Drumheller Aquaplex
Mechanical Upgrade

Drumheller, Alberta

Issued for Tender and Construction
2023-06-02

Project No.: 000c-1309-22

Group2

Architecture
Interior Design

Drumheller Aquaplex Mechanical Upgrade

Drumheller, Alberta

Project No: 000c-1309-22

Architectural Consultant:

Group2 Architecture Interior Design Ltd.
#200, 4706 – 48th Ave
Red Deer, Alberta T4N 6J4

Mechanical Consultant:

AME Group
710 – 1122 4th Street SW
Calgary, Alberta T2R 1M1

Electrical Consultant:

SMP Engineering
403, 1240 Kensington Road N.W.
Calgary, Alberta T2N 3P7

PROJECT INFORMATION

DRUMHELLER AQUAPLEX MECHANICAL UPGRADE

Drumheller, Alberta

Project No: 000c-1309-22

BID DOCUMENTS AVAILABLE	**10:00 A.M. Friday, June 2nd, 2023**
MANDATORY PRE-BID MEETING:	**10:00 A.M. Thursday, June 8th, 2023** 100 Riverside Dr W, Drumheller, AB
BID CLOSING: (VIA EMAIL)	**2:01 P.M. Tuesday, June 20th, 2023** Group2 Architecture Interior Design Ltd. Attn: Ryan Bultena – ryan.bultena@group2.ca
PRIVATE BID OPENING	**Immediately following Bid Closing.**
CONTRACT AWARD:	**WITHIN 60 DAYS**
CONSTRUCTION START-UP:	**IMMEDIATELY AFTER AWARD**
CONSTRUCTION COMPLETION:	**October 3rd, 2023**

Documents prepared by:
Group2 Architecture Interior Design Ltd.

May 2023

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PART 1 Instructions To Bidders

1.1 BID INTENT

.1 The intent of this Invited Bid call is to obtain an offer to perform work to complete a Mechanical Upgrade project, located at Drumheller Aquaplex, Drumheller, Alberta for a Stipulated Price contract, in accordance with the Contract Documents.

.2 Refer to Section 01 10 00 - Summary of Work for a summary of the Project, including requirements pertaining to Contract Time.

.3 The Owner is the **Town of Drumheller** and hereafter will be referred to as the "Owner".

.4 The Prime Consultant is **Group2 Architecture Interior Design Ltd.** and hereafter referred to as the "Consultant".

.5 Bids shall be prepared and submitted and the Bidding process shall be administered in accordance with these Bidding requirements.

.6 Bidders are responsible to ascertain the full extent of the scope of the Work and to make themselves aware of all conditions, which may affect the performance of the Contract.

1.2 CONTRACT DOCUMENTS IDENTIFICATION

.1 The Contract Documents are identified as **Drumheller Aquaplex Mechanical Upgrades** and File Number 000C-1309-22 as prepared by AME Group and their consultants and listed in the Project Manual.

1.3 DOCUMENT AVAILABILITY

.1 Bid Documents are not available in hard copy.

.3 Electronic Bid Documents provided to Bidders.

.4 All reproduction costs of printing any Bid documents (drawings, specifications and contract documents) will be the sole responsibility of the Bidding contractor.

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

1.4 EXAMINATION OF BID DOCUMENTS AND SITE

.1 Bidder shall, before submitting a Bid:

.1 examine and read the Bid Documents thoroughly,

.2 visit site and its surroundings and other locations to become familiar with local and other conditions affecting the Work,

.3 consider the effect of regulatory requirements applicable to the Work,

.4 study and correlate Bidder's observations with the Bid Documents,

.5 immediately notify the Consultant of all perceived omissions and discovered conflicts, errors and discrepancies in the Bid Documents, and

.6 be satisfied that Bidder understands the Bid Documents and is competent to undertake and complete the Work.

.2 Refer to Article 1.8 - Bidders Briefing and Site Visit. This meeting will be the only opportunity for Bidders to review the facility's safety and security regulations which may impact the bid. A site inspection to obtain a clear understanding of the project requirements is deemed optional but remains at the Bidder's discretion.

.3 Examine Drawings and Specifications. The failure or omission of any Bidder to receive or examine any document, or to visit site and acquaint himself with the existing conditions will not relieve the Bidder from any obligation with respect to his Bid.

.4 Check that Bid Documents are complete and correspond with List of Drawings and the Table of Contents of the Specifications. Notify the Consultant of any omissions. Written instructions in the form of Addenda will be issued. Questions must be received in writing not less than seven (7) Working Days before the Bid call date.

.5 Bidders must examine all Drawings and read through all Divisions of the Specifications, so that they are fully conversant with the scope of the Documents.

.6 The Consultant does not guarantee site information indicated in the Bid Documents, and each bidder must evaluate such information relative to the actual conditions.

.7 The Owner will assume no responsibility or liability for the completeness of any Bid Documents obtained from a source other than the address specified in Document Availability noted above.

.8 In the event of a discrepancy between hard copy Bid Documents obtained from the address specified in Document Availability noted above and any electronic version of the Bid Documents, or any hard copy version derived from any electronic version, the Bid Documents issued from the address specified in Document Availability noted above, shall be deemed to be correct. Promptly notify the Consultant at the office identified under "Queries" upon discovery of any such discrepancies.

.9 If such discrepancies, omissions, ambiguities or conflicts which are known to the Bidder are not brought to the attention of Consultant prior to bid submission, it shall be assumed that the Bidder has provided for a decision of the Owner representative during the progress of construction which decision shall be final, legally binding on the Bidder and no additional cost to the Owner.

.10 The foregoing is not intended to require the Bidder to provide work which is not indicated on or reasonably inferable from the Contract Documents. It is intended to eliminate later claims for extras, based on alleged discrepancies, omissions, ambiguities or conflicts in or among the Bid Documents which were known to the Bidder at the time of Bid submission.

.11 If in any doubt as to the meaning and intent of the Contract Documents, the Bidder shall request clarification from the Consultant prior to submitting a bid.

1.5 QUERIES/ADDENDA

.1 If any person contemplating submitting a Bid on this Work is in doubt as to the true meaning and intent of any part of Drawings and Specifications, he must request in writing, to the Consultant for an interpretation thereof. If such an interpretation is not requested, the Bids will be presumed to be based upon the interpretation of directions that may be subsequently given by the Consultant after award of the Contract, in accordance with the provisions of the Contract.

.2 Direct questions regarding interpretation of Bid Documents to:

Group2 Architecture Interior Design Ltd.
Attention: Ryan Bultena
Email: ryan.bultena@group2.ca
Telephone: 403.340.2200

.3 During the Bid period, Addenda will be issued by the Prime Consultant and distributed via e-mail. All addenda shall become an integral part of the Contract Documents and shall be allowed for in arriving at the Bid Prices.

.4 The Consultant will endeavor to make addenda available to:

.1 All Bidders who have been provided documents.

.5 Any replies to inquiries or interpretations or modifications of the Bid Documents made verbally, by e-mail, or by any manner other than in the form of a written addendum, shall not be binding.

.6 Submit inquiries as early as possible in the bid period. If an inquiry requires an interpretation or modification of the Bid Documents, but is received too close to the bid closing time to permit issuance of an addendum, the Consultant may be unable to respond to that inquiry.

.1 Clarifications requested by Bidders must be in writing not less than seven (7) working days before the time and date set for receipt of Bids.

.2 If the Consultant determines that a clarification is warranted then the reply will be in the form of an addendum, a copy of which will be forwarded to Invited Bidders.

.7 Each Bidder shall ascertain before Bid submission that it has received all Addenda and shall indicate in the Bid Form the Addendum number(s) of all Addenda received. Failure to acknowledge in the Bid Form all Addenda may cause the Bid to be declared incomplete and the Bid may be rejected.

.8 The Bidder has the responsibility to notify the Consultant in written format, ambiguity, divergence, error, or omission, oversight, contradiction, or item subject to more than one interpretation in these Bid Documents, as it is discovered, and to request any instruction, decision, or direction required to prepare the Bid. Unless such a request is made, any subsequent claim for extra costs will not be considered.

.9 No Addenda except to extend the Bid Period will be issued later than 24 hours prior to the Bid closing date and time. Ensure queries are made prior to this.

.10 Prospective Bidders who have received Bid Documents from the Consultants office but do not intend to submit a Bid, are requested to notify the Consultant, no later than 24 hours prior to the Bid closing time.

.11 Addenda will supersede and amend the drawings, specifications and schedules as set forth therein and shall become part of the Bid and Contract Documents.

1.6 OMISSIONS AND DISCREPANCIES

.1 Bidders to become thoroughly familiar with project site.

.2 Notify Consultant of any apparent omission, discrepancies, or conflict between Drawings, Schedules, Specification, General Conditions or Supplementary Conditions, and request written clarification or ruling before submission of Bid.

.3 Unless such request is made, any subsequent claim for extra costs will not be considered.

.4 No interpretation or instruction given verbally by any person will be considered valid.

1.7 SITE EXAMINATION

.1 All Bidders must visit the site to examine structures, conditions, means of access, limitations and all information as to risks, contingencies and circumstances which may affect the Bid and the Work.

.2 The Bidder is advised to carry out its own investigations of all site conditions and the construction methods and/or techniques that may be appropriate, together with all matters that may affect the Bidder's costs and performance of the work required to be provided by the Bidder as the Bidder is required to accept all risks of all such conditions and construction methods or techniques anticipated by the Bidder in the preparation of its Bid. Claims for extra payment and extensions to the completion date will not be considered in respect of conditions which, in the opinion of the Owner, could have been ascertained by an inspection of the site prior to close of Bids.

.3 Bidders are responsible for inspecting the site and for making whatever inquiries or arrangements are necessary for them to become fully informed of the nature of the site and of the work to be performed, and, by the submission of its Bid, acknowledges that it has investigated and satisfied itself as to:

.1 The nature of the work;

.2 The location of and all conditions relating to the site including, but not limited to accessibility, general character, surface conditions, utilities, roads, uncertainties of seasonal weather and all other physical, topographical geological and geographic conditions;

.3 The general character, quality, quantity and availability of equipment and materials required to execute and complete the work;

.4 All environmental risks, conditions, laws and restrictions applicable to the Bidders or their work;

.5 All conditions affecting labour, including, without limitation, availability, productivity, and administrative practices, including those related to safety, prevailing at, or applicable to, the work or site; and

.6 The magnitude of the construction work required in executing and completing the work.

.4 The Owner is not responsible for undertaking any investigations to assist the Bidder. Any information, plans, drawings, reports or other documents, which are not included or referred to in the Contract Documents, form no part of this Bid. The Owner assumes no responsibility of any kind whatsoever arising from or, relating to, its failure to include or refer to such information, plans, drawings, reports or other documents. Bidders, who obtain or rely upon such information, plans, drawings, reports or other documents, do so at their own risk.

.5 Bidders are to:

.1 Consider effect of regulatory requirements applicable to the Work;

.2 Consider the effect of their Work and Work of others on the constructability of the Project;

.3 Study and correlate Bidder's observations with the Bid Documents, and

.4 Immediately notify the person identified for receiving inquiries of all perceived omissions and discovered conflicts, errors, and discrepancies in the Bid Documents.

.6 Claims for additional work will not be entertained with respect to conditions which could have been ascertained by an inspection of the site and existing conditions prior to the Bid Closing date.

.7 Lands upon which Work is to be performed, rights of way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Bid Documents. Additional lands and access thereto required for performance of the Work shall be provided by Contractor.

1.8 MANDATORY BIDDERS BRIEFING AND SITE VISIT

.1 A Bidders briefing and site visit to the project site has been arranged for Bidders at the time and date identified on the Information Page.

.2 All prime contractors and major subtrade bidders and suppliers are invited.

.3 It is mandatory for all prime contractors to attend the identified pre-bid meetings. All other contractors are invited to attend but it is not mandatory. Record of attendance will be taken at pre-bid meeting.

.4 Representatives of the Owner and Consultants will be in attendance.

.5 Information relevant to the Bid Documents will be recorded in an Addendum and issued to known Bidders.

1.9 BID CALL

.1 The **Owner will only be accepting e-mailed submissions**. **It is the Contractor's sole responsibility to ensure their submission is received prior to the closing date and time**.

.1 Town of Drumheller

c/o Group2 Architecture Interior Design Ltd.,

Email: ryan.bultena@group2.ca

Attention: Ryan Bultena

.2 Email Bids will be accepted until the bid closing date and time ("Bid Closing") identified on the Project Information page of the Bid Documents**.** Email subject line to contain response to **" Drumheller Aquaplex Mechanical Upgrades"**.

.3 The size of the email is limited to 10MB and the attached file(s) should be in PDF format unless otherwise specified.

.4 The time piece at the location for receiving Bids shall be the only measure for the exact time.

.5 Upon bid acceptance the successful Contractor may be asked to submit an original hard copy of their bid.

.2 Offers submitted after the above time will be rejected and/or returned to the Bidder unopened.

.3 Oral, telephoned, fax or hard copy bids will not be accepted nor acknowledged.

.4 Bidders are responsible to ensure that Bids, Bid modifications are received in full and in legible form by Consultant before 2:01 p.m. on the deadline date.

.5 Those Bidders who choose to send Bid modifications to the submitted Bid will be permitted if received via email prior to Bid closing and if endorsed by the same party or parties who signed and sealed the offer and assume all risks associated with a transmission which fails, or which is not completed before the deadline time, regardless of the cause of that failure or lack of completion. Bidders are specifically cautioned that email transmissions may fail due to problems at either the sending or receiving end, including power outage, communications interruptions, machine failures and other reasons.

.6 Furthermore, the vendor acknowledges that emailed Bid modifications are, by nature, unsealed and while Owner will make every effort to ensure the Bid modifications received by email are kept confidential, neither Consultant nor the Owner accept any responsibility for any lack of confidentiality of emailed Bid modifications.

.7 Extension of Bid Closing:

.1 The Owner may extend the offer closing time by addendum.

.8 Offers will be opened privately after the closing time for receipt of Bids.

1.10 BID SUBMISSIONS

.1 Bidders shall be solely responsible for the delivery of their Bids to the instructions herein, in the manner and time prescribed.

.2 Submit one copy of the executed offer on the Bid Forms provided, signed and corporate sealed together with the required security, clearly identified with Bidder's name, project name and Owners as required on the Bid Forms.

.1 Complete Bid Form in its entirety and sign. Any required information that is omitted or illegible, any alterations to the text, or any conditions added on or

submitted with the Bid Form, may cause the Bid to be declared invalid and rejected.

.3 Include the Stipulated Price Bid Form and requested security deposit, Bid bond, qualification forms. Bid Form supplements will be reviewed for compliance with the requirements of the Bid Documents after the Bid opening.

.4 Any of the following irregularities may cause the Bid to be declared invalid and rejected:

.1 Any failure to submit a required Bid Form supplement as specified.

.2 Any required information in a Bid Form supplement is omitted, illegible, frivolous, or otherwise improperly submitted.

.3 Any alterations to the text, or any conditions added on or submitted with a Bid Form supplement.

.5 The Bid submissions shall include all applicable taxes and identify the GST amount separately.

1.11 BID SECURITY DEPOSIT

.1 Bids shall be accompanied by a security deposit as follows:

.1 Bid bond in an amount not less than ten (10)% of the Bid price.

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

.2 Bid Security may be submitted by email with the Bid, with the original Bid security document delivered upon request following the close of Bids.

.3 Improperly completed information, irregularities in Bid security, may be cause not to open the Bid envelope and declare the Bid invalid or informal.

.4 Use Bid Bond Form CCDC 220 or standard form from the bonding company.

.5 The security deposit will be returned after delivery to the Owner of the required Performance and Labour and Materials Payment Bond(s) by the accepted Bidder.

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

1.12 CONSENT OF SURETY

.1 Submit with the Bid Form and Bid Bond, a Consent of Surety (Agreement to Bond), issued by a company licensed to carry on such business in Alberta, stating that the surety providing the Bid Bond is willing to supply the Performance and Labour and Materials Payment Bond required.

.2 Include the cost of bonds in the Bid Price.

.3 Unless this requirement is expressly waived or modified by a prime contract Bidder for a subcontract Bidder, subcontract Bidders whose Bids exceed $25,000.00, excluding cost of security, shall include in their subcontract Bids for and, if successful, shall provide the Contractor with:

.1 a performance bond in the amount of 50% of the subcontract price, and

.2 a labour and material payment bond in the amount of 50% of the subcontract price.

1.13 CONTRACT PERFORMANCE SECURITY AND SECURITY FOR PAYMENT OF CLAIMS

.1 The accepted Bidder shall provide security for performance of the Contract in the form of a Performance Bond for 50% of the Contract Price, as specified in Section 00 61 13 – Contract Security.

.2 The accepted Bidder shall provide security for payment to claimants for labour and material used or reasonably required for use in the performance of the Contract. Such security shall be in the form of a Labour and Material Payment Bond for 50% of the Contract Price, as specified in Section 00 61 13 – Contract Security.

.3 Include the cost of bonds in the Bid Price.

1.14 INSURANCE

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

.2 The Bidder who is awarded the Contract shall submit evidence of insurance coverage as outlined under Section 00 62 16 - Insurance prior to commencing any work under this Contract.

.3 The Bidder shall include the estimated cost of insurance in their Bid price and shall indicate the estimated cost for the required insurance coverage on the Bid Form.

.4 The Owner reserves the right, after the closing date, but prior to the execution of the contract, to decide as follows:

.1 - to require the successful Bidder to obtain the insurance coverage,

OR

.2 - to acquire the insurance coverage at its own cost and reduce the submitted Bid value by the submitted estimated cost of the same noted above.

1.15 SAFETY PREQUALIFICATION

.1 As a precondition to contract award, Prime contract Bidders must provide a valid standard Certificate of Recognition (COR) or a valid Temporary Letter of Certification (TLC) for a standard COR, or a COR Equivalency Letter (COREL) for out of province Bidders, as issued by the Alberta Construction Safety Association (ACSA) or another certifying partner authorized by Alberta Ministry of Labour and Immigration to issue COR's or TLC's or COREL's. Possession of a Certificate of Recognition other than a standard COR, TCL or COREL, such as a Small Employer Certificate of Recognition (SECOR) is not acceptable.

.2 Prospective Bidders not in possession of a valid COR may prequalify if in possession of a valid Temporary Letter of Certification (TLC) issued by the ACSA.

.3 A Bid from a Bidder who does not possess a valid COR or TLC or COREL may be declared invalid and may be rejected.

1.16 GST EXCLUDED

.1 Bidders shall not include GST in their Bid prices.

1.17 BID FORM EXECUTION

.1 Refer to 00 41 13 – Bid Form – Stipulated Price. Form is included in the Bid documents.

.2 Bids shall be signed under seal, executed, and dated by Bidder or by a signing officer authorized by Bidder. Signatures and seals as follows:

.1 Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature. Affix seal.

.2 Partnership: Signature of formal sharing partners in the presence of a witness who will also sign. Insert the word "Partner" under each partner signature.

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

.4 Joint Venture: Each party of the joint venture shall execute the Bid under their respective seals in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

.3 Alternate, itemized, separate and unit prices or voluntary alternate prices, where required by the Bid documents, must include, without limitation, all taxes (except PST and GST), assessments, levies and custom duties, overhead and profit.

.4 In the case of a levy, assessment or custom duty revision effective prior to the acceptance of a Bid, it is assumed that all Subcontractors have considered all such items and any such revisions known to be coming into effect and have included for any such revision in their Bid price.

1.18 QUALIFICATIONS

.1 Subcontractors and suppliers may be required to submit evidence as to their ability to carry out the Work and be prepared to satisfy the Owner as to their competency.

.2 The Contractor’s major business and experience must be derived from the type of Work being Bid on.

.3 Provide with the Bid, a list of references from Owners of Projects previously completed by the Bidder per Section 00 41 13, Appendix ‘C’.

1.19 APPENDICES TO THE BID FORM

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

.2 Appendix ‘B’ – Subcontractors: Include the names of all known or pre-determined Subcontractors and the portion(s) of the Work the Bidder will perform.

.3 Appendix 'C' – AHU/Boiler Replacement Experience: Include a listing of AHU and boiler replacement projects (minimum of three projects for each) performed in the last five (5) years.

.4 Appendix 'D' – Aquatic Mechanical Experience: Include a listing of aquatic centre mechanical projects (minimum of three projects) experience involving work in an occupied aquatic centre in the last five (5) years. For each project listed provide a brief description of the project, original & actual completion dates and if project was completed on time. If the project was not completed on time provide reason(s) why project was not completed on time. In addition, include a minimum of two reference letters for relevant comparable projects completed with the last three (3) years.

.5 Appendix ‘E’ – Project Schedule: Include a project schedule including completion date.

1.20 BID EVALUATION AND CONTRACT AWARD

.1 All bids will be evaluated following the opening in accordance with Evaluation Criteria listed below. Contract Award will be based on this evaluation.

.2 The evaluation of bids will be conducted in the following stages:

.1 Stage 1 will consist of a review to determine that the bid submission satisfies all of the mandatory requirements. If a submission fails to satisfy the mandatory requirements it will be excluded from further consideration.

.2 Stage 2 will consist of a scoring on the basis of the Rated Criteria and Bid Submission.

.3 Bid Evaluation Chart/Scoring Matrix:

1. Mandatory Requirements		Yes or No
1a	Insurance	
1b	COR	
1c	Evidence of WCB Coverage	
2. Appendices to Bid Form		**/65**
Appendix C	AHU/Boiler Replacement Experience	/20
Appendix D	Aquatic Mechanical Experience	/35
Appendix E	Project Schedule	/10
3. Bid (Pricing Submission)		**/35**

All prices will be scored using the calculation method below. The lowest price will score full points. The balance of the prices will be assigned points by the following calculation.

$$\text{Points Awarded} = \text{Available Points (35)} \times \frac{\text{Lowest Proponents Price}}{\text{Proponents Price}}$$

\

.4 Bid Form supplements will be reviewed for compliance with the requirements of the Bid Documents after the bid opening.

.5 Bid Form supplements are final and binding on the Bidder upon submission and may not be modified or superseded with another submission, unless the modifying or superseding submission is received before the bid closing time, as specified in the Instructions to Bidders article entitled "Bid Modifications."

.6 The Owner may, after the bid closing time and before contract award, require any Bidder to submit, in a form prescribed by or acceptable to the Owner, a detailed cost breakdown of the Bid Price(s), or any other additional supplementary information about any aspect of the Bidder's bid which, in the Owner's opinion, is necessary for bid evaluation purposes.

.7 Upon acceptance of a Bid, the Owner will issue a letter of acceptance to the successful Bidder, signifying the Owner's intention to proceed with the Work and execute a Contract Agreement on the standard CCDC 2 – 2020- Stipulated Price Contract as amended by the Supplementary General Conditions, to conform to the Bid Documents and the Bid.

1.21 BID MODIFICATIONS

.1 Amendments to the submitted offer will be permitted if received in writing prior to Bid closing time and if endorsed by the same party or parties who signed and sealed the initial offer.

.2 For Bid closing purposes, the official time of receipt of emailed Bid modifications shall be the time of receipt automatically printed on the email transmission by the receiving machine.

.3 State all Addendum Numbers received, if different from what was indicated on originally submitted Bid Form.

.4 Bidders shall bear full responsibility for ensuring their Bids and modifications are received prior to closing and opening dates herein specified. Modifications to Bids received after specified times will be rejected. The Owner will assume no responsibility or liability for the content of modifications, or for modifications that are, for any reason, delayed, illegible, unclear as to intent, ambiguous, contrary to these instructions, or otherwise improperly received. The Owner may disregard improperly received modifications.

.5 When submitting a modification directing a change in a bid amount, do not reveal the original amount nor the revised amount:

.1 On stipulated price bids, state only the amount to be added to or deducted from the original bid amount.

.6 When submitting a second or more modifications related to a single bid amount, ensure that there is no ambiguity as to the intended bid price. The written modification shall clearly indicate whether:

.1 the bid amount first submitted is being modified and any previous modifications are to be disregarded, or

.2 a revised bid amount derived from a previous modification is being modified.

1.22 BID WITHDRAWAL

.1 A Bid may be withdrawn at any time before the Bid closing time, provided the request is in the form of:

.1 an email transmittal received and printed out in its entirety at the email address specified in Article 1.9, before the Bid closing time.

.2 Withdrawn Bids may be resubmitted in accordance with these Bidding requirements providing the resubmitted Bid is received at the office indicated in Article 1.9, before the Bid closing time.

1.23 PRIVATE BID OPENING

.1 A private bid opening will commence no later than 24hrs after the Bid Closing.

1.24 POSTING OF BID RESULTS AND AWARD INFORMATION

.1 After Bids have been privately opened, the Owner may, at his discretion, release to the public a summary of Bid prices; however, the Owner shall not disclose the separate, alternative, or unit prices.

1.25 BID AND CONTRACT DOCUMENTS

.1 Bid Documents: The Contract Documents supplemented with Instructions to Bidders, Bid Form, Bid Securities, and Bid Supplementary Forms identified.

.2 Contract Documents: Defined in:

.1 CCDC 2 - Stipulated Price-2020, Supplementary General Conditions and Definitions.

1.26 DEFINITIONS

.1 The term: Bid, Offer, or Bidding: An act of submitting an offer under seal.

.2 The term: Bid Price: Monetary sum identified by the Bidder in the Bid Form.

1.27 PRODUCT/SYSTEM OPTIONS AND SUBSTITUTIONS – DURING THE BID PROCESS

.1 Materials and equipment are specifically described and named in the specification to establish a standard of materials and workmanship.

.1 Where manufacturer's trade names are used, base the Bid on the use of materials and equipment as specified.

.2 Where products are specified by a proprietary specification, and substitutions are permitted, Bidders may base their bids on a named product or manufacturer or on unnamed substitutions, subject to the requirements specified for substitutions in this Section.

.2 Product Exchange Procedures **During the Bid Process**: When a request to exchange a Product is made, suppliers or manufacturers shall submit requests for acceptance to the Consultant in writing up to 2:00 p.m., seven (7) working days prior to the time stated for receiving Bids. If an item is accepted as a Substitution in writing by the Consultant, Bidders may use that item in place of the specified item. Items not accepted as substitutions will not be allowed in the base bid for this bid call. The Consultant may approve the exchange and will issue an approval by return facsimile and include in an Addendum.

.3 Product Acceptability:

.1 With the request for Substitution or Alternative, submit proof that a Product (or Products) proposed for use complies with requirements of Bid Documents. Such proof shall be in the form of Product data as noted below:

.1 Complete with manufacturer's literature, specifications, Drawings, cuts, performance data, list of references, list of deviations from Specifications or Drawings, or other information necessary to completely describe Product;

.2 In a form clearly indicating the applicable Specification Section, the specific Product or item being proposed in lieu of the specified item.

.2 Should it be determined that a proposed Product does not meet requirements of Bid Documents, the request for Substitution or Voluntary Alternative will be

rejected, and the Bidder shall base his Bid on Products specified or other Products accepted as Substitutions.

.4 Requests which do not comply with above requirements or are received within 3 working days prior to closing of Bids will not be reviewed.

.5 Bidders shall assume full responsibility and costs when use of acceptable substitute products affects any other work or exceeds space requirements allocated for such products or equipment. Bidder shall pay for any drawing or design changes required as result of use of such product. Drawings incorporating and coordinating all aspects of affected work shall bear seal and signature of Architect or Engineer registered in Province of Alberta. A later claim by the Bidder for an addition to the contract price because of changes in work necessitated by use of alternatives shall not be considered.

.6 All references in the Specification to "Or Other Approved", "other pre-approved Product" or similar phrases means that acceptance must be obtained as described above.

.7 Voluntary Alternatives:

.1 Voluntary Alternative proposals may be submitted with Bid, based on the use of materials or equipment different to the materials or equipment specified in quality and performance. Under no circumstances Bid a Voluntary Alternative material or method of construction in the base Bid price.

.2 The Consultant reserves the right to accept or reject proposed Voluntary Alternatives or Substitutions or to deem whether items submitted can be Bid as voluntary Alternatives or Bid as substitutes as he sees fit, and also to claim for the Owner the financial benefit of a Substitution.

.3 In submission of substitutes or Voluntary Alternatives to Products specified, include all changes which may be required in the Work to accommodate such Substitution or Alternative. No later claims by the Bidder will be considered for an addition to the Contract Price because of the Substitution or Voluntary Alternative.

.8 The process for submission for exchanging Products **after Bids have been submitted**, is described in Sections Section 01 62 00 - Product Exchange Procedures.

.1 No approval shall be granted for any Substitution for any material, equipment, product or system except where Substitution is necessary due to strikes, lockouts, bankruptcy, the Owner’s benefit or discontinuation of a product, material, equipment or system.

.2 Requests for Substitution under such circumstances shall be made within ten (10) working days of the date that the Bidder ascertains that he cannot obtain the material or equipment specified.

.3 Such requests shall be accompanied by a complete description of the material, equipment, product or system to be used, as well as any changes or extra provisions required in or on the existing work necessary to accommodate the new material, equipment, product or system.

.4 Substitution of material, equipment, product or system specified will not be made without the expressed written permission of the Owner.

1.28 PRODUCT/SYSTEM OPTIONS AND SUBSTITUTIONS – AFTER CONTRACT AWARD

.1 Product options: Comply with requirements of Section 01 62 00 - Product Exchange Procedures.

.2 Substitutions:

.1 Comply with requirements of Section 01 62 00 - Product Exchange Procedures.

.2 Where products are specified by a proprietary specification, and substitutions are permitted, Bidders may base their bids on a named product or manufacturer or on unnamed substitutions, subject to the requirements specified for substitutions in Section 01 62 00 - Product Exchange Procedures.

.3 During the bid period, it is the sole responsibility of each Bidder to determine whether a substitution meets the requirements specified in Section 01 62 00 - Product Exchange Procedures.

.4 The Owner will not consider requests for approval of substitutions from Bidders during bid period.

.5 Substitutions will be evaluated and approved or rejected by the Owner after contract award.

.3 Product Acceptability:

.1 The Owner may, after bid submission and before contract award, require any Bidder to submit proof that a product proposed for use complies with requirements of Bid Documents. Such proof shall be in the form of product data as specified in Section 01 62 00 - Product Exchange Procedures.

.2 Should the Owner determine that a proposed product does not meet requirements of Bid Documents, Bidder shall propose a product which, in the Owner's opinion, does meet requirements of Bid Documents, otherwise such Bidder's bid may be declared invalid and rejected.

1.29 SUBCONTRACTORS

.1 The Owner (as further described in the General Conditions) reserves the right to reject a proposed subcontractor for reasonable cause.

.2 Refer to CCDC 2-2020 as to Owner rights to accept or dismiss subcontractors.

1.30 SUBCONTRACTORS' BIDS

.1 The Alberta Construction Tendering System shall not be used on this project.

.2 Electrical Contractors are to ensure that the entire scope of work of the specified and required work is provided by sub-contractors.

.3 Bids will close directly with Electrical Contractor.

1.31 CONTRACT COMPLETION

.1 The Bidder, in submitting an offer, accepts the Time period stated in the Contract Documents for performing the Work. The completion date in the Agreement shall be this completion Time added to the commencement date.

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

.3 The Bidder shall submit a schedule related to the construction phasing with the Bid. The schedule shall indicate milestone dates for the completion of the major components of the Work per Section 00 41 13, Appendix 'D'.

1.32 DURATION OF OFFER

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

.2 The Bid acceptance period referred to above shall commence at midnight of the date of Bid closing and shall terminate at midnight of the 60th day thereafter. If the 60th day falls on a statutory holiday, such day(s) shall be omitted from the computation.

.3 The acceptance period referred to above may be extended at the Owner's request and subject to the Bidder's written agreement to the extension.

1.33 ACCEPTANCE OR REJECTION OF OFFER

.1 The Owner reserves the right to:

.1 cancel the Bid process, either before, during or after the receipt of Bids, at the Owner's sole discretion and without generating any cause for claim from any Bidder

.2 waive irregularities and formalities in any Bid

.3 request clarifications and/or additional information on any Bid

.4 negotiate for the modification of any, some, or all Bids

.5 accept or reject any or all Bids

.6 accept the Bid which, in the Owner's sole judgement, is most advantageous to it's own needs, whether or not such Bid contains the lowest Bid Price

.7 re-advertise for Bids if desired

.8 modify the Bid documents and rebid a revised design for the project

.9 acquire products and services from persons and companies other than those who have submitted Bids

.2 The Bidder acknowledges that the Owner shall have the right to reject any, or all, Bids for any reason, or to accept any Bid which the Owner in its sole unfettered discretion deems most advantageous to itself. The lowest, or any, Bid will not necessarily be accepted and the Owners shall have the unfettered right to:

.1 accept a non-compliant Bid

.2 accept a Bid which is not the lowest Bid, and

.3 reject a Bid that is the lowest Bid even if it is the only Bid received

.3 The Owner may however, in its sole discretion, reject or retain for its consideration, Bids which are non-conforming because they do not contain the content or form required or for failure to comply with the process for submission as set out in these Instructions to Bidders.

.4 Bids will NOT be accepted from any Contractor or Subcontractor presently involved in any legal dispute with the Owner.

.5 By the act of submitting its Bid, the Bidder waives any right to contest in any legal proceeding or action the right of the Owner to award the Work to whomever it chooses, in its sole and unfettered discretion, and for whatever reasons the Owner deems appropriate.

.6 In no event will the Owner be responsible for the costs of preparation or submission of a Bid.

.7 The Contract shall be established upon issuance, by the Consultant on behalf of the Owner, to the successful Bidder, of a 'Letter of Intent' accepting the Bid without qualification and indicating the Owner's intent to enter into a formal contract. Or, if the letter accepting the Bid contains one or more qualifications, upon written acceptance by the Bidder of all such qualifications.

.8 The Owner may negotiate contract terms with the Bidder submitting the lowest valid Bid, provided that the negotiated changes to the Bid Documents result in either no change to the Bid price or a reduced Bid price. Such changes may be formalized in the form of a Post-Bid Addendum that, upon written acceptance by the Bidder, shall form part of the Contract Documents.

.9 The Bidder acknowledges that the Owner may rely upon the criteria which the Owner deems relevant, even though such criteria may not have been disclosed to the Bidder. By submitting a Bid, the Bidder acknowledges the Owner's right under this Section and absolutely waives any right or cause of action against the Owner and its consultants and advisors, by reason of the Owner's failure to accept the Bid submitted by the Bidder, whether such right or cause of action arises in contract, negligence or otherwise.

.10 After a Bid has been accepted, all rejected Bids will be returned to the respective Bidders with submitted Bid securities, and other requested enclosures.

1.34 RIGHT TO WAIVE IRREGULARITIES AND INFORMALITIES

.1 A Bid that is informal, incomplete, qualified, non-compliant with the requirements of the Bid Documents, or otherwise irregular in any way, may be declared invalid and rejected.

.2 The Owner reserves the right to reject any or all Bids. Without limiting the generality of the foregoing, any Bid may be rejected which either:

.1 is unsigned, improperly signed and sealed, illegible or obscure; or

.2 which reflects a manifestly unbalanced Bid, or

.3 fails to include the information required to be included by a Bidder in any Schedule or tabulation contained in or attached to the Bid Form, or fails to include the complete information required in such Schedule whether the same purports to be complete or not; or

.4 has erasures or corrections not initialed by the Bidder; or

.5 omits a Bid on any one or more items in any Schedule to the Bid Form.

.6 is non-compliant or has qualifying conditions attached to the Bid price; or

.7 is accompanied by an insufficient or irregularly certified cheque or by a Bid Bond in an unsatisfactory form or insufficiently executed or of an insufficient amount.

.3 Discrepancies between words and figures will be resolved in favour of words.

.4 Non-compliant Bids may not be considered, however, the Owner may accept or waive a minor and inconsequential irregularity, or where practicable to do so, the Owner may, as a condition of Bid acceptance, request a Bidder to correct a minor and inconsequential irregularity with no change in Bid price.

.5 The determination of what is, or is not, a minor and inconsequential irregularity, the determination of whether to accept, waive, or require correction of an irregularity, and the final determination of the validity of a bid, shall be at the Owner's sole discretion.

1.35 FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

.1 Any information collected or generated by the Contractor in the course of the performance of the Contract, is the sole property of the Owner and it is subject to the Alberta Freedom of Information and Protection of Privacy (FOIP) Act, as well as all other regulation requirements governing the management of personal information.

.1 The *FOIP Act* applies to all information and records relating to, or obtained, generated, created, collected or provided under, Contract and which are in the custody or under the control of the Owner. The *FOIP Act* allows any person a right of access to records in the Owner’s custody or control, subject to limited and specific exceptions as set out in the *FOIP Act*; and

.2 The Bidder, if it considers portions of its Bid to be confidential, shall identify those parts of its Bid to the Owner considered to be confidential and what harm could reasonably be expected from disclosure. The Owner does not warrant that this identification will preclude disclosure under the *FOIP Act*.

.2 By submitting a Bid, the Contractor acknowledges that FOIPP precludes any obligation on the Owner to provide anyone information on its assessment of the Bids or its considerations on any award of the Agreement it may subsequently wish to make. All parties submitting Bids to this Bid Call shall make themselves aware of the complete requirements associated with FOIPP.

1.36 TRADE AGREEMENTS

.1 Bidders are advised that procurements issued by the Owner which fall within the scope of New West Partnership Trade Agreement or the Canadian Free Trade Agreement are subject to the applicable provisions of those trade agreements.

1.37 PERMITS AND LICENSES

.1 The Bidder who is awarded the Contract shall obtain and pay for all permits and licenses required by the Province, Municipality and or any other authority to enable the Contractor to do all things necessary to perform the Contract according to the provisions of the Contract Documents.

END OF DOCUMENT

Part 1 General

1.1 INFORMATION

PROJECT TITLE: **Drumheller Aquaplex Mechanical Upgrades**

LOCATION: **Drumheller, Alberta**

OWNER: **Town of Drumheller**

CONSULTANT: **Group2 Architecture Interior Design Ltd.**

SUBMITTED BY: _____

ADDRESS: _____

_____

TELEPHONE: _____

DATE: _____

Part 2 General

2.1 OFFER

.1 Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Group2 Architecture Interior Design Ltd. (Consultant) for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the stipulated price of:

$ _____

_____

dollars, in lawful money of Canada.

.2 We have included herewith, the required security deposit Bid Bond, Consent of Surety (Agreement to Bond), Undertaking of Insurance Letter and COR Certificate as required by the Instruction to Bidders.

.3 Taxes:

.1 Applicable federal taxes are excluded from the Bid Price.

.4 Cash allowances described in Section 01 21 00 are included in the Bid Price.

.5 We have included a schedule related to the construction phasing with the Bid. The schedule shall indicate milestone dates for the completion of the major components of the Work.

.6 We have included herewith, the estimated cost for the required insurance coverage as required by the Instruction to Bidders. The Estimated Cost of Insurance Premium is:

$ _____.

.1 The Owner reserves the right, after the closing date, but prior to the execution of the contract, to decide as follows:

.1 - to require the successful bidder to obtain the insurance coverage,

OR

.2 - to acquire the insurance coverage at its own cost and reduce the submitted bid value by the submitted estimated cost of the same noted above.

2.2 ACCEPTANCE

.1 Refer to Section 00 21 13 - Instructions to Bidders for Conditions of acceptance.

.2 This offer shall be open to acceptance and is irrevocable for sixty (60) days from the Bid closing date and time.

.3 If this Bid is accepted by the Owner within the time period stated above, we will:

.1 Execute the 'Agreement' within ten (10) days of receipt of the form of execution.

.2 Furnish the required bonds within seven (7) days of receipt of the Agreement in the form described in the Supplementary Conditions.

.3 Perform the work in compliance with the required completion schedule stated in the Bid Documents; or if no schedule is stated, to attain Substantial Performance of the Work within _____ weeks from commencement of the Work.

.4 If this Bid is accepted within the time stated herein, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the deposit or the difference between this Bid and the Bid which the Contract is signed.

.5 In the event our Bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions in the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

.6 No person, firm or corporation other than the undersigned has any interest in this Bid or in the proposed Contract for which this Bid is made.

2.3 APPENDICES

.1 A list of the Contract Documents is appended hereto and identified as 'Appendix A'.

.2 A list of Subcontractors is appended hereto and identified as 'Appendix B'.

.3 A list of AHU/Boiler Replacement Experience is appended hereto and identified as 'Appendix C'.

.4 A list of Aquatic Mechanical Experieince is appended hereto and identified as 'Appendix D'.

.5 Project Schedule is appended hereto and identified as 'Appendix E'.

2.4 ADDENDA

.1 The following Addenda have been received. The modifications to the Contract Documents noted therein have been considered and all costs thereto are included in the Bid Price.

.1 Addendum # _____ Dated _____.
.2 Addendum # _____ Dated _____.
.3 Addendum # _____ Dated _____.
.4 Addendum # _____ Dated _____.

2.5 BID FORM SIGNATURE(S)

The Corporate Seal of

_____
(Bidder - please print)
was hereunto affixed in the presence of:

(Seal)

_____
Authorized signing officer Title

_____
Authorized signing officer Title

Dated at: _____ this _____ day of _____, 2023

If this Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture on the appropriate form or forms, as above.

Appendix A: **List of Bid Documents**

The following is the list of **Contract Documents** referred to in the Bid Form submitted by:

(Bidder) _____

(Owner) _____

dated _____ to which this Appendix is an integral part of the Bid Form.

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

- Agreement between Owner and Contractor
- Definitions
- The General Conditions of the Stipulated Price Contract
- Supplementary Conditions
- List of drawings - Section 00 01 15
- Project Manual(s) - project specifications as listed in Section 00 01 10 - Table of Contents, Division 1 to 49.
- Addenda #_____ to #_____.
- Bid Form Appendix B – List of Subcontractors.
- Bid Form Appendix C – AHU/Boiler Replacement Experience.
- Bid Form Appendix D – Aquatic Mechanical Experience.
- Bid Form Appendix E – Project Schedule.

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

Appendix B – List of Subcontractors:

The following is the list of Subcontractors referred to in the Bid Form submitted by:

(Bidder) _____

dated _____ to which this Appendix is an integral part of the Bid Form.

The following are the Subcontractors and Suppliers we propose to use for the portions of Work listed hereunder. Where the bidder does not intend to employ a Subcontractor, he shall insert "Own Forces" in space provided. If item of Work is not applicable to Project, insert N/A. No changes to the list will be allowed without the express written consent of the Owner:

Portion of the Work	**Subcontractor or Supplier Name**
Prime Mechanical	
Controls	
Plumbing	
Sheet Metal	
Sprinkler	
Prime Electrical	
Fire Alarm	
Data	
Metal Fabrications	
Firestopping	

Signature of Authorized Representative:	

Appendix C – AHU/Boiler Replacement Experience

The following is the list of Subcontractors referred to in the Bid Form submitted by:

(Bidder) _____

(Owner) **Town of Drumheller**

dated _____ to which this Appendix is an integral part of the Bid Form.

The following list is our AHU/Boiler Replacement Project Experience in the past five (5) years listed hereunder (minimum of three (3) projects for each to be provided).

Project Name	**Year Completed**

Signature of Authorized Representative:	

Appendix D – Aquatic Mechanical Experience

The following attached Claims Loss Ration Report referred to in the Bid Form submitted by:

(Bidder) _____

(Owner) **Town of Drumheller**

dated _____ to which this Appendix is an integral part of the Bid Form.

The following list is our Aquatic Mechanical Experience in the past five (5) years listed hereunder. Reference letters and project descriptions including original and actual completion dates and if project was completed on time etc. to be attached to Appendix.

Project Name	**Year Completed**

Signature of Authorized Representative:	

Appendix E – Project Schedule:

The following attached Project Schedule referred to in the Bid Form submitted by:

(Bidder) _____

(Owner) **Town of Drumheller**

dated _____ to which this Appendix is an integral part of the Bid Form.

The following attached is the Project Schedule.

END OF BID FORM DOCUMENT

Part 1 Agreement and Definitions

1.1 DECLARATION

.1 CCDC 2 – 2020 Edition, Stipulated Price Contract as may be amended by Section 00 73 13 Supplementary Conditions, forms the basis of Agreement between the Owner and Contractor including the Definitions of specific words and terms.

.2 The Consultant, on behalf of the Owner, will provide and prepare two (2) original sets of documents for execution of the contract. The Owner and the Contractor will retain one original executed.

Part 2 Definitions

2.1 Amend the following CCDC 2 definitions to include the following:

12. **Provide:** Change to read:

Provide means to supply and install, complete and in place, including all accessories, finishes, tests and services as required to render the item so specified completely ready for use.

14. **Contract Time:** Add the following to the definition:

"Time limits stated in the *Contract Documents* are of the essence of the *Contract*."

17. **Change Order:** Change to read:

A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and executed by the parties to the contract stating their agreement upon:

.1 a change in the *Work*,

.2 the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and

.3 the extent of the adjustment in the *Contract Time*, if any.

2.2 Add new Definitions to CCDC 2 as follows:

.22 **Addendum:** Any written order, directive or instruction of the *Owner* or *Consultant* relating to the *Work* and issued prior to execution of the Agreement.

.23 **Agreement:** The signed and sealed legal instrument binding parties in a *Contract*, describing in strict terms their mutual arrangement, roles and responsibilities, commencement, and completion responsibilities.

.24 **Alternative Price:** Defined as a price which is an addition or deduction to the base Bid Price. This applies if an *Owner* wishes to change a portion of the *Work* - to something either more costly or less costly.

.25 **As-Built Drawings:** *As-Built Drawings* means drawings prepared by the *Contractor* by marking on a copy of the *Drawings* the changes from the *Drawings* which occur during construction including, but are not limited to the exact location of major building components that were shown generally on the *Drawing*s.

.26 **Bid:** To offer as a Bid stating for what price a *Contractor* will assume a *Contract*.

.27 **Bid Documents:** The *Contract Documents* supplemented with Instructions to Bidders, Subsurface Investigation Report, Bid Form, bid securities, and Bid Supplementary Forms identified, and other information issued for the benefit of bidders.

.28 **Bid, Offer, or Bidding:** An act of submitting an offer under seal.

.29 **Bid Price:** Monetary sum identified by the Bidder in the Bid Form.

.30 **Confidential Information:** *Confidential Information* means all the information or material of the *Owner* that is of a proprietary or confidential nature, whether it is identified as proprietary or confidential or not, including but not limited to information and material of every kind and description (such as drawings and move-lists) which is communicated to or comes into the possession or control of the *Contractor* at any time, but *Confidential Information* shall not include information that:

.1 is or becomes generally available to the public without fault or breach on the part of the *Contractor*, including without limitation breach of any duty of confidentiality owed by the *Contractor* to the *Owner* or to any third party, but only after that information becomes generally available to the public

.2 the *Contractor* can demonstrate to have been rightfully obtained by the *Contractor* from a third party who had the right to transfer or disclose it to the *Contractor* free of any obligation of confidence;

.3 the *Contractor* can demonstrate to have been rightfully known to or in the possession of the *Contractor* at the time of disclosure, free of any obligation of confidence; or

.4 is independently developed by the *Contractor* without use of any *Confidential Information*.

.31 **Contingency Allowance:** An additional monetary amount added to a *Project* cost estimate and designated to cover unpredictable or unforeseen items of Work. The amount is usually based on some percentage of the estimated cost and expended and adjusted by *Change Order*. It is not intended to cover additions to the scope of Work.

.31 **Commissioning:** The process for achieving, verifying, and documenting that the facility and its systems are planned, designed, installed, and tested to ensure that they meet the original project requirements established by the *Owner*.

.32 **Consultant Certification:** *Consultant* Certification means to state or declare a professional opinion of conditions whose true or exact properties cannot be known at the time such certification was made, despite appropriate professional evaluation. The *Consultants* Certification of conditions in no way relieves any other party from meeting requirements imposed by contract or other means, including commonly accepted industry practices.

.33 **Contract Documents:** Defined in CCDC 2 - Stipulated Price - 2008 Edition, Agreement, Definitions, and General Conditions.

.34 **Contract Time:** Time Limits stated in the Contract Documents are of the essence of the Contract

.35 **General Conditions:** That part of the *Contract Documents* which sets forth many of the rights, responsibilities and relationships of the parties involved in a *Contract*.

.36 **Install:** Means to remove from site storage, move or transport to intended location, install in position, connect to utilities, repair site caused damage or replace, and make ready for use.

.37 **Instructions To Bidders:** Instructions contained in the Bid Documents to convey an *Owner's* expectations and criteria associated with submitting a Bid.

.38 **Personal Information:** *Personal Information* means personal information as that term is defined in subsection 2(1) of the *Freedom of Information and Protection of Privacy Act*, and includes personal health information as that term is defined in subsection 2(1) of the *Personal Health Information Protection Act* which definitions extend to individual's name, address, age, date of birth, sex, and religion, and any and all personal health information of an individual, whether recorded in printed form, on film, by electronic means, or otherwise.

.39 **Product or Products**: Means material, machinery, equipment, and fixtures forming the Work, and shall include all Operators Manuals, Warranty documentation, plans, as built drawings, schematics, software programs, or other materials (whether or not specifically designated or provided for in the Contract specifications) which are required or reasonably necessary by the Owner to enable the Owner to operate, maintain, and service such Products following the turnover of the project to the Owner.

Product or Products does not include machinery and equipment used to prepare, fabricate, convey, or erect the Work, which items are referred to as construction machinery and equipment

.40 **Project Manual:** The written compilation of specifications, schedules, details, diagrams, graphics, and other information bound into a Volume as part of the *Contact Documents*.

.41 **Proposed Change:** A written notice by the *Consultant* to the *Contractor* proposing a Change in the Work issued after award of *Contract* and requesting itemized cost quotations for any proposed changes which may affect the *Contract Price* or the *Contract* Time. A Notice of Change does not constitute authorization to proceed with any Change in the *Work* except where specifically indicated otherwise in the Notice of Change. The term **Proposed Change Notice (PCN)** will be used in place of the term Notice of Change.

.42 **Quality Assurance:** Planned or systematic actions necessary to provide adequate confidence that a product, process, or service will conform to establish requirements.

.43 **Quality Control:** Inspection, testing, evaluation, or other necessary action to verify that a product, process, or service conforms to established requirements and specifications.

.44 **Section:** A portion of a *Project Specification* covering one or more segments of the total *Work* or requirements. Sections are included in a *Project* manual as required to meet *Project* requirements.

.45 **Separate Price:** Defined as a price for work to be added to the base Bid Price if selected by the *Owner*. This price type is not part of the base Bid Price.

.46 **Standard:** A document describing a grade or a level of quality, which has been established by a recognized agency or organization, utilizing an internal voting process.

.47 **Sub-Consultant:** a Sub-*Consultant* is a person, firm, or corporation having a direct contract with the *Consultant*, including for structural, civil, geotechnical, environmental, interior-design, mechanical, electrical, data and communication, landscaping, signage, specification, hardware, building envelope, acoustical or costing disciplines, and their employees as may be employed by the *Consultant* for this project

.48 **Sub-subcontractor:** *A sub-subcontractor* is a person, firm or corporation having a direct contract with a *Subcontractor* to perform a part or parts of the *Work*, or to supply products worked to a special design according to the *Contract Documents*, but does not include one who merely supplies products not so worked. The term *Sub-subcontractor* is referred to throughout the *Contract Documents* as if singular in number and masculine in gender.

.49 **Supply:** Means to acquire or purchase, ship or transport to the site, unload, remove packaging to permit inspection for damage, re-package, replace damaged items, and safely store on-site.

.50 **Total Performance of the Work:** Means when the entire *Work*, excepting only those items arising under GC 12-3 – Warranty, have been performed to the requirements of the *Contract Documents* and have been certified as being completed by the *Consultant.*

.51 **Unit Price:** Defined as a price which may be used to adjust the contract price for an addition to or deletion from the *Work*. This applies to a unit of *Work* which, during the *Work*, increases or decreases the quantity of *Work* required.

END OF SECTION

Part 1 General

1.1 CONTRACT SECURITY

.1 The *Contractor* shall, prior to commencement of the *Work* or within the specified time, provide to the *Owner* any *Contract* security specified in the *Contract Documents*.

.2 If the *Contract Documents* require surety bonds to be provided, such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the *Place of the Work* and shall be maintained in good standing until the fulfillment of the *Contract*. The form of such bonds shall be in accordance with the latest edition of the CCDC approved bond forms.

.3 Submit bond to the *Owner* within 15 days after date of issuance of Letter of Acceptance of bid.

1.2 CONTRACT PERFORMANCE SECURITY

.1 The *Contractor* shall *provide* and pay for a Performance Bond in the name of the *Owner*, in the amount of Fifty percent (50%) of the *Contract Price*, to assure the faithful performance of the *Contract*, including corrections to the *Work* required under GC 12.3 - Warranty; and this bond shall be submitted to the *Consultant*.

.2 Bond shall be in accordance with the Canadian Construction Documents Committee (CCDC) Standard Form of Performance Bond, CCDC Document No. 221.

