

ARCHITECTURAL SPECIFICATIONS

Unicorn Daycare Trail, BC

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ISSUED FOR TENDER
SEPTEMBER 2026



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SEE ALSO :

CIVIL ENGINEERING SPECIFICATIONS, see drawings or separate document

LANDSCAPE SPECIFICATIONS, see drawings or separate document

STRUCTURAL SPECIFICATIONS, see drawings or separate document

MECHANICAL SPECIFICATIONS, see drawings or separate document

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Energy Report

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INVITATION TO TENDER

UNICORN DAYCARE CITY OF TRAIL ("CITY")

SUMMARY OF KEY INFORMATION

Request Number	23-06
Issued:	September 8, 2026 Site Visit is not mandatory
Site Visit or Meeting	
Enquiries/Questions deadline	21 September 2026
Anticipated Latest Issue of Addendum Date:	24 September 2026
Closing Time and Date:	1 October, 15:00:00 hours Pacific Time
Closing Location:	Provide one electronic copy in PDF format emailed with request number and title noted in pdf title.
City Contact Person:	Tender to be emailed to: Kim Brooks, City of Trail kbrooks@trail.ca
Enquiries or Questions:	All questions to be emailed to: Ruby Barnard ruby@bonimaddison.com or Anthony Boni anthony@bonimaddison.com

Tenders will be opened in private shortly after closing



1.0 OVERVIEW OF THIS REQUEST

1.1 Purpose of This Request

Stipulated Price Bid for the construction and site works for the Unicorn Daycare

1.2 Background

Building is on City owned land and funded by the Ministry of Children and Development

1.3 Scope

Construction of a single storey daycare building, all site services including a sanitary lift station, all site works including parking, walkways and landscape.

Alternate pricing requested for A. septic field in lieu of sanitary connection, B CLT and heavy timber construction in lieu of conventional truss and framing and C. Stained plywood in lieu of p.lam millwork.

1.4 The City's Commitments

City of Trail is committed to sustainability, social procurement, workplace safety and promoting local involvement for labour or materials.

2.0 DEFINITIONS

Throughout this Invitation to Tender, the following definitions apply:

“Addenda”: means all additional information regarding this ITT including amendments to the ITT;

“BC Bid”: means the BC Bid website located at www.bcbid.ca;

“City”: means the City of Trail located in the Province of British Columbia, Canada;

“Closing Location”: includes the location or email address for submissions indicated in the Key Information Summary;

“Closing Time”: means the closing time and date for this ITT as set out Key Information Summary of this ITT;

“Contract”: means the written agreement resulting from the ITT executed by the City and the successful Tenderer;

“Contractor”: means the successful Tenderer to the ITT who enters into a Contract with the City;

“Coordinator”: The person appointed by the City of Trail from time to time to represent the City as liaison between the City and the supplier;

“DDP”: Destination Duty Paid Incoterms 2010;

“Department”: means the Department of the City issuing this ITT;

“Invitation to Tender” or “ITT”: means the solicitation described in this document, including any attached or referenced appendices, schedules or exhibits and as may be modified in writing from time to time by the City by Addenda;

“Must”, “Shall” or “Mandatory” means a requirement that must be met for a Tender to receive consideration;

“Preferred Tenderer”: means the Tenderer deemed by the City to have the highest ranked assessment of its response according to the process set out herein;

“Tenderer”: means a person or entity (excluding its parent, subsidiaries or other affiliates) with the legal capacity to contract, that submits a Tender in response to the ITT;

“Tender”: means a written response to the ITT that is submitted by a Tenderer;

“Response”: means the submission of an offer, bid, tender or proposal according to this request;

“Respondent” or “Tenderer”: The company, individual or entity responding to this request;

“City”: means City of Trail and includes the Department issuing this request;

“City Contact”: means the individual named as the contact person for the City in the ITT;

“City Electronic Bid Receiving System”: means the electronic system of City of Trail; Bids will be emailed.

“Should”, “Could” “may” or “Desirable”: means a requirement having a significant degree of importance to the objectives of this Request;

“Supplier” or “Contractor”: the person or company selected to provide products and/or services under the terms of this contract. This extends to and includes any sub-contractors to the supplier;

“Sustainability”: means the evaluation of the products and/or services will include their related packaging, delivery, production, and waste diversion methods as well as the ecological, economic, and social benefits;

“W.C.B.”: Workers Compensation Board of British Columbia, doing business as WorkSafe BC.

3.0 INSTRUCTIONS TO TENDERERS

3.1 Submission of Tenders

Tenders must be submitted before Closing Time to the Closing Location as stated in the summary of key information using one of the submission methods set out in this section of this ITT. Tenders must not be sent by fax, except in the circumstances set out below. The Tenderer is solely responsible for ensuring that, regardless of submission method selected, the City receives a complete Tender, including all attachments or enclosures, before the Closing Time.

A Tender should be signed by a person authorized to sign on behalf of the Tenderer with the intent to bind the Tenderer to the ITT and to the statements and representations in the Tenderer's Tender. A scanned copy of the signed response form of this ITT is acceptable as is a cover letter identifying the Tenderer, identifying the ITT and including a signature of an authorized representative of the Tenderer that confirms the Tenderer's intent to be bound.

For electronic submissions by email, the following applies:

- The Tenderer is solely responsible for ensuring that the complete electronic Tender, including all attachments, is received before Closing Time;
- The maximum size of each attachment must be 10 MB or less (Tenderers are solely responsible for ensuring that email Tender submissions comply with any size restrictions imposed by the Tenderer's internet service provider);
- Tenderers should submit email Tender submissions in a single email and avoid sending multiple email submissions for the same opportunity. If the file size of an electronic submission exceeds the applicable maximum size, the Tenderer may make multiple submissions to reduce attachment file size to be within the maximum applicable size; Tenderers should identify the order and number of emails making up the email Tender submission (e.g. "email 1 of 3, email 2 of 3...");
- For email Tender submissions sent through multiple emails the City reserves the right to seek clarification or reject the Tender if the City is unable to determine what documents constitute the complete Tender;
- Attachments must not be compressed, must not contain a virus or malware, must not be corrupted and must be able to be opened. Tenderers submitting by electronic submission are solely responsible for ensuring that any emails or attachments are not corrupted. The City may reject Tenders that are compressed, cannot be opened or that contain viruses or malware or corrupted attachments.

For email Tender submissions, including any notices of amendment or withdrawal referred to in Section 3 of this Request, the subject line of the email and any attachment should be clearly marked with the name of the Tenderer, the ITT number and the project or program title.

The City strongly encourages Tenderers using electronic submissions to submit Tenders with sufficient time to complete the upload and transmission of the complete Tender and any attachments before Closing Time.

The Tenderer bears all risk associated with delivering its Tender by electronic submission, including but not limited to delays in transmission between the Tenderer's computer and the City Electronic Mail System.

While the City may allow for email Tender submissions, the Tenderer acknowledges that email transmissions are inherently unreliable. The Tenderer is solely responsible for ensuring that its complete email Tender submission and all attachments have been received before Closing Time. If the City Electronic Mail System rejects an email Tender submission for any reason, and the Tenderer does not resubmit its Tender by the same or other permitted submission method before Closing Time, the Tenderer will not be permitted to resubmit its Tender after Closing Time. The Tenderer is strongly advised to contact the City Contact immediately to arrange for an alternative submission method if:

- The Tenderer's email Tender submission is rejected by the City Electronic Mail System; or
- The Tenderer does not receive an automated response email from the City confirming receipt of the email and all attachments within a half hour of the time the email Tender submission was sent by the Tenderer.

An alternate submission method may be made available, at the City's discretion, commencing one half hour before the Closing Time, and it is the Tenderer's sole responsibility for ensuring that a complete Tender (and all attachments) submitted using an approved alternate submission method is received by the City before the Closing Time. The City makes no guarantee that an alternative submission method will be available or that the method available will ensure that a Tenderer's Tender is received before Closing Time.

3.1.1 Alternative Solutions

If more than one approach to deliver the services described in the ITT is offered, aside from alternatives requested, Tenderers should submit the alternative approach in a separate Tender.

3.1.2 Brand Names or Equivalent

Unless otherwise stated, if, and wherever, the Specifications state a brand name, a make, the name of manufacturer, a trade name or a vendor catalogue number, it is not intended to rule out the use of other equivalent materials or equipment.

If, however, Products other than that brand or manufacturer specified is quoted in any ITT, the Submission must explicitly include the name of such Products, its manufacturer, and trade name and any applicable vendor catalogue number, and the City may require that the Tenderer provide proof of equivalency. Evidence of quality in the form of samples may be requested.

3.1.3 Collection and Use of Personal Information

Tenderers are solely responsible for familiarizing themselves, and ensuring that they comply, with the laws applicable to the collection and dissemination of information, including resumes and other personal information concerning employees and employees of any subcontractors. If the ITT requires Tenderers to provide the City with personal information of employees who have been included as resources in response to the ITT, Tenderers will ensure that they have obtained written consent from each of those employees before forwarding such personal information to the City. Such written consents should specify that the personal information may be forwarded to the City for the purposes of responding to the ITT and used by the City for the purposes set out in the ITT. The City may, at any time, request the original consents or copies of the original consents from Tenderers, and upon such request being made; Tenderers will immediately supply such originals or copies to the City.

3.1.4 Signatures

If an individual is making the response, they shall print or type their name and address on the response form and sign the same in the spaces provided. Their signature shall be witnessed, and the witness shall give their address.

If a partnership is making the response, the name and address of the partnership shall be printed or typed on the response form and the names of all members of the partnership shall be printed or typed in the spaces provided. The response shall be signed by one or more of the partners in the following manner: for example, "Smith and Jones by John Jones a partner". The signature or signatures shall be witnessed, and the witness or witnesses shall give their address or addresses.

If a company is making the response, the name of the company and its place of business shall be printed or typed on the response form and the form shall be signed by the person or persons authorized to sign the response on behalf of the company, indicating the capacity in which they sign: for example, "John Doe Company Ltd. by John Smith, Secretary" or as the case may be.

Responses signed by an agent must be accompanied by evidence of their authority.

3.1.5 Additional Information

All Addenda will be posted on BC Bid. It is the sole responsibility of the Tenderer to check for Addenda on BC Bid. Tenderers are strongly encouraged to subscribe to BC Bid's email notification service to receive notices of Addenda.

3.1.6 Debriefing

At the conclusion of the ITT process, the outcome may be posted on BC Bid and City's website. Tenderers may request a debriefing meeting with the City.

4.0 GENERAL TERMS AND CONDITIONS

4.1 Acceptance

Submitting a Tender indicates acceptance of all the terms and conditions set out in the ITT, including those that follow and that are included in all appendices and any Addenda.

4.1.1 Mandatory Conditions

The response must be emailed and must be received at the closing location by or before the closing time as noted in the summary of key information of this document;

A completed and signed form substantially similar in form and content to that in Appendix A is included with the response; and

The response is in the English Language.

4.1.2 Late Tenders

Tenders will be marked with their receipt time at the Closing Location. Only complete Tenders received and marked before the Closing Time will be considered to have been received on time. Tenders received late will be marked late and not considered or evaluated. In case of a dispute, the Tender receipt time as recorded by the City at the Closing Location will prevail whether accurate or not.

4.1.3 Tender Validity

Tenders will be open for acceptance for at least 90 days after the Closing Time.

4.1.4 Firm Pricing

Prices will be DDP Incoterms 2010 and firm for the entire Contract period unless the ITT specifically states otherwise.

4.1.5 Completeness of Tender

By submitting a Tender, the Tenderer warrants that, if the ITT is to design, create or provide a system or manage a program, all components required to run the system or manage the program have been identified in the Tender or will be provided by the Contractor at no additional charge.

4.1.6 Delivery of Notices to Tenderers

Any notices required concerning this tender shall be in writing and delivered by e-mail to the e-mail address provided by the tenderer. Notices shall be considered delivered when transmitted.

4.1.7 Changes to Tenders

By submitting a clear and detailed written notice, the Tenderer may amend or withdraw its Tender before the Closing Time. Unless the ITT otherwise provides, Tenderers should use a consistent submission method for submitting Tenders and any amendments or withdrawals. Upon Closing Time, all Tenders become irrevocable. The Tenderer will not change any part of its Tender after the Closing Time unless requested by the City for purposes of clarification. Any such requested changes should be submitted by the Tenderer within 48 hours of City's issue of that request.

4.1.8 Conflict of Interest/No Lobbying

A Tenderer may be disqualified if the Tenderer's current or past corporate or other interests, or those of a subcontractor, may, in the City's opinion, give rise to an actual or potential conflict of interest in connection with the services described in the ITT. This includes, but is not limited to, involvement by a Tenderer in the preparation of the ITT or a relationship with any employee, contractor or representative of the City involved in preparation of the ITT, participating on the evaluation committee or in the administration of the Contract. If a Tenderer is in doubt as to whether there might be a conflict of interest, the Tenderer should consult with the City Contact prior to submitting a Tender. By submitting a Tender, the Tenderer represents that it is not aware of any circumstances that would give rise to a conflict of interest that is actual or potential, in respect of the ITT.

A Tenderer must not attempt to influence the outcome of the ITT process by engaging in lobbying activities. Any attempt by the Tenderer to communicate for this purpose directly or indirectly with any employee, contractor or representative of the City, including members of the evaluation committee and any elected officials of the City, or with the media, may result in disqualification of the Tenderer.

4.1.9 Subcontractors

Unless the ITT states otherwise, the City will accept Tenders where more than one organization or individual is proposed to deliver the services described in the ITT, so long as the Tender identifies the lead entity that will be the Tenderer and that will have sole responsibility to deliver the services under the Contract. The City will enter into a Contract with the Tenderer only. The evaluation of the Tenderer will include evaluation of the resources and experience of proposed sub-contractors, if applicable.

All subcontractors, including affiliates of the Tenderer, should be clearly identified in the Tender.

A Tenderer may not subcontract to a firm or individual whose current or past corporate or other interests, may, in the City's opinion, give rise to an actual or potential conflict of interest in connection with the services described in the ITT. This includes, but is not limited to, involvement by the firm or individual in the preparation of the ITT or a relationship with any employee, contractor or representative of the City involved in preparation of the ITT, participating on the evaluation committee or in the administration of the Contract. If a Tenderer is in doubt as to whether a proposed subcontractor might be in a conflict of interest, the Tenderer should consult with the City Contact prior to submitting a Tender. By submitting a Tender, the Tenderer represents that it is not aware of any circumstances that would give rise to a conflict of interest that is actual or potential, in respect of the ITT.

Where applicable, the names of approved subcontractors listed in the Tender will be included in the Contract. No additional subcontractors will be added, nor other changes made to this list in the Contract without the written consent of the City.

4.1.10 Tenderers' Expenses

Tenderers are solely responsible for their own expenses in participating in the ITT process, including costs in preparing a Tender and for subsequent finalizations with the City, if any. The City will not be liable to any Tenderer for any claims, whether for costs, expenses, damages or losses incurred by the Tenderer in

preparing its Tender, loss of anticipated profit in connection with any final Contract, or any other matter whatsoever.

4.1.11 Limitation of Damages

By submitting a Tender, the Tenderer agrees that it will not claim damages, for whatever reason, relating to the Contract or in respect of the competitive process, in excess of an amount equivalent to the reasonable costs incurred by the Tenderer in preparing its Tender and the Tenderer, by submitting a Tender, waives any claim for loss of profits if no Contract is made with the Tenderer.

4.1.12 Liability for Errors

While the City has used considerable efforts to ensure information in the ITT is accurate, the information contained in the ITT is supplied solely as a guideline for Tenderers. The information is not guaranteed or warranted to be accurate by the City, nor is it necessarily comprehensive or exhaustive. Nothing in the ITT is intended to relieve Tenderers from forming their own opinions and conclusions with respect to the matters addressed in the ITT.

4.1.13 No Commitment to Award

The ITT should not be construed as an agreement to purchase goods or services. The lowest priced or any Tender will not necessarily be accepted. The ITT does not commit the City in any way to award a Contract.

4.1.14 No Implied Approvals

Neither acceptance of a Tender nor execution of a Contract will constitute approval of any activity or development contemplated in any Tender that requires any approval, permit or license pursuant to any federal, provincial, regional district or municipal statute, regulation or by-law.

4.1.15 Legal Entities

The City reserves the right in its sole discretion to:

- disqualify a Tender if the City is not satisfied that the Tenderer is clearly identified;
- prior to entering into a Contract with a Tenderer, request that the Tenderer provide confirmation of the Tenderer's legal status (or in the case of a sole proprietorship, the Tenderer's legal name and identification) and certification in a form satisfactory to the City that the Tenderer has the power and capacity to enter into the Contract;
- not to enter into a Contract with a Tenderer if the Tenderer cannot satisfy the City that it is the same legal entity that submitted the Tenderer's Tender; and
- require security screenings and / or criminal record checks for a Tenderer who is natural person, subcontractors and key personnel before entering into a Contract and decline to enter into a Contract with a Tenderer or to approve subcontractor or key personnel that fail to pass the security screenings and / or criminal record checks to the City's satisfaction.

4.1.16 Reservation of Rights

In addition to any other reservation of rights set out in the ITT, the City reserves the right, in its sole discretion:

- to modify the terms of the ITT at any time prior to the Closing Time, including the right to cancel the ITT at any time prior to entering into a Contract with a Tenderer;
- in accordance with the terms of the ITT, to accept the Tender or Tenders that it deems most advantageous to itself;
- to waive any non-material irregularity, defect or deficiency in a Tender;
- to request clarifications from a Tenderer with respect to its Tender, including clarifications as to provisions in its Tender that are conditional or that may be inconsistent with the terms and conditions of the ITT, without any obligation to make such a request to all Tenderers, and consider such clarifications in evaluating the Tender;
- to reject any Tender due to unsatisfactory references or unsatisfactory past performance under contracts with the City, or any material error, omission or misrepresentation in the Tender;
- at any time, to reject any or all Tenders; and
- At any time, to terminate the competition without award and obtain the goods and services described in the ITT by other means or do nothing.

4.1.17 Ownership of Tenders

All Tenders and other records submitted to the City in relation to the ITT become the property of the City and, subject to the provisions of the Freedom of Information and Protection of Privacy Act and the ITT, will be held in confidence. For more information on the application of the Act, go to [http://www.cio.gov.bc.ca/cio/priv leg/index.page](http://www.cio.gov.bc.ca/cio/priv_leg/index.page).

4.1.18 Copyright

This document is subject to copyright and may be used, reproduced, modified and distributed only to the extent necessary for the Tenderer to prepare and submit a Tender.

4.1.19 Confidentiality Agreement

The Tenderer acknowledges that prior to the Closing Time it may be required to enter into a confidentiality agreement with the City in order to obtain access to confidential materials relevant to preparing a Tender.

4.1.20 Contract

By submitting a Tender, the Tenderer agrees that should its Tender be successful the Tenderer will enter into a Contract with the City on substantially the same terms and conditions set out in Appendix C and such other terms and conditions to be finalized to the satisfaction of the City, if applicable.

Written notice to a Tenderer that it has been identified as the successful Tenderer and the subsequent full execution of a written Contract will constitute a Contract for the goods or services, and no Tenderer will acquire any legal or equitable rights or privileges relative to the goods or services until the occurrence of both such events.

4.1.21 Contract Finalization Delay

If a written Contract cannot be finalized with provisions satisfactory to the City within thirty days of notification of the successful Tenderer, the City may, at its sole discretion at any time thereafter, terminate

discussions with that Tenderer and either commence finalization of a Contract with the next qualified Tenderer or choose to terminate the ITT process and not enter into a Contract with any of the Tenderers.

4.1.22 Trade Agreements

This ITT is covered by trade agreements applicable to City and other jurisdictions, including the following:

- Canadian Free Trade Agreement;
- New West Partnership Trade Agreement;

For more information, Tenderers may contact the City Contact.

5.0 RESPONSE EVALUATION

This section outlines the process and criteria for evaluation of responses to this request to select a preferred Tenderer or Tenderers if this request allows for the possibility of contracting with multiple suppliers.

Please note that past performance with City of Trail or others will affect this and any future evaluations of the Tenderer's Tender(s).

Tenders that have met the initial Mandatory Conditions for submitting a Tender, as outlined in part 4.1 of the General ITT Terms & Conditions, shall be evaluated as follows:

5.1 Evaluation

Tenders will be assessed in accordance with the Evaluation Process outlined below. The City will be under no obligation to receive further information, whether written or oral, from any Tenderer. The City is under no obligation to perform any investigations or to otherwise verify any statements or representations made in a Tender.

Tenders from not-for-profit agencies will be evaluated against the same criteria as those received from any other Tenderers.

The City may consider and evaluate any Tenders from other jurisdictions on the same basis that the City purchasing authorities in those jurisdictions would treat a similar Tender from a British Columbia supplier.

5.1.1 Evaluation Team

The evaluation team may consist of City employees, contractors to the City and others as may be appointed to the evaluation team by the City. All persons on the evaluation committee shall be bound by the same standard of confidentiality.

5.2 Evaluation Process

Evaluation of responses will be made in the same and subsequent order as stated in the subsections to this section.

5.2.1 Mandatory Criteria

Responses will be first evaluated against the mandatory criteria. Responses not meeting these criteria will be rejected and excluded from any further consideration

5.2.2 Price and/or Total Contract Value

The qualified Tenderer that submits the lowest cost to deliver the products as specified could become the preferred tenderer.

5.2.3 Interview and/or Presentation

Selected Tenderers may be requested to attend an interview with the City's evaluation committee and/or make a presentation to the committee. This stage of the selection process may or may not be applicable as stated immediately below.

Tenderers may be asked to clarify or verify any part of their written response and/or presentation.

5.3 Reference Checks

The references and/or recent clients of the Preferred Tenderer may be contacted to validate any part of a Response. The City reserves the right to conduct such independent reference checks or verifications including criminal record checks as are deemed necessary by it to clarify, test, or verify the information contained in the Tender and confirm suitability of the Tenderer. By submitting a Tender, the Tenderer agrees that they consent to the conduct of all or any of those investigations by the City.

The City will not enter into a Contract with any Tenderer whose criminal record check, references and / or prior performance, in the City's sole and reasonable opinion, are found to be unsatisfactory.

5.4 Prices Evaluation

Prices will be evaluated according to the formula:

$$\text{Maximum Points Available for price} \quad \times \quad \frac{\text{Lowest Price Offered}}{\text{Price being Evaluated}}$$

5.5 Negotiations

The City reserves the right, at its sole discretion, to negotiate with the Preferred Tenderer. In no event will the City be required to offer any modified terms to any other Tenderer prior to entering into an agreement with the Preferred Tenderer and the City shall not incur any liability to any Tenderer as a result of such negotiation or modifications.

It is the intent of the City to ensure it has the flexibility it needs to arrive at a mutually acceptable Contract. It is not the intent of the City to allow for new or significantly altered Responses in any negotiations with the Preferred Tenderer.

Negotiations may include:

- Minor changes to the requirements and responsibilities;
- Contract payment details
- Selected contract terms contained in the pro-forma contract as identified by the Tenderer for negotiation.

If a Contract cannot be negotiated with the Preferred Tenderer, the City will follow the process outlined in Part 7 immediately below.

5.6 Negotiation Delay

If a written Contract cannot be negotiated within thirty (30) days of notification of the Preferred Tenderer, the City may, at its sole discretion at any time thereafter, terminate negotiations with that Tenderer and either negotiate a Contract with the next best qualified Tenderer and so on or choose to terminate the Invitation to Tender process and not enter into a Contract with any of the Tenderers. Such cancellation does not preclude the City from entering into a contract with a Tenderer in respect of any aspect of the work contemplated by this Request.

5.7 Notification

All Tenderers may be notified of the outcome of the appraisal and award process. Unsuccessful Tenderers may request a debriefing interview with the City.

6.0 APPENDIX A: SIGNATURE AND RESPONSE FORM

Complete this section and enclose it with your response.

ITT Project Title: UNICORN DAYCARE

ITT Reference No: 23-06

Legal Name of Tenderer: _____

Contact Person and Title: _____

Business Address: _____

Telephone: _____ E-Mail: _____

I/We, the undersigned duly authorized representative of the contractor, having received and carefully reviewed all of the Tender documents, including the ITT and any issued addendums, and having full knowledge of the Site(s), and having fully informed ourselves as to the intent, difficulties, facilities and local conditions attendant to performing the Services, we have allowed for these conditions and submit this Tender in response to the ITT.

The undersigned further agrees, on behalf of the company named below, to supply the goods and services listed at the prices quoted and within the terms and conditions as identified in Invitation to Tender #~requestno. This Tender is valid and enforceable for at least Ninety (90) days following the closing date.

This Tenderer further warrants that this Tender is made without collusion with any other party except those expressly disclosed in this Tender and that the Tenderer has no conflict of interest.

The undersigned warrants that they have the authority to bind the company to this contract.

I/We confirm that this Tender is accurate and true to best of my/our knowledge.

I/We confirm that, if I/we am/are awarded the Agreement, I/we will at all times be the "prime consultant/contractor" as provided by the Worker's Compensation Act (British Columbia) with respect to the Services. I/we further confirm that if I/we become aware that another consultant/contractor at the place(s) of the Services has been designated as the "prime consultant/contractor", I/we will notify the City immediately, and I/we will indemnify and hold the City harmless against any claims, demands, losses, damages, costs, liabilities or expenses suffered by the City in connection with any failure to so notify the City.

This Tender is submitted this _____ day of _____, 2026

I/We have the authority to bind the Tenderer.

(Name of Tenderer)

(Name of Tenderer)

(Signature of Authorized Signatory)

(Signature of Authorized Signatory)

(Print Name and Position of Authorized Signatory)

(Print Name and Position of Authorized Signatory)

6.1 Addenda Acknowledgment

Addenda No.	Date Issued

6.2 Response Form

6.2.1 Prices

Prices shall be given in Canadian Dollars with applicable taxes itemized and shown separately.

Item: Description of the component of the supply	Price Offered
CONCRETE; foundation	
METALS	
WOOD, PLASTICS AND COMPOSITES; framing, trusses, millwork	
THERMAL AND MOISTURE PROTECTION; insulation, cladding, roofing	
OPENINGS; doors, windows, glazing	
FINISHES; wallboard, flooring, painting	
SPECIALTIES; signage, toilet partitions, washroom acc, lockers, appliances	
MECHANICAL	
ELECTRICAL	
EARTHWORK; clearing,excavation, backfill, subgrade prep	
EXTERIOR IMPROVEMENTS; paving, lighting, fencing	
LANDSCAPE; soft landscape, play equipment, furnishings	
UTILITIES; water, sanitary, stormwater, site electrical	
SANITARY PUMP STATION AND RELATED WORK	
GENERAL CONDITIONS, INSURANCE	
OTHER	
OTHER	
SUB TOTAL	
PST IF APPLICABLE	
GST	
TOTAL CONTRACT PRICE	

7.0 APPENDIX B: ALTERNATE PRICES

LIST OF ALTERNATIVE PRICES

1. The following alternative prices may be used to vary the Bid price prior to award of the Contract or later to vary the Contract Price in accordance with GC 6.1 – Changes. Such prices shall include all labour, materials, overhead and profit. Work for which the alternative price applies is not included in the Bid Price stated in the Bid Form. These prices do not include GST.
2. Prices shall include the cost of any changes or modifications to other aspects of the work. Provide a list of such modifications to the Consultant if requested.
3. Alternative prices shall remain open for acceptance by the Owner at any time before the logical schedule requirement for such work or materials.
4. The costs stated for alternative prices are to be added to or deleted from the Bid Price as indicated.
5. The following are our alternative prices for work listed hereunder.

DESCRIPTION OF WORK

COST DIFFERENCE (+ OR -)

A. SANITARY DESIGN OPTION: In lieu of the Sanitary Lift station, connection to the existing force main, generator, related works including power, controls as shown on drawings. Alternate is septic system and all related works including power and controls. See drawings;

- S01,S02, S03 by Highland Consulting Ltd.,
- C26001-001 Servicing Plan 2 – Optional Pricing (Septic) by WSA Engineering Ltd.
- Architectural Scope:
 - A0.4; see alternate Septic Field location. Cut and fill in this area will change
 - A0.5; delete generator pad
 - A3.02; see site section for proposed field and cut required.
- Electrical; delete generator, pump connections and control panel. Add connection to septic pump, control panel
- Mechanical; no change to sanitary location or size.

\$ _____

DESCRIPTION OF WORK

**COST
DIFFERENCE
(+ OR -)**

B. HEAVY TIMBER OPTION; In lieu of standard loadbearing walls and truss assembly as shown on drawings, alternate for heavy timber system including wood posts, beams and CLT roof. See alternate drawings:

- CLT & Heavy Timber Option S0.00, S1.01, S1.02, S2.01, S2.02, S3.01, S3.02, S4.01 by Juniper Structural Engineers dated 2026-06-01.
- Architectural Drawings; A3.01 Details D2.01, D2.02, D2.03, D2.05. Architectural drawings are to represent the main elements of change to the scope. All drop ceilings to remain. Exposed CLT or wood columns/beams to be stained/varnished.
- Mechanical; HVAC systems to remain as detailed
- Electrical: Light fixtures or other devices located on the exposed CLT ceiling to be surface mounted, distribution can be on top of CLT, in conduit, with the roof insulation. MFG can chose to imbed into CLT panel. Lighting would be redistributed to better align with beam locations.
- All exposed wood elements to be stained and varnished.

\$ _____

C. MILLWORK OPTION; In lieu of cabinet/casework construction and finishes as noted in Section 12 30 00 Manufactured Casework, alternative for 3/4" G2S plywood for all surfaces in lieu of high pressure laminate on MDF for cabinets, fronts, cubbies. Basic cabinets can still be melamine impregnated low pressure laminate. Finish to be stained and varnished.

\$ _____

END OF APPENDIX B

8.0 APPENDIX C: LIST OF SUBCONTRACTORS

PROJECT TITLE: UNICORN DAYCARE

BIDDER: _____

LIST OF PROPOSED SUBCONTRACTORS AND SUPPLIERS

1. We submit herewith a list of Subcontractors and Suppliers we propose to use in the Work, reserving to us, the right to substitute other Subcontractors and Suppliers for any trades in the event of any Subcontractor withdrawing his bid or becoming bankrupt after the date hereof. Any such substitution shall be subject to the approval of the Consultant and Owner and contingent upon evidence of withdrawal or bankruptcy.
2. Each item shall have a Subcontractor's or Supplier's name as applicable entered against it, except where the work is to be executed directly by the Contractor. In such cases list "Own Forces". Fill in all blank spaces provided.

Description of Work	Name of Subcontractor/Supplier
Division 3 Concrete	
Division 6 Rough Carpentry	
Division 6 Finish Carpentry	
Division 7 Cladding, Roofing	
Division 8 Doors, Frames, and Hardware	
Division 9 Flooring	
Division 9 Metal framing, Drywall	
Division 9 Painting	
Division 12 Millwork	
Division 22,23 Mechanical	
Division 26 Electrical	
Division 33 Civil Works	
Division 32 Landscaping and Playground	
Other	

9.0 APPENDIX D: SCOPE OF WORK, LIST OF DOCUMENTS

Construction of a single storey daycare building, all site services including a sanitary lift station, all site works including parking, walkways and landscape. Alternate pricing requested for a septic field in lieu of sanitary connection and CLT and heavy timber construction in lieu of conventional truss and framing, as detailed.

Tender documents include:

ARCHITECTURAL DRAWINGS

A0.01 COVER SHEET
 A0.02 CODE REVIEW
 A0.03 CODE PLAN
 A0.04 CONTEXT PLAN
 A0.05 SITE PLAN
 A1.01 FOUNDATION PLAN
 A1.02a GROUND FLOOR PLAN
 A1.02b GROUND FLOOR PLAN DIMS
 A1.03 GROUND FLOOR RCP
 A1.04 ROOF PLAN
 A2.01 ELEVATIONS
 A2.02 ELEVATIONS
 A3.01 BUILDING SECTIONS
 A3.02 SITE SECTIONS / SEPTIC
 A4.01 INTERIOR ELEVATIONS
 A4.02 INTERIOR ELEVATIONS
 A4.03 INTERIOR ELEVATIONS
 A4.04 INTERIOR ELEVATIONS
 A9.01 SCHEDULES
 A9.02 SCHEDULES
 ARCHITECTURAL DETAIL BOOK
 ARCHITECTURAL SPECIFICATIONS
 ARCHITECTURAL DRAWINGS
 (HEAVY TIMBER ALTERNATE B)
 A3.01 SECTIONS (HEAVY TIMBER ALTERNATE)

ARCHITECTURAL DETAILS (HEAVY TIMBER ALTERNATE B)

D2.01 ROOF AT SOFFIT 1
 D2.02 GABLE END EAVES DETAIL 1
 D2.03 GABLE END EAVES DETAIL 2
 D2.05 ENTRY CANOPY DETAIL

REPORTS:

SITE SURVEY
 UNDERGROUND LOCATES
 ENERGY REPORT
 GEOTECHNICAL REPORT

STRUCTURAL

S0.00 COVER PAGE
 S1.01 GENERAL NOTES

S1.02 GENERAL NOTES
 S2.01 FOUNDATION PLAN
 S2.02 MAIN FLOOR SHOWING ROOF FRAMING
 S3.01 SECTIONS
 S4.01 DETAILS

STRUCTURAL (HEAVY TIMBER ALTERNATE)

S0.00 COVER PAGE
 S1.01 GENERAL NOTES
 S1.02 GENERAL NOTES
 S2.01 FOUNDATION PLAN
 S2.02 MAIN FLOOR SHOWING ROOF FRAMING
 S3.01 SECTIONS
 S3.02 SECTIONS
 S4.01 DETAILS

MECHANICAL

M0.05 SITE PLAN & COVER PAGE
 M1.01 FOUNDATION PLAN
 M1.02 PLUMBING FLOOR PLAN
 M1.03 HVAC FLOOR PLAN
 M1.04 SERVICE SPACE & ATTIC PLAN
 M1.05 ROOF PLAN
 M2.01 DETAILS
 M2.02 DETAILS
 M2.03 SCHEDULES
 M3.01 SPECIFICATIONS
 M3.02 SPECIFICATIONS
 M3.03 SPECIFICATIONS

ELECTRICAL

E-1 SITE PLAN, SYMBOL LEGEND
 E-2 GROUND FLOOR PLAN - LIGHTING
 E-3 GROUND FLOOR PLAN - POWER & AUXILIARIES
 E-4 ROOF PLAN
 E-5 DETAILS
 E-6 SCHEDULES
 E-7 SPECIFICATIONS

CIVIL

C1 LOCATION PLAN & DRAWING INDEX
 C2 EXISTING SITE PLAN
 C3 PROPOSED SITE PLAN

UNICORN DAYCARE

Invitation to Tender #23-06



C4 SERVICING PLAN
C4.1 SERVICING PLAN 2-OPTIONAL PRICING WITH SEPTIC
C5 GRADING PLAN
C5.1 GRADING PLAN-NORTH PLAY AREA
C5.2 GRADING PLAN-EAST PLAY AREA
C6 DRAINAGE PLAN
C7 STORMWATER DETAILS
C8 MMCD STD DETAILS

LANDSCAPE

L0.0 COVER SHEET
L0.1 LANDSCAPE NOTES & SCHEDULES
L0.2 LANDSCAPE ILLUSTRATIVE PLAN
L1.0 TREE MANAGEMENT PLAN
L1.1 CIVIL SERVICING PLAN
L2.0 SITE LAYOUT PLAN
L3.0 LANDSCAPE MATERIALS PLAN
L3.1 LANDSCAPE GRADING PLAN

L4.0 LIGHTING PLAN
L5.0 TREE PLAN
L6.0 PLANTING PLAN
L7.0 SOIL DEPTH PLAN
L7.1 IRRIGATION AND LANDSCAPE SERVICING PLAN
L8.0 LANDSCAPE SECTIONS
L9.1 SOFTSCAPE DETAILS
L9.2 HARDSCAPE DETAILS
L9.3 PLAY DETAILS
L9.4 SITE FURNISHING DETAILS
L9.5 SITE FURNISHING DETAILS
LANDSCAPE SPECIFICATIONS

SEPTIC (ALTERNATE)

S01 GENERAL LAYOUT
S02 DETAILS
S03 DETAILS

10.0 **APPENDIX E: CONTRACT**

By submission of a Tender the respondent to this Request agrees that a contract entered into between the City will be a **CCDC2 2020 Stipulated Price. Contract**. Tenderers are to identify any contract terms that they could not agree to and the identification of any such terms shall be included in post-closing negotiations, if any.

See also Section 00 73 00 Supplementary Conditions.

10.1 Insurance

At its' own expense and prior to the commencement of the term of the Contract, the Preferred Tenderer shall obtain and maintain or cause to be obtained and maintained in force during the term of the Contract, insurance acceptable to the City where the City is named as additional insured with limits not less than those shown for each respective item as follows:

Insurance	Consultant	Independent or Trade Contractor
Commercial General Liability (CGL)	\$2 million per occurrence	\$3 million per occurrence
Automobile Liability	\$2 million per occurrence	\$2 million per occurrence
Umbrella or Excess Liability	To bring CGL or auto liability to \$2 million	To bring CGL to \$3 million or auto liability to \$2 M
Professional Liability	\$1 million each claim	None

11.0 APPENDIX F: CONFIRMATION OF INTENTION

Invitation to Tender #23-06 UNICORN DAYCARE

Please complete this form and e-mail immediately to City:

Attention: Kim Brooks, City of Trail email; kbrooks@trail.ca

Failure to return this form may result in a termination of communication regarding this Request.

Company Name _____

Address _____

City _____ Postal Code: _____

Contact Person _____ Phone _____ Fax _____

E-Mail _____

I have received a copy of the above noted Invitation to Tender

☐

Yes I intend to respond to this Invitation to Tender.

A coordinated site visit has not been organized. It is the Contractors responsibility to familiarize themselves with the site.

☐

No, I will not be responding to the Request. I understand that if I do not submit a Tender, this will not affect our company's status as a potential Tenderer to City in the future.

Signature: _____ Title: _____

Date: _____

Supplementary General Conditions to the CCDC 2-2020 form of Stipulated Price Contract between Owner and Contractor.

The following Supplementary General Conditions shall amend the contract as follows:

DEFINITIONS

19. Substantial Performance of the Work

Delete and replace with the following:

"Substantial Performance of the Work shall have been reached when:

- .1 the Work is ready for use or is being used for the purpose intended and is so certified by the Consultant; and*
- .2 a Certificate of Completion has been issued for the Work as a whole."*

Add:

22. Builders Lien Act

Builders Lien Act means the *Builders Lien Act*, S.B.C. 1997, c.45, as amended, and all regulations thereto, and any successor legislation in the Province of British Columbia in relation to builders liens.

23. Certificate of Completion

A Certificate of Completion is a certificate of completion as defined in the *Builders Lien Act*."

GENERAL CONDITIONS

PART 3 EXECUTION OF THE WORK

GC3.8 SUBCONTRACTORS AND SUPPLIERS

3.8.2 Delete and substitute:

"Subject to paragraph 3.8.3, the *Contractor* agrees to employ only those *Subcontractors* proposed in writing, including the *Contractor's* own forces, if any, and accepted by the *Owner* with the acceptance of the tender or on entering into this *Contract*. The *Contractor* shall not change any *Subcontractor* without cause and without the written consent of the *Owner*, which consent will not be unreasonably withheld."

GC3.12 USE OF THE WORK

Add:

- "3.12.3 The *Contractor* shall not use any service, plant or equipment installed as part of the *Work* without first receiving the written approval of the *Consultant*. On receipt of such approval, the *Contractor* shall be subject to any conditions set out as part of such approval and shall be responsible for all costs including damage and compensation for wear."

.1 PART 5 PAYMENT

GC5.2 APPLICATIONS FOR PROGRESS PAYMENT

- 5.2.2 In line 3, after *Place of Work*, add “,which in the opinion of the *Consultant* will be installed within 30 calendar days of delivery, unless agreed otherwise,”.

Add:

- "5.2.7 The *Contractor* shall submit one copy of all applications for payment and all applications for payment, except the first, shall be accompanied by a form of statutory declaration approved by the *Owner* completed and sworn before a Notary Public or a Commissioner for Oaths for the Province of British Columbia, which statutory declaration must include a statement that all accounts for labour, subcontracts, *Products*, construction machinery and equipment and other indebtedness which may have been incurred by the *Contractor* in the performance of the *Work* covered by the immediately preceding progress claim, and for which the *Owner* might in any way be held responsible, have been paid in full, except holdback monies properly retained.
- 5.2.8 Every application for payment shall identify the *Value Added Taxes* payable by the *Owner* to the *Contractor* as a separate entry."

GC5.3 PROGRESS PAYMENT

- 5.3.1 Add at the end:

"No certificate for payment will be issued for any of the *Work* and no payment shall be approved, authorized or made unless the *Contractor* has provided all documents as required to be provided at that time under this *Contract* or as otherwise reasonably required by the *Consultant* for the *Consultant* to determine the amount properly due.

- 5.3.2 Delete and substitute:

"The *Owner* shall make payment of 90% of the amount as determined by the *Consultant* to be due to the *Contractor* on account in accordance with the provisions of Article A-5 PAYMENT no later than 20 days after the certificate for payment has been issued, provided that the *Owner*, at its sole and absolute discretion, may retain out of such payment the amount of any outstanding liens or claims or any other indebtedness which may have been incurred by the *Contractor* in performing the *Work* and for which the *Owner* may in any way be held responsible. "Other indebtedness" means only such debts incurred by the *Contractor* to persons in privity of contract with the *Contractor*, debts arising out of statutory requirements and, in the case of the *Contractor's* workers, any debts arising out of collective bargaining agreements, legislation applying to workers compensation, employment insurance and minimum wage standards where applicable. Upon request by the *Owner*, the *Contractor* shall forthwith provide a full accounting as to the disbursement of all monies paid by the *Owner* to the *Contractor*, including a complete list of all persons to whom monies remain due and the amounts due."

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

- 5.4.1 Delete "permitted by the lien legislation applicable to the *Place of the Work*" on the first two lines.

Add at the end of 5.4.1:

"The *Contractor* shall submit the following documents with their request for *Substantial Performance* review by the *Consultant*. These requirements do not limit the *Contractor's* *Substantial Performance* obligations noted elsewhere in the *Contract*. A deficiency holdback will be retained for the estimated value of the following items until they are submitted, reviewed and accepted by the *Consultant*:

- .1 the list of all deficient and incomplete items of work including the estimated value of each item;
- .2 complete reports including a balancing report for the mechanical system and certification by all testing, cleaning or inspection authorities or associations as specified in the *Contract Documents*;
- .3 a complete demonstration of all mechanical and electrical systems and electrically-operated devices to the *Owner's* operating and maintenance staff and any training required by the specifications, to the *Owner's* satisfaction;
- .4 all maintenance manuals, operating instructions, maintenance and operating tools, replacement parts or materials and warranties as specified in the *Contract Documents*;
- .5 a complete set of marked up construction drawings and other data in the form specified in the *Contract Documents*, or as required by the *Consultant*, for the production of as built drawings to show all significant *Changes to the Work* made during construction;
- .6 current certification by the Workers Compensation Board that the *Contractor* and all *Subcontractors* are in good standing;
- .7 a statement that all claims and demands for extra work or otherwise, under or in connection with the *Contract*, have been presented to the *Consultant* and that the *Contractor* expressly releases the *Owner* from all claims and demands except those made in writing prior to that date and still unsettled;
- .8 a statutory declaration in accordance with the Construction Contract;
- .9 a survey of the *Place of the Work* prepared by a British Columbia Land Surveyor confirming the exact area of the property and the lot and side yard dimensions and confirming that the position of the buildings, the side, front and back yard setbacks, building heights and finish grades comply with all municipal requirements;
- .10 all keys required for the entire *Project*;

- 5.4.2 Delete and substitute:

"Upon receipt of the *Contractor's* request for issuance of a certificate of *Substantial Performance of the Work* for all or a designated portion of the *Work*, the *Consultant* will forthwith review the *Work* to verify the validity of the request and no later than 10 days after the date of the request, will notify the *Contractor* and the *Owner* whether the *Work*, or the designated portion of the *Work*, is substantially performed by delivery of the applicable certificate of *Substantial Performance of the Work*. With respect to a request from the *Contractor* for a review by the *Consultant* for issuance of the certificate of *Substantial Performance of the Work* for the *Work* in its entirety, the *Consultant* will, in addition to making an inspection and assessment of the *Work* to verify the validity of the request, establish a list of all deficient and incomplete items of work including an estimated value for each item, subject to the approval of such value by the *Owner*. The *Contractor* shall be responsible for all additional costs incurred by the *Owner* for inspection of the *Work* prior to the *Contractor* meeting all requirements set out in paragraph 5.4.1, and such costs shall be deducted from the monies due to the *Contractor* upon *Substantial Performance of the Work*."

Add:

- "5.4.5 No later than 30 days following issuance of the certificate of *Substantial Performance of the Work* for the *Work*, the *Contractor* shall provide to the *Owner* all service contracts, manufacturer's inspections, certifications, guarantees and warranties and assignments of all guarantees and warranties as specified in the *Contract Documents*.
- 5.4.6 No later than 20 days following issuance of the certificate of *Substantial Performance of the Work* for the *Work*, the *Owner* shall pay to the *Contractor* the balance of the *Contract Price* less:
- .1 any holdback monies as required by the *Builders Lien Act* to be retained and released in accordance with GC5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK;
 - .2 the aggregate amount, if any, determined pursuant to paragraph 5.4.2 multiplied by two; and
 - .3 the amount, if any, determined pursuant to GC5.8 WITHHOLDING OF PAYMENT;
 - .4 and until all of the deficient and incomplete work for which amounts are withheld pursuant to subparagraphs .2 and .3 of this paragraph 5.4.6 are rectified and completed to the satisfaction of the *Consultant*, the *Owner* may withhold the full amounts set out in subparagraphs .2 and .3 of this paragraph 5.4.6 respectively."

GC5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

- 5.5.1 In line 1, delete "the certificate of *Substantial Performance of the Work*" and substitute "the *Certificate of Completion* for the *Work*".
- 5.5.2 Delete and replace with the following:
- "The *Consultant* shall be the payment certifier responsible under the *Builders Lien Act* for certifying substantial completion of the *Work* and, if required, the work of a *Subcontractor* or *Supplier*, and for issuing a *Certificate of Completion*. The *Contractor* shall promptly provide the *Consultant* with all information and documentation requested by the *Consultant* to assist the *Consultant* in making its inquiries and determinations for issuing a *Certificate of Completion*, including without limitation for *Subcontractors* and *Suppliers*, and shall indemnify and save the *Owner* and the *Consultant* harmless from all liability arising from a failure to issue a *Certificate of Completion* when required, or from a premature issuance of a *Certificate of Completion* for a *Subcontractor* or *Supplier*, arising directly or indirectly from a failure to promptly provide complete and accurate information and documentation requested by the *Consultant*."
- 5.5.3 Delete.

GC5.6 PROGRESSIVE RELEASE OF HOLDBACK

- 5.6.1 In lines 1 and 2 delete:
- " , upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*"
- and replace with the words:
- "the *Consultant* has pursuant to GC5.5.2 issued a *Certificate of Completion* for the work of a *Subcontractor* or *Supplier*,"

GC5.7 FINAL PAYMENT

5.7.4 In line 2, delete the number "5" and substitute the number "20".

Add at the end thereof:

"less any monies properly retained by the *Owner* pursuant to the terms of this *Contract* and less any other third party monetary claims against the *Contractor* which are enforceable against the *Owner*."

PART 6 CHANGES IN THE WORK

GC6.1 CHANGES

Add:

"6.1.3 Any substitution of *Products* specified in the *Contract Documents* must be approved by the *Owner* in writing prior to such substitution."

6.2 CHANGE ORDER

6.2.1 Add at the end:

"The adjustment for the *Contract Price* shall not exceed the actual cost of the *Contractor's* work for the change in the *Work*, plus an allowance for overhead and profit 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 cost of the *Subcontractor's* work plus the amount determined as set out in .3 below;
- .3 For *Subcontractor*, for overhead and profit, 10% of the actual cost of the *Subcontractor's* work."

Add:

"6.2.3 If a change in the *Work* results in a net decrease in the *Contract Price*, the amount of the 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*."

.2 GC6.3 CHANGE DIRECTIVE

6.3.2 Add:

"Unless otherwise agreed between the *Owner* and the *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 cost of the *Subcontractor's* work plus the amount determined as set out in .3 below;
- .3 For *Subcontractor*, for overhead and profit, 10% of the actual cost of the *Subcontractor's* work."

GC6.4 CONCEALED OR UNKNOWN CONDITIONS

Add:

- "6.4.4 The *Contractor* shall be familiar with the site and existing conditions affecting the Work prior to the submission of bids. No claims for an increase in Contract Price or Contract Time arising from observable conditions will be accepted by the Consultant.

GC6.5 DELAYS

Add:

- "6.5.6 During any delays in the performance of the *Work* as set out in GC6.5 DELAYS, the *Contractor* shall maintain adequate surveillance of the *Work* and undertake such maintenance and protection of the *Work* as may be reasonable to maintain safety and when possible to protect *Products* already installed in the *Work* or delivered to the *Place of the Work*."

PART 7 DEFAULT NOTICE

GC7.1 OWNER'S RIGHT TO PERFORM THE WORK, STOP THE WORK, OR TERMINATE THE CONTRACT

- 7.1.1 In line 1 after the word "bankrupt" insert "commits an act of bankruptcy or threatens to commit an act of bankruptcy,"

Add:

- "7.1.7 If the *Owner* terminates the *Contractor's* right to continue with the *Work* in whole or in part or terminates the *Contract*, the *Contractor* shall at the *Contractor's* expense, safeguard the *Work* then completed and the materials and equipment then delivered to the *Place of the Work* and do such other extra work as may be ordered by the *Consultant* for the purpose of leaving the *Work* in a safe and useful condition.
- 7.1.8 Except as provided in paragraphs 7.1.5.3 and 7.1.5.4, the *Contractor* shall have no claim or right of action against the *Owner* for any damages, costs, expenses, loss of profits or otherwise as a result of the termination by the *Owner* of the *Contractor's* right to continue with the *Work* in whole or in part or the termination by the *Owner of the Contract*."

GC7.2 CONTRACTOR'S RIGHT TO STOP THE WORK OR TERMINATE THE CONTRACT

- 7.2.3.1 Delete.

7.2.3 Add:

- "7.2.3.5 The foregoing defaults in contractual obligations shall not apply to the withholding of certificates of payment or payment, or both, following receipt of court ordered garnishments of monies owing to the *Contractor*, notice of the *Contractor's* failure to pay claims against the *Contractor* or the filing of liens against the *Project* for as long as they remain outstanding."

7.2.4 In line 2, delete the number "5" and substitute the number "20".

Add at the end:

"provided that if the default is of the nature set out in paragraph 7.2.3.4 and such default cannot be reasonably corrected within 20 *Working Days*, the *Owner* shall no longer be considered to be in default if the *Owner*:

- .1 provides the *Contractor* with a reasonable schedule for correction within 20 *Working Days*; and
- .2 corrects the default in accordance with such schedule."

PART 8 DISPUTE RESOLUTION

GC8.2 NEGOTIATION, MEDIATION AND ARBITRATION

Add:

"8.2.9 Unless both parties agree, the *Contractor* shall not stop the *Work*, or any part of the *Work*, pending the resolution of any dispute under the *Contract* between the parties."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC9.3 TOXIC AND HAZARDOUS SUBSTANCES AND MATERIALS

9.3.1 Add:

"and the *Contractor* shall be deemed to have control and management of the *Place of the Work* with respect to any toxic or hazardous substances or materials which may be brought on to the *Place of the Work* by the *Contractor* or its *Subcontractors*."

9.3.5.4 Add:

"and take all necessary steps in accordance with the instructions of the *Consultant* and all applicable legislation to treat, store or otherwise dispose of the substances or materials."

9.3.6 In line 2, after the reference to "paragraph 9.3.5.3", insert:

"and 9.3.5.4 provided that the toxic or hazardous substances or materials were not brought on to the *Place of the Work* by the *Contractor* or its *Subcontractors*".

Add:

"9.3.10 The *Contractor* shall indemnify and hold harmless the *Owner*, the *Consultant*, their agents and employees, from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or resulting from exposure to, or the presence of, toxic or hazardous substances or materials which are brought on to the *Place of the Work* by the *Contractor* or its *Subcontractors*. This obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity set out in GC 12.1 - INDEMNIFICATION or which otherwise exist respecting a person or party described in this paragraph."

PART 10 GOVERNING REGULATIONS

GC10.1 TAXES AND DUTIES

Add:

- "10.1.3 Where documentation may be required for tax refund purposes, the *Contractor* shall be responsible for providing the *Owner* with such invoices and records as may be necessary to substantiate the amount of tax paid during the performance of the *Work* for which the *Owner* may lawfully claim exemption."

.3 GC10.2 LAWS, NOTICES, PERMITS AND FEES

Add:

- "10.2.6 The *Contractor* shall provide to the *Consultant* copies of all inspection reports from the various authorities having jurisdiction forthwith as they are received from time to time."

GC10.4 WORKERS COMPENSATION

- 10.4.1 In line 2, after the word "compliance" insert "by the *Contractor* and *Subcontractors*".

Add:

- "10.4.3 The *Contractor* shall abide by and comply with all provisions of the *Workers' Compensation Act* with respect to the performance of the *Work* and will make all payments, contributions and other remittances and all reports, returns and statements required of employers under the said Act. The *Contractor* shall ensure full compliance with the said Act by all *Subcontractors* and other persons employed by the *Contractor* or with whom the *Contractor* may make any contract for the performance of any part of the *Work*. The *Contractor* agrees to indemnify the *Owner* against all cost, loss, liability, obligation and lien which may arise as a consequence of any failure by the *Contractor* or any *Subcontractor* or other person fully to comply with the said Act. The *Contractor* agrees immediately to qualify, and shall require all *Subcontractors* to qualify, as an employer or employers under the said Act."

PART 12 INDEMNIFICATION--WAIVER--WARRANTY

GC12.3 WARRANTY

Add:

- "12.3.7 Where specific warranties or guarantees are required by the *Contract Documents* relating to the *Work* and including without limitation those relating to any fixtures, improvements, appliances, equipment or other chattels for the *Project*, the *Contractor* shall secure such warranties or guarantees from the *Subcontractors* and *Product* suppliers and they shall be assigned to or addressed to and in favour of the *Owner*. The *Contractor* shall cooperate and assist in the enforcement of such warranties or guarantees. The *Contractor* shall deliver the originals plus 2 copies of such warranties or guarantees to the *Owner* no later than 30 days following issuance of the certificate of *Substantial Performance of the Work*."

Add the following General Conditions:

GC13.1 LIENS

- 13.1.1 The *Contractor* will pay or cause to be paid promptly when due all claims, debts and charges against the *Contractor* or *Subcontractors* engaged by the *Contractor* which might become a lien upon the *Project* arising out of the *Work* performed or materials furnished by the *Contractor* or any *Subcontractors* under the *Contract*, and will not suffer or permit any lien or encumbrance of any kind to be filed against or upon the *Project*, regardless of whether the basis of such lien is a claim against the *Contractor* or any *Subcontractor*.
- 13.1.2 If the *Owner* is not in default in making payment to the *Contractor* as required under this *Contract* and if a claim of builders lien is filed against title to the *Project* by anyone claiming under or through the *Contractor*, the *Owner* may notify the *Contractor* in writing that the filing of such claim or claims of builders lien is a material default by the *Contractor* of its contractual obligations and instruct the *Contractor* to obtain and file a release of the said claim or claims in the Land Title Office within 7 *Working Days* immediately following receipt of such notice.
- 13.1.3 If such default is not corrected within the time specified or subsequently agreed upon in writing, the *Owner*, without prejudice to any other right or remedy it may have, may:
- .1 pay, settle or compromise any such claim or claims of builders lien, or pay into Court sufficient security for the cancellation thereof as determined by the Court and deduct the amount of any such payment from the next ensuing payment which may become due to the *Contractor*; or
 - .2 pay into Court from the holdback account established by the *Owner* in accordance with the *Builders Lien Act* sufficient security for the cancellation of any such claim or claims of builders lien as determined by the Court and this provision will constitute the agreement of the *Contractor* to make such payment as required under Section 5(2)(c) of the *Builders Lien Act*;
- and the *Owner* may deduct from the next ensuing payment which may become due to the *Contractor* all costs and expenses thereby incurred by the *Owner*, including any account for legal fees and disbursements incurred by the *Owner*.
- 13.1.4 If the *Owner* is not in default in making payment to the *Contractor* as required under this *Contract*, the *Contractor* will indemnify and save the *Owner* harmless from and against the costs of any and all actions commenced by any lien claimant claiming under or through the *Contractor* against the *Owner* pursuant to the *Builders Lien Act*, including solicitor and client costs.
- 13.1.5 Notwithstanding any other provision of the *Contract*, no payments whatsoever shall be due or owing to the *Contractor* so long as any liens filed by anyone claiming under or through the *Contractor* remain registered against title to the *Project*."

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Reference Documents.
- .2 Work under this Contract.
- .3 Definitions.
- .4 Complementary Documents.
- .5 Precedence of Documents.
- .6 Specification Language.
- .7 Contractor's use of premises.
- .8 Existing Conditions.
- .9 Cutting and Patching.
- .10 Conflicts and Omissions on Drawings and Specifications.
- .11 Objections to Specified Products.

1.2 REFERENCE DOCUMENTS & RELATED REQUIREMENTS

- .1 Work shall conform to the requirements of the BC Building Code, current Edition.
- .2 Where compliance with two (2) or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the *Consultant* for a decision before proceeding.
- .3 Conform with the provisions or standards referenced in the sub-divisions of the *Specifications* with the same force and effect as if the standards referenced were bound or copied directly into the Sub-division, except:
 - .1 Conform with more stringent provisions when contained elsewhere in the *Contract Documents*; and
 - .2 Where a reference standard is specifically dated in the *Specifications*, references to standards will be taken to mean the latest edition in effect at the date of award of this *Contract*. In the case of standards (dated or not) that appear in the *Specifications*, and that are referenced in the applicable building code, the specific edition of the standard referenced in the code shall govern; and
 - .3 In case of a conflict between referenced version of standards in the *Contract Documents* and new edition of standards that is in effect at the date of award of the Contract, the new edition shall govern.
- .4 Refer to the all sections of the Project Manual and Consultants Drawings.

1.3 WORK UNDER THIS CONTRACT

- .1 This contract includes all work related to providing one single-storey daycare building, including surface parking and landscaping, new site services, pitched roofs, and all related civil, architectural, structural, mechanical, electrical, and landscaping work required to complete the project. Meeting Part 10 of the 2024 BCBC and Part 8 of NECB 2020 requirements. Refer to current issue of all drawings and documents.
- .2 Note alternative scopes noted in the bidding documents, including CRT construction and septic field.

1.4 COMPLEMENTARY DOCUMENTS

- .1 Drawings, specifications, and schedules are complementary to each other and what is called for by one is binding as if called for by all. Should discrepancies appear between documents that leave doubt as to the intent or meaning, abide by Precedence of Documents article below or obtain direction from the Consultant.
- .2 Drawings indicate general location and route of conduit and wire/conductors. Install conduit or wiring/conductors and plumbing piping not shown or indicated diagrammatically in schematic or riser diagrams to provide an operational assembly or system.
- .3 Install components to physically conserve headroom, to minimize furring spaces, or obstructions.
- .4 Locate devices with primary regard for convenience of operation and usage.
- .5 Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or additional work beyond work described to be brought to attention of Consultant prior to that work proceeding.
- .6 Division of the *Work* among *Subcontractors* and *Suppliers* is solely *Contractor's* responsibility. *Consultant* and *Owner* assume no responsibility to act as an arbiter to establish subcontract limits between Sub-divisions or Divisions of the *Work*. For construction by *Owner* or by *Other Contractors*, refer to relevant "General Conditions of *Contract*" under CCDC.

