PROJECT MANUAL & SPECIFICATIONS

Drumheller Memorial Arena

Dressing Room Addition

Drumheller, AB

CLOSING:
April 18th, 2023
2:00 pm

MANDATORY PRE-BID MEETING:
April 11th, 2023
11:00 am

DRUMHELLER VALLEY

Bearisto & Associates | 60 YEARS | ENGINEERING & SURVEY

BASE PROJECT NUMBER:
22GEBD1000

SPECIFICATION

FOR

Drumheller Memorial Arena

Dressing Room Addition

20 – 1st Avenue W.
Drumheller, AB

MARCH 2023

Prepared By:

Beairsto & Associates ENGINEERING & SURVEY | 60 YEARS

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1. SUMMARY

.1 The Owner is:

Town of Drumheller
224 Centre Street
Drumheller, AB T0J 0Y4

c/o Reg Bennett, Facilities Manager
email: rbennett@drumheller.ca

.2 The Engineering Consultant is:

Beairsto & Associates Engineering Ltd.
10940 – 92 Avenue
Grande Prairie, AB T8V 6B5

.3 Bids shall be prepared and submitted and the bidding process shall be administered in accordance with these bidding requirements.

.4 Refer to Section 01 11 00 Summary of the project, including requirements pertaining to Contract Time.

2. BID SUBMISSION

.1 Bids will be received before **2:00 p.m.** local time on **Tuesday, April 18th, 2023** (the "bid closing time")

.2 Bids shall be submitted electronically to purchasing@drumheller.ca

.3 For bid closing purposes, the official time of receipt of electronic (emailed) bids shall be governed by the date and time the submission is received in the email inbox and this will serve as the official receipt of submission. The Town of Drumheller is not responsible for any technical system delays in the electronic delivery of the email submission.

.4 Submit bids on forms provided in the Bid Documents. All bids must be free of any and all escalation clauses, qualifications or other additions or deletions.

.5 Oral, telephoned, telegram bids **will not be accepted nor acknowledged**.

.6 The Owner may extend the bid closing time by addendum.

3. BASIS OF BID - STIPULATED PRICE

.1 Bids shall be on a stipulated price basis.

4. SUFFICIENCY OF BID

.1 The submission of a bid shall constitute an incontrovertible representation by the Bidder that:

.1 The Bidder has complied with all bidding requirements,

.2 The Bidder is qualified and experienced to perform the Work in accordance with the Bid Documents,

.3 The bid is based upon performing the Work in accordance with the Bid Documents, without exception, and

.4 The price or prices stated in the bid cover all the Bidder's obligations under the Contract and all matters and things necessary for the performance of the Work in accordance with the Bid Documents.

5. MANDATORY ATTENDANCE PRE-BID MEETING AND SITE INSPECTION

.1 A mandatory attendance pre-bid meeting and site inspection will be held at the site on **Tuesday, April 11th, 2023 at 11:00 am**. Refer to Section 00 25 13 for additional information.

6. BID DOCUMENTS

.1 The Bid Documents are the documents issued or made available to Bidders by the Owner for the purpose of preparing a bid. The Bid Documents consist of the following:

.1 RFP Requirements
.2 Instructions to Bidders
.3 Mandatory Attendance Pre-Bid Meeting
.4 Bid Security
.5 Bid Form and Bid Form Supplements
.6 Payment Conditions
.7 Contract Performance Security
.8 Security for Payment of Claims
.9 Insurance Conditions
.10 Supplementary Conditions
.11 Specifications, Divisions 00 to 28
.12 Drawings, as listed in the List of Drawings
.13 Addenda issued during bid period
.14 Information Documents

7. BID FORM

.1 Fill-in all blanks in Bid Form and sign as follows:

.1 Limited Company: Print or type in space provided full name of company and name(s) and status of authorized signing officer(s). Authorized signing officer(s) shall sign. Sign Bid Form in the presence of a witness who shall also sign, or in the absence of a witness, affix corporate seal.

.2 Limited Company Joint Venture: Each joint venture company shall sign as for a limited company.

.3 Partnership: Print or type in space provided firm name and name(s) of person(s) signing. One or more of the partners shall sign in the presence of a witness who shall also sign.

.4 Sole Proprietorship: print or type in space provided, business name and name of sole proprietor shall sign in the presence of a witness who shall also sign.

.2 Complete Bid Form in its entirety. 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 Submit bids electronically to purchasing@drumheller.ca

.4 Clearly indicate in the subject line the name of the project: "**Drumheller Memorial Arena Dressing Room Project**"

8. BID FORM SUPPLEMENTS

.1 Prepare and submit each required supplement to the Bid Form as specified below.

.2 Include the following Bid Form supplement(s) together with the Bid Form attached to an email and submit electronically before the bid closing time:

.1 Addendum receipts, (if any addendum issued).
.2 COR or SECOR certificate, or TLC
.3 Contractor's proposed schedule

.3 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."

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

.5 Any required information that is omitted or illegible, any alterations to the text, or any conditions added on or submitted with a Bid Form Supplement, may cause the bid to be declared invalid and rejected.

.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.

9. BID MODIFICATION

.1 A bid, including the Bid Form and Bid Form supplements, submitted in accordance with these bidding requirements may be modified, provided the modification:

.1 is in the form of an email, received at the email address specified in 2.1, prior to the bid closing time, and

.2 states the name of the Bidder, the nature of the modification, and is signed by an authorized person.

.2 For bid closing purposes, the official time of receipt of faxed bid modifications shall be the time of receipt as shown on the email by the receiving email.

.3 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.

.2 On unit price bids, state only the amount to be added to or deducted from each original unit price or lump sum in the Schedule of Prices.

.4 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.

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

.6 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.

10. BID WITHDRAWAL AND ACCEPTANCE

.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 received at the email address specified in 2.1, before the bid closing time, or

.2 Withdrawn bids may be resubmitted in accordance with these bidding requirements providing the resubmitted bid is received at the office specified in 2.1, before the bid closing time.

.3 A bid may not be withdrawn at or after bid closing time and shall be open to acceptance by the Owner until:

.1 some other Bidder has entered into a contract with the Owner for performance of the Work
OR:
.2 35 days after the bid closing time,
whichever occurs first.

.4 The 35 day acceptance period referred to above shall commence at midnight of the date of bid closing and shall terminate at midnight of the 35th day thereafter. If the 35th day falls on a statutory holiday, such day(s) shall be omitted from the computation.

.5 The 35 day acceptance period referred to above may be extended at the Owner's request and subject to the Bidder's written agreement to the extension.

.6 The Contract shall be established upon issuance, by the Owner to the successful Bidder, of a letter accepting the bid without qualification or, if the letter accepting the bid contains one or more qualifications, upon written acceptance by the Bidder of all such qualifications.

.7 The lowest or any bid will not necessarily be accepted, and the Owner may reject any and all bids. Award of contract may be contingent upon final approval of Grant Funding for the project.

.8 The Owner may negotiate contract terms with the successful Bidder, 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.

11. BID OPENING

.1 Bids will be opened publicly at the Town office, shortly after the bid closing time:

Town of Drumheller
224 Centre Street
Drumheller, AB T0J 0Y4.

12. IRREGULARITIES

.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 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.

.3 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.

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

13. SAFETY PREQUAIFICATION

.1 Prime contract Bidders shall possess, at the time of bid closing, a valid standard Certificate of Recognition (COR), a valid Temporary Letter of Certification (TLC) for a standard COR, or Small Employer Certificate of Recognition (SECOR), as issued by the Alberta Construction Safety Association (ACSA) or another certifying authorized by Alberta Ministry of Labour to issue CORs or TLCs.

.2 A bid from a Bidder who does not possess a valid Standard COR, SECOR, or a TLC for a standard COR at the time of bid closing will be declared invalid and will be rejected.

.3 Prospective Bidders who do not possess a standard COR, SECOR, or a TLC for a standard COR, and wish to obtain information about obtaining either one, are advised to contact:

The Alberta Construction Safety Association
#101, 13025 St Albert Trail
Edmonton, Alberta T5L 5G2

Telephone: (780) 453-3311 or 1-800-661-2272
Fax: (780) 455-1120
Internet: www.acsa-safety.org

or another certifying partner authorized by Alberta Employment, Immigration and Industry to issue a standard COR or TLC.

14. BIDDER'S QUALIFICATIONS

.1 Bidders shall be registered or licensed in the Province of Alberta as required by the laws of the Province of Alberta.

.2 Bidders shall be actively engaged in the types of work required by the Tender Documents, and shall provide written references to similar work performed by them.

.3 The Owner may, during the tender period or after tender submissions, require any bidder to submit written proof of qualification. Proof shall consist of the completed Canadian Standard Form of Contractor's Qualification Statement CCA Document No. 11, written references, and such other data as the Owner may require.

15. AVAILABILITY OF BID DOCUMENTS

.1 Bid Documents in PDF versions are available from the Consultant.

.2 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 .1 above.

.3 The bid documents are made available only for the purpose of submitting bids for the Project. Availability and/or use of the Bid Documents does not confer a license or grant for any other purpose.

16. GST EXCLUDED

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

17. 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 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 Before submitting a bid, each Bidder shall, at the Bidder’s expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the conditions at, under or contiguous to the site, which may affect performance of the Work in accordance with the Bid Documents. Bidders shall obtain the Owner’s prior approval for access to site for the purpose of carrying out any such activities. Bidders shall restore site to a condition acceptable to the Owner upon completion of such activities.

19. APPLICABLE LIEN LEGISLATION

.1 The Builders' Lien Act of Alberta applies to this Project; the Public Works Act of Alberta does not apply.

.2 Claims procedures shall be in accordance with the Builders' Lien Act.

20. CONTRACT PERFORMANCE SECURITY AND SECURITY FOR PAYMENT OF CLAIMS

.1 Provide and include in bid price for security specified in Section 00 61 13 – Performances and Payment Security.

21. EVIDENCE OF ABILITY TO PROVIDE SECURITY

.1 The Owner may, after bid submission and before contract award, require a Bidder to submit evidence of Bidder's ability to provide security specified in the Bid Documents.

22. PRODUCT OPTIONS AND SUBSTITUTIONS

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

.2 EQUALS:

.1 Comply with requirements of Section 01 62 00.

.2 Where the drawings or specifications stipulate a particular product, submissions requesting equal status will be considered by the Consultant up to three (3) days (including the third day) prior to receipt of final Tender. No submissions will be considered after this deadline..

.3 If an item is approved as equal, all Bidders may use that item in place of the specified item.

.4 Bidders shall include in their Tenders for any changes required in the Work to accommodate such inclusion of approved equals. No later claim by the Trade Contractor for an addition to the Contract Price because of changes in the Work necessitated by use of equals shall be considered.

.5 Any submission shall provide sufficient information to enable the Consultant to determine acceptability of such products.

.6 Approval by the Consultant will be in writing only, and proof of approval is to be submitted with the tenders for all products the Trade Contractor proposes to incorporate in the Work.

.7 Unless submissions are made in accordance with this procedure, approval will not be given and Bidders will be required to provide all products as specified.

.3 ALTERNATIVES:

.1 Where the drawings or specifications stipulate a particular product, submissions requesting status as an alternative will be considered by the Consultant up to five (3) days (including the third day) prior to receipt of final Tender.

.3 Bidders will be held to have included in the change in price for any changes required in the Work to accommodate such inclusion of approved alternatives. No later claim by the Trade Contractor for an addition to the Contract Price because of changes in the Work necessitated by use of alternatives shall be considered.

.4 Any submission shall provide sufficient information to enable the Consultant to determine the acceptability of such products.

.5 Alternatives which have not received prior approval, or are not identified on the Tender Form, will not be considered.

.6 Approval by the Consultant will be given in writing and proof of approval is to be submitted with the tenders for all alternatives identified on the Tender Form.

.7 Unless submissions are made in accordance with this procedure, approval will not be considered.

23. AGREEMENT

.1 The successful Bidder will be required to enter into a formal Agreement with the Owner for performance of the Work.

24. DIVISION OF WORK

.1 Work specified in the Specifications is divided into Divisions and Sections for reference purposes only. Except as may be otherwise specified in the Bid Documents, division of work among Contractor, Subcontractors, Sub-subcontractors and suppliers is Bidders' responsibility.

25. INTERPRETATION AND MODIFICATION OF BID DOCUMENTS

.1 Submit questions about the meaning and intent of the Bid Documents to the Owner at the office identified under "Inquiries".

.2 If an inquiry requires an interpretation or modification of the Bid Documents, the response to that inquiry will be issued in the form of a written Addendum only, to ensure that all bidders base their bids on the same information.

.3 Addenda may also be issued by the Consultant to modify the Bid Documents as considered necessary by the Consultant.

.4 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.

.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.

26. ADDENDA

.1 During the bid period, Addenda will be issued by the Consultant via email.

.2 Addenda shall become part of the Bid and Contract Documents.

.3 Each Bidder shall ascertain before bid submission that it has received all Addenda issued by the Consultant and shall indicate in the Bid Form the Addendum number(s) of all Addenda received.

27. INQUIRIES

.1 When submitting an inquiry, identify your organization name, address, telephone and email address in the body of the email, as well as **"Drumheller Memorial Arena Dressing Room Addition"** in the subject line.

.2 Direct all inquiries during bid period to:

Lori Thiessen, C.E.T., PMP
Beairsto & Associates Engineering Ltd.
Email: lorit@baseng.ca

END OF SECTION

1. MANDATORY PRE-BID MEETING AND SITE INSPECTION

.1 A mandatory pre-bid meeting and site inspection will be held at the site on **Tuesday, April 11th, 2023, at 11:00am.**

.2 Site location: 20 1 Ave W,
Drumheller, AB T0J 0Y4

.3 Purpose is to:
.1 provide bidders an opportunity to familiarize themselves with the Work
.2 provide bidders an opportunity to familiarize themselves with existing conditions.

.4 Owner's representative(s) will be present.

.5 Attendance at the time and place specified is mandatory for Prime Contract Bidders.

.6 Major subcontract bidders are recommended to attend. Others are invited to attend.

.6 An attendance form will be made available at the pre-bid meeting for all prime contract Bidders to sign to indicate their attendance at the pre-bid meeting.

.6 No information provided by the Owner or any of his representatives at the pre-bid meeting and site inspection shall be binding, unless such information is included in an Addendum.

END OF SECTION

1. DEFINITIONS

.1 Information Documents means information of any type and in any form, related to the Project and identified in this Section as such.

.2 Contractor is synonymous with Bidder.

2. STATUS OF INFORMATION DOCUMENTS

.1 Information Documents, or any part thereof, are not part of the Contract unless specifically incorporated into Contract Documents by means of copying, transcribing, or referencing.

3. USE OF AND RELIANCE UPON INFORMATION DOCUMENTS

.1 Information Documents are made available to Bidder by Consultant for the purpose of providing Bidder with access to information available to Consultant.

.2 Information Documents shall not be considered a representation or warranty that information contained therein is accurate, complete, or appropriate.

.3 Bidder shall interpret and draw its own conclusions about Information Documents and is encouraged to obtain specialist advice with respect thereto. Consultant assumes no responsibility for such interpretations and conclusions.

.4 Information contained in Information Documents may be time sensitive and dates shall be considered when interpreting Information Documents.

4. INFORMATION DOCUMENTS INCORPORATED INTO CONTRACT DOCUMENTS

.1 Information Documents incorporated into Contract Documents, in whole or in part, consist of the following:

.1 Existing Building Drawings, available upon request

END OF SECTION

1. FROM (Bidder): _____
(Name)

_____
(Address)

_____

PROJECT: **Drumheller Memorial Arena**
Dressing Room Addition
20 1 Ave W, Drumheller, AB

2. We, the undersigned, having examined and read the Bid Documents for the above-noted project, including Addendum Number(s) _____, and having visited the site and examined all conditions affecting the Work, are satisfied we understand the Bid Documents and declare ourselves competent to undertake and complete the Work in accordance with the Bid Documents, for the stipulated price of:

_____
(Total in Words)

$_____ (Total in Figures) in Canadian Dollars, **excluding GST.**

3. If notified in writing by the Owner of the acceptance of this bid within 35 days after the bid closing time, the undersigned will, within 15 days after date of issuance of such notification, execute a formal Agreement with the Owner for the performance of the Work and for the above stated compensation and comply with all other requirements of the Bid Documents.

4. After having reviewed the scope of this project, we estimate the project will take _____ weeks from the date of commencement. Our preferred start date is _____, 2023.

EXECUTED THIS _____ DAY OF _____, 2023.

NAME (of Bidder): _____

ADDRESS: _____

_____

SIGNATURE OF AUTHORIZED REPRESENTATIVE(S)	NAME AND TITLE (Print or Type)
_____	_____
_____	_____
_____	_____

SIGNATURE OF WITNESS OR CORPORATE SEAL:

_____

END OF SECTION

1. FROM (Bidder): _____
(Name)
_____
(ADDRESS:)
_____

To: Town of Drumheller
224 Centre Street
Drumheller, AB T0J 0Y4

PROJECT: **Drumheller Memorial Arena Dressing Room Addition**
20 1 Ave W, Drumheller, AB

2. This List of Subcontractors and Cost Breakdown forms a part of the bid for the above project.

3. The following conditions apply to the List of Subcontractors:

.1 Items of work for which bidder intends to use Subcontractors, Sub-subcontractors, suppliers and own forces are so indicated.

.2 For items of work where CSA certification is required, parties named will possess, or will use parties who will possess, CSA certification at time of performance of work.

.3 Should bidder be awarded the Contract, parties named, including bidder's own forces, shall be used to perform the work they are scheduled to perform and shall not be changed without the Owner's written consent.

4. The following conditions apply to the Cost Breakdown:

.1 Costs entered for subcontract work are subcontract bid prices and do not include prime bidder's general requirements costs.

.2 Costs entered for sub-subcontract work are the sub-subcontract bid prices and do not include Subcontract Bidder's nor Prime Bidder's general requirements costs.

.3 Cost entered for Miscellaneous Items of Work:
.1 Is a lump sum which includes costs for all items of work which are **not** itemized separately, such that the total of all costs entered in the Cost Breakdown may equal the stipulated price entered in the Bid Form, and
.2 May include subcontract prices, sub-subcontract prices, supplier prices and cost of work by prime bidder's own forces but does not include prime bidder's general requirements costs.

.4 Cost entered for General Requirements is a lump sum which includes prime bidder's profit, operating overhead, job overhead and other general requirements items.

5. Bidder shall submit List of Subcontractor Breakdown within 24 hours of bid closing.

ITEM OF WORK	NAME OF SUBCONTRACTOR OR SUPPLIER	COST
Division 1 – General Requirements		
General Requirements		$_____
Mobilization / Demobilization (50% mobilization and 50% demobilization)		$_____
Permits, Bonds, Insurance and Warranties		$_____
Division 2 - Demolition		
Selective Demolition	_____	$_____
Division 3 - Concrete		
Cast-in place Concrete	_____	$_____
Concrete Floor Finishes	_____	$_____
Division 4 - Masonry		
Concrete Unit Masonry	_____	$_____
Division 5 - Metals		
Metal Fabrications	_____	$_____
Division 6 – Wood, Plastic and Composites		
Rough Carpentry	_____	$_____
Finish Carpentry	_____	$_____
Division 7 – Thermal and Moisture Protection **Thermal Insulation and Barriers**		
Foundation Damproofing/Waterproofing	_____	$_____
Insulation & Air/Vapor Barriers	_____	$_____
Built-up Roofing	_____	$_____
Metal Siding	_____	$_____
Metal Flashing and Trim	_____	$_____
Gutters and Downspouts	_____	$_____

Sealants	_____	$_____
Fire Stopping	_____	$_____
Division 8 - Openings		
Metal Doors and Frames	_____	$_____
Finish Hardware	_____	$_____
Division 9 - Finishes		
Gypsum Board Assemblies	_____	$_____
Tiling	_____	$_____
Resilient Floor Covering	Owner's Own Contractor	$_____
Painting	_____	$_____
Division 10 – Specialties		
Washroom Accessories	_____	$_____
Misc. Specialties	_____	$_____
Division 22 – Plumbing		
Plumbing	_____	$_____
Additional Not Listed	_____	$_____
Division 23 – HVAC		
Ventilation and Sheet Metal	_____	$_____
Additional Not Listed	_____	$_____
Division 25 – Controls		
Controls	_____	$_____
Additional Not Listed	_____	$_____
Division 26 – Electrical		
Wiring	_____	$_____
Electrical Power	_____	$_____
Lighting	_____	$_____

Fire Alarm System	_____	$_____
Fire Alarm System Verification Engineering Fees	_____	$ 2,500.00
Additional Not Listed	_____	$_____

Division 31 – 33 – Site Work

Building and Structure Excavating and Backfill	_____	$_____
Concrete Pads, Ramps & Sidewalks	_____	$_____
Utility Services	_____	$_____
Additional Not Listed	_____	$_____

Cash Allowances

Cash Allowances	_____	$_____

Miscellaneous Items

Cost of all other items of work not itemized above	_____	$_____
O&M Manuals	_____	$ 3,000.00

BID PRICE

Total Bid Price	$_____

SIGNATURE OF AUTHORIZED REPRESENTATIVE

BIDDER:_____

END OF SECTION

1. CONTRACT PERFORMANCE SECURITY AND SECURITY FOR PAYMENT OF CLAIMS

.1 Contractor shall provide security for performance of the Contract and 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 one of the following:

.1 Performance Bond for 50% of the Contract Price AND Labour and Material Payment Bond for 50% of the Contract Price.

.2 Government of Canada or Provincial Bonds in bearer form in the amount of 100% of the Contract Price, at current market value as of date of issuance of the Letter of Acceptance of bid.

.3 Certified Cheque in the amount of 100% of the Contract Price.

2. SURETY BONDS

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

.2 Labour and Material Payment Bond shall be in accordance with the Canadian Construction Documents Committee (CCDC) Standard Form of Labour and Material Payment Bond, CCDC Document No. 222.

.3 Consign bonds to "Town of Drumheller".

.4 Submit Bonds to Owner within 15 days after date of issuance of Letter of Acceptance of bid.

3. GOVERNMENT BONDS

.1 Government bonds shall be unconditionally guaranteed as to principal and interest and shall be payable to bearer.

.2 Contractor shall be entitled to and shall receive accrued interest on government bonds provided as security.

.3 Submit Bonds to Owner within 15 days after date of issuance of Letter of Acceptance of bid.

4. CERTIFIED CHEQUES

.1 Certified cheques shall be drawn on a financial institution authorized to conduct business in the Province of Alberta and shall be made payable to the " Town of Drumheller ".

.2 Contractor shall be entitled to and shall receive accrued interest on a certified cheque provided as security.

5. RELEASE OF SECURITY

.1 Where security is provided in the form of a certified cheque or government bonds, such security will be released to Contractor provided:

.1 Prime Consultant has issued a Letter of Interim Acceptance of the Work,

.2 the Builders' Lien Act statutory period of 45 days from the date of issue of a
1. Certificate of Substantial Performance by the Contractor or,
2. a letter of Interim Acceptance by the Prime Consultant,
whichever is later, has expired.