1.3 SECURITY FOR PAYMENT OF CLAIMS

.1 *Contractor* shall provide security for payment to claimants for labour and material used or reasonably required for use in the performance of the *Contrac*t. Such security shall be in the form of a Labour and Material Payment Bond in the name of the *Owner* for 50% of the, to assume faithful payment of monies to parties in *Contract* with the *Contract*.

END OF DOCUMENT

Part 1 Insurance Form

1.1 DECLARATION

.1 CCDC 41 – Insurance Requirements, Jan 21, 2008 Edition, as may be amended by addendum, forms the basis of Insurance for the Agreement between the *Owner* and *Contractor*, as noted in CCDC 2- 2020.

Part 2 Insurance Requirements

2.1 GENERAL REQUIREMENTS FOR INSURANCE

.1 Without restricting the generality of the hold harmless provisions of the General Conditions of *Contract* and without limiting his obligations or liabilities under the *Contract*, *Contractor* shall, unless otherwise specified, *Provide*, maintain, and pay for the insurance coverages specified in this Section.

.2 Form: Insurance policies shall be placed with Insurers who comply with the Insurance Act (Alberta) and be in forms acceptable to *Owner*.

.3 Duration: Unless otherwise specified, required insurance coverages shall be maintained continuously from date of commencement of the *Work* until date of Total Performance of the *Work* by *Contractor*. The policies shall not be cancelled, altered, or permitted to lapse unless the insurer notifies the *Owner* in writing at least (30) days prior to the effective date of cancellation or expiry.

.4 Waiver of Recourse: *Contractor* waives all rights of recourse against *Owner* for damages to *Contractor's* property.

.5 Indemnification: The *Contractor* shall indemnify and save harmless the *Owner* from any and all losses, liabilities, claims, demands, and costs (including legal costs) howsoever caused with respect to losses caused directly by the *Contractor*.

.6 Deductible: Amount of deductible on any insurance provided by *Contractor* shall be reasonable and shall be subject to *Owner's* approval.

.7 Notice of Change to Policy: Each required policy shall be endorsed to provide the *Owner* with not less than 30 Days advance written notice of cancellation or material change restricting coverage.

.8 Proof of Insurance: Prior to commencement of any activities on site, *Contractor* and all *Sub-Contractors* shall provide *Owner* with proof that insurance coverages are in effect and meet specified conditions. In addition, *Contractor* shall at any time upon request, promptly submit to the *Owner* a certified true copy of any insurance policy and shall otherwise provide proof of any required insurance, in a form acceptable to *Owner*.

.9 *Subcontractors'* Insurance: *Contractor* shall ensure that his *Subcontractors* provide their own General Liability Insurance, Automobile and Watercraft Liability Insurance, where such risks exist, and Other Insurance equivalent to that specified herein. With respect to General Liability Insurance, *Contractor* may alternatively provide such insurance on a wrap-up basis insuring himself, his *Subcontractors*, and anyone employed directly or indirectly by himself or his *Subcontractors* to perform a part of the *Work*.

2.2 COMMERCIAL GENERAL LIABILITY INSURANCE

.1 Commercial General Liability Insurance (CGL) shall be with limits of not less than $5,000,000 per occurrence, an aggregate limit of not less than $5,000,000 within any policy year with respect to completed operations, and a deductible not exceeding $5,000.

.2 The insurance coverage shall not be less than the insurance provided by IBC Form 2100 (including an extension for a standard provincial and territorial form of non-owned automobile liability policy) and IBC Form 2320 - Commercial General Liability Policy CCDC Endorsement.

.3 To achieve the desired limit, umbrella or excess liability insurance may be used.

.4 Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

.5 In respect to losses for property damage for which coverage is provided under the *Contractors* Comprehensive General Liability insurance, **the first $25,000 of each and every property damage loss shall be for the account of the *Contractor* found to be responsible by the independent adjuster appointed by *Owner* to investigate and settle all losses.**

2.3 AUTOMOBILE LIABILITY INSURANCE

.1 Automobile liability insurance in respect of vehicles that are required by law to be insured under a contract by a Motor Vehicle Liability Policy, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all vehicles owned or leased by the *Contractor*.

.2 Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles owned, operated and used or to be used by the *Contractor* in connection with the *Work.*

2.4 AIRCRAFT AND WATERCRAFT LIABILITY INSURANCE

.1 Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft (if used directly or indirectly in the performance of the *Work*), including use of additional premises, shall have limits of not less than $5,000,000 inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof thereof and limits of not less than $5,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner.*

2.5 BUILDERS' RISK BROAD FORM PROPERTY INSURANCE

.1 Builders' Risk Broad form property insurance shall have limits of not less than the sum of 1.1 times *Contract Price* and the full value, as stated in the *Contract*, of *Products* and design services that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding $5,000.

.2 The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 (excluding flood and earthquake) or their equivalent replacement.

.3 Subject to satisfactory proof of financial capability by the *Contractor*, the *Owner* may agree to increase the deductible amounts.

2.6 EQUIPMENT BREAKDOWN (BOILER AND MACHINERY) INSURANCE

.1 Equipment Breakdown insurance shall have limits of not less than the replacement value of the permanent or temporary boilers and pressure vessels, and other insurable objects forming part of the *Work*.

.2 The insurance coverage shall not be less than the insurance provided by a comprehensive equipment breakdown policy.

2.7 BROAD FORM CONTRACTORS' EQUIPMENT INSURANCE

.1 Broad form contractors' equipment insurance coverage covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*.

.2 Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* may agree to waive the equipment insurance requirement.

.3 Unless otherwise directed by *Owner* in writing, the *Contractor* will carry All Risks insurance coverage covering all construction equipment owned or rented for which *Contractor* may be responsible and for an amount not less than the replacement cost value of the equipment. In the event of loss, or damage to the said equipment or any part thereof, *Contractor* shall if so requested by the *Owner* in writing, forthwith replace such damaged or destroyed equipment. Such All-Risks insurance policy shall be endorsed to waive rights of subrogation against the *Owner*, Architect and Engineer.

2.8 INSTALLATION FLOATER INSURANCE

.1 Unless otherwise direct by the *Owner* in writing the *Contractors* will carry an All-Risks Installation Floater for equipment and materials in transit to the job site, and until equipment and materials have been installed, tested, approved and accepted by the Owner. The limit of insurance to be maintained on this coverage is a minimum of $25,000. In the event of loss, or damage to the said equipment, materials or any part thereof, *Contractor* shall if so, requested by the *Owner* in writing, forthwith replace such damaged or destroyed equipment. Such All-Risks insurance floater shall be endorsed to waive rights of subrogation against the *Owner*, Architect and Engineer.

2.9 POLLUTION LIABILITY

.1 *Contractors* and *Sub-Contractors* with *Work* involved in the removal or treatment of hazardous materials will provide and maintain *Contractor*'s Pollution Liability Insurance or an appropriate Environmental Impairment Liability (EIL) Insurance Policy. Such coverage will specifically schedule the type of work defined in the *Contract*. The limits of liability for *Contractor*'s Pollution Liability or (EIL) Insurance for Parties involved in abatement work:

.1 Combined Single Limit per Occurrence $2,000,000.

.2 General Annual Aggregate $2,000,000.

.2 If transporting hazardous waste/materials to/from the Job Site an appropriate endorsement must be attached and supplied by the *Contractor* with a $2,000,000 limit. The *Owner* must be added as an Additional Insured to this policy with respect to the *Work* performed on behalf of the *Owner*.

.3 The *Owners* rights under this policy are meant to be maintained with respect to a pollution condition arising out of the operations of the *Contractor*. Insured vs. Insured exclusion to be removed under the above-mentioned policy.

2.10 WORKERS' COMPENSATION INSURANCE

.1 Workers' Compensation Insurance covering all employees of Contractor engaged in the Work in accordance with the statutory requirements of the province or territory having jurisdiction over such employees.

2.11 OTHER INSURANCE

.1 *Contractor* shall provide, maintain and pay for any additional insurance required to be provided by law, or which he considers necessary to cover risks not otherwise covered by insurance specified in the *Contract Documents*.

2.12 STANDARD EXCLUSIONS

.1 In addition to the broad form property exclusions identified in IBC forms 4042 and 4047, the *Contractor* is not required to provide the following insurance coverage:

.1 Cyber Risk

.2 Valuable Papers and Records

.3 Electronic Data

.4 Terrorism

END OF SECTION

Part 1 General Conditions

.1 CCDC 2 –2020 The General Conditions of the Stipulated Price Contract - is the General Conditions between the Owner and Contractor.

Part 2 Supplementary Conditions

.1 Refer to Document 00 73 03 - Supplementary Conditions for amendments to these General Conditions.

END OF DOCUMENT

Part 1 Amendments to the CCDC 2 Agreement by Supplementary Articles

1.1 AGREEMENT BETWEEN OWNER AND CONTRACTOR

.1 ARTICLE A-2 AGREEMENTS AND AMENDMENTS - Add the following:

2.3 The AGREEMENT will be executed by both the *Owner* and the *Contractor*, incorporating information obtained from either these *Specifications* or the Tender submitted.

2.4 *Contract* Completion:

.1 The *Contractor* shall complete *Substantial Performance of the Work* as specified in Section 01 10 00 Summary of Work, as certified by the *Consultant* in accordance with GC 5.4.

.2 ARTICLE A-3 CONTRACT DOCUMENTS - Delete paragraph 3.1 in its entirety and replace with the following:

3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement – THE *WORK*:

- Agreement between *Owner* and *Contractor*
- Definitions
- The General Conditions of the Stipulated Price *Contract*
- Supplementary Conditions
- List of *drawings* - Section 00 01 15
- *Project* Manual(s) - *project specifications* as listed in Section 00 01 10 - Table of Contents, Division 1 to 49.
- Addenda and Post-Tender Addenda
- Bid Form Appendices as identified in Section 00 41 13.

Part 2 Supplements to General Conditions

2.1 INTENT

.1 These Supplementary Conditions amend the General Conditions forming part of CCDC 2 – 2020 as indicated. Provisions not amended remain in full force and effect.

2.2 GC 1.1 - CONTRACT DOCUMENTS

.1 Revise Paragraph 1.1.5 with a Precedence of *Contract Documents*, as follows:

1.1.5 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 Definitions as contained in CCDC 2 and as amended by Section 00 52 13 Agreement and Definitions,

.3 Supplementary Conditions,

.4 General Conditions of the *Contract* as contained in CCDC 2,

.5 Sections of Division 1 of the *specifications*,

.6 Technical *Specifications*:

.1 Sections of Divisions 2 through 49 of the *specifications*, and

.2 *Specifications* specifically indicated on *drawings*.

.7 Schedules and keynotes:

.1 Material and finishing schedules within the *specifications*, then

.2 Material and finishing 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 Amended or later dated documents shall govern over earlier documents of the same type.

.10 Noted materials and annotations shall govern over graphic indications.

.11 In the event of conflict between documents, the decision of the *Consultant* shall be final.

.12 The requirements stated in Division 01 specification sections apply to all other specification sections within Division 02 to 49. Refer to precedence statements above.

.2 Paragraph 1.1.7 - add the following:

1.1.7 Where directive language is used (i.e. 'notify the appropriate agency well in advance etc.'), it shall be presumed to be preceded by 'the *Contractor* shall'. Some words and phrases have been intentionally omitted from the *specifications*. Missing portions shall be supplied by inference such as with notes or indications on the *Drawings*. The words 'accepted' 'reviewed', 'selected', 'directed' and similar words and phrases shall be presumed to be followed by 'by *Consultant*'. The words 'satisfactory', 'submitted', 'reported', and similar words or phrases shall be presumed to be followed by 'to *Consultant*'.

.3 Paragraph 1.1.9 - add the following to the end of the last sentence:

1.1.9 "...., except where specifically indicated in the *Contract Documents*."

2.3 GC 2.2 ROLE OF THE CONSULTANT

.1 Add the following wording to Paragraph 2.2.1 as follows:

2.2.1 "… during construction until issuance of the final certificate for payment and subject to GC 2.1 – Authority of the *Consultant* and with the *Owner's* consent, from time to time until the completion of any correction of defects as provided in paragraph 12.3.4. of GC 12. 3 – Warranty."

.2 Add the following to the end of Paragraph 2.2.12 as follows:

2.2.12 If, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or in the *Contract Time*, it shall, within five (5) *Working Days* of the receipt of a *Supplemental Instruction*, provide the *Consultant* with a written notice to that effect. Failure to provide written notification within the time stipulated in paragraph 2.2.12 shall preclude the *Contractor* from making a claim for an adjustment in the *Contract Price* or *Contract Time* as a result of the *Supplemental Instruction*.

.3 Delete Paragraph 2.2.15 in its entirety and replace with the following:

2.2.15 The *Consultant* will conduct reviews of the *Work* to confirm the date of *Substantial Performance of the Work* and verify that *Ready-for-Takeover* has been attained.

2.4 GC 2.3 REVIEW AND INSPECTION OF THE WORK

.1 Add new Paragraph 2.3.8 to read as follows:

2.3.8 Should the *project* not achieve *Substantial Performance of the Work* by the date specified in the *contract*, or the *work* has been misrepresented as to the stage of completion and additional site visits are required by the *Consultants* on behalf of the *Owner*, the *Contractor* shall be responsible for compensation to the *Owner* at the following rates:

.1 $145.00/on site hour/individual *Consultant*

.2 $725.00/on site day/individual *Consultant*.

.3 All travel costs including but not limited to, vehicle rental, gas, mileage, meals, Consultants hourly charge out rate.

2.5 GC 2.4 DEFECTIVE WORK

.1 Add new Paragraph 2.4.1.1 and 2.4.1.2 to read as follows:

2.4.1.1 The *Contractor* will rectify in an acceptable manner to the *Owner* and the *Consultant*, all defective *Work* and deficiencies throughout the *Work,* whether or not such defects or deficiencies are specifically identified by the *Consultant* or the *Owner*.

2.4.1.2 When applicable, the *Contractor* shall give priority to the correction of any defective work or deficiencies which the *Owner* determines adversely affect its day-to-day operations.

2.6 GC 3.1 CONTROL OF THE WORK

.1 Add new Paragraph 3.1.3 to read as follows:

3.1.3 Without limiting the generality of the foregoing, the *Contractor* is responsible for the co-ordination of the various parts of the *Work* so that no part is left in an unfinished or incomplete condition.

.2 Add new Paragraph 3.1.4 to read as follows:

3.1.4 At all times during the construction, *Owner's* Project Managers, agents and designates shall have the right to access, ingress and egress any work site, building or facility where *Contractor* performs the *Work*, and any part thereof, for any purpose.

.3 Add new Paragraph 3.1.5 to read as follows:

3.1.5 Prior to commencing any of the *Work*, the *Contractor* will verify all measurements, dimensions, and levels necessary for the proper, timely and complete performance of all aspects of the *Work*. Where measurements, dimensions or levels are not included in the *Contract Documents* or exact locations or requirements are not apparent, the *Contractor* will immediately notify the *Consultant* in writing of such and will obtain instructions from the *Consultant* prior to proceeding with any part of the *Work* affected thereby.

2.7 GC 3.2 CONSTRUCTION BY *OWNER* OR OTHER *CONTRACTORS*

.1 Add new Paragraph 3.2.3.5 to read as follows:

3.2.3.5 For the purposes of Occupational Health and Safety Act (Alberta), the *Contractor* shall be the "Prime *Contractor*" (as defined in the statute) in respect to the *Place of the Work*.

2.8 GC 3.4 CONSTRUCTION SCHEDULE

.1 Delete Paragraph 3.4.1 in its entirety and replace with the following:

3.4.1 The *Contractor* shall,

.1 within 15 days following the award of the *Contract*, prepare and submit to the *Owner* and the *Consultant* for their review and acceptance, a construction schedule that indicates the timing of the activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time* and in accordance with the *Contract Documents.* Unless otherwise agreed to in writing, in advance by the *Owner* and the *Contractor*, when required by the *Specifications* to employ construction scheduling software, the *Contractor* shall employ the software Microsoft Project in generating the construction schedule, which permits the progress of the *Work* to be monitored in relation to the critical path established in the schedule. The *Contractor* shall provide the construction schedule and any successor or revised schedules to the *Owner* in electronic format and paper copy. When required by the *Specifications* to employ construction scheduling software, the *Contractor* shall provide the construction schedule to the *Owner* in editable format, together with a record version in PDF format. Once accepted by the *Owner* and the *Consultant*, the construction schedule submitted by the *Contractor* shall become the baseline construction schedule;

.2 provide the expertise and resources, such resources including manpower and equipment, as are necessary to maintain progress under the accepted baseline construction schedule or any successor or revised schedule accepted by the *Owner* pursuant to General Condition 3.4 – CONSTRUCTION SCHEDULE;

.3 monitor the progress of the *Work* on a weekly basis relative to the baseline construction schedule, or any successor or revised schedule accepted by the *Owner* pursuant to General Condition 3.4 – CONSTRUCTION SCHEDULE, update the schedule on a monthly basis and advise the *Consultant* and the *Owner* in writing of any variation from the baseline or slippage in the schedule; and

.4 if, after applying the expertise and resources required under subparagraph 3.4.1.2, the *Contractor* forms the opinion that the variation or slippage in schedule reported pursuant to subparagraph 3.4.1.3 cannot be recovered by the *Contractor*, it shall, in the same notice, indicate to the *Consultant* and the *Owner* if the *Contractor* intends to apply for an extension of *Contract Time* as provided in PART 6 of the General Conditions - CHANGES IN THE WORK.

.2 Add new Paragraph 3.4.2 to read as follows:

3.4.2 If, at any time, it should appear to the *Owner* or the *Consultant* that the actual progress of the *Work* is behind schedule or is likely to become behind schedule, or if the *Contractor* has given notice of such to the *Owner* or the *Consultant* pursuant to subparagraph 3.4.1.3, the *Contractor* shall take appropriate steps to cause the actual progress of the *Work* to conform to the schedule or minimize the resulting delay and shall produce and present to the *Owner* and the *Consultant* a recovery plan demonstrating how the *Contractor* will achieve the recovery of the schedule. If the *Contractor* intends to apply for a change in the *Contract Price* in relation to a schedule recovery plan, then the *Contractor* shall proceed in accordance with General Condition 6.5 – DELAYS.

2.9 GC 3.5 SUPERVISION

.1 Add the following wording to the end of Paragraph 3.5.1 as follows:

3.5.1 … and without the prior written approval of the *Owner.*

.2 Delete Paragraph 3.5.2. in its entirety and replace with the following:

3.5.2 The appointed representative shall represent the *Contractor* at the *Place of the Work* and shall have full authority to act on written instructions given by the *Consultant* and/or the *Owner*. Information and instructions given to the appointed representative shall be deemed to have been given to the *Contractor* and both the appointed representative and any project manager shall have full authority to act on behalf of the *Contractor* and bind the *Contractor* in matters related to the *Contract.*

.3 Add new Paragraph 3.5.3 to read as follows:

3.5.3 The *Contractor* will continue to have a supervisor in attendance on a full-time basis until all deficiencies noted at the time of *Substantial Performance of the Work* have been corrected to the satisfaction of the *Consultant*.

.4 Add new Paragraph 3.5.4 to read as follows:

3.5.4 The *Owner*, may with reasonable cause, at any time during the execution of the *Work*, require the replacement of any of the key individuals, or other supervisory personal assigned to the *Work* or the Project. Upon receipt of such a request, the *Contractor* will immediately make arrangements to appoint an acceptable replacement.

2.10 GC 3.6 SUBCONTRACTORS AND SUPPLIERS

.1 Paragraph 3.6.4, Insert the words "without reasonable cause" after the words "Subcontractor and Supplier".

.2 Add new Paragraph 3.6.7 to read as follows:

3.6.7 The *Contractor* shall ensure that, and make it a condition of any engagement of a *Subcontractor* that, if any individual who performs any *Work* or who will be present at the *Place of the Work* on behalf of the *Contractor* or a *Subcontractor* would not ordinarily be consider to be a “worker” under the Worker’s Compensation Act (Alberta) by virtue of section 15(1) thereof, such individual shall have obtained voluntary coverage under the Worker’s Compensation Act (Alberta) so that such statute shall apply to such individual as a “worker” and shall have a valid personal coverage identification card at all times during which such individual is performing any *Work* or is present at the *Place of Work*. The *Contractor* shall require all *Subcontractors* to have similar requirements for their *Sub-subcontractors*.”

.3 Add new Paragraph 3.6.8 to read as follows:

3.6.8 The *Contractor* agrees not to change *Subcontractors* without the *Owner’s* prior written consent. Any change in *Subcontractors* will not result in an adjustment to the *Contract Price* or *Contract Time*.

2.11 GC 3.7 LABOUR AND PRODUCTS

.1 Delete Paragraph 3.7.1. in its entirety and replace with the following:

3.7.1 The *Contractor* shall maintain good order and discipline among the *Contractor's* employees, agents, *Subcontractors* and *Suppliers* engaged on the *Work* and employ only workers that are skilled in the tasks assigned.

.2 Delete Paragraph 3.7.2. in its entirety and replace with the following:

3.7.2 Unless otherwise expressly stipulated elsewhere in the *Contract Documents*, the *Contractor* shall provide and pay for labour, *Products*, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract*.

.3 Delete Paragraph 3.7.3. in its entirety and replace with the following:

3.7.3 Unless otherwise specified in the *Contract Documents*, *Products* provided shall be new and fit for the purpose intended. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.

.4 Add new Paragraph 3.8.4 to read as follows:

3.8.4 Until such time as the *Products* are incorporated into the *Work*, the *Contractor* will be responsible for the safe and secure storage of *Products* on the *Project* site, or elsewhere if located off the *Project* site, in a manner as to avoid damage, destruction, contamination, waste or spoilage to the *Products* or other persons or property.

2.12 GC 3.8 SHOP DRAWINGS

.1 Delete Paragraph 3.8.1. in its entirety and replace with the following:

3.8.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents* or as the *Consultant* may reasonably request.

2.13 GC 4.1 CASH ALLOWANCE

.1 Delete Paragraph 4.1.2 in its entirety and replace with the following:

4.1.2 Unless otherwise specified in the allowance estimate included within the *Contract Documents*, the *Contract Price*, and not the cash allowances, includes the cost of construction machinery and equipment, unloading, handling, storage, installation and the *Contractor's* overhead and profit in connection with such cash allowances."

.2 Add new Paragraph 4.1.8 to read as follows:

4.1.8 Administration of Cash Allowances:

.1 *Contractor* shall administer, upon direction from *Consultant*. Competitive quotations are required where applicable. When competitive quotations are not applicable, a complete breakdown into net costs of labour and materials (all trades) is required.

.2 Bidders for quotes on *Work* under cash allowances shall be acceptable to the *Consultant*. The successful bidder shall then enter into a sub-contract arrangement with the *Contractor*.

.3 Add new Paragraph 4.1.9 to read as follows:

4.1.9 Adjustment of Cash Allowances:

.1 A *Change Order* will be issued to reconcile the final Cash Allowance balance with the *Contract Price*.

.4 Add new Paragraph 4.1.10 to read as follows:

4.1.10 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work*, to be paid for from cash allowances.

.5 Add new Paragraph 4.1.11 to read as follows:

4.1.11 Cash Allowances: See *specification* Section 01 21 00 - Allowances.

2.14 GC 5.2 APPLICATION FOR PROGRESS PAYMENT

.1 Delete Paragraph 5.2.2 entirely and add new Paragraph 5.2.2 to read as follows:

5.2.2 Submit to the *Consultant*, by the 25th of each month, a draft application for payment in the form and content required by the *Consultant*, for review by the *Consultant* and *Owner*. Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties.

.2 Delete Paragraph 5.2.8 entirely and add new Paragraph 5.2.8 to read as follows:

5.2.8 Submit receipts, declarations or other vouchers showing payments for labour or material, and acknowledgement of payment received by *Subcontractors* and *Suppliers* relating to the previous month's payment:

.1 For any materials purchased for the *Work* under Conditional Sale Agreements either incorporated into the *Work* or in a bonded warehouse.

.2 For any other *Contractor's* liability which, if not paid, might fall upon the *Owner*.

.3 Payment shall not be issued for materials delivered to the site which have not been checked, reviewed and verified to the correct products as specified or subsequently accepted, in correct quantities and in undamaged condition.

.4 Claims for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* will only be made if ownership of the *Products* has been transferred from the *Supplier* to the *Contractor* and will be supported by such evidence as the *Consultant* may reasonably require to establish the value, delivery, payment for and transfer of ownership of the *Products*. Despite the transfer of ownership of the *Products* or payment by the *Owner* to the *Contractor*, the *Contractor* will remain liable for the *Products* until incorporated into the *Work*.

.3 Add new Paragraphs 5.2.9 to read as follows:

5.2.9 The *Contractor* shall prepare current As-Built Drawings during the course of the *Work*, which current As-Built Drawings shall be maintained by the *Contractor* and made available to the *Consultant* for review with each application for progress payment. The *Consultant* may retain a reasonable amount and up to a maximum of the amounts outlined in paragraph 5.4.10, from any progress payment for the value of the As-Built Drawings not presented for review until the As-Built Drawings are presented for review.

2.15 GC 5.3 PAYMENT

.1 Add the new Paragraph 5.3.2 to read as follows:

5.3.2 Notwithstanding any other provision of this *Contract*, the *Owner* may refuse to make the whole or any part of any payment otherwise due under this *Contract*, to the extent that is reasonably necessary to protect the *Owner* from loss because:

.1 the *Work* is defective, or completed *Work* has been damaged requiring correction and replacement;

.2 the *Owner* has been required to correct defective *Work* or complete *Work* in accordance with paragraph 7.1.4.1;

.3 liens have been filed against the *Work* or written notice of a lien in respect of the *Work* has been given to the *Owner*;

.4 of third party monetary claims against the *Contractor* which are enforceable against the *Owner*; or

.5 there are other items entitling the *Owner* to a set-off pursuant to this *Contract*.

.2 Add a new Paragraph 5.3.3 to read as follows:

5.3.3 The certificate of payment reviews by the *Consultants* shall not bind the *Owner* or the *Consultant* in any manner in the preparation of the estimate of the *Work* done, but shall be approximate only and shall in no case be taken as an acceptance of the *Work* or as a release of the *Contractor* from the *Contractor's* responsibilities under the *Contract*. *Consultant* reviews are conducted in good faith. If it should become apparent that previous certified *Contractors* progress claims are over-estimated, the contractor upon notification will take immediate action to rectify over-progressed payments. The *Owner* reserves the right to withhold payments until identified over-progressed payments are resolved.

.3 Add a Paragraph 5.3.4 to read as follows:

5.3.4 Notwithstanding any other provision of the *Contract*, when an item of the *Work* is nearing completion, the application for a *sub-contractors* payment **shall not exceed 95%** of the total value of that item of the *Work*, until all deficiencies have been corrected or until any outstanding requirements under the *Contract* have been met. The *Contractor* will be required to confirm in writing that the *Work* is complete, and deficiencies are completed, before allowing any *sub-contractor* to receive 100% of the payment due to such *sub-contractor.*

.4 Add a Paragraph 5.3.5 to read as follows:

5.3.5 Notwithstanding any other term or condition in the *Contract Documents*, the *Owner* shall not be required to make payment to the *Contractor*, if at such time, a claim for lien arising from the performance of the *Work* has been registered against the title to the *Place of the Work* (other than a lien filed by the *Contractor* as a result of the *Owner's* failure to pay any amount due and owing to the *Contractor* under this *Contract*.). If any such lien is registered against the title to the *Place of the Work*, the *Contractor* shall, within 10 calendar days, at its sole cost and expense, vacate or discharge the lien from such title. If the lien is merely vacated, the *Contractor* shall, if requested by the *Owner*, undertake the Owner's defense of any subsequent lawsuit commenced in respect of the lien at the *Contractor's* sole cost and expense. If the *Contractor* fails or refuses to vacate or discharge a construction lien within the time prescribed above, the *Owner* shall, at its option, acting at its discretion, be entitled to take all steps necessary to vacate and/or discharge the lien, and all costs and expenses incurred by the *Owner* in so doing (including legal fees of a solicitor and his own client basis and any payment which may ultimately be made out of, or pursuant to security posted to vacate the lien) shall be for the account of the *Contractor*, and the *Owner* may deduct such amounts from amounts otherwise due or owning to the *Contractor*. Without limiting any other obligation of the *Contractor* under the *Contract*, the *Contractor* shall indemnify and hold harmless the *Owner* for all Clams it may incur in connection with any such lien or subsequent lawsuit brought in connection with any such lien, or in connection with any other Claim brought against the *Owner* by any person that provided services or material to the *Place of the Work* which constituted part of the *Work*.

.5 Add a new Paragraph 5.3.6 to read as follows:

5.3.6 The *Owner* will retain from every progress claim an amount equal to two percent (2%) of the progress claim and apply this amount to the Deficiency Fund.

.1 The Deficiency Fund is an amount in addition to the Lien Holdback amount stipulated in the lien legislation applicable to the *Place of Work*.

.2 The deficiency Fund is established by the *Owner* to ensure that all Deficient *Work* is corrected prior to application of final payment as defined by GC 5.7. The Deficiency Fund will be released to the *Contractor* after all Deficient *Work* has been corrected and verified by *Consultant*.

.3 In the event that the Deficient *Work* is not corrected in a time frame mutually agreed by the *Owner* and the *Contractor*, the *Owner* may choose to apply the Deficiency Fund to pay for another *Contractor* to complete the *Work* and to seek compensation from the *Contractor* for any additional payments or damages arising from correction of deficient *work*.

.4 Progressive release of Deficiency Holdback shall occur upon application by the *Contractor*, and verification by the *Consultant* that the Deficient *Work* of the *Subcontractor* has been corrected, the *Owner* shall pay the *Contractor* the Deficiency Holdback amount retained for such subcontract *Work*, or the *Products* supplied by such *Supplier*.]

2.16 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

.1 Add new Paragraphs 5.4.7, 5.4.8, 5.4.9, 5.4.10, 5.4.11, 5.4.12 and 5.4.13 to read as follows:

5.4.7 In the event that all deficiencies are not completed by the *Contractor* in accordance with the *Contract Documents* and to the satisfaction of the *Consultant* within the time established by G.C.5.4.1, the *Owner* will have the right to have the deficiencies completed by another contractor and recover or set-off the costs of such completion work from the *Contractor* as permitted by this *Contract* or otherwise at law. If any deficiency remains uncompleted or unfulfilled as at the date of *Total Performance of the Work*, the value of such deficiency as previously determined will become a deduction from the *Contract Price* and may be recovered or set-off against monies otherwise due or accruing due to the *Contractor* as permitted by this *Contract* or otherwise at law. In the event that the *Contractor* fails to remedy a deficiency within the time established by G.C.5.4.1 once the *Owner* has proceeded with any activities necessary to remedy the deficiency, the *Contractor* will be liable to and will indemnify the *Owner* for all corrective actions taken by any parties performed in respect of such deficiency and such corrective actions will not constitute a waiver of any of the *Contractor's* warranty obligations.

5.4.8 Prior to submitting its written application for *Substantial Performance of the Work*, the *Contractor* shall submit to the *Consultant* all:

.1 guarantees;
.2 warranties;
.3 certificates;
.4 testing and balancing reports;
.5 distribution system diagrams;
.6 spare parts;
.7 maintenance manuals;
.8 samples;
.9 existing reports and correspondence from authorities having jurisdiction in the *Place of the Work*;

and other materials or documentation required to be submitted under the *Contract*, together with written proof acceptable to the *Owner* and the *Consultant* that the *Work* has been substantially performed in conformance with the requirements of municipal, governmental, and utility authorities having jurisdiction in the *Place of the Work*.

5.4.9 Where the *Contractor* is unable to deliver the documents and materials described in paragraph 5.4.8, then, provided that none of the missing documents and materials interferes with the use and occupancy of the *Project* in a material way, the failure to deliver shall not be grounds for the *Consultant* to refuse to certify *Substantial Performance of the Work*. If the *Contractor* fails to deliver any of the documents or materials required described in paragraph 5.4.8 the *Consultant* shall retain from payments otherwise owing to the *Contractor* under this *Contract* the amount described in paragraph 5.4.10 and retain such amount until such documents and materials are delivered.

5.4.10 The amount to be retained by the *Consultant* as contemplated in subparagraphs 5.2.10 and 5.4.9 is as follows:

.1 where the *Contract Price* is less than $100,000 the amount to be retained is $5,000;
.2 where the *Contract Price* is greater than $100,000 but less than $1,000,000, the amount to be retained is $10,000*; and*
.3 where the *Contract Price* is greater than $1,000,000 but less than $5,000,000, the amount to be retained is $25,000; and
.4 where the *Contract Price* is greater than $5,000,000, the amount to be retained is $100,000.

5.4.11 Should the As-Built Drawings not be delivered in accordance with subparagraph 5.2.10 or any documents or materials not be delivered in accordance with paragraph 5.4.8 by the earlier of 60 days following publication of the certificate of *Substantial Performance of the Work* and the submission of the *Contractor*'s application for final payment under paragraph 5.5.1 of General Condition 5.5 – FINAL PAYMENT, then the amount previously retained pursuant to paragraph 5.2.10 or 5.4.10 may be used by the *Owner* to defray the cost of preparing or replacing the documents or materials, or As-Built Drawings which the *Contractor* failed to deliver.

5.4.12 Together with the submission of its written application for *Substantial Performance of the Work*, the *Contractor* shall submit to the *Consultant* and to the *Owner* a statutory declaration setting forth in reasonable detail any then outstanding and unresolved disputes or claims between the *Contractor* and any *Subcontractor* or *Supplier,* including any claims allegedly arising from delay, which are, directly or indirectly, related to any then outstanding or anticipated disputes or claims between the *Contractor* and the *Owner,* and this disclosure shall, at a minimum:

.1 identify the parties involved;
.2 identify the amount in dispute;
.3 provide a brief statement summarizing the position of each party;
.4 include copies of any correspondence or documents in support of either party's position;
.5 include copies of any documents of any court or arbitration process related to the matter;
.6 identify the dispute or claim between the *Contractor* and the *Owner* to which the matter relates; and
.7 include a copy of any written agreement or a summary of any oral agreement between the parties related to resolution of the matter.

The disclosure requirements detailed herein are of a continuing nature and survive completion of the *Work.* Accordingly, the *Contractor* shall supplement the information provided with the original statutory declaration with additional materials pertaining to new or existing disputes or claims, as they become available.

5.4.13 Under the requirements of the Alberta Builders Lien Act, the *Contractor* cannot declare *Substantial Performance* until the balance of *Work* to complete the project, including deficiencies, drops below a calculated figure as defined by the Act. For the purpose of this requirement, the *Contractors* Progress Claims "balance of *Work* to complete" shall be used to define the *Work* left.

2.17 GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

.1 Add the following to the end of Paragraph 6.1.2:

6.1.2 All such changes require approval by a representative of the *Owner* with proper signing authority.

.2 Add new Paragraphs 6.1.3 to 6.1.6 to read as follows:

6.1.3 Unit prices included in the Contract, or prices pro rata thereto, will be used in the first instance in pricing changes.

6.1.4 Unit and Alternative Prices included in the *Contract* include *Supply*, *Installation*, *Products*, equipment, services, materials, labour, *Overhead*, profit and taxes, but exclude *Value Added Taxes*.

6.1.5 The *Owner*, through the *Consultant*, reserves the right to authorize payment for changes in the *Work* by means of *Cash Allowance Disbursement Authorizations*.

6.1.6 If any change or deviation in, or omission from the *Work* is made by which the amount of *Work* to be performed is decreased, or if the whole or a portion of the *Work* is dispensed with, no compensation is claimable by the *Contractor* for any loss of anticipated profit in respect thereof.

2.18 GC 6.2 CHANGE ORDER

.1 Delete Paragraph 6.2.1 and substitute with the following paragraph:

6.2.1 When a change in the *Work* is proposed or required, the *Consultant* shall provide the *Contractor* with a written description of the proposed change in the Work. The *Contractor* shall promptly present, in a form acceptable to the *Consultant*, a method of adjustment or an amount of adjustment for the *Contract Price,* if any, and the adjustment in the *Contract Time,* if any, for the proposed change in the *Work.* The *Contractor* shall also provide the following:

.1 The method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, from the *Subcontractors* on the *Subcontractors'* letterhead.

.2 Quotations submitted by the *Subcontractors* and the *Contractor* shall have a complete breakdown for all items of material, a total number of hours for labour, and a dollar rate applied against individual material items and labour quantities.

.2 Delete Paragraph 6.2.2 and substitute with the following paragraph:

6.2.2 When the *Owner* and *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and will be recorded in a *Change Order* issued by the *Consultant* and signed by the *Contractor* and *Owner*. The value of the *Work* performed as a result of *Change Orders* shall be included in the applications for progress payments.

.3 Add new Paragraph 6.2.3 to read as follows:

6.2.3 Forms for *Change Orders*:

.1 Where clarifications or supplementary instructions are issued, and do not change the *Contract* requirements, the "Site Instruction/Field Review" form will be used.

.2 The form of written order used to request a Change in the *Work* and make an adjustment to the *Contract Price* and/or *Contract Time,* contained in the *Contract* will be the "*Proposed Change Notice* (PCN)" form and administered in accordance with GC 6.2.

.3 The form of written order used to Change the *Work* will be the form "*Change Order*".

.4 Add new Paragraph 6.2.4 to read as follows:

6.2.4 All indirect and impact costs related to and or resulting from the *Contractor's* implementation of a particular authorized change, are deemed to be included in the amount stated on that particular *Change Order* as the sum by which, and only which, the *Contract Price*, and *Contract* Time if applicable, will be adjusted. The *Contractor* is not entitled to any additional compensation other than the adjustments in the *Contract Price* and the *Contract Time* specifically recorded on *Change Orders*.

.5 Add new Paragraph 6.2.5 to read as follows:

6.2.5 The *Contractor* is required to provide the Labour Rates from the *Subcontractors*, for use in *Change Order* quotes, as required under Specification Section 01 29 10 – Change Evaluation Procedures.

.6 Add new Paragraph 6.2.6 to read as follows:

6.2.6 The *Consultants* shall submit their recommendations on the cost breakdowns for changes to the *Owner*. The *Owner* reserves the right to conduct its own review, before authorizing a *Change Order* to be issued.

2.19 GC 6.3 CHANGE DIRECTIVE / SUPPLEMENTAL INSTRUCTION

.1 Add new Paragraph 6.3.14 to read as follows:

6.3.14 When a clarification or modification of the *Work* is required which would not adjust the *Contract Price* or *Contract Time*, the *Consultant* will issue a *Supplemental Instruction*."

.2 Add new Paragraph 6.3.15 to read as follows:

6.3.15 Upon receipt of a *Supplemental Instruction*, the *Contractor* will proceed promptly with the change in the *Work*, if the *Contractor* agrees that there is no adjustment required in the *Contract Price* or *Contract Time*. The *Contractor* is to confirm acceptance of the *Supplemental Instruction* by signing and returning a copy to the *Consultant* within seven (7) days. Failure to respond will be considered as undisputed concurrence with the instructions.

.3 Add new Paragraph 6.3.16 to read as follows:

6.3.16 In the event that the *Contractor* disagrees that no change in the *Contract Price* or *Contract Time* is involved with a *Supplemental Instruction*, the *Contractor* will immediately notify the *Consultant* in writing that a *Change Order* is required and submit a method of adjustment or an amount of adjustment for the *Contract Price* and the adjustment in the *Contract Time*, if any. The *Consultant* will provide a written interpretation and finding of the *Contractor's* disagreement pursuant to G.C.2.2.7 and will notify the *Contractor* of the *Consultant's* findings with 10 *Working Days*.

2.20 GC 6.5 DELAYS

.1 Delete paragraph 6.5.1 in its entirety and replace with the following:

6.5.1 If the *Contractor* is delayed in the performance of the *Work* by the *Owner*, *Consultant* or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents* and such delay as could not reasonably be mitigated, then the *Contract Time* shall be extended for such reasonable time as the *Owner* and the *Contractor* may agree. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.

.2 Paragraph 6.5.2: Insert the words "and such delay could not be reasonably mitigated" after the words "directly or indirectly"

.3 Delete paragraph 6.5.4 in its entirety and replace with the following:

6.5.4 No extension of the *Contract Time* will be given and the *Contractor* shall not be entitled to payment for costs incurred as a result of any delay unless *Notice in Writing* of the cause of delay is given to the *Consultant* not later than 5 *Working Days* after the commencement of the delay. In the case of the continuing cause of delay, only one *Notice in Writing* shall be necessary. Failure on the part of the *Contractor* to give the written notice to the *Consultant* and the *Owner* in accordance with this GC 6.5.4 will constitute a waiver of the *Contractor's* right to any such extension of time.

.4 Add new Paragraph 6.5.6. to read as follows

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor,* or by any cause within the *Contractor's* control, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may decide in consultation with the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including, but not limited to, the cost of all additional services required by the *Owner* from the *Consultant* or any *Sub-Consultants*, project managers, or others employed or engaged by the *Owner*.

2.21 GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

.1 Delete Paragraph 6.6.1 and substitute with the following paragraph:

6.6.1 If the *Contractor* intends to make a claim for an increase to the *Contract Price* (including Requests for Extra), or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price* (including Requests for Credit), the party that intends to make the claim shall give a written notice stating the general nature of the claim, to the *Consultant* promptly, and in no event later than Twenty One (21) days after the occurrence of the event-giving rise to the claim. Any work for which a claim has been made shall be kept readily accessible and shall not be covered up without the express permission of *Consultant*.

.2 Delete Paragraph 6.6.3 and substitute with the following paragraph:

6.6.3 The party making the claim shall submit to the *Consultant*, within Twenty-Eight (28) days after the event causing the occurrence, a detailed account of the amount claimed, including full cost breakdowns and backup information, and the grounds upon which the claim is based.

2.22 GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

.1 Delete Paragraph 7.1.4.1 and substitute with the following paragraph:

7.1.4.1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*, provided that, if such costs exceed such payments, the *Contractor* shall remain liable to reimburse the *Owner* for such excess notwithstanding the exercise by the *Owner* of it's rights under this GC 7.1.4.1 to correct such defect and to deduct such costs, or

2.23 GC 10.2 LAWS, NOTICES, PERMITS AND FEES

.1 Delete Paragraph 10.2.2 and substitute with the following paragraph:

10.2.2 The *Consultant,* on behalf of the *Owner,* will apply for, obtain, and pay for Development Permit if required. The *Contractor* shall obtain and pay for all permits (including demolition permits, building permits occupancy permits, electrical / plumbing / gas permits) and all other necessary approvals as required to complete the work, except for the permits and fees referred to in paragraph 10.2.3 or for which the *Contract Documents* specify as the responsibility of the *Contractor*. The *Owner* will obtain and pay for, permanent easements and rights of servitude or other related regulations that are not germane to the actual requirements for construction.

2.24 GC 10.4 WORKER'S COMPENSATION

.1 Add new Paragraph 10.4.2 to read as follows:

10.4.2 Worker's Compensation covers all employees engaged in the work in accordance with the statutory requirements of the province or territory having jurisdiction over such employees.

.2 Add new Paragraph 10.4.3 to read as follows:

10.4.3 The *Contractor* shall at all times pay or cause to be paid any assessment or compensation required to be paid pursuant to the Worker's Compensation Act and upon failure to do so, the *Owner* may pay such assessment or compensation to the Worker's Compensation Board and may deduct the amount from monies due or to become due to the *Contractor*. The *Contractors* shall at the time of entering into a *Contract* declare that all assessments or compensation payable to the Worker's Compensation Board have been paid and the *Owner* may at any time during the performance and upon the completion of the *Work* require a further declaration that such assessment or compensation has been paid in full. The *Contractor* unconditionally guarantees to the *Owner* full compliance with the said conditions, regulations and laws by any *Subcontractor* or other person employed by the *Contractor* or with whom the *Contractor* may take any contract for the performance of any of the *Work* hereunder.

.3 Add new Paragraph 10.4.4 to read as follows:

10.4.4 The *Contractor* unconditionally agrees to indemnify and save harmless the *Owner* and the *Consultant* from and against all loss, liability, costs, charges, claims, damages, expenses or liens which may arise as a consequence of or result from any failure by the *Contractor* or any *Subcontractor* or other person employed by the *Contractor* to comply fully with the provisions of this GC 10.4 or which may arise as a consequence of or grow out of any injury, illness or death of any employee of the *Contractor* or any employee of any *Subcontractor* engaged or participating in the performance of the *Work* to be performed under this *Contract*.

2.25 GC 11.1 INSURANCE

.1 Add new Paragraph 11.1.9 to read as follows:

11.1.9 All required insurance policies shall name the *Owner*, the *Owner'*s Project Manager and their respective employees, the *Consultant* and its employees, all Sub-Consultants and their employees, as additional named insureds."

.2 Add new Paragraph 11.1.10 to read as follows:

11.1.10 All insurance policies to be obtained by the *Contractor* pursuant to the *Contract* shall:

.1 include a provision to the effect that the insurer shall not be entitled to and waives any right to subrogation against the *Owner* or the *Consultant* in respect to any claims relating to such policies, and

.2 be considered primary coverage and not excess coverage for any insurance coverage carried by the *Owner* or the *Consultant*.

2.26 GC 12.3 WARRANTY

.1 Delete Paragraph 12.3.1 and substitute with the following paragraph:

12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date of *Ready-for-Takeover* as verified by the *Consultant*, or those periods specified in the *Contract Documents* for certain portions of the *Work* or *Products*.

.2 Delete Paragraph 12.3.4 and substitute with the following paragraph:

12.3.4 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor's* expense, defects or deficiencies in the *Work* which appear prior to and during the one-year warranty period. Provided that, if the *Contracto*r does not promptly and diligently correct any defect or deficiency in the work for which it has received notice under GC 12.3 within one year of the date of *Ready-for-Takeover*, then the *Owner* may correct such defect or deficiency and the *Contractor* shall reimburse the *Owner* for all reasonable costs and expenses incurred by the *Owner* in such regard within 30 days of the *Owner* invoicing the *Contractor* for such amounts. The term "defects and deficiencies" includes all damage resulting from any defect or deficiency. All such remedial, replaced or corrected work or *Products* shall then be warranted by the *Contractor* as set forth in this *Contract.*

.3 Add new Paragraph 12.3.7 to read as follows:

12.3.7 Where applicable, warranties shall take into account seasonal deficiencies, such as for Landscaping, and shall commence upon the date that the seasonal deficiencies have been remedied.

2.27 GC 13.1 – INDEMNIFICATION

.1 Add new Paragraph 13.1.7 to read as follows:

13.1.7 By virtue of this contract, the *Contractor* is designated and shall assume all the duties and responsibilities of Prime *Contractor* for this *Project* as defined by the Occupational Health and Safety Act of the Province of Alberta and Regulations there under (the Act) and in said capacity, shall have the skills to ensure compliance on its part and on the part of all *Contractors*, employees, agents or subcontractors with all of the provisions of the Act and Regulations. Should the Act or Regulations not be complied with, the *Owner* may give written notice to the *Contractor* to discontinue operations until steps have been taken to ensure compliance. The *Contractor* shall discontinue work as of the date of receipt of such notice. The *Contractor* shall be solely responsible for any fees, expenses, damages, costs, etc. resulting from the breach of any provisions of the Act or Regulations and the *Contractor* shall indemnify, hold harmless and pay for any costs incurred by the *Owner* as a result of such breach.

END OF DOCUMENT

Part 1 General

1.1 SECTION INCLUDES

.1 The Contractor and all Subcontractors are responsible to read the tender documents in whole and not in part. It is assumed that by accepting the awarded contract all items included in the tender documents all be furnished for the price stipulated.

1.2 RELATED SECTIONS

.1 Section 00 73 03: Supplementary Conditions

.2 Section 01 14 00: Work Restrictions

.3 Section 01 19 00: Specifications and Documents

.4 Section 01 21 00: Allowances

.5 Section 01 78 10: Closeout Procedures.

.6 This section describes project specific requirements applicable to all Sections within project Divisions 02 to 49.

1.3 WORK OF THE PROJECT

.1 Work of the Project, of which Work of this Contract is a part, comprises the following:

.1 Mechanical upgrades to the existing Drumheller Aquaplex.

1.4 WORK OF THIS CONTRACT

.1 Work of this Contract comprises the following:

.1 All required and necessary Work to construct **Drumheller Aquaplex Mechanical Upgrades.** The Project includes the replacement of an existing AHU and boilers and all components identified in these contract documents.

.2 Project Location: 100 Riverside Dr. W, Drumheller, Alberta.

.3 Construct work under a single stipulated price contract.

1.5 SPECIFICATIONS LANGUAGE AND STYLE

.1 These specifications are written in the imperative mood and in streamlined form. The imperative language is directed to Contractor, unless stated otherwise.

.2 Complete sentences by reading "shall", "Contractor shall", "shall be", and similar phrases by inference. Where a colon (:) is used within sentences and phrases, read the words "shall be" by inference.

.3 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.

.4 When used in the context of a Product, read the word “provide” to mean “supply and install to result in a complete installation ready for its intended use”.

1.6 CONTRACTOR RESPONSIBILITIES

.1 The Contractor assumes total control of the Work and will effectively direct and supervise the Work so as to ensure conformity with the Contract Documents.

.2 The Contractor is solely responsible for construction means, methods, techniques, sequencing, safety, scheduling, and procedures and for coordinating the various parts of the Work.

.3 This Section is written for the purpose of obtaining Bids by the Contractor from Subcontractors and does not relieve the Contractor from responsibility for overall coordination. The individual specification Sections do not define trade scope, and it is the Contractor's responsibility to determine each Subcontractor's trade scope.

.4 The Contractor is responsible for all coordination for the Project, including coordinating Subcontractors, and for ensuring that the Contract between the Contractor and the Owner and Contracts between the Contractor and Subcontractors are coordinated and adhered to.

.5 If items in these Specifications are noted as being done by a Subcontractor, it does not relieve the Contractor from his responsibilities to coordinate such Work and to ensure such items are done in accordance with the Contract Documents and done within time allotted in the agreed upon schedule.

.6 In the case of a dispute, the Contractor will arbitrate disputes regarding trade scope. Extras will not be considered on the grounds of differences in interpretation of the Specification as to which Subcontractor does what Work.

.7 The Contractor will provide full-time site administration to ensure that all Subcontractors coordinate their Work with other Subcontractors and to ensure that the established construction schedule is maintained.

.8 Each Subcontractor shall cooperate fully with the Contractor and with all other Subcontractors.

.9 Any Subcontractor who considers that there is a lack of cooperation on the part of any other Subcontractor shall promptly so inform the Contractor in writing.

.10 When Work is being done on site, the Contractor will be on site continuously during the Work, weather and site conditions permitting.

1.7 PRECEDENCE OF DOCUMENTS

.1 In the event of conflict within and between the Contract Documents, the precedence of Documents shall be as defined in Section 00 73 03 – Supplementary Conditions.

.2 In the event of conflict between documents, the decision of the Consultant shall be final. Discrepancies between documents are to be clarified at time of Tender. Extras will not be considered in the event that the Contractor fails to obtain direction during Tender.

.3 Precedence of Documents do not overrule the Consultant's intent.

1.8 CONTRACT METHOD

.1 Construct Work under the contract requirements in the applicable Division 00 sections.

.2 For purposes of reference in these Contract Documents, the term "Contractor" shall mean the primary party or parties in Contract with the Owner to manage and construct the Work.

1.9 DIVISION OF THE WORK

.1 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 Sections or Divisions of the Work.

.2 Contract Documents were prepared by the Consultant for the Owner. Any use which a third party makes of the Contract Documents, or any reliance on or decisions to be made based on them, are the responsibility of such third parties. The Consultant or Owner accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions based on the Contract Documents.

1.10 CONTRACT DOCUMENTS FOR CONSTRUCTION PURPOSES

.1 Owner will supply Contractor with a complete set of Contract Documents in electronic PDF form before commencement of the Work. Contractor may print hard copies for construction purposes as required.

.2 Hard copy sets shall be at Contractor’s expense for the cost of printing, handling and shipping which includes two (2) sets for record ‘As-built’ purposes.

1.11 DOCUMENTS AT THE SITE

.1 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 and addenda.
- .2 Change Orders, Change Directives, and Supplementary Instructions.
- .3 Reviewed Shop Drawings, Product data and samples.
- .4 Field test reports and records.
- .5 Construction progress schedule.
- .6 Meeting minutes.
- .7 Manufacturer’s certifications.
- .8 Permits, inspection certificates, and other documents required by authorities having jurisdiction.
- .9 Current as-built drawings.
- .10 Material Safety Data Sheets (MSDS) for all controlled Products.

1.12 PERFORMANCE OF THE WORK

.1 Ready-for-Takeover of the Work is required for Owner occupancy before October 1st, 2023 in accordance with the Contract requirements.

1.13 WORK NOT IN CONTRACT

.1 Items marked “N.I.C.” (Not in Contract) on Drawings do not form part of Work.

1.14 CASH ALLOWANCE ITEMS

.1 Items marked “C.A.” on Drawings refer to Cash Allowance items as specified in Section 01 21 10.

1.15 WORK BY OWNER

.1 The Owner has awarded a contract for the supply of the following:

.1 One (1) Engineered Air AHU.

.2 Work under this contract will include:

.1 The supply of one (1) AHU

1.16 OWNER-SUPPLIED PRODUCTS

.1 Obtain the necessary shop drawings from the Owner and proceed to coordinate details for installation, expedite, receive, unload, install, connect and test the specified equipment, and only be responsible for **all** warranties.

.2 Receive Owner-supplied Products and equipment F.O.B. and store and process Products and equipment until installation.

.3 Owner Responsibilities:

.1 Arrange for delivery of shop drawings, product data, samples, manufacturer's instructions, and certificates to Contractor.

.2 Deliver supplier's bill of materials to Contractor.

.3 Inspect deliveries jointly with Contractor.

.4 Contractor Responsibilities:

.1 Designate submittals and delivery date for each Product in progress schedule.

.2 Review shop drawings, product data, samples, and other submittals. Submit to Consultant, notification of any observed discrepancies or problems anticipated due to non-conformance with Contract Documents.

.3 Arrange and pay for delivery to the Place of the Work in accordance with Progress Schedule.

.4 Receive and unload Products at site.

.5 Inspect deliveries jointly with Owner; record shortages, and damaged or defective items.

.6 Submit claims for transportation damage.

.7 Arrange for replacement of damaged, defective or missing items.

.8 Arrange for manufacturer's field services; arrange for manufacturer's warranties and bonds.

.9 Handle Products at site, including uncrating and storage.

.10 Protect Products from damage, and from exposure to elements.

.11 Assemble, install, connect, adjust, and finish Products.

.12 Arrange for installation inspections required by public authorities.

.13 Repair or replace items damaged by Contractor or Subcontractor on site (under their control).

.5 Schedule of Owner-supplied Products.

.1 AHU (1 units in total).

1.17 CONTRACTOR USE OF PREMISES

.1 Except as otherwise specified, Contractor has partial use of Place of the Work from time of Contract award until Ready-for-Takeover.

.2 Confine Construction Equipment, Temporary Work, storage of Products, waste products and debris, and all other construction operations to limits required by laws, ordinances, permits, and Contract Documents, whichever is most restrictive. Do not unreasonably encumber Place of the Work.

.3 Time Restrictions for Performing Interior Work:

.1 As this is an operating Aquatic Centre all work must be completed during the scheduled yearly maintenance shutdown period. The yearly maintenance shutdown period is four weeks in length and starts September 5th, 2023

.2 Work is expected to start September 5th, 2023 **and the contractor can operate normal business hours until September 30th, 2023**. After September 30th, the contractor **may** have to complete any remaining work after hours, but must coordinate with the Town of Drumheller and facility staff. Facility staff will be on site during the maintenance shutdown period. Any work done before September 5th, 2023 will have to be done after hours and with written permission from the Owner as the operation of the Aquaplex **cannot** be disrupted.

.3 The Contractor is expected to work with the Town of Drumheller, facility staff and other potential contractors working on projects or tasks during the scheduled yearly maintenance shutdown period.

1.18 RESPONSIBILITY FOR EXISTING PROPERTY

.1 Contractor shall assume responsibility for premises assigned to him for performance of the Work.

.2 Contractor shall assume responsibility for and shall make good damage to existing property attributable to performance of Work of this Contract.

1.19 OWNER ORDERED WORK

.1 Owner has placed orders for products with vendors for specific products (AHU) to obtain early delivery and to expedite the Work and for other purposes in Owner's interests.

.2 On execution of Owner/Contractor Agreement, execute an agreement with designated vendor/supplier, in accordance with terms stated in attachment.

.3 Owner is responsible for purchase of pre-ordered AHU’s.

.4 Contractor is responsible for delivery, handling, coordination, assembly, installation, connection and **all** warranties of the above noted pre-ordered products in the same manner as for other Contractor-furnished Products.

.5 Schedule of Pre-ordered Products.

.1 AHU (one unit).

.6 Obtain necessary Shop Drawings from Owner for inclusion in maintenance manual in accordance with Section 01 78 10.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Restrictions on Use of Premises.

.2 Work Sequence.

.3 Owner Occupancy.

.4 Connecting to existing services.

.5 Restricted Hours of Work

.6 Noisy Work Restrictions in Occupied Facilities

.7 Maintaining Life Safety Systems in Occupied Facilities

.8 Work Areas

.9 Coring and Drilling.

.10 Security.

1.2 RELATED SECTIONS

.1 Section 01 10 00: Summary of Work

.2 Section 01 32 00: Construction Progress Documentation

.3 Section 01 33 00: Submittal Procedures.

.4 Section 01 35 23: Health & Safety Requirements.

.5 Section 01 53 00: Temporary Construction.

.6 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 INTENT

.1 Due to nature of the operational Aquatic Centre where the Work is being performed, special procedures shall be followed during the course of the Work.

.2 Comply with requirements specified in this Section and as otherwise determined by Owner, to maintain required degree of security and safety for the user, Contractor's personnel and the public.

1.4 RESTRICTIONS ON USE OF PREMISES

.1 Limit use of premises for Work to allow;

- .1 Owner occupancy.
- .2 Work by other Contractors.
- .3 Public usage.

.2 Coordinate use of premises under direction of Owner.

.3 Conduct work with least possible interference or disturbance to occupants, general public and normal operation of Aquatic Centre premises. Work that disrupts daily operation of the facility is to be scheduled after normal business hours.

.4 Co-operate with Consultant, Owner's Staff, and maintenance personnel, in timing of work which may affect normal operations within the building to facilitate execution of Work.

.5 Where security has been affected by Work, provide temporary means to maintain security which is acceptable to the Owner, including the ongoing operation of any electronic security systems.

.6 Maintain safe access to, and egress from, occupied premises at all times. Do not allow materials or equipment to obstruct fire exits unless alternative exits are provided to approval of Owner and local authorities having jurisdiction.

.7 Arrange operations and protect materials, tools, equipment, etc., to assure minimum of hazard to occupants of occupied premises.

.8 Maintain emergency building exits during construction at all times.

.9 Utility Outages and Shutdown: Coordinate with Owner.

.10 Contractor shall provide storage for all materials and supplies within the designated boundaries of the site. Obtain and pay for use of additional storage or Work areas needed for operations.

.11 Do not unreasonably encumber site with materials or equipment.

.12 Move any stored products or equipment which interferes with operations of Owner or other Contracts awarded by Owner.

.13 Coordinate construction access and locations for material delivery with the Owner.

1.5 WORK SEQUENCE

.1 Schedule and construct Work in phases to accommodate Owner's continued stated usage requirements of premises during construction. Coordinate the construction schedule and operations with the Owner.

.2 Schedule and construct Work in phases to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.

.3 Schedule Work to achieve occupancy of each phase as indicated on Drawings and as specified in Section 01 10 00 – Summary of Work.

.4 Contractor shall submit a proposed schedule of start and completion dates for each phase, within 30 days of award of Contract as specified in Section 01 32 00 - Construction Progress Documentation. This schedule shall be subject to review and approval by the Owner and the Consultant.

.5 Maintain fire access and control of fire protection equipment in accordance with authorities having jurisdiction.

1.6 OWNER OCCUPANCY

.1 Owner will occupy existing premises during entire construction period for execution of normal operations.

.2 Cooperate with Owner in scheduling operations to minimize conflict, a utility usage and to facilitate Owner usage.

.3 Owner will temporarily vacate portions of the premises to permit access to those areas for performance of the Work.

.4 Maintain fire and life safety systems and public access to exits during all stages of the Work.

1.7 EXISTING SERVICES

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

.2 Where Work involves breaking into or connecting to existing services, give Owner, 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work.

.1 Keep duration of interruptions to a minimum.

.2 Perform interruptions after normal working hours of occupants, preferably on weekends.

.3 Where necessary to cut off existing services during normal hours of occupancy, make prior arrangements for substitute services with Consultant and Owner.

.3 Carry out Work at times directed by governing authorities with minimum of disturbance to pedestrian and vehicular traffic.

.4 Confirm and establish locations of existing services in area of Work prior to any construction or demolition.

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

.6 Protect, relocate or maintain existing active services as required. Cap off encountered inactive services in a manner approved by authorities having jurisdiction over service.

.7 Be responsible for application and payment of utility connection fees, to ensure integration with construction schedule.

.8 Construct barriers in accordance with Section 01 53 00 – Temporary Construction.

1.8 SPECIAL HOURS OF WORK REQUIREMENTS

.2 The standard work week shall include evenings and weekends, as required to facilitate the completion of the Work.

.3 Allow for hours of work restrictions in construction progress schedule.

.4 Exterior work may be carried out at any time, subject however to noise control and other restrictions specified herein.

.5 Interior construction may be carried out during seasonal maintenance shutdown, subject to noise control, except during times or other times as identified in the Phase Schedule and as designated by Owner.

.6 Contractors when working within existing facility areas may be required to schedule their work beyond normal business hours and on weekends in order to accommodate the irregular hours of the Aquatic Centre. Contractors will be required to coordinate their hours with those of the facility staff.

.7 Contractors when directed by an authorized Owner's representative shall suspend their activities in order to accommodate the life and safety activities of the facility.

.8 Any work that will affect the existing services or life safety systems of the Aquatic Centre shall be scheduled outside of the stated operating hours and coordinated with the Owner.

.9 Any investigations or work that requires access to occupied areas shall be coordinated and approved ahead of time by the Owner and scheduled outside of the stated operating hours.

1.9 NOISY WORK RESTRICTIONS IN OCCUPIED FACILITIES

.1 Operations which cause excessive noise, include; demolition, jack hammering, cutting and coring of concrete slabs, operations requiring the use of gasoline powered equipment, and other similar operations considered by the Owner to cause excessive noise shall be postponed to non-sensitive hours when instructed to do so by the Owner.

.2 Certain construction activities that generate noise and/or vibration and/or dust may have to be temporarily halted during critical functions in the existing Aquatic Centre. Coordinate and schedule such activities in advance with the Owner.

.3 All Work under this contract shall be coordinated with the Aquatic Centre through the Owner. When hours of Work, noise levels or vibration are excessive or detrimental to the ongoing operation of the existing Aquatic Centre, an alternate time for such Work shall be scheduled through the Owner.

.4 Prior to commencing any Work which will cause undue noise or vibration consult with the Owner. When permitted, cooperate with Owner's schedule of activity to minimize disruptions and submit details and locations to Owner well in advance, and not less than 24 hours.

.5 Locate noise-producing machinery that will cause interference with the function of the Aquatic Centre, as far as possible from the existing buildings, or as directed, to provide isolation from existing buildings.

.6 Comply with all requirements of the local Noise Bylaw.

1.10 MAINTAINING LIFE SAFETY SYSTEMS IN OCCUPIED FACILITIES

.1 Maintain operational life safety systems and public access to exits in occupied areas during all stages of the Work.

.2 Determine nature and exact locations of existing fire and smoke sensors prior to the commencement of the Work. Avoid direct or indirect jarring while working in adjacent areas and exercise caution to avoid triggering these devices.

.3 Be responsible for costs incurred by Owner on account of false fire alarms activated as a result of the execution of the Work without adequate precautions.

.4 The Contractor will prepare a Safety Plan for the project as a whole and will continuously update the Site Specific requirements for all phases.

.5 Subcontractors and their personnel will be oriented on all aspects of these requirements and are to comply with all the requirements relative to security and Standing Orders relative to fire and other emergencies.

.6 As the Contractor moves into work area, he shall make himself totally familiar with the systems in each area and essential services passing through the area which must remain fully operational.

.7 In the event of false alarms caused by construction personnel or procedures any costs associated with these false alarms shall be by the Subcontractor's responsibility.

1.11 WORK AREAS

.1 Limits of Work are as indicated on drawings. Work and operation of vehicles and machinery, storage of equipment, materials and/or supplies must be contained within areas under construction. All damage caused to existing roads, lanes, paving, curbs, buildings and equipment due to Work of this Contract, but not called for as Work under this Contract, shall be made good by Contractor at no additional cost to Owner.

.2 During construction, if Contractor requires access to locked areas, he shall contact Owner's representative and arrange for sign in/sign out procedure with Owner for authorized personnel to obtain keys as required. Keys shall be returned at end of Work period.

.3 Contractor shall post boundaries of working areas with suitable signs warning his forces that areas outside of designated Work area are out of bounds to all personnel and equipment. These signs are to remain in place at all times during construction.

.4 Existing protected areas and other areas outside limits of Work area are out of bounds to all personnel and equipment. These areas are not to be used for any other purpose.

.5 If revision to limits of the working area becomes necessary for any compelling reason, contact Consultant immediately and do not disturb additional area without authorization from Consultant.

.6 Make provisions to maintain security of work areas in a manner acceptable to the Consultant during construction and after normal work hours.

1.12 CORING AND DRILLING

.1 Schedule required coring and drilling to be performed outside of normal business hours and obtain approval for such work from the Consultant and the Owner's representative prior to commencement of same. Perform work in accordance with Contractor's Safety and procedure manual.

.2 The procedure shall include one person on each side of the surface being cut or cored. Pilot hole(s) shall be drilled and flagging pushed through the pilot holes prior to cutting or coring to demonstrate the location on the opposite surface. After proving no interference or danger, the cutting and coring may proceed after the appropriate safety precautions are in place. When cutting or coring through precast floor slabs, the pilot hole shall be drilled to a controlled depth to prove that the core is outside of the precast T-legs.

END OF SECTION

Part 1 General

1.1 RELATED DOCUMENTS

.1 Document 00 52 13: Agreement and Definitions.

.2 Document 00 56 13: Definitions

.3 Document 00 72 13: General Conditions.

.4 Document 00 73 03: Supplementary Conditions

.5 Section 01 10 00: Summary of Work: Precedence of documents.

.6 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2 SPECIFICATION EXPLANATION

.1 Parts of the specification are written in short form, therefore, it is understood that where a component of the work is stated in a heading followed by a material or operation, the words "shall be", "shall consist of", or similar words or phrases are implied which denote complete supply and installation of such materials or operations for the component of work designated by the heading.

.2 Wherever a standard confers upon a person, body politic or a body corporate, the right to approve, to select, exercise authority or to interpret the standard, and refers to that person, body politic or body corporate as the Engineer, Owner, or by some other such designation, the Consultant has the right to exercise the powers of any such person, body politic or body corporate.

.3 Instructions in the Contract Documents are addressed to the Contractor unless noted otherwise.

1.3 WORDS AND TERMS

.1 Conform to definitions and their defined meanings in the Agreement and Definitions portion of CCDC 2 for supplementary words and terms.

.2 Additional words and terms are cited in Section 00 52 13, 00 56 13 and described in Supplementary Conditions.

.3 Where a standard designates authorities such as the "Engineer", "Owner", (when used in a sense other than that defined in the General Conditions) or some other such designation, these designations mean the Consultant.

.4 Where the term "Trade Contractor" or “Subcontractor” is used in the specifications, it means Subcontractor to the General Contractor. Where the term “Contractor” is used in the specifications, it means either Subcontractor or General Contractor or both, as applicable to each situation.

.5 In the Specifications, the expression "trade(s)" is synonymous with Subcontractor(s) if the context permits. The expression "all trades" includes the General Contractor.

.6 In the specifications, references such as "indicated on the drawings", "specified", "scheduled", "called for", as similar phrases, include work required by the Contract Documents.

.7 The term "building" means the buildings included in the Contract. Similarly, where other words in the Contract Documents occur in the singular number, take such words as plural where applicable in accordance with the quantities required to satisfy the requirements of the Contract.

.8 The term "Section Includes" identifies the general work scope which the Section covers, and also itemizes particular elements of work which could have been located in some other Section.

.9 The term "Related Sections" lists Sections which could be associated with the work covered by the Section and are highlighted as a guide only for ease of reference. All Sections of the specifications are related to each other, whether listed under “Related Sections” or not.

.10 The expression "provide” includes the provision, installation and finishing, maintenance, servicing and removal of the work described. Repair and make good all work damaged by temporary installations, at no extra cost to the Owner.

.11 Unless the word "only" suffixes "supply" or "install" or other variation of those words according to the Contract wherein they are used, it is the express intent of this Contract that "supply and install" is implied. Unless otherwise specified, install Work in accordance with the manufacturer's printed directions and recommendations.

.1 The term “Supply Only” mean the procurement or fabrication of materials, equipment, or components, or the performance of services to the extent indicated. Where used with respect to materials, equipment or components, the terms include delivery to the work site but is not intended to include the installation of the item, either temporary or final.

.2 The term “Install Only” means the placement of materials, equipment or components, including the receiving, unloading, transporting, storage and installing and the performance of such testing and finish work as is compatible with the degree of installation specified.

.12 The expression "to the satisfaction or acceptance or approval of the Consultant" is implied throughout the Specifications in regard to all materials and workmanship.

.13 "Submit for approval" or "Submit for acceptance" means that the item in question is to be submitted to the Consultant for acceptance and obtain written acceptance of it and authorization for its use in the Work before it is incorporated in the Work. Subcontractors to submit items for review and acceptance to the Consultant via the General Contractor.

.14 An "Approved Method" or "Accepted Method" means that which has the manufacturer's recommendation or which is generally accepted as good trade practice. The Consultant's acceptance is also required.

.15 Whenever the words "approved", "satisfactory", "directed", "selected", "permitted", "reviewed", "instructed", "required", "submit", are used in the Contract Documents, unless the context otherwise provides, they mean "approved by the Consultant", "satisfactory to the Consultant", "directed by the Consultant", "selected by the Consultant", "permitted by the Consultant", "reviewed by the Consultant", "instructed by the Consultant", "required by the Consultant", "submit to the Consultant".

.16 The term “Consultant's Reviews” mean a general review only by the Consultant, not a detailed review of all the Work.

.17 The term "work site" means the total site within the property lines as indicated on the site plan.

.18 The term "preapproved product" means preapproved five (5) working days prior to closing of Bids.

.19 “Approve/Approval/Preapproved/Certified/Verified”, when any of these terms are used in the Contract Documents with respect to an action by the Consultant, they shall mean reviewed by the Consultant without exceptions. Such review does not relieve the Subcontractor and General Contractor of responsibility for errors, omissions or deviations in work or of responsibility for meeting all requirements of the Contract Documents, unless a deviation has been accepted in writing by the Consultant.

.20 The term “As Indicated” means as indicated on the Drawings and Schedules which accompany these Specifications, both of which are part of the Contract Documents.

.21 The term “As Specified” means collectively all terms, requirements and stipulations described for the respective equipment, material or method in the Specifications.

.22 The Term “Certificate of Substantial Performance of the Work” means a certificate of Substantial Performance of the Work is a certificate issued by the General Contractor or Subcontractor in accordance with the provisions of lien legislation applicable to the Place of the Work.

.23 The term “Certified by the Consultant” or” Certified by the General Contractor /Subcontractor” when used in reference to Substantial Performance of the Work, mean "certified by the General Contractor /Subcontractor and reviewed by the Consultant".

.24 The term “Post Tender Addendum” means any written order, directive or instruction of the Owner or Consultant relating to the Work and issued after Bid closing but prior to execution of the Agreement.

1.4 COMPLEMENTARY DOCUMENTS

.1 Drawings, specifications, and schedules are complementary each to the other and what is called for by one to be binding as if called for by all. Should any discrepancy appear between documents which leaves doubt as to the intent or meaning, abide by Precedence of Documents article below or obtain direction from the Consultant.

.2 Generally, Drawings indicate graphically, the dimensions and location of components and equipment. Specifications indicate components, assemblies, and identify quality.

.3 Drawings, Specifications, diagrams and schedules are complementary, each to the other, and what is required by one, to be binding as if required by all.

.4 Should any conflict or discrepancy appear between documents, which leave doubt as to the intent or meaning, apply the Precedence of Documents article in Section 00 10 00 Summary of Work or obtain guidance or direction from the Consultant.

.5 Install piping, conduit or wire conductors and fixtures not shown or indicated diagrammatically in schematic or riser diagrams, to result in an operational assembly or system.

.6 Install components to physically conserve headroom, to minimize furring spaces, to accommodate installed Work, or other obstructions.

.7 Locate devices with primary regard for convenience of operation and usage.

.8 Examine all discipline Drawings, Specifications, and schedules and related Work to ensure that Work can be satisfactorily executed.

.9 Conflicts or perceived additional work, beyond work described, notify Consultant.

.10 All specification sections of the Project Manual and Drawings are affected by requirements of Division 01 sections.

1.5 SPECIFICATION GRAMMAR

.1 Specifications and terms used are written in the imperative (command) mode, in an abbreviated form, terms which are commonly used in the Canadian construction industry.

.2 Imperative language of these technical specification sections is always directed to the Owner and Contractor identified as a primary constructor, and as executor of the Contract, unless specifically noted otherwise.

.1 This form of statement requires the Contractor to perform such Work.

.2 Perform all requirements of the Contract Documents whether stated imperatively or otherwise.

.3 Division of the Work among subcontractors, suppliers, or others is solely the Contractor's responsibility. The specification author assumes no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of work.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Schedule of values.

.2 Cash Flow projection.

.3 Applications for progress payments.

.4 Substantial performance procedures.

.5 Release of hold-back procedures.

.6 Final Payment.

1.2 RELATED DOCUMENT

.1 Refer to CCDC 2-2020 for specific requirements.

1.3 RELATED SECTIONS

.1 Section 00 73 03: Supplementary Conditions.

.2 Section 01 62 00: Product Exchange Procedures.

1.4 SCHEDULE OF VALUES

.1 Submit to Consultant for review, minimum fifteen (15) calendar days before first application for payment, an initial schedule of values in an electronic spreadsheet format based on the format provided and content described in latest edition of CCDC 24 – A Guide to Model Forms and Support Documents form. Modify the initial schedule of values if and as requested by Consultant. Obtain Consultant's written acceptance of the initial schedule of values prior to the first application for payment.

.2 Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the primary associated specification section. Include separate line items for closeout procedures including closeout submittals, demonstration and training, start-up and testing, and commissioning. Also identify site mobilization, bonds and insurance.

.1 Electrical breakdown shall include as a minimum, labour and material breakdowns for lighting, lighting control, distribution, branch wiring, wiring devices, Fire alarm, security, communication, demolition and any other breakdowns as requested by the Consultant.

.3 Include individual line items for approved Change Orders and cash allowances, so that the breakdown amounts indicated in the schedule of values aggregate to the current total Contract Price. Also provide for indicating the estimated value of Change Directives within the schedule of values, separately from the current total Contract Price.

.4 Revise schedule to list approved Change Orders, with each Application for Payment.

1.5 CASH FLOW PROJECTION

.1 Prior to the first application for payment submit, for Consultant's review, a forecast of approximate monthly progress payments for each month of the Contract Time.

.2 Submit revised cash flow forecasts when requested by Consultant.

1.6 APPLICATIONS FOR PROGRESS PAYMENT

.1 Make applications for payment on account as monthly as Work progresses, in accordance with CCDC2-20202 GC 5.2 and as per modifications specified in Section 00 73 03 – Supplementary Conditions.

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

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

.4 Date applications for payment last day of agreed payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products delivered to Place of Work as of that date.

1.7 PROGRESS PAYMENT

.1 Consultant will issue to Owner, no later than ten (10) calendar days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be properly due.

.2 If the Consultant certifies a different amount, or rejects the application or part thereof, the Owner shall promptly issue a written notice to the Contractor giving reasons for the revision or rejection, such written notice to be in compliance with Payment Legislation.

.3 The Owner shall make payment to the Contractor on account as provided in CCDC2-2020 Article A-5 of the Agreement – Payment on or before 28 calendar days after the receipt by the Owner and the Consultant of the application for payment, and in any event, in compliance with Payment Legislation.

1.8 PROGRESSIVE RELEASE OF HOLD-BACK

.1 Where legislation permits, if Consultant has certified that Work has been performed prior to Substantial Performance of the Work, Owner will pay hold-back amount retained for such Work, or products supplied, on day following expiration of hold-back period for such Work stipulated in lien legislation applicable to Place of the Work.

.2 Notwithstanding provisions of preceding paragraph, and notwithstanding wording of such certificates, ensure that Subcontract Work or Products is protected pending issuance of final certificate for payment and be responsible for correction of defects or Work not performed regardless of whether or not such was apparent when such certificates were issued.

1.9 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Prepare and submit to Consultant a comprehensive list of items to be completed or corrected. Failure to include an item on the list does not alter responsibility to complete the Contract.

.2 Request Consultant review to establish Substantial Performance of the Work.

.3 Where permitted by local lien legislation, Contractor may apply for substantial performance of a designated portion of the Work, subject to Owner acceptance of that portion of the Work being substantially performed.

.4 The Consultant will review the Work to certify or verify the validity of the application for Substantial Performance of the Work and will promptly, and in any event, no later than twenty (20) calendar days after receipt of the Contractor's application:

.1 advise the Contractor in writing that the Work or the designated portion of the Work is not substantially performed and give reasons why, or

.2 state the date of Substantial Performance of the Work or a designated portion of the Work in a certificate and issue a copy of that certificate to each of the Owner and the Contractor.

.5 Immediately following issuance of certificate of Substantial Performance of the Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.10 PAYMENT OF HOLD-BACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 After issuance of certificate of Substantial Performance of the Work:

.1 Submit an application for payment of hold-back amount.

.2 Submit sworn statement that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of the Work and for which Owner might in any way be held responsible have been paid in full, except for amounts properly retained as hold-back or as identified amount in dispute.

.2 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of hold-back amount.

.3 Where hold-back amount t required by the applicable lien legislation has not been placed in a separate lien hold-back account, Owner shall, no later than ten (10) calendar days prior to expiry of hold-back period stipulated in lien legislation applicable to Place of the Work, place hold-back amount in bank account in joint names of Owner and Contractor.

.4 Amount authorized by certificate for payment of hold-back amount is due and payable to the Contractor no later than ten (10) Working Days following the expiration of the holdback period stipulated in the lien legislation applicable to the Place of the Work.

.1 Where lien legislation does not exist or apply, hold-back amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties.

.2 Owner may retain out of hold-back amount any sums required by law to satisfy any liens against Work or, if permitted by lien legislation applicable to Place of the Work, other third-party monetary claims against Contractor which are enforceable against Owner.

1.11 FINAL PAYMENT

.1 Submit an application for final payment when Work is completed.

.2 Consultant will, no later than ten (10) calendar days after receipt of an application for final payment, review Work to verify validity of application.

.3 When the Consultant finds the Contractor's application for final payment valid, the Consultant will promptly issue a final certificate for payment to the Owner, with a copy to the Contractor.

.4 If the Consultant rejects the application or part thereof, the Owner will promptly issue a written notice to the Contractor giving reasons for the revision or rejection, such written notice to be in compliance with Payment Legislation.

.5 Subject to the provision of paragraph 10.4.1 of GC 10.4 – Workers' Compensation, and any legislation applicable to the Place of the Work, the Owner shall, no later than five (5) calendar days after the issuance of a final certificate for payment, pay the Contractor provided in Article A-5 of the Agreement – Payment and in any event, in compliance with Payment Legislation.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Section 00 73 03: Supplementary conditions.

1.2 CHANGES IN THE WORK

.1 The Owner, without invalidating the Contract, may make changes in the Work, consisting of additions, deletions, or other modifications, the Contract Price and Contract Time being adjusted if required.

.2 Changes in the Work shall be authorized by written order from the Owner.

1.3 METHOD OF CONTRACT PRICE ADJUSTMENT - CHANGE ORDERS

.1 Read this Section in conjunction with the conditions governing changes in the Work and valuation of changes in the General Conditions of Contract.

.2 The General Conditions of Contract provide for valuation of changes by three different methods: lump sum, unit price, and cost plus.

.3 The value of any change shall be determined by one or more of the following methods, as selected by the Owner:

.1 By acceptance of a lump sum, properly itemized, and supported by Contractor's, Trade Contractor's, Sub-subcontractor's and supplier's signed quotations and other substantiating data as may be required by the Owner to permit evaluation.

.2 By unit prices agreed upon.

.3 By cost plus percentage of fixed fee.

.4 Unless otherwise agreed, the adjustment of the Contract Price on account of a proposed change in the Work shall be based on a quotation for a fixed price increase or decrease to the Contract Price regardless of the Contractor's actual expenditures and savings.

.5 If unit prices included in the stipulated price contract are applicable to the proposed change, the adjustment of the Contract Price shall be based on those unit prices, to the extent they apply.

.6 In cases of extra work to be paid for under cost plus or percentage fee, the Contractor shall keep and present in such form as the Owner may direct, a correct account of the actual cost of labour, materials, and equipment, together with vouchers. The Owner shall certify as to the amount due the Contractor.

1.4 CHANGE ORDER PROCEDURES

.1 Upon issuance by the Consultant to the Contractor of a proposed change notice (PCN) in the Work, and unless otherwise requested in the proposed change or unless otherwise agreed:

.1 Submit to the Consultant a fixed price quotation for the proposed change in the Work within 5 days after receipt of the proposed change in the Work.

.2 If requested in the proposed change, provide a detailed breakdown of the price quotation including the following to the extent applicable, with appropriate supporting documentation:

.1 Estimated labour costs, including hours and applicable hourly rates based on the accepted schedule of labour rates.

.2 Estimated Product costs, including Supplier quotations, estimated quantities and unit prices.

.3 Estimated Construction Equipment costs.

.4 Enumeration of all other estimated costs included in the price quotation.

.5 Estimated credit amounts for labour and Products not required on account of the proposed change.

.6 Fees, not exceeding the applicable percentages for overhead and profit as specified in this Section.

.7 Where applicable, Subcontractor quotations, also including a detailed breakdown of all of the above.

.3 Include in detailed breakdown of Contractor Proposal only those labour rates included in Schedule of Labour Rates and previously approved by Owner in writing, unless the extra work cannot be performed during regular working hours and Owner has given approval, in writing, for premium time labour rates.

.4 The Contractor shall include in his proposal for change a statement as to the effect the proposed change will have on the Contract Time if any, stated in number of days. Such statement shall include a written narrative describing the effect on the schedule, as well as a critical path schedule that reflects the effect and any other substantiating data as may be required by the Owner to permit evaluation.

.5 Include in the quotation the number of days for which the quotation is valid.

.6 The quotation will be evaluated by the Consultant and the Owner and, if accepted by the Owner, be documented in the form of a signed Change Order.

1.5 FEES FOR OVERHEAD AND PROFIT – CHANGE ORDERS

.1 Where work is added pursuant to GC 6.2 Change Order, the Contract Price shall be increased only by the net actual value of the work added including taxes, but excluding Value Added Taxes, plus the following, identified and applied separately:

.1 For work performed by Contractor's own forces, Contractor shall be entitled to:

.1 Overhead 10% on actual cost of material and labour.

.2 Profit 5% on the above total.

.2 For work performed by a Subcontractor, Contractor shall be entitled to:

.1 Overhead 5% on the Subcontractor's price quotation including the Subcontractor's fee.

.3 Subcontractor's mark-up on its own work:

.1 Overhead 10% on actual cost of material and labour.

.2 Profit 5% on the above total.

.3 Subcontractor is not entitled to mark-ups on Sub-subcontractor's work.

.4 Sub-Subcontractor's mark-up on its own work:

.1 Overhead 10% on actual cost of material and labour.

.2 Profit 5% on the above total.

.5 Where the Contractor's or a Subcontractor's price quotation for a Change Order results in a net decrease in price before adjustment for fees for overhead and profit, such a price quotation shall be for the net decrease without any adjustment for fees for overhead and profit.

.6 If a change involves both extras and credits and results in an increased cost, overhead and profit shall be allowed on the increase only.

1.6 METHOD OF CONTRACT PRICE ADJUSTMENT - CHANGE DIRECTIVES

.1 Unless the Owner and the Contractor reach an earlier agreement on the adjustment to the Contract Price by means of a Change Order that cancels the Change Directive, the adjustment in the Contract Price for change carried out by way of a Change Directive shall be determined as specified in the General Conditions of Contract after the change in the Work is completed.

1.7 CHANGE DIRECTIVE PROCEDURES

.1 If a Change Directive is issued for a change in the Work for which a proposed change was previously issued, but no Change Order has yet been signed, the Change Directive shall cancel the proposed change and any Contractor quotations related to that change in the Work.

.2 When proceeding with a change in the Work under a Change Directive, keep accurate records of daily time sheets for labour and Construction Equipment, and invoices for Product and Construction Equipment costs. Submit such records to the Consultant weekly, until the Change Order superseding the Change Directive is issued.

1.8 FEES FOR OVERHEAD AND PROFIT – CHANGE DIRECTIVES

.1 Where work is added pursuant to GC 6.3 *Change Directive*, the Contract Price shall be increased only by the net actual value of the work added including taxes, but excluding Value Added Taxes, plus the following, identified and applied separately:

.1 For work performed by Contractor's own forces, Contractor be entitled to:

.1 Overhead 10% on actual cost of material and labour.

.2 Profit 5% on the above total.

.2 For work performed by a Subcontractor, Contractor shall be entitled to:

.1 Overhead 5% on the Subcontractor's price quotation including the Subcontractor's fee.

.3 Subcontractor's mark-up on its own work:

.1 Overhead 10% on actual cost of material and labour.

.2 Profit 5% on the above total.

.3 Subcontractor is not entitled to mark-ups on Sub-subcontractor's work.

.4 Sub-Subcontractor's mark-up on its own work:

.1 Overhead 10% on actual cost of material and labour.

.2 Profit 5% on the above total.

.2 Where a Change Directive results in net savings on account of work not required to be performed and a net decrease in the Contractor's or Subcontractor's cost, the net savings

to the Contractor or Subcontractor shall be calculated without any adjustment for fees for overhead and profit.

.3 When a Change Directive is ultimately recorded as a Change Order, there shall be no additional entitlement to fees for overhead and profit beyond those specified in this article.

1.9 DEFINITIONS

.1 "*Overhead*" percentage identified in Articles 1.5 and 1.8 above includes Contractor's, Subcontractors' and Sub-subcontractors' costs related to without limitations:

.1 operation and maintenance of head offices, branch offices, and site offices, including head office personnel, sub-trade attendance; site offices; storage compounds, use of temporary offices, sheds and other general temporary site support and safety facilities and all utilities used therein, etc.;

.2 transportation; material handling; garbage removal; separation of waste materials for recycling; clean-ups; miscellaneous tools and equipment; expendable and non-expendable small tools including maintenance thereof;

.1 plant and equipment already on site in the course of general construction shall be made available for use in Change Orders, at no extra cost.

.2 no fuel surcharges will be accepted.

.3 the salaries of superintendents, engineers, timekeepers, accountants, clerks, watch persons and all other site supervision staff above foreperson employed directly on the Work; traveling costs;

.4 the salaries and other compensation of off-site personnel;

.5 temporary services including heat, light, power, telephone and fax, water, etc;

.6 office administration at head offices, branch offices, and site offices; processing correspondence, submittals, shop drawings, drafting, samples, changes, planning, estimating, safety, coordinating, and scheduling of Work, coordination with other trades affected, etc.;

.7 general management, legal, audit, estimating and accounting; payroll; technical and supervisory personnel; and statutory fees; financing costs and other bank charges including hold back;

.8 job targeting and market enhancement recovery funds; union dues and charges; certificates and licenses in connection with extra work, inspections by authorities having jurisdiction;

.9 expendable and non-expendable small tools, including maintenance thereof;

.10 bonding and insurance;

.11 licenses and permits, except when these are special for particular item or work, and

.12 all other unallocated costs not defined as direct costs.

.2 "Actual cost of material and labour" as used in the valuation of changes, means the sum of costs directly related to or necessarily and properly incurred by Contractor, Subcontractors and Sub-subcontractors in the performance of a change in the Work. Direct costs shall include:

.1 Materials cost,

.2 total labour cost,

.3 travel and subsistence cost,

.4 temporary work cost,

.5 construction equipment cost,

.6 and shall exclude overhead cost and profit.

.3 "Material Cost": means cost of all Materials, including transportation and storage thereof. All rebates, refunds, returns from sale of surplus Materials, and trade discounts other than prompt payment discounts, shall be credited to Owner.

.4 "Total Labour Cost": means costs shall be the actual, prevailing rates at the *Place of Work* paid to the workers, plus payroll burdens, where payroll burdens are limited to payments in respect of the employer contribution to workers compensation payments, vacation pay, employment insurance premiums, sickness and accident insurance and pension fund contributions.

.5 "Direct Labour Cost": means base wage costs of employees, excluding payroll burden cost.

.6 "Payroll Burden Cost": means costs statutory charges and fringe benefit costs additional to direct labour cost and includes unemployment insurance, workers' compensation, vacation pay, statutory holiday pay, health and welfare, pension plan, training fund, and other payroll costs which are hourly wage dependent and are paid by the employer.

.7 "Travel and Subsistence Cost": means travel and subsistence costs incurred by employees when working beyond a reasonable commuting distance (approximately 150 km) from their normal place of work (business office) and the project site, unless pre-approved by the Owner.

.8 "Temporary Work Cost": means cost of temporary structures, facilities, services, controls, safety and other temporary items used in the performance of a Change in the Work, including maintenance, dismantling and removal, less any residual value after dismantling and removal.

.9 "Construction Equipment Cost": means the cost of rented or owned equipment, including cost of loading, transportation, unloading, erection, maintenance, dismantling and removal.

1.10 SUPPLEMENTAL INSTRUCTIONS

.1 The Consultant may issue Supplemental Instructions to provide clarifications to the Contract Documents, provide additional information, or make minor variations in the Work not involving adjustment in the Contract Price or Contract Time.

.2 If the Contractor considers a Supplemental Instruction to require an adjustment in Contract Price or Contract Time, the Contractor shall promptly notify the Consultant and the Owner in writing and shall not proceed with any work related to the Supplemental Instruction pending receipt of a Change Order, a Change Directive, or, in accordance with the dispute resolution provisions of the General Conditions of Contract, a Notice in Writing of a dispute and instructions to proceed.

1.11 SCHEDULE OF LABOUR RATES

.1 Prior to the first application for payment, submit for the Consultant's review a schedule of labour rates for all trades and classifications of trades, such as journeymen, apprentices, and foremen and other applicable classifications within each trade that will be employed in the Work. Provide a breakdown of payroll burden component of labour rates.

.2 Labour rates shall reflect the salaries, wages, and benefits paid to personnel in the direct employ of the Contractor Subcontractors, and sub-Subcontractors, stated as hourly rates, that will be used when:

.1 preparing price quotations for Change Orders, and

.2 determining the cost of work attributable to Change Directives.

.3 Labour rates stated in the schedule of labour rates shall be consistent with rates that will actually be paid, and payroll burden costs that will actually be incurred, in the normal performance of the Work, during regular working hours. Labour rates shall not include any additional overhead and profit component.

.4 Where collective agreements apply, the labour rates shall not exceed those established by collective agreement.

.5 Obtain the Owner's written acceptance of the schedule of labour rates before submitting the first Change Order quotation.

.6 Approved schedule of Labour Rates will be used by Owner solely for evaluating Contractor's proposals for Change Order quotations and cost of performing work attributable to Change Directives. Nothing specified herein, nor the submission of a Schedule of Labour Rates by Contractor, shall be construed to mean that the Owner has established, or will establish, minimum wages or benefits applicable to the Work, other than those required by law.

.7 Include all trades that will be employed in the Work, including trades employed by Subcontractors and Sub-subcontractors.

.8 Owner's approval of rates provided in the Schedule of Labour Rates will be conditional upon compliance with the foregoing requirements. Approval will be based on most current information available to Owner on Alberta construction industry wages and benefits.

.9 Contractor may request an amendment to an approved rate stated in the Schedule of Labour Rates, if changes in the labour rates that will actually be paid, or payroll burden cost that will actually be incurred, in the normal performance of the Work can be demonstrated. If Contractor can prove to Owner's satisfaction that a different rate will actually be paid, Owner may, at his sole discretion, approve such a change in rate. Obtain the Owner's written acceptance of such changes.

1.12 OVERTIME LABOUR

.1 Avoid use of overtime labour except as specified otherwise and subject to conditions noted.

.2 Use overtime labour which results in extra cost to Owner only where procedures requiring such use have had prior approval by Owner and are authorized in writing by Consultant.

.3 Compensation covering additional costs to Contractor for such overtime labour as authorized by Consultant will be made to Contractor on basis of amount by which overtime rates of pay exceed regular pay rates plus direct costs.

.4 **Overtime labour necessary to maintain adherence with the construction schedule will not be eligible for extra compensation**.

1.13 SCHEDULE OF EQUIPMENT RATES

.1 Prior to the first application for payment, submit for the Consultant's review a schedule of equipment rates for Contractor owned Construction Equipment.

.2 Equipment rates shall reflect the rates that will be used when:

.1 preparing price quotations for Change Orders, and

.2 determining the cost of work attributable to Change Directives.

.3 Equipment rates stated in the schedule shall be consistent with local equipment rental market rates and shall not include any additional overhead and profit component.

.4 Obtain the Owner's written acceptance of the schedule of equipment rates before submitting the first Change Order quotation.

.5 Accepted schedule of equipment rates will be used solely for evaluating Change Order quotations and cost of performing work attributable to Change Directives.

.6 The Contractor may request amendments to the accepted schedule of equipment rates if changes in local equipment rental market rates can be demonstrated. Obtain the Owner's written acceptance of such changes.

FROM:

(CONTRACTOR)
(Name)

(Address)

PROJECT:
(Project Name
and Location)

.1 This Schedule of Labour Rates is submitted in compliance with the requirements of Section 01 29 10 - Change Evaluation Procedures of the Contract Documents.

.2 It is understood that:

.1 This Schedule of Labour Rates is subject to Owner's approval and will be used solely for evaluating Contractor Proposals for changes in the Work.

.2 The Owner has not established, and does not intend to establish, minimum wages or benefits applicable to the Work, other than those required by law.

.3 Schedule: See next page.

.4 Labour rates for trades employed by Contractor:

Name of Trade	Trade Classification	Direct Labour Cost ($/hour)	Payroll Burden Cost ($/hour)	Total Labour Cost ($/hour)

We hereby declare that the above stated labour rates are, to the best of our knowledge, the rates that will actually be paid in the normal performance of the Work, during regular working hours, and do not include any overhead cost or profit.

Name of Contractor / Signature / Date

.5 Labour rates for trades employed by Subcontractors and Sub-subcontractors:

Name of Trade	Trade Classification	Direct Labour Cost ($/hour)	Payroll Burden Cost ($/hour)	Total Labour Cost ($/hour)

We hereby declare that the above stated labour rates are, to the best of our knowledge, the rates that will actually be paid in the normal performance of the Work, during regular working hours, and do not include any overhead cost or profit.

Name of Subcontractor / Signature / Date

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Site Examination.

.2 Administrative Procedures.

.3 Project Information Management System.

.4 Response to RFI's.

.5 Pre-Construction, Construction Progress, and Warranty meetings

.6 On-Site Documents, Schedules, Submittals, Coordination Drawings.

.7 General Installation Provisions.

.8 Cutting and Remedial Work.

.9 Closeout Procedures.

.10 Public Relations.

1.2 RELATED SECTIONS

.1 Section 01 12 00: Multiple Contract Summary

.2 Section 01 32 00: Construction Progress Documentation

.3 Section 01 33 00: Submittal Procedures.

.4 Section 01 45 00: Quality Control

.5 Section 01 51 00: Temporary Utilities.

.6 Section 01 52 00: Construction Facilities.

.7 Section 01 73 30: Cutting and Patching.

.8 Section 01 78 10: Closeout Submittals.

.9 Section 01 78 40: Maintenance Requirements

.10 This section describes requirements applicable to all Sections within Divisions 02 to 49.

.11 Visit the site and compare the drawings and specifications with all existing site conditions including all conditions surrounding the site prior to submitting Bids. Failure to visit the site in no way relieves the Contractor the necessity of furnishing any material or performing any work in accordance with drawings and specifications, without additional cost to the Owner.

.12 Examine the field conditions and determine if any conflicts arise between the Construction Documents and the required construction sequence. Inform the Consultant in writing immediately, should a conflict arise.

.13 Examine the drawings and specifications regarding the performance of the Work. Examine existing conditions and report to the Consultant, in writing any defects, deficiencies or conditions, which may affect the proper performance of the Work. Commencement of the Work implies acceptance of existing conditions and substrates. In the absence of any such report, the Contractor and applicable Subcontractors will be held

to have waived all claims for damage to or defects in such work. Commencement of the Work implies acceptance of existing conditions and substrates.

.14 Submission of a Bid is deemed to be evidence that the Contractor has examined the site and is familiar with conditions under which work will be done.

.15 If, while carrying out the Work, conditions are exposed which are in contravention with applicable regulatory codes and requirements of authorities having jurisdiction, unsafe or in any way less than the acceptable industry standard for the particular item, immediately notify the Consultant before proceeding with further work. The Consultant will review the condition and issue the appropriate instruction.

1.3 GENERAL COORDINATION

.1 Coordinate all construction activities as required to ensure efficient and orderly installation of each part of the Work.

.2 Co-ordinate work of all trades and Subcontractors to expedite progress and avoid interference. This applies particularly to work of trades which will be installed in close proximity with work of other trades.

.3 Coordinate installation of all utilities, including electrical, telephone, cable TV, gas, water, sewer, sanitary and the like. The Contractor to have all utilities in their name until Substantial Performance of the Work, at which point utilities will be placed in the Owner's name.

.4 Notify trades and Subcontractors of readiness for their Work, to allow adequate time for installation without delaying completion of project.

.5 Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule and coordinate construction activities in the sequence required to obtain the best results.

.6 Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

.7 Bring to the attention of the Consultant all discrepancies between Contract Documents and existing and surrounding site conditions and all other discrepancies. Do not proceed until course of action has been established by the Consultant and the Consultant directs the Contractor and Subcontractor to proceed. Failure to do so, in no way relieves the Contractor and Subcontractor from responsibility to performing the work as intended, at no additional cost to the Owner.

.8 Supply all items to be built in including anchors, ties, nailing strips, blocks, bolts, sleeves, and the like, as and when required, together with templates, measurements and shop drawings.

.9 Establish correct location of sleeves, inserts, hangers, holes and chases.

.10 Check and verify dimensions as the Work proceeds.

.11 If imperial sized items or products must be used and are accepted by the Consultant, ensure that items will accurately fit together in the Work.

.12 Call Alberta First Call and appropriate utility companies to determine locations of all underground utilities prior to commencement of any excavation or underground work.

.13 Co-ordinate the work of all trades requiring suspension or fixing devices to be incorporated into the structure. Where required, build in such suspension or fixing devices into the structure and by the type specified or detailed herein, submit to the Consultant details of the device proposed accompanied by such information as the Consultant may require to assess the capability of the proposed device.

.14 Make adequate provisions to accommodate items scheduled for later installation under separate contract or by Owner's own forces.

1.4 DIAGRAMMATIC LOCATIONS

.1 Un-dimensioned locations of equipment, fixtures and outlets indicated or specified are to be considered as approximate. Confirm all un-dimensioned locations including location of electrical, security and communications fixtures, outlets and switches, mechanical grilles and all other such items, prior to installation.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Note furring requirements and limitations indicated on the drawings. Make allowances for possibility that indications and locations on mechanical and electrical drawings are diagrammatic.

.4 Where locations of holes in the structure would possibly affect the nature or strength of structure, inform the Consultant before proceeding.

.5 Where the Subcontractor determines that furring allowances described in item 1.5.3 above cannot be obtained, inform the Contractor and Consultant before masonry, concrete forming or installation work is carried out.

.6 Inform Consultant of impending installation of items of Work which are diagrammatically indicated on the drawings and obtain acceptance for actual location.

.7 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.5 ADMINISTRATIVE PROCEDURES

.1 Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities shall include, but not be limited to, the following:

.1 Preparation of schedules

.2 Installation and removal of temporary facilities

.3 Delivery and processing of submittals

.4 Progress meetings

.5 Contract acceptance procedures

.6 Change Procedures

.7 Commissioning.

1.6 CONSTRUCTION ORGANIZATION AND START-UP

.1 Promptly after Contract award, Consultant will establish the time and location of a construction start-up meeting to review and discuss administrative procedures and responsibilities. Consultant will notify Contractor at least 5 Working Days before the meeting.

.2 Representatives of the Owner, Consultant, Contractor's representatives: Contractor's project manager, Contractor's site superintendent, and others deemed as necessary are to be in attendance.

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

.4 Agenda to include following:

.1 Introduction of Owner's and Contractor's representatives

.2 Review of significant contractual responsibilities and administrative and procedural requirements.

.1 *Project* communications.

.2 *Contract Documents* for construction purposes.

.3 Documents at the site.

.4 *Contractor*'s use of premises.

.5 Owner-supplied Products.

.6 Work restrictions.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.

.8 Payment procedures.

.3 Schedule of Work, progress scheduling in accordance with Section 01 32 00 – Construction Progress Documentation

.4 Schedule of submission of shop drawings, samples, colour chips in accordance with Section 01 33 00 – Submittal Procedures.

.5 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00 – Temporary Utilities.

.6 Delivery schedule of specified equipment in accordance with Section 01 32 00 – Construction Progress Documentation

.7 Site security in accordance with Section 01 52 00 – Construction Facilities.

.8 Site safety in accordance with Section 01 35 23 – Health & Safety

.9 Record drawings in accordance with Section 01 78 10 – Closeout Submittals

.10 Maintenance material and data in accordance with Section 01 78 40 – Maintenance Requirements

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

.12 Monthly progress claims, administrative procedures, photographs, and holdbacks.

.13 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00 – Quality Control

.14 Insurances and transcript of policies

.15 Performance and Labour and Material Payment Bonds.

.5 Minutes: Consultant will record minutes and distribute copies to all attendees within seven (7) Days after meeting.

.6 Comply with Owner's allocation of mobilization areas of site; for field offices and sheds, access, traffic, and parking facilities.

.7 During construction, coordinate use of site and facilities through Consultant's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.

.8 Comply with instructions of Consultant for use of temporary utilities and construction facilities.

.9 Coordinate field engineering and layout work with Consultant.

1.7 CONSTRUCTION PROGRESS MEETINGS

.1 Schedule and administer bi-weekly construction progress meetings for the duration of the Work as determined by Consultant.

.2 Schedule and administer pre-installation meetings when specified in sections and when required to coordinate related or affected Work.

.3 Distribute written notice of each meeting four (4) days in advance of meeting date to Consultants and Owner's representatives.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Attendees:

.1 Contractor's representatives: Contractor's project manager, Contractor's site superintendent. Contractor's representatives shall be qualified and authorized to act on behalf of the party each represents.

.2 Owner's representatives: as determined by Owner.

.3 Ensure that Subcontractors attend as and when appropriate to the progress of the Work.

.7 Agenda:

.1 Review Project Communication procedures.

.2 Review, revise as necessary, and approval of minutes of previous meeting.

.3 Review progress of the Work since last meeting, including status of submittals for acceptance.

.4 Field observations, problems, and concerns

.5 Identify problems which may impede planned progress.

.6 Revisions of the Construction schedule, including providing a 3-week look ahead schedule update.

.7 Review of off-site fabrications delivery schedule.

.8 Progress, schedule, during succeeding work period

.9 Site security in accordance with Section 01 52 00 – Construction Facilities.

.10 Site safety in accordance with Section 01 35 23 – Health & Safety

.11 Review submittal schedule; expedite as require.

.12 Developing corrective measures and procedures to regain planned schedule

.13 Maintenance of quality standards

.14 Pending changes and substitutions

.15 Review of proposed changes for effect on construction schedule and on completion date.

.16 Review of items of significance that could affect progress.

.17 Other topics for discussion as appropriate to current status of the Work

.8 Minutes: Contractor will record minutes and distribute copies to all meeting participants and all parties not in attendance, within seven (7) days after meeting. Include significant proceedings and decisions. Identify action by parties.

1.8 WARRANTY MEETINGS

.1 Warranty meetings shall be held between Substantial Performance of the Work and just prior to the one-year anniversary of Substantial Performance of the Work.

.1 Purpose: to bring to Contractor's attention Contract Deficiencies identified during warranty period, determine action required for their correction, and monitor progress of Contract Deficiency correction.

.2 Frequency: called by Owner on an as-needed basis.

.3 Location: as agreed to between Owner and Contractor.

.4 Attendees: same as construction progress meetings.

.5 Agenda:

.1 Review and approval of minutes of previous meeting

.2 Review of progress of Contract deficiency correction.

.3 Identification of problems impeding Contract deficiency correction

.4 Review of outstanding Contract deficiencies.

.5 Other business

.6 Minutes: same as construction progress meetings.

1.9 ON-SITE DOCUMENTS

.1 Maintain at job site, one copy each of the following:

.1 Contract drawings
.2 Specifications
.3 Addenda
.4 Reviewed shop drawings.
.5 Change orders.
.6 Other modifications to Contract
.7 Field test reports
.8 Copy of approved Work schedule
.9 Manufacturers' installation and application instructions
.10 Labour conditions and wage schedules.
.11 Applicable current editions of municipal regulations and by-laws. Current building codes, complete with addenda bulletins applicable to the Place of the Work.

1.10 SCHEDULES

.1 Submit preliminary construction progress schedule in accordance with Section 01 32 00 - Construction Progress Documentation to Consultant coordinated with Consultant's project schedule.

.2 After review, revise and resubmit schedule to comply with revised project schedule.

.3 During progress of Work revise and resubmit as directed by Consultant.

1.11 SUBMITTALS

.1 Submit preliminary shop drawings, product data and samples to Section 01 33 00 - Submittals for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Consultant.

.2 Submit requests for payment for review, and for transmittal to Consultant.

.3 Submit requests for interpretation of Contract Documents and obtain instructions through Consultant.

.4 Process substitutions through Consultant.

.5 Process change orders through Consultant.

.6 Deliver closeout submittals for review and preliminary inspections, for transmittal to Consultant.

1.12 COORDINATION DRAWINGS

.1 Provide information required by Consultant for preparation of coordination drawings.

.2 Review and approve revised drawings for submittal to Consultant.

1.13 GENERAL INSTALLATION PROVISIONS

.1 Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

.2 Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

.3 Inspect Materials immediately upon delivery and again prior to installation. Reject damaged and defective items.

.4 Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

.5 Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to Owner for final decision.

.6 Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

.7 Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

.8 Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Owner for final decision.

.9 Supervise construction activities to ensure that no part of the Work, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.14 CUTTING AND REMEDIAL WORK

.1 Do the cutting and remedial work required to make the several parts of the Work come together properly. Refer to Section 01 73 30 – Cutting and Patching.

.2 Coordinate the Work to ensure that this requirement is kept to a minimum.

.3 Cutting and remedial work shall be performed by specialists familiar with Materials affected and shall be performed in a manner to neither damage nor endanger the Work.

1.15 CLOSEOUT PROCEDURES

.1 Notify Consultant when Work is considered ready for Substantial Performance.

.2 Accompany Consultant on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Consultant's instructions for correction of items of Work listed in executed certificate of Substantial Performance [and for access to Owner-occupied areas].

.4 Notify Consultant of instructions for completion of items of Work determined in Consultant's final review.

1.16 PUBLIC RELATIONS

.1 Contractor sub-contractors or suppliers shall not release any information, statements, drawings or photographs pertaining to Project to press or other news media without written permission of Owner as to content.

.2 No photographs of children permitted.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Construction Schedules, form, content, submission.

1.2 RELATED SECTIONS

.1 Section 01 10 00: Summary of Work

.2 Section 01 33 00: Submittal Procedures.

.3 Section 01 75 16: Start-up Procedures.

.4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 SCHEDULES FORMAT AND SUBMISSION

.1 Schedule Format and Content

.1 Prepare schedule in form of a horizontal Gantt bar chart.

.2 Provide a work breakdown structure to provide level of detail to enable ready interpretation and facilitate performance monitoring including

.1 identifying key activities, work packages, and major milestones,

.2 including long delivery Products, inspection and testing activities,

.3 Shutdown or closure activities,

.4 and similar items, at a sufficient level of detail to effectively manage construction progress.

.3 Indicate the earliest start date, earliest finish date, and total float time for each activity. Indicate work restriction and Milestone Dates, and the Contract Time specified in Section 01 10 00 – Summary of Work.

.4 Split horizontally for projected and actual performance.

.5 Indicate milestone dates for Ready-for-Takeover and Substantial Performance of the Work.

.6 Indicate estimated percentage of completion for each item of Work at each submission.

.7 Indicate changes occurring since previous submission of schedule:

.1 Major changes in scope.

.2 Activities modified since previous submission.

.3 Revised projections of progress and completion.

.4 Other identifiable changes.

.2 Schedule Submission

.1 Submit initial format of schedules within 15 Working Days after award of Contract and prior to the pre-construction meeting, submit a copy of an initial construction schedule for Owner's and Consultant’s review and acceptance at the pre-construction meeting.

.2 Submit schedules in electronic format, forward through e-mail as *.pdf files.

.3 Consultant and Owner will review schedule and return review copy within 10 Working Days after receipt. Revise and resubmit schedule as required by Owner.

.4 Resubmit finalized schedule within 7 Working Days after return of review copy.

.5 Submit revised progress schedule with each application for payment.

.6 Submit progress schedules (such as 3 week look ahead) at each regular site progress meeting.

.7 Distribute copies of revised schedule to:

.1 Job site office.

.2 Subcontractors.

.3 Other concerned parties.

.8 Instruct recipients to report to Contractor within 10 Working Days, problems anticipated by timetable shown in schedule.

1.4 CONSTRUCTION PROGRESS SCHEDULING

.1 Submit revised schedules with each Application for Payment, identifying changes since previous version.

.2 Submit a computer generated horizontal bar chart with separate line for each section of Work, identifying first Working Day of each week.

1.5 QUALITY ASSURANCE

.1 The schedule shall be prepared by an experienced scheduler, whose qualifications are subject to approval by the Consultant. Use of scheduler shall be from start of construction to Final Certificate, including Commissioning.

.2 The schedule will be used by the Contractor to plan, execute, and coordinate the project work in an orderly and expeditious manner.

.3 The schedule will be used by the Owner and its Representative to evaluate progress and status at the various stages of the Project, to allocate funds for progress payments, and to determine the impact of any changes to the contract.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Shop Drawings and Product data.

.2 Samples.

.3 Certificates and transcripts.

1.2 RELATED SECTIONS

.1 Section 01 32 00: Construction Progress Documentation.

.2 Section 01 45 00: Quality Control.

.3 Section 01 78 10: Closeout Submittals.

.4 Other sections requesting submittals.

.5 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 CONTRACT REQUIREMENTS

.1 Submit Construction Schedule in accordance with Article GC 3.4 of the General Conditions of the Stipulated Price Contract.

.2 Submit Shop Drawings and Project Data, required by Specification Sections, in accordance with Article GC 3.8 of the General Conditions of the Stipulated Price Contract.

.3 Submit Samples required by Specification Sections, as specified in this Section.

1.4 ADMINISTRATIVE

.1 Submit to Consultant submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Sub-divide submittals to Consultants discretion. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time or for Product substitutions and no claim for extension by reason of such default will be allowed.

.2 Where required by authorities having jurisdiction, provide submittals to such authorities for review and approval.

.3 Work affected by submittal shall not proceed until review and acceptance is complete.

.4 Electronically log and number all submittals. Indicate portions of Contract Documents, including drawings sheets, detail numbers, specification Sections, schedules and the like, to which the Submittal pertains. Indicate original submission date, date reviewed and resent to the Contractor Dates of resubmission where required, dates of when resubmissions are send back to the Contractor by the Consultant, the names of the Contractor Subcontractor, supplier, fabricator, manufacturer and all other information required.

.5 Ensure all submittals are accompanied by a filled out Submittal Transmittal form. Hardcopies will only be acceptable when submitting samples, but an electronic PDF copy must also be submitted.

.6 The Contractor and each Subcontractor must review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with the requirements of the Work and the Contract Documents.

.7 All submittals must bear the stamp of the Contractor and applicable Subcontractor and must be signed by the Contractor's representative and applicable Subcontractor's representative certifying a review of submittal, verification of products, field measurements and field construction criteria and co-ordination of the information within the submittal with requirement of the Work and of the Contract Documents. Submittals which do not bear the stamp of the Contractor and Subcontractor and signature of the Contractor's representative and Subcontractor's, will be rejected.

.8 Present Shop Drawings, Product data, samples and mock-ups in SI Metric units.

.9 Where items or information is not manufactured or produced in SI Metric units, converted values within the metric measurement tolerances are NOT acceptable.

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

.11 Verify field measurements and affected adjacent Work are coordinated.

.12 Do not propose Substitutions or deviations from Contract Documents via Shop Drawing, Product data and sample submittals.

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

.14 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review, unless Consultant gives written acceptance of specific deviations.

.15 Check with other Subcontractors who's Work may be affected by Work indicated on submittals, to eliminate conflict between Subcontractors and to ensure that all related Work coordinated.

.16 Review by Consultant is for sole purpose of ascertaining conformance with general design concept and shall not mean that Consultant approves detail design inherent in Shop Drawings or Project Data, responsibility for which shall remain with Contractor.

.17 Consultant review of separate items does not constitute review of assembly in which item functions.

.18 After Consultant's review and return of submittals, distribute copies as specified herein.

.19 Allow ten (10) Working Days for Consultant's review of each submittal. Allow additional five (5) Working Days where sub-Consultant review is required.

.20 W.C.B. Submittals: Submit certificate of an account with Workers Compensation Board prior to commencement of Work. Submit letter of clearance with application for payment of holdback, if applicable, and with application for final payment.

1.5 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

.1 Distribute copies of Shop Drawings and Project Data which carry Consultant's review stamp, to:

.1 Contractor's file.

.2 Contractor's job site file.

.3 Record Documents file (3 copies).

.4 Subcontractors.

.5 Supplier.

1.6 SHOP DRAWINGS AND PRODUCT DATA

.1 Indicate Products, methods of construction, and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of the Work.

.2 Where Products attach or connect to other Products, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross-references to Drawings, Specifications and other already reviewed Shop Drawings.

.3 Manufacturer's Data:

.1 Submittals which provide the item name or reference as identified in the Contract Documents, the manufacturer's name and the specific Product identification of the manufacturer.

.2 Where equipment has preassembled operable components, such as motors, fans or other sub-assemblies, then these elements of the equipment shall be identified with the manufacturer's name and number.

.3 Data shall include catalogue cuts, rough-in dimensions, descriptive literature, performance capabilities, colour chips and any similar material in published form and shall, in all cases, include the manufacturer's printed installation instructions.

.4 Material furnished in generalized printed form may be used but shall be clearly marked as to which portions are applicable to the particular project.

.5 Non-applicable information or data shall be crossed out or obliterated.

.6 The data shall indicate precisely what is to be furnished, and where and under what conditions it is to be installed.

.4 Equipment List:

.1 Submittals which include the item name or reference as identified in the Contract Documents, the manufacturer's name and the specific Product identification of the manufacturer.

.2 Where the equipment has preassembled operable compounds, such as motors, fans or other sub-assemblies, then these elements of the equipment shall be identified with the manufacturer's name and number.

.3 The above will only be accepted if they:

.1 Delete information not applicable to Project.

.2 Show dimensions and clearances required.

.3 Show wiring diagrams and controls.

.4 Contain space for Contractor's and Consultant's review stamps without stamping over printed information.

.5 Product data submittals shall include material safety data sheets (MSDS) for all controlled Products.

.6 Shop Drawings:

.1 Modified standard drawings, or original drawings prepared specifically for the Project to describe shop fabrication and/or assembly of material or equipment.

.2 Reproduction of construction Drawings to serve as background for Shop Drawings is not permitted. If construction Drawings are used for this purpose, remove references to Consultant.

.3 Indicate materials, layouts showing dimensions, including identified field dimensions and clearances, fabrication, setting and erection details, methods of construction and attachment or anchorage, erection diagrams, connection, capacities, performance characteristics, standards, operating weights, wiring diagrams, single line and schematic diagrams, relationship to adjacent work, explanatory notes, as applicable and other information necessary for completion of the Work.

.4 Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed.

.5 Indicate cross references to Contract Drawings and Specifications.

.6 Where necessary, Shop Drawings shall note dimensions required to be established or verified by the Contractor on the job.

.7 Supplement standard information to include details applicable to Project.

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

.8 Make changes in Shop Drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of any revisions other than those requested.

.9 Accompany submissions with transmittal letter, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each Shop Drawing, Product data and sample.

.5 Other pertinent data.

.10 Shop Drawing submissions shall include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Blank space: 150 mm x 50 mm for Contractor's and Consultant's stamps.

.1 Contractor's stamp, date, and signature of authorized representative responsible for Shop Drawing review, indicating that each Shop Drawing has been reviewed for compliance with Contract Documents and, where applicable, that field measurements have been verified.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to other parts of the Work.

.6 Applicable standards, such as CSA, CGSB or ASTM numbers.

.7 Identification of deviations from Contract Documents.

.8 Engineer's seal, where specified.

.11 Submit shop drawings electronically, in PDF format. Where PDF files are submitted for shop drawings, prints of shop drawings will still be required for operation and maintenance manuals:

.1 Submit **PDF copies** of Shop Drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

.2 Consultant will review submitted Shop Drawings and return digital reviewed set to Contractor for distribution to Subcontractor.

.3 Contractor is responsible for reproducing and distribution of reviewed Shop Drawings for their distribution.

.4 Subcontractor is responsible distribution of reviewed Shop Drawings.

.12 Submit one digital PDF copy of Product data sheets or brochures for requirements requested in specification sections and as requested by Consultant where Shop Drawings will not be prepared due to standardized manufacture of Product.

.13 Where a submittal includes information not applicable to the Work, clearly identify applicable information and strike out non-applicable information.

.14 Upon receipt, the Consultant will check the shop drawings for conformance with the design concept of the project and compliance with information given in the Contract Documents and the electronic PDF drawings stamped accordingly, in one of the following ways:

.1 Reviewed,

.2 Modify as Reviewed

.3 Revise and Resubmit,

.4 Not Reviewed.

.15 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, submittal will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted submittal will be returned and re-submission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.1 Submittals not submitted in whole or incorrectly will be rejected.

.2 It is the Contractor’s responsibility to ensure submittals are complete prior to any submission for review by the Consultant. The Consultant may indicate a delay due to incomplete or incorrect submittals requiring resubmittals. Any resultant

schedule delay due to incomplete or incorrect submittals will be the responsibility to the Contractor to address to the satisfaction of the Owner.

.16 Correct “Revise and Resubmit” or “Not Reviewed” electronic PDF drawings and data sheets and resubmit to the Consultant.

.17 Use only shop drawings stamped “Reviewed” or “Reviewed as Noted” “Modify as Reviewed”, on the site. All other shop drawings are considered not reviewed.

.18 Consultant’s notations on submittals are intended to ensure compliance with Contract Documents and are not intended to constitute a change in the Work requiring change to the Contract Price or Contract Time. If Contractor considers any Consultant’s notation to be a change in the Work, promptly notify Consultant in writing before proceeding with the Work.

.19 Resubmit corrected submittals through same procedure indicated above, before any fabrication or installation of the Work proceeds. When resubmitting, notify Consultant in writing of any revisions other than those requested by Consultant.

1.7 ELECTRONIC SUBMITTALS

.1 Submit shop drawings, product data, design criteria delegated design documentation, and other documents required by the specifications electronically using open source Portable Document Format (PDF) software that is compatible with ISO 32000-1:2008 Document Management:

.1 Software Writers: Any software that can save to or write a PDF including that allows for encryption and signature.

.2 Scanned Copies: Legible scanned PDF files of paper originals are acceptable; scanned submittals that are not legible will be rejected.

.3 File Size: Maximum file sizes for delivery of PDF submittals are as follows:

.1 E-Mail Delivery: 6 Megabytes (MB)

.2 Newforma Site Delivery: No Limit

.3 Split Delivery: Break larger PDF files into small packages where necessary to meet delivery restrictions; identify split packages as "1 of 2" and "2 of 2" in the Subject Line of submission after other required information listed below.

.4 Sheet Orientation: Assemble PDF sheets in a single file; unless resulting file is larger than 10 MB, rotated to a "Ready-to-Read" orientation with majority of text horizontal to the sheet with no additional adjustments or formatting required by the viewer.

.4 File Security: Do not set any permissions on the file; protected documents will not be accepted.

.5 File Identification: File name must contain Project Number, Name of Submission, Date of Submission, Name of Fabricator and Submittal Number with underscore between each item; do not use periods except immediately prior to document type; example file name follows:

.1 Project Number_Name of Submission_ Submission date_ Name of Fabricator

.6 Transmission Requirements: Send non-zipped files as an attachment to email or upload to Newforma site; zipped files will be rejected:

.1 E-Mail Transmission: Include same name as the attachment file name without the file type extension in the Subject Line; e-mail that does not contain appropriate subject will be rejected.

.2 Newforma Transmission: Notify Consultant using e-mail that documents have been uploaded; use same subject line protocol as noted above.

.3 Transmittal Layout: Include only one attachment or one topic per e-mail transmission, with the following text appearing in the body of the transmission; <> indicates text edited by sender:

.1 Attention: <Insert Name of Consultant's Contract Administrator>

.2 Project Number <Insert Name>

.3 Project Name: <Insert Name>

.4 Name of Contractor: <Insert Name>

.5 Name of Subcontractor : <Insert Name>

.6 Name of Fabricator: <Insert Name>

.7 Name of Product or Assembly: <Insert Name>

.8 Submission Method: <e-mail> <Newforma site>

.1 Attached is one set of <Shop Drawings> <Product Data> <Insert Name of Other Document> relating to the above mentioned project, product or assembly

.2 Attachments are for your review, comments and acceptance prior to starting fabrication of the items listed.

.3 Please return reviewed documents to: <Insert Name>

1.8 SAMPLES

.1 Samples means cuts or containers of materials or partial sections of manufactured or fabricated components which are physically identical to products proposed for use and which establish minimum standards by which the work will be judged.

.2 Submit for review samples in triplicate, in sizes as requested in respective specification Sections. Label samples with origin, Project name and intended use.

.3 Deliver samples prepaid to Consultant's business address.

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

.5 Where a required colour, pattern or texture has not been specified, submit full range of available Products meeting other specified requirements.

.6 Consultant selection from samples is not intended to change the Contract Price or Contract Time. If a selection would affect the Contract Price or Contract Time, notify Consultant in writing prior to proceeding with the Work.

.7 Resubmit samples as required by Consultant to comply with Contract Documents.

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

1.9 MOCK-UP

.1 Construct mock-up assemblies where specified and as requested by the Consultant.

.2 Erect mock-ups in accordance with Section 01 45 00 – Quality Control.

1.10 CERTIFICATES AND TRANSCRIPTS

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

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

1.11 CONTRACTOR'S AND SUBCONTRACTOR'S REGISTERED PROFESSIONAL ENGINEER'S REQUIREMENTS

.1 Intent:

.1 The intent of Delegated Design Submittals required by this Section is to account for professional engineering responsibility for design, review and acceptance of components of Work forming a part of permanent Work in accordance with National Building Code Alberta Edition 2019 and that has been assigned to a design entity other than Consultant including, but not limited to, the following:

.1 Design requiring structural analysis of load bearing components and connections.

.2 Design requiring compliance with fire safety regulations.

.3 Design requiring compliance with life or health safety regulations as indicated in the individual specification Sections.

.4 Design required for mechanical and electrical and other components as indicated in the individual specification Sections.

.2 This Section provides standard forms for submittal of Letter of Commitment and Letter of Compliance required complying with requirements of Building Code and design delegated to a professional Engineer within technical specification Sections.

.3 Delegated Design Submittals are not required for components of Work requiring engineering for temporary Work (for example: crane hoisting, engineered lifts, false Work, shoring, concrete formwork) that would normally form a part of Contractor's and Subcontractor's scope of Work.

.4 The requirements of this section are in general conformance with recommended Responsibilities for Engineering Services for Building Projects published by Association of Professional Engineers & Geoscientists of Alberta (APEGA), with regards to duties of specialty professionals appointed during construction period.

.5 The requirements of this section do not diminish responsibilities of Consultant's role as Registered Professional of Record; submittals will be used by Consultant to establish that Work is substantially performed in accordance with Building Code.

.2 For all Sections of Work which require the Contractor and Subcontractors to provide professional engineering services by a Professional Engineer registered in the Province of Alberta, have the[Contractor's and Subcontractor's Registered Professional Engineer design and engineer components for the project which the Contractor's and Subcontractor's Registered Professional Engineer is responsible for, and sign and seal all shop drawings and supporting documentation, to the satisfaction of the Consultant and according to requirements of the authority having jurisdiction.

.3 The Contractor's and Subcontractor's Engineer, must be a Professional Engineer registered in the Province of Alberta and must be fully qualified and experienced in the design of items which he/she is designing and to be responsible for the design of such components and systems, and to prepare, seal, and sign all shop drawings and to perform field reviews.

.4 The Contractor's and Subcontractor's Professional Engineer responsible for this work is to review the fabrication and erection of all items in accordance with APEGA requirements (current edition).

.5 Submit a signed and sealed Letter of Commitment prior to starting Work requiring design and seal of a Professional Engineer registered in the province of Alberta. Note: where signed and sealed shop drawings are requested in the specifications, this letter is required in addition to the shop drawings.

.6 At completion of the Work, have each of the Contractor's and Subcontractor's Registered Professional Engineers provide a letter confirming that:

.1 Relevant civil, structural, architectural, mechanical, electrical and other components are fabricated and erected in conformance with their design.

.2 Relevant components are capable of supporting all the loads or capable of performance specified or indicated on the reviewed shop drawings.

.3 All changes to the Contract Documents have been reviewed and are acceptable.

.4 Relevant components have been designed, fabricated and installed to substantially comply with the applicable requirements of the National Building Code Alberta Edition 2019.

.5 Relevant components have been designed and installed to conform with the seismic restraint requirements of the National Building Code Alberta Edition 2019.

.6 The fabrication and installation of such components has been reviewed and accepted by the Contractor's and Subcontractor's Registered Professional Engineers.

.7 Relevant components are fabricated and erected in accordance with the reviewed shop drawings.

.8 In addition to the letter outlining the above items, submit a signed and sealed Letter of Compliance on company letterhead addressed to Consultant on completion of Work requiring design and seal of a Professional Engineer registered in the Province of Alberta.

1.12 BUILDING PERMIT SUBMITTAL REQUIREMENTS

.1 Within five (5) working days of award of major Subcontracts, submit all technical information, test results, ITS (Intertek Testing Services - Warnock Hersey), ULC, ULI and other acceptable fire rating systems, to the Authority Having Jurisdiction, as required to obtain the Building Permit. Such information will be required for all fire rated items, including, but not limited to gypsum board assemblies, masonry assemblies, sprayed fireproofing, fire stop and smoke seal, exterior cladding (where applicable), interior coatings, intumescent paints and varnishes, and all other items and systems which are fire rated and which require back-up data acceptable to the Authority Having Jurisdiction, in order to obtain the Building Permit.

.2 The Contractor will make shop drawings available on site on various products so that the Authority Having Jurisdiction's Building Inspector can check to ensure that they conform to the building permit submission.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Safety requirements and adherence.

1.2 RELATED SECTIONS

.1 Section 01 31 00: Project Managing and Coordination.

.2 Section 01 33 00: Submittal Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

.1 Province of Alberta: Occupational Health and Safety Act, Regulation and Code R.S.A 2000 -Amended 2010, including requirements for a *Prime Contractor* as defined by the Act.

1.4 WORK SITE SAFETY - THIS CONTRACTOR IS "PRIME CONTRACTOR"

.1 The Contractor shall, for the purposes of the Occupational Health and Safety Act (Alberta), and for the duration of the Work of this Contract:

.1 Be the "prime contractor" for the "work site", and

.2 Do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance with the Act, its regulations, and Code, as required to ensure the health and safety of all persons at the "work site".

.2 The Contractor shall direct all Subcontractors, Sub-subcontractors, Other Contractors, employers, workers and any other persons at the "work site" on safety related matters, to the extent required to fulfill its "prime contractor" responsibilities pursuant to the Act, regardless of:

.1 Whether or not any contractual relationship exists between the Contractor and any of these entities, and

.2 Whether or not such entities have been specifically identified in this Contract.

1.5 CERTIFICATE OF RECOGNITION (COR)

.1 For the duration of the Work of this Contract, the Contractor shall maintain a valid Alberta Construction Safety Association COR Certification or a valid Temporary Letter of Certification (TLC) for a standard COR as issued by the Alberta Construction Safety Association (ACSA) or another certifying partner authorized by Alberta Employment, Immigration and Industry to issue COR's or TLC's.

.2 The Owner may, after bid submission and prior to contract award, require proof of possession of a valid standard COR or TLC. A bid from a Bidder who fails to submit the required proof may be declared invalid and may be rejected.

1.6 RESPONSIBILITY

.1 The "Prime Contractor" according applicable local jurisdiction, is responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

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

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

1.7 SUBMITTALS

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

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

.1 Results of site specific safety hazard assessment.

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

.3 Consultant will review one (1) copy of Contractor's site-specific Project Health and Safety Plan.

.4 Consultant's review of Contractor's Project Health and Safety plan should not be construed as approval and does not reduce or alter the Contractor's overall responsibility for construction Health and Safety.

.5 Contractor to submit copies of all work related incident and injury reports and investigations to the Consultant and Owner.

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

.7 Submit copies of site Health and Safety inspection reports to the Consultant upon request.

1.8 GENERAL HEALTH AND SAFETY REQUIREMENTS

.1 Trade contractors shall make provision of all:

.1 Safe Work Practices and Procedures,

.2 Barricades,

.3 Personal Protective Equipment, and

.4 Other safety requirements necessary to carry out their work in accordance with the requirements of the Occupational Health and Safety Act regulation and Code for the safety of the public and the workers at all times.

.2 All workers are required to wear CSA or ANSI approved safety glasses, safety footwear and hard hat as a minimum requirement. Each trade is responsible to provide qualified first aide personnel as required by the General Contractor.

.3 Whenever workers leave the job site after using hazardous equipment, make a through check to ensure that there is not a possibility of fire resulting from the Work

.4 Comply with the W.H.M.I.S. (Workplace hazardous Material Information System).

.5 Provide instruction to all personnel handling, using, and installing hazardous materials, in the proper and safe use of these materials. Hazardous materials are to be handled and used only by personnel trained and knowledgeable in their use and handling.

.6 Participate in site safety orientations and tool box meetings and cooperate with the General Contractor in the delivery of the Project Health and Safety Plan.

1.9 HEALTH AND SAFETY COORDINATOR

.1 Employ and assign to Work, a competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:

.1 Have minimum two (2) years' site-related working experience specific to activities.

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

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

.4 Support site supervisors on implementing, enforcing daily and monitoring the Contractor's Project Health and Safety Plan.

.5 Be on site during execution of Work and report directly to and be under direction the General Contractor's representative or site supervisor.

.6 May be assigned to other duties in additional to those of the Health & Safety Coordinator on site during the execution of the Work.

1.10 POSTING OF DOCUMENTS

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

1.11 CORRECTION OF NON-COMPLIANCE

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

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

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

1.12 HAZARDOUS WORK

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

.2 Use powder actuated devices only after receipt of written permission from Owner.

1.13 WORK STOPPAGE

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

1.14 FIRE PROTECTION

.1 During the full time of construction, maintain free unobstructed access to all parts of the building for local fire department equipment.

.2 Maintain levels of safety to the Fire Marshall's satisfaction.

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

.4 Coordinate fire safety with administration staff of the occupied facility in regard to local fire alarm operation.

.5 Do not interfere with the existing fire alarm system.

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

.7 Maintain placed or installed fire resistive construction, fireproofing, firestopping, to protect the portions of the Work during construction.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Laws, notices, permits and fees.

.2 Discovery of hazardous materials.

1.2 RELATED SECTIONS

.1 Section 01 35 43: Hazardous Materials.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 DEFINITIONS

.1 Regulatory requirements means laws, by-laws, ordinances, rules, regulations, codes, orders of authorities having jurisdiction, and other legally enforceable requirements applicable to the Work and which are or become in force during the performance of the Work.

1.4 LAWS, NOTICES, PERMITS AND FEES

.1 The laws of the Place of the Work shall govern the Work.

.2 Determine detailed requirements of authorities having jurisdiction.

.3 Comply with regulatory requirements.

.4 Except as otherwise specified, apply for, obtain, and pay all fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and the Contract Documents, based on:

.1 regulatory requirements and fees in force on date of tender submission, and

.2 any change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given prior to date of tender submission.

.5 Contractor shall give all notices required by regulatory requirements.

.6 Pay construction damage deposits levied by municipality in connection with the issuance of a building permit.

.7 to his failure to comply with provisions of such regulatory requirements.

1.5 ALBERTA BUILDING CODE

.1 Conform to and perform work in accordance with the National Building Code 2019 Alberta Edition.

.2 For buildings or parts of buildings required to be of Non-combustible construction, building shall be constructed with non-combustible materials complying with ABC Section 3.1.5., and tested in accordance with ULC-S135 –Test Method for Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter) and as required by the Authority Having Jurisdiction.

.3 Combustible components for exterior walls of building required to be of non-combustible construction must comply with ABC Sentence 3.1.5.5., and be tested in accordance with CAN/ULC-S134 – Fire Test of Exterior Wall Assemblies.

.4 Submit test results upon request from the Consultant or Authority Having Jurisdiction.

1.6 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: If material resembling asbestos or other hazardous material is encountered in course of demolition work, immediately stop work and notify Consultant.

1.7 PERSONNEL SMOKING

.1 Comply with regulatory and Owner imposed smoking restrictions during execution of the Work.

.2 Smoking is not permitted in within the Building or the construction areas within the building site.

.3 Smoking is not permitted on the property.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Defined acronyms for standards and industry agencies.

.2 Standards producing industry associations and their address.

1.2 RELATED SECTIONS

.1 Section 01 61 00: Product Requirements.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 STANDARDS PRODUCING INDUSTRY ORGANIZATIONS

.1 The following associations and organizations are cited in specification sections. Acronym, name, address, and Internet URL addresses are as follows.

.2 Conform to these Standards in whole or in part as specifically requested in the specifications.

.3 Conform to the latest date or issue of reference Standards in effect at the time of submission of Tenders except where specifically noted.

.4 The Consultant reserves the right to request documentation or to test products or systems to verify conformance to applicable Standard.

.5 Canadian Organizations:

.1 ACEC - Association of Consulting Engineers of Canada,130 Albert Street, Suite 616, Ottawa, ON. K1P 5G4 URL http://www.acec.ca

.2 AWMAC - Architectural Woodwork Manufacturers Association of Canada, 516-4 Street West, High River, Alberta T1V 1B6 URL http://www.awmac.com

.3 Canada Green Building Council; 330 - 55 rue Murray Street, Ottawa, ON, K1N 5M3; Tel: 613-241-1184 Fax: 613-241-5750, URL: www.cagbc.org

.4 CCA - Canadian Construction Association,75 Albert St., Suite 400 Ottawa, Ontario, K1P 5E7 URL http://www.cca-acc.com

.5 CCDC - Canadian Construction Documents Committee, Refer to ACEC, CCA, CSC or RAIC; www.CCDC.org

.6 CEMA – Canadian Electrical Manufacturer's Association

.7 CFFM - Canadian Forces Fire Marshal, 101 Colonel By Drive, 8NT MGen George R. Pearkes Bldg., Ottawa, Ontario K1A 0K2 URL http://www.dnd.ca/admie/dgcps/CFFMe.htm

.8 CGA - Canadian Gas Association, 20 Eglinton Avenue West, Suite 1305, Toronto, Ontario M4R 1K8 URL http://www.cga.ca

.9 CGSB - Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 0S5 URL http://w3.pwgsc.gc.ca/cgsb

.10 CISC - Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, Ontario M2J 4G8 URL http://www.cisc-icca.ca

.11 CLA - Canadian Lumbermen's Association, 27 Goulburn Avenue, Ottawa, Ontario, K1N 8C7 URL http://www.cla-ca.ca

.12 CNLA - Canadian Nursery Landscape Association, RR #4, Stn. Main, 7856 Fifth Street, Milton, Ontario. L9T 2X8 URL http://www.canadanursery.com

.13 CRCA - Canadian Roofing Contractors Association, 155 Queen Street, Suite 1300, Ottawa, Ontario K1P 6L1 URL http://www.roofingcanada.com

.14 CSA - Canadian Standards Association International, 178 Rexdale Blvd., Toronto, Ontario M9W 1R3 URL http://www.csa-international.org

.15 CSC - Construction Specifications Canada, 120 Carlton Street, Suite 312, Toronto, Ontario M5A 4K2 URL http://www.csc-dcc.ca

.16 CSDMA - Canadian Steel Door Manufacturers Association, One Yonge Street, Suite 1801, Toronto, Ontario M5E 1W7; http://www.csdma.org/

.17 CSPI - Corrugated Steel Pipe Institute, 652 Bishop Street N, Unit 2A, Cambridge, Ontario N3H 4V6 URL http://www.cspi.ca

.18 CSSBI - Canadian Sheet Steel Building Institute, 652 Bishop St. N., Unit 2A, Cambridge, Ontario N3H 4V6 URL http://www.cssbi.ca

.19 CUFCA - Canadian Urethane Foam Contractor's Association, Box 3214, Winnipeg, Manitoba, R3C 4E7 URL http://www.cufca.ca

.20 CWC - Canadian Wood Council, 1400 Blair Place, Suite 210, Ottawa, Ontario K1J 9B8 URL http://www.cwc.ca

.21 EC - Environment Canada, Conservation and Protection, Inquiry Centre, 351 St. Joseph Blvd, Hull, Québec KIA 0H3 URL http://www.ec.gc.ca

.22 EEMAC – The Electrical and Electronic Manufacturers Association of Canada, 5800 Explorer Drive, Suite 200, Mississauga, Ontario, Canada L4W 5K9, www.electrofed.com/councils/eemac

.23 EFC - Electro Federation of Canada, 5800 Explorer Drive, Suite 200, Mississauga, Ontario L4W 5K9 URL http://www.electrofed.com

.24 EIMA - EIFS Industry Manufacturer's Association, 3000 Corporate Center Drive, Suite 270, Morrow, Georgia U.S.A. 30260 URL http://www.eima.com

.25 IAO - Insurer's Advisory Organization of Canada, 90 Allstate Parkway; Markham, Ontario; L3R 6H3, https://secure.cgi-ibs1.com

.26 MPI - The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6 URL http://www.paintinfo.com

.27 NABA - National Air Barrier Association, PO Box 2747, Winnipeg, Manitoba R3C 4E7 URL http://www.naba.ca

.28 NLGA - National Lumber Grades Authority, 406-First Capital Place, 960 Quayside Drive, New Westminster, B.C. V3M 6G2; http://www.nlga.org/

.29 NRC - National Research Council, Building M-58, 1200 Montreal Road, Ottawa, Ontario K1A 0R6 URL http://www.nrc.gc.ca

.30 QPL - Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 1G6 URL http://www.pwgsc.gc.ca/cgsb

.31 RAIC - Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, Ontario, K1N 5M3 URL http://www.raic.org

.32 SCC - Standards Council of Canada, 270 Albert Street, Suite 2000, Ottawa, Ontario K1P 6N7 URL http://www.scc.ca

.33 TTMAC - Terrazzo, Tile and Marble Association of Canada, 30 Capston Gate, Unit 5 Concord, Ontario L4K 3E8 URL http://www.ttmac.com

.34 ULC - Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, Ontario M1R 3A9 URL http://www.ulc.ca

.6 USA Organizations:

.1 AA - Aluminum Association, 900 19th Street N.W., Washington, D.C., U.S.A. 20006 URL http://www.aluminum.org

.2 AABC - Associated Air Balance Council, 1518 K Street NW, Washington DC 20005, Email: info@aabcdirect.com

.3 AASHTO - American Association of State Highway and Transportation Officials, 444 N Capitol Street N.W., Suite 249, Washington, D.C., U.S.A. 20001 URL http://www.aashto.org

.4 AHA - American Hardboard Association, 1210W Northwest Hwy., Palatine, Illinois, U.S.A. 60067 URL : http://www.hardboard.org

.5 AITC - American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, Colorado, U.S.A. 80112 URL http://www.aitc-glulam.org

.6 AMCA - Air Movement and Control Association Inc., 30 West University Drive, Arlington Heights, Illinois, U.S.A. 60004-1893 URL http://www.amca.org

.7 ANSI - American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, New York, U.S.A. 10036 URL http://www.ansi.org

.8 APA - The Engineered Wood Association, P.O. Box 11700, Tacoma, Washington, U.S.A. 98411-0700 URL http://www.apawood.org

.9 API - American Petroleum Institute,1220 L St. Northwest, Washington, D.C., U.S.A. 20005-4070 URL http://www.api.org

.10 ARI - Air Conditioning and Refrigeration Institute, 4100 N Fairfax Drive, Suite 200, Arlington, Virginia, U.S.A. 22203 URL http://www.ari.org

.11 ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, Georgia, U.S.A. 30329 URL http://www.ashrae.org

.12 ASME - American Society of Mechanical Engineers, ASME Headquarters, 3 Park Avenue, New York, New York, U.S.A. 10016-5990 URL http://www.asme.org

.13 ASTM International, 100 Barr Harbor Drive West, Conshohocken, Pennsylvania 19428-2959 URL http://www.astm.org

.14 AWCI - Association of the Wall and Ceiling Industries International, 803 West Broad Street, Suite 600, Falls Church, UA, U.S.A. 22046 URL http://www.awci.org

.15 AWPA - American Wire Producer's Association, 801 N Fairfax Street, Suite 211, Alexandria, VA U.S.A. 22314-1757 URL http://www.awpa.org

.16 AWPA - American Wood Preservers' Association, P.O. Box 5690, Granbury Texas, U.S.A. 76049-0690 URL http://www.awpa.com

.17 AWS - American Welding Society, 550 N.W. LeJeune Road, Miami, Florida U.S.A. 33126 URL http://www.amweld.org

.18 AWWA - American Water Works Association, 6666 W. Quincy Avenue, Denver, Colorado, U.S.A. 80235 URL http://www.awwa.org

.19 FM - Factory Mutual Engineering Corporation, **Vancouver Office,** 550 Burrard Street, Suite 1028 Bentall 5, Vancouver, BC V6C 2B5, http://www.fmglobal.com

.20 ISAP - International Society for Asphalt Paving, 400 Selby Avenue, Suite 1, St. Paul, MN 55102 U.S.A. URL http://www.asphalt.org

.21 IEEE - Institute of Electrical and Electronics Engineers, IEE Corporate Office, 3 Park Avenue, 17th Floor, New York, New York U.S.A. 10016-5997 URL http://www.ieee.org

.22 MSS - Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street, N.E., Vienna, Virginia U.S.A. 22180-4602 URL http://www.mss-hq.com

.23 NAAMM - National Association of Architectural Metal Manufacturers, 8 South Michigan Avenue, Suite 1000, Chicago, Illinois U.S.A. 60603 URL http://www.naamm.org

.24 NEMA - National Electrical Manufacturers Association,1300 N. 17th Street, Suite 1847, Rosslyn, Virginia 22209 URL http://www.nema.org

.25 NFPA - National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101Quincy, Massachusetts, U.S.A. 02269-9101 URL http://www.nfpa.org

.26 NFSA - National Fire Sprinkler Association, P.O. Box 1000, Patterson, New York, U.S.A. 12563 URL http://www.nfsa.org

.27 NHLA - National Hardwood Lumber Association, 6830 Raleigh-La Grange Road,Memphis, TN, U.S.A 38184-0518 URL http://www.natlhardwood.org

.28 NSPE - National Society of Professional Engineers, 1420 King Street, Alexandria, VA U.S.A. 22314-2794 URL http://www.nspe.org

.29 PCI - Prestressed Concrete Institute, 209 W. Jackson Blvd., Suite 500, Chicago, Illinois, U.S.A. 60606-6938 URL http://www.pci.org

.30 PEI - Porcelain Enamel Institute, PO Box 920220, Norcross, GA U.S.A. 30010 URL http://www.porecelainenamel.com

.31 SSPC - The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh, Pennsylvania 15222-4656 URL http://www.sspc.org

.32 TPI - Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI, U.S.A. 53719 URL http://www.tpinst.org

.33 UL - Underwriters' Laboratories, 333 Pfingsten Road, Northbrook, Illinois, U.S.A. 60062-2096 URL http://www.ul.com

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Written and electronic reports.

.3 Equipment and system adjust and balance.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCE STANDARDS

.1 "Reference standards" means consensus standards, trade association standards, guides, and other publications expressly referenced in Contract Documents.

.2 Where an edition or version date is not specified, referenced standards shall be deemed to be the latest edition or revision issued by the publisher at the time of bid closing. However if a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the regulatory referenced edition or version shall apply.

.3 Reference standards establish minimum requirements. If Contract Documents call for requirements that differ from a referenced standard, the more stringent requirements shall govern.

.4 If compliance with two or more reference standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to Consultant for clarification.

.5 Within the Specifications, reference may be made to standards writing, testing, or certification organizations by their acronyms or initialisms, as specified in Section 01 42 00 – References.

.6 Within the Specifications, reference may be made to the following standards writing, testing, or certification organizations by their acronyms or initialisms:

.1 AA - Aluminum Association
.2 ACI - American Concrete Institute
.3 AISC - American Institute of Steel Construction
.4 ANSI - American National Standards Institute
.5 ASME - American Society of Mechanical Engineers
.6 ASTM - American Society for Testing and Materials
.7 AWMAC - Architectural Woodwork Manufacturers Association of Canada
.8 AWPA - American Wire Producers Association
.9 CaGBC - Canadian Green Building Council
.10 CGSB - Canadian General Standards Board
.11 CISC - Canadian Institute of Steel Construction

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

1.4 INSPECTION BY AUTHORITY

.1 Allow Authorities Having Jurisdiction access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by law in the Place of the Work.

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

1.5 REVIEW BY CONSULTANT

.1 Conduct tests in presence of Consultant when requested. Provide 72 hours notice in writing.

.2 Consultant may order any part of Work to be reviewed if Work is suspected to be not in accordance with Contract Documents.

.3 If the Contractor covers or permits to be covered, Work that has been designated for special tests, inspections or review before such is made, uncover such Work, have the inspections or tests satisfactorily completed and make good such work at no cost to the Owner.

.4 If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.

.5 If such Work is found in accordance with Contract Documents, Owner will pay cost of review and replacement.

1.6 ACCESS TO WORK

.1 The Owner and the Consultant shall have access to the Work. If part of the Work is in preparation at locations other than the Place of Work, access shall be given to such work whenever it is in progress.

.2 Allow and arrange for inspection and testing agencies to have access to the *Work*, including access to off site manufacturing and fabrication plants.

1.7 PROCEDURES

.1 For inspection and testing required by *Contract Documents* or by authorities having jurisdiction, provide *Consultant* and inspection and testing agencies with timely notification in advance of required inspection and testing.

.2 Submit test samples and materials required for testing [in accordance with submittals schedule specified in Section 01 32 00 – Construction Progress Documentation]. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

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

1.8 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents.

.2 Replace or re-execute in accordance with Contract Documents

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

.4 Where tests or inspections by designated testing laboratory reveal work not in accordance with Contract Document requirements, or if defects are revealed during inspection and testing, the Consultant may request additional inspection and testing to ascertain full degree of defect. Correct defects and irregularities as advised by Consultant at no cost to the Owner. Pay all costs for re-testing and re-inspection as the Consultant may require verifying acceptability of corrected work.

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

1.9 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports electrical and building equipment systems.

.2 Refer to appropriate Sections for definitive requirements.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Temporary utilities.

1.2 RELATED SECTIONS

.1 Section 01 52 00: Construction Facilities.

.2 Section 01 53 00: Temporary Construction.

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.4 EXISTING BUILDING HEATING, VENTILATION, POWER, AND LIGHTING

.1 Existing building heating, ventilation, power, and lighting may be relied upon and used during construction.

.2 Coordinate and make arrangements with the building operator for provision of these services during hours or days when the building is not operational.

.3 Maximum power supply of 230 V is available and will be provided for construction use at no cost. Connect to existing power supply in accordance with Canadian Electrical Code.

1.5 TEMPORARY COMMUNICATION FACILITIES

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

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Construction Parking.

.2 Access to Site.

.3 Construction aids.

.4 Equipment, tools and materials storage.

.5 Sanitary Facilities.

1.2 RELATED SECTIONS

.1 Section 01 51 00: Temporary Facilities.

.2 Section 01 53 00: Temporary Construction.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REFERENCES

.1 American National Standards Institute (ANSI):

.1 ANSI Z535.2 -2011(R2017): Environmental and Facility Safety Signs

.2 ANSI Z535.4 -2011(R2017): Product Safety Signs and Labels, Includes Errata

.2 Canadian General Standards Board (CGSB):

.1 CAN/CGSB 1.189-2000: Exterior Alkyd Primer for Wood

.2 CGSB 1.59-97: Alkyd Exterior Gloss Enamel

.3 Canadian Standards Association (CSA):

.1 CSA A23.1/A23.2-19: Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete

.2 CSA O121-17: Douglas Fir Plywood

.3 CAN/CSA-S269.2-16: Access Scaffolding for Construction Purposes

.4 CAN/CSA Z321-96 (R2006): Signs and Symbols for the Occupational Environment

.4 U.S. Environmental Protection Agency (EPA) / Office of Water:

.1 EPA 832-R92-005: Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices

.5 Canadian Construction Association:

.1 COVid-19: COVid-19 Standardized Protocols for All Canadian Construction Sites (Current version)

1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 Comply with all related requirements of the Workers' Compensation Board of Alberta] and all authorities having jurisdiction including utility company requirements.

1.5 CONSTRUCTION PARKING

.1 Parking on the site will be permitted on site provided space is available and parking does not disrupt performance of Work and continuing operation of the facility.

.2 On street parking of workers vehicles shall be in conformance with local ordinances and bylaws.

1.6 VEHICULAR ACCESS TO SITE

.1 Provide and maintain adequate access to Place of the Work.

.2 Existing roads at Place of the Work may be used for access to Place of the Work, provided Contractor assumes responsibility for any damage caused by construction traffic, and prevents or promptly cleans up any mud tracking or material spillage.

.3 Access to construction area is permitted only through designated approaches in such a manner that traffic will not interfere with Contractor's activities.

.4 Do not place or store materials in accesses, or on streets, sidewalks or lanes.

1.7 SANITARY FACILITIES

.1 Existing permanent facilities may be used.

.2 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

1.8 FIRE PROTECTION

.1 Provide and maintain temporary fire protection systems and equipment during construction.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Materials Storage:

.1 There will be limited on-site materials storage on this project. Obtain written permission from the Owner.

.2 Owner will allocate areas for storage of materials for work in progress.

.2 Trade Contractor will be responsible for the procurement and payment of all off-site storage.

.3 Materials are to be brought to the site only immediately prior to their incorporation into the Work.

.4 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

Part 2 Materials

.1 Not used

Part 3 Execution

3.1 INSTALLATION, GENERAL

.1 Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required and as directed by the Owner.

.2 Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 DELIVERIES AND LOADING

.1 Coordinate requirements relative to loading and deliveries with the Owner prior to the start of the Work.

.2 Deliver all materials and equipment to the Contractor's designated loading area.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Guardrails and barriers.

.2 Dust tight barriers.

.3 Activities generating vibration, noise or safety concerns.

.4 Protection of applied finishes.

1.2 RELATED SECTIONS

.1 Section 01 51 00: Temporary Utilities.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 TEMPORARY CONTROLS - GENERAL

.1 Provide temporary controls as necessary for performance of the Work and in compliance with applicable regulatory requirements.

.2 Maintain temporary controls in good condition for the duration of the Work.

.3 Remove temporary controls and Construction Equipment used to provide temporary controls from Place of the Work when no longer required.

1.4 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 Be prepared, by maintaining appropriate materials, equipment, and trained personnel on site, to intercept, clean up, and dispose of spills or releases that may occur.

.3 Promptly report spills and releases that may occur to:

.1 authority having jurisdiction,

.2 person causing or having control of pollution source, if known, and

.3 Owner and Consultant.

.4 Contact manufacturer of pollutant, if known and applicable, to obtain material safety data sheets (MSDS) and ascertain hazards involved and precautions and measures required in cleanup or mitigating actions.

.5 Take immediate action to contain and mitigate harmful effects of the spill or release.

.6 Maintain temporary pollution control features installed under this Contract.

.7 Control emissions from equipment and plant to local authority’s emission requirements.

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

.9 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control in construction areas.

1.5 BARRIERS AND ENCLOSURES - GENERAL

.1 Provide temporary barriers and enclosures necessary to protect the public and building occupants and to secure Place of the Work during performance of the Work.

.2 Comply with applicable regulatory requirements.

.3 Maintain temporary barriers and enclosures in good condition for the duration of the Work.

.4 Remove temporary barriers and enclosures from Place of the Work when no longer required.

1.6 DUST TIGHT BARRIERS

.1 Provide strict dust and fume controls, including, but not limited to dust and fume tight screens or partitions to localize dust and fume generating activities, and for the protection of workers, finished areas of Work.

.2 Suppress all dust and dirt. Prevent the occurrence of unsanitary conditions, flooding or leaking.

.3 Wherever possible all procedures using noxious products such as lacquer or oil paint are to be completed off-site and the finished product brought into the building.

.4 Where required in the facility, supply perimeter dust screens and fans to perimeter of the Work in accordance with the Site Safety plan.

.5 Dust tight barriers and screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.6 Erect, maintain, and relocate partitions as required to facilitate construction operations and Owner’s operational requirements.

.7 Trade Contractor(s) shall:

.1 Provide all other required dust tight screens to localize dust-generating activities, and for protection of workers, finished areas of Work and the Public.

.2 Coordinate installation of temporary dust screens with the Contractor.

.8 Partitions:

.1 Shall be constructed using 92 mm steel studs at 400 mm oc., with continuous 0.15 mm polyethylene between studs and 12.7 mm drywall or plywood on one side.

.2 Partitions to extend to underside of structure and be sealed to underside of structure to maintain dust proof seal.

.3 Ensure partitions are sealed at abutting walls or structure and at floors. Where exposed to the public Provide vinyl faced gypsum board.

.9 Provide, maintain and relocate protection until dust-generating activities are complete.

1.7 ACTIVITIES GENERATING VIBRATION, NOISE OR SAFETY CONCERNS

.1 Operations considered by the Owner to generate vibration, noise or safety concerns include, but are not limited to, the following:

.1 Jack hammering.
.2 Shotblasting.
.3 Sandblasting.
.4 Cutting and coring of concrete.
.5 Use of powder actuated fasteners.
.6 Excavating.

.2 Do the following when work generating vibration, noise or safety concerns may affect user or user operations.

.1 Coordinate with the Owner and user representative.
.2 Schedule and coordinate hours of work with user representative.
.3 Stop operations generating vibration, noise or safety concerns when instructed verbally or in writing by the Owner. Do not resume such operations until authorized by the Owner.

1.8 FIRE ROUTES

.1 Maintain fire access routes, including overhead clearances, for use by emergency response vehicles.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Construction signage.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REGULATORY REQUIREMENTS

.1 Comply with municipal bylaws, provincial regulations and other applicable regulatory requirements relating to permits for signs and locating signs close to highways and on rights-of-way.

.2 Provide temporary on-site warning, traffic directing, and other information signs as required by applicable regulatory requirements.

Part 2 Products

2.1 GENERAL SIGNAGE

.1 General signage or advertisements is not permitted anywhere on site except by specific written permission by the Owner.

.2 Signs for safety purposes or for traffic flow are permitted where appropriate.

.3 Signs and notices for safety and instruction to be printed in English.

Part 3 Execution

3.1 ERECTION, MAINTENANCE AND REMOVAL

.1 Erect information signs at optimum location for visibility, on ground mounted poles or temporarily attached to structural surfaces.

.2 Do not erect any signs, other than those specified, without Owner's prior approval.

.3 Maintain approved signs and notices in good condition for duration of project and dispose of off site on completion of project.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Product substitution procedures.

.3 Manufacturer's instructions.

.4 Quality of Work, coordination and fastenings.

.5 Existing facilities.

1.2 RELATED SECTIONS

.1 Section 01 42 00: References and Definitions: Other terms used in the Project Manual.

.2 Section 01 62 00: Product Exchange Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 GENERAL

.1 Provide Products that are not damaged or defective, and suitable for purpose intended, subject to specified requirements. If requested by Consultant, furnish evidence as to type, source and quality of Products provided.

.2 Unless otherwise specified, maintain uniformity of manufacture for like items throughout.

.3 [Permanent manufacturer’s markings, labels, trademarks, and nameplates on Products are not acceptable in prominent locations, except where required by regulatory requirements or for operating instructions, or when located in mechanical or electrical rooms.]

1.4 TERMINOLOGY

.1 New: Produced from new materials.

.2 Re-newed: Produced or rejuvenated from an existing material to like-new condition to serve a new or existing service.

.3 Defective: A condition determined exclusively by the Consultant.

1.5 PRODUCT OPTIONS

.1 Subject to provisions of Section 01 62 00 – Product Exchange Procedures.

1.6 PRODUCT QUALITY

.1 Products, materials, equipment, parts or assemblies (referred to as Products throughout the specifications) incorporated in Work will be new or recycled as noted, not damaged or defective, of best quality (compatible with specification requirements) for purpose intended. If requested, provide evidence as to type, source and quality of Products provided.

.2 Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Consultant based upon the requirements of the Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

.6 Incorporate products using recycled materials, products with low VOC emissions, and having recycling potential, to the maximum possible extent, and as required to meet the sustainable requirements for this project.

.7 Wherever possible and where allowed by the National Building Code (AE) 2019, use on-site waste as primers, sealers, underlayments, supports, backing, blocking, furring, suspension systems, and accessories as required for any purpose in patching existing work.

.8 Ensure the flame spread rating of floor, wall and ceiling finishes including glazing conforms to the Building Code.

1.7 PRODUCT DATA

.1 When requested by the 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.

.2 For substitutions and requests for changes to accepted Products, include in addition to the above, the following:

- .1 Itemized comparison of substitution with named Product(s). List significant variations.
- .2 Designation of availability of maintenance services and sources of replacement materials.

1.8 PRODUCT AVAILABILITY AND DELIVERY TIMES

.1 Promptly upon Contract award and periodically during construction, review and confirm Product availability and delivery times. Order Products in sufficient time to meet the construction progress schedule and the Contract Time.

.2 If a specified Product is no longer available, promptly notify Consultant. Consultant will take action as required.

.3 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 progress schedule for Consultant's review and acceptance.

.4 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available Products of similar character, at no increase in Contract Price or Contract Time.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Where choices exist, use products and materials with recycled content or resource efficient characteristics.

.2 In the selection of the products and materials, especially adhesives, mastics, membranes and the like, use those with the following characteristics:

.1 Water based.

.2 Water soluble.

.3 Water clean-up.

.4 Non-flammable.

.5 Biodegradable.

.6 Low Volatile Organic Compound (VOC) content.

.7 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.

.8 Manufactured without compounds which contribute to smog in the lower atmosphere.

.9 Does not contain methylene chloride.

.10 Does not contain chlorinated hydrocarbons.

.11 Recycled content: post-consumer or post-industrial waste.

.3 All materials must meet specified and quantitative requirements as defined throughout the Contract Documents. A statement in the Submittals by the Contractor and Subcontractors, indicating "Low VOC's" is not sufficient unless the detailed quantitative data indicates materials meet or exceed specified sustainable requirements.

1.10 STORAGE, HANDLING AND PROTECTION

.1 Store, handle and protect Products during transportation to Place of the Work and before, during, and after installation in a manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled Products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Adequately and continuously protect items having high class factory finish such as baked enamel, porcelain enamel or polished metal, from scratches or other damage, while in transit, during installation and until completion of the Contract.

.4 Comply with the requirements of the workplace hazardous materials information system (WHMIS) regarding use, handling, storage, and disposal of hazardous materials, including requirements for labeling and the provision of material safety data sheets (MSDS).

.5 For exterior storage of fabricated Products, place on sloped supports above ground.

.6 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.

.7 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

.8 Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

.9 Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.11 TRANSPORTATION AND HANDLING

.1 Transport and handle Products in accordance with manufacturer's instructions.

.2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

.3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.12 PRODUCT CHANGES

.1 Change in Product(s): Submit request for substitution or alternative in accordance with Section 01 62 00.

1.13 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, [and building occupants] [and pedestrian and vehicular traffic].

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

1.14 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications install or erect Products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

.2 Interpret recommended practices as directives and change the word "should" to "shall".

.3 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.

.4 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

.5 Unless otherwise specified, comply with the manufacturer's latest printed instructions for materials and installation methods to be used.

.6 Install products in strict accordance with manufacturer's recommendations to reduce damage to or waste of materials by required replacement.

1.15 QUALITY OF WORK

.1 Provide the best quality workmanship as defined by good trade practices and to the satisfaction of the Consultant, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site any workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.16 COORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.17 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.18 REMEDIAL WORK

.1 Perform remedial Work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial Work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.19 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.20 SLEEVES, ANCHORS, HANGERS AND SUPPORTS

.1 Provide and set sleeves where conduits pass through masonry or concrete.

.2 Do not pierce concrete slabs with hanger wires, rods, brackets, bolts, inserts and other connections, except as authorized by the Consultant. Submit methods of fixing to the Consultant for acceptance, prior to commencement of operation.

.3 Be responsible for all system pipe, conduit and equipment anchors, hangers and support systems and connections to building structure and employ a Professional Engineer registered in the Province of Alberta to design such anchors, hangers, support systems and connections to building structure. Make engineering design notes available to the Consultant upon request.

.4 Fixing to steel decks from below: do not pierce top flute.

1.21 FIELD MARKINGS

.1 Do not use wick pen to mark face of products to be installed in the Work. Such pen marks will show through applied paint or vinyl coatings and the like, in due course. Be responsible for and remedy such defects, classified as "latent defects" regardless of when they occur.

.2 Aerosol paints may not be used within the building envelope for marking out except where explicitly allowed in the Contract Documents.

1.22 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

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

1.23 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use Type 304 or 316 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.24 AIR/VAPOUR BARRIERS

.1 Conform to the following requirements to maintain and protect the continuity and integrity of the building air/vapour barriers:

.1 The Contractor and all Subcontractors and any persons on the site must take all necessary precautions not to puncture, tear, weaken or damage in any way, the vapour retarder and air barrier. Seal and repair damage to the acceptance of the Consultant.

.2 The air/vapour barrier must always be protected from the cold in the final building by insulation.

1.25 FIRE SEPARATIONS

.1 Construct, maintain and protect the continuity of the fire separations as required by the authority having jurisdiction.

.2 Maintain continuity of fire separations where openings in rated assemblies have been produced by separate Contractor’s employed by the Owner, where applicable.

1.26 SALT

.1 No salt is to be used on this project under any circumstances for ice and snow removal or as an addition to concrete without acceptance of the Consultant.

1.27 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of the Project.

.2 Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of Consultant.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Substitutions.

1.2 RELATED SECTIONS

.1 Section 01 21 00: Allowances.

.2 Section 01 29 00: Payment Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 DEFINITIONS

.1 Proprietary specification means a specification which includes one or more proprietary names of products or manufacturers, or both, and may also include descriptive, reference standard, or performance requirements, or any combination thereof.

.2 Non-proprietary specification means a specification which includes descriptive, reference standard or performance requirements, or any combination thereof, but does not include proprietary names of products or manufacturers.

.3 "Basis-of-Design" Product: Where Specifications name a product, or refer to a product named on the Drawings, and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. The named product establishes the salient features against which comparable products of the several manufacturers listed may be evaluated. Qualities may include type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that an "equal" item must meet to be acceptable for award.

.4 In this Section "Substitution" means a *Product*, a manufacturer, or both, not originally specified in *Contract Documents* by proprietary name but proposed for use by *Contractor* in place of a *Product*, a manufacturer, or both, specified by proprietary name.

1.4 PRODUCT OPTIONS

.1 Wherever a *Product* is specified by reference to a standard only, provide any *Product* that meets or exceeds the specified standard. If requested by *Consultant*, submit information verifying that the proposed *Product* meets or exceeds the specified standard.

.2 Wherever a *Product* is specified by descriptive or performance requirements only, provide any *Product* that meets or exceeds the specified requirements. If requested by *Consultant*, submit information verifying that the proposed *Product* meets or exceeds the specified requirements.

.3 For products specified by proprietary specification:

.1 Wherever a *Product* or manufacturer is specified by a single proprietary name, provide the named *Product* only.

.2 Wherever more than one *Product* or manufacturer is specified by proprietary name for a single application, provide any one of the named *Products*.

.3 Substitute an unnamed product or manufacturer in accordance with Article 1.5 of this Section.

.4 For products specified by proprietary specification and accompanied by words indicating that substitutions will not be accepted:

.1 Select product or manufacturer named; substitutions are not permitted.

.5 Products other than specified shall require acceptance by Consultant three (3) working days prior to Bid Closing.

1.5 PERMITTED SUBSTITUTIONS

.1 Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.

.2 *Contractor* may propose a Substitution wherever a *Product* or manufacturer is specified by proprietary name(s), unless there is accompanying language indicating that Substitutions will not be considered.

.3 *Contractor* may propose a Substitution wherever a *Product* or manufacturer is specified by proprietary name(s) and accompanied by language such as "or equal", "or approved equal", or other similar words. Do not construe such language as an invitation to unilaterally provide a Substitution without *Consultant's* prior acceptance in writing. Do not order or install any Substitution without a *Supplemental Instruction* or *Change Order*.

.4 Provided a proposed Substitution submission includes all of the information specified in this Section under Submission Requirements for Proposed Substitutions, *Consultant* will promptly review and accept or reject the proposed Substitution.

.5 *Consultant* may accept a Substitution if satisfied that:

.1 the proposed substitute *Product* is the same type as, is capable of performing the same functions as, interfaces with adjacent work the same as, and meets or exceeds the standard of quality, performance and, if applicable, appearance and maintenance considerations, of the specified Product,

.2 the proposed substitute manufacturer has capabilities comparable to the specified manufacturer,

.3 substitutions shall not require revisions to Contract Documents nor to Work of Other Contractors, and

.4 the Substitution provides a benefit to *Owner*.

.6 If in Consultant's opinion, a substitution does not meet requirements of Contract Documents, Contractor shall, at no extra cost to Owner, provide a product which, in Consultant's opinion, does meet requirements of Contract Documents.

.7 No substitutions, as described above, will be permitted without prior written approval of Consultant.

.1 Prepare a list of proposed substitutes and submit to the Consultant within five (5) Working Days after notification of Contract award.

.2 Consultant will review submission within ten (10) Working Days of receipt of proposal.

.3 Consultant is not obliged to accept any or all proposed substitutions submitted by the Contractor. Submissions may be dismissed without explanation.

1.6 SUBSTITUTIONS AFTER CONTRACT AWARD

.1 Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor after Contract award. Such proposal requests must include statements of respective costs of items originally specified and proposed substitutions.

.2 Consultant will consider proposals if:

.1 Products or equipment selected by Contractor from those specified are not available.

.2 Delivery date of products or equipment selected from those specified would unduly delay completion of Contract.

.3 Alternative products or equipment to those specified, which are brought to attention of, and considered by Consultant as equivalent to those specified, will result in credit to Contract amount.

.4 Verification that selected product can:

.1 Be obtained.

.2 Meets project performance requirements.

.3 Meets building Code requirements.

.5 Products or construction methods will result in credit to the Owner and maintain performance.

.6 Products or construction methods with increased additional costs may be considered where:

.1 Additional value is demonstrated or,

.2 There is a life-cycle cost benefit.

.3 If *Contractor* fails to order a specified *Product* or order a *Product* by a specified manufacturer in adequate time to meet *Contractor*'s construction schedule, *Consultant* will not consider that a valid reason to accept a Substitution.

.1 Substitution requests, resulting from negligence, on the part of the Contractor, will not be considered. If the Contractor has failed to order a product in a timely manner the Consultant may require expedited delivery

.4 If *Consultant* accepts a Substitution and subject to *Owner*'s agreement, the change in the *Work* will be documented in the form of either a *Supplemental Instruction* or *Change Order*. Any and all credits arising from approval of substitutions shall be determined by Consultant and credited to Contract and Contract amount shall be adjusted accordingly.

.5 If a Substitution is accepted in the form of a *Supplemental Instruction* or *Change Order*, *Contractor* shall not revert to an originally specified *Product* or manufacturer without *Consultant*'s prior written acceptance.

.6 Should proposed substitutions be accepted, in part or in whole, assume full responsibility and costs when substitution affects any other Work or exceeds space requirements allocated for such Products or equipment. Pay for design or Drawing changes required as result of substitution.

1.7 SUBMISSION REQUIREMENTS FOR PROPOSED SUBSTITUTIONS

.1 Include with each proposed Substitution the following information:

.1 Identification of the Substitution, including product name and manufacturer's name, address, telephone numbers, and web site.

.2 Reason(s) for proposing the Substitution.

.3 A statement verifying that the Substitution will not affect the *Contract Price* and *Contract Time* or, if applicable, the amount and extent of a proposed increase or decrease in *Contract Price* and *Contract Time* on account of the Substitution.

.4 A statement verifying that the Substitution will not affect the performance or warranty of other parts of the *Work*.

.5 Manufacturer's *Product* literature for the Substitution, including material descriptions, compliance with applicable codes and reference standards, performance and test data, compatibility with contiguous materials and systems, and environmental considerations.

.1 Chart of Comparison: Provide table comparing properties to specified product.

.2 Appearance: provide sample if appearance is relevant.

.3 References: Provide three (3) names, addresses where Product has been used.

.6 A summarized comparison of the physical properties and performance characteristics of the specified *Product* and the Substitution, with any significant variations clearly highlighted.

.7 Construction Methods: provide the following:

.1 Table comparing substitute Product with specified method.

.2 Table describing substitute and specified methods.

.3 Schedule: Compare methods in relation to the Project schedule.

.4 Cost: Compare methods in relation to the Project costs.

.5 Code: verify code compliance.

.8 Availability of maintenance services and sources of replacement materials and parts for the Substitution, as applicable, including associated costs and time frames.

.9 If applicable, estimated life cycle cost savings resulting from the Substitution.

.10 Details of other projects and applications where the Substitution has been used.

.11 Identification of any consequential changes in the *Work* to accommodate the Substitution and any consequential effects on the performance of the *Work* as a whole. A later claim for an increase to the *Contract Price* or *Contract Time* for other changes in the *Work* attributable to the Substitution will not be considered.

.2 Contractor's Acceptance Responsibility:

.1 Contractor shall assume full responsibility and all costs for substitution affecting any other Work.

.2 Contractor to assume all costs related to Drawing and Specification revisions.

.3 Contractor to assume all incorporation and coordination costs.

.4 Contractor to assume all costs to obtain professional signature and seal from Consultant or Engineer registered in the Province of the Work.

.3 Contractor's Representations:

.1 The Contractor has investigated substitute product or manufacturer, or both, and has determined that it meets or exceeds the specified Product or method.

.2 There will be no change in warranty or guarantee.

.3 The Contractor will make any changes to the Work necessitated by the substitution as required for the Work to be complete in all respects, and all changes and coordination of adjacent or related work is included.

.4 Contractor waives claims for additional costs and time caused by substitution which may subsequently become apparent.

.5 No additional compensation or costs will be considered.

.6 Cost quoted, includes all related costs.

.4 Submissions which do not comply with the noted requirements will not be considered.

.5 Substitution Submittal Procedure:

.1 Submit electronic copies of request for Substitution for consideration. Limit each request to one (1) proposed Substitution.

.2 Burden of proof is on proposer.

.3 The Consultant will notify Contractor in writing of decision to accept or reject request.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Requirements and limitations for cutting and patching the Work.

1.2 RELATED SECTIONS

.1 Section 01 62 00: Product Exchange Procedures.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 SUBSURFACE CONDITIONS

.1 Promptly notify Consultant in writing if discovered surface or subsurface conditions at Place of Work differ materially from those indicated in Contract Documents.

.2 Advise the Consultant of a reasonable assumption of probable conditions when determined.

.3 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes or Change Orders set out in Section 01 29 00.

1.4 EXAMINATION

.1 Inspect existing conditions, including elements or adjacent Work subject to irregularities, damage, movement, including Work during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of the Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

1.5 PREPARATION

.1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.2 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.6 EXISTING UTILITIES AND STRUCTURES

.1 Before commencing excavation, drilling or other earthwork, establish or confirm location and extent of all existing underground utilities and structures in work area.

.2 Promptly notify 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.

1.7 VERIFICATION OF EXISTING CONDITIONS

.1 Where work specified in any Section is dependent on the work of another Section or Sections having been properly completed, verify that work is complete and in a condition suitable to receive the subsequent work. Commencement of work of a Section that is dependent on the work of another Section or Sections having been properly completed, means acceptance of the existing conditions.

.2 Verify that ambient conditions are suitable before commencing the work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of Products used.

.3 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.

.4 Notify Consultant in writing of unacceptable conditions.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Submittal requirements associated with connecting to existing facilities.

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

1.2 RELATED SECTIONS

.1 Section 01 70 00: Examination and Preparation.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 SUBMITTALS - ATTACHING TO EXISTING WORK

.1 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of any element of Project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of any operational element.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.2 Include in request:

- .1 Identification of Project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.4 MANUFACTURER'S INSTRUCTIONS

.1 Install, erect, or apply Products in strict accordance with manufacturer's instructions.

.2 Notify Consultant, in writing, of conflicts between Contract Documents and manufacturer's instructions where, in Contractor's opinion, conformance with Contract Documents instead of the manufacturer's instructions may be detrimental to the Work or may jeopardize the manufacturer's warranty.

.3 Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

.4 Provide manufacturer's representatives with access to the Work at all times. Render assistance and facilities for such access so that manufacturer's representatives may properly perform their responsibilities.

1.5 CONCEALMENT

.1 Conceal pipes, ducts, and wiring in floors, walls and ceilings in finished areas:

.1 after review by Consultant and authority having jurisdiction, and

.2 where locations differ from those shown on Drawings, after recording actual locations on as-built drawings.

.2 Provide incidental furring or other enclosures as required.

.3 Notify Consultant in writing of interferences before installation.

1.6 FASTENINGS - GENERAL

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials.

.2 Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to avoid direct contact.

.3 Use non-corrosive fasteners and anchors for securing exterior work [and in spaces where high humidity levels are anticipated].

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.

1.7 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Bolts shall not project more than one diameter beyond nuts.

1.8 FIRE RATED ASSEMBLIES

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

1.9 LOCATION OF FIXTURES, OUTLETS AND DEVICES

.1 Consider location of fixtures, outlets, and devices indicated on Drawings as approximate.

.2 Locate fixtures, outlets, and devices to provide minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements.

.3 Promptly notify Consultant in writing of conflicting installation requirements for fixtures, outlets, and devices. If requested, indicate proposed locations and obtain approval for actual locations.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.10 PROTECTION OF COMPLETED WORK AND WORK IN PROGRESS

.1 Adequately protect parts of the Work completed and in progress from any kind of damage.

.2 Promptly remove, replace, clean, or repair, as directed by Consultant, work damaged as a result of inadequate protection.

.3 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety or integrity of the Work.

1.11 REMEDIAL WORK

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

1.12 EXECUTION

.1 Execute cutting, fitting, and patching to complete the Work.

.2 Perform all required excavation and fill to complete the Work.

.3 Fit several parts together, to integrate with other Work.

.4 Uncover Work to install ill-timed Work.

.5 Remove and replace defective or non-conforming Work.

.6 Remove samples of installed Work for testing, if not designated in the respective Section as remaining as part of the Work.

.7 Provide openings in non-structural elements of Work for penetrations of [mechanical,] [electrical,] [and associated] Work. Limit opening dimensions to minimal sizes required and performed in a neat and clean fashion.

.8 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.9 Employ [competent] [qualified] workers] [original installer] to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.10 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry or concrete work without prior approval.

.11 Restore work with new products in accordance with requirements of Contract Documents.

.12 Fit Work [airtight] [reasonably close to opening size] to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.13 Re-finish surfaces to match adjacent finishes: For continuous surfaces re-finish to nearest intersection; for an assembly, re-finish entire unit.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Requirements and limitations for cutting and patching of Work.

1.2 RELATED SECTIONS

.1 Section 01 10 00: Summary of Work: Work by Owner.

.2 Section 02 41 19: Selective Demolition

.3 Individual Product Specification Sections:

.1 Cutting and patching incidental to Work of the section.

.2 Advance notification to other sections of openings required in Work of those sections.

.3 Limitations on cutting structural members.

1.3 DEFINITIONS

.1 Cutting, Fitting, Patching, Matching and Making Good:

.1 These words used in Contract Documents implies that the Contractor to Provide all labour, materials, and equipment to accomplish the following at no extra cost to Owner.

1.4 REQUEST FOR CUTTING, PATCHING AND REMEDIAL WORK

.1 Submit written request in advance of cutting, coring, or alteration which affects or is likely to affect:

.1 Structural integrity of any element of the Work.

.2 Integrity of weather exposed or moisture resistant element.

.3 Efficiency, maintenance, or safety of any operational element.

.4 Visual qualities of sight exposed elements.

.5 Work of Owner or other contractors.

.6 Warranty of Products affected.

.2 Include in request:

.1 Identification of Project.

.2 Location and description of affected Work, including drawings or sketches as required.

.3 Statement on necessity for cutting or alteration.

.4 Description of proposed Work and Products to be used.

.5 Alternatives to cutting and patching.

.6 Effect on work of Owner or other contractors.

.7 Written permission of affected other contractors.

.8 Date and time work will be executed.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Unless otherwise specified, when replacing existing or previously installed *Products* in the course of cutting and patching work, use replacement *Products* of the same character and quality as those being replaced.

.2 Obtain new products to patch, match or extend existing products and meet or exceed quality of existing products.

.3 Quality of existing products, available for assessment during pre-bid site visit, shall serve as basis for requirements for appearance and performance of materials used in the Work.

.4 Where existing material cannot be matched with new, salvaged material may be used subject to approval by Owner & Consultant.

.5 Where matching materials are not available, Owner & Consultant will consider similar product which meets same performance requirements as existing.

.6 Obtain acceptance of Owner & Consultant before installing any materials not matching existing.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

.2 Execute cutting, fitting and patching of work that may be required to make several parts fit properly together to receive or be received by work of various Sections specified.

.3 After uncovering existing Work, assess conditions affecting performance of Work.

.4 Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

.1 Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

.2 Provide protection from elements for areas which may be exposed by uncovering Work.

.3 Maintain excavations free of water.

.4 Obtain Consultant's review before cutting, boring or sleeving load-bearing members.

3.3 EXISTING UTILITIES

.1 Where the Work involves breaking into or connecting to existing services, give Owner 48 hours notice for necessary interruption of mechanical or electrical services.

.2 Maintain excavations free of water.

.3 Keep duration of interruptions to a minimum.

.4 Carry out interruptions after regular working hours of occupants, preferably on weekends, unless Owner's prior written approval is obtained.

.5 Protect and maintain existing active services. Record location of services, including depth, on as-built drawings.

.6 Construct or erect barriers in accordance with Section 01 53 00 - Temporary Construction as required to protect pedestrian and vehicular traffic.

3.4 CUTTING, REMOVAL AND FITTING - GENERAL

.1 Contractor shall assign the Work of moving, removal, cutting, patching and repair to trades under his supervision so as to cause the least damage to each type of Work encountered, and so as to return the building as much as possible to the appearance of new Work.

.2 Coordinate and perform the *Work* to ensure that cutting and patching work is kept to a minimum.

.3 Perform cutting, fitting, patching, and remedial work [including excavation and fill,] to make the affected parts of the *Work* come together properly and complete the *Work*.

.4 Provide openings in non-structural elements of the *Work* for penetrations of mechanical and electrical work.

.5 Uncover Work to install improperly sequenced Work.

.6 Remove and replace defective or non-conforming Work.

.7 Leave the structural integrity of the altered area in proper conditions.

.8 Remove samples of installed Work for testing when requested.

.9 Perform work to avoid damage to other Work.

.10 Perform cutting, patching, and remedial work using competent and qualified specialists familiar with the Products affected, in a manner that neither damages nor endangers the Work.

.11 Cut rigid materials using masonry saw or core drill.

.12 Do not use pneumatic or impact tools without *Consultant*'s prior approval.

.13 Make cuts with clean, true, smooth edges. Make patches invisible in final assembly.

.14 Use electric percussion tools to cut clay tile, plaster and concrete blocks.

.15 Carefully remove material being cut. Do not cut services.

.16 Where required, carefully remove modular, manufactured type finishes, including lay-in ceiling tile in component ceiling systems.

.17 Ensure that cutting, patching, and remedial work does not jeopardize manufacturers' warranties.

.18 Refinish surfaces to match adjacent finishes. For continuous surfaces refinish to nearest intersection. For an assembly, refinish entire unit.

.19 Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces with suitable allowance for deflection, expansion, contraction, acoustic isolation, and firestopping.

.20 Maintain fire ratings of fire rated assemblies where cutting, patching, or remedial work is performed. Completely seal voids or penetrations of assembly with firestopping material to full depth or with suitably rated devices.

3.5 REPAIR

.1 Repair all Work damaged in the course of alterations, except at areas accepted otherwise by the Consultant for other remedial action.

.2 Where full removal of extensive amounts of almost-suitable work would be needed to replace damaged portions, then filling, straightening, spackling and similar repair techniques, followed by full painting or other finishing, may be permitted by the Consultant.

.3 Examples of Work that may frequently be approved by the Consultant for repair, rather than replacement: slightly bent ceiling runners, hairline cracks in drywall. If the repaired Work is not brought up to the standard for new Work, the Consultant will direct that it be cut out and replaced with new Work.

3.6 PATCHING

.1 Execute patching to complement adjacent Work.

.2 Fit Products together to integrate with other Work.

.3 Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

.4 The work of patching, repairing, replacing and/or rebuilding existing work shall be performed by tradesmen qualified to work the specific material or finish.

.5 Restore work with new Products in accordance with requirements of Contract Documents.

.6 Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

.7 No attempt has been made to show or specify all the various existing materials, components, finishes, etc., which may be affected by the Work of this Contract. The

Contractor shall investigate all aspects of the Work in a pre-bid site visit and shall be the standard of quality for repair, patching and making good, as acceptable by the Consultant.

.8 Ensure continuity of building air and vapour seals and retardant treatment.

.9 CONCEAL PIPES, DUCTS AND WIRING IN FLOOR, WALL AND CEILING CONSTRUCTION IN FINISHED AREAS EXCEPT WHERE INDICATED OTHERWISE.

.10 Location of fixtures, apparatus, outlets, etc., shown or specified shall be considered as approximate.

.11 Actual location shall be as directed and required to suit conditions at time of installation. Ensure these variations are duly recorded on the 'Record Drawings' as specified in Section 01 78 10.

.12 Where piping, conduit, ductwork or any other building components pass through ceilings or walls, close off space between such components and adjacent construction with tight fitting metal caps and non-combustible insulation to preserve and maintain required fire ratings and separations. Caulk and seal to the approval of authorities having jurisdiction. Specific requirements are outlined in Section 07 84 00 - Firestopping.

3.7 PATCHING, EXTENDING AND MAKING GOOD TO EXISTING WORK

.1 Patch, extend and make good existing work using skilled workers able to match existing quality. Quality of work shall meet technical requirements for similar components throughout Specifications.

.2 Where a portion of existing finished surface is damaged, lifted, stained, or otherwise imperfect, patch or replace with matching materials. Match existing finishes unless specified otherwise.

.3 If patched or imperfect surface was painted or coated, repaint or recoat entire surface area.

.4 Replace damaged lay-in type ceiling tile and other components with new.

.5 Patch surfaces and materials exposed by partition removal, with finishes to match adjacent.

.6 Restore existing work damaged during construction to a condition matching existing finishes.

3.8 TRANSITIONS

.1 Make transitions as smooth as possible where new work abuts or finishes flush with existing work.

.2 Match existing adjacent work in texture and appearance, providing transition invisible to the eye from distance of 2 meters.

.3 When smooth transition is not practicable, e.g., from a smooth finish to masonry, tile or plaster, terminate existing surface along a straight line at a natural point of division and provide trim to Owner & Consultant's approval.

.4 Where two or more spaces become one space and planes are nominally continuous, review with the Consultant methods to re-work floors and walls and ceilings to provide planes meeting without breaks, steps or bulkheads.

.5 When the difference is greater than approved by the Consultant, the Consultant will issue instructions to effect the transition.

3.9 ALTERATIONS TO MECHANICAL AND ELECTRICAL SERVICES

.1 Refer to electrical drawings and Divisions 26 of the Specifications for extent of electrical alterations.

.2 Perform alterations with minimum disturbance to existing work.

.3 Access service runs in ceiling spaces through light fixture openings and ceiling access panels where possible. Subject to Owner & Consultant's approval.

.4 Except in electrical rooms, conceal ducts, pipes, raceways, conduit runs and junction boxes using chases and cut-outs in walls and floors, under floor ducts and ceiling spaces.

.5 Patch and make good existing work, where damaged due to alterations to and installation of services.

3.10 CORING, DRILLING AND SAW-CUTTING CONCRETE

.1 When specified, complete an x-ray inspection of affected concrete area before coring. Employ the services of an experienced x-ray inspector. Confirm with Owner before coring or drilling, location of reinforcing steel and raceways that may be present.

.2 Wet or dry core drilling and saw-cutting are acceptable. Reduce amount of cooling water used to minimum required and collect water used in suitable containers or use a suitable vacuum system that will collect water.

.3 Do not core structural beams or cut conduits or reinforcing steel without written permission from Owner and Consultant.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Progressive cleaning.

.2 Cleaning prior to acceptance.

1.2 RELATED SECTIONS

.1 Section 01 35 41: Waste Managing and Disposal.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REGULATORY REQUIREMENTS

.1 Comply with applicable regulatory requirements when disposing of waste materials.

.2 Obtain permits from authorities having jurisdiction and pay disposal fees where required for disposal of waste materials and recyclables.

1.4 GENERAL CLEANING REQUIREMENTS

.1 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.

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

.3 Prevent cross-contamination during the cleaning process.

.4 Notify the Consultant of the need for cleaning caused by Owner or other contractors.

1.5 PROGRESSIVE CLEANING AND WASTE MANAGEMENT

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

.2 Provide appropriate, clearly marked, containers for collection of waste materials and recyclables. Locate containers as directed by the Owner.

.3 Remove waste materials and recyclables from work areas, separate, and deposit in designated containers at end of each *Working Day*. Collect packaging materials for recycling or reuse.

.4 Remove waste materials and recyclables from *Place of the Work* at regular intervals.

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

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

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

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

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

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

1.6 CLEANING PRIOR TO ACCEPTANCE

.1 Prior to applying for Substantial Performance of the Work, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Before final cleaning, arrange a meeting at Place of the Work to determine the acceptable standard of cleaning. Ensure that Owner, Consultant, Contractor are in attendance.

.3 Remove from Place of the Work surplus Products, waste materials, recyclables, Temporary Work, and Construction Equipment not required to perform any remaining work.

.4 Provide professional cleaning by a qualified, established cleaning company.

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

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

.7 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.

.8 Re-clean as necessary areas that have been accessed by Contractor’s workers prior to Owner occupancy.

.9 Remove dust from lighting reflectors, lenses, lamps, bulbs, and other lighting surfaces.

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

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Dispose of waste materials and recyclables at appropriate municipal landfills and recycling facilities in accordance with applicable regulatory requirements.

.2 Do not burn or bury waste materials at Place of the Work.

.3 Do not dispose of volatile and other liquid waste such as mineral spirits, oil, paints and other coating materials, paint thinners, cleaners, and similar materials together with dry waste materials or on the ground, in waterways, or in storm or sanitary sewers. Collect such waste materials in appropriate covered containers, promptly remove from Place of

the Work, and dispose of at recycling facilities or as otherwise permitted by applicable regulatory requirements.

.4 Cover or wet down dry waste materials to prevent blowing dust and debris.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Starting equipment in preparation for adjusting and commissioning.

.2 To bring the facility to a fully operational state, free of deficiencies, in the most efficient and timely manner achievable.

.3 Contractor's and Owner's responsibilities during each of the following successive sub phases of facility start-up:

.1 Contractor start-up which leads to Substantial Completion of the Work.

.2 Performance Testing which leads to Practical Completion of the Work.

1.2 RELATED SECTIONS

.1 Section 01 75 19: Testing, Adjusting and Balancing.

.2 Division 21, 22, 23: General Mechanical Starting and Testing.

.3 Division 21, 22, 23: Mechanical Equipment Systems Starting & Testing.

.1 Division 26, 27, 28: Electrical Equipment Systems Starting & Testing.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 STARTING SYSTEMS

.1 Coordinate schedule for start-up of various equipment and systems.

.2 Notify Consultant and Owner seven days prior to start-up of each item.

.3 Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

.4 Verify tests, metre readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

.5 Verify that wiring and support components for equipment are complete and tested.

.6 Execute start-up under supervision of applicable Contractors' personnel in accordance with manufacturers' instructions.

.7 When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

.8 Submit a written report in accordance with Section 01 33 00 that equipment or system has been properly installed and is functioning correctly.

1.4 START-UP REPORT

.1 Commissioning agent will provide start up report forms (check sheets) with the exception of controls.

.2 Contractor to develop, complete and provide the report forms for all control points, software and hardware

.3 Submit completed report forms to commissioning agent for review within ninety (90) days of award of contract.

.4 Commissioning agent will assemble completed report forms into a Acommissioning manual@ on the following subjects:

.1 Each mechanical system (except for controls).

.2 Each electrical system

.5 Refer to Owner for a sample of the commissioning report form.

.6 Include manufacturer's equipment start-up reports and test certificates as an appendix to the commissioning manual.

.7 The commissioning manual will be kept on site for use by appropriate contractors and the commissioning agent.

.1 Maintain this manual current.

.2 Maintain a schedule for work of the commissioning agent in conjunction with the commissioning schedule.

.8 The report forms are divided into three parts:

.1 Technical Data

.2 Static Checks

.3 Operational Checks

.9 Contractor is to complete each part prior to verification by the commissioning agent.

.10 Contractor is responsible for completing the report forms as follows and as indicated on the attached sample:

.1 <u>Technical Data</u>

Specified:	Commissioning Agent
Shop Drawing:	Contractor
Installed:	Contractor
Verified:	Commissioning Agent
Date/Checked By:	Contractor to sign when all shop drawing and installed information is completed.

.2 <u>Static Checks</u>

Confirmation of Completion:	Contractor to confirm all items listed are completed prior to verification by the commissioning agent.
Date / Checked By:	Contractor to sign when the installation of the equipment and or systems are complete and ready for the commissioning agent to verify.

.3 <u>Operational Checks</u>

Operational checks will be performed by the commissioning agent using the balancing report and control=s forms.

1.5 SUBMISSIONS

.1 Advise Commissioning Agent of report forms required for equipment and systems but not yet supplied by the commissioning agent.

.2 Provide a sample of manufacturer's start-up forms for equipment or systems not included.

.3 Submit and completed and verified commissioning manual to the Owner with all data entered and sign-offs, prior to Substantial Performance of the Work.

1.6 CONTRACTOR START UP

.1 Contractor to perform the following during start-up:

- .1 Start equipment and systems.
- .2 Test, adjust and balance equipment and systems as specified in Section 01 75 19.
- .3 Demonstrate equipment and systems as specified in Section 01 78 10.

.2 Complete and submit start-up reports including:

- .1 Contractor's system and equipment start up reports.
- .2 Manufacturers' equipment start up reports.

.3 Review Contract Documents and inspect the Work to ensure completeness of the Work and compliance with requirements of Contract Documents.

.4 Correct Contract deficiencies and defects identified as a result of the foregoing and as may be identified by the owner.

.5 Execute and complete approved Change Orders.

.6 Perform other work and activities required for fulfillment of prerequisites to Interim Acceptance of the Work.

.7 Commissioning Agent will perform the following during start-up:

- .1 Perform preliminary interim inspections as necessary.
- .2 Witness manufacturers' equipment start-up.
- .3 Verify starting, testing, adjusting and balancing by Contractor.
- .4 Provide start-up reports for all systems and equipment and review and approve Contractor start-up reports.
- .5 Cooperate in systems and equipment demonstration and instruction.
- .6 Initiate Change Orders as required.
- .7 Verify correction of Contract deficiencies and defects by Contractor.
- .8 Verify execution of Change Orders performed by Contractor.
- .9 Perform other activities related to Substantial Performance of the Work as specified in Section 01 78 10.

.8 The following will be performed to an on-going cycle of:

.1 Owner's inspections.
.2 Documentation of results.
.3 Diagnosis of problems.
.4 Correction of Contract Deficiencies and execution of Change Orders as required.
.5 Verification of results.

1.7 PERFORMANCE TESTING

.1 Performance testing will be performed by the Commissioning Agent and:

.1 completed prior to Substantial Performance,
.2 completed when all systems have been balanced and tested and are operating to the satisfactory of the Commissioning Agent, and

.2 Contractor to perform the following during Performance Testing:

.1 Correct Contract deficiencies and defects previously outstanding and those identified during performance testing.
.2 Execute Change Orders.

.3 The following will be performed to an on-going cycle of:

.1 Performance testing.
.2 Documentation of results.
.3 Diagnosis of problems.
.4 Correction of Contract deficiencies, defects and execution of Change Orders as required.
.5 Verification of results.

1.8 SEASONAL CONSTRAINTS

.1 Notwithstanding requirements in this section, additional separate cycles of Contractor start-up, performance testing and fine tuning may be necessitated at a later time on equipment and systems whose full operation is dependent on seasonal conditions.

.2 Contractor's responsibilities with respect to later facility start-up activities are specified in this section.

1.9 PARTIAL UTILIZATION OF WORK

.1 When partial utilization of the Work is required, the applicable requirements specified in this section apply to the part(s) of the Work to be utilized.

1.10 THIRD PARTY TESTING

.1 Third party independent testing may be carried out prior to Substantial Performance:

.2 Cooperate with independent testing agencies to enable thorough and detailed testing of all systems and equipment.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Adjusting products and equipment required by all specifications sections for this Project.

1.2 RELATED SECTIONS

.1 Section 01 74 00: Cleaning and Waste Processing.

.2 Section 01 75 16: Start-Up Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 PURPOSE

.1 Testing adjusting and balancing of operating systems will be performed in contract by an agency that will be selected by the Owner and consigned to this Contract:

.2 Prior to start of balancing, the Contractor is to ensure systems are:

.1 piped, ducted, wired and wireless services and systems, including components and equipment forming part thereof,

.2 manually and mechanically operated, including components and equipment forming any part,

.3 testing, adjusting and balancing will not be started until after all static checks have been completed for the system being balanced and signed off on the commissioning report forms,

.4 Contractor to ensure systems are operated at designated times, under conditions required for proper testing, adjusting, and balancing,

.5 report any deficiencies or defects which may effect the balancing or noted during testing, adjusting and balancing, which cannot be promptly corrected.

Part 2 PRODUCTS

Not used.

Part 3 EXECUTION

3.1 PREPARATION

.1 Prepare each system and item of equipment for testing, adjusting and balancing.

.2 Verify that each system and equipment installation is complete and in functional operation.

.3 Verify appropriate ambient conditions.

3.2 TESTING

.1 Tests will be conducted to confirm compliance with requirements of Contract Documents. Take corrective action as necessary.

3.3 ADJUSTING

.1 Adjust operating Products and equipment to ensure smooth and unhindered operation.

.2 Provide equipment required to ensure proper, efficient and safe operation of all equipment including belts and sheaves.

3.4 BALANCING

.1 Cooperate with, and assist the balancing agent to ensure that the various parts of system are in a proper state of equilibrium.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Reviews and declarations.

.2 Closeout submittals

.3 Operation and maintenance manual format.

.4 Contents each volume.

.5 Recording actual site conditions.

.6 Record (as-built) documents and samples.

.7 Warranties and bonds.

1.2 RELATED SECTIONS

.1 Section 01 33 00: Submittal Procedures.

.2 Section 01 45 00: Quality Control.

.3 Division 26-28: Electrical Submittals.

.4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 REVIEWS AND DECLARATIONS

.1 Contractor's Review: Contractor and all Subcontractors shall conduct a review of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

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

.2 Request Consultant's Review.

.2 Consultant's Review:

.1 Consultant and Contractor will perform review of Work to identify defects or deficiencies.

.2 Correct defective and deficient Work accordingly.

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

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

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

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

.4 Certificates required by Authorities Having Jurisdiction have been submitted.

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

.6 Work is complete and ready for Final Review.

.4 Final Review:

.1 When items noted above are completed, request final review of Work by Owner and Consultant, and Contractor.

.2 If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-review.

.5 Declaration of Substantial Performance:

.1 When Owner and Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Substantial Performance of the Work.

.6 Commencement of Warranty Periods:

.1 Date of Substantial Performance of the Work shall be the date for commencement of the warranty period.

.7 Commencement of Lien Periods:

.1 Date of publication of the certificate of Substantial Performance of the Work shall be the date for commencement of the lien period, unless required otherwise by lien legislation applicable at Place of the Work.

.8 Final Payment:

.1 When Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.

.9 Payment of Hold-back:

.1 After issuance of certificate of Substantial Performance of the Work, submit an application for payment of hold-back amount.

1.4 OPERATION AND MAINTENANCE MANUAL

.1 Prepare a comprehensive operation and maintenance manual, in the language of the Contract, using personnel qualified and experienced for this task.

.2 Submit an initial draft of the operation and maintenance manual for Consultant's review, eight (8) weeks prior to Substantial Performance of the Work. If required by Consultant's review comments, revise manual contents and resubmit for Consultant's review. If required, repeat this process until Consultant accepts the draft manual in writing.

.3 Final Copies: Four (4) weeks prior to Substantial Performance of the Work, submit to the Consultant, three (3) final hard copies and one (1) final electronic copies of operating and maintenance manuals in Canadian English.

1.5 OPERATION AND MAINTENANCE MANUAL FORMAT (HARD COPY)

.1 Organize data in the form of an instructional manual.

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

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

.4 Cover: Identify each binder with typed or printed title “Operation and Maintenance Manual”, name of Project or facility, and subject matter of contents.

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

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

.7 Text: Manufacturer's printed data, or typewritten data.

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

.9 Provide electronic copy of Shop Drawings in manual as 1:1 scaled CAD files in .dwg format on USB flash drive or electronic media acceptable to Owner.

.10 Provide electronic copy of all Manuals (Architectural, Mechanical, & Electrical) in searchable PDF format.

.11 Refer to Division 26 to 28 – Electrical Submittals for electrical manual format.

1.6 CONTENTS - EACH VOLUME

.1 Table of Contents for each volume: provide title of project;

.1 date of submission;

.2 Complete contact information for Consultant, subconsultants, other consultants, and Contractor with name of responsible parties; and

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

.2 For each product or system, include complete contact information for Subcontractors, Suppliers and manufacturers, including local source of supplies and replacement parts.

.3 Product Data: Mark each sheet to clearly identify specific products, options and component parts, and data applicable to installation; delete or strike out inapplicable information. Supplement with additional information as required.

.4 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 – Quality Control.

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

.6 Reviewed Shop Drawings.

.7 Certificate of Acceptance: Relevant certificates issued by authorities having jurisdiction, including code compliance certificate, life safety systems performance certificate and pressure vessel acceptance.

.8 Warranties.

.9 Refer to Division 26 to 28 – Electrical Submittals for electrical volume format and content.

1.7 OPERATION AND MAINTENANCE MANUAL FORMAT (ELECTRONIC COPY)

.1 Digital Copy Format: Provide database and PDF documents on USB Memory Stick as a single digital file with hyperlinks to associated files and documents for easy retrieval and use by the Owner and as follows:

.2 Number of Copies: Provide one (1) USB Memory Sticks each containing fully linked data and searchable index.

.3 Presentation: Assemble, coordinate and index required data into Operation and Maintenance Data Manual arranged by the same MasterFormat Division numbers and as follows:

.1 Submit required copies in English language.

.2 Drawings, diagrams and manufacturers literature must be legible.

.3 Scanned paper copies must be type written or set; handwritten materials will not be accepted.

1.8 OPERATION AND MAINTENANCE MANUAL - PRODUCTS AND FINISHES CONTENT

.1 Include Product data, with catalogue number, options selected, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured Products.

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

.3 Include an outline of requirements for routine and special inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.

.4 Include additional content as specified in technical Specifications sections.

1.9 OPERATION AND MAINTENANCE MANUAL - WARRANTIES CONTENT

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

.2 List each warrantor with complete contact information.

.3 Verify that documents are in proper form and contain full information. Ensure that warranties are for the correct duration and are in Owner’s name.

.4 Include maintenance bond(s).

1.10 RECORDING ACTUAL SITE CONDITIONS ON CONTRACTOR'S AS-BUILT DRAWINGS

.1 Record information on set of black line opaque drawings, and within the Project Manual, provided by Owner. Record information and maintain as-built drawings in clean, dry and legible condition.

.1 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.

.2 Clearly label each drawing as "AS-BUILT DRAWING". Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.

.3 Record changes and variations from Contract Drawings concurrently with construction process. Do not conceal any work until required information is digitally recorded and a back-up copy has been saved.

.1 Prior to placing concrete slab, record:

.1 Locations and routing of site, inslab and underslab services.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances.

.3 Locations and identification of underslab equipment and materials.

.4 Measured depths of foundation elements in relation to finished first floor datum.

.5 Prior to slab pours, video inspection shall be completed for all underground piping. Forward video for Owner's approval prior to slabs being poured.

.2 Prior to enclosing walls, record:

.1 Locations and identification of all concealed equipment.

.2 Locations and identification of all major service risers.

.3 Locations and identification of all access requirements.

.3 Prior to enclosing ceilings, record:

.1 Locations and identification of all concealed equipment

.2 Locations and routing of major services

.3 Locations of internal utilities and appurtenances.

.4 Prior to enclosing floors, record:

.1 Locations and identification of all concealed equipment

.2 Locations and routing of major services.

.4 Reference all horizontal measured locations to gridlines and/or major permanent building elements or surface improvements.

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

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

.2 Changes made by Addenda and change orders.

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

1.11 RECORD (AS-BUILT) DOCUMENTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Consultant and Owner, one record copy of:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Change Orders and other modifications to the Contract.
- .5 Reviewed Shop Drawings, Product data, and samples.
- .6 Field test records.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.

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

.3 Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.

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

.5 Keep as-built documents and samples available for review by Consultant.

1.12 SPARE PARTS, MAINTENANCE MATERIALS, AND SPECIAL TOOLS

.1 Supply spare parts, maintenance materials, and special tools in quantities specified in technical Specifications sections.

.2 Ensure spare parts and maintenance materials are new, not damaged nor defective, and of same quality, manufacturer, and batch or production run as installed Products.

.3 Provide tags for special tools identifying their function and associated Product.

.4 Deliver to and store items at location directed by Owner at Place of the Work. Store in original packaging with manufacturer’s labels intact and in a manner to prevent damage or deterioration.

.5 Catalogue all items and submit to Consultant an inventory listing organized by Specifications section. Include Consultant reviewed inventory listing in operation and maintenance manual.

.6 If requested, furnish evidence as to type, source and quality of products provided.

.7 Defective products will be rejected, regardless of previous reviews. Replace products at own expense.

.8 Pay costs of transportation.

1.13 WARRANTIES AND BONDS

.1 In addition to the one (1) year warranty for the entire project, provide extended guarantees and warranties as specified in the individual Sections. All guarantees and warranties must be in the name of the Owner.

.2 In the case of work performed by his Subcontractors and when the guarantees and warranties are required, secure such guarantees from the Subcontractors.

.3 All guarantees and warranties are to commence on the date of Substantial Performance of the Work, in total. In the case where portions of the Work are occupied by the Owner prior to Substantial Performance of the Work, then extend guarantees and warranties that are applicable to include for the period of time prior to Substantial Performance of the Work. Bind all guarantees and warranties into the maintenance manuals.

.4 Provide within O/M manuals an index sheet clearly indicating location of all warranties based on product type within their respective Sections.

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

.6 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of Work.

.7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

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

.9 Co-execute submittals when required.

.10 Retain warranties and bonds until time specified for submittals.

1.14 TAKEOVER PROCEDURES

.1 Prior to application for certificate of Substantial Performance of the Work, carefully review the Work and ensure it is complete, that major and minor construction deficiencies are complete, defects are corrected and the building is clean and in condition for occupancy. Notify the Consultant in writing, of satisfactory completion of the Work and request review.

.2 Reviews by the Consultants include listing deficiencies, omissions, and non-compliance of Work with Contract Documents.

.3 Rectify outstanding deficiencies encountered after occupancy and during the guarantee period, as specified under the Contract Documents and after review by the Consultants.

.4 Carry out corrective measures as required to correct outstanding items as listed by the Consultant in the deficiencies list upon and within a reasonable time of notification.

1.15 FOLLOW-UP REVIEW - TOTAL PERFORMANCE OF THE WORK AND FINAL CERTIFICATE OF PAYMENT

.1 Advise the Consultant when all deficiencies have been corrected and request a follow-up review.

.2 Obtain a Total Performance of the Work and Final Certificate of Payment upon completion of all deficiencies and required corrective Work from the Consultant; initiate specified follow up reviews until Total Performance of the Work has been declared and Final Certificate of Payment has been issued.

1.16 FINAL WARRANTY REVIEW

.1 Prior to the expiry of the Warranty period for the project or individually completed areas of the project, carry out a review by the Consultant and the Contractor detailing the defective or unsatisfactory materials and workmanship. Carry out all remedial work required as observed by this review.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Equipment and systems.

.2 Materials and finishes.

.3 Spare parts.

.4 Maintenance manuals.

.5 Special tools.

.6 Storage, handling and protection.

1.2 RELATED SECTIONS

.1 Section 01 78 40: Closeout Submittals.

.2 Section 01 45 00: Quality Control.

1.3 EQUIPMENT AND SYSTEMS

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

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

.3 Include installed colour coded wiring diagrams.

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

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

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

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

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

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

.14 Include test and balancing reports as specified in Section 01 45 00.

.15 Additional requirements: As specified in individual specification sections.

1.4 MATERIALS AND FINISHES

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

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

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

.4 Building Envelope: include copies of drawings of building envelope components, illustrating the interface with similar or dissimilar items to provide an effective air, vapour and thermal barrier between indoor and outdoor environments. Include an outline of requirements for regular inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.

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

1.5 SPARE PARTS

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

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

.3 Deliver to site; place and store.

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

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

1.6 MAINTENANCE MATERIALS

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

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

.3 Deliver to site; place and store.

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

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

.6 Mechanical Spare Parts: Furnish spare parts as follows and as specified in relevant sections.

.1 One (1) set of seals for each pump.

.2 One (1) set of belts for each piece of equipment.

.3 One (1) set of filter media for each filter or filter bank in addition to final operating.

.4 Twenty four (24) filter cartridges for each bypass filter installed on project.

1.7 SPECIAL TOOLS

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

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

.3 Deliver to site; place and store.

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

1.8 STORAGE, HANDLING AND PROTECTION

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

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

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

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

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

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Demonstrate and provide training to Owner's personnel on operation and maintenance of equipment, prior to scheduled date of Substantial Performance of the Work.

.2 Owner will provide list of personnel to receive training and will coordinate their attendance at agreed upon times.

.3 Coordinate and schedule demonstration and training provided by Subcontractors and Suppliers.

1.2 RELATED SECTIONS

.1 Section 01 45 00: Quality Control.

.2 Section 01 75 16: Startup-Procedures.

.3 Section 01 75 19: Testing, Adjusting and Balancing.

.4 Section 01 78 40: Closeout Submittals.

.5 Division 21, 22, 23, 25: Mechanical submittals.

.6 Division 26, 27, 28: Electrical submittals.

.7 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 COMPONENT DEMONSTRATION

.1 Manufacturer to provide authorized representative to demonstrate operation of equipment and systems.

.2 Instruct Owner's personnel and provide written report that demonstration and instructions have been completed.

1.4 SUBMITTALS

.1 Submit schedule of time and date for demonstration of each item of equipment and each system.

.2 Submit proposed dates, times, durations, and locations for demonstration and training of each item of equipment and each system for which demonstration and training is required, [two weeks] prior to designated dates, for Consultant's approval. Allow sufficient time for training and demonstration for each item of equipment or system, or time as may be specified in technical Specifications.

.3 Consultant and Owner will review submittal and advise Contractor of any necessary revisions.

.4 Submit report(s) within five (5) Working Days after completion of demonstration and training:

.1 identifying time and date of each demonstration and training session,

.2 summarizing the demonstration and training performed, and

.3 including a list of attendees.

.5 Submit a video record of adequate quality of all demonstration and training sessions for Owner use, together with report.

1.5 CONDITIONS FOR DEMONSTRATIONS

.1 Testing, adjusting, and balancing has been performed in accordance with Contract Documents.

.2 Equipment and systems are fully operational.

.3 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

.4 Conditions for demonstration and training comply with requirements specified in technical Specifications.

Part 2 PRODUCTS

Not used.

Part 3 EXECUTION

3.1 PREPARATION

.1 Verify that suitable conditions for demonstration and instructions are available.

.2 Verify that designated personnel are present.

.3 Prepare agendas and outlines.

.4 Establish seminar organization.

.5 Explain component design and operational philosophy and strategy.

.6 Develop equipment presentations.

.7 Present system demonstrations.

.8 Accept and respond to seminar and demonstration questions with appropriate answers.

3.2 PREPARATION OF AGENDAS AND OUTLINES

.1 Prepare agendas and outlines including the following:

.1 Equipment and systems to be included in seminar presentations.
.2 Name of companies and representatives presenting at seminars.
.3 Outline of each seminar's content.
.4 Time and date allocated to each system and item of equipment.
.5 Provide separate agenda for each system

3.3 SEMINAR ORGANIZATION

.1 Coordinate content and presentations for seminars.

.2 Coordinate individual presentations and ensure representatives scheduled to present at seminars are in attendance.

.3 Arrange for presentation leaders familiar with the design, operation and maintenance and troubleshooting of the equipment and systems. Where a single person is not familiar with all aspects of the equipment or system, arrange for specialists familiar with each aspect.

.4 Coordinate proposed dates for seminars with Owner and select mutually agreeable dates.

3.4 EXPLANATION OF DESIGN STRATEGY

.1 Explain design philosophy of each system. Include following information:

.1 An overview of how system is intended to operate.

.2 Description of design parameters, constraints and operational requirements.

.3 Description of system operation strategies.

.4 Information to help in identifying and troubleshooting system problems.

3.5 DEMONSTRATION AND TRAINING

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment or designated location.

.2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.

.3 Review operation and maintenance manual in detail to explain all aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Alteration project procedures.

.2 Removal of designated building equipment and fixtures as required to facilitate demolition, including salvage of existing items to be reused in new construction.

.3 Removal of designated construction.

.4 Disposal of materials.

.5 Capping and identification of utilities.

.6 Cutting of existing surfaces as required to receive work of Divisions 20 to 27.

.7 Protective hoardings and barricades.

1.2 RELATED SECTIONS

.1 Section 01 10 01 – General Requirements.

1.3 REFERENCE STANDARDS

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 2019 National Building Code - Alberta Edition.

.3 Workers' Compensation Act - Province of Alberta

.4 Workers Compensation Act - Province of British Columbia

.5 Workers Compensation Act - Saskatchewan

.6 Hazardous Products Act (Canada)

.7 Workplace Hazardous Materials Information System (WHMIS)

.8 CSA S350 -M1980 (R2003): Code of Practice for Safety in Demolition of Structures.

.9 ASSE A10.6 -2014: Safety Requirements for Demolition Operations

.10 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 10 01: Procedures for submittals.

.2 Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work.

1.5 SUBMITTALS FOR CLOSEOUT

.1 Section 01 10 01: Procedures for submittals.

.2 Project Record Documents: Accurately record actual locations of capped utilities and subsurface obstructions.

1.6 REGULATORY REQUIREMENTS

.1 Conform to applicable 2019 National Building Code – Alberta Edition for demolition work, dust control, products requiring electrical disconnection and re-connection

.2 Obtain required permits from authorities.

.3 Do not close or obstruct egress width to any building or site exit.

.4 Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

.5 Conform to procedures applicable when hazardous or contaminated materials are discovered.

1.7 VISIT AND EXAMINE SITE

.1 Visit and examine the site and become familiar with all features and characteristics affecting the work. No allowances will be made by the Owners for any difficulties encountered due to any features or peculiarities of the site or existing conditions which exist at the time of examination prior to submission of bid.

.2 Inspect the premises to determine the conditions under which the work is to be done and the amount of materials and debris to be removed.

.3 Provide at least one person who is familiar with the scope and intent of the Work and ensure that he is present at all times during all phases of the demolition.

1.8 SCHEDULING

.1 Section 01 10 00.

.2 Schedule demolition work with the Owner and Consultant to cause minimum interference with adjacent building and site.

1.9 PROJECT CONDITIONS

.1 Conduct demolition to minimize interference with adjacent and occupied building areas.

.2 Cease operations immediately if structure appears to be in danger and notify Consultant. Do not resume operations until directed.

1.10 CHANGED CONDITIONS

.1 If the condition of structures to be demolished is significantly different when work is commenced, relative to the condition at time of examination prior to bidding, immediately inform the Consultant.

1.11 EXISTING SERVICES

.1 Verify with the Consultant, all services which are to remain and which are to be removed or relocated.

.2 Arrange and pay for disconnecting, removing and capping utility services within area of demolition. Disconnect and stub off as required, removing line as far back as possible to lines remaining in service.

.3 Place markers to indicate location of disconnected services. Identify service lines and capping locations on as-built drawings.

.4 Locate all electrical wiring in demolition areas and determine all requirements before disconnecting and capping.

.5 Notwithstanding any industry trade scope definitions, mechanical demolition must be done by the mechanical Subcontractor, and electrical demolition must be done by the electrical Subcontractor.

1.12 PROTECTION

.1 Do not interfere with use of adjacent buildings. Maintain free and safe passage to and from occupied buildings.

.2 Prevent movement or settlement of structure(s), services and of existing building to remain. Provide and place bracing and be responsible for safety and support of structure. Be liable for any such movement or settlement and any damage or injury caused.

.3 Cease operations and notify the Consultant immediately, if safety of structure appears to be endangered. Take all precautions to properly support structure. Do not resume operations until reviewed with the Consultant.

.4 Ensure safety of persons in area not enclosed with barriers preventing entrance of the public or other workers. Provide, erect and maintain hoardings, barricades, lighting and guard rails as required by local authority's regulations and by-laws to provide full protection for occupants of building and workers.

.5 Prevent debris from blocking drainage systems and inlets, mechanical and electrical systems which remain operational.

.6 Protect electrical and mechanical system components which are intended to remain, or required to serve areas not being demolished. Do not demolish any electrical or mechanical components before they have been identified. If mechanical or electrical components or systems whose disposition (to be demolished or to be retained) is not described in the drawings are encountered, notify the Consultant.

1.13 DEMOLITION DRAWINGS

.1 Where required by authorities having jurisdiction, submit for approval, drawings, diagrams or details clearly showing sequence of demolition/disassembly and removal work for building supporting structure and underpinning as may be Do not commence

with demolition work until these drawings have been approved by the Authority having jurisdiction.

1.14 HAZARDOUS MATERIALS

.1 Cease operations and notify the Consultant immediately if unexpected hazardous materials are encountered.

1.15 ALTERATION PROJECT PROCEDURES

.1 Materials: As specified in Product sections; match existing Products and work for patching and extending work.

.2 Employ skilled and experienced installer to perform alteration work.

.3 Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

.4 Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring Products and finishes to original or specified condition.

.5 Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with a neat transition to adjacent finishes.

.6 Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

.7 When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Consultant for review.

.8 Where a change of plane of <6 mm> or more occurs, submit recommendation for providing a smooth transition; to Consultant for review.

.9 Patch or replace portions of existing surfaces which are damaged, lifted, discoloured, or showing other imperfections.

.10 Finish surfaces as specified in individual Product sections.

Part 2 Products

2.1 SALVAGEABLE MATERIALS

.1 In addition to the items noted as salvaged for reuse in this project, all existing items which areto be removed or demolished, are to be inspected by the Owner. If the Owner wants the demolished or removed items, turn them over to the Owner. If the Owner does not want the demolished or removed items, then they become the property of the Contractor and are to be immediately removed from site.

2.2 MATERIALS TO BE RETAINED BY THE OWNER

.1 Items such as cornerstones and their contents, commemorative plaques and tablets found or indicated, remain the property of the Owner. Notify Consultant prior to removal and obtain approval regarding method of removal.

.2 The Owner will review all existing items to be demolished. Carefully removed without damage, items selected by the Owner for salvage, and tag them to identify location of origin.

.3 Items so designated on the drawings as to be retained, are to be removed and turned over to the Owner.

.4 Carefully remove without damage, items to be retained by the Owner, or to be retained for reincorporation in the Work, and if required to ensure reinstallation in the correct location, tag them to identify location of origin.

.5 Deliver and store where directed by the Owner, on site.

Part 3 Execution

3.1 SAFETY

.1 Unless otherwise specified, carry out demolition work in accordance with CSA S350 Code of Practice in Demolition of Structures and National Building Code 2019 Alberta Edition, and all other applicable provincial regulations.

.2 Provide bracing and shoring as required to adequately support the structure as it is being demolished.

3.2 PREPARATION

.1 Provide, erect, and maintain temporary barriers, insulated partitions at locations indicated.

.2 Erect and maintain weatherproof closures for exterior openings.

.3 Erect and maintain temporary partitions to prevent spread of dust, odours, and noise to permit continued Owner occupancy.

.4 Protect existing materials which are not to be demolished.

.5 Prevent movement of structure; provide bracing and shoring.

.6 Notify affected utility companies before starting work and comply with their requirements.

.7 Disconnect all service lines as noted on the mechanical and electrical drawings. Post warning signs on all services and equipment which must remain energized to serve other areas during period of demolition. Identify and clearly mark services which are to be retained, including those which can be disconnected during demolition

.8 Mark location and termination of utilities.

.9 Provide appropriate temporary signage including signage for exit or building egress.

3.3 DEMOLITION

.1 Completely demolish the items indicated and as required to accommodate new Work, and remove all resulting materials from the premises, except as noted otherwise.

.2 Disconnect remove, cap, and identify designated utilities within demolition areas.

.3 Demolish in an orderly and careful manner. Protect existing supporting structural members.

.4 Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.

.5 Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.

.6 Remove temporary Work.

3.4 RESTORATION

.1 Restore to its original condition portions of building demolished unnecessarily, at no expense to Owner.

.2 Immediately as Work progresses, repair vibration and excavation damages to existing adjacent properties and active underground services.

.3 At landscape/site demolition: patch disturbed areas with topsoil and sodding to match adjacent conditions.

3.5 CLEANUP

.1 Remove Hazardous Materials away from site in accordance with local laws and the recommendations of the Hazardous Material Abatement Report.

.2 Remove all debris and rubbish away from site at regular intervals.

.3 Leave site free of all debris and rubbish. Broom clean hard surfaces.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Shop fabricated ferrous metal items.

.2 Steel Pipe Handrails, balusters, and fittings.

1.2 RELATED SECTIONS

.1 Section 09 21 16: Gypsum Board Assemblies.

.2 Section 09 91 10: Painting: Paint finish.

1.3 REFERENCES

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 Note: CSA standards govern over ASTM standards or other standards for applicable materials.

.3 CSA G40.20-04/G40.21 -04(R2009): General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel

.4 CAN/CSA-G164 -M92 (R2003): Hot Dip Galvanizing of Irregularly Shaped Articles.

.5 CSA-S16 -14: Design of steel structures.

.6 CSA S136 -12: North American Specification for the Design of Cold Formed Steel Structural Members

.7 CSA W48.1 -M1991 (R1998): Carbon Steel Covered Electrodes for Shielded Metal Arc Welding

.8 CSA W47.1 -09(R2014): Certification of Companies for Fusion Welding of Steel Structures.

.9 CSA W55.3 -08(R2013): Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.

.10 CSA W59 -13: Welded Steel Construction (Metal-Arc Welding).

.11 CSA W178.1 -14: Certification of Welding Inspection Organizations.

.12 CSA W178.2 -14: Certification of Welding Inspectors.

.13 CSA PLUS 4001 -95: ASTM Specifications for Steel: ASTM Standards Referenced in CSA's CAN/CSA-S16.1 -94

.14 CSA G30.18 -09 (R2014): Carbon steel bars for concrete reinforcement, Includes Update No. 1 (2012)

.15 CSA G40.20-04/G40.21 -13: General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel

.16 CAN/CSA G164 -M92 (R2003): Hot Dip Galvanizing of Irregularly Shaped Articles

.17 ASTM A36/A36M -14: Standard Specification for Carbon Structural Steel

.18 ASTM A53/A53M -12: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

.19 ASTM A108 -13: Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished

.20 ASTM A123/A123M -15: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

.21 ASTM A194/A194M -15a: Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both.

.22 ASTM A283/A283M -13: Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

.23 ASTM A307 -14: Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

.24 ASTM A325 -14: Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.25 ASTM A325M -14: Standard Specification for Structural Bolts, Steel, Heat Treated 830 Mpa Minimum Tensile Strength (Metric).

.26 ASTM A500/A500M -13: Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

.27 ASTM A501/A501M -14: Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

.28 ASTM A653/A653M -15e1: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

.29 ASTM A780/A780M -09(2015): Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

.30 ASTM B221 -14: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.31 ASTM B221M -13: Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.32 ASTM D1187/D1187M -97(2011)e1: Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal

.33 ASTM E935 -13e1: Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings

.34 ASTM E935 -13e1: Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings

.35 ASTM F436 -11: Standard Specification for Hardened Steel Washers.

.36 ASTM F436M -11: Standard Specification for Hardened Steel Washers (Metric).

.37 ASTM F1554 -15: Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

.38 NAAMM - National Association or Architectural Metal Manufacturers.

.1 NAAMM AMP 555 -92: Code of Standard Practice for the Architectural Metal Industry (Including Miscellaneous Iron)

.2 NAAMM AMP 521 -01: Pipe Railing Manual

.3 NAAMM MBG 531 -09:Metal Bar Grating Manual

.4 NAAMM MBG 532 -09: Heavy Duty Metal Bar Grating Manual

.5 NAAMM AMP 500 -06: Metal Finishes Manual

.39 SSPC - Society for Protective Coatings (formerly Steel Structures Painting Council):

.1 SSPC Paint 15: Steel Joist Shop Primer/Metal Building Primer.

.2 SSPC Paint 20: Zinc-Rich Coating (Type I - Inorganic and Type II - Organic).

.3 SSPC Paint 33: Coal Tar Mastic, Cold Applied

.4 SSPC SP 1: Solvent Cleaning, Includes Editorial Revisions (2004)

.5 SSPC 05 -03: Surface Preparation Specifications and Practices

.6 SSPC SP 16: Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals

.40 AWS D1.1/D1.1M:2015: Structural Welding Code - Steel, Includes Errata

.41 AWS A2.4:2012: Standard Symbols for Welding, Brazing, Nondestructive Examination

.42 CISC/ICAA Handbook of Steel Construction -- 10Th Edition

.43 CISC/CPMA Standard 2-75: A Quick-drying Primer for Use on Structural Steel

.44 Aluminum Association Designation System for both painted and anodized Aluminum Finishes - Current Edition.

.45 2019 National Building Code – Alberta Edition

.46 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 DESIGN REQUIREMENTS

.1 Design connections and other work not shown on drawing, but necessary for completion of the work. Design in accordance with the Alberta Building Code, CAN/CSA-S16 and CSA-S136 for design loads indicated on drawings.

.2 All beams, angles, channels, etc. are shown on contract drawings by a single line of approximate length to scale. Make connections as required between such members to carry all loads involved whether indicated by special details or otherwise.

.3 Where a connection is fully detailed on drawings alternative connections may be proposed to the Consultant but prior to production of shop drawings.

.4 Railing Assembly, Wall Railing and Components Design: designed for:

.1 Minimum specified horizontal load of 0.75 kPa or,

.2 Concentrated horizontal load of 1.0 kN to top rail, at any point,

.3 Minimum specified vertical 1.5 kN/m load to top rail,

.4 Individual components concentrated load of 0.5 kN at any point.

.5 Balustrade Assembly Design: same as railing assembly design.

1.5 SUBMITTALS FOR REVIEW

.1 Shop Drawings:

.1 Indicate materials, profiles, sizes of sections, and material core thicknesses.

.2 Indicate connection attachments, joints, reinforcing, supports, cuts, copes, holes and method of anchorage.

.3 Finishes: indicate material finishes for exposed and semi-exposed surfaces and components.

.4 Fasteners: size and type of fasteners, rivets and welds.

.5 Accessories. Indicate all accessory materials and components.

.6 Include erection drawings, elevations, and details where applicable.

.7 Stair plans, stair sections, and dimensions.

.8 Railing plans, elevations, sections, and dimensions.

.9 Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, welds and accessories.

.10 Dimensions to be confirmed by fabricator, in person, prior to assembly

.2 Indicate welded connections using standard AWS A2.1 welding symbols. Indicate net weld lengths.

1.6 QUALITY ASSURANCE

.1 Welders' Certificates:

.1 Certifying welders employed on the Work, verifying qualification within the previous 12 months to CSA W47.1 and CSA W59.

.2 Verify that field measurements are as indicated on shop drawings.

.3 Perform Work in accordance with ASTM E985 - Permanent Metal Railing Systems and Rails for Buildings.

.4 Prepare Shop Drawings under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of the Place of Work.

.5 Prepare fabrication and erection Shop Drawings in accordance with CSA S16.1

.6 Detail metal fabrications to NAAMM manuals.

.7 Fabricate stair railing assembly to NAAMM - Metal Stairs Manual, Class Commercial.

.8 Welding Inspections: to CSA A178.

.9 Fusion Welding: to CSA W59.

1.7 PRODUCT DELIVERY AND STORAGE

.1 Schedule delivery of components to site to coincide with installation of this work.

.2 Store components to prevent damage and distortion.

.3 Protect finishes from scratches and soiling.

.4 Deliver materials to be installed under other sections:

.1 Anchor bolts and other anchorage devices to be embedded in concrete or masonry construction to be delivered to the site in time to be installed prior to concrete or masonry work.

.2 Provide setting drawings, templates and directions for the installation of anchor bolts and other devices.

Part 2 Products

2.1 MATERIALS - STEEL

.1 Steel sections and plates: to CSA G40.20-04 / G40.21-04, Grade 300W.

.2 Steel Sections: ASTM A36.

.3 Hollow structural steel sections (HSS), to CSA G40.21-M92, Type 350W, Class C.

.4 Steel Tubing: ASTM A500, Grade B.

.5 Plates: to ASTM A283.

.6 Pipe: ASTM A53, Grade A Schedule 40.

.7 Galvanized Steel Traction Tread Planks, Accessories, and Fasteners:

.1 As indicated on Drawings: 50mm deep x 302mm wide 11 Guage.

.2 Construction: Welded, load rating 12 kN/m^2, concentrated load 36 kN.

.3 Finish: Powder Coated.

.4 Fasteners: galvanized fasteners with welded lugs to NAAMM and manufacturer's recommendations requirements.

.5 Install to manufacturer's recommendations and shop drawings.

.8 Fasteners:

.1 Expansion Anchors: Drilled Inserts:

.1 To ASTM E 488, capable of withstanding four (4) time imposed load.

.2 Acceptable Products:

.1 Hilti "Kwik Bolt",

.2 UCAN.

.3 ITW/Buildex.

.2 Bolts, Nuts, and Washers: ASTM A325

.3 Anchor Bolts: to ASTM F1554, Grade 36.

.4 Finishes:

.1 Exterior Use: stainless steel.

.2 Interior Use: Zinc plated, coating to ASTM B633

.3 Galvanized to ASTM A153 for galvanized components.

.9 Bearing plates: carbon steel strip, welding anchors hooked for embedding in masonry, prime painted.

.10 Welding materials: to CSA W48.01 and CSA W59.

.11 Welding Materials: Type required for materials being welded.

.12 Grout: Non-shrinking, non-metalic, non-corrosive, to CSA A3000, for interior or exterior application

2.2 STEEL RAILING SYSTEM

.1 Pipe: ASTM A53, Grade A Schedule 40.

.2 Fittings: Elbows, T-shapes, wall brackets, escutcheons; machined steel.

.3 Mounting: Adjustable brackets and flanges, with steel inserts for casting in concrete with steel brackets for embedding in masonry.

.4 Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

.5 Splice Connectors: Steel concealed spigots, welding collars, threaded collars.

.6 Galvanizing: To ASTM A123, provide minimum 380 g/sq m galvanized coating.

.1 Touch-Up Primer for Galvanized Surfaces: SPCC 20 Type I Inorganic.

.7 Shop and Touch-Up Primer: SPCC 15, Type 1, colour grey.

2.3 FINISHES:

.1 General: Comply with NAAMM's Metal Finishes manual for Architectural and Metal Products. Comply with NAAMM's recommendations for preparation, application, and finishing.

.2 Paint Primer – Shop Applied:

.1 Surface Preparation: SSPC SP6 or SP7, as indicated below.

.2 Shop and Touch-Up Primer: SPCC 15, Type 1, colour grey.

.3 Powder Coating: Thermosetting Powder: refer to Section 09 97 30 – Powder Coating

.4 Isolation coating: acid and alkali resistant asphaltic paint to CGSB 1.108.

.5 Bituminous paint: asphalt mastic, to SSPC Paint 12, cold applied, asbestos free.

2.4 FINISHES – STEEL

.1 Paint / Preparation / Application: Conforming to the following table:

PAINT STANDARDS		
PAINT	PREPARATION	APPLICATION
CPMA 1-73	SP-3	Exterior

.2 Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

.3 Do not prime surfaces in direct contact with concrete or where field welding is required.

.4 Prime paint items with one coat.

.5 Steel Members: Galvanize after fabrication to ASTM A123. Provide minimum 380 g/sq m galvanized coating.

.6 Primer to be compatible with scheduled architectural paint finishes.

2.5 FABRICATION

.1 Verify all dimensions on site prior to proceeding with shop fabrication.

.2 Fit and shop assemble items in largest practical sections, for delivery to site.

.3 Fabricate work square, true, straight and accurate to required size.

.4 Fabricate items with joints tightly fitted and secured.

.5 Supply all components required for anchoring to concrete, bolting or welding to structural frame, standing free of resting in frames or sockets, as noted on drawings.

.6 Accurately form connections with exposed faces flush; mitres and joints tight.

.7 Drill and tap fabrications as indicated to receive finish anchors or reinforcing.

.8 Make allowance for thermal movement in steel fabrication to complete range of temperature.

.9 Weld connections where possible, unless bolt connections are noted on drawings. Countersink exposed fastenings, cut off bolts flush with nuts. Exposed connections to be same material, colour and finish as base material on which they occur.

.10 Exposed welds to be continuous for length of each joint. File or grind exposed welds smooth and flush.

.11 Exposed Mechanical Fastenings:

- .1 Flush countersunk screws or bolts, self tapping
- .2 Unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- .3 Use self-tapping shake-proof countersunk flat headed screws on items required to be assembled by screws or as indicated.

.12 Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

.13 Provide anchors, plates and angles required for connecting railings to structure.

.14 Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.

.15 Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

.16 Accurately form components to suit stairs and landings, to each other and to building structure.

.17 Accommodate for expansion and contraction of members and building movement without damage to connections or members.

.18 Where work of other Sections is to be attached to work of this Section, prepare work by drilling and tapping holes as required to facilitate installation of such work.

.19 Work of this Section, supplied for installation under other Sections, shall be prepared as required ready for installation.

2.6 FABRICATION TOLERANCES

.1 Squareness: 3 mm maximum difference in diagonal measurements.

.2 Maximum Offset Between Faces: 1.5 mm.

.3 Maximum Misalignment of Adjacent Members: 1.5 mm.

.4 Maximum Bow: 3 mm in 1.2 m.

.5 Maximum Deviation From Plane: 1.5 mm in 1.2 m.

2.7 CHANNELS AND PLATES

.1 Size: sizes and shapes as indicated.

.2 Attachment: Mechanically fastened or welded where indicated.

.3 Location: For support of metal decking;

.4 Finish:

.1 Exterior Walls: Refer to finish schedule.

.2 Interior Walls: Refer to finish schedule.

2.8 BEARING PLATES

.1 Loose bearing and levelling plates for insertion into masonry assemblies to concrete foundations.

.2 Fabricate to receive anchor bolts.

.3 Fabricate with nelson studs for embedment into masonry or concrete.

.4 Finish: galvanized finish after fabrication.

.5 Locations: refer to Drawings.

2.9 MISCELLANEOUS MEMBERS

.1 General: Non-structural, trim frame or support components, required to complete the Work.

.2 Components: fabricated from structural steel members; plates, bar, shapes, solid or hollow, of welded fabrication.

.3 Fabricate: To forms, sizes, shapes or profiles indicated. Provide continuous welded joints, ground for smooth finish. All exposed edges to be rounded and smooth. All corners to be mitered.

.4 Fabricate to either receive or be incorporated into adjacent construction assemblies or components.

.5 Modify fabricated components by drilling tapping or cutting to receive anchors, supports or similar attachments.

.6 Provide to work of other Sections of incorporation into masonry or concrete or gypsum board assemblies. Provide all necessary anchors for either pre-installation or post-installation. Anchors to be 100 mm from each corner or end; 600 mm spacing along lengths.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that field conditions are acceptable and are ready to receive work.

.2 Beginning of installation means erector accepts existing conditions.

3.2 PREPARATION

.1 Clean and strip primed steel items to bare metal where site welding is required.

.2 Supply steel items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections.

3.3 INSTALLATION GENERAL

.1 Install items plumb and level, accurately fitted, with tight joints and intersections, free from distortion or defects.

.2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

.3 Provide suitable and acceptable means of anchorage acceptable to Consultant, such a dowels, anchor clips, bar anchors, toggles, expansion bolts and shields. Securely anchor components in place. Unless otherwise indicated, anchor components as follows:

.1 To concrete and solid masonry with expansion shields and bolts.

.2 To hollow construction with toggle bolts.

.3 To thin metal with screws or bolts.

.4 To thick metal with bolts or by welding.

.5 To wood with bolts for heavy and medium duty fastenings; with screws for light duty fastenings.

.4 Hand items to be cast into concrete or built into masonry over to appropriate trades together with setting templates.

.5 Anchor railings to structure with anchors, plates.

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

.7 After installation, site clean and refinish damaged finishes, welds, bolt heads and nuts. Refinish with primer or zinc rich paint to match original finish.

.8 Make provision for erection stresses and temporary bracing to keep work in alignment until completion of erection.

.9 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection using shop primer to prime painted surfaces.

.10 Allow for erection loads and make provision for erection stresses and temporary bracing to keep work in alignment until completion of erection and installation of permanent attachments.

.11 Field weld components indicated on Drawings and shop drawings.

.12 Perform field welding in accordance with CSA requirements.

.13 Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

.14 Assemble with spigots and sleeves to accommodate tight joints and secure installation.

.15 Obtain approval prior to site cutting or making adjustments not scheduled.

.16 After erection, prime welds, abrasions, and surfaces not shop primed and galvanized, except surfaces to be in contact with concrete.

.17 Replace members damaged in course of erection.

3.4 INSTALLATION OF DOWNSPOUTS

.1 Seal joints watertight.

.2 Secure downspouts in place using concealed fasteners where possible.

.3 Connect downspouts to downspout boots and shoes. Seal connection watertight.

.4 Set splash pads under downspouts.

3.5 ERECTION TOLERANCES

.1 Maximum Variation From Plumb: 6 mm per story, non-cumulative.

.2 Maximum Offset From True Alignment: 6 mm.

.3 Maximum Out-of-Position: 6 mm.

3.6 SCHEDULE

.1 The following Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

.2 Examine drawings and specifications and furnish all miscellaneous metalwork items required for proper execution of project.

.3 Extent of miscellaneous metalwork shall include, BUT NOT BE LIMITED TO, items already listed in this specification and as follows:

.1 Metal angle brackets and all required fasteners and anchors etcetera for millwork vanities.

END OF SECTION

1. General

1.1 SECTION INCLUDES

.1 Blocking in wall and roof openings.

.2 Wood furring, framing, and grounds.

.3 Wood Sheathing.

.4 Preservative treatment of wood.

.5 Fire Retardant Treatment.

1.2 RELATED SECTIONS

.1 Section 07 21 13: Rigid Board Insulation

.2 Section 07 21 16: Blanket Insulation.

.3 Section 07 28 00: Air Barriers /Vapour Retarders.

.4 Section 07 52 11: SBS/APP Modified Bitumen membrane – Conventional.

.5 Section 07 62 00: Sheet Metal Flashings and Trims.

.6 Section 08 12 13: Standard Hollow Metal Frames.

1.3 REFERENCES

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 Alberta Roofing Contractors' Association (ARCA) Manual of Good Roofing Practice and Accepted Roofing Systems

.3 CSA O112 SERIES -M1977 (R2006): CSA Standards for Wood Adhesives

.4 CSA O141 -05 (R2014): Softwood Lumber.

.5 CSA O121 -08 (R2013): Douglas Fir Plywood.

.6 CSA O151 -09 (R2014): Canadian Softwood Plywood.

.7 CSA O153 -13: Poplar Plywood.

.8 CSA B111 -1974 (R2003): Wire nails, spikes, and staples.

.9 CSA O80 Series -08 (R2012): Wood Preservation

.10 CSA O86 -14: Engineering Design in Wood.

.11 CAN/CSA-G164 -M92 (R2003): Hot Dip Galvanizing of Irregularly Shaped Articles.

.12 CAN/CSA-O325.0 -92 (R2003): Construction Sheathing.

.13 CAN/CSA O325.1 -88 (R2003): Test Methods for Construction Sheathing

.14 CSA O437 Series -93 (R2011): Standards on OSB and Waferboard.

.15 ASTM C919 -12: Standard Practice for Use of Sealants in Acoustical Applications

.16 ASTM D1761 -12: Standard Test Methods for Mechanical Fasteners in Wood.

.17 ASTM D5582 -14: Standard Test Method for Determining Formaldehyde Levels from Wood Products Using a Desiccator

.18 2019 National Building Code – Alberta Edition

.19 NLGA Standard Grading Rules for Canadian Lumber, latest edition.

.20 CLSAB: Canadian Lumber Standards Accreditation Board

.21 NPA A208.1 -2009: Particleboard

.22 Alberta Wall & Ceiling Association (AWCA)

.23 Northwest Wall & Ceiling Bureau (NWCB)

.24 Association of Wall & Ceiling Contractors (AWCC)

.25 AWCC Wall & Ceiling Specifications Standards Manual

.26 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 REGULATORY REQUIREMENTS

.1 Comply with applicable requirements of 2019 National Building Code – Alberta Edition.

1.5 SOURCE QUALITY CONTROL

.1 Supply lumber graded and stamped by an agency certified by Canadian Lumber Standards Administrative Board (CLSAB).

.2 Supply plywood graded and stamped in accordance with applicable CSA standards.

.3 Supply other panel products marked with a recognized, visible grade stamp.

1.6 DELIVERY, HANDLING, AND STORAGE

.1 Protect materials from weather while in transit and upon delivery to job site.

.2 Store materials on raised supports, minimum 150 mm above ground. Cover materials with waterproof covering. Provide adequate air circulation and ventilation.

.3 Do not store seasoned materials in wet or damp areas.

.4 Protect sheet material edges from damage during storage.

.5 Protect joists from warping or other distortion by stacking in vertical position, braced to resist movement.

1.7 SUBMITTALS FOR REVIEW

.1 Product Data: Provide technical data on wood preservative materials.

.2 Certificates: Provide certificates for materials prior to delivery to project site:

.1 Treatment of materials:

.1 Treated with preservative.

.2 Indicate treatment, applicable standard, moisture content, and acceptable finish that may be applied.

.3 All lumber, harvesting to mill.

1.8 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 10 01.

.2 Each shop drawing submitted shall bear the stamp of a qualified professional engineer registered in province of Alberta.

.3 Indicate species, sizes, and stress grades of lumber used as truss, joist and beam members. Show pitch, span, camber, configuration and spacing of trusses, joists and beams. Indicate connector types, thicknesses, sizes, locations and design value. Show bearing details.

.4 Submit stress diagram or print-out of computer design indicating design load for each truss, joist and beam member. Indicate allowable load and stress increase.

.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.

.8 Indicate all other structural members and elements including built-up posts and beams.

1.9 QUALITY ASSURANCE

.1 Perform Work in accordance with the following agencies:

.1 Lumber Grading Agency: Certified by ALS.

.2 Plywood Grading Agency: Certified by APA.

.2 Design structural shop fabricated joists under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the Province of Alberta.

.3 Provide all lumber bearing the grading stamp of an agency certified by the Canadian Lumber Standards Administration Board.

.4 Supply lumber and panel components marked with a recognized, visible grade stamp.

1.10 DESIGN

.1 Design trusses, joists, beams bracing, bridging in accordance with CSA-O86 to withstand all dead loads as well as local wind, snow and all other superimposed loads in accordance Alberta Building Code.

.2 Limit live load deflection to 1/360th of span where gypsum board ceilings are hung directly from trusses.

.3 Limit live load deflections to 1/240th of span unless otherwise specified or indicated.

.4 Provide the component and overall design for framing system. Design framing members for the depth as required.

.5 Design truss, joists and beams so as not to interfere with ductwork, etc., or work of other trades.

.6 Design Built up wood beams and posts to withstand all superimposed loading, in accordance with Alberta Building Code

2. Products

2.1 LUMBER GRADES

.1 Provide grade marked lumber, conforming to accepted grading rules set by CLSAB

2.2 LUMBER

.1 Dimension lumber: To CAN/CSA-O141 and species group to CSA O86 as listed and to National Lumber Grades Authority Standard Grading Rules current edition

- .1 For required grades of <u>all</u> structural lumber, refer to structural drawings.
- .2 Softwood, S-P-F, S4S, surface-dry.
- .3 Graded and stamped in accordance with current National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.
- .4 Meets requirement of the Alberta Building Code.
- .5 Moisture Content:
  - .1 General Use: Maximum 16% at time of installation.
  - .2 Gypsum Board Assemblies: Maximum 12-14% at time of installation.

.2 Framing and Board Lumber: in accordance with ABC and as specified in schedules.

.3 Furring, Blocking, Nailing Strips, Grounds, Rough Bucks, Cants, Curbs Fascia Backing and Sleepers: S4S, “Standard” or better grade for board, post and timber sizes, “Standard” light framing or better for dimension sizes.

.4 Lumber Grading Rules: NLGA.

.5 Miscellaneous Framing: Stress Group D, #2 or Better species, 19 percent maximum moisture content, pressure preservative treat.

.6 Finger jointed lumber is not acceptable.

2.3 ENGINEERED WOOD PRODUCTS

.1 Design to the referenced codes, standards, deflection limits, etc, noted in the general notes of the structural drawings.

.2 Submit shop drawings signed and sealed by an Alberta professional engineer prior to fabrication. Shop drawings to include material sizes and grades, calculations, layout drawings, joist bracing and bridging details, bearing and anchorage details, and connection details between joists and their supports.

.3 For all wood stairs/ramps, submit shop drawings signed and sealed by an Alberta professional engineer prior to fabrication. Shop drawings to include material sizes and grades, calculations, layout drawings, and connection details between treads and stringers, stingers and their supports, landing framing connections, etc. Shop drawings shall cover all stairs shown on drawings unless noted otherwise. For stairs to existing basement at gridline N between grids 20 and 22, stair design shall include post installed concrete anchors to foundation walls to support appropriate ledgers (as required) and/or stair stringers.

2.4 PANEL PRODUCTS

.1 Plywood conforming to CSA O325.0-92(R1998), Construction Sheathing.

.2 Canadian Softwood Plywood: to CSA 0151.

.3 Douglas Fir Plywood: to CSA 0121.

.4 Poplar Plywood: to CSA 0153, standard construction.

.5 Oriented Strand Board: to CSA 0437.0.

.6 Underlayment: Douglas Fir plywood, exterior, sanded grade, G1S, wood inlay patches only, plugged crossbands.

.7 Rated Interior Construction: ULC labelled fire resistant, stamped and graded to suit.

2.5 FASTENING DEVICES AND HARDWARE

.1 Nails and Spikes To CSA B111 and to Alberta Building Code:

- .1 Hot dip galvanized finished steel for exposed exterior work, highly humid interior areas and for pressure - preservative and fire-retardant treated lumber.
- .2 Use coated common spiral nails and spiral spikes except where indicated otherwise.

.2 Underlayment Fasteners:

- .1 Nails: galvanized, annular ringed, length to provide minimum 85% penetration into subfloor, but not enough to anchor underlayment to joists.
- .2 Staples: chisel point, non-divergent, double-coated, length ensuring minimum 85% penetration into subfloor but not penetration through.

.3 Bolt, nut, washer, screw and pin type fasteners: hot dip galvanized finish to CSA G164-M92.

.4 Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

.5 Provide products with allowable structural capacity to support the loads from the members as shown on the Drawings. Manufacturer's published values shall be determined from empirical data and rational engineering analysis, and shall be supported by comprehensive testing performed by qualified testing company.Joist hangers: minimum 1.0 mm sheet steel, galvanized.

2.6 ANCILLARY MATERIALS

.1 Subflooring adhesive: to CAN/CGSB 71.26-M88, waterproof, cartridge loaded.

.2 Surface applied wood preservative: copper napthanate base or pentachlorophene, prepared in accordance with CSA O80.15, coloured green, two (2) coats.

.3 Polyethylene Film: to CAN/CGSB-51.34-M86, 100 micrometre thick.

.4 Sealing Tape: minimum 60 mm width, polypropylene sheathing tape with acrylic adhesive, or duct tape of same width.

.5 Wood Preservative: Clear or slight tint solution of five (5) percent copper napthenate or pentachlorophenol or other formulation meeting CSA O80.

.6 Adhesive: conforming to CAN/CGSB-71.26, high solids, rubber contact type glue supplied in cartridges. PL 400 as manufactured by B.F. Goodrich or preapproved product.

.7 Rough Hardware and proprietary fasteners: bolts, nuts, toggle bolts, expansion shields, washers, lag bolts, pins, screws (hot dip) galvanized to CAN/CSA-G164 and/or ASTM A924/A924M where exposed to corrosive conditions, and lead or inorganic fibre plugs; recommended for purpose by manufacturer.

.8 "H" Clips: extruded 6063-T5 aluminum alloy "H" clips to suit thickness of plywood; type to be acceptable to the Consultant.

.9 Air seal caulking: gunnable butyl rubber sealant, or acoustical sealant to CAN/CGSB-19.2l.

.10 Sill Gasket on Top of Foundation Wall: 6 mm thick, closed cell polyethylene foam from continuous rolls, full width of sill plate, between foundations and plate, or sill plate interface.

.11 Sill Flashing (Under Sill Gasket): 0.15 mm thick, clear polyethylene sheet.

.12 Insect Screens.

2.7 PRESSURE PRESERVATIVE TREATED MATERIALS

.1 Pressure Preservative Treated Lumber:

- .1 Grade: Pine or Spruce-Pine.
- .2 Species: No.2 or better, structural posts and lumber.
- .3 Treatment:
  - .1 Product: amine copper quat (ACQ) or copper Azole (CA).
  - .2 In accordance with CSA O80 Series:
    - .1 CSA O80.15 using ACA or CCA water borne preservative treatment.
- .4 Retention:
  - .1 Above ground application: minimum of 4.0 kg/m3.
  - .2 Ground Contact Application: minimum of 6.4 kg/m3
- .5 Water-borne preservative treated wood shall have maximum moisture content of 19% after treatment.

.2 Pressure Preservative Treated Plywood:

- .1 Plywood Grade: exterior grade sheathing.
- .2 Treatment: In accordance with CSA O80.9 Series.
- .3 Product: amine copper quat (ACQ) or copper Azole (CA).
- .4 Retention:
  - .1 Above ground application: minimum of 4.0 kg/m3.
  - .2 Ground Contact Application: minimum of 6.4 kg/m3
- .5 Water-borne preservative treated wood shall have maximum moisture content of 19% after treatment.

2.8 FIRE RETARDANT TREATED WOOD

.1 **Fire-Retardant Treated Wood** (FRTW), **-** Wood or a wood product that has had its surface-burning characteristics, such as flame- spread, rate of fuel contribution and density of smoke developed, reduced by pressure treating with fire retardant chemicals.

.2 **Fire-Retardant Chemical -** A chemical or preparation of chemicals used to reduce flammability or to retard the spread of a fire over the surface of a material.

.3 Process: pressure impregnated process.

.4 Components: to all interior wood components, plywood, blocking, furring, or sheathing of size larger than nominal 17 x 89 m or 38 x 38 mm shall be fire protected.

.5 Requirements: fire protected wood bearing ULC label meeting the following requirements:

- .1 Flame Spread: 20
- .2 Fuel Contribution: 15
- .3 Smoke Development: 10

.6 Acceptable Source:

.1 Panel Source International Inc.

.1 Suite 101, 18 Rayborn Crescent; St. Albert, Alberta, Canada; T8N 5C1

.2 Call PSI-Toll Free: 1-877-464-7246 Telephone: 780-458-1007; Fax: 780-419-2345

.3 E-mail: info.panelsource.net

.4 Website: www.panelsource.net

.2 Dricon FRTW Lumber and Plywood, http://www.dricon.com.

3. Execution

3.1 FASTENERS

.1 Provide all nails, bolts nuts and washers, screw anchors, toggle bolts, expansion shields, self tapping screws or bolts as necessary to complete the Work and to ABC standards. Minimize splitting by staggering nails in the direction of the grain and by keeping them well away from edges.

.2 Use hot dip galvanized or stainless steel nails in conjunction with treated lumber, space visible nails evenly and in straight lines along support.

.3 Hollow Masonry Units:

.1 Expansion Shields with lock washers bolts and nuts or bolts with self locking nuts and washers.

.2 Threaded Rod c/w nut and washer in screen tube with injection adhesive by Hilti or Simpson.

.4 Solid Masonry Units:

.1 Expansion Shields with lock washers bolts and nuts or bolts with self locking nuts and washers.

.2 Threaded Rod c/w nut and washer in screen tube with injection adhesive by Hilti or Simpson.

.5 Concrete Surfaces: same as hollow masonry units.

.6 Structural Steel: Use bolts through drilled holes, or welded stud or self-tapping screws or bolts.

.7 Gypsum Board & panel Surfaces: Use toggle bolts or gypsum board anchors by Hilti or equivalent.

.8 Powder-actuated Fasteners: may be used if approved by Consultant in writing.

.9 Inorganic Plugs: Use where requires to conceal fastener.

.10 Recess flush all bolts or other fixings where to be surfaced by roof membranes, flashings, finishes, and the like.

3.2 SITE APPLIED WOOD PRESERVATIVE

.1 Apply preservative treatment to resurface modified pressure treated wood components in accordance with manufacturer's instructions.

.2 Re-treat surfaces exposed by cutting, trimming or boring.

.3 Application:

- .1 Maintain wet film on surface for minimum 3 minutes on lumber and 1 minute for plywood for each coat.
- .2 Brush apply with liberal two (2) coats of surface applied wood preservative after modifying lumber or plywood members and before installing the member.
- .3 Allow first coat to fully penetrate before applying the second coat.
- .4 Allow preservative to dry prior to installing members.

.4 Install using hot dipped galvanized anchors, screw or nail applied.

.5 Refer to Schedule of Preservative Treated Wood.

3.3 ERECTION OF FRAMING MEMBERS

.1 Comply with requirements of the Alberta Building Code.

.2 Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

.3 Set structural members level and plumb, in correct position.

.4 Construct load bearing framing and curb members full length without splices.

.5 Space framing and furring 400 mm on centre, unless otherwise indicated.

.6 Install spanning members with "crown-edge" up.

.7 Double members at openings over 500 mm wide. Space short studs over and under opening to stud spacing.

.8 Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists. Frame rigidly into joists.

.9 Bridge joist framing in excess of 2.3 m span as detailed, at mid-span. Fit solid blocking at ends of members.

.10 Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 100 mm.

.11 Place sill gasket directly on sill flashing. Puncture gasket clean and fit tight to protruding foundation anchor bolts.

.12 Coordinate installation of wood decking and wood joists.

.13 Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.

.14 Coordinate curb installation with installation of decking and support of deck openings, roofing vapour retardant, and parapet construction.

.15 Construct framing as necessary to accommodate the work of other trades.

.16 Properly place and align curbs and framing to prevent steps, unwarranted slopes, projections or depressions.

.17 Make provision for erection stresses. Securely brace members in place to maintain them plumb and true until permanently fixed and held in structure.

.18 At suspended wood framed bulkheads, tie framing to wood structure with framing anchors. Toe nailing and screw fastenings under tension will not be accepted.

.19 Refer to the structural drawings and specifications for additional framing and sheathing, spacing of framing members required to meet design requirements as indicated on the structural drawings. Apply plywood or OSB sheathing to interior walls prior to installation of gypsum board where indicated on the structural drawings.

.20 Provide double bottom and double top plates. Provide pressure treated bottom plates to all walls.

.21 Do not permit holes or notches in studs which reduce the effective width to less than 2/3 of the full width.

.22 Frame fire rated partitions and partitions requiring an S.T.C. rating, to meet those requirements.

.23 Install fire stopping in wood frame construction to the requirements of the Alberta Building Code.

.24 Construct built up posts to same width as beams which they support, and in accordance with the drawings and reviewed shop drawings.

.25 All wood framed partitions to underside of structure unless noted otherwise.

3.4 BUILT UP WOOD BEAM SYSTEMS

.1 Install spanning members with "crown-edge" up.

.2 Construct Built-Up wood beams using dimension material.

.3 Provide even and level bearing for beams. Provide not less than 90 mm length of bearing at all supports, unless noted otherwise on Structural Drawings.

.4 Built-up beams are sized so that all plies shall be continuous between supports. Do not splice any plies at any point along the span, without written permission from the structural engineer.

.5 Nail individual members of laminated beams in accordance with Structural Drawings.

.6 Do not permit holes to be drilled in built-up beams without the prior consent of the Consultant for each size and location of hole to be drilled.

3.5 WOOD JOISTS AND BEAM SYSTEMS

.1 Install wood joists at spacing noted on Structural Drawings; plumb, square and true to line.

.2 Install spanning members with "crown-edge" up.

.3 Install joist hangers securely to provide support for joist butting into headers or beams or which do not bear on top of supports or ledgers. Select hangers which will support all live and dead loads according to the manufacturer's recommendations.

.4 Install rim joists as indicated.

.5 Provide bridging for joists as noted on structural drawings.

.6 Frame double joists headers at ceiling openings unless noted otherwise on Structural Drawings. Frame rigidly into joists.

.7 Frame double joists under wall studding running parallel to walls.

.8 Construct Built-Up wood beams using dimension material where indicated.

.9 To locations indicated, construct sloped strapping over wood joists to provide slopes to decks as indicated.

.10 Install prefabricated beams to locations indicated, plumb, level and true to line

3.6 ROOF, FLOOR AND WALL SHEATHING

.1 Install roof and wall sheathing in accordance with requirements of the Alberta Building Code.

.1 Install roof and wall sheathing with panel end-joints located on solid bearing, staggered at least 800 mm.

.2 For all fastening of roof and wall sheathing, refer to structural drawings.

.2 Secure roof sheathing with longer edge perpendicular to framing members and with ends staggered and sheet ends over bearing.

.3 Where framing members are spaced at more than 400 mm oc, install "H" clips so that they occur mid way between supports.

.4 Provide solid edge blocking between sheets. Fully engage tongue and groove edges.

.5 Secure wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered.

.6 Place building paper horizontally over wall sheathing; weather lap edges and ends.

.7 Secure subfloor sheathing with longer edge perpendicular to floor framing and with end joints staggered and sheet ends over bearing. Attach with subfloor glue and drywall screws.

.8 Place building paper between floor underlayment and subflooring.

.9 Install flooring underlayment after dust and dirt generating activities have ceased and prior to application of finished flooring. Apply perpendicular to subflooring, stagger joints of underlayment. Secure with fasteners.

.10 Install tongues into grooves as specified for floor sheathing such as to decks.

3.7 WOOD FURRING, BLOCKING, AND BACKING

.1 Provide wood furring and blocking at locations indicated on drawings and as specified.

.2 Install blocking to facilitate installation of finishing materials, fixtures, specialty items and trim.

.3 Provide furring and framing around piping, duct work, at columns to allow for enclosure.

.4 Install blocking, plates and backing for all components mounted on gypsum board walls ceilings and bulkheads requiring support.

.1 Components include, but not limited to: architectural woodworking components, door frames and hardware, windows, displays, lockers, handrails, mirrors, white boards and tack boards, washroom partitions and accessories, boot racks, curtains, interior signage, window treatments, manufactured specialities, mechanical and electrical devices, and items indicated as N.I.C. and requiring support.

.2 Center supporting members on fastening line of supported component.

.3 Supporting members to extend one stud spacing to each side of the supported component.

.4 Provide the following supporting members:

.1 Single Layer of 19 mm Plywood:

.1 Door hardware, Lockers, Mirrors, White boards and tack boards, Interior signage, and Window treatments.

.2 Double layer of 19 mm Plywood:

.1 Architectural woodworking components, Door frames and hardware, Windows, Displays, Lockers, Handrails, Washroom partitions and accessories, Boot racks, Curtains, Manufactured specialities, Mechanical and electrical devices, and other items.

.3 Plywood Height: 300 mm.

.5 Mounting Heights: refer to drawing for details. For items not detailed, verify with the Consultant.

.5 Erect furring, blocking, and backing in true line and plumb.

.6 Secure to substrates using specified fasteners or anchors to provide rigid installation.

.7 For non-combustible construction, provide members with pressure fire retardant treatment.

.8 Block all edges of wall sheathing and gypsum board, except for gypsum board on metal furring

.9 Bucks, Plates and Curbs:

.1 Install all bucks, curbs and all other wood members as indicated on the drawings or as otherwise required to complete all necessary rough carpentry.

.2 Install rough bucks where indicated for securing door and window frames. Erect plumb and true. Rigidly support and securely anchor to masonry and concrete where applicable.

3.8 INSECT SCREEN

.1 Install insect screens to ensure areas of installation are rendered insect proof. Install insect screens where directed by the Consultant.

.2 Building insect screens into wood framing and elsewhere as indicated, at all openings vented to exterior to prevent entrance of insects and vermin.

3.9 CARPENTRY FOR ROOF PENETRATION, PARAPETS AND PLATES

.1 Provide pressure preservative treated lumber or plywood for components:

.1 In contact with roof membranes.

.2 Exposed to weather or water.

.2 Construct wood curbs for roof mounted equipment, vents, flutes, ducts, mechanical service penetration, electrical service penetrations anchors and for roof penetrations, except drains.

.1 Curb heights measured from highest point of roof adjacent to curb.

.1 200 mm for plumbing vents.

.2 250 mm for other curbs.

.3 Construct curb members of single pieces.

.4 Curb roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.

.5 Coordinate curb installation with installation of:

.1 Decking and support of deck openings,

.2 Roofing vapour retardant,

.3 Parapet construction

.6 Slope top of wood parapets or other roof up-stands. Slope parapets to roof side. Minimum slope is 6% percent.

.7 Flashings: all flashings to have continuous wood banking.

.8 Roof Membrane and Flashings: provide either continuous plywood sheathing or solid wood behind all membranes and flashings.

.9 Mechanically screw fasten plywood facing to parapets, and walls at roof-wall/parapet junctions.

.10 Support edges of plywood back-slope sheets. Bevel edge of sheets that meet structural deck.

.11 Attach curbs, control joint boxes, blocking and framing directly to structure.

.12 Cut cant strip from treated fir lumber, 89 x 89 mm x 45 degrees.

3.10 MISCELLANEOUS ROUGH CARPENTRY

.1 Provide temporary supports for masonry lintels or openings.

.2 Provide temporary bracing for walls or piers.

.3 Provide temporary enclosure framing for weather enclosures.

3.11 TOLERANCES

.1 Framing Members: 6 mm from true position, maximum.

.2 Surface Flatness of Floor: 2 mm/m maximum, and 12 mm in 9 m maximum.

3.12 SCHEDULE OF DIMENSION LUMBER

.1 For all grades of dimensional lumber used for structural purposes, refer to Structural Drawings

.2 Other Components not listed above: species group D (Spruce-Pine-Fir, stamp identification S-P-F), No. 2 or better.

3.13 SCHEDULE OF PANEL PRODUCTS

Location/Panel Type	Thickness	Grade	Type	Edge
Roof Sheathing: As indicated on Structural Drawings				
Parapet and Flashing Backing:				
Douglas Fir Plywood	19 mm	Sheathing		Square
Canadian Softwood Plywood	19 mm	Sheathing		Square
Poplar Plywood	19 mm	Sheathing		Square
Oriented Strand Board	19 mm	Sheathing		Square
Exterior Wall Sheathing: As indicated on Structural Drawings				

Note: Where more than one panel type is specified for a single location, provide any one of the types specified for that location.

3.14 SCHEDULE OF PRESSURE PRESERVATIVE TREATED WOOD

.1 Use pressure preservative treated wood for following components:

- .1 Fascia backing.
- .2 Roof Curbs.
- .3 Roof Nailers.
- .4 Sleepers on roof deck.
- .5 Wood in direct contact with concrete or masonry.
- .6 Wood in direct contact with soil materials.

.2 Before installation, provide liberal brush application of surface applied wood preservative to surfaces of pressure preservative treated wood exposed by cutting, trimming or boring.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Board insulation at cavity wall construction, perimeter foundation wall, underside of floor slabs, exterior wall assembly, and roof assembly.

1.2 RELATED SECTIONS

.1 Section 07 21 16: Blanket Insulation.

.2 Section 07 28 00: Air Barriers/Vapour Retarders.

.3 Section 07 46 16: Preformed Metal Siding.

.4 Section 07 52 11: Rigid insulation at SBS Roofing

1.3 REFERENCES

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 CAN/ULC S101 -14: Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.3 CAN/ULC S102-10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.4 CAN/ULC S114 -05: Standard Method of Test for Determination of Non-Combustibility in Building Materials.

.5 CAN/ULC S134 -13: Standard Method of Fire Test of Exterior Wall Assemblies.

.6 CAN/ULC S701 -11: Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering

.7 CAN/ULC-S702 -09-AM1: Standard for Thermal Insulation Mineral Fibre for Buildings, Includes Amendment 1 (January 2012).

.8 ULC S702.2 -10: Mineral Fibre Thermal Insulation for Buildings, Part 2: Application Guidelines.

.9 CAN/ULC S704 -11:Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

.10 CAN/ULC S770 -09: Standard Test Method for Determination of Long-term Thermal Resistance of Closed-Cell Thermal Insulating Foams

.11 CAN3 A451.1 -M86 (R2001): Polystyrene Insulation Adhesives

.12 ASTM C203 -05a(2012):Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation

.13 ASTM C518 -10: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

.14 ASTM C591 -12b: Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation

.15 ASTM C1104/C1104M -13a: Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation

.16 ASTM C1289 -13e1: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.

.17 ASTM C1303/C1303M -12: Standard Test Method for Predicting Long-Term Thermal Resistance of Closed-Cell Foam Insulation

.18 ASTM D696 -08e1:Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between −30°C and 30°C with a Vitreous Silica Dilatometer

.19 ASTM D1621 -10: Standard Test Method for Compressive Properties Of Rigid Cellular Plastics

.20 ASTM D2842 -12: Standard Test Method for Water Absorption of Rigid Cellular Plastics

.21 ASTM E84 -14: Standard Test Method for Surface Burning Characteristics of Building Materials

.22 ASTM E96/E96M -13: Standard Test Methods for Water Vapor Transmission of Materials

.23 ASTM E136 -12: Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 C

.24 CAN3 A451.1 -M86 (R2001): Polystyrene Insulation Adhesives

.25 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 SYSTEM DESCRIPTION

.1 Materials of This Section: Provide continuity of thermal barrier at building enclosure elements.

.2 Materials of This Section: Provide thermal protection to vapour retarder in conjunction with vapour retarder materials.

.3 Materials of This Section: Provide thermal protection to air seal materials at building enclosure elements in conjunction with air barrier materials.

1.5 SUBMITTALS

.1 Product Data: Provide data on product characteristics, performance criteria, and limitations.

.2 Manufacturer's Installation Instructions: Indicate special environmental conditions required for installation, installation techniques, and fastening systems.

.3 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

.1 Periodic reviews by Consultant of all insulation materials installation, prior to closing up wall cavities is **mandatory**, with no exceptions.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.8 SEQUENCING

.1 Sequence work to ensure vapour retarder materials are in place before beginning the Work of this section.

1.9 COORDINATION

.1 Coordinate the work with Section 07 28 00 for installation of vapour retarder and air seal materials.

Part 2 Products

2.1 MANUFACTURERS - INSULATION MATERIALS

.1 Beaver Plastics.

.2 Dow.

.3 Owens-Corning.

.4 PlastiFab EPS Product Solutions.

.5 Substitutions: Refer to Section 01 62 00.

2.2 INSULATION MATERIALS

.1 Extruded Polystyrene Insulation: ASTM C578 Type IV; cellular type, conforming to the following:

.1 Board Edges: Shiplap or Tongue and groove edges.

.2 Extruded Polystyrene Insulation: conforming to ULC S701, CFC and HCFC free, without ozone depletion potential greater than zero, EcoLogo certified, up to 40% recycled content; thickness and RSI values as indicated on the drawings, ship lapped edges, types as follows:

.1 Perimeter foundation insulation and horizontally under structural slab insulation: extruded polystyrene insulation type 4, compressive strength of 240 kPa (30 psi), Acceptable materials:

.1 Dow Styrofoam SM.

.2 Owens-Corning Celfort 300.

.2 Insulation to horizontal applications below slabs on grade (non-structural) and horizontally to exterior side of foundations: high density polystyrene insulation, type 4, with a compressive strength of 275 kPa (40 psi). Acceptable materials:

.1 Dow Styrofoam Highload-40.

.2 Owens Corning Foamular 400.

.3 Semi-Rigid Insulation: basalt mineral fibre, semi-rigid board insulation, minimum 4.4 lb/ft3 density, 610 mm x 1219 mm board size, asbestos free, minimum R value of 4.3 per inch, surface burning characteristics when tested in accordance with CAN/ULC-S102, ASTM E84 and UL 723 not to exceed flame spread of 5 and smoke developed of 0. thickness as indicated, One of the following:

.1 Fibrex CWB 45

.2 Roxul CavityRock.

.3 Other Preapproved product.

.4 Rigid Insulation to Roofing: as specified in Section 07 52 11.

2.3 ADHESIVES

.1 Adhesive Type 1: Gun grade, mastic type, compatible with insulation and substrate; Type recommended by insulation manufacturer for application.

.2 Adhesive Type 2: liquid applied air/vapour seal, trowel consistency; type recommended by insulation manufacturer.

.3 Insulation Adhesive for vertical surfaces: conforming to CGSB 71-GP-24M, Type 1, Class A, adhesive must not contain solvents and must be compatible with membrane and insulation and to be PMDI/formaldehyde free.

2.4 FASTENERS

.1 Fasteners shall be specifically designed to anchor insulation by frictional resistance within structurally adequate substrates. They shall be inserted into and compressed against surrounding substrates, either by being driven or screwed, and shall be one of the following types:

.1 Plastic: with integral shank and head of minimum 45 mm diameter to distribute stresses, of high density polyethylene to ASTM D1248 or high density polypropylene to ASTM D4101.

.2 Carbon Steel or Stainless Steel: of nail, screw or expansion type, with separate hot-dip galvanized sheet steel or high density polyethylene or polypropylene stress distribution plates of minimum 50 mm diameter or width.

.3 Concealed fasteners: galvanized metal clip system as recommended by insulation manufacturer.

.4 One of the following combination masonry connectors/insulation fasteners:

.1 Masonry Connectors: as specified in Section 04 27 23, designed, with or without optional insulation retainer plates, to function as insulation fasteners.

.2 Plastic Wedges: with locking ribbed surface, designed to secure rigid insulation when installed with ladder type masonry connectors complying with Section 04 27 23 and factory modified to provide rigid anchorage for wedges.

.5 Performance requirements for installed insulation fasteners:

.1 Pullout Resistance: minimum 200 N, perpendicular to applicable substrates and within temperature range of 30 degrees C to 40 degrees C.

.2 Corrosion Resistance: carbon steel components shall show not more than 15% of the surface rusted, and coatings shall not blister, peel or crack, when tested to Corrosion Test Procedure of Factory Mutual Research Approval Standard, Class I Roof Covers (4470).

2.5 ACCESSORIES

.1 Sheet Vapour Retarder: Specified in Section 07 28 00: Air Barrier/Vapour Retarder.

.2 Tape: Bright aluminum, Polyethylene or Polyester self-adhering type, mesh reinforced, minimum 50 mm wide.

.3 Fibreglass Thermal Spaces: Cascadia Clip; sizes as indicated. (403) 560-2107

Part 3 Execution

3.1 EXAMINATION

.1 Verify site conditions.

.2 Verify that substrate, adjacent materials, and insulation boards are dry and ready to receive insulation.

.3 Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials or substances that may impede bond or anchorage.

.4 Verify that all membranes and flashings to divert moisture to exterior, provided under other sections, are properly in place.

3.2 INSTALLATION - FOUNDATION PERIMETER

.1 Apply Type 1 adhesive in three continuous beads per board length or Type 2 adhesive to full bed 3 mm thick. Ensure adhesive is compatible with dampproofing.

.2 Install boards on foundation perimeter, horizontally.

.1 Place boards in a method to maximize contact bedding.

.2 Stagger all vertical joints on insulation except free ends or line of expansion/control joints.

.3 Butt edges and ends tight to adjacent board and to protrusions.

.4 Lay out insulation so that ends overlap minimum 100 mm and maximum of 150 mm over line of expansion/contraction joints. Leave overlapping ends of insulation unbonded over line of these joints, allowing insulation to move freely with foundation.

.3 Extend boards over control and/or expansion joints, unbonded to foundation 200 mm on one side of joint.

.4 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.5 Place the perimeter insulation on exterior foundations to not less than 610 mm below the adjacent grade in locations where indicated.

.6 Immediately following application of board insulation, mechanically fasten protective boards over exposed insulation surfaces.

.1 Install boards horizontally from 200 mm below grade to underside of exterior wall finishes.

.2 Butt board joints tight; stagger from insulation joints.

3.3 INSTALLATION - UNDER CONCRETE SLABS

.1 Place insulation under slabs on grade after base for slab has been compacted. Insulate concrete slabs at entrances, extend minimum 1200 mm from all adjacent foundations.

.2 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.3 Prevent insulation from being displaced or damaged while placing slab. Replace sunburned, crushed or dented insulation immediately prior to covering. Coordinate with backfill operations.

3.4 INSTALLATION - EXTERIOR WALLS

.1 Apply Type 1 adhesive in three continuous beads per board length or Type 2 adhesive to full bed 3 mm thick. Daub adhesive tight to protrusions.

.2 Install boards on wall surface vertically or horizontally to suit exterior finish application.

.3 Place boards in a method to maximize contact bedding. Stagger end joints minimum 400 mm. Butt edges and ends tight to adjacent board and to protrusions.

.4 Cut and fit insulation tight to protrusions or interruptions to the insulation plane.

.5 Where insulation is installed between Z girt framing, install to fit tightly between framing members. Mechanically fasten insulation between Z girt framing as specified herein.

.6 Where indicated, install first layer of insulation between horizontal Z girt framing to exterior walls and other locations. Where there is one layer of vertical Z girts, install insulation in 2 equal thickness layers with joints staggered minimum 300 mm.

.7 Install insulation to all locations above grade, including between framing members such as Z girts, using screw-on type fasteners using minimum 6 fasteners per board and not less than 75 mm from all ends and edges. Provide minimum of 2 fasteners per cut section and no pieces of insulation smaller than 300 mm. Do not anchor to gypsum sheathing only.

.8 Insulation applied to curved substrates shall conform to profile without creation of cavities in, or alteration of density of, insulation boards.

.9 Follow the instructions for use of materials of insulation and accessory manufacturers.

.10 Use largest possible dimensions to reduce the number of joints.

.11 Offset both vertical and horizontal joints in multiple layer applications.

.12 Ensure that joints in insulation do not occur directly over joints in back-up such as between different materials and at deflection joints. Offset insulation joints from deflection joints in backup minimum 300 mm.

.13 Neatly and accurately slope cut insulation to accommodate through wall flashing, as detailed on the drawings.

.14 Fill all spaces 3 mm or greater, between boards and between boards and adjacent materials, with foam-in-place insulation.

.15 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 type B and L vents. Fill spaces adjacent to heat emitting devices with fire safing insulation specified in Section 07 21 16 – Batt Insulation.

3.5 PROTECTION OF FINISHED WORK

.1 Do not permit work to be damaged prior to covering insulation.

3.6 SCHEDULES

Location	Type	Thickness(mm)
Vertical below grade:	Polystyrene, Type IV	100 mm
Vertical above grade	Semi-Rigid	Refer to Drawings
Horizontal below grade:	Polystyrene, Type IV	100 mm
Roofing	Polyisocyanurate	Refer to 07 52 11.

Note: Coordinate thicknesses with Drawings.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Blanket (batt) insulation in exterior wall, ceiling, and roof construction.

.2 Blanket (batt) insulation for filling perimeter window and door shim spaces, and crevices in exterior wall and roof.

1.2 RELATED SECTIONS

.1 Section 06 10 00: Rough Carpentry.

.2 Section 07 21 13: Board Insulation.

.3 Section 07 28 00: Air Barriers/Vapour Retarders.

.4 Section 07 84 00: Firestopping.

.5 Section 08 12 13: Standard Hollow Metal Frames.

.6 Section 08 41 13: Aluminum Framed Entrances and Storefronts.

.7 Section 09 21 16: Acoustic Insulation in Gypsum Board Assemblies.

1.3 REFERENCES

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 CAN/ULC S101 -14: Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.3 CAN/ULC S102-10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.4 CAN/ULC S114 -05: Standard Method of Test for Determination of Non-Combustibility in Building Materials.

.5 CAN/ULC S134 -13: Standard Method of Fire Test of Exterior Wall Assemblies.

.6 CAN/ULC-S702 -09-AM1: Standard for Thermal Insulation Mineral Fibre for Buildings, Includes Amendment 1 (January 2012).

.7 ULC S702.2 -10: Mineral Fibre Thermal Insulation for Buildings, Part 2: Application Guidelines.

.8 ASTM C553 -11: Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

.9 ASTM C612 -10: Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

.10 ASTM C665 -12: Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.11 ASTM C1320 -10: Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

.12 ASTM C727 -12: Standard Practice for Installation and Use of Reflective Insulation in Building Constructions.

.13 ASTM C991 -08e1: Standard Specification for Flexible Glass Fiber Insulation for Metal Buildings

.14 CAN/ULC-S115 -11: Standard Method of Fire tests of Firestop Systems.

.15 CAN/ULC-S604 -M91: Standard for Factory-Built Type A Chimneys.

.16 CSA-B149.1 -10: Natural gas and propane installation code, Includes Update No. 1 (2010)

.17 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 SYSTEM DESCRIPTION

.1 Materials of This Section: Provide continuity of thermal barrier at building enclosure elements.

.2 Materials of This Section: Provide thermal protection to vapour retarder in conjunction with vapour retarder materials in Section 07 28 00.

.3 Materials of This Section: Provide thermal protection to air seal materials at building enclosure elements in conjunction with air barrier materials in Section 07 28 00.

1.5 SUBMITTALS

.1 Product Data: Provide data on product characteristics, performance criteria, and limitations.

.2 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.6 COORDINATION

.1 Coordinate the work with Section 07 28 00 for installation of vapour retarder and air seal materials.

1.7 QUALITY ASSURANCE

.1 Periodic reviews by Consultant of all insulation materials installations, prior to closing up wall cavities in **mandatory**, with no exceptions.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle materials to manufacturer’s recommendations.

.2 Store materials in original packaging in a dry interior location.

Part 2 Products

2.1 MANUFACTURERS - INSULATION MATERIALS

.1 Johns – Manville www.jm.com 1-800-654-3103

.2 Roxul www.roxul.com 1-800-265-6878

.3 Owens – Corning www.owenscorning.com 1-800-GET PINK

.4 Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

.1 Unfaced Batt Insulation: CAN/ULC S702 type 1; preformed glass or mineral fibre batt; GreenGuard certified or formaldehyde binder free and EcoLogo certified; friction fit and designed for stud material and spacing:

.1 Surface Burning Characteristics to CAN/ULC S102.2 for horizontal/sloped applications, CAN/ULC S102 for vertical applications:

.1 Flame Spread: 15, Smoke Developed <5.

.2 Minimum Recycled content: 25% minimum.

.3 Density to be minimum 1.22 kg/m of surface area, to meet all Alberta Building Code 2014 requirements, thickness and thermal resistance as indicated on the drawings.

.4 Acceptable Manufacturers:

.1 Johns-Manville.

.2 Owens Corning EcoTouch Pink Fibreglass thermal insulation.

.3 CertainTeed Sustainable Batt Insulation.

.2 Mineral Fibre Batt Insulation: mineral wool fibre insulation made from basalt rock and steel slag, conforming to CAN/ULC-S702, type 1, 32 kg/m density, EcoLogo certified; non-combustible, thickness and thermal resistance as indicated on the drawings; Acceptable Products:

.1 Roxul Plus Batt Insulation.

.2 Roxul ComfortBatt Insulation.

.2 Acoustic Batt Insulation: one of the following:

.1 Acoustic Insulation: GreenGuard certified or formaldehyde binder free EcoLogo certified, acoustic insulation; thickness as indicated on the drawings. Acceptable Manufacturers:

.1 Johns-Manville “Sound SHIELD”.

.2 Owens Corning EcoTouch Quietzone Pink Fibreglass acoustic insulation.

.3 CertainTeed NoiseReducer.

.2 Sound Attenuation/Fire Blanket: conforming to ASTM C665; thickness as indicated; EcoLogo certified. Acceptable products:

.1 CGC Thermafiber Sound Attenuation Fire Blanket.

.2 Roxul AFB Acoustic Fire Batts as manufactured by Roxul.

.3 Fire safing insulation: rock wool or mineral fibre, conforming to ASTM C612, formaldehyde binder free, EcoLogo certified, one of the following materials:

.1 'Firebarrier' distributed by A/D Distributors.

.2 'Firestop' distributed by Alberta Spray-On.

.3 Roxul 07840 Safe as manufactured by Roxul.

.4 Sheet Vapour Retarder: Specified in Section 07 28 00

.5 Adhesive: conforming to CGSB 71-GP-24M, Type 1, Class A, adhesive must not contain solvents and must be compatible with membrane and insulation and to be PMDI/formaldehyde free.

.6 Nails or Staples: Steel wire; galvanized; type and size to suit application.

.7 Tape: Polyethylene or Polyester self-adhering type, mesh reinforced, 50 mm wide.

.8 Insulation Fasteners: Steel impale spindle and clip on flat metal base, self adhering backing, length to suit insulation thickness, capable of securely and rigidly fastening insulation in place.

.9 Wire Mesh: Galvanized steel, hexagonal wire mesh.

Part 3 Execution

3.1 EXAMINATION

.1 Verify site conditions. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

.1 Install insulation in accordance with insulation manufacturer's instructions.

.2 Install in walls and ceiling spaces without gaps or voids. Do not compress insulation.

.3 Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

.4 Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.

.5 Staple or nail facing flanges in place at maximum 150 mm inches on centre. Retain in place with wire mesh secured to framing members.

.6 Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

.7 Wood Framing: Place vapour retarder on warm side of insulation by stapling or nailing at 150 mm on centre. Lap and seal sheet retarder joints over member face.

.8 Place insulation fasteners at 150 mm on centre. Retain insulation in place with wire mesh secured to framing members. Tape seal tears or cuts in vapour retarder.

.9 Extend vapour retarder tight to full perimeter of adjacent window and door frames and other items interrupting the plane of membrane. Tape seal in place.

.10 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 type B and L vents. Fill spaces adjacent to heat emitting devices with fire safing insulation.

.11 To vertical furred spaces between studs or framing, install one layer of gypsum board and adhere each insulation piece to backside of gypsum board with 2 walnut size daubs of compatible adhesive, to prevent sagging of batt insulation in furred spaces.

3.3 INSTALLATION/ACOUSTIC BATT INSULATION

.1 Install acoustic insulation in corridor partitions and to all demising partitions and elsewhere as indicated on the drawings.

.2 Fill behind electrical outlets boxes and other openings with at least 150 mm lap around perimeter of opening, packed tight in layers (to approximately 50% of nominal thickness).

.3 Co-ordinate with electrical and mechanical Subcontractors to ensure that no back-to-back openings are formed, whether or not so indicated on the drawings. Openings must be offset at least one stud space.

.4 Thickness of sound insulation batts is to be the full stud depth unless specifically noted otherwise, with material placed after one wall face has been installed, using adhesive to hold the material in place. Use multiple layers of insulation as required to achieve stud depth. Stagger joints between layers minimum 300 mm.

3.4 INSTALLATION/FIRE-RATING BATT INSULATION

.1 Install fire-rating batts to wall as indicated or required to achieve fire ratings. Use acoustic batt insulation material, and install as specified for batt insulation (acoustic).

.2 Install insulation to locations indicated on the drawings to achieve fire ratings required to the satisfaction of the Authority Having Jurisdiction.

3.5 INSTALLATION/FIRE SAFING INSULATION

.1 Install fire safing insulation to locations around hot penetrations through the exterior envelope and elsewhere as required. Fire safing insulation to masonry construction or to drywall construction is specified under Section 04 26 13, 05 41 00 and 09 21 16 respectively.

.2 Completely fill voids with fire safing insulation.

3.6 SCHEDULES

Location	Material
Acoustic Wall Assemblies	Fibrous Glass Batts or Mineral Fibre
Parapet Assemblies (Complete batt cavity fill)	Mineral Fibre
Rated Wall Assemblies	Mineral Fibre
Other Locations	Fibrous Glass Batts or Mineral Fibre

Note: Where more than one insulation type is specified for a single location, provide any one of the types specified for that location.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 The intent is to provide a continuous barrier to air movement and an effective barrier to water vapour transmission through the building envelope.

.2 Air leakage criteria for primary air seal building enclosure materials and assemblies.

.3 Materials and installation methods supplementing other primary air seal materials and assemblies.

.4 Air seal materials to connect and seal openings, joints, and junctions between other air seal materials and assemblies.

.5 Sheet and sealant materials for controlling vapour diffusion.

.6 Materials and installation methods to provide continuity of vapour retarder to seal gaps between enclosure components and opening frames.

.7 Air seal materials to bridge and seal openings and penetrations of aluminum curtainwall, window and entrance frames, hollow metal door frames, louvres, mechanical and electrical protrusions and all other protrusions through the plane of the air/vapour barrier.

.8 Through wall flashing.

1.2 RELATED SECTIONS

.1 Section 06 10 00: Rough Carpentry.

.2 Section 07 21 13: Board Insulation.

.3 Section 07 21 16: Blanket Insulation.

.4 Section 07 52 11: Roofing Membrane.

.5 Section 07 62 00: Sheet Metal Flashing and Trim.

.6 Section 07 84 00: Firestopping: Fire stopping materials.

.7 Section 07 92 00: Joint Sealants: Sealant materials and installation techniques.

.8 Section 08 12 13: Standard Hollow Metal Frames.

.9 Section 08 44 13: Glazed Aluminum Curtain Walls: Functioning as a primary air seal.

.10 Section 09 21 16: Gypsum Board Assemblies.

.11 Section 09 91 10: Painting.

1.3 REFERENCES

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a

different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 CSC Tek Aid Digest on Air Barriers.

.3 ASTM C1193- 13: Standard Guide for Use of Joint Sealants

.4 ASTM D882 -12: Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

.5 ASTM D903 -98(2010): Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

.6 ASTM E84 -14: Standard Test Method for Surface Burning Characteristics of Building Materials

.7 ASTM E96/E96M -13: Standard Test Methods for Water Vapor Transmission of Materials

.8 ASTM E154/E154M -08a(2013)e1: Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

.9 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 the Specimen

.10 ASTM E330/E330M -14: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

.11 ASTM E783 -02(2010): Standard Test Method for Field Measurements of Air Leakage Through Installed Exterior Windows and Doors.

.12 ASTM E1186 -03(2009): Standard Practices for Air Leakage Site Detection in Building Envelope and Air Retarder Systems.

.13 ASTM E1643 -11: Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

.14 ASTM E1745 -11: Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

.15 ASTM E2178 -13: Standard Test Method for Air Permeance of Building Materials

.16 ASTM E2357 -11: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

.17 CAN/CGSB-51.33 -M89: Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.

.18 CAN/CGSB 51.34 -M86: Vapour Barrier, Polyethylene Sheet for Use in Building Construction

.19 CGSB 149-GP-2MP: Manual for Thermographic Analysis of Building Enclosures

.20 CAN/ULC S741 -08: Standard for Air Barrier Materials - Specification

.21 CAN/ULC S101 -14: Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.22 CAN/ULC S102-10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.23 CAN/ULC S114 -05: Standard Method of Test for Determination of Non-Combustibility in Building Materials.

.24 CAN/ULC S134 -13: Standard Method of Fire Test of Exterior Wall Assemblies.

.25 2019 National Building Code – Alberta Edition, Part 5, Environmental Separation.

.26 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

.27 NECB 2017

1.4 DEFINITION

.1 The air/vapour barrier for the purpose of these specifications, is a membrane which performs three functions, air barrier, moisture barrier and vapour retarder as defined below.

.2 The definition of the vapour retarder for the purpose of these specifications is a continuous material or assembly of materials including joints of membrane to adjacent construction and to itself which retards the passage of moisture as it diffuses through the assembly of materials in the wall, with adequate strength and stiffness to not deflect excessively under air pressure differences, to which it will be subjected in service. It can be comprised of a single material or a combination of materials to achieve the performance requirements.

.3 The definition of the air barrier for the purpose of these specifications is a continuous membrane including joints of membrane to adjacent construction and to itself, which stops outside air from entering the building through the walls, windows, curtain wall, or roof, and inside air from exfiltration through the building envelope to the outside.

1.5 PERFORMANCE REQUIREMENTS

.1 Be responsible for establishing that sealing work as indicated and specified is carried out correctly and in accordance with the overall intent of this Section.

.2 The air/vapour barrier must be continuous through the building envelope. The air/vapour barrier membrane of the wall must be continuous with the air/vapour barrier of the roof.

.3 The air/vapour barrier must be adhered with some fastening at perimeter connection details, to the supporting structure to resist a peak wind load, and sustained stack effect or pressurization from ventilation equipment; it must be sufficiently rigid to resist displacement.

.1 The materials and configuration of the air/vapour barrier assembly must resist the highest expected air pressure load, inward or outward, without rupturing or detaching from the support.

.2 The assembly must not creep away from the substrate or part at a joint under sustained pressure difference.

.3 The deflection of the air/vapour barrier materials between supports must be minimized to prevent the displacement of other materials.

.4 The air/vapour barrier system (means area plus joints) must be virtually air impermeable.

.5 A combined air/vapour barrier system must meet the requirements of the air barrier, moisture barrier and vapour retarder functions.

.6 Use galvanized sheet steel as a substrate to support the air/vapour barrier membranes as necessary. Do not allow the galvanized material to interfere with the perimeter edge seals of the air barrier membranes.

.7 Use brake formed galvanized sheet steel as compartmentalization baffles in exterior cavity walls.

.8 The air/vapour barrier installation must be designed and installed to accommodate building movement without rupture.

.4 Building sealing comprises of the following:

.1 Prevention of entry of air and water into interior building spaces.

.2 Prevention of air leakage from inside of the building.

.3 Control of water vapour migration.

.5 Prevent interior air leakage through gaps in air/vapour barrier membrane which cause condensation or frost accumulation.

.6 Where air/vapour barriers are specified or indicated, ensure that no gaps, openings, or cracks are left. Seal all cracks, gaps, and the like, to satisfaction of the Consultant.

.7 The method for prevention of air leakage is indicated or specified. Ensure that the work is carried out fully and correctly.

.8 The air/vapour barrier must be installed by a manufacturer's approved installer having a minimum of 2 years documented experience in the installation of the product on similar projects. The manufacturer must submit a written declaration that the air/vapour barrier installation including connection to other vapour retarders, air barrier and membranes is done in accordance with the manufacturer's specifications and recommendations to achieve a complete air/vapour barrier.

.9 **Unless specifically noted otherwise, use only one type of self adhered air/vapour barrier throughout the project**.

1.6 SUBMITTALS

.1 Product Data: Provide data indicating material characteristics, performance criteria, and limitations.

.2 Manufacturer's Installation Instructions: Indicate preparation, installation requirements and techniques, product storage and handling criteria.

.3 Submit statement from manufacturer(s) indicating Products supplied under this Section are compatible with one another and with Products previously installed under the Work of related sections.

.4 Provide duplicate 200 x 200 mm samples of membrane adhered to all Project substrates, including adjoining membranes specified in other sections.

1.7 QUALITY ASSURANCE

.1 Perform Work in accordance with membrane manufacturer's requirements for materials and installation.

.2 Applicators' Qualifications:

.1 Trained and experienced in skills required for installation.

.2 Familiar with manufacturer's recommended methods of installation.

.3 Completely familiar with the requirements of this Specification Section.

.3 Periodic reviews by Consultant of all insulation materials installations, prior to covering up membrane is **mandatory,** with no exceptions.

.4 Single-Source Responsibility:

.1 Obtain air/vapour barrier materials from a single manufacturer regularly engaged in manufacturing the product. Source all components from one manufacturer, including air/vapour barrier membrane, air barrier sealants, primers, mastics, flashings and adhesives.

.2 Provide products which comply with all federal, provincial, and local regulations controlling use of volatile organic compounds (VOCs).

.5 Installers are to be factory trained as required by the manufacturer.

1.8 MOCK-UP

.1 Install 10 m² minimum or typical and representative vapour retarder and air barrier system in location as directed by Consultant, and in consultation with membrane manufacturer.

.2 Mock-up to show interface with other materials and Provide details including parapet, window opening, door opening, base of wall, insulation, vapour retarder, air barrier, and building corner condition.

.3 Allow 48 hours for review of mock-up by Consultant.

.4 Do not proceed with further installation until mock-up has been reviewed by Consultant.

.5 Mock-up may form part of the finished Work providing materials and workmanship have been reviewed by Consultant.

1.9 PRE-INSTALLATION CONFERENCE

.1 Pre-installation conference shall include:

.1 Manufacturer's Inspection: representative to provide the following to assure quality and competence of membrane installation:

.1 Pre-installation training and supervision as required for personnel to install membrane.

.2 On-going, frequent inspection visits during installation.

.2 Adjacent System Interface:

.1 Coordination between all installers of each component of vapour retarder and air barrier system is essential to ensure continuity of system and that junctions between the various components are effectively sealed.

.2 Verify with Consultant installation procedures of building components incorporated into air barrier elements including, but not limited to: various membranes, coatings, sealants, as well as continuity of roofing membrane.

1.10 ENVIRONMENTAL CONSIDERATIONS

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

.2 Do not install solvent curing or vapour release materials in enclosed spaces without ventilation.

.3 Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation. Do not apply membranes at temperatures below 5EC. Where exterior surface temperatures are colder than 5EC, provide heating and hoarding to maintain surface temperatures above 5EC. If winter grade membranes are used, membranes may be installed at lower temperatures as recommended by the manufacturer.

.4 Apply air/vapour barrier only when substrate is dry and free of moisture or frost, dust, dirt and other contaminants that can hinder proper membrane adhesion.

.5 In cold weather, at temperatures below those recommended by the manufacturer for installation of the air/vapour barrier, provide all necessary heating and hoarding to maintain temperatures within the range recommended by the manufacturer for installation of the air/vapour barrier. Install hoarding to protect from rain, snow and the like. Use winter grade materials as required to suit exterior conditions.

1.11 SEQUENCING AND SCHEDULING

.1 If climatic conditions may result in condensation between membranes and substrates, schedule installation of insulation to immediately follow installation of membranes.

.2 Sequence Work to permit installation of materials in conjunction with other related materials and seals, and air barrier assemblies.

.3 Install membranes over joints and gaps before installing membranes over adjacent substrates.

.4 Install membranes on sloped roofs after installation of membrane on walls, to provide a lap over wall membrane.

.5 Unless membrane will be adhered directly to window frames or other components fitted into openings, install membrane before installation of such components.

.6 Do not leave exposed incomplete installation of transition membranes. Do not leave release film exposed to the environmental conditions. Coordinate and sequence all work to prevent damages to incomplete membrane installation.

1.12 COORDINATION

.1 Coordinate the installation of sheet air/vapour barrier with other parts of the work to achieve an air tight building envelope.

.2 Ensure that air/vapour barrier materials used at junctions between different parts of the Work are compatible with each other and with other adjacent materials such as foam-in-place insulation around windows and protrusions.

.3 Ambient Conditions:

.1 Install materials outlined in this Section after completion of work by other Sections is complete; to provide adequate dry, clean, level, and plumb surfaces for installation and adhesion.

.2 Apply when ambient air and substrate temperatures are above temperature range indicated by sheet applied air/vapour barrier membrane manufacturer, during time of install, and for a minimum of forty-eight (48) hours after installation, unless otherwise indicated.

.4 Ensure surfaces are sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants.

1.13 WARRANTY

.1 Warranty: Include coverage of installed sealant and sheet materials which fail to achieve air tight seal, exhibit loss of adhesion or cohesion, or do not cure.

1.14 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to Project site in original unopened packages, clearly marked with manufacturer’s name, brand name, and description of content.

.2 Use all means necessary to protect membrane materials before, during and after installation and, to protect the installed Work of all other Subcontractors.

.3 Protect all materials by raised platforms and waterproof coatings.

.4 Store membrane following manufacturer’s instructions. Do not store in temperature above 32 degrees C for prolonged periods of time.

.5 Store in dry area, away from heat, open flame, or sparks.

.6 Prior to and during installation, take all precautions and handle with due care all under slab sheet vapour barrier materials to prevent breakage, puncture, tearing and the like. Protect materials from direct exposure to sunlight.

.7 Replace sheet vapour barrier materials damaged or installed in such a manner as may be detrimental to designed performance of the material in the opinion of the Consultant.

1.15 INSPECTION AND TESTING

.1 Owner may engage an independent testing and inspection consultant. Do not include any costs for inspection and testing. Cooperate with testing and inspection consultant.

.2 Where testing reveals defects in the air/vapour barrier, remove cladding to access the defect area using same trade who initially installed cladding. Repair defect or gap in air/vapour barrier and reinstall cladding using original installer at no cost to the Owner.

.3 When the repairs have been completed, another series of tests will be done to ensure that the repairs have been properly performed and to ensure that all defects have been repaired. The cost of this series of tests will be borne by the Subcontractor.

.4 If further defects are detected, perform additional repairs, and perform additional testing to verify that the air barrier is continuous and complete. Pay all costs of such additional repairs and testing.

Part 2 Products

2.1 SHEET MATERIALS

.1 Use materials and primers as directed in sentence 1.7.4 Single-Source Responsibility.

.2 Sheet Seal Type 1: self-adhering, rubberized asphalt integrally bonded to high density polyethylene film.

.1 Acceptable Products:

.1 Air Shield; manufactured by W.R. Meadows

.2 Blueskin (SA or SA LT); manufactured by BAKOR.

.3 CCW-705; manufactured by Carlisle.

.4 Perm-A-Barrier Wall Membrane; manufactured by Grace Construction Products.

.5 Sopraseal Stick 1100; manufactured by Soprema.

.6 Aquabarrier AVB by IKO.

.7 Substitutions: Refer to Section 01 10 01.

.3 Sheet Seal Type 3: Air barrier membrane, self-adhering, rubberized asphalt integrally bonded to high density polyethylene film.

.1 For use as an air barrier membrane to form a weather tight building envelope at exterior side of parapets above roof line, and the like.

.1 Blueskin VP 160 as manufactured by Henry Company.

.2 Perm-A-Barrier VPS as manufactured by Grace Construction Products.

.3 WrapShield SA as manufactured by VaproShield LLC.

.4 CCW-705 VP as manufactured by Carlisle Coatings & Waterproofing Incorporated.

.5 SRP AirOutsheild SA 280 as manufactured by SRP Canada.

.6 Sopraseal Stick VP as manufactured by Soprema (this product does not require a primer).

.7 3M Air barrier 3015VP (this product does not require a primer).

.8 Substitutions: Refer to Section 01 10 01.

.4 Liquid Seal Type 4: elastomeric bitumen, synthetic rubber, or polymer-modified; either sprayed or rolled on.

.1 Acceptable Products:

.1 Air-Shield LM; manufactured by W.R. Meadows.

.2 Air-Bloc 06; manufactured by BAKOR.

.3 Barriseal; manufactured by Carlisle.

.4 Perm-A-Barrier Liquid; manufactured by Grace Construction Products.

.5 Soprseal Retrofit; manufactured by Soprema.

.6 Substitutions: Refer to Section 01 10 01.

.5 Sheet Retarder Type 7: to ASTM E1745 class A, for horizontal use below grade, under concrete slabs, complete with manufacturer's compatible joint tape and mastic.

.1 Acceptable Products:

.1 Florprufe 120; manufactured by Grace Construction Products.

.2 Perminator 15 mil; manufactured by W.R. Meadows.

.3 Stego Wrap 15 mil; by Stego Industries, LLC. www.stegoindustries.com Available at www.brockwhite.com

.4 Substitutions: Refer to Section 01 10 01.

.6 Sheet Retarder Type 8: For vertical and horizontal applications above grade, used on interior walls and ceilings, 0.15mm (6 mil) thickness, 15 ng/(Pa.s.m^2) maximum.

.1 Acceptable Products:

.1 5000 Series Polyethylene Vapour Barrier; manufactured by Ralston Industrial Products.

.2 CGSB Vapour Barrier Poly; manufactured by Layfield Poly Films, Ltd.

2.2 ACCESSORIES

.1 Sealants: as per membrane manufacturers' recommendations, compatible with membrane substrate.

.2 Adhesive: to manufacture's recommendation compatible with membrane and substrate, permanently non-curing.

.3 Primer (for self-adhered exterior sheathing membrane and SBS modified self-adhered membrane flashings): as recommended by the membrane manufacturer with a Volatile Organic Content (VOC) of <240 grams/litre.

.1 Primer for low temperature membranes: low VOC type, as recommended by the manufacturer.

.4 Thinner and Cleaner for Air Barrier and Vapour Retarder: as recommended by membrane material manufacturer.

.5 Tape: Polyethylene or Polyester self adhering type, mesh reinforced, 50 mm wide, compatible with air/vapour membrane material.

.6 Sheet metal membrane support: Z275 designation galvanized sheet metal commercial quality conforming to ASTM A653/A653M, 0.91 mm (20 gauge) thickness.

.7 Battens: channels formed of 1.2 mm base metal thickness, Z275 designation galvanized sheet steel, commercial quality conforming to ASTM A653/A653M, 19 mm wide with 9.5 mm legs.

.8 Mechanical Fasteners: galvanized flat head screws, of type and size suitable for securing metal battens to substrate.

2.3 FABRICATION

.1 Brake form sheet metal to permit installation using self-tapping, self-drilling screws or drilled anchors.

.2 Make provisions in air/vapour barrier design to accommodate movement resulting from thermal change and from structural deflection. Provide sheet metal membrane support to bridge all gaps in excess of 12 mm.

.3 Supply and install sheet metal membrane support to all locations where no other substrate occurs to support the membrane, including at all locations of through wall membrane flashing at cavities; coordinate with Section 04 20 00 where gaps exceed 12 mm. Form return flanges or provide suitable angles, and fasten to adjacent substrates to prevent deflection movement.

.4 Form 13 mm hem on sheet metal edges overlapped with air/vapour barrier membrane, membrane flashing and waterproof membrane.

.5 Brake form sheet metal backing able to accommodate movement with continuous “V” groove to allow for expansion and contraction.

.6 Cut, fit trim and form metal air/vapour barrier supports as required to accommodate conflicting framing connections.

.7 Cut back all 90 degree corners to a 45 degree to prevent puncturing of air/vapour barrier materials with sharp edged corners.

Part 3 Execution

3.1 EXAMINATION

.1 Verify surfaces and conditions are ready to accept Work of this section. Notify the Consultant in writing of any discrepancies. Commencement of the Work or any parts thereof means acceptance of the prepared substrates.

.2 All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants detrimental to the adhesion of the membranes. Fill voids, gaps and spalled areas in substrate to provide an even plane. Strike masonry joints full-flush.

.3 Prepare substrate surfaces in accordance with air barrier/vapour retarder manufacturer's printed instructions.

3.2 PREPARATION

.1 Remove loose or foreign matter which might impair adhesion of materials.

.2 Clean substrate surfaces to receive primer, adhesive and sealants in accordance with manufacturers instructions.

3.3 INSTALLATION

.1 Apply primer for application of membrane in accordance with membrane manufacturer's recommendations. Use primer in all applications.

.2 Install membranes in accordance with membrane manufacturers' recommendations, and to ensure continuity of air and vapour seal. Neatly trim membrane terminations.

.3 Apply membrane to substrate(s) continuously, in horizontal or vertical courses, starting at bottom of wall.

.4 Apply materials within recommended application temperature ranges. Consult manufacturer when materials cannot be applied within these temperature ranges.

.5 Completely adhere the entire membrane to the substrate after application of primer, and roll with a weighted roller, in accordance with the manufacturer's instructions. Install membrane to achieve smooth wrinkle free surfaces, completely bonded to the substrate, without air entrapment.

.6 Ensure complete coverage of (and adhesion to) all substrates to receive air/vapour barrier membrane, including all wall protrusions. Ensure co-operation of other trades to obtain continuity of the membrane.

.7 Where 3M air and vapour barrier and through wall flashings are used, preform adhesion tests to each substrate to determine if primer is required. If adhesion without primer is not sufficient, use primer in strict accordance with manufacturer's recommendations, to achieve proper adhesion.

.8 Wherever possible, install membrane prior to installation of Z girts, masonry ties and the like. Where membrane is installed after ties and anchors and the like, are in place, notch membrane around ties and seal penetrations using a combination of membrane patches and rubber asphalt sealant.

.9 Apply membrane so the horizontal joints overlap with the upper sheet over the lower sheet, shingle style. Use mastic sealant where reverse lapping cannot be avoided.

.10 Corner details:

.1 Double cover outside and inside corners.

.2 Use 300 mm wide strip of membrane centered on corner axis.

.3 Follow with full width of sheet membrane to cover corner strip completely.

.4 Cut, lap, and weld double return corners and other complicated changes of direction.

.11 Construction and Control Joints or Gaps:

.1 Ensure that joints are properly sealed with joint sealer and a compatible sealant is installed prior to beginning Work over joint.

.2 Install membrane in double thickness over properly sealed joints.

.3 Use 300 mm wide strip of membrane centered over joint.

.4 Follow with 1000 mm width of sheet membrane.

.12 Lap horizontal membrane joints:

.1 Side laps must be as marked on rolls.

.2 Minimum lap 75 mm width.

.3 End lap minimum 200 mm width.

.13 Install Sheet Retarder Type 7 to ASTM E1643 and manufacturer's instructions. Seal penetrations, including pipes.

.14 Air Barrier Membrane Rolling: roll entire installed membrane surface firmly and completely immediately after each sheet is applied. Use hand held, counter-top roller.

.15 Unacceptable conditions include:

.1 Fish mouths and folds

.2 Blisters and bulges.

.3 Insufficient overlaps.

.4 Inadequate adhesion.

.5 Punctures, tears, cuts.

.6 Other similar defects.

.16 Membrane Inspection and Repair:

.1 Inspect membrane thoroughly before covering and immediately make any corrections or modifications required.

.2 Misaligned or inadequately lapped seams, punctures, fishmouths or other damage must be repaired with patch of membrane extending minimum 150 mm in all directions from edge of damaged area. Seal all edges of the patch with mastic. Slit fishmouths prior to repair with a membrane patch..

.17 Where membrane is not otherwise mechanically held in place, fasten membrane to the substrate with vertical battens spaced 600 mm maximum centres. Place additional battens adjacent to openings, edges, and corners. Install battens and mechanical fasteners where the membrane bond width to substrate is less than 50 mm. Ensure batten occur in locations that will not be exposed in the final assemblies.

.18 Fasten battens through the membrane and gypsum board sheathing into the framing or into concrete or concrete block substrate at 300 mm centres, with the legs facing out. Bend up ends of battens and file smooth so that thermal movement will not cause end of batten to dig into membrane. Use battens in lengths not exceeding 1200 mm, and leave 25 mm gaps between ends of battens on the same alignment. Where back up substrate is gypsum sheathing and steel studs, ensure that battens are fastened through into studs or into solid blocking.

.19 Extend membrane onto glazing reglet and onto flexible flashings of aluminum windows as indicated on Drawings.

.20 Seal membrane to door frames.

.21 Install Sheet Membrane on soffit, fascias, and parapets for continuous installation.

3.4 INSTALLATION UNDER SLAB VAPOUR RETARDER

.1 Install Sheet Retarder Type 7 to ASTM E1643 and manufacturer's instructions. All joints/seams both lateral and butt should be overlapped a minimum of 150 mm (6") and taped using manufacturer's recommended tape.

.2 All pipe, ducting, rebar, wire penetrations and block outs should be sealed using manufacturer's recommended tape or mastic and methods.

.3 ASTM E 1643 requires sealing the perimeter of the slab. Extend vapour retarder over footings and seal to foundation wall, grade beam, or slab at an elevation consistent with the top of the slab or terminate at impediments such as waterstops or dowels. Achieve this by installing in accordance with the manufacturer's recommended details. Coordinate with the Consultant before proceeding to determine which perimeter seal technique should be employed for the project.

.4 In the event that sheet vapour retarder is damaged during or after installation, repairs must be made. Manufacturer's recommended tape can be used to repair small holes in the material. For larger holes, cut a piece of vapour retarder to a size and shape that covers any damage by a minimum overlap of six inches in all directions. Clean all adhesion areas of dust, dirt, moisture, and frost. Tape down all edges using manufacturer's recommended tape.

3.5 INSTALLATION AT TRANSITIONS TO MEMBRANE ROOFING

.1 Install Transition Membrane at transitions to membrane roofing.

.2 Lap Transition Membrane minimum 200 mm over roofing vapour retarder and over Sheet Membrane on walls.

.3 Ensure compatibility of Transition Membrane and air/vapour membranes and substrate materials.

3.6 INSTALLATION AT PENETRATIONS

.1 Cut membrane to ensure it is installed tight to penetrations.

.2 Provide flanged membrane collar around mechanical and electrical penetrations. Flange shall be at plane of surrounding membrane.

.3 Apply tape where membrane has been cut to fit around penetrations.

3.7 INSTALLATION OF THRU-WALL FLASHINGS

.1 Apply through-wall flashing membrane where detailed on the drawings. Apply through-wall flashing membrane where detailed on the drawings. At openings, extend flashing 200 mm beyond jambs.

.2 Coordinate installation of through wall flashing with air/vapour barrier of this Section, to ensure a water tight installation and to maintain continuity of the air/vapour barrier. Sequence membrane flashing installation with air/vapour barrier installation, so that air/vapour barrier membrane overlaps top edge of membrane flashing, minimum 50 mm and is completely and continuously sealed in place to maintain air/vapour barrier and to shed water in cavity to the exterior.

.3 Apply continuous membrane flashing over all ledger angles or supporting sills, extending flashing up behind air/vapour barrier, and up vertical surface minimum 200 mm. Extend flashing horizontally over ledger angle or supporting sill, stopping maximum 10 mm from horizontal leg of ledger angle or supporting sill.

.4 Apply continuous membrane flashing over all ledger angles or supporting sills, extending flashing up behind air/vapour barrier, and up vertical surface minimum 200 mm. Coordinate installation of flashing with installation of air/vapour barrier, so that air/vapour barrier weather laps over membrane flashing to provide a weather tight installation and to maintain continuity of the air/vapour barrier. Extend flashing horizontally over ledger angle or supporting sill, stopping maximum 10 mm from horizontal leg of ledger angle or supporting sill.

.5 For the application of SBS modified self-adhered through-wall flashings and other applications of SBS modified self-adhered transition membranes, condition the substrate with applicable primer.

.1 Apply primer at rate recommended by manufacturer to all areas to receive SBS modified self-adhering sheet membrane as indicated on drawings by roller or spray and allow to dry.

.2 Primed surfaces not covered by self-adhering membrane or self-adhering through-wall flashing membrane during the same working day must be re-primed.

.6 Prime surfaces and allow to dry, press membrane firmly into place, overlap minimum 50 mm at all side and end laps. Promptly roll all laps and membrane to ensure the seal.

.7 Ensure applications form a continuous flashing membrane and extend up a minimum of 203 mm up the back-up wall.

.8 Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.

.9 Install through-wall flashing membrane and extend 13 mm from outside edge of veneer. Provide "end dam" flashing as detailed.

3.8 INSTALLATIONAT EXPANSION JOINT

.1 At expansion joints, including at roof to wall joints and wall to wall joints, install specified expansion joint membrane, in place prior to installation of air/vapour barrier wall and roof membranes.

.2 Install complete with termination bars as recommended by the manufacturer. Where recommended by the manufacturer, nail expansion joint membrane in place in accordance with expansion joint membrane manufacturer’s recommendations.

.3 Apply primer over portions of expansion joint membrane to receive air/vapour barrier tie-in. Overlap and seal air/vapour barrier membranes over expansion joint membrane as recommended by the membrane manufacturer.

3.9 INSTALLATION OF PRIMARY SELF-ADHERED EXTERIOR PARAPET SHEATHING MEMBRANE

.1 Apply self-adhered exterior sheathing membrane to exterior side of parapets, from top of parapet and overlapping air/vapour barrier membrane minimum 200 mm and completely and continuously sealing in place.

.2 Apply self-adhering exterior sheathing membrane complete and continuous to substrate in an overlapping shingle fashion and in accordance with manufacturer's recommendations and written instructions. Stagger all vertical joints.

.3 Prime surfaces to achieve surface adhesion as per manufacturers' instructions and allow to dry.

.4 Align and position self-adhering membrane to substrate, remove top panel of protective release film and press firmly into place.

.5 Ensure alignment, hold membrane in place to avoid wrinkles and sequentially remove remaining panels of protective film and press firmly into place.

.6 Ensure minimum 75 mm overlap at all end and 50 mm side laps of subsequent membrane applications.

.7 Pressure roll all membrane surfaces, laps and flashings with a counter top roller or 'J-roller' to ensure appropriate surface adhesion.

.8 Coordinate installation of roofing membrane over parapets, so that the roofing membrane overlaps the self-adhered exterior sheathing membrane minimum 100 mm.

.9 At the end of each day's work seal the top edge of the membrane where it meets the substrate with termination sealant. Trowel apply a feathered edge to seal termination and shed water.

3.10 INSTALLATION OF METAL AIR/VAPOUR BARRIER BACK-UP

.1 Prior to installation, apply a heavy protective coating of alkali resistant bituminous paint or zinc chromate primer, to concealed surfaces of galvanized sheet steel, which come in direct contact with steel, dissimilar metals, concrete and masonry.

.2 Supply and install sheet metal membrane support to all locations where no other substrate occurs to support the membrane where gaps exceed 12 mm. Form return flanges or provide suitable angles, and fasten to adjacent substrates to prevent deflection movement.

.3 Provide membrane supports for all gaps in the substrate or between components, larger than 12 mm, or as otherwise recommended by the membrane manufacturer.

.4 Provide metal backing at junctions between different substrates as indicated.

.5 Overlap metal back-up with adjoining substrates and securely attach with fasteners appropriate for the substrate encountered. Where metal back-up is used to span deflection joints or areas where movement is anticipated between dissimilar materials, fasten metal on one side only to allow for movement. Provide continuity of air/vapour barrier with adjacent air/vapour barrier systems.

.6 Gun apply a continuous 6 mm bead of sealant at all joints and junctions with adjacent construction. Liberally butter screws fastenings with sealant. Attach sheet metal membrane supports with screws at 300 mm o.c.

.7 Cut back all sheet metal corners, and ensure that the sheet metal supports do not interfere with the perimeter edge seals of the air/vapour barrier membranes.

3.11 PERIMETERS

.1 Wherever air/vapour barriers of different systems meet, such as curtain wall or roofs and air/vapour barrier of this Section, ensure that the air/vapour barriers are connected to each other and completely sealed to maintain continuity.

.2 Cut corners are to prevent curling back of membrane and to prevent water migration through horizontal end laps at termination edges.

.3 At perimeters, overlap roofing air/vapour barrier and the like, seal air/vapour barrier membrane to adjacent membranes. Overlap end joints minimum 150 mm and seal together to achieve a complete air seal.

.4 Extend air/vapour barrier membrane under parapet framing to tie wall air/vapour barrier to roof air/vapour barrier. Coordinate sequencing with Steel Stud parapet framing specified in Section 05 41 00.

.5 Extend air/vapour barrier membrane down to minimum 150 mm below adjacent floor slabs, unless indicated otherwise and lap over dampproofing minimum 100 mm and completely and continuously seal in place.

.6 At heads of door, window, curtain wall and entrance frames and louvre frames, apply self-adhered air/vapour barrier membrane strip, minimum 300 mm wide unless indicated otherwise, and sealed to adjacent frame as specified below. Then install metal flashing as detailed; coordinate with Section 07 62 00, 08 44 13 and 08 51 13; ensure top edge of wall leg of flashing is not less than 75 mm below top edge of air/vapour barrier tie-in strip. After metal flashing is installed, extend wall air/vapour barrier over air/vapour barrier membrane tie in strip and metal flashing down to bottom of vertical leg of metal flashing and completely and continuously seal in place to maintain continuity of the air/vapour barrier.

.7 At junctions between air/vapour barrier and hollow metal door frames and louvre frames, apply a 300 mm wide strip of membrane, sealed to the inside of the frame, prior to application of foam in place insulation. Do not remove release on unadhered portion of strip until the door frame or louvre frame is in place and the adjacent air/vapour barrier membrane is in place and ready to be sealed. Seal to adjacent membranes to achieve a continuous and complete air/vapour barrier.

.8 At junctions between aluminum curtain wall and entrance frames, and air/vapour barrier, mechanically fasten and continuously seal air/vapour barrier into glazing rabbet of frame using continuous anti-rotational channels as specified in Section 08 44 13, form a complete and continuous air/vapour seal between the aluminum curtain wall and entrance frames and the air/vapour barrier. Note: connection of air/vapour barrier membrane to aluminum curtain wall and entrances is to be done under Section 08 44 13, and is the responsibility of the aluminum curtain wall and entrance Subcontractor. Coordinate with Section 08 44 13.

.9 Mechanically fasten air/vapour barrier membrane to air barrier flange to entire perimeter of aluminum window frames as specified in Section 08 51 13. Seal all corners and edges to ensure continuity of the air/vapour barrier membrane. Note: connection of air/vapour barrier to aluminum windows is the responsibility of the aluminum window installer. Coordinate with Section 08 51 13.

.10 Inspect air/vapour barrier for continuity. Pay particular attention to change in direction bends, such as at windows head, sill and jamb intersections. Repair tears, punctures, rips, with pieces of membrane.

3.12 PROTECTION OF FINISHED WORK

.1 Do not permit adjacent Work to damage Work of this section.

.2 Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.

.3 Do not leave air/vapour barrier membrane and liquid membrane exposed to sunlight longer than recommended by the manufacturer.

.4 Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane, including wall openings and construction activity above completed self-adhered exterior parapet sheathing membrane installations.

.5 Self-adhered exterior parapet sheathing membrane is not designed for permanent exposure. Cover as soon as possible, not to exceed 90 days.

3.13 SCHEDULES

Application	Substrate Construction	Sheet Seal / Retarder Type
Vertical Walls above grade	Wall Assemblies with rigid insulation on exterior of wall sheathing.	Sheet Seal Type 1 with transition membrane of Sheet Seal Type 3 or 4
	Parapet Assemblies above roof line with rigid insulation on exterior of wall sheathing.	Sheet Seal Type 3
	Cavity Wall Assemblies	Sheet Seal Type 1 with transition membrane of Sheet Seal Type 3 or 4
Horizontal Surfaces below grade	Concrete Slabs on Grade	Sheet Retarder Type 7

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Coping, parapet, cap, sill, and lintel flashings.

.2 Fascia, scuppers, metal gutters, downspouts, and pitch pockets.

.3 Counterflashings over base flashings.

.4 Counterflashings at roof mounted equipment, clear storeys, and vent stacks.

1.2 RELATED SECTIONS

.1 Section 06 10 00: Rough Carpentry.

.2 Section 07 46 16: Preformed Metal Siding.

.3 Section 07 92 00: Joint Sealants.

.4 Section 09 91 10: Painting.

1.3 REFERENCES

.1 All Standards listed below are to be the most current edition at the time of tender regardless of any older dates that may be listed herein unless specifically noted otherwise. Withdrawn or obsolete standards may still apply unless it has been replaced with a different Standard in which case the new Standard shall apply. Report any withdrawn Standards to the Consultant for instructions.

.2 CRCA: Canadian Roofing Contractor's Association.

.3 ARCA "Roofing Application Standards Manual".

.4 CAN/ULC S101 -14: Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.5 CAN/ULC S102-10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.6 CAN/ULC S114 -05: Standard Method of Test for Determination of Non-Combustibility in Building Materials.

.7 CAN/ULC S134 -13: Standard Method of Fire Test of Exterior Wall Assemblies.

.8 ASTM E84 -14: Standard Test Method for Surface Burning Characteristics of Building Materials

.9 ANSI/SPRI/FM 4435/ES-1 (2011): Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

.10 ASTM A526/A526M -85: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality

.11 ASTM A653/A653M -13: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.12 ASTM A792/A792M -10: Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.13 ASTM A924/A924M -13: Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

.14 ASTM D1187 -97(2011)e1: Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

.15 SMACNA 1120: Architectural Sheet Metal Manual, 7th Edition. Sheet Metal and Air Conditioning Contractors National Association Inc.

.16 SMACNA 1937: Architectural Sheet Metal Inspection Guide

.17 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 SUBMITTALS

.1 Refer to Section 01 33 00: Submission procedures.

.2 Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

.3 Submit one sample, 300 x 300 mm in size, illustrating metal finish colour.

1.5 QUALITY ASSURANCE

.1 Perform work in accordance with SMACNA standard details and requirements.

1.6 QUALIFICATIONS

.1 Fabricator and Installer: Company specializing in sheet metal flashing work with 5 years documented experience, and shall be a member in good standing with the ARCA.

1.7 PRE-INSTALLATION CONFERENCE

.1 Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Protect flashing and sheet metal work in all phases of handling, storage, transportation, fabrication and installation.

.2 Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

.3 Prevent contact with materials which may cause discolouration or staining.

1.9 WARRANTY

.1 Provide the manufacturers standard warranty with the minimum coverage of 20 years for the paint finish against chalking, fading, peeling, checking, cracking, or colour change.

Part 2 Products

2.1 SHEET MATERIALS

.1 Pre-Coated Galvanized Steel: ASTM A653/A653M, G90 zinc coating; 0.7 mm core steel, shop pre-coated with siliconized modified polyester paint finish on front and a wash coat of 0.3 – 0.4 mil dry film thickness applied to the reverse side.; colours as selected by consultant. Approved products:

- .1 Firestone Metal Products
- .2 Vicwest
- .3 Other preapproved product

2.2 ACCESSORIES

.1 Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

.2 Underlayment: ASTM D226, No. 15 asphalt saturated roofing felt.

.3 Slip Sheet: Rosin sized building paper.

.4 Primer: Zinc chromate or Galvanized iron type.

.5 Protective Backing Paint: FS TT-C-494, bituminous.

.6 Sealants:

- .1 Field applied sealant: multi-component urethane, custom coloured to Consultant's later selection.
- .2 Tape Mastic: butyl-polyisobutylene preformed sealant

.7 Bedding Compound: Rubber-asphalt or Butyl type.

.8 Plastic Cement: ASTM D4586, Type I

.9 Reglets: Surface mounted type, galvanized steel or rigid extruded PVC; face and ends covered with plastic tape.

.10 Solder: ASTM B32; 50/50 type.

.11 Flux: rosin, cut muriatic acid, or commercial preparation suitable for materials to be soldered.

2.3 COMPONENTS

.1 Gutters: Rectangular SMACNA style profile.

.2 Downspouts: Rectangular profile.

.3 Accessories: Profiled to suit gutters and downspouts.

.4 Splash Pads: Precast concrete type, of size and profiles indicated; minimum 21 MPa at 28 days, with minimum 5 percent air entrainment.

.5 Downspout Boots / Shoes: Steel.

2.4 FABRICATION

.1 Form sections true to shape, accurate in size, square, and free from distortion or defects.

.2 Fabricate cleats of same material as sheet, minimum 150 mm wide, interlockable with sheet.

.3 Form pieces in longest possible lengths, except at parapet flashings.

.4 Form parapet flashing to 1500 mm lengths.

.5 Hem exposed edges on underside 13 mm; mitre and seam corners.

.6 Form material with flat lock seams.

.7 Fabricate corners from one piece with minimum 450 mm long legs; seam for rigidity, seal with sealant.

.8 Fabricate vertical faces with bottom edge formed outward 6 mm and hemmed to form drip.

.9 Fabricate flashings to allow toe to extend 50 mm over roofing gravel. Return and brake edges.

.10 Fabricate snow guards in accordance with SMACNA Plate 159.

2.5 FINISH

.1 Where metal flashing or trim is in contact with dissimilar materials such as concrete or masonry, apply an additional coat of bituminous back paint to concealed surfaces.

.2 Parapet Cap Flashings Colour: Dark Brown QC 16062.

Part 3 Execution

3.1 EXAMINATION

.1 Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets in place, and nailing strips located.

.2 Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

.1 Install starter and edge strips, and cleats before starting installation.

.2 Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

3.3 INSTALLATION

.1 Conform to drawing details included in the SMACNA manual.

.2 Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

.3 Apply plastic cement compound between metal flashings and felt flashings.

.4 Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

.5 Seal metal joints watertight.

.6 Seal metal joints watertight.

3.4 FIELD QUALITY CONTROL

.1 Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.5 TOUCH UP AND CLEANING

.1 Touch up with matching paint any scratched or abraded surfaces of prefinished sheet metal roofing and associated flashing and trim.

.2 Remove excess sealants by use of recommended solvent which is not detrimental to paint finish.

.3 Wash down exposed surfaces.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Fireproof fire-stopping and fire-safing materials and accessories.

1.2 RELATED SECTIONS

.1 Section 03 30 00: Cast-In-Place Concrete.

.2 Section 04 26 13: Unit Masonry

.3 Section 05 31 23: Steel Roof Decking.

.4 Section 07 28 00: Air Barriers / Vapour Retarders.

.5 Section 07 92 00: Sealants.

.6 Section 09 21 16: Gypsum Board Assemblies: Gypsum wallboard fireproofing.

.7 Section 21 to 25: Mechanical work requiring firestopping.

.8 Section 26 to 28: Electrical work requiring firestopping.

1.3 REFERENCES

.1 ***NOTE:*** *Canadian standards govern over American standards for applicable materials.*

.2 ASTM E84 -12c: Standard Test Method for Surface Burning Characteristics of Building Materials

.3 ASTM E119 -12a: Standard Test Methods for Fire Tests of Building Construction and Materials

.4 ASTM E814 -11a: Test Method for Fire Tests Through Penetration Fire Stops.

.5 ASTM E1966 -07(2011): Standard Test Method for Fire-Resistive Joint Systems

.6 ASTM E2837-11: Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies

.7 ASTM E2923 -13: Standard Practice for Longevity Assessment of Firestop Materials Using Differential Scanning Calorimetry

.8 ASTM E2785 -11: Standard Test Method for Exposure of Firestop Materials to Severe Environmental Conditions

.9 ANSI/UL 1479: Fire Tests of Through-Penetration Fire Stops.

.10 ASME A112.20.2-2004: Qualification of Installers of Firestop Systems and Devices for Piping Systems

.11 CAN/ULC-S101 -07: Standard Method of Fire Endurance Tests of Building Construction and Materials.

.12 CAN/ULC S102 -10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

.13 CAN/ULC S115 -11: Standard Method of Fire Tests of Firestop Systems

.14 ULC: List of Equipment and Materials.

.15 FM (Factory Mutual) Approvals 4990: Firestopping

.16 FM (Factory Mutual) Approvals 4991: Approval of Firestop Contractors

.17 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 DEFINITION

.1 Firestopping (Firesafing): A sealing or stuffing material or assembly placed in spaces between building materials to arrest the movement of smoke, heat, gases, or fire through wall or floor openings.

1.5 SYSTEM DESCRIPTION

.1 Firestopping systems installed to resist spread of fire and passage of smoke and other gases at penetrations through fire resistance rated wall, floor assemblies, materials and components.

1.6 PERFORMANCE REQUIREMENTS

.1 Materials, accessories and application procedures listed by ULC, cUL, WHI (Intertek/Warnock Hershey) or OPL (Omega Point Laboratories), or tested in accordance with CAN/ULC-S115 to comply with building code requirements.

.2 Fire-Resistive Joint Systems:

.1 Generally, use listed assembly types F, FT, FH or FTH, as applicable.

.3 Firestopping Materials: CAN/ULC-S101, ASTM E119, ASTM E814 and ASTM E1966, and to achieve fire ratings indicated.

.4 Surface Burning of Exposed Materials: CAN/ULC-S102 and ASTM E84 with a minimum flame spread/smoke developed rating of 25/450, unless otherwise required by applicable code.

1.7 SUBMITTALS

.1 Section 01 10 01: Submission procedures.

.2 Product Data: Provide data on product characteristics, performance and limitation criteria, and indicating construction details accurately illustrating Project conditions.

.3 System Design Listings: Submit system design listings, including illustrations from a qualified testing and inspection agency that is applicable for each firestop configuration.

.1 Where Project conditions require modification to a qualified testing agency's illustration for a particular firestopping system condition, submit illustration, with modifications marked, approved by firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire resistance rated assembly.

.4 Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

.5 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.8 QUALIFICATIONS

.1 Applicator: Company specializing in performing Work of this section approved and trained by firestopping system manufacturer.

1.9 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire resistance ratings and surface burning characteristics.

.2 Provide certificate of compliance from Authority Having Jurisdiction indicating approval of materials used.

1.10 PRE-INSTALLATION CONFERENCE:

.1 Conduct conference at Project site to discuss fire stopping components and assemblies to be used on the Project that comply with this specification.

.2 Seminar: Provide a manufacturer's seminar, one (1) hour duration, on components and systems to be used on the Project.

.3 In attendance: Manufacturer's representative, Contractor's superintendent, installers, Owner, and Consultant.

.4 Conference to be followed by mock-up to demonstrate systems.

1.11 QUALITY ASSURANCE

.1 Products of This Section: Manufactured to ISO 9000 certification requirements.

.2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this Section with minimum five years documented experience and FCIA (Firestop Contractors International Association) Manufacturer Member in good standing.

.3 Applicator Qualifications: Company specializing in performing the work of this Section and as follows:

- .1 FM approved in accordance with FM standard 4991 - Approval of Firestop Contractors.
- .2 FCIA Member in good standing.
- .3 Licensed by the province or local authority where applicable.
- .4 Successfully completed not less than five comparable scale projects.

.4 Single Source Responsibility: Obtain firestop systems for each type of penetration and construction situation from a single primary firestop systems manufacturer.

1.12 ENVIRONMENTAL REQUIREMENTS

.1 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Do not apply multi-component foams when temperature of substrate material and ambient air is below 15 degrees C. Maintain this minimum temperature before, during, and for 3 days after installation of materials.

.3 Provide ventilation to manufacturer's instructions in areas to receive solvent cured materials.

1.13 FIRESTOPPING REVIEW

.1 Prior to concealing or enclosing fire stopping materials and service penetration assemblies notive Consultant for review of firestopping installation.

.2 Notify Consultant 72 hours when ready for review.

Part 2 Products

2.1 MATERIALS - GENERAL

.1 Select exposed firestopping products in walls and ceilings, capable of receiving specified paints.

.2 Do not use cementitious or rigid seals for:

.1 Re-entry penetrations.

.2 Penetrations in sound and vibration control assemblies.

2.2 MANUFACTURERS

.1 Subject to compliance with requirements provide products of one of the following manufacturers:

.1 A/D Fire Protection Systems Inc. Firestop Systems.

.2 Hilti Canada Ltd.

.3 Dow Corning Corporation.

.4 3M Fire Protection Products.

.5 Specified Technologies Inc.

.6 Tremco Sealants & Coatings.

2.3 MATERIALS

.1 All Fire stop systems and Listed Systems Designs selected for use shall be listed, tested and capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN/ULC S115 and not to exceed opening sizes for which they are intended.

.2 All Smoke Seal materials shall gave been tested in compliance with requirements of CAN/ULC S102 and have a flame spread classification of 25 or less.

.3 Fire resistance ratings of installed Fire stop systems shall not be less than the fire resistance rating of the surrounding Fire Separation or Fire Wall.

.4 All Fire stop materials and Smoke Seals shall have elastomeric characteristics to allow for building settling and seismic movement.

.5 All Fire stop materials and Smoke Seals shall be free of asbestos.

.6 All Listed Systems Designs used must provide a Flame (F), Temperature (T) and Hose (H) stream rating in accordance with those outlined in the 2006 Alberta Building Code, include any additional requirements of the Work in this Section.

.7 Use only one manufacturer for firestopping material on project.

.8 All visible firestopping in non-service areas to be paintable.

2.4 COMPONENTS

.1 Mineral Wool Backing Insulation: ULC or cUL labelled, preformed non-combustible materials.

.2 Retainers: clips to support mineral wool.

.3 Fire Stopping Sealant: ULC or cUL labelled, single component silicone based.

.4 Fire Stopping Seal: ULC or cUL labelled, single component water-based seal.

.5 Fire Stopping Foam: ULC or cUL labelled, two component silicone foam.

.6 Fire Stopping Mortar: ULC or cUL labelled, fibre reinforced, foamed cement mortar.

.7 Damming Material: Mineral fibreboard matting, plywood or particle board, removable and in accordance with tested assembly being installed as acceptable to Authorities Having Jurisdiction.

.8 Firestop Pillows: ULC or cUL labelled, formed mineral fibre pillows.

2.5 ACCESSORIES

.1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.

.2 Dam Material: Permanent:

- .1 Mineral fibreboard.
- .2 Mineral fibre matting.
- .3 Sheet metal.
- .4 Plywood or particle board.
- .5 Alumina silicate fire board

.3 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

2.6 FINISHES

.1 Colour: Dark grey or red in concealed locations, white in visible non-service areas.

Part 3 Execution

3.1 EXAMINATION

.1 Verify existing conditions before starting work.

.2 Verify opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping are ready to receive the work of this Section.

.3 Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

.1 Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.

.2 Remove incompatible materials which may affect bond.

.3 Examine sizes and conditions of voids to be filled to establish correct thickness and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

.4 Prepare surfaces in contact with firestopping materials and smoke seals to manufacturers' instructions.

.5 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

.6 Install backing or damming materials to arrest liquid material leakage.

.7 Install clips and retainers for mineral wool stuffing insulation.

3.3 APPLICATION

.1 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

.2 Apply primer and materials in accordance with manufacturer's instructions.

.3 Apply firestopping material in sufficient thickness to achieve rating, to uniform density and texture.

.4 Seal holes or voids made by through penetrations, poke-through termination devices, and un-penetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

.5 Compress fibred material to achieve a density of 40 percent of its uncompressed density.

.6 Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

.7 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.8 Tool or trowel exposed surfaces to a smooth, neat and tidy finish where required and exposed to view.

.9 Remove excess compound promptly as work progresses and upon completion.

.10 Remove dam material after firestopping material has cured.

.11 Notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.4 CORRECTIONS

.1 Make corrections to defective, incomplete or missing firestopping work as determined by firestopping reviewer.

.2 Request addition review by Consultant when corrections are made.

3.5 CLEANING

.1 Clean adjacent surfaces of firestopping and smoke seal materials.

3.6 PROTECTION OF FINISHED WORK

.1 Protect adjacent surfaces from damage by material installation.

3.7 SERVICE PENETRATION FIRE STOP SYSTEMS

.1 Fire stop and smoke seal gaps and holes in all Fire Separation and Firewall construction through which conduit, wire, cables, ductwork, piping and all other protrusions pass as a result of Work using an appropriate Listed System Design identifying substrate type, penetrating material type, penetrating item size, minimum and maximum annular space and overall "FTH" ratings.

.2 Apply Fire stop Systems at un-penetrated openings and sleeves installed for future use through Fire Separations and Firewalls.

.3 Install 6 mm to 10 mm bead of Fire stop caulking at interface of retaining angles around fire dampers, where angles meet fire-rated assembly, and between retaining angles and fire damper, both sides of penetration. At floor locations, sealant bead at top of assembly is adequate.

.4 Where necessary, remove fibreglass insulation and replace with mineral wool insulation from insulated pipes and ducts where such services penetrate a Fire Separation or Firewall unless the Listed Systems Design permits such insulation to remain within the Fire stop System.

.5 All cable tray penetrations to be removable and resettable for future cable routing without the requirement of special tools or re-application of a wet firestopping system.

3.8 SCHEDULES

.1 Refer to Drawings for additional requirements.

.2 Main floor fire walls: 2 hour.

.3 Fire stop and smoke seal at the following locations:

.1 Around all mechanical and electrical service penetrations and poke through termination devices through fire-resistance rated masonry, concrete, and gypsum board partitions and walls. Also includes HVAC, telecommunication and cable penetrations.

.2 Top of fire resistance rated masonry and gypsum board partitions to underside of slabs and decks.

.3 Concrete, masonry, and gypsum board horizontal and vertical joints with dissimilar Firewalls or Fire Separations.

.4 All Mechanical Damper Joints in Fire Separations and Firewalls. Completely around all wall and floor dampers, both sides of the wall on wall dampers, top side only in floor dampers.

.5 Openings and sleeves installed for future use through fire separations.

.6 Rigid ducts: greater than 129 cm^2: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Preparing substrate surfaces.

.2 Sealant and joint backing.

1.2 RELATED SECTIONS

.1 Section 04 26 13: Unit Masonry

.2 Section 07 28 00: Air Barriers / Vapour Retarders.

.3 Section 07 52 11: SBS/APP Modified Bitumen Membrane – Conventional.

.4 Section 07 62 00: Sheet Metal Flashing and Trim.

.5 Section 09 51 13: Acoustic Panel Ceilings; sealants required in conjunction with acoustic ceiling panels.

.6 Section 09 65 10: Resilient Flooring; sealants required in conjunction with floor and base finish.

1.3 REFERENCES

.1 ASTM C1193 - Standard Guide for Use of Joint Sealants.

.2 ASTM C834 - Latex Sealants.

.3 ASTM C919 - Use of Sealants in Acoustical Applications.

.4 ASTM C920 - Elastomeric Joint Sealants.

.5 ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

.6 SWRI (Sealant, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

.1 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations and colour availability.

.2 Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, and perimeter conditions requiring special attention.

1.5 QUALITY ASSURANCE

.1 Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

.2 Perform acoustical sealant application work in accordance with ASTM C919.

1.6 QUALIFICATIONS

.1 Applicator: Company specializing in performing the work of this section approved by manufacturer.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.8 WARRANTY

.1 Warranty: Include coverage for installed sealants and accessories which fail to achieve air tight seal, and water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

Part 2 Products

2.1 SEALANTS

.1 Butyl / Synthetic Rubber (Type A): ASTM C1311, blend of butyl rubber and polyisobutylene, solvent release sealant, for use in horizontal or vertical joints where movement should not exceed 10% of the minimum joint width.

.1 Product: Butyl Sealant; manufactured by Tremco.
- .1 Colour: to Consultant's later selection.

.2 Product: L175 Formula 1; manufactured by GE Sealants and Adhesives.
- .1 Colour: to Consultant's later selection

.2 Siliconized Acrylic Latex (Type B): ASTM C834; single component, pure acrylic latex with fast setting pliable seal, for use in horizontal or vertical joints where movement should not exceed 12.5% of the minimum joint width.

.1 Product: Tremflex® 834; manufactured by Tremco.
- .1 Service Temperature Range: -17 to 71 degrees C.
- .2 Colour: to Consultant's later selection.

.2 Product: L100, manufactured by GE Sealants and Adhesives.
- .1 Service Temperature Range: -34 to 82 degrees C.
- .2 Colour: to Consultant's later selection

.3 Acrylic Terpolymer (Type C): CGSB 19GP5; single component; solvent curing, for use in horizontal or vertical joints where movement should not exceed 12.5% of the minimum joint width.

.1 Product: Mono 555®; manufactured by Tremco.
- .1 Service Temperature Range: 5 to 60 degrees C.
- .2 Shore A Hardness: 50 +/- 5
- .3 Colour: to Consultant's later selection

.2 Product: VP57, Manufactured by GE Sealants and Adhesives.
- .1 Service Temperature Range: -23 to 82 degrees C
- .2 Colours: to Consultant's later selection

.4 Acoustic Sealant (Type D): ASTM C919, Acoustic grade, single component, solvent release, non-skinning, non-sagging, non-hardening, for use where sealant must inhibit air movement and buffer vibration.

.1 Product: Acoustical Sealant; manufactured by Tremco.

.1 Lower Temperature Flexibility: passes -10 degrees C.

.2 Colour: Dark Gray.

.5 Polyurethane Sealant (Type E): ASTM C920, Grade NS, Class 25, Use NT, M, T, A, I, O; single component, moisture curing, non-staining, non-bleeding, capable of continuous water immersion type; for use in horizontal or vertical joints where movement should not exceed 25% of the minimum joint width.

.1 Product: Vulkem® 116; manufactured by Tremco.

.1 Shore A Hardness: 40

.2 Colour: to Consultant's later selection

.2 Product: Sikaflex® 1a; manufactured by Sika®

.1 Shore A Hardness: 40 +/- 5.

.2 Service Temperature Range: -40 to 77 degrees C.

.3 Colour: to Consultant's later selection

.6 Polyurethane Sealant (Type F): ASTM C920, Grade NS, Use T, NT, M, A and O; multi-component, chemical curing, non-staining, non-sagging type; for use in vertical or horizontal joints, specially formulated for dynamically moving building joints.

.1 Product: Dymeric® 240/240 FC; manufactured by Tremco.

.1 Movement Capability: +/- 50 percent

.2 Low Temperature Flexibility: -54 degrees C.

.3 Shore A Hardness Range: 25 to 35.

.4 Colour: to Consultant's later selection

.2 Product: Sikaflex® 2c NS EZ Mix, manufactured by Sika®.

.1 Movement Capability: +/- 50 percent

.2 Low Temperature Flexibility: -40 degrees C.

.3 Shore A Hardness Range: 25 +/- 5

.4 Colours: to Consultant's later selection

.7 Polyurethane Sealant (Type G): ASTM C920, Grade NS, Class 50, Use T, NT, M, A and O; single component, moisture curing, low modulus expansion joint sealant; for use in vertical or horizontal joints, specially formulated for dynamically moving building joints.

.1 Product: Dymonic®; manufactured by Tremco.

.1 Shore A Hardness: 25.

.2 Colour: to Consultant's later selection

.2 Product: Sikaflex® 15LM; manufactured by Sika®.

.1 Shore A Hardness: 20 +/- 5.

.2 Colour: to Consultant's later selection.

.3 Product: L500 Polyurethane Sealant; manufactured by GE Sealants and Adhesives.

.1 Shore A Hardness: 33.3

.2 Colours: to Consultant's later selection.

.8 Silicone Sealant (Type H): ASTM C920, Type S, Grade NS, Use NT, G, A, O; single component, moisture curing, acetoxy, for use in horizontal or vertical joints where movement should not exceed 25% of the minimum joint width.

.1 Product: Proglaze®; manufactured by Tremco.
  .1 Elongation Capability (as cured after 14 days): 450-550 percent
  .2 Shore A Hardness Range (as cured after 14 days): 26 to 30.
  .3 Colour: to Consultant's later selection.
.2 Product: SCS1001, manufactured by GE Sealants and Adhesives.
  .1 Shore A Hardness: 28
  .2 Colour: Clear.

.9 Silicone Sealant (Type I): ASTM C920, Type S, Grade NS, Use NT, G, A, and O; single component, fungus resistant, moisture curing, for use on horizontal or vertical joints.

.1 Product: Tremsil® 200; manufactured by Tremco.
  .1 Colour: to Consultant's later selection
.2 Product: L007 Polybond Adhesive Sealant.
  .1 Colour: to Consultant's later selection

2.2 ACCESSORIES

.1 Primer: Non-staining type, recommended by sealant manufacturer, to suit application.

.2 Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

.3 Joint Backing: ASTM D1056; round, closed cell polyethylene foam backer rod; oversized 30 to 50 percent larger than joint width, type as recommended by sealant manufacturer.

.4 Joint Backing, Bond Breaking Tape: adhesive backed polyethylene tape, installed to prevent three sided adhesion, type as recommended by sealant manufacturer.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that substrate surfaces and joint openings are ready to receive work.

.2 Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

.1 Remove loose materials and foreign matter which might impair adhesion of sealant.

.2 Clean and prime joints in accordance with sealant manufacturer's instructions.

.3 Perform preparation in accordance with sealant manufacturer's instructions.

.4 Protect elements surrounding the work of this section from damage or disfiguration.

3.3 INSTALLATION

.1 Install sealant in accordance with sealant manufacturer's instructions.

.2 Measure joint dimensions and size materials to achieve required width/depth ratios.

.3 Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.

.4 Install bond breaker where joint backing is not used.

.5 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

.6 Apply sealant within recommended application temperature ranges. Consult sealant manufacturer when sealant cannot be applied within these temperature ranges.

.7 Tool joints: as detailed.

3.4 CLEANING

.1 Clean adjacent soiled surfaces.

3.5 PROTECTION OF FINISHED WORK

.1 Protect sealants until cured.

3.6 SCHEDULE

SUBSTRATE	SEALANT TYPE	COLOUR
Bathrooms/Spas - Bathtub / ceramic tile / porcelain / metal	Type I	TBA
Metal siding	Type C	To match siding colour
Door frame/ walls	Type C Type F Type G	TBA
Under thresholds	Type A	TBA
Glazing	Type H	TBA
Acoustic Seal in interior walls, ceilings, and floors.	Type B Type D	TBA
Masonry	Type E Type F Type G	TBA
Neoprene / EPDM Gaskets	Type A	TBA
Submerged Environments	Type E	TBA

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Surface preparation and field application of paints and coatings.

.2 Labour, materials, tools and other equipment, services and supervision required to complete interior and exterior painting and decorating Work as indicated on Finish Schedules and to the full extent of the drawings and specifications.

.3 Work also includes, but not necessarily be limited to:

- .1 High pressure washing and abrasive blasting of surfaces.
- .2 Surface preparation of substrates as required for acceptance of painting, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to limits defined under MPI preparation requirements.
- .3 Surface preparation and prime painting surfaces for wall coverings prior to installation in accordance with wall covering manufacturer's and **MPI** requirements.
- .4 Specific pre-treatments noted herein or specified in the Master Painters Institute (**MPI**) Architectural Painting Specification Manual.
- .5 Priming (except where pre-primed with an approved primer under other Sections of Work) and painting of structural steel, miscellaneous metal, ornamental metal and primed steel equipment.
- .6 Priming and back-priming of wood materials as noted herein or specified in **MPI** Architectural Painting Specification Manual.
- .7 Painting of semi-concealed areas (e.g. inside of light troughs and valances, behind grilles, and projecting edges above and below sight lines).
- .8 Painting of roof vent flashings in accordance with requirements of Section 07 62 00.
- .9 Zone and traffic marking (e.g. parking lines and numbers, direction arrows, "small car", barrier free accessible and visitor parking bay designations, speed bump and pedestrian walkway demarcation, overhead height restrictions, etc. on exterior (asphalt and/or concrete) and interior (asphalt and/or concrete) surfaces except where such Work is part of asphalt or concrete paving specification Work.
- .10 Painting and finishing of exposed to view elevator equipment and components (i.e. doors and door frames) unless pre-finished.
- .11 Painting of exposed to view mechanical (heating, ventilating and plumbing) services and equipment, e.g., ducts, heating units, sprinkler piping, etc., and electrical Work to extent noted on Finish Schedule unless pre-finished.
- .12 Re-painting of existing surfaces and finishes when adjacent to new painting and coating Work where applicable including surface preparation, prime and finish coats.
- .13 Provision of safe and adequate ventilation where toxic and/or volatile/flammable materials are being used.

.4 Refer to Drawings and schedules (e.g., Finish Schedule) for type, location and extent of finishes required, and include touch-ups and field painting necessary to complete Work shown, scheduled or specified.

.5 This Section along with the drawings forms part of the Contract documents and is to be read, interpreted and co-ordinated with all other parts.

1.2 RELATED SECTIONS

.1 Section 04 26 13: Unit Masonry.

.2 Section 05 50 00: Metal Fabrications.

.3 Section 05 51 00: Metal Stairs.

.4 Section 06 41 11: Architectural Cabinetwork.

.5 Section 07 62 00: Sheet Metal Flashing and Trim.

.6 Section 08 12 13: Standard Hollow Metal Frames.

.7 Section 08 13 13: Standard Hollow Metal Doors.

.8 Section 08 22 13: Plastic Faced Wood Doors.

.9 Section 08 31 13: Access Doors and Frames.

.10 Section 08 36 13: Sectional Doors.

.11 Section 09 21 16: Gypsum Board Assemblies.

.12 Section 09 72 16: Vinyl-Coated Fabric Wall Coverings.

.13 Division 23: Mechanical Identification.

.14 Division 26: Electrical Identification.

1.3 REFERENCES

.1 Architectural Painting Specification Manual by the Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List. (hereafter referred to as the MPI Painting Manual) as issued by the local MPI Accredited Quality Assurance Association having jurisdiction. (Latest Edition)

.1 Architectural Painting Specifications Manual

.2 Maintenance Repainting Manual

.3 MPI Approved Products List (APL)

.2 AWWA (American Water Works Association) - C218 - Standard for Coating the Exterior of Aboveground Steel Water Pipelines & Fittings.

.3 AWWA (American Water Works Association) - D102 - Coating Steel Water Storage Tanks.

.4 NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.

.5 SSPC (The Society for Protective Coatings) (formerly SSPC - Steel Structures Painting Council) - Steel Structures Painting Manual.

.6 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

.7 ASTM D523 -08: Standard Test Method for Specular Gloss

.8 ASTM D714 -02(2009): Standard Test Method for Evaluating Degree of Blistering of Paints

.9 ASTM D1006/D1006M -13: Standard Practice for Conducting Exterior Exposure Tests of Paints on Wood

.10 ASTM D2369 -10e1:Standard Test Method for Volatile Content of Coatings

.11 ASTM D2486 -06(2012)e1: Standard Test Methods for Scrub Resistance of Wall Paints

.12 ASTM D2805 -11: Standard Test Method for Hiding Power of Paints by Reflectometry

.13 ASTM D3359 -09e2: Standard Test Methods for Measuring Adhesion by Tape Test

.14 ASTM D3363 -05(2011)e2: Standard Test Method for Film Hardness by Pencil Test

.15 ASTM D3960 -05: Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings

.16 ASTM D4214 -07:Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films

.17 ASTM D6736 -08(2013): Standard Test Method for Burnish Resistance of Latex Paints

.18 CAN/ULC S102-10: Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

.19 If requested by the Consultant provide a PDF digital copy of any or all of the Standards above as selected by the Consultant at no additional cost.

1.4 SUBMITTALS

.1 Section 01 33 00: Submission procedures.

.2 Submit to Construction Manager itemized costs for Product Values Spreadsheet and Product Data as defined in Section 01 35 18: LEED Requirements and Procedures.

.3 Product Data: Provide data on finishing Products.

.4 Samples: Submit duplicate 200 x 200 mm sample panels of each type of colour of paint, varnish or lacquer finish specified.

1.5 QUALITY ASSURANCE

.1 Do painting and finishing Work in accordance with MPI Architectural Painting Specification Manual, latest edition, and Maintenance Repainting Specification Manual, latest edition, except where specified otherwise.

.2 Applicator Qualifications: Minimum of five (5) years proven satisfactory experience and shall submit documentation, prior to commencement of Work, that he will maintain a qualified crew of painters throughout duration of Work. When requested, submit list of last three comparable jobs, including: name and location, specifying consultant, project manager, start and completion dates and cost of painting Work.

.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 direct supervision of a qualified journeyman in accordance with trade regulations.

.4 Conform to standards in MPI Architectural Painting Specification Manual, latest edition (hereafter referred to as **MPI**) for painting Products including preparation and application of materials.

.5 Paint manufacturers and Products used shall be as listed under "Approved Products" section of **MPI** Architectural Painting Specification Manual.

.6 **MPI Paint Schedule**: Submit schedule within 30 days of Contract award. Schedule is appended to back of this section.

.1 Fill out corporate and contact information.

.2 For each substrate, list MPI information and approved manufacturer's information.

.3 Submit to Consultant for review.

.4 Do not proceed with Work until schedule is reviewed in writing by Consultant.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Section 01 61 00: Deliver, store, protect and handle Products to site.

.2 Deliver Products to site in sealed and labeled containers; inspect to verify acceptability.

.3 Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and instructions for mixing and reducing.

.4 Store paint materials in original labelled containers in a secure (lockable), dry, heated and well ventilated single designated area meeting minimum requirements of both paint manufacturer and Authorities Having Jurisdiction, and at a minimum ambient temperature of 7 degrees C. Only material used on this project to be stored on site.

.5 Where toxic and/or volatile/explosive/flammable materials are being used, provide adequate fireproof storage lockers and take necessary precautions and post adequate warnings (ie. No Smoking) as required. Take adequate measures to prevent release of volatile organic compounds (VOC's) into atmosphere.

.6 Take necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect environment from hazard spills. Materials that constitute a fire hazard (paints, solvents, drop cloths, etc.) shall be stored in suitable closed and rated containers and removed from site on a daily basis.

.7 Comply with requirements of Authorities Having Jurisdiction, in regard to use, handling, storage and disposal of hazardous materials.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Do not apply materials when surface and ambient temperatures are outside temperature ranges required by paint Product manufacturer.

.2 Do not apply exterior coatings during rain or snow, or when relative humidity is outside humidity ranges required by paint Product manufacturer.

.3 UNLESS specifically pre-approved by Consultant and applied Product manufacturer, perform no painting or decorating Work when ambient air and substrate temperatures are below 10 degrees C for both interior and exterior Work.

.4 Perform no painting or decorating Work when relative humidity is above 85% or when dew point is less than 3 degrees C variance between air/surface temperature.

.5 Perform no painting or decorating Work when maximum moisture content of substrate exceeds:

.1 12 % for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.3 12 % for plaster and gypsum board.

.4 8% for concrete floors.

.6 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple “cover patch test”.

.7 Test concrete, masonry and plaster surfaces for alkalinity as required.

.1 Note: Concrete and masonry surfaces must be installed at least 28 days prior to painting and decorating Work and must be visually dry on both sides. This is not to be construed as including a “wetting down” process for Latex.

.8 Perform no painting or decorating Work unless a minimum lighting level of 323 Lux (30 foot candles) is provided on surfaces to be painted or decorated. Adequate lighting facilities shall be provided by Construction Manager.

.9 Perform no painting or decorating Work unless adequate continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application. Provide supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.10 Apply paint only to dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect quality of finished surfaces.

1.8 MAINTENANCE MATERIALS & DATA

.1 Section 01 78 10: Submission procedures for maintenance data.

.2 Section 01 78 40: Submission procedures for maintenance materials.

.3 Submit complete list of various paints used throughout project, indicating material, manufacturer and manufacturer's colour number for inclusion in Maintenance Manuals.

.4 Leave on premises for touching up, sufficient quantity (not less than 1%) of colours and types of paint scheduled.

.5 Containers shall be tightly sealed and clearly labelled for identification.

.6 Maintenance materials to be from same production run as installed materials.

.7 Furnish Owner, through Consultant, a copy of each manufacturer's maintenance instructions. Submit complete list of various wall coverings used throughout project, indicating material, manufacturer and manufacturer's colour number for inclusion in Maintenance Manuals.

1.9 GUARANTEE:

.1 Furnish either:

.1 Guarantee: **MPI** Accredited Quality Assurance Association's two (2) year guarantee, or,

.2 Maintenance Bond: a 100% two (2) year Maintenance Bond - both in accordance with **MPI** Painting Manual requirements.

.1 Maintenance Bond shall warrant that painting Work has been performed in accordance with **MPI** Painting Manual requirements.

.2 Provide maintenance bond consent from a reputable surety company licensed to do business in Canada. Cash or certified check is not acceptable in lieu of surety consent.

.2 Inspection and Guarantee Program:

.1 Painting and decorating Work shall be in accordance with **MPI** Painting Manual requirements.

.2 Work shall be inspected by local **MPI** Accredited Quality Assurance Association's Paint Inspection Agency (inspector), whether using either **MPI** Accredited Quality Assurance Association's guarantee, or Maintenance Bond option.

.3 Cost for such inspections, and for either local **MPI** Accredited Quality Assurance Association's Guarantee, or Maintenance Bond, shall be included in Base Bid Price.

Part 2 Products

2.1 PAINT MATERIALS

.1 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with **MPI** Architectural Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.

.2 Other paint materials such as linseed oil, shellac, etc. shall be highest quality Product of an approved manufacturer listed in **MPI** Architectural Painting Specification Manual and shall be compatible with other coating materials as required.

.3 Materials and paints to be lead and mercury free and have low VOC content where possible.

.4 Where required, paint Products shall meet requirements of Environmental Choice Program, Department of Environment. Water based paints to be certified to ECP-07-89, solvent based; to ECP-12-89.

.5 Paint materials to have good flowing and brushing properties and to dry or cure free of blemishes or sags.

.6 Where required, paints and coatings shall meet flame spread and smoke developed ratings designated by local Code requirements and/or authorities having jurisdiction.

.7 Slip resistant additives (SRA) - rubber aggregate, clean/washed silica sand or ground walnut chips (interior dry areas only) for use with or as a component part of paint (usually floor/porch/stair enamel) on horizontal surfaces as required to provide slip resistance. Where site applied, material to either mixed into paint (and mixed constantly to keep material in suspension) or broadcast into first or prime coat as required.

.8 Patching compounds: Spackling compound or oil base putty for surfaces receiving a paint finish. Oil base putty, coloured to match finish, for surfaces receiving a transparent finish.

.9 Metal primers: For structural metals and metal fabrications: to CISC/CPMA 1-73a. For hollow metal doors and frames: to CGSB 1-GP-181M.

2.2 MIXING

.1 Paints: ready-mix except for field-catalysed types. Field mix coating in paste or powder form in accordance with manufacturer's directions.

.2 Paint shall have good flowing and brushing properties and shall dry or cure free of streaks or sags, to yield finish specified.

2.3 COLOUR SCHEDULE

.1 Colours shall be as selected by Consultant from a manufacturer's full range of colours. Schedule will be furnished after award of Contract, except general requirements to be as noted herein.

.2 Paint colours and locations of colours as indicated on the Colour Schedule, Finish Schedule, and Drawings. Where colours aren't indicated or the intent is not clear obtain direction from the Consultant.

Code	Manufacturer	Colour	Notes
P1		TO MATCH EXISTING	DUCTWORK, CONDUITS

.3 Access doors, prime coated butts and other prime painted hardware (e.g. door closers), registers, radiators and covers, unit heaters, exposed piping and electrical panels shall be painted to match adjacent surfaces (i.e. color, texture and sheen), unless otherwise noted or where pre-finished.

.4 Plywood service panels (e.g. electrical, telephone and cable vision panels) including edges shall be back-primed and painted to match painted wall mounted on.

.5 Inside of light valances shall be painted gloss white.

.6 Inside of ductwork behind louvers, grilles and diffusers for a minimum of 460 mm (18") or beyond sightline, whichever is greater, shall be painted using flat black (non-reflecting) paint.

.7 Parking bays lines shall be identified with 100 mm (4") wide white or yellow painted lines with each bay consecutively numbered with 50 mm (2") wide white or yellow painted numbers in accordance with approved parking layout and/or in accordance with requirements of Authorities Having Jurisdiction.

.8 Barrier free accessible parking bays and refuge areas shall be identified with appropriate symbol designation and/or in accordance with requirements of Authorities Having Jurisdiction.

.9 Pedestrian walkways shall be identified with 100 mm (4") wide yellow painted lines at 45 degrees to path of travel spaced at 450 mm (18") o.c. and/or in accordance with requirements of Authorities Having Jurisdiction.

.10 Low headroom areas shall be identified with minimum 100 mm (4") wide yellow band on leading edge marked “CAUTION - LOW CLEARANCE” in 50 mm (2") high black letters at suitable intervals and/or in accordance with requirements of Authorities Having Jurisdiction.

.11 Where other methods are not specified (i.e. applied material or nosings) and/or in accordance with requirements of Authorities Having Jurisdiction at stairs providing access and exit for persons with visual impairment, slip resistant paint shall be applied to handrails and treads. Slip resistant paint shall be of a contrasting color at tactile warning strips at stair treads and landings.

2.4 GLOSS LEVELS

.1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with noted values.

.2 Specified gloss levels are based on MPI standard, which is as follows:

Gloss Level	Previous Industry Description	Gloss at 60		Sheen at 85
Gloss Level 1	Traditional matte finish- flat	Max 5 units	and	Max 10 units
Gloss Level 2	High side sheen flat – a “velvet-like” finish	Max 10 units	and	10-35 units
Gloss Level 3	Traditional “eggshell-like” finish	10-25 units	and	10-35 units
Gloss Level 4	Satin-like finish	20-35 units	and	Min 35 units
Gloss Level 5	Traditional semi-gloss	35-70 units		
Gloss Level 6	Traditional gloss	70-85 units		
Gloss Level 7	High Gloss	85 units +		

.3 Except as otherwise specified, gloss levels for interior paint finishes shall be as follows:

.1 Gloss Level 5: walls of classrooms, washrooms, storage rooms, mechanical rooms, janitor rooms, corridors, stairwells, etc.

.2 Gloss Level 3: ceilings, ceiling bulkheads, etc.

.3 Gloss Level 5: metal railings, doors, frames and trim, etc.

.4 Gloss Level 2: gypsum board ceilings in storage rooms, janitor rooms, etc.

.4 Where gloss level is not specified, allow for satin finish.

.5 Prior to proceeding with finish coats, confirm with Consultant required gloss levels for surfaces.

Part 3 Execution

3.1 EXAMINATION

.1 Inspect surfaces and conditions before commencing Work and report defects in writing to Consultant.

.2 Thoroughly inspect existing conditions to verify the degree of surface deterioration (DSD) of each previously coated substrate required to be repainted or refinished. Degrees of surface deterioration shall be as defined in the MPI "Maintenance Repainting Manual" (MR Manual), Chapter 2 and 3, Section 3 - Surface Preparation.

.3 Do not proceed with painting Work until defects have been corrected and surfaces acceptable.

.4 It shall be responsibility of Painting Subcontractor to see that surfaces are properly prepared before paint or coating is applied.

.5 Commencement of Work implies acceptance of surfaces.

3.2 PREPARATION OF SURFACES

.1 Prepare surfaces to be painted to requirements of MPI Manual, "Surface Preparation" and MPI Maintenance Repainting Manual, "Surface Preparation".

.2 Prepare substrates using surface preparation procedures in Chapter 6 Section 2 as defined in the MPI "Maintenance Repainting Manual", including cleaning and removal systems, specified for the degree of surface deterioration.

.3 Commencement of Work shall imply acceptance of surfaces.

3.3 PAINT APPLICATION

.1 Painting coats specified are intended to cover surfaces satisfactorily with even colour tone, when applied in strict accordance with manufacturers' recommendations, and as specified.

.2 Apply paint materials to minimum painting standards of MPI Manual and MPI Maintenance Repainting Manual, Premium Grade finish requirements, except as specified otherwise.

.3 Applied and cured coatings shall be uniform in thickness, sheen, colour, and texture and be free of defects detrimental to appearance and performance. Such defects include brush marks, streaks, runs, laps, heavy stippling, pile up of paints and skipped or missed areas. Edges of paint adjoining other materials shall be clean and sharp with no overlapping.

.4 Apply a minimum of four coats of paint where deep or bright colors are used to achieve satisfactory results.

.5 Sand and dust between each coat to remove defects visible from a distance of up to 1.0 m.

.6 Site prime hollow metal Work.

.7 Interior woodwork which is to receive a paint finish shall be back-primed at job site with enamel undercoat paint.

.8 Exterior and interior woodwork to be stained and/or varnished shall be back-primed with gloss varnish reduced 25% with mineral spirits.

.9 Except for Architectural woodwork having factory applied finishes as specified in Section 06 41 11, back prime following concealed surfaces of interior wood components, prior to their installation:

.1 Surfaces in contact with concrete or masonry.
.2 Surfaces in contact with floors of floor finishes.
.3 Cut-outs for sinks, drains and other mechanical services.
.4 Underside of front edges of counter tops and toe-spaces.
.5 Other surfaces which may be subject to moisture during normal use or cleaning operations.

.10 One Interior, Exterior primer and one finish coat to be applied to top and bottom of edges of wood and metal doors when they are to be painted and prime finished with two coats of gloss varnish when doors are to receive a stained or clear finish. Varnish on wood doors shall be applied after stain or filler coat.

.11 Apply feature pigmented colours to exposed trusses and mechanical/electrical equipment in occupied areas that are without finished suspended ceilings.

.12 Paint walls, ceiling, miscellaneous metal (cat walks) and floor finishes black enamel unless noted otherwise.

3.4 MECHANICAL AND ELECTRICAL EQUIPMENT

.1 Paint exposed conduits, pipes, unit heaters, ductwork, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Colour and texture to match adjacent surfaces, except as noted otherwise.

.2 Colour code mechanical and electrical equipment piping and conduit systems, and exposed ductwork, in accordance with Canadian Government Specification No. 5-GP-1a-identification symbols and colours, unless otherwise indicated. Refer to Division 21-28 for additional information.

.3 Paint piping, conduits, ductwork and other unfinished equipment in mechanical/electrical room. In other unfinished areas leave equipment, piping, conduits, hangers, etc., in original finish and touch up scratches and marks.

.4 Piping and conduit that is located in spaces above ceilings or enclosed in pipe chases, shall be coded at least once where pipe or conduit enters and once where leaving these areas.

.5 Paint uninsulated valves, integral pump bases including pumps not shop finished, fans and integral fan bases not shop finished.

.6 Piping:

.1 Paint fire protection piping [red in colour] for full length of piping in accessible areas, whether in finished or unfinished areas, such as behind access doors and in ceiling spaces above suspended ceilings.

.2 Finish uninsulated pipe lines with one coat of metal primer and two coats of machinery enamel. High heat aluminum paint to be used on lines where necessary.

.7 Ductwork:

.1 Paint inside of ductwork behind grilles where visible, with primer and one coat of flat black paint.

.2 Paint ductwork in exposed areas a feature colour to Consultant's later selection.

.8 Mechanical Equipment:

.1 Paint insulated equipment one coat of latex primer sealer and block filler (50-50 mix) and two coats of semi-gloss enamel.

.2 Paint uninsulated equipment one coat of metal primer suitable for temperature involved and two coats of semi-gloss suitable for temperature involved.

.9 Machine Bases:

.1 Paint concrete machine bases and floating anti-vibration bases yellow with diagonal black stripes 50 mm wide spaces 150 mm apart.

.10 Electrical Equipment:

.1 Paint conduit and other fitments and equipment and bases in electrical rooms. In areas above finished ceilings, leave equipment, conduit, etc. in original factory finish.

.2 Paint plywood backboards for electrical equipment before installing backboards and mounting equipment.

.3 Paint disconnect switches and junction boxes for fire alarm system and exit light systems in accordance with Division 26 requirements.

.4 Paint sound system panels, pull and junction boxes in accordance with Division 26 requirements.

3.5 CLEANING

.1 Remove paint where spilled, splashed, splattered or sprayed as Work progresses using means and materials that are not detrimental to affected surfaces.

.2 Keep Work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

.3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of Authorities Having Jurisdiction.

.4 Clean equipment and dispose of wash water/solvents, as well as other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with safety requirements of Authorities Having Jurisdiction.

3.6 PAINTING AND FINISHING SCHEDULES

.1 Apply number of coats of specified materials to designated surfaces as indicated in Room Finish and Door Schedules and the following Exterior and Interior Finishing Schedules.

3.7 EXTERIOR FINISH / COATING SYSTEMS

.1 Paint exterior surfaces in accordance with the following **MPI** Painting Manual requirements:

.2 **Asphalt Surfaces:** (zone / traffic marking for drive and parking areas, etc.)

.1 EXT 2.1B Alkyd zone / traffic marking finish.

.1 **Concrete Vertical Surfaces:** (including horizontal soffits)

.1 EXT 3.1J Concrete stain finish.

.2 **Concrete Horizontal Surfaces:** (decks, stairs, driveways, parking and court areas, etc.)

.1 EXT 3.2F Alkyd zone / traffic marking finish for game lines, etc

.3 **Concrete Masonry Units:** (smooth and split face block and brick).

.1 EXT 4.2H Water repellent non-paintable finish. Not for use on light weight block

.2 EXT 4.2J Water repellent paintable finish. Not for use on light weight block

.4 **Structural Steel and Metal Fabrications**:

.1 EXT 5.1S Epoxy (over self-priming epoxy), to be used for all exposed structural steel and miscellaneous metal.

.5 **Galvanized Metal:** (not chromate passivated)

.1 EXT 5.3C Epoxy finish. (for use on high contact / high traffic areas)

.2 EXT 5.3D Pigmented polyurethane finish (over vinyl wash and epoxy primer). (for use on high contact / high traffic areas)

3.8 INTERIOR PAINT AND COATING SYSTEMS

.1 Paint interior surfaces in accordance with the following MPI Painting Manual requirements.

.2 **Concrete Vertical Surfaces:** (including horizontal soffits)

.1 INT 3.1J Water repellent paintable finish.

.2 INT 3.1M Institutional low odor / low VOC finish.

.3 **Concrete Horizontal Surfaces**: (floors and stairs)

.1 INT 3.2F Concrete floor sealer finish.
.2 INT 3.2L Waterborne epoxy floor paint finish.

.4 **Concrete Masonry Units:** (smooth and split face block and brick)

.1 INT 4.2D High performance architectural latex finish.

.5 **Structural Steel and Metal Fabrications**: (columns, beams, joists, etc.)

.1 INT 5.1C Waterborne dry fall finish.
.2 INT 5.1CC Waterborne dry fall finish (over quick dry shop primer).
.3 INT 5.1R High performance architectural latex finish.

.6 **Metals**: **Mechanical** and electrical (cabinets, sprinkler pipes, conduit systems etc.)

.1 INT 5.3K W.B. Light Industrial Coating over w.b. primer

.7 **Galvanized Metal:** (doors, frames, railings, misc. steel, overhead decking, etc.)

.1 INT 5.3M High performance architectural latex finish.

.8 **Dressed Lumber:** (including doors, door and window frames, casings, molding, etc.)

.1 INT 6.3F Lacquer finish (over stain).
.2 INT 6.3H Clear lacquer finish.
.3 INT 6.3K Polyurethane varnish finish.

.9 **Plaster and Gypsum Board:** (gypsum wallboard, drywall, “sheet rock type material”, etc., and textured finishes)

.1 INT 9.2B High performance architectural latex finish.

.10 **Canvas and Cotton Coverings**:

.1 INT 10.1D Institutional low odor / low VOC finish.

.11 **Bituminous Coated Surfaces:** (cast iron pipe, concrete, etc.)

.1 RIN 10.2A Latex finish.

3.9 CLEANING

.1 Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.10 PAINT SCHEDULE

.1 Fill in schedule and submit to Consultant for review.

MASTER PAINTERS INSTITUTE PAINT SCHEDULE					
Company:			Phone:		
Contact:			Facsimile:		
			Email:		
Specified Quality:					
Master Painters Institute			**2010 Approved Paint Products**		
Substrate	MPI#	MPI Name	Manufacturer	Product	Code

END OF SECTION