1.5 PRECEDENCE OF DOCUMENTS

- .1 In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings are - from highest to lowest:
 - .1 Agreement - Between Owner and Contractor.
 - .2 Supplementary General Conditions.
 - .3 General Conditions of the Contract.
 - .4 Tender Documents and Requirements.
 - .5 Sections of Division 1 of the specifications.
 - .6 Specifications:
 - .1 Sections of Divisions as noted herein and
 - .2 Specifications specifically indicated on drawings.
 - .7 Schedules and keynotes:
 - .1 Schedules within the specifications, then
 - .2 Schedules on drawings.
 - .8 Drawings:
 - .1 Drawings of larger scale shall govern over those of smaller scale of the same date, then
 - .2 Dimensions shown on drawings shall govern over dimensions scaled from drawings, then
 - .3 Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical drawings.
 - .9 Later dated documents shall govern over earlier documents of the same type.
- .2 In the event of conflict between documents, the decision of the Consultant shall be final.

1.6 SPECIFICATION LANGUAGE

- .1 These specifications are a special form of technical writing and contain deviations from traditional writing formats. Capitalization, underlining and bold print is used to assist the reader in finding information and no other meaning will be implied.
- .2 Except where specifically indicated otherwise, the subject of imperative statements is the Contractor.
- .3 Streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Owner or by others when so noted.
- .4 The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
- .5 "Provide": means furnish and install, compete with necessary components and accessories, ready for intended use.
- .6 "Indicated": is a reference to other portions of the Contract Documents.
- .7 "Approved": except where specifically stated otherwise, the words "approved", "directed", "requested", "selected", "accepted", mean "approved by the Owner or Consultant", "directed by the Owner or Consultant" and so on. The words "approved" and "accepted" shall be held to the limitations stated in the General and Supplementary Conditions. In no case shall "approval" or "acceptance" by the Owner be interpreted as a release of Contractor of their responsibilities to fulfill all of the requirements of the Contract Documents.
- .8 "Furnish": Except as otherwise defined in greater detail, furnish means supply, including shop fabrication if applicable, and delivery to project site, ready for unloading, unpacking, assembly, installation and similar operations as applicable in each instance.
- .9 "Install": Except as otherwise defined in greater detail, install means operations at project site including but not limited to, unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, placing in service and similar operations as applicable in each instance.
- .10 "Installer": The person or firm engaged by Contractor for performance of a specific unit of installation work at the project site. It is a general requirement that Installers be expert and experienced in the work they are engaged to perform.
- .11 "Observe, Observation": Except as otherwise defined, the Consultant's observation of the work will be held to the limitations stated in the General and Supplementary Conditions and the Owner/Consultant Agreement. In no case shall observation by the Owner or Consultant be interpreted as a release of Contractor of their responsibilities to fulfill all of the requirements of the Contract Documents.

1.7 DOCUMENTS AT THE SITE:

Keep the following documents at *Place of the Work*, stored securely and in good order and available to *Owner* and *Consultant* in hard copy or electronic form.

- 1 Current *Contract Documents*, including *Drawings*, *Specifications*, Requests for Information (RFI), and Addenda.
- 2 *Change Orders*, *Change Directives*, and *Supplemental Instructions*.
- 3 Reviewed *Shop Drawings*, *Product data*, and samples.
- 4 Field test reports and records.
- 5 Construction Progress Schedule.

- .6 Meeting minutes.
- .7 Building Permit Drawings.
- .8 *Contractor's* Safety Program.
- .9 *Contractor's* Traffic Management Plan (TMP).
- .10 *Contractor's* Erosion and Sedimentation Control (ESC) Plan.
- .11 *Contractor's* Construction Waste Management Plan (CWMP).
- .12 *Contractor's* Construction Indoor Air Quality (IAQ) Management Plan.
- .13 Manufacturer's certifications.
- .14 Permits, inspection certificates, and other documents required by Authorities Having Jurisdiction (AHJ).
- .15 Current As-Built Drawings.
- .16 Fire Safety Program.
- .17 Site Reports.
- .18 Material Safety Data Sheets (MSDS) for all controlled *Products*.

1.8 LABOUR FORCE

- .1 The *Owner* supports the provision of opportunities for work experience and training in the construction industry for entry-level workers to trade apprentices. This includes recruitment from programs intended to grow skilled trades such as the Skilled Trades Employment Program (STEP) and registration in programs committing employers to supply a safe and productive work environment such as the Builders Code.
- .2 Where programs exist within a reasonable distance from the *Place of the Work*, the *Contractor* shall use reasonable commercial efforts to staff its labour force with individuals who have been placed through agencies such as BladeRunners, Embers, or similar organizations that provide ongoing training and support to persons with barriers to employment. Individuals placed through these programs shall not be considered to be employees of the *Owner*. If no applicable program(s) exist within the geographic area of the *Work*, the *Contractor* may seek a waiver from the *Owner*.
- .3 The *Owner*, at its discretion, may require the *Contractor* or any *Subcontractor* to provide sufficient evidence of the involvement of such employees in the *Work*.

1.9 CONTRACTOR'S USE OF PREMISES

- .1 Coordinate use of premises with Owner.
- .2 Limit use of the premises to Work of this Contract, storage, and facilities required for completion of this Work.
- .3 Assume full responsibility for the protection and safekeeping of products under this Contract, stored on the site.
- .4 Obtain and pay for the use of additional storage or work areas needed for operations so as to not encumber Project site.

- .5 Maintain Project site in a neat and orderly manner to avoid accumulation of unnecessary debris, equipment, and materials.
- .6 Distribute storage, staging, other loads so as to not overload building's structural systems.
- .7 Maintain pedestrian and vehicular access to and around site. Make provision for free, convenient, unencumbered, and direct access to properties neighboring the Project Site.
- .8 Establish program to maintain streets, walks, and other public ways in and around Project site free of spillage, tracking, dirt, and construction debris resulting from Work of this Contract.
- .9 Promptly patch, repair, replace, or make reimbursement as necessary to return to original or better condition damage to existing paving, utilities, planting, and other property adjacent to Project site, outside of Project area as directed by the Consultant.

1.10 OWNER SUPPLIED PRODUCTS

- .1 *Owner-Supplied Contractor-Installed (OSCI) items, shall be coordinated with Owner.*
- .2 *Owner responsibilities:*
- .3 Order and pay for *Owner-supplied Products* not already in *Owner's* possession.
- .4 Arrange and pay for delivery of *Owner-supplied Products* Free On Board (FOB) to the site, within time frames required by Construction Progress Schedule.
- .5 Advise *Contractor* in writing of the value of *Owner-supplied Products* for *Contractor's*
 - i. insurance purposes.
- .6 Inspect deliveries jointly with *Contractor*.
- .7 Submit claims for transportation damage.
- .8 Arrange for replacement of damaged, defective, or missing items identified at time of delivery.
- .9 Arrange for manufacturer's field services.
- .10 Arrange for delivery of manufacturer's warranties to *Contractor* for inclusion in operation and maintenance manual.

1.10.1 CONTRACTORS RESPONSIBILITIES

- 1. Designate in Construction Progress Schedule, timeframes for delivery of *Owner-supplied Products* to the site and for receipt of related submittals. If the site is not ready to receive delivery of *Owner-supplied Products* within the timeframe indicated in the latest Construction Progress Schedule submitted to *Owner*, arrange and pay for delivery to a temporary storage location and subsequent delivery to the site.
- 2. Review all required submittals and notify *Consultant* of any observed discrepancies or anticipated issues.
- 3. Ensure that Course of Construction (COC) insurance is adequate to cover *Owner-supplied Products*.
- 4. Receive and unload *Owner-supplied Products* at the site.
- 5. Inspect deliveries jointly with *Owner*. Record and notify *Owner* and *Consultant* of shortages and visibly damaged or defective items.
- 6. Handle *Owner-supplied Products* at site, including uncrating and storage. Dispose of waste

materials and debris.

7. Take appropriate precautions to protect *Owner-supplied Products* from loss or damage.
8. Repair or replace items damaged on site.
9. Assemble, install, connect, adjust, and finish *Owner-supplied Products* as specified.
10. Arrange for inspections required by Authority Having Jurisdiction (AHJ) as specified.
11. Arrange for or perform testing as specified.
12. Provide workmanship warranty for installation as specified.

1.11 EXISTING CONDITIONS

- .1 Surveys and reports of existing topographical and subsurface conditions, including locations of utilities, are provided by the Owner without warranty as to their accuracy or completeness and are intended as general reference to probable conditions.
- .2 Field verify site and geological conditions.

1.12 CUTTING AND PATCHING

- .1 Refer to GC 3.12 of the General Conditions Cutting and Patching.
- .2 Core drilling and cutting of the concrete structure is permitted only with the use of X-raying or scanning to detect embedded materials. X-raying or scanning are to be done outside normal working hours in co-ordination with the Consultant and the Owner and applicable Engineering Consultant of Record. The Contractor is responsible for the repair of any damaged services and structural reinforcements cut during coring or channeling.
- .3 Submit a written request including performing sufficient radiographic survey inspections of affected area/s to the Consultant and applicable Engineering Consultant of Record well in advance of executing any cutting or alteration which affects the following:
 - .1 Work by the Owner or any other contractor.
 - .2 Structural value or integrity of any element of the project.
 - .3 Integrity of effectiveness of the rated assembly & performance of the existing elements or systems.
 - .4 Efficiency, operational life, maintenance, or safety of operational elements.
 - .5 Visual qualities of sight exposed elements.
- .4 Hazardous Material Inventories:
 - .1 Prior to commencing *Work* activities, *Contractors*, *Consultants*, and *Suppliers* are required to view the online [Hazardous Materials Inventory Site](#) to check for known hazardous materials (such as asbestos or lead-based paint) and other potential hazards to ensure safe working conditions.
- .5 Coordination with Teck Resources Ltd. and contaminated soils.
 - .1 Teck Responsibilities
 - .1 Teck will accept any and all contaminated soils from the site, and dump on their selected site. No dumping fees to the project.
 - .2 Teck will engage consultants to undertake site investigations during construction to determine if soils are contaminated and direct removal.

- .3 Teck will pay for labour and materials for any over excavation that may be required to remove contaminated materials, as well as fill to reinstated design grades. This relates to building location as well as landscape areas.
- .2 Contractor responsibilities:
 - .1 Contractor to pay for labour, materials and trucking of contaminated soils to the Teck selected dump site, aside from over excavation and noted above.
 - .2 Contractor to pay for reinstatement of the site per the contract drawing requirements.
- .3 See Cut & Fill plan for boundaries and depths of design grades for building, landscaping or utilities.
- .6 Preparation:
 - .1 Provide temporary support as necessary to assure structural value or integrity of affected portion of Work.
 - .2 Provide devices and methods to protect other portions of Work from damage.
 - .3 Provide protection from all public traffic for that portion of Work that may be exposed by cutting and remedial Work. Maintain area well protected from all surrounding occupied tenant and public spaces of on-going normal hours of services and operations.
- .7 Performance:
 - .1 Execute cutting and selective demolition by methods, which will prevent damage to other Work and will provide proper surfaces to receive installation of repairs and new work to follow.
 - .2 Employ original installer or fabricator skilled in the type of work required to perform cutting and patching for dealing with all architectural quality and appearance of exposed to view finished surfaces.
 - .3 Execute fittings and adjustments to comply with proposed interior upgrade renovations & reconstruction of new finishing products, functions, tolerances, and appearances as specified in these specifications.
 - .4 Restore Work that has been cut or removed. Install new finishing products to provide completed Work in accordance with Contract Documents.
 - .5 Fit Work airtight to pipes, sleeves, ducts, conduit, and other surface penetrations.
 - .6 Refinish entire surfaces as necessary to provide an invisible transition finish with flush smooth even appearance (viewed at approximately 3 metres away) to match adjacent finishes as follows:
 - .1 Continuous surfaces: refinish to nearest intersection.
 - .2 An assembly: refinish entire unit.

1.13 CONFLICTS AND OMISSIONS IN DRAWINGS AND SPECIFICATIONS

- .1 Bring immediately to the Architect's attention for interpretation and direction.

1.14 OBJECTIONS TO SPECIFIED PRODUCTS

- .1 Where Contractor has reasonable objection to ANY specified products throughout these specifications or specifications by other disciplines such as Civil/Mechanical/Electrical/Structural/Landscape, or valid reason for proposing substitutions, comply with provisions of Section 01 25 00 Product Substitutions.

- .2 Where not approved by Owner, substitutions to specified Products constitutes Non-Conforming Work, as defined by General Conditions, and requires removal and replacement with specified or approved Products.

PART 2 - PRODUCTS

- .1 Not Used.

PART 3 - EXECUTION

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Work includes special environmental, sustainable, and green building practices related to energy conservation and efficiency, indoor air quality, and resource efficiency.
- .2 Building is designed to align with the National Energy Code of Canada for Buildings (NECB). Energy modeling has been undertaken and forms part of the contract documents.
- .3 Removal of contaminated soils will be required.
- .4 Project procedures include, but are not limited to, the following:
 - .1 Maintain practices that ensure healthy indoor air quality in final Project.
 - .2 Maximize use of durable products.
 - .3 Maximize use of products easy to maintain, repair, and that can be cleaned using non-toxic and low-emitting (VOCs) substances.
 - .4 Maximize recycled content in materials, products, and systems.
 - .5 Maximize use of reusable and recyclable packaging.
 - .6 Maximize use of low embodied energy products (manufacturing, transportation).
 - .7 Minimize energy consumption.
 - .8 Maximize use of low VOC emitting materials and finishing.
 - .9 Removal of contaminated soils.
 - .10 **Airtightness Testing to be undertaken by the Contractor.**

1.2 REFERENCES

- .1 British Columbia Building Code current edition.
- .2 Trail Area Health and Environmental Program, Best Management Practices, Excavation Potentially Metal Contaminated Soil. See attached
- .3 City of Trail requirements.

1.3 RELATED WORK

- .1 01 11 00 Summary of Work
- .2 01 33 00 Submittal Procedures.
- .3 01 35 43 Environmental Procedures
- .4 01 35 44 Construction IAQ
- .5 01 35 46 Low Emitting Materials
- .6 01 74 19 Construction Waste Management

1.4 PROJECT CONDITIONS

- .1 Comply with sustainable building practices during construction and when considering materials for substitutions.

1.5 ENVIRONMENTAL GOALS

- .1 Environmental goals have been established with intent to provide safe and healthy environment for building occupants with minimal impact on local, regional, and global environment.
- .2 Contract Documents are not intended to limit alternative means of achieving environmental goals. Suggestions from construction team for implementing goals are encouraged.
- .3 Environmental Goals:
 - .1 Energy Efficiency (Operations Throughout Project Life):
 - .1 Materials and systems are intended to maximize energy efficiency for operation of Project throughout service life (substantial performance to ultimate disposition – reuse, recycling, or demolition).
 - .2 Indoor Environmental and Air Quality:
 - .1 Materials are selected and processes specified, such as preconditioning and temporary ventilation, to maximize healthy indoor air quality. Cleaning, surface coating, and renewal or replacement of interior materials should be feasible with lowest practical use of toxic, irritating, or odorous compounds.
 - .2 Ventilation system design, construction, and commissioning ensure adequate outside air supply under all anticipated conditions of use. Documentation of system design assumptions is included in Project Manuals to enable building operators and management to use and modify the system as required to provide continued assurance of indoor air quality.
 - .3 Materials are selected to provide appropriate indoor environmental qualities such as healthy indoor air quality, good acoustics, and good lighting.
 - .3 Resource Efficiency (Project Construction):
 - .1 Materials and systems are to maximize environmentally benign construction techniques, including construction waste recycling, reusable delivery packaging, and reusability of selected materials.
- .4 Energy Conservation: Maximize strategies in order to reduce life-cycle energy requirements.
 - .1 Reduce undesirable heat gain and heat loss through exterior envelope.
 - .2 Use daylight as the primary lighting source and supplement with integrated and energy-efficient electrical lighting systems.
 - .3 Choose equipment with high-end energy performance characteristics, including lighting, HVAC systems, appliances, and office equipment.
 - .4 Where appropriate, use thermal storage strategies such as thermal mass of building and sub-surface ground water to minimize total energy consumption.
 - .5 Design mechanical systems for efficient operation throughout the typical operating range, from minimum to peak load.
- .5 Durable Materials:
 - .1 Select materials with longest useful service life.

- .2 Select materials that deteriorate minimally with installed conditions, exposures and uses.
- .3 Select materials with surfaces that require minimal or no refinishing or resurfacing.
- .4 Select materials with protective coating requirements that do not involve frequent application of toxic or odorous components for materials that require surface renewal or protection
- .5 Select materials that can be re-used after their service life in this building.
- .6 Select materials that can be recycled at the end of their useful lives for materials that cannot be re-used.
- .6 Resource Efficient Materials: Use resource efficient materials; consider energy use over the life-cycle of a material including harvesting, mining, manufacturing, transport, installation, use, operations, recycling and disposal.
 - .1 Where possible and allowable by the Agency and Code with Jurisdiction over the project, re-use existing building materials to extent feasible within design concept expressed in Contract Documents.
 - .2 Select materials that efficiently use resources such as energy, water, and components.
 - .3 Use construction practices such as material reduction and dimensional planning that maximize efficient use of resources and materials.
 - .4 Provide materials that utilize recycled content to maximum degree possible without being detrimental to product performance or indoor air quality.
 - .5 Where possible and feasible, provide for non-destructive removal and re-use of materials after their service life in this building.
 - .6 Select materials that use less embodied energy to manufacture.
 - .7 Exceptions might include materials that result in net energy conservation during their useful life in building and building's life cycle.
 - .8 Select materials that conserve energy during building operations.
 - .9 Where possible, select materials harvested and manufactured regionally, within the following radius of the project site:
 - .1 800 km if transported by truck,
 - .2 2400 km if transported by rail/ship.
- .7 Scarce, Irreplaceable and Endangered Resources:
 - .1 Select materials from abundant resources.
 - .1 For natural resources, determine abundance based on ratio of removal rate from existing stocks to natural replacement/renewal rate, where this information is available.
 - .2 For mineral resources, determine abundance based on ratio of removal rate from terrestrial storage minus amount re-entering commerce through recycling or resource recovery compared to total in terrestrial storage, where this information is available.
 - .2 If possible, select rapidly renewable materials, and materials which can be replenished.

- .3 Select materials that create minimal or no damage to natural habitats and natural environment.
- .4 Select materials that can be easily refinished, repaired or refurbished to extend their useful life.
- .8 Pollution: Select materials that generate least amount of pollution during mining, manufacturing, transport, installation, use, and disposal.
 - .1 Avoid materials that emit greenhouse gases
 - .2 Avoid materials that require energy intensive extraction, manufacturing, processing, transport, installation, maintenance, or removal.
 - .3 Avoid materials that contain ozone-depleting chemicals (e.g. CFCs or HCFCs).
 - .4 Avoid materials that emit potentially harmful volatile organic chemicals (VOCs).
 - .5 Employ construction practices that minimize dust production and combustion by-products.
 - .6 Avoid materials that can leach harmful chemicals into ground water; do not allow potentially harmful chemicals to enter sewers or storm drains.
 - .7 Protect soil against erosion and topsoil depletion.
 - .8 Minimize noise generation during construction; screen mechanical equipment to quiet.
 - .9 Select materials that can be reused or recycled and materials with significant percentage of recycled content; conform with or exceed specified Project recycled content percentages for individual materials; avoid materials difficult to recycle.
 - .10 Protect natural habitats; restore natural habitats where feasible within scope of Project.
- .9 Wood Products:
 - .1 Composite wood products with high-recycled content, which meet the indoor air quality data requirements, are acceptable.
 - .2 Wood products containing urea formaldehyde in their manufacture are not permitted for use in the project. Do not incorporate into the work.
 - .3 Wood products from Forest Stewardship Council certified sources are acceptable.
- .10 Water Efficiency:
 - .1 Reduce the use of municipally supplied potable water.
 - .2 Reduce dependence on municipal storm water system for plumbing fixtures and irrigation. Eliminate irrigation or use micro-irrigation. Use moisture sensors or clock timers on irrigation systems.
 - .3 Maintain natural aquifer conditions.
 - .4 Consider roof water or groundwater collection system.
 - .5 Consider gray water collection system for irrigation systems.
 - .6 Commission irrigation, gray water, roof water and collection systems. Provide measurement and verification for these systems. Train maintenance staff on performance of water collection and distribution systems.

1.6 ENVIRONMENTAL CONTROLS

- .1 Comply with Federal, Provincial and Civic regulations pertaining to waste, air, solid waste, chemical waste, sanitary waste, sediment, and noise pollution.
- .2 Protection of natural resources: Preserve the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract in their existing condition or restore to an equivalent or improved condition upon completion of the Work.
 - .1 Confine demolition and construction activities to areas defined by public roads, easements, and work area limits indicated on the Drawings.
 - .1 Temporary construction: Remove indications of temporary construction facilities, such as haul roads, work areas, structures, stockpiles of excess or waste materials, and other vestiges of construction as directed by Owner's Representative.
 - .2 Water resources: Comply with applicable regulations concerning the direct or indirect discharge of pollutants to the underground and natural waters.
 - .1 Oily substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water in such quantities as to affect normal use, aesthetics, or produce a measurable ecological impact on the area. Store and service construction equipment at areas designated for collection of oil wastes.
 - .3 Land resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, grasses, topsoil, and landforms without permission from the Owner's Representative.
 - .1 Erodible soils: Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use the areas developed. Immediately protect side slopes and back slopes upon completion of rough grading. Provide progress photos documenting erosion control measures.
 - .2 Erosion and sedimentation control devices: Construct or install temporary and permanent erosion and sedimentation control features as indicated in Section 01 57 19 Temporary Environmental Controls.
 - .4 Dust control, air pollution, and odour control: Prevent creation of dust, air pollution and odours.
 - .1 Use water sprinkling, temporary enclosures, and other appropriate methods to limit dust and dirt rising and scattering to lowest level. Do not use water when it may create hazardous or other adverse conditions such as flooding and pollution.
 - .2 Store volatile liquids, including fuels and solvents, in closed containers. Refer to Section 01 35 44 Construction Indoor Air Quality Management Plan.
 - .3 Properly maintain equipment to reduce gaseous pollutant emissions.
 - .4 Refer to Section 01 74 19 Construction Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 CHEMICALS OF CONCERN

- .1 Chemicals of Concern that should be avoided if possible are those chemicals listed below as toxic air contaminants, carcinogens, teratogens, reproductive toxins, and chemicals with established Chronic Reference Exposure Levels (REL):
 - .1 Carcinogens: Chemicals listed as probable or known human carcinogens in the latest published edition of the following two lists:
 - .1 California Environmental Protection Agency, Air Resources Board (ARB), list of Toxic Air Contaminants (California Air Toxics).
<http://www.arb.ca.gov/toxics/summary/summary.htm>.
 - .2 California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
 - .2 Reproductive Toxicants: Chemicals known to cause reproductive toxicity including birth defects or other reproductive harm in the latest published edition of the following list: California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
 - .1 Chemicals with established Chronic Reference Exposure Levels (REL):
The California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) has developed Reference Exposure Levels (REL) for hazardous airborne substances. A chronic REL is an airborne concentration level that would pose no significant health risk to individuals indefinitely exposed to that level. RELs are based solely on health considerations, and are developed from the best available data in the scientific literature.
http://www.oehha.org/air/chronic_rels/AllChrels.html
 - .2 Refer to OEHHA Table of Chronic Exposure Levels referenced in Section 01 35 46 Low Emitting Materials – Emission Limits Tables.

PART 3 - EXECUTION

3.1 CONTAMINATED SOILS

- .1 See Section 01 11 00 Summary of Work for scope.

END OF SECTION

Best Management Practices

Excavating Potentially Metal Contaminated Soil

Contractors and their employees should be aware that soils at this property may contain lead and other metals. As such, the project safe work plan should include industrial hygiene best management practices outlined below. These are best practices for any construction site, as dust is not healthy regardless of metal content.

Keep dust down during work:

- Use water to moisten dry soils prior to or during excavating. Moist soils do not generate as much dust when disturbed.
- During clean-up, wash off hard surfaces, tools and equipment with water. Avoid sweeping to clean-up hard surfaces as this can generate dust.
- Ensure any exposed soil or stockpiles are kept moist. If left onsite for any length of time (e.g., overnight), stockpiles must be covered by poly sheeting or heavy-duty tarps.

Avoid tracking soil and dust offsite:

- Before leaving site, clean vehicles, equipment and tools by washing with water.
- Remove soil and dust from boots and any dirty clothing before leaving site.
- If dirty equipment or clothing can't be cleaned onsite, store and wash separately from other equipment or clothing. If dirt is tracked into vehicles, vacuum, rather than shake out floor mats.

Worker Hygiene:

- Wear gloves when handling potentially contaminated soil.
- Wash hands and face before eating or smoking.
- Eat and smoke in designated areas outside of the work area.
- Respirators or dust masks are not considered necessary if dust is controlled through the above best practices. Dust monitoring of soil excavations in Trail has shown dust levels in the air below WorkSafeBC regulations.

PART 1 - GENERAL

1.1 SUMMARY

- .1 Requests for Substitution (RFS) *prior* to execution of contract.
- .2 Requests for Substitution (RFS) *after* to execution of contract.

1.2 RELATED SECTIONS

- .1 00 21 13 Instruction to Bidders.
- .2 01 25 01 Substitution Request Form.
- .3 01 60 00 Product Requirements.

1.3 DEFINITIONS

- .1 Products Not Available: When all listed manufacturers products in the specification section are no longer manufactured.
- .2 Proprietary specification means a specification that includes one or more proprietary names of products or manufacturers, or both, and may include descriptive, reference standard, or performance requirements, or any combination thereof.
- .3 Non-proprietary specification means a specification that includes descriptive, reference standard or performance requirements, or any combination thereof, but does not include proprietary names of products or manufacturers.
- .4 Substitution means a product or manufacturer not specified by proprietary name, which may be acceptable in place of a product or manufacturer that is specified by proprietary name.
- .5 As per the Instructions to Bidders and Supplementary General Conditions documents, any Substitution of Products and Alternatives specified under Contract Documents must be approved by Consultant and Owner in writing and prior to implementing variance on the Project.
- .6 Consultant will consider Substitution of Products and Alternatives provided:
 - .1 Substitution of Products and Alternatives shall be of similar type, perform same functions, and meet or exceed the quality and performance standards of those specified in *Contract Documents* and the estimated overall Lifecycle Cost remains consistent or is decreased.
- .7 Acceptance of any Substitution of Products and Alternatives will be based on the value of the estimated cost savings and relevance of the performance benefits to the *Project*.

1.4 CONTRACTOR PROCEDURE

- .1 Product options:
 - .1 For products specified by non-proprietary specification:
 - .1 Select any product by any manufacturer, which meets requirements of Contract Documents
 - .2 For products specified by proprietary specification:
 - .1 Select any product or manufacturer named, or
 - .2 Substitute an unnamed product or manufacturer in accordance with Article 1.6 of this Section.
 - .3 For products specified by proprietary specification and accompanied by words indicating that substitutions will not be accepted:
 - .1 Select any product or manufacturer named; substitutions are not permitted.

1.5 SUBSTITUTIONS - PRODUCTS

- .1 Substitute Products: Where substitute products are permitted, unnamed products may be accepted by the Consultant, subject to the following:
 - .1 Substitute products shall be same type as, be capable of performing same functions as, and meet or exceed standards of quality and performance of specified product(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.

1.6 SUBSTITUTIONS - MANUFACTURERS

- .1 Substitute Manufacturers: Where substitute manufacturers are permitted, unnamed manufacturers will be accepted by the Consultant, subject to the following:
 - .1 Substitute manufacturers shall have capabilities comparable to those of the named manufacturer(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.
 - .2 Do not order or install requested Substitutions without Consultant's acceptance.
 - .3 If, in Consultant's opinion, a substitution does not meet requirements of Contract Documents, Contractor shall, at no extra cost to Consultant, provide a product which, in Consultant's opinion, does meet requirements of Contract Documents.

1.7 PROPRIETARY SPECIFICATIONS

- .1 Notwithstanding specified proprietary names of either or both products or manufacturers, products provided shall meet other applicable requirements of Contract Documents. Modify products if necessary to ensure compliance with all requirements of Contract Documents.

1.8 CHANGES TO ACCEPTED PRODUCTS AND MANUFACTURERS

- .1 Products and manufacturers accepted by Consultant for use in performance of Work of Contract shall not be changed without Consultant's written consent.
- .2 Submit requests to change accepted products and manufacturers to Consultant in writing, including product data indicated in Article "Product Data" below.

1.9 PRODUCT DATA

- .1 When requested by Consultant, submit complete data substantiating compliance of a product with requirements of Contract Documents. Include the following:
 - .1 Product identification, including manufacturer's name and address.
 - .2 Manufacturer's literature providing product descriptions, applicable reference standards, and performance and test data.
 - .3 Samples, as applicable.
 - .4 Name and address of projects on which product has been used and date of each installation.
 - .5 Itemized comparison of substitution with named product(s). List significant variations.
 - .6 Designation of availability of maintenance services and sources of replacement materials.

1.10 CONSULTANT PROCEDURE

- .1 In reviewing the supporting data submitted for substitutions, Consultant will use, for purposes of comparison, all the characteristics of the specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Specifications.
- .2 Consultant will review supporting data and will determine if substitution in the Consultant's opinion is or is not able to meet or exceed standards of quality, appearance and performance to material specified.

- .3 Consultant to sign and date the Request for Substitution (RFS).

1.11 OWNER PROCEDURE

- .1 Owner will review RFS form and accept or reject substitution.
- .2 Owner to sign and date RFS.
- .3 Such acceptance from the Owner shall not relieve Contractor from complying with the requirements of the Drawings and Specifications.
- .4 Contractor shall be responsible for costs of changes resulting from Contractor's proposed substitutions that affect other parts of the Work.

END OF SECTION

PROJECT: Unicorn Daycare Trail, BC

SPECIFIED ITEM

Section No.	Paragraph No.	Description of Specified Item
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REQUEST FOR SUBSTITUTION

Description of Proposed Item

Provide lump sum installed cost difference between proposed item and least expensive specified item.

	Increase/Decrease \$
	Increase/Decrease \$

The undersigned requests consideration for following substitution to that specified.

ATTACHED DATA: Data on the following is included: ☐ VOCs. ☐ Recycled Content.

Include product description, specifications, drawings, photographs, performance, test data as necessary for evaluation. Clearly identify data from other items where more than one item is described.

CERTIFICATION

In proposing a substitution, the undersigned certifies that the following are correct:

- .1 Proposed substitution does not affect dimensions or details as shown on Drawings.
- .2 Undersigned will pay for all changes to building design, engineering design and construction costs, caused by requested substitution, as required for Work to be complete in all respects.
- .3 Proposed substitution request clearly states adverse affects on other trades, Construction Schedule, or specified warranty requirements.
- .4 Maintenance and service parts are locally available for proposed substitution.
- .5 Has similar or better VOC characteristics than specified product.
- .6 Have investigated substitute product/manufacturer and determined it meets criteria specified.
- .7 Any claims for additional costs or time caused by substitution at any time will be waived.
- .8 Undersigned further states that function, appearance, and quality of proposed substitution are equivalent or superior to specified item.

SUBMITTED BY:

Signature _____

Firm _____

Address _____

Date _____

Telephone (_____) _____

Fax (_____) _____

LIST ATTACHMENTS

Approved for Consultant's Review:

(Contractor's Signature)

FOR USE BY CONSULTANT

Reviewed _____ Reviewed as noted

Not Approved _____ Received too late

Not Approved – inadequate information

By _____

Date _____

Remarks _____

☐ Accepted ☐ Not Accepted ☐ Accepted as Noted

By: (Owner/Consultant's Signature)

PART 1 - GENERAL

1.1 GENERAL

- .1 Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, Submittal Schedule, and List of Subcontracts.
- .1 **Any conflicts between this document, Tender Documents, Contract Terms and Supplementary General Conditions, Owner takes precedent.**
- .2 Schedule of Values:
 - .1 Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - .2 Submit the Schedule of Values no later than 7 days before the date scheduled for submittal of the initial Application for Payment.
- .3 Format and Content:
 - .1 Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.
 - .2 Include the following Project identification:
 - .1 Project name and location.
 - .2 Name of Consultant.
 - .3 Consultant's Project number.
 - .4 Contractor's name and address.
 - .5 Date of submittal.
 - .3 Arrange the Schedule of Values in tabular form acceptable to Consultant, with separate columns to indicate the following for each item listed:
 - .1 Related Specification Section or Division.
 - .2 Description of Work.
 - .3 Scheduled Value.
 - .4 Work completed from previous application.
 - .5 Work completed from this period.
 - .6 Materials presently stored not included in work completed.
 - .7 Total completed and stored to date.
 - .8 Percentage of Contract Sum completed to nearest percent.
 - .9 Balance to Finish.
 - .10 Retainage.
 - .4 Provide a breakdown of the Contract Sum in sufficient detail to facilitate evaluation of Applications for Payment. Break subcontract amounts down into several line items. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
 - .5 Provide month end photographs showing progress including summary of work undertaken.
 - .6 Provide a separate line item for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored off site, but not installed. See also Contract Terms and Supplementary General Conditions. Items purchased or fabricated but not installed may be paid for only if:

- .1 Stored in a bonded warehouse, provide copy of insurance, photographs of products, list of products, waybills or;
- .2 A bill of sale is made to the owner.
- .3 Agreed to by the owner.
- .4 Alternatively, materials inventoried and securely stored on site in a fenced in secure compound with the Owner's prior agreement, may be progress invoiced as delivered. A list of such materials is to be provided with the progress invoice for inclusion under the Owner's insurance policies.
- .5 Materials stored on site, per item 4, and will be incorporated into the work within the following month, unless otherwise pre-approved by Owner.
- .7 Provide separate line items for initial cost of the materials, for each subsequent stage of completion, and for total installed value.
- .8 Show line items for indirect costs and margins on costs only when such items are listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete. Include the total cost and proportionate share of general overhead and profit margin for each item.
 - .1 Temporary facilities and items that are not direct cost of work-in-place may be shown as separate line items or distributed as general overhead expense.
- .9 Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives change the Contract Sum.
- .10 Change Orders and their percent completion will be evaluated separately for each change.

1.2 APPLICATIONS FOR PAYMENT

- .1 Applications for Payment shall be consistent with previous applications and payments as certified by the Consultant and paid for by the Owner.
- .2 Payment-Application Forms – as acceptable to Owner and Consultant.
- .3 Application Preparation:
 - .1 Complete every entry, including notarization and execution by a person authorized to sign on behalf of the Contractor. The Owner or Consultant will return incomplete applications without action.
 - .2 Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - .3 Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- .4 Transmittal:
 - .1 A Draft of the Application for Payment complete with the schedule of values shall be circulated by e-mail or fax prior to the date of the review meeting.
 - .2 Provide month end photographic report showing progress, site conditions and any materials stored on site.
 - .3 After the review meeting and receipt of approvals or comments from the consultants the final Application for Payment shall be prepared. Submit executed original copies of each Application for Payment to the Consultant. One copy shall be complete, including waivers of lien and similar attachments. Include current WCB clearance letter, notarized Statutory Declaration form.
 - .4 Transmit each copy with a transmittal listing attachments and recording appropriate information related to the application.

- .5 The Consultant may withhold or nullify the whole or a part of any application for payment represented by the Contractor's estimate, or a Certificate for Payment to such extent as may be necessary to protect the Owner from loss because of:
 - .1 Section 01 33 29: Sustainable Design Reporting
 - .2 Section 01 35 43: Environmental Procedures
- .5 Waivers of Lien:
 - .1 With each Application for Payment, submit statutory declaration that all subcontractors have been paid from previous monthly payment.
 - .2 Submit partial waiver for the amount requested, prior to deduction for retainage.
 - .3 When an application shows completion of an item, submit final or full waivers.
 - .4 Submit each Application for Payment with Contractor's waiver of lien for the period of construction covered by the application.
 - .1 Submit final Applications for Payment with final waivers from every entity involved with performance of the Work covered by the application who may file a lien.
 - .5 Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.
- .6 Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
 - .1 List of subcontractors (to date).
 - .2 List of principal suppliers and fabricators.
 - .3 Schedule of Values.
 - .4 Contractor's Construction Schedule (preliminary if not final).
 - .5 Submittal Schedule (preliminary if not final).
 - .6 Copies of permits other than the MUP, Development Permit, and Building Permit, copies of which the Owner will provide to the Contractor.
 - .7 Copies of licenses from governing authorities.
 - .8 Certificates of insurance and insurance policies for the Contractor.
 - .9 Performance and payment bonds.
 - .10 Initial progress report.
 - .11 Data needed to acquire Owner's Insurance.
 - .12 Initial settlement survey and damage report (if required).
- 1.3 APPLICATION FOR PAYMENT AT SUBSTANTIAL PERFORMANCE**
 - .1 Following issuance of the Certificate of Substantial Performance, submit an Application for Payment. This application shall reflect Certificates of Partial Substantial Performance issued previously for Owner occupancy of designated portions of the Work.
 - .2 Administrative actions and submittals that shall precede or coincide with this application include the following. Refer to Section 01 77 00 Closeout Procedures for additional requirements.
 - .1 Occupancy permits.
 - .2 Warranties and maintenance agreements.
 - .3 Test/adjust/balance records.
 - .4 Approved Maintenance Manuals and Maintenance Instructions.

- .5 Meter readings.
- .6 Start-up performance reports.
- .7 Changeover information related to Owner's occupancy.
- .8 Final cleaning.
- .9 Application for reduction of retainage and consent of surety.
- .10 Advice on shifting insurance coverages.
- .11 Final progress photographs.
- .12 List of incomplete Work, recognized as exceptions to Consultant's Certificate of Substantial Performance.
- .13 Verification of completion of utilities or right-of-way work for which bond is held.

1.4 FINAL PAYMENT APPLICATION

- .1 Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
 - .1 Completion of Project closeout requirements. Refer to Section 01 77 00 Closeout Procedures.
 - .2 Completion of items specified for completion after Substantial Performance. Provide sign off of deficiencies and final photos, as may be required and requested by the Consultant or owner.
 - .3 Transmittal of Project construction records to Owner.
 - .4 Certified property survey.
 - .5 Proof that taxes, fees, and similar obligations were paid.
 - .6 Removal of temporary facilities and services.
 - .7 Change of door locks to Owner's access.
 - .8 Assurance that unsettled claims will be settled.
 - .9 Assurance that Work not complete and with exceptions will be completed without undue delay.
 - .10 Removal of surplus materials, rubbish and similar elements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 This Section includes requirements for coordinating construction operations including, but not necessarily limited to, the following:
 - .1 Coordination drawings and requirements for coordination of space.
 - .2 Administrative and supervisory personnel.
 - .3 Cleaning and protection.
 - .4 General project coordination procedures.

1.2 COORDINATION

- .1 Coordinate construction to ensure efficient and orderly installation of each part of the Work. Coordinate operations that depend on each other for proper installation, connection, and operation.
 - .1 Schedule operations in the sequence required to obtain the best results where installation of one part depends on installation of other components, before or after its own installation.
 - .2 Coordinate installation of different components to use spaces efficiently and assure maximum accessibility for maintenance, service, and repair.
 - .3 Coordinate space requirements and installation of mechanical and electrical work as indicated diagrammatically on drawings.
 - .4 Follow routing shown for pipes, ducts, and conduits as closely as possible; make runs parallel with lines of building.
 - .5 Make provisions to accommodate items scheduled for later installation.
- .2 Where necessary, prepare memoranda for Consultants and separate subcontractors where coordination of their work is required and distribute to each party involved, outlining procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
- .3 Administrative Procedures: Coordinate scheduling and timing of required procedures with other activities to avoid conflicts and assure orderly progress.
- .4 Conservation: Coordinate construction to assure that operations are carried out with consideration for conservation of energy, water, and reduction of waste materials. Salvage materials and equipment involved in performance of, but not incorporated in, the Work.
- .5 Carefully study and compare Contract Documents before proceeding with fabrication and installation of work. Promptly advise Consultant of errors, inconsistencies, omissions, or apparent discrepancies discovered.
- .6 Verify that characteristics of operating equipment are compatible with building utilities and services.
- .7 Verify characteristics of elements of interrelated operating equipment are compatible; coordinate work of various specification sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- .8 In finished areas, except as otherwise indicated, conceal pipes, conduit and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.
- .9 Execute cutting and patching to integrate elements of work, uncover ill-timed, defective, and non-conforming work, provide openings for penetrations of existing surfaces, and provide samples for testing. Seal penetrations through floors, walls, and ceilings.

- .10 Coordinate the actual layout of plumbing, fire protection, HVAC, electrical and other similar elements as necessary to avoid interference between systems.
- .11 Maintain configurations of architectural elements and minimum ceiling and clearance heights as required by code and Contract Documents.
- .12 Coordination Drawings: Prepare coordination drawings if needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space necessitates maximum utilization of space for efficient installation of different components.
 - .1 Show the relationship of components shown on separate shop drawings.
 - .2 Indicate required installation sequences.
 - .3 Comply with requirements contained in Section 01 33 00 Submittal Procedures.

1.3 REQUEST FOR INFORMATION

- .1 Allot time in construction scheduling for liaison with Consultant and Owner. Allow two weeks for Consultant/Owner review and routing of submittals and Request for Information (RFI's).
- .2 Submit RFI's to Consultant, on Contractor's standard form, in sequentially numbered requests in typewritten or e-mail form.

PART 2 - PRODUCTS

- .1 Not used

PART 3 - EXECUTION

- .1 Inspection of Conditions: Installers of major components to inspect substrates and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected. Commencement of work immediately confirms acceptance of the substrate.
- .2 Coordinate temporary enclosures with inspections and tests to minimize the need to uncover completed construction.
- .3 Clean and protect construction in progress and adjoining materials, during handling and installation. Apply protective covering to assure protection from damage.
- .4 Clean and maintain completed construction as necessary through the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- .5 Limiting Exposures: Supervise construction to assure that no part is subject to harmful, dangerous, or damaging exposure. Such exposures include, but are not limited to:
 - .1 Excessive static or dynamic loading.
 - .2 Excessive internal or external pressures.
 - .3 Excessively high or low temperatures or humidity.
 - .4 Water or ice.
 - .5 Solvents and chemicals.
 - .6 Abrasion.
 - .7 Soiling, staining, and corrosion.
 - .8 Combustion.
 - .9 Air contamination or pollution.
 - .10 Excessive weathering.
 - .11 Unprotected storage.

3.2 REFERENCE STANDARDS

- .1 For products specified by association or trade standards, comply with requirements of the standard except when more rigid requirements are specified or are required by applicable codes.
- .2 The date of the standard is that in effect as of the Bid date, or date of Owner-Contractor Agreement when there are no bids, except when a specific date is specified.
- .3 Obtain copies of standards when required by Contract Documents. Maintain copy at jobsite during progress of the specified work.

3.3 FIELD ENGINEERING

- .1 Provide field engineering services; establish grades, lines, and levels, by use of recognized engineering survey practices.

3.4 APPLICATIONS FOR PAYMENT

- .1 Submit each application on a form acceptable to the Owner.
- .2 Content and Format: As specified for Schedule of Values in Section 01 33 00 Submittal Procedures.

3.5 PROJECT RECORD DOCUMENTS

- .1 Refer to Section 01 77 00 Closeout Procedures.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
 - .1 Preconstruction conferences.
 - .2 Pre-installation conferences.
 - .3 Progress meetings.

1.2 RELATED SECTIONS

- .1 01 35 43 Environmental Procedures.
- .2 01 74 19 Waste Management
- .3 01 35 44 Construction IAQ Management
- .4 01 77 00 Closeout Procedures

1.3 GENERAL MEETING REQUIREMENTS

- .1 Make physical arrangements for meetings, prepare agenda a minimum of 24 hours before the meeting, and submit to Owner and Consultant, with copies for participants.
- .2 Take meeting minutes, and distribute copies within two days, to the Owner, Consultant, and attendees. Distribute copies to other parties as appropriate.
- .3 Representatives attending meetings shall be authorized to act on behalf of the entity each represents.
- .4 Consultant will periodically attend meetings to ascertain the work is expedited and is consistent with Contract Documents and construction schedules.

1.4 PRE-CONSTRUCTION CONFERENCE

- .1 Within 15 working days after "Notice to Proceed" letter, convene a pre-construction conference to discuss and resolve administrative procedures and responsibilities, with Owner's Representative, Consultant, and major Trade Contractors.
- .2 The Contractor will establish time and location of meeting and notify all parties concerned to attend.
- .3 Attendees:
 - .1 As necessary, authorized representatives of the Owner, Consultant, and the Owner's Consultants; the Owner's superintendent; major subcontractors; and other concerned parties shall attend.
 - .2 Subcontractor participants shall be familiar with the Project and authorized to conclude matters relating to the Work.
- .4 Agenda: Discuss items that could affect progress, including the following:
 - .1 Tentative construction schedule and critical work sequencing.
 - .2 Submittal of Shop Drawings, Product Data, and Samples, and Special Submittal Procedures.
 - .3 Use of the premises, site mobilization, and review of Owner Contractor responsibilities and administrative procedures.
 - .4 Procedures to follow regarding site security, control of access of the site, emergency response procedures in case of fire or serious injury.

- .5 Project specific concern/issues and strategies to maximize health and safety during the term of the contract.
- .6 Review draft IAQ plan per Section 01 35 44 Construction IAQ Management
- .7 Review Construction Waste Management plan and reporting.

1.5 PRE-INSTALLATION CONFERENCES

- .1 As necessary the Contractor will conduct a conference before each activity that requires coordination with other operations. If requested by Contractor, subcontractors are required to attend the conferences.
- .2 Attendees:
 - .1 The Installer and representatives of manufacturers and fabricators involved in or affected by the installation shall attend. As necessary the Owner will advise Consultant of scheduled meeting dates.
 - .2 Review the progress of other operations and preparations for the activity under consideration at each pre-installation conference, including requirements for the following:
 - .1 Compatibility problems and acceptability of substrates.
 - .2 Time schedules and deliveries.
 - .3 Manufacturer's recommendations.
 - .4 Warranty requirements.
 - .5 Inspecting and testing requirements.
 - .3 Contractor will record significant discussions and distribute record of meeting to everyone concerned, including Consultant.
 - .4 Subcontractor is not to proceed with installation if conference cannot be successfully concluded. Subcontractor is responsible for initiating actions necessary to resolve problems and reconvene conference.
- .3 Unless otherwise required, notify Consultant a minimum of seven calendar days prior to each scheduled meeting.

1.6 CONSTRUCTION PROGRESS MEETINGS

- .1 *Contractor* shall prepare meeting agendas, chair the meetings, and record and distribute the minutes.
- .2 Purpose: to monitor construction progress and to identify problems and action required for their solution, to expedite the Work.
- .3 Frequency: monthly, with additional meetings when required, or as otherwise directed by Owner.
- .4 Location: Contractor to arrange for and provide physical space for meetings, can be site office.
- .5 Contractor to arrange for a voice and video conferencing systems for progress meetings.
- .6 Attendees:
 - .1 Contractor's project manager, site superintendent and when so requested by Contractor, Trade Contractors, suppliers and other parties involved in the Work. Representatives shall be qualified and authorized to act on behalf of the party each represents.
 - .2 Owner's representatives: Owner's Project Manager or other representatives, Consultants, including Protect Technical Consultant, Commissioning agent.
- .7 Agenda:

- .1 Review and approval of minutes of previous meeting.
- .2 Review of items of significance that could affect progress.
- .3 Other topics for discussion as appropriate to current status of the Work.
- .4 Review progress since the last meeting. Determine where each activity is in relation to the Construction Schedule. Determine how to expedite construction behind schedule; secure commitments from parties involved to do so. Discuss revisions required to insure subsequent activities will be completed within Contract Time.
- .5 Provide RFI log and discuss status of RFI's.
- .6 Provide change proposal log and discuss status of proposed changes.
- .7 Provide submittal log and discuss status of submittals.
- .8 Reporting: Meeting minutes will be distributed to each party present and to parties who should have been present.
- .9 Schedule Updating: Revise Construction Schedule as necessary after each meeting where revisions have been made.
- .10 Review Construction Waste Management report and requirements.
- .8 Minutes: Contractor will record minutes and distribute copies to attendees and affected parties not in attendance, within Three Working Days after meeting.
- .9 Building Handover Meeting: to be undertaken prior to actual Building Occupancy. This meeting will focus on final commissioning activities, occupancy and handover, staff training, move-in, closeout submittals, and final and warranty inspections. See also Section 01 77 00 Closeout Procedures
- .10 Post Occupancy Meetings: the following meetings should be held to discuss the procedures and requirements for overall completion of the project.
 - .1 Post Completion Review Meeting: to be undertaken within 3 months of building occupancy. The meeting will include analysis of the Contract Price, Contract Time, scope or Work, change order variances, communication among the stakeholders, risk management and operational issues, along with identifying the successes of the project and the areas for improvement. The commissioning activities and any seasonal testing shall be completed for full operation.
 - .2 See also 01 77 00 Closeout Procedures
 - .3 Warranty Review Meeting: within 1 month prior to expiry of warranty

PART 2 - PRODUCTS

- .1 Not Used.

PART 3 - EXECUTION

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 This Sub-division specifies *Contractor's* responsibilities for preparation and submission of schedules and other documentation related to tracking construction progress.
 - .1 *Contractor* shall provide *Consultant* and *Owner* with construction progress updates monthly through the Course of Construction (COC) phase to demonstrate that actual progress aligns with planned schedule and *Contract Time*.
 - .2 *Contractor* shall proactively identify and manage schedule issues and risks to ensure planned progress is maintained or revised to meet the *Contract Time*.

1.2 CONSTRUCTION PROGRESS SCHEDULE

- .1 Construction Schedule shall be developed around critical path and long-delivery lead-time items to meet *Contract Time*.
- .2 Provide a work breakdown structure identifying key activities, work packages, and major milestones, including long-delivery *Products*, inspection and testing activities, preparation and review of mock-ups, *Owner* decisions for cash allowances, shutdown or closure activities, delivery of *Owner*-supplied *Products*, demonstration and training activities, and similar items, at a sufficient level of detail to effectively manage construction progress.
- .3 Indicate milestone dates for Substantial Performance of the Work or Ready-for-Takeover (whichever is applicable to the contract) and Building Handover.
- .4 Submit initial schedule to *Owner* and *Consultant* within ten (10) *Working Days* after *Contract* is awarded.

1.3 SUBMITTALS SCHEDULE

- .1 Prepare Submittal Schedule identifying all required *Shop Drawings*, *Product* data, and sample submissions, including samples required for testing and those for *Owner*-supplied *Products*, with planned submittal dates, review time, response deadlines, and resubmission contingencies.
- .2 Submit initial schedule to *Consultant* within twenty (20) *Working Days* after *Contract* award.

1.4 SCHEDULE MANAGEMENT

- .1 A schedule submitted as specified and accepted by *Consultant* shall become the baseline schedule and shall be used as the baseline for updates.
- .2 At each regular progress meeting, review and discuss current construction progress and submittals schedules with *Consultant* and *Owner*, including activities that are behind schedule and planned measures to regain schedule slippage in key areas on or near the critical path.

1.5 PROGRESS DOCUMENTATION

- .1 Arrange for periodic digital photography to document and provide a photographic record of the progress of the *Work*.
 - .1 All documentation services shall track progress at regular intervals (typically monthly) throughout the construction in chronological order, and, in addition, special dates like milestones, mock-ups, testing, inspection, commencement, completion, miscellaneous events such as materials arriving on site, waste handling/recycling as determined by *Owner/ Consultant*, and, at handover, training on building systems. The documentation shall include date, electronic indexing, navigation through architectural plans, storage, and online access.
 - .2 Exterior progress documentations: include all elevations and major site features like underground utilities, soil and sediment control, adjacent buildings, blindside property line excavation, reinforcing drainage, concrete wall construction, outside progression of building envelope, roof construction, and more.

- .3 Interior progress documentations: include interior improvements by areas like interior wall framing, insulation, air/vapour barrier and finishes, envelope and suite-level air-tightness details, flooring installation, interior finishes, millwork, and more.
- .4 Overlapping images of all in-slab utilities within the building and all finished systems located in the walls and ceilings for mechanical, electrical, plumbing, and all other systems.
- .2 Do not use progress or any other *Project* photographs for promotional purposes or share it with others/third parties without *Owner's* written consent.

1.6 INSPECTION REPORTS

- .1 The *Contractor* shall provide to the *Consultant* copies of all inspection reports from third-party inspection agencies and the Authorities Having Jurisdiction (AHJ) as they are received.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 The Owner reserves the right to withhold payment when appropriate submittals are not made.

1.2 SUBMITTALS - GENERAL

- .1 Submit Shop Drawings, product data and samples called for by Contract Documents and for such other items as Contractor may reasonably request. Do not proceed with work until related submission has been reviewed.
- .2 Submit submittals for review allowing adequate time for delivery, review, re-submission if required, ordering, delivery, particularly in regard to affected Subcontractors and fabricators, manufacturers and suppliers.
- .3 Submit with reasonable promptness and orderly sequence, not to cause delay of the Work.
- .4 Unless otherwise noted, allow a minimum of fourteen (14) working days for review and processing of submittals by Consultant.
- .5 Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no additional expenses, substitution of alternate materials or methods in lieu of those specified or indicated in order to meet installation requirements, by reason of such default will be allowed.
- .6 Review of Shop Drawings by Consultant is for the sole purpose of ascertaining conformance with the general design concept and for general arrangement only. This review does not mean approval of detail design inherent in Shop Drawings, responsibility for which remains with Trade Contractor submitting same. Such review does not relieve responsibility for meeting requirements of Contract Documents, unless Consultant has accepted a deviation in writing.

1.3 PRIOR TO SUBMISSION

- .1 Review, date and sign, Shop Drawings, product data and samples, prior to submission. Review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with Work requirements and Contract Documents.
- .2 Individual drawings will not be reviewed until related shop drawing and product data are available.
- .3 Submittals not stamped, signed, dated and identified as to the specific project shall be returned without being examined and shall be considered rejected.
- .4 Determine and verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
 - .4 Conformance with Contract Documents.
- .5 Notify Consultant in writing on submission and at time of submission of Contract Document requirement deviations.

1.4 SUBMITTAL FORMAT

- .1 Transmittal Form: Accompany each submittal with Contractor's Submittal Cover Sheet. Do not address more than one topic or portion of the Work on each transmittal.
- .2 Submittal Numbering: Sequentially number submittals (i.e. #22) in order submitted. Add revision suffix to original submittal number for re-submittals (i.e. #22R1).
- .3 Submittal Identification:

- .1 Date and revision dates.
 - .2 Project Title and Number.
 - .3 Contractor, Subcontractor or Supplier.
 - .4 Drawing and Detail number.
 - .5 Specification Section number.
 - .6 Manufacturer.
 - .7 Fabrication, Product and Material.
 - .8 Detailer when details not prepared by trade contractor, sub-contractor, or supplier.
- .4 Contractor's Certification: Apply Contractor's stamp, signed or initialed, certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of Contract Documents. Review submittals for adequate installation interface with work of other trades, including requirements for lighting, ductwork, and sprinklers.
- .5 Review Stamp Space: Provide minimum 4" x 6" blank space each for Consultant's and Engineer's stamps.
- .6 Make corrections or changes to rejected submittals and resubmit, as specified for initial submittal.
- .7 After final review reproduce the number of prints required for performance of work documents and distribute to subcontractors as required.
- 1.5 COORDINATION AND CONSOLIDATION
- .1 Schedule and coordinate Submittals for review in an orderly sequence and in manageable quantity to aid in review of independent elements of the Work. Submittals received from other than Contractor will be rejected.
 - .2 Coordinate and consolidate Submittals to include complete assemblies and systems. Partial or incomplete submittals will not be reviewed until complete submittal is received.
 - .3 Deviations on Submittals: Identify deviations from Contract Documents, conforming to standard shop practices or industry standards by drawing cloud or other identifying marking around deviation and noting change.
 - .4 Product and System Limitations: Indicate condition, which may be detrimental to successful performance or completion of the Work.
- 1.6 PRODUCT DATA
- .1 Number of Copies: Submit ONE PDF copy.
 - .2 Product Data means standard printed information describing materials, products, equipment and systems; not specially prepared for work of this Project, other than the designation of selections.
 - .3 Clearly mark product data to identify products.
 - .4 Product data consisting of manufacturers' installation and maintenance instructions, standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and descriptive data may be accepted in lieu of Shop Drawings provided that:
 - .1 Information not applicable to work of this Project is deleted, and
 - .2 Standard information is supplemented with information specifically applicable to the work of this Project.
- 1.7 SHOP DRAWINGS
- .1 Number and Format: Submit ONE PDF copy, include final pdf and hardcopy in O&M manuals.

- .2 "Shop Drawings" shall mean drawings, diagrams, illustrations, samples, schedules, performance charts, literature, brochures, and other data which are to be provided by Contractor to illustrate details of a portion of Work.
 - .3 Refer to Electrical and Mechanical Divisions for additional requirements particular to mechanical and electrical trades.
 - .4 Review Shop Drawings completely and signify review by stamping and dating Shop Drawings, in one of the following ways prior to submitting the Shop Drawings to Consultant:
 - .1 Reviewed.
 - .2 Reviewed as Noted.
 - .5 Un-reviewed Shop Drawings and samples or Shop Drawings stamped by the Contractor as Revise and Resubmit received by Consultant shall be returned to Contractor without review by Consultant noting the above requirements.
 - .6 Shop Drawings will be reviewed by Consultant for general conformance with design concept of project and general compliance with information given in Contract Documents. Consultant will signify his review by stamping and dating the digital copy accordingly, in one of the following manners:
 - .1 Reviewed.
 - .2 Reviewed as Noted.
 - .3 Revise and Resubmit.
 - .7 Consultant will return stamped copy to Contractor for use, copying, record keeping purposes, and for distribution to Subcontractors and to suppliers.
 - .8 Contractor shall distribute copies of Shop Drawings stamped by Consultant as "Reviewed" and "Reviewed as Noted" to Site Office and to offices of Consultant(s), Subcontractors, and suppliers.
 - .9 Correct "Revise and Resubmit" copies and resubmitted to Consultant following requirements stated above.
 - .10 Use only Shop Drawings stamped "Reviewed" and "Reviewed as Noted" on site. Other Shop Drawings shall be considered as being not reviewed.
 - .11 Submit fully detailed Shop Drawings, indicating materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes, required backing or accessories including those to be provided by others, colour charts for selecting colours where applicable, design calculations, and any other pertinent information necessary to complete the work. Where items attach or connect to other items, or to waterproof membranes, indicate that such items have been coordinated, regardless of which Section under with such adjacent items are supplied and installed. Indicate cross references to contract documents including drawings, details, and specifications
 - .12 Adjustments indicated on Shop Drawings by Consultant are not intended to change Contract Price. If such adjustments affect the value of Work, state such in writing to Consultant prior to proceeding with Work.
 - .13 Make changes in Shop Drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify the Consultant in writing of any proposed revisions other than those requested.
- 1.8 SAMPLES
- .1 Quantity or Number: Submit two (2) sets each, except as otherwise specified plus additional samples as required by Contractor for distribution.
 - .2 Submittal Procedure: Submit for Consultant's review in accordance with Submittal Procedures specified this Section. After review, distribute to applicable entities, including Owner.

- .3 Size and Completeness: As specified by individual Sections. When not specified, submit samples of sufficient size and completeness to clearly illustrate product.
- .4 Identification: Label each sample with project title and complete product identification, including manufacturer, model number, descriptive name, supplier, and as applicable, to sample identification.
- .5 Functional Characteristics: Include parts, attachments, and components, as applicable. Coordinate with interfacing work.
- .6 Aesthetic Characteristics: As required for selection of colors, finishes, patterns, and as required or requested to finalize selection process. Furnish full range of manufacturer's custom and standard selections. Where selection is specified, submit as required to show conformance to Contract Documents.
- 1.9 DESIGN DATA AND TEST REPORTS
 - .1 Number: Submit ONE PDF copy, include final pdf and hardcopy in O&M manuals.
 - .2 Content: Include information necessary for assessing conformance with and design concept expressed by Contract Documents.
- 1.10 CERTIFICATES
 - .1 Number: Submit ONE PDF copy, include final pdf and hardcopy in O&M manuals.
 - .2 Content: Written certification, signed by manufacturer's representative, supplier, Contractor, or others as specified. Indicate that material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, current test results, and other certification as appropriate. Include statements to certify compliance with provisions for certified specialists, product performance, Code compliance, and as specified. Meet or exceed specified requirements.
- 1.11 MANUFACTURER INSTRUCTIONS
 - .1 Number: Submit ONE PDF copy, include hardcopy in manuals.
 - .2 Content: Include Manufacturer's printed instructions for delivery storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing as specified for individual specification Sections. Include special procedures, project conditions, and environmental criteria required for application or installation.
- 1.12 MANUFACTURER FIELD REPORTS
 - .1 Number: Submit ONE PDF copy, reports within 10 days of observation.
 - .2 Content: Include information necessary for assessing conformance with and design concept expressed by Contract Documents.
- 1.13 REGISTERED PROFESSIONAL ENGINEER'S LETTERS OF ASSURANCE
 - .1 Where Sections of Work require provision of professional engineering services:
 - .1 Registered Professional Engineer shall be licensed to practice in British Columbia.
 - .2 Shall design and engineer project components specified.
 - .3 Sign and seal Shop Drawings and supporting documentation.
 - .4 Submit Letters of Assurance as required by Authority having jurisdiction.
 - .5 Stamp Permit Drawings.
 - .6 Review fabrication and installation of specified components.
 - .7 Provide Letter of Conformance, requirements for which are listed below, confirming Work is in conformance with Shop Drawings, code requirements and contract documents. For

- specific requirements for Structural Steel and similar Work refer to individual section for detailed requirements.
- .8 Provide Letters of Assurance on Standard BCBC Form where required by authority having jurisdiction.
- 1.14 LETTERS OF CONFORMANCE
- .1 Letter of Conformance: Short-form informational submittals which are to be used instead of, or to supplement, Shop Drawings, product data and samples. A sample "Letter of Conformance" is located at the end of this Section. Use copies of this form for each submittal where it is allowed unless a more specific Letter of Conformance is located at the end of a particular Specification Section.
- .2 Not less than 90 days prior to Substantial Performance, submit Letter of Conformance indicating Contractor's selections for products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- .3 Procedures:
- .1 Submit one copy, which will be retained by the Consultant and Owner.
- .2 Submit a completed Letter of Conformance for products selected as indicated within each section.
- .3 Fill-in required information on form and sign in ink by person authorized to sign on behalf of the Contractor.
- .4 Attach product data to each Letter of Conformance.
- .5 No Modifications to form permitted.
- .6 Letters of Conformance are not to be used for substitution requests.
- .4 Letter of Conformance is attached here. By submitting a Letter of Conformance, the Contractor declares that the Product identified by manufacturer's name and model number:
- .1 Is one of the product(s) specified,
- .2 Is suitable for the intended use as defined within the Contract documents, and
- .3 Will be provided and placed in operational condition in accordance with the Contract Documents and manufacturer's published instructions.

End of Section

LETTER OF CONFORMANCE

PROJECT: _____

CONTRACTOR: _____

The following product(s) has been selected for use in the above referenced project from the list of specified items.

Section Number: _____ Section Name: _____

Drawing Number(s): _____ Detail Number(s): _____

SPECIFIED ITEM TO BE USED:

STATEMENT OF CONFORMANCE:

This Letter of Conformance is provided as a Submittal for Information in accordance with Section 01 33 00 – Submittal Procedures. The undersigned hereby declares that the Product identified above by manufacturer's name and model number is (one of) the product(s) specified and is suitable for the intended use as defined within the Contract Documents and has been provide and placed in operational condition in accordance with the manufacturer's published instructions and the Contract Documents.

SUBCONTRACTOR/SUPPLIER:

(Contact name of subcontractor/supplier offering above product)

Phone Number: _____

(Subcontractor/supplier name and address)

CONTRACTOR:

(Contact name of Contractor)

Phone Number: _____

PART 1 - GENERAL

1.1 REFERENCE STANDARDS AND REGULATIONS

- .1 British Columbia Building Code (BCBC) current edition:
 - .1 BCBC– Safety Measures at Construction and Demolition Sites.
- .2 Canada Labour Code:
 - .1 Part II – Occupational Health and Safety.
 - .2 Canada Occupational Health and Safety Regulations.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
 - .1 .1 Material Safety Data Sheets (MSDS).
- .4 B.C. Environmental Management Act:
 - .1 Contaminated Sites Regulation.
 - .2 Hazardous Waste Regulation.
- .5 WorkSafeBC Occupational Health and Safety Regulation:
 - .1 All *Contractors* and *Sub-contractors* must be registered and in good standing with WorkSafeBC.
 - .2 Where a *Contractor* is a sole-individual, they must have Personal Optional Protection with WorkSafeBC.
- .6 This Sub-division describes requirements applicable to all Sub-division within all Divisions.

1.2 CONSTRUCTION SAFETY

- .1 The *Contractor* shall appoint a safety representative (“Construction Safety Officer (CSO)”) to be responsible for communication with the *Owner*, *Consultant*, workers, and WorkSafeBC with respect to health and safety issues.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Comply with sustainable building practices during construction and when considering materials for substitutions.
- .2 Follow special environmental, sustainable, and green building practices related to energy conservation and efficiency, indoor air quality, and resource efficiency. Project procedures include, but are not limited to, the following.
 - .1 Maintain practices that ensure healthy indoor air quality in final Project.
 - .2 Maximize use of durable products.
 - .3 Maximize use of products easy to maintain, repair, and that can be cleaned using non-toxic and low-emitting (VOCs) substances.
 - .4 Maximize recycled content in materials, products, and systems.
 - .5 Maximize use of reusable and recyclable packaging.
 - .6 Maximize use of products with low embodied energy (production, manufacturing, and transportation).
 - .7 Minimize energy consumption.
 - .8 Maximize use of low VOC emitting materials and finishing.
 - .9 Utilize locally sourced materials.
- .3 Airtightness Testing will be required.

1.2 RELATED SECTIONS

- .1 Section 01 60 00: Product Requirements.
- .2 Section 01 74 19 Waste Management

1.3 SUBMITTALS

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

1.4 DEFINITIONS

- .1 Recycled Content:
 - .1 Post-Consumer recycled content is the percentage by weight of a product or material in which Consumer waste has become the raw material for another product.
 - .2 Pre-Consumer (Post-Industrial) recycled content is the percentage by weight of a product or material in which Manufacturing or Industrial waste has become the raw material for another product. Please note that rework, regrind or scrap generated in a process and capable of being reclaimed within the same process is excluded from this definition.
 - .3 The value of the recycled content of building materials or furnishings shall be determined by dividing the weight of the recycled content by the total weight of the item, then multiplying the resulting percentage by the total value of the item.
 - .4 Steel Recycled Content: Submit Manufacturer, Supplier or Mill inspection reports on general recycled content information. Materials with the following recycled content are encouraged/preferred but are not required:
 - .1 Basic Oxygen Furnace (BOF) Process: Minimum of 25% recycled content.
 - .2 Electric Arc Furnace (EAF) Process: Minimum of 95% recycled content.
- .2 Regional Manufacture and Harvest/Extraction of Materials:
 - .1 Indicate materials that are extracted (raw materials), process and manufactured (location of final assembly) regionally within:
 - .1 800 Km radius of the project site if transported by truck

- .2 2400 Km of the project site if transported by ship or rail OR,
 - .3 A combination of transportation types
 - .2 Of the 20% of building materials required, 80% of its mass must meet this regional harvest and manufacture goal.
 - .3 Low Emitting Materials:
 - .1 Adhesives, sealants, paints, and other coatings selected for the project shall meet or be lower than the emission limits for volatile organic compounds (VOC's) as defined in Section 01 60 00.01 Low-Emitting Materials- VOC Emission Limit Tables.
 - .2 Carpet products selected for the project shall meet the Carpet and Rug Institute (CRI) Green Label or Green Label Plus Testing Program. Carpet Adhesives used shall comply with the emission limits as defined in Section 01 60 00.01 Low-Emitting Materials – VOC Emission Limit Tables.
 - .3 All composite wood and agrifibre products shall have no added Urea-Formaldehyde resins. Adhesives used in fabrication of these assemblies shall also contain no Urea-Formaldehyde.
 - .4 Exterior applied products and products not mixing with indoor air need not be submitted.
 - .4 FSC Certified Wood:
 - .1 Indicates wood or wood products obtained from responsibly managed forests. The Forest Stewardship Council certifies wood or wood products by means of a Chain of Custody Certificate. Which tracks the movement of wood products from forest to vendor and is used to verify compliance with FSC Guidelines.
 - .5 Airtightness Testing:
 - .1 Whole-building airtightness (EALR) for each building is to be tested and reported, and all buildings are to be designed and constructed with the intention of meeting an air-leakage target of 0.1 L/s*sm @ operating pressure. Airtightness of suites (IPALR) is to be tested and reported for residential buildings and must demonstrate compliance with a suite-level air-leakage target, as tested to USACE Airtightness Protocol or and equivalent standard (USAGS).. ***Note for this project whole building testing not required but each unit will be tested.***
- 1.5 INDOOR AIR QUALITY
- .1 Each Subcontractor is required to comply with the Construction Indoor Air Quality Plan as established by the Contractor.
 - .2 Refer to Section 01 35 44 Construction Indoor Air Quality Management.
- 1.6 DELIVERY, STORAGE AND HANDLING
- .1 Take special care to prevent accumulation of moisture on materials and within packaging during delivery, storage and handling to prevent development of mold and mildew on packaging and on products. Refer to Section 01 35 44 Construction Indoor Air Quality Management.
 - .2 Immediately remove from site and properly dispose of materials showing signs of mold and signs of mildew, including materials with moisture stains.
 - .3 Replace moldy materials with new, undamaged materials.
 - .4 Packaging:
 - .1 Deliver materials in recyclable, or in reusable packaging, such as cardboard, wood paper, or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.
 - .2 Minimize packaging materials to maximum extent possible while still ensuring protection of materials during delivery, storage and handling.

- .3 Minimize the use of the following packaging materials: Polyurethane, polyisocyanurate, polyethylene, and similar plastic materials such as "foam" plastics and "shrink-fit" plastics.
 - .4 Reusable Blankets: Deliver and store materials in reusable blankets and mats reclaimed by manufacturers or suppliers for reuse where program exists or where program can be developed for such reuse.
 - .5 Pallets: Where pallets are used, suppliers shall be responsible to ensure pallets are removed from site for reuse or for recycling.
 - .6 Corrugated Cardboard and Paper: Refer to Section 01 74 20 Construction Waste Management.
- 1.7 PROJECT CONDITIONS
- .1 No smoking will be permitted on the Project site after the building has been closed up.
 - .2 Construction ventilation and preconditioning:
 - .1 Construction ventilation: Materials that emit Volatile Organic Compounds (VOC) are to be avoided; however, maintain sufficient temporary ventilation of areas where materials are being used that emit VOCs. Maintain ventilation continuously during installation and until emissions dissipate after installation. If continuous ventilation is not possible via building's heating, ventilation, and air conditioning (HVAC) system(s), then ventilation shall be supplied via open windows and temporary fans, sufficient to provide no less than three (3) air changes per hour.
 - .2 The period after installation shall be sufficient to dissipate odours and elevated concentrations of VOCs. Where no specific periods are stated in these *Specifications*, a period of seventy-two (72) hours shall be used. This period is not considered part of the "building flushing-out" period.
 - .3 Ventilate areas directly to outside; ventilation to other enclosed areas is not acceptable.
 - .4 During dust-producing activities (e.g., drywall installation and finishing), turn ventilation system off, and openings in supply and return HVAC system shall be protected from dust infiltration. Provide temporary ventilation as required.
 - .5 Preconditioning: Store *Products* that have odours (and that have significant VOC emissions to off-gas) in dry, well-ventilated space for a sufficient period to allow for reasonable dissipation of odours and emissions prior to delivery to *Project*.
 - .6 Condition *Products* without containers and packaging to maximize off-gassing of VOCs. Condition *Products* in a ventilated warehouse or other building. Comply with substitution requirements for consideration of other locations. See Sub-division 01 25 00 – Substitutions and Alternatives Procedures.
 - .3 Comply with Federal, Provincial and Civic regulations pertaining to waste, air, solid waste, chemical waste, sanitary waste, sediment, and noise pollution.
 - .4 Protection of natural resources: Preserve the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract in their existing condition or restore to an equivalent or improved condition upon completion of the Work.
 - .1 Confine demolition and construction activities to areas defined by public roads, easements, and work area limits indicated on the Drawings.
 - .1 Remove indications of temporary construction facilities, such as haul roads, work areas, structures, stockpiles of excess or waste materials, and other vestiges of construction as directed by Owner's Representative.
 - .2 Water resources: Comply with applicable regulations concerning the direct or indirect discharge of pollutants to the underground and natural waters.

- .1 Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water in such quantities as to affect normal use, aesthetics, or produce a measurable ecological impact on the area. Store and service construction equipment at areas designated for collection of oil wastes.
 - .3 Land resources: Prior to construction, identify all land resources to be preserved within the work area. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, grasses, top soil, and land forms without permission from the Owner's Representative.
 - .1 Plan and conduct earthwork to minimize the duration of exposure of unprotected soils. Clear areas in reasonably sized increments only as needed to use the areas developed. Immediately protect side slopes and back slopes upon completion of rough grading. Provide progress photos documenting erosion control measures.
 - .2 Construct or install temporary and permanent erosion and sedimentation control features.
 - .4 Dust control, air pollution, and odour control: Prevent creation of dust, air pollution, and odours.
 - .1 Use water sprinkling, temporary enclosures, and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level. Do not use water when it may create hazardous or other adverse conditions such as flooding and pollution.
 - .2 Store volatile liquids, including fuels and solvents, in closed containers. Refer to Section 01 35 44 Construction Indoor Air Quality Management.
 - .3 Properly maintain equipment to reduce gaseous pollutant emissions.
- 1.8 SEQUENCING
- .1 On-site application: Where odorous and/or high-VOC-emitting *Products* are applied on site, apply prior to installation of porous and fibrous materials. Where this is not possible, protect porous materials with polyethylene vapour retarders.
 - .2 Complete the installation of interior finishes to allow adequate time prior to date of *Substantial Performance of the Work* or *Ready-for-Takeover* (whichever is applicable to the *Contract*) to permit the complete cleanup of the building.
 - .3 When *Contractor* is required to perform touch-up work, provide temporary construction ventilation during installation, and extend building flushing-out accordingly

PART 2 - PRODUCTS

2.1 CHEMICALS OF CONCERN

- .1 Chemicals of Concern that should be avoided if possible are those chemicals listed below as toxic air contaminants, carcinogens, teratogens, reproductive toxins, and chemicals with established Chronic Reference Exposure Levels (REL):
- .2 Carcinogens: Chemicals listed as probable or known human carcinogens in the latest published edition of the following two lists:
 - .1 California Environmental Protection Agency, Air Resources Board (ARB), list of Toxic Air Contaminants (California Air Toxics).
<http://www.arb.ca.gov/toxics/summary/summary.htm>.
 - .2 California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
- .3 Reproductive Toxicants: Chemicals known to cause reproductive toxicity including birth defects or other reproductive harm in the latest published edition of the following list: California

Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA), Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).

- .1 Chemicals with established Chronic Reference Exposure Levels (REL): The California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) has developed Reference Exposure Levels (REL) for hazardous airborne substances. A chronic REL is an airborne concentration level that would pose no significant health risk to individuals indefinitely exposed to that level. RELs are based solely on health considerations, and are developed from the best available data in the scientific literature. http://www.oehha.org/air/chronic_rels/AllChrels.html
- .2 Refer to OEHHA Table of Chronic Exposure Levels referenced in Section 01 35 46 Low Emitting Materials – Emissions Limits Tables.

PART 3 - NOT USED

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 This Section describes construction indoor air quality (IAQ) goals and includes administrative and procedural requirements for the development and execution of a construction indoor air quality management plan.
- .2 The Contractor is responsible for the identification and management of construction related airborne contaminants in compliance with all municipal, provincial and federal Acts and regulations, including Work Safe BC legislation and regulations.
- .3 IAQ Management Goals:
 - .1 The Owner has established that this Project shall prevent indoor air quality problems resulting from the deconstruction and construction processes, to sustain long term installer and occupant health and comfort.
 - .2 Protect the ventilation system components during construction and clean contaminated components after construction is complete.
 - .3 Control sources of potential IAQ pollutants at their source, by controlling selection of materials and processes used in Project deconstruction and construction.

1.2 RELATED SECTIONS

- .1 Section 01 11 02 Environmental Goals
- .2 Section 01 35 43: Environmental Procedures.
- .3 Section 01 50 00 Temporary Facilities and Controls.
- .4 Section -1 60 00 Product Requirements
- .5 Division 23 Heating, Ventilating, and Air-Conditioning (HVAC).

1.3 REFERENCE STANDARDS

- .1 Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings Under Construction, 1995, Chapter 3.

1.4 DEFINITIONS

- .1 MERV: Minimum Efficiency Reporting Value.
- .2 Construction IAQ: Indoor Air Quality during the construction and pre-occupancy phases of the Project.
- .3 Project Construction IAQ Management Plan: A plan developed by the Owner and implemented by the Contractor to maintain high indoor air quality standards for the construction and pre-occupancy phases of the project.
- .4 Contractor Construction IAQ Plan: A plan developed by the Contractor describing how the Work will comply with the Project Construction Indoor Air Quality Management Plan.

1.5 CONTRACTOR CONSTRUCTION IAQ MANAGEMENT PLAN

- .1 Develop an indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building to:
 - .1 Protect stored on-site or installed absorptive materials from contamination.
 - .2 Meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction 1995, Chapter 3.
- .2 The SMACNA IAQ Guidelines for Occupied Buildings under Construction provides an overview of air pollution associated with construction, control measures, construction process management, quality control, communicating with occupants, and case studies. These guidelines can be accessed at www.smacna.org Chapter 3 of the SMACNA Guidelines

recommends Control Measures in five areas: HVAC protection, source control, pathway interruption, housekeeping, and scheduling. Review the applicability of each Control Measure and include those that apply in the Draft IAQ Management Plan.

- .3 HVAC Protection: Shut down the return side of the HVAC system whenever possible during heavy construction. If the system must remain operational during construction include the following strategies that apply:
 - .1 Fit the return side of the HVAC system with temporary filters with minimum efficiency reporting value(MERV) of 8.
 - .2 Isolate the return side of the HVAC system from the surrounding environment as much as possible (e.g., place all tiles for the ceiling plenum, repair all ducts and air handler leaks).
 - .3 Damper off the return system in the heaviest work areas and seal the return system openings with plastic.
 - .4 Upgrade the filter efficiency where major loading is expected to affect operating HVAC system.
 - .5 Clean permanent return air ductwork per National Air Duct Cleaning Association standards upon completion of all construction and finish installation work.
 - .6 Install new clean media just prior to substantial performance and occupancy that has a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999.
- .4 Source Control: Perform work in such a way as to minimize generation of contaminants at their source.
- .5 Pathway Interruption: Prevent contamination of clean spaces. Include the following strategies that apply:
 - .1 Use 100% outside air ventilation (when outside temperatures are between 13 degrees C and 29 degrees C and humidity is between 30% and 60%) with air exhausted directly to the outside during installation of finishes and other VOC emitting materials.
 - .2 Erect temporary barrier between work areas or between the inside and outside of the building to prevent unwanted airflow from dirty to clean areas.
- .6 Housekeeping: Reduce construction contamination in the building prior to occupancy through HVAC and regular space cleaning activities.
 - .1 Store building materials in a weather tight, clean area prior to unpacking for installation.
 - .2 Check for possible damage to building materials from high humidity.
 - .3 Clean coils, air filters, and fans before testing and balancing procedures are performed.
- .7 Scheduling: Specify construction sequencing to reduce absorption of VOC's by materials that act as sinks or contaminant sources. Complete application of wet and odor-emitting materials such as paints, sealants, and coatings before installing sink materials such as ceiling tiles, carpets, insulation, gypsum products, and fabric-covered furnishings are installed.
 - .1 Protect stored on-site or installed absorptive materials from exposure to moisture through precipitation, plumbing leaks, or condensation from the HVAC system to prevent microbial contamination.

1.6 QUALITY ASSURANCE

- .1 Meeting Requirements: Draft IAQ Management Plan Review Meeting:
 - .1 Once the Owner and Consultant have reviewed the Draft IAQ Management Plan and prior to construction at the site, schedule and conduct a meeting to review the Draft IAQ Management Plan and discuss procedures, schedules and specific requirements for IAQ during the construction and pre-construction phases of the building.

- .2 Discuss coordination and interface between the Contractor and other construction activities. Identify and resolve problems with compliance to the requirements. Record minutes of the meeting, identify all conclusions reached and matters requiring further resolution.
- .3 Attendees: The Contractor and related Contractor personnel associated with the work of this section, including personnel to be in charge of the IAQ management program, Consultant, Owner and such additional personnel as the Consultant or Owner deem appropriate.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 IMPLEMENTATION OF IAQ MANAGEMENT PLAN

- .1 IAQ Manager (Contractor): The Contractor will designate an on-site individual responsible for instructing workers and overseeing the Contractor Construction IAQ Management Plan.
- .2 Progress Meetings: Include construction related IAQ procedures in the pre-construction and construction progress meeting agendas.
- .3 Distribution: The Owner will distribute copies of the IAQ Management Plan to the Contractor, the Owner, and the Consultant.
- .4 Instruction: Provide on-site instruction of the IAQ procedures and ensure that participants in the construction process understand the importance of the goals of the IAQ Management Plan.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 This section includes requirements for Quality Assurance measures. Quality Assurance may include:
 - .1 Submission of testing agencies qualifications.
 - .2 Preparation mock-ups.
 - .3 Convening, pre-installation conferences.
 - .4 Controlling the source of products.
 - .5 Ensuring Installer Qualifications are as specified.
- .2 Quality Assurance services include:
 - .1 Inspections, tests, and related actions, including reports performed by the Contractor, by independent agencies, by commissionaires, and by governing authorities.
 - .2 They do not include contract administration activities performed by the Owner or the Consultant.

1.2 DEFINITIONS

- .1 Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- .2 Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Consultant.
- .3 Testing Agency: Means an entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- .4 Installer/Applicator/Erector: Means employee, Subcontractor, Sub-subcontractor, or another entity engaged by Contractor to perform a particular construction operation, including installation, erection, application, and similar operations.
- .5 Experienced: Means having successfully completed minimum of 3 years previous experience and 3 to 5 previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction. This applies to manufacturer, fabricator or installer.
- .6 Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- .7 Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- .8 Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

1.3 QUALITY ASSURANCE

- .1 The following Quality Assurance requirements apply to each technical section unless indicated otherwise within and individual section.

- .2 Service Agency Qualifications: Engage pre qualified inspection and testing service agencies complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" that specialize in the types of inspections and tests to be performed.
 - .1 Each agency shall be authorized by authorities having jurisdiction to operate in the province where the Project is located.
- .3 Source Quality Control:
 - .1 Ensure critical components and materials used for manufacture are examined and tested in accordance with Specifications and reference standards. Maintain records of examinations and testing.
 - .2 Keep records of inspection work completed by the Supplier and make available to the Consultant during performance of the Work and for a minimum of one year after expiration of the warranty period.
 - .3 Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- .4 Installer Qualifications: Use Experienced Installers.
- .5 Workmanship:
 - .1 Comply with industry standards, except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
 - .2 Perform Work with persons qualified to produce workmanship of specified quality.
 - .3 Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- .6 Manufacturer's Instructions:
 - .1 Unless specified otherwise, comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Consultant before proceeding.
- .7 Mock-ups:
 - .1 Provide mock-ups as specified in the individual specification sections, including:
 - .1 Typical exterior wall construction: include exterior wall finish, backup walls, wall cavities, flashings, air seal membranes, insulation, sealants, sheathing, and sheathing membranes, as applicable.
 - .2 Windows: include installed window frame, window anchors, glazing, flashing, air seal membrane connection, sealants, and finished trim, as applicable. Refer to Section 08 53 13 Vinyl Windows
 - .3 Masonry veneer wall mock-up inspection
 - .4 Complete suite mock-up for modular construction and typical construction.
 - .5 Exterior cladding mock-ups
 - .6 Painting, see Section 09 90 00
 - .7 Flooring, see Section 09 65 00
 - .8 Do not provide additional mock-ups, until approval is provided by Consultant or Owner's representative.
 - .2 Do not proceed with subsequent work until approval of the mock-up is obtained.
 - .3 Approval of mock-up shall be the standard of workmanship and materials for the remainder of Work similar to the mock-up.

- .4 Maintain mock-up in approved condition, until directed otherwise.
 - .5 Unless specified otherwise, remove mock-up at completion, when directed by Owner's representative. Prior to removal photo-document mock-up with prints to Owner.
 - .6 Prepare mock-ups for the *Consultant's* review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the *Work*. Preparing mockups and concluding reviews are considered as part of the *Project* scope, and it shall not result in requests for extension of *Contract Time* and *Contract Price*.
 - .7 Notify Consultant and Owner a minimum of 5 working days prior to mock-up.
 - .8 For each mock-up, provide conditions that will duplicate the conditions of the actual installation, including lighting.
- 1.4 CONTRACTOR'S RESPONSIBILITIES
- .1 Conduct Quality Assurance and Quality Control activities to ensure products and systems incorporated into the *Work* meet the specified requirements.
 - .2 Where requirements for inspections and tests are identified, the Contractor shall employ and pay for a qualified independent testing agency to perform services.
 - .3 Provide inspections and tests specified and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum. See all other specifications sections for additional requirements. As a minimum the Contractor shall coordinate inspection and testing of the following:
 - .1 Plumbing, electrical, elevator
 - .2 Firestopping.
 - .3 Soils and compaction testing of backfill, road base and sub-courses, underslab and service trenches
 - .4 Asphalt mix and testing
 - .5 Concrete mix design
 - .6 Materials testing including
 - .1 Concrete
 - .2 Standard reinforcing steel and embedded items.
 - .7 Building Airtightness Testing to meet BC Energy Code (BCBC item 10.2.3.5) in accordance with testing procedures ASTM E779, to meet requirements per the energy report.
 - .8 Window and door pre-delivery lab test.
 - .9 Erosion and sediment control
 - .10 Additional tests per Authority Having Jurisdiction and Owner's requests.
 - .11 See also testing requirements on any and all other Engineering or Landscape Architect drawings or Specifications.
 - .4 Notify Consultant, Owner, and Testing Laboratory 48 hours prior to expected time for operations requiring inspection and testing. When tests or inspections cannot be performed, through the fault of the Contractor, reimburse the Owner for additional costs incurred.
 - .5 Provide Consultant and Owner with copies of reports and tests results with 24 hours of receipt.
 - .6 If any defects are revealed during inspection and testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. The *Contractor* must correct defects and irregularities as advised by the *Consultant* at no

- additional cost to the *Owner*. The *Contractor* must pay all costs of re-testing and re-inspection.
- .7 Employment of inspection and testing agencies by *Contractor* or *Owner* does not relieve *Contractor* from responsibility to perform the *Work* in accordance with *Contract Documents*.
- .8 *Contractor* to allow and arrange for inspection and testing agencies to have access to the *Work*, including access to off-site manufacturing and fabrication plants.
- .9 For inspection and testing required by *Contract Documents* or by AHJ, provide *Consultant* and inspection and testing agencies with timely notification in advance of required inspection and testing.
- .10 Inspection and Testing Agency Reports:
- .1 For inspection and testing required by *Contract Documents* or by regulatory requirements, and performed by *Contractor* retained inspection and testing agencies, submit to *Consultant* and *Owner* copies of reports. Submit within five (5) *Working Days* after completion of inspection and testing.
- .2 For inspection and testing performed by *Owner*-retained inspection and testing agencies, copies of inspection and testing agency reports will be provided to *Contractor*
- .3 For remedial work required to repair or replace defective or unacceptable work, refer to BCH Sub- division 01 73 00 – Execution Requirements
- .11 Retesting: Retest until specified standards are met, where results of inspections and tests prove unsatisfactory and indicate noncompliance with requirements, regardless of whether the original test was *Contractor*'s responsibility.
- .1 Costs of retesting are the *Contractor*'s responsibility where tests performed indicated noncompliance with requirements.
- .12 Inspection and Testing Log:
- .1 Maintain an inspection and testing log at Project site adequate to ensure compliance with Contract requirements and Contract Schedule. Post changes and modifications as they occur. Provide access to test and inspection log for *Consultant*'s reference during normal working hours.
- .2 Clearly indicate the following;
- .1 Activity description
- .2 Frequency of testing or inspections
- .3 Reference to acceptance procedure(s), codes, and standards.
- .4 Personnel responsible for inspection or testing.
- .5 Level of inspection: review, verify, witness, or hold.
- .6 Documentation requirements.
- .3 Prepare a record of tests and inspections. Include the following:
- .1 Date test or inspection was conducted.
- .2 Description of the Work tested or inspected.
- .3 Date test or inspection results were transmitted to *Consultant*.
- .4 Identification of testing agency or special inspector conducting test or inspection.
- .5 Submit a copy of the log in accordance with section 01 77 00 Closeout Procedures.

1.5 TESTING AGENCY DUTIES

- .1 Testing agency shall cooperate with Owner, Consultant, and Contractor in performing its duties. Agency shall provide qualified personnel to perform inspections and tests. The agency shall:
 - .1 Notify Owner, Consultant, and Contractor of irregularities or deficiencies observed in the Work during performance of its services.
 - .2 Not release, revoke, alter or enlarge requirements or approve or accept any portion of the Work.
 - .3 Not perform duties of Contractor.
- .2 Test Agency Submittals:
 - .1 Testing agency shall submit a certified written report, in triplicate, of each inspection and test to Owner. If Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection or test through Consultant.
 - .2 The testing agency shall submit additional copies of each report to the governing authority, when authority so directs.
 - .3 Report Data: Reports of each inspection, test, or similar service include, but are not limited to, the following:
 - .1 Date of issue.
 - .2 Project title and number.
 - .3 Name, address, and telephone number of testing agency.
 - .4 Dates and locations of samples and tests or inspections.
 - .5 Names of individuals making the inspection or test.
 - .6 Designation of the Work and test method.
 - .7 Identification of product and Specification Section.
 - .8 Complete inspection or test data.
 - .9 Test results and an interpretation of test results.
 - .10 Ambient conditions at the time of sample taking and testing.
 - .11 Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
 - .12 Name and signature of laboratory inspector.
 - .13 Recommendations on retesting.
- .3 Special installation procedures
- .4 Make no attachment to structure, structural concrete, or steel members in the building in such a way as to overload or impair the structural integrity of member.

PART 2 - PRODUCTS

- .1 Not Used.

PART 3 - EXECUTION

3.1 GENERAL

- .1 On completion of inspection, testing, and sample taking, repair damaged construction. Restore substrates and finishes. Comply with Section 01 11 00 Summary of Work.

- .2 Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 - .3 Comply with the Contract Document requirements for Cutting and Patching in Section 01 11 00 Summary of Work.
- 3.2 REPAIR AND PROTECTION
- .1 Regardless of whether damage to the work was caused by quality assurance or quality control inspections and testing, upon completion of inspection, testing, and sample taking, repair damaged construction. Restore substrates and finishes. Comply with Section 01 11 00 Summary of Work.
 - .2 Protect construction exposed by or for quality-assurance service activities, and protect repaired construction.
 - .3 Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for inspection and testing.

END OF SECTION

PART 1 - GENERAL

1.1 REGULATORY REQUIREMENTS

- .1 Execute the Work in accordance with applicable bylaws, regulations and building codes. Conform to the latest revisions, addenda, supplementary and/or current standards presently recognized and enforced by authorities having jurisdiction as follows:
- .2 Bylaws, Regulations and Building Code Standards:
 - .1 British Columbia Building Code current edition
 - .2 British Columbia Plumbing Code current edition
 - .3 British Columbia Fire Code current edition
 - .4 Master Municipal Construction Documents.
 - .5 British Columbia Health Act.
 - .6 WorkSafeBC.
 - .7 Municipal and Regional Bylaws.
- .3 Should conflicts arise between one document or authority and another, obtain clarification from the Consultant before proceeding with the Work. Generally, the most stringent regulation will govern.
- .4 Provide Shop Drawings, for approval, of all Approved and Tested Building Assemblies (wall, roof, floor, etc) and approach to fire stopping including proposed products, see Section 07 84 00.
- .5 Submit to the *Consultant* during construction and upon completion of the *Work* all certificates of inspection provided by AHJ. At completion, obtain Occupancy Permit, and all certificates of approval as may be issued by building, plumbing, electrical, health, fire, safety, engineering, zoning/planning, and other departments, or by other inspection by AHJs over site and *Project*.

1.2 FIRE RATED ASSEMBLIES

- .1 The Contractor and Subcontractors shall conform to the following requirements to maintain continuity and integrity of fire rated assemblies whether or not shown on the drawings:
 - .1 Tightly fit or seal openings for conduits, pipes and ducts with firestop and sealant materials at penetration to prevent passage of flame and smoke migration and remain in place when subjected to the standard fire exposure in CAN4-S115-95 (R2001) for a period of time equal to the fire protection rating required for the grade of fire-rated assembly in which the penetration occurs.
 - .2 Ensure where work passes through a fire rated assembly, the opening is sealed with only fire stopping systems tested to CAN4-S115-95 (R2001) standard complete with Listed Systems Designs showing their appropriate individual applications are acceptable.
 - .3 Ensure walls, partitions, floors, ceilings, columns, beams and girders, as well as some components of building sub-assemblies designated or required to prevent the passage of flame and smoke migration, remain in place when subjected to the standard fire endurance tests in CAN/ULC-S101-M89 for a period of time equal to the grade of fire protection rating required.
 - .4 Acceptable products and acceptable manufacturers shall be in accordance with ULC or Warnock Hersey - Certified Fire Rated - Systems Design.
 - .5 See also Section 07 84 00 Firestopping.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide temporary facilities and controls specified in this Section, in Tender Documents, and as otherwise required for performance of Work of the Contract.
- .2 Materials Storage: There will be no on-site materials storage on this project without Owner's written permission. Bring materials to site immediately prior to their incorporation into the Work. Provide heated storage areas as required for materials supplied by Owner to the Contractor for installation.

1.2 SITE FENCE / HOARDING

- .1 Supply, install and maintain during the course of the Work, perimeter site fencing and necessary signage and lighting to alert and protect the public from entering the construction site.
- .2 Subcontractors shall supply other requirements in compliance with Safety Procedure Manual, the Site Safety Plan and Site Specific requirements.

1.3 FIELD OFFICES AND SHEDS

- .1 Provide a temperature-controlled and ventilated office, with suitable lighting, of sufficient size to accommodate site meetings and furnished with drawing laydown table. Provide a computer in the office connected to an internet service provider for sending and receiving email. Provide meeting space for eight (8) people.

1.4 FIRST AID FACILITIES

- .1 To conform to WorkSafeBC regulations.

1.5 PROJECT IDENTIFICATION SIGNS AND PUBLIC STATEMENTS

- .1 The Contractor shall not erect or permit the erection of any sign or advertising at the *Place of the Work* without the prior written approval of the Owner.
- .2 The Contractor shall not make any public statement with respect to the *Project* without the prior written consent of the Owner.

1.6 TEMPORARY TELEPHONE, FAX AND OFFICE EQUIPMENT

- .1 Provide facilities as required to undertake the project.
- .2 Computer and Internet Service: Provide WIFI internet access.
- .3 Provide desk/area suitable for Consultant's use acceptable to Consultant.
- .4 Reference Materials: Where specified in individual sections make referenced standards available for review by Construction Team and Consultant and Consultant's Team. The following minimum reference materials shall be available as required.
 - .1 B.C. Building Code, current edition.

1.7 TEMPORARY WATER SUPPLY

- .1 Arrange and pay for a temporary supply of water required during construction.
- .2 The use of fire protection piping for supply of temporary water for construction is not permitted.

1.8 TEMPORARY HEATING AND VENTILATING

- .1 Arrange and pay for temporary heating and ventilation required during construction.
- .2 Vent construction heaters in enclosed spaces to the outside, or use flameless type of construction heaters.

- .3 Provide temporary ventilation for the *Work* as required to maintain a safe work environment meeting applicable regulatory requirements.
- .4 Do not use the new permanent building heating and ventilation systems during construction.
- 1.9 TEMPORARY ELECTRICAL POWER AND LIGHTING
 - .1 Arrange and pay for temporary power and lighting required during construction.
 - .2 Arrange and pay for necessary connections and disconnections of temporary power and lighting in accordance with regulatory requirements.
 - .3 Do not use the new permanent building power and lighting systems during construction. If the new permanent building power and lighting systems are used during construction, *Contractor* shall pay for utility costs resulting from the use.
 - .4 Provide and maintain temporary lighting throughout the project. The level of illumination on all floors and stairs shall be not less than that required by the WorkSafeBC Occupational Health and Safety Regulation.
- 1.10 TEMPORARY CONTROLS
 - .1 Plant Protection:
 - .1 Protect trees and other plant material designated to remain on site and on adjacent properties where indicated on *Drawings*, on arborist report, and as per Authorities Having Jurisdiction (AHJ) requirements.
 - .2 Protect trees and shrubs susceptible to damage during construction by encasing with protective wood framework from grade to an effective height.
 - .3 For trees designated to remain, protect roots inside dripline from disturbance or damage during excavation and grading. Avoid traffic, dumping, and storage of materials over root zones.
 - .4 Dust and Particulate Control: Implement and maintain dust and particulate control measures in accordance with applicable regulatory requirements to minimize spreading of dust on site or to adjacent properties.
 - .5 Dewatering: Do not pump water containing suspended materials or other harmful substances into waterways, sewers, or surface drainage systems. Treat or dispose of such water in accordance with applicable regulatory requirements.
 - .6 Erosion and Sediment Control (ESC): To civil specifications and in accordance with applicable regulatory requirements.
 - .7 Pollution Control:
 - .1 Take measures to prevent contamination of soil, water, and atmosphere through uncontrolled discharge of noxious or toxic substances and other pollutants, potentially causing environmental damage.
 - .2 Take immediate action to contain and mitigate harmful effects of the spill or release.
 - .8 Noise abatement: To requirements of AHJ and local by-laws.
- 1.11 LAYOUT OF THE WORK
 - .1 Layout major grid lines and mark on concrete structure at base of building together with sufficient datum elevations.
 - .2 Maintain layout and if disturbed, arrange for replacement at no additional cost to the Owner.

1.12 GUARDS AND BARRICADES

- .1 Provide temporary safeguards and protection, to protect against accident or injury to workers or other personnel on site.
- .2 Provide and maintain guard as required by the authority having jurisdiction.
- .3 Protect building materials in their final position, from freezing.
- .4 Be responsible for safe storage of materials.
- .5 Prevent sprayed materials from contaminating air beyond application area, by providing temporary enclosures.
- .6 Remove temporary barriers and enclosures prior to completion and final acceptance. Patch and repair surfaces to original condition.

1.13 DESIGN OF TEMPORARY FACILITIES

- .1 Be responsible for design and safety of temporary facilities. Temporary facilities of such nature that engineering proficiency is required for their design to ensure safety during construction shall be designed by a Professional Engineer licensed to practice in British Columbia.
- .2 Before the temporary structures are used; the person responsible for the design or their representative shall inspect the structure and issue a certificate stating that it has been constructed according to their design and meets code requirements.

1.14 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, to top of shafts and other openings in floors and roofs.
- .2 Provide protection against weather, rain, wind, storms, so as to maintain work, materials, apparatus and fixtures free from injury or damage. At end of day's work protect new work likely to be damaged from same.
- .3 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work area for temporary heat.
- .4 Properly protect the Work, and make provision for necessary temporary cold weather heating, during such periods of Work stoppages.

1.15 PUBLIC TRAFFIC FLOW

- .1 Provide and maintain flag persons, traffic signals, barricades, and detours as required by local authorities for the control of existing traffic patterns.

1.16 PROTECTION OF THE PUBLIC AND FIRE SAFETY

- .1 Comply with requirements of the BC Building Code current edition.

1.17 CLEANING DURING CONSTRUCTION

- .1 Cleanup garbage and debris on a daily basis to achieve project's Scheduling and Safety objectives.
- .2 Clean up site on a regular basis during progress of Work, clean-up building premises and site and dispose of waste material, rubbish, and debris.
- .3 Do not allow waste material, rubbish, and debris to accumulate and become an unsightly or hazardous condition. Maintain site in a clean and orderly condition.
- .4 Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- .5 Do not allow waste material, rubbish, and windblown debris to reach and contaminate adjacent properties.
- .6 Sprinkle dusty debris with water as required.

- .7 Lower waste material in a controlled manner; do not drop or throw materials from heights.
- .8 Clean interior building areas prior to commencement of finishing operations and continue cleaning on an as-needed basis and to eliminate dust, until building is ready for occupancy.
- 1.18 MANAGEMENT AND WASTE DISPOSAL REQUIREMENTS
 - .1 Comply with Provincial and Municipal laws, rules and regulations pertaining to disposal operations.
 - .2 Collect and dispose of non-hazardous waste material, rubbish and debris from site.
 - .3 Do not burn or bury waste material, rubbish and debris on site.
 - .4 Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - .5 Separate hazardous waste from general waste and stored in an area designated by Owner. Ensure waste is promptly and properly removed and disposed of in accordance with regulations. Pay cost associated with debris removal.
 - .6 Refer also to Section 01 74 19 Construction Waste Management and Disposal.
- 1.19 CLEANING OF STREETS AND SIDEWALKS
 - .1 Prevent depositing of mud or debris on roadways, sidewalks, and paved areas. Promptly clean mud or debris so deposited. Do not wash down streets or sidewalks by means of a flush truck. Vacuum sweep off-site areas.
- 1.20 REMOVAL AND RESTORATION
 - .1 Remove temporary facilities specified in this Section, prior to request for inspection for Final Acceptance.
 - .2 Clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to original condition.
- 1.21 PARKING
 - .1 On-site and immediately adjacent street parking is limited. Ensure that employees and subcontractor minimize impact of parking on neighboring residents and businesses.
- PART 2 - PRODUCTS
 - .1 Not Used.
- PART 3 - EXECUTION
 - .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Products include materials, equipment, and systems.
- .2 Comply with size, make, type and quality specified, unless otherwise approved in writing by Consultant. Specifications and referenced standards are minimum requirements.
- .3 A required component to be supplied in quantity shall be the same, and shall be interchangeable. This requirement applied to items furnished under one or several sections of the specifications.
- .4 Unless specified or indicated otherwise, materials employed for construction purposes, such as formwork, scaffolding, and temporary lighting, shall not be incorporated into Work.
- .5 Unless indicated or specified otherwise, products incorporated into the Work shall be new, and of the most suitable grade of their respected kinds for the intended use.

1.2 RELATED SECTIONS

- .1 01 25 00 Product Substitutions.
- .2 01 33 00 Submittal Procedures.
- .3 01 35 43 Environmental Procedures.
- .4 01 35 44 Construction Indoor Air Quality (IAQ) Management.
- .5 01 40 00 Quality Requirements.

1.3 REFERENCES

- .1 This Section applies to Technical Specification sections, and supplements the General and Supplemental Conditions, and General-Subcontractor Agreement.
- .2 Adhesives and sealants are not to exceed the VOC limits of the State of California's South Coast Air Quality Management District (SCAQMD) Rule #1168, June 2006, or the most current standard. See also 07 92 00 Joint Sealants.
- .3 Refer to reference list of acceptable levels of VOC limits provided in 01 35 46 Low Emitting Materials. For any other products to be used provide the information specified.
- .4 Paints and Coatings are to comply with the following standards:
 - .1 Architectural Paints, Coatings and Primers applied to interior walls and ceilings shall not exceed the VOC limits in Section 4.4 of the Green Seal Standard GS-11, Paints, Second Edition, May 12, 2008 or the most current standard.
 - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates shall not exceed the VOC Limits of Section 4.4 Green Seal Standard GS-11, Paints, Second Edition, May 12, 2008 or the most current standards.
 - .3 See also MPI standards per Section 09 90 00 Painting and Coating

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Transport products by methods to avoid product damage.
- .2 Deliver products in manufacturer's original containers or packaging, with identifying labels intact and legible.
- .3 Furnish equipment and personnel to handle products by methods to prevent soiling or damage.
- .4 Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- .5 During construction, review and confirm *Product* availability and delivery times at regular intervals, while considering supply chain, manufacturing, and transportation lead

times. Order *Products* in sufficient time to meet the Construction Schedule and the *Contract Time*.

.6 Immediately replace non-conforming products with new conforming products, at no additional cost to Owner.

.7 If delivery delays are foreseeable, for any reason, promptly notify *Consultant*.

.1 If a delivery delay is beyond *Contractor's* control, *Consultant* will provide direction.

.2 If a delivery delay is caused by something that was, or is within *Contractor's* control, *Contractor* shall propose actions to maintain the Construction Schedule for *Consultant's* review and acceptance.

1.5 STORAGE AND PROTECTION

.1 Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.

.2 Store products in accordance with Section 01 35 44 Construction Indoor Air Quality (IAQ) Management.

.3 Store sensitive products in weather-tight enclosures. Maintain within temperature and humidity ranges required by manufacturer's instructions, and as otherwise required to prevent damage.

.4 For exterior storage of fabricated products, place on sloped supports above ground. Protect from soiling or staining through ground contact. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.

.5 Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.

.6 Arrange storage of products to furnish convenient access for inspection and inventory.

.7 Provide secure off-site storage, when on-site storage is logistically impossible due to site size or access restrictions.

.8 Remove and replace damaged *Products*.

1.6 GENERAL INSTALLATION REQUIREMENTS

.1 Unless indicated or specified otherwise, install each product in accordance with the product manufacturer's instructions.

.2 Obtain and distribute copies of manufacturer's instructions to parties involved in the installation, including two copies to *Consultant*.

1.7 PRODUCT OPTIONS

.1 Product specified by Reference Standards or by Description Only: Provide product meeting those standards.

.2 Product Specified by Naming One or More Manufacturers with an "or approved" Provision: Use specified product or submit a request for substitution in accordance with the specified substitution requirements. When approved a substitute product may be used.

.3 Product Specified by Naming One or More Manufacturers, without a provision for Substitution: No substitution will be allowed, except as specified under the Article on Substitutions.

1.8 SUBSTITUTIONS

.1 Refer to Section 01 25 00 Product Substitutions and Section 01 25 01 Substitution Request Form.

PART 2 - PRODUCTS

.1 Not Used.

PART 3 - EXECUTION

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

- .1 Surveyor Qualifications, Submittals, Survey Reference Points, Survey Requirements and Records
 - .1 Refer to [Sub-division 01 71 23 – Field Engineering.](#)
- .2 Examination
 - .1 Verification of Existing Conditions:
 - .1 Riparian areas regulation assessment, preliminary site investigations, and sensitive ecosystem development permit, as applicable.
 - .2 Site walkthrough, safety inspections, and safety measures in compliance with WorkSafeBC regulations and other regulatory requirements.
 - .3 Arborist report and impacts related to bird-nesting seasons to coordinate construction activities to meet *Contract Time* and schedule.
 - .2 Although the design/*Consultant* team has done a detailed study of the existing structures, the existence and location of site improvements, utilities, and other construction indicated as existing shall be confirmed by the *Contractor* using the BC 1 Call service. Before beginning *Work*, investigate and verify existence and location of mechanical and electrical systems and other construction affecting the *Work*.
- .3 Preparation
 - .1 Existing Utilities and Structures:
 - .2 Promptly notify *Consultant* if underground utilities, structures, or their locations differ from those indicated in *Contract Documents* or in available project information. *Consultant* will provide appropriate direction.
 - .3 Record locations of maintained, re-routed, and abandoned utility lines.

END OF SECTION

PART 1 - GENERAL

- .1 Submittals
 - .1 Submit to *Owner* and *Consultant* the survey of the *Work* prepared and issued by a registered Land Surveyor on completion of the building footings and foundations, as required by Authorities Having Jurisdiction (AHJ), and on completion of the *Work*.
- .2 Records
 - .1 Certified Surveys: On completion of foundations and major site improvements, prepare a certified survey showing all pertinent data, information, dimensions, locations, angles, and elevations of the *Work*, and submit two (2) copies signed and sealed by registered Land Surveyor to the *Consultant*.
 - .2 Final Property Survey: Submit five (5) hard copies and a digital copy showing the *Work* performed and record survey data.

END OF SECTION

PART 1 - GENERAL

- .1 Notify *Consultant*, in writing, of conflicts between *Contract Documents* and manufacturer's instructions where, in *Contractor's* opinion, conformance with *Contract Documents* instead of the manufacturer's instructions may be detrimental to the *Work* or may jeopardize the manufacturer's warranty.
- .2 Conceal pipes, ducts, and wiring in floors, walls, and ceilings in finished areas:
 - .1 After review by *Consultant* and Authority Having Jurisdiction (AHJ), and
 - .2 Where locations differ from those shown on *Drawings*, after recording actual locations on As- Built Drawings.
- .3 Use non-corrosive fasteners and anchors for securing exterior work and in spaces where high humidity levels are anticipated.
- .4 Mounting Heights:
 - .1 Where mounting heights are not indicated, mount components at heights directed by *Consultant*.
- .5 Promptly remove, replace, clean, or repair, as directed by *Consultant*, work damaged as a result of inadequate protection. Work damaged or defaced due to failure in providing such protection is to be removed and replaced or repaired, as directed by the *Consultant*, at no increase in *Contract Price*.
- .6 Remedial work: Notify *Consultant* of and perform remedial work required to repair or replace defective or unacceptable work.

END OF SECTION

PART 1 - GENERAL

- .1 Obtain permits from Authorities Having Jurisdiction (AHJ), and pay disposal fees where required for disposal of waste materials and recyclables.
- .2 General Cleaning Requirements:
 - .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .3 Progressive and Final Cleaning:
 - .1 Maintain the *Place of the Work* in a tidy and safe condition, meeting regulatory and AHJ requirements, free from accumulation of waste materials and construction debris.
 - .2 Provide appropriate, clearly marked containers for collection of waste materials and recyclables.
 - .3 Ensure that volatile fluid wastes are not disposed of in storm or sanitary sewers, in open drain courses, or anywhere on site.
 - .4 Final cleaning: arrange a meeting at *Place of the Work* to determine the acceptable standard of cleaning. Ensure that *Owner, Contractor*, and cleaning company are in attendance.
 - .5 Remove stains, spots, marks, and dirt from finished surfaces, electrical and mechanical fixtures and equipment, furniture fitments, walls, floors, decorative work, electrical fixtures, posts, floor slab and roof, roof drain, exterior and interior windows, and exterior façade.
 - .6 Clean glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and all other finished surfaces, including mechanical and electrical fixtures. Replace broken, scratched, or otherwise damaged glass.
 - .7 Replace filters for mechanical equipment if equipment is used during construction.
 - .8 Remove waste materials and debris from crawlspaces and other accessible, concealed spaces.
 - .9 Maintain cleaning until *Owner* has taken possession of building or portions thereof.

END OF SECTION

PART 1 - GENERAL

1.1 WASTE MANAGEMENT GOALS FOR THE PROJECT

- .1 The *Owner* is committed to reducing waste in all aspects of its business.
- .2 Ensure a Construction Waste Management Plan (CWMP) implemented for all construction, renovation, and demolition (C&D) projects across the Province of BC. A waste management process shall be employed by the *Contractor* to ensure the generation of as little construction waste as possible and report all waste generated.
- .3 For projects located:
 - .1 In the Lower Mainland and on Vancouver Island, the *Contractor* shall achieve minimum waste diversion target of seventy-five percent (75%) of the total waste generated on site by weight away from landfill, and
 - .2 In other parts of British Columbia, the *Contractor* shall achieve minimum waste diversion target of fifty percent (50%) of the total waste generated on site by weight away from landfill.
 - .3 The total waste generated excludes any hazardous or excavated materials, such as asbestos, lead, and earthwork. All materials banned and prohibited from landfills according to the regional and municipal regulations shall be recycled.

1.2 REGULATORY REQUIREMENTS

- .1 Conform to applicable codes and regulations for disposal and removal of common (non-hazardous) and hazardous waste. Handle and dispose of all waste materials in accordance with the BC Waste Management Act, Environmental Management Act and Special Regulation, and regional and municipal regulations.
- .2 The hazardous and banned materials should be handled separately from common (non-hazardous) materials and follow WorkSafeBC's regulation. Hazardous materials include but are not limited to asbestos, drywall (banned from disposal), underground storage tanks, polychlorinated biphenyls (PCBs), abandoned chemicals (gasoline, pesticides, flammable and combustible substances), freon from cooling equipment, lead-based paints, smoke detectors, and mercury containing switches.
- .3 The *Owner* will provide, upon the *Contractor's* request, a Hazardous Material Inventory Spreadsheet for use with hazardous materials. The *Contractor* shall use this form to record all hazardous waste encountered during the *Work*. Where hazardous waste exists at the *Place of the Work*, the *Contractor* shall submit a Hazardous Material Inventory Spreadsheet with each application for payment until all hazardous waste has been removed, as determined by the *Owner*.

1.3 RELATED SECTIONS

- .1 Section 01 35 43 Environmental Procedures.

1.4 DOCUMENT SUBMITTAL

- .1 Construction Waste Management Plan (CWMP) and
- .2 Construction Waste Management Tracking Form, The *Contractor* shall use this form to record all waste products by weight but excluding hazardous waste.

1.5 CONTRACTOR'S RESPONSIBILITY

- .1 The Contractor is responsible for meeting construction waste diversion target rate and tracking waste diversion rate of all waste generated on site throughout the construction, demolition and land clearing activities including the work carried out by the subcontractors or trades.

- .2 The Contractors shall prevent contamination of materials to be recycled and salvaged and handled materials consistent with requirements for acceptance by designated facilities according to the regional regulations
- .3 The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling to be used by all personnel at the appropriate stage of the Project by using proper signage, educating all workers. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
- .4 The Proponent is required to maintain way-bills, invoices and other documentation confirming that all materials have been transported to the required locations, and to submit this documentation at the completion of the Project if requested.
- .5 Refer to Sub-division 01 74 00 (Cleaning), for "Progressive and Final Cleaning".

1.6 WASTE MANAGEMENT PLAN IMPLEMENTATION

- .1 For all projects, a waste management plan should be developed and prior to demolition and construction stage. A copy of the plan must be submitted to the consultant.
- .2 List of compulsory material to be recycled, shall include, at minimum, the following designated materials:
 - .1 Clean dimensional wood, palette wood
 - .2 Concrete/Brick/Concrete Block/Asphalt
 - .3 Drywall (asbestos free)
 - .4 Scrap metal
 - .5 Corrugated cardboard
- .3 Material Handling: Where space permits, source separation shall be provided. Where materials must be co-mingled the Contractor shall arrange appropriate bins and also arrange for bins to be taken to a processing facility for separation offsite.
- .4 Transportation: The Contractor may engage a haulage subcontractor or make each subcontractor responsible for their own waste, in some cases the Contractor may self haul. In any case compliance with the project requirement is mandatory to all contractors.
- .5 Destination Facilities: Recycled material that are diverted from landfill and sent to alternative to landfills such as recycling facilities or used building material yard. Materials that are sent to landfills or waste-to-energy facilities cannot be reported as recycled material.
- .6 The Construction Waste Management Tracking Form is to be filled out, signed, and submitted, by the Contractor, at following stages: .1 completion of demolition (if applicable);
 - .1 50% construction progress claim; and
 - .2 Substantial Performance of the Work or Ready-for-Takeover (whichever is applicable to the Contract).

For each material salvaged, recycled or disposed from the project, amount (in cubic yard or tonnes or in the case of salvaged item state quantities by number, type and size of items) and the destination (i.e. recycling facility).

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.
- .2 The closeout documents shall be prepared by the *Contractor* and submitted to the *Consultant* and *Owner* for an initial review prior to the completion of the *Work*. Following this review and responding to the comments, the *Contractor* must submit the completed documents to the *Owner* no later than thirty (30) *Working Days* after the date of *Substantial Performance of the Work* or the issue of the Certificate of Completion (whichever is earlier), or, when applicable under varying contract types, *Ready-for-Takeover* is achieved.

1.2 RELATED DOCUMENTS

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- .2 Section 01 35 43 Environmental Procedures.
- .3 Section 01 91 00 Building Commissioning
- .4 Section 10 14 00 Code Signage
- .5 See also Draft Occupancy Checklist (attached)

1.3 CONTRACT ACCEPTANCE PROCEDURES

- .1 Prior to requesting Consultant's inspection for Substantial Performance:
 - .1 Ensure Work is ready for use for purpose intended.
 - .2 Review Contract Documents and inspect Work to confirm prerequisites to Substantial Performance of Work have been fulfilled and that Work is ready for inspection for Substantial Performance.
- .2 Submit written request to Consultant for inspection for Substantial Performance of the Work, certifying prerequisites have been fulfilled and specifying known exceptions in the form of a list of items to be completed, corrected or submitted and date which items on list will be complete.
- .3 Results of Consultant's inspection for Substantial Performance will form initial Contract Deficiency list.
- .4 Following inspection, Consultant will:
 - .1 Issue a Letter of Substantial Performance stating effective date of Substantial Performance of Work, with a copy of the Contract Deficiency list attached thereto, or
 - .2 Advise Contractor that prerequisites to Substantial Performance are not fulfilled and repeat inspection for Substantial Performance as necessary.
- .5 Upon issuance of Letter of Substantial Performance, Owner will assume responsibility for care, custody and control of the Work.
- .6 Prior to requesting Consultant's inspection for Substantial Performance, Trade Contractor shall do the following:
 - .1 Ensure that Work, except those items arising from the warranty provisions of Contract Documents, has been performed to the requirements of Contract Documents.
 - .2 Review Contract Documents and inspect Work to confirm that prerequisites for Substantial Performance of Work have been met and that Work is ready for inspection for Substantial Performance.

- .7 Submit written request to Consultant for inspection for Substantial Performance of Work, including copy of Consultant's most recent Contract Deficiency list, and certifying that each Contract Deficiency has been corrected or otherwise resolved in a manner agreed to between Consultant and Trade Contractor. List known exceptions, if any, in request.
- .8 Following inspection, Consultant will:
 - .1 Issue a Letter of Substantial Performance, stating effective date of Substantial Performance of Work, or
 - .2 Advise Trade Contractor of Contract Deficiencies which must be corrected prior to issuance of Letter of Substantial Performance.

1.4 FINAL CLEANING

- .1 Perform final cleaning prior to request for inspection for Substantial Performance of the Work.
- .2 Remove grease, paint spots, dirt, dust, stains, labels, fingerprints and other foreign matter from interior and exterior surfaces; vacuum and dust behind grilles, louvres and screens; wash floor surfaces not otherwise finished; clean metal doors and frames; clean metal work; clean equipment; clean hardware; clean and polish glass on both sides; clean and polish mirrors.
- .3 Use low Volatile Organic Compound (VOC) emitting cleaning products that do not damage substrates and that are certified by Green Seal or The Environmental Choice Program.
- .4 Repair, patch and touch-up marred surfaces to match adjacent finishes.
- .5 Replace cracked and broken glass.
- .6 Ensure that cleaning agents and methods do not remove finishes and permanent protective coatings on surfaces being cleaned.
- .7 Remove waste, surplus materials and temporary facilities from the site, including construction fencing.
- .8 Leave all surfaces in perfectly clean and unsoiled condition.
- .9 Final Cleaning Environmental Issues:
 - .1 Clean interior and exterior surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces using approved cleaning and maintenance products.
 - .2 Clean equipment and fixtures to sanitary condition using cleaning and maintenance products as described in Part 1 of this Section. Products should be certified under the Environmental Choice or Green Seal Program.
 - .3 Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) vacuum.
 - .4 Clean ducts as specified under Division 22 Plumbing and Division 23 Heating, Ventilating and Air Conditioning.
 - .5 Replace all air filters (i.e., pre and final filters) just prior to Substantial as specified under Division 22 Plumbing and Division 23 Heating, Ventilating and Air Conditioning.
 - .6 Remove and properly dispose of recyclable materials.

1.5 PROJECT RECORD DOCUMENTS

- .1 Definition: As-Built *Drawings* means drawings prepared by the *Contractor* by marking the changes that occur during construction on a copy of *Drawings*, including, but not limited to, the exact dimensions, geometry and location of the major building components that were shown generally on the *Drawings*.

- .2 Provide one set of prints for record drawing purposes. Store record documents in site office apart from documents used for construction.
- .3 Maintain project Record Drawings separate from Construction Drawings and record out of sight deviations from Contract Documents caused by Site Conditions. Mark changes in red coloured ink.
- .4 Record changes and variations from Contract Drawings concurrently with construction process. Do not conceal any work until required information is recorded.
- .5 Legibly mark project record drawings to record actual construction, including:
 - .1 Measured locations of internal utilities and appurtenances concealed in construction.
 - .2 Out of sight field changes of dimension and detail.
 - .3 Out of sight changes to equipment layout and services.
- .6 Submit project record drawings to all Consultants before, or with, request for inspection for Substantial Performance.
- .7 Upon completion of the *Work*, the *Contractor* should employ the *Consultants* to produce one (1) copy of white print signed and certified by the *Contractor* per sample Certificate of Record below, and two (2) sets in high-quality indexed electronic format (e.g., CD, USB) for both PDFs and CAD drawings that include all As-Built conditions noted on the *Contractor's As-Built Drawings* and PDF *Specifications*.
- .8 The *Contractor* must sign each drawing and provide one (1) Certificate of Record for the drawing set as illustrated in the following paragraphs, signed by persons authorized to sign on behalf of the *Contractor*.
- .9 Acceptance of the As-Built *Drawings* and *Specifications* shall be subject to the review and approval of the *Consultant(s)*. The *Consultant(s)* shall provide all the comments to the *Contractor* within fifteen (15) *Working Days* after receipt of these documents.
- .10 Include two (2) copies of *Specifications* with *Contract* modifications, Addenda, *Change Orders*, and Site Instructions in PDF on high-quality indexed electronic format.
- .11 Following this review and responding to the comments, the *Contractor* must submit the completed documents to the *Owner* no later than thirty (30) *Working Days* after the date of *Substantial Performance of the Work* or the issue of the Certificate of Completion (whichever is earlier), or, when applicable under varying contract types, *Ready-for-Takeover* is achieved
- .12 **SAMPLE CONTRACTOR'S CERTIFICATE OF RECORD**

I/We (name of Contractor) hereby certify that the set of As-Built *Drawings* attached hereto, comprising (-) sheets, is a complete and total record of the building(s) as constructed.

We further certify that the drawings show accurately all structural details, all mechanical and electrical services, exposed or hidden and that the *Owner* may fully rely on their accuracy in any future contemplated repairs, modifications, or additions to this **DELETE** work **ADD Work**.

Signed by

Contractor: _____

Name of *Contractor*: _____

Per: _____

Date: _____

Witnessed by: _____

Date: _____

.13 Construction Waste Management Tracking Form

- .1 The *Contractor* must complete the "Construction Waste Management Tracking Form" as part of the closeout requirements. The form is to be completed by the *Contractor*, signed, and submitted to Owner at the following stages(s): completion of demolition (if applicable), 50% construction progress claim, and *Substantial Performance of the Work* or the issue of the Certificate of Completion (whichever is earlier), or, when applicable under varying contract types, *Ready-for-Takeover* is achieved. Refer to [Section 2 — Energy and Environmental Design](#) for additional information.

.14 Gas And Electricity

- .1 The occupancy date shall be the date of turnover of all gas and electricity billings to the *Owner*. The *Contractor* shall notify the gas and electricity suppliers and the *Owner* in writing as to the date of billing turnover at least forty-five (45) *Working Days* prior to such date.
- .2 The *Owner* shall be responsible for notifying the gas and electricity suppliers of start-up billing failing which the *Owner* shall reimburse the *Contractor* for all charges accruing thereafter

.15 Utility Incentive And Rebate Documentation

- .1 The *Contractor* will provide all documentation necessary to apply for all applicable incentives within 30 days of equipment purchase to the staff responsible for managing the project. The related documents are, but not limited to, appliance invoices, lighting invoices, exhaust fan invoices, boiler invoices, and any related mechanical equipment invoices. Invoices must state the manufacturer, model, unit price, quantity, and physical installation address. For the appliances, lighting, and exhaust fans, a suite or unit breakdown should be provided outlining corresponding lighting and appliances, including make, model type and confirmation of ENERGY STAR® rating. Refer to [Section 2 — Energy and Environmental Design](#) for additional information.

.16 Upon completion, the Contractor shall submit two (2) hard copies in 3 ring binders with printed and laminated tabs for each section, and one (1) copy in electronic PDF format plus original text files using .docx (Microsoft Word) for text and .dwg, for site/building plans.

.17 The Contractor is responsible for completing (including costs) all application and registration process, including permits in all jurisdictions where required.

.18 The directional/information plaques in the building can be provided by this company or the contractors designated sign company. See also Section 10 14 00

1.6 PROVIDE ONE SET OF PRINTS FOR RECORD DRAWING PURPOSES. STORE RECORD DOCUMENTS IN SITE OFFICE SUBMISSION OF PROJECT RECORD DOCUMENTS

- .1 Submit completed project record documents before, or with, application for Substantial Performance of the Work.
- .2 Submit with each submission a covering letter including Date of Submission, Contractor's name, address and telephone number.
- .3 Provide "Certificate of Record – As Built Drawings" form.

1.7 OPERATION AND MAINTENANCE DATA

- 1. Provide a detailed index and a summary checklist of items to be maintained, including required preventative maintenance time scale. Also highlight the methodology and scope which can be readily cut and pasted onto work orders or separate scopes of work for bid purposes and/or instruction to in-house maintenance staff.
- 2. Manuals are to contain pertinent care, maintenance, operational and installation information for all building materials, finishes, components, equipment and systems. Instructions in the manuals to be in plain language so as to guide the Owner in the proper operation and maintenance of the building.
- 3. Manuals shall be prepared by experienced and qualified staff or consultants. Acceptance of the maintenance manuals shall be subject to the review and approval of the Consultant.
- 4. Provide information for future operating staff to understand and optimally operate the commissioned systems and how to effectively recommission the systems to prolong the service life, decrease energy consumption, and reduce operational, maintenance and replacement cost.

.1 Requirements

- .1 Submit a draft copy of the tables of contents for the manuals 30 days prior to the date of Substantial Performance of the Work or *Ready-for-Takeover* (whichever is applicable to the *Contract*), for review by the Consultant.
- .2 Submit completed maintenance manuals with application for Substantial Performance of the Work or *Ready-for-Takeover* (whichever is applicable to the *Contract*), for review by the Consultant. Include an indexed demonstration video of all mechanical, electrical systems and electrically-operated devices, bed-bug room operation and any other systems (requested by the Consultant) to the Owner's operating and maintenance staff and any training required by the specifications, to the Owner's satisfaction.
- .3 Submit one (1) set of final hardcopy maintenance, operating and instruction manuals and two (2) sets in high quality indexed electronic format (e.g. CD, USB) PDF to the Owner no later than thirty (30) working days after the date of Substantial Performance off the Work

or the issuance of the Certificate of Completion (whichever is earlier), or, when applicable under varying contract types, *Ready-for-Takeover* is achieved.

.4 Complete reports including a balancing report for all mechanical systems and certification by all testing, cleaning or inspection authorities as specified in the contract documents.

.5 Include summary of items covered by change orders.

.6 Include summary of equipment and systems that require periodic filter change, manufacturer's inspection (if required) and city inspection (if any) and provide the schedule for maintenance staff.

.7 Provide a list of spare parts for the equipment and system that was provided as per contract documents.

.8 Include any equipment supplied by the Owner, Contractor installed (OSC) equipment.

.9 Include development permit, building permit, occupancy permit and letters of assurance.

.10 Include all warranty information, contact information for inquiries, warranty period start dates, expiry dates, and a brief description of any commentary related to warranty coverage or limitations. Warranty information is to be compiled into one document that can be easily referenced by the Owner.

.11 Include performance bond and/or maintenance bonds.

.12 Include Letter of Credit (if applicable) issued to cover the performance and completion of site services.

.13 Format: Bind manual contents into hard plastic coated three-ring binders, complete with coloured plastic tabs organizing contents into applicable categories of Work, based on the specifications for the project. Label the cover and spine of the manuals with the name of the project and manual contents. Descriptions and lists are to be neatly typed or printed on 216 mm x 280 mm (8" x 11") heavy bond paper.

.14 Provide copy of appliance user manuals, to be located in each suite, copy in main manuals.

1.8 ORGANIZATION OF MANUALS

.1 Section 1.0 – Directory

.1 Provide a directory listing the names, addresses, telephone and facsimile numbers of Consultant, Engineering Consultants, Contractor, Subcontractors, major equipment, product and equipment suppliers and service contract providers (e.g., alarm system, elevator, mechanical). Include emergency contact names. Also outline duration of warranties, including start and expiry dates.

.2 Section 2.0 – List of Drawings and Specifications

.1 Provide a complete list of drawings and specifications. Provide list of shop drawings and test reports for the project in their own sections.

.3 Section 3.0 – Architectural (Including Landscaping, Building Envelope, Finishes)

.1 Provide care, cleaning and recommended maintenance instructions for finishes and materials as specified.

.2 Provide operation and maintenance instructions for equipment such as (but not limited to) overhead doors, landscape irrigation systems and elevators. Provide descriptive and technical data, maintenance and operating procedures, wiring diagrams, spare parts lists, name of service representative, suppliers for replacement parts, trouble shooting

data and preventive maintenance program complete with maintenance and renewal checklists.

.3 Submit a backup copy of the elevator control system software.

.4 Provide copy of finish hardware schedule, paint schedules (interior and exterior), and caulking and sealant schedules, complete with the manufacturer, supplier and identification names and numbers.

.5 Provide inspection and approval certificates from authorities having jurisdiction.

.6 Provide RCABC and MPI 2 year Maintenance Bond and documentation.

.7 Provide a copy of all warranty and guarantee certificates as specified.

.8 Provide a copy of the Homeowner Protection Office (HPO) Building Envelope Renovation, Schedule, where applicable.

.9 Submit a list of chattels, if any, including make, model and serial number provided by the Contractor for the project.

.10 Provide the copy of air tightness testing and any energy and sustainable certification for the project.

.11 Remove all construction key and replace with permanent (*Owner's*) security master keying. Provide a controlled lockable key cabinet for operator usage.

.12 Confirmation letter of extra replacement materials, and system demonstration to operator.

.13 Provide completed Integrated system testing report outlined in Sub-division 01 91 00 - Building Commissioning

.4 Section 4.0 – Mechanical

Provide an index with the following headings:

.1 Mechanical Drawing List including all shop drawings (sprinkler, variation isolations, valves tag and flow diagram, air handing unit / make-up air unit, HRVs, fan coils and grille, radiant

heating (if provided), sump pumps and all other pumps, plumbing fixtures and drains, heat pumps or any preheating systems, control shop drawings, and any other)

- .2 Description of Systems
- .3 Mechanical System service, maintenance, operation and troubleshooting data
- .4 Required preventative maintenance schedule, belt schedule, filter schedule, and lubrication schedule for all equipment and systems
- .5 Subtrade and supplier list equipment repair manuals
- .6 List of spare parts provided as per contract documents
- .7 Chemical treatment certificates, hydrostatic and air test certificates
- .8 Final 3rd party independent testing adjusting and balancing reports
- .9 Valve tag schedule, piping colour code
- .10 Equipment start up reports and operating instruction for each systems and components equipment performance verification test results, and contractor's pre-functional testing reports
- .11 Functional testing reports and final commissioning tracking checklist showing the completion of commissioning activities
- .12 Guarantee certificate, final inspection certificates, warrantee certificates
- .13 Controls "as built" drawings, control schematics for equipment/systems and sequence of operation
- .14 WHMIS Information
- .15 Training manuals
- .16 Documentation of all equipment and system information, such as model number, serial number, engineer's review, inspections by authority having jurisdiction
- .17 Final commissioning report from the commissioning provider or contractor's independent commissioning agent
- .18 Under each of the above headings, provide the following information, arranged under separate tabs, for each system and major piece of equipment:

- .1 Descriptive and Technical Data

Include detailed description of the system and components, an explanation of how each component interfaces with others and the location of each thermostat and all controls.

- .2 Operating Procedures

- .1 Provide complete and detailed operation of each major component
- .2 Include starting procedure, exact switch and control location
- .3 Describe operation of component controls, changes required for summer or winter operation and method of making changes
- .4 Describe trouble shooting sequence when settings cannot be maintained
- .5 Describe safe guards to check if equipment goes off line
- .6 Describe fire protection and smoke control

- .3 Maintenance and Lubrication

- .1 Provide detailed preventive maintenance schedule for each of the major components
including daily, weekly, monthly, semi-annual and yearly checks and tasks
 - .2 Describe lubrication and maintenance procedures for equipment components such as bearings, drives, motors and filters. Include recommended lubricants
 - .3 Compile this information for each typical piece of equipment
 - .4 Provide a belt schedule
- .4 List of Equipment Supplier, Subcontractors and Servicing Companies
 - .1 Provide a complete list of local equipment Supplier of parts, Subcontractors and reputable and qualified Service Companies, including address and telephone numbers
 - .2 Outline procedures for purchasing parts and equipment
 - .3 Provide a detailed description including drawings, dimensions, parts list and repair manual for each piece of equipment specified
- .5 Certification and Test Results
 - Include copies of the following:
 - .1 Pre-operational cleaning reports and chemical treatment
 - .2 Hydrostatic and air tests performed on piping systems
 - .3 Equipment alignment certificates
 - .4 Balancing reports for air and water systems
 - .5 Valve tag identification schedule including location, service and normal position
 - .6 Pipe colour code
 - .7 Inspection and approval certificates for plumbing and gas systems and heating and ventilation systems
 - .8 Equipment startup reports
 - .9 Warranty certificates
- .6 Shop Drawings
 - Include copy of all reviewed shop drawings.
- .5 Section 5.0 – Electrical
 - Provide an index with the following headings:
 - .1 Switch gear and distribution
 - .2 Lighting fixtures and lamps
 - .3 Fire alarm system
 - .4 Emergency generator system
 - .5 Mechanical motor control equipment
 - .6 Communication systems
 - .7 Security system
 - .8 Personal call system (if any)

- .9 Fire safety plan
- .10 Integrated system testing report outlined in Section 01 91 00 Building Commissioning
- .11 Any further testing reports outlined in Section 01 91 00 Building Commissioning
- .12 Under each of the above headings, provide the following information, arranged under separate tabs, for each system and major piece of equipment:
 - .1 Descriptive and technical data
 - .2 Maintenance and operating procedures
 - .3 Wiring diagrams
 - .4 Spare parts list
 - .5 Service representatives
 - .6 Suppliers for replacement parts
 - .7 Test results and final vitrification reports
 - .8 Certifications and warranties
 - .9 Troubleshooting, operational and performance data
 - .10 Preventive maintenance program complete with checklists.

.3 Schedule of Maintenance Manuals Submittals

- .1 The Contractor shall ensure that all manufacturer product information required by the Owner to maintain the building is included in the Maintenance Manuals.
- .2 Include a copy of all reviewed shop drawings as noted in the Schedule of Maintenance Manual Submittals, or as requested by the Consultant.

1.9 SPARE PARTS AND MAINTENANCE MATERIALS

- .1 Deliver specified spare parts, extra material and maintenance materials before request for inspection for Substantial Performance, as identified in each relevant Specification Section.
- .2 Provide spare parts manufactured by original equipment manufacturer,
- .3 Provide maintenance materials identical to those installed.
- .4 Use unbroken cartons, or if not supplied in cartons, they shall be securely packaged. Identify, on carton or package, name of item, colour or part number, as applicable. Identify equipment, system, area, room no., etc. for which each item is intended.
- .5 Stored items shall remain in Trade Contractor's care, custody, and control until Substantial Performance of the Work. Protect stored items against theft or damage.
- .6 Prior to requesting Consultant's inspection for Substantial Performance, do the following:
 - .1 Review Contract Documents and compare with inventory list to verify that all required items have been delivered.
 - .2 Verify that items listed on inventory list are in their designated storage locations.
 - .3 Inspect items to verify that they meet specified requirements and are in serviceable condition.
 - .4 Arrange for delivery of any missing items.
 - .5 Arrange for replacement of items not meeting specified requirements or not in serviceable condition.

- .6 Provide Consultant with copy of inventory list indicating status of all required items.
- .7 Review inventory list with Consultant during Consultant's inspection for Substantial Performance.
- .8 For items not delivered prior to Substantial Performance of the Work, provide a duplicate copy delivery slip and obtain Consultant's signature upon delivery. Consultant will only accept responsibility for care, custody, and control of items properly received and signed for.

PART 2 - PRODUCTS

- .1 Not Used.

PART 3 - EXECUTION

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide concrete formwork required by Section 03 30 00 Cast-in-Place Concrete with accessories including the following.
 - .1 Design, supply and erect formwork components required to confine concrete and shape it to required dimensions.
 - .2 Provide formwork with adequate strength to resist damage from removal operations.
 - .3 Install sleeves, ties, anchor bolts, blockouts, reglets, and other embedded items supplied under other sections.
 - .4 Provide re-shoring as required to safely distribute weight of newly placed concrete, forms, and construction live loads to support floors on ground.
- .2 Refer to Structural Drawings.

1.2 RELATED SECTIONS

- .1 03 20 00 Concrete Reinforcement.
- .2 03 30 00 Cast-In-Place Concrete.

1.3 REFERENCES

- .1 BC Building Code current Edition.
- .2 CSA A23.1-04/A23.2-04 Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
- .3 CSA-S269.3-M92/R98, Concrete Formwork.

1.4 SYSTEM DESCRIPTION / DESIGN

- .1 Refer to Structural Notes.

1.5 QUALITY ASSURANCE

- .1 Installer Qualifications: Provide at least one person who shall be present during execution of the work, who shall direct the work, and who is thoroughly familiar with the type of materials being installed, the referenced standards, and the requirements of the work.
- .2 Pre-Installation Conference: Review forms and shoring removal times with Consultant at commencement of project.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Obtain delivery of materials supplied under other Sections and to be installed under this Section. Obtain latest revisions of approved setting drawings, instructions and template.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Refer to Structural Notes.

2.2 ACCESSORIES

- .1 Provide accessories and other materials, not specifically described but required for proper completion of concrete formwork, selected by Contractor, subject to Consultant's advance approval.
- .2 Fasteners for formwork and installation of bands, reglets and reveals shall be galvanized or approved non-corrosive steel materials.
- .3 Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces, as recommended by forming material manufacturer.

- .1 Formulate form-release agent with rust inhibitor for steel form-facing materials.
- .2 Bond Breaker: 6 mil polyethylene or water based chemical bond breaker as recommended by topping manufacturer must meet ULC requirements for inclusion in a rated assembly and subject to approval of structural engineer.
- .4 Form Stripping Agent: Colourless mineral oil, free of kerosene.
- .5 Joint-Filler Strips: ASTM D1752, cork or self-expanding cork.
- .6 *Bentonite water stops, as required at cold joints in concrete*

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verify lines, levels, and column centres with Installer present before proceeding with formwork. Ensure dimensions agree with drawings. Correct unsatisfactory conditions.

3.2 PREPARATION

- .1 Carefully examine drawings, reviewed Shop Drawings, and specifications, and consult with other trades to determine requirements for provision of blockouts, sleeves, chases and embedded items.
- .2 Provide temporary openings at bottom of wall and column forms and at other locations required to permit cleaning and observation prior to pouring.
- .3 Review locations for vertical joints and coordinate with below grade water proofing requirements.
- .4 Camber: Provide cambered formwork to suit cambers indicated and as noted on structural drawings.
- .5 Chamfers: Provide 45 degree 19 mm (3/4 in.) nominal chamfer to corners of permanently exposed concrete surfaces.
- .6 Joint Locations: Ensure joint locations are as indicated on reviewed Shop Drawings.
- .7 Remove debris from areas where formwork is to be constructed.

3.3 FORMWORK

- .1 Formwork shall comply with the requirements of CSA Standard A23.1, Clause 11.
- .2 Refer to architectural drawings for location, details, and finishes for exposed concrete surfaces.
- .3 Form and set slots, sleeves, bolts, hangers, inserts, and conduit, and ensure items are secure and not displaced during placing of concrete.
 - .1 Do not locate conduits, outlet boxes, or other items within columns or shear walls unless approved by Consultant prior to construction.
 - .2 Do not permit installation of conduits in slabs and walls that are larger than one third of the slab or wall thickness. Place conduit within slab's middle third.
- .4 Ensure subsidence of formwork due to sinking of sills, compression of supporting materials, and tightening of joints, does not adversely affect line or grade of final concrete surface.
- .5 Coating and Cleaning:
 - .1 Coat form surfaces with approved non staining form release agent that will permit bonding of finishes to concrete surfaces prior to placing reinforcing steel and concrete.
 - .2 Previously used forms are not to be used for exposed exterior concrete if there is any evidence of surface wear and tear that will impair quality of concrete.
 - .3 Thoroughly clean and properly coat forms as recommended by manufacturer before each reuse.

- .4 Ensure forms and embed items are free from accumulated mortar, grout, or other matter from previous concreting.
- .5 Ensure forms are without patches, broken edges, or joint width greater than 1.5 mm, except for temporary opening required above.
- .6 Ties:
 - .1 Terminate internal tie systems not closer than two (2) diameters or twice the minimum dimension of tie from formed faces of concrete to be permanently exposed to view, except that in no case shall this distance be less than 19 mm (3/4 in.).
 - .2 Use form ties so that ends can be removed without appreciable concrete spalling. Grout holes.
 - .3 Ensure ties are located in an orderly arrangement. Where tie locations are concealed locate in orderly fashion with minimum spacing of 600 mm (24 in.) on center each way.
- .7 Inserts:
 - .1 Set reglets, ties, anchor bolts and other inserts, block outs, chases and sleeves in concrete walls, as required by other trades.
 - .2 Ensure no sleeves, ducts, pipes or other openings pass through beams or walls except where indicated.
 - .3 Check sleeves and similar openings, indicated on structural drawings with the architectural and mechanical drawings. Do not permit additional sleeves or openings without Consultant's pre-approval.

3.4 TOLERANCES

- .1 Tolerances for concrete work shall conform to CSA Standard A23.1, Clause 10. Follow CSA standards except as noted below.
- .2 Variation from level or grade as indicated on the drawings for slab surfaces, beam soffits, lintels, sills, horizontal grooves, parapets and other conspicuous lines to be 6 mm (1/4 in.) in 6096 mm (20 ft.) or 9 mm (3/8 in.) in any bay.
- .3 Variation from plumb in surfaces of columns, walls, pilasters, beams, vertical joints or grooves, or other conspicuous lines to be 6 mm (1/4 in.) in the greater of 10 feet (3048 mm) or one storey height, and 13 mm (1/2 in.) in total height.
- .4 Variation from cross-section dimension as indicated on the drawings of columns, beams, slabs, and walls to be minus 6 mm (1/4 in.) to plus 9 mm (3/8 mm).
- .5 Variation of building lines in plan and position of columns and walls to be 13 mm (1/2 in.) in any bay or 6096 mm (20 ft.) maximum. Surfaces adjacent property lines must not project beyond property lines. Lines of vertical elements above and below floor level shall align within 6 mm (1/4 in.).
- .6 Variation in steps of stairs to be 3 mm (1/8 in.) for risers and 6 mm (1/4 in.) for treads, otherwise as indicated.

3.5 INSPECTION

- .1 Obtain inspection and approval of formwork by Consultant immediately prior to pouring.
- .2 Continuously inspect formwork during and after pouring. Adjust shores to take up all settlement during concreting operations.

3.6 OBSERVATION

- .1 Continuously observe formwork while concrete is being placed and check that no deviation from desired alignment, elevation, plumb or camber occurs.
- .2 If deviation occurs, or a weakness develops stop work, repair damage, and strengthen formwork. Remove and replace permanently damaged construction.

3.7 REMOVAL OF FORMS

- .1 Obtain the Structural Engineer's approval before removing formwork.
- .2 Removal of form ties shall be done carefully to avoid marking concrete and to allow for patching. Grout bottom of form tie hole to prevent rust staining.

3.8 COMPLETION

- .1 On completion of Work make good all damage to Work and adjoining Work. Remove from site all surplus materials, debris, tools, plant and equipment and leave site in a condition satisfactory to Consultant.

3.9 PROTECTION

- .1 Protect cast-in-place concrete materials before, during, and after installation, and protect installed work and materials of other trades.
- .2 In the event of damage, immediately make repairs and replacements necessary to Consultant's approval at no additional cost to Owner.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide concrete reinforcing steel, accessories, support bars, tools, as indicated and specified.
- .2 Provide reinforcing steel and accessories for reinforced masonry as indicated and specified.
- .3 Supply, fabricate, place, and secure reinforcing steel and accessories.
- .4 Supply and place reinforcing mesh.
- .5 Refer to Structural Notes, Landscape notes.

1.2 RELATED SECTIONS

- .1 03 10 00 Concrete Formwork and Accessories.
- .2 03 30 00 Cast-In-Place Concrete.
- .3 Concrete Unit Masonry Assemblies: refer to Structural.

1.3 REFERENCES

- .1 CAN/CSA-A23.1-04, Concrete Materials and Methods of Concrete Construction.
- .2 CAN/CSA-A23.3-04, Design of Concrete Structures.
- .3 CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement.
- .4 CAN/CSA-W186-M1990 (R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .5 BC Building Code and Trail Bylaws, current Edition.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures and Structural Notes.

1.5 QUALITY ASSURANCE

- .1 Inspections: Give Consultant at least twenty-four (24) hours notice for reinforcing inspection.
 - .1 Do not place concrete before Consultant has inspected the placed reinforcement.
 - .2 Arrange and pay for inspection of rejected reinforcement placement within twenty-four (24) hours of receiving rejection notice.
 - .3 Replace concrete placed without Consultant's approval at no cost to Owner.

1.6 DELIVERY AND STORAGE

- .1 Deliver, handle and store reinforcing steel, welded wire fabric and accessories so as to prevent contamination from bond-reducing foreign matter and damage to fabricated form. Ship bundles of bar reinforcement, identified clearly in accordance with bar list.

PART 2 - PRODUCTS

- .1 Refer to Structural Notes and Landscape Notes/details
- .2 Concrete Sidewalks
 - .1 Concrete sidewalks and paving to be constructed, reinforced and finished to suit municipal bylaws, BC Ministry of Transportation (MOT) Standard and engineering standards.
 - .2 Standard grey sand and cement concrete paving to the exterior areas conforming to applicable exposure class C2 of the CAN/CSA A23.1.
 - .3 Slope paving to drain minimum 2%. Provide expansion and contraction joints to suit and at junction of paving and building. Expansion joints are to be at maximum 4.57 m (15') on

center. Apply consistent broom finish to sidewalks and paving areas; all paving with broom finish to have tooled joints.

- .4 Concrete paving or sidewalks installed directly on top of base structure, shall be 100 mm (4") thick minimum, reinforced with 152 mm x 152 mm (6" x 6") — 4/4 welded wire mesh or 10M at 457 mm (18") o/c each way, adequately chaired to mid depth. Minimum requirement unless more restrictive requirements noted in Structural or Civil Drawings.
- .5 Concrete paving or sidewalks installed on 150 mm (6") minimum gravel or sand base, shall be 100 mm (4") thick minimum, reinforced with 152 mm x 152 mm (6" x 6") — 2/2 welded wire mesh or 10M at 457 mm (18") o/c each way, adequately chaired to mid depth. Minimum requirement unless more restrictive requirements noted in Structural or Civil Drawings.
- .6 See Geotechnical required for confirmation of sub base.

EXECUTION

2.2 PLACING

- .1 Refer to Structural Notes, Civil and Landscape Notes/details

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide cast-in-place concrete with accessories for a complete installation as indicated and specified.
- .2 Provide keys and dowels in construction joints. *Provide water stops as required.*
- .3 Provide curing compounds, sealers and hardeners.
- .4 Provide landscape concrete including retaining walls, sidewalks, toppings, curbs, and pads for mechanical equipment, landscape furnishings, sheds, gazebo, garbage area, etc., as shown on civil, landscape drawings OR architectural drawings.
- .5 Provide housekeeping pads for mechanical equipment as indicated and required in mechanical rooms, and any other locations indicated on the drawings. Refer also to Structural drawings.
- .6 Provide concrete pads for prefabricated storage sheds and gazebo as shown on the Landscape plans and Site Plan. Refer also to Structural drawings.
- .7 Install prefabricated inserts provided by others.
- .8 Comply with the provisions of local building ordinances, bylaws and regulations of authorities having jurisdiction. Furnish such notification and reports and pay fees to authorities as required.
- .9 Concrete work shall comply with requirements of WorkSafe BC, Industrial Health and Safety Regulations, and the Canadian Construction Safety Code.
- .10 Refer to Structural Notes, Landscape Notes and Details.

1.2 RELATED SECTIONS

- .1 03 10 00 Concrete Forming and Accessories.
- .2 03 20 00 Concrete Reinforcing.
- .3 03 30 01 Mix Design Form.

1.3 REFERENCES

- .1 ACI 305R-10, Hot Weather Concreting.
- .2 ACI 306.1-90(R2002), Standard Specification for Cold Weather Concreting.
- .3 ASTM C94/C94M-15B, Standard Specification for Ready-Mixed Concrete.
- .4 ASTM C150-16, Standard Specification for Portland Cement.
- .5 ASTM D448-12, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
- .6 ASTM E1155-14, Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.
- .7 CSA A23.1-14/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete INCLUDING UPDATE #1(2015)
- .8 CAN/CSA A23.3-14, Design of Concrete Structures.
- .9 CAN/CSA A23.4-16, Precast Concrete - Materials and Construction.
- .10 CSA A3000-13 Including updates 1 thru 4 (2014) Cementitious Materials Compendium.
- .11 CAN/CSA G30.18-M92 (R2007), Billet-Steel Bars for Concrete Reinforcement.
- .12 CAN/CSA W186-M1990 (R2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .13 CSA S269.3-M92 (R2013), Concrete Formwork.

1.4 SYSTEM DESCRIPTION

- .1 The design life of concrete shall be 100 years.

1.5 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: For each manufactured material and product indicated.
- .3 Design Mixes: Submit mix design for each concrete mix indicated, prior to ordering materials.
- .4 Certificates and Reports: Material certificates and test reports including shrinkage test reports.
 - .1 Obtain and pay for a CSA certified inspection agency to review concrete mix designs and perform concrete testing in accordance with CAN/CSA A 23.1
- .5 Refer to Structural Notes.

1.6 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment.
- .2 Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- .3 Pre-installation Conference: Conduct conference at Project site with General Contractor, Consultant, and concrete supplier present.
- .4 Concrete Finishes: Below Grade: Refer to Section 07 11 00 Dampproofing and Waterproofing.
 - .1 Testing of Concrete Finishes: Perform testing of concrete finishes on selected areas as directed by Consultant to demonstrate quality of finishes prior to undertaking finishing work. Repeat as required until Consultant approves. Proceed with finishing work upon Consultant approval.

1.7 COORDINATION

- .1 Cooperate with other trades to permit proper execution of Work.
- .2 Consult with other trades to ensure exact location and extent of items supplied and work required by other trades, which are to be incorporated into concrete work.

1.8 DELIVERY AND HANDLING

- .1 Deliver concrete from a plant approved by Consultant. If problems of delivery or quality control of concrete occur, Consultant has the right to require a change to another supplier.

1.9 PROJECT CONDITIONS

- .1 Meet requirements of CAN3-A23.1, Clause 21, for protection including hot weather protection, cold weather protection, and preparation and cooling after protection.
- .2 Meet requirements of CAN 3-A23.1, Clause 28, architectural concrete for exposed concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Materials for concrete shall conform to requirements of CSA A23.1. Do not use calcium chloride or admixtures containing chlorides, fluorides, or nitrates.
- .2 Refer to Structural Notes.

2.2 ACCESSORIES

- .1 Curing Compounds: Where permitted or specified, shall be a liquid, membrane forming, curing compound containing a fugitive dye and meeting the requirements of ASTM C309, applied at manufacturer's recommended rate. Product: Sternson's Florseal, or other approved alternative.
- .2 Concrete Sealer: Refer to Section 09 90 00 Painting and Coating.
- .3 Non-Metallic Hardener: Non-coloured, non-metallic hardener. Product: Sika Colorplete Natural, or approved alternative.

- .4 Curing Materials:
 - .1 Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - .2 Absorptive Cover: AASHTO M182, Class 2, burlap cloth made from jute or kenaf.
 - .3 Moisture-Retaining Cover: ASTM C171, polyethylene film, or white burlap-polyethylene sheet.
 - .4 Water: Potable.
 - .5 Membrane-Forming Curing Compound:
 - .1 ASTM C309, Type I.
 - .2 Moisture loss not more than 0.55 kg/sq. meter when applied at 200 sq. ft./gal.
- .5 Granular Fill: Refer to Section 31 00 00 Earthwork.
- .6 Waterseals and waterstops: Refer to Section 03 10 00 Concrete Forming and Accessories.
- .7 Vapour barrier under slabs on grade. Refer to Section 03 10 00 Concrete Forming and Accessories.
- .8 Joint spacers, separators, expansion locations are not to be asphaltic or fibre type. To be polypropylene type.
- 2.3 CONCRETE MIXES
 - .1 Refer to Structural Notes.
- PART 3 - EXECUTION
 - 3.1 EXAMINATION
 - .1 Examine areas to receive cast in place concrete with installer present.
 - .2 Correct unsatisfactory conditions. Start of work indicates acceptance of conditions.
 - 3.2 PREPARATION
 - .1 Ensure reinforcing has been reviewed and approved by the Consultant and the authority having jurisdiction.
 - .2 Where environmental conditions indicate protection is required review standards for hot weather concreting or cold weather concreting as applicable.
 - 3.3 CONCRETE PLACEMENT
 - .1 Refer to Structural Notes.
 - 3.4 JOINT FILLERS AND SEALERS
 - .1 Provide joint fillers and sealers at location and to details shown on drawings.
 - .2 Care shall be taken to construct clean joints free from foreign material, which will impair proper function of the joint.
 - .3 Joint filler material shall be anchored to previously poured concrete surface.
 - .4 Unless shown otherwise, joint filler shall extend for full depth of joint and shall terminate 25 mm (1in.) below top of joint. The 25 mm (1 in.) space shall be filled with joint sealer.
 - 3.5 PATCHING
 - .1 Immediately after removal of forms, bolts, ties, nails or other metal not specifically required for construction purposes remove or cut back to a depth of 25 mm (1 in.) from surface of concrete.
 - .2 Structural repairs shall be accomplished under direction and supervision of Materials Consultant if deemed necessary by the structural engineer.
 - .3 Areas requiring patching shall be saturated with water. Surface shall be scrubbed with a neat cement paste and repaired by filling with cement mortar of same general composition as that

used in the concrete. The mortar shall be well pressed or packed into the depression so as to completely fill the cavity and then finished to match adjacent surface.

- .4 Areas that have been patched shall be cured in accordance with requirements outlined elsewhere in this Section.

3.6 FINISHING FORMED SURFACES

- .1 Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

- .1 Apply to concrete surfaces not exposed to public view.

- .2 Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

- .1 Apply to concrete surfaces exposed to public view, to receive a rubbed finish, and to be covered with a coating or covering material applied directly to concrete.

- .3 Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:

- .1 Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

- .2 Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

- .3 Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part Portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

- .4 Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.7 FINISHING FLOORS AND SLABS

- .1 General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

- .2 Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in 1 direction.

- .1 Apply scratch finish to surfaces indicated and to receive concrete floor toppings.

- .3 Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.

- .1 Apply float finish to surfaces indicated and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

- .4 Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - .1 Apply a trowel finish to surfaces indicated exposed to view or to be covered with resilient flooring, carpet, paint, or another thin-film-finish coating system.
 - .2 Finish surfaces to the following tolerances, according to ASTM E1155/ E1155M), for a randomly trafficked floor surface:
 - .1 Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.
 - .2 Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.
 - .3 Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15; for suspended slabs.
 - .4 Specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 24.
 - .3 Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 3 m (10 ft.) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 6 mm (1/4 in.).
 - .5 Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated where ceramic or porcelain quarry tile is to be installed by thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
 - .1 Comply with flatness and levelness tolerances for trowel finished floor surfaces.
 - .6 Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 - .1 Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
 - .7 Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
 - .1 Uniformly spread 12 kg/10 sq. m (25 lb/100 sq. ft.) of dampened slip-resistive aggregate over surface in 1 or 2 applications. Tamp aggregate flush with surface, but do not force below surface.
 - .2 After broadcasting and tamping, apply float finish.
 - .3 After curing, lightly work surface with a steel wire brush or an abrasive stone and water to expose slip-resistive aggregate.
 - .8 The top surface of concrete elements shall be cambered to accommodate immediate and long-term deflections due to self-weight and applied loads.
- 3.8 SIDEWALKS
- .1 Standard grey sand and cement concrete paving to the exterior areas conforming to applicable exposure class C2 of the CAN/CSA A23.1.
 - .2 Slope paving to drain minimum 2%. Provide expansion and contraction joints to suit and at junction of paving and building. Expansion joints are to be at maximum 4.57 m (15') on center. Apply consistent broom finish to sidewalks and paving areas; all paving with broom finish to have tooled joints.

- .3 Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 - .1 Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
 - .4 See Geotechnical required for confirmation of sub base.
- 3.9 REJECTION OF DEFECTIVE WORK
- .1 In the event that concrete tests do not conform to the requirements of this specification, or when conditions are such to cause doubt about the safety of the structure, test any portion of the structure in accordance with CAN 3-A23.2-14C. Such test shall be made at the expense of the Contractor.
 - .2 Where, in the opinion of the Consultant, material or workmanship fails to meet the requirements of the specification, such Work may be rejected. Work rejected shall be replaced or repaired to the approval of the Consultant and at no additional cost to the Owner.
 - .3 Acceptance criteria shall be 100% of the design strength of the concrete in situ. Alternative testing methods shall be evaluated by the Materials Consultant, who shall indicate anticipated twenty-eight (28) day and long-term strength. The Consultant shall evaluate suitability of low concrete strength and indicate those, which are not acceptable.
 - .1 If Contractor is, in any way, dissatisfied with the decision of the Consultant, the Contractor shall, without delay, make a proposal for alternative rectification.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide rough carpentry, including blocking, nailers, backing, rough bucks, and rough hardware as indicated and as specified.
- .2 Install vapour barriers to areas that will become inaccessible to trades after rough carpentry is complete to achieve continuous barrier.
- .3 Provide framing and rough carpentry items, hardware and accessories for a complete installation.
- .4 Install and remove temporary enclosures, hoarding, dust screens, scaffolding, ladders, hoists, cranes and other equipment required for the execution of the work.
- .5 Provide permanent and temporary bracing.
- .6 Provide blocking and backing for fixtures anchoring and mounting for millwork cabinets, washroom accessories, grab bars, wall stops, handrails, gate location, mechanical, and electrical equipment, structural connections, and other items as required including fastenings and hardware as shown or where required.
- .7 Provide installation of sheet metal backing and coordination for mounting of items under Section 06 20 00 Finish Carpentry.
- .8 Provide wood or plywood backing at windows and doors as detailed.
- .9 Provide and install insulation, vapor barriers, and moisture barriers to walls and soffits and ceilings areas that will become inaccessible to other trades.
- .10 Provide and install exterior wall strapping and insect screening behind exterior cladding as indicated and specified.
- .11 Refer to Structural drawings and specifications

1.2 RELATED SECTIONS

- .1 05 50 00 Metal Fabrications.
- .2 06 20 00 Finish Carpentry.
- .3 07 21 00 Building Insulation.
- .4 07 25 00 Weather Barriers.
- .5 07 44 53 Fibre-Reinforced Cementitious Cladding
- .6 07 84 00 Firestopping.
- .7 07 92 00 Joint Sealants.
- .8 09 21 16 Gypsum Board Assemblies.
- .9 10 28 13 Washroom Accessories.
- .10 Division 22 Plumbing.
- .11 Division 23 Heating, Ventilating and Air Conditioning.
- .12 Division 26 Electrical.

1.3 REFERENCES

- .1 BC Building Code and Terrace Building Bylaw current edition.
- .2 ANSI/NP A A208.1-2009 - Particleboard.
- .3 APA (American Plywood Association) - Grades and Specifications.
- .4 CANPLY (Canadian Plywood Association) - Plywood Handbook, Canada.

- .5 CSA O86-09 – Engineering Design in Wood.
 - .6 CSA O121-17 - Douglas Fir Plywood
 - .7 CSA O141-05 (R2014) - Softwood Lumber.
 - .8 CSA O151-17 - Canadian Softwood Plywood.
 - .9 CAN/CSA O80 Series-15 - Wood Preservation.
 - .10 CSA O325-16 – Construction Sheathing.
 - .11 CSA O437 Series-93 (R2011) - OSB and Waferboard.
 - .12 NLGA (National Lumber Grades Authority) - Standard Grading Rules for Canadian Lumber, 2007 Edition.
 - 1.4 SUBMITTALS
 - .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
 - .2 Provide product data.
 - 1.5 QUALITY ASSURANCE
 - .1 Grading: Dimension lumber shall be graded according to the National Lumber Grading Authority Rules for Douglas Fir, Pacific Coast Hemlock and Western Red Cedar. Size, grading, and inspection to CAN/CSA O141. Species groups to CSA O86.
 - .2 Conform to the requirements of the British Columbia Building Code, current edition.
 - .3 Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.
 - .4 Deliver mill end-marked to site with certificates as required by Consultant to show compliance with specifications.
 - 1.6 DELIVERY, STORAGE AND HANDLING
 - .1 Protect materials from moisture.
 - .2 Store materials on site to prevent deterioration or loss or impairment of structural and other essential properties, including mold.
 - .3 Store on raised supports in accordance with manufacturer's recommendations and WHMIS regulations.
 - .4 Damaged or deteriorated materials shall be removed from site for recycling and replaced.
 - 1.7 COORDINATION AND COOPERATION
 - .1 Cut, trim, drill, frame and make good rough carpentry work for passage of work of other sections except where otherwise specified.
 - .2 Provide location, centering, and bracketing for all trades and wood framing for plumbing, heating, electrical and other trades. Make good all defects and fully complete the rough carpentry.
 - 1.8 WASTE MANAGEMENT AND DISPOSAL
 - .1 To largest extent possible, divert unused or damaged materials and packing materials from landfill to local recycling facilities.
- PART 2 - PRODUCTS**
- 2.1 MATERIALS
 - .1 Dimensions of materials: as indicated.

- .2 Lumber: unless specified otherwise, softwood, S4S, moisture content 15% or less in accordance with following standards:

- .1 CSA O141
.2 NLGA Standard Grading Rules for Canadian Lumber.

- .3 Refer to Structural Notes.

2.2 LUMBER, PLYWOOD AND TIMBER

- .1 Lumber

ITEM	MATERIAL	DESCRIPTION
Exterior Fascia and Trim	SPF #2	Textured combed finish, pre-primed for solid colour stain, 2" nominal thickness
Grab bar, Railing blocking, wall stops	Hem Fir	2" x 12"
Interior/exterior wall backing/blocking	Hem Fir, SPF #2	
Exterior heavy timber construction, landscape	Hem Fir/Douglas Fir	No 2 preservative treated

- .2 Plywood:

ITEM	MATERIAL	DESCRIPTION
Exterior Wall Sheathing	DFP/SCP, sheathing grade	Confirmation regarding nailing pattern required prior to covering.
Exterior Grade Plywood, Blocking + Backing	Douglas Fir, treated where indicated, T + G.	Same as Sheathing, Refer to Structural Notes on Structural Drawings.
Electrical and Mechanical Equipment Panels	Douglas Fir Plywood G1S	Electrical backboards to be fire resistant and pressure treated. Thickness: 19mm (3/4 in.)
Roof Sheathing	DFP/CSP, sheathing grade	Edge support, when required using T&G panels
Electrical and Mechanical Equipment Panels	Douglas Fir Plywood G1S	Electrical backboards to be fire resistant and pressure treated. Thickness: 19mm (3/4 in.)
Rain Screen Strapping.	Pressure Treated Plywood conforming to CAN/CSA 080 Series	3/4" in 3" wide strips
Insect screen	Black fibreglass	1/16" mesh
Sill Gaskets	Polyethylene	Closed cell
Insect screen	Black fibreglass	1/16" mesh
Fasteners/hardware	Conform to CSA B111 and AST< A153	Hot dip galvanized in exterior locations, stainless steel for pressure treated wood or high humid areas in treated lumber and elsewhere liable to exposed to corrosion

- .3 Refer to Structural Notes. **NOTE OSB not acceptable for wall or roof sheathing.**

2.3 ACCESSORIES

- .1 Anchor bolts (for connection of sills to new concrete): minimum 9mm (3/4 in.) diameter, 50mm (2 in.) hook at bottom with 150mm (6 in.) minimum embedment in concrete.
- .2 Nails, Staples and Fasteners: Conform to CSA B111. Stainless steel for exterior locations and treated lumber, to CSA G164.
- .3 Machine Bolts, Washers, Lag Bolts, Drift Pins and Dowels: Conform to CSA G164. Exterior items hot-dipped galvanized.
- .4 Hardware: Supply and install rough hardware as indicated and required, including, bolts, nuts, washers, lags, drifts, pins, nails, screws, joint hangers, etc. Exterior exposed fixing items to be hot dip galvanized to CSA G164.
- .5 Connecting Hardware: Pre-engineered, pre-drilled, purpose made galvanized joist hangers, framing fasteners and anchors to structural Consultant's requirements and pre-approval.
 - .1 Approved Manufacturer: MGA Connectors, or approved alternative.
- .6 Connection Steel: mild structural steel, conforming to CSA G40.21, Grade 300W galvanized in exterior locations, high humidity areas, and elsewhere where liable to corrosion, unless noted otherwise.
- .7 Fasteners:
 - .1 General: Fasteners shall be in accordance with BCBC requirements and as indicated, meeting CSA B111 and ASTM A153. Use hot dipped galvanized steel for exterior work and for pressure-preservative and fire-retardant treated lumber except where indicated otherwise. Use standard finish elsewhere with primer paint finish where installed on sight-exposed surfaces.
 - .2 Lag screws: Machine threaded, not cast threaded.
 - .3 Bolts: To ASTM A307 unless otherwise noted, complete with nuts and washers, non-corrosive.
 - .4 Machine bolts, washers, lag bolts, drift pins, dowels, timber rivets: Conforming to CSA B33.1; galvanized in exterior locations, high humidity areas, and elsewhere where liable to corrosion, and in treated lumber.
 - .5 Nails: Stainless steel nails, type 316, for salt spray environments. Plain galvanized or electroplated nails are not acceptable. Do not use aluminum nails in conjunction with galvanized building components.
 - .6 Pre-drilled hole sizes in wood member for lag screw shall be in accordance with O86.1.
 - .7 Pre-drilled holes in steel plates for timber rivets shall be in accordance with O86.1.
 - .8 Screws: To ASTM requirements, non-corrosive.
 - .9 Wire Nails, Spikes and Staples: To CSA B111, galvanized.
- .8 Framing adhesive: Franklin International Titebond II Premium Wood Glue, ITW TACC Z Glue or pre-approved alternate. Use to fasten all plywood to joists (if applicable), single layer application and where shown.
- .9 Insect Screens: Black Fiberglass.
- .10 Miscellaneous Concealed Flashings: detailed 22-gauge aluminum mill finished.
- .11 Post Support: 300mm (12 in.) deep hot-dipped galvanized bracket with a 600mm (24 in.) long steel dowel to be inserted into 250mm (10 in.) diameter concrete pile support. Refer to Section 03 33 00 Cast-in-Place Concrete for concrete materials.
- .12 Sealants: Refer to Section 07 92 00 Joint Sealants.
- .13 Sill Gasket: Closed cell polyethylene foam.

2.4 WOOD PRESERVATIVES

.1 Outside the Weather (Moisture) Barrier

.1 Wood Preservative (Pressure Treatment): CAN/CSA O80 Series, minimum 0.40 lb/sq ft, Alkaline Copper Quaternary (ACQ) preservative for the following:

- .1 Exterior wood in contact with concrete, masonry, or where moisture may occur.
- .2 Roof up stands in flat roofs, and planters.
- .3 Heavy timber construction, fence posts and cavity furring.

.2 Wood framing components outside moisture barrier must be treated material. Use treated wood for rainscreen strapping.

.2 Field Treatment: Provide additional treatment solution to the site for field touch up of field cuts and drilled holes. Apply two coats of wood preservative to pressure treated plywood that is cut or drilled on site. Field treatment to be borate based insecticide/fungicide. Acceptable products:

- .1 Boracol 20-2 BD Luorganic Boron Wood Preservative.
- .2 Shellguard Insecticide and fungicide concentrate for wood.
- .3 Pre-Ser-Vor 25-3 Inorganic Boron Wood Preservative.
- .4 Green Cuprinol.
- .5 Window Liner: Treated with Boron CAN/CSA-080 Series.

Use of CCA (Chromated Copper Arsenate) or AZCA (Ammonical Zinc Copper Arsenate) is not permitted.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Examine surfaces and conditions to which the work of this section shall be applied. Ensure that conditions are suitable to provide a complete and satisfactory installation. Correct unsatisfactory conditions.

3.2 PREPARATION

- .1 Touch-up cut or other field worked parts of pre-treated materials in accordance with manufacturer's instructions so full protection of materials is maintained.
- .2 Verify dimensions on site prior to fabrication and installation of work.

3.3 FRAMING CARPENTRY

- .1 Construct rough carpentry in accordance with standards of the British Columbia Building Code 2024.
- .2 Arrange members true to lines, levels, and elevations, plumb, and uniformly spaced.
- .3 Exterior Wall Sill Plates and Bottom Plates: Set exterior wall sill plates and bottom plates in contact with concrete or masonry on full width strip of polyethylene sill gasket.
- .4 Frame members, anchor, fasten, tie and brace together to provide the strength and rigidity necessary for the intended use.
- .5 Ensure nails or staples are long enough so that at least half their length penetrates into the second member. Length and spacing to be in accordance with BC Building Code, Part 3, unless noted otherwise on Structural Drawings.
- .6 Minimize splitting of wood members by staggering nails or staples in direction of grain and keep well in from edges.

- .7 Roof cants and curbs: Fit curbs around openings in roofing as required. Curbs: 38mm x 286mm (2 in. x 12 in.) lumber unless indicated otherwise, secure and neatly install ready for work to follow.
- .8 Copings: Fit copings to tops of parapets as required. On concrete and masonry walls bolt copings securely to walls with 9mm (3/8 in.) diameter bent bolts at maximum 1200mm (4 ft.) o.c., nuts and bolt ends countersunk. Install carefully in long lengths, weathered as required, neatly mitred at corners, ready for flashing work to follow.
- .9 Wood bucks, blocking and fillers: Trim around openings in concrete and masonry with treated dry wood bucks, blocking and fillers, bolted or shot into place as required to suit frames, casing and trim.
- .10 Wood grounds: Provide and secure wood grounds of proper thickness required to suit finishes. Install grounds straight, true and plumb, to straighten out inequality of wall surfaces. Grounds for securing other trim, frames, or wood structure of finish to be cast in concrete or laid up on masonry as required.
- .11 Equipment backboards: Install plywood backboards for mounting mechanical or electrical equipment as indicated or as required. Use 18mm (3/4 in.) thick DFP/G1S on 24mm x 100mm (1 in. x 4 in.) nominal furring around perimeters and at maximum 300mm (12 in.) intermediate spacing.
- .12 Electrical backboards to have fire resistant pressure treated plywood.
- .13 Backing for cabinets: at wall-hung cabinets, provide heavy duty blocking and backing designed to accept weight of cabinets and contents. If contents of cabinets are not explicitly specified on drawings, assume cabinets will be used to store paper products.
- .14 Solid blocking for mounting of future or proposed grab bars to be 2 x 12 minimum.
- .15 Provide and install wood blocking as required and where detailed in stud walls at doorjamb and other locations where required to attach accessories or building elements including mechanical and electrical elements.
- .16 Provide blocking for installation of wall mounted bike racks, 2 rows; any and all washroom accessories; behind all door wall stops.
- .17 Coordinate and provide blocking for mechanical and electrical equipment as required.
- .18 Provide 2x wood Fire Blocking, in joist space, above all Fire Rated Wall locations. To be tight fitted.
- .19 Batt insulation and vapor barrier: supply and install batt insulation and vapor barrier to inaccessible wood framing as indicated to maintain continuous systems.
- .20 Floor sheathing to be glued and screwed.
- .21 Do not install insulation or vapour barrier until all exterior wood is tested and confirmed to be less than 19% moisture content.
- .22 Install acoustic sealant to underside of studs at demising/corridor walls.
- .23 Provide blocking in walls, at the top of interior stairs, for future installation of baby gates.
- 3.4 ACCESSORIES
 - .1 Dampproofing: Wood resting on concrete or masonry shall have continuous strip of dampproofing.
 - .2 Air Barrier: Coordinate sequence of work to ensure total continuity of the system and in such a manner that the air barrier is left exposed to the weather for a minimum length of time.
- 3.5 INTERIOR PARTITION FRAMING
 - .1 Refer to drawings for the sizes of studs for interior walls. Set studs for walls at 410mm (16 in.) on centre unless otherwise noted. Length of stud to be full height between plates (except at

openings) and no splicing allowed. Use single bottom plate (unless noted otherwise on drawings) and double top plate, double studs at all openings, triple studs at corners and intersections, unless noted otherwise.

.2 Install sheathing on interior shearwalls where shown on drawings and use fasteners as specified on drawings.

.3 Girts to be 38mm (1-1/2 in.) x stud width x space between studs; set on flat either in line and/or toe nailed; or staggered to permit back nailing through stud. Use girts at locations where studs exceed 2100mm (7 ft.) in length. Locate girts to divide the stud heights equally.

.4 Where fixtures or other hanging devices occur, provide blocking between studs to suit, and where required.

3.6 STRAPPING

.1 Apply pressure treated rain-screen strapping where indicated on details. Securely nail vertically into stud lines (over building wrap).

.2 Apply strapping where required to provide backing for finishes to follow. Securely nail, staple or shoot straps in place uniformly spaced, all shimmed, and straightened to dead flat planes. Strapping to be minimum 3/4 in. x 3 in. @ 16 in. on centre unless noted otherwise. Generally arrange direction and spacing of straps to suit the bearings and finishes, preferably cross strapping over wood bearings and under wood finishes.

.3 Attachment and fasteners per cladding manufacturers requirement.

3.7 NAILERS

.1 Of treated Douglas Fir, sizes as indicated and as required to be continuous unless noted otherwise.

3.8 ADDITIONAL ITEMS

.1 The Contractor shall make allowance for and provided and installed as required for strength and against movement and deflection, such as blocking, bracing, backing, in-fill pieces, fasteners, furring, grounds, shims, bucks, dowels, bolts and washers, and other hardware, whether indicated or not, as directed by the Engineer or Architect and as required by building bylaws and the B.C. Building Code. No additional funds will be paid to the Contract to provide such additional items to complete the project as intended.

3.9 FURRING

.1 Furr out services, piping, ductwork, and other items projecting or becoming visible through finished surfaces as required whether indicated or not. Furr out surfaces of walls, columns, and ceilings as required to provide planes of finished surfaces on desired lines and/or elevations. Furring to be minimum 38mm x 38mm @ 410mm (1 1/2 in. x 1 1/2 in. @ 16 in.) on centre with plates unless otherwise required. Finish surface of furring to match surrounding materials.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide shop-fabricated wood trusses as indicated and specified.
- .2 Refer to Structural.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 Structural drawings and specifications

1.3 REFERENCES

- .1 British Columbia Building Code, current Edition.
- .2 CAN/CSA O80-97 (R2007) Series, Wood Preservation.
- .3 CAN/CSA O86.1-14 (2005), Engineering Design in Wood (Limit States Design).
- .4 CAN/CSA O141-05 (R2014), Softwood Lumber.
- .5 CSA S307-M1980 (R2006), Load Test Procedure for Wood Roof Trusses for Houses and Small Buildings.
- .6 CSA S347-14 Method of Test for Evaluation of Truss Plates Used in Lumber Joints.
- .7 CSA W47.1 (R2014), Certification of Companies for Fusion Welding of Steel Structures.
- .8 NLGA, Standard Grading Rules for Canadian Lumber.

1.4 DESIGN CRITERIA

- .1 Refer to Structural Notes.

1.5 SOURCE QUALITY CONTROL

- .1 Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.
- .2 Certify preservative and fire retardant treated wood in accordance with CAN/CSA-O80 Series.

1.6 QUALIFICATION OF MANUFACTURERS

- .1 Fabricator for welded steel connections to be certified in accordance with CSA W47.1.

1.7 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Shop Drawings:
 - .1 Each shop and erection drawing submission shall bear signature and stamp of professional engineer registered or licensed in British Columbia, Alberta or the Yukon Territories of Canada.
 - .2 Indicate species, sizes, and stress grades of lumber used as truss members. Show pitch, span, camber, configuration and spacing of trusses. Indicate connector types, thicknesses, sizes, locations and design value. Show bearing details. Indicate design load for members.
 - .3 Submit stress diagram or print-out of computer design indicating design load for truss members. Indicate allowable load and stress increase.
 - .4 Do load testing on representative trusses selected by Consultant. Provide certification that trusses meet requirements of CSA S307 and CSA S347.
 - .5 Indicate arrangement of webs or other members to accommodate ducts and other specialties.

- .6 Show lifting points for storage, handling and erection.
- .7 Show location of lateral bracing for compression members.
- .3 Design data:
 - .1 Complete calculations stamped by a Professional Engineer registered to practice in the Province of British Columbia.
 - .2 Certified load test results.
- .4 See also Structural drawings and specifications

1.8 DELIVERY AND STORAGE

- .1 Deliver, handle, store and protect materials in accordance with Section 01 60 00 Product Requirements.
- .2 Store trusses on job site in accordance with manufacturer's instructions. Provide bearing supports and bracings. Prevent bending, warping and overturning of trusses.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Lumber: For species, grade, and maximum moisture content, refer to Structural Drawings.
- .2 Meet the following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA (National Lumber Grading Association), Standard Grading Rules for Canadian Lumber.
- .3 Fastenings: To CAN/CSA-O86.1.

2.2 FABRICATION

- .1 Fabricate wood trusses in accordance with reviewed Shop Drawings.
- .2 Provide for design camber and roof slopes when positioning truss members.
- .3 Connect members using bolts and nuts, gussets, metal connector plates, split rings, and shear plates as indicated on reviewed Shop Drawings.
- .4 Apply preservative and fire retardant in accordance with CAN/CSA Series.

PART 3 - EXECUTION

3.1 ERECTION

- .1 Erect wood trusses in accordance with reviewed erection drawings.
- .2 Indicated lifting points to be used to hoist trusses into position.
- .3 Make adequate provisions for handling and erection stresses.
- .4 Exercise care to prevent out-of-plane bending of trusses.
- .5 Install temporary horizontal and cross bracing to hold trusses plumb and in safe condition until permanent bracing and decking are installed.
- .6 Install permanent bracing in accordance with reviewed shop drawings, prior to application of loads to trusses.
- .7 Do not cut or remove any truss material without approval of Consultant.
- .8 Remove chemical and other surface deposits on treated wood, in preparation for applied finishes.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide standing and running trim where shown, and shelving as indicated and specified.
- .2 Install Metal Doors and Frames.
- .3 Install Wood Doors and Frames.
- .4 Install Vinyl Windows.
- .5 Install Interior Windows.
- .6 Install Finish Hardware.
- .7 Install interior glazing as scheduled.
- ~~.8 Install Storage Lockers as indicated.~~

1.2 RELATED SECTIONS

- .1 07 92 00 Joint Sealants.
- .2 08 11 00 Metal Doors and Frames.
- .3 08 14 00 Wood Doors and Frames.
- .4 08 51 13 Aluminum Windows and Doors.
- .5 08 53 13 Vinyl Windows.
- .6 08 71 00 Door Hardware.
- .7 08 81 00 Glass Glazing
- .8 10 28 13 Washroom Accessories
- .9 10 50 00 Miscellaneous Interior Specialties
- .10 12 30 00 Manufactured Casework.
- .11 Division 22 Plumbing.
- .12 Division 23 Heating Ventilation and Air Conditioning.
- .13 Division 26 Electrical.

1.3 REFERENCES

- .1 Comply with current edition of referenced standards unless indicated otherwise.
- .2 AWI/AWMAC Architectural Woodwork Standards current Edition, hereafter referred to as the AWS Manual.
- .3 BHMA – Builders Hardware Manufacturers' Association.
- .4 BC Building Code and Trail Building Bylaw, current edition.
- .5 CAN/CGSB 41.33 M87, Installation of Rigid Vinyl Residential Siding, Soffits and Fascias.
- .6 CSA 0115-M1982(R2001) Hardwood and Decorative Plywood.
- .7 CSDMA – Canadian Steel Door Manufacturers' Association.
- .8 Door Hardware Institute (DHI).
- .9 National Lumber Grade Authority.
- .10 NFPA (Fire) 80, Fire Doors and Windows, current Edition.
- .11 NFPA (Fire) 105, Standard for the Installation of Smoke-Control Door Assemblies, current Edition.

- .12 NFPA (Fire) 252, Fire Tests of Door Assemblies, current Edition.
- 1.4 SUBMITTALS
 - .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
 - .2 Product Data: For each type of plastic laminate specified.
 - .3 Samples: Provide two (2) samples for each of the following:
 - .1 Type of finish specified.
 - .2 300mm (12 in.) length of standing and running trim specified.
 - .3 Handrail brackets.
- 1.5 QUALITY ASSURANCE
 - .1 Use qualified, experienced installers.
 - .2 Installation of millwork shall conform to Part 6 of the AWI/AWMAC Architectural Woodwork Standards 2014 Edition 2.
- 1.6 DELIVERY, STORAGE AND HANDLING
 - .1 Store woodwork materials and completed woodwork in a dry ventilated place, protected from the weather, and complying with the temperature and humidity conditions specified by AWMAC.
 - .2 Protect sanded and finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

PART 2 - PRODUCTS

- 2.1 MATERIALS - GENERAL
 - .1 Items shall meet the requirements of the QSI Manual for Custom Grade. If modifications to this standard occur in this specification or on the Drawings, the modifications shall govern.
 - .2 Lumber grading shall conform to NLGA, National Lumber Grade Authority.
 - .3 Particleboard and Hardboard: Graded in accordance with applicable CSA or CGSB standards. MDF shall be formaldehyde free. Ensure wood materials do not contain urea formaldehyde.
 - .4 Hardwood plywood: conform to CSA O115-M1982.
 - .5 Preservative Treatment: Comply with QSI Manual for exterior finish carpentry to receive water-repellent preservative treatment.
- 2.2 PLASTIC LAMINATE
 - .1 Plastic Laminate: High-pressure decorative laminate: Type Horizontal Grade standard (HGS) 1mm (0.4") thick conforming to NEMA LD3.
- 2.3 MATERIALS
 - .1 Materials :

ITEM	MATERIAL	DESCRIPTION
Door Casing; <i>bypass doors</i>	Hemlock or Pine.	Primed; 3 1/2" x 5/8" head, 2 1/2" x 1/2" jambs, flat. Butt joint. Unless indicated otherwise.
Door Trim. Head Valance at bypass and bifold doors	Hemlock or Pine.	3/4" x 2 1/4" thick flat, unless indicated otherwise.
Closet Rod + Shelf	Plastic Coated Wire, 1 x 300mm (12") deep. Shelf and hanging combo.	Complete with wall + intermediate supports, full closet width. <i>provide vertical standards and adjustable</i>

ITEM	MATERIAL	DESCRIPTION
		<i>supports to wire shelves to these locations. ClosetMaid or equal.</i>
Shelving	Melamine finish	See details, also casework
Storage Shelving	Plastic Coated Wire, 406mm (16") deep.	Complete with wall + intermediate supports.
Shelving	Melamine – 16" <u>deep</u> ; refer to Drawings.	w/ adjustable heavy duty support tracks. As detailed
Baseboards	Hemlock or Pine	Primed, 3 1/2" x 5/8"
Window Sills or pass throughs	Hemlock or Pine	32m (1 1/4") thick. <i>Trim under sills/caps 3/4" thick.</i>
Laundry shelving	Melamine or plastic coated wire shelving– 16" <u>deep</u>	See interior elevations.
Joint Sealant	Refer to Section 07 92 00 Joint Sealants.	

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Condition finish carpentry to average prevailing humidity conditions in installation areas before installation, for a minimum of 24 hours.
- .2 Prime and backprime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section 09 90 00 Painting and Coating.
- .3 Check hardware items to ensure compliance with Hardware Schedule.

3.2 INSTALLATION - GENERAL

- .1 Install finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where required for alignment. Scribe and cut finish carpentry to fit adjoining work. Refinish and seal cuts.
- .2 Repair damaged or defective finish carpentry where possible to eliminate functional or visual defects. Where not possible to repair, replace finish carpentry. Adjust joinery for uniform appearance.
- .3 Fascias, Window Trim, Trim, Valance, Base: Install in longest practical lengths, end joints to be cut at 45 degrees and lapped. Do not use short sections.
- .4 Quality Standard: Install woodwork to comply with QSI for Custom Grade.
- .5 Install woodwork level, plumb, true, and straight to a tolerance of 3mm in 2400mm (1/8 inches in 96 inches). Shim as required with concealed shims.
- .6 Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.
- .7 Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- .8 Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Stagger joints in adjacent and related trim. Cope at returns and miter at corners.

3.3 INSTALLATION – WOOD DOORS AND FRAMES

- .1 Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
- .2 Install fire-rated frames and fire-rated doors in accordance with NFPA 80.
- .3 Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
- .4 Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- .5 Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- .6 Placing Frames: Comply with AWI Custom Grade quality standard. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 - .1 Wall Anchors: Provide at least three anchors per jamb. For openings 2286mm (90 in.) or more in height, install an additional anchor at hinge and strike jambs.
 - .2 Gypsum Board Partitions: for in-place partitions, install knock-down, drywall slip-on frames.
- .7 Door Installation: Comply with ANSI A250.8. Shim as necessary to comply with ANSI/DHI A115.1G.
- .8 After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer.

3.4 INSTALLATION – METAL DOORS AND FRAMES

- .1 Install fire-rated metal frames and fire-rated metal doors in accordance with NFPA 80.
- .2 Smoke Control Doors: Install in accordance with NFPA 105.
- .3 Placing Frames: Comply with provisions in CSDMA, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 - .1 Wall Anchors: Provide at least three anchors per jamb. For openings 2286mm (90 in.) or more in height, install an additional anchor at hinge and strike jambs.
 - .2 Gypsum Board Partitions: For in-place partitions, install knockdown, drywall slip-on frames.
- .4 Coat or otherwise isolate metal doors and frames to prohibit galvanic action.
- .5 Provide solid grouting to metal doorframes in conformance to CSDMA recommendations.
- .6 Door Installation: Shim as necessary to comply with CSDMA "Recommended Dimensional Standards for Commercial Steel Doors and Frames."
- .7 After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer.

3.5 INSTALLATION – FINISH HARDWARE

- .1 Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

- .2 Steel Door and Frame Preparation: Drill and tap doors and frames for surface-applied hardware in conformance with CSDMA recommendations.
- .3 Wood Door Preparation: Adjust and reinforce attachment substrates as necessary for proper installation and operation. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- .4 Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, verify location with Consultant.
- .5 Configuration: Provide the least number of power supplies required to adequately serve doors with electrified door hardware.
- .6 Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Section 07 92 00 Joint Sealants.
- .7 Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with accessibility requirements.
 - .1 Door Closers: Adjust sweep period so that from open position of 70 degrees, door will take at least three seconds to move to a point 75mm (3 in.) from latch, measured to leading edge of door.
- .8 Hardware shall be installed by carpenter mechanics skilled in the application of institutional grade hardware, and in accordance with manufacturer's instructions.
- .9 Mounting height for hardware:
 - .1 Unless a conflict arises, the following are standard mounting heights on products. If a question or conflict should arise, the hardware supplier, if requested, shall assist the Contractor and Owner in determining mounting heights. Refer to ANSI/BHMA Standards A156 Series.
 - .2 Measurements are from finish floor unless noted otherwise:
 - .1 Butts:
 - .1 Top: 316.5mm (11-3/4 in.) center of butt to top of door.
 - .2 Intermediate: equal distance between top and bottom butts.
 - .3 Bottom: 330mm (13 in.) center of butt.
 - .2 Knob locks: 1023mm (40-5/16 in.) to center of strike.
 - .3 Deadlocks: 524mm (60 in.) to center of strike.
 - .4 Exit devices 1023mm (40-5/16 in.) to center of strike.
 - .5 Push plates 1142mm (45 in.) to center.
 - .6 Pull plates 1167mm (42 in.) to center.
 - .7 Door closers: as per manufacturer's instructions.
 - .3 Fit hardware accurately using full complement of screws and draw up tight.
- 3.6 INSTALLATION OF GLAZING TO DOORS OR WINDOWS.
 - .1 Work shall be by skilled glaziers with a minimum 5 years of experience.
 - .2 Install glazing to wood or metal doors and frames in accordance with reviewed Shop Drawings.
 - .3 Install glass in frames without bending or twisting, with planes true and parallel to frame faces, with thickness or bedding even and regular all around.
 - .4 Ensure wood and steel frames and stops are primed before glazing. Do not mark or chip prefinished metal surfaces.

- .5 Glass as specified in Section 08 81 00 Glass Glazing.
 - .6 Obtain glass sizes from site measurements with allowances made to suit glass thickness and sizes as recommended by glass manufacturers.
 - .7 Glass weight and thicknesses: As required by size of glass unit in accordance with code requirements, but in no case shall be less than 6mm (1/4 in.) thick.
 - .8 Install glass on glazing blocks and with spacer blocks, both of sizes required, and to ensure adequate spaces for glazing, as recommended by the manufacturer of tapes.
 - .9 Wood Doors: Wood stops; install glass type as indicated or scheduled and as required by light size. Set glass in continuous tape, both sides, according to manufacturer's recommendations for interior glazing. No movement, sagging or rattling of glass allowed. Trim excess material.
- 3.7 PROTECTION AND CLEANING
- .1 Protect Work of this section from damage.
 - .2 Clean installed items according to manufacturer's instructions. Remove debris from site, recycle as indicated in Section 01 74 19 Construction Waste Management and Disposal or dispose of in a legal manner.
 - .3 Turn over special finish hardware installation tools to Owner.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide waterproofing or dampproofing to foundation walls below grade, as indicated and specified.
- .2 Provide protection board or drain mat as detailed and required.
- .3 Refer to Architectural and Building Envelope details.

1.2 RELATED SECTIONS

- .1 03 30 00 Cast-in-Place Concrete.
- .2 07 05 00 Thermal Bridging & Airtightness
- .3 07 25 00 Weather Barriers
- .4 07 21 00 Building Insulation

1.3 REFERENCES

- .1 British Columbia Building Code, current edition.
- .2 CAN/CGSB-37.2-M88, Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.
- .3 CAN/CGSB 37.3-M89, Application of Emulsified Asphalts for Dampproofing or Waterproofing.
- .4 CGSB 37-GP-9Ma-1983 Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: provide manufacturer's installation instructions including special handling criteria, installation sequence, and cleaning procedures.

1.5 QUALITY ASSURANCE

- .1 Work of this section is subject to review by Consultant and Building Envelope Consultant.
- .2 Manufacturer's Qualifications: Sheet composite drainage material and protection board shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of sheet composite drainage material and protection board.
- .3 Installers Qualifications: Trained by manufacturer for installation of their products.
- .4 Prior to installation confirm compatibility of overlapping membranes and coatings. Where doubt exists, contact membrane manufacturer to confirm compatibility and submit record to Consultant.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, handle, store and protect materials of this section in accordance with manufacturer's printed recommendations.
- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store materials on supports to prevent deformation.
- .4 Remove only in quantities required for same day use.
- .5 Avoid freezing during storage, application and before material has cured.

1.7 PROJECT REQUIREMENTS

- .1 Provide applicator with substrates that are free of standing water, dirt and debris, loose material, voids and protrusions or deformations that may inhibit application or performance of the product.

- .2 Apply dampproofing and waterproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.
- .3 Do not proceed with work when wind chill effect would tend to set bitumen before proper curing takes place.
- .4 Maintain air temperature and substrate temperature at dampproofing installation area above 5 deg C (41 deg F) for 24 hours before, during and 24 hours after installation.
- .5 Do not apply dampproofing or waterproofing in wet weather.
- .6 Protect new work from rain or water from any source until cured.
- .7 Do not apply material to excessively wet surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Ensure compatibility of overlapping membranes and coatings.
- .2 Dampproofing: Cold-Applied Waterproof emulsion of vacuum-reduced asphalt dispersed in mineral colloid emulsifier, odourless, non-toxic, "700-01" by Bakor or approved alternative.
 - .1 Materials:
 - .1 Physical properties: complies with CAN/CGSB 37.2.
 - .2 Solids by volume: 57%.
 - .3 Coverage: 1.5 l /m² (3.6 US gal./110 sq.ft.)
 - .4 Flammability: non-combustible.
 - .5 Vapour permeance: 8.0 ng/Pa.m².s (0.14 perms).
 - .3 Filled, Cutback Asphalt for Dampproofing: Conforming to CAN/CGSB 37.16-M89 for use at temperatures below 4 C. (39 F).
 - .4 Waterproofing:
 - .1 Self-Adhesive Membrane: 1.5 mm (1/16") thick, self-adhering SBS membrane of rubberized asphalt compound integrally bonded to a high density, cross-laminated, polyethylene sheet with vapour permeance 2.8 ng/pa.s.m2 (0.05 perms). Blueskin WP 200 by Bakor or approved alternative.
 - .2 SBS Modified Membrane: 180 g/m2 non-woven polyester reinforcing, polypropylene bottom surface for torch application to substrate, granular top surface is required where membrane terminates above grade level, conforming to CGSB 37- GP-56M. NP 180gM Cap Sheet by Bakor or approved alternative.
 - .3 Cold Fluid-Applied: elastomeric asphalt emulsion waterproofing membrane in compliance with CAN/CGSB 37.2 M or ASTM C836. Apply a full and continuous coat at a rate of minimum 2.0 l/m² (5 gal/100ft²) to provide a minimum wet thickness of 2.3 mm (0.090" or 90mils) ensure no pinholes or blisters. Allow membrane to fully cure/dry prior to subsequent application coatings. Membrane complies with the VOC limits established by the South Coast Air Quality Management District.
 - .5 Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor and approved by the product manufacturer as compatible, subject to Owner's approval.
 - .6 Protection Board: 4 mm (3/16") asphalt glass laminate protection board for torched based sheets; 11 mm (7/16") asphalt impregnated fibreboard for mop application. Use over waterproof membrane installed on foundation walls where not protected by rigid insulation.
 - .7 Drain mat as shown on drawings and details. Sika Drainage Mat 420 or equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine areas to receive dampproofing with Installer present. Ensure substrates are suitable for dampproofing application.
- .2 Ensure surfaces are sound, free from frost, grease, oil, or loose material. Ensure masonry mortar is finished clean and smooth and concrete is free from fins, honeycomb, or other surface irregularities.
- .3 Correct unsatisfactory conditions. Start of work indicates acceptance of conditions.

3.2 PREPARATION

- .1 Ensure surface preparation and detailing is in accord with this Specification and the Drawings. Comply with product manufacturer's instructions except where more stringent requirements are indicated or specified.
- .2 Before applying dampproofing, seal exterior joints between foundation walls and footings, joints between concrete floor slab and foundation and around penetrations through dampproofing with sealing compound.
- .3 Dampen dry surfaces with water just prior to application of the coating to improve bond.

3.3 APPLICATION FOR DAMPPROOFING AND WATERPROOFING

- .1 Install to CAN/CGSB-37.3 application of Emulsified Asphalt for Dampproofing and Waterproofing and manufacturer's recommendations.
- .2 Apply a brush coat of dampproofing material at approximately 1.5 l /m² (.264 gallons/10 sq.ft.) and let dry.
- .3 Apply continuous, uniform coating to locations indicated.
- .4 Apply two additional coats of dampproofing to vertical corners and construction joints for a minimum width of 230 mm (9 in.) on each side and all around and for 230 mm (9 in.) along pipes passing through walls.

3.4 CURING AND PROTECTION

- .1 Allow to dry thoroughly and apply protection layer prior to commencing backfill or other wall finishes.

3.5 INSTALLATION – RIGID INSULATION

- .1 General: Install rigid insulation over dampproofing or waterproofing in accordance with Section 07 21 00

3.6 CLEAN UP

- .1 Store brushes, tools, and equipment in water immediately after use. Use mineral spirits to remove dried films.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide fiberglass batt and blanket, rigid and semi-rigid thermal insulation with accessories for a complete installation as indicated and specified.
- .2 Provide mineral wool as indicated and where not indicated as required to meet Code requirements.
- .3 Provide spray applied foam insulation to locations indicated in details and schedules of assemblies.
- .4 Provide concrete faced rigid insulation, at foundation wall, above grade as indicated.

1.2 RELATED SECTIONS

- .1 01 74 19 Waste Management
- .2 06 10 00 Rough Carpentry.
- .3 07 22 00 Blown-in Insulation.
- .4 07 92 00 Joint Sealants.
- .5 08 42 13 Plastic Doors.
- .6 08 53 13 Vinyl Windows.
- .7 09 21 16 Gypsum Board Assemblies.
- .8 09 22 16 Non-structural Metal Framing.

1.3 REFERENCE STANDARDS

- .1 ASTM C665-12, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- .2 Terrace Building Bylaw, current edition
- .3 CAN/ULC S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .4 CAN/ULC S702-09, Standard for Thermal Insulation Mineral Fibre for Buildings.
- .5 CAN/ULC S702.2-03, Mineral Fibre for Buildings, Part 2: Application Guidelines
- .6 CAN/ULC S705.1-01 (R2004), Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Material - Specification, Includes Amendments 1,2
- .7 CAN/ULC S705.2-04, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Installer's Responsibilities-Specification
- .8 CAN/ULC S770-09, Standard Test Method for Determination of Long-term Thermal Resistance of Closed-Cell Thermal Insulating Foams.

1.4 DESIGN CRITERIA

- .1 Minimum total thermal value of insulation alone in exterior wall and soffit assemblies shall be as indicated on drawings and schedules. In no case shall values other than those specified be used to calculate minimum thicknesses required.
- .2 Sound transmission ratings for wall and floor assemblies shall be in accordance with Code requirements with such assemblies tested by testing agencies acceptable to authorities having jurisdiction where required, and as indicated on drawings and schedules.
- .3 Unless otherwise indicated or required by authorities having jurisdiction, provide acoustic insulation in walls indicated. Total wall assembly, including insulation and caulking, shall meet minimum STC ratings as scheduled.

1.5 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Published "R" value for thicknesses of insulation, product characteristics, performance criteria, and limitations, for each product indicated.
 - .2 Product test reports and Research/evaluation reports.
 - .3 Submit manufacturer's literature including installation instructions, independent test data confirming compliance with reference standards, and specification requirements.

1.6 QUALITY ASSURANCE

- .1 Thermal Conductivity: The thicknesses shown are for the thermal conductivity specified for each material. Provide adjusted thicknesses as directed for the use of material having a different thermal conductivity.
- .2 Fire and Insurance Ratings: Comply with fire-resistance flammability and insurance ratings, where required, and comply with Code interpretations by authorities having jurisdiction.
- .3 Mock-up:
 - .1 Cooperate with mock-up of exterior wall as described in Section 07 25 00 Weather Barriers. Weather Barriers including accessories to Consultant's satisfaction.
 - .2 Mock-ups may be incorporated into final work upon Consultant's approval.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials to site in original unopened packages, bearing name of manufacturer, product identification, and references to Standard.
- .2 Store materials off ground, under cover away from dampness and direct sunlight and keep dry.
- .3 Store insulation products, handle and dispose of insulation products in accordance with manufacturer's and Industrial Health and Safety Regulation requirements.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- .1 Subject to compliance with specifications the following manufacturers are acceptable for the products indicated.
 - .1 Johns Manville.
 - .2 Owens-Corning.
 - .3 Dow Corning Corporation.
 - .4 Rockwool.
 - .5 Or approved alternative.

2.2 MATERIALS

- .1 Rigid and batt insulation to have minimum 25% post consumer recycled content.
- .2 Rigid Insulation: Extruded closed cell rigid polystyrene conforming to CAN/ULC-S701 Type 4, with maximum water absorption of 0.7% in accordance with ASTM D2842, thickness as indicated, minimum five (5) year aged R-value R5.0 per 1inch (RSI = .88).
 - .1 Insulation Type INS-1: For Horizontal Applications: Minimum compressive strength of 275kPa (40 psi).
 - .1 "Styrofoam Highload 40" by Dow.
 - .2 "Foamular 400" by Owens-Corning.

- .3 or approved alternative.
- .2 Rigid Insulation with Concrete Face INS-2: Extruded closed cell rigid polystyrene board with 3/8 inch thick factory applied latex modified concrete facing intended for use at exterior face of foundation walls. Acceptable Products:
 - .1 Tech-Crete CFI.
 - .2 Finex fibre cement panel rated for below grade use, 1/2" thick, with attachments over rigid insulation.
 - .3 Or approved alternative.
- .3 Insulation Type INS-4 For use in joist header spaces:
 - .1 Styrofoam Cavitymate.
 - .2 Or approved equal.
- .3 Semi Rigid Insulation / Mineral Wool Insulation: in fire rated assemblies, walls or floors, mineral wool batt, filling wall cavity, conforming to BC Building Code requirements for fire rated assemblies, with a mass of 1.22 kg/m². CAN/ULC-S702, Type 1, Flame Spread Rating of ≤ 25; Smoke Developed Rating ≤ 0)
 - .1 Insulation Type INS-5: For Exterior Fire Rated Assemblies Vertical Applications:
 - .1 "CavityRock DD" by Rockwool. **See wall assembly or details for locations.**
 - .2 Insulation Type INS-6: For Interior Fire Rated Assemblies Vertical Applications:
 - .1 "Safe'n'Sound" by Rockwool. **See wall assembly or details for locations.**
 - .2 Johns Manville "Sound & Fire Block" mineral wool batts.
 - .3 or approved alternative. **See wall assembly or details for locations.**
 - .4 or approved alternative.
 - .3 Insulation Type INS-7: For Interior Acoustic Insulation Vertical Applications:
 - .1 "Safe'n'Sound" by Rockwool.
 - .2 Johns Manville "Sound & Fire Block" mineral wool batts.
 - .3 Or approved alternative.
- .4 Glass Fibre Batt Insulation: Formaldehyde free, mineral / glass fibre friction fit batt type to ASTM E85 (Flame Spread Rating of ≤ 25; Smoke Developed Rating ≤ 50) and ASTM C665, Type 1, 0.79 lb/ft³ density, thicknesses as indicated. Minimum R-Value: R3.5 per 1", for wall or ceiling Construction.
 - .1 Insulation Type INS-8: For Interior Thermal Insulation Vertical Applications (walls):
 - .1 "Easy Fit" by Johns Manville.
 - .2 "Thermal Batt FIBERGLAS" by Owens-Corning.
 - .3 Or approved alternative.
 - .2 Insulation Type INS-9: For Interior Acoustic Insulation Vertical Applications: To ASTM E90, Airborne Sound Transmission Loss, and to ASTM E413, Sound Transmission Class (STC) as noted on drawings.
 - .1 "JM Sound Shield for Steel Frame" by Johns Manville.
 - .2 "Sound Attenuation Batts" by Owens-Corning.
 - .3 "Safe'n'Sound" by Rockwool.
 - .4 Or approved alternative.

- .3 Attic Insulation Type INS-10: Batt or Blown-in as per contractor's choice. Meet R values detailed and specified and required by Building Code. See Section 07 22 00 for Blown-in Insulation.
- .5 Insulation Type INS-11: Spray applied polyurethane foam insulation for use in joist header spaces, around door and window frames, electrical boxes in exterior walls and where indicated in architectural and building envelope details.

2.3 ACCESSORIES

- .1 Acoustical Sealant: Provide non-hardening type in accordance with Section 07 92 00 Joint Sealants.
- .2 Insulation Fasteners: Insulok / Channelmate by Dow or approved alternative.
- .3 Impaling Pins: Corrosion resistant steel wire spindles of lengths required for insulation thickness, fixed to perforated metal plates suitable for adhesive fixing to concrete substrates, with friction locking washers.
- .4 Insulation Clips: Use to fastening semi-rigid insulation to wall sheathing and soffits. Impale type, perforated 51 mm x 51 mm (2" x 2") steel, 0.7 mm (0.030") thick, adhesive back, spindle of 2.5 mm (0.098") diameter annealed steel, 25.4 mm (1") diameter self-locking washers, length to suit insulation thickness.
- .5 Vapour Barrier: 6 mil polyethylene to CAN/CGSB 51.34.
- .6 Sealing Tape: Vapour product for below slab or interior walls, air barrier tape for exterior, Dupont Tyvek products or approved. Adhesives: To insulation manufacturer's recommendation.
- .7 Nails and Staples: Electroplated steel wire of type and size to suit installation.
- .8 Firestopping: Provide firestopping as specified in Section 07 84 00 Firestopping.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- .1 Install insulation in accordance with manufacturer's instructions to provide a uniform insulating value over entire surface.
- .2 *Do not install insulation or vapour barrier until all exterior wood is tested and confirmed to be less than 19% moisture content. Provide written confirmation.*

3.2 BATT INSULATION AND MINERAL WOOL INSTALLATION

- .1 Install batt insulation to thickness and locations indicated.
- .2 Install around piping such as water supply, waste piping and rainwater leaders and where acoustical insulation is indicated. Install within stud space, including adjacent stud space, where pipes are less than 65 mm (2-1/2") away from stud, and in chase stud cavities.
- .3 Fit batt insulations tightly between studs, full height of partition complete with retainers where insulation is not the same depth as stud and/or as required to prevent sagging or displacement and with tight butt or overlapping joints or allow batts to overlap. Provide measures to prevent sagging in stud cavities.
- .4 Install insulation full width and length between studs and framing members to fit snugly without buckling, creasing or crushing.
- .5 In walls, install lower batt first; upper batt installed to butt with the first and any extra length of insulation trimmed at the top.
- .6 Install insulation in continuous contact with interior sheathing.
- .7 Do not compress batt insulation between gypsum board and piping.
- .8 Install acoustical sealant in joints between sound rated partitions where indicated and adjoining construction with sealant specified. Extrude a full 10 mm (3/8") diameter bead into joints

between first layer of gypsum board and floor to effectively block airborne sound transmission. Fill joints around penetrations with acoustical insulation.

- .9 Install mineral wool insulation in fire rated partitions as indicated and noted WHI or ULC design requirements.
- .10 Apply insulation units to substrates by bonding units to substrate with adhesive to provide permanent placement and support of units.
- .11 Seal joints between closed-cell (nonbreathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant.
- .12 Install acoustic insulation in sound insulated partitions. Tightly fit insulation between studs to full height of partitions. Fit insulation tight to penetrations through wallboard.
- .13 Install a layer of RSI 2.45 (R-14) batt insulation around and under bathtubs.
- .14 Where cavity heights exceed 2440 mm (96 inches) support blankets mechanically.

3.3 INSTALLATION OF BOARD INSULATION

- .1 Install rigid insulation in thickness as indicated.
- .2 Install insulation to comply with insulation manufacturer's written instructions applicable to products and application indicated. Extend insulation in thickness indicated to envelop entire area to be insulated.
- .3 Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- .4 Rigid insulation used at joist headers to be tight fitted with foam insulation at edges.
- .5 Verify walls to be plumb, true, clean, and even in plane before beginning installation. Cut mortar joints flush with masonry face. Remove fins and projections from concrete.
- .6 Pneumatically drive mechanical fasteners through each prepared hole in furring strips at 250mm (10 in.) on center through insulation into substrate.
- .7 Leave ready for installation of vapour barrier and gypsum board specified Section 09 21 16 Gypsum Board Assemblies.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide air / vapour barriers as indicated and specified.
- .2 Provide flexible membrane flashings as indicated and specified.
- .3 Provide air / weather barriers as indicated and specified
- .4 Seal joints and around protrusions through weather barriers as required for a complete installation.

1.2 RELATED SECTIONS

- .1 03 30 00 Cast in Place Concrete.
- .2 06 10 00 Rough Carpentry.
- .3 07 21 00 Building Insulation.
- .4 07 42 13 Metal Panel Cladding.
- .5 07 62 00 Sheet Metal Flashing and Trim.
- .6 07 84 00 Firestopping.
- .7 07 92 00 Joint Sealants.
- .8 08 11 00 Metal Doors and Frames.
- .9 08 41 13 Plastic Doors.
- .10 08 53 13 Vinyl Windows.
- .11 09 90 00 Painting and Coating.

1.3 REFERENCES

- .1 Comply with current edition of referenced standards unless indicated otherwise.
- .2 ASTM D 638-14 Standard Test Methods for Determining Tensile Properties of Plastics.
- .3 ASTM D 792-13 Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- .4 ASTM E330-14 Standard Test Method for Structural Performance of Exterior Windows, Skylights, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- .5 ASTM E96-16 Standard Test Methods for Water Vapor Transmission of Materials.
- .6 ASTM E 779-10 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
- .7 ASTM E 283-04 (2012), Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows and Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .8 BC Building Code, current edition.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Submit 3 copies or PDF of manufacturer's specification and installation instructions for each type of vapour and air barrier material, accessory components, self adhering membrane flashing materials, related sealants and fastening systems specified.
 - .2 Include data substantiating that materials comply with specified requirements.

- .3 Submit installation instructions for each product specified including weather forecast requirements.
- .3 Samples: Submit with related Quality Assurance/Control documents. Submit manufacturers published data referencing test reports and performance specifications confirming compliance.
- .4 Test Reports: independent testing agency reports indicating materials meet requirements of referenced standards and quantities specified.
- 1.5 QUALITY ASSURANCE
 - .1 Installer Qualifications: Engage an experienced installer. With minimum 2 years experience in installation of weather barrier systems.
 - .2 Pre-installation Conference:
 - .1 Notify involved parties in advance in order to conduct a pre-installation conference prior to commencement of any composite sheet waterproofing installation.
 - .2 Attendees shall include Owner, Consultant, Installer, and Product Manufacturer's Representative.
 - .3 At conference, attendees shall:
 - .1 Inspect the substrate(s).
 - .2 Review products.
 - .3 Discuss installation methods and details, including special details and flashing.
 - .4 Coordinate this work with related and adjacent work.
 - .5 Discuss weather conditions related to application.
 - .6 Discuss any other installation related questions or issues.
 - .3 Mock-up:
 - .1 Mock-up each barrier system around two wall openings and two doors in locations determined by Consultant indicating sequence of work. Mock-up complete with membrane flashing, metal flashings and sealants.
 - .2 Coordinate mock-ups with each Related Sections indicated in this Section.
 - .3 Ensure compatibility amongst adjacent systems prior to installing balance of Work.
 - .4 Coordinate installation of liquid applied air/moisture barrier with exterior finish systems to ensure compatibility between systems including sealants used at window installations.
 - .5 Mock-ups will remain in place as standard for work upon Consultant's approval.
 - .6 Perform cut and pull test with Consultant present at Consultant identified locations.
 - .7 Mock-ups may remain in place as part of finished work upon Consultant's approval.
- 1.6 DELIVERY, STORAGE AND HANDLING
 - .1 Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.
 - .2 Label materials with manufacturer's name, product, and date of manufacture, and directions for storage.
 - .3 Protect stored materials from direct sunlight.
 - .4 Immediately remove damaged material from the jobsite.
 - .5 Protect materials from damage during transit, handling, storage, and installation. Place materials on pallets or raised platforms and fully protect from moisture.

- .6 Store shipping cartons flat in a cool, shaded area. Inside storage (building or trailer) is preferred for the cartons containing rolls of sheet membrane and flashing.
- .7 Temporary Outside Storage (30 Days or Less):
 - .1 Rolls and Flashings: Cover with a light coloured canvas tarpaulin. Use of polyethylene film or other non-breathing cover material is unacceptable.
 - .2 Adhesive Containers:
 - .1 Store containers on pallets off the ground away from construction activities.
 - .2 Store away from any potential fire hazard.
 - .3 If containers have been stored longer than one (1) week in hot weather or two (2) weeks in cold weather, closely examine containers for a tight seal. Recycle products with broken seals and do not use on the project.
- 1.7 PROJECT CONDITIONS
 - .1 Attach membrane flashings in accordance with manufacturer's recommendations for acceptable weather conditions and temperatures. Attention is drawn to manufacturer's special conditions requiring forecasts for inclement weather.
 - .2 Ensure preparation work is complete prior to installing barriers.
 - .3 Do not apply barriers to damp or wet substrates.

PART 2 - PRODUCTS

2.1 VAPOUR BARRIER

- .1 Vapour Barrier at Walls: Conforming to CGSB 51.34; polyethylene film, 6 mils thick.
- .2 Under Slab Radon Air Barrier:
 - .1 To meet CAN/ULC-S742, Performance Class 1 per BCBC, maximum air leakage of 0.05
 - .2 Minimum 10 mil thick Radon Air Barrier. All joints overlapped and taped, caulk at perimeter of foundation wall.
 - .3 Product; Stego Wrap 10-Mil (0.25mm) Class A Vapour Barrier, *Viper II 10 Mil Class A Vapour Barrier*, or approved equivalent.
 - .4 *Provide compatible tapes over all joints and sealants.*

2.2 AIR WEATHER BARRIER (AWB)

- .1 Air Weather Barrier: Vapour Permeable Self-Adhered membrane. Product; Soprema Sopraseal Stick VP, or Blueskin VP 160 or Grace Perm-A-Barrier VPS, or Majvest 500SA by SIGA, *IKO Aquabarrier VP*, *Resisto VP* or equivalent.
- .2 Complete with all compatible tapes.

2.3 SELF ADHERED MEMBRANE (SAM)

- .1 Location: Windows and Door Sills:
 - .1 Rubberized self-adhesive modified asphalt on polyethylene film integrally laminated to a cross laminated polyethylene film. Thickness: 40 mils (1.0 mm). Elongation to ASTM D412. Modified Membrane Tensile Strength: 3.45 MN/m² (500 psi) minimum. Water Vapor Transmission: 0.05 perms. Products:
 - .1 Blueskin SA by BAKOR, *IKO AcrylicStick SA*, or approved alternative.
 - .2 Transition Membrane Primer: Synthetic rubber based adhesive type, quick setting, having the following physical properties. Blueskin Primer as manufactured by BAKOR, *IKO SAM Adhesive*, or approved equivalent.

- .2 Or alternative product: 3M Self Adhered Air and Vapour Barrier Membrane 3015, *IKO Aquabarrier AVB*
- .2 Location: roof parapets and curbs under metal flashing:
- .1 SBS modified bitumen self adhesive membrane to meet the following minimum criteria:
 - a) Membrane is to be 40 mils thick (including release film) and must have release film to protect the adhesive surface
 - b) The membrane system must not show any signs of softening flow or deterioration at temperatures 110 degrees C or below.
- .2 Acceptable Products:
 - .1 Blueskin SA High Temp
 - .2 APPROVED ALTERNATE

2.4 FLEXIBLE MEMBRANE - THROUGH WALL FLASHINGS

- .1 Locations: Masonry shelf angles and similar conditions.
 - .1 Self Adhesive SBS rubberized asphalt compound integrally laminated to a cross laminated polyethylene film. Thickness: 40 mils (1.0 mm). Elongation to ASTM D412. Modified Membrane Tensile Strength: 500 psi minimum. Water Vapor Transmission: 0.05 perms. Products: Blueskin TWF by BAKOR or approved alternative.
 - .2 Or alternative product: 3M Self Adhered Air and Vapour Barrier Membrane 3015, *or IKO Aquabarrier TWF*

2.5 JOINT TREATMENT

- .1 Fill joints between panels of exterior gypsum plywood and rigid insulation up to 6 mm (1/4 in.) wide with trowel applied application of liquid applied air/moisture barrier and reinforce with 500 mm (2 in.) strip of glass fibre tape.
- .2 Bakor yellow jacket 990-06 or approved alternative.
- .3 Seal joints wider than 6mm (1/4 in.) with flexible membrane flashing.
- .4 Blueskin SA by Bakor, IKO AcrylicStick SA, or approved alternative.

2.6 ACCESSORIES

- .1 Primer, sheet flashings, liquid membrane, patching membrane, and liquid mastics recommended by barrier manufacturer for intended use and compatible with specified product.
- .2 Joint Sealing Tape: Air resistant pressure sensitive adhesive tape. Product: 8087 Construction Seaming Tape by 3M Canada Inc. or as recommended by vapour barrier manufacturer.
- .3 Sealants: Provide sealants in accordance with Section 07 92 00 Joint Sealants and conform to requirements of 01 35 46 Low Emitting Materials – Emissions Limits Tables.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine surfaces to receive moisture barrier with Installer present.
- .2 Verify surfaces and conditions are ready to accept work of this section.
- .3 Correct unsatisfactory conditions.
- .4 Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.

3.2 PREPARATION

- .1 Coordinate as required with other trades to assure proper and adequate provision in work of those trades for interface with the work of this section.

- .2 Ensure concrete substrates are cured a minimum of 14 days and are dry.
- .3 Clean, prepare, and treat substrate according to manufacturer's written instructions.
- .4 Provide sound, clean, dust-free dry substrate, free of oil, grease, dirt, excess mortar or other contaminants for waterproofing application.
- .5 Fill spalled areas in substrate to provide an even plane.
- .6 Prepare, treat, rout, and fill joints and cracks in substrate.
- .7 Prepare, prime, and treat inside and outside corners, terminations, penetrations, drains, and protrusions according to waterproofing manufacturer's written instructions.
- .8 Check weather forecast to ensure manufacturer's requirements requiring pending weather can be met prior to start of work.

3.3 INSTALLATION – VAPOUR BARRIER

- .1 Install vapour barrier as indicated and in accordance with Code requirements. Tape and seal seams.

3.4 INSTALLATION – FLEXIBLE MEMBRANE FLASHING

- .1 Install self-adhering composite sheet according to waterproofing manufacturer's written instructions, including use of primer and recommended accessories, methods and details for complete waterproof system.
- .2 Apply primer to substrates in accordance with manufacturer's printed instructions. Apply at required rate and allow to dry.
- .3 Apply and firmly self-adhere sheet membrane with hand roller over area to receive waterproof and over fishmouths and blisters.
- .4 Accurately align sheets and maintain uniform minimum lap widths, end laps and stagger laps per manufacturer's recommendations to ensure watertight installation.
- .5 Re-prime surfaces where membrane is not attached on same day as primer.
- .6 When ambient and substrate temperatures exceed 5 deg C (40 deg F) install manufacturer's standard rubberized-asphalt composite sheet.
- .7 When ambient and substrate temperatures range between -4 deg C and 5 deg C (25 deg F and 40 deg F) install manufacturer's standard, low-temperature, rubberized-asphalt composite sheet.
- .8 Transition Sheet:
 - .1 Position self-adhered transition membrane and remove protective film. Press firmly into place. Accurately align sheets and ensure minimum 50mm (2 in.) overlap at end and side laps. Stagger laps in accordance with manufacturer's instructions.
 - .2 Promptly roll laps with a counter top roller to effect seal.
 - .3 Ensure preparatory work is complete prior to installing liquid applied air/moisture barrier.

3.5 AIR WEATHER BARRIER

- .1 Preparation: Ensure surfaces to receive building paper are smooth, clean, dry and in good condition. Remove moisture, grease, machine oil or other foreign material.
- .2 Attach Air Barrier to wood, sheathing board or exterior gypsum with slater's head or plastic capped galvanized nails or galvanized staples with a minimum 1 inch crown.
- .3 Install sufficient fasteners to secure Air Barrier to wall and resist a limited period of wind forces prior to application of exterior cladding. Ensure building paper is free from holes and breaks other than those created by fasteners.

- .4 Apply Air Barrier horizontally; with upper layer lapped over lower layer not less than 6 inches, shingle style. Lap vertical joints not less than 6 inches. Flash wall penetrations with specified membrane flashing materials providing a water shedding system.
- .5 Inspection and Repair: Inspect Air Barrier thoroughly before covering and make corrections immediately. Misaligned or inadequately lapped seams, punctures, or other damage must be repaired with a patch of air barrier extending 152 mm (6") in all directions from the edge of the damaged area. Seal all edges of the patch with mastic. Repair punctures or other damage as recommended by manufacturer.
- 3.6 REPAIR
 - .1 In barriers not meeting requirements, repair tears, voids, and lapped seams.
 - .2 Slit and flatten fishmouths and blisters.
 - .3 Patch with sheet membrane extending 150mm (6 in.) beyond repaired areas in all directions.
- 3.7 CLEANING
 - .1 Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.
 - .2 Dispose of waste in proper manner.
- 3.8 PROTECTION
 - .1 Cover finished work as soon as possible after application and in no case more than 4 weeks after application.
 - .2 Begin covering membrane on southern-exposure first wherever possible, followed by reminder of surface.
 - .3 Protect waterproofing from damage and wear during application and remainder of construction period, according to manufacturer's written instructions.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide asphalt shingles as indicated and specified. See attached approved alternatives.
- .2 Provide underlayment protection at eaves and valleys as indicated. Provide additional membrane protection at Cricket location.
- .3 Provide related flashings and all venting. Provide flashing covering all fascias.
- .4 Include provision and installation of rainwater leaders, gutters, and roof drains.

1.2 RELATED SECTIONS

- .1 07 25 00 Weather Barriers.
- .2 07 62 00 Sheet Metal Flashing and Trim.

1.3 REFERENCES

- .1 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 British Columbia Building Code, current edition.
- .3 CAN/CGSB-37.5 M89, Cutback Asphalt Plastic Cement.
- .4 CAN/ULC-S107-10, Methods of Fire Tests of Roof Coverings.
- .5 CSA A123.5-16 Asphalt Shingles Made From Organic Felt and Surfaced With Mineral Granules/Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.
- .6 CSA B111-1974 (R2003) Wire Nails, Spikes and Staples.
- .7 Roofing Contractor's Association of B.C. (RCABC); Roofing Practices Manual latest edition.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Sample: Submit samples for colour selection.

1.5 QUALITY ASSURANCE

- .1 The roofing manufacturer must warrant in writing to the Owner of the building that The Roof System will remain free of any manufacturing defects resulting in water leakage during the applicable warranty period. The warranty will include for removal and replacement of any defect in The Roof System to a water tight condition, including labour or refund the Owner an amount equal to the costs for labor and materials required to replace the defective materials. The warranty shall be non pro-rated for a period of ten (10) years from the date of substantial completion.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store materials undamaged and where applicable in original wrappings or containers with manufacturers labels and seals intact. Store materials on a dry floor in a weatherproof enclosure.

1.7 GUARANTEE OR MAINTENANCE BOND

- .1 Provide a minimum Thirty (30) years guarantee for the asphalt shingle manufacturer's standard material.

PRODUCTS

1.8 MATERIALS

- .1 Acceptable materials as listed in the RCABC Roofing Practices Manual. Shingle materials manufactured to CSA A123.5 for fibre glass felt core product. Organic felt products are not acceptable as they are not covered under the Roofing Guaranty Corporation (RGC) program.
- .2 Conform to requirements of CAN/ULC-S107 and Fire Rating Classifications C as applicable for compliance to codes and insurance requirements governing material selection.
- .3 Asphalt shingles: Three tab or laminated Architectural fibreglass asphalt shingle surfaces with mineral granules, manufactured to CSA A123.5: Products:
 - .1 As listed in the RCABC Roofing Practice Manual.
 - .2 GAF Timberline UHDZ Ultra High Definition, Lifetime Shingles.
 - .3 Gaf Royal Sovereign Shingles, for low slope application
 - .4 or approval alternative.
- .4 For low slope roof install Low Slope Triple Coverage shingles as recommended by the RCABC. Low slope shingles to match those on the remainder of the roof.
- .5 Asphalt Primer: Conforming to ASTM D41, Asphalt primer No. 706 by Malarkey or approved alternative.

1.9 METAL FLASHINGS

- .1 Base and counter flashing and coping metal: Pre-finished sheet steel, minimum 24 gauge, thick galvanized to ASTM A653/A653M, ZF275 coating, prefinished with Stelcolour 8000 series paint finish. Colour to be selected by Consultant from manufacturer's standard range.
- .2 Step flashings must be 24 gauge and shall extend a minimum of 125mm (5") up vertical services in accordance with RCABC requirements.
- .3 Gutters and Downspouts: Prefinished with 2-coat as per ASTM D—1729, 24 gauge seamless one piece aluminum or pre-finished sheet steel gutters and downpipes. Gutter: 127 mm x 127 mm (5" x 5"), and downpipes are of size 51 mm x 75 mm (2" x 3") or 75 mm (3") diameter. All accessories should be provided by the manufacturers. Colour as selected by consultant and compatible with the shingles.
- .4 Downspouts that terminate at sloped roofs shall have the downspouts continued down and over the roof to drain directly into the eaves trough/gutters.
- .5 Downspouts shall be capped where they enter the storm drain, at grade level, with a metal cap finished to match downspouts. Secure the cap to the drain with sheet metal screws. Where storm drains do not exist, terminate downspouts on a dedicated splash pad.
- .6 Install zinc strips at ridge locations. Installed zinc strip must have minimum 51 mm (2") exposed to the weather.

1.10 ACCESSORIES

- .1 Install zinc strips to all ridge locations with minimum 51 mm (2") exposed to the weather.
- .2 Fasteners in contact with pressure treated wood to be stainless steel.
- .3 Eaves Protection: Self adhesive rubberized asphalt sheet, RCABC listed Acceptable Materials.
 - .1 Lastbond 195 by Soprema
 - .2 ArmourGuard Ice & Water protector by IKO
 - .3 Review RCABC for low slope application and approved products.
 - .4 Or approved equivalent

- .4 Nails: 1 1/4 inch hot dipped galvanized conforming to CSA B111, RCABC and manufacturer's requirements. Exposed eaves and soffits may require shorter nails to prevent penetration of decking.
- .5 Nails for Shingles: Large head roofing nails, hot dipped galvanized or aluminum.
- .6 Plastic Cement: CAN/CGSB-37.5, Asphalt type with mineral fibre.
- .7 Underlayment on all of roof, as listed in RGC Manual for guarantee specified.
- .8 Provide roof vents, typically RF-50, at all locations and additional vents as required to meet BCBC requirements. See also drawings for requirements.

PART 2 - EXECUTION

2.1 APPLICATION

- .1 Installation per all RCABC requirements and as dictated by RCABC inspector.
- .2 Apply 7'-0" strip of eave and valley protection membrane fully bonded to substrate, as indicated, in accordance with membrane manufacturer's instructions, and RGC recommendations.
- .3 Apply 7'-0" strip of valley protection membrane fully bonded to substrate to all "Cricket" locations.
- .4 Apply underlayment over entire roof, lapped shingle fashion to shed water. Vertical and horizontal laps to RGC recommendations.
- .5 Apply shingles, vents and flashings in strict accordance with RGC standards, manufacturer's instructions and as detailed.
- .6 Apply as a Low-Slope application for roof area with slope between 2/12 and 4/12 as per the RCABC Roofing Practices Manual.
- .7 Install flashings, cappings, anti-moss strips and trim as detailed and as required. Fold and seamed, free and regletted edges to profiles indicated. Backprime flashings with bitumastic paint. Seal joints.
- .8 Provide slope to drains in all gutter applications. Waterproof linings for "hidden" or "inboard" or "built-in" type gutters must be fully adhered 2 ply modified bitumen sheets and must be carried up to the slope to a point that is 200 mm (8") vertical above the outside height of the parapet or an emergency overflow outlet in the gutter. The cap sheet is to provide UV protection and must be installed in all areas exposed to UV. Use self adhering base sheet whenever possible with second UV protective ply fully torched to first ply. Ensure drains discharge into downspouts that are kept above freezing.
- .9 Ensure drains discharge into downspouts that are kept above freezing.
- .10 Caulking compounds must not be used as the primary water seal for any roofing application or roofing detail.
- .11 Downspouts at storm drain pipe at grade with metal cap, finish to match downspout. Secure to drain with sheet metal screws.

2.2 PROTECTION AND CLEANING

- .1 Protect the work of other Sections from damage resulting from the work of this Section.
- .2 Promptly as the work proceeds and on completion remove surplus materials and equipment and leave work in a neat, tidy condition.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide metal roof panels as indicated and specified
- .2 Provide underlayment protection at eaves and valleys as indicated.
- .3 Provide related flashings.
- .4 Coordinate work of this section with installation of rainwater leaders, gutters, and roof drains.
- .5 Provide a 10 year manufacturer's full system warranty.

1.2 RELATED SECTIONS

- .1 07 25 00 Weather Barriers.
- .2 06 10 00 Rough Carpentry.
- .3 07 62 00 Sheet Metal Flashing and Trim.
- .4 07 92 00 Joint Sealants.

1.3 REFERENCES

- .1 ASTM A653/A653M-07, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 British Columbia Building Code, current Edition.
- .3 CAN/CGSB-37.5 M89, Cutback Asphalt Plastic Cement.
- .4 CAN/ULC-S107-03, Methods of Fire Tests of Roof Coverings.
- .5 CSA B111-1974 (R2003) Wire Nails, Spikes and Staples.
- .6 Roofing Contractor's Association of B.C. (RCABC); Roofing Practices Manual latest edition.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Sample: Submit colour samples on metal.
- .3 Record of Installation: Provide the Owner with RCABC Roofing System record of installation. Record to include guarantees, copies of inspection reports and roof maintenance guide.

1.5 QUALITY ASSURANCE

- .1 Materials and workmanship shall conform to guarantee standards of the Roofing Contractor's Association of BC Guarantee Corp (RGC) as published in the RGC Roofing Practices Manual, latest published edition and updates, for qualification for a five (5) year Guarantee Certificate.
- .2 Obtain and pay for roofing inspections by an independent roofing inspection agency. Cooperate with the Owner's inspection agency.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store materials undamaged and where applicable in original wrappings or containers with manufacturers labels and seals intact. Store materials on a dry floor in a weatherproof enclosure.

1.7 WARRANTY

- .1 The product Manufacturer shall issue a written and signed document in Owner's name certifying the product will meet physical characteristics published by Manufacturer and that membrane manufacturer will repair, at its own expense, any leaks in roof membrane or membrane

flashings caused by either faulty materials or workmanship for a period of not less than ten (10) years with no dollar limit, starting from the date of acceptance of work.

- .2 The Contractor shall issue a written and signed document in Owner's name certifying work executed shall remain in place and free of performance defects for a period of not less than ten (10) years non-prorated, starting from date of acceptance of the work.

1.8 GUARANTEE

- .1 Provide a 10 year manufacturer's full system warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Conform to requirements of CAN/ULC-S107 and Fire Rating Classifications C as applicable for compliance to codes and insurance requirements governing material selection.
- .2 All products, panels, clips, insulation, membranes, etc., per Manufacturer and RCABC requirements and standards for fully warranted system. General products are noted herein.
- .3 Sheet Metal: Oven baked factory finished standing seam steel panels:
 - .1 Firestone UNA-CLAD UC-14 Panel clip system
 - .2 24ga Firestone Zoncalume Plus finish.
 - .3 Or approved alternative.
- .4 Firestone UC-14 Stainless Steel Clip, and UC Bearing Plate, or approved equivalent.
- .5 Underlayment: must meet the following requirements
 - .1 Must meet requirements of Metal Panel manufacturer for their warranty.
 - .2 Firestone CLAD-GARD SA Underlayment, or approved equivalent
 - .3 Meet the requirements of the RCABC for Metal Roof underlayment. Fully adhered membrane.
- .6 Manufacturer's seam sealant to be factory applied to the seam.
- .7 Insulation; Firestone ISO 95+ GL / ISOGARD GL insulation, or approved equivalent

2.2 METAL FLASHINGS

- .1 Base and counter flashing and coping metal: Pre-finished sheet steel, minimum 26 gauge, (.56 mm) thick galvanized to ASTM A653/A653M, ZF275 coating, prefinished with Stelcolour 8000 series paint finish. Colour to be selected by Consultant from manufacturer's standard range.
- .2 Step flashings must be 26 gauge in accordance with RCABC requirements.
- .3 Gutters and Downspouts: Prefinished, baked enamel, seamless one piece aluminum gutters. Ogee design, 127 mm x 127 mm (5" x 5"), 8 mm (0.33") thick. Downpipes of 75mm (3") diameter. Provide all accessories. Colour as selected by Consultant. Coordinate with Mechanical.

2.3 ACCESSORIES

- .1 Firestone UC-14 Stainless Steel Clip, and UC Bearing Plate, or approved equivalent.
- .2 Fasteners in contact with pressure treated wood to be stainless steel.
- .3 Eaves Protection: Self adhesive rubberized asphalt sheet, RCABC listed Acceptable Materials.

PART 3 - EXECUTION

3.1 APPLICATION

- .1 Apply 3'-0" strip of eaves protection membrane fully bonded to substrate, as indicated, in accordance with membrane manufacturer's instructions, and RGC recommendations.
- .2 Apply fully adhered underlayment over entire roof, lapped shingle fashion to shed water. Vertical and horizontal laps to RGC recommendations.
- .3 Apply underlayment, metal panels and flashings in strict accordance with RGC standards, manufacturer's instructions and as detailed.
- .4 Install flashings, cappings, trim as detailed and as required. Fold and seamed, free and regletted edges to profiles indicated. Backprime flashings with bitumastic paint. Seal joints.
- .5 Provide slope drains for gutter applications.
- .6 Ensure drains discharge into downspouts that are kept above freezing.
- .7 Caulking compounds must not be used as the primary water seal for any roofing application or roofing detail.
- .8 Downspouts at storm drain pipe at grade with metal cap, finish to match downspout. Secure to drain with sheet metal screws.

3.2 PROTECTION AND CLEANING

- .1 Protect the work of other Sections from damage resulting from the work of this Section.
- .2 Promptly as the work proceeds and on completion remove surplus materials and equipment and leave work in a neat, tidy condition.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide all exterior fibre-reinforced cementitious cladding - vertical panels with prefinished aluminum trims, - for a complete installation as specified and detailed.
- .2 Provide fibre-reinforced cementitious fascia trim as detailed and specified.
- .3 Provide prefinished metal soffit, as detailed.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 06 20 00 Finish Carpentry.
- .3 07 21 00 Building Insulation.
- .4 07 25 00 Weather Barriers.
- .5 07 62 00 Sheet Metal Flashing and Trim.
- .6 07 92 00 Joint Sealants.
- .7 09 90 00 Painting and Coating.

1.3 REFERENCES

- .1 ASTM C1186-08 (2012), Standard Specification for Flat Fibre-Cement Sheets.
- .2 ASTM C1186 grade II, Type A for siding.
- .3 ASTM E84-15b, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .4 British Columbia Building Code, current edition.
- .5 CAN/CGSB 41.33 M87, Installation of Rigid Vinyl Residential Siding, Soffits and Fascias.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: Submit manufacturer's standard product installation and maintenance data. Incorporate care and maintenance instructions into Maintenance Manuals and submit in accordance with Section 01 77 00 Closeout Procedures.
- .3 Shop Drawings:
 - .1 Indicating thickness and dimensions of all parts, fastening and anchoring methods, detail and location of joints including joints necessary to accommodate thermal movement, and panel layout.
 - .2 Manufacturer's affidavit certifying material meets specified requirements.
 - .3 Manufacturer's literature for panel material and recommended installation procedures.
- .4 Samples: Submit three (3) 300mm (12 in.) long sample of panel and horizontal siding as indicated and specified and trim boards with selected paint colour.

1.5 QUALITY ASSURANCE

- .1 Installers Qualifications: Installers to have a minimum of five (5) years experience of proven experience installing the specified materials/system on projects of similar size and complexity.
- .2 Mock Up:

- .1 Provide mock up with Related Sections and complete with accessories and sealants to the Consultant's satisfaction, in area of building as selected by Consultant. Mock up to include typical panel/siding installation locations, install of flashings, detailing at windows and doors, detailing at mechanical grilles or plumbing equipment. Including full envelope materials.
 - .2 Mock-up will serve as the standard of work and demonstrate layout, corner treatment and junction details with adjacent window and any veneer installation.
 - .3 Mock-up, once approved, shall be basis for acceptance of the Work of this Section. Non-conforming work will be required to be removed, cleaned and reinstalled at no cost to the Owner.
 - .4 Approved mock-up may remain in-situ as part of the final Work.
- 1.6 DELIVERY STORAGE AND HANDLING
- .1 Deliver and handle panels in accordance with manufacturer's recommendations.
 - .2 Provide and maintain dry, off the ground storage.
 - .3 Stack Fibre-Cement components on edge or lay flat on a smooth, level surface.
 - .4 Protect edges and corners from chipping.
 - .5 To ensure optimum performance store sheets under cover and keep dry prior to installing. If sheets should become wet, allow to dry thoroughly before installing.
- 1.7 WARRANTY
- .1 Cladding System: Provide two (2) year material and labour warranty for cladding system.
 - .1 Siding Finish: Submit manufacturer's minimum thirty (30) year product warranty and 15-year finish warranty for prefinished products

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Subject to compliance with specifications the following manufacturers are acceptable.
 - .1 HardiePanel, prefinished Hardie Architectural Trims, by James Hardie Building Products Inc.
 - .2 Allura Fibre Cement products including, panel, trims.
 - .3 EasyTrim Reveals, aluminum trim system
 - .4 See drawings for product materials and finishes.

2.2 MATERIALS

- .1 All fibre cement products shall be **site finished**, to be primed.
- .2 Fibre Cement Cladding: to ASTM C1186 Grade 11, Type A Grade II machine edges. Non-combustible when tested in accordance with ASTM E136. Surface burning characteristics when tested in accordance with ASTM E84:
 - .1 Flame Spread: 0.
 - .2 Fuel Contributed: 0.
 - .3 Smoke Density: 5.
 - .4 NFPA Class: A.
 - .5 UBC Class: 1.
- .3 Trims:

- .1 Fascia, Barge Boards, fibre cement 5/4 Rustic Grain or Cedar texture, 1" thick boards, width to sizes and locations as shown on drawings and details. Provide acceptable furring behind trim as indicated.

- .4 Exterior items: See drawings for locations.

ITEM	MATERIAL	DESCRIPTION
Wood Fascia	Fibre Cement, primed	Dimensions as indicated.
Panel Trims	Prefinished aluminum	
Metal Soffit	Westform 6" Proboard Soffit. Vented incl. all trims.	Standard colour by Consultant. Solid colour

2.3 ACCESSORIES

- .1 Fasteners: 6d common corrosion resistant nails or 1" roofing nails.
- .2 Sealant: Provide sealant as recommended by panel manufacturer.
- .3 Insect screen: black fibreglass mesh bent to fit over exterior wall strapping top, bottom, at joints within wall system and under through wall flashing locations.
- .4 Sealants: Acrylic Latex base, as specified in Section 07 92 00 Joint Sealants in colour to match siding.
- .5 Isolation Coating: Acid and alkali resistant bituminous paint or epoxy solution. Apply isolation coating to separate aluminium materials from sources of corrosion or electrolytic action contact points and to metal surfaces in contact with dissimilar surfaces, such as concrete and masonry.

2.4 FINISHES

- .1 All fibre cement products shall be **site finished**

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine surfaces to receive panels with Installer present. Ensure that substrates are even, smooth, sound, clean, dry and free from defects detrimental to work. Correct unsatisfactory conditions. Do not proceed with erection until unsatisfactory conditions have been corrected.
- .2 Ensure exterior sheathing is completely covered with an air/weather barrier. Ensure sheet metal flashings are in place at window heads and sills, along bottom of wall, and other locations as shown on drawings and details. Do not proceed with installation of insulation, rainscreen strapping or z-girts and siding until the membrane and flashing have been inspected and approved by Consultant.
- .3 Prior to covering exterior sheathing or shear walls, request inspection of nailing patterns by Structural Engineer.

3.2 PREPARATION

- .1 Install continuous furring for support where cementitious cladding product joints occur. For specific framing and fastener requirements refer to Tables II and III in National Evaluation Service Report No. NER-405. Place fasteners no closer than 3/8" from panel edges and no closer than 2" from sheet corners.
- .2 Repaint exposed edges resulting from on-site cuts to maintain manufacturer's warranty. Use manufacturer supplied paint materials for cut ends, fastener heads or other deficiencies.

3.3 INSTALLATION

- .1 Install fibre cement siding over pressure treated plywood rainscreen strapping on frame walls or metal Z girts on concrete block walls, as indicated and in accordance with manufacturer's printed instructions.
- .2 Installation of rainscreen strapping per manufacturers recommendations taking into account depth of exterior rigid insulation. Installation of rainscreen into wood studs with suitable anchors (screws) providing effective penetration per manufacturers requirements.
- .3 Carry out work using skilled installers familiar with the application of each product using the manufacturer's recommended systems and tools including touch-up of finish and nail heads etc.
- .4 Install exterior cladding to form a continuous weatherproof protection system.
- .5 Re-prime cut material prior to installation in accordance with manufacturer's printed instructions to maintain warranty.
- .6 Install a double bead of sealant below each batten prior to mechanically fastening batten.
- .7 Properly seal, caulk or flash joints where cladding meets with roof, soffits, windows, doors, foundation, penetrations or other materials.
- .8 Counter sink and fill nail heads prior to application of finish coat of paint.
- .9 At interior corner provide strapping up to 12mm (1/2") away from interior corner each way.
- .10 Install insect screen to wall in straight line minimum 25mm (1 in.) above bottom end and below top end of strapped walls. Apply strapping, into insect screen covering ends of strapping top and bottom, and staple at every strapping location, 3/8" plywood strapping.
- .11 Fasten siding in vertical, straight, aligned lengths at 600mm (24 in.) on centre maximum using two nails at each fixing location. Horizontal joints of planks are to align over strapping members. Stagger joints not less than 800mm and distribute evenly over wall faces.
- .12 Drive nail perpendicular to siding and framing. Fastener heads should rest snug against siding. In case of countersinking nails caulk nail hole and add nail.
- .13 Inject boltholes and penetrations through fascia and walls with sealant to prevent water penetration.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide flashing and sheet metal work as indicated and as specified.
- .2 Provide flashings at vertical and horizontal junctions, perimeters, and sill flashings to ensure integrity of building materials.
- .3 Provide flashing for roofing work including ALL fascias, parapet copings, valley flashing, drip flashing, overflow scuppers.
- .4 Provide gutters, rain water leaders as specified
- .5 Provide counter flashing for vent stacks and similar elements.
- .6 Provide flashing and trim not supplied by other trades.

1.2 RELATED SECTIONS

- .1 04 22 00 Concrete Unit Masonry.
- .2 06 10 00 Rough Carpentry.
- .3 07 25 00 Weather Barriers.
- .4 07 92 00 Joint Sealants.
- .5 08 51 13 Vinyl Windows.
- .6 08 11 00 18-09 Metal Doors & Frames.
- .7 09 90 00 Painting and Coating.
- .8 Division 22 Plumbing.

1.3 REFERENCES

- .1 Comply with current edition of referenced standards unless indicated otherwise.
- .2 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural Physical Quality.
- .3 BC Building Code, current edition.
- .4 Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Inc., Architectural Sheet Metal Manual, current Edition.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
- .2 Samples: Submit manufacturer's colour chart / samples of pre-finished flashing materials to Consultant for review and selection.

1.5 QUALITY ASSURANCE

- .1 All metal flashings must be installed to RCABC guarantee standards and standard RCABC flashing details. Form flashings square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance. Ensure that wide girth flashings are adequately sloped to the inside of the roof area and do not pond water.
- .2 Conform to SMACNA requirements specified and detailed in Architectural Sheet Metal Manual for all other flashing and sheet metal requirements.
- .3 Use experienced installers.
- .4 Mock ups: Mock up flashing at each typical opening.

- .1 Provide mock up indicating sequence of installation and coordinate work with work of Related Sections indicated above.
- .2 Mock up may remain as part of finished work upon Consultant's approval.

1.6 DESIGN REQUIREMENTS

- .1 Minimum material gauges and weights shall be in accordance with British Columbia Building Code, RCABC and SMACNA requirements.
- .2 Ensure minimum size for overflow scuppers is in accordance with local Building and Plumbing Code requirements for local rain load and maximum permitted hydraulic loads.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Metal products shall have a minimum 80% recycled content, minimum 15% post-consumer recycled content.
- .2 Aluminum/Zinc Prefinished Stock: AZ150 medium duty aluminum zinc (Galvalume) coating to ASTM A792/A792M, clean of mill oils, chemicals and residue,
 - .1 Surface: Smooth, flat.
 - .2 General: 0.71mm (0.028 in.) minimum thick.
 - .3 Exposed Finish: pre-painted with a two-coat thermoset system (primer and topcoat) of silicone modified polyester (SMP) with nominal dry film thickness of 1.0 + 0.2 mil, color as selected by Consultant.
 - .4 Concealed Sheet Finish: baked on neutral coloured primer coat having a minimum dry film thickness of 0.06mm (0.25 mil)
- .3 Prefinished Aluminum: to ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required. Max. sheet length 3.04m (10 ft.) x 1200mm (48 in.).
 - .1 Surface: Smooth, flat.
 - .2 General Flashing: 1.27mm (0.050 in.) minimum thick
 - .3 Base Flashing: Aluminum: 1.02mm (0.040 in.) minimum thick.
 - .4 Counter flashing: Aluminum: 0.81mm (0.032 in.) minimum thick.
 - .5 Flashing Receivers: Aluminum: 0.81mm (0.032 in.) minimum thick.
 - .6 Exposed Finish: Three-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - .7 Concealed Finish: Pretreat with manufacturer's standard white or light colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013mm).
- .4 Galvanized Steel Sheet: to ASTM A446, minimum 24 gauge, commercial quality with minimum Z275 (G90) designation zinc coating to ASTM A653/A653, prefinished with Stelcolor 8000 series. Submit sample for approval by Consultant. Refer to Section 07 31 13 to avoid duplication.

- .5 Material Gauges: SMACNA and design criteria requirements except minimum gauge shall be 0.61mm (0.024 in. / 24 gauge) unless indicated otherwise. Provide heavier gauge where oil canning may occur.

2.2 ACCESSORIES

- .1 Fasteners: Corrosion resistant to CSA B111(hot dipped galvanized or aluminium), same as substrate sheet metal and compatible with material being fastened with respect to galvanic reaction. Length and thickness to meet British Columbia Building Code requirements and reference standards.
- .2 Washers: Of same material as sheet metal with resilient (rubber) packings as required.
- .3 Plastic Cement: to CAN/CGSB-37.5, compatible with roofing membranes.
- .4 Isolation Coating: alkali resistant bituminous paint to ASTM D1187.
- .5 Sealants: Provide sealants in accordance with Section 07 92 00 Joint Sealants.
- .6 Cleats: Minimum 50mm (2 in.) wide of same material temper and thickness as sheet metal being secured.
- .7 Reglets: Minimum 0.56mm (1/50 in.) galvanized steel or 0.64mm (1/40 in.) thick aluminium pre-fabricated, surfaced mounted and embedded reglet and flashing system complete with corners, clips and accessories as required to suit application.

2.3 FABRICATION

- .1 Form flashings, copings and fascias to profiles and materials indicated and specified, to SMACNA requirements.
- .2 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance and in maximum lengths making allowances for expansion.
- .3 Fabricate sill flashings with soldered or "dog ear" end dams minimum 12 mm (1/2 in.) high.
- .4 Hem exposed edges on underside 12mm (1/2 in.).
- .5 Apply isolation coating to metal surfaces in contact with dissimilar surfaces, such as concrete and masonry.
- .6 Align seams with adjacent architectural elements.
- .7 All flashings exposed to traffic shall be hammered, bent over or filed to remove all sharp edges.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine areas to receive sheet metal, flashing and trim with Installer present.
- .2 Correct unsatisfactory conditions.
- .3 Start of work indicates acceptance of substrates as suitable for satisfactory installation.

3.2 INSTALLATION OF FLASHINGS

- .1 Provide underlayment under sheet metal in accordance with SMACNA requirements, secured in place with joints lapped a minimum of 100mm (4 in.).
- .2 Install flashing and sheet metal in accordance with SMACNA requirements.
- .3 Use concealed in-seam or clip-type fasteners unless indicated otherwise.
- .4 Do not fasten metal flashings through top surfaces. Where top fastening is required due to specific job site conditions use self-adhering membrane on underside of flashing and

appropriate colour matched screw type fasteners with neoprene washers. Nails are not acceptable.

- .5 Join flashing using "S" lock along continuous lengths, and standing seams with corners mitred and end joints locked at corners. Joints to be caulked watertight. Lap seams are not acceptable.
- .6 Counterflash bituminous flashings at intersections of roof and vertical surfaces and curbs.
- .7 Install surface mounted reglets as indicated, true and level and caulk joint.
- .8 Insert metal flashing into reglets or under cap flashing as detailed to form a weathertight junction.
- .9 Turn top edge of flashing into recessed reglet a minimum of 25mm (1 in.), wedge securely into joint and caulk.
- .10 All bolt holes and penetrations through fascia and / or walls shall be injected with sealant to prevent water penetration, and ensure air tightness.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide asbestos-free firestopping and smoke sealing systems including accessories for a complete system as indicated and specified.
- .2 Firestopping applies to all disciplines architectural, mechanical or electrical locations.
- .3 Provide firestopping at:
 - .1 Penetrations and openings in Fire Resistance Rated walls with or without Fire Separations at floors, ceilings and roofs including those around mechanical and electrical services.
 - .1 Top and bottom of all penetrations through stud framing, all locations.
 - .2 Any penetrations through fire rated gypsum board walls or ceilings
 - .2 Penetrations through fire blocking locations within walls, floors or roof framing.
 - .3 Openings and spaces at perimeter edge conditions, floor slabs edges at exterior walls.
 - .4 Openings and sleeves installed for future openings.
 - .5 Firestopping of electrical boxes in fire rated assemblies, as required and noted by Architectural details.
 - .6 Firestopping of other elements in fire rated assemblies, such as fire extinguishers, laundry boxes, other boxes exceeding size limitations.
 - .7 Firestopping and smoke seals to deflection voids between top of fire-rated CMU walls, fire-rated steel stud, gypsum board partitions and structure above.
 - .8 At outlet boxes per BCBC. See also drawings and details.
- .4 Firestop interruptions to fire-rated assemblies, materials or components.
- .5 Coordinate firestopping and smoke sealing with work of Divisions 22, 23 and 26.
- .6 See Architectural details (attached) on scope and approach to fire stopping.

1.2 RELATED SECTIONS

- ~~.1 04 22 00 Concrete Unit Masonry Assemblies.~~
- .2 06 10 00 Rough Carpentry.
- .3 07 92 00 Joint Sealants.
- .4 08 11 00 Metal Doors and Frames.
- .5 08 31 00 Access Doors and Panels.
- .6 08 51 13 Vinyl Windows.
- .7 08 43 13 Aluminum-Framed Entrances and Storefronts.
- .8 09 21 16 Gypsum Board Assemblies.
- .9 09 22 16 Non-structural Metal Framing.
- .10 Division 22 Plumbing.
- .11 Division 23 Heating Ventilation and Air Conditioning.
- .12 Division 26 Electrical.

1.3 REFERENCES

- .1 Comply with current edition of referenced standards unless indicated otherwise.

- .2 BC Building Code current edition.
- .3 CAN/ULC S101-07, Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .4 CAN/ULC S102-07, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .5 CAN/ULC S115-05, Standard Method of Fire Tests of Firestop Systems.
- .6 ULC FS04 Firestop Systems and Components.
- 1.4 SUBMITTALS
 - .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
 - .2 Product Data:
 - .1 Submit "Letter of Conformance" with manufacturers product data attached, indicating specified products.
 - .2 Mark each copy to identify applicable products, characteristics, models, options, and other supplemental data to clearly communicate information specific to this project.
 - .3 Submit documentation, including illustrations, from a qualified testing and inspecting agency applicable to each through-penetration firestop configuration.
 - .4 Where project conditions require modification of qualified testing and inspecting agency's illustration to suit a particular through-penetration firestop condition, submit illustration approved by firestopping manufacturer's fire protection engineer with modifications indicated.
 - .5 Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements, comply with local regulations controlling use of volatile organic compounds (VOCs), and are nontoxic to building occupants
 - .3 Shop Drawings:
 - .1 Submit complete Shop Drawings (using architectural floor plans); show all locations of all firestop seals including Division 22, 23 and 26 seals. Indicate applicable listed ULC system and design number as applicable. Show fire rated walls and floor penetrations. Show penetrations and develop an indexing (identification) system.
 - .2 Submit and review Shop drawings prior to placement of sleeves by Division 22, 23, 26.
 - .3 Submit firestop seal details and confirmation of ULC system listings. Show any variations, limitations, or areas where listings are expected to be exceeded.
 - .4 Provide copies of reviewed Shop Drawings to Division 22, 23 and 26 subtrades.
 - .4 Maintenance Data:
 - .1 Comply with Submittal requirements of Section 01 77 00 Closeout Procedures.
 - .2 Manuals: Complete firestopping details and instructions. Include listing, location, and test for each type of firestopping system condition on project.
 - .3 Submit, upon completion maintenance manual for the Owners' future use. Include product names, applicator, installation instructions, ULC listings, manufacturer's literature, etc.
 - .4 Instruction of Owner's Personnel: Instruct designated personnel in procedures required to maintain integrity of firestopping systems and fire-resistive rated construction and assemblies.

1.5 QUALITY ASSURANCE

- .1 Manufacturer Qualification's: Company specializing in the manufacture of firestopping and smoke sealing materials.
- .2 Installer Qualifications: Approved by manufacturer of firestopping and smoke sealing materials. Employ only skilled installers, thoroughly trained and competent in use of specified materials.
- .3 Conform to reference standards and British Columbia Building Code requirements for fire and smoke resistance ratings. Ensure all seals conform to CAN4 S115 fire protection ratings.
- .4 Fire resistance rating of installed fire stopping assembly shall not be less than the fire resistance rating of penetrated assembly and to be Type F, FT, FH or FTH in accordance with British Columbia Building Code and applicable Standard requirements.
- .5 Comply with requirements of authorities having jurisdiction.
- .6 Pre Installation Conference:
 - .1 Convene a meeting between related sections of work prior to commencement of construction to discuss firestopping and smoke sealing system requirements and applicable interactions with other trades including staging, penetrations, and sequencing of work.
 - .2 Review requirements of Section 01 35 43 Environmental Procedures and Section 01 74 19 Construction Waste Management and Disposal.
- .7 Continually co-ordinate and sequence firestopping and smoke sealing work with other trades.
- .8 Mock Up:
 - .1 Mock up 2 complete areas as designated by Consultant to demonstrate complete range of applications of materials specified. Do not start balance of work unit Consultant approves mock-up. Mock up may form part of the finished work upon Consultant's approval.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturers written recommendations.
- .2 Deliver materials in original containers with manufacturer's labels and seals intact. Do not use materials that are damaged or not labelled.

1.7 PROJECT CONDITIONS

- .1 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for application and curing of firestopping materials.
- .2 Provide adequate lighting, ventilation and take safety precautions in accordance with Work Safe BC requirements and manufacturers written recommendations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Subject to compliance with specifications the following manufacturers are acceptable:
 - .1 Hilti Canada Ltd.
 - .2 Dow Corning Corporation.
 - .3 3M Fire Protection Products.
 - .4 Johns-Manville Firestop Systems.
 - .5 CAFCO.

2.2 MATERIALS

.1 General:

- .1 Materials shall comply with VOC requirements specified in Section 01 35 46 Low Emitting Materials – Emission Limits Tables.
- .2 Firestopping materials applied shall be products of one manufacturer to the maximum extent possible.
- .3 Compatibility: Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application as demonstrated by Firestopping manufacturer based on testing and field experience.
- .4 Exposure: For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
- .5 Forming and Damming Materials: Mineral fiberboard or other type recommended by firestop manufacturer.

.2 Firestopping and Smoke Sealing Systems: Low VOC, asbestos free, capable of maintaining an effective barrier against flame, smoke, gases, temperature rise and hose stream (where noted) in accordance with requirements of CAN4-S115 or ULC 1479 and ASTM 814 and not exceeding opening sizes or design limitations for which they are intended.

- .1 Non-slump ability in wall and overhead applications.
- .2 Re-enterability in cable and cable tray penetrations without use of power tools.

.3 Sealants:

- .1 Vertical and overhead joints: non-sagging type.
- .2 Horizontal joints and fluid seals at floors: self-levelling type.
- .3 Flexible: elastomeric type allowing movement and capable of returning to original configuration without damage to seal and without adhesive or cohesive failure.

.4 Primers: in accordance with manufacturer's recommendations for fire stop material and substrate conditions.

.5 Damming, Gasketing, Back-up Materials, Supports and Anchoring Devices: in accordance with manufacturer's recommendations for tested assembly, substrate conditions and to Standards noted.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine areas to receive firestopping with Installer present. Correct unsatisfactory conditions.
- .2 Start of work indicates acceptance of conditions as suitable for a satisfactory installation.

3.2 PREPARATION

- .1 Sequence work to permit installation and inspection of firestopping and smoke sealing materials after adjacent work is complete and before the application of mechanical pipe insulation and the closure of spaces.
- .2 Clean, prepare and prime contacting surfaces in accordance with manufacturer's instructions for substrate conditions. Ensure surfaces are dry and frost free.
- .3 Ensure substrates are free of dust, dirt, rust, scale, oil, grease, paint, sealers, moisture and conditions otherwise detrimental to the formation of a durable bond.

- .4 Protect equipment, floors and other surfaces against splatter, staining or damage by firestopping and smoke sealant work. Remove splatters by proper methods, using care not to scratch or otherwise damage finished surfaces.
- .5 Ensure formed, sleeved or cored penetrations, holes or voids made by through penetrations, poke through termination devices, and unpenetrated openings or joints, conform to appropriate ULC / WHI requirements for type of system to be used.
- .6 Provide damming and temporary forming as required and remove only after materials have gained sufficient strength and cured in accordance with manufacturer's recommendation.

3.3 INSTALLATION

- .1 Install firestopping and smoke sealing materials and systems in accordance with manufacturer's written instructions and appropriate ULC / WHI certification requirements to provide ratings of not less than rating of penetrated assembly.
- .2 Use flexible sealants or assemblies at fire damper perimeters, mechanical piping penetrations, and expansion, contraction, control, and sway joints, and deflection spaces.
 - .1 Minimum 10% operational movement of all joints and annulars of mechanical piping and electrical bus duct penetrations.
- .3 Tool or trowel exposed sealant surfaces to provide a neat finish and allow to cure before covering or enclosing.
- .4 Provide minimum 75mm (3 in.) square identification tags, plates or decals at each mechanical and electrical penetration stating seal number, installation date and the following note:

**FIRESTOP SYSTEM -
DO NOT RE-ENTER, PUNCTURE OR DESTROY
UNLESS PREPARED TO RE-SEAL IMMEDIATELY
WITH APPROVED COMPATIBLE MATERIALS**

- .5 Apply such identification each side of wall and on top of floor penetrations on penetrant(s), on seal or next to assembly.
- .6 Notify inspection authorities when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 SEQUENCING

- .1 No installation is to proceed unless review and return of shop drawings has been completed.
- .2 Firestopping to floor and roof slab penetrations must precede drywall track installation. Coordinate with Section 09 22 16 Gypsum Board Assemblies.
- .3 Firestopping must precede fireproofing installation.
- .4 Firestopping at slab edge detail to exterior wall panels and at window panels must be done with wall panel installations.
- .5 Firestopping must precede mechanical pipe insulation (vapour barriers must be continued along with FPI - ASJ jacketing).

3.5 FIELD QUALITY CONTROL

- .1 Fire Stop Seals:
 - .1 Water Pressure Resistance: 25mm (1") head (0.0025kg/cm²).
 - .2 Compression Strength in cable and Cable Tray Penetration: Minimum 250psi (17.6kg/cm²).
- .2 Complete fire-tested (CAN4-S115) compatibility and operational compatibility without stress corrosion and/or any weakening effects within the following materials and/or combinations thereof in their respective applications: Black Steel (Piping, Sleeving & Structural)

- .1 Copper (Piping)
- .2 Aluminum (Cable Tray)
- .3 Galvanized Steel
- .4 Cast Iron (Piping)
- .5 ASJ Vapor Barriers (Insulation, Jacketing)
- .6 Concrete
- .7 Masonry
- .8 Power Cables (Min. 40% tray fill area rating)
- .9 Communication Cables (minimum 40% tray fill area rating) Inspection of installations must be simplified by using identifiable material colours such as red or orange.
- .3 Owner with administer Indoor Air Quality (IAQ) Testing as specified in Section 01 45 16 Field Quality Control – Environmental Tobacco Smoke – Audit Requirements.
- .4 Cooperate with Owner's testing agency.
- .5 Where suites or units fail to comply with specified standards, repair firestopping at no additional cost to Owner. Pay for re-testing until specified standards are achieved.
- 3.6 CLEANING
 - .1 Daily as the work progresses, remove waste and debris from site. Place in recycle or waste containers on site where available.
 - .2 Remove excess material from adjacent surfaces using firestopping manufacturer's recommended products.
 - .3 Touch up surfaces affected by firestopping application

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide exterior and interior caulking and sealant materials and accessories for a complete system as indicated and specified.
- .2 Provide sealants not specified in other Sections.

1.2 RELATED SECTIONS

- ~~.1 04 22 00 Concrete Unit Masonry Assemblies.~~
- .2 06 10 00 Rough Carpentry.
- .3 06 20 00 Finish Carpentry.
- .4 07 42 13 Metal Panel Cladding.
- .5 07 62 00 Sheet Metal Flashing and Trim.
- .6 08 11 00 Metal Doors and Frames.
- .7 08 14 00 Wood Doors and Frames.
- .8 08 31 00 Access Doors and Panels.
- .9 08 53 13 Vinyl Windows.
- .10 09 21 16 Gypsum Board Assemblies.
- .11 09 65 00 Resilient Flooring
- .12 09 90 00 Painting and Coating.
- .13 12 30 00 Manufactured Casework.

1.3 REFERENCES

- .1 Comply with current edition of referenced standards unless indicated otherwise.
- .2 ASTM C834-14 Standard Specification for Latex Sealants.
- .3 ASTM C919-12 Standard Practice for Use of Sealants in Acoustical Applications.
- .4 ASTM C920-14a Standard Specification for Elastomeric Joint Sealants.
- .5 ASTM C1193-16 Standard Guide for Use of Joint Sealants.
- .6 ASTM C1253-14 Standard Test Method for Determining the Outgassing Potential of Sealant Backing.
- .7 ASTM D1056-14 Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
- .8 BC Building Building code, current edition.
- .9 CAN/CGSB-19.0-M77, Methods of Testing Putty, Caulking and Sealing Compounds.
- .10 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric Chemical Curing.
- .11 CAN/CGSB-19.18-M87, Sealing Compound, One Component, Silicone Base, Solvent Curing.
- .12 CAN/CGSB-19.21-M87, Sealing and Bedding Compound Acoustical.
- .13 CAN/CGSB-19.22-M89, Mildew-Resistant Sealing Compound for Tubs and Tiles.
- .14 CAN/CGSB-19.24-M90, Multi-Component, Chemical-Curing Sealing Compound.
- .15 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing.
- .16 CGSB 19-GP-23, Guide to the Selection of Sealants on a Use Basis.
- .17 Occupational Health and Safety Regulations of the WorkSafeBC.

- .18 SSPC SP-1 Solvent Cleaning.
- .19 SSPC SP-2 Hand Tool Cleaning.
- .20 SSPC SP-3 Power Tool Cleaning.
- .21 Sealant, Waterproofing and Restoration Institute (SWRI) - Sealant and Caulking Guide Specification.
- 1.4 SUBMITTALS
 - .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's information indicating chemical characteristics, performance criteria and limitations for all proposed caulking and sealant products to be supplied as well as sealant colour charts and colour availability for each sealant type specified for Consultant's review, selection and pre-approval prior to installation.
 - .3 Manufacturer's Certification: Submit written confirmation from the product manufacturer, that product is approved for use in proposed application as well as laboratory tests or data verifying product compliance with criteria specified.
- 1.5 QUALITY ASSURANCE

Installer Qualifications: Installer specializing in application of caulking and sealants with a minimum of five (5) years local experience, thoroughly trained and competent in application of caulking and sealants using both hand and pressure operated equipment.

 - .1 Mock Up:
 - .1 Provide for review a "first day" mock up showing actual caulked joints and special conditions. Do not start balance of work until Consultant approves mock up. Proceeding with on site work without approval of mock up is cause for rejection.
 - .2 Pre-installation Conference / Field Adherence and Pull Testing:
 - .1 Conduct a pre-installation conference with each sealant manufacturer to review requirements for each material to be applied.
 - .2 Review requirements of Section 01 74 19 Construction Waste Management and Disposal.
 - .3 Field Test sealers on substrates designed to receive sealant with installer and sealant manufacturer present prior to full installation.
 - .4 Verify sealant manufacturer's requirements for substrate priming.
 - .5 Verify amount and method of application of primer or primers. Apply primers in accordance with manufacturer's instructions.
 - .6 Apply sealers to primed substrates following the manufacturer's recommendations.
 - .7 Manufacturer shall perform field pull tests to verify that required adhesion has been achieved.
 - .8 Make modifications required by the manufacturer after completion of pull tests to ensure adequate seal.
- 1.6 DELIVERY, HANDLING AND STORAGE
 - .1 Deliver materials to site in original, un-opened containers with manufacturer's labels intact.
 - .2 Handle and store materials in accordance with manufacturer's recommendations.
- 1.7 PROJECT CONDITIONS
 - .1 Apply caulking and sealants to completely dry surfaces within air and material temperatures as established by manufacturer's specifications.

- .2 As caulking and sealant application continues, record conditions and temperatures of application.
- 1.8 WARRANTY
 - .1 Provide material manufacturer's five (5) year written material guarantee from date of Substantial Performance that covers materials and replacement of caulking and sealant work that does not cure, leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent surfaces after installation.
 - .2 Provide Installer's written five (5) year warranty to repair or replace caulking and sealants which, in the Consultant's opinion, fail to provide airtight or watertight joints, fail in adhesion, cohesion, and abrasion, weather, extrusion, migration, resistance, and stain resistance, general durability, or appear to deteriorate.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

- .1 Sealant: VOC content shall comply with standards specified in Section 01 35 46 Low Emitting Materials – Emissions Limits Tables.
- .2 Sealants (SL): to CAN/CGSB 19.13 series to suit condition with non-staining colours to approximately match adjacent surfaces. Color to be selected by Consultant from manufacturer's full range.
- .3 Use materials with unexpired shelf life.
- .4 Obtain materials from manufacturers who will, if required, send a qualified technical representative to project site, for purpose of advising on procedures and precautions for proper application of materials.
- .5 Use materials that are known to be fully compatible with actual installation conditions.

2.2 EXTERIOR SEALANTS

- .1 Sealant 1 (SL1) - Non-Traffic Locations:
 - .1 One component neutral cure silicone sealant: to ASTM C920, Type S, Grade NS, Class 25. Joint movement capabilities: minimum 50% extension and 50% compression.
 - .2 Subject to compliance with specifications the following products are acceptable:
 - .1 Neutral Cure CWS by Dow Corning.
 - .2 Spectrem 3 by Tremco.
 - .3 Or approved alternate.
 - .3 Locations:
 - .1 Exterior locations at joints between dissimilar construction
 - .2 Around penetrations through exterior walls and roofs
 - .3 Metal flashing
 - .4 Aluminum doors
 - .5 Wood, vinyl, and fiber cement siding
 - .6 Pressed steel door frames, including at sill.
- .2 Sealant 2 (SL2) - Traffic Locations:
 - .1 Locations:
 - .1 Horizontal expansion joints, in concrete and cementitious slabs such as sidewalks, balconies, and pavements.
 - .2 Between pressed steel frames and concrete or at metal thresholds

- .3 Sealing stud wall plates to surrounding construction in exterior walls
 - .4 Sealing penetrations through interior layer of gypsum wallboard for Airtight Drywall."
 - .2 One Component Polyurethane Sealant, self-leveling, conforming to ASTM C920, Type S Grade P, Use T, class 25. Subject to compliance with specifications the following products are acceptable:
 - .1 Sikaflex – 1c SL by Sika, 604-943-2453.
 - .2 Masterseal SL(formerly Sonolastic SL) – 1 by Sonneborn.
 - .3 Urexpan NR-200 by Pecora.
 - .4 Or approved alternate.
- 2.3 INTERIOR SEALANTS
- .1 Sealant 3 (SL3):
 - .1 One part mildew and mold-resistant Silicone sealant conforming to CAN/CGSB-19.13 to ASTM C920 Type S (Single Component) Grade NS (Non-Sag) class 25 Use NT; G & A Color: White against white fixtures clear in other location. Products:
 - .1 Tremsil 200 by Tremco.
 - .2 Or approved alternate.
 - .3 Locations:
 - .1 Junction of washroom fixtures to floor
 - .2 Junction of counters (kitchen and bathroom vanities) to walls
 - .3 Behind plumbing escutcheons in tubs and showers
 - .4 Joints between tub enclosures and tubs, including trims around enclosures.
 - .5 Between finished resilient flooring/threshold and door frames
 - .6 Resilient floor/wall junction prior to installation of the rubber or wood base
 - .7 Between finished wood base and resilient floor.
 - .8 Between top of wood base and wall.
 - .9 Resilient floor and kitchen or vanity cabinet junctions.
 - .10 Kitchen or bathroom cabinets and wall
 - .11 At door frames, window frames and adjacent finishes
 - .12 At stair/tread/stringer interface, see also Section 09 65 00 3.3.6
 - .13 As may be required at electrical or mechanical penetrations/connections to maintain air tight conditions to meet energy standards. Including penetrations to exterior wall assembly.
 - .2 Sealant 4 (SL4):
 - .1 One part polyurethane sealant, conform to CGSB CAN/CGSB 19.13-M87; classification MCG-2-25B - N for part polyurethane sealant.
 - .2 Colour: As selected by the Consultant from manufacturer's complete range of available colors.
 - .3 Locations between interior pressed steel frames and concrete and masonry; sealing stud wall plates to surrounding construction in exterior walls; sealing penetrations through interior layer of gypsum wallboard where the "Airtight Drywall Approach" is used to control air leakage. Sealing in behind rubber base and other wall penetrations.

- .1 Sikaflex Ia by Sika.
 - .2 Or approved alternate.
- .3 Sealant 5 (SL5):
 - .1 Multi-component polyurethane sealant conforming to CAN/CGSB 19.4, Type II Class B. Color: as selected by consultant from manufacturer's full range. Subject to compliance with specifications the following products are acceptable:
 - .1 Dymeric 240 by Tremco.
 - .2 Or approved alternate.
- .4 Sealant 6 (SL6) – Acoustic Sealant:
 - .1 Subject to compliance with specifications the following products are acceptable: Non-hardening sealant for use in sealing sound-rated gypsum wallboard partitions and all end and lap joints in polyethylene vapour barriers, conforming to CAN/CGSB 19.21-M87 and acoustically tested in drywall partition system.
 - .2 Locations: joints requiring acoustical properties. Underside of sill plates
 - .3 Subject to compliance with specifications the following products are acceptable:
 - .1 Tremco-Acoustical Sealant: VOC 180 g/L.
 - .2 Or approved alternate.
- 2.4 ACCESSORIES
 - .1 Joint Cleaner: As recommended by sealant or caulking manufacturer for joint surfaces.
 - .2 Joint Primers: Non-corrosive and non-staining type, as recommended by sealant manufacturer, for joint surface conditions encountered.
 - .3 Bond Breaker Tape: Polyethylene tape/plastic tape recommended by sealant manufacturer, applied to sealant contact surfaces where bond to substrate or backer rod must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.
 - .4 Solvents, Cleaners and Primers: non-staining, non-corrosive types as recommended by sealant manufacturer for each particular substrate and compatible with joint forming materials.
 - .5 Backer Rod:
 - .1 Non-adherent type, closed cell to suit application requirements flexible rod, conforming to ASTM D1056 compatible with primers and sealants used, of type as recommended by sealant manufacturer, with the following properties:
 - .1 Extruded polyolefin, polyethylene, urethane, neoprene or vinyl foam rod with Shore A hardness of 20 and tensile strength from 140 to 200 kPa (20psi to 30psi).
 - .2 Neoprene or butyl rubber round solid rod with Shore A hardness of 70.
 - .3 Polyvinyl chloride or neoprene extruded tubing with minimum 6mm (1/4 in.) thick walls.
 - .4 Polystyrene foam and open cell rods are not acceptable.
 - .2 Locations:
 - .1 Horizontal Joints: Closed cell polyethylene foam rod, except where joint filler is specified at paving.
 - .2 Vertical Joints: Closed cell polyethylene foam or "soft rod" (skinned open cell) polyethylene foam.
 - .3 Diameter: 1/3 greater than width of joint where it is to be installed.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup material and sealants. Prepare and prime surfaces in accordance with the manufacturer's directions. Use joint backup material to control the depth of joint to the sealant manufacturer's recommended thickness.
- .2 Verify surfaces and conditions ready to receive work of this section with Installer present.
- .3 Do no work until conditions are satisfactory.
- .4 Start of work indicates acceptance of conditions.

3.2 PREPARATION

- .1 Verify substrates are clean and dry before proceeding.
- .2 Remove lacquers and protective films from metal surfaces.
- .3 Clean and prime joints in accordance with manufacturer's instructions.
- .4 Remove loose materials and foreign matter that might impair adhesion of sealant.
- .5 Verify that back-up material and release tapes are compatible with sealant.
- .6 Perform preparation in accordance with referenced ASTM C920 for elastomeric sealants and ASTM C834 for latex type materials.
- .7 Apply masking tape tightly around joints to protect adjacent surfaces from excess sealants.
- .8 Apply sealants prior to painting.
- .9 Protect equipment, floors and other surfaces against overflow, spillage, splatter or damage by primers and caulking and sealant work but suitable means.
- .10 Ensure temperature conditions are within manufacturer's recommended limitations for proper application.

3.3 INSTALLATION

- .1 Install in accordance with ASTM C1193 and manufacturer's instructions unless noted otherwise. Where in conflict with Contract Documents, follow more stringent requirements.
- .2 Employ proven application techniques and ensure full and uniform continuous beads of sealant without runs, wrinkles, sags, gaps, air-pockets or imbedded impurities and with equal joint bond on both surfaces.
- .3 Seal interior and exterior joints between locations as detailed and required to make weathertight. Refer to Architectural Drawings for window installation sequence.
 - .1 Around windows, lights, doors, and other openings in walls.
 - .2 Joints of dissimilar materials.
 - .3 Horizontal joints, including exterior paving joints over joint filler.
 - .4 At joints in sheet metal, flashing and trim.
- .4 Sealant beads shall have a sectional width to depth ratio of 2 to 1, unless specified otherwise or recommended otherwise by the sealant manufacturer.
- .5 Install sealants to size and shape indicated, with slightly concave surface, and ensure full contact with inner face of joint.
- .6 Backing for surfaces:
 - .1 Where more than 19mm (3/4 in.) wide pack with foam rod back-up material to within 13mm (1/2 in.) of surface.

- .2 Where less than 13mm (1/2 in.) wide install foam rod back-up material to within 6mm (1/4 in.) of surface.
- .3 Where less than 13mm (1/2 in.) deep, apply bond breaker tape to bottom of joints to prevent adhesion of sealant to bottom of joint.
- .4 Provide backing materials in as long lengths as practicable; install with proper tool. Force backing into joint to proper depth for sealant.
- .5 Do not insert with sharp objects. Do not puncture backer rod.
- .7 Install back-up material so sealant depth is not greater than joint width, and not less than 6mm (1/4 in.) thick. Joint width 25mm (1 in.), unless indicated otherwise.
- .8 Non-Traffic Joints: Install sealants with slight concave surface.
 - .1 Sealant Bite: Install between 6mm (1/4 in.) and 13mm (1/2 in.) deep, except minimum 50% of joint width.
 - .2 Narrowest Dimension at Sealant Profile: Minimum 3mm (1/8 in.) thick at center of profile.
 - .3 Verify dimension requirements with manufacturer's instructions.
- .9 Seal joints before final coat of finish is applied to adjacent surfaces.
- .10 Provide positive contact to concrete, masonry, metal, and other finish surfaces.
- 3.4 FIELD QUALITY CONTROL – EXTERIOR
 - .1 Conduct field adherence and pull testing in accordance with requirements itemized in Part 1 of this section.
 - .2 Replace or repair areas that fail testing and retest until tests are successful.
- 3.5 REPAIR AND CLEANING
 - .1 Examine installation carefully. Repair areas where sealant is not properly adhered due to bubbles, foreign matter, or other defects.
 - .2 Remove excess sealant material promptly as work progresses and upon completion, using cleaners recommended by manufacturer.
 - .3 Remove and dispose of masking materials.
 - .4 Leave surfaces neat, clean, and smooth.
- 3.6 PROTECTION
 - .1 Protect surfaces adjacent to joints. Apply masking around joints to protect adjacent surfaces from defacement and staining during sealing operations.
 - .2 Protect from dust, moisture, and other harmful substances during installation.
 - .3 Protect sealed joints for at least 12 hours.
 - .4 Do not allow sealant or priming compound to overflow, spill, or to migrate onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide commercial grade, insulated or un-insulated interior and exterior metal doors with frames as indicated.
- .2 Provide single and double-glazed metal doors, frames, and sidelights as indicated.
- .3 Provide related doors with labels indicating fire resistance rating.
- .4 Work of this Section is installed under Section 06 20 00 Finish Carpentry.
- .5 Refer to Door Schedule and Door Types Schedule.

1.2 RELATED SECTIONS

- .1 06 20 00 Finish Carpentry.
- .2 07 92 00 Joint Sealants.
- .3 08 14 00 Wood Doors.
- .4 08 53 13 Vinyl Windows & Doors
- .5 08 71 00 Finish Hardware.
- .6 08 81 00 Glass Glazing.
- .7 09 90 00 Painting and Coating.

1.3 REFERENCES

- .1 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A924/A924M-14e1, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .3 BC Building Code and Trail Building Bylaw, current Edition.
- .4 Canadian Steel Door and Frame Manufacturers Association (CSDFMA), Manufacturing Specification for Steel Doors and Frames.
- .5 CSDFMA, Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
- .6 NFPA (Fire) 80, Fire Doors and Windows, current Edition.
- .7 ULC CAN4-S104-15, Standard Method for Fire Tests of Door Assemblies.
- .8 ULC CAN4-S105-09, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.4 SUBMITTALS

- .1 Submit in accordance with the following Sections:
 - .1 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Provide configurations, standard details for cut-outs and hardware reinforcement, and door reinforcement and construction.
 - .2 Provide manufacturer's installation instructions. Indicate special installation instructions. Transmit one copy of instructions to Installer.
- .3 Shop Drawings: for review prior to fabrication.
 - .1 Clearly indicate manufacturer, door frame, elevations, dimensions, fastening, reinforcing, thickness hardware, reinforcement details, opening requirements for glazing, quality of

materials, shop finishes, fabrication details, installation requirements and wall condition/anchorage details.

.2 Indicate doors and frames bearing labels for ratings and opening classifications.

.4 Manufacturer's Certificates:

.1 Hollow Metal Doors and Frames: Certify that products conform to, or exceed, specified requirements. Manufacturer agrees to replace, at no additional cost to Owner, doors, and frames not meeting provisions of Specifications.

.2 Primers: Certify that specified priming procedures, methods, and products have been followed.

1.5 QUALITY ASSURANCE

.1 Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labelled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated. Fire Rated Doors and Frames to be labeled by UL or Warnok Hersey (WH).

.2 Provide steel doors and frames from single manufacturer.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver in manufacturer's protective packaging. Break seal on site to permit ventilation.

.2 Store under cover in building in protected, upright position. Set on wood sills. Protect doors, frames, and finish to prevent rust and damage.

1.7 WARRANTY

.1 Provide a two year written warranty against warpage, twist, deformation, or other defects from date of Substantial Performance that defective doors will be replaced and refinished at no cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

.1 Subject to compliance with specifications the following manufacturer's are acceptable:

.1 Fleming Co.

.2 Steelcraft Manufacturing Co. part of Allegion

.3 Ceco Door- Trio-E Energy efficient steel stiffened door for full glazed front entrance.

.4 Or approved alternate.

2.2 MATERIALS

.1 Steel to have minimum 80% recycled content and minimum 25% post-consumer recycled content.

.2 Sheet Steel: Commercial steel (CS), Type B (stretcher-levelled standard of flatness), to ASTM A653, ZF075 (satin or wipe coat), zinc coated, minimum.

.3 Inserts, Bolts, and Fasteners: Manufacturer's standard units.

.4 Bituminous Coating: Fibrated asphalt coating.

.5 Sealant: Refer to Section 07 92 00 Joint Sealants.

.6 Firestopping: In accordance with Section 07 84 00 Firestopping.

.7 Grout for Frames: Gypsolite by National Gypsum Co, Structolite by U.S. Gypsum Co., or approved alternative.

.8 Glazing: as indicated on Door Schedule, Refer to Section 08 81 00 Glass Glazing.

- .1 In fire rated locations; Fire Rated Ceramic Glass.
- .2 Glazing Stops: Standard non-removable 1 mm (20 gauge) outside face of doors and frames.
- .3 Removable Glazing Bead: On room side of doors and frames.
- 2.3 FABRICATION - DOORS
 - .1 Fabricate doors in accordance with CSDFMA Standards.
 - .2 Fabricate fire-rated doors in accordance with testing agency's requirements using material not less than thickness specified, unless a greater thickness is specified in rating requirements.
 - .3 Exterior Doors: Complying with same rating and testing requirements as outlined in CAN/CSA A440 Window and CSA A440.1 User Selection Guide to CSA Standard A440. Provide minimum A, B, and C ratings as specified by Owner's building envelope consultant.
 - .4 Surfaces: smooth and flat, free from dents, warp, wave, buckle. Corners: neatly formed and finished without horizontal or vertical seams showing on exposed faces in final installation. Reinforcing, cores or marks telegraphing through flat panels and surfaces will not be accepted.
 - .5 Factory or shop fit and assemble door and frame units to be rigid and free from defects, such as warp or buckle.
 - .6 Close recessed tops and bottoms of doors with galvanized steel or plastic inverted channels or end caps for flush seamless appearance.
 - .7 Fabricate frames with hardware reinforcement welded into place. Include concealed stiffeners, reinforcement, edge channels, and moldings fabricated from either cold-rolled or hot-rolled steel.
 - .8 Weld longitudinal joints continuously, grind, dress, and make smooth, flush, for seamless appearance. Spot welded seams, filled and sanded edges as per the Shanahans WSSE series are an acceptable alternate.
 - .9 Bevel door edges 3mm (1/8 in.) in 50mm (2 in.) on lock and hinge edges.
 - .10 Attach fire rated label to hinge side of door.
 - .11 Exterior Service Room and Exit Doors
 - .1 Thickness: 45 mm (1-3/4")
 - .2 Door Construction: 18 gauge galvanized steel
 - .3 Style: Flush - hollow metal panel design. Flush doors are defined as those without visible seams on faces of doors.
 - .4 Core: Polyurethane insulation, thermally broken.
 - .5 Finish: Prime painted for site finishing
 - .6 Sill: extruded thermally broken aluminium. 1/2" height if accessibility is required.
 - .7 Weatherstripping: mechanically fastened, extruded aluminium with neoprene inserts and adjustable sweep at sill
 - .8 Frame: hollow metal frame, thermally broken. Insulate with slab polyurethane insulation or spray insulation.
 - .9 Rain Drip: aluminium rain drip at head of door frame.
 - .12 Service/Mechanical Rooms, Interior Exit Doors
 - .1 Thickness: 45 mm (1-3/4")
 - .2 Door Construction: 18 gauge galvanized steel

- .3 Style: Flush - hollow metal panel design. Flush doors are defined as those without visible seams on faces of doors.
- .4 Core: Structural small cell 25.4 mm (1") maximum kraft paper 'honeycomb'. Weight: 36.3 kg (80 lb.) per ream minimum, density: 16.5 kg/m³ (1.03 pcf) minimum, sanded to required thickness.
- .5 Finish: Prime painted for site finishing
- .6 Sill: extruded aluminium
- .7 Weatherstripping: mechanically fastened, extruded aluminium with neoprene inserts and adjustable sweep at sill
- .8 Frame: hollow metal frame.
- .9 Door and frame product shall be manufactured from tension-levelled steel to ASTM A924. Galvanized to ASTM A653 Commercial Steel (CS) dry passivated, coating designation A40 (ZF 120), known commercially as painted galvalume.
- .10 Door frames for concrete and concrete block walls: Fully welded, 16 gauge steel to ASTM A525 prepared to ASTM A527, Class ZF075, wiped zinc coated.
- .11 Metal doorframes in wood frame construction shall be "knock down" or welded frame type. Note Welded frames to be used for exterior doors, thermally broken.
- .12 Fire-Rated Frames: Fabricate fire-rated frames as per underwriter's requirements using material not less than the thickness specified herein unless a greater thickness is stipulated by the labelling authority.
- .13 For corridor fire doors, provide weather stripping and maximum area of wired glass/fire rated ceramic glass permitted by the applicable building code. Door installation shall include hold open device activated by the fire alarm.
- .13 Interior Steel Doors:
 - .1 Face Sheets: 1.6 mm (18 ga) minimum thickness, galvanized sheet steel.
 - .2 Structural small cell 25.4 mm (1") maximum kraft paper 'honeycomb'. Weight: 36.3 kg (80 lb.) per ream minimum, density: 16.5 kg/m³ (1.03 pcf) minimum, sanded to required thickness.
- .14 Fire Rate Doors: Door construction 1.6 mm (18 ga). Temperature Rise Rated (TRR): Core composition to provide the fire-protection rating and limit the temperature rise on the unexposed side of door to 250°C at 30 or 60 minutes, as determined by governing building code requirements. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, covering the Standard Method of Tests of Door Assemblies and shall be listed by a nationally recognized testing agency having a factory inspection service. Frame and sidelights 1.52mm (16ga)
- 2.4 STEEL FRAMES
 - .1 Fabricate frames in accordance with CSDFMA Standards and details shown on drawings.
 - .2 Fabricate frames as welded to suit ULC requirements.
 - .3 Frame to be mortised, blanked, reinforced, drilled and tapped at the factory for templated hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.
 - .4 Reinforce frames wider than 1200mm (48 in.) with roll formed steel channels fitted tightly into frame head flush with top.
 - .5 Prepare frames for silencers. Provide three (3) single silencers for single doors, mullions of double doors on strike side and 2 single silencers on frame head at double door without mullions.

- .6 Attach fire rated label to each frame unit at hinge side.
- .7 Provide frame anchors of a type suitable for wall construction.
- .8 Back paint frames with bituminous coating where in contact with masonry, concrete, plaster or grout.
- .9 Pressed steel frames with 50 mm (2 in.) face, 13mm (1/2 in.) returns, and double rabbet with 16 mm (5/8 in.) stop:
 - .1 Frames at Interior Doors, Sidelights and Relights: Medium duty 1.60 mm (16 gauge).
 - .2 Frames at Exterior Doors: Medium duty 1.60 mm (16 gauge) hot-dip galvanized ASTM A653/A653M, cold-rolled steel, thermally broken.
 - .3 Anchors: Cover fastener locations on frames and body with putty, flush with frame, to make invisible.
 - .4 Welded Construction: Miter and weld corners. Weld other components. Knock-down frames not permitted.
 - .5 Plaster Guards: Weld 0.84 mm (26 gauge) steel plaster guards or mortar boxes to frame at back of finish hardware cutouts where finish materials might obstruct hardware operation.
 - .6 Accessories: Include glazing stops for hollow metal frames for installation of glass specified Section 08 81 00 Glass Glazing.
- 2.5 PROVISION FOR HARDWARE
 - .1 Doors and frames shall be prepared and hardware located in accordance with the Canadian Metric Guide for Steel Doors and Frames (Modular Construction), published by the CSDFMA.
 - .2 The installation of hardware is specified under Section 08 71 00 Door Hardware.
 - .3 Doors and frames shall be prepared to receive security system devices, as required, including but not limited to devices listed in Section 08 71 00 Door Hardware.
 - .4 Factory reinforce, drill and tap doors and frames to receive mortised hinges, locks, latches, flush bolts, and concealed door closers.
 - .5 Minimum Gauge for Hardware Reinforcing:
 - .1 Hinges: 2.74 mm (12 gauge) at doors or equivalent number of threads and 7 gauge at frames.
 - .2 Locks: 1.60 mm (16 gauge) or equivalent number of threads.
 - .3 Surface Closers: 2.74 mm (12 gauge).
 - .4 Hold Open Arms: 2.74 mm (12 gauge).
 - .5 Panic Devices: 1.30 mm (18 gauge).
 - .6 Floor Check Hinges and Pivots: 1.60 mm (16 gauge).
 - .6 Anchors: Provide sufficient wall anchorage for wall attachment, tested in accordance with ANSI/SDI 119, Level A of one million cycles, except where anchorage is otherwise detailed on Drawings.
 - .7 Do work using hardware templates. Factory drill for door silencers. Do not install silencers on fire-rated doors.
 - .8 Plaster Guards: Provide at silencers and strike pockets.
 - .9 Finish Hardware Locations: Refer to Section 06 20 00 Finish Carpentry and 08 71 00 Door Hardware.
 - .10 Provide field tapping and drilling and installation of surface applied hardware not applicable for factory installation.

2.6 FINISH

- .1 Exterior Doors and Frames: Provide A250.10 factory applied, baked-on epoxy-ester shop primer, ready for work of Section 09 90 00 Painting and Coating.
- .2 Interior Doors and Frames: Provide air dried epoxy-ester shop primer, 1.5 mil dry film thickness, ready for work of Section 09 90 00 Painting and Coating.

2.7 GALVANIC PROTECTION

- .1 Coat or otherwise isolate metal doors and frames to prohibit galvanic action where it might occur.

2.8 LABELLED DOORS AND FRAMES

- .1 Fire Rated Doors and Frames: Provide doors and frames constructed, tested, and approved by Underwriters' Laboratories Canada (ULC), Warnok Hersey (WH) or other nationally recognized testing agency.
- .2 Where door or frame specified does not qualify for appropriate labeling because of design, hardware, or other reason, notify Consultant. Obtain approval of modifications required for compliance before fabricating unit.

PART 3 - EXECUTION

3.1 INSPECTION / PREPARATION

- .1 Confirm dimensions on site prior to fabrication or delivery to site.

3.2 INSTALLATION

- .1 Install metal doors and frames in accordance with reviewed Shop Drawings and Code requirements.
- .2 Installation of Metal Doors and Frames: Refer to Section 06 20 00 Finish Carpentry.
- .3 Tolerances: Maximum allowable variation 1.6mm (1/16 in.) out of plumb measured on face of frame, 3mm (1/8 in.) twist corner to corner diagonally.

3.3 ADJUSTING AND CLEANING

- .1 Touch up damaged galvanized finish. Remove mortar splatter and leave components ready for finishing by others.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide flush wood doors, fire rated and non-rated with paint grade wood or stained as indicated on drawings, scheduled and specified.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 06 20 00 Finish Carpentry.
- .3 08 11 00 Metal Doors and Frames.
- .4 08 53 13 Vinyl Windows & Doors
- .5 08 71 00 Door Hardware.
- .6 08 81 00 Glass Glazing.
- .7 09 90 00 Painting and Coating.

1.3 REFERENCES

- .1 ANSI / AHA A135.4-2012, Basic Hardboard.
- .2 ASTM E413-16, Classification for Rating Sound Insulation.
- .3 ASTM E2074-00e1, Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies.
- .4 Architectural Woodwork Institute / Architectural Woodwork Manufacturers Association (AWMAC) of Canada / Quality Standards Illustrated (QSI), current edition, hereafter referred to as QSI Manual, shall form part of these Specifications.
- .5 BC Building Code and Trail Building Bylaw, current edition.
- .6 CAN/CSA O132.2 SERIES-90 (R2003), Wood Flush Doors.
- .7 NFPA (Fire) 80, Fire Doors and Windows, current Edition.
- .8 NFPA 252, Standard Method of Fire Tests for Door Assemblies.

1.4 SUBMITTALS

- .1 Submit in accordance with the following Sections:
 - .1 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Indicate door core materials and edge construction; veneer species, type and characteristics. Confirm prime paint products used, to meet MPI standards.
- .3 Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special blocking for hardware, identify cutouts for glazing and louvers.
- .4 Samples: Submit two samples of door construction, 300 x 300 min size cut from top corner of door. Provide manufacturer's written installation instructions indicating special instructions as required.
- .5 Prior to finish site painting provide painted mock up on each type of door, for testing by MPI inspector for proper adhesion.

1.5 QUALITY ASSURANCE

- .1 Perform work in accordance with QSI Manual Custom Grade.
- .2 Finish doors in accordance with QSI Manual, Custom Grade.

- .3 Manufacturer: Company with minimum three years documented experience specializing in manufacturing Products specified.
- 1.6 SCHEDULE
 - .1 Refer to drawings and Door and Hardware Schedules for sizes, types, details and ratings of doors and corresponding frames.
 - .2 Identify and mark (concealed or removed when doors are installed and finished) in conjunction with Door and Hardware Schedule number designations and key for site location. Door numbers to be the same as those indicated on the Door Schedule.
- 1.7 DELIVERY, STORAGE AND HANDLING
 - .1 Package, deliver, and store doors in accordance with QSI Manual.
 - .2 Arrange delivery and storage on site in a timely manner in accordance with contractors construction schedule, keeping site storage to a minimum.
 - .3 Deliver doors to project site factory-sealed, each door individually wrapped with polyethylene to prevent damage or deterioration.
 - .4 Provide equipment necessary for off-loading of materials to complete the work.
 - .5 Protect materials from damage, dampness, weather, and store in a dry place.
 - .6 Immediately remove damaged or deteriorated doors from site and return to supplier for re-use and recycling
- 1.8 PROJECT CONDITIONS
 - .1 Coordinate the work with door opening construction, door frame and door hardware installation.
- 1.9 GUARANTEE
 - .1 ***All doors and frames shall be guaranteed by the manufacturer for a period of not less than three (3) years after the substantial completion against stile, rail, core show-through or deformation in the surfaces as determined under AWMAC.***
 - .2 Replace defective wood doors, hang, and finish to match, at no additional cost to Owner.

PART 2 - PRODUCTS

- 2.1 SOLID CORE WOOD DOORS (RATED OR UNRATED)
 - .1 Door - 20 minute OR 45 minute rating, as per door schedule, non-rated wood doors as scheduled.
 - .1 Core: Particleboard or solid wood stave core, fully glued and bonded. Rated for applicable fire requirements.
 - .2 Face: Flush panel tempered hardboard face, paint grade (per schedule)
 - .3 Face: Flush panel, GIS plywood, stain finish (per schedule)
 - .4 Finish: Shop primed, site finished. MPI Approved Primer
 - .5 Thickness: 45mm.
 - .6 Frame: If wood, meeting BCBC requirements for fire rating, min 38mm thick. Finger jointed PSF, shop primed, site finished.
 - .7 Blocking: Minimum 125mm x 460mm solid wood with lock blocking at both stiles.
 - .8 Adhesive: Low VOC, Type I PVA waterproof adhesive.
 - .9 Provide smoke and draft control assembly as required by authority having jurisdiction.

2.2 FABRICATION

- .1 Doors to be urea formaldehyde free.
- .2 Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
- .3 Comply with requirements in NFPA 80 for fire-rated doors.
- .4 Fabricate non-rated doors in accordance with QSI requirements.
- .5 Provide lock blocks at lock edge and top of door for closer for hardware reinforcement.
- .6 Provide edge clearances in accordance with QSI.
- .7 Prepare doors for grilles, louvers, and glazing as scheduled. Provide hardwood-glazing stops to match face veneer with mitred corners.

2.3 SHOP PRIMING

- .1 Shop prime doors with one coat of wood primer specified in Section 09 90 00 Painting and Coating. Primer to meet MPI standards. Seal all four edges, edges of cutouts, and mortises with primer.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine doors and installed doorframes before hanging doors.
 - .1 Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - .2 Reject doors with defects.
- .2 Correct unsatisfactory conditions.
- .3 Verify that opening sizes and tolerances are acceptable.
- .4 Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

- .1 Refer to Section 06 20 00 Finish Carpentry.
- .2 Doors are to be installed plumb, square and level. Ensure that doors can swing out fully without obstruction.
- .3 While setting the frame, check and correct as necessary for opening width, opening height, square, alignment, twist and plumb, in accordance with the AWMAC.
- .4 Consultant shall ensure that pocket doors walls do not support vertical or lateral loads (such as wall-hung fixtures, grab bars, etc) unless appropriate design measures are taken to support such loads.

3.3 ADJUSTING

- .1 Refer to Section 06 20 00 Finish Carpentry.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide fire-rated and non-rated wall and ceiling access doors and frames as scheduled, indicated and specified.
- .2 See also mechanical drawings for access to plumbing locations.
- .3 Provide appropriate access doors to any and all equipment requirement servicing or maintenance including plumbing cleanouts or other concealed services.

1.2 RELATED SECTIONS

- .1 03 30 00 Cast-in-Place Concrete.
- .2 06 10 00 Rough Carpentry.
- .3 06 20 00 Finish Carpentry.
- .4 08 71 00 Door Hardware.
- .5 08 71 01 Door Hardware Schedule.
- .6 09 21 16 Gypsum Board Assemblies.
- .7 09 90 00 Painting and Coating.
- .8 Division 22 Plumbing.
- .9 Division 23 Heating Ventilating and Air Conditioning.
- .10 Division 26 Electrical.

1.3 REFERENCES

- .1 ASTM E283-04(2012) Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across Specimen.
- .2 BC Building Code, current edition.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: Manufacturer's information on materials, fabrication, and installation of access doors and panels.

1.5 QUALITY ASSURANCE

- .1 Manufacturer's Qualifications: A firm with not less than 5 years experience in fabrication of access doors and panels.
- .2 Installer Qualifications: Installation shall be by manufacturer or authorized representative.
- .3 Where access doors are required in fire rated construction, assemblies shall be labeled by Underwriter's Laboratory of Canada, Warnock Hersey, or other testing laboratory approved by local authority having jurisdiction, to meet hourly fire resistance rating of construction in which access door is installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Fire rated, insulated roof access hatch to be lockable with keyed cylinder locks.
- .2 Wall and ceiling access doors and panels, subject to compliance with specifications the following manufacturers are acceptable:
 - .1 Maxam Metal Products.

- .2 Bauco, by Access Panel Solutions Inc.
- .3 Or approved alternate.

2.2 RATED ACCESS DOORS AND PANELS

- .1 Fire rated, Flush Access Doors with Trimless Frames, fabricated from steel sheet.
 - .1 Make/Model: Maxam/FCB-150, or approved alternative. Size as noted in drawings or as required to provide access.
 - .2 Locations: Wall or ceiling surfaces.
 - .3 Fire-Resistance Rating: Not less than rating indicated.
 - .4 Temperature Rise Rating: 139 deg C (250 deg F) at the end of 30 minutes.
 - .5 Door: Flush panel with a core of 57mm (2-1/4 in.) thick, mineral-fiber insulation enclosed in sheet metal with a minimum thickness of 1.9mm (0.075 in.).
 - .6 Frame: Minimum 1.5mm (0.060 in.) thick sheet metal with drywall bead.
 - .7 Hinges: Concealed continuous rod.
 - .8 Panel Closer: Automatic panel closer.
 - .9 Lock: Self-latching device with detention lock.
- .2 Flush Access Doors and Trimless Frames, fabricated from steel sheet.
 - .1 Make/Model: Maxam/NDB, or approved alternative. Size as noted in drawings or as required to provide access.
 - .2 Locations: Wall and ceiling surfaces.
 - .3 Door: Minimum 1.5mm (0.060 in.) thick sheet metal, set flush with surrounding finish surfaces.
 - .4 Frame: Minimum 1.5mm (0.060 in.) thick sheet metal with drywall bead flange.
 - .5 Hinges: Galvanized spring with 175 degree opening.
 - .6 Latch: Cam latch operated by screwdriver with interior release.
 - .7 Lock: 29mm (1-1/8 in.) mortise prep complete with mortise cylinder.
 - .8 Lock Preparation: Prepare door panel to accept cylinder specified in Section 08 71 00 Door Hardware.
- .3 Recessed Access Doors and Trimless Frames, fabricated from steel sheet.
 - .1 Make/Model: Maxam/NDI, or approved alternative. Size as noted in drawings or as required to provide access.
 - .2 Locations: Wall and ceiling surfaces.
 - .3 Door: Minimum 1.5mm (0.060 in.) thick sheet metal in the form of a pan recessed 16mm (5/8 in.) for gypsum board infill.
 - .4 Frame: Minimum 1.5mm (0.060 in.) thick sheet metal with drywall bead for gypsum board surfaces or designed for insertion into acoustical tile ceiling.
 - .5 Hinges: Concealed rod type.
 - .6 Latch: Cam latch operated by screwdriver with interior release.
 - .7 Lock: 29mm (1-1/8 in.) mortise prep complete with mortise cylinder.
 - .8 Lock Preparation: Prepare door panel to accept cylinder specified in Section 08 71 00 Door Hardware.

2.3 ACCESSORIES

- .1 Hardware: Manufacturers standard with flush, key operated cam locks.

2.4 FINISHES

- .1 Interior/Dry Locations: Manufacturers' standard factory applied baked enamel primer, colour to match surrounding finishes.
- .2 Exterior/Wet Locations: Galvanized steel with wiped coat finish, prime units with manufacturer's standard primer to receive paint coatings as specified in Section 09 90 00 Painting and Coating, colour to match surrounding finishes.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Verify and coordinate locations with Consultant prior to installation.
- .2 Verify that openings to receive access doors are satisfactory for their installation.
- .3 Install access doors, including associated accessories, and joint sealers in accordance with manufacturers' instructions.
- .4 Coordinate access door sizes and locations with Divisions 22 Plumbing, 23 HVAC, and 26 Electrical.

3.2 ADJUSTMENT

- .1 Following installation, adjust access doors for smooth operation.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide operable and fixed, vinyl double glazed windows with accessories including hardware, flashings, and vinyl trim for a complete installation.
- .2 Provide insect screens to operable windows.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 06 20 00 Finish Carpentry.
- .3 07 25 00 Weather Barriers.
- .4 07 92 00 Joint Sealants.
- .5 08 81 00 Glass Glazing.
- .6 08 71 00 Door Hardware
- .7 08 11 00 Metal Doors and Frames

1.3 REFERENCES

- .1 AAMA/WDMA/CSA 101/I.S.2/A440, NAFS North American Fenestration Standard/Specification for windows, doors and skylights.
- .2 CSA A440S1, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440 NAFS North American Fenestration Standard/Specification for windows, doors and skylights.
- .3 CAN/CSA-A440.4 Window, Door, and Skylight Installation.
- .4 CAN/CGSB-12.20 Structural Design of Glass for Buildings.
- .5 IGMA TM-3000 North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use.
- .6 ASTM E1105 Field Determination of Water Penetration of Installed Exterior Curtain Walls and Doors, by Uniform or Cyclic Static Air Pressure Difference.
- .7 ASTM E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation.
- .8 Current versions of the BC Building Code, BC Energy Efficiency Standards Regulation, and Local Government Act.
- .9 Building Enclosure Design Guide – Wood-Frame Multi-Unit Residential Buildings (Homeowner Protection Office — HPO, most recent edition) for guidance on window and door installation detailing.
- .10 Best Practices for Window and Door Replacement in Wood Frame Buildings (Homeowner Protection Office – HPO, most recent addition).

1.4 SYSTEM DESCRIPTION – PERFORMANCE REQUIREMENTS

- 1. Windows shall conform to AAMA/WDMA/CSA 101/I.S.2/A440 and CSA A440S1, and have the following minimum tested performance rating of Class LC.
- 2. Performance Grade – For Part 9 buildings, Performance Grades should be selected according to the Canadian Supplement CSA A440S1. For Part 3 Performance Grade shall not be less than PG35.
- 3. Water Penetration Resistance Test Pressure – to be determined in accordance with CSA A440S1, but in no case shall it be less than 290 Pa for buildings up to four storeys.
- 4. AAMA/WDMA/CSA 101/I.S.2/A440 requires products supplied with screens to be laboratory tested for water penetration resistance both with screens and without screens.

5. Air Infiltration/Exfiltration Level: A-3 for operable windows; "Fixed" for non-operable windows
6. Insulating glass units shall be of dual seal construction certified for durability and argon gas retention to ASTM E 2190.
7. Multifamily and Part 3 Buildings. Design and manufacture fenestration products and product anchoring to the building structure to meet all applicable building code loads for the building height and location, including wind loads, seismic loads, human impact loads, guard loads, seismic movements, and other expected movements and deformations of the building structure. Deflection of all glass supporting members to be limited to L/175 in class CW and AW.

"SEE SECTION 08 81 00 FOR PERFORMANCE REQUIREMENTS". Fenestration products shall be labeled to show an overall product U-value as required by the BC Energy Efficiency Standards Regulation. U-value labels shall bear the mark of a recognized certification agency.

8. For the purposes of the fenestration product design and anchoring appropriate design wind pressures should be determined for building locations and terrain. The design pressure determined by the responsible engineer may differ from the Performance Grade used to prequalify products on the basis of NAFS tested performance ratings.
9. Fenestration products shall comply with the Canadian Operating Force Requirements in AAMA/WDMA/CSA 101/I.S.2/A440.

1.5 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: Submit installation instructions.
- .3 Shop Drawings: Submit Shop Drawings of typical items indicating dimensions and methods of fixing. Confirm dimensions on site prior to fabrication of units. Shop Drawings to be signed and sealed by a Structural Engineer registered to practice in the province of British Columbia.
- .4 Samples: Submit samples of typical hardware components in finish selected by Consultant.

1.6 QUALITY ASSURANCE

- .1 Mock-up: Provide sequential mock-ups in conjunction with Related Sections. Install sample window completely in framed opening for approval before beginning work of this Section. Mock-up will provide installation standard for remainder of windows and may become incorporated into work if approved by Consultant. Provide mock-up for each system and configuration indicated.
- .2 Test Results: Show that windows and doors comply with or exceed specified performance characteristics.

1.7 WARRANTY

- .1 Sealed units to have a minimum warranty period of twenty (20) years against failure of glazing unit seals and deposits on interior glass faces detrimental to vision.
- .2 Fenestration product frames to have a minimum warranty period of 25 years against failure of frame, sash and mullions. Failure modes include: warping, cracking, shrunken glazing beads, failure of gaskets, dislocation or disappearance of weatherstrips, detectable water penetration through joints in the product, and operational difficulties such as inability or increased difficulty to operate products, including an increase in operating force beyond the values in AAMA/WDMA/CSA 101/I.S.2/A440 Table 6.
- .3 Hardware to have a minimum warranty period for 10 years against breakage; premature wear and/or operational difficulties such as inability or increased difficulty to operate products, including an increase in operating force beyond the values in AAMA/WDMA/CSA 101/I.S.2/A440 Table 6.

- .4 Unpainted frames shall be free of uneven or noticeable colour change for a period of 10 years. Painted finishes shall be free of noticeable uneven or noticeable colour change for a period of 10 years.
- .5 Supplier to guarantee that the Black finish will not result in any warping or premature degradation of the finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Subject to compliance with specifications, the following manufacturers are acceptable for the requirements indicated:
 - .1 Starline Windows, 7100 Series, awning and fixed, as indicated. Series 3500/3501 swing door.
 - .2 All Weather Windows, Apex 1900 series
 - .3 Centra 2900 Series windows.
 - .4 Ply Gem Window, Enviro or Comfort series.
 - .5 Vinyltek 157 Boreal 6000 Series windows.
 - .6 Or approved alternate.

2.2 WINDOWS

- .1 Vinyl Windows: Fabricated from extruded, impact resistant, rigid polyvinyl chloride (PVC) Labelled as Energy Star Rated.
 - .1 Frame and sash members: hollow multi-chambered design with 3 mm (1/8") wall thickness. Cam handle locking operation.
 - .2 Provide screens for all windows.
 - .3 Colour: WHITE on exterior, WHITE on interior.
 - .4 Supplier to guarantee that the finish will not result in any warping or premature degradation of the finish.

2.3 SEALED UNITS

- .1 Sealed Units: Conforming to CAN2-12.8 as specified in Section 08 81 00 Glass Glazing.

2.4 ACCESSORIES

- .1 Safety Restrictors: to restrict vent opening to 4".
- .2 Provide rotary handle window operation and locking handles to all openers. Provide 5% extra for maintenance purposes.
- .3 Insect Screens: Provide manufacturer's standard wicket-type insect screens with aluminum mill finish frame and grey fibre mesh, held in place with manufacturer's standard clips.
- .4 Metal Flashing. As specified in Section 07 62 00 Sheet Metal Flashing and Trim.
- .5 Weather Barriers: As specified in Section 07 25 00 Weather Barriers.

2.5 FABRICATION

- .1 Windows: 100% high impact, lead free, uPVC, UV stabilized, vacuum extruded with smooth, uniform finish and nominal wall thickness of 2 mm, screwed to galvanized steel reinforcements. Corners: fusion welded with welds properly dressed for neat appearance. Ventilators: fully weather stripped with two (2) santoprene weather strips. Locking Hardware: Heavyduty, Corrosion resistant multipoint hocking hardware.
 - .1 Provide 3mm (1/8") face clearance between frame and glass.

- .2 Shun glazing units over 1900mm (75 inches).
- .2 Glazing: Refer also to Section 08 81 00 Glass Glazing. Double glazed sealed units with 11mm of air space, to meet performance requirements. Overall sealed unit maximum size 35mm. Lay glass in place from outside and hold in place by a vinyl glass bead. Sealed units: primary seal of polyisobutylene, secondary seal of polysulfide.
 - .1 Tempered Glazing: Provide 2 or 3 lites of glass as indicated and required by Code.
 - .2 Coatings: Provide Low E coating to each air space, on the #2 and #5 surfaces.
 - .3 Air Space: Argon filled.
 - .4 Warm Edge spacer.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install window in accordance with reviewed Shop Drawings, Code requirements, and manufacturer's printed instructions.
- .2 Set units plumb, level and true to line without warp or rack of frames or sash.
- .3 Coordinate installation with the work of other sections.
- .4 Anchor frames solidly to surrounding construction to prevent distortion or misalignment.
- .5 Seal anchor penetrations in glazing channels with sealant.
- .6 Correctly locate and install flashings, defectors and weep holes to ensure proper drainage of moisture to exterior. Provide flashing with end dams over window heads and sill flashing with end dams at window sills. Slope sills and sill flashing to the outside.
- .7 Do not block or seal weep holes.
- .8 Ensure that sealants are appropriate for the particular application; ensure proper surface preparation. Avoid any discontinuity in sealant application.
- .9 Ensure proper fit, sizing and continuity of gaskets and glazing tapes.
- .10 Adjust hardware for proper functioning and ease of operation.
- .11 Seal frames to surrounding construction in accordance with Section 07 92 00 Joint Sealants. Remove excess materials as work proceeds to leave exposed surfaces and joints clean and smooth.
- .12 All windows to have restrictors, to limit to 4"..

3.2 FIELD QUALITY CONTROL

- .1 Window Site Tests:
 - .1 Field water tests shall be performed in accordance with ASTM E1105.
 - .2 Tests will be performed to determine if windows meet CAN/CSA A440 for standard indicated in system description of Part 1 of this section.
 - .3 Windows failing to meet specified standards will be repaired or replaced by manufacturer, and re-tested to meet standard, at no additional cost to Owner.
 - .4 The minimum number of windows specified for field testing shall comply with the BPG: Wood Frame, Table 7.9, Number of Recommended Field Tests. For example, for a building with 100-200 windows, a minimum of two windows shall be tested before 5% of the windows are installed and one more window when 50% of the windows are installed.

3.3 ADJUSTING, CLEANING AND PROTECTION

- .1 Adjust window sash and hardware for smooth operation.

- .2 Remove protective material from prefinished aluminum surfaces. Remove labels.
- .3 Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Wipe surfaces clean.
- .4 Remove excess sealant with moderate application of mineral spirits or other solvents acceptable to sealant manufacturer.
- .5 Protect finished surfaces from damage during Work's progress.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide hardware for wood doors, hollow metal as indicated and specified.
- .2 Provide thresholds, weather-stripping, seals, and door gaskets as indicated and specified.
- .3 Use non-ferrous hinges on exterior doors.
- .4 For rated doors provide ball bearing hinges with fire knuckles and two sets of bearings.
- .5 Provide exterior grade locksets, padlock and hasp for exterior gates and enclosures.
- .6 Refer to Door Schedule in the Architectural Details for hardware requirements for each door.
- .7 Provide lock boxes at exterior for fire department, Electrical Utility.
- .8 Provide overhead door restrictors where to doors may interfere with each other.

1.2 RELATED SECTIONS

- .1 06 20 00 Finish Carpentry.
- .2 08 11 00 Metal Doors and Frames.
- .3 08 14 00 Wood Doors and Frames.
- .4 08 31 00 Access Doors and Panels.
- .5 08 53 13 Vinyl Windows & Doors
- .6 Division 26 Electrical.

1.3 REFERENCES

- .1 ANSI – BHMA Builders Hardware Manufacturer’s Association (BHMA), current editions:
 - .1 ANSI/BHMA A156.3 - Exit Devices.
 - .2 ANSI/BHMA A156.4 - Door Controls – Closers.
 - .3 ANSI/BHMA A156.8 - Door Controls - Overhead Stops and Holders.
 - .4 ANSI/BHMA A156.10 - Power Operated Pedestrian Doors.
 - .5 ANSI/BHMA A156.12 - Interconnected Locks.
 - .6 ANSI/BHMA A156.19 - Power Assist And Low Energy Power Operated Doors .
 - .7 ANSI/BHMA A156.25 - Electrified Locking Devices.
 - .8 ANSI/BHMA A156.29 - Exit Locks, Exit Locks with Exit Alarms, Exit Alarms, Alarms for Exit Devices.
 - .9 ANSI/BHMA A156.31 - Electric Strikes and Frame Mounted Actuators.
- .2 BC Building Code, current Edition.
- .3 CAN/ULC S133-07 Amendment 1, Standard for Door Closers Intended for use with Swinging Doors.
- .4 NFPA (Fire) 80 - Fire Doors and Windows, current edition.
- .5 ULC/ORD-C14(e)-M1985 Guide for Hardware for Fire Doors and Emergency Exits.
- .6 ULC/ORD-C228-1995 Door Closers and Holders.
- .7 ULC-S132-07 Amendment 1 Standard For Emergency Exit And Emergency Fire Exit Hardware.
- .8 ULC-S533-15 Standard For Egress Door Securing And Releasing Devices.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures. Shop Drawings: indicate locations and mounting heights of each type of hardware, schedules, catalogue cuts, electrical characteristics and connection requirements.
- .2 Samples:
 - .1 Submit one returnable sample of latchset, lockset and closer illustrating style, colour, and finish.
 - .2 Samples will be returned to supplier upon Substantial Performance.
- .3 Product Data: Provide two (2) copies of maintenance data, manufacturer's parts list, manufacturer's instructions for door closers, lock and latch sets, door holders, panic hardware, and three (3) sets of wrenches for door closers, lock and latch sets.
- .4 Hardware Schedule (provide for review):
 - .1 Indicate manufacturer's name and article number in complete detail including active hands of pairs of doors, degree of opening and other information pertinent to the intended function of the door and frame details.
 - .2 In addition to hardware, the Schedule shall include, for each heading or group of doors, Consultant's door reference number as per Door Schedule, the room designations, door size and material and label requirements.
 - .3 Incorporate detailed keying for final approval by the Owner.
 - .4 Provide "as-installed" hardware list, including name of supplier, to the Consultant upon Substantial Performance of the contract.
 - .5 List to be complete with key to explain manufacturer's names, abbreviations and codes.
 - .6 Templates shall not be issued or material supplied until the hardware list has been approved. Provide additional copies of the hardware lists to the Consultant on request.
- .5 Report: Submit report indicating hardware has been installed according to code requirements. Include closest location for replacement materials and name and address of hardware supplier.

1.5 CLOSEOUT PROCEDURES

- .1 Project Record Documents: Record actual locations of installed cylinders and their master key code. Refer to Section 01 77 00 Closeout Procedures.
- .2 Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- .3 Keys: Deliver with identifying tags to Owner. Obtain receipt for keys.
- .4 Tools: Deliver to Owner specialty tools required for installing and maintaining hardware.

1.6 QUALITY ASSURANCE

- .1 Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC) to assist in the work of this section.
- .2 Labelled Doors Hardware used in fire rated openings must bear Underwriter's Laboratory of Canada (ULC) label.
- .3 Source Quality Control: For each type of hardware, supply shall be from a single manufacturer.

1.7 REGULATORY REQUIREMENTS

- .1 Products Requiring Electrical Connection: Listed and classified by testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.8 DELIVERY, STORAGE, AND PROTECTION

- .1 Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.9 PROJECT CONDITIONS

- .1 Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.
- .2 Sequence installations to ensure utility connections are achieved in an orderly and expeditious manner.
- .3 Coordinate Owner's keying requirements during the course of the Work.
- .4 Coordinate with security requirements and with fire alarm requirements of Division 26 Electrical.

1.10 MAINTENANCE PRODUCTS

- .1 Provide special wrenches and tools applicable to each different or special hardware component.
- .2 Provide maintenance tools and accessories supplied by hardware component manufacturer.

1.11 WARRANTY

- .1 Provide a one (1) year guarantee for all finish hardware except for exit devices, which must have a five (5) year guarantee, and closers, which must have a thirty (30) year guarantee.
- .2 Submit warranty in accordance with Section 01 77 00 Closeout Procedures.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Subject to compliance with specifications the following manufacturers and products are acceptable for the items indicated.
 - .1 Ball Bearing Hinges.
 - .1 Hager BB 1279 (Ferrous Steel); Hager BB 1191 (Non Ferrous).
 - .2 Stanley BB 179 (Ferrous Steel); Stanley BB 191 (Non Ferrous).
 - .3 McKinney TA2714 (Ferrous steal); McKinney TA2314 (Non Ferrous).
 - .4 Or approved alternative.
 - .2 Hinges-Suite Interior Doors
 - .1 89 x 89mm (31/2") 2 GD finish 3 pair.
 - .3 Door Stops: ALL doors have a wall or floor mounted stop. Hinge stops or flex stop not acceptable.
- .2 Provide materials as specified in Door Hardware schedule in brand and quality unless otherwise approved by Consultant. Claims as to the suitability of proposed substitutions will not be considered unless such claims are made before award of contract.
- .3 Approved deadbolts, locks, latch set series, and designs are as follows:
 - .1 Review Door Schedule and attached Hardware Schedule for specific hardware products.
General Products:
 - .2 Exterior Gate Latch: Designed for exterior application.
 - .1 Wood gate lockable gate latch
 - .2 Lee Valley item 0151680
 - .3 Or equal
 - .3 Exterior Doors Levers:

- .1 Schlage D Series Rhodes levers or Dorex G1L
- .2 Sargent 10 Line L levers
- .3 Corbin CL 3500 NZD levers
- .4 Electric strike and fob access, to locations as noted on door schedule
- .5 Lockset functionality to be confirmed by Architect
- .4 Interior Doors
 - .1 Schlage D Series Rhodes levers or Dorex G1L
 - .2 Sargent 10 Line L levers
 - .3 Corbin CL 3500 NZD levers
 - .4 Dutch doors to have 2 hinges each leaf and connecting deadbolt with single lever.
- .5 Closers
 - .1 Fire door closers: LCN 1461, Sargent 1431 or Norton 8501 or approved equivalent.
 - .2 Exterior/Interior Door closers: LCN 4040, Sargent 351 or Norton 7500 or approved equivalent.
 - .1 Where doors require an overhead restrictor it should be a function of the closer, eg. LCN 4040 to include the CUSH function.
 - .2 Doors where wall or floor stops are not possible, to have overhead door restrictors. Norton Rixson 10 series, Deltana, Glynn Johnson 450 series overhead stop or approved equal.
- 2.2 HARDWARE QUALITY
 - .1 Hinges: to ANSI/BHMA A156.1 to size,
 - .1 Fire rated doors five knuckle and two sets bearings. Approved manufacturers and model numbers : Hager BB1279 (Ferrous Steel), Hager BB1191(non ferrous), Stanley BB179(Ferrous), Stanley BB 191 (non-ferrous), M McKinney#TA 2714 (ferrous), McKinney #TA 2314 (non-ferrous)
 - .2 Use non-ferrous hinges on all exterior doors.
 - .3 Interior doors: 3-1/2" x 3-1/2" 2GD finish, 3 pair. Stanley 821 or approved equal.
 - .2 Locks, Latches and Deadbolts: to ANSI/BHMA A156.2, Series 4000, Grade 1, complete with mortised faceplate latch and 6-pin cylinders
 - .1 Use standard hardware with 70 mm (2-3/4 in.) backsets except where panic hardware is required for fire exits.
 - .2 Lever handles are required on all lock and latch sets accessible to tenants.
 - .3 Provide standard functions for door use. Lock functions to be determined by Architect.
 - .4 Suite entry and patio locks should be specified to be locked and operated with a key only from the outside.
 - .5 *Note residential grade products acceptable, to be approved by architect.*
 - .3 Strikes: ANSI strikes size 125 x 32 mm (5 in. x 1-1/4 in.) for locks and latches where required.
 - .4 Self Closers: to minimum requirement to be ULC listed and certified under ANSI/BHMA A156.4, Grade 1. All closers to meet barrier free requirements.
 - .1 Types: Provide type and design of closer to the following requirements:
 - .1 To provide maximum degree of opening required;

- .2 To provide the required closing force as ANSI/BHMA A156.4.
- .3 To provide the required opening force on closures of 38 N in case of exterior doors and 22 N in case of interior doors.
- .4 For Unit Entry Doors at Unit Types A, B, C, E, and H Closers are to include an overhead stop function.
- .2 To provide back check control to public doors (e.g. locker room, laundry room).
- .5 Door Stops:
 - .1 Types: Provide proper type of stop to ALL doors to prevent damage to hardware, doors, walls, and millwork. In general:
 - .1 Where doors open against a wall, provide a wall mounted convex/concave dome stop with concealed mounting. Approved product: Gallery Hardware Wall #231 Convex; Wall #233 Concave
 - .2 Floor mounted stops may be accepted if approved by consultant, provide half dome rubber stop with concealed mounting. Approved product: Gallery Hardware Floor #200 Lo Rise; Floor #218 High Rise.
 - .3 Hinge or flex type is not acceptable.
 - .4 Doors that may interfere with each other are to be controlled with overhead restrictors or stops. Commercial Hinge Pin Door Stop Saver, Richelieu #221301284 for interior application.
 - .5 Doors where wall or floor stops are not possible, to have overhead door restrictors. Norton Rixson 10 series, Deltana, Glynn Johnson 450 series overhead stop or approved equal.
 - .6 Elephant stop; Gallery GSH 289-289B Door Holder-Solid Brass
- .6 Kick plates: Minimum 250mm (10 in.) high, 1.6mm (1/16 in.) thick, full width of door. High Kick as noted on Schedule to be 24" high. Aluminum C-28 finish secured with corrosive resistant screws.
- .7 Push Plates: 100mm x 580mm, 1.6mm thick (4 in. x 20 in. x 1/16 in.), aluminum, C-25 finish.
- .8 Pull Plates: Same as push plates, with 300mm (12 in.) "D" handles.
- .9 Lock guards: full height. All exterior doors to have lock guards
- .10 Flush bolts: Manual flush bolts for metal doors from Ives, Gallery or approved equal.
- .11 Door Pulls for Closets: Richelieu Door Pull 7", #1412010
- .12 Thresholds:
 - .1 Extruded aluminium mill finished, bevelled, not greater than 13mm (1/2 in.) floor offset,
 - .2 Set on two continuous beads of sealant and secured with at least three corrosive resistant fasteners.
 - .3 At exterior doors thresholds to be thermally broken. See details for products.
 - .4 Acceptable Products:
 - .1 Pemko Barrier Free System.
 - .2 Zero International,
 - .3 Or approved alternative.
 - .5 See Section 08 14 00 Wood Doors & Frames for Fibreglass door thresholds.
- .13 Exterior Gate Hardware: Exterior grade, heavy duty, Lee Valley item 0151680

- .14 Weather Stripping: heavy-duty bulb type weatherstrips (not foam type) that restrict air infiltration to not more than 0.05 m³ (1.76 ft³) per minute per 1.0 m (3'-4") of joint. Acceptable products: AK Drafseal #D SS66 or Pemko #588. Other doors draftseal DS141.
 - .15 Door Sweep; Draftseal DS138C, Zero International 8198AA or equal.
 - .16 Provide a suitable key cabinet for all keys.
 - .17 Bypass Door recessed pull, all locations, Richelieu JNF Recessed Rectangular Pull, 89IN16412170.
- 2.3 KEYS AND KEYING
- .1 The hardware supplier shall verify keying system with Owner for project prior to placing lock order with factory.
 - .2 Keying System to ANSI/BHMA A156.28.
 - .1 Locks to be supplied with a 6 pin factory generated master key system. Keying to be determined in consultation with Consultant and Owner.
 - .2 Locks to operate on one common master key, plus sub masters as determined by the Consultant.
 - .3 Allow for factory construction keying of all locks.
 - .4 Allow for two keys per lock (unless specified otherwise).
 - .5 Keys to be stamped "Do Not Duplicate".
 - .6 Keying groups to include, at a minimum;
 - .1 Grand Master, for all doors
 - .2 Separate key for service room
 - .3 Separate key for office
 - .4 Final keying schedule to be provided which will define and change/modify key groups.
 - .3 Provide lock cylinders with construction inserts and construction keys to remain in use until Consultant directs that construction inserts be removed with the provided extractor key and lock cylinder to be installed. At this time, turn over construction keys and extractor key to Owner.
 - .4 Deliver tagged and indexed keys and key cylinders directly to Owner's representative and obtain a signed receipt from Owner's authorized receiver. Owner's representation will return cylinders to Contractor for installation when building is ready for occupancy.
 - .5 Contractor shall turn over to Consultant a suitable key cabinet complete with labelling.
- 2.4 FINISHES
- .1 Generally BHMA 626 Satin Chromium, unless otherwise noted.
 - .2 Door Closers: factory powder coated to match other hardware, unless otherwise noted.
 - .3 Hardware Finishes: of like kind matching throughout project, to be #626 Satin Chromium, #630 Satin Stainless Steel, #628 Anodized Satin Aluminum, or powder coated #689 Aluminum.
- 2.5 SCHEDULE
- .1 See Door schedule for hardware requirements for each door location.
- PART 3 - EXECUTION
- 3.1 EXAMINATION
- .1 Verify doors and frames are ready and dimensions are as indicated on shop drawings.
 - .2 Verify electric power is available to power operated devices and is of the correct characteristics.

3.2 INSTALLATION

- .1 Install hardware in accordance with manufacturer's instructions, and in accordance with Door & Hardware Institute Guide. Use full complement of screws and draw tight.
- .2 Refer also to Section 06 20 00 Finish Carpentry.
- .3 Fully weatherstrip doors in accordance with manufacturer's instructions.

3.3 FIELD QUALITY CONTROL

- .1 Ensure Architectural Hardware Consultant inspects installation and certifies hardware has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.4 ADJUSTING

- .1 Adjust hardware for smooth operation.

3.5 PROTECTION

- .1 Do not permit adjacent work to damage hardware or finish.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide glass and glazing, single, double glazed sealed units, Low E coating to vinyl windows, and to metal exterior doors with accessories for a complete installation as indicated and specified.
- .2 Provide glazing for insulated steel entrance doors.
- .3 Provide miscellaneous glass and glazing materials and sealants required.
- .4 Provide glazing for interior windows as scheduled.
- .5 Provide framed and unframed mirrors as indicated and specified.
- .6 See Energy Report for requirements
- .7 Refer to Window Details, Door Schedules, and Finish Schedules.

1.2 RELATED SECTIONS

- .1 05 50 00 Metal Fabrications.
- .2 08 13 00 Metal Doors and Frames.
- .3 08 14 00 Wood Doors and Frames.
- .4 08 51 13 Vinyl Windows.

1.3 REFERENCES

- .1 BC Building Code and Trail Building Bylaw current edition.
- .2 Insulating Glass Manufacturers Association of Canada (IGMAC).
- .3 CAN/CGSB 12.1-M90, Tempered or Laminated Safety Glass.
- .4 CAN/CGSB 12.3-M91, Flat, Clear Float Glass.
- .5 CAN/CGSB 12.8-97 AMEND, Insulating Glass Units.
- .6 CAN/CGSB 12.10-M76, Glass, Light and Heat Reflecting.
- .7 CAN/CGSB 12.11-M90, Wired Safety Glass.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 Submittal Procedures.
- .2 Samples: Submit three 300 x 300 mm (12" x 12") samples of each textured or tinted glazing material specified.
- .3 Maintenance Data:
 - .1 Submit maintenance brochures on care and cleaning of glass and glazing materials for incorporation into maintenance manuals.

1.5 QUALITY ASSURANCE

- .1 Conform to manufacturers printed directions and recommendations.
- .2 Sealed insulating glass units to conform, as a minimum, to Insulating Glass Manufacturers Association of Canada (IGMAC) standards.
- .3 Installer Qualifications: Skilled in installation of glass and glazing with a minimum of five (5) years proven experience.
- .4 Thickness of Glass: Conforming to BCBC requirements according to maximum glass sizes.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store packaged materials in original containers with manufacturer's labels and seals intact.
- .2 Deliver glass in wood crating or approved protective wrapping. Store vertically, off floor in a weatherproof enclosure.
- .3 Store insulating glass units vertically with positive bottom support at right angles to plane of glass. Do not slope or tilt units.
- .4 Install glass as soon as possible after delivery to site. Do not store on site.

1.7 PROJECT CONDITIONS

- .1 Coordinate work of this Section with installation of frames to ensure a continuous uninterrupted sequence and to prevent undue exposure of unprotected frames to weather.
- .2 Conform to manufacturer's recommended application temperatures for installation of glazing materials.

1.8 GUARANTEE

- .1 Guarantee the following types of glass listed against defects in materials and workmanship for the period indicated commencing from the date of Substantial Performance.
 - .1 Hermetically Sealed Units: Twenty (20) years.
 - .2 Mirror units against silver spoilage: Fifteen (15) years.
 - .3 Guarantee to cover full replacement including stops, trim, clips, caulking, sealants, at no cost to the Owner.

PART 2 - PRODUCTS

2.1 GLASS

- .1 Glass 1 (GL1): Safety (Tempered) Glass: Type 2, tempered; Class B, float or plate glass, clear; conforming to CAN/CGSB 12.11.
- .2 Glass 2 (GL2): Safety (Laminated) Glass: Type 1, laminated; Class B, float or plate glass, clear; conforming to CAN/CGSB 12.11, 0.8 mm (0.030") minimum thickness vinyl interlayer.
- .3 Glass 3 (GL3): Float Glass: Glazing quality, conforming to CAN/CGSB 12.3, minimum thickness as indicated or as required by Code.
- .4 Glass 4 (GL4): Fire Rated Ceramic Glass to interior fire rated door locations or fire rated safety glass, FireLite or FireLiteNT by TGP, SuperClear 45-HS-L1 by SAFTI/FIRST, or approved alternative.

2.2 MIRRORS

- .1 Bathroom Mirrors: Tempered polished plate or float glass, 1/4 inch thick, No. 1 quality, silver coated and electrolytically copper plated, with smooth ground edges. 15 year warranty against silver spoilage.

2.3 SEALED UNITS

- .1 Sealed Insulating Glass Units: ~~including aluminium entrance doors.~~
 - .1 Conforming to CAN2-12.8; dual seal type edge construction to maintain a hermetic seal.
 - .2 Glass shall be float glass, or tempered or laminated glass as required by Code.
 - .3 Dual sealed (polyisobutylate primary seal and silicone secondary seal), double glazed units with 11mm nominal argon filled spaces, filled with moisture absorbing desiccant, between two lites of glass. Spacer bar: warm edge, aluminium mill finish or stainless steel finish with mitred and spigoted corners.

- .4 Spacer Bar: Polyamide foil-faced, warm edge type.
- .5 Certified through the Insulating Glass Certification Council (IGCC) in accordance with ASTM E773 and E774. Certified to level CBA.
- .6 Each piece shall bear certification number, date, and manufacturer's identification mark.
 - .1 Exterior lite: 4 - 6mm $\leq$ 1300 mm wide, 6 - 8 mm $\geq$ 1300-1700, Colour: clear.
 - .2 Air Spaces: 11mm argon filled.
 - .3 Interior lites: 4 - 6 mm, as required to minimize deflection.
 - .4 Max. Overall Thickness: 35mm (1.37").
- .7 Glazing to meet performance requirements of 2.4.

2.4 LOW E INSULATING GLASS UNITS

- .1 Provide sealed units with Low E coating for all exterior glazing including glazing in doors. Double glazing to meet the performance requirements. See Energy Report.
- .2 Coatings: provide Low E coating to each air space, on the #2 and #5 surfaces.
- .3 AFG TiAC 40 low emissive sputter vapour deposition coating on No. 2 surface. Pyrolytic (hardcoat) coating not accepted. Provide units by single manufacturer and of same colour rendition between glass units.
- .4 Acceptable Low E Coatings:
 - .1 Cardinal low-e coatings
 - .2 Triple Glazed: 270/180 (surface #2/#5)
 - .3 Double Glazed: 366 (must be surface #2 for required SHGC performance)
 - .4 Or approved alternative.
- .5 Performance Requirements:
 - .1 Glass Thickness: 4 - 6mm exterior and 4 - 6mm interior or thicker where required by Code. To be confirmed by manufacturer.
 - .2 Colour: Clear.
 - .3 Visible Daylight Transmittance, Solar Heat Gain Coefficient, 0.30, U-Value 0.25, **double glazed windows, see energy report for requirements.**

CLARIFICATION THE PERFORMANCE NOTED HEREIN ARE TO GOVERN
GLAZING FOR DOORS OR WINDOWS

2.5 ACCESSORIES

- .1 Glazing Tape: Non-shrinking butyl rubber tape with self-adhesive surface, minimum 4 mm (5/32 in.) thick. Approved Products: Tremco 440 tape, or approved alternative.
- .2 Glazing Splines: Neoprene or polyvinyl chloride, manufacturer's standard dry glazing splines to suit aluminium extrusions and glazing thickness, colour black.
- .3 Glazing Blocks: Neoprene (80 Durometer hardness) to give minimum 4 mm (5/32 in.) clearance, and as required by glass weights and light sizes.
- .4 Spacer Blocks: Neoprene (80 Durometer hardness) or of non-ferrous metal and designed to fully bedded in glazing materials; to give minimum 4 mm (5/32 in.) clearance, and as required by glass weights and light sizes.
- .5 Solvent Cleaner: As required for glazing materials and as recommended by manufacturer.
- .6 Structural Silicone: Dow Corning 795 Sealant or approved alternative. Colour to be selected by Consultant from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine areas to receive glazing with Installer present and ensure conditions are suitable for glazing. Correct unsatisfactory conditions. Start of work indicates acceptance of conditions.
- .2 Ensure openings are square, plumb, secure and present a uniform face and edge clearances.
- .3 Set nails, screws, and fastenings properly to prevent contact with glass.
- .4 Ensure stops, splines, glazing accessories and components provided by others are accurately cut to length and of proper size and type for specific glazing being held.

3.2 PREPARATION

- .1 Verify glass sizes from site measurements with allowances made for thicknesses, bites or overlaps and edge clearances.
- .2 Remove protective coatings, oil, and other materials detrimental to bond between glass and glazing materials, using cleaners as directed by manufacturer.
- .3 Apply primers to contact surfaces in accordance with manufacturer's directions.

3.3 INSTALLATION

- .1 Exterior Glazing Gasket/Tape/Pressure Plate:
 - .1 Seal inside corners of frames.
 - .2 Install gasket, mitre corners allowing adequate length for shrinkage. (If system utilizes an interior tape, install here in lieu of gasket).
 - .3 Install setting blocks at quarter points on base.
 - .4 Install extruded bead without excessive gaps at corners.
 - .5 Ensure exterior gasket is sufficiently tight to ensure that it remains in place.
- .2 Mirrors:
 - .1 Install mirrors with L shaped steel clips. Do not use adhesives.
 - .2 Mirrors to be set square and plumb, typically 4" above vanity, see drawings for locations and sizes.

3.4 PERFORMANCE REQUIREMENTS

- .1 Class and glazing installations shall be completely air and watertight.
- .2 Tapes and sealants shall be continuous, without gaps or ridges.
- .3 Stops shall be tightly secured in place.

3.5 ADJUST AND CLEAN

- .1 Remove excess sealants and primer stains from finished surfaces.
- .2 Remove manufacturer's labels on glass after approval.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide gypsum wallboard, plain and fire rated, to walls, partitions, ceilings, and soffits as indicated.
- .2 Provide water resistant gypsum board behind showers.
- .3 Provide finishing of gypsum wallboard, including taping, filling and sanding.
- .4 Provide trim, accessories, control joints, reveal moldings, fasteners, and sealants.
- .5 Provide fire rated duct enclosures and shaft walls.
- .6 Provide Level 1 where finish ware assembly will be entirely concealed.
- .7 Provide Level 3 finish on ceilings to receive spray texture finish.
- .8 Provide Level 4 finish for smooth wall surfaces unless noted otherwise.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 07 21 00 Building Insulation.
- .3 07 84 00 Firestopping.
- .4 07 92 00 Joint Sealants.
- .5 08 11 00 Metal Doors and Frames.
- .6 08 14 00 Wood Doors and Frames.
- .7 09 22 16 Non-Structural Metal Framing.
- .8 09 90 00 Painting and Coating.

1.3 REFERENCES

- .1 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A924/A924M-14e1, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .3 ASTM C1396/C1396M-06a, Standard Specification for Gypsum Wallboard including exterior Gypsum Board sheathing.
- .4 ASTM C475/C475M-15 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .5 ASTM C840-13, Standard Specification for Application and Finishing of Gypsum Board.
- .6 ASTM D3273-12e1 Standard Test Method for Resistance to Growth of Mould on the Surface of Interior Coatings in an Environmental Chamber.
- .7 ASTM E497-99, Standard Practice for Installing Sound-Isolating Lightweight Partitions.
- .8 AWCC Specification Standards Manual, current edition.
- .9 BC Building Code, current edition.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: Manufacturer's data including installation instructions.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: Comply with requirements of authority having jurisdiction.

- .2 Single Source Responsibility: Obtain materials from a single manufacturer for each different product required.
- .3 Tested System: provide products as required for tested assemblies, to meet STC ratings.
- .4 Mock-Ups: Provide a mock-up complete unit with accessories and sealants as per the Owner's requirements.
- .5 Conform to Specifications Standards Manual as published by the Association of Wall and Ceiling Contractors of BC. (AWCC)
- 1.6 DELIVERY, STORAGE AND HANDLING
 - .1 Keep products dry during shipping, storage, and handling.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Subject to compliance with specifications, the following manufacturers are acceptable:
 - .1 Georgia Pacific.
 - .2 Westroc Inc.
 - .3 CGC Inc.
 - .4 Or approved alternate.

2.2 MATERIALS

- .1 Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end joints. See drawings, assemblies and details for specific product locations.
- .2 Gypsum Board: Regular and Type X, conforming to ASTM C1396/C1396M, with tapered longitudinal edges, thickness as indicated.
 - .1 Post Industrial Recycled Content: Minimum of 99% for regular and 95% for fire-rated (Type X).
 - .2 Paper Backing: 90% Post Consumer recycled content minimum for regular gypsum board.
 - .1 ProRoc and ProRoc Type 'X' by BPB.
 - .2 ToughRock by Georgia Pacific.
 - .3 SHEETROCK Regular and Firecode by CGC Inc.
 - .4 Or approved alternative.
- .3 Ceiling Board: Light weight sag resistant, 12.7mm thick or 15.9mm to ASTM C36, Class A flame spread rating, non-combustible core. Post Industrial Recycled Content: Minimum of 99%.
 - .1 ToughRock CD Ceiling Board by Georgia Pacific.
 - .2 SHEETROCK Interior Ceiling Board by CGC Inc.
 - .3 Or approved alternative.
- .4 Water Resistant Gypsum Board: Conforming to ASTM C630, 16mm (5/8 in.) thick. Locations: as indicated including behind plastic laminate enclosures or full acrylic showers/tubs in bathrooms and janitor rooms. Post Industrial Recycled Content: Minimum of 95%. Fire Rated as required.
 - .1 DensArmor Plus or DensArmor Plus Fireguard 'C' by Georgia Pacific.
 - .2 Sheetrock Humitek by CGC Inc.
 - .3 Or approved alternate.
- .5 Cement Board: Regular and Type X, in thickness indicated.
 - .1 Wonder Board by Custom Building Products.

- .2 Durock Cement Board by CGC Inc.
- .3 Or approved alternative.
- .6 Shaft Liner: Type X conforming to ASTM C442 and ASTM C1396. Thickness 25mm (1 in.) unless noted otherwise. Post Industrial Recycled Content: Minimum of 99%.
 - .1 DensGlass Ultra Shaft Liner by Georgia Pacific
 - .2 Cavity Shaft Wall by CGC Inc.
 - .3 Or approved alternative.
- .7 Exterior Gypsum Sheathing: Regular and Type X conforming to ASTM C36 and CAN/ULC S102 smoke spread 0, complete with water repellent, non-organic glass mat finish, square edges bound factory cut in thicknesses as detailed. Post Industrial Recycled Content: Minimum of 95%.
 - .1 DensGlass Gold by Georgia Pacific
 - .2 Or approved alternative.
- 2.3 ACCESSORIES
 - .1 Resilient Channels: 25 ga corrosion resistant steel.
 - .2 Post Industrial Recycled Content: Minimum of 80%.
 - .3 Resilient Isolation Hangers: Mason WHR Hangers by Mason Industries, Model ICW Ceiling Hanger; or approved; combination high deflection steel spring in series with a resilient, molded neoprene noise and vibration isolation pad incorporated into a stamped steel hanger assembly to resiliently support isolated ceiling.
 - .4 Gypsum Board Accessories:
 - .1 Screws:
 - .1 Metal Support Systems: Type S, bugle head, sizes as recommended by manufacturer. Length such that penetration through metal supporting member shall be 6mm (1/4 in.) minimum and 13mm (1/2 in.) maximum.
 - .2 Wood Framing: Type W, 32mm (1-1/4 in.) long.
 - .2 Corner Bead: Fine mesh expanded steel wing type, zinc coated in conformance with ASTM A525 G90 coating designation, or ASTM A633.
 - .3 Control Joint: Steel, perforated wing type, with single bead, zinc coated in conformance with ASTM A525 G90 coating designation, or ASTM A633.
 - .4 Metal Trim: Steel, of configuration and size as shown or required. Zinc coated in conformance with ASTM A525 G90 coating designation, or ASTM A633.
 - .5 Joint Treatment: Joint tape, and joint compound for embedding and finishing shall be products of one manufacturer and in conformance with ASTM C475.
 - .6 Adhesive: As recommended by gypsum board manufacturer.
 - .7 Waterproof Sealer: In accordance with gypsum board manufacturer's recommendations.
 - .8 Acoustical Insulation: As specified in Section 07 21 00 Building Insulation.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine areas to receive gypsum wall board with Installer present. Correct unsatisfactory conditions.
- .2 Verify that framing is accurately spaced and aligned. Correct framing members out of alignment, bowed or warped, to provide true, plumb, surfaces before applying gypsum board.

- .3 Start of work indicates acceptance of conditions.

3.2 INSTALLATION

- .1 Erect work in accordance ASTM C840, AWCC standards, reviewed Shop Drawings, Code requirements and manufacturer's printed instructions. Where in conflict, follow more stringent requirements.
 - .2 In areas of possible water penetration place asphalt felt strip or approved flashing material between runners, studs and adjacent surface.
 - .3 Install additional framing, furring, runners, lath and beads, as required to form openings and frames for other work as indicated. Coordinate support system for proper support of framed work, which is not indicated to be supported independently of metal furring system.
 - .4 Isolation: Where metal support system abuts building structure horizontally, and where partition/wall work abuts overhead structure, isolate the work from structural movement sufficiently to prevent transfer of loading into the work from the building structure. Install slip or cushion type joints to absorb deflections but maintain lateral support.
 - .1 Frame both sides of control and expansion joints independently, and do not bridge joints with furring and framing or accessories.
 - .5 Apply gypsum board first to ceilings and then to partitions. Apply vertically to partitions. Joints on opposite sides of same partition shall occur on different studs. Install gypsum board in moderate contact, not forced into place. Joints that do not fall over framing members shall be rejected.
 - .6 Attach gypsum board to framed panel edges and intermediate supports with screws at 300mm (12 in.) on centre for ceilings, and 400mm (16 in.) on centre for partitions.
 - .7 Upon completion of ceiling installations neatly cut tape at intersections of walls and ceilings at locations where walls have been designed and built to accommodate structural movement. Provide resilient channels and resilient isolation hangers in accordance with manufacturer's recommendations, acoustical specifications, and as shown and specified.
 - .8 Fire rated gypsum board to be continuous to maintain fire resistive value and fire separations, at intersecting walls.
 - .9 Accessories: Provide corner beads at vertical and horizontal external corners. Provide metal trim where gypsum board abuts partition or ceiling of dissimilar construction.
 - .10 Acoustical Partitions:
 - .1 Friction fit noise barrier batts in place until interior finish is applied. In areas where noise barrier batt insulation will be applied in heights over 8 feet provide supplementary support until interior finish is applied. Carefully fit insulation around outlets, junction boxes, and other irregularities.
 - .2 Install gypsum board 6mm to 10mm (1/4 in. to 3/8 in.) above floor and fill resultant space with acoustical sealer.
 - .3 Provide a minimum clearance of 6mm (1/4 in.) along perimeters of penetrations; fill resultant space with acoustical sealer.
 - .4 Achieve maximum sound insulation through careful installation in jointing, sealing, taping, and staggering of joints. Conform to ASTM E497.
- ### **3.3 FINISHING**
- .1 Finish gypsum wallboard in accordance with the AWCC Manual and as follows:
 - .1 Level 1 for areas totally concealed from view in the finished work including partitions above ceilings to underside of structure above.
 - .2 Level 4 for interior wall and ceiling surfaces.

- .2 Provide taping and finishing using proper hand tools such as broad knives or trowels with straight and true edges or mechanical tools designed for this purpose.
- .3 Seal screw heads at water resistant gypsum board with waterproof sealer.
- .4 Apply joint compound at joints, fasteners, and metal trim in accordance with GA 216, and AWCC Finish Level 4.
- .5 Reinforce joints, corner beads and metal trim with tape. Centre tape on joint and seat in joint compound. Apply skim coat to cover tape. Allow tape to dry before second coat is applied.
- .6 Apply second coat of joint compound over embedding coat, cover tape and feather 50mm (2 in.) beyond edges leaving joint flush.
- .7 When second coat is dry apply third thin coat of finishing compound feathered 50mm (2 in.) beyond second coat.
- .8 Finish nail, screw depressions, gouges, and scratches with 3 coats of joint compound. Leave surface of gypsum board flush, smooth, and free of tool marks and ridges.
- .9 Fire tape only, gypsum board surfaces in ceiling plenums. Finish other gypsum board surfaces in accordance with manufacturer's recommendations.
- .10 Sand finish coat when dry to leave surface flush, smooth, and ready for painting specified in Section 09 90 00 Painting and Coating.
- .11 With final application of joint compound and sanding, leave gypsum board surfaces uniformly smooth to comply with AWCC Finish Level 4.
- .12 Prime paint gypsum board, with latex primer sealer specified in Section 09 90 00 Painting and Coating, before and after application of texture coat.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide metal furring and suspended ceiling framing at interior locations as indicated and specified.
- .2 Provide framing accessories and acoustic sealants for a complete installation.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 07 21 00 Building Insulation.
- .3 07 84 00 Firestopping.
- .4 09 21 16 Gypsum Board Assemblies.
- .5 Division 22 Plumbing
- .6 Division 23 Heating Ventilation and Air Conditioning.
- .7 Division 26 Electrical.

1.3 REFERENCES

- .1 ASTM A568-15, Standard Specification for Steel Sheet, Carbon, Structural and High-Strength, Low-Alloy, Hot-rolled and Cold-rolled, General Requirements for.
- .2 ASTM C645-14e1 Standard For Non-Structural Steel Framing Members.
- .3 ASTM A653/A65315e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .4 ASTM C1002-14, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .5 ASTM A1003/A1003-15, Standard Specification for Steel Sheet, Carbon, Metallic and Non-metallic-Coated for Cold-formed Framing Members.
- .6 ASTM C1007-11a(2015), Standard Specification for Installation of Load-Bearing (Transvers and Axial) Steel Studs and Related Accessories.
- .7 Association of Wall and Ceiling Contractors - B.C. (AWCC).
- .8 BC Building Code, current edition
- .9 CAN/CGSB 7.1-98 Lightweight Steel Wall Framing components.

1.4 SYSTEM DESCRIPTION

- .1 System: Interior metal stud framing systems, plenums, furred ceilings, and soffits used in conjunction with sound insulation, gypsum board systems and soffit construction.
- .2 Maximum Allowable Deflection: Design and size components for 1/120th defection at five (5) psf loading as indicated on Structural Drawings.
- .3 Accommodate construction tolerances, deflection of building structural members, and clearance of intended openings.

1.5 SUBMITTALS

- .1 Submit in accordance with the following Sections:
 - .1 01 33 00 Submittal Procedures.
 - .2 Product Data: Manufacturer's published literature including each type of metal stud framing system and accessory. Show compliance with Specifications. Include installation instructions and procedures requiring special attention.

- .2 Shop Drawings: Indicate details required for proper installation including gauges, typical cross sections, connections, anchorage to structure, fasteners, lateral bracing, and components not indicated by Product Data submittal. Shop drawings to be sealed for Exterior Wall Framing. Coordinate submittal with Division 22 Plumbing, Division 23 Heating, Ventilating, and Air Conditioning and Division 26 Electrical systems.
 - .3 Fire and Sound tested assemblies demonstrating equivalency with ULC and WH test indicated.
- 1.6 QUALITY ASSURANCE
- .1 Work of this Section subject to review by Consultant and Owner's Acoustical Consultant.
 - .2 Exterior Wall Framing: Provide 3rd party structural engineering of non-load-bearing steel studs, at exterior walls and all related details including framing at openings, headers, etc. Provide sealed shop drawings from a registered professional engineer. See also structural drawings for design information.
 - .3 Work of this section shall conform to the Association of Wall and Ceiling Contractors (AWCC) Standards Manual.
 - .4 Manufacturer Qualifications: Company specializing in work of this section, with minimum 5 years documented experience.
 - .5 Installer Qualifications: Company specializing in work of this section, with minimum 3 years documented experience in commercial quality work of comparable scope.
 - .6 Regulatory Requirements:
 - .1 Comply with local and provincial codes, ordinances, and other regulatory requirements.
 - .2 Comply with applicable ULC or WH tested design for fire-resistive assemblies.
 - .7 Coordination:
 - .1 Conform with Section 01 60 00 Product Requirements for coordination with related Sections.
 - .2 Coordinate installation of backing and bearing plates for casework, equipment, specialties, utilities, and other items required by other Sections, including Division 22 Plumbing, Division 23 Heating, Ventilating and Air Conditioning and Division 26 Electrical.
 - .3 Coordinate work of this Section with Section 07 84 00 Firestopping for firestopping installations prior to installation of gypsum board systems.
- 1.7 DELIVERY, STORAGE AND HANDLING
- .1 Comply with provisions of Section 01 60 00 Product Requirements and manufacturer's instructions.
 - .2 Deliver in unopened containers or bundles, clearly labeled with manufacturer's name, brand, type, and grade. Verify undamaged conditions.
 - .3 Protect steel studs, carrying and furring channels, lath and accessories from dampness and damage. Store under cover, off floor, on wood supports or pallets in dry well-ventilated space to protect from rusting and damage.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 General: Metal Source: Post-Consumer Recycled Content: Minimum of 80%.
- .2 Comply with Contract Documents, References, Codes, and manufacturer's instructions. Where in conflict, follow more stringent requirements.
- .3 Non-Load Bearing - Light Gauge Framing Members: ASTM C645, formed from steel meeting requirements of ASTM A568, Grade 33, galvanized ASTM A525, G 40.

- .4 Steel Studs: 25-gauge minimum, 1-1/4 inch flanges, with 90° angle return leg 5/16 inches long, punched webs (for mounting electrical conduit).
 - .5 Runners: 25 gauge, 1-1/4 inch flange minimum, faces knurled, except as otherwise indicated for top runners.
 - .6 Reinforcement for Metal Stud Framing Faced with Wall Board on One Side Only: 16 gauge minimum, 3/4 inch cold rolled channel, weighing 300 pounds per 1000 lineal feet, or 1-1/2 inch cold rolled channel, weighing 475 pounds per 1000 lineal feet.
 - .7 See also requirements on Structural Drawings for exterior stud wall framing and connections.
- 2.2 SHAFT WALL SYSTEMS
- .1 ULC rated assemblies to meet ratings as noted on drawings in accordance with ULC requirements.
 - .2 Utilize all manufacturer recommended framing, liners and finish to achieve required rating.
- 2.3 FURRING CHANNELS
- .1 Furring/Resilient Channels: 25 light gauge steel furring member, galvanized (Z075) wipe coat, for screw attachment of gypsum wallboard. Refer to sizes as noted on drawings.
 - .2 Exterior Furring: 25 light gauge galvanized (Z275) steel furring member to underside of concrete slab for screw attachment of cedar soffit boards at Lobby. Refer to sizes as noted on drawings.
- 2.4 ACCESSORIES
- .1 Sheet Metal Backing Channel: Minimum 25 gauge, 6 inches wide with 1-1/2 inch legs, notched and continuous between studs designed for wall-supported items.
 - .2 Fasteners: ASTM C1002, self-drilling, self-tapping framing screws, designed for gauge of framing.
 - .3 Anchorage Devices: Powder activated fasteners as required to transfer design loads. Fastener and charge from manufacturer's standard range to suit structural conditions, and fixing requirements and in accordance with manufacturer's recommendations.
 - .1 Ramset, Hilti or approved equivalent.
 - .4 Appropriate hand driven or screw fasteners for fastening to framing.
 - .5 Screws: Lengths as required to suit applications, self-tapping corrosion resistant drywall screws.
 - .6 Acoustic Gasket or Tape: Self-adhesive foam tape 6mm x 25mm (1/4 in. x 1 in.) closed cell neoprene and/or polyvinyl chloride.
 - .7 Acoustic Caulking: Acoustic sealant conforming to ASTM C834 Tremflex 834 by Tremco, Grace Acousticaulk or approved equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verify installation conditions as satisfactory to receive work of this Section with Installer present. Correct unsatisfactory conditions. Beginning work constitutes acceptance of conditions as satisfactory.
- .2 Verify that rough-in utilities are in proper location.

3.2 PREPARATION

- .1 Meet at project site with the installers of related work including for hollow metal frames, mechanical, and electrical work. Review areas of potential interference and conflicts. Coordinate layout and make provisions for interfacing work.
- .2 Protect installed finish work of other trades and surfaces to preclude damage from work of this Section.

3.3 INSTALLATION

- .1 Erect work in accordance with Contract Documents, References, Codes, and Manufacturer's instructions. Where in conflict, follow more stringent requirements.
- .2 Comply with ASTM C754 for installation of metal studs to receive gypsum board and other drywall systems.
- .3 Erection Tolerances: Install framing level, plumb, and true to line to a maximum allowable tolerance variation of 1:960 (1/8 inch in 10 ft.).
- .4 Studs:
 - .1 Except as otherwise detailed, comply with following:
 - .2 Erect studs to specified centers but not over 600mm (24 in.) on centre, except install additional studs as detailed or required at partition intersections, corners or openings.
 - .3 Place studs against walls of dissimilar materials and secure in place with anchors or fasteners 915mm (3 ft.) on centre maximum.
 - .4 In areas of possible water penetration place asphalt felt strip between runners, studs and adjacent surface.
 - .5 Install runner tracks screwed through each stud flange or approved clinch fastener to attach studs at openings, partition intersections, corners, and where partitions support fixtures or casework.
- .5 Shimming and Bracing:
 - .1 Shim metal furring to provide true and level surface for application of wallboard.
 - .2 Cross brace chase partitions as recommended by manufacturer or approved by Consultant.
 - .3 Laterally brace metal studs with finish systems on side only or where finish system does not run full height of studs, as recommended by manufacturer, to meet lateral design loads.
- .6 Welding: Conform to provisions of the Standard Code of Welding in Building Construction and to Recommended Practices for Resistance Welding of the American Welding Society, for details of welding, inspection, and qualification of welding operators.

3.4 INSTALLATION - FURRING

- .1 Install in vertical or horizontal pattern to suit conditions, centre at 600mm (24 in.) or 400mm (16 in.) as required, or detailed to provide solid backing for applications of gypsum board, backer board or plywood backing board.
- .2 Install furring to underside of soffit at maximum 400mm (16 in.) perpendicular to placement of cedar boards.
- .3 Fastening to substrates or structure to be by approved powder-activated or drill-in type fasteners satisfying AWCC requirements and recommendations of that manufacturer.
- .4 Install all backing for electrical, washroom accessories, mirrors, and build in chases and openings for access doors and built-ins installed under this section or supplied and installed by others.

3.5 SHAFT WALL SYSTEMS

- .1 Install shaft wall assemblies in accordance with ULC or applicable manufacturer's instructions.

3.6 REPAIRS

- .1 Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide Linoleum flooring, non-slip vinyl flooring with integral flashed cove base, as indicated, scheduled and specified with accessories for a complete installation.
- .2 Provide flashed cove base using sheet flooring in locations as indicated.
- .3 Provide cleaning and, where required, sealing and polishing of all resilient flooring.

1.2 RELATED SECTIONS

- .1 03 30 00 Cast-in-Place Concrete.
- .2 03 54 13 Gypsum Cement Underlayment.
- .3 06 20 00 Finish Carpentry.
- .4 09 21 16 Gypsum Board Assemblies.

1.3 REFERENCES

- .1 ASTM D2047-11 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
- .2 ASTM F1913-04(2014) Standard Specification for sheet vinyl Floor Covering.
- .3 BC Building Code and Trail Building Bylaw, current edition.
- .4 National Floor Covering Association: Floor Covering Specification Manual, current edition.
- .5 BC Floor Covering Association (BCFCA) latest edition.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data prior to ordering product.
 - .2 Provide product data for each material specified, including storage and installation instructions.
 - .3 Submit "Material Safety Data Sheets" for sealers and adhesives.
 - .4 Maintenance Data: Submit, at completion, maintenance data, including procedures for recommended cleaning and polished materials, for specified type of resilient floor covering installed.
- .3 Samples: Submit each type and colour of flooring material for the Consultant's approval.
- .4 Maintenance Materials: Submit 5% of each type and color of flooring supplied for the Owner's later use in maintenance of floors, in original packages or factory wrappings. Obtain Owner's receipt for materials.

1.5 QUALITY ASSURANCE

- .1 Installer Qualifications: Work shall be installed by installers with a minimum of 5 years experience and be to the requirements of the B.C. Floor Covering Association Manual for applicable types of flooring and conditions of work. Red Seal or Installation Certificate.
- .2 Pre-installation Conference: the Contractor, flooring installer, flooring manufacturer's representative and Consultant shall meet on-site to establish procedures for inspections, approval of product samples, patterns, colors and accessories, procedures for acceptability of the substrate, environmental conditions, installation procedures, and protection of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Store packaged material in original containers in accordance with the manufacturer's instructions with the manufacturer's seals and labels intact.
- .2 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
- .3 Damage Protection: Store sheet goods on end and keep at 20°C temperature for at least 48 hours prior to installation.

1.7 PROJECT CONDITIONS

- .1 Establish and maintain adequate ventilation of work area.
- .2 Do not permit contaminants, including odors, to enter other parts of the building.

PART 2 - PRODUCTS

2.1 LINOLEUM FLOORING (**SF1 & SF2** AS NOTED IN FINISH SCHEDULE)

- .1 Standard: ASTM F2034, Standard Specification for Linoleum flooring.
- .2 Overall Thickness: minimum 2.5mm (0.100").
- .3 Sheet products, joints all sealed
- .4 Installation in accordance with manufacturers instructions including adhesive products.
- .5 General: Colour to be selected by Consultant from manufacturer's full range. Assume 1 (one) colour throughout, SF1, and 1 (one) accent colour SF2 to areas as shown on drawings.
- .6 Acceptable products:
 - .1 Marmoleum by Forbo
 - .2 LinoFloorxf2 by Tarkett
 - .3 DLW linoleum by Gerflor
 - .4 or approved alternate.

2.2 SLIP-RESISTANT VINYL FLOORING (**SRV** AS NOTED ON FINISH SCHEDULE)

- .1 Homogenous sheet vinyl; acceptable products:
 - .1 Aquarius by Altro
 - .2 Safety Zone by Armstrong;
 - .3 Polysafe Verona by Polyflor;
 - .4 Multisafe or Safe-T by Armstong
 - .5 or approved equivalent.
- .2 Binder content 50% minimum.
- .3 Thickness: minimum 2.0mm (0.080").
- .4 Static coefficient of friction of 0.60 or greater for level surfaces and 0.80 or greater for dry ramps, ASTM D 2047.
- .5 Standard: ASTM F 1303, Standard Specification for Sheet Vinyl Floor Covering with Backing, Type 2, Grade 1, Class A or B backing. or Standard: ASTM F1913, Standard Specification Sheet Vinyl Floor Covering without Backing.
- .6 General: Colour to be selected by Consultant from manufacturer's full range. Assume up to 2 colours used in the Project.
- .7 Seams: All seams to be heat welded with matching welding rods.

- .8 Integral Flashed Cove Base: 6" integral flashed cove base where indicated, of same product as flooring in continuous cove. Provide solid blocking behind cove to prevent collapsing. Provide PVC or metal J trim at top edge and seal the edge.

2.3 ACCESSORIES

- .1 Adhesive: S760 or S780 by Armstrong, S240 for flashed cove areas, or approved alternative.
- .2 Floor Polish: As per manufacturer's recommendation.
- .3 Levelling Compound: Purpose-made floor leveling compound as recommended by resilient flooring manufacturer for substrates indicated.
- .4 Primers: Non-toxic, solvent-free type as recommended by resilient flooring manufactured for specific material on an applicable substrate.
- .5 Reducer Strips: Metal: Refer to Drawings and Specifications. Locate where required to accommodate level changes between floor materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Examine areas to receive the work of this section.
- .2 Correct unsatisfactory conditions prior to start of work.
- .3 Commencement of work implies acceptance of conditions.

3.2 PREPARATION

- .1 Cleaning: Ensure cementitious underlayment is free of dust, paint, oil, sealers, adhesives, curing agents and other debris.
- .2 Levelling:
 - .1 Level subfloor to within resilient flooring manufacturer's recommended tolerances – 3/16 inch in 10 ft. or 1/8 inch in 6 ft.
 - .2 Fill low areas with patching or levelling compound. High spots should be ground level.
 - .3 Latex liquid and powder levelling compound can be used up to 1/8 in. in thickness.
 - .4 Levelling or patching compounds used in areas thicker than 1/8 in. need to have a compressive strength of at least 4000 psi. Ensure patching compounds are thoroughly dry before installing on them.
- .3 Ensure temperature of surrounding areas is within the recommended range of minimum 18 deg C (64 deg F) and maximum 38 deg C (100 deg F). Avoid concentrated or irregular heating.
- .4 Ensure ventilation is adequate and will restrict contaminants and odors from entering other parts of the building.
- .5 Do not start to lay resilient floor coverings until moisture tests indicate surfaces are properly cured and ready for coverings.
- .6 Ensure surfaces meet manufacturer's recommendations for installation preparation. Ensure surface irregularities have been removed or filled to prevent telegraphing through floor finish.
- .7 Apply manufacturer's recommended leveling compound where required to achieve flush conditions where resilient flooring products abut adjacent flooring materials.

3.3 INSTALLATION - FLOORING

- .1 Install flooring in accordance with Manufacturer's instructions.
- .2 All seams in sheet flooring to be heat welded.

- .3 Apply primer and adhesive in accordance with Manufacturer's written instructions. Roll floor with adhesives in both directions. 6 hour working time. Clean adhesive residue.
 - .4 Trim and cut flooring to fit accurately and snugly at walls, columns, pipes and other fixtures.
 - .5 Prohibit traffic until adhesive has completely set in accordance with manufacturer's instructions.
 - .6 Caulk/Seal in behind rubber base, between wall and floor, all locations. Caulk between stair wood stringer and tread. Caulk behind stair tread and riser, and surface between stair tread and riser.
- 3.4 CLEANING AND PROTECTION
- .1 Clean, seal, and polish resilient flooring in accordance with manufacturer's instructions using products recommended by manufacturer. Do not wax and polish where not recommended.
 - .2 Protect other work from damage during the work of this section.
 - .3 Remove excess adhesive as the work progresses.
 - .4 Clean and remove excess adhesive, dust, dirt and extraneous materials from surfaces.
 - .5 Protect finished work from traffic as recommended by the manufacturer.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide labour, materials, tools and other equipment, services and supervision required to complete all interior and exterior painting, coating and decorating work as indicated on Finish Schedules, Wall, Floor and Roof Assemblies and to the full extent of the drawings and specifications.
- .2 Refer to Drawings and Finish Schedules for type, location, and extent of finishes required, and include all touch-ups and field painting necessary to complete work shown, scheduled, or specified.
- .3 Surfaces shall receive Premium grade finish systems, 3 coats, except where MPI Manual indicates no Premium system in which case a 2 coat Custom system is acceptable.
- .4 Coordinate the work of this section closely with the work of Section 05 50 00 Metal Fabrications and 07 92 00 Joint Sealants to ensure compatibility of primers and finish systems.
- ~~.5 Work includes the cost of the Master Painters Institute's inspection service and warranty or maintenance bond as specified.~~
- .6 Paints and coatings, (defined as inside of the weatherproofing system and applied on-site) shall comply with the following criteria: Environmentally Friendly Products:
 - .1 Provide paints and coatings complete with VOC limits outlined in Section 01 35 46 Low Emitting Materials - Emission Limits Tables.
 - .2 The Master Painter's Institute Manual and approved products list has introduced an environmentally friendly system to identify which of their systems meet the lowest VOC standards. This system is as follows:
 - .1 E 3 : Lowest level of VOC: <101 g/L
 - .2 E 2 : Next lowest level of VOC: 101 - 150 g/L
 - .3 E 1: Next lowest level of VOC: 151 - 200 g/L
 - .4 E 0: Outside range, N/A – Data unavailable.
- .7 Acceptable paints and coatings have been given an MPI Rating as outlined below. Ensure paints and coatings applied on interior of building are on the MPI approved products list and comply with the following criteria:

PAINT TYPE	VOC LIMIT (g/L)	MPI RATING	COMMENTS
Interior Flat	50	E 3	
Interior Non-flat	150	E 2	
COATING TYPE	VOC LIMIT (g/L)	MPI RATING	COMMENTS
Primers, Sealers & Undercoaters	100	E 3	
Quick Dry Primers, Sealers & Undercoaters	100	E 3	
Quick Dry Enamels	50	E 3	
Stains, Interior	250	E 0	
Waterproofing Concrete/Masonry Sealers	100	E 3	

1.2 RELATED SECTIONS

- .1 03 30 00 Cast-in-Place Concrete.
- .2 04 22 00 Concrete Unit Masonry Assemblies.
- .3 05 50 00 Metal Fabrications.
- .4 06 20 00 Finish Carpentry.
- .5 07 44 53 Fibre Reinforced Cementitious Cladding.
- .6 08 11 00 Metal Doors and Frames.
- .7 08 14 00 Wood Doors and Frames.
- .8 08 31 00 Access Doors and Panels.
- .9 09 21 16 Gypsum Board Assemblies.

1.3 REFERENCES

- .1 British Columbia Building Code, current edition.
- .2 Master Painters Institute (MPI) Architectural Painting Specification Manual, hereafter referred to as the MPI Manual. Copies of the Manual may be obtained from the following locations.
T: (604)298-7558. Approved Products list is available on-line at www.paintinfo.com.
- ~~.3 BCH Design Guidelines Construction Standards 2019~~

1.4 SYSTEM DESCRIPTION

- .1 Paint exposed surfaces in new construction affected by new work whether or not colors are designated in "schedules," except where a surface or material is specifically indicated not to be painted or is to remain natural.
 - .1 Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces.
 - .2 If colour or finish is not designated, Consultant will select from standard colors or finishes available.
 - .3 Painting includes field painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment or access doors.
- .2 Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
- .3 Prefinished items not to be painted include the following factory-finished components:
 - .1 Shower enclosures.
 - .2 Acoustic materials.
 - .3 Architectural woodwork and casework.
 - .4 Finished mechanical and electrical equipment. Rooftop mechanical equipment to be painted uniform colour.
 - .5 Light fixtures.
 - .6 Switchgear.
 - .7 Distribution cabinets.
 - .8 Fibre Cement cladding materials (only as indicated).
- .4 Concealed surfaces not to be painted include wall or ceiling surfaces in the following generally inaccessible areas:
 - .1 Foundation spaces.
 - .2 Furred areas.

- .3 Pipe spaces.
- .4 Duct shafts.
- .5 Finished metal surfaces not to be painted include:
 - .1 Anodized aluminium.
 - .2 Copper and copper alloys.
 - .3 Stainless steel.
 - .4 Chromium plate.
- .6 Operating parts not to be painted include moving parts of operating equipment such as the following:
 - .1 Valve and damper operators.
 - .2 Linkages.
 - .3 Sensing devices.
 - .4 Motor and fan shafts.
 - .5 Door and window handles.
- .7 Colours shall be as selected by the Consultant from a manufacturer's full range of colours. Refer to Finish Schedule for identification and location of colours or minimum as noted herein. The schedule will be furnished after award of the Contract, except general requirements shall be as noted herein.
- .8 Colour selection for interiors and exteriors will be maximum:
 - .1 Interior Colours: 1 wall colour, 1 trim colour, 1 ceiling colour, 1 door colour, 3 accent wall colours
 - .2 Closets, storage rooms, service rooms, can have the same wall and ceiling colour.
 - .3 Exterior Colours: Fibre Cement Panels 1 colour, Fibre Cement fascia 1 colour, doors 1 colour, trim 1 colour
 - .4 Note that this does not include pre-finished items by others, such as flashings, metal or aluminum trims and windows.
- .9 Gloss level ratings of all painted surfaces shall be as noted on Finish Schedule. Refer to MPI Painting Manual for gloss level definitions and requirements.
- .10 Labels: Do not paint over CSA, Underwriter's Laboratories, Factory Mutual or other code required labels or equipment name, identification, performance rating, or nomenclature plates.
- .11 Coordination of Work: Review other sections in which primers are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
- .12 Notify Consultant of problems anticipated using the materials specified.
- 1.5 SUBMITTALS
 - .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
 - .2 Product data:
 - .1 For each product specified including two sets of Material Safety Data Sheets (MSDS) prior to commencement of work for review and for posting at job site as required.
 - .2 Provide an itemized list complete with manufacturer, paint type, and color coding for each color used for Owner's later use in maintenance.
 - .3 When requested, submit invoice list of all paint materials ordered for project work to Paint Inspection Agency indicating manufacturer, types and quantities for verification and compliance with specification and design requirements.

- .3 Samples: Provide 150mm x 150mm (6 in. x 6 in.) samples of colours and finishes selected for approval by Consultant.

~~.4 Submit consent of surety with Bid Submission as proof of ability to supply a 100% two (2) year Maintenance Bond, if a local MPI Accredited Quality Assurance Association's guarantee option is not used.~~

1.6 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: All paint manufacturers and products used shall be as listed under the Approved Product List section of the MPI Painting Manual.
- .2 Installer Qualifications: Paint Contractor shall have a minimum of five (5) years proven satisfactory experience. Paint Contractor shall maintain a qualified crew of painters throughout duration of the work who shall be qualified to fully satisfy the requirements of this specification.
- .3 Only qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting and decorating work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.
- .4 Regulatory Requirements: Comply with all applicable requirements of the laws, codes, ordinances and regulations of Federal, Provincial and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.
- .5 Single Source Responsibility: Obtain materials from a single manufacturer for the complete system.
- .6 Mockups: To be confirmed by Owner if Required.
 - .1 Use the same installation methods and materials as required for the Work. Schedule construction so that it may be reviewed, and any necessary adjustments made, prior to commencing fabrication of the Work. When accepted, mock-up shall serve as the standard for materials, workmanship, and appearance throughout the Project.
 - .2 Prepare and paint designated surface, area, room or item (in each color scheme) to requirements specified, with specified paint or coating showing selected colors, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. Apply paint or coating in sufficient coats to obtain desired colour.
 - .1 Mock up one (1) full suites, one (1) per colour scheme.
 - .3 Consultant to select designated surfaces.
 - .4 Prepare mock up of finish paint on factory primed doors, for adhesion testing.
 - .5 When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.
 - .6 Accepted mock-ups in undisturbed condition at time of Substantial Performance may become part of completed unit of Work.
- .7 Pre-Installation Conferences: Conduct conferences at Project site.
- .8 Conform to the standards contained in the Master Painters Institute MPI Manual, latest edition.
- .9 Paint manufacturers and products used shall be as listed under the "Approved Products" section of the MPI Manual.
- ~~.10 Field Quality Control:
 - .1 Painting and decorating work shall be inspected by a Paint Inspection Agency (inspector) acceptable to Consultant and the local MPI Accredited Quality Assurance Association. Notify the Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of the project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.~~

~~.2 Surfaces requiring painting shall be inspected by the Paint Inspection Agency who shall notify the Consultant and Contractor in writing of defects or problems, prior to commencing painting work, or after the prime coat shows defects in the substrate.~~

~~.3 Do not apply paint finishes in areas where dust is being generated.~~

.4 *The architect will provide inspections of painted surfaces*

1.7 DELIVERY, STORAGE AND HANDLING

.1 General: Deliver materials in manufacturer's original packaging, with labels intact and indicating the following:

- .1 Product name or title of material.
- .2 Product description (generic classification or binder type).
- .3 Manufacturer's stock number and date of manufacture.
- .4 Contents by volume, for pigment and vehicle constituents.
- .5 Thinning and mixing instructions.
- .6 Application instructions.
- .7 Color name and number.
- .8 VOC content.

.2 Storage and Protection:

- .1 Store materials in accordance with manufacturer's instructions in a protected dry location off ground.
- .2 Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 7 deg C (45 deg F). Maintain containers used in storage in a clean condition, free of foreign materials and residue. Keep storage area neat and orderly.
- .3 Protect from freezing.
- .4 Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.
- .5 Do not open packaging or remove labels until time of installation.

1.8 PROJECT AND SITE CONDITIONS

.1 Coordinate this work with the work of other Sections to avoid delays or interference.

.2 Environmental Requirements: Proceed with the Work in accordance with manufacturer's requirements and instructions and any agreements or restrictions of the Pre-Construction Meeting, including the following.

- .1 Water Based Paint: Apply only when the temperature of surfaces to be painted and surrounding air temperatures are between 10 deg C (50 deg F) and 32 deg C (90 deg F).
- .2 Snow, Rain, Fog, or Mist: Do not apply paint when the relative humidity exceeds 85 percent, at temperatures less than 3 deg C (5 deg F) above the dew point, or to damp or wet surfaces.
- .3 Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.

~~1.9 GUARANTEE~~

~~.1 Provide and pay for:~~

- ~~.1 A 100% two (2) year Maintenance Bond, in accordance with MPI Painting Manual requirements. Maintenance Bond shall warrant that all painting work has been performed in accordance with MPI Painting Manual requirements.~~

~~.2 See also inspection requirements under Quality Assurance.~~

.3 *Painting Contractor to provide standard 1 year warranty*

1.10 WASTE MANAGEMENT

- .1 The painting contractor shall receive written confirmation of the specific surface preparation procedures and primers used for all fabricated steel items from the fabricator/supplier to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting any such work.
- .2 When requested by the Consultant or Paint Inspection Agency, prepare and paint a designated surface, area, room or item (in each color scheme) to requirements specified herein, with specified paint or coating showing selected colors, 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.
- .3 Paint, stain and wood preservative finishes and related materials (thinners, solvents, caulking, empty paint cans, cleaning rags, etc.) shall be regarded as hazardous products. Recycle and dispose of same subject to regulations of applicable authorities having jurisdiction.
- .4 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground retain cleaning water and filter out and properly dispose of sediments. .
- .5 Set aside and protect surplus and uncontaminated finish materials not required by the Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

- .1 Material Quality: Provide the manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.
- .2 Refer to Schedule at end of section.
- .3 Alternative and Equivalent Products:
 - .1 Proposed alternative products will be assessed on their physical and aesthetic attributes.
 - .2 Only products and methods specified shall be used, or such products and methods approved as equivalent. Alternative or equivalent products and methods may be used only where approved in writing by Consultant.
 - .3 Submit request for approval, in duplicate, to Consultant. List specification section or drawing number and page, brand, model, and manufacturer of specified product and proposed product, with full supporting technical specifications, data, and samples and any other special requirements listed in the section.
- .4 Materials including primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, shall be selected from the MPI Painting Specification Manual "Approved Product" listing unless noted otherwise and shall be from a single manufacturer for each system used.
- .5 Other paint materials such as linseed oil, and shellac shall be the highest quality product of an approved manufacturer listed in the MPI Painting Specification Manual and shall be compatible with other coating materials as required.
- .6 Materials and paints shall be lead and mercury free and shall comply with low VOC content requirements of authorities having jurisdiction.

2.2 EXTERIOR SURFACES

- .1 Paint exterior surfaces in accordance with the following MPI Painting Specification Manual requirements.
- .2 Concrete Masonry Units: (smooth and split face block and brick)

- .1 Water repellent, clear non-paintable finish (anti graffiti finish). Fabrishield PR 60 by Fabrikem or approved alternative.
- .3 Structural Steel and Metal Fabrications:
 - .1 EXT 5.1C: Alkyd metal primer / High performance acrylic finish.
- .4 Galvanized Metal: (doors, frames, railings, misc. steel, pipes, overhead decking, ducts, gutters, flashing)
 - .1 EXT 5.3J: WB Light Industrial Coating (over WB primer), GL5.
- .5 Dimensioned Lumber: (Columns, beams, exposed joists, underside of decking, siding, fencing).
 - .1 Ext 6.2 D Solid Colour Stain (cementitious cladding).
 - .2 Ext 6.2 E Semi transparent Stain (wood fencing, soffit).
- .6 Dressed Lumber: (including doors, door and window frames, casings, battens, smooth fascias)
 - .1 EXT 6.3J: Water Based (WB) Light Industrial (over alkyd primer) GL5.
- .7 Rough surface Douglas Fir: columns, beams, exposed joists:
 - .1 Provide Sansin Classic 3-coat stain application. Provide Classic Naturals Topcoat.
 - .2 Stain Colour to be selected by Consultant from standard colour range.
- .8 Heavy Timber structure, columns, beams, CLT soffits
 - .1 Provide Sansin Classic 3-coat stain application. Provide Classic Naturals Topcoat.
 - .2 Stain Colour to be selected by Consultant from standard colour range.
- .9 Fibre reinforced Cementitious Cladding:
 - ~~.1 Factory finished. Coordinate with 07 44 53 Fibre Reinforced Cementitious Cladding.~~
 - .2 As per Manufacturer's written recommendations.
 - .3 Note all fibre reinforced cladding products will be painted onsite, colour to be selected by Architect
- 2.3 PAVEMENT MARKINGS
 - .1 Provide painted site pavement traffic and lane markings as indicated.
 - .2 Provide parking bay striping, lane divider stripes, and directional arrows.
 - .3 Provide lettering and graphic symbols.
 - .4 Provide painted international handicapped symbol in each parking space designated for handicapped parking.
 - .5 Asphalt to be cured and dry one week minimum before application of marking paint. Remove dirt, oil, grease and foreign material from areas of pavement and curbs to be marked.
 - .6 Apply paint only on thoroughly dry surfaces, when atmospheric temperature is above 10 deg C (50 deg F), when relative humidity is below 85 percent, and when weather is favorable.
 - .7 Apply pavement-marking paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges.
 - .8 Apply at manufacturer's recommended rates to provide a minimum dry film thickness of 8mils.
 - .9 Layout and review with Consultant before paint application. Apply respective markings in colours shown. Use white unless noted otherwise.
 - .10 Do not permit traffic on pavement until markings are thoroughly dry.
 - .11 Scope:
 - .1 Line painting

- .2 Stall numbers
- .3 Handicapped symbol – see drawings
- 2.4 INTERIOR SURFACES
 - .1 Paint interior surfaces in accordance with the following MPI Painting Specification Manual requirements:
 - .1 Concrete Horizontal Surfaces: (floors and stairs)
 - .1 INT 3.2G: Waterborne concrete floor sealer.
 - .1 Refer to Interior Finish Schedule – Common Areas.
 - .2 Structural Steel and Metal Fabrications:
 - .1 INT 5.1R High Performance Architectural Latex. GL5.
 - .3 Galvanized Metal: (doors, frames, railings, misc. steel, pipes, overhead decking, ducts)
 - .1 INT 5.3M: High Performance Architectural Latex. GL5.
 - .4 Dressed Lumber: (including doors, door and window frames, casings, trims, moldings)
 - .1 INT 6.3A: High Performance Architectural Latex, GL5.
 - .1 Doors and Trim Throughout: Refer to Interior Finish Schedule.
 - .5 Wood Paneling and Casework: Including exposed heavy timber
 - .1 INT 6.3W: W.B. acrylic clear, over stain, premium grade, satin gloss GL4
 - .6 Plaster, Gypsum Board, Trim: (gypsum wallboard, drywall, “sheet rock type material”, trim):
 - .1 INT 9.2B: High Performance Architectural Latex,, eggshell finish. GL3.
 - .1 Walls.
 - .2 INT 9.2B: High Performance Architectural Latex,, semi flat finish. GL1.
 - .1 Ceilings.
 - .3 INT 9.2B: High Performance Architectural Latex,. GL5.
 - .1 Suite Bathrooms, Kitchens, and Common laundry Areas, Janitor rooms, Common washrooms and kitchen. If Kitchens continuous with living space, wall between counter top and upper cabinets to be painted this finish.

PART 3 - EXECUTION

- 3.1 PREPARATION OF SURFACES
 - .1 The Work shall also include, but not necessarily be limited to surface preparation of substrates as required for acceptance of painting, including cleaning, small crack repair, patching, filling of nail heads or joints on trims, caulking, making good surfaces and areas, pre-treatment, priming and backpriming to the extent / limits defined under MPI preparation requirements.
 - .2 Note; pre-primed products may require additional priming or preparation to meet MPI requirements.
- 3.2 APPLICATION
 - .1 Do not paint unless substrates are acceptable and/or until environmental conditions (heating, ventilation, lighting and completion of other subtrade work) are acceptable for applications of products.
 - .2 Paint surfaces requiring paint or stain finish to minimum MPI Manual finish requirements with application methods in accordance with best trade practices for type and application of materials used.

- .3 Use aggregate coating or a slip resistant additive in paint for surfaces as noted (e.g. stair treads/landings, handrails) where scheduled to be painted.
- .4 Continue paint finishes through behind wall mounted items.
- 3.3 FIELD QUALITY CONTROL / STANDARD OF ACCEPTANCE
 - .1 All surfaces, preparation and paint applications shall be inspected.
 - .2 Painted exterior and interior surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent to the Painting Inspection Agency inspector:
 - .1 Brush / roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
 - .2 Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
 - .3 Damage due to touching before paint is sufficiently dry or any other contributory cause.
 - .4 Damage due to application on moist surfaces or caused by inadequate protection from the weather.
 - .5 Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).
 - .3 Painted surfaces shall be considered unacceptable if any of the following are evident under natural lighting source for exterior surfaces and final lighting source (including daylight) for interior surfaces:
 - .1 Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1m (3 ft.).
 - .2 Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1m (3 ft.).
 - .3 Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
 - .4 When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.
 - .4 Painted surfaces rejected by the inspector shall be made good at the expense of the Contractor. Small affected areas may be touched up; large affected areas or areas without sufficient dry film thickness of paint shall be repainted. Runs, sags of damaged paint shall be removed by scraper or by sanding prior to application of paint.
- 3.4 MECHANICAL AND ELECTRICAL EQUIPMENT
 - .1 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Color and texture to match adjacent surfaces, except as noted otherwise. Coordinate with mechanical trades applying banding and labeling after pipes have been painted.
 - .2 Paint gas piping gas standard yellow where visible in service spaces.
 - .3 Paint surfaces inside of ductwork, and elsewhere behind grilles, where visible, using primer and one coat of matte black paint.
 - .4 Paint both sides and edges of plywood backboards for equipment before installation.
 - .5 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- 3.5 PAINT SCHEDULE
 - .1 Perform painting in accordance with the instructions of the selected paint manufacturers and in conformance with the systems specified.

- .2 Additional coats may be required to achieve acceptable color and coverage.
- 3.6 PROTECTION AND CLEAN-UP
 - .1 Protect newly painted exterior surfaces from elements condensation and contamination until paint coatings are completely dry. Erect barriers or screens and post signs to warn of or limit or direct traffic.
 - .2 Remove spilled, splashed, splattered or over sprayed paint as work progresses, remove waste materials and keep area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.
 - .3 *Provide at completion, 1 gallon of each colour used on site.*

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide Code required signage in accordance with requirements of the authority having jurisdiction. See Signage Schedule
- .2 Provide aluminum building address freestanding signs as indicated and specified.

1.2 RELATED SECTIONS

- .1 03 30 00 Cast-in-Place Concrete.
- .2 09 21 16 Gypsum Board Assemblies.
- .3 32 17 23 Pavement Markings.
- .4 Landscaping.
- .5 Division 26 Electrical.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Samples: Submit samples of each general sign type proposed for Work.
- .3 Schedule: Submit schedule of signage. List text, location, size, and type for each sign to be provided.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Plastic Sheet: 3mm (1/8") thick acrylic sheet. Low gloss finish. See 2.3
- .2 Double Stick Tape: 3M Scotch brand #665 double-stick, double-coated tape, 6mm (1/4") wide.
- .3 Verify colours and typefaces with Consultant.

2.2 SIGNAGE SCHEDULE: RESIDENTIAL

- .1 Verify design and coordinate with architectural drawings.

	LOCATION	DESCRIPTION
1)	Exterior Building Sign (1), Freestanding. Located close to street	Approximately 5'-0x2'-0 aluminum sign with building, name, address, on wood posts and cap, light fixture. Graphic will be provided. See detail. Name to be confirmed. Unicorn Daycare 351 Kootenay Avenue
2)	Building Entry door	Vinyl applica on glass, 3" high letters "Unicorn Daycare Hours of Operation _____" Contact: _____"
3)	Building Entry door	Vinyl applica on glass, 10" high "351"
4)	Entry	±12" x 12" Acrylic Sheet with Text, on wall MAXIMUM BUILDING OCCUPANT LOAD 54 PEOPLE

	LOCATION	DESCRIPTION
5)	Above each pull station	±12" x 12" Acrylic Sheet with Text, on wall (4) NOTIFY FIRE DEPARTMENT IN EVENT OF FIRE EMERGENCY TEL: 000-000-0000
6)	Each daycare room – 3 locations	±6" x 6" Acrylic Sheet with Text, on door or wall
7)	Short term parking sign (2)	<i>12" x 18" x 0.063 thick aluminum plate with 4 mounting holes, mounted 1500mm above pavement, complete with post embedded in concrete foundation, "DROP OFF ONLY, SHORT TERM PARKING". 2 locations</i>
8)	Parking lines, stall numbers (14), see drawings	Refer to 09 90 00 Painting for requirements
9)	<i>Parking Stalls: Accessible parking stall, see plan for locations.</i>	<i>12" x 18" x 0.063 thick aluminum plate with 4 mounting holes, mounted 1500mm above pavement, complete with post embedded in concrete foundation, WITH HANDICAPPED SYMBOL IN WHITE WITH BLUE BACKGROUND. 1 locations</i>

2.3 FABRICATION

- .1 Unless required otherwise, signs shall be free of rough edges, irregular surfaces, non-uniform finishes, and similar imperfections.
- .2 Unless specified and approved otherwise, signage shall be silk screened to the backside of clear plastic sheet.
 - .1 Provide solid colour background over silk screened text. Colours to be confirmed by consultant.
 - .2 Apply images with uniform colours, sharp definition of line, and accurate configuration.
 - .3 Size of sign to suit text.
- .3 Parking Signage: Refer to Site Schedule, and verify with Consultant.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Prior to Work commencing, carefully inspect installed Work of other trades with installer present and verify that work is complete to the point where work of this Section may properly commence. Correct conditions detrimental to the proper and timely completion of the work.
- .2 Do not begin installation until unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 INSTALLATION

- .1 Mount graphics level, plumb, and in accurate alignment, unless indicated otherwise in accordance with manufacturer's written instructions.
- .2 Mounting:
 - .1 Clean surfaces as necessary to accept mounting tape.

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CODE SIGNAGE
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.2 Use double stick tape for mounting unless approved otherwise.

END OF SECTION

Part 1 General

1.1 Section Includes

- .1 Phenolic-core toilet partitions.
 - .1 Full height partition in Washroom 114
 - .2 partial height custom partitions in Washroom 109 and 114,

1.2 Related Sections

- .1 Section 06 10 00 – Rough Carpentry: Reinforcement within walls.
- .2 Section 10 28 13 – Toilet, Bath, Laundry Accessories.
- .3 Refer also to Owner supplied accessories, as required.

1.3 References

- .A ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .B ASTM A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .C ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .D ASTM A743/A743M - Standard Specification for Castings, Iron-Chromium, Iron-Chromium-Nickel, Corrosion Resistant, for General Application.
- .E ASTM B86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings.
- .F ASTM B221 - Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .G CAN/CSA-B651-04 - Accessible Design for the Built Environment.

1.4 Submittals

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide data on panel construction, hardware, and accessories.
- .3 Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and floor, supports, door swings.
- .4 Samples: Submit samples of partition panels, in size illustrating panel finish, colour, and sheen.
- .5 Installation Data: Manufacturer's special installation requirements, including special procedures requiring special attention.
- .6 Close-Out Submittals:
- .7 Installation Data: Manufacturer's special installation requirements, including special procedures
 - .1 Spare Parts.
 - .2 Special Tools.

1.6 Regulatory Requirements

- .1 Conform to applicable code and CAN/CSA B651 for accessibility requirements for the handicapped.

Part 2 Products

2.1 Manufacturers

- .1 Hadrian Manufacturing Inc.
- .2 Approved substitutions: Refer to Section 01 25 00.

2.2 Materials

- .A Phenolic-Core Toilet Compartments:
 - 1. Standard: 58-inch- (1473-mm-) high doors and panels and custom sized dividers. See drawings and details
 - a. Basis of Design Product: **Hadrian Standard.**
 - b. Style: Floor to ceiling and custom smaller dividers.
- .1 Steel Sheet: ASTM A653/A653M, with G90 zinc coating or ASTM A792/A792M galvalume.

2.3 Accessories

- .1 Pilaster Shoe: Formed stainless steel to ASTM A167, Type 304 with No. 4 finish, 4 inches high, 2-piece continuous self-locking edges, corners welded and ground smooth.
- .2 Attachments, Screws, and Bolts: Stainless steel; tamper proof type, heavy duty extruded aluminum brackets.
- .3 Hardware: Stainless Steel:
 - a) Pivot hinges, gravity type, adjustable for door close positioning.
 - b) Nylon bearings.
 - c) Thumb turn door latch with exterior emergency access feature.
 - d) Door strike and keeper with rubber bumper.
 - e) Coat hook with rubber bumper
 - f) Door pull for out swinging doors.
 - g) continuous stainless steel channel at wall for short partitions. Raised leg to support short partitions.

2.4 Fabrication

- .1 Fabricate components as follows:
- .2 Doors and Panels:
 - a) Thickness: Nominal 25mm (1 inch)
 - b) Door width as indicated
 - c) Height: Standard 1,473mm (58in)
 - d) Coat hook with rubber bumper
 - e) Door pull for out swinging doors.

- .3 Pilasters: 32 mm (1-1/4 inch) thick, of sizes required to suit cubicle width and spacing.
- .4 Phenolic Door, Panel, and Pilaster Construction, General: Decorative surface papers impregnated with melamine resins, pressed over kraft paper core sheets impregnated with phenolic resin and bonded together under high pressure and temperature.

2.5 Finishes

- .1 Colour: As selected by the Consultant from the manufacturers standard range.

Part 3 Execution

3.1 Examination

- .1 Verify existing conditions before starting work.
- .2 Verify that field measurements are as indicated on shop drawings. Verify correct spacing of and between plumbing fixtures.
- .3 Verify correct location of built-in framing, anchorage, and bracing.

3.2 Installation

- .1 Install partitions to manufacturer instructions. Install partitions secure, rigid, plumb, and level.
- .2 Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.
- .3 Attached panel brackets securely to walls using anchor devices.
- .4 Attach panels and pilasters to brackets with tamper proof through bolts and nuts. Locate head rail joints at pilaster centre lines.
- .5 Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.
- .6 Support pilasters from built-in framing using two (2) adjustable hanging studs providing vertical leveling. Conceal ceiling fastenings with pilaster shoe.
- .7 Equip each door with two hinges, one door latch and one (1) coat hook and bumper.
- .8 Install door strike and keeper with door bumper on each pilaster in alignment with door latch.
- .9 Field touch-up of scratches or damaged enamel finish will not be permitted. Replace damaged or scratched materials with new materials.

3.3 Erection Tolerances

- .1 Maximum Variation from True Position: 6 mm (1/4 inch).
- .2 Maximum Variation from Plumb: 3 mm (1/8 inch).

3.4 Adjusting

- .1 Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- .2 Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.
- .3 Adjust adjacent components for consistency of line or plane.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide toilet and washroom accessories as indicated, scheduled and specified.
- .2 Provide vandal resistant washroom accessories to public areas as indicated and specified.

1.2 RELATED SECTIONS

- .1 06 10 00 Rough Carpentry.
- .2 09 21 16 Gypsum Board Assemblies.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: Provide catalogue cuts of each item specified.

1.4 QUALITY ASSURANCE

- .1 Mock-ups: provide a mock-up of one residential unit complete with accessories and sealants.

1.5 PROJECT CONDITIONS

- .1 Coordinate Work of this Section with Work of other Sections to assure proper location of cutouts, backing, and recess framing. Furnish templates and printed instructions as required to prepare Work of other Sections to receive Work of this Section.

PART 2 - PRODUCTS

- 2.1 WASHROOMS: See drawings for locations, or to be clarified by Architect.

ITEM	MAKE/MODEL	DESCRIPTION
Toilet Tissue Dispenser	Bobrick: B-76857, Frost 1135, Or approved alternate.	Satin finish SS, mounted within 610mm (24") of toilet.
Grab Bars at Toilet	Bobrick: B-5898.99 30"x30", Frost 1003SP3030, or approved alternate	Able to withstand vertical and horizontal force of 1.3 kN. <i>Accessible Locations</i>
Grab Bar behind Toilet	Bobrick B-5806.99 x 24", Frost 1001SP24, or approved alternate	Located behind toilet <i>Accessible Locations</i>
Towel Bars	Bobrick B-530 x 18" or 24", Frost 1001SP 18 or 24, Or approved alternate.	Satin finish SS, 18" or 24", see drawings
Robe Hooks	Bobrick B-7672, Frost 1139-S, or approved alternate	1 robe hooks per washroom, located on wall.
Mirrors		Frameless plate glass, full vanity width, max. 4" above lav, w/ "L" shaped st. clips.
Paper Towel Dispenser	Bobrick B-2621, Frost 107, or approved alternate.	Wall-mounted, 200 C fold /275 Multifold, satin SS.
Shelf	Bobrick B-298x18	In Universal Washroom

ITEM	MAKE/MODEL	DESCRIPTION
Soap Dispenser	Bobrick: B2111	Wall mounted, 40-fl oz, satin finish SS. In Universal Washroom
Changing Station	Koala Kare KB310-SSWM	Horizontal SS surface mounted baby changing station in Universal Washroom

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verify that surfaces, recesses, backing are satisfactory for the installation.

3.2 INSTALLATION

- .1 Install accessories in locations shown and specified. Install units plumb and true.
.2 Fasten accessories securely with mechanical fasteners recommended by manufacturer.

3.3 ADJUSTING AND CLEANING

- .1 Remove protective coatings in accordance with manufacturer's instructions.
.2 Adjust accessories, as applicable, for smooth operation.
.3 Clean exposed surfaces of accessories in accordance with manufacturer's instructions.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Supply, install and hook-up appliances including refrigerator, electric range, dishwashers, laundry equipment as indicated and specified.

1.2 RELATED SECTIONS

- .1 Division 22 Plumbing
- .2 Division 23 Heating, Ventilating and Air Conditioning.
- .3 Division 26 Electrical.

1.3 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Submit installation instructions.
 - .2 Submit Operations and Maintenance Manuals.

1.4 QUALITY ASSURANCE

- .1 Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- .2 ULC and NEMA Compliance: Provide electrical components required as part of residential appliances that are listed and labeled by ULC and that comply with applicable NEMA standards.
- .3 Canadian Gas Association (CGA) and ANSI Standards: Provide gas-burning appliances that carry the design certification seal of CGA and that comply with ANSI Z21-Series standards.
- .4 AHAM Standards:
 - .1 Refrigerators and Freezers: Total volume and shelf area ratings certified according to ANSI/AHAM HRF-1 2016 Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers

1.5 DELIVERY

- .1 Deliver appliances only after utility rough-in is complete and construction in spaces to receive appliances is substantially complete and ready for installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Products shall be a nationally recognized company meeting warranty requirements and shall be CSA approved.
- .2 Products shall have **Energy Star labels**.

2.2 APPLIANCES

- .1 General: Appliances shall be white unless indicated otherwise.
- .2 Product make and model are noted but approved alternatives will be acceptable. If any models are discontinued supplier can provide equivalent or new model.
- .3 Appliances: To be provided to locations as noted. See plans for locations

ITEM	MAKE	MODEL	DESCRIPTION
Refrigerator	Frigidaire	FFHT1814YW white	+/- 30" wide, frost free. Min. 18 cu.ft. Energy Star, 100% frost free, slide out wire shelves.
Range	Frigidaire	FCRE306CAW white	30" Provide dedicated circuit. w/ self-clean.
Dishwasher	Frigidaire	FDPH4316AW	24" wide dishwasher with sanitizing high heat option
Laundry	LG 5.2cf LG 7.4CF	WM3600HWA washer DLES3600W dryer	Provide stacking hardware

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Built-in Appliances: Securely anchor to supporting cabinetry or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and rough openings are completely concealed. All dryer ducting to be metal.
- .2 Freestanding Appliances: Place in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- .3 Securely anchor appliances with provided load and seismic restraints including refrigerators and full stoves.
- .4 Verify that each appliance is in good working condition and all component parts are installed.

END OF SECTION

1.1 SUMMARY

- .1 Provide roller shades to all EXTERIOR windows.

1.2 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: Submit data covering the care and cleaning of blinds for incorporation into maintenance manuals.
- .3 Samples: Submit duplicate samples of manufacturer's standard colours for Consultant's selection.

1.3 QUALITY ASSURANCE

- .1 Qualifications of Installer: Minimum of five (5) years proven experience in this type of work and acceptable to the manufacturer for installation of their products.
- .2 Mock-up: Install one unit of each type of window treatment, in location directed by Consultant.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver blinds to site in accordance with construction schedule when floor and ceiling finishes and overhead work has been completed.
- .2 Store in a location protected from damage by other sections of the work.

PART 2 - PRODUCTS

2.1 ROLLER SHADES

- .1 Hardware, shades fabric and aluminum/steel coating shall have a ten (10) year manufacturer's warranty.
- .2 Fabrics: inherently anti-static, waterproof, washable, flame retardant to NFPA 701 and NFPA 703, fungal resistant to ASTM G21, fade and stain resistant, light filtering, room darkening fabrics as selected by the Consultant and Owner. Typically 3% opening and black out at all Nap Room locations.
- .3 Operating system: Manual pull up or down system, no chains, provide pull ring on blind.
- .4 Roller tube: circular shaped aluminum tube, with 50.8 mm (2") outside diameter, providing additional tensile strength and allow for secure placement of clutch and end plug. Blind able to be pushed up or pulled down easily and stops at any location. Provide Valance cover.
- .5 Bottom bar: sealed hem bar, extruded aluminum weight in a sealed fabric hem pocket provided uniform look.

2.2 FABRICATION

- .1 Fabricate units to fit the openings indicated when mounted on the face of the wall, from head to sill and from mullion to mullion. Size to allow smooth operation of the unit.
- .2 Blinds can span full width of windows. Larger windows 7'-0" or wider to be divided, at a mullion.
- .3 Fabricate elements to integrate with adjacent construction.

PART 3 - EXECUTION

3.1 INSTALLATION – BLINDS

- .1 Install blinds and hardware in accordance with manufacturer's directions. See also details.
- .2 Install blinds square, true-to line, with operable parts adjusted for smooth operation. Include centre brackets where necessary to prevent deflection of head rail.
- .3 Adjust to provide for operation without binding.
- .4 Use non-corrosive metal fasteners for installation, concealed in final assembly.

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ROLLER WINDOW SHADES
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END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide kitchen, bathroom, daycare cabinets, laundry, nap rooms, staff room, cubbies, storage areas, cabinets/casework as indicated, specified, and scheduled.
- .2 Shelving: Refer to 06 20 00 Finish Carpentry.
- .3 Countertops; Refer to 12 36 00
- .4 Coordinate the work of this Section closely with work of Section 12 36 00 Countertops.

1.2 RELATED SECTIONS

- .1 06 20 00 Finish Carpentry.
- .2 07 92 00 Joint Sealants.
- .3 11 31 00 Appliances.
- .4 12 36 00 Countertops.

1.3 REFERENCES

- .1 CA/CSA O141-05 (R2014), Softwood Lumber.
- .2 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.

1.4 DEFINITIONS

- .1 The following definitions for high pressure decorative plastic laminates apply to the work of this section.
- .2 Horizontal Grade Standard (HGS): 1.2mm nominal thickness.
- .3 Horizontal Grade Light (HGL): 1.0mm nominal thickness.
- .4 Vertical Grade Standard (VGS): 0.7mm nominal thickness.
- .5 Vertical Grade Light (VGL): 0.5mm nominal thickness.
- .6 Horizontal Grade Post-Forming (HGP): 1.0mm nominal thickness.
- .7 Vertical Grade Post-Forming (VGP): 0.7mm nominal thickness.
- .8 Cabinet Liner Standard (CLS): 0.5mm nominal thickness.
- .9 Backer Liner (BKL): 0.5mm nominal thickness.
- .10 Melamine or Low Pressure Laminate: 0.5mm nominal thickness.

1.5 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data: For cabinets and cabinet hardware.
- .3 Shop Drawings: Include plans and elevations. Show materials, finishes, filler panels, hardware, countertop edge and backsplash profiles, cutouts for plumbing fixtures, and methods of joining countertops.
 - .1 Cabinets: Verify dimensions of installation areas by field measurements before fabrication and indicate measurements on Shop Drawings. Show fillers and scribes if necessary.
 - .2 Countertops: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

- .3 Residential Appliances: coordinate Shop Drawings with final selection of residential appliances.
- .4 Provide confirmation to Quality Standards noted in 1.6.3.
- .4 Samples: Provide samples of laminates per architect request. Provide samples of door or counter, if requested by architect.
- 1.6 QUALITY ASSURANCE**
 - .1 Quality Standards:
 - .1 Cabinets: Meet NKCA testing requirements and HVD formaldehyde emissions test 24CF3280.
 - .2 All materials workmanship and equipment shall conform to the architectural woodwork specifications as set forth in the Quality Standards for Architectural Woodwork Manufacturers Association of Canada (AWMAC), Canadian Kitchen Cabinet Association (CKCA) or CAN 3-A278M for residential kitchen cabinets and bathroom vanities.
- 1.7 WARRANTY**
 - .1 In addition to standard one-year warranty, provide a five (5) year warranty against de-lamination of finishes and two years on hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Refer to Finish Schedule.

2.2 MATERIALS

- .1 Particle Board: Industrial grade, 45 lb density, conforming to ANSI A 208.1 Grade M-3.
- .2 Plywood: Exterior grade, for countertops containing sinks.
 - .1 Softwood conforming to CAN/CSA O141.
 - .2 Hardwood conforming to CSA O115.
- .3 Plastic Laminate: Conform to referenced standard and thicknesses indicated in definitions above.
- .4 Solid Wood: Clear lumber, free of defects, selected for compatible grain and color, and kiln dried, hardwood to 7 percent moisture content, soft wood to 12% moisture content.

2.3 CASEWORK HARDWARE

- .1 General: Complying with ANSI / BHMA A156.9:
- .2 Manufacturers: Blum, Richelieu, or approved alternative.
- .3 Door and Drawer Pulls:
 - .1 Drawer pull: 102mm (4"), "D" pulls.
 - .2 Cabinet Pull: 102mm (4"), "D" pulls.
 - .3 Finish: brushed chrome.
- .4 Hinges: Fully concealed Euro hinges, stay-closed design, metal, 110 degree opening and adjustable six (6) ways. Soft close.
- .5 Drawer Fronts: Easily adjusted for alignment, removal, and reinstallation, 100 pounds static and 75 pounds dynamic capacity. Performing 100,000 open close cycles without failure.

- .6 Drawer Guides: Dual Euro drawer guides. Epoxy-coated steel. Resistant to scratching and household chemicals. Self-closing, soft-close, with double warning pullout stops and lockout feature.
- .7 Door Bumpers: elastic. Provide bumpers at any conflict between door pulls and wall or cabinet.
- .8 Screw Caps: Colored to match cabinet finish, inside and outside of cabinet.
- .9 Provide a built-in stop to prevent drawers from impact during closing.
- .10 Wheels: Nylon on both sides, captive to ensure parallel alignment.
- .11 Corbels: As required.
- .12 Provide cabinet and drawer locks where shown on the drawings and as listed here:
 - .1 Provide locking mechanism for all cabinets and/or drawers as shown on drawings. All to be keyed alike. Supply 6 keys with locks.
 - .2 Cabinet locks to be solid brass bodied pin tumbler cam locks complete with matching strike plates, nickel finish, Dom cam lock with mounting plate from Richelieu or approved equal.
 - .3 Drawer locks to be Dom from Richelieu or approved equal.

2.4 CABINET CONSTRUCTION

- .1 Cabinet over 813mm (2'-8") wide, must have mullion installed
- .2 Door and Drawer Front Styles: High Pressure Laminate on face, 1/8" PVC edge colour matched. From standard range of solid or patterned colours. Assume up to 3 laminate colours
- .3 Wall Cabinets - Tops, Bottoms, and Sides: 19mm (3/4 in.) thick, melamine impregnated low pressure laminate surface on SDP particleboard or wheat board, with PVC edge banding on visible edges. Bottom of wall cabinet double thickness to accommodate lighting.
- .4 Interiors: White laminated.
- .5 Backs: 3mm (1/8 in.) thick hardboard finished to match inside of cabinet, joined with a full glue line in a dado and stapled.
- .6 Cabinet and Filler Panels: Not more than 50mm (2 in.) wide.
 - .1 Cabinets must be assembled with dowels and bolts.
 - .2 Cabinet Hanging Rails: High-density particle board, concealed.
 - .3 To match door and drawer fronts
- .7 Drawer Construction: Sides, backs, and sub-fronts 19mm (3/4 in.) thick SDP particleboard or wheat board finished with melamine. Bottom must be 3 mm (1/8") hardboard, paint finished. Finish exposed edges of drawers with plastic edging.
- .8 Ends: Finished. Exposed gables to match door and door fronts.
- .9 Mounting: Combination glue blocks and hanging cleats mounted at cabinet back.
- .10 Shelves: 19mm (3/4 in.) thick SDP particleboard with white laminate finish and white PVC Front edge.
 - .1 Shelf Supports: Adjustable shelf clips, adjustable at 32mm (1-1/4 in.) on centre.
 - .2 In addition to the above items, provide pull-out work surfaces with surface mounted pulls as indicated.
- .11 Range Hood duct enclosers. Provide duct enclosure inside cabinet as well as above cabinet, to enclose air duct. Finish to be melamine inside of cabinet and MDF painted above cabinet.

2.5 KITCHEN CABINETS

- .1 Kitchen Base Cabinets: 915mm (3 ft.) from floor to top of counter. 34" at accessible locations.
 - .1 All base kicks to receive a finished baseboard, same finish as door or drawer product. Toe space at base cabinets shall be 3"x4", or 6"x10" at accessible units.
- .2 Kitchen Base Cabinet depth 600mm (2 ft.) from front to back.
- .3 Refrigerator Openings: Minimum 50mm (2 in.) wider than Refrigerator. Refer to Section 11 31 00 Appliances. Cabinet above refrigerator location to be 24" deep.
- .4 Base kick to have laminate, matching cabinet door faces.

2.6 BATHROOM CABINETRY

- .1 All cabinets and counters per specifications herein.
- .2 Toilet dividers to be phenolic core, see Section 10 21 13 toilet compartments

2.7 CUBBIES

- .1 All surfaces high pressure laminate, 5/8" MDF core, 1/8" PVC edge banding.
- .2 Hanging hooks Richelieu 3 1/4" double utility hook #76243
- .3 Kicks to match other wall materials.
- .4 See drawings for sizes and dimensions.
- .5 Provide all anchors to floor or wall for anti-tipping

2.8 STORAGE SHELVING

- .1 Provide melamine storage adjustable shelving, as detailed and shown on drawings.
- .2 Shelves: 19mm (3/4 in.) thick SDP particleboard with white laminate finish and white PVC Front edge.
- .3 Adjustable shelving brackets to be Richelieu Double Shelf Bracket 4182T to depth as shown on drawings, complete with double shelf standard 4082T to lengths as required.
- .4 Or approved alternative

2.9 ACCESSORIES

- .1 Sealant: Refer to Section 07 92 00 Joint Sealants.
- .2 Provide Lazy Susan in kitchen base corner cabinets.
- .3 Provide inserts for adjustable shelving inside millwork cabinets

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install casework in accordance with reviewed Shop Drawings and manufacturer's instructions.
- .2 Install casework without variations in plane of adjoining surfaces. Use concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips. Scribe strips and moldings in finish to match casework face.
- .3 Install casework level and plumb to a tolerance of 3 mm in 2.4 m (1/8 inch in 8 ft.). Attach cleats to wall true, level, and square to return walls.
- .4 Cabinets:
 - .1 Fasten cabinets to adjacent units and to backing.

- .2 Fasten wall cabinets through back, near top and bottom, at ends and not less than 600mm (24 in.) on centre.
- .3 Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.
- .4 Fasten wall cabinets through back, near top and bottom, at ends and not more than 400mm (16 in.) on centre. with blocking, or hanging strips with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
- .5 Countertops:
 - .1 Install countertops in accordance with the fabricator's instructions and reviewed Shop Drawings.
 - .2 Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Caulk space between backsplash and wall with sealant specified in Section 07 92 00 Joint Sealants.
 - .3 Install units using approved setting methods.
 - .4 Install sealant at joints.
 - .5 Ensure range hood light and fan controls are counter-mounted in accessible units.
 - .6 All counters to have backsplash on all locations, including up against a wall.
 - .7 See also Section 12 36 00
- .6 Install Door Bumpers after doors have been hung and adjusted. Install door bumpers on adjacent surfaces at handle location, to prevent damage.
- .7 Adjust casework and hardware so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- .1 Provide countertops with accessories for a complete system as indicated and specified, to all locations.
- .2 Provide cut outs in countertops for sinks and plumbing fixtures in accordance with templates provided by plumbing subcontractors at time of installation.

1.2 RELATED SECTIONS

- .1 07 92 00 Joint Sealants.
- .2 12 30 00 Manufactured Casework.

1.3 REFERENCES

- .1 Cabinets: Meet NKCA testing requirements and HVD formaldehyde emissions test 24CF3280.

1.4 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's product data, installation instructions, and maintenance information.
- .3 Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, locations and relationship with adjacent construction.
- .4 Samples: Submit two 12" x 12" (300 mm x 300 mm) manufacturer's samples showing available colours, textures, and finishes.

1.5 QUALITY ASSURANCE

- .1 Comply with governing codes and regulations.
- .2 Provide product from a single manufacturer.
- .3 Use experienced installers.
- .4 Mock-Up:
 - .1 Mock up one complete unit of each type of product specified including accessories, complete, in-place for approval. Approved mock-up may remain in place upon Consultant's approval.
- .5 Deliver, handle and store materials in accordance with manufacturer's instructions.

1.6 PROJECT CONDITIONS

- .1 Field Measurements: Check dimensions by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:
 - .1 Formica Corporation.
 - .2 Nevamar.
 - .3 Wilsonart International; Div. of Premark International, Inc.
 - .4 Colour from standard range & finish; solid colour or patterned.

- .2 Countertops:
 - .1 High-Pressure Decorative Laminate: Type HGS, 1mm (0.04") thick, conforming to ANSI/NEMA, LD3-2005. Assume one colour to be used throughout this project.
 - .2 One-piece factory "postformed" type, bonded to a particleboard core with bullnosed edges and 89 mm (3 1/2") high backsplash, composed of high pressure laminate.
- .3 Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
- 2.2 COUNTERTOPS
 - .1 Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Provide front and end overhang of 1 inch (25 mm) over base cabinets.
 - .2 Plastic Laminate for Flat Tops: Grade-Horizontal Grade standard 1.2 mm thick.
 - .3 Plastic Laminate for Post Formed Tops: Grade HGP 1.0 mm thick.
 - .4 Plastic Laminate for Backing: Grade BKL.
 - .5 Edges: Same material as top on front edge of top, on top edges of backsplashes and end splashes, and on ends of tops and splashes.
 - .6 Construct top and backsplash from one piece of plastic laminate with rolled edges and coved intersection. All locations against a wall, provide separate end splashes fitted to top.
 - .7 SDP M3 grade particleboard core, zero formaldehyde construction that meets ANSI A208.1 High use application.
- 2.3 ACCESSORIES
 - .1 Anchors and Attachments: Stainless steel, ASTM A666, Type 304.
 - .2 Adhesives: As recommended by manufacturer.
 - .3 Sealant: Non-staining type recommended by countertop manufacturer or as specified in Section 07 92 00 Joint Sealants. Colour: as selected by Consultant to match countertop as nearly as possible. Colour to be selected by Consultant from manufacturer's full range.
- 2.4 FABRICATION
 - .1 Fabricate to profiles indicated.
 - .2 Form external corners to joint profile as indicated.
 - .3 Coordinate profiles with Section 12 30 00 Manufactured Casework.
- PART 3 - EXECUTION
 - 3.1 EXAMINATION
 - .1 Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting installation and performance of stone. Do not proceed with installation until unsatisfactory conditions have been corrected.
 - 3.2 PREPARATION
 - .1 Clean countertops prior to installation. Protect adjacent surfaces from the work of this section.
 - 3.3 INSTALLATION
 - .1 Install countertops in accordance with the fabricator's instructions and reviewed Shop Drawings.
 - .2 Countertops: Caulk space between backsplash and countertop and between backsplash and wall with sealant specified in Section 07 92 00 Sealants.
 - .3 Arrange to provide a minimum number of joints and in approved locations.
 - .4 Continuous bead of sealant between sections to prevent water penetration.
 - 3.4 TOLERANCES
 - .1 Variation in Line: 1/8" (3 mm) in 96" (2.4 m) maximum.

- .2 Variation in Surface Plane: 1/8" (3 mm) in 10 feet (3 m) maximum from level or slope indicated.
 - .3 Variation in Joint Width: No more than 1/16" (5 mm) or one-fourth of nominal joint width whichever is less.
 - .4 Variation in Plane between Adjacent Units: 1/32" (0.75 mm) difference between planes of adjacent units.
- 3.5 CLEANING AND PROTECTION
- .1 Remove excess sealant upon completion of work. Clean soiled surfaces with cleaning solution. Use non-metallic tools in cleaning operations.
 - .2 Protect tiling and other surfaces during the Work and until completion of the work with recommended methods and materials.

END OF SECTION