level ratings under full load. The efficiency of 1 phase AC motors to 1 HP is to be in accordance with CAN/CSA C747. The efficiency of 3 phase motors 1 HP & larger is to be in accordance with CAN/CSA C390 or IEEE 112B.

1.28 Electrical Power & Control Wiring

.1 Line and load side power wiring for mechanical work will be done as part of the electrical work.
.2 Do all required control wiring shown and specified.

1.29 Mechanical Work Identification

.1 Identify all new/relocated mechanical work in accordance with existing identification standards at the site, or, if all new work or no existing site standard, identify new exposed piping & ductwork such that it can be easily seen.
.2 Piping: Paint gas piping with primer & 2 coats of yellow paint in accordance with Code requirements. For electrically traced mechanical work include "ELECTRICALLY TRACED". Pipe identification is to be equal to SMS Ltd. or Brady vinyl plastic with indoor/outdoor type vinyl ink lettering & directional arrows. For pipe to and including 150 mm (6") dia., use coiled type snap-on markers. For pipe larger than 150 mm (6") dia., use saddle type strap-on markers with 2 opposite identification locations & c/w nylon cable ties. Identification wording & colours, unless otherwise indicated, is to be in accordance with CAN/CGSB-24.3.
.3 Ductwork: Custom made Mylar stencils with 50 mm (2") high lettering to accurately describe the duct service, i.e. "AHU-1 SUPPLY", c/w a directional arrow, & coloured ink with ink pads & roller applicators. Ink colour is generally to be black but must contrast with the lettering background.
.4 Exposed Piping and Ductwork: Identify at every end, adjacent to valves, strainers, damper & similar accessory, at connecting equipment, on both sides of pipes & ducts penetrating floors, walls, or partitions, at 6 m (20') intervals on runs exceeding 6 m (20') in length, at least once in each room, & at least once on runs less than 6 m (20').
.5 Concealed Piping & Ductwork: Identify at points where pipes or ducts enter & leave rooms, shafts, pipe chases, furred spaces, & similar areas, at maximum 6 m (20') intervals above suspended accessible ceilings, at least once in each room, at each access door location, & at each piece equipment, automatic valve, etc.
.6 Equipment: Provide an identification nameplate for piece of equipment, including control valves, motorized dampers, instruments, & similar products. Nameplates are to be 2-ply laminated black/white plastic, minimum 12 mm x 50 mm (½" x 2") for smaller items, minimum 25 mm x 65 mm (1" x 2½") for equipment, & minimum 50 mm x 100 mm (2" x 4") for control panels & similar items. Secure nameplates with stainless steel screws unless prohibitive, in which case use epoxy cement. Equipment identification terminology is to be as per drawing identification.
.7 Valve Tags & Chart: Attach a tag to each new valve, except valves located at the equipment they control. Tags are to be coloured, 40 mm (1½") square, 2-ply laminated plastic with bevelled edges, red-white, green-white, yellow-black, etc., to match the piping identification colour, c/w a 3.2 mm (1/8") dia. by 100 mm (4") long brass plated steel bead chain, and 4 lines of engraved identification wording to indicate the valve number, size, service, & NO or NC. Prepare a computer printed chart to list tagged valves. If an existing chart is available, valve tag numbering is to be an extension of existing numbering & the new valve tag chart is to incorporate the existing chart. Frame & glaze 1 copy of the chart & affix to a wall in each main Mechanical and/or Equipment Room.

1.30 Fastening and Securing Hardware

.1 Provide fastening & securing hardware to maintain installations attached to the structure or to finished floors, walls & ceilings in a secure & rigid manner capable of withstanding the dead loads, live loads, superimposed dead loads, & any vibration of the installed products. Where construction is not suitable to support the loads, provide additional framing or special fasteners to ensure proper securement to the structure. Do not attach fasteners to steel deck without written consent from the Consultant.

1.31 General Re: Installation of Valves

.1 Generally, valve locations are indicated or specified, however, regardless of locations shown, provide shut-off valves to isolate all systems, at the base of vertical risers, in branch take-offs at mains & risers, to isolate equipment, to permit work phasing as required, & wherever else required for proper system operation & maintenance.

1.32 Pipe Leakage Testing

.1 Before new piping has been insulated or concealed, & before equipment, fixtures and fittings have been connected, pressure test piping for leakage in accordance with requirements of applicable Codes and Standards. Have completed test report sheets dated & signed by those present to confirm proper test results. Ensure that piping has been properly flushed, cleaned & is clear of foreign matter prior to pressure testing.

1.33 Concrete Work for Mechanical Equipment Bases/Pads

.1 Unless otherwise specified, provide all poured concrete work, including reinforcing & formwork, required for mechanical work. Concrete is to be minimum 20,700 kPa ready-mix concrete in accordance with CAN/CSA-A23.1 & the Building Code.

1.34 Excavation and Backfill Work

.1 Unless otherwise specified, do excavation, backfill & related work required for your work. Grade trench excavations as required. Unless otherwise specified, backfill trenches within the building with clean sharp sand in individual layers of maximum 150 mm (6") thickness compacted to a density of 100% Standard Proctor. Hand compact the first layers up to a compacted level of minimum 300 mm (12") above the top of the pipe. Hand or machine compact the balance up to grade. Depth of exterior trenches or those in unheated interior areas must prevent pipes from freezing.
.2 Unless otherwise specified, backfill trenches outside the building (not under roads, parking lots or traffic areas), up to a compacted level of 450 mm (18") thick above the pipe, hand compacted to a density of 95% Standard Proctor, using granular "A" gravel. Backfill the balance in 150 mm (6") layers with approved excavated material, compacted to 95% Standard Proctor density.
.3 Prior to excavation, carefully check inverts and locations of existing services and report any serious discrepancy. Contact Utilities to accurately locate their services.

1.35 Cutting, Drilling, and Patching for Mechanical Work

.1 Do all cutting, drilling and patching of the existing building for the installation of your work. Confirm exact locations prior to cutting and/or drilling work. Patch surfaces, where required, to exactly match existing finishes using tradesmen skilled in the particular trade or application worked on.
.2 Where new pipes pass through existing construction, core drill an opening sized to leave 12 mm (½") clearance around pipes or pipe insulation. In poured concrete construction, determine the location, if any, of existing concealed services.
.3 Pack and seal the void between pipe openings and the pipe or pipe insulation for the length of the opening in interior construction with rock wool & seal both ends of the opening with non-hardening silicone base caulking. Seal sleeves in exterior walls below grade (& any other wall where water leakage may be a problem) with link type mechanical seals.

1.36 Roofing Work

.1 Do flashing work, including counter-flashing, for mechanical work penetrating and/or set in the roof.
.2 Where roof revisions and/or replacements are part of the project, include for disconnecting, lifting, or temporarily removing mechanical equipment on the roof as required to permit completion of the roofing work, & for re-installing the equipment when the roofing work is complete.

1.37 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with requirements of Canadian Construction Association Standard Document CCA 81, A Best Practices Guide to Solid Waste Reduction. Do not let waste materials accumulate at the site.

1.38 Demolition Work

.1 Where indicated on the drawings, disconnect & remove mechanical work, including hangers, supports, insulation, & similar items. Cut back obsolete piping behind finishes, identify, & cap water-tight. Estimate the extent & cost of the work at the site during bidding period scheduled site visit(s). Perform demolition work in accordance with requirements of CAN/CSA-S350, Code of Practice for Safety in Demolition of Structures.
.2 If existing isolation valves are not available to isolate sections of piping to be removed, provide such valves.
.3 Unless otherwise specified, remove & dispose of demolished materials which are not to be relocated or reused.
.4 Refrigeration Equipment: Remove & reclaim refrigerant from equipment to be decommissioned, removed and/or altered in accordance with Refrigerant Management Canada guidelines, & governing codes and regulations. Do not under any circumstances vent refrigerant from existing equipment to atmosphere. Dispose of reclaimed refrigerant by engaging the services of a licensed firm specializing in recycling of reclaimed refrigerant. Submit documentation to confirm that the refrigerant has been properly removed from the site & recycled or disposed of.

1.39 Testing, Adjusting & Balancing (TAB)

.1 Perform TAB of mechanical systems which include, as applicable, domestic hot & domestic hot water recirculation water systems, & HVAC & control systems in accordance with either the *National Standards for a Total System Balance* published by the Associated Air Balance Council, or the *Procedural Standards for Testing, Adjusting & Balancing of Environmental Systems* published by the National Environmental Balancing Bureau. Employ an agency certified by either the Associated Air Balance Council or the National Environmental Balancing Bureau.
.2 Submit 2 copies of draft reports on AABC or NEBB forms. One draft report will be returned. Upon approval of draft reports, submit 2 copies of final reports with schematic system diagrams & other data in identified 3-ring binders.
.3 Spot check final report results with the Consultant, &, if results do not, on a consistent basis, agree with the final report, rebalance the systems involved, resubmit the final report, & again perform spot checks with the Consultant.
.4 Indicate in the balance report:

.1 Operating performance (design vs. actual) of all fans and air systems.
.2 Air flow from each overall fan system and individual supply and return air outlets.
.3 Outdoor air flow from each rooftop unit with outdoor air damper at minimum and maximum position.
.4 Inlet na doutlet pressure of each rooftop unit. (Total system pressure drop)
.5 Motor HP draw, lock rotor amperage, running load amperage and fan and motor RPM of each rooftop unit.

2 MECHANICAL INSULATION

.1 Provide all required mechanical work insulation. Insulation system materials inside the building must have a fire hazard rating of not more than 25 for flame spread & 50 for smoke developed when tested in accordance with CAN/ULC-S102. Thermal performance, i.e. conductivity, of insulation is to meet or exceed the values given in the National Energy Code of Canada for Buildings, & ASHRAE/IES Standard 90.1.
.2 Submit product data sheets for insulation products.
.3 As applicable, do not insulate heating piping within radiation unit enclosures, branch domestic water piping located under counters to serve counter mounted plumbing fixtures & fittings (except barrier-free lavatories), exposed chrome plated domestic water angle supplies from concealed piping to plumbing fixtures & fittings (except barrier-free lavatories), PEX piping within suites, heated liquid system pump casings, valves, strainers & similar accessories, domestic water & heating system expansion tanks, & flexible branch ductwork from sheet metal ducts to grilles or diffusers.
.4 Install insulation directly over pipes & ducts and not over hangers & supports. Install piping insulation & jacket continuous through pipe openings & sleeves. Install duct insulation continuous through walls, partitions, & similar surfaces except at fire dampers.
.5 Where piping and/or equipment is traced with electric heating cable, ensure that cable has been successfully tested prior to the application of insulation, & ensure that the cable is not damaged or displaced during the application of insulation.
.6 Where existing insulation work is damaged as a result of a new mechanical work, repair the damaged insulation work to new work standards.
.7 Insulation for Piping @ Hangers & Supports: At each hanger & support location for piping 50 mm (2") dia. & larger & scheduled to be insulated, supply a factory fabricated section of phenolic foam pipe insulation with integral vapour barrier jacket and captive galvanized steel shield equal to Belform Insulation Ltd. "Koolphen K-Block" insulated pipe support inserts. Supply the insulation sections to the piping installers for installation as the pipe is erected.
.8 Piping Insulation-Mineral Fibre: Unless otherwise specified, insulate the following pipe inside the building & above ground to the thickness indicated with rigid, sectional, sleeve type insulation to ASTM Standard C 547, with a factory applied vapour barrier jacket, & blanket type roll insulation to ASTM C553, 24 kg/m³ (1½ lb./ft.³) density, with a factory applied vapour barrier facing:

.1 Domestic cold water piping up to & including 100 mm (4") dia. - 25 mm (1") thick
.2 Domestic hot water piping to 40 mm (1½") dia. - 25 mm (1") thick, & piping larger than 40 mm (1½") dia. - 50 mm (2") thick
.3 Recirculation domestic water piping - 25 mm (1") thick
.4 Condensate drainage piping from air conditioning system/unit drain pans to main vertical drain risers or to indirect drainage point - 25 mm (1") thick
.5 Piping as above located inside the building in unheated areas or outside the building & indicated to be traced with electric heating cable - 50 mm (2") thick
.6 Refrigerant piping inside building - 25 mm (1") thick
.7 Refrigerant piping outside the building or buried below grade - 25 mm (1") thick

.9 Piping Insulation-Non-Combustible Insulation: Where pipe (inside the building & above ground) which is to be insulated as specified above penetrates fire rated construction, provide non-combustible, rigid, sectional, longitudinally split mineral fibre pipe insulation with a reinforced vapour barrier jacket in accordance with requirements of CAN/ULC-S114 & compatible with firestopping as per CAN/ULC-S101.
.10 Piping Insulation-Flexible Elastomeric Insulation: Insulate refrigerant piping outside the building with 25 mm (1") thick closed cell, sleeve type, longitudinally split, self-seal, foamed plastic pipe insulation in accordance with requirements of ASTM C534 & equal to Armacell AP/Armaflex SS & installed in strict accordance with the manufacturer's published instruction to produce a water-tight installation.
.11 Barrier-Free Lavatory Insulation Kits: Provide removable, flexible, reusable, white moulded plastic insulation kits equal to Zeston "SNAP-TRAP" for barrier-free lavatory drain piping & water supplies exposed under barrier-free lavatories.
.12 Equipment Insulation-Blanket Mineral Fibre: Insulate equipment listed below with roll form mineral fibre blanket type insulation equal to Johns Manville Inc. Type 150 "Microlite" to ASTM Standard C553, 24 kg/m³ (1½ lb./ft.³) density, with a factory applied vapour barrier facing:

.1 Water meter(s) - 40 mm (1½") thick

.13 Equipment Insulation-Semi-Rigid Mineral Fibre Insulation: Insulate the equipment listed below with roll form semi-rigid mineral fibre board insulation with a factory applied vapour barrier facing consisting of laminated aluminum foil & kraft paper, equal to Johns Manville Inc. Pipe and Tank Insulation to ASTM Standard C1393:

.1 Uninsulated domestic hot water storage tank(s) - 50 mm (2") thick

.14 Mineral Fibre Insulation-Ductwork Inside Building: Equal to Johns Manville Inc. Type 814 "Spin-Glas" preformed board type insulation to ASTM C612, with a factory applied reinforced aluminum foil & kraft paper facing for exposed rectangular ductwork, roll form semi-rigid insulation equal to Multi-Glass Insulation Ltd. "Multi-Flex MKF" to ASTM C1393 with a factory applied vapour barrier facing for exposed round & oval ducts, & blanket type roll form insulation equal to Johns Manville Inc. Duct Wrap Type 150 "Microlite" to ASTM Standard C553, 24 kg/m³ (1½ lb./ft.³) density, 40 mm (1½") thick with a factory applied vapour barrier facing for concealed rectangular, round & oval ductwork. Insulate the following ductwork systems inside the building with mineral fibre insulation of the thickness indicated:

.1 Fresh air intake ductwork, casings & plenums to & including mixing plenums or sections, or, if mixing plenums or sections are not provided, to the 1st heating coil, or if both mixing plenums or sections & heating coil sections are not provided, & the fresh air is not tempered, then the fresh air ductwork system complete - 40 mm (1½") thick
.2 Internal Insulation - supply air ductwork outward from fans for a distance of 3 m (10'), including any supply plenums in the 3 m (10') distance - 25 mm (1") thick rigid board or 40 mm (1½") thick flexible blanket as required. Applies to:
  .1 ERV-1 and ERV-2 supply air
.3 Internal Insulation - return/exhaust air ductwork outward from fans for a distance of 3 m (10'), including any supply plenums in the 3 m (10') distance - 25 mm (1") thick rigid board or 40 mm (1½") thick flexible blanket as required. Applies to:
  .1 AHU-1, AHU-2, AHU-3, & AHU-4 return air
  .2 ERV-1, ERV-2, & ERV-3 return air
  .3 ERV-1, ERV-2, & ERV-3 exhaust air
.4 External Insulation - Air conditioning supply air ductwork, except for supply ductwork exposed in the area it serves - 25 mm (1") thick rigid board or 40 mm (1½") thick flexible blanket as required;
  .1 Applies to AHU-1, AHU-2, AHU-3, & AHU-4 supply air ducting
.5 External Insulation - Exhaust air ductwork, located in the attic space - 25 mm (1") thick rigid board or 40 mm (1½") thick flexible blanket as required;
.6 External Insulation - Exhaust discharge ductwork for a distance of 3 m (10') downstream (back) from exhaust openings to atmosphere, including exhaust plenums within the 3 m (10') distance, where not internally insulated - 25 mm (1") thick rigid board or 40 mm (1½") thick flexible blanket as required;
.7 Any other ductwork, casings, plenums or sections specified or detailed on the drawings to be insulated - thickness as specified.

.15 Insulation Coatings, Finishes & Jackets: Provide coatings, finishes or jackets as follows:

.1 Canvas: ULC listed and labelled, 25/50 rated, roll form, minimum 170 g (6 oz.) canvas jacket material secured in place with a full 100% covering coat of lagging adhesive for, unless otherwise shown and/or specified, exposed mineral fibre insulation inside the building
.2 White PVC: Roll form sheet & fitting covers equal to Johns Manville Inc. "Zeston" 300. 25/50 rated, for exposed mineral fibre pipe insulation in wet or wash-down areas
.3 Rigid Aluminium: Equal to Childers Metals (ITW Insulation Systems Canada) "Lock-on embossed aluminum jacket material to ASTM B209, factory cut to size & c/w moisture barrier & continuous modified Pittsburgh Z-Lock, "Fabstraps" & butt straps to cover end to end joints, & 2-piece epoxy coated pressed aluminum with weather locking edges for exposed mineral fibre pipe insulation outside the building or in "wet" areas.
.4 Protective Coating - Flexible Foam Elastomeric Insulation: Equal to Armacell "WB Armaflex" weatherproof, water-based latex enamel finish. Apply 1 coat for interior insulation & 2 coats (with 24 hours between coats) for insulation outside the building.

.16 Insulation Application Requirements: Unless otherwise specified apply insulation materials in accordance with requirements of the current edition of the Thermal Insulation Association of Canada National Installation Standard.

3 DOMESTIC WATER SYSTEMS

.1 Provide domestic water piping systems. All products in contact with domestic water are to be NSF/ANSI 61 certified lead free.
.2 Domestic Water Piping
Material: Type L Copper
Code REf: BCBC 7.2.74
Conform to: ASTM B88
Fittings: Wrought copper with Silvabrite Solder. 95.5% Sn, 4% Cu, 0.5% Ag. T-Drill fittings are not approved

.1 Provide eccentric pipe reducers for domestic waterlines to prevent collection of air pockets.
.2 Provide water hammer arrestors at the top of all domestic cold water risers, on each domestic hot water system and at any quick closing valves.
.3 Provide shut-off valves for all fixtures, located in accessible locations.
.4 Copper pipe, direct connections: UL approval; brazing in accordance with Copper Development Association Copper Tube Handbook
.5 Ensure no joints of dissimilar metals are provided. Install dielectrically isolated fittings where dissimilar metallic materials meet.
.6 All connections to fixtures shall be with unions
.7 Use only strap wrenches on chromium plated piping and fittings. Replace any surface damage by wrench mark ups. Joints to be threaded or slip union type.

.3 Piping Installation: Conform to the following requirements:

.1 If and where required, brace & secure u/g water service pipe entering the building in accordance with Municipal standards & details & paint metallic restraint devices with 2 coats of corrosion resistant black asphalt base coating prior to backfilling
.2 Provide proper dielectric unions in connections between copper pipe & ferrous pipe or equipment
.3 Secure trap seal primer tubing embedded in concrete to reinforcing steel & be present during the concrete pour to ensure that the tubing is not damaged or dislodged
.4 Provide balancing valves in domestic hot water recirculation piping where shown or required
.5 Flush new and/or reworked domestic water piping after leakage testing is complete, & when flushing is complete, disinfect the piping with a solution of sodium hypochlorite to AWWA B-300 in accordance with requirements of the Ministry of Environment document entitled Procedure for Disinfection of Drinking Water in British Columbia, under supervision of a P. Eng. Authorized by the Professional Engineers of British Columbia to perform such work, & when disinfecting is complete, submit water samples to a certified laboratory for purity testing &, when testing indicates pure water in accordance with governing standards, submit a copy of the test results & fill the systems

4 DRAINAGE & VENT SYSTEMS

.1 Provide drainage & vent piping systems.
.2 Sanitary & Storm Piping Above Grade
Material: Type DWV Copper/Cast Iron
Code Ref: BCBC 7.2.7.4/BCBC 7.2.6.1
Conform to: ASTM B306/CAN/CSA B70-M
Fittings: Wrought Copper with 50-50 Solder/MJ with SS bands and clamps
Cleanouts to be Round Nickel Bronze Top Model:
Jay R. Smith 4100S, cast iron extended ferrule, tapered gasket seal, ABS plug and adjustable round secure nickel bronze top.
.3 Sanitary & Storm Piping Below Grade
Material: Type ABS DWV & PVC DWV
Code Ref: BCBC 7.2.5.10/BCBC 7.2.5.12
Conform to: CAN/CSA B181.2
Fittings: ABS DWV & PVC DWV solvent cement
Cleanouts to be Round Nickel Bronze Top Model:
Jay R. Smith 4100S, cast iron extended ferrule, tapered gasket seal, ABS plug and adjustable round secure nickel bronze top.

.4 Piping Installation: Conform to the following requirements:

.1 Slope horizontal drainage piping a/g in sizes to & including 75 mm (3") dia. 25 mm (1") in 1.2 m (4'), & pipe 100 mm (4") diameter & larger 25 mm (1") in 2.4 m (8')
.2 Install & slope u/g drainage piping to inverts or slopes indicated to facilitate straight & true gradients between the points shown, & verify available slopes before installing the pipes.
.3 Slope horizontal branches of vent piping down to the fixture or pipe to which they connect with a minimum pitch of 25 mm (1") in 1.2 m (4').
.4 Extend vent stacks up through the roof generally where shown but with exact locations to suit site conditions & in any case a minimum of 3 m (10') from fresh air intakes. Terminate vent stacks a minimum of 330 mm (13") above the roof (including roof parapets) in vent stack covers.
.5 Provide proper dielectric unions at connections between copper pipe and ferrous pipe or equipment.

.5 Building Weeper System Piping: Provide building foundation weeper piping & extend to a concrete sand settling sump as shown on the drawings. Weeper piping is to be perforated PVC with an integral geodesic sock. Provide sand settling sump piping, & connect the sump discharge to a storm main terminated 1.5 m (5') outside the building.

5 PLUMBING FIXTURES & FITTINGS

.1 Provide plumbing fixtures & fittings as shown & scheduled on the drawings. Water supply fittings are to be lead-free in accordance with NSF/ANSI 61 requirements.
.2 Unless otherwise specified, vitreous china, porcelain enamelled, & acrylic finished fixtures are to be white. Unless otherwise specified, fittings & piping exposed to view are to be chrome plated & polished. Fittings located in areas other than private washrooms are to be vandal-resistant
.3 Fixture Exposed Traps: Exposed traps for fixtures not equipped with integral traps, such as lavatories, are to be adjustable chrome plated cast brass "P" traps with cleanouts, minimum #17 gauge chrome plated tubular extensions, & chrome plated escutcheons.
.4 Fixture Concealed Traps: Concealed traps for fixtures not equipped with integral traps, such as counter sinks, are to adjustable cast brass with cleanout plugs.
.5 Fixture Exposed Supplies: Exposed supplies for fixtures which do not have supply trim/fittings with integral stops, i.e. lavatories, are to be solid chrome plated brass angle vales with screwdriver stops for public areas, wheel handle stops for private areas, flexible stainless steel risers, & stainless steel or chrome plated steel escutcheons. Dahl Brothers Canada Ltd, NSF/ANSI 61 certified chrome plated "mini-ball" valve assemblies will be acceptable.
.6 Fixture Concealed Supplies: Water piping as specified, c/w ball type shut-off valves as specified with the water piping or NST/ANSI 61 certified Dahl Bros. Canada Ltd. ¼ turn "mini ball" valves.
.7 Barrier-Free Fixtures: Comply with mounting height & other requirements of the governing Code(s).
.8 Caulking: Caulk around plumbing fixtures & fittings where they contact walls, floors, & any other building surface using gun applied caulking equal to General Electric Series SCS-1200 Silicone Construction Sealant or Dow Corning 780 silicone rubber sealant with primers as recommended by the sealant manufacturer. Caulking colour other than white, if any, will be selected by the Consultant.
.9 Testing & Adjusting: When installation is complete, check & test the operation of each fixture & fitting. Adjust or repair as required.

6 NATURAL GAS

.1 Gas Service: Make arrangements with the supply utility on behalf of the Owner for installation of natural gas service piping with gas pressure regulator & meter assembly where shown. Provide 2 m (7') high minimum 200 mm (8") dia. Schedule 80 galvanized steel concrete filled bollards at the meter-regulator location in a protective pattern. Install the pipe 1.2 m (4') below grade in a continuous 600 mm (2') dia. reinforced concrete footing. Smoothly crown the top of the concrete above the top of the pipe & paint with 2 coats of yellow exterior equipment enamel.
.2 Piping Installation: Provide natural gas distribution piping & connect gas fired or operated equipment, & provide all required vent piping to atmosphere, including vent piping from pressure regulators. Do piping work in accordance with requirements of CAN/CSA-B149.1, as amended by the TSSA & local Gas Codes. Conform to the following requirements:

.1 Slope gas piping in the direction of flow to low points, & provide full pipe dia. 150 mm (6") long drip pockets at the bottom of vertical risers, at piping low points, & wherever else shown and/or required
.2 Identify piping above ground with 2 coats of safety yellow enamel applied over primer, and SMS Ltd. or equal coil type vinyl identification makers with arrows
.3 For u/g gas piping, provide continuous 75 mm (3") wide yellow PVC warning tape with "CAUTION - GAS LINE BURIED BELOW" wording at 750 mm (30") intervals located above the pipe approximately 250 mm (10") below grade

.3 Pressure Regulators: Provide CSA certified pressure regulators in piping where indicated and/or required.

.1 For indoor appliances, use lever acting design, dead end lockup type, each c/w a vent limiter, self-aligning valve, die-cast aluminium housing, & synthetic rubber compound diaphragm, mounted in a horizontal upright position. Note that these pressure regulators do not require vent piping.

.4 Natural Gas Pipe (Below Ground)

.1 Pipe
  .1 Polyethylene coated steel piping to CSA standards (Z245.1).
.2 Joints
  .1 Use approved transition fittings when joining to dissimilar pipe materials.
  .2 Steel Pipe: Threaded joints not permissible. Continuously welded only. Heat shrink factory extruded polyethylene sleeves over bare metallic pipe at weld. Retain an independent testing agency to verify the continuity of polyethylene jacketing on buried piping utilizing a 12,000 volt Holiday detector. Submit report to mechanical consultant.
    .1 Forged Steel socket weld (ANSI B16.11)
    .2 Wrought Steel butt weld (CSA Z245.10)
    .3 Steel Fittings
      .1 Malleable iron: screwed, banded, class 150 to ANSI/ASME - B16.3
      .2 Welding: Butt-welding to ANSI/ASME - B16.9
      .3 Unions: Malleable iron, brass to iron. Ground seat. Screwed to ASTM A47M.
      .4 Nipples: Schedule 40 to ASTM A53
.3 Protection
  .1 Provide brightly colored polyethylene tape above the underground gas pipe installation. Install minimum 300mm above the gas pipe and a minimum of 300mm below grade.
.4 Pipe Hangars
  .1 Install hangars for a steel pipe with a maximum separation as indicated in the table below and where required elsewhere to avoid sag in the pipe installation. Provide sheet metal shields to protect insulation from being crushed at hangar locations on cold water installations.

Pipe Diameter	Rod Diameter	Steel	Copper
Up to 19mm	10mm	1.8m	1.8m
25mm to 32mm	10mm	2.4m	1.8m
38mm to 50mm	10mm	3.0m	2.4m
65mm to 75mm	13mm	3.6m	2.4m
100mm to 130mm	16mm	3.6m	2.4m
150mm	19mm	3.6m	2.4m

.5 Natural Gas Pipe And Accessories

.1 Scope of Work
  .1 Propane gas piping for furnaces
  .2 Hot water heater
  .3 Supply air fan to kitchen exhaust
  .4 Kitchen Equipment
.2 Codes Standards And Approvals
  .1 Propane gas installation shall conform to the requirements of CAN/CSA-B149.1, Natural Gas and Propane Installation Code.
  .2 Route piping installation in a orderly manner, as indicated on the drawings. Generally follow routes parallel and perpendicular to building structure.
  .3 Approval from the Provincial Gas Inspection Department must be obtained prior to commencing work. Submit to the Provincial Gas Inspection Department drawings, specification as required to obtain approval prior to work commencement.
.3 Natural Gas Pipe (Above Ground)
  .1 Pipe: Schedule 40 black steel to ASTM A53 and CSA B-36
  .2 Joints:
    .1 50mm (2-inch) and smaller: Threaded
    .2 65mm (2.5-inch) and larger: Continuously
  .3 Steel Fittings:
    .1 Malleable iron: Screwed , banded, class 150 to ANSI/ASME-B16.3
    .2 Welding: Butt-welding to ANSI/ASME-B16.3
    .3 Unions: Malleable iron, brass to iron. Ground Seat. Screwed to ASTM A47M
    .4 Nipples: Schedule 40, to ASTM A53
  .4 Above Ground Exterior Piping
    .1 Apply the following to piping one coat of Rust-Oleum 769 damp proof red primer one coat of Rust-Oleum 960 zinc chromate one coat of Rust-Oleum 850 yellow. Paint above ground gas exposed piping yellow.

7 CHIMNEYS

.1 Quality Assurance

.1 Vent materials and installation shall comply with the requirements of:
  .1 Provincial Gas Inspector
  .2 Provincial Boiler Inspector
  .3 Natural Gas and/or Propane installations shall conform to the requirements of CAN/CSA-B149.1 -00, "Natural Gas and Propane Installation Code."
.2 Appliance vents and intakes shall have CSA and ULC listings.

.2 Materials

.1 Venting for Condensing furnace will be supplied and installed by the contractor.
  .1 The furnace shall operate under Category IV positive vent pressure conditions.
  .2 Venting material shall be 50-mm (2") diameter OR, 2-pipe system for enhanced fuel efficiency for positive pressure Category IV venting.
.2 Category 3 and 4 – Positive Pressure, Condensing – System 636 Sch. 40, PVC piping certified to ULC S636.
.3 Combustion air and Vent and pipe insulation to be provided as per manufacturers recommendations.

8 REFRIGERANT PIPING

.1 Provide refrigerant piping systems & equipment. Refrigerant piping systems are to be in accordance with CSA B52, Mechanical Refrigerant Code, & any applicable local Codes & Regulations.
.2 Refrigerant Piping Schematics: Submit, in shop drawing form, a schematic piping diagram for each refrigerant piping system indicating pipe sizes, slopes, valves, traps, & piping specialties. Piping schematics must be reviewed, approved, & signed by the refrigeration equipment manufacturers prior to being submitted to the Consultant for review.
.3 Certification Reports: Submit letters from equipment suppliers certifying proper installation & start-up of the piping systems & equipment.
.4 Installation Personnel: Refrigerant piping & direct expansion refrigeration equipment must be installed by or under direct on site supervision of TSSA certified & licensed journeyman refrigeration mechanics.
.5 Piping Specialties: Refrigerant piping specialties such as moisture indicators, liquid line filter-driers, relief valves, traps, and thermostatic expansion valves are to factory cleaned, degreased, & supplied to the site with capped ends. Acceptable manufacturers are Mueller Industries Inc., Sporlan Valve Co., & Superior Refrigeration Products/Sherwood.
.6 Piping Installation: During the brazing process, ensure that the pipe & fittings are kept full of nitrogen or carbon dioxide to prevent scale formation. Conform to the following requirements:

.1 Where shown or specified, use soft copper refrigerant piping line sets
.2 Provide shut-off valves to isolate each piece of equipment if shut-off valves are not supplied integral with the equipment, & provide a refrigerant charging valve for each system if such a valve is not supplied integral with the equipment
.3 Provide refrigerant piping accessories shown and/or required
.4 Provide refrigerant as required, R410a or R134a unless otherwise specified
.5 Provide flexible connections at piping connections to roof mounted condensing units
.6 Provide expansion valves where shown and/or required, each matched to the coil

.7 Refrigerant Cooling Coils

.1 Coils constructed of copper tubes, aluminum fins and steel frame and pipe headers, self-venting and with drainable coil connections. Ensure coils fins and flanges are not damaged. If so replace coil or comb out fins.
.2 For performance data, sizes and capacities refer to the mechanical equipment schedules, Section 15993.

.8 Coil Drain Pans

.1 Provide type 304 stainless steel drain pans under all three sections of the new cooling coil.
.2 Pans are to extend 100-mm (4-inches) upstream and 375-mm (15-inches) downstream of coil faces. Provide intermediate drain lines between sections.

.9 Refrigerant Piping

.1 Piping: Type K copper, ACR grade 2, certified in accordance ASTM B88.
.2 Fittings: Direct brazed connections in accordance with Copper Development Association Copper Tube Handbook.
.3 Installation: Maintain piping free from scale and dirt by protection of open ended pipe during construction. Use temporary plugs or other suitable method of pipe protection. Flush out all piping prior to system start-up.
.4 The refrigerant piping installation shall comply with provincial refrigeration regulations and be in conformance with the recommended practices of industry accepted refrigeration codes.
.5 Scope: Liquid and suction lines connecting the outside condensing units and indoor unit ventilators
  .1 CU-1 and the DX coil in FCU-1
  .1 CU-2 and the DX coil in AHU-3
.6 Install refrigerant lines completely inside the unit ventilator casing. Route up to roof through the unit's top discharge plenum. Under no circumstances is the refrigerant pipe to pierce the side walls of the unit ventilator and be run exposed on the exterior of the casing.

.10 Refrigerant System Accessories

.1 Flexible Connectors
  .1 Flexible connectors shall consist of close pitch corrugated bronze hose with single layer of exterior braiding to provide additional strength and prevent elongation of corrugated section.
  .2 Connectors shall be minimum 230 mm long and provided with bronze fittings to facilitate connection to equipment.

9 NATURAL GAS FIRED FURNACES

.1 Quality Assurance

.1 Furnaces shall be built to the level of quality as herein specified and to the description of the Air Handling Unit Schedule
.2 Substitution of any product other than that specified, must assure no deviation below the stated capacities, air flow rate, heat transfer rate, filtration efficiency and air mixing quality. Power requirements must not be exceeded, and where specifically defined, sound power levels must not be exceeded.
.3 Unless stated otherwise, furnace units are to be shipped to the job in one piece, factory assembled. All equipment shall be factory tested prior to shipment.
.4 The furnace units and major components shall be products of manufacturers regularly engaged in the production of such equipment.
.5 Fans and air handling equipment shall meet the requirements of AMCA performance standards.
.6 Equipment supplied shall be constructed to meet the requirements of CSA/NRTL, ULC or ETL approvals.
.7 Gas-fired equipment supplied shall be CGA, C-ETL or CSA certified.
.8 Provide industry standard size filters only in all air handling equipment.
.9 Energy star certified.

.2 Gas Fired, Two STAGE, Heating/Ventilation Condensing Furnace

.1 Provide packaged furnace unit consisting of exterior plenum construction and internal components as follows:
  .1 Forward curved centrifugal supply air fan and ECM motor
  .2 Propane fired, stainless steel heat exchanger
  .3 External filter rack and section
  .4 Factory installed safety, interlock and control wiring
.2 Unit Construction: self-contained unit in thermal lined, one piece steel cabinet, prime painted and with baked enamel finish. Casing to have insulated blower cabinet. Casing shall have access doors with door handles providing easy access to all internal components
.3 Supply fan: forward curved centrifugal fan, with entire assembly mounted on rails.
.4 Complete with internally mounted condensate drain trap.
.5 Filters: External, fully accessible filter rack kits complete with filters shall be provided with furnace. Configuration and location of external filter rack to be provided and installed as per relative unit configuration and site conditions. Standard filter size.
.6 Quality: Stainless steel primary and secondary heat exchanger complete with high temperature limit control, direct ignition, flame roll-out sensors. 93% AFUE efficiency range, single stage gas valve operation. Complete with integrated control.
.7 Warranty: Provide 10-year warranty.
.8 Units to be internally pre-wired and allow for connection to the building controls system.
.9 Contractor to provide a field-fabricated mixing box c/w external filter rack to be installed to underside of furnace. Frame of mixing box assembly to be designed to support the furnace.
.10 Condensate Neutralizer Kit
  .1 The FM2000 is condensate neutralizer kit for furnaces up to 200,000Btu/hr.
  .2 It is 1.25" diameter, 10" length and has 5/8" OD CPVC fitting and 6.5 OZ calcium carbonate and total weight of 14 OZ.
  .3 Life expectancy of refillable content is one heating season.

10 ENERGY RECOVERY VENTILATOR

.1 Provide packaged, dual-core high efficiency heat recovery ventilator. (ERV)
.2 Two modular aluminum HRV cores.
.3 Two PSC, 5 speed double shafted, 120V, 3-15A motors with 1 HP AT 1725 RPM, total 750 watts at high speed.
.4 Centrifugal type rated for 1250 CFM free air delivery.
.5 Washable air filters in exhaust and supply airstream.
.6 Supply bypass damper that routes indoor air to defrost cores.
.7 20 gauge pre-painted galvanized steel cabinet for superior corrosion resistance. Insulated with foil faced insulation duct liner to prevent condensation.
.8 Programmable control with built in relay for interfacing to furnace.
.9 Programmable 24 hour/ 7 day timeclock.
.10 15 yrs warranty on HRV core and 2-year parts warranty.

11 DUCTWORK

.1 Provide all required galvanized steel ductwork, rectangular and/or round and/or flat oval as shown. **Note** that where rectangular ductwork is shown, round or flat oval ductwork of equivalent cross-sectional area is acceptable.
.2 Unless otherwise specified, construct & install ductwork in accordance with ANSI/SMACNA HVAC Duct Construction Standards Metal & Flexible to suit the duct pressure class designation of **minimum** 500 Pa (2" w.c.) positive or negative as applicable, a minimum velocity of 10 m/s (2000 fpm), & so that the ductwork does not "drum". All flat surfaces of rectangular ductwork are to be cross-broken. Duct system sealing is to meet ANSI/SMACNA Seal Class A requirements.
.3 Duct Routing and Dimensions: Confirm the routing of ductwork at the site & site measure ductwork prior to fabrication. Duct dimensions may be revised to suit site routing & building element requirements, if dimension revisions are reviewed with & approved by the Consultant. Duct routing and/or dimension revisions to suit conditions at the site are not grounds for a claim for an extra cost.
.4 Automatic Control Components: Install (but do not connect) duct system mounted automatic control components supplied as part of the automatic control work.
.5 Heat Transfer Equipment Connections: Where indicated, provide duct connections to fan powered heat transfer equipment with integral coils.
.6 Round & Flat Oval Duct Support Inside Building: Support round & flat oval ducts inside the building in accordance with ANSI/SMACNA HVAC Duct Construction Standards Metal & Flexible, but, unless otherwise specified, for both uninsulated and insulated ducts exposed in finished areas, use bands & secure at the top of the duct to a hanger rod, all similar to Ductmate Canada Ltd. type "BA". If the duct is insulated, size the strap to suit the diameter of the insulated duct.
.7 Flexible Ductwork: Provide maximum 3 m (10') long lengths of flexible ductwork for connections between galvanized steel ducts & necks of ceiling grilles & diffusers. Do not install flexible ductwork through walls, even if shown on the drawings. At rectangular galvanized steel duct, accurately cut holes & provide flanged or "Spin-in" round flexible duct connection collars. Seal joints with duct sealer. Install flexible ducts as straight as possible & secure at each end with nylon or stainless steel gear type clamps, & seal joints. Provide long radius duct bends where they are required.
.8 Testing, Adjusting & Balancing: Include for a site walk-through with testing & balancing personnel following the route of duct systems to be tested, adjusted & balanced for the purpose of confirming the proper position & attitude of dampers, the location of pitot tube openings, & any other work affecting the testing & balancing procedures. Perform corrective work required as a result of this walk-through.

12 AUTOMATIC CONTROL SYSTEMS

.1 Provide complete systems of control & instrumentation to control & supervise building equipment & systems. The control systems are to generally be as indicated on drawing control diagrams & are to have all the elements therein indicated or implied. The control diagrams show only the principal components controlling the equipment & systems. Supplement each control system with relays, transformers, sensors, etc., required to enable each system to perform as specified & to permit proper operation & supervision.
.2 Shop Drawings/Product Data: Shop drawings/product data sheets are to include all control system components, identified schematic control diagrams with component identification, catalogue numbers, & sequence of operation for all systems, & certified wiring diagrams for all systems.
.3 Installation Requirements: The control systems are to be installed by the control component manufacturer or by licensed personnel authorized by the control component manufacturer. The control system installation company is to have local parts & service availability on a 24/7 basis. Control wiring work is to be performed by licensed journeyman electricians, or under direct daily supervision of journeyman electricians.
.4 Control System Components: Provide all required control system components & related hardware. Refer to drawing control diagrams, points lists, & sequences. Where components are pipe, duct, or equipment mounted supply the components at the proper time, coordinate installation with the appropriate trade, & ensure that the components are properly located & mounted.
.5 Control Wiring: Do all required control wiring from 15A-1P circuits terminated as part of the electrical work in junction boxes in equipment rooms/areas. Coordinate exact junction box locations at the site with the electrical trade. Except as specified below, install wiring in conduit. Unless otherwise specified the final 600 mm (2') connections to sensors & transmitters, & wherever conduit extends across flexible duct connections is to be liquid-tight flexible conduit. Control wiring in ceiling spaces & wall cavities may be plenum rated cable installed without conduit but neatly harnessed, secured, & identified.
.6 Testing, Adjusting & Commissioning: When control work is complete, check the installation of components & all wiring connections, make any required adjustments, coordinate adjustments with personnel doing HVAC testing, adjusting & balancing work. & commission the control systems.
.7 Demonstration & Training: Include for a full day of on-site operation demonstration & training sessions for 2 groups of 6 people.
.6 Provide expansion valves where shown and/or required, each matched to the coil

13 FIRESTOPPING AND SMOKE SEALS

.1 Quality Assurance

.1 Wherever piping, ductwork or conduit penetrates fire rated assemblies provide an installation of a firestopping and smoke seal system.
.2 Materials used are to be asbestos-free and capable of maintaining an effective barrier against flame, smoke and gases in compliance with the requirements of
  .1 CAN4-S115-M, "Standard Method of Fire Tests of Firestop Systems."
  .2 British Columbia Building Code Section 3.1.7
.3 Acceptable Products - all products to be sourced from one manufacturer for project
  .1 3M Brand Fire Barrier Penetration Sealing System.
  .2 Johns Manville Firetemp Products
  .3 Passive Fire Protection Products
.4 Install in strict accordance with manufacturers printed specifications, including field quality control after installation.
.5 Only an approved specialist firm, employing skilled tradesman experienced in firestopping and smoke seals application, shall carry out the work of this section.
.6 Contractor shall submit to Consultant, suitable document signed by the manufacturer or his representative, stating:
  .1 The Contractor has received sufficient installation instruction from the manufacturer or his representative
  .2 Follow manufacturers published installation instructions precisely including field quality control after installation.
.7 The Contractor shall remove up to four (4) firestopping assemblies for random inspection if requested by the Consultant, and replace at no cost to the Owner.

.2 Shop Drawings

.1 Submit shop drawings and product data for review by the Consultant prior to ordering the materials

.3 Scope of FIrestopping Work

.1 Applicable to piping, ductwork and control conduit or wiring penetrating:
  .1 The walls of the Storage Rooms
  .2 South exterior wall along Grid Line H

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SUB-CONSULTANT:

KEYPLAN:

No.	DATE	DESCRIPTION	BY
4	04 NOV 2020	ISSUED FOR TENDER	TB
3	03 NOV 2020	TENDER REVISION	TB
2	29 OCT 2020	TENDER COORDINATION	TB
1	22 SEP 2020	COORDINATION	TB

REVISIONS:

SEAL:

CLIENT:

REGIONAL DISTRICT OF NANAIMO

PROJECT:
MEADOWOOD COMMUNITY HALL

1830 GLAVIN PLACE
QUALICUM BEACH, BC

DRAWING NAME:
MECHANICAL SPECIFICATIONS

PROJECT NUMBER:
20437-N

DRAWN BY: TB
DESIGNED BY: TB
APPROVED BY: AM
SCALE: REFER TO VIEWS

DRAWING:
M-10

14 FIRE EXTINGUISHERS

.1 Fire Extinguishers

.1 All fire extinguishers are to be pressurized (stored pressure) rechargeable type, in accordance with NFPA 10, and UL and/or ULC listed and labelled for the class of fires and hazard locations for which they are specified.

.2 Each extinguisher is to be complete with:

.1 A manufacturer's identification label indicating the extinguisher model number, rating, and operating instructions

.2 An anodized aluminum or chrome plated forged brass valve with positive squeeze grip on-off operation and a pull-pin safety lock

.3 Discharge hose with nozzle or horn and hose securing clip

.4 For wall mounted extinguishers, a wall mounting bracket

.3 Multi-purpose 3A10B:C dry chemical extinguishers are to be 100 mm (4") diameter, 2.27 kg (5 lb.), each complete with a steel cylinder with a safety red baked enamel finish and a waterproof stainless steel pressure gauge.

.4 Semi-Recessed Fire Extinguisher Cabinets: Rectangular cabinets sized to suit the extinguishers to be housed, with a #18 gauge corrosion resistant white enamelled steel tub, #14 gauge cleaned and prime coat painted steel door and adjustable trim assembly with rounded corners, semi-concealed piano hinge, safety glass panel, and flush stainless steel door latch. Where recessed cabinets are located in fire rated construction the cabinet construction is to maintain the fire rating.

.2 Installation of Fire Extinguishers

.1 Provide fire extinguishers of the type(s) specified and as per requirements of NFPA 10.

.2 Unless otherwise shown or specified, wall mount extinguishers using wall brackets supplied with the extinguishers.

.3 Do not install extinguishers until after wall finishing work is complete.

.4 You will be responsible for fire extinguishers until after Substantial Performance of the Work.

.5 If extinguishers are indicated adjacent to a door, locate the extinguishers at the strike side of the door.

.3 Installation of Fire Extinguisher Cabinets

.1 Provide wall cabinets for fire extinguishers where shown on Architectural Plans.

.2 Unless otherwise shown or specified, locate cabinets so that the centreline is approximately 1.2 m (4") above the finished floor.

.3 Confirm exact locations prior to installation.

15 VIBRATION CONTROL

.1 Isolation Pads

.1 Sandwich type pads, 20 mm (¾") nominal thickness, selected for 3.2 mm (1/8") static deflection unless otherwise specified, consisting of two waffle type or ribbed 50 durometer neoprene pads permanently bonded to a minimum #10 gauge steel plate, and complete with rubber bushed bolt holes and equipment anchor bolts with neoprene isolation grommets. Acceptable products are:

.1 Vibro-Acoustics Ltd. Type NSN

.2 The VMC Group Vibration Mounting & Controls Inc. (Korfund-Dynamics) "SHEAR-FLEX PLATES"

.3 Kinetics Noise Control Vibron Products Group Type NGS/NGD

.4 Mason Industries Inc. Type SW/S/SW with HG Bolt Insertion Washers

.2 Use for Condensing Units CU-1 and CU-2

.3 Use for Supply Air Unit SF-1

.4 Use for AHU-1, AHU-2, AHU-3, and AHU-4

.2 Spring Hangers

.1 Welded steel plate housing with top and bottom rod mounting holes and spring retainer, neoprene double deflection isolation element, stable colour coded spring, and heavy-duty rubber washers. Acceptable products are:

.1 Vibro-Acoustics Ltd. Type SHR-SN

.2 The VMC Group Vibration Mounting & Controls (Korfund-Dynamics) "Spring-Flex" Series HRSA

.3 Kinetics Noise Control Vibron Products Group. Type SRH

.4 Mason Industries Inc. Type 30N

.2 Use for ERV-1, ERV-2, & ERV-3

.3 Neoprene Hanger Isolators

.1 Neoprene double deflection rod isolators with steel housing and hanger rod bushing, selected for a minimum 4 mm (0.15") static deflection unless otherwise specified. Acceptable products are:

.1 Vibro-Acoustics Ltd. Type NH

.2 The VMC Group Vibration Mounting & Controls (Korfund-Dynamics) Type HR

.3 Kinetics Noise Control Vibron Products Group Type RH

.4 Mason Industries Inc. Type HD or WHD

.2 Use for FCU-1

.4 Steel Equipment Base

.1 Fully welded structural steel equipment and motor support bases, each complete with a wide flange steel frame, full depth cross members, brackets for spring mounts, and adjustable motor slide rails. Acceptable products are:

.1 Vibro-Acoustics Ltd. Type SB

.2 The VMC Group Vibration Mounting & Controls (Korfund-Dynamics) Type WFB

.3 Kinetics Noise Control Vibron Products Group Type SFB

.4 Mason Industries Inc. Type WFSL

.2 Use for AHU-3

.5 Installation of Vibration Isolation Materials

.1 Vibration isolation products are to be in accordance with the drawing schedule and details, and as specified below.

.2 Supply to the vibration isolation product manufacturer or supplier a copy of a "reviewed" shop drawing or product data sheet for each piece of equipment to be isolated and dimensioned pipe layouts of associated piping to be isolated.

.3 Ensure that the vibration isolation manufacturer coordinates material selections with equipment provided in order to ensure adherence to performance criteria. Allow for expansion and contraction when material is selected and installed.

.4 Isolation for Base Mounted Equipment: Unless otherwise indicated, install isolation materials for base mounted equipment on concrete housekeeping pad bases which extend at least over the full base and isolated area of the isolated equipment. Additional requirements are as follows:

.1 Block and shim all bases level so that all ductwork and piping connections can be made to a rigid system at the proper operating level, before isolated adjustment is made, and ensure that there is no physical contact between isolated equipment and the building structure;

.2 All steel bases are to clear the sub-base by 25 mm (1")

.3 All concrete bases are to clear the sub-base by 50 mm (2")

.5 Isolation of Piping: Isolate all piping larger than 25 mm (1") dia. directly connected to motorized and/or vibration isolated equipment with 25 mm (1") static deflection spring hangers at spacing intervals in accordance with the following:

.1 For pipe to and including 100 mm (4") diameter - first three points of support

.2 The first point of isolated piping support is to have a static deflection of twice the deflection of the isolated equipment but maximum 50 mm (2")

.3 Secure the top of the spring hanger frame rigidly to the structure, and do not install spring hangers in concealed locations

.4 Where it is impossible to use at least two spring hangers, provide Senior Flexonics Ltd. Style 102 (or 102-U as required) or equal, twin sphere, moulded rubber flexible connection assemblies, selected by the manufacturer and suitable in all respects for intended application, and complete with required nipples and connections to provide proper vibration isolation

.6 Control Wiring Connections: for all control wiring connections to vibration isolated equipment ensure that flexible metallic conduit with 90° bend is used for conduit 25 mm (1") dia. and smaller, and for conduit larger than 25 mm (1") dia., use Crouse Hinds EC couplings. Connections are to be long enough so that the conduit will remain intact if the equipment moves 300 mm (12") laterally from its installed position, and flexible enough to transmit less vibration to the structure than is transmitted through the vibration isolation. Coordinate these requirements with the mechanical trades involved. If electrical power connections are not made in a similar manner as part of the electrical work, report this fact to the Consultant.

16 SEISMIC CONTROL AND RESTRAINT

.1 Seismic Consultant

.1 Retain the services of a Professional Engineer, registered in the Province of British Columbia, and specializing in the design of seismic restraint systems or structural engineering to ascertain that all mechanical equipment installed under this contract are adequately seismically restrained.

.2 It is the responsibility of the Contractor's Seismic Engineer to ascertain that an appropriate size restraint device is selected for each piece of equipment.

.3 At the commencement of design completion of field reviews obtain a Letter of Assurance bearing the seal of the Seismic Engineer, for inclusion in the Operation and Maintenance Manuals, stating that the mechanical. Installation is seismically restrained in accordance with Building Code and SMACNA requirements.

.2 Quality Assurance

.1 Unless otherwise specified seismic control and restraints are to be designed in accordance with

.1 2018 British Columbia Building Code

.2 CAN/CSA-S832, Seismic Risk Reduction of Operational and Functional Components (OFC's) of Buildings

.3 ANSI/SMACNA Seismic Restraint Manual: Guidelines for Mechanical Systems

.4 P.P.I.C. Manual Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems

.5 Local Code requirements

.3 Products

.1 Slack Cable Restraints

.1 Galvanized steel aircraft cable slack cable restraints meeting all current requirements of the Building Code, sized to suit the application and complete with all required cable ties, anchor hardware (selected for a load equal to twice the weight of the equipment), and similar connection accessories.

.2 Anchor Bolts

.1 Equal to Mason Industries type SAB seismic anchor bolts.

.4 Execution

.1 Installation of Seismic Restraint Materials

.1 Provide seismic restraint for all mechanical equipment, piping, and ductwork, including diffusers, grilles, etc., as per the requirements of the current edition of all local Codes and Standards, and this Section of the Specification.

.2 Mechanical Components Restraint Guide: The following Mechanical Components Restraint Guide is to be used as a general guide only to establish appropriate restraint methods, hardware, and attachments, however, due to the differences in construction, size, weight, and configuration of different manufacturer's equipment and the variety of ways and means that the equipment and components can be installed, specific restraint methods are to be confirmed in the field. All seismic restraint materials and methods are to be reviewed and approved by the Seismic Consultant.

ITEM	TYPE OF RESTRAINT	MINIMUM NO. OF Restraints	NOTES
Expansion tanks	SCR	4	
D.H.W. Tanks	SCR	4	Attach to removable steel strap yoke
FCU-1/2 Units Free Standing			
- With Base	BTHP	4	
ERV-1/2 Units Suspended			
- Isolated	SCR	4	
- Non-Isolated	SCR	4	
Condensing Units (all types)			
On Sleepers	BSTLPR	4	Sleeper anchored to concrete
Grilles, Registers, Diffusers	SCR	4	Where not bolted to duct (i.e. in tee bar ceilings)
Piping	SCR TSR	As required	As per Specification
Ductwork	SCR TSR	As required	As per Specification

LEGEND

SCR Slack cable restraint (bolted to structure)
TSR Threaded support rod (bolted or clamped to structure)
BTSLPR Bolt to sleeper (sleeper bolted to structure)
BTHP Bolt to concrete housekeeping pad (pad to be keyed to structure)

.3 Provide structural steel bases for all equipment unless the equipment manufacturer certifies direct attachment capabilities.

.4 Space restraints under equipment so that the minimum distance between adjacent corner restraints is at least equal to the height of the centre of gravity of the equipment. Include the height of the centre of gravity on shop drawings, otherwise, design for increased forces on the supports and submit design calculations with shop drawings.

.5 Floor mounted isolated equipment is to be installed on concrete housekeeping pads (design and thickness as selected by the Seismic Consultant) with at least 200 mm (8") clearance between drilled inserts and the edges of the pads. Ensure that all housekeeping pads are keyed to the structure to resist seismic displacement.

.6 Requirements pertaining to seismic control work are as follows:

.1 Execute seismic control and restraint work in accordance with drawing details, reviewed product data shop drawings, and all specified/governing Codes and Standards

.2 Seismic control systems are to work in all directions

.3 Fasteners and attachment points are to resist the same maximum load as the seismic restraint

.4 Drilled or power driven anchors and fasteners are not permitted

.5 No equipment, equipment supports or mounts are to fail before failure of the structure

.6 Supports of cast iron or threaded pipe are not permitted

.7 Seismic control measures are not to interfere with the integrity of firestopping

.8 All equipment is to be bolted to the structure, and all bolts are to fitted with isolation washers

.9 The number, size, type, and installation of anchor bolts are to be as recommended by the anchor bolt manufacturer and the Seismic Design Consultant

.10 Where more than a 3 mm (1/8") differential exists between an anchor or attachment bolt diameter, an anchor and attachment point hole, or an isolator gap attachment bolt and equipment anchor attachment hole, pack the air gap with Mason type 0.5 fastseel reinforced epoxy putty

.11 All hung equipment and pipe hangers are to be fitted with a means of preventing upward movement, and non-isolated equipment and pipe hanger rods are to be fitted with oversized steel washers and nuts above and below the hanger or equipment attachment point, locked tight to prevent uplift of the equipment or hanger

.12 Where suspended equipment hanger rod length exceeds 50 rod diameters between the structure and the equipment attachment point, reinforce the rods with angle iron to prevent bending due to uplift forces

.13 Seismic control measures are not to jeopardize noise and vibration isolation systems, and 6 mm (¼") to 9 mm (3/8") clearance during normal operation of equipment and systems is to be provided between seismic restraint and equipment

.14 Where hold-down bolts for seismic restraint equipment penetrate roofing membranes coordinate with roofing trade for installation of pitch pockets/"gum cups" and sealing compound to maintain the water-tight integrity of the roof

.15 Where friction type clamps are used for support of equipment and connecting services, secure clamps to steel work by means of welding or other positive means to prevent slippage or loosening of the clamps due to seismic forces

.7 Slack Cable Restraint Requirements: Provide slack cable restraint assemblies for:

.1 All fuel gas, fuel oil, medical gas, compressed air and service piping 25 mm (1") diameter and larger

.2 All piping 32 mm (1¼") diameter and larger located in equipment rooms

.3 All horizontal and vertical piping 65 mm (2½") diameter and larger

.4 All piping suspended by individual hangers longer than 300 mm (12 inches) from the top of pipe to the bottom of the support for the hanger.

.5 All piping suspended by hangers longer than 300 mm (12 inches) from the top of the duct to the bottom of the support for the hanger.

.6 All duct mounted equipment greater than 20lbs

.7 All rectangular air handling ducts greater than or equal to 0.56 sq. meters (6 sq. ft.) in cross sectional area.

.8 All round air handling ducts greater than or equal to 710 mm (28 inches) in diameter

.9 All ducts suspended by hangers longer than 300 mm (12 inches) from the top of the duct to the bottom of the support for the hanger.

.10 All isolated and non-isolated ceiling hung fans, tanks, equipment, etc. greater than 20lbs.

.8 Slack Cable Restraint Installation Requirements: Installation requirements for slack cable restraints include the following:

.1 Connect slack cable restraints to ceiling hung equipment in such a way that the axial projection of the wires passes through the centre of gravity of the equipment

.2 Orient restraint wires on ceiling hung equipment at approximately 90° to each other (in plan), and tie back to the ceiling slab at an angle not exceeding 45° to the slab

.3 Install cables using appropriate grommets, shackles, and other hardware to ensure alignment of the restraints and to avoid bending the cables at connection points, and, where feasible, wrap cables directly around pipes as opposed to using collars

.4 For piping systems, provide transverse slack cable restraints at a maximum spacing of 12.5 m (40'), and longitudinal restraints at 25 m (80') maximum spacing, or as limited by anchor/slack cable performance

.5 For piping less than 250 mm (10") diameter, reduce transverse restraint spacing to 6 m (20'), and note that smaller piping may be rigidly tied to larger piping for restraint, but not the reverse

.6 Vary adjacent spacing of restraints on a piping run by 10% to 30% to avoid coincident resonance

.7 Transverse bracing for one pipe section may also act as longitudinal bracing for the piping connected perpendicular to it if the bracing is installed within 600 mm (24") of the elbow or tee, and if the connected piping is the same or smaller dia., and note that branch lines are not to be used to restrain main lines

.8 Wherever possible, support the weight of vertical piping risers at a point or points above the centre of gravity of the riser, and provide lateral guides at the top and bottom of the riser, and at intermediate points not to exceed the transverse spacing specified above for horizontal pipes, with guide clearance not exceeding 3m (10')

.9 Install restraints at least 50 mm (2") clear of all other equipment and services

.10 Adjust restraint cables such that they are not visibly slack, or such that the flexibility is approximately 40 mm (1½") under thumb pressure for a 1.5 m (5') cable length, with an equivalent ratio for other cable lengths, and adjust the clearance of cable strap/spacer piece restraints so as not to exceed 6 mm (¼")

.11 Provide transverse and axial restraints within 4 m (12') of a vertical bend

.12 At steel trusses, connect to top chords at panel points and follow the truss manufacturer's instructions

.13 All diffusers and grilles mounted in T-bar or similar suspended ceilings or which are not positively secured to ductwork or the structure are to be fitted with slack cable restraints to prevent them from falling in the event the ceiling grid is displaced

.14 Do not bridge vibration isolators with slack cable restraints

.15 Other approved restraint systems are conventional pipe guides, rigid restraint where piping passes through a block or concrete wall, or a cable strap and spacer piece attached to the structure and used where the piping is adjacent to a wall and conventional slack cable restraints cannot be used

.17 KITCHEN GREASE EXHAUST HOOD

.1 Kitchen Ventilation hood(s) shall be of the Type I, exhaust only wall low proximity. The hood(s) shall be U.L. 710 Listed without (with) fire damper for 450°F or 600°F rated cooking appliances. Make-up air shall be independently provided.

.2 The hood(s) exterior shall be constructed of a minimum of 18 gauge stainless steel with an embossed finish (430 SS), if 300 series SS is required, a #4 polished finish is to be provided. The hood(s) shall be constructed using the standing seam method for optimum strength. An integral 3 inch air space is provided to meet NFPA 96 clearance requirements against limited combustible walls. Integral 3 inch air space may be omitted for non-combustible construction. All seams, joints and penetrations of the hood enclosure shall be welded and/or liquid tight. Lighter material gauges, alternate material types and finishes are not acceptable. All unexposed interior surfaces shall be constructed of a minimum 18 gauge corrosion resistant steel including, but not limited to ducts, plenum, and brackets.

.3 The hood(s) shall include a filter housing constructed of the same material as the hood. The filters shall be stainless steel baffle type, U. L. 1046 Classified, and in sufficient number and sizes to ensure optimum performance. The filter housing shall terminate in a pitched, full length grease trough which shall drain into a removable grease container.

.4 The hood(s) shall include a Performance Enhancing Lip (PEL) to improve capture efficiency by turning air back into the hood. The proximity hood(s) shall be built in accordance with National Fire Protection Association (NFPA) Bulletin #96, International Mechanical Code (IMC), Uniform Mechanical Code (UMC), and bear the National Sanitation Foundation (NSF) Seal of Approval. The hood manufacturer shall provide, on request, the necessary data that confirms compliance with the code authorities listed above.

.5 Refer to mechanical plans for equipment schedule and installation details.

.18 KITCHEN GREASE EXHAUST HOOD FIRE SUPPRESSION SYSTEM

.1 System Design

.1 Schematic plans and schedules of kitchen hood fire suppression system are indicated on the drawings.

.1 The Fire Suppression Contractor is to include in his tender the cost of providing engineered shop drawings for the entire hood fire suppression system.

.2 Shop drawings shall be prepared and sealed by a professional engineer registered in the Province of British Columbia.

.3 The design engineer shall design system in accordance with NFPA-96-2014 requirements

.4 The design engineer shall provide all professional letters of assurance (from the British Columbia Building Code) that may be required by the local Building Inspector, and provide site reviews of the installation sufficient to satisfy requirements of such submissions.

.2 Product Info

.1 The system piping shall be installed in the hood at the time of construction above the hood or within the supply plenum, and shall be concealed from view. No exposed piping is acceptable, with the exception of appliance drops. The system shall be capable of automatic detection and actuation and/or remote manual actuation. The system shall have the fire suppression capabilities to protect the ducts, plenums, filter areas and cooking equipment.

.2 The Prepipe only system includes schedule 40 black iron pipe, detectors, and chrome appliance drops. The remainder of the system is not included and is provided by others. Available for any job site.

.3 The Export system (Canada) includes schedule 40 black iron pipe, detectors, chrome appliance drops, additional conduit and black iron to complete the system, the PRM pneumatic release module, agent cylinder, agent, detectors, tubing, liquid tight fittings, remote manual pull station and gas valve. The field installed parts will be shipped to the freight forwarder by the manufacturer in a separate shipment. The remainder of the system is not included and is provided by others.

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MECHANICAL SPECIFICATIONS

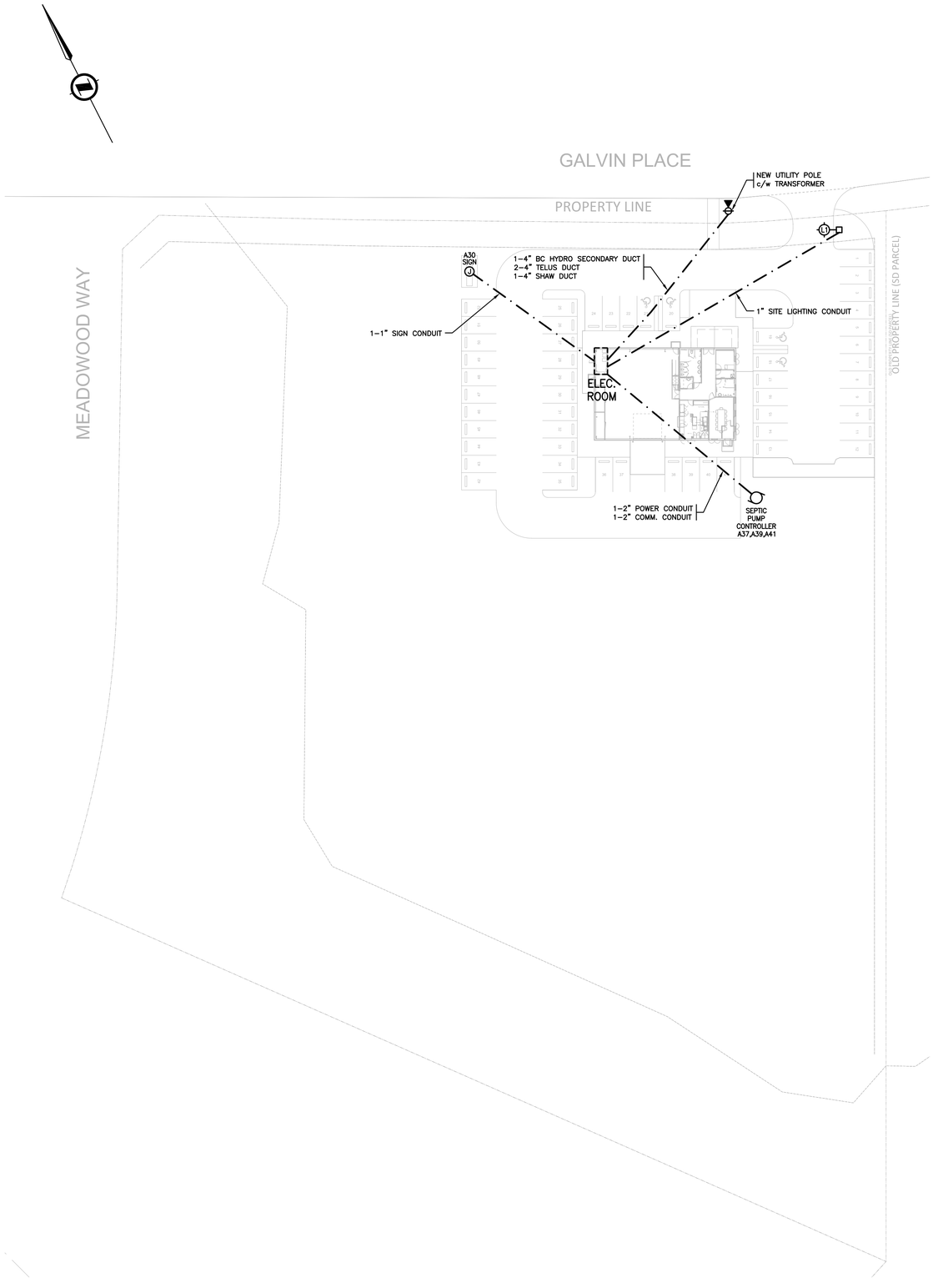
PROJECT NUMBER:

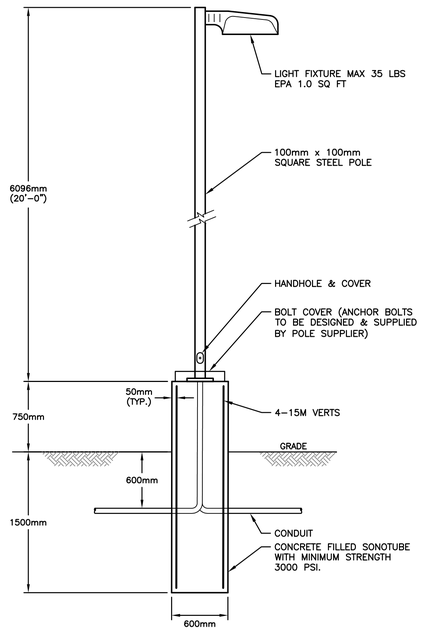
20437-N

DRAWN BY:	TB
DESIGNED BY:	TB
APPROVED BY:	AM
SCALE:	REFER TO VIEWS

DRAWING:

M-11





PARKING LOT LIGHT DETAIL

SCALE: N.T.S.

SYMBOL LEGEND

SYMBOL	MOUNTING	DESCRIPTION
	CEILING	2'x4' LED LUMINAIRE, SURFACE/SUSPENDED
	CEILING	2'x2' LED LUMINAIRE, RECESSED
	CEILING	1'x4' LED LUMINAIRE, SURFACE
	WALL	LED LUMINAIRE, SURFACE
	CONCRETE BASE	POLE AND LED LUMINAIRE
	455mm (18") B.O.D. A.F.F.	DUPLEX RECEPTACLE, 1 GANG
20A–T	455mm (18") B.O.D. A.F.F.	DUPLEX RECEPTACLE, 20 AMP T–SLOT
	AS REQUIRED	240 VOLT RECEPTACLE, AS SPECIFIED
	455mm (18") B.O.D. A.F.F.	DATA OUTLET
CATV	455mm (18") B.O.D. A.F.F.	CATV OUTLET
	455mm (18") B.O.D. A.F.F.	TELEPHONE OUTLET
$	1200mm (48") T.O.D. A.F.F.	SP 1 GANG SWITCH
$D	1200mm (48") T.O.D. A.F.F.	DIMMER SWITCH
$3	1200mm (48") T.O.D. A.F.F.	3–WAY, 1 GANG SWITCH
$4	1200mm (48") T.O.D. A.F.F.	4–WAY, 1 GANG SWITCH
$VS	1200mm (48") T.O.D. A.F.F.	1 GANG SWITCH c/w VACANCY SENSOR
$M	1200mm (48") T.O.D. A.F.F.	1 GANG SWITCH c/w MOTION SENSOR
M	CEILING	MOTION SENSOR
TC	WALL	24 HOUR TIME–CLOCK
100W	2400mm (96") A.F.F.	EMERGENCY BATTERY, 100 W
	2400mm (96") A.F.F.	RUNNING MAN PICTOGRAM EXIT SIGN
	2400mm (96") A.F.F.	RUNNING MAN PICTOGRAM EXIT SIGN, DIRECTION INDICATED
DS	2400mm (96") A.F.F.	RUNNING MAN PICTOGRAM EXIT SIGN, DOUBLE SIDED
	2400mm (96") A.F.F.	REMOTE EMERGENCY LIGHT, DOUBLE HEADS, WALL MOUNTED
	CEILING	REMOTE EMERGENCY LIGHT, DOUBLE HEADS, CEILING MOUNTED
J	AS REQUIRED	JUNCTION BOX
	–	MOTOR CONNECTION
M	–	MECHANICAL EQUIPMENT CONNECTION
K	–	KITCHEN EQUIPMENT CONNECTION
	GROUND	CONDUIT, BURIED
FF 2.5	WALL	ELECTRIC FORCE FLOW HEATER, RECESSED, 2500W
2.0	WALL	ELECTRIC BASEBOARD HEATER, 2000 WATTS
T	1200mm (48") T.O.D. A.F.F.	LINE VOLTAGE THERMOSTAT
DC	DOOR FRAME	INTRUSION – DOOR CONTACT
KP	WALL	INTRUSION – KEY PAD
PIR	CEILING/WALL	INTRUSION – PASSIVE INFRARED MOTION DETECTOR

ABBREVIATIONS:
(NL) – NIGHT LIGHT
(AC) – ABOVE COUNTER
(WP) – WEATHER PROOF
(GF) – GROUND FAULT
(B.O.D.) – BOTTOM OF DEVICE
(T.O.D) – TOP OF DEVICE
(A.F.F) – ABOVE FINISHED FLOOR
(B.C.) – BELOW CEILING

LOAD CALCULATION

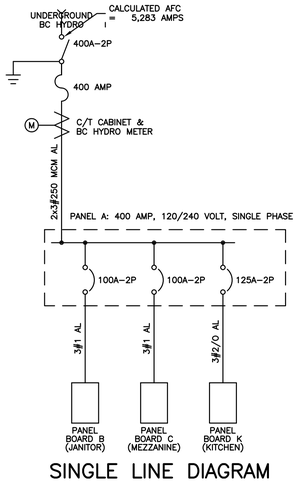
1.	FLOOR AREA: 5,561 sq.Ft x 2.5 W/sq.Ft	= 13,903 VA
2.	HVAC:	= 22,608 VA
3.	ELECTRIC HEAT	= 5,150 VA
4.	KITCHEN EQUIPMENT:	= 22,056 VA
5.	MISC. LOADS:	= 10,000 VA
6.	TOTAL VA:	= 73,717 VA
7.	AMPACITY: 73,717 VA /240 VOLT	= 307 AMPS
8.	80% CAPACITY: 307 AMPS X 1.25	= 384 AMPS
9.	SERVICE SIZE: 400 AMP, 120/240 V, SINGLE PHASE	

GENERAL NOTE:

COORDINATE WITH UTILITY COMPANIES AND CIVIL CONSULTANT. REFER TO UTILITY DESIGN DRAWINGS FOR EXACT ROUTING/PLACEMENT OF DUCTS, PADS, PEDESTALS, PULL BOXES, ETC.

SINGLE LINE NOTE:

ALL EQUIPMENT TO BE CAPABLE OF WITHSTANDING CALCULATED FAULT CURRENT OR DISTRIBUTION MANUFACTURER TO DEMONSTRATE SERIES RATING OF DEVICES.



SINGLE LINE DIAGRAM

NO.	DATE	REVISION
3	NOV 04 2020	ISSUED FOR TENDER
2	AUG 02 2018	ISSUED FOR COST ESTIMATE
1	JULY 31 2018	ISSUED FOR COORDINATION

RB ENGINEERING LTD
ELECTRICAL CONSULTING ENGINEERS
#4 1850 NORTHFIELD ROAD
NANAIMO, BC, V9S 3B3
TEL 250-756-4444
RBENGINEERING.CA

CLIENT

PROJECT

MEADOWOOD
1830 GALVIN PL.
QUALICUM, B.C.

TITLE

SITE PLAN
ELECTRICAL
LAYOUT

PROJECT NO. 18–2934

DATE JULY, 2018

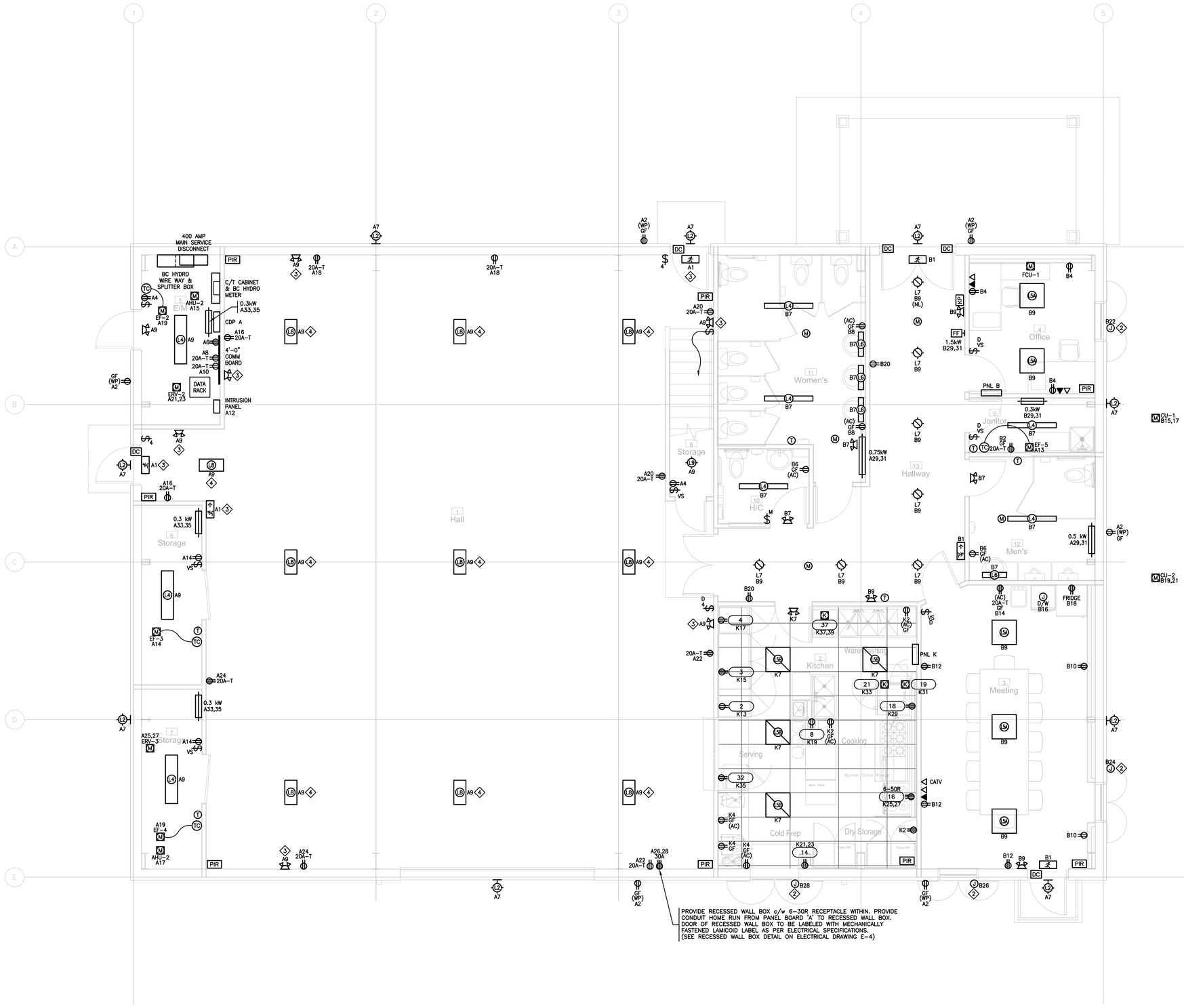
SCALE 1:500

SEAL

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
C. E. MITCHELL
November 4, 2020

DRAWING NO.

E-1



KEY NOTES:

1. NOT USED.
2. ROUGH-IN FOR FUTURE WINDOW ROLL SHUTTER OPERATOR.
3. PROVIDE POLY-CARBONATE OR WIRE GUARD FOR ELECTRICAL DEVICE.
4. LIGHT FIXTURE TO DE-ENERGIZE WHEN INTRUSION SYSTEM IS ARMED.

NO.	DATE	REVISION
1	NOV 04 2020	ISSUED FOR TENDER

KB ENGINEERING LTD
ELECTRICAL CONSULTING ENGINEERS
#4 1830 NORTHFIELD ROAD
NANAIMO, BC, V9S 3B3
TEL 250-756-4484
RBENGINEERING.CA

CLIENT

PROJECT

MEADOWOOD
1810 GALVIN PLACE
QUALICUM, BC

TITLE

MAIN FLOOR PLAN
ELECTRICAL LAYOUT

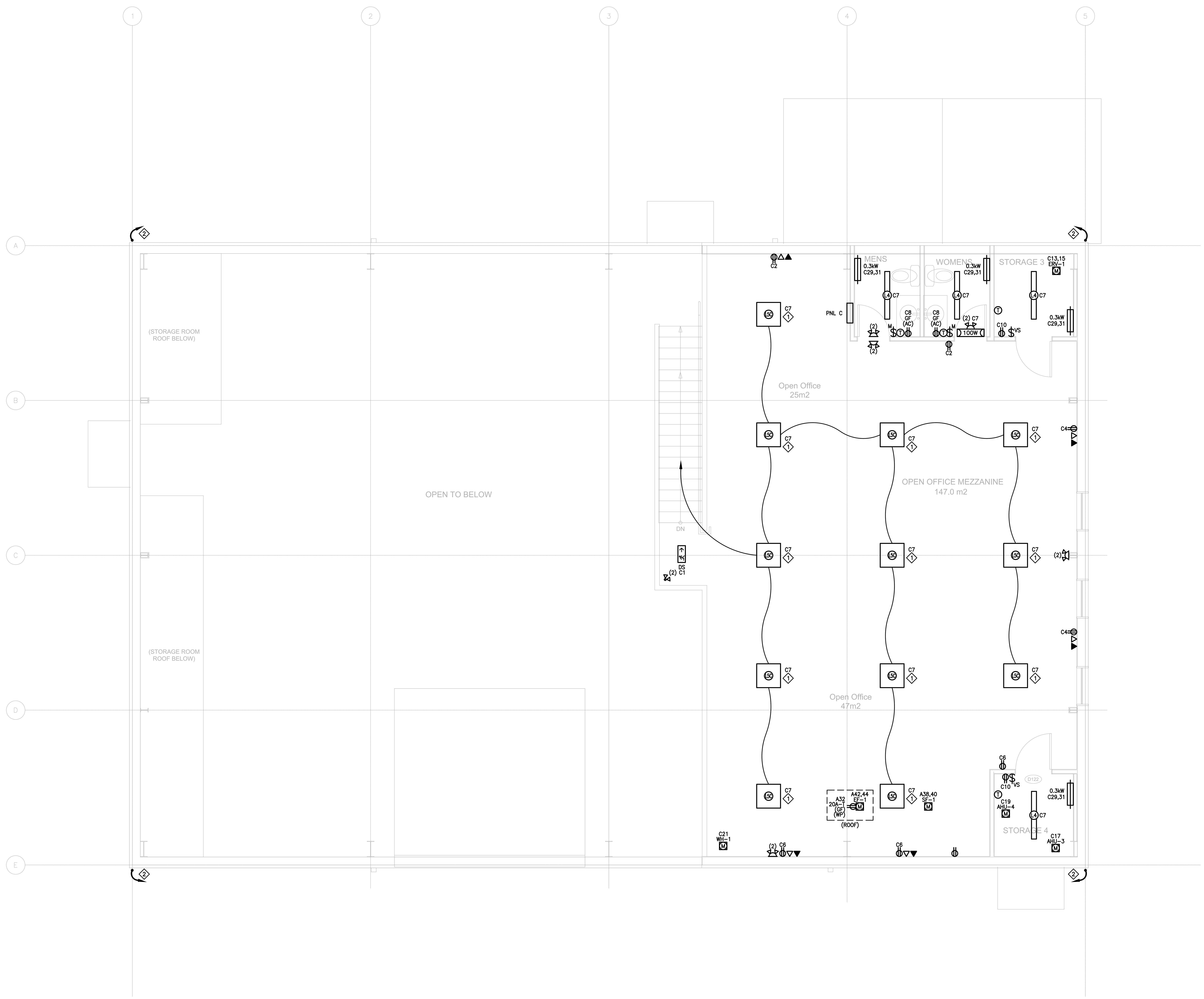
PROJECT NO.	18-2934
DATE	JULY, 2018
SCALE	1/4"=1'-0"

SEAL

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
C. E. MATTHEWS
November 4, 2020

DRAWING NO.

E-2



KEY NOTES:

1. LIGHT FIXTURE TO DE-ENERGIZE WHEN INTRUSION SYSTEM IS ARMED.
2. 1" CONDUIT BACK TO COMM BOARD FOR FUTURE CAMERA. COORDINATE EXACT LOCATION WITH OWNER.

NO.	DATE	TITLE
1	NOV 04 2020	ISSUED FOR TENDER

REVISION

RB ENGINEERING LTD
ELECTRICAL CONSULTING ENGINEERS
#4 1850 NORTHFIELD ROAD
NANAIMO, BC, V9S 3B3
TEL 250-756-4444
RBENGINEERING.CA

CLIENT

PROJECT

MEADOWOOD
1810 GALVIN PLACE
QUALICUM, BC

TITLE

MEZZANINE PLAN
ELECTRICAL LAYOUT

PROJECT NO. 18-2934

DATE JULY, 2018

SCALE 1/4"=1'-0"

SEAL

November 4, 2020

DRAWING NO.

E-3

VOLTS 120/240 V | PANEL A | MAIN BREAKER NONE
PHASE 1ø | LOCATION ELECTRICAL RM | MIN. BUS AMPACITY 400 A
MOUNTING SURFACE

CONTACTOR	DESCRIPTION	WATTAGE øA	WATTAGE øB	BKR	CIRC	A B	CIRC	BKR	WATTAGE øA	WATTAGE øB	DESCRIPTION
	EXIT SIGNS	100		15	1		2	15	500		REC – EXTERIOR
					3		4	15		500	REC – ELEC. RM/MECH. RM
					5		6	15	500		REC – COMM BOARD
	LTS – EXTERIOR		169	15	7		8	20		500	REC – DATA RACK
② X	LTS – HALL	1060		20	9		10	20	500		REC – DATA RACK
					11		12	15		500	INTRUSION PANEL
					13		14	15	500		REC – STORAGE
	AHU–1 – AIR HANDLING UNIT		1560	20	15		16	20		500	REC – HALL
	AHU–2 – AIR HANDLING UNIT	1560		20	17		18	20	500		REC – HALL
	EXHAUST FANS		100	15	19		20	20		500	REC – HALL
	ERV–2 – ENERGY RECON	840		15	21		22	20	500		REC – HALL
			840	2P	23		24	20		500	REC – HALL
	ERV–3 – ENERGY RECON	840		15	25		26	30	500		REC – HALL
			840	2P	27		28	2P		500	
					29		30	15	500		SIGN
					31		32	20		500	REC – ROOF
	ELECTRIC HEAT	450		15	33		34				
			450	2P	35		36				
	SEPTIC SYSTEM PUMP	400		20	37		38	45	2304		SF–1 – SUPPLY FAN
	SEPTIC SYSTEM PUMP		400	20	39		40	2P		2304	
	SEPTIC SYSTEM CONTROLLER PWR	250		15	41		42	30	840		EF–1 – EXHAUST FAN
					43		44	2P		840	
					45		46				
					47		48				
	PANEL BOARD B	8363		100	49		50				
			8185	2P	51		52				
	PANEL BOARD C	4528		100	53		54				
			3816	2P	55		56				
	PANEL BOARD K	10766		125	57		58				
			12708	2P	59		60				

TOTAL A	35,983 VA	
TOTAL B	36,212 VA	
TOTAL LOAD	72,195 VA	301 AMPS

VOLTS 120/240 V | PANEL B | MAIN BREAKER NONE
PHASE 1ø | LOCATION JANITOR RM | MIN. BUS AMPACITY 100 A
MOUNTING FLUSH

DESCRIPTION	WATTAGE øA	WATTAGE øB	BKR	CIRC	A B	CIRC	BKR	WATTAGE øA	WATTAGE øB	DESCRIPTION
EXIT SIGNS	100		15	1		2	20	500		REC – JANITOR RM
				3		4	15		500	REC – OFFICE
				5		6	15	500		REC – MENS WASH. RM
LTS – JANITOR/WASH. RM		280	15	7		8	15		500	REC – WOMEN WASH. RM
LTS – OFFICE/HALL/MGT	258		15	9		10	15	500		REC – MEETING
				11		12	15		500	REC – MEETING
EXHAUST FANS	100		15	13		14	20	500		REC – MTG KITCHEN
CU–1 – CONDENSING UNIT		1056	15	15		16	15		500	DISHWASHER
	1056		2P	17		18	15	500		REC – FRIDGE
CU–1 – CONDENSING UNIT		1824	30	19		20	15		500	REC – HALL
	1824		2P	21		22	15	500		WINDOW ROLL SHUTTER
				23		24	15		500	WINDOW ROLL SHUTTER
				25		26	15	500		WINDOW ROLL SHUTTER
				27		28	15		500	WINDOW ROLL SHUTTER
ELECTRIC HEAT	1525		20	29		30				
		1525	2P	31		32				
				33		34				
				35		36				
				37		38				
				39		40				
				41		42				

TOTAL A	8,363 VA	
TOTAL B	8,185 VA	
TOTAL LOAD	16,548 VA	69 AMPS

VOLTS 120/240 V | PANEL C | MAIN BREAKER NONE
PHASE 1ø | LOCATION MEZZANINE | MIN. BUS AMPACITY 100 A
MOUNTING FLUSH

CONTACTOR	DESCRIPTION	WATTAGE øA	WATTAGE øB	BKR	CIRC	A B	CIRC	BKR	WATTAGE øA	WATTAGE øB	DESCRIPTION
	EXIT SIGNS	100		15	1		2	15	500		REC – MEZZANINE
					3		4	15		500	REC – MEZZANINE
					5		6	15	500		REC – MEZZANINE
② X	LTS – MEZZANINE		416	15	7		8	15		500	REC – MENS/WOMEN WASH. RM
					9		10	15	500		REC – STORAGE
					11		12				
	ERV–1 – ENERGY RECON	840		15	13		14				
			840	2P	15		16				
	AHU–3 – AIR HANDLING UNIT	960		15	17		18				
	AHU–4 – AIR HANDLING UNIT		960	15	19		20				
	WH–1 – WATER HEATER	528		15	21		22				
					23		24				
					25		26				
					27		28				
	ELECTRIC HEAT	600		15	29		30				
			600	2P	31		32				
					33		34				
					35		36				
					37		38				
					39		40				
					41		42				

TOTAL A	4,528 VA	
TOTAL B	3,816 VA	
TOTAL LOAD	8,344 VA	35 AMPS

VOLTS 120/240 V | PANEL K | MAIN BREAKER NONE
PHASE 1ø | LOCATION KITCHEN | MIN. BUS AMPACITY 200 A
MOUNTING FLUSH

CONTACTOR	DESCRIPTION	WATTAGE øA	WATTAGE øB	BKR	CIRC	A B	CIRC	BKR	WATTAGE øA	WATTAGE øB	DESCRIPTION
					1		2	15	500		REC – KITCHEN
					3		4	15		500	REC – KITCHEN
					5		6				
	LTS – KITCHEN		128	15	7		8				
					9		10				
					11		12				
	2 – REACH–IN REFRIGERATOR	333		15	13		14				
	3 – REACH–IN REFRIGERATOR		750	15	15		16				
	4 – REACH–IN FREEZER	333		15	17		18				
	8 – FOOD PROCESSOR		750	15	19		20				
	14 – TOASTER	900		30	21		22				
			900	2P	23		24				
① X	16 – INDUCTION RANGE	3840		40	25		26				
			3840	2P	27		28				
① X	18 – CONVECTION OVEN	240		15	29		30				
	19 – EXHAUST HOOD		1440	15	31		32				
	21 – FIRE SUPPRESSION SYSTEM	720		15	33		34				
	32 – U/C REFRIGERATOR		500	15	35		36				
	37 – DISHWASHER	3900		40	37		38				
			3900	2P	39		40				
							41				
							42				

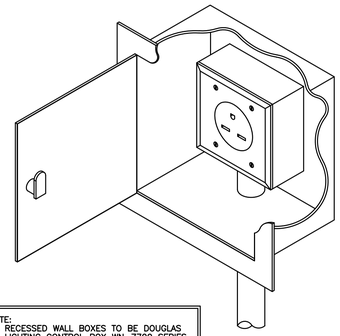
TOTAL A	10,766 VA	
TOTAL B	12,708 VA	
TOTAL LOAD	23,474 VA	98 AMPS

INTERIOR LIGHTING POWER DENSITY

TYPE OF AREA	ASHRAE 90.1–2016 (W/sq.m.)	AREA (sq.m.)	ASHRAE ALLOWABLE WATTAGE	ACTUAL WATTAGE
TOWN HALL	8.6	517	4446	2344

EXTERIOR LIGHTING POWER DENSITY

TYPE OF AREA	ASHRAE 90.1–2016 (W/sq.m.)	AREA (sq.m.)	ASHRAE ALLOWABLE WATTAGE	ACTUAL WATTAGE
UNCOVERED PARKING	0.32	3504	1121	169



NOTE:
RECESSED WALL BOXES TO BE DOUGLAS LIGHTING CONTROL BOX WN–7700 SERIES

RECESSED WALL ELECTRICAL BOX DETAIL

SCALE: N.T.S.

KEY NOTES:

① SHUT DOWN KITCHEN AND ELECTRICAL EQUIPMENT UPON ACTIVATION UPON ACTIVATION OF KITCHEN EXHAUST HOOD FIRE SUPPRESSION SYSTEM.

② LIGHT FIXTURES AS NOTED ON FLOOR PLANS TO SHUT OFF ON ACTIVATION OF INTRUSION SYSTEM.

KITCHEN EQUIPMENT SCHEDULE

ITEM	QTY	DESCRIPTION	VOLTS/PHASE/FREQ	HP	kW	FLA	MCA	MOCP	CONNECTION	NOTES
2	1	REACH–IN REFRIDGERATOR	120/1/60	1/3					5–15R	1
3	1	REACH–IN REFRIDGERATOR	120/1/60	3/4					5–15R	1
4	1	REACH–IN FREEZER	120/1/60	1/3					5–15R	1
8	1	FOOD PROCESSOR	120/1/60	3/4					5–15R	1
14	1	TOASTER	240/1/60		1.8				6–30R	1
16	1	INDUCTION RANGE	240/1/60			40			6–50R	1
18	1	CONVECTION OVEN	120/1/60			2			5–15R	1
19	1	EXHAUST HOOD	120/1/60			15			DIRECT	1
21	1	FIRE SUPPRESSION SYSTEM	120/1/60			6			DIRECT	1
32	1	UNDERCOUNTER REFRIDGERATOR	120/1/60						5–15R	1
37	1	DISHWASHER	240/1/60			32.5			DIRECT	1

NOTES:
1. PROVIDE POWER POINT CONNECTION AND DISCONNECT AS REQUIRED.

ELECTRICAL CONTRACTOR MUST CONFIRM LOCATION, VOLTAGE, PHASE, AMPACITY OF ALL MECHANICAL EQUIPMENT BEFORE CONNECTION. REPORT ANY MAJOR DISCREPANCIES TO THE ELECTRICAL CONSULTANT. NO EXTRAS WILL BE ALLOWED FOR REMOVING INSTALLED CABLE AND BREAKERS FOR UNCOORDINATED MECHANICAL EQUIPMENT CONNECTION.

MECHANICAL EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	VOLTS/PHASE/FREQ	HP	kW	FLA	MCA	MOCP	DISC.	STARTER	CONTROL	NOTES
ERV–1	ENERGY RECOVERY VENT – MEZZ.	240/1/60	1		7	8	15			BY MECH.	1,2
ERV–2	ENERGY RECOVERY VENT – NORTH STOR.	240/1/60	1		7	8	15			BY MECH.	1,2
ERV–3	ENERGY RECOVERY VENT – SOUTH STOR.	240/1/60	1		7	8	15			BY MECH.	1,2
AHU–1	AIR HANDLING UNIT – NORTH STOR.	120/1/60	1		13		20	30A–1P	RELAY	BY MECH.	1,2
AHU–2	AIR HANDLING UNIT – SOUTH STOR.	120/1/60	1		13		20	30A–1P	RELAY	BY MECH.	1,2
AHU–3	AIR HANDLING UNIT – MEZZ STOR.	120/1/60	1/2		8		15	15A–1P	RELAY	BY MECH.	1,2
AHU–4	AIR HANDLING UNIT – MEZZ STOR.	120/1/60	3/4		8		15	15A–1P	RELAY	BY MECH.	1,2
FCU–1	FAN COIL UNIT – OFFICE							15A–1P		BY MECH.	4
CU–1	CONDENSING UNIT – OUTDOOR	240/1/60	1/8			11	15	15A–2P–WP		BY MECH.	1,2
CU–2	CONDENSING UNIT – OUTDOOR	240/1/60	1/3			19	30	30A–2P–WP		BY MECH.	1,2
EF–1	EXHAUST FAN – KITCHEN	240/1/60	1.5		7		30	30A–2P		KITCHEN CTRL	1,2
EF–2	EXHAUST FAN – NORHT STOR.	120/1/60		0.025				15A–1P		24HR TIMECLOCK	1,3
EF–3	EXHAUST FAN – SOUTH STOR.	120/1/60		0.025				15A–1P		24HR TIMECLOCK	1,3
EF–4	EXHAUST FAN – WEST STOR.			0.025						24HR TIMECLOCK	1,3
EF–5	EXHAUST FAN – JANITOR CLOSET	120/1/60		0.025				15A–1P		24HR TIMECLOCK	1,3
SF–1	SUPPLY FAN – KITCHEN HOOD	240/1/60	1.5		19.2	26.5	45.2	60A–2P		KITCHEN CTRL	1,2
WH–1	WATER HEATER – MEZZ.	120/1/60		0.265		5.5				INTEGRAL	1,2

NOTES:
1. PROVIDE POWER POINT CONNECTION AND DISCONNECT AS REQUIRED.
2. CONTROLS SUPPLIED AND INSTALLED BY MECHANICAL.
3. CONTROLS SUPPLIED AND INSTALLED BY ELECTRICAL.
4. FAN COIL UNIT FCU–1 FED VIA CONDENSING UNIT CU–1.

ELECTRICAL CONTRACTOR MUST CONFIRM LOCATION, VOLTAGE, PHASE, AMPACITY OF ALL MECHANICAL EQUIPMENT BEFORE CONNECTION. REPORT ANY MAJOR DISCREPANCIES TO THE ELECTRICAL CONSULTANT. NO EXTRAS WILL BE ALLOWED FOR REMOVING INSTALLED CABLE AND BREAKERS FOR UNCOORDINATED MECHANICAL EQUIPMENT CONNECTION.

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER	CATALOG No.	MOUNTING	DESCRIPTION	LAMP TYPE	LAMP QTY	REMARKS
LED							
L1	LITHONIA	AS1LED–42C–350–40K–SR3–MVOLT–SPA–DBLXD	4" SQUARE POLE	15'–0" TALL LED SITE LIGHT	49W LED		
L2	LITHONIA	WDGE1LED–P2–40K–80CRI–VF–MVOLT–DNAXD	SURFACE, WALL	SMALL LED WALL PACK	15W LED		
L3	NOT USED						
L4	LITHONIA	SBL4–LP835(CI–254RKP)	SURFACE, CEILING	4'–0" LED SQUARE WRAP	32W LED		
L5A	LITHONIA	CPX–2X2–3200LM–35K–M4	SURFACE, CEILING	2' x 2' LED FLAT PANEL	32W LED		c/w SURFACE MOUNT KIT
L5B	LITHONIA	CPX–2X2–3200LM–35K–M4	RECESSED, CEILING	2' x 2' LED FLAT PANEL	32W LED		
L5C	LITHONIA	CPX–2X2–3200LM–35K–M4	SUSPENDED, CEILING	2' x 2' LED FLAT PANEL	32W LED		c/w 4–CABLE CONNECTION
L6	LITHONIA	BLWP2–33L–ADSMT–GZ10–LP835	SURFACE, WALL ABOVE MIRROR	2'–0" LED WALL CUBE	30W LED		
L7	LITHONIA	WF6–LED–27K30K55K–90CRI–MW–M6	RECESSED, CEILING	6" DIA LED WAFER THIN	14W LED		3500K COLOR TEMP.
L8	LITHONIA	IBG–18000LM–SEF–AFL–GND–MVOLT–GZ10–35K–80CRI	SUSPENDED, CEILING	2' x 1' LED HIGH BAY	106W LED		0–10 VOLT DIMMING
L9	LEVITON	9850–LED	SURFACE, CEILING	LED LAMP HOLDER c/w POLY–CARBONATE GUARD	10W LED		

NO.	DATE	TITLE
1	NOV 04 2020	ISSUED FOR TENDER
NO.	DATE	TITLE

REVISION

KB ENGINEERING LTD
ELECTRICAL CONSULTING ENGINEERS
#4 1850 NORTHFIELD ROAD NANAIMO, BC, V9S 3B3
TEL 250-756-4444
RBENGINEERING.CA

CLIENT

PROJECT
MEADOWOOD
1810 GALVIN PLACE
QUALICUM, BC

TITLE
ELECTRICAL PANELS & SCHEDULES

PROJECT NO. 18–2934

DATE JULY, 2018

SCALE N/A

SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA C.E. MITCHELL
November 4, 2020

DRAWING NO.
E-4

REFERENCE STANDARDS

1. MATERIAL SHALL CARRY CSA OR CUL APPROVAL AND CONFORM WITH EEMAC STANDARDS.
2. EQUIPMENT WIRING AND WIRING DEVICES SHALL MEET THE REQUIREMENTS OF THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE 22.1, PART 1.
3. EMERGENCY LIGHTING, EXIT SIGNS AND SEISMIC REQUIREMENTS TO MEET THE REQUIREMENTS OF THE CURRENT EDITION OF THE BRITISH COLUMBIA BUILDING CODE.

GENERAL REQUIREMENTS

1. THE ELECTRICAL CONTRACTOR SHALL SUPPLY ALL LABOUR, MATERIALS, TOOLS, EQUIPMENT, TRANSPORTATION REQUIRED FOR THE COMPLETE INSTALLATION, WIRING AND TESTING OF THE SYSTEM SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN AND IS RESPONSIBLE TO REVIEW ARCHITECTURAL, MECHANICAL, STRUCTURAL, CIVIL DRAWINGS FOR DISCREPANCIES AND REPORT TO THE ENGINEER.
2. THE ELECTRICAL DRAWINGS INDICATE THE GENERAL LOCATION AND ROUTE. CONDUIT AND/OR WIRING SHALL BE INSTALLED TO PROVIDE A COMPLETE OPERATING SYSTEM AND SHALL BE INSTALLED PHYSICALLY TO CONSERVE HEADROOM, FURRING SPACES ETC.
3. THE WORK TO BE DONE AS DESCRIBED IN THE DRAWINGS.
4. THE DRAWINGS AND SPECIFICATIONS COMPLEMENT EACH OTHER AND WHAT IS CALLED FOR BY ONE IS BINDING AS IF CALLED FOR BY BOTH. IF THERE IS ANY DOUBT AS TO THE MEANING OR TRUE INTENT DUE TO A DISCREPANCY BETWEEN THE DRAWINGS AND SPECIFICATIONS, OBTAIN RULING FROM ENGINEER PRIOR TO TENDER CLOSING. FAILING THIS, ALLOW FOR THE MOST EXPENSIVE ALTERNATIVE.
5. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL CONDUIT, WIRE, CABLE, ETC., THE ELECTRICAL CONTRACTOR IS TO PROVIDE CONDUIT, WIRE, CABLE, ETC. FOR A COMPLETE OPERATING JOB TO MEET IN ALL RESPECTS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS. ELECTRICAL DRAWINGS DO NOT SHOW ALL ARCHITECTURAL, STRUCTURAL AND MECHANICAL DETAILS.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AS TO WHICH TRADE PROVIDES SPECIFIC LABOUR AND MATERIALS. EXTRAS WILL NOT BE CONSIDERED BASED ON DIFFERENCES IN INTERPRETATION AS TO WHICH TRADE IS TO PROVIDE CERTAIN ITEMS.

SHOP DRAWINGS

1. PRIOR TO ORDERING OF ANY EQUIPMENT, THIS CONTRACTOR SHALL SUBMIT DIGITAL COPIES OF SHOP DRAWINGS AND DETAIL DRAWINGS FOR REVIEW BY THE ENGINEER. THE ENGINEER SHALL THEN RETURN COPIES OF THE REVIEWED SHOP DRAWINGS TO THE CONTRACTOR. SHOP DRAWINGS SHALL BE SUBMITTED ON ALL MAJOR EQUIPMENT.
2. ALL SHOP DRAWINGS SUBMITTED TO THE ENGINEER MUST BEAR THE CONTRACTORS APPROVALS.
3. ALL SHOP DRAWINGS SHALL BEAR THE NAME OF THE MANUFACTURER AND/OR MANUFACTURER'S REPRESENTATIVE.
4. SUBMIT SHOP DRAWINGS FOR AT LEAST THE FOLLOWING ITEMS:
   .1 ALL DISTRIBUTION PANEL BOARDS, DISCONNECT SWITCHES, CIRCUIT BREAKERS, INSTRUMENT TRANSFORMERS AND RELAYS, ETC.
   .2 MOTOR CONTROL EQUIPMENT INCLUDING STARTERS, CONTACTORS, OVERLOAD HEATER DATA, CONTROL RELAYS, TIME DELAY RELAYS, MOTOR CIRCUIT AND CONTROL CIRCUIT FUSES/BREAKERS AND APPLICABLE PILOT LIGHTS, CONTROL TRANSFORMERS, AND SELECTOR SWITCHES, ETC.
   .3 LIGHTING FIXTURES, DIMENSIONS, WEIGHTS, ETC., PHOTOMETRIC DATA, LAMP INFORMATION AND BALLAST INFORMATION.

MAINTENANCE AND OPERATION MANUAL

1. CONTRACTOR TO SUBMIT ONE COPY OF MAINTENANCE AND OPERATION MANUALS IN THREE RING BINDER TO ENGINEER FOR APPROVAL AT TIME OF SUBSTANTIAL COMPLETION.
2. MANUALS TO INCLUDE THE FOLLOWING:
   .1 PROJECT CONTACT INFORMATION
   .2 APPROVED SHOP DRAWINGS
   .3 WARRANTIES AND GUARANTEES
   .4 TEST RESULTS
   .5 AS BUILT DRAWINGS
3. ON APPROVAL CONTRACTOR TO PROVIDE THREE COPIES OF THE MAINTENANCE AND OPERATION MANUALS IN THREE RING BINDERS c/w CD OF ALL DOCUMENTS IN PDF FORMAT.

PERMITS, CERTIFICATES, AND FEES

1. ON COMPLETION OF THE WORK, SUBMIT CERTIFICATE OF ACCEPTANCE FROM INSPECTION AUTHORITY TO THE ENGINEER.
2. PRIOR TO COMMENCEMENT OF WORK, SUBMIT THE NECESSARY DRAWINGS TO THE ELECTRICAL INSPECTION DEPARTMENT AND THE ELECTRICAL SUPPLY AUTHORITY.
3. PAY ALL ASSOCIATED FEES, AND OBTAIN DOCUMENTS POSTING AS REQUIRED.

INSPECTION OF WORK

1. UPON COMPLETION OF THE BUILDING AND IMMEDIATELY PRIOR TO FINAL INSPECTION AND TAKEOVER, CHECK LOAD BALANCE ON ALL FEEDERS AND AT DISTRIBUTION CENTRES, PANELS, ETC. IF LOAD EXCEEDS 10 PERCENT PHASE IMBALANCE, RECONNECT CIRCUITS TO BALANCE THE LOAD. RECORD EACH PHASE AMPERAGE AND VOLTAGE AND INCLUDE THE RESULTS IN THE MAINTENANCE AND SHOP DRAWING MANUALS.

ALTERNATIVES

1. ALL MATERIALS OR EQUIPMENT AS CALLED FOR ON THE DRAWINGS AND IN THE SPECIFICATIONS BY TRADE NAMES OR BY CATALOGUE REFERENCE NUMBERS, ARE THE MATERIALS ON WHICH THIS TENDER IS TO BE BASED. ALL EQUIPMENT MUST BE INSTALLED AS SHOWN ON THE DRAWINGS OR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE REQUEST FOR APPROVAL SHALL BE ACCOMPANIED BY COMPLETE SPECIFICATIONS OF PROPOSED SUBSTITUTION, SHOWING DIMENSIONS, RATINGS, PHOTOMETRICS DATA, ETC. IT SHALL BE THIS SUB-CONTRACTOR'S RESPONSIBILITY TO MAKE AND ALLOW FOR ANY CHANGES AND CHARGES WHICH WILL OCCUR IF HE WISHES TO SUBMIT ALTERNATIVE EQUIPMENT. NO SUBSTITUTION BY THIS CONTRACTOR WILL BE PERMITTED AFTER CLOSING OF THE TENDERS.
2. THE ENGINEER RESERVES THE RIGHT TO ACCEPT OR REJECT ANY ALTERNATIVES PROPOSED.

GUARANTEE

1. AFTER THE WORK IS COMPLETED BUT BEFORE FINAL PAYMENT, FURNISH TO THE OWNER A WRITTEN GUARANTEE THAT FOR ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION, ANY DEFECTS IN MATERIALS OR WORKMANSHIP WILL BE CORRECTED AT NO COST TO THE OWNER, EXCEPT WHERE, IN THE OPINION OF THE ENGINEER, SUCH DEFECTS ARE DUE TO MIS-USE OR NEGLECT BY THE OWNER.

MINOR FIELD CHANGES

1. THE LOCATION, ARRANGEMENT AND CONNECTION OF EQUIPMENT AND MATERIAL AS SHOWN ON THE DRAWINGS REPRESENTS A CLOSE APPROXIMATION OF THE INTENT AND REQUIREMENTS OF THE CONTRACT. THE RIGHT IS RESERVED BY THE ENGINEERS TO MAKE REASONABLE CHANGES REQUIRED TO ACCOMMODATE CONDITIONS ARISING DURING THE PROGRESS OF THE WORK. SUCH CHANGES SHALL BE DONE AT NO EXTRA COST TO THE OWNER, UNLESS THE LOCATION, ARRANGEMENT OR CONNECTION IS MORE THAN TEN FEET FROM THAT SHOWN AND THE ITEM IN QUESTION HAS BEEN INSTALLED.
2. CONFIRM FINAL LOCATION PRIOR TO INSTALLATION.

CONDUIT

1. INSTALL CONDUIT CONCEALED IN ALL AREAS EXCLUDING MECHANICAL AND ELECTRICAL ROOMS, OR WHERE SPECIFICALLY NOTED AS BEING EXPOSED. RUN PARALLEL OR PERPENDICULAR TO BUILDING LINES.
2. INSTALL AND ATTACH SURFACE MOUNTED CONDUIT WITH TWO HOLE STEEL STRAPS. GROUP CONDUITS WHEREVER POSSIBLE ON CHANNELS.
3. DUCTS INSTALLED BELOW GRADE AND NOT UNDER A FLOOR SLAB SHALL BE RIGID P.V.C. OR DBII. CONDUIT INSTALLATION SHALL CONFORM TO THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE. WHERE A CONDUIT CROSSES A FOUNDATION WALL OR EXPANSION JOINT, SLEEVING AND APPROPRIATE FITTINGS SHALL BE PROVIDED. INSTALL UNDERGROUND DUCT BANKS AS PER C.E.C. DIAGRAMS D11.
4. CONDUITS 1" OR LARGER INSTALLED THROUGH FIRE SEPARATIONS TO BE NON-COMBUSTIBLE.
5. FACTORY ELBOWS FOR 90 DEGREE BENDS FOR 2" OR LARGER CONDUITS.
6. MAKE CONNECTIONS TO MECHANICAL MOTORS AND EQUIPMENT WITH P.V.C. JACKETED FLEXIBLE CONDUIT AND LIQUID TIGHT CONNECTORS. MINIMUM SIZE (1/2"). ALL FLEXIBLE CONDUIT OF SUFFICIENT LENGTH TO AVOID TRANSMISSION OF VIBRATION.
7. DO NOT INSTALL CONDUIT LARGER THAN (1") IN POURED CONCRETE SLABS.
8. WHERE 1-1/4" CONDUIT OR LARGER IS SHOWN "UNDER FLOOR", RUN UNDER SLAB ABOVE VAPOUR BARRIER OR IN CEILING SPACE BELOW.
9. WHERE CONDUIT IS INSTALLED IN OR PASSES THROUGH SPECIAL AREAS SUCH AS WATERPROOF OR ISOLATION SLABS, THE INSTALLATION SHALL BE TO THE SATISFACTION AND SPECIFICATIONS OF THE SLAB SUPPLIER OR GUARANTOR.
10. A SEPARATE BONDING CONDUCTOR SHALL BE INSTALLED IN ALL CONDUITS.
11. FISH CORD SHALL BE INSTALLED IN ALL EMPTY CONDUIT SYSTEMS. FISH CORD TO BE POLYPROPYLENE.

WIRE AND CABLE

1. BUILDING WIRE: 98% CONDUCTIVITY COPPER, 90°C RATED 600V INSULATION, RW90 X-LINK FOR DAMP LOCATIONS. COPPER CONDUCTORS SHALL BE STRANDED WHEN LARGER THAN #8 AWG OR AS NOTED.
2. BRANCH CIRCUIT WIRING: THE MINIMUM SIZE OF CONDUCTORS TO BE #12 AWG CU.
3. LOW VOLTAGE SIGNAL WIRING SHALL BE SEPARATED FROM POWER WIRING AND RUN IN SEPARATE RACEWAYS. THIS INCLUDES PANEL WIREWAYS.
4. CABLES IN PLENUMS TO BE FT6 RATED UNLESS INSTALLED IN NON-COMBUSTIBLE CONDUIT.
5. NMD-90 CABLE ALLOWED IN WOOD FRAME CONSTRUCTION.
6. AC90 CABLE ALLOWED IN STEEL FRAME CONSTRUCTION AND LUMINAIRE DROPS. NO SURFACE AC90 CABLE ALLOWED.
7. SURFACE WIRING ALLOWED IN MECH/ELEC ROOMS ONLY.
8. COLOUR CODE TO CSA C22.1 CURRENT EDITION.
9. ALUMINIUM CONDUCTORS CAN NOT BE USED UNLESS SPECIFICALLY SHOWN OR WITH SPECIAL PERMISSION.

OUTLET BOXES

1. NON-COMBUSTIBLE OUTLET BOXES TO BE INSTALLED IN FIRE RATED ASSEMBLIES. IN EXTERIOR WALLS, COMBUSTIBLE BOXES WITH FIRE RATED PUTTY PACKS ARE PERMISSIBLE. COORDINATE WITH GENERAL CONTRACTOR FOR VAPOUR BARRIER DETAILS.
2. COMBUSTIBLE BOXES ARE ALLOWED IN COMBUSTIBLE ASSEMBLIES WITH NO FIRE RATING.
3. NO MUD RINGS ARE ALLOWED IN ANY FIRE RATED ASSEMBLIES.
4. MAXIMUM SIZE OF ELECTRICAL OUTLET IN FIRE RATED ASSEMBLIES TO BE AS FOLLOWS:
   .1 3 GANG BOX
   .2 5 1/2" DIA
   .3 4" x 4"

SWITCHES AND SENSORS

1. ON/OFF SWITCHES: QUIET, SLOW MAKE, SLOW BREAK DESIGN, TOGGLE HANDLE, WITH TOTALLY ENCLOSED CASE RATED AT 15A, 120 VAC.
2. DIMMING SWITCHES: DIMMING SWITCH ABLE TO ADJUST LIGHTING OUTPUT OF THE ASSOCIATED LUMINAIRE TO 1% AND HAVE AN ON/OFF FUNCTION. SWITCHES TO BE APPROVED FOR USE BY LUMINAIRE MANUFACTURER.
3. VACANCY SWITCHES: VACANCY SWITCH TO DETECT MOTION IN THE ASSOCIATED SPACE AND TURN THE LIGHTS OFF WITHIN 30 MINUTES WHEN SPACE IS UNOCCUPIED. SWITCH TO BE MANUALLY CONTROLLED FOR ON/OFF AND DIMMING FUNCTION WHEN SPACE IS OCCUPIED. SENSORS TO BE DUAL TECHNOLOGY TYPE WITH PASSIVE INFRARED (PIR) AND MICROPHONIC/ULTRASONIC DETECTION. SWITCH TO BE APPROVED FOR USE BY LUMINAIRE MANUFACTURER.
4. LINE VOLTAGE MOTION SENSORS: SENSORS TO DETECT IN THE ASSOCIATED SPACE AND TURN THE LIGHTS OFF WITHIN 30 MINUTES WHEN SPACE IS UNOCCUPIED. SENSORS TO BE DUAL TECHNOLOGY TYPE WITH PASSIVE INFRARED (PIR) AND MICROPHONE/ULTRASONIC DETECTION. SENSOR TO PROVIDE A MINIMUM RADIAL COVERAGE OF 7.6 METERS (25 FEET) WHEN MOUNTED AT 9 FEET CEILING HEIGHT. MANUFACTURER TO CONFIRM MOTION COVERAGE IN EACH AREA ON THE PLANS. LINE VOLTAGE SENSORS TO HAVE A MINIMUM CAPACITY OF 800 W AT 120 V FOR ALL LOAD TYPES.
5. COLOUR: PROVIDE WHITE SWITCHES AND SENSORS IN ALL FINISHED AREAS. ONE MANUFACTURER THROUGHOUT PROJECT.

RECEPTACLES

1. RECEPTACLES: FULL GANG SIZE, U-GROUNDING TYPE, RATED AT 15A AT 125 VAC WITH PARALLEL SLOTS, DECORA STYLE.
2. SPECIAL RECEPTACLES: GROUND FAULT INTERRUPTING (G.F.I.).
3. COLOUR: PROVIDE WHITE RECEPTACLES IN ALL AREAS. ONE MANUFACTURER THROUGHOUT PROJECT.

PLATES

1. STAINLESS STEEL.
2. WEATHERPROOF AS NOTED.

OUTSIDE LIGHTING CONTROL

1. PROVIDE LIGHTING CONTROL SYSTEMS AS INDICATED.
2. EXTERIOR LIGHTS SHALL BE CONTROLLED BY PHOTOCELL AND TIMECLOCK. INCLUDE CONTACTOR(S) AND OVERRIDE SWITCHES.
3. TIMECLOCK TO BE ASTRONOMIC, 2 CHANNEL, 28 ON/28 OFF/4 ASTRONOMIC EVENTS, AUTOMATIC DST ADJUSTMENT, ALKALINE BATTERY BACK-UP. INTERMATIC ET8015C OR APPROVED EQUAL.
4. PHOTOCELL TO BE SPEC GRADE.

LIGHTING

1. SUPPLY AND INSTALL LUMINAIRES AND LAMPS AS PER LUMINAIRE SCHEDULE.

POWER SERVICE

1. PROVIDE AN UNDERGROUND SERVICE AS SHOWN. RB ENGINEERING DRAWING IS DIAGRAMMATIC ONLY. ALL BC HYDRO INFRASTRUCTURE SHALL BE BUILT BASED ON DESIGN OBTAINED BY THE CONTRACTOR FROM BC HYDRO. CONTRACTOR TO COORDINATE SERVICE CONNECTION WITH BC HYDRO, ENSURE ALL BC HYDRO INSPECTIONS AND DETAIL REQUIREMENTS ARE MET.
2. BC HYDRO WILL PROVIDE PILASTER COVER, JUNCTION BOXES, PRECAST CONCRETE TRANSFORMER BASES AND COUNTERPOISE GROUND RODS. CONTRACTOR SHALL ARRANGE WITH BC HYDRO FOR PICK-UP AND DELIVERY. CONTRACTOR TO SUPPLY ADDITIONAL GROUNDING FOR BOLLARDS AND INSTALL ALL EQUIPMENT.
3. GROUND SERVICE AND TRANSFORMER BASES AS PER C.E.C. CURRENT EDITION.
4. WATER, SEWER AND DRAIN PIPES INCLUDING SERVICES TO BE INSTALLED PRIOR TO BC HYDRO UNDERGROUND DUCTS.
5. FOR BC HYDRO METER COMMUNICATIONS PROVIDE A 6"x6"x6" JB MOUNTED ON THE EXTERIOR OF THE BUILDING CONNECTED TO A 6"x6"x6" JB MOUNTED IN THE MAIN ELECTRICAL ROOM. PROVIDE A 6"x6"x6" JB IN EACH METER ROOM DAISY CHAINED TO MAIN ELECTRICAL ROOM JB. PROVIDE 1-1/4" EMT CONDUIT BETWEEN EACH JB. COORDINATE WITH BC HYDRO FOR EXACT LOCATIONS.
6. ALL BC HYDRO WORK TO BE DONE IN ACCORDANCE WITH APPLICABLE BC HYDRO SPECIFICATIONS.
7. BC HYDRO CHARGES WILL BE PAID DIRECTLY BY OWNER.
8. ANY CHANGES TO LAYOUT TO BE APPROVED BY BC HYDRO.

MAIN SERVICE DISTRIBUTION

1. C/T'S AND METER SUPPLIED BY HYDRO, INSTALLED BY CONTRACTOR. C/T CABINET AND METER BASES SUPPLIED AND INSTALLED BY CONTRACTOR.
2. ALL DISTRIBUTION TO HAVE LIGHT GREY COLOUR, EEMAC 2Y-1 CURRENT EDITION.
3. DETAILS SHOW GENERAL ARRANGEMENT OF COMPONENTS OF THE MAIN DISTRIBUTION REQUIRED AND ARE FOR A GUIDE TO MANUFACTURERS AND SUPPLIERS ONLY, REARRANGEMENT OF COMPONENTS WILL BE CONSIDERED TO SUIT A PARTICULAR MANUFACTURER'S EQUIPMENT OR PHYSICAL LIMITATIONS.
4. ALL EQUIPMENT TO BE CAPABLE OF WITHSTANDING CALCULATED FAULT CURRENT OR DISTRIBUTION MANUFACTURER TO DEMONSTRATE SERIES RATING OF DEVICES.

DISCONNECT SWITCHES

1. SWITCHES: 400 AMP AND ABOVE TO BE HEAVY DUTY RATED.
2. SWITCHES: 200 AMP AND BELOW TO BE GENERAL DUTY RATED.
3. PROVIDE FUSES FOR ALL DISCONNECTS AS SHOWN.

NAME TAGS

1. PROVIDE LAMICOID NAME TAG INDICATING AMPACITY, VOLTAGE AND PHASE OR INDICATED SYSTEM.
2. LAMICOID TO BE 1/8" THICK PLASTIC ENGRAVING SHEET, BLACK FACE, WHITE CORE.
3. LETTERS TO BE 1/4" HIGH UNLESS SPECIFIED OTHERWISE.
4. ALLOW FOR AVERAGE OF 25 LETTERS PER NAMEPLATE.
5. PROVIDE LAMICOID NAME TAG FOR BREAKERS, METERS, DISCONNECTS, MOTOR PROTECTION SWITCHES, PANEL BOARDS, RECESSED WALL BOX, ETC. NAME TAGS SHALL BE MECHANICALLY FASTENED.
6. PROVIDE ADHESIVE CABLES FOR ALL COMMON AREA RECEPTACLES AND ON/OFF SWITCHES ON COVER PLATES. LABEL TO INDICATE PANEL NAME AND BRANCH CIRCUIT NUMBER.
7. ALL RECESSED JUNCTION BOXES TO BE CABELLED IN INDECIBLE INK. CABLE TO INDICATE FUNCTION OF JUNCTIPN BOX (INCLUDING EQUIPMENT NAME, FIRE ALARM, EMERGENCY, OR EXIT) AND PANEL NAME AND BRANCH CIRCUIT NUMBER.

PANEL BOARDS

1. PANEL BOARDS: 1 PHASE, SOLID NEUTRAL DESIGN WITH SEQUENCE STYLE BUSSING AND FULL CAPACITY NEUTRAL OF CAPACITY INDICATED.
2. PROVIDE A TYPED WRITTEN DIRECTORY FOR EACH PANEL BOARD.
3. FOR EACH PANEL BOARD, STUB THREE 1" EMT CONDUITS TO THE CEILING SPACE.
4. BRANCH CIRCUIT BREAKERS:
   .1 BREAKERS TO BE RATED MINIMUM 10,000 AMPS SYM FAULT CURRENT AT THE OPERATING VOLTAGE UNLESS NOTED OTHERWISE.
   .2 PROVIDE BOLT-ON BREAKERS FOR ALL OTHER AREAS.
   .3 TWO AND THREE POLE BREAKERS TO HAVE A COMMON SIMULTANEOUS TRIP.
5. PANELS SHALL BE SQUARE D, EATON OR SIEMENS.

MECHANICAL EQUIPMENT CONTROL

1. THIS CONTRACTOR SHALL CO-OPERATE/COORDINATE THE SUPPLY AND INSTALLATION OF CONDUIT AND WIRING FOR LINE VOLTAGE MECHANICAL CONTROLS AND EQUIPMENT INTERLOCKING. LOW VOLTAGE CONTROLS FORM PART OF THE MECHANICAL CONTROL SPECIFICATIONS.
2. PROVIDE LINE VOLTAGE POWER SUPPLY CONNECTIONS TO ALL MECHANICAL EQUIPMENT.
3. CONFIRM LOCATION, AMPACITY, VOLTAGE AND PHASE OF ALL MECHANICAL EQUIPMENT BEFORE CONNECTION. REPORT ANY MAJOR DISCREPANCIES TO THE ENGINEER.

TELEPHONE SYSTEM

1. TELEPHONE SYSTEM INCLUDES TELEPHONE SERVICE RACEWAY AS SHOWN. CONTRACTOR TO COORDINATE TELUS INSTALLATION AND ENSURE ALL INSPECTIONS AND DETAIL REQUIREMENTS ARE MET. BIX BLOCKS, SERVICE BOARD, MULTI-MEDIA PANEL, SUITE OUTLETS AND HOME RUN TEL CABLE TO ELECTRICAL ROOM ARE INCLUDED.
2. A TEL OUTLET CONSISTS OF A BOX, JACK AND CABLE. ALL CABLES TO BE TERMINATED AT COMM. BOARD IN MAIN ELECTRICAL ROOM.
3. TEL CABLE TO BE 4 PAIR, CAT5E, #24 AWG, CONFORM TO CSA C22.2#214-M90.
4. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL BIX BLOCKS AND #6 AWG TWH GROUND WIRE TO TELUS DEMARKATION POINT.
5. THE 2 - 100mm DBII DUCT FROM THE PILASTER TO ELECTRICAL ROOM TO USE 22.5 DEGREE BENDS.
6. TELUS CHARGES WILL BE PAID DIRECTLY BY OWNER.
7. ANY CHANGES TO LAYOUT TO BE APPROVED BY TELUS.

CABLEVISION SYSTEM

1. CABLEVISION SYSTEM INCLUDES SERVICE RACEWAY, SERVICE BOARD OUTLETS.
2. A CABLEVISION OUTLET CONSISTS OF A BOX, CAT5E CABLE c/w JACK AND RG6 CABLE c/w JACK. ALL CABLES TO BE TERMINATED AT COMM. BOARD IN MAIN ELECTRICAL ROOM.
3. APPROVED CATV CONTRACTOR SHALL INSTALL COAXIAL CABLE AND PERFORM ALL TERMINATIONS FOR THE OUTLETS.
4. CABLEVISION SERVICE CHARGES TO BE PAID DIRECTLY BY OWNER.
5. ANY CHANGES TO LAYOUT TO BE APPROVED BY CABLEVISION COMPANY.

DATA SYSTEM

1. ALL DATA WIRING, JACKS AND PATCH PANELS TO BE INSTALLED AND TESTED AS PER ANSI TIA/EIA 568B STANDARDS.
2. DATA OUTLET CONSISTS OF BOX, JACK AND CABLE.
3. DATA CABLE TO BE 4 PAIR CAT6, #24 AWG.
4. DATA CABLES TO BE INSTALLED IN CONDUIT IN CONCEALED SPACES.
5. DATA JACK TO BE RJ45.
6. ELECTRICAL CONTRACTOR TO BE CERTIFIED DATA INSTALLER.
7. PROVIDE 19 INCH WALL MOUNTED DATA RACK c/w PATCH PANELS, PANELS TO HAVE 25% SPARE CAPACITY.
8. PROVIDE A HOME RUN CABLE FROM EACH OUTLET TO THE COMMUNICATION BOARD LOCATED IN THE ELECTRICAL ROOM.

INTRUSION SYSTEM

1. THE INTRUSION SYSTEM TO BE A STANDALONE DSC SYSTEM c/w DOOR CONTACTS, MOTION SENSOR, KEY PAD AND SIREN TO CONSTITUTE A COMPLETE SYSTEM.
2. COORDINATE PROGRAMMING AND MONITORING WITH OWNER.

HEAT

1. ELECTRIC HEATING TO BE PROVIDED AS SHOWN. VOLTAGE AND SIZE AS INDICATED.
2. BASEBOARD HEAT TO BE OUELLET OFM SERIES OR STELPRO B SERIES.
3. FORCE FLOW HEAT TO BE OUELLET OAC SERIES OR STELPRO WF SERIES.
4. LINE VOLTAGE THERMOSTATS TO HAVE TEMPERATURE CONTROL +/- 0.5°C AND A SETTING RANGE + 5°C TO +35°C.

EXIT AND EMERGENCY EQUIPMENT

1. BATTERY PACKS TO BE 120/12 VOLT, WATTAGE AS INDICATED, UNITS TO BE HARDWIRED.
2. REMOTE HEADS TO BE 12 VOLT, 5 WATT LED LAMP.
3. EMERGENCY LIGHTS c/w INTEGRAL BATTERIES TO BE 5 WATT LED. UNITS TO BE HARD-WIRED.
4. EMERGENCY LIGHTING TO BE CONNECTED TO ASSOCIATED BRANCH CIRCUIT PRIOR TO ANY SWITCHING OR CONTROLS TO MAINTAIN UNINTERRUPTED POWER POINT CONNECTION.
5. EXIT SIGNS TO BE PICTOGRAM THERMOPLASTIC, L.E.D. 120 VOLT c/w INTEGRAL BATTERY.
6. BATTERIES TO PROVIDE 30 MIN RUN TIME FOR ALL DEVICES.

AS BUILT DRAWINGS

1. PROVIDE A CLEAN SET OF DRAWINGS AT THE JOB SITE, FOR AS BUILT MODIFICATIONS ONLY.
2. MARK ALL MODIFICATIONS IN RED, IN A NEAT, LEGIBLE MANNER.
3. SUBMIT AS BUILTS TO ENGINEER FOR APPROVAL.

EMERGENCY SYSTEMS

1. ALL EMERGENCY SYSTEMS ASSOCIATED WITH BUILDING CODE REQUIREMENTS SUCH AS EMERGENCY LIGHTING, FIRE ALARMS AND EGRESS LIGHTING MUST NOT BE ALTERED WITHOUT THE APPROVAL OF THE ENGINEER. SUCH UNAUTHORIZED CHANGES MAY RESULT IN OCCUPANCY PERMIT DELAYS.

SEISMIC

1. ALL ELECTRICAL EQUIPMENT IS TO BE SECURED TO THE BUILDING STRUCTURE TO MEET THE SEISMIC REQUIREMENTS OF THE BUILDING CODE.

FIRE SEPARATIONS

1. THE CONTRACTOR SHALL PROVIDE FIRE STOPPING FOR ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.
2. FIRE STOP SYSTEMS SHALL, WHEN SUBJECTED TO THE FIRE TEST METHOD IN CAN/ULC S115 "STANDARD METHOD OF FIRE TESTS OF FIRE STOP SYSTEMS", HAVE AN FOR FT RATING (AS REQUIRED) NOT LESS THAN THE RATING OF THE FIRE SEPARATION.
3. CONTRACTOR SHALL PROVIDE TO ENGINEER/ARCHITECT COMPLETE LISTINGS FOR ALL FIRE STOPPING INSTALLATIONS. PROVIDE SPECIFIC DETAILS REGARDING TYPE OF FIRE STOPPING COMPOUND, APPLICABLE APPLICATIONS, MANUFACTURE, TESTING AGENCY, ETC.
4. CONTRACTOR SHALL NOTIFY ENGINEER/ARCHITECT A MIN. OF ONE WEEK PRIOR TO CONCEALING OF ENCLOSING FIRE STOP ASSEMBLIES AND BE AVAILABLE ON SITE FOR ENGINEERS FIELD REVIEW.
5. ALL ELECTRICAL PANELS, MEDIA PANELS, FIRE ALARM PANELS AND FORCE FLOW HEATERS INSTALLED IN EITHER A FIRE RATED WALL REQUIRED BY BUILDING CODE OR A LOAD BEARING ASSEMBLY SHALL BE BOXED IN WITH DRY WALL AND FIRE BLOCKED SO AS TO MAINTAIN THE FIRE RATING OF THE ASSEMBLY.

PROJECT CLOSE OUT PROCEDURES

1. PROVIDE 24 HOUR NOTICE TO THE ENGINEER FOR FINAL FIELD REVIEW FOR ELECTRICAL DISCIPLINE. ELECTRICAL CONTRACTOR TO ENSURE ALL LIFE SAFETY DEVICES ARE INSTALLED AND OPERATIONAL. ELECTRICAL CONTRACTOR TO ENSURE ALL ELECTRICAL WORKS NOT INSTALLED ARE MADE SAFE.
2. THE FOLLOWING DOCUMENTS TO BE FORWARDED TO THE ENGINEER PRIOR TO FINAL FIELD REVIEW:
   .1 SEISMIC ENGINEER SCHEDULES
   .2 MAINTENANCE MANUALS
   .3 FIELD SAFETY REPRESENTATIVE (FSR) DECLARATION

1	NOV 04 2020	ISSUED FOR TENDER
NO.	DATE	TITLE

REVISION

RB ENGINEERING LTD
ELECTRICAL CONSULTING ENGINEERS
#4 1850 NORTHFIELD ROAD
NANAIMO, BC, V9S 3B3
TEL 250-756-4444
RBENGINEERING.CA

CLIENT

PROJECT
MEADOWOOD
1810 GALVIN PLACE
QUALICUM, BC

TITLE
ELECTRICAL SPECIFICATION

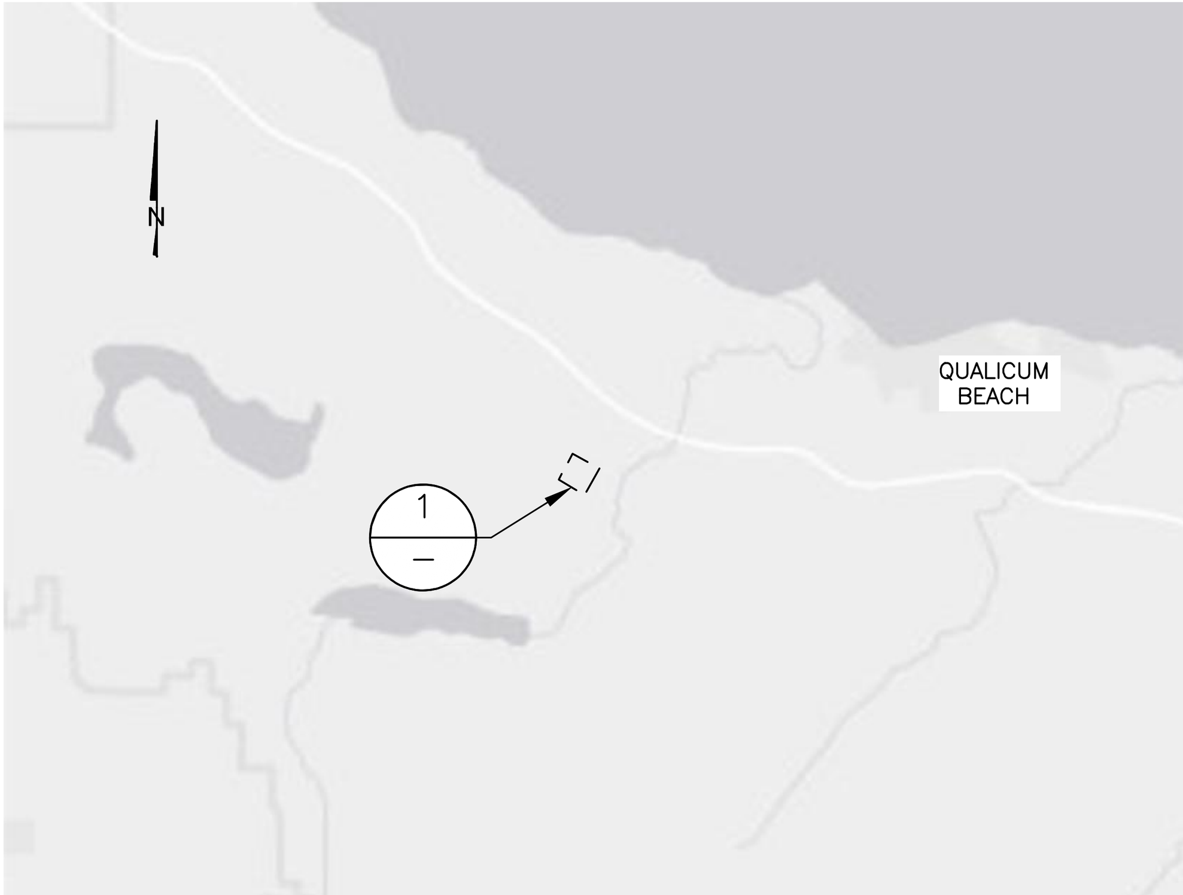
PROJECT NO. 18-2934

DATE JULY, 2018

SCALE N/A

SEAL
PROFESSIONAL
C. E. REITMEIER
ENGINEER
November 4, 2020

DRAWING NO.
E-5



LOCATION PLAN
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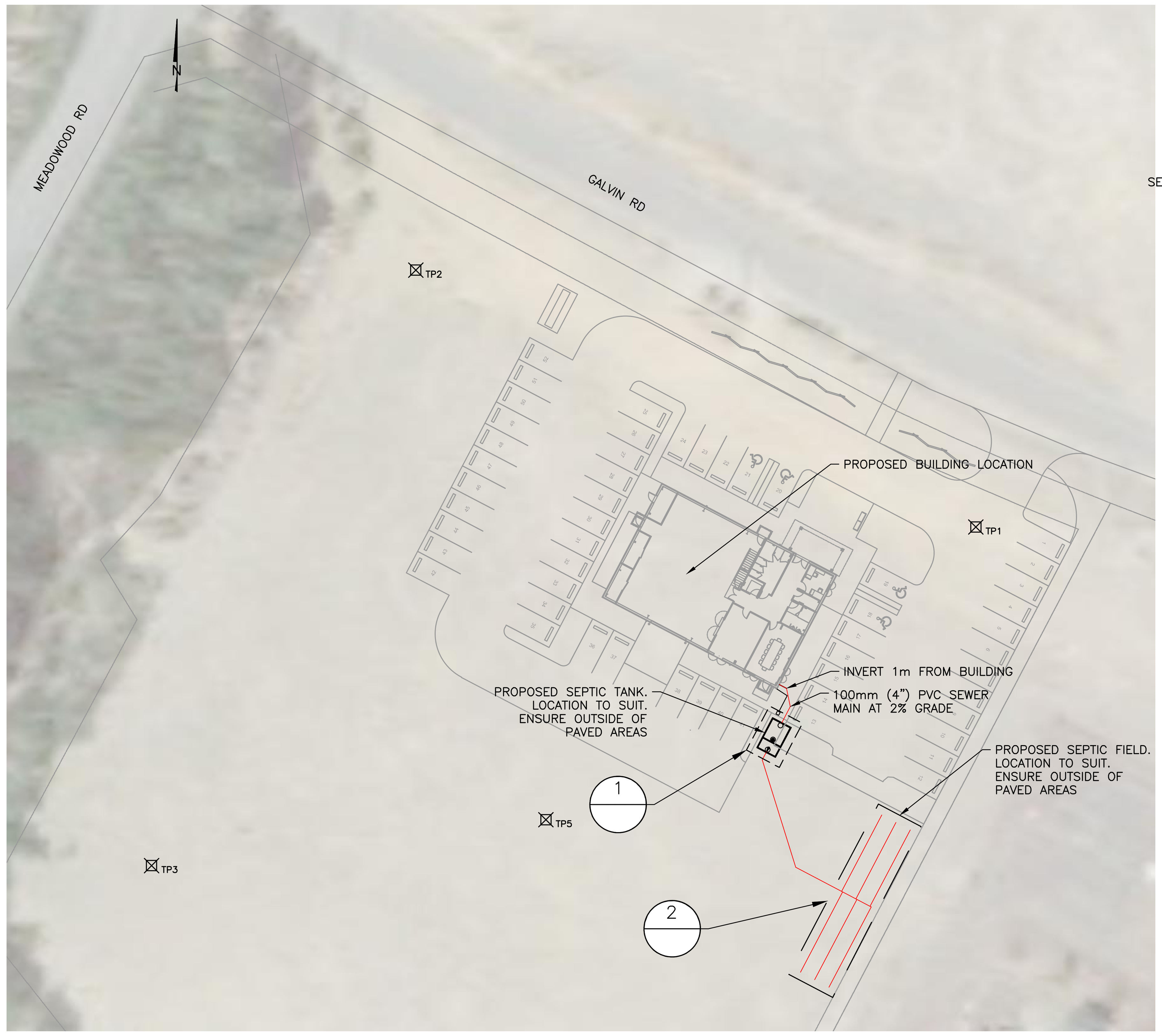

SITE PLAN
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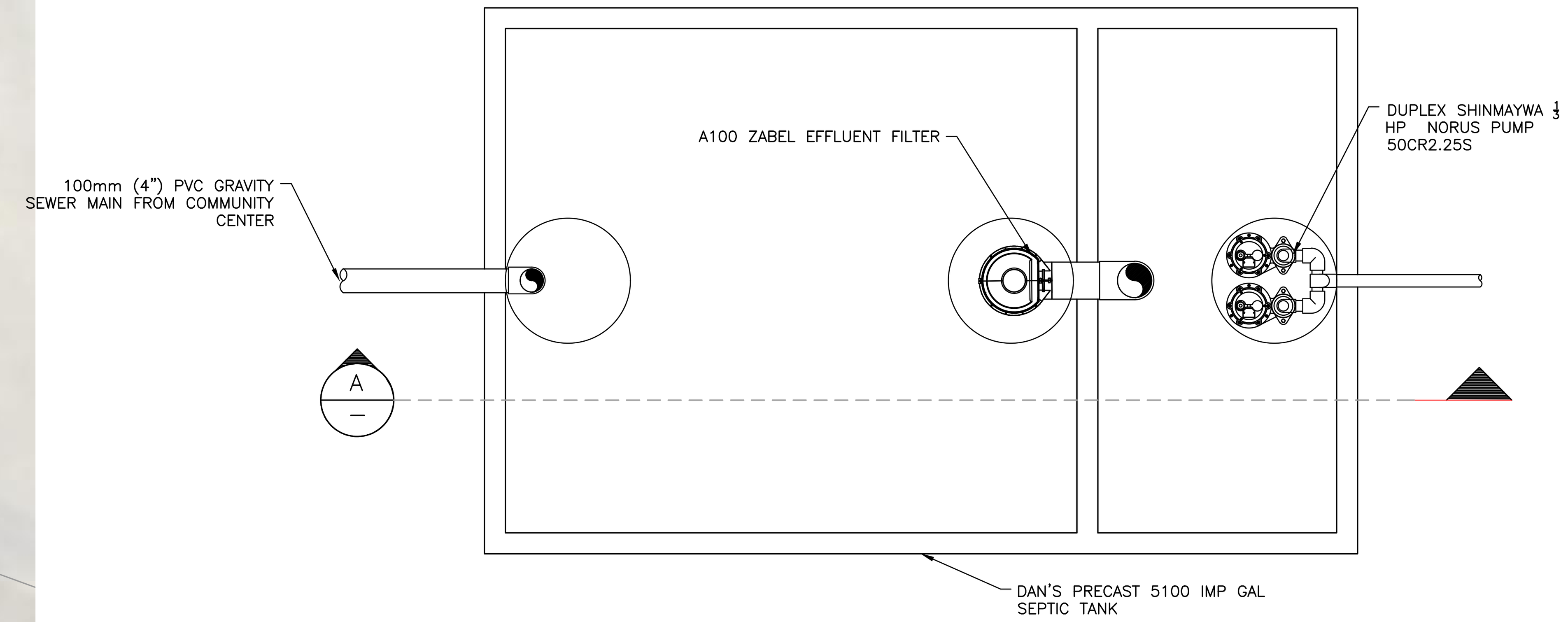
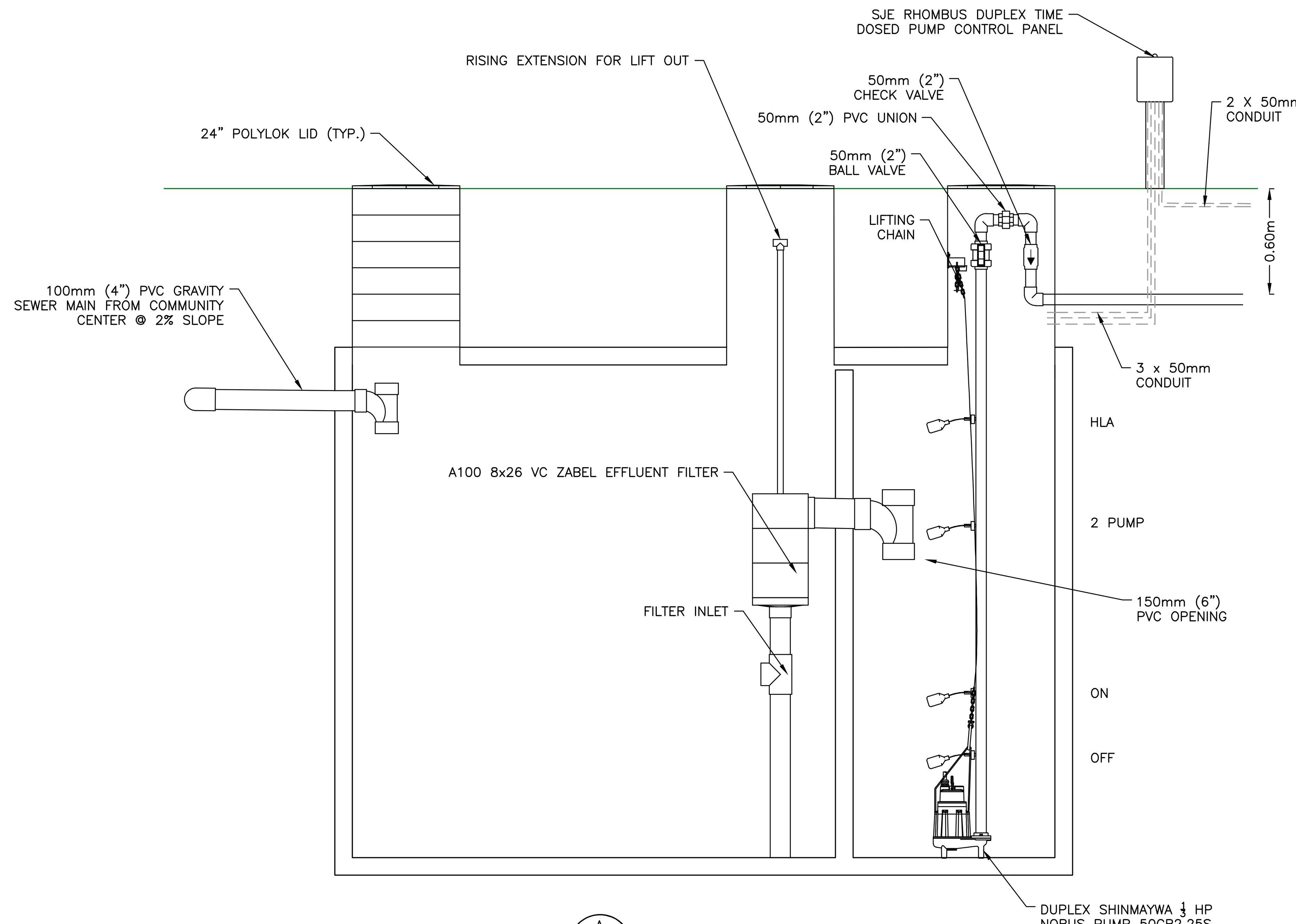


1 — **SEPTIC TANK PLAN**
SCALE:1:25



A — **SEPTIC TANK PROFILE**
SCALE:1:25

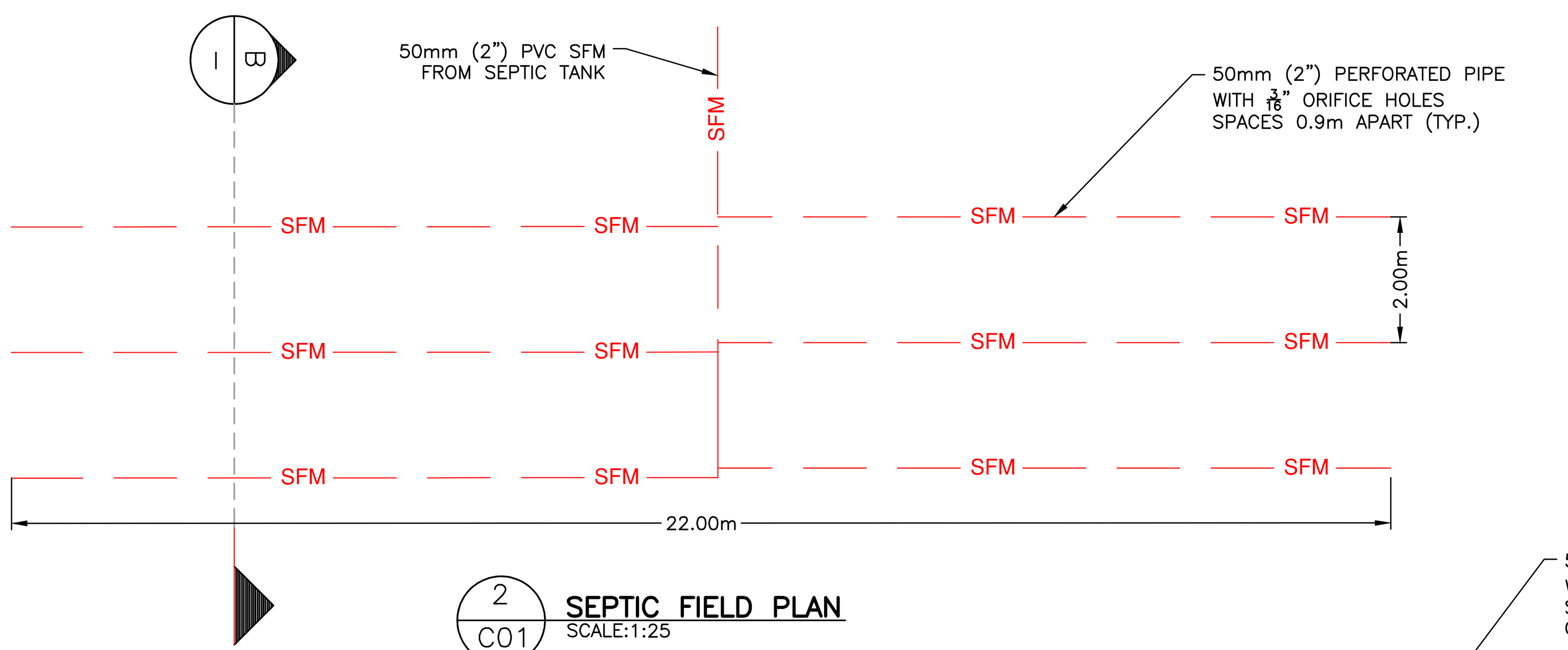
GENERAL NOTES

1. WORK TO BE COMPLETED DURING DRY WEATHER ONLY
2. CONTRACTOR TO ENSURE ALL SPECIAL USE PERMITS ARE IN PLACE PRIOR TO CONSTRUCTION
3. ALL WORKS TO BE COMPLETED AS PER CURRENT STANDARDS AS PER LATEST EDITION OF STANDARD PRACTICE MANUAL
4. ANY CONFLICTS BETWEEN THESE DRAWINGS AND SITE CONDITIONS TO BE REPORTED TO ENGINEER PRIOR TO CONSTRUCTION
5. ALL UTILITIES TO BE LOCATED PRIOR TO SYSTEM INSTALLATION. WATER LINE TO BE SLEEVED IF WITHIN 3.0m OF NEW DISPOSAL FIELD (OR RELOCATED)
6. ALL THE CONSTRUCTION TO BE IN ACCORDANCE WITH THE MANUFACTURER'S LITERATURE ON BACKFILL AND COMPACTION
7. ALL EQUIPMENT TO BE MADE SURFACE ACCESSIBLE WITH APPLICABLE RISERS AND LIDS. MINIMUM INSULATION TO BE 100mm RIGID STYROFOAM CUT TO SUIT

DISPOSAL FIELD NOTES

1. RECEIVING AREA TO BE PROPERLY PREPARED. CHAMBERS TO BE PLACED DIRECTLY ON SCARIFIED TRENCH BOTTOM.
2. SLOPE OF THE LONG AXIS OF ANY INDIVIDUAL LATERAL MUST BE WITHIN 1%. LATERALS TO BE INSTALLED PERPENDICULAR TO SLOPE.
3. SOIL BACKFILL TO BE MOUNDED TO ALLOW FOR SETTLING. DIRECT SURFACE RUNOFF AWAY FROM DISPOSAL AREA, SOME GRADING OF UPSLOPE AREAS MAY BE REQUIRED TO DIRECT SURFACE WATER AWAY FROM DISPOSAL FIELD.
4. INSULATE PIPE TO DISPOSAL FIELD WITH ALUMINIZED BUBBLE WRAP INSULATION.
5. ALL DISTRIBUTION BOXES TO BE INSTALLED WITH RISERS TO THE SURFACE.

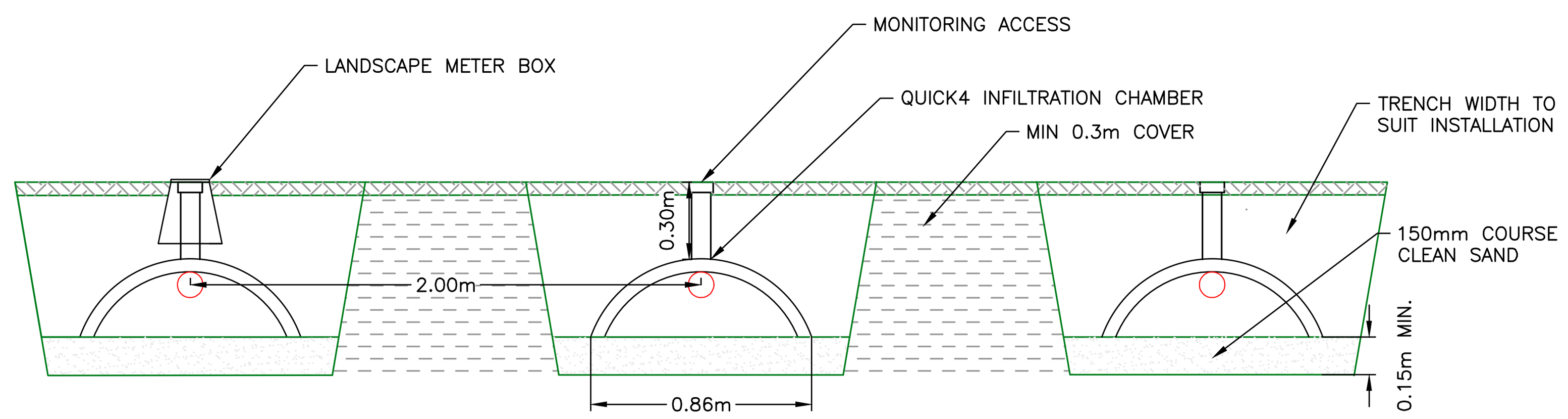
CONTRACTOR TO SELECT METHOD FOR INSTALLATION AND CONSTRUCT ON BOTH SIDES. TOTAL REQUIREMENT: 3 LATERALS, WITH 34 INFILTRATOR SEGMENTS AND ONE END CAP PER LATERAL.



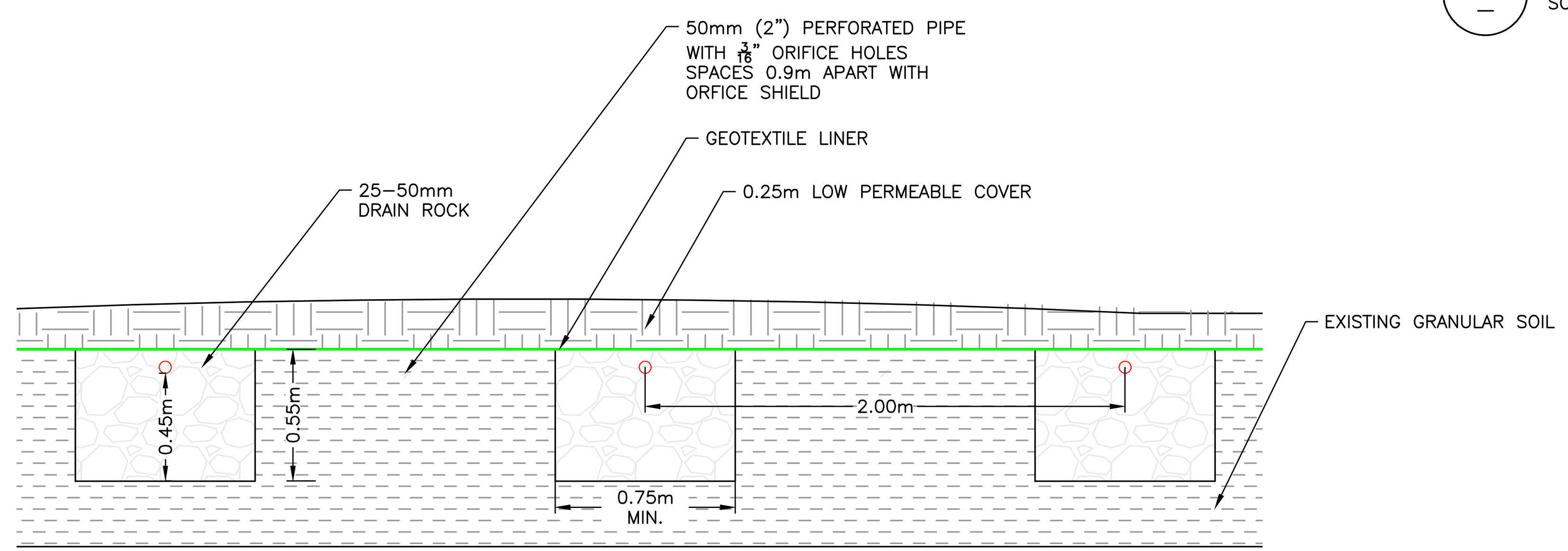
2 C01 **SEPTIC FIELD PLAN**
SCALE:1:25

LOADING RATE INFORMATION:
DESIGN DAILY FLOW = 3,000 LPD
PERCOLATION RATE =1.25 min/in
AREA OF INFILTRATIVE SURFACE = 67m^2
LINEAR LOADING RATE = 140L/d/m
VERTICAL SEPARATION REQUIREMENT = N/A

GENERAL MINIMUM FIELD SETBACK REQUIREMENTS (TYPE 1)		
	FIELD	TANK
FROM PARCEL BOUNDARY, BUILDING, DOMESTIC WATERLINE, INTERCEPTOR DRAIN (UPSTREAM)	3m (10ft)	1m (3ft)
BREAK-OUT POINT – PERIMETER DRAIN MARINE WATER	15m (50ft)	10m (33ft)
FROM SOURCE OF DOMESTIC/FRESH WATER	30m (100ft)	15m (50ft)



B — **OPTION A SEPTIC FIELD PROFILE**
SCALE:1:25



A — **OPTION B SEPTIC FIELD PROFILE**
SCALE:1:25

ISSUED FOR TENDER
NOVEMBER 2020

1:25 0 0.5 1.5m 1:500 0 10 30m

BC 1 CALL BEFORE YOU DIG! 1-800-474-6886 or by CELLULAR #6886 Vancouver Area 287-6840
CALL AT LEAST TWO FULL WORKING DAYS BEFORE YOU PLAN TO DIG

NO.	DATE	BY	REVISIONS	ENG
1				

NO.	DATE	BY	ISSUED	ENG
1.	2020.10.29	C.S.	ISSUED FOR TENDER	M.S.

PROJECT:
MEADOWOOD COMMUNITY CENTRE
DESCRIPTION:
SITE PLAN AND DESIGN DRAWING

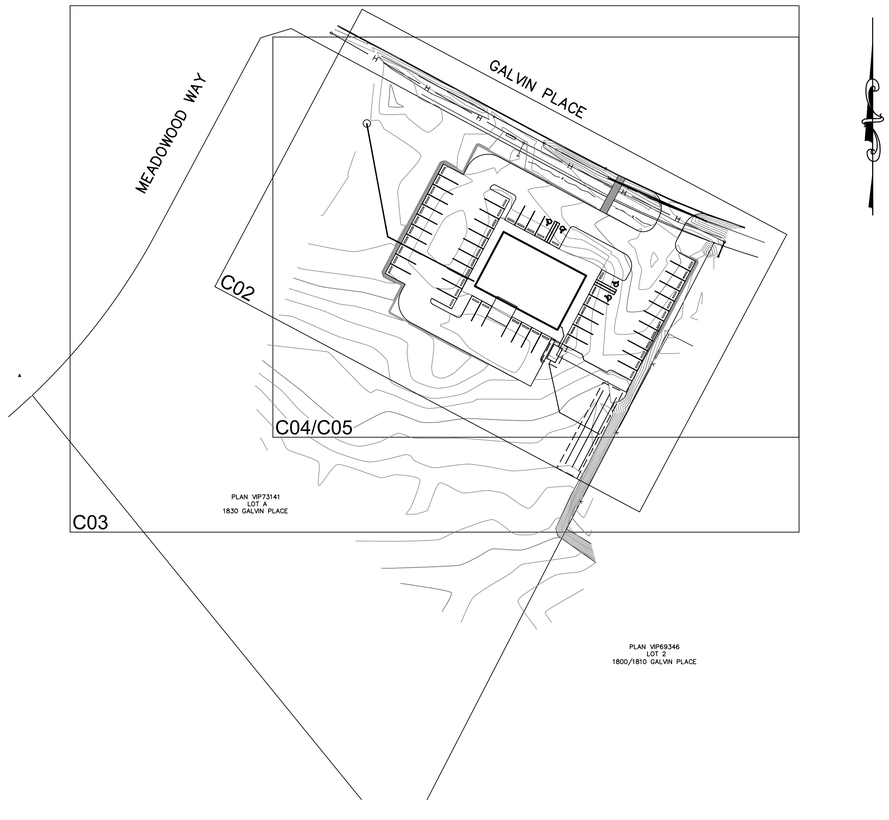
MSR SOLUTIONS INC.
INNOVATIVE ENGINEERING SERVICES
125 – 662 GOLDSTREAM AVENUE, VICTORIA B.C.
V9B 0N8
OFFICE: (250) 479 – 5164
FAX: 888.277.2816
info@msrsolutions.ca
www.msrsolutions.ca

DESIGN BY: C.S.	DATE: 2020.10.26
DRAWN BY: C.S.	DATE: 2020.10.27
CHECKED BY: M.S.	DATE: 2020.10.29
APPROVED BY: M.S.	DATE: 2020.10.29

HORZ. SCALE:	AS SHOWN	DRAWING No.:	C01
VERT. SCALE:	AS SHOWN	PROJ No.:	20–539
SHEET 1	OF 1	VERSION No.:	1

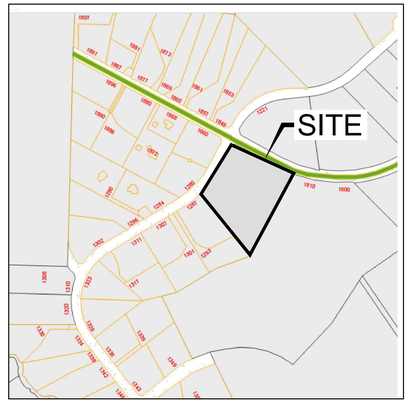
LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
		EDGE OF PAVEMENT			REDUCER
CURB		CURB AND GUTTER			FENCE
		EDGE OF GRAVEL			DITCH/SWALE
TB/BB		TOP/BOTTOM OF BANK	W	W	WATERMAIN (SIZE AND MATERIAL NOTED)
CB		CATCH BASIN	S	S	SANITARY SEWER (SIZE AND MATERIAL NOTED)
WV		WATER VALVE	D	D	STORM DRAIN (SIZE AND MATERIAL NOTED)
FH		FIRE HYDRANT	T	T	UNDERGROUND TELEPHONE
		CAPPED END	H	H	UNDERGROUND HYDRO
		UTILITY POLE AND STREET LIGHT (LABELED PP,TP,PP/LS ETC.)			MONUMENT
MH		MANHOLE			PROPERTY LINE
CO		CLEANOUT		5+100 5+110	CENTERLINE AND STATIONING
SSIC/SDIC	SSIC/SDIC	SANITARY/STORM INSPECTION CHAMBER (200ø RISER)			SANITARY SEWER SERVICE CONNECTION AT MAIN
JB		JUNCTION BOX	+32.75	(43.170)+	ELEVATIONS
AV	AV	AIR VALVE			PAVEMENT REMOVAL
WM	WM	WATER METER			NEW ASPHALT



KEY PLAN
1:750

1:750 0 15 45m



LOCATION PLAN
NTS

LIST OF DRAWINGS

DWG No.	DESCRIPTION
C01	LEGEND, LOCATION KEY PLAN, DRAWING LIST & GENERAL NOTES
C02	SITE SERVICING
C03	SITE GRADING
C04	STORM WATER MANAGEMENT PLAN
C05	EROSION & SEDIMENT CONTROL PLAN

GENERAL NOTES:

1. ALL WORK AND MATERIALS ARE TO BE AS DESCRIBED IN THE MASTER MUNICIPAL CONTRACT DOCUMENTS (MMCD) LATEST EDITION OR AS OTHERWISE APPROVED BY THE ENGINEER.
2. A "PERMIT TO INSTALL WORKS WITHIN STREETS, LANES AND DISTRICT PROPERTY AREAS" WILL BE REQUIRED WHERE CONSTRUCTION IS TO BE UNDERTAKEN IN REGIONAL DISTRICT OF NANAIMO RIGHT-OF-WAYS AND/OR REGIONAL DISTRICT OF NANAIMO-OWNED UTILITIES OR PROPERTIES.
3. UPON APPROVAL OF THE PERMIT, THE REGIONAL DISTRICT OF NANAIMO'S CONSTRUCTION DIVISION SHALL BE NOTIFIED 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
4. THE ENGINEER SHALL BE NOTIFIED 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
5. CONTRACTOR TO COMPLY WITH ALL APPLICABLE MINISTRY OF ENVIRONMENT AND DEPARTMENT OF FISHERIES & OCEANS CANADA REQUIREMENTS AT ALL TIMES DURING CONSTRUCTION.
6. CONTRACTOR TO CONFIRM LOCATION OF EXISTING UTILITIES AT ALL CROSSINGS AND CONNECTIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
7. CONTRACTOR TO CONFIRM THAT ELEVATION, LOCATION AND GRADIENT OF ASPHALT MATCH EXISTING PRIOR TO PLACEMENT OF ASPHALT OR CONCRETE.
8. ALL TREES NOT BEING REMOVED IN THE CONSTRUCTION AREA SHALL BE PROTECTED.
9. ADJUST ALL MANHOLES, WATER VALVES, HYDRO VAULTS, ETC. TO MATCH NEW CONSTRUCTION.
10. ALL LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY USE OF A PIPE LOCATOR AND MANUAL DIGGING. ALL OR ANY STRUCTURES NOT NECESSARILY SHOWN.
11. ALL DISTURBED SURFACES TO BE RESTORED TO EXISTING CONDITION OR BETTER.
12. ALL ORTHOMETRIC ELEVATIONS ARE TO CGVD28BC GEODETIC DATUM AND ARE DERIVED FROM DUAL FREQUENCY GNSS TES TO THE NANOOSE BAY ACTIVE CONTROL STATION GCM 816868.

DATA SOURCES:
- TOPOGRAPHIC SURVEY COMPLETED BY JE ANDERSON IN SEPTEMBER 2020.
- RECORD DRAWINGS PROVIDED BY THE REGIONAL DISTRICT OF NANAIMO.

WATERMAIN NOTES:

1. ALL WATERMAINS ARE TO BE PVC C900 DR18 (RATED TO 235 psi) WITH INTEGRALLY THICKENED BELL TO ASTM D3139, UNLESS OTHERWISE NOTED.

STORM SEWER NOTES:

1. ALL CATCH BASINS ARE TO BE C.O.N. STANDARD TYPE UNLESS OTHERWISE NOTED.
2. ALL CATCH BASIN LEADS ARE TO BE 200ø PVC SDR35 UNLESS OTHERWISE NOTED.
3. ALL STORM SERVICES ARE TO BE 100ø PVC SDR28 UNLESS OTHERWISE NOTED.

SANITARY SEWER NOTES:

1. ALL SANITARY SERVICES ARE TO BE 100ø PVC SDR28 UNLESS OTHERWISE NOTED.

ROAD NOTES:

1. ALL CURB AND GUTTER TO BE RDN TYPE CS-1 UNLESS OTHERWISE NOTED.

PRIVATE UTILITY NOTES:

1. PRIVATE UTILITY MAIN AND SERVICE LOCATIONS ARE APPROXIMATE ONLY AND ARE BASED ON BC ONE CALL INFORMATION.

ISSUED FOR TENDER

ISSUES

No.	DATE YYYY.MM.DD	ISSUED FOR
A	2020.11.04	ISSUED FOR TENDER

CLIENT

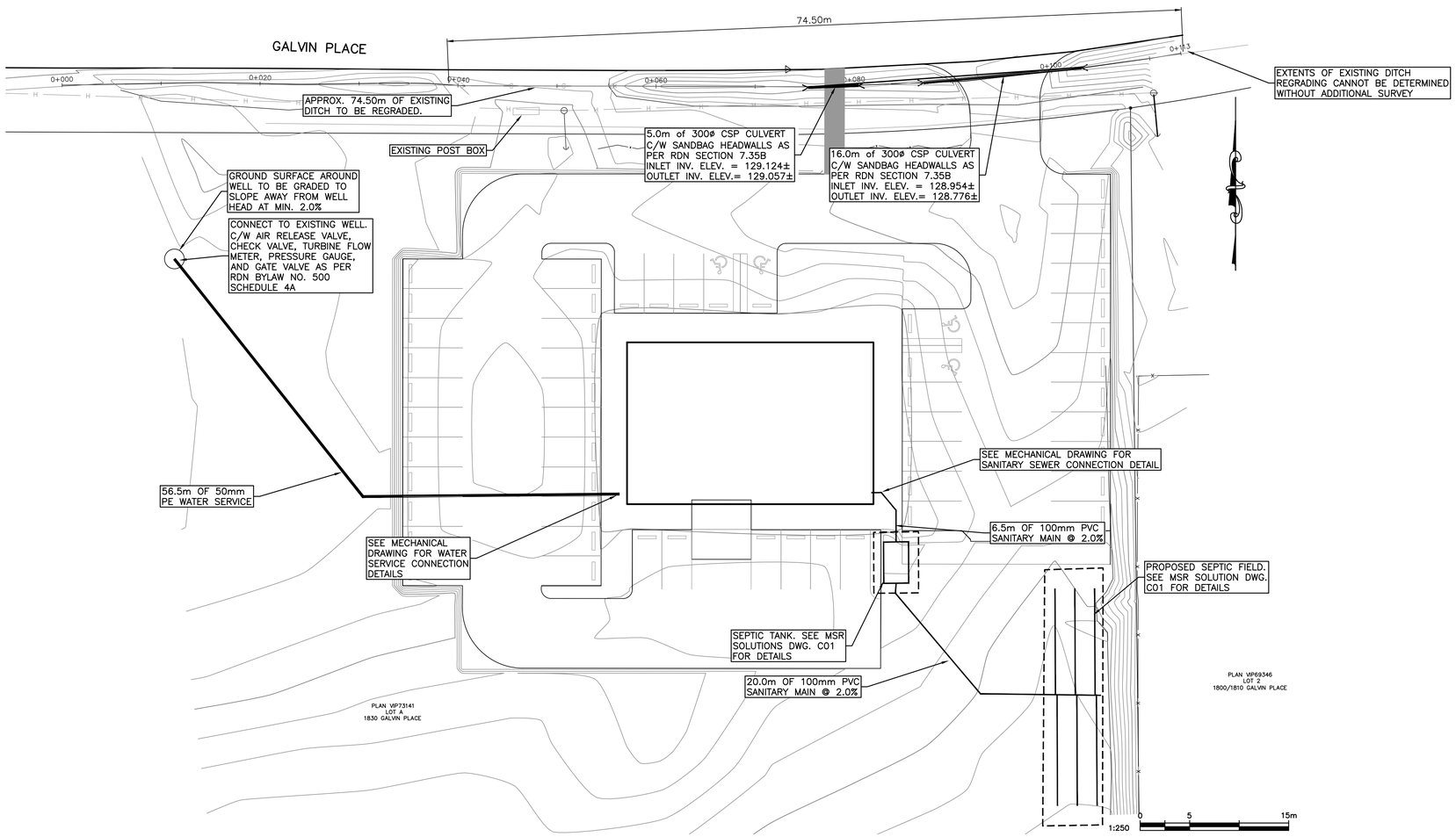
MEADOWOOD COMMUNITY CENTRE
1830 GALVIN PLACE
QUALICUM, BC
REGIONAL DISTRICT OF NANAIMO

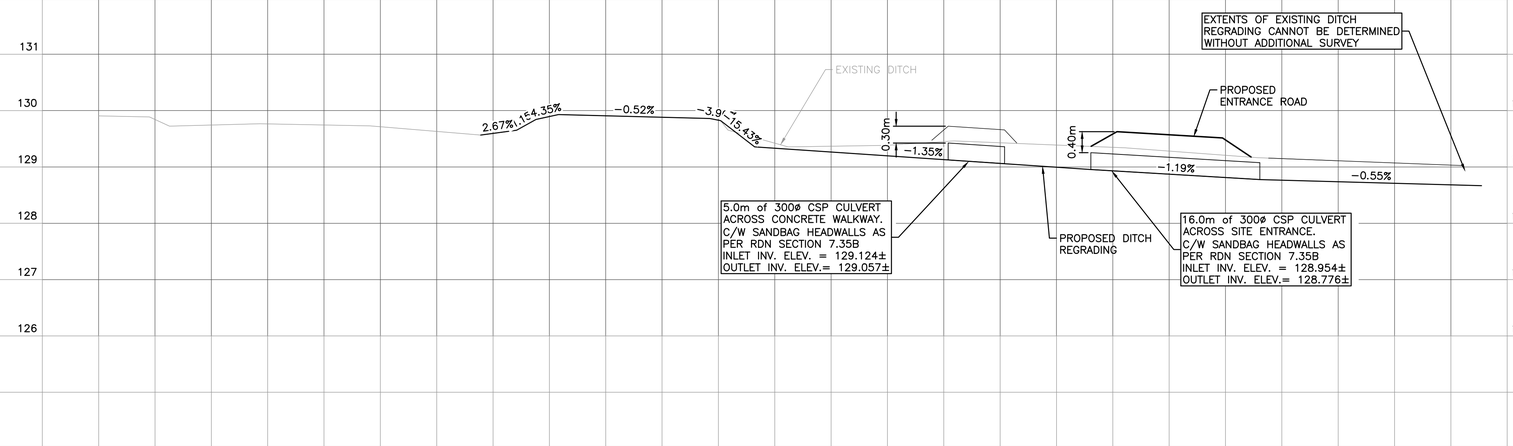
HEROLD ENGINEERING
3701 Shenton Rd, Nanaimo, BC V9T 2H1
Tel: 250-751-8558 Fax: 250-751-8559
Email: mail@heroldengineering.com

LEGEND, LOCATION KEYPLAN, DRAWING LIST, & GENERAL NOTES

DESIGNED GTH	ENGINEER'S SEAL
DESIGN REVIEW PGR	
DRAFTED GTH	
DRAFTING REVIEW IEB	
PROJECT No. 0837-052	CLIENT DRAWING No.
SCALE H: 1:750 V: N/A	PERMIT No.
HEL DRAWING No. C01 1 OF 5	REVISION A

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION





℄ CHAINAGE	DESIGN DITCH ELEVATIONS	EXISTING DITCH ELEVATIONS
0+000	129.91	
	129.84	
	129.74	
	129.76	
0+020	129.74	
	129.71	
	129.63	
	129.60	129.595
0+040	129.89	129.895
	129.91	129.908
	129.88	129.882
	129.83	129.830
0+060	129.42	129.332
	129.37	129.264
	129.38	129.197
	129.45	129.130
0+080	129.43	129.062
	129.39	128.995
	129.35	128.930
	129.28	128.871
0+100	129.21	128.812
	129.15	128.765
	128.737	
	128.710	
0+120	128.682	

NOTES:

1. FOR GENERAL NOTES SEE DWG. No. C01.

ISSUES

No.	DATE YYYY.MM.DD	ISSUED FOR
A	2020.11.04	ISSUED FOR TENDER

CLIENT

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REGIONAL DISTRICT OF NANAIMO

HEROLD ENGINEERING
3701 Shenton Rd, Nanaimo, BC V9T 2H1
Tel: 250-751-8558 Fax: 250-751-8559
Email: mail@heroldengineering.com

SITE SERVICING

DESIGNED GTH	ENGINEER'S SEAL
DESIGN REVIEW PGR	
DRAFTED GTH	
DRAFTING REVIEW IEB	
PROJECT No. 0837-052	CLIENT DRAWING No.
SCALE H: 1:750 V: N/A	PERMIT No.
HEL DRAWING No. C02	REVISION A

2 OF 5

ISSUED FOR TENDER

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File: H:\Projects\0837-052 Meadowood Community Centre\CIVIL\04C Drawings\0837-052 Civil Drawings.dwg Plot Time: Nov. 4, 20 5:23 PM User: Garrett Hunter

NOTES:

1. FOR GENERAL NOTES SEE DWG. No. C01.

CATCHMENT	AREA (ha)
A1	0.113
A2	0.0713
A3	0.051
A4	0.007

CUT/FILL MATERIAL LIST

NATIVE MATERIAL TO PARKING LOT SUBBASE:

- CUT VOLUME = 484.78 Cu.M
- FILL VOLUME = 187.55 Cu.M
- TOTAL VOLUME = 297.23 Cu.M CUT

IMPORT MATERIAL FOR PARKING LOT STRUCTURE

- 355.54 Cu.M 10mm PARKING LOT CHIP GRAVEL
- 592.56 Cu.M 75mm MINUS SUBBASE

MEADOWOOD WAY

GALVIN PLACE

CONCRETE WHEEL STOPS (TYP.)

CONCRETE WALKWAY, ELEVATION TO MATCH PARKING LOT AND EXISTING ASPHALT

MATCH EXISTING ELEVATIONS

PROPOSED GRAVEL PARKING LOT STRUCTURE

150mm – 10mm DRIVEWAY CHIP GRAVEL
250mm – 75mm MINUS SUBBASE

BUILDING MFE.
ELEV. = 130.556m

PLAN VIP73141
LOT A
1830 GALVIN PLACE

PLAN VIP69346
LOT 2
1800/1810 GALVIN PLACE

ISSUED FOR TENDER

1:250 0 5 15m

ISSUES

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A	2020.11.04	ISSUED FOR TENDER

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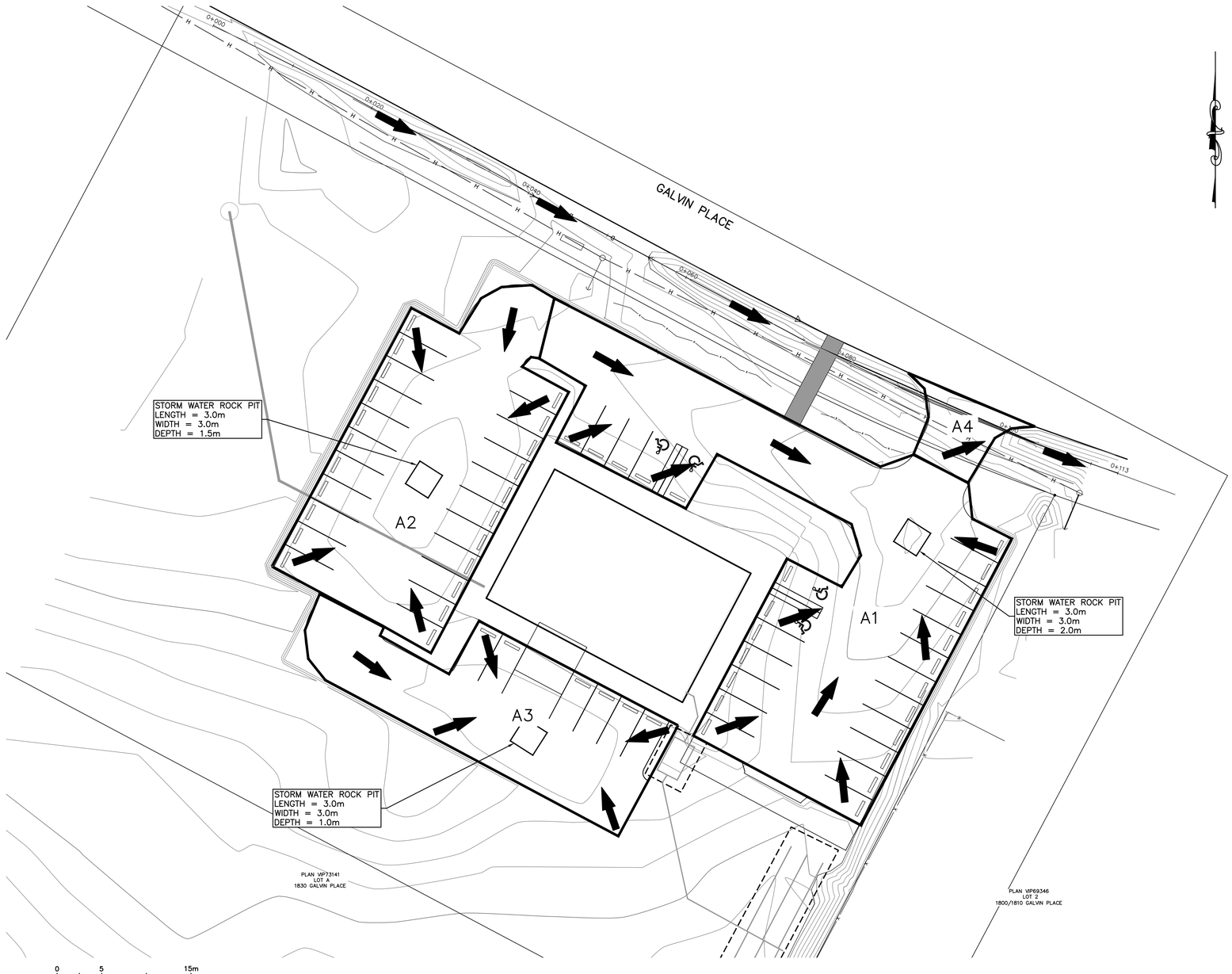
Tel: 250-751-8558 Fax: 250-751-8559
Email: mail@heroldengineering.com

SITE GRADING

DESIGNED: GTH	ENGINEER'S SEAL
DESIGN REVIEW: PGR	
DRAFTED: GTH	
DRAFTING REVIEW: IEB	
PROJECT No.: 0837-052	CLIENT DRAWING No.
SCALE: H: 1:750 V: N/A	PERMIT No.
HEL DRAWING No.: C03 3 OF 5	REVISION: A

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION



CATCHMENT	AREA (ha)
A1	0.113
A2	0.0713
A3	0.051
A4	0.007

MAJOR STORM EVENT ROUTING
(OVERLAND) 100 YEAR

Q1:
5yr= 3.57 L/s
100yr= 4.17 L/s

ISSUED FOR TENDER

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A	2020.11.04	ISSUED FOR TENDER

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REGIONAL DISTRICT OF NANAIMO

HEROLD ENGINEERING
3701 Shenton Rd, Nanaimo, BC V9T 2H1
Tel: 250-751-8558 Fax: 250-751-8559
Email: mail@heroldengineering.com

STORMWATER MANAGEMENT PLAN

DESIGNED: GTH	ENGINEER'S SEAL
DESIGN REVIEW: PGR	
DRAFTED: GTH	
DRAFTING REVIEW: IEB	
PROJECT No.: 0837-052	CLIENT DRAWING No.
SCALE: H: 1:750 V: N/A	PERMIT No.
HEL DRAWING No.: C04 4 OF 5	REVISION: A

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

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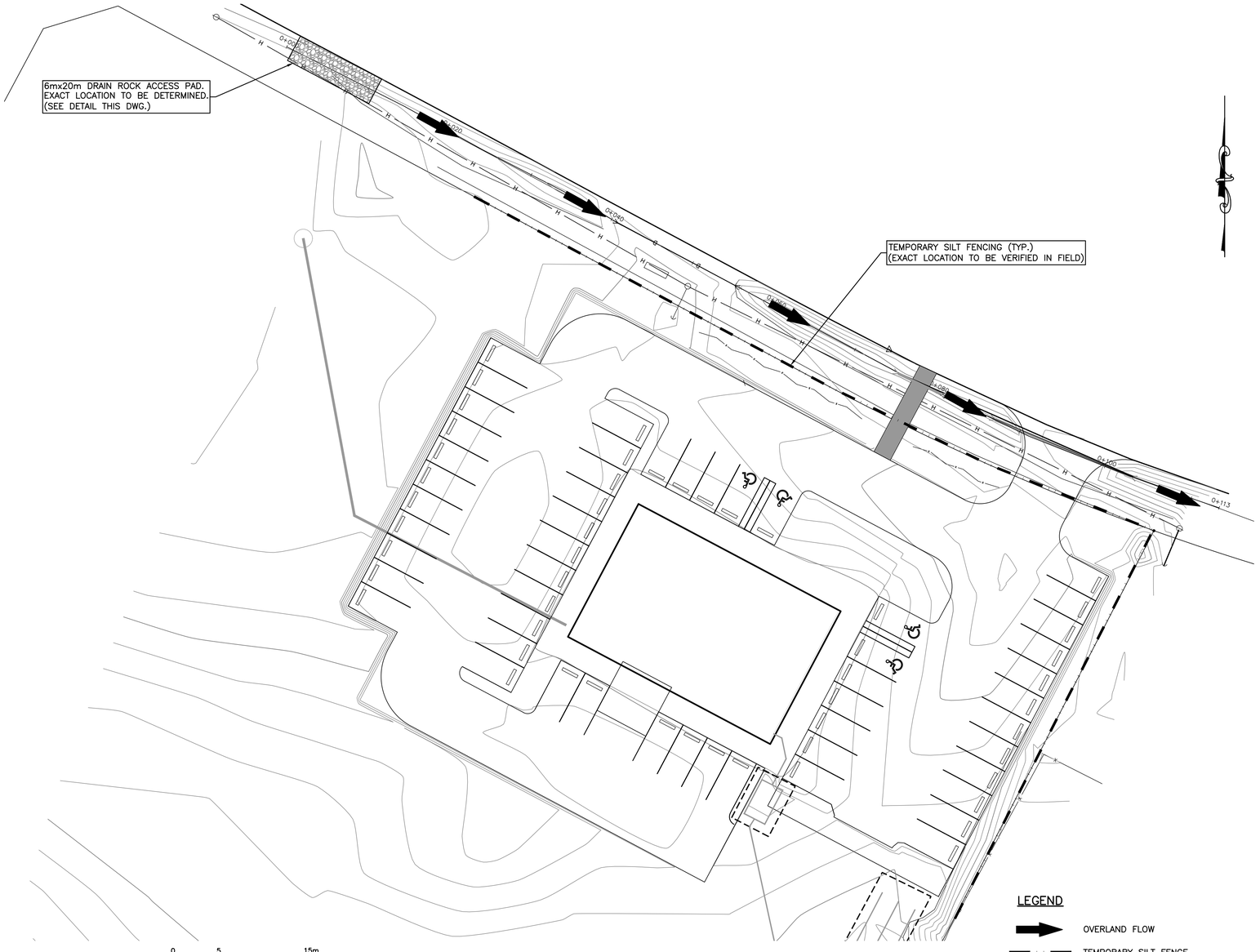


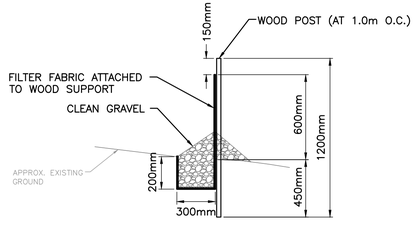
LEGEND

OVERLAND FLOW

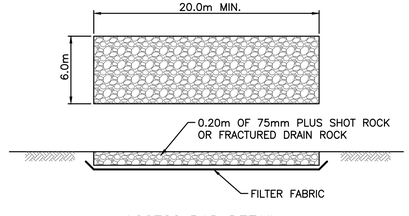
TEMPORARY SILT FENCE

EROSION & SEDIMENT CONTROL NOTES:

1. EROSION AND SEDIMENT CONTROL FOR THIS PROJECT WILL BE AS OUTLINED IN THE FISHERIES AND OCEANS CANADA & MINISTRY OF WATER, LANDS AND AIR PROTECTION HANDBOOK ENTITLED "LAND DEVELOPMENT GUIDELINES FOR THE PROTECTION OF THE AQUATIC HABITAT, SEPTEMBER 1993" AND "ENVIRONMENTAL BEST MANAGEMENT PRACTICES FOR URBAN AND RURAL LAND DEVELOPMENT IN BRITISH COLUMBIA, JUNE 2004" AND "EROSION & SEDIMENT CONTROL GUIDELINE" BY THE REGIONAL DISTRICT OF NANAIMO. IT IS INCUMBENT UPON THE CONTRACTOR TO ACQUIRE THESE GUIDELINES AND FAMILIARIZE HIMSELF WITH THE REQUIREMENTS WITHIN.
2. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR DAMAGES RESULTING FROM IMPROPER EROSION AND SEDIMENT CONTROL MEASURES UNDERTAKEN BY THE CONTRACTOR.
3. ANY DIRECTION GIVEN BY THE CONSULTANT OR DISTRICT TO THE CONTRACTOR FOR EROSION AND SEDIMENT CONTROL AND NOT FOLLOWED BY THE CONTRACTOR IS TO BE REPORTED TO THE DISTRICT IMMEDIATELY.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE NO MUD, DIRT, SOIL, SILT OR ANY OTHER SUBSTANCES ARE SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY, OR AREAS THAT LEAD TO CATCH BASINS CONNECTED TO PUBLIC SYSTEMS. THE CONTRACTOR IS TO CLEAN ANY SUCH MATERIAL IMMEDIATELY. i.e. STREETS ARE TO BE SWEPT WITH A VACUUM STREET SWEEPER AFTER WORK STOPPAGE EACH DAY.
5. PRIOR TO CONSTRUCTION, INSTALL A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT TO LIMIT TRACKING OF SITE SOILS ONTO OFFSITE ROADWAYS. THE WIDTH OF THE PAD SHOULD NOT BE LESS THAN THE FULL WIDTH OF POINT OF INGRESS OR EGRESS IN ANY CASE SHOULD NOT BE LESS THAN 6m WIDE WITH A LENGTH OF THE PAD NOT LESS THAN 20m AND HAVING A MINIMUM THICKNESS OF 200mm (8") OF COARSE GRANULAR MATERIAL. COARSE GRANULAR MATERIAL SUCH AS 75mm PLUS SHOT ROCK OR FRACTURED DRAIN ROCK UNDERLAIN WITH GEO-TEXTILE FABRIC IS RECOMMENDED.
6. THE ENTRANCE SHOULD BE MAINTAINED FOR THE DURATION OF CONSTRUCTION, IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHT OF WAYS, OR AREAS THAT LEAD TO CATCH BASINS CONNECTED TO PUBLIC SYSTEMS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL MATERIAL AS CONDITIONS DEMAND. THE PAD MAY BE REMOVED ONCE PERMANENT PAVEMENTS ARE IN PLACE AT THE SITE. A WHEEL WASH MAY BE REQUIRED IF THE TEMPORARY GRAVEL PAD IS NOT WORKING.
7. PRIOR TO CONSTRUCTION, CONTRACTOR TO CLEARLY FLAG OR FENCE AREAS OF NO DISTURBANCE AS WELL AS ANY DESIGNATED TREES AND SHRUBS THAT ARE TO BE PRESERVED. MARKINGS SHALL REMAIN IN PLACE THROUGHOUT CONSTRUCTION.
8. CONTRACTOR TO STRIP AND GRUB ONLY THOSE AREAS NECESSARY FOR THE CURRENT CONSTRUCTION. STAGE CONSTRUCTION OPERATIONS TO LIMIT DISTURBANCE AND DO NOT STRIP ANY AREA UNTIL REQUIRED.
9. IF GRADED AREAS WITHIN THE PROJECT WILL NOT BE COMPLETED OUTSIDE OF THE WET SEASON (OCTOBER TO APRIL), REVEGETATION OPERATIONS SHOULD BE CARRIED OUT WITHIN ONE WEEK OF GRADING COMPLETION OR NO LATER THAN SEPT. 15th.
10. SILT FENCING IS TO BE INSTALLED AROUND ALL STOCK/SPOIL PILES, OR PILES ARE TO BE OTHERWISE COVERED TO LIMIT EROSION AND SEDIMENT GENERATION.
11. ROUTINE INSPECTION AND MAINTENANCE OF THE SYSTEM COMPONENTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHOULD DESIGNATE AN ON-SITE PERSON TO BE RESPONSIBLE FOR DAY-TO-DAY MANAGEMENT OF THE ESCP. AT A MINIMUM, INSPECT ALL BMP'S WEEKLY TO ENSURE PROPER FUNCTION WITH INSPECTION REPORTS PROVIDED TO THE ENGINEER AND THE REGIONAL DISTRICT OF NANAIMO FOR REVIEW.
12. 48 HOURS PRIOR TO ANY PREDICTED SIGNIFICANT STORM EVENT, THE DESIGNATED SITE PERSON SHOULD INSPECT THE E&SC WORKS AND ENSURE THAT THE WORKS ARE ADEQUATE TO PROTECT THE SITE DURING THE STORM EVENT AND PROVIDE A WRITTEN REPORT TO THE ENGINEER AND/OR THE DISTRICT UPON REQUEST. IF THE DESIGNATED SITE PERSON DETERMINES THAT THE E&SC WORKS ARE NOT ADEQUATE TO PROTECT THE SITE DURING THE ANTICIPATED STORM EVENT, THEN HE/SHE IS TO IMMEDIATELY INFORM THE ENGINEER AND CONTRACTOR SO THAT THE WORKS CAN BE MODIFIED TO ADEQUATELY PROTECT THE SITE DURING THE STORM EVENT AND PROVIDE A WRITTEN REPORT TO THE ENGINEER AND/OR THE DISTRICT UPON REQUEST.
13. DURING AND/OR FOLLOWING EACH SIGNIFICANT STORM EVENT, THE DESIGNATED SITE PERSON SHOULD OBSERVE THE STORM DRAIN TO CONFIRM THAT TURBID WATERS FROM SOURCES ASSOCIATED WITH CONSTRUCTION ARE NOT ENTERING THE STORM DRAINAGE SYSTEM. TAKE IMMEDIATE CORRECTIVE ACTION IF INSPECTION INDICATES A PROBLEM. RECORD INSPECTION DATES, ANY SIGNIFICANT OBSERVATIONS, AND ACTIONS TAKEN, THEN INFORM THE CONSULTANT IN CHARGE AND THE REGIONAL DISTRICT OF NANAIMO.
14. REGIONAL DISTRICT OF NANAIMO STANDARD EROSION & SEDIMENT CONTROL SIGNAGE IS REQUIRED TO BE PLACED ON-SITE PRIOR TO THE START OF CONSTRUCTION AND MAINTAINED IN PLACE UNTIL LANDSCAPING IS COMPLETED.



SILT FENCE DETAIL
NTS



ACCESS PAD DETAIL
NTS

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ISSUES

No.	DATE YYYY.MM.DD	ISSUED FOR
A	2020.11.04	ISSUED FOR TENDER

CLIENT

MEADOWOOD COMMUNITY CENTRE
1830 GALVIN PLACE
QUALICUM, BC
REGIONAL DISTRICT OF NANAIMO

HEROLD ENGINEERING
3701 Shenton Rd, Nanaimo, BC V9T 2H1
Tel: 250-751-8558 Fax: 250-751-8559
Email: mail@heroldengineering.com

EROSION & SEDIMENT CONTROL PLAN

DESIGNED GTH	ENGINEER'S SEAL
DESIGN REVIEW PGR	
DRAFTED GTH	
DRAFTING REVIEW IEB	
PROJECT No. 0837-052	CLIENT DRAWING No.
SCALE H: 1:750 V: N/A	PERMIT No.
HEL DRAWING No. C05 5 OF 5	REVISION A

DESTROY ALL DRAWINGS SHOWING PREVIOUS REVISION

File: H:\Projects\0837-052 Meadowood Community Centre\CIVIL\04C Drawings\0837-052 Civil Drawings.dwg Plot Time: Nov. 4, 20 5:23 PM User: Garrett Hunter