.3 No lien claims have been registered which are then outstanding, and

.4 Contractor has submitted to Owner, completed Statutory Declaration Form.

END OF SECTION

1. CONSTRUCTION CONTRACT

.1 These supplementary general conditions consist of amendments and supplements to the "General Conditions of the Stipulated Price Contract", hereinafter referred to as the general conditions, of the latest Standard Construction Document CCDC 2 Stipulated Price Contract, and shall be read in conjunction with this document.

2. AGREEMENT BETWEEN OWNER AND CONTRACTOR

.1 The AGREEMENT will be completed by the Owner incorporating information obtained from both these Specifications and the Bid submitted.

.2 ARTICLE A-3 CONTRACT DOCUMENTS

Amend to include:

The List of Contract Documents to be entered in the AGREEMENT subsequent to the award of the contract shall be as follows;

.1 AGREEMENT BETWEEN OWNER AND CONTRACTOR
.2 SUPPLEMENTARY CONDITIONS
.3 DEFINITIONS
.4 GENERAL CONDITIONS
.5 PROJECT SPECIFICATIONS: (Including Instructions to Bidders) See List of Contents
.6 SCHEDULES
.7 DRAWINGS; see List of Drawings
.8 All documents issued during the bidding period

.3 ARTICLE A-4 CONTRACT PRICE

Delete 4.2 and substitute the following:

Value Added Taxes (G.S.T.) of 5% payable by the Owner to the Contractor will be added to the Contract Price, shown as a separate item on each monthly claim.

3. GC 1.1 CONTRACT DOCUMENTS

.1 Add the following to Clause 1.1.9

Work specified in the specifications is divided into sections for reference purposes only. Division of work between contractor, subcontractors, sub-subcontractors and suppliers is Bidder's responsibility. The Owner or Consultant assumes no responsibility to act as an arbiter to establish subcontract, subcontractor, and supplier limits between sections or divisions of work.

.2 Add the following new clauses:

1.1.12 All instructions contained in the specifications are written in the imperative mood and directed to the Contractor and as such are deemed to include the expression "the Contractor shall".

1.1.13 The Contractor is responsible for the co-ordination of metric and imperial dimensions as shown on the drawings and as specified.

4. GC 1.4 ASSIGNMENT

.1 Replace 1.4.1 with the following:

1.4.1 The Contractor shall not assign the Contract without the Owner's written consent, which consent may be unreasonably withheld. The Contractor, when requesting the Owner's consent to an assignment, shall provide evidence satisfactory to the Owner of the ability of the proposed assignee to complete the Contract in respect of its technical and financial competence, its workforce and its equipment along with any other information requested by the Owner. In the event that the Contractor assigns the Contract, such assignment shall not relieve the Contractor of its obligations pursuant to the Contract.

.2 Add the following new clause:

1.4.2 The Contractor shall supply a list of Subcontractors to the Owner and shall not replace any Subcontractors without the prior written consent of the Owner.

5. GC 2.2 ROLE OF THE CONSULTANT

.1 2.2.9 Amend last line to read:

"….to the parties within a reasonable time, except questions of law arising from the interpretation or application of the Contract Documents"

.2 Replace 2.2.13 with the following:

2.2.13 The Contractor shall be responsible for requesting any additional instructions or clarifications that may be required from the Consultant which are needed for the performance of the Work, and shall request such instructions or clarifications in time to avoid any delay or unnecessary cost of the Work.

.3 Add the following new clause:

2.2.19 The Consultant, acting reasonably, may vary or revoke any of his instructions, directions or authorizations where:

a) There is a contravention of any conditions under which the instructions, directions or authorizations were issued, or

b) The instructions, directions or authorizations were issued in error, or

c) The instructions, directions or authorizations were issued on the basis of incorrect or incomplete information.

6. GC 2.3 REVIEW AND INSPECTION OF THE WORK

.1 2.3.4 Amend last line to add the following:

"….Where it is necessary to correct any portion or portions of the Work, the corrected work shall, if required by the Consultant, be re-tested or re-inspected, at the Contractor's sole cost and expense."

.2 Add the following new clause:

2.3.8 The Consultant, the Owner and their representatives shall at all times have access to the Project and be permitted to examine the Work and materials used or to be used for the Work, and the Contractor agrees to provide reasonable facilities for such inspection.

7. GC 2.4 DEFECTIVE WORK

.1 Add the following new clauses:

2.4.4 The value of deficient work will be determined by the Consultant. In the Consultant's evaluation, deficiency values will be multiplied by a factor of 2.5.

8. GC 3.5 SUPERVISION

.1 Add the following new clause:

3.5.3 If, in the opinion of the Consultant, the supervision is deemed not satisfactory, changes or additions to the Contractor's personnel may be demanded by the Consultant and must be acted on within ten (10) working days by the Contractor**.**

9. GC 3.8 SHOP DRAWINGS

.1 Replace GC 3.8.1 with the following:

3.8.1 The Contractor shall be responsible for providing all Shop Drawings necessary for the performance of the Work**.**

10. GC 4.1 CASH ALLOWANCES

.1 Add the following new clause:

4.1.8 The Contractor shall keep accurate records, as reasonably required by the Consultant, of costs under cash allowances and present them in support of the value of the cash allowances, where applicable.

11. GC 5.1 FINANCIAL INFORMATION REQUIRED OF THE OWNER

.1 Delete paragraph 5.1.1 in its entirety. Add the following new paragraph 5.1.1

5.1.1 The Owner and Contractor shall provide each other with timely notice in writing of any material change in their financial ability to fulfill their respective obligations under the contract.

12. GC 5.2 APPLICATIONS FOR PAYMENT

.1 Add the following to Clause 5.2.4

Included in the Schedules of Values shall be an amount for the provision of record drawings, maintenance manuals, operations manuals, deficiency holdback, warranties and guarantees.

13. GC 5.3 PAYMENTS

.1 Add the following new clause.

5.3.2 The Consultant shall not certify the first payment until the evidence of the Contractor's insurance required by GC 11.1, has been received by the Consultant.

14. GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

.1 Add the following to the beginning of Clause 5.4.5:

"Provided that no claims of builders liens have been filed with respect to the Project,…"

15. GC 5.5 FINAL PAYMENT

.1 Add the following to the end of Clause 5.5.1:

"…The Contractor shall include the following with its application for final payment:

.1 a complete set of As-Built Drawings showing all changes to the Work;

.2 evidence that any portion of the Work requiring inspection by any governmental authority has been duly inspected and approved by such governmental authority;

.3 evidence that all required certificates of occupancy and other governmental approvals, licenses, permits have been issued, unless delayed for reasons beyond the Contractor's control; and;

.4 assignments and originals of all manufacturers' and other guarantees and warranties required pursuant to GC 12.3.7."

.2 Add the following new clauses.

5.5.5 Neither the final payment nor any part thereof shall become due until the Contractor obtains and delivers to the Owner a complete release of any liens arising out of this Contract (other than his own), but the Contractor, may, if any Subcontractor or Supplier refuses to furnish a release of such lien, take all steps necessary to have such lien removed expeditiously, except where such lien was a direct result of a breach of this Contract by the Owner or the non-payment by the Owner of a valid charge or claim under this Contract..

5.5.6 The issuance of final certificate of payment in no way relieves the Contractor from correcting deficiencies, defects, omissions, or warranty obligations not readily apparent at the time of issuance of this certificate.

16. GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

.1 Add the following new clause:

6.1.3 No changes in or additions to the Work shall be undertaken without written authorization of the Owner

17. GC 6.2 CHANGE ORDER

.1 Add the following new clause:

6.2.3 On extra work authorized by the Owner, the allowance for overhead and profit will be based on the following schedules.

.1 For work performed by the Contractors own forces, the Contractor shall be entitled to 10% for overhead and profit on the actual cost of material and labour.

.2 For work performed by Subcontractors:
.1 Each Subcontractor shall be entitled to 10% for overhead and profit on the actual cost of material and labour.
.2 The Contractor shall be entitled to 5% of the Subcontractor's total.

.3 For work performed by Sub-subcontractors:

.1 Each Sub-subcontractor shall be entitled to 10% for overhead and profit on the actual cost of material and labour.
.2 Subcontractor shall be entitled to 5% of above Sub-subcontractor's total.
.3 Contractor shall be entitled to 5% of above total.

.2 Add the following new clause:

6.2.3 The Contractor shall supply all necessary backup including labour and materials breakdowns to substantiate a claim for a Change.

18. GC 6.3 CHANGE DIRECTIVE

.1 Add the following to the beginning of Clause 6.3.1:

"If a change in the work is being considered, the Consultant will give the Contractor notice by issue of his standard for "proposed change". Any such notice requires that the Contractor submit to the Consultant within ten (10) days a valuation of the contemplated change. Such notice does not constitute a change in the work nor is it authority to proceed with the work. The Contractor shall show cost breakdowns for each section of the work and any time delays attributable to the contemplated change.

.2 Add the following new clause:

6.3.14 On extra work authorized by the Owner, the allowance for overhead and profit will be based on the following schedules.

.1 For work performed by the Contractors own forces, the Contractor shall be entitled to 10% for overhead and profit on the actual cost of material and labour.

.2 For work performed by Subcontractors:
.1 Each Subcontractor shall be entitled to 10% for overhead and profit on the actual cost of material and labour.
.2 The Contractor shall be entitled to 5% of the Subcontractor's total.

.3 For work performed by Sub-subcontractors:

.1 Each Sub-subcontractor shall be entitled to 10% for overhead and profit on the actual cost of material and labour.
.2 Subcontractor shall be entitled to 5% of above Sub-subcontractor's total.
.3 Contractor shall be entitled to 5% of above total.

.4 If a change results in a decrease in cost, the amount of credit to be given to the Owner by the Contractor shall be the amount of the actual decrease without overhead and profit.

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

.6 The Contractor shall include in his proposal for change a statement as to the effect the proposed change will have on the Contract Time. A statement that it will be evaluated at a later date is not acceptable.

.3 Add the following new clause:

6.3.15 All change directives must include the reason for change and name of the requestor.

19. GC 6.5 DELAYS

.1 Add the following new clauses:

6.5.6 The Contractor shall be responsible for the case, maintenance and protection of work in the event of any suspension or delay in the performance of the work.

20. GC 6.60 CLAIMS FOR A CHANGE IN CONTRACT PRICE

.1 Replace GC 6.6.1 with the following:

6.6.1 Except where a different notice period is expressly set out in the Contract, the Contractor waives any claim for an extension of the Contract Time, change in the Contract Price, adjustment or interpretation of the Contract Documents, any other relief with respect to the terms of the Contract Documents or any other claim for loss, damage, cost or expense arising from or in any way related to the Project, unless the Contractor provides a notice in writing of the claim to the Owner and the Consultant within ten (10) Working Days after occurrence of the event giving rise to such claim or ten (10) Working Days after the Contractor first recognized, or ought reasonably to have recognized, the conditions giving rise to the claim, whichever is later.

21. GC 9.1 PROTECTION OF WORK AND PROPERTY

.1 Add the following new clauses:

9.1.5 The Contractor shall take all precautions necessary to minimize the spread of dust, dirt and noise from the project site on to adjacent properties including streets and shall be responsible for all cleaning operations necessary through failure to exercise such precautions.

9.1.6 The Contractor shall provide all barricades, doors, gates, locks, scaffold, barriers, fences, warning signs, lights and personnel necessary for the protection of persons and property on and adjacent to the Place of the Work.

22. GC 9.4 CONSTRUCTION SAFETY

.1 Add the following new clauses:

9.4.6 The Contractor is responsible for all site safety and shall be deemed to be the "Prime Contractor" for the Place of the Work for the purposes of all occupational health and safety regulations from the effective date of this Contract until the completion of the Work. In respect of deficiency and warranty Work, the Contractor shall be the "Prime Contractor" for such Work.

9.4.7 If the Owner is of the reasonable opinion that the Contractor has not taken such precautions as are necessary to ensure compliance with the requirements of GC 9.4.1, the Owner may take or order any remedial measures which it deems necessary, including stopping the performance of all or any portion of the Work, and the Owner may use the employees of itself, the Contractor, any Subcontractor or any other contractors to perform such remedial measures. The Contractor acknowledges and agrees that any failure by the Contractor to comply with the Safety Requirements or the Safety Guidelines shall constitute a default pursuant to G.C. 7.1.2.

9.4.8 The Contractor shall file any notices or any similar document (including, without limitation, a Notice of Project where applicable) required pursuant to the Contract or the Safety Regulations. This duty of the Contractor will be considered to be included in the Work and no separate payment therefore will be made to the Contractor.

9.4.9 Unless otherwise provided in the Contract Documents, the Contractor shall develop, maintain and supervise for the duration of the Work a comprehensive safety program that will effectively incorporate and implement all required safety precautions. The program shall, as a minimum, respond fully to the Safety Regulations and general construction practices for the safety of persons or property, including without limitation the Safety Guidelines and any Workers' Compensation or Occupational Health and Safety statutes or regulations that may be applicable (e.g., WHMIS)..

9.4.10 The Contractor shall provide a copy of its Certificate of Recognition in jurisdictions where this is applicable or otherwise provide a copy of the safety program described in paragraph 9.4.5 hereof to the Consultant for delivery to the Owner prior to the commencement of the Work and shall require, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the Project complies with such program.

9.4.11 The Contractor shall arrange regular safety meetings at its expense. Such meetings shall occur no less frequently than once per week. The Contractor shall record the minutes of such meetings and maintain a complete file for review by the appropriate authorities.

9.4.12 The Contractor shall supply and maintain, at its own expense, at its office or other well-known place at the job site, safety equipment necessary to protect the workers and general public against accident or injury as prescribed by the governing authorities.

9.4.13 The Contractor shall supply and maintain all articles necessary for giving first-aid to any person who may be injured on the job site and shall establish an emergency procedure for the immediate removal of any injured person to a hospital or a doctor's care in accordance with the Safety Regulations.

9.4.14 The Contractor shall promptly report in writing to the Owner and the Consultant all accidents of any sort arising out of or in connection with the performance of the Work whether on or adjacent to the Place of the Work, giving full details and statements of witnesses. If death or serious injuries or damages are caused, the accident shall be promptly reported by the Contractor to Owner by telephone (with written notice promptly following to the Owner and the Consultant) in addition to any reporting required under the Safety Regulations or the Safety Guidelines.

23. GC 10.1 TAXES AND DUTIES

.1 Add the following new clause:

10.1.3 In reference to paragraph 10.1.1, the Owner may be entitled to an exemption or recovery of government sales taxes, customs duties or excise taxes and Federal Goods and Services Tax. Cooperate fully in providing the Owner with complete documents, records and other evidence necessary for the applications to receive the exemption and/or recover the taxes and duties.

24. GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 Revise Clause 10.2.2 to read:

10.2.2 The *Owner* shall obtain and pay for permanent easements, and rights of servitude. The *Contractor* shall be responsible for business, licenses, or certificates necessary for the performance of the *work* which were in force at the date of bid closing, including the Building Permit.

25. GC 12.3 WARRANTY

.1 Add the following to Clause 12.3.4:

Notwithstanding provisions under the Alberta Builder's Lien Act permitting Substantial Performance of subcontractors' work prior to substantial performance of the total work, the commencement date for warranty is the date of substantial performance for the total work but in no case before the item being warranted is complete and has been inspected and accepted.

26. INSPECTIONS

The Contactor shall advise the Consultant that works are ready for inspection prior to continuing. 24 hours prior notice of an inspection is necessary. These times are as follows:

.1 Prior to any concrete pour
.2 Prior to any drywall placement
.3 Completion of project

Inspections by the Consultant do not in any way mitigate the responsibility of the Contractor or meet code, quality or quantity of the provided drawings and specifications. Failure to notify for an inspection may result in removals or other additional costs to the Contractor.

END OF SECTION

1. FORM OF CONTRACT

.1 The form of Contract shall be the Canadian Construction Documents Committee, Stipulated Price Contract, CCDC 2, 2020 edition, hereinafter referred to as "CCDC 2".

.2 CCDC 2 is comprised of the following parts:

.1 Agreement between Owner and Contractor.
.2 Definitions.
.3 General Conditions of the Stipulated Price Contract.

.3 CCDC 2 shall form part of the Bid and Contract Documents.

.4 The Bid Documents incorporated CCDC 2 by reference only. The Contract Documents signed by Contractor and Owner will include a copy of CCDC 2.

.5 All persons with an interest in the Contract are advised to read and understand CCDC 2.

END OF SECTION

1. RELATED REQUIREMENTS

.1 Hold Harmless Agreement: General Conditions of Contract.

.2 Workers Compensation: General Conditions of Contract.

2. 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 coverage 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 coverage shall be maintained continuously from date of commencement of the Work until date of Final Acceptance of the Work by Owner.

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

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

.6 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.

.7 Proof of Insurance: Prior to Contract Signing, the Contractor shall provide the Owner with proof that insurance coverage is in effect and meets specified conditions. At the option of the Owner, the Contractor shall promptly submit certified true copies of any insurance policy and shall otherwise provide proof of any required insurance in a form acceptable to the Owner.

.8 Subcontractors' Insurance: Contractor shall ensure that his Subcontractors provide their own General Liability Insurance, Automobile Liability Insurance, where such risks exist, Aircraft and Watercraft Liability Insurance, 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.

3. GENERAL LIABILITY INSURANCE

.1 Contractor shall provide “Comprehensive General Liability Insurance” with limits of not less than $5,000,000.00 inclusive per occurrence, insuring against bodily injury, death and property damage including loss of use thereof. Such insurance shall include but not necessarily be limited to coverage for:

.1 Premises, property, and operations liability.
.2 Broad Form Products and completed operations liability.
.3 Owner’s and Contractor’s protective liability.
.4 Blanket written contractual liability
.5 Contingent employer’s liability
.6 Personal injury liability
.7 Non-owned automobile liability

.8 Employee as additional insured
.9 Broad form property damage endorsement
.10 Cross liability with respect to additional insured.
.11 Incidental Malpractice
.12 Employer's liability (for those not covered by Canadian Workers' Compensation Plan).
.13 Sudden and Accidental Pollution (equivalent or exceeding IBC 2313 form) with reporting and discovery period of 120 hours.
.14 Damage to existing structure coverage if the project involves renovations or any work involving existing structures; or if existing structures are present.
.15 Consultants and Sub-consultants while on site for personal injury.

4. AUTOMOBILE LIABILITY INSURANCE

.1 Contractor shall provide Automobile Liability Insurance on all vehicles owned, operated or licensed in Contractor's name, with limits of not less than $2,000,000.00 inclusive per occurrence for bodily injury, death, and property damage.

5. COURSE OF CONSTRUCTION AND BOILER INSURANCE

.1 Contractor shall provide Course of Construction Insurance in the form of:

.1 An All Risks Builder's Risk Policy, or

.2 If appropriate, due to the nature of the Work, and subject to Consultant's approval, an All Risks Installation Floater,

insuring not less than the sum of the amount of the Contract Price and the full value of Products specified to be provided by Consultant for incorporation into the Work. Coverage shall extend to any location and while in transit and shall be maintained continuously until date of Interim Acceptance of the Work.

.2 Where, due to the nature of the Work, the full insurable value of the Work is substantially less than the Contract Price, Consultant may, upon request and at his sole discretion, reduce the amount of insurance required or waive the Course of Construction Insurance requirement.

.3 Where such risks exist, Contractor shall provide Boiler and Machinery Insurance insuring not less than the replacement value of boilers, pressure vessels and other objects insurable under a Boiler and Machinery Policy and forming part of the Work.

.4 Builder's Risk and Boiler and Machinery Policies shall:

.1 Be primary insurance and shall not require pro rata sharing of any loss with any insurer of the Owner.

.2 Be in the joint names of Contractor and Owner and shall in addition insure the interests of Subcontractors, Sub-subcontractors and all others having an insurable interest in the Work, and

.3 Provide that, in the event of a loss or damage, payment shall be made to Owner, Contractor and other Insured's as their respective interests may appear.

.5 In the event of loss or damage to property insured under the Course of Construction and Boiler Insurance:

.1 Contractor shall act on behalf of Owner and himself for the purpose of adjusting the amount of such loss or damage payment with the Insurers.

.2 When extent of loss or damage is determined, and upon Owner's approval, Contractor shall proceed to restore the Work.

.3 Contractor shall be entitled to receive from Owner, in addition to amount due under the Contract, the amount at which Owner's interest in restoration of the Work has been appraised, such amount to be paid as restoration of the Work proceeds and in accordance with the payment conditions specified in the Contract Documents. In addition, Contractor shall be entitled to receive from payments made by Insurer, the amount of Contractor's interest in restoration of the Work.

.4 Loss or damage shall not affect the rights and obligations of either party under the Contract except that Contractor shall be entitled to such reasonable extension of Contract Time relative to the extent of the loss or damage as Owner may decide in consultation with Contractor.

6. CONTRACTORS' EQUIPMENT INSURANCE

.1 Contractor shall provide insurance covering construction machinery and equipment owned, rented or used by Contractor for performance of the Work, including boiler insurance on temporary boilers and pressure vessels, in such forms and amounts as will enable the expeditious replacement or repair of damaged or destroyed equipment.

7. 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.

END OF SECTION

1. RELATED REQUIREMENTS

.1 Workers' Compensation Board submittals: Section 01 33 00.
.2 Contract Price breakdown: Section 01 33 00.

2. BASIS OF PAYMENT

.1 When payment is on the basis of a Stipulated Price Arrangement, amounts claimed by Contractor for progress payments shall be consistent with the approved Contract Price breakdown.

.2 The Builders' Lien Act of Alberta, Latest Edition, together with the payment conditions, shall govern payment.

3. PROGRESS PAYMENTS

.1 Contractor shall submit monthly application for payment to Owner through the Consultant who will issue a Certificate for Payment.

.2 Application for payment shall be dated the last day of the monthly payment period agreed to with Owner and the amount claimed shall be for the value, at that date and for that payment period, of:

.1 work performed, including labour provided and material supplied and set in place, and
.2 material stored at the Place of the Work, but not incorporated into the Work.

.3 Horse Lake First Nation will issue payment on the terms: net 30 days from receipt of the Application for Payment.

.4 Contractor shall submit with application for payment:

.1 sufficient data to permit Owner to evaluate amount claimed,
.2 completed Statutory Declaration Document with second and subsequent applications for payment
.3 WCB Clearance Letter
.4 any additional data requested by Consultant

.5 Consultant will review application for payment and may make adjustments to amount claimed, including reducing amount claimed by the amount of deductions specified in Article 8.1.

.6 Amount payable will then be paid by the Owner less the holdback specified in Article 4.

4. HOLDBACK FROM PROGRESS PAYMENTS

.1 Owner will hold back the amount of 10% from each payment referred to in Article 3, other than payment of holdback and facility start-up payments.

.5 FEDRAL GOODS AND SERVICES TAX

.1 Each application for payment shall indicate a separate amount for Federal Goods and Services Tax which shall be considered as separate from the Contract Price.

.2 The amount of Federal Goods and Services Tax properly chargeable to Owner by Contractor will be paid by Owner to the Contractor together with each payment made by the Owner.

6. PAYMENT OF HOLDBACK

.1 Up to 100% of holdback monies will be payable by Owner to Contractor provided:

.1 Owner has verified Contractor's Certificate of Substantial Performance,
.2 Builders' Lien Act statutory period of 45 days from date of Substantial Performance has expired, and
.3 No lien claims have been registered which are then outstanding.

.2 Contractor shall submit to Owner written application for payment of holdback monies, including:

.1 Letter of clearance from Workers' Compensation Board,
.2 completed Statutory Declaration Document
.3 copy of clear title for the 46th day.

.3 Amount of holdback monies payable pursuant to Article 6.2 shall be subject to any deductions under Article 8, and subject to withholding:

.1 any amount equal to twice the Consultant's estimate of the cost to the Owner of remedying any uncorrected defects described in the Letter of Interim Acceptance of the Work, and
.2 an amount equal to the Consultant's estimate of the cost to the Owner of completing any outstanding work described in the Letter of Interim acceptance of the Work.

.3 If the Owner withholds a portion of the holdback monies pursuant to clause 6.3, such monies, or portions thereof, shall, at such reasonable times and intervals as the Consultant may determine, become payable by the Owner as and when the cause or causes for the withholding are removed.

7. FINAL PAYMENT

.1 The unpaid balance of the Contract Price less all amounts required to be retained under the Builders' Lien Act, will be payable by the Owner to Contractor provided:

.1 Consultant has issued a Final Certificate for Payment,
.2 no lien claims have been registered which are then outstanding,
.3 final adjustment of accounts has been rendered and agreed to between Owner and Contractor.

.2 Any amounts required to be retained under the Builder's Lien Act for the minor lien fund will be payable by the Owner to the Contractor providing:

.1 The Builders' Lien Act statutory period of 45 days from date of issue of letter of Total Performance of the Work by the Consultant has expired,
.2 No lien claims have been registered which are then outstanding.

.3 Contractor shall submit written application for final payment, including:

.1 Letter of clearance from Workers' Compensation Board
.2 completed Statutory Declaration Document

.3 statement of final adjustment of accounts.

.4 Notwithstanding requirements of Article 7.1, Owner and Contractor may agree to defer payment for those portions of the Work which cannot be completed due to circumstances beyond Contractor's control.

8. DEDUCTIONS FROM PAYMENTS

.1 Owner may deduct from any amount claimed by or payable to Contractor: an amount equal to the value, as determined by Consultant, of work not in accordance with Contract Documents.

.2 Owner may deduct from any amount payable to Contractor any amount permitted to be deducted under the Builders' Lien Act of Alberta:

.3 Deductions referred to in Articles 8.1 and 8.2 will be made if and as required, provided such deductions have not been previously made from monies payable to Contractor.

9. WITHHOLDING OF PAYMENT

.1 Owner may withhold all or part of any amount payable to Contractor in order to protect the Owner or third parties from loss due to Contractor's:

.1 failure to make payments properly to Subcontractors or for labour, materials or equipment,
.2 failure to ensure that Subcontractors make payments properly to Sub-subcontractors or for labour, materials or equipment,
.3 inability to complete the Work for the unpaid balance of the Contract Price,
.4 inability to complete the Work in accordance with the Contract Documents,
.5 failure to perform the Work in accordance with the Contract Documents,
.6 deficiencies at the rate of two times the actual cost.

10. TITLE TO AND ACCEPTANCE OF WORK

.1 Contractor warrants that title to work and materials covered by any application for payment will pass to the Owner, at the time of payment, free and clear of all claims, interests and encumbrances.

.2 Contractor further warrants that materials, stored at the Place for the Work and for which payment has been received, shall not be removed from the Place of the Work and shall be kept secure and protected.

.3 Payments made by Owner shall not be construed as an acceptance that the Work, Products, or any part thereof is complete, is satisfactory or in accordance with the Contract Documents.

END OF SECTION

1. General

1.1 REFERENCE DOCUMENTS

.1 Canadian Standards Association (CSA):

.1 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures

.2 Hazardous Materials Information Review Act, 1985

.3 Motor Vehicle Safety Act (MVSA), 1995

.4 National Fire Protection Association (NFPA):

.1 NFPA 241-04 Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.3 EXISTING CONDITIONS

.1 Visit and examine the site and note all characteristics and irregularities that may affect the work of this Section.

1.5 PROTECTION

.1 Prevent movement or settlement of adjacent work. Be liable for any such movement or settlement, and any damage or injury caused.

.2 Cease operations and notify Consultant and Project Manager if safety of any adjacent work or structure appears to be endangered. Take all precautions to support the structure. Do not resume operations until reviewed with the Consultant.

.3 Ensure safe passage of building occupants around area of demolition.

.4 Cease operations and notify the Consultant and Project Manager immediately for special protective and disposal instructions when asbestos materials, lead, or other hazardous materials, other than those identified, are uncovered during the work of this project.

.6 Prevent debris from blocking surface drainage inlets and mechanical and electrical systems which remain in operation.

.7 Temporarily suspended work that is without continuous supervision, shall be closed to prevent entrance of unauthorized persons.

1.6 TEMPORARY PARTITIONS

.1 Erect and maintain dustproof partitions, seal off ducts as required to prevent spread of dust and fumes to other parts of the building. On completion, remove partitions and make good surfaces to match adjacent surfaces.

2. Products

2.1 MATERIALS AND EQUIPMENT

.1 Provide materials and equipment as required to perform work of this section.

3. Execution

3.3 EXISTING SERVICES

.1 Disconnect all electrical and telephone service lines in the areas to be demolished. Post warning signs on all electrical lines and equipment that must remain energized to serve other areas during period of demolition. Disconnect electrical and telephone service lines in demolition areas to the requirements of local authority having jurisdiction.

.2 Disconnect and cap all mechanical services in accordance with requirements of local authority having jurisdiction. Natural gas supply lines shall be removed by the gas company or by a qualified tradesman in accordance with gas company instructions.

.3 Essential Services: Maintain all essential services to the existing offices during regular office hours. Consult with Owner regarding any disruptions which may occur during regular office hours.

.4 In each case notify the affected utility company in advance and obtain approval where required, before commencing with the work on main services.

3.5 APPLICATION

.1 Unless otherwise specified, carry out demolition in accordance with CSA S350.

.1 Remove from the site all materials indicated to be removed.

.2 Carry out demolition in a manner to minimize inconvenience to adjacent occupied space.

.3 Carry out demolition in an orderly and careful manner.

.7 Lower waste materials in a controlled manner; do not drop or throw materials from heights.

.8 Burning of materials on site is not permitted.

3.6 RESTORATION

.1 Restore to its original condition any portion of the building demolished unnecessarily, at no expense to the Owner.

.2 Immediately as the work progresses, repair all vibration and excavation damages to existing adjacent properties and active underground services.

.3 Walls of adjoining structures that were not exposed prior to demolition shall be adequately protected from all weather until finished weatherproof construction is complete for that area.

3.7 CLEAN-UP

.1 For clean-up during demolition and for final cleaning, comply with requirements of Division 01.

END OF SECTION

1. General

1.1 SUMMARY

.1 This Section includes requirements for supply and installation of low permeance, high puncture resistant plastic vapour barriers specifically manufactured for contact with ground under concrete slabs-on-grade, including installation accessories required for a complete installation.

1.2 REFERENCE DOCUMENTS

.1 American Concrete Institute (ACI):

.1	ACI 302.2R-06	Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

.2 American Society for Testing and Materials (ASTM):

.1	ASTM E1643-18a	Standard Practice for Selection, Design, Installation, and Inspection of Water Vapour Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
.2	ASTM E1745-17	Standard Specification for Plastic Water Vapour Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

.3 Canadian Standards Association (CSA):

.1	CSA A23.1-14 / A23.2-14	Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.
.2	CSA S478-95 (R2007)	Guideline on Durability in Buildings.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate delivery of materials specified in this section to coincide with placement of underslab granular materials and reinforcing steel.

1.4 SUBMITTALS

.1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data: Submit copies of manufacturer's product literature indicating specified materials, including listing of accessory materials required for complete installation and manufacturer's written installation instructions.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

.2 Storage and Handling Requirements: Store materials in a clean, dry area in accordance with the manufacturer's instructions; protect materials during handling and application to prevent damage or contamination.

2 Products

2.1 MATERIALS

.1 Plastic Sheet Moisture Suppression Membrane: High density, puncture resistance plastic sheet membrane meeting requirements of ASTM E1745, and as follows:

- .1 Vapour Permeance: Nominal ≤ 0.01 Perm (as determined by ASTM E96/E96M).
- .2 Tensile Strength and Puncture Resistance: ASTM E1745 Class A or Class B (minimum).
- .3 Thickness:
  - .1 Minimum 10 mil (0.25 mm) where the vapour barrier is protected with granular fill
  - .2 Minimum 15 mil (0.38 mm) where the vapour barrier is not protected by granular fill

.2 Accessory Materials: Provide manufacturer's required seam tape, pipe boots and vapour proofing mastic forming and a complete system in accordance with CSA A23.1 and ASTM E1643.

3 Execution

3.1 EXAMINATION

.1 Verify that base materials are placed level and compacted, and have been accepted by the Consultant before starting installation of products specified in this Section.

- .1 Installation of products specified in this Section will denote acceptance of site conditions.

3.2 INSTALLATION

.1 Install vapour barrier in accordance with manufacturer's written instructions and ASTM E1643, and generally as follows:

- .1 Unroll vapour barrier with the longest dimension parallel to direction of concrete placement.
- .2 The lap or seams for the vapour barrier should be lapped minimum 150 mm or as instructed by the manufacturer. Seal laps with manufacturer's recommended tape.
- .3 At the perimeter, the vapour barrier should be turned up and sealed onto face of grade beam or foundation wall.
- .4 Seal penetrations including pipe and conduit risers in accordance with manufacturer's instructions.
- .5 Make no additional penetrations except as required for placing of reinforcing steel and permanent utilities.

.2 Repair damaged areas by cutting patches of vapour barrier membrane; sized to overlap damaged area a minimum of 150 mm to each side of puncture; and tape all sides using manufacturer's required tape.

END OF SECTION

1. General

1.1 RELATED SECTIONS

.1 Cast-in-place Concrete: Division 03
.2 Rigid Board Insulation Section 07 21 13

1.2 SUBMITTALS

.1 Comply with requirements of Division 01.

.2 Product Data:
- .1 Provide two copies of most recent data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Provide two copies of MSDS for all products and indicate VOC content.

1.3 REFERENCE DOCUMENTS

.1 American Society for Testing and Materials (ASTM)
1. ASTM D1227-95(2007) Standard Specification for Emulsified Asphalt Used as Protective Coating for Roofing
2. ASTM D4479-07 Standard Specification for Asphalt Roof Coatings, Asbestos Free.
3. ASTM D4586-07 Standard Specification for Asphalt Roof Cement, Asbestos Free

.2 Canadian General Standards Board (CGSB)
1. CGSB 37-GP-5
2. CGSB 37-GP-2M
3. CGSB 37-GP-16M

1.4 DELIVERY AND STORAGE

.1 Deliver and store materials in original containers with manufacturer's labels and seals intact.

2. Products

2.1 MATERIALS

.1 Filler material for all voids shall be plastic or approved equal, as recommended by dampproofing manufacturer. Filler to comply with CGSB 37-GP-5.

.2 Primer shall be Bakor 910-11 or approved alternate, as recommended by dampproofing manufacturer. Primer to comply with CGSB 37-GP-9M.

.3 Dampproofing coating shall be Bakor 710-11 or approved alternate. Dampproofing to comply with CGSB 37-GP-16M.

.4 Dampproofing coating applied below 5°C shall comply with CGSB 37-GP-16M.

3. Execution

3.1 PROTECTION

.1 Protect adjoining surfaces from soiling during application.

3.2 EXAMINATION

.1 Examine substrates and verify that surface smoothness, moisture emissions and other conditions affecting performance of materials specified in this Section complies with the dampproofing manufacturer's recommended substrate requirements.

.2 Commencement of work implies acceptance of conditions.

3.3 PREPARATION

.1 Protect and mask adjoining exposed surfaces from being stained, spotted or coated with dampproofing; prevent dampproofing materials from entering or clogging weep holes, drains and perimeter drainage systems.

.2 Seal exterior joints between foundation walls and footings, joints between concrete floor slab and foundation and around penetrations through dampproofing with sealing compound and reinforcing fabric before applying dampproofing.

.3 Clean substrates, remove projections; fill voids and apply bond breakers (if required), and apply primer as recommended by dampproofing manufacturer.

3.4 APPLICATION

.1 All dampproofng shall be applied in strict accordance with the manufacturer's specifications.

.2 Apply dampproofing to provide a continuous, uniform coating to entire exterior faces of foundation walls from 50 mm below finish grade level to and including tops of foundation wall footings:

.1 Do not permit dampproofing to extend onto surfaces exposed to view in final construction.

.2 Reinforce changes in direction greater than 45° at intersections, projecting surfaces, internal and external corners, changes in plane, and across construction joints, cracks and honeycombing; apply additional coat of dampproofing material to embed reinforcing fabric into primary dampproofing membrane; extend reinforcing fabric 200 mm to each side of areas requiring reinforcing.

.3 Allow for additional coats to achieve required coating.

.4 Provide sufficient drying time between successive coatings.

.5 Provide drying time according to manufacturer's recommendations before backfilling. Allow for a range of ambient temperatures and humidity.

.3 Use cutback asphalt materials at temperatures below 5°C.

.4 Use either cutback or emulsified asphalt materials, at Contractor's option, when surfaces and ambient air will be minimum 5°C for 72 hours before application, during application and for curing period.

.5 Seal holes around pipes and other services passing through dampproofed surfaces by using joint sealing compound applied in accordance with manufacturer's directions.

.6 Seal joints between new and existing construction where applicable, using a joint sealing compound applied in accordance with manufacturer's directions.

3.5 CLEANING

.1 Dampproofing materials shall be removed from surfaces not intended to receive dampproofing.

END OF SECTION

1. General

1.1 RELATED WORK

.1	Sheet Membrane Air Vapor Barriers	Section 07 27 00
.2	Batt and Blanket Insulation	Section 07 21 16
.3	Spray Applied Polyurethane Foam Air Seal	Section 07 27 08
.4	Joint Sealants	Section 07 92 00
.5	Gypsum Board Assemblies	Section 09 29 00

1.2 REFERENCES

.1 American Society for testing and Materials

- .1 ASTM-C236-89 (1993)e1, Standard Test Methods for Steady State Thermal Performance of Building Assemblies by Means of a Guarded Box.
- .2 ASTM-D1621-94, Standard Test Methods for Compressive Properties of rigid Cellular Plastics
- .3 ASTM-D2842-97, Standard Test Methods for Water Absorption of rigid Cellular Plastics.
- .4 ASTM-D5113-97 Standard Test Method for Determining Adhesive Attach on Rigid Cellular Polystyrene Foam.

.2 Underwriters Laboratories of Canada (ULC)

- .1 CAN/ULC-S102.2-M88, Standard Method of Test for Surface Burning Characteristics of Flooring, floor Covering and Miscellaneous Materials and Assemblies.
- .2 CAN/ULC-S704, Thermal Insulation
- .3 CAN/ULC-701-05, Thermal Insulation, Polystyrene Boards and Pipe Coverings.
- .4 CAN/ULC-S702-09, Thermal insulation, Mineral Fibre for Buildings.

1.3 CERTIFICATION

.1 Polystyrene insulation shall be tested, certified and labeled for conformance with CAN/ULC-S701, Thermal Insulation, Polystyrene, Boards and Pipe Covering, in accordance with, ULC, or other certification program accredited by Standards Council of Canada.

1.4 STORAGE AND PRODUCT HANDLING

.1 Deliver all insulation materials to the site suitably protected with the manufacturer's seals and labels intact, and store neatly in dry locations, on raised platforms, protected from damage by weather, and construction activity.

.2 Store to protect materials from wind, moisture, sunlight and accidental ignition.

.3 Prior to and during installation, take all precautions and handle with due care all insulation materials to prevent breakage or indentations of the surface and the like.

.4 Replace insulation materials damaged or installed in such a manner as may be detrimental to designed performance of the material.

.5 Prevent exposure of polystyrene insulation to direct sunlight.

1.5 ENVIRONMENTAL CONDITIONS

.1 Install insulation during dry weather conditions.

1.6 SEQUENCING AND SCHEDULING

.1 Schedule application of insulation to follow immediately after installation of sheet membrane air and vapour seal and to proceed concurrently with it.

1.7 QUALITY ASSURANCE

.1 Perform work of this Section using a company which specializes in the type of building insulation work required for this Project, with a minimum of five (5) years of documented successful experience, using skilled workers thoroughly experienced in the necessary crafts.

.2 Use Manufacturer specializing in manufacturing the type of building insulation specified in this Section with a minimum of five (5) years of documented successful experience, and having the facilities capable of meeting all requirements of the Contract Documents as a single-source responsibility and warranty.

.3 Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

.4 Periodic reviews by the Consultant of ALL air/vapour barrier and insulation materials installations – prior to application of covering materials – is MANDATORY

2. Products

2.1 INSULATION

.2 Polystyrene – Expanded Type 2 Below Grade Insulation: Conforms to CAN/ULC-S701-Type 2, thermal resistance of R 3.7 per 25 mm thickness. Compressive strength 10.0 psi. Based on Terrafoam Type 2 as manufactured by Beaver Plastics Ltd.

.3 Polystyrene – Expanded Type 2 High Density: Conforms to ASTM C578, ASTM E84, ASTM E96, ASTM C177, ASTM D1621, ASTM D2842, Type-2, thermal resistance of R 4.0 per 25 mm thickness, compressive strength 40.0 psi. Based on Terrafoam HS40 as manufactured by Beaver Plastics Ltd.

.4 Polystyrene – Extruded Type 3 Cavity Wall Insulation: Conforms to ASTM CC518, ASTM D1621, ASTM E96, ASTM D696, ASTM D2842, ASTM C203, CAN ULC S7-01 -Type 3, thermal resistance of R 5.0 per 25 mm thickness, compressive strength 25 psi. Based on Dow Styrofoam CavityMate, manufactured by Dow Chemical Company. Approved alternate: Owens Corning Foamular 300.

.5 Fibrous Glass: to CAN/ULC-S702, rigid, and as follows:

.1 Thermal Resistance: minimum 0.73 m^2°C/W per 25.4 mm thickness.

.2 Minimum Density: 45 kg/m^3.

2.2 BOARD DIMENSIONS AND SHAPE

.1 Minimum Width: 400mm (16”).

.2 Minimum Length: 1200mm (4’-0”).

.3 Thickness: as indicated in Insulation Schedule.

.4 Insulation applied to curved substrates shall conform to profile without creation of cavities in, or alteration of density of, insulation boards.

2.3 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 (1.8”) 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 (2”) diameter or width.

2.4 ACCESSORIES

.1 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.

3. Execution

3.1 WORKMANSHIP

.1 Install insulation after building substrate materials are dry and air/vapor barrier has been verified as properly installed.

.2 Ensure all surfaces which are to receive insulation are clean, free from deleterious matter and are sufficiently level to allow the proper installation of insulation.

.3 Install insulation to maintain continuous and complete thermal protection for building spaces and elements.

.4 Install insulation boards horizontally. Offset vertical joints minimum 300 mm.

.5 Cut and trim insulation to fit spaces around corners and penetrations. Take care to prevent cutting sheet membrane air and vapour seal. Cut and fit insulation tight around all cladding anchors and supports, against mechanical, electrical and other items which protrude through the plane of insulation.

.6 Protect insulation from exposure to sunlight and hydrocarbons. Do not use insulation which has been so exposed.

.7 Press insulation tightly in place so that it abuts the air/vapour barrier membrane. Butt ends and edges of boards tightly together to form a complete thermal barrier.

.8 Use only insulation boards free from broken or chipped edges. Do not use insulation which has had its hard skin punctured.

.9 Use largest possible dimensions to reduce the number of joints

.10 Do not enclose insulation until it has been inspected and approved by Constultant.

3.2 RIGID INSULATION BELOW GRADE

.1 Provide below grade insulation on the exterior of grade beams, continuous at perimeter of slab extending to 1200mm (4'-0") from exterior edge, and/or as indicated on the drawings. Thickness and locations as indicated on the drawings.

.2 Protect insulation from damage or displacement. Install protection board over rigid insulation and/or as indicated on the drawings.

.3 Install below grade insulation with pre-drilled mechanical fasteners set into concrete foundations, utilize 25mm (1”) outside diameter pre-punched fiber washer under fastener head to provide a large bearing surface for the fastener unless noted otherwise.

.4 Install exterior perimeter grade beam insulation with pre-drilled expansion type metal anchors at top and bottom of CT brand insulation maximum 600mm (24”) on center.

.5 Use adhesives recommended by the manufacturer. Do not use petroleum solvent based adhesives in contact with polystyrene insulation boards.

3.3 PROTECTION

.1 Protected installed insulation and air/vapour barriers from damage due to harmful weather exposure, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

3.4 CLEANING

.1 Promptly as work proceeds, and on completion, clean up and remove from premises all rubbish and surplus materials resulting from work of this Section, leaving areas in clean condition.

END OF SECTION

1. General

1.1 WORK INCLUDED

.1 Batt and blown-in insulation as required and indicated on the drawings (installed by Section 06 10 00 and Section 09 29 00).

1.2 RELATED WORK

.1	Doors and Windows	Division 08
.2	Gypsum Wallboard Assemblies	Section 09 29 00
.3	Spray Applied Polyurethane Air Seal	Section 07 27 08

1.3 REFERENCE STANDARDS

.1 ASTM C553-08, Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
.2 ASTM C665-06, Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
.3 ASTM C1320-05, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
.4 CAN/ULC-S702-09, Thermal Insulation, Mineral Fibre, for Buildings.
.5 CAN/ULC S703-01, Standard for Cellulose Fibre Insulation (CFI) for Buildings
.6 National Building Code, Alberta Edition (ABC) 2019

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Install insulation adhesives in accordance with manufacturer's instruction.

1.5 PRODUCT HANDLING

.1 Deliver all insulation materials to the site suitable protected with the manufacturer's seals and labels intact, and store in dry locations, off ground, protected from damage by weather, and construction activity. Protect from damage and disfiguration.

.2 Prior to and during installation, take all precautions and handle with due care all insulation materials to prevent tearing and the like.

.3 Replace insulation materials damaged or installed in such a manner as may be detrimental to designed performance of the material in the opinion of the Consultant.

1.6 QUALITY ASSURANCE

.1 Perform work of this Section using a company which specializes in the type of building insulation work required for this Project, with a minimum of five (5) years of documented successful experience, using skilled workers thoroughly experienced in the necessary crafts.

.2 Use Manufacturer specializing in manufacturing the type of building insulation specified in this Section with a minimum of five (5) years of documented successful experience, and having the facilities capable of meeting all requirements of the Contract documents as a single-source responsibility and warranty.

.3 Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

.4 Fire-Test-Response Characteristics: provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspection agency.

.1 Test Reports: Submit copies of fire test reports from ULC or UL of product and assembly indicating conformance to:
-CAN/ULC S101 for fire resistance rating.
- CAN/ULC S102 for surface burning characteristics.
- CAN/ULC S114 for non-combustibility.

.5 Permit Consultant to perform periodic reviews by the Consultant of air/vapour barrier and insulation materials installations – prior to application of covering materials if requested.

1.7 EXISTING CONDITIONS

.1 Ensure all in-wall construction is complete before beginning installation.

.2 Ensure substrate materials are properly installed and complete and dry before beginning installation.

.3 Commencement of work implies acceptance of conditions.

2. Products

2.1 MATERIALS

.1 Unfaced Batt Insulation: friction fit preformed type 1, Density to be minimum 1.22 kg/m2 of surface areas, to meet all Alberta Building Code Requirements, thickness and thermal resistance as indicated on the drawings. Acceptable Manufacturers:

.1 Johns-Manville.
.2 Owens Corning.
.3 Other preapproved product.

.2 Fire safing insulation: rock wool or glass fibre, conforming to ASTM C612, one of the following materials:.

.1 “Firebarrier” distributed by A/D Distributors.
.2 “SAFE” as manufactured by Roxul
.3 Other preapproved product.

.3 Loose Mineral Wool and Loose Glass Fibre: thermal resistance (RSI) as indicated on drawings.

.4 Loose Cellulose Fibre: to CAN/ULC S703-01, suitable for pouring or blowing installation, thermal resistance (RSI) as indicated in insulation schedule.

3. Execution

3.1 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuous and complete thermal protection for building spaces and elements.

.3 Ensure all surfaces which are to receive insulation are clean, free from deleterious matter and are sufficiently level to allow the proper installation of insulation.

.4 Install batt insulation in accordance with ASTM C1320 and CAN/ULC S702. Follow the manufacturer's instructions for use of insulation and accessories.

.5 Neatly and accurately cut and trim insulation to fit spaces. Butt edges and ends tight. Leave no gaps or voids.

.6 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation. Cut and trim insulation neatly to fit.

.7 Do not compress insulation to fit into spaces. Fluff to retain the full insulating value.

.8 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 CSA B149.1 and CSA B 149.2 type B and L vents. Fill spaces adjacent to heat emitting devices with fire safing insulation.

.9 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 two (2) walnut size daubs of compatible adhesive, to prevent sagging of batt insulation in furred spaces.

.10 Install between framing members to completely fill furred area and to maintain continuity and complete thermal protection to interior spaces. Cut insulation as required.

.11 Use batts sized for the spacing of the framing. Full size for steel stud framing.

.12 Install acoustic insulation in walls, ceilings and bulkheads noted on the drawings.

.13 Install ULC approved insulation for fire rated assemblies. Maintain the continuity of the rated assembly.

3.2 INSTALLATION OF FIRE SAFING INSULATION

.1 Install fire safing insulation around hot penetrations through the exterior envelope and elsewhere as required.

.2 Install fire safing insulation to completely fill voids at heads of walls to underside of structure as indicated on the drawings.

.3 Install fire safing insulation to fill voids in fire rated partitions.

3.3 PROTECTION

.1 Protect installed insulation and air/vapour barriers from damage due to harmful weather exposure, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

3.4 CLEANING

.1 Promptly as work proceeds, and on completion, clean up and remove from premises all rubbish and surplus materials resulting from work of this Section, leaving areas in clean condition.

END OF SECTION

1. General

1.1 WORK INCLUDED

.1 Clean and prepare surfaces to receive air seal in accordance with manufacturer's directions.

.2 Supply and install air seal and backing materials to locations indicated on the drawing, and to all penetrations through exterior walls for ducts, conduits, pipes, structural connections, etc. to ensure the integrity of the air/vapour barrier at the building envelope.

.3 Supply and install air seal and backing materials all around all window shim spaces to ensure air tight envelope.

.4 Foam-in-Place insulation to exterior hollow metal door frames and aluminum window and door frames.

.5 Foam-in-place insulation around protrusions through the exterior wall envelope and juncture of different cladding materials.

.6 Install at additional locations as detailed on drawings.

1.2 RELATED WORK

.1	Sheet Membrane Air/Vapour Barriers	Section 07 26 00
.2	Rigid Board Insulation	Section 07 21 13
.3	Batt and Blanket Insulation	Section 07 21 16
.4	Firestopping & Smoke Seals	Section 07 84 00
.5	Joint Sealants	Section 07 92 00
.6	Hollow Metal Doors and Frames	Section 08 11 13

1.3 DELIVERY/STORAGE

.1 Receive and store materials as recommended by materials manufacturer.

.2 Maintain containers and labels in undamaged condition.

1.4 EXISTING CONDITIONS

.1 Examine substrate materials, joint voids and note temperature/humidity conditions. Report unacceptable conditions to the Architect.

.2 Commencement of work implies acceptance of conditions.

1.5 GUARANTEE/WARRANTY

.1 Provide a written guarantee in accordance with the following:

.1 The guarantee is to provide for air seal for joints which fail to perform as intended because of leaking, crumbling, shrinkage and loss of adhesive within a period of two (2) years from date of substantial performance of work.

1.6 QUALITY ASSURANCE

.1 Application shall be by experienced workmen approved by the manufacturer to perform the requirements of this work.

.2 Apply material to properly prepared surfaces.

.3 Use equipment specifically designed for this application.

1.7 PROTECTION

.1 Provide temporary enclosures to prevent spray and noxious vapour from contaminating air beyond application area.

.2 Protect workers as recommended by insulation manufacturer.

.3 Protect adjacent surfaces and equipment from damage by over spray, fall-out, and dusting of insulation materials in accordance with Alberta Human Resources & Employment.

.4 Dispose of waste foam daily in location designated by Consultant and decontaminate empty drums in accordance with foam manufacturer's instructions.

2. PRODUCTS

2.1 MATERIALS

.1 The use of insulation products manufactured with CFA's as blowing agents is prohibited.

.2 Insulation: one component rigid urethane, spray in place foam, from one of the following acceptable manufacturers:

.1 Insta-Foam Froth Pack FP-12 as manufactured by Insta-Foam Products Inc.
.2 RHH Roam Systems Inc.
.3 Hilti foam CF 128-DW
.4 "EnerRoam" as manufactured by Abisko Manufacturing Inc.
.5 "Handi-Seal Window & Door Sealant" as manufactured by Fomo Products Inc.
.6 Other preapproved product.

3. EXECUTION

3.1 SURFACE PREPARATION/EXISTING CONDITIONS

.1 Cleaning spaces which are to receive insulation, of dirt, dust grease, loose material or other foreign matter which may inhibit adhesion.

.2 Examine substrates receiving foamed-in-place insulation to verify suitability.

.3 If recommended by manufacturer, prime substrates I accordance with manufacturer's recommendations.

3.2 APPLICATION

.1 Apply insulation in accordance with manufacturer's recommendations. Use equipment recommended by manufacturer.

.2 Apply material as detailed and in sufficient thickness to achieve a complete seal wherever proper air seals cannot be achieved using polyethylene sheets and bituminous air barrier membrane. Completely fill voids.

.3 Allow Prime Consultant to review installation prior to enclosing.

.4 Fill pressed steel door frames 75% full with foam-in-place insulation prior to installation of door frames. Fill the remainder of the frame after installation, through the gap between the frame and the wall construction.

.5 install foam-in-place insulation around protrusions through the exterior building envelope to achieve and maintain the continuity of air/vapour seal.

.6 Install foam-in-place insulation through all structural elements that penetrate the building envelope. Install form-in-place insulation to warm side of structural elements to provide a thermal barrier to interior of heated spaces where structural elements are continuous from interior to exterior of building envelope.

.7 Cut back excess form-in-place insulation once cured, flush with surrounding surfaces, or recess back for application of sealant.

.8 Upon completion of foam-in-place insulation work clean adjacent surfaces of over-spray and dusting to the satisfaction of the consultant.

END OF SECTION

1. General

1.1 INTENT

.1 Provide firestopping to meet or exceed requirements of the National Building Code, Alberta Edition 2019 and as specified in this Section.

1.2 RELATED SECTIONS

.1	Gypsum Board Assemblies	Section 09 29 00
.2	Mechanical Divisions	Division 23
.3	Electrical Divisions	Division 26

1.3 REFERENCE DOCUMENTS

.1 National Building Code, Alberta Edition 2019.
.2 Underwriter's Laboratories of Canada ULC S115-05 - Standard Method of Fire Tests of Firestop Systems.
.3 Underwriter's Laboratories of Canada (ULC), ULC-FS-09 Firestop Systems and Components 2009 Edition.
.4 Warnock Hersey (WH) Certification Listings, current edition.

1.4 PERFORMANCE REQUIREMENTS

.1 Firestopping must be performed by an industry trained and recognized professional.

.2 Firestopping shall maintain the fire rating of the fire rated assemblies.

.3 Firestopping of electrical and communications cables shall be easily re-enterable and re-sealable with negligible risk of damage to cables, and shall not require de-rating of electrical cables.

.4 Provide F ratings or FT ratings for firestopping as required to meet Alberta Building code requirements.

.5 Firestopping used to fill voids in floors having openings 100mm (4”) diameter or larger, and which are accessible to the public, shall support floor design loading.

.6 It is the responsibility of the Contractor to ensure all firestopping meets the current Alberta Building Code and will satisfy local building inspectors throughout the project. No additional costs will be permitted for firestopping that is required, but not included in the tender price.

1.5 SUBMITTALS

.1 Comply with requirements of Division 01.

.2 Submit manufacturer's product data and MSDS for materials and systems. Include manufacturer's printed instructions for installation.

.3 Data shall indicate conformance with requirements of this Section, including ULC or Warnock Hersey system number.

1.6 QUALITY ASSURANCE

.1 Contractor applying the fireproofing material must be certified by the manufacturer of the fireproofing material. Provide written evidence of such endorsement where requested.

.2 Use materials and methods of determining required thicknesses of application that have full acceptance of authority having jurisdiction.

1.7 COORDINATION AND SEQUENCING

.1 Coordinate construction of fire separations and penetrations through fire separations with work of this Section.

.2 Ensure penetrations have been completed prior to installing firestopping.

.3 Install firestopping prior to insulation of piping, unless insulation is part of a tested firestop system meeting requirements.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original, unopened packaging bearing manufacturer's seals and labels intact.

.2 Store materials off ground, under cover and away from moisture.

1.9 SITE CONDITIONS

.1 Conform to manufacturer’s written recommendations with regard to temperature relative humidity and substrate moisture contact.

2. Products

2.1 SYSTEMS AND MATERIALS

.1 Firestopping systems: as listed under ULC-FS-09 Firestop Systems and Components 2009 Edition, or as listed in WH Listings under "Through-Penetration Firestopping Systems".

.2 Firestopping materials, whether used in a tested system or not, shall be:

.1 Listed under ULC-FS-09 or under WH Listings,
.2 Labeled with applicable ULC or WH label
.3 Compatible with applicable substrates and openings.

.3 All materials to provide a flame and temperature rating to penetrating items equal to the floor and wall surrounding.

.4 Whenever the firestopping system cannot meet this specification notify the Consultant immediately.

.5 Products must have a compressive strength capable of self supporting any penetrating item and maintain their integrity as tested in a ULC vertical application.

.6 Use any of the following firestopping materials/system to prevent fire spread through assembly openings

for services, at the option of the Consultant.

.1 3M fire Barrier.
.2 Tremco Smokeseal and firestopping system.
.3 Metacaulk Smokeseal and Firestopping system.
.4 Hilti Firestopping System.
.5 Dow Corning Smokeseal and Direstopping System.
.6 GE smokeseal and firestop system.
.7 “EnerStop” system as manufactured by Ancron Corp.
.8 Cafco TPS as manufactured by Cafco Industries.
.9 A/D Firebarrier Firestopping system.
.10 SpecSeal Firestopping system.
.11 Johns-Manville “Firetemp” firestopping System.
.12 Other preapproved product.

.7 Primer: as recommended by firestopping manufacturer for applicable substrate.

3. Execution

3.1 VERIFICATION OF CONDITIONS

.1 Examine condition of voids to be filled to ensure suitability for firestop systems.

.2 Verify installation of service penetrations and adjacent construction has been completed.

3.2 PREPARATION

.1 Prepare substrates and surfaces to a clean, dry, and frost free condition, ready to receive firestopping.

.2 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

.3 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer’s instructions.

.4 Maintain insulation around pipes and ducts penetrating fire separation.

.5 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

.6 Do not apply firestop materials to surfaces previously painted or treated with other coatings. Perform tests to ensure that materials are compatible.

.7 Prime substrates and surfaces to manufacturer's recommendations.

3.3 INSTALLATION

.1 Provide tested firestopping systems meeting specified performance requirements wherever the continuity of a fire separation is interrupted by mechanical, electrical or other service penetrations, or by any other openings, gaps or discontinuities.

.2 Install tested firestopping systems in accordance with manufacturer's recommendations and in strict

conformance with tested systems.

.3 Prepare surfaces and install materials in accordance with manufacturer's directions and as required to achieve fire ratings to the satisfaction of the Authority Having Jurisdiction, including filling in around new and existing openings in existing assemblies as required to maintain fire ratings.

.4 Apply firestop material to completely close all voids in fire rated assemblies including around pipes, ducts and chases, passing through fire separations, to maintain the required fire separation.

.5 Apply in strict accordance with manufacturer's recommendations and ULC listing to provide a temperature and flame rated seal equal as a minimum to the rating of the surrounding assembly. Use silicone or acrylic based material to all areas where re-entry for mechanical and electrical items is required.

.6 Where required by the Authority Having Jurisdiction, apply silicone or acrylic based fire stop and smoke seal to heads of walls in lieu of fire safeing insulation, to achieve fire ratings required.

.7 Where applicable, neatly tool or trowel firestopping surfaces remaining exposed and make flush with surrounding exposed surfaces.

.8 Cure firestop sealant in accordance with manufacturer's written recommendations. Do not cover up sealant until proper curing has taken place.

3.4 INSPECTION

.1 Notify Consultant when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.5 SCHEDULE

.1 Firestop and smoke seal at all:

.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls. Use fire stop mortar when walls are concrete or masonry. Use fire stop insulation, with fire stop sealant surface applied on both sides of the walls when walls are gypsum wallboard.

.2 Top of fire-resistance rated masonry and gypsum board partitions. Use fire stop insulation, with fire stop sealant surface applied on both sides of the walls.

.3 Intersection of fire-resistance rated masonry and gypsum board partitions. Apply firestop material flush with the face or the walls within which is applied.

.4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls. Use fire stop insulation, with fire stop sealant surface applied on both sides or the walls.

.5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.

.6 Around mechanical and electrical assemblies penetrating fire separations. Use fire stop mortar when walls are concrete or masonry. Use fire stop insulation, with fire stop sealant surface applied on both sides of the walls when walls are gypsum wall board.

.7 Rigid ducts: greater than 20 in^2 (129 cm^2): fire stopping to consist of bead of fire retaining angle and duct, on each side of fire separation.

.8 Electrical boxes within rated assemblies within the same stud space. Use of rated electrical boxes does not negate the need for firestop and smoke seal.

3.6 CLEAN-UP

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.

.2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

END OF SECTION

1. General

1.1 WORK INCLUDED

.1 Fabrication and supply of hollow metal doors with flush faces standard and ULC labeled fire rated as called for on drawings.

.2 Fabrication and supply of all pressed steel frames, standard and ULC labeled fire rated, for doors and windows as called for on the drawings.

.3 Preparation of hollow metal doors and pressed steel frames for receiving finished hardware.

.4 Co-ordinate supply of all required stops and hardware for installation of glass.

1.2 RELATED WORK

.1	Sheet Membrane Air Vapor Barriers	Section 07 27 00
.2	Spray Applied Polyurethane Foam Air Seal	Section 07 27 08
.3	Joint Sealants	Section 07 92 00
.4	Hardware	Section 08 70 00
.5	Glass and Glazing	Section 08 81 00
.6	Gypsum Board Assemblies	Section 09 29 00
.7	Painting and Finishing	Section 09 91 05
.8	Wiring and conduit for power assist and alarm hardware	Division 26

1.3 REFERENCES

.1 American Society for Testing of Materials (ASTM)
- .1 ASTM A568/A568M-97 Standard specification for Steel, Sheet, Carbon. And High-Strength, Low-Alloy, Hot-Rolled, General Requirements.
- .2 ASTM A653/A653M-99a, Standard Specification for Steel Sheet, Zinc coated (Galvanized) or Zinc=Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM A1008/A1008M-00, Standard Specification for Steel, Sheet, Cold rolled Carbon, Structural, High Strength Low Alloy and High Strength Low Alloy with Improved Formability.
- .4 ASTM E90-99m Standard Specification for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .5 ASTM E413-87 (1999) Standard Classification for Rating Sound Insulation.

.2 Canadian General Standards Board (CGSB)
- .1 CGSB 1-GP-132M, Primer, Zinc chromate, low Moisture Sensitivity.
- .2 CAN/CGSB 1-140-M89, Oil alkyd Type Red Lead, Iron Oxide Primer.

.3 Canadian Steel Door and Frames Manufacturers' Association, (CSDFMA)
- .1 Canadian Manufacturing Specifications for Steel Door and Frames, 1982.
- .2 Canadian Fire Labeling Guide for Steel Door and Frames.

.4 Underwriter's Laboratories of Canada (ULC)
- .1 CAN/ULC S701-1997, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
- .2 CAN/ULC S702-1997, thermal Insulation, Mineral Fiber, for Buildings.
- .3 CAN/ULC-S705, thermal Insulation, Spray Applied Rigid Polyurethane Foam, Medium Density.

.5 National Fire Protection Association (NFPA)
.1 NFPA 80-1986 Fire Doors and Windows.

.6 Warnock Hersey/Intertek Professional Services Ltd. (WHI)
.1 Fire Rating Services, Building materials and Equipment Listings

1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 Steel fire rated doors and frames: labeled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4 S104M-80 revised 1985 and CAN4 S105M-1985 for ratings specified or indicated.

.2 Install labeled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Division 01.

.2 Fully describe and locate all items being furnished.

.3 Indicate each type of door, materials, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, arrangement of hardware and fire rating.

.4 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and finishes.

.5 Indicate all door hardware mounting heights and locations. DO NOT PROCEED WITH PREPARATION OF DOORS FOR HARDWARE UNTIL HARDWARE MOUNTING HEIGHTS AND LOCATIONS HAVE BEEN CONFIRMATED BY THE CONSULTANT.

.6 Reference doors and frames to door schedule. Indicate door numbers and construction where applicable.

.7 Maintain the numbering and identification system used on the drawings and schedules.

1.6 COORDINATION

.1 Coordinate installation of anchorages for steel door frames.

.2 Furnish setting drawings, templates and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

.3 Deliver such items to Project site in time for installation.

1.7 QUALITY ASSURANCE

.1 Perform work of this Section using a company that specializes in the type of steel door and frame work required for this Project, with a minimum of five (5) years of documented successful experience using skilled workers thoroughly experienced in the necessary crafts.

.2 Use manufacturer specializing in the manufacturing of the type of steel doors and frames specified in this Section, with a minimum of five (5) years of documented successful experience, and have the facilities

capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty. The manufacturer must be a member in good standing of the Canadian Steel Door and Frame Manufacturer's Association.

.3 Use installers trained and approved by the door and frame manufacturer.

.4 Obtain all steel doors and frames through one source from a single manufacturer.

1.8 FIRE RATED DOORS

.1 Doors shall bear testing agency label indicating following:
- .1 At standard size openings: fire endurance rating.
- .2 At oversized openings: unclassified as to fire rating

2. Products

2.1 HOLLOW METAL DOORS

.1 Hollow metal doors, standards and ULC labeled fire rated in accordance with the drawings and as specified herein.

2.2 MATERIALS

.1 Exterior Doors: insulated core doors shall have a minimum of 16-gauge surface sheets and 14-gauge top and bottom end channels securely welded in place. Steel top cap shall be welded flush to top of each door. Vertical seams shall be tack welded @ 300mm (12") O.C.

.2 Interior Doors: hollow core doors shall have a minimum of 18-gauge surface sheets and 16-gauge top and bottom end channels securely welded in place. Vertical seams shall be tack welded @ 300mm (12") O.C.

.3 Door Core:
- .1 Exterior Doors: rigid urethane foam securely bonded under pressure to the inside face of both surface sheets.
- .2 Interior Doors: small-cell honeycomb material, laminated under pressure to the inside face of both surface sheets and completely filling all voids within the door.

.4 Frames: Steel frames to exterior and interior openings 14 gauge all welded construction

.5 Floor anchors, channel spreaders and wall anchors: minimum 1.6mm (1/16") base thickness steel.

.6 Glazing Stops: minimum 1mm base thickness sheet steel, channel shaped 16mm (5/8") with W25 zinc finish to ASTM 525-80a, mitered joints, counter sunk for screws.

.7 Door Bumpers: black neoprene double stud.

.8 Reinforcing channel: to CSA G40.21-M1978, type 300W.

.9 Provide other door and frame components in accordance with CSDFMA requirements.

.10 Filler: metallic paste filler as recommended by the manufacturer.

.11 Primer: For cold rolled steel sheet: CGSB 1-GP-40M-79.

.12

Component	Thickness in mm
Hinge and pivot reinforcement	(1 3/16'' x 9" x 1/8") 30mm x 250mm x 3.5mm
Strike reinforcement	16 gauge (1.6mm)
Flush Bolt reinforcement	16 gauge (1.6mm)
Closer reinforcements	13 gauge (2.5mm)
Surface Hardware reinforcement	13 gauge (2.5mm)

All other components: in accordance with CSDMA, Specification for Commercial Steel Doors and Frames, Thickness of Steel for Component Parts, commercial grade steel to ASTM A653M.

2.3 FABRICATION - GENERAL

.1 Fabricate doors and frames as detailed, to Canadian Steel Door and Frame Manufacturers' Association, (CSDFMA) Canadian Manufacturing Specifications for Steel Doors and Frames, 1982; except where specified otherwise. Reinforce door and frames to suit hardware requirements specified Section 08 71 00 – Door Hardware.

.2 Provide underwriters' labels for fire rated openings.

.3 Shop prime cold rolled sheet steel.

2.4 FABRICATION - DOORS

.1 Fabricate hollow metal doors in accordance with requirement of "Canadian Manufacturing Standards for Steel Doors and Frames" produced by the Canadian Steel Door and Frame Manufacturers' Association, and as indicated on drawings.

.2 Insulated Core Doors: cores filled with polystyrene insulation material laminated under pressure to surface sheets.

.3 Honeycomb Core doors: Cores filled with honeycomb material laminated under pressure to surface sheets.

.4 Fire Rated Doors: cores filled with honeycomb material laminated under pressure to surface sheets. Place metal labels where visible when installed, riveter to doors. Note: stick on labels are not acceptable.

.5 Cores (Honeycomb): structural small cell (24.5mm max.) kraft paper "honeycomb". Weight 36.3 kg per ream minimum density, 16.5 kg/m3 minimum (103 pcf), sanded to the required thickness.

.6 Cores (Polystyrene): rigid extruded, fire retardant, closed cell board, density 16 to 32 kg/m3, thermal value RSI 2.0 minimum.

.7 Cores (Temperature Rise Rated (TRR): core composition to limit temperature rise on the unexposed side of door to 250°Celsius at 30 to 60 minutes, as determined by governing building code requirements. Test Cores as part of a complete door assemble, in accordance with CAN/ULC S104 or NFPA 252, covering standard methods of tests of door assemblies and listed by a nationally recognized testing agency having a factory inspection service.

.9 Reinforce and prepare doors to receive hardware. Blank, reinforce, drill and tap for mortise, template hardware. Fabricate doors for continuous hinges where indicated. Examine hardware schedule prior to door fabrication to ensure any hardware preparation requirements are met.

.10 Adhesives: for honeycomb cores and steel components, use heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement. For polystyrene cores use heat resistant, epoxy resin based, low viscosity contact cement.

.11 Door thickness: 45mm (1 ¾") unless indicated otherwise.

.12 For interior doors, weld, fill and sand and/or grind seams and edges flush and smooth. Fully weld top and bottom edges.

.13 For doors in exterior walls, stitch weld longitudinal edges using tack welds. Fill and sand and/or grind seams and edges flush and smooth. Factory caulk edges between stitch welds.

.14 Fabricate doors with top and bottom channels flush and filled solid, extending full width of door and welded to both faces.

.15 Shop prime face and backside of all welds where accessible.

.16 Ensure spot welding does not leave marks on exposed faces. Fill spot weld, marks on door faces with filler as specified. Sand smooth, leaving spot weld mark invisible and producing a uniform surface. Doors with spot weld marks on exposed faces will be rejected.

.17 Factory prepare holes 12.7mm (1/2") diameter and larger, except mounting and through-bolt holes, prepared at site at time of hardware installation. Factory prepare holes less than 12.7mm (1/2") diameter only when required for function of the device (for knob, lever, cylinder, thumb or turn pieces) or when these holes overlap function holes.

.18 Provide astragals for double doors. Provide in accordance with requirements for labeled doors.

.19 If doors with surface depressions are accepted, fill with metallic paste filler and sand to a smooth uniform finish and to render patched areas undetectable after painting.

.20 Touch up areas where galvanized coating has been removed due to sanding or handling. Use zinc chromate primer in conformance with CAN/CGSB 1.132-M90.

.21 Install conduit in doors as required for electronic hardware such as electric hinges and strikes. Conduit to be of type and sizes as recommended by the electronic hardware supplier. Coordinate conduit locations with hardware locations.

.22 Fabricate doors with the following clearances:

- .1 Clearance between door and frames and between meeting edges of door swinging in pairs shall not exceed 3mm (1/8").
- .2 Clearance between bottom of door and a raised non-combustible sill shall not exceed 20mm (3/4").
- .3 Where there is no sill, the clearance between the bottom of the door and the floor shall not exceed 19mm (3/4").

.4 Clearance between bottom of door and nominal surface of combustible floor coverings shall not exceed 12mm (1/2”).

.5 Minimum clearance between bottom of door and floor coverings or sills shall not be less than 10mm.

.23 Make provision for glazing as indicated and provide necessary glazing stops. Fixed glazing stops to be located on security side.

2.5 FABRICATION - PRESSED STEEL FRAMES

.1 Fabricate exterior frames of 16-gauge base thickness steel welded type construction thermally broken. Fabricate interior frames of 18-gauge base thickness steel welded type construction.

.2 Accurately mitre or mechanically joint frames and securely welded on the inside of the profile. Grind welded corners to a flat plane, grind all welds to a smooth, uniform finish. Fill any exposed gaps with metallic paste filler and sand to a smooth uniform finish.

.3 All welding must conform to CSA W59-03.

.4 Fabricate steel window frames to sizes as indicated on drawings.

.5 Make provision for glazing as indicated and provide necessary glazing stops. Fixed glazing stops located on security side. Glass stops shall be minimum of 20 gauge channel shaped 16 mm high profile fitted with flush screws. Supply frames requiring glass stops complete with stops fitted and screwed in place.

.6 Reinforce frames wider than 1200mm (4’-0”) with 2.5 thick formed steel channels welded in place, flush with top of frames.

.7 Reinforce and prepare door frames to receive hardware. Blank, reinforce, drill and tap for mortised, template hardware. Protect mortised cutouts with steel guard boxes.

.8 Jamb Anchors: Manufacturer’s standard type recommended for applicable installation of suitable design capable of securely and rigidly anchoring frames in place. Provide 6 lock-in type anchors for all frames which are to be set in wood stud walls or 6 tee anchors for block construction. Provide offset anchors for door frames in exterior walls. Comply with ULC requirements in rated frames.

.9 Provide for appropriate anchorage to floor and wall construction. Securely attach to jambs. Locate each wall anchor immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb. For rebate opening heights up to 1520mm (5’-0”) provide two (2) anchors and an additional anchor for each additional 760mm (30”) or height or fraction thereof.

.10 Place minimum of 3 bumpers on single door frames and double door frames with removable mullions. Space equally along strike jambs. Place minimum of two (2) bumpers on double door frames. Place on frame heads.

.11 When frames with surface depressions or holes are accepted by the Consultant, fill with metallic paste filler and grind to a smooth finish.

.12 Weld in two (2) temporary jamb spreaders per frame to maintain proper alignment during shipping and installing.

.13 Touch up areas where galvanized coating has been removed due to sanding or handling inside and outside of frames, whether exposed or not. Use primer as noted for doors.

3. Execution

3.1 SITE STORAGE AND PROTECTION

.1 Thoroughly inspect all materials upon receipt and immediately report in writing to the supplier all discrepancies, deficiencies and/or damages.

.2 Properly store materials in vertical position spaced by blocking to permit air circulation, in a dry location, off ground, out of water and completely covered to protect from damage and weather.

3.2 INSTALLATION

.1 Install fire labeled frames in accordance with NFPA-80, most current edition.

.2 Set frames as indicated plumb, square, true to line, at correct elevation, and without distortion. Limit of acceptable frame distortion: 2mm out of plumb measured on face or frame, maximum twist corner to corner of 3mm.

.3 Secure anchorages and connections to adjacent construction. Anchor door jamb reinforcement securely to structure.

.4 Brace frames solidly to maintain in position while being built-in.

.5 Install a temporary horizontal wood spreader at mid-height of door opening to maintain frame width until building work completed.

.6 For frames over 1200mm (4'-0") in width, provide vertical support at the centre of head.

.7 In interior stud and gypsum board walls, fill frames with batt insulation.

.8 Install mortar in hollow metal frames to interior masonry walls

.9 Make allowance for deflection to ensure structural loads are not transmitted to frames.

.10 Drill and tap for surface applied hardware.

.11 Remove all hardware before painting commences and replace upon completion of painting or original condition without damage to adjacent finished surfaces.

.12 Remove temporary spreaders only after completion of adjacent work.

.13 Provide formed metal drip section full width of frame opening for exterior doors.

.14 Fill exterior frames with foam-in-place insulation immediately after installation and connect frames to air/vapour barrier membrane.

.15 Caulk perimeter of frames between frame and adjacent material.

.16 Refer to Division 16 for Electrical requirements.

.17 Adjust operable parts for correct function.

.18 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 – Door Hardware and in accordance with CSDFMA Installation Guide.

.19 Maximum permissible warp of 3mm measured diagonally across face of door.

.20 Shim butts as required using steel shims to provide correct clearance, fit and operation. Shims by door manufacturer.

3.3 ADJUST AND CLEAN

.1 Remove rust, sand abrasive areas and supply touch-up factory primer prior to application of field applied finish coat. Touch up galvanized surfaces with zinc-rich primer prior to application of finish paint.

.2 Touch up all scratched or damaged surfaces to the satisfaction of the Consultant.

.3 Clean all door frames after installation, removing all foreign matter.

END OF SECTION

1. General

1.1 SECTION INCLUDES

.1 Fire rated and non-fire rated access panels in gypsum board walls and gypsum board ceilings. Including but not limited to panels for water manifold valves, sprinkler trees, attic access. roof access, etc. A comprehensive schedule is not included. Refer to drawings and specifications to obtain all types and quantities.

1.2 RELATED SECTIONS

.1	Gypsum Board Assemblies	Section 09 29 00
.2	Painting and Finishing	Section 09 91 05
.3	Mechanical: access panels for Mechanical Work	Division 22 & 23
.4	Electrical: access panels for Electrical Work	Division 26

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

- .1 ASTM A568/A568M-00b, Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-rolled and Cold-Rolled.
- .2 ASTM A591/A591M-98, Standard Specification for Steel Sheet, Electrolytic Zinc Coated, for light coating weight (Mass) Applications.
- .3 ASTM A653/653M-01, Steel Sheet, Zinc-Coated (Galvanized) of Zinc-Iron Alloy-coated (Galvannealed) By the Hot-Dip Process.
- .4 ASTM A1008M-01e1 Standard Specification for Steel, Sheet, cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- .5 ASTM B221-00 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
- .6 ASTM C36/C36M-01, Standard Specification for Gypsum Wallboard.

.2 National Fire Protection Agency (NFPA)

- .1 NFPA 80, Standard for Fire Doors and Fire Windows.

.3 Underwriters Laboratories of Canada (ULC)

- .1 CAB4-S104-1980 (R1985), Fire Tests of Door Assemblies.

1.4 SUBMITTALS

.1 Submit in accordance with Division 01.

.2 If requested, submit shop drawings indicating panel construction, anchor method, hardware and finishes.

.3 Provide product data for each type of door and frame indicated, including construction details relative to materials, individual components and profiles, finishes, and fire ratings (if required) for access doors and frames.

2. Products

2.1 UNIVERSAL ACCESS DOORS

.1 Acceptable Manufacturers:

.1 Mifab Series UA
.2 Shanahan's

.2 Construction:

.1 Minimum 1.6mm (1/16") thick sheet steel frame and door leaf.
.2 Frame with integral mounting flange.
.3 Frame with pre-punched mounting holes
.4 Prime painted: zinc chromate, rust inhibitive type.

.3 Hardware:

.1 Concealed pivot pins hinge.
.2 Tamperproof latch and stop.

.4 Size:

.1 For access to domestic water manifold within GWB assemblies within suites, minimum size to be 12" x 12" clear opening.
.2 For all other access panels, provide minimum size required to allow access to service.

3. Execution

3.1 INSTALLATION

.1 Prior to installation of wall access panels coordinate location with Consultant.

.2 Prior to installation of attic access panels coordinate location with Consultant. Attic access panels to be aligned on a common and y axis, align access panels with ceiling mounted electrical and mechanical fixtures and devices on a common x and y axis.

.3 Coordinate with Electrical and Mechanical trades for optimum location of equipment service access locations.

.4 Install in place in accordance with manufacturer's directions, level and flush with top of wall and ceiling surfaces.

.5 After installation, fit, align and adjust access panels to provide proper operation.

3.2 SCHEDULE

.1 Wall & Attic Access Panels: Quantity, sizes and rating to be determined on site with Mechanical and Electrical Subtrades.

END OF SECTION

1 General

1.1 RELATED WORK SPECIFIED IN OTHER SECTIONS

.1	Hollow Metal Doors and Frames:	Section 08 11 13
.2	Aluminum Doors and Frames:	Section 08 11 16
.3	Flush Wood doors:	Section 08 14 16
.4	Electrical	Division 26

1.2 REFERENCE STANDARDS

.1 Standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturer's Association.
.2 CAN/CGSB-69.17-M86 / ANSI/BHMA A156.2-1983, Bored and Preassembled Locks and Latches.
.3 CAN/CGSB-69.18-M90 / ANSI/BHMA A156.1-1981, Butts and Hinges.
.4 CAN/CGSB-69.19-93 / ANSI/BHMA A156.3-1989, Exit Devices.
.5 CAN/CGSB-69.20-M90 / ANSI/BHMA A156.4-1986, Door Controls (Closers).
.6 CAN/CGSB-69.21-M90 / ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated products.
.7 CAN/CGSB-69.22-M90 / ANSI/BHMA A156.6-1986, Architectural Door Trim.
.8 CAN/CGSB-69.24-M90 / ANSI/BHMA A156.8-1982, Door Controls – Overhead Holders.
.9 CAN/CGSB-69.28-M90 / ANSI/BHMA A156.12-1986, Interconnected Locks and Latches.
.10 CAN/CGSB-69.29-M90 / ANSI/BHMA A156.13-1980, Mortise Locks and Latches.
.11 CAN/CGSB-69.31-M89 / ANSI/BHMA A156.15-1981, Closer/Holder Release Devices.
.12 CAN/CGSB-69.32-M90 / ANSI/BHMA A156.16-1981, Auxiliary Hardware.
.13 CAN/CGSB-69.33-M90 / ANSI/BHMA A156.17-1987, Self-closing Hinges and Pivots.
.14 CAN/CGSB-69.34-93 / ANSI/BHMA A156.18-1987, Materials and Finishes.
.15 CAN/CGSB-69.37-93 / ANSI/BHMA A156.21-1989, Thresholds.
.16 BHMA 1301 -1982 for materials and finishes.

1.3 PRODUCT OPTIONS AND SUBSTITUTIONS

.1 Refer to Division 01 for requirements pertaining to product options and substitutions.

1.4 PRODUCT DATA

.1 Comply with requirements of Division 01.

.2 Hardware Schedule: Submit a detailed hardware schedule indicating the following:

.1 Door and frame types, sizes, door swings.
.2 Type, style, function, size and finish of each hardware item.
.3 Mounting heights, fastenings and other pertinent information.
.4 Name and manufacturer of each item.
.5 Location of all hardware items cross-referenced to door numbers indicated on floor plans and in door and frame schedule.
.6 Explanation of all abbreviations, symbols and codes contained in schedule.

.3 Keying Schedule: Submit a separate detailed schedule clearly indicating how Owner's instructions on keying requirements have been fulfilled.

1.5 CERTIFICATES

.1 After completion of all construction work, certify on an approved form, that all items of finish hardware have been adjusted and are working properly and that all hardware on fire rated labeled doors conforms to the requirements of (ULC) Underwriters Laboratories of Canada.

1.6 OPERATION AND MAINTENANCE DATA

.1 Comply with requirements of Division 01.

.2 Provide the following:

.1 Manufacturer's maintenance instructions.
.2 Complete parts lists and source of supply.
.3 Manufacturer's installation and operation instructions for all operable hardware.

1.7 SOURCE OF SUPPLY

.1 Use one manufacturer’s products only for all similar items.

1.8 PACKING AND SHIPPING

.1 Include with each item of hardware the following:

.1 Screws, bolts and fastening necessary for installation.
.2 Installation instructions.
.3 Special tools required for installation.

.2 Deliver finish hardware with all items in individual packages, legibly marked and adequately labeled indicating the part of the work for which it is intended.

1.9 STORAGE AND PROTECTION

.1 Contractor shall arrange for a secure area with adequate storage space to properly receive and stock hardware prior to installation.

.2 Protect knobs, handles, push plates and pulls with adhesive release paper, of type that is easily removed with marring finish.

.3 Deliver finish hardware with all items in individual packages, legibly marked and adequately labeled indicating the part of work for which it is intended.

1.10 SEQUENCING AND SCHEDULING

.1 Deliver hardware required for shop application in ample time so as not to impede the progress of the Work.

1.11 SPARE PARTS AND MAINTENANCE MATERIALS

.1 Comply with requirements of Division 01.

.2 Provide two sets of wrenches for door closers, lock and latch sets and exit devices.

1.12 ACCEPTANCE OF KEYS

.1 For security reasons, forward all keys by hand to the individual indicated at later date.

2. Products

2.1 HARDWARE MATERIALS

.1 The following list of materials is intended to establish product quality and acceptable materials. Product substitutions will be considered when submitted in accordance with Section 01 62 00 – Substitutions and Product Options.

.2 Provide all hardware of each type from one manufacturer.

.3 Coordinate with Division 26 for conduit, wiring, junction boxes, and 120 VAC power supply to 24 VAC devices.

Hardware Item	Acceptable Manufacturers	Acceptable Materials
Locksets: Lock function appropriate to room type listed in Schedule on Drawings.		
626 Finish	Schlage	ND Series Rhodes
Exit Device		
ALUM	Von Duprin	98/99 Series
Closers		
ALUM	LCN	4040 Series
Hinges		
652 Finish	Stanley	BB1409 NRP
Flush Bolt		
630	Ives	FB31P-C32D
Coordinator		
628	Ives	COR52-C32D
Kickplate		
250 high x DW		
C32D Finish	Standard Metal	SM80

Hardware Item	Acceptable Manufacturers	Acceptable Materials
Weatherstrip Clear Anodized Aluminum and Neoprene	KN Crowder	W-17N
Sweeps Anodized Aluminum with Solid Neoprene	KN Crowder	W-13S
Floor Stop Dome type to suit floor C26D Finish	Standard Metal	S102L
Door Pull C32D Finish	Standard Metal	9509
Push Plate C32D Finish	Standard Metal	K11A-3

Additional miscellaneous hardware as listed in Hardware Schedule at the end of this section shall be commercial quality, matching hardware requirements established by named products above.

2.2 KEYING

.1 Consult with Owner regarding keying. All keying to be incorporated into existing master keying system.

.2 Key two or more doors to the same room alike.

.3 Key doors to mechanical and electrical spaces alike.

.4 Key doors to Storage Rooms and Janitor Room alike.

.6 Form keys from nickel silver.

.7 Provide two change keys for each lock except where otherwise required. Provide all other keys as required to meet keying system requirements.

3. Execution

3.1 INSTALLATION

.1 Provide metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.2 Install all hardware items to manufacturer's instructions and recommendations.

.3 Where hardware items are required to be installed onto or into surfaces that are to be later painted or finished, install hardware completely to ensure proper fit, remove and store until finishing is complete, and then re-install.

.4 Drill and countersink units which are pre-prepared for anchorage of fasteners. Space fasteners and anchors to manufacturer's recommendations. Use only fasteners supplied by hardware manufacturers.

.5 Install hardware to heights and centres as indicated in hardware schedule.

.6 Protect doors and frames from damage due to installation of hardware.

.7 All conduit runs are by Division 26.

.8 Communication subtrade shall connect and terminate all electrical hardware.

3.2 INSTRUCTION

.1 Instruct user's personnel in:

.1 Proper care, cleaning and general maintenance of hardware.

.2 Operation of key control system. Make periodic checks during warranty period to ensure functional efficiency of the system.

END OF SECTION

1 General

1.1 INTENT

.1 This Section specifies:

.1 General requirements common to site installed glass and glazing work.
.2 Glass and glazing products.

.2 Read this Section in conjunction with other Sections which specify glass installation in specific components.

1.2 RELATED SECTIONS

.3	Plastic Windows	Section 08 53 00
.5	Wood Doors	Section 08 14 16
.6	Hollow Metal Doors and Frames	Section 08 11 13

1.3 REFERENCE DOCUMENTS

.1 CAN/CGSB-12.1-M90 Tempered or Laminated Safety Glass
.2 CAN/CGSB-12.3-M91 Flat, Clear Float Glass
.3 CAN/CGSB-12.4-M91 Heat Absorbing Glass
.4 CAN/CGSB-12.8-M90 Insulating Glass Units
.5 CAN-CGSB-12.10-M76 Glass, Light and Heat Reflecting
.6 CAN/CGSB-12.11-M90 Wired Safety Glass
.7 CAN/CGSB-12.12-M90 Plastic Safety Glazing
.8 CAN/CGSB-19.13-M87 Sealing Compound, One-Component, Elastomeric, Chemical Curing
.9 CGSB 19-GP-14M Sealing Compound, One Component, Butyl-Polisobutylene Polymer Base, Solvent Curing
.10 CAN/CGSB-19.24-M90 Multicomponent, Chemical-Curing Sealing Compound
.11 CSA A440.2 [98], Energy Performance Evaluation of Windows and Sliding Glass Doors.
.12 CSA Certification Program for Windows and Doors.
.13 Flat Glass Manufacturers Association (FGMA), FGMA Glazing Manual.
.14 Laminators Safety Glass Association (LSGA), LSGA Laminated Glass Design Guide.

1.4 SUBMITTALS

.1 Comply with requirements of Division 01.

.2 Samples: If requested by Consultant, submit 300mm x 300mm (12” X 12”) sized samples of each type of glass, clearly labeled with manufacturer's name and glass type. Reference glass types to those scheduled and specified herein.

1.5 QUALITY ASSURANCE

.1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials utilizing inner light of multiple light sealed units for continuity of air and vapour seal.

.2 Size glass to withstand wind loads, deck loads and positive and negative live loads acting normal to plane of glass to a design pressure of 75kPa as measured in accordance with ANSI/ASTM E330.

.3 Limit glass deflection to 1/200 with full recovery glazing materials.

.4 Window fabricator shall be a member in good standing of the Northern Alberta Glass Trades Association and adhere to the rules and regulations for workmanship, training and personnel as set forth by the association.

.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .1 Provide testing and analysis of glass under provisions of Division 01.
- .2 Provide shop inspection and testing for glass.

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

.7 Glazing for Fire-Rated Door and window Assemblies: Glass tested per NFPA 252 and NFPA 257, as applicable, for assemblies complying with NFPA 80 and listed and labeled per requirements of authorities having jurisdiction.

1.6 SITE CONDITIONS

.1 Environmental Requirements:
- .1 Install glazing when ambient temperature is 10°Celsius minimum. Maintain ventilated environment for 24 hours after application.
- .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

.2 Coordinate the Work of this Section with the Installation of frames to ensure a continuous, uninterrupted sequence, and to prevent the undue exposure of unprotected frames to the weather.

.3 Do not install any glass until all nearby welding is completed.

.4 As each light of glass installed, mark it in a manner to make it visible and obvious to all persons. Do not use materials which may permanently mar, discolour or disfigure the glass.

1.7 WARRANTY

.1 Provide manufacturer's guarantee for the following types of glass listed, against defects in materials and workmanship for the period indicated, commencing from the date of Substantial Performance of Work:

1. Sealed glass units against misting, dusting, seal failure, thermal shock breaks, or other impairments: 20 years.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Suitably protect glass products to prevent damage from weather and breakage. Individually wrap accessory materials to protect them from damage.

.2 Store glass vertically, off the ground, on "A" frames, braced or blocked to prevent racking, twisting, or sagging.

.3 Take special care to protect edges of insulating glass units from damage but do not apply tape or other materials to edges.

.4 Protect glass products from exposure to moisture or condensation prior to installation.

.5 Protect the installed work and materials of all other trades. Prevent damage to glass, adjacent materials and surfaces.

.6 In the event of damage, immediately make all repairs and replacements necessary to the approval of the Consultant and at no additional cost to the Owner.

1.9 CERTIFICATIONS

.1 Insulating glass units shall be certified by the Insulated Glass Manufacturers Alliance (IGMA)

2. Products

2.1 CLEAR FLOAT GLASS

.1 Product: to CAN/CGSB-12.3-M91, glazing quality.

2.2 WIRED SAFETY GLASS

.1 Product: to CAN/CGSB-12.11-M90

.1 Type 1, polished both sides, transparent
.2 Wire Mesh Style: 3 – Square
.3 6 mm thick, with wire parallel to edges

2.3 CLEAR TEMPERED SAFETY GLASS

.1 Product: to CAN/CGSB-12.1-M90

.1 Type 2 – Tempered
.2 Class: B Float Glass
.3 Category II – 540, impact resistance
.4 6mm (1/4") thick

2.4 LOW EMISSIVITY (LOW E) GLASS

.1 Where so indicated in the Contract Documents, provide primary glass products with a low emissivity coating as follows:

.1 Type of Metallic Coating: Soft, sputtered.

2.5 MIRRORS

.1 Conforming to CGSB 12 GP-5, type 1B for high humidity use.

2.6 INSULATING GLASS UNITS

.1 Provide sealed insulating glass units in accordance with CAN/CGSB-12.8-M90, in configurations indicated in and as specified herein.

.2 Manufacture sealed insulating glass units without edge channels or tape, that is, with bare glass edges.

.3 Use two stage seal method of manufacture, as follows:

.1 Primary Seal: polyisobutylene sealing compound between glass and metal spacer/separator, super spacer bar or TDSE Intercept.

.2 Secondary Seal: polyurethane, silicone or polysulphide base sealant, filling gap between the two liters of glass at the edge up to the spacer/separator and primary seal.

.4 Spacer/separator to provide continuous vapour barrier between interior of sealed unit and secondary seal.

2.7 GLAZING ACCESSORIES

.1 Setting Blocks: neoprene, 80 durometer hardness, 100mm (4") long x 6mm (1/4") thick x width required to support full glass thickness for single glazing and full thickness of thermal units.

.2 Spacer Shims: neoprene, 80 durometer hardness, 75mm (3") long x minimum 6mm (1/4") thick. Do not use metal, plastic, or wood shims.

.3 Glazing Splines and Gaskets: manufacturer's standard dry neoprene glazing splines and gaskets. Provide keyed type for fixed glazing stops and keyed or roll-in type for removable glazing retaining devices. Except where otherwise specified, colour shall match frame colour.

.4 Glazing Tape: preformed butyl tape, 10 - 15 durometer hardness, with integral neoprene shim, 80 durometer hardness, paper release.

.5 Sealant compound: one component, silicone base, solvent curing to CGSB 19-GP-18M-80. Colour to match adjacent materials, as directed by Consultant.

.6 Sealant compound: multi-component, chemical curing to CAN/CGSB-19.24-M80, type 2, class A. Colour to match adjacent materials, as directed by Consultant.

.7 Primer-sealers and cleaners: to glass and gasket manufacturer's standard.

2.8 GENERAL FABRICATION

.1 Cut all glass to field measurement with proper clearances; cut to produce clean, straight edges with no chips, cracks or flaws.

2.9 INSULATING GLASS FABRICATION

.1 Shop fabricate sealed glass units to CAN/CGSB. 12.8 and IGMAC certification as a minimum.

.2 Sealed units shall have a minimum of 12mm (1/2") air space giving a total overall thickness of not less than 25mm (1"). Edge spacer shall not bow in or out more than 5mm (3/16") over full length of a side.

.3 Sealed units shall be assembled and air space sealed in a clean, dry environment, in a location with the same barometric air pressure as the job site.

.4 Sealed units having pressure-venting or equalizing holes in spacer for site sealing, will be rejected.

.5 Edges of sealed units shall be clean and not have metal or tape binding or facing.

3. Execution

3.1 GLAZING GENERAL REQUIREMENTS

.1 Clean sealing surfaces at perimeter of glass and sealing surfaces of rabbets and stop beads before applying tapes, splines or gaskets. Use solvents and cleaning agents recommended by manufacturer of sealing materials.

.2 Install glazing tapes, splines and gaskets uniformly with accurately formed corners and bevels. Ensure that proper contact is made with glass and rabbet interfaces.

.3 Continuously and uniformly compress length of dry glazing splines and gaskets 38-50mm (1 1/2" – 2") per 1200mm (4'-0") during installation.

.4 Set glass on setting blocks, spaced as recommended by glass manufacturer. Provide at least one setting block at quarter points from each corner.

.5 Centre glass in glazing rabbet to maintain required clearances at perimeter on all four sides.

.6 Use spacers and shims in accordance with glass manufacturer's recommendations.

.7 Apply cap bead of sealant at exterior void.

.8 Apply sealant to uniform and level line, flush with sightline and tooled or wiped with solvent to smooth appearance.

.9 Do not cut or abrade tempered, heat treated, or coated glass.

.10 Install safety glass in interior doors and partitions.

.11 Supply glass with drawlines that will run horizontally when installed.

.12 Leave labels on glass until final cleaning.

.13 Be responsible for any faulty glazing and sealing to windows and doors. Reseal and make good any damage attributed to faulty glazing.

3.2 EXAMINATION

.1 Verify that openings for glass are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 INSTALLATION

.1 Install in accordance with the manufacturer's written instructions and the contract documents, plumb, true, level and rigid.

.2 Do not glaze when ambient or surface temperatures are less than 4°Celsius. Glazing rebates, stops and glass shall be dry, free from ice, frost slick, grease, oil, dust, rust, or other matter detrimental to adhesion, of tape, glazing compounds and sealant.

.3 Installation of glass shall be by workmen skilled in this trade in strict accordance with manufacturer's directions, to produce a first-class installation.

.4 Center and support glass on setting blocks at quarter points, as required shim sides.

.5 Glass shall be free from contact with the frames and stops.

.6 Label each light to show manufacturer's name or trademark, quality and thickness.

.7 Glaze interior doors with foam or cork tape on both sides. For wired glass, use glazing tape. Trim tape even with the sight line.

.8 Use sealant at exterior doors, sealing water and weather tight.

3.4 CLEANING

.1 Remove dirt, scum, plaster, paint spatter and other harmful or deleterious matter from glass promptly and completely, before they establish tight adhesion.

.2 Use clean water or proprietary glass cleaning solutions that will not damage glass surfaces. Avoid using abrasives, steel wool, razor blades, solvents, alkaline or other harsh cleaning agents.

.3 Remove labels after work has been completed.

3.5 PROTECTION

.1 Identify glazed openings immediately following glass installation, using liquid shoe wax in a sponge topped bottle or similar easy-to-remove product.

.2 Protect glass against scratches, pitting and other surface damage.

3.6 GLAZING SCHEDULE

.1 Exterior:

.1 All exterior insulated metal doors in pressed steel frames, to receive double glazed insulating glass units as specified in this Section.

.2 Interior:

.1 Inner vestibule doors: 6 mm clear tempered.

.2 Mirrors Glass: 6mm (1/4”), thick

END OF SECTION

1 General

1.1 WORK INCLUDED

.1 This Contractor shall furnish all labour and materials to complete the work shown on the drawings and herein specified, but not limited to the following:

.1 All drywall to wood and/or metal studs and furrings, and other areas detailed on the drawings.
.2 All drywall joint treatment where applicable unless otherwise stated.
.3 Installation only of access doors supplied by others to drywall surfaces.
.4 All suspended drywall ceilings including suspension system.
.5 All drywall metal accessories, i.e., corner bead, metal trim, etc.
.6 Cutting and fitting of work in this Section as required for the work of other trades.

1.2 RELATED SECTIONS

.1	Sheet Membrane Air & Vapor Barrier	Section 07 26 00
.2	Batt & Blanket Insulation	Section 07 21 16
.3	Firestopping and Smoke Seals	Section 07 84 00
.4	Joint Sealants	Section 07 92 00
.5	Access Panels	Section 08 31 00
.6	Painting & Finishing General Requirements	Section 09 91 05

1.3 REFERENCE DOCUMENTS

.1 ASTM C840-11, Standard Specification for Application and Finishing of Gypsum Board. (Provide copy on site.)
.2 ASTM C1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
.3 ASTM C1047-05, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
.4 ASTM C1278/C1278M-07a Standard Specification for Fibre-Reinforced Gypsum Panel
.5 ASTM C1280-07, Standard Specification for Application of Gypsum Sheathing.
.6 ASTM C1396/C1396M-13, Standard Specification for Gypsum Board.
.7 CAN/CGSB-51.34-M86 AMEND, Vapor Barrier, Polyethylene Sheet for Use in Building Construction.
.8 CAN/CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
.9 CAN/ULC-S101-07, Fire Endurance Tests of Building Construction and Materials.

1.4 SUBMITTALS

.1 Comply with requirements of Division 01.

1.5 QUALITY ASSURANCE

.1 Fire Test Response Characteristics: As specified in Section 01620 – Fire Separations.

.2 Sound Transmission Characteristics: For Gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by a qualified independent testing agency for STC ratings of specific assemblies indicated on Drawings.

1.6 TERMINOLOGY

.1 The terms “GWB”, “drywall”, “gypsum board” and “gypsum wallboard” are synonymous.

1.7 EXAMINATION

.1 Examine drawings, details and schedules. Determine the intent, extent, materials, location, conditions of interfacing with other work. Be aware of requirements set out therein.

.2 Inspect surfaces on which the work of this Section is dependent, for unevenness, moisture and other irregularities detrimental to the application and performance of the work. Confirm that conditions are satisfactory before proceedings.

.3 Examine and co-ordinate work with other trades and ensure that anchors, blocking, grounds, electrical conduit, wiring and mechanical work, which is to be installed in or behind work of this Section, has been installed, tested and accepted.

.4 Inspect existing conditions which will affect the work of this Section. Report any unacceptable conditions to the Consultant. Do not proceed with Work of this Section until unacceptable conditions have been rectified. Starting work implies acceptance of existing conditions.

1.8 PRODUCT HANDLING

.1 Store gypsum board and cement board flat, in weatherproof enclosure in dry atmosphere clear of damp surfaces, in neat piles without overhanging board. Do not load any area of the building beyond the design limits.

.2 Ship metal studs, furring materials, corner and casing beads and such trim in rigid packages to prevent damage. Do not use bent and deformed materials.

1.9 PROTECTION

.1 Protect the work against damage by others, from weather or other causes. Protect other work against damage. Make good any damage caused.

.2 Protect other surfaces from accidental application of taping compound, take particular care with finished surfaces and glass. Restore damaged work to its original condition.

1.10 ENVIRONMENTAL CONDITIONS

.1 Ensure temperature or surrounding areas is minimum 10°Celsius and maximum 22°Celcius for seven (7) days before and during taping and finishing of gypsum board. Maintain for four (4) days thereafter. Avoid concentrated or irregular heating during drying.

.2 Ensure ventilation is provided for proper drying of joint filler, and to prevent excessive humidity.

2 Products

2.1 MANUFACTURERS

.1 Acceptable Manufacturers:

.1 Certain Teed Gypsum Canada Inc.
.2 CGC Inc.
.3 Georgia-Pacific Canada, Inc.
.4 BPB Westrock Inc.

2.2 GYPSUM MATERIALS

.1 For general use: to ASTM C1396/C1396M plain and as follows:
- .1 Type: regular and fire resistant
- .2 Size: 1200mm (4'-0") x maximum practical length.
- .3 Thickness: as indicated on Drawings.
- .4 Ends: square cut.
- .5 Edges: tapered.
- .6 Acceptable Materials:
  1. ProRoc Wallboard (Type X) (Type C), Certain Teed
  2. Sheetrock Firecode (Type C), CGC Inc.
  3. Toughrock Gypsum Wallboard (Fireguard X) (Fireguard C), Georgia-Pacific

.2 Exterior gypsum: to ASTM C1177/C1177M and as follows:
- .1 Type: regular and fire resistant
- .2 Size 1200mm (4'-0") x maximum practical length.
- .3 Thickness: as indicated on Drawings.
- .4 Edges: square.
- .5 Acceptable materials:
  1. Dens-Glass gold, Georgia-Pacific Canada, Inc.
  2. GlassRoc Exterior Sheathing, Certain Teed.
  3. Securock Glass Mat Sheathing, CGC Inc.

.3 Water Resistant Board: to ASTM C1396 and as follows:
- .1 Type: regular and fire resistant
- .2 Size 1200mm (4'-0") x maximum practical length.
- .3 Thickness: as indicated on Drawings.
- .4 Edges: square.
- .5 Acceptable materials:
  1. CGC Sheetrock W/R Board.
  2. Georgia Pacific Moisture Guard.
  3. BPB Westrock Inc. Aquaguard.
- .6 Location: Around sinks, mop sink, showers, and as required.

.4 Tile Backer Board: to ASTM C1178: surface coated fiberglass faced with silicone treated gypsum core and as follows:
- .1 Type: regular and fire resistant
- .2 Size 1200mm (4'-0") x maximum practical length.
- .3 Thickness: as indicated on Drawings.
- .4 Edges: square.
- .5 Acceptable materials:
  1. Georgia Pacific DensShield Tile Guard
  2. GlasRoc Tile Backer as manufactured by Certainteed.
- .6 Location: All surfaces exposed in all wall tiled areas around sinks, and as required.

.5 Sag Resistant Gypsum Board: to ASTM C1396/C1396M and as follows:

.1 Type: regular and fire resistant (Type 'X')
.2 Thickness: as indicated on Drawings.
.3 Acceptable materials:
1. CD Ceiling Board, Georgia-Pacific Canada, Inc.
2. ProRoc Interior Ceiling Board, Certain Teed.
3. Sheetrock Interior Ceiling Board, CGC Inc.
.4 Location: All ceilings and bulkheads, and as required.

.6 Mould resistant board: to ASTM C1396/C1396M and as follows:
.1 Type: regular and fire resistant
.2 Size: 1200mm (4'-0") x maximum practical length.
.3 Thickness: as indicated on Drawings.
.4 Acceptable Materials:
1. ProRoc M2Tech Moisture & Mould resistant Gypsum Board.
2. Sheetrock Mold Tough, CGC Inc.
3. ToughRock Mold-Guard, Georgia-Pacific Canada Inc.

2.3 RELATED ACCESSORIES

.1 Joint tape: 50mm (2") wide perforate type recommended for gypsum wallboard finishing.

.2 Joint compounds: Bedding and finishing types recommended for gypsum wallboard finishing; casing, vinyl or latex base. To CSA A82.31-M1980, asbestos-free.

.3 Fasteners: Standard drywall screws or nails; rust resistant; of size to suit application and to rigidly secure gypsum wallboard and related accessories in place. Screw all drywall to studs and furring.

.4 Casing beads, corner beads fill type: 24 gauge (0.5mm) base thickness commercial grade sheet steel with Z275 zinc finish to ASTM A525-86, perforated flanges; one piece length per location. Location: At all locations where gypsum board abuts a dissimilar material.

.5 Reveals: metals, pre-finished to profile indicated.

.6 Acoustic sealant: to CAN/CGSB-19.21-M87, one component, gun grade, non-staining, non-hardening, permanently flexible synthetic rubber based sealant.

.7 Wood and Plywood blocking: as specific in Section 06 10 00.

.8 Fire safing filler: rock wool or glass fibre. As specified in Section 07 21 16.

.9 Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30-M1980, galvanized.

.10 Drywall furring channels: 24 gauge (0.5mm) core thickness galvanized steel channels for screw attachment of gypsum board.

.11 Nails, screws and staples: to CSA A82.31- M1980.

3 Execution

3.1 PREPARATION

.1 Do not commence work of this Section until all framing is acceptable to receive gypsum board.

3.2 BATT INSULATION

.1 Coordinate the installation of acoustical batt insulation Section 07 21 16 to work of this Section.

3.3 INSTALLATION OF VAPOUR RETARDER MATERIALS

.1 Install sheet polyethylene where indicated on drawings and schedules, as required to form a continuous vapour retarder on warm side of building envelope.

.2 Use sheets of largest practical size to minimize joints. Join sheets over solid, continuous backing, lapping sheets minimum 150mm (6”).

.3 Mechanically fasten or adhere polyethylene sheet to substrates.

.4 Repair punctures and tears with sealing tape. Where punctures and tears are extensive replace entire damaged section, overlapping perimeter framing on all sides.

.5 Seal sheet polyethylene to air/vapour hats installed over electrical boxes and other semi-recessed devices, using sealing tape or 15mm (5/8”) diameter bead of polyurethane sealant.

.6 Seal penetrations through air/vapour hats using polyurethane sealant. Ensure sealant extrudes to both sides of penetrations.

3.4 ACOUSTIC TREATMENT

.1 Install acoustic insulation between studs as indicated on drawings.

.2 Ensure acoustic insulation fills spaces between studs, full height of walls, and is continuous over door frames and around openings and corners.

.3 Ensure insulation is packed around cut openings in board and panels, behind outlet boxes, around plumbing, heating or structural items passing through the system and at abutting walls.

.4 Unless indicated otherwise on drawings, apply 15mm (5/8”) diameter bead of acoustic sealant continuously around periphery of each face of partitioning to acoustically seal gypsum board and panel junction with abutting fixed building components. Seal full perimeter of cutouts around electrical boxes, ducts, piping, etc.

.5 Apply sealant in accordance with manufacturer's directions.

.6 Apply two, 10mm (3/8”) diameter beads of acoustic sealant between stud framing and fixed building components, around periphery of acoustically rated partitions.

3.5 CONTROL JOINTS

.1 Construct control joints of two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.

.2 Locate control joints where indicated and/or at changes in substrate construction at approximate 8 m spacing on long corridor runs, at approximate 16 m spacing on ceilings. Locate ceiling control joints at intersection of structural framing, columns unless noted otherwise.

.3 Install control joints straight and true.

.4 Provide continuous polyethylene dust barrier behind and across control joints.

3.6 APPLICATION OF GYPSUM WALL BOARD

.1 Do not apply gypsum board and until all framing, blocking, anchors, mechanical and electrical work have been inspected and approved.

.2 Erect gypsum board in accordance with good trade practice and as recommended by CSA A82.31 and local governing Drywall, Lath and Plaster Institutes.

.3 Use gypsum board to satisfy all Alberta Building Code requirements.

.4 Erect ceiling first, then walls, support edges of ceiling board on edge of gypsum board.

.5 Do not locate side joints on same stud on opposite side of partitions. Stagger end joints on side of partitions. Keep end joints away from prominent locations and central portions of ceilings.

.6 Extend gypsum board behind fitments and other objects on stud or furred walls; behind mirrors and removable items.

.7 Walls-space screws at maximum 300mm (12”) O.C.

.8 Fire rated construction installation – space screws at maximum 200mm (8”) O.C.

.9 Start securing board within the field of the board and work towards ends and edges. Hold board firmly against framing members while installing.

.10 Install perimeter fasteners not less than 10mm (3/8”) or more than 12mm (1/2”) from edges and ends and opposite fasteners at adjacent boards.

.11 Drive fasteners perpendicular to face board.

.12 Provide control joints in positions indicated on drawings and/or in accordance with Drywall lath and Plaster Institute guidelines. DO NOT LOCATE ANY VERTICAL END JOINTS AT THE JAMB LINES OF DOORS, WINDOWS, OR OTHER OPENINGS.

.13 Apply single and double layer gypsum board to metal furring or framing using screw fasteners for first layer, screw fasteners for second layer. Maximum spacing or screws 300mm (12”) O.C.

.14 Install gypsum wall board vertically to support sheets all around and to avoid edge butt joints, except

where dictated otherwise by ULC requirements for fire rated assemblies.

.15 Erect gypsum board vertically for walls unless horizontal application results in fewer end joints. Locate end joints over framing members.

.16 Keep end joints away from prominent locations and central portions of ceilings.

.17 Locate vertical joints at least 300mm (12") from jamb lines of doors, windows and other openings. DO NOT LOCATE ANY VERTICAL END JOINTS AT THE JAMB LINES OF DOORS, WINDOWS, OR OTHER OPENINGS.

.18 Erect ceiling gypsum board and panels with long dimensions perpendicular to framing members.

3.7 CEILING BULKHEADS

.1 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.2 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

3.8 WALL FURRING

.1 Install wall furring for gypsum board wall finishes in accordance with CSA A82.31-M1980, except where specified otherwise.

.2 Furr openings and around built-in equipment, cabinets and access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.3 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.9 INSTALLATION OF ACCESSORIES

.1 Provide control joints where indicated.

.2 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150mm 16" O.C.

.3 Install casing beads around perimeter of suspended ceilings.

.4 Install expansion joints at all building expansion joints.

.5 Erect beads and joints straight and rigid. Use full length pieces only. Mitre and fit corners accurately.

.6 Install corner beads at external angles. Secure to substrate.

.7 Install casing beads where gypsum board materials terminate against surface having no trim concealing the junction and where indicated on drawings.

3.10 ACCESS DOORS

.1 Install access doors to electrical and mechanical fixtures specified in respective Sections.

.2 Rigidly secure frames to furring or framing systems.

3.11 TAPING AND FINISHING

.1 Meet or exceed requirements of ASTM C 840.

.2 Provide the finish level, specified in ASTM C 840, for the following surfaces:
- .1 Level 1: plenum areas above ceilings and other concealed areas.
- .2 Level 2: surfaces that are to receive ceramic tile.
- .3 Level 3: surfaces that are to receive heavy spray or trowel applied finishes.
- .4 Level 4: surfaces to receive wallcoverings, flat paints or light textures.

.3 Taping and filling of joints and corners shall be performed by persons skilled in this work and in strict accordance with wallboard manufacturer's printed instructions. Filling shall be done either manually, using told of the trade, including a plaster's trowel, spatula, etc., or be a mechanical taping and filling machine or proven efficiency.

.4 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and topping compound, installed according to manufacturer's directions and feathered out onto panel faces.

.5 Apply joint system according to manufacturer's directions. Feather out onto board and panel faces.

.6 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of topping compound feathered out 300 mm onto board and panel faces.

.7 Fill each screw and nail head depression individually with joint and topping compounds to bring flush with adjacent surfaces of gypsum board and panels so as to be invisible after painting is completed.

.8 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surfaces of boards and panels.

.9 Use minimum #120 grit sandpaper for first and second sandings. Use minimum #150 grit sandpaper for final sanding.

.10 Completed installation shall be smooth, level or plumb, free from waves and other defects, ready for painting.

3.12 CUTTING AND PATCHING

.1 Do all cutting, patching and making good as required by the installation of work of other trades. Cooperate closely with other trades to assure a satisfactory finish. Remove and make good any work which, in the opinion of the Consultant is defective and not acceptable at no additional cost.

.2 When prime coat has become sufficiently dry, examine surfaces for any final patching that may be required. Use colour tinted patching compound for later visual examination and approval by Minister before final prime and paint coats.

3.13 TOLERANCES

.1 Provide finished gypsum board surfaces with true planes within 3mm (1/8”) when checked with 3m (39”) straight edge placed anywhere on the surface. Provide surfaces free from waves, irregularities and other defects, vertical surfaces plumb and true to line, horizontal surfaces level.

3.14 PROTECTION

.1 Protect installed products form damage from weather, condensation, direct sunlight construction, and other causes during remainder of the construction period.

.2 Remove and replace panels that are wet, moisture damaged and mould damaged.

.1 Indications that panels are wet or moisture damaged including, but are not limited to, discoloration, sagging or irregular shape.

.2 Indications that the panels are mould damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

3.15 CLEAN-UP

.1 Upon completion of work of this Section, remove from site all debris and sweep, vacuum or otherwise remove all gypsum board dust and droppings; clean and remove excess material from all finished surfaces; leave area clean and tidy and acceptable to the Consultant.

END OF SECTION

1 General

1.1 SUMMARY AND INTENT

.1 This Section includes labour, materials, tools and other equipment, services and supervision required for surface preparation and field painting of exposed exterior and interior items and surfaces to the requirements of the "Architectural Painting Specifications Manual", Current edition, including the latest edition of the "Approved Products List", published by the Master Painters Institute (MPI).

.2 The reference document is available from:

Master Painters Institute (HQ)
4090 Graveley St., Burnaby, BC V5C 3T6
Tel : (888) 674-8937 toll free Fax: (888) 211-8708 toll free
www.paintinfo.com

.3 Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections, and as follows:

.1 Surface preparation of substrates including cleaning, small crack repair, patching, caulking and making good surfaces and areas.

.2 Surface preparation and prime painting surfaces for wall coverings before installation in accordance with wall covering manufacturer's written instruction.

.3 Prime painting and back-priming of surfaces except where pre-primed with an MPI Approved primer under other Sections of the work.

.4 Paint exposed and semi-exposed items and surfaces, except where Specifications indicate that the surface or material is not painted or is to remain natural, as follows:

.1 Paint item or surface same as similar adjacent materials or surfaces where item or surface is not specifically mentioned.

.2 Painting including field painting of exposed bare and covered conduit, pipes and ducts including colour coding, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory applied final finish.

.3 Painting of semi-concealed areas such as inside of light valances, behind grills, and projecting edges below sight lines.

.4 Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by Contractor, where toxic, volatile, or flammable materials are being used.

.5 Touch-ups and field painting necessary to complete work shown, scheduled or specified.

.6 Site touch-up of pre-finished wood doors.

.7 Painting of exposed to view mechanical heating, ventilation and plumbing services, and equipment such as ducts, sprinkler piping, and electrical work to extent specified unless pre-finished.

.8 Consultant will select from Standard colours and finishes available where a colour of finish is not specified.

.9 Read this Section in conjunction with the following Section[s] containing more detailed requirements for site painting and finishing:

1.2 RELATED SECTIONS

.1	Gypsum Board Assemblies:	Section 09 29 00
.2	Hollow Metal Doors & Frames	Section 08 11 13
.3	Flush Wood Doors	Section 08 14 16
.4	Sprayed Cementitious Textured Coating	Section 09 94 13

1.3 REFERENCE DOCUMENTS

.1 Canadian General Standards Board (CGSB):

.1 CGSB 1-GP-71 Set of 3 Standards 2003, Methods of Testing Paints and Pigments - Set includes 1-GP-71 No. 5-96, 1-GP-71 No. 38-96 and 1-GP-71 No. 73-96.

.2 Master Painters Institute (MPI)

.1 The painting and finishing specifications for new, not previously painted or finished, substrates are based on and make reference to the "Architectural Painting Specification Manual", November 2007 issue, including the latest edition of the "Approved Products Lists", published by the Master Painters Institute (MPI).

.2 The reference documents are available from:

Master Painters Institute (HQ)

4090 Graveley St.
Burnaby, BC V5C 3T6
Tel: 888-674-8937 toll free
Fax: 888-211-8708 toll free
www.paintinfo.com

or

Alberta Painting Contractors Association

2725 - 12th Street N.E.
Calgary, AB T2E 7J2
Tel: 403-250-0903
Fax: 403-291-9562

1.4 SUBMITTALS

.1 Product Data

.1 Comply with requirements of Division 01.

.2 Prior to commencement of Work of this Section, submit list of products proposed for use corresponding to the specified finishing systems. Include manufacturer's name, manufacturer's product name, manufacturer's product code and MPI number of each product.

.3 Products identified in submitted products list and approved by Consultant shall be used in the applications for which they are scheduled and shall not be changed without Consultant's consent.

.4 Manufacturer's Safety Data Sheets (MSDS): Provide copies to the Contractor prior to commencement of work for review and for posting at job site as required.

1.5 SAMPLES

.1 When requested by the Consultant, provide samples of each colour and material, with texture to simulate actual conditions, on representative samples of the actual substrates. Digital and printed color charts are not acceptable.

.1 When requested by the Consultant, finish, with all required coats, a three square meter minimum sized surface of each major substrate and colour scheme, to show selected colours, finish textures, gloss levels, and workmanship. Where surface is less than three square meters, finish the entire surface.

.2 Obtain Consultant's approval before proceeding with remainder of the work. Approved sample area shall serve as the standard to be met or exceeded in the remainder of the work.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials in sealed original labeled containers bearing manufacturer's name, type of material, brand name, colour designation, and where applicable, instructions for mixing and reducing.

.2 Store paint and other materials in a single heated and well ventilated area with a minimum ambient temperature of 7°Celsius.

.3 Take precautionary measures to prevent fire hazards or spontaneous combustion.

1.7 QUALITY ASSURANCE

.1 Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated in this Project, whose work has resulted in applications with a record of successful service performance, and as follows:

.1 Have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the work.

.2 When requested provide a list of the last three comparable jobs including name and location, specifying start and completion dates and cost of the painting work.

.3 Only qualified journeymen who have a Tradesman Qualification Certificate of Proficiency shall be engaged in painting and decorating work.

.4 Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.2 Source Limitations:

.1 Use only paint manufacturers and products as listed under the Approved Products **S**ection of the MPI Manual Architectural Painting Specification Manual.

1.8 PROJECT CONDITIONS

.1 Maintain temperatures of surfaces and surrounding air between the following temperatures for a minimum of 24 hours before, during and after application or until paints and coatings are fully cured, whichever is greater:

.1 Waterborne paints and coatings: 10°Celsius to 32°Celsius.

.2 Solvent thinned paints and coatings: 7°Celsius to 35°Celsius.

.3 Maintain temperatures during application, and until materials are fully cured.

.2 Maintain surfaces free from:

.1 Snow, rain, fog or mist, dampness or wetness that could impair bond.

.2 Relative Humidity in excess of 85%.

.3 Temperatures less than 3°Celsius above the dew point.

.4 Painting may continue during inclement weather if surfaces and areas are enclosed and heated within temperature limits specified above.

.3 Maintain surfaces at less than maximum moisture content indicated below; test wood and plaster surfaces using a properly calibrated electronic moisture meter.

.1 12% for concrete and masonry, test concrete surfaces in accordance with ASTM F1869 and as follows:

.1 Do not paint concrete or masonry surfaces for a minimum of 60 days after installation.
.2 Concrete and masonry surfaces must be visually dry on both sides and tested for maximum moisture content.
.3 This is not to be construed as including a wetting down process that may be required for latex or filler coatings.

.2 15% for wood.

.3 12% for plaster and gypsum board.

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.5 Maintain a minimum lighting level of 323 Lux (30 foot candles) on surfaces where paint or coatings are being applied.

.6 Maintain adequate continuous ventilation and sufficient heating facilities to maintain specified air and substrate temperatures.

.7 Maintain a dust free environment in area of site painting.

1.9 MAINTENANCE AND DATA SHEETS

.1 Submit copies of manufacturer's written maintenance information for inclusion in the operations manual.

.2 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.

.3 Maintenance materials shall match products installed; packaged with protective covering for storage, and identified with labels describing contents and building location.

1.10 COORDINATION

.1 Coordinate the supply of temporary heat and light, scaffolding and platforms, and housekeeping services with Contractor.

.2 Schedule painting work before installation of miscellaneous hardware, surface fittings, fastenings, fixtures and trim by other trade contractors including the hanging of doors and installation of door hardware.

.3 Coordinate compatible shop primer for architecturally exposed steel with Structural Steel, Open web Steel joists, and Steel Fabrications. Metal fabricators will be responsible for surface preparation and application of compatible primer systems.

.4 Metal fabricators will be responsible for applying primer to shop applied materials at filed welds, immediately after completion of field welds.

.5 This Section will be responsible for performing minor site touch-up and repair to metal priming system, and apply finish coats of paint.

.6 Coordinate correction of defects and deficiencies in substrates which may adversely affect painting work, except for minimal work specified in this Section and preparation of surfaces to receive paint and finishes under this Section of work, with trades responsible for installation of deficient substrates.

.7 Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates.

.8 Coordinate surface preparation and shop priming of structural steel, steel deck, miscellaneous and ornamental metal fabrications, metal doors, frames, and windows including fittings as specified under those respective sections for type of primer including part of the painting system specified in this Section.

.9 Coordinate requirements for site finishing Finish Carpentry in Section 06 20 00 – Finish Carpentry. Back-prime wood assemblies before installation in final location.

.10 Coordinate requirements for painting and identification of mechanical piping and ducting, and electrical conduits with trades responsible for that part of the work. Mechanical Contractor shall provide quantity or length of materials requiring applied finishes, and identify which colour is required on each surface. Painting Contractor shall prepare surfaces and apply coating systems specified in colours required for each surface.

1.11 STANDARD OF ACCEPTANCE

.1 The following requirements establish the standard of acceptance for the Work, when viewed using the final lighting source.

.1 Vertical surfaces: No defects visible from a distance of 1m (39") at 90 degrees to surface.
.2 Horizontal surfaces: No defects visible from a distance of 1m (39") at 45 degrees to surface.
.3 Ceilings: No defects visible from floor at 45 degrees to surface.
.4 Final coat shall exhibit uniformity of sheen across full surface area.

.2 Defects include brush marks, streaks, runs, laps, drips, heavy stippling, pile up of paints, roller tracking, inadequate hiding of substrate, skipped or missed areas, and foreign materials in paint.

1.12 MAINTENANCE MATERIALS

.1 Leave on premises not less than 4 litres of new material of each colour and finish sheen used.

.2 Provide maintenance materials in new containers, full, tightly sealed and clearly labelled. Remnants of used materials are not acceptable.

2. Products

2.1 MATERIALS

.1 Provide materials (cleaning agents, primers, coatings, varnishes, lacquers, fillers, solvents, thinners) in accordance with the MPI Manual Architectural Painting Specification Manual, Chapter 5 Approved Product Listing.

.2 Paint materials for each coating formula to be products of a single manufacturer.

.3 Materials and paints shall be lead and mercury free and have low VOC content to the greatest extent possible; Low VOC paint products shall meet the requirements of the Environmental Choice Program initiated by Environment Canada.

.4 Thinners: Odorless paint thinner, pure and clean with no deleterious material.

.5 Patching compounds: Spackling compound or oil base putty for substrates receiving a paint finish. Oil base putty, coloured to match finish, for substrates receiving a transparent finish.

2.2 MIXING

.1 Except as otherwise specified, paint shall be ready mixed. Re-mix prior to application to ensure colour and gloss uniformity. Materials in paste or powder form, or to be field-catalyzed, shall be field mixed in accordance with manufacturer's directions. Perform colour tinting operations prior to delivery to site.

.2 Thinning of materials to extent permitted by paint manufacturer will be permitted only where specified herein or upon Consultant's approval. Do not use solvent for thinning.

.3 Strain materials thoroughly prior to application.

.4 Accent colours and deep tints shall have factory added colour pigments wherever possible.

2.3 COLOURS

.1 Colour Schedule: Contactor shall advise Consultant four (4) weeks prior to requiring colour schedule. Do not start work prior to receiving colour schedule.

.2 Colour Scheme: For bidding purposes, colour scheme will be generally as follows:

.1 Maximum two (2) field colours and two (2) accent colours for interior.
.2 Maximum one (1) colours for ceilings.
.3 Maximum three (3) colours for doors, frames, trim etc.
.4 Generally, no more than 3 colours to be used in any one area.

2.4 GLOSS LEVELS

.1 Specified gloss levels are based on the MPI standard, which is as follows:

.1 Level G1 – Matte or Flat: gloss rating of 0 to 5 units at 60 degrees and sheen rating of a maximum of 10 units at 85 degrees.

.2 Level G2 - Velvet: gloss rating of 0 to 10 units at 60 degrees and a sheen rating of 10 to 35 units at 85 degrees.

.3 Level G3 - Eggshell: gloss rating of 10 to 25 units at 60 degrees and a sheen rating of 10 to 35 units at 85 degrees.

.4 Level G4 - Satin: gloss rating of 20 to 35 units at 60 degrees and a sheen rating of 35 units minimum at 85 degrees.

.5 Level G5 - Semi-gloss: gloss rating of 35 to 70 units at 60 degrees.

.6 Level G6 - Gloss: gloss rating of 70 to 85 units at 60 degrees.

.7 Level G7 – High-gloss: gloss rating of more than 85 units at 60 degrees.

.2 Except as otherwise specified, provide the following gloss levels for specified locations and substrates:

.1 Interior paint finishes:

.1 Flat – G1: ceilings
.2 Eggshell –G3: walls
.3 Semi-gloss – G5: storage rooms, mechanical rooms, corridors, stairwells, doors and frames.

.2 Interior transparent finishes:

.1 Satin – G4:
.2 Gloss – G6:

.3 Exterior paint finishes:

.1 Flat – G1:
.2 Semi-gloss – G5: doors and frames

.3 Gloss – G6:

.4 Exterior transparent finishes:

.1 Satin – G4:
.2 Gloss – G6:

.3 Where gloss level is not specified, confirm required gloss level with Consultant prior to proceeding with finish coats.

3. Execution

3.1 VERIFICATION OF CONDITIONS

.1 Ensure all dust generating activities have been terminated and dust removed.

.2 Prior to commencement of painting and finishing work, thoroughly examine substrates scheduled to receive coatings.

.3 Do not apply coatings to substrates whose condition will adversely affect execution, permanence, or quality of work and which cannot be put into an acceptable condition through preparatory work specified herein.

.4 Verify compatibility of any previously applied coatings with specified coatings.

.5 Notify Consultant of any incompatibilities.

.6 Commencement of work implies acceptance of conditions.

3.2 PROTECTION OF EXISTING SURFACES

.1 Protect adjacent surfaces from spray, splashings, and droppings.

.2 Remove electrical plates, surface hardware, fittings and fastenings prior to painting and finishing operations. Carefully store and replace these items on completion of work in each area.

.3 Keep sprinkler heads and smoke detectors free of paint. Replace those that do receive paint.

3.3 CONDITION OF SUBSTRATES

.1 Substrates shall be sound, non-dusting, and free of grease, oil, dirt, and other matter detrimental to adhesion and appearance of coatings.

.2 Temperature: minimum 8°Celsius.

.3 Test moisture content using electronic moisture meter. Maximum moisture content as follows:

.1 Plaster and wallboard: 12%
.2 Concrete: 12%
.3 Concrete block and brick: 12%
.4 Wood: 15%

.4 Alkalinity: test cementitious substrates for alkalinity using litmus paper test. If greater than 7, refer to manufacturer's requirements.

3.4 PREPARATION OF NEW/UNFINISHED SUBSTRATES

.1 Prepare substrates in accordance with requirements of the MPI Manual, Chapter 2 and 3, Section 3-Surface Preparation, and as specified herein.

.2 All Substrates: thoroughly broom, vacuum and wipe clean as required to produce acceptable surface. Sand lightly and dust prior to application of each coat. Use recommended type and grade of sandpaper to avoid scratching or gouging of surfaces.

.3 Remove all oil and grease from substrates that could impair bond of the various coatings before applying paint or other surface treatments. Wipe down galvanized metal surfaces with an etching cleaner in accordance with MPI Manual Approved Products.

.4 Wood Generally: clean soiled surfaces, sand smooth and dust. Fill nail holes, splits, scratches, small joints and other minor imperfections with patching compound after paint prime coat or first varnish coat has been applied and dried. Apply putty with putty knife, press firmly in place, and finish flush with surface.

.5 Wood for Paint Finish: clean knots, pitch streaks, and sappy sections of residue and seal such areas with shellac or knot sealer before applying prime coat. Prepare in accordance with MPI Manual requirements.

.6 Wood for Transparent Finish: clean knots, pitch streaks, and sappy sections of residue and seal with sanding sealer or shellac after applying stain, if stain is required. Sand between coats using minimum #400 grit wet and dry sandpaper. Prepare in Prepare in accordance with MPI Manual requirements.

.7 Bare Ferrous Metal: Prepare in accordance with MPI 5.1 requirements for the system specified.

.8 Previously Primed Metal: remove loose shop primer and rust; make good shop coat, feather out edges of touch-up.

.9 Zinc Coated Metal: Prepare in accordance with MPI 5.3 requirements for the system specified.

.10 Unit Masonry and Concrete: fill minor cracks, holes and fissures with cement grout and smooth to a flush surface. Include bonding agent in cement grout mix. Prepare in accordance with MPI Manual requirements.

.11 Gypsum Board and Plaster: fill minor cracks, holes, and imperfections with tinted patching compound after prime coat has been applied and dried. Allow patching compound to dry, sand smooth and remove dust. Use minimum #150 grit sandpaper. Prepare in accordance with MPI Manual requirements.

.12 Alkaline Surfaces: wash and neutralize using recommended type of solution compatible with paint to be used.

3.5 PREPARATION OF PREVIOUSLY COATED SUBSTRATES

.1 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 "Maintenance Repainting Manual" (MR Manual), Chapter 2 and 3, Section 3 - Surface Preparation.

.2 Prepare substrates using surface preparation procedures in Chapter 6 Section 2, including cleaning and removal systems, specified for the degree of surface deterioration.

3.6 APPLICATION OF COATINGS

.1 Apply paint according to manufacturer's written instructions, use applicators and techniques best suited for substrate and type of material being applied, and in accordance with **MPI Manual Premium Grade Finish Requirements (three (3) coat system)**, except where additional requirements have been specified.

.2 Applied and cured coatings shall be uniform in thickness, sheen, colour, and texture and be free of defects detrimental to appearance and performance. Edges of paint adjoining other materials shall be clean and sharp with no overlapping.

.3 Do not paint over dirt, dust, scale, grease, oil, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

.4 Use rollers that will produce the least possible stipple effect; maximum 10 mm pile for smooth substrates. Heavier pile rollers may be permitted for use on rough substrates, subject to Consultant's approval.

.5 Provide finish coats that are compatible with primers used.

.6 Use a single manufacturer's products for all coats required for each finish system.

.7 Allow each coat to dry hard before succeeding coats are applied with a minimum of 24 hours between coats, except where manufacturer's instructions state otherwise.

.8 Sand and dust between each coat to remove defects visible from distance up to 914mm (3'- 0").

.9 Finish bottoms, edges, tops and cutouts of doors after fitting as specified for door surfaces.

.10 Finish tops of cabinets and projecting ledges, both above and below sight lines as specified for surrounding surfaces.

.11 Finish closets and alcoves as specified for adjoining rooms.

.12 Paint all new and renovated exposed surfaces unless specified otherwise.

.13 For woodwork to receive a stain finish, apply uniform coats of stain and wipe off if required. Wood shall have a uniform shade. Match stain so that dissimilar woods have uniform finished appearance.

.14 For open grain woods to receive a clear finish, tint paste wood filler to match wood. Work filler well into grain and before it sets, wipe off excess to provide a clean surface.

3.7 FINISHING OF NEW/UNFINISHED SUBSTRATES

.1 Site paint or finish all work and substrates indicated as requiring site painting or finishing in Schedules, Drawings, or Specifications.

3.8 FINISHING OF PREVIOUSLY COATED SUBSTRATES

.1 Repaint or refinish all work and substrates indicated as requiring repainting or refinishing in Schedules, Drawings, or Specifications.

3.9 BACK-PRIMING EXTERIOR WOOD

.1 Back prime concealed surfaces of the following components, prior to their installation:

.1 All wood components with one or more surfaces exposed to the exterior and one or more surfaces concealed after installation.

.2 Use exterior alkyd primer for components scheduled to receive a paint finish.

.3 Use semi-transparent stain for components scheduled to receive a solid or semi-transparent stain finish.

.4 Use gloss varnish, reduced 25% with thinner, for components scheduled to receive a varnish finish.

3.10 BACK-PRIMING INTERIOR WOOD

.1 Except for architectural woodwork having factory applied finishes as specified in Section 06 40 00, 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 any floors or floor finishes.
.3 Cut-outs for sinks, drains and other mechanical services.
.4 Underside of front edges of countertops and toe-spaces.
.5 Other surfaces which may be subjected to moisture during normal use or cleaning operations.
.6 Backboards for mechanical and electrical equipment.

.2 Use white alkyd wood primer for components scheduled to receive paint finish.

.3 Use semi-transparent stain for components scheduled to receive solid or semi-transparent stain finish.

.4 Use gloss varnish, reduced 25% with thinner, for components scheduled to receive varnish finish.

3.11 FINISHING NEW/UNFINISHED DOORS AND FRAMES

.1 Finish edges of doors in accordance with specified finish system. For top and bottom edges, final coat may be omitted.

.2 Finish wood doors after doors have been hung and adjusted. Refinish tops, bottoms and edges after fitting.
.3 Apply finishes specified for exterior doors to both door faces and edges.

.4 Finish unfinished vertical edges of prefinished wood doors to match door faces.

3.12 MECHANICAL / ELECTRICAL EQUIPMENT RELATED SURFACES

.1 Unless otherwise specified or noted, paint all "unfinished" conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and texture to match adjacent surfaces, in the following areas:

.1 Where exposed to view in all exterior and interior areas except in service rooms.
.2 In all interior high humidity interior areas.
.3 In all mechanical and electrical rooms.

.1 In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical

equipment in original finish and touch up scratches and marks. Do not paint over nameplates.

.3 Paint the inside of all ductwork where visible behind louvers, grilles and diffusers beyond sight line with primer an done coat of matte black (non-reflecting) paint. Paint the inside of light valances gloss white.

.4 Refer to Mechanical and Electrical specifications for painting, banding, stenciling of other surfaces / equipment.

3.13 FINISHING MISCELLANEOUS SUBSTRATES

.1 Paint substrates behind surface mounted fixtures, wall mounted heating units and unbacked cabinet work with specified finish systems, including specified number of coats.

.2 Finish shelving tops, bottoms and edges with specified finish systems, including specified number of coats.

3.14 PATCHING OF COMPLETED WORK

.1 Repair, touch-up, and refinish damaged finishes and finishes unsatisfactory to Consultant.

.2 Refinish entire wall or area where deemed necessary by Consultant.

3.15 RESTORATION

.1 Clean and reinstall all hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashing on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

3.16 CLEANING

.1 Place cotton waste, cloths and other material that may constitute a fire hazard in metal containers and remove from site daily.

END OF SECTION

1. General

1.1 INTENT

.1 Read this Section in conjunction with Section 09 91 05 - Painting and Finishing General Requirements.

2. Products

.1 (Not used).

3. Execution

3.1 INTERIOR PAINTING AND FINISHING SCHEDULE

.1 The following code numbers, finishing system descriptions, gloss levels, coats and product descriptions are derived from the MPI Architectural Painting Specification Manual and the MPI Approved Products List.

Code Number	Finishing System Description	Coat	Product Description
RIN 4.2A – CONCRETE MASONRY UNITS (block and brick)			
RIN 3.1A	Latex Gloss level G4 (DSD 3 – MPI # 50)	1st 2nd 3rd	DSD Latex Latex
RIN 3.2 – CONCRETE HORIZONTAL SURFACES			
RIN 3.2A	Latex Floor Enamel Gloss Level G3 and G6	1st 2nd 3rd	DSD Latex Floor Latex Floor
INT 9.1 – SPRAY TEXTURED KNOCK-DOWN CEILIING			
INT 9.1	Latex, (spray application only) Gloss Level G1	1st 2nd	Latex Latex
INT 9.2 – PLASTER AND GYPSUM BOARD			
INT 9.2A	Latex (over latex sealer) Gloss level G3 and G5	1st 2nd 3rd	Latex Primer Sealer Latex Latex

END OF SECTION

1 General

1.1 RELATED WORK

.1	Gypsum Board Assemblies	Section 09 29 00
.2	Painting and Finishing	Section 09 91 05

1.2 SAMPLE

.1 If requested by Consultant, prepare minimum 600mm x 600mm (2'-0" x 2'-0") area of textured coating on typical substrate for approval.

1.3 STORAGE AND PROTECTION

.1 Store materials in a dry, weatherproof enclosure at minimum 10°C.

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Ambient temperature shall be minimum 12°Celsius during and for 24 hours after application.

.2 Provide adequate ventilation during and for 24 hours after application.

2. Products

2.1 MATERIALS

.1 Textured coating material: factory prepared dry mix consisting of cementitious powder, mineral aggregate and binder, for mixing with water and spray application. Self priming materials are not acceptable.

.2 Water: potable

.3 Filling compound for concrete substrates: as recommended by textured coating manufacturer.

.4 Primer: flat white paint, alkyd base.

2.2 MIXES

.1 Mix materials in accordance with manufacturer's instructions.

2.3 FINISHES

.1 Colour: white.

.2 Texture: medium. – Confirm with Consultant prior to commencing work. Provide sample of texture to be used for approval.

3 Execution

3.1 PROTECTION OF EXISTING WORK

.1 Protect surrounding surfaces from droppings and overspray.

3.2 CONDITION OF SUBSTRATES

.1 Clean, free from dirt, dust, grease and loose materials.

.2 Temperature: minimum 12°Celsius.

.3 Moisture content: maximum 12%

.4 Ensure that gypsum board substrate joints and nail or screw depressions have been taped, filled, and sanded.

3.3 SUBSTRATE PREPARATION

.1 Gypsum Board Ceilings:

.1 All joints to be taped sanded and filled.

.2 Seal substrates with one coat of primer. Allow to dry minimum 24 hours.

.3 Correct irregularities that appear after application of primer.

3.4 APPLICATION

.1 Spray apply coating mixture in accordance with manufacturer's instructions.

.2 Completely cover and conceal substrate with an even coating.

.3 Finish texture shall be uniform and match approved mock-up.

.4 Allow coating to dry naturally.

3.5 CLEAN-UP

.1 Upon completion of work of this Section, remove from site all debris and sweep vacuum or otherwise remove all spatters and droppings; clean and remove excess material from all finished surfaces; leave area clean and tidy and acceptable to the Consultant.

END OF SECTION

1. General

1.1 GENERAL

.1 All Architectural, Electrical, Mechanical, Structural, and Civil drawings and Divisions 00 and 01 shall apply to this trade.

.2 It is the intent of these specifications and drawings to provide for a complete and fully operating system in complete accord with all applicable codes. These documents may not show or describe each item required; therefore, the Contractor shall make provisions for all labour, material and equipment deemed necessary to complete the work indicated or reasonably implied on all drawings, except where specifically noted such work is not included.

.3 The locations of various items are approximately correct and are subject to slight revision as the work is installed in order to accommodate construction and architectural details. The Electrical Contractor shall consult with the Engineer and Owner to ascertain any changes that may have to be made. Coordinate with General Contractor and all other trades.

.4 The responsibility and scope of each sub-trade rests solely with the Contractor. Extras will not be considered based on the grounds of difference in interpretation of specifications and drawings as to which trade involved shall provide certain specialties or materials.

.5 Should discrepancies occur between the drawing and specifications, or any other contract documents, the Electrical Contractor shall obtain a ruling from the Engineer prior to submitting his tender. If this is not done, it shall be determined that the more expensive alternative was included.

.6 The Electrical Contractor shall keep on the project, a competent foreman and necessary qualified tradesmen to oversee the progress of the work. The foreman shall represent the Electrical Contractor in his absence and all directions given to the foreman shall be held as being given to the Electrical Contractor.

1.2 REFERENCE DOCUMENTS

.1 Canadian Standards Association (CSA):
- .1 CSA C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
- .2 CAN/CSA-22.3 No. 1, Overhead Systems.
- .3 CAN3-C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 V.

1.3 REGULATIONS

.1 It is a condition of this contract, that the Contractor will, in the performance of the services for the Owner as described in this contract, perform work in accordance with the latest edition of the National Building Code – Alberta Edition, Canadian Electrical Code, Workplace Hazardous Materials Information System (WHMIS), OHS Act, utility service provider's requirements and any other code of Provincial or Local application, including hours of work, rates of pay, job safety and all other matters in which the Municipal, Provincial or Federal authorities have jurisdiction, provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Comply with standard for building construction operations, issued by the local fire department and all applicable fire safety codes, laws, and regulations.

.3 It is incumbent upon the Contractor to inform itself of any such legislation and the Contractor agrees that in the event of non-compliance with this legislation, it will indemnify and hold harmless the Owner from any costs and damages resulting from such non-compliance.

.4 All work shall be carried out in accordance with standards of good practice such as, but not limited to, SMACNA and ASHRAE, meet or exceed requirements of contract documents, specified standards, codes, and referenced documents described in these instructions.

1.4 COORDINATION

.1 This Contractor shall fully coordinate work with the General Contractor and other trades. Obtain shop drawings for the equipment supplied by others prior wiring and confirm final locations. Failing to do so will not warrant extras at a later date.

.2 Coordinate electrical work with the other trades to ensure that all electrical work is installed in a workmanship-like manner.

.3 Locate distribution systems, equipment, and materials to provide minimum interference and maximum usable space.

.4 Locate all existing underground services and make all parties aware of their existence and location.

.5 Where interference occurs, Owner and Engineer must approve relocation of equipment and materials regardless of installation order.

.6 Notwithstanding the review of shop drawings, this Division may be required to relocate electrical equipment which interferes with the equipment of other trades, due to lack of co-ordination by this Division. The cost of this relocation shall be the responsibility of this Division. The Owner and Engineer shall decide the extent of relocation required.

1.5 VOLTAGE RATINGS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.6 PERMITS, FEES & INSPECTION

.1 Submit to Electrical Inspection Department and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Owner will provide drawings and specifications required by Electrical Inspection Division and Supply Authority at no cost.

.3 Pay associated fees.

.4 Give all notices, obtain all permits, and pay all fees so that the work specified herein may be carried out, except for occupancy permit which will be obtained by the Owner.

.5 At the Engineer's or Owner's request, furnish any certificates as evidence that the work installed conforms with the laws and regulations of all Authorities Having Jurisdiction.

.6 Notify Engineer of changes required by Electrical Inspection Department prior to making changes.

1.7 SHOP DRAWINGS

.1 Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or materials.

.2 Where applicable, indicate wiring, single line and schematic diagrams.

.3 Include wiring drawings or diagrams showing interconnection with work of other sections.

.4 Each shop drawing will be stamped and signed by the Contractor before submitting, stating that he has checked the drawings against the requirements as called for in the Contract Documents and also in the case where the equipment is attached to or connects to other equipment, that is has been properly coordinated with this equipment, whether supplied under Division 26 or under other Divisions.

.5 Each shop drawing for non-catalogue items shall be prepared specifically for this project. If brochures are submitted for catalogue items, the brochures shall be marked deficiently indicating the item or items to be supplied.

.6 Work shall not be proceeded with on any of the equipment until final review of shop drawings received by the Contractor.

.7 Shop drawing review is for general compliance with Contract Documents. No responsibility is assumed by the Owner for correctness of dimensions or details. Corrections or comments, or lack thereof, made on the shop drawings during the Owner's review does not relieve the Contractor from compliance with the requirements of the drawings and specifications.

.8 If changes are required, notify Owner of these changes before they are made.

1.8 DELIVERY, STORAGE & HANDLING

.1 Deliver packaged materials in original unopened containers. Clearly identify each box/carton

.2 Coordinate with General Contractor regarding location for stored materials.

.3 Protect all materials from damage.

1.9 FIELD QUALITY CONTROL

.1 All electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower vocational training and qualification. Employees registered in a provincial apprentice's program shall be permitted, under the direct supervision of a qualified licensed electrician, to perform specific tasks - the activities permitted shall be determined based on the level of training attained and the demonstration of ability to perform specific duties.

.2 The work of this division to be carried out by a Contractor who holds a valid Master Electrical Contractor license as issued by the Province that the work is being constructed.

.3 Conduct and pay for following tests:
- .1 Power distribution system including phasing, voltage, grounding and load balancing.
- .2 Circuits originating from branch distribution panels.
- .3 Lighting and its control.
- .4 Emergency lighting
- .5 Motors, heaters and associated control equipment including sequenced operation of systems where applicable.
- .6 Systems: fire alarm system, communications.
- .7 Other: Integrated life safety system tests

.4 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.

.5 Insulation resistance testing.

- .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.

.6 Check resistance to ground before energizing.

.7 If requested, schedule and carry out tests in presence of Engineer. Provide ten (10) business days written notice of tests.

.8 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

.9 All data / voice cabling is to be tested to EIA/TIA standards.

.10 Submit test results for Engineer's review.

1.10 STAGING & SCHEDULING OF WORK

.1 This Division shall assume full responsibility for laying out work and for any damage or extra costs caused to the Owner or other contractors by improper location or carrying out of the Contactor’s work.

.2 The Electrical Contractor is responsible for the arrangement and organization of the required work and staging to implement these tender documents. The proper staging of this work is critical to completing all work within acceptable timelines.

.3 Contain all work being performed within the physical area of work which is under way, or approved work areas as indicated by the Owner. Keep the amount of disruption in the existing or associated facility to a minimum.

.4 Provide warning signs in locations where renovations and alteration work is adjacent to areas accessed by the public.

1.11 CUTTING & PATCHING

.1 This Division is responsible for required cutting and patching. Coordinate locations for all holes for pipes, ducts through floors and roof, etc., and provide sleeves required to execute the installation. X-ray floors

and structural walls before cutting to locate existing rebar and conduits. Xray of floor and walls to be carried out after hours when building is vacated.

.2 Obtain Engineer's approval for proposed cutting or drilling of walls, floors, and/or roofs prior to proceeding.

.3 Inform all other divisions in time, concerning required openings. Where this requirement is not met, bear the cost of all cutting.

1.12 FIRE RATING OF PENETRATIONS

.1 Maintain fire ratings around all penetrations and conduits passing through fire rated assemblies.

.2 Use 3M brand or equal fire barrier products at each penetration.

.3 Acceptable products for fire barrier products shall be 3M #CP25 fire barrier caulk, #303 putty, #FS 195 wrap and #CS195 sheet.

.4 Acceptable manufacturers: Nelson, Fire Stop Systems, 3M or approved equal. Material of same manufacturer to be used throughout project.

1.13 PROTECTION

.1 Protect exposed live equipment during construction for personnel safety.

.2 Shield and mark all live parts "LIVE 120 VOLTS", or with appropriate voltage in English.

.3 Arrange for installation of temporary doors for rooms containing electrical distribution equipment. Keep these doors locked except when under direct supervision of electrician.

1.14 EQUIPMENT SUPPORTS & HOUSEKEEPING PADS

.1 Fabricate equipment supports not supplied by equipment manufacturer from structural grade steel meeting requirements of Division 5. Submit structural calculations with shop drawings. Ensure that supports meet the requirements of the National Building Code.

.2 Mount base mounted equipment on chamfered edge housekeeping pads, minimum of 100 mm high and 50 mm larger than equipment dimensions all around.

1.15 ANCHOR BOLTS & TEMPLATES

.1 Submit anchor bolts and templates for installation by other divisions.

1.16 ACCESS DOORS

.1 Supply access doors for concealed electrical equipment to allow operation, inspection, adjusting and servicing.

.2 Use flush mounted 600 x 600 mm for body entry and 300 x 300 mm for hand entry unless otherwise noted. Doors to open 180, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.

.3 All doors are to be accurately located to provide accessibility for new and existing equipment.

.4 Material:
- .1 Use stainless steel with brushed satin or polished finish in special areas such as tiled or marble surfaces and as directed by Owner.
- .2 In remaining areas, use prime coated steel.
- .3 Use ULC rated access doors in fire rated walls and ceilings.

.5 Installation
- .1 Locate so that concealed items are accessible.
- .2 Locate so that hand or body entry (as applicable) is achieved.
- .3 Installation is specified in applicable sections.

1.17 INSPECTION OF WORK

.1 The Owner and Engineer will make periodic visits to the site during construction to ascertain reasonable conformity to plans and specifications but will not execute quality control. The Contractor shall be responsible for the execution of his work in conformity with the construction documents and with the requirements of the inspection authority.

1.18 WARRANTY, TRAIL USAGE

.1 The Contractor, as a condition precedent to final payment after completion of this work, shall give the Owner a written guarantee warranting all apparatus furnished under the contract to remain in perfect serviceable condition for a period of one year from the date of Final Acceptance of his work as established by the Owner and Engineer.

.2 All equipment to carry a minimum of a one-year unlimited warranty on all parts, labour, and expenses for the replacement of the defective or non-functional part from the date of energization.

.3 Warranty of the electrical systems or equipment that is energized and used on temporary or partial basis shall not commence until the entire project has reached Final Acceptance.

.4 Temporary, or trial use, or any electrical devices or equipment shall not be construed as evidence of acceptance of the same.

1.19 CARE, OPERATION & START-UP

.1 Instruct Owner and operating personnel in the operation, care and maintenance of systems, system equipment and components.

.2 Operating instructions to include following:
- .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
- .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
- .3 Safety precautions.
- .4 Procedures to be followed in event of equipment failure.
- .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

.3 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance, and calibrate components and instruct operating personnel.

.4 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.20 RECORD DRAWINGS

.1 The Contractor shall keep a neat and accurate record of the installation and, at the completion of the job, furnish the Engineer with a red lined set of "Record Drawings". Include all costs to produce record drawings.

.2 Show on the Record Drawings the installed inverts of all services entering and leaving the building and the property. Dimension underground services at key points of every run in relation to the structure and building.

.3 Indicate exact location of all services for future work. Show and dimension all work embedded in the structure.

.4 Submit in accordance with Division 01.

1.21 OPERATION AND MAINTENANCE DATA

.1 Provide operations and maintenance data for incorporation into the operations and maintenance manuals, as per the requirements of Division 01. Provide data in both digital (PDF) and printed form, according to Division 01.

.2 Include in the operations and maintenance data:

.1 Complete list of suppliers including telephone numbers, shop drawings, final electrical inspection certificate, warranty certificates, record drawings, and test reports.

.2 Details of design elements, construction features, component function and maintenance requirements to permit effective start-up operation, maintenance, repair, modification, extension and expansion of any portion or feature of installation.

.3 Technical data, product data, supplemented by bulletins, exploded views, technical description of items and part lists. Advertising or sales literature not acceptable.

.4 Wiring and schematic diagrams and performance curves.

.5 Copy of reviewed shop drawings.

.3 Each section shall be separately tabbed.

1.22 PROJECT COMPLETION

.1 Prior to final acceptance of the project, all electrical deficiencies noted on the Final Construction Review Report shall be completed, and the Fire Alarm Verification Report, Inspection Dept. Final Inspection Certificate, Record Drawings, and Maintenance Manuals shall be submitted.

.2 Contractor to inform the Engineer of the completion of these deficiencies in writing.

2. Products

2.1 MATERIALS AND EQUIPMENT

.1 Provide materials and equipment as required to perform work of this section.

.2 All materials and equipment shall be new and unused.

.4 Equipment and materials to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from the Authority Having Jurisdiction

.5 Factory assemble control panels and component assemblies.

2.2 ALTERNATES

.1 All equipment supplied shall be exactly as specified herein.

.2 All requests for alternatives are to be submitted as per Division 01.

.3 All equivalency decisions made by the Engineer will be final. The burden of proof of equivalent products both in terms of performance and quality shall be on the Contractor.

.4 The following supporting information shall be submitted for review when requesting an alternate:
- .1 Copy of manufacturers one year warranty against defects in material and workmanship for the luminaire and ballast.
- .2 Catalogue cut-sheets complete with technical specifications including photometric data from an independent laboratory.

.5 Different fixture types shall be identified.

.6 A sample fixture may be required at Engineer's discretion.

2.3 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
- .1 Paint outdoor electrical equipment 'equipment green' finish to EEMAC Y1-1-1955.
- .2 Paint indoor switchgear and distribution enclosures 'light grey' to EEMAC 2Y-1-1958.

.2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.3 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

2.4 IDENTIFICATION

.1 Label all panels, distribution, and other major pieces of equipment with limacoid nameplates complete with mechanical attachment as follows:

.2 Labels:
- .1 Embossed plastic labels with 5 mm high letters unless specified otherwise.

.3 Wording on nameplates to be approved by Engineer prior to manufacture.

.4 Identification to be English.

.5 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

.6 All receptacles and light switches shall be identified with panelboard/circuit identification on 'P-Touch' type extra-strength adhesive-backed water-resistant labels.
- .1 Use black text on clear background for normal circuits.
- .2 For covers that are a dark colour, use white text on clear background.
- .3 Use red text on clear background for Emergency circuits.
- .4 Use Arial, 5mm high font.
- .5 Ensure label location is cleaned and dry before affixing the label.

.7 All distribution devices shall have a Size 8 nameplate, unless limited by the available space on the device at which point it can be reduced in size to a smaller nameplate, to indicate the following items:
- .1 Identification or designation of device, including item or system being fed
- .2 Voltage, phases, wires, amperage
- .3 Source of supply, i.e. panelboard

.8 Label each new ceiling outlet/junction box with circuit number contained within.

.9 Provide neatly typed updated circuit directories in a plastic holder on the inside door of new panel boards, with copy in manual.

2.5 WIRING IDENTIFICATION

.1 Label all conductors with panel and circuit designation at all access points including outlet, pull or junction boxes and at panelboards.

- .1 Identify wiring at both ends with heat shrink type, indelible machine printed wire markers. Raychem ShrinkMark, or approved equal.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour code: to CSA C22.1.
- .4 Use colour coded wires in communication cables, matched throughout system.

2.6 CONDUIT AND CABLE IDENTIFICATION

.1 Colour code conduits, boxes and metallic sheathed cables.

.2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.

.3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	Prime	Auxiliary
Up to 250 V	yellow	
Telephone	green	
Other comm. Systems	green	blue
Security systems	red	yellow

2.7 GROUNDING

.1 Grounding shall be provided as required by CEC. Ground all mechanical metallic pipe systems.

2.8 CIRCUIT BREAKERS

.1 Panelboards to have bolt-in breakers, locking doors, flush or surface mounting as per drawings.

.2 Branch circuit breakers quick make, quick break, ambient compensated, common trip on all multipole breakers, trip indicating clearly shown by breaker handle taking position midway between on and off.

.3 New breakers shall be compatible with existing panel.

2.9 WIRE AND CONDUIT

.1 All wiring over 50V to be copper, RW90 600 Volt insulated, stranded with 'brady label' making sleeves at each end, unless otherwise noted. Wiring to be colour coded as per code. Minimum wire size to be no.12 AWG for power and lighting. Utilize No.10 AWG for runs greater than 100' (30m). Aluminum shall not be utilized.

.2 All wiring shall be concealed in wall and ceiling assemblies where possible.

.3 All wiring shall be contained in EMT conduit where exposed. Armoured cable (BX) shall be allowed where permitted by local inspection authority in concealed areas only. All surface mounted wiring shall be contained in EMT and rigid steel conduit painted to match the wall/ ceiling finish.

.4 Each length of conduit to be new and bear CSA stamp of approval.

.5 All conduits run above the suspended ceiling to be 'EMT'.

.6 Provide nylon pullropes in all empty conduit runs.

.7 Connectors: moulded PVC receptacles and adapters.

.8 Utilize PVC/DB2 raceways for in-slab or below grade raceways c/w ground wire.

2.10 WIRING DEVICES

.1 All switches and receptacles shall be commercial specification grade, white in colour, as manufactured by Hubbell, Leviton or Cooper. Provide smooth white phenolic plate to match device.

.2 Provide GFI receptacles at all locations indicated or where required by Canadian Electrical Code.

.3 Provide special receptacles and devices where indicated.

.4 Provide heavy duty, grey, die-cast weatherproof covers for outdoor outlets.

2.11 OUTLET BOXES

.1 All switches and receptacles shall be commercial specification grade, white in colour, as manufactured by Hubbell, Leviton or Cooper. Provide smooth white phenolic plate to match device.

.2 Do not use setscrew couplings made of zinc.

.3 Only setscrew couplings made of steel or malleable iron, with four hardened hex head screws to provide high quality bond, may be used for sizes 1/2 inch to 1 inch.

.4 Electro-galvanized steel, coating equal to that of the conduit.

.5 Minimum 37 mm deep 100 mm square or octagonal as required.

.6 Equip with plaster rings deep enough for wall finish material to fit over the box and within 6 mm of the cover opening.

.7 Provide GFI receptacles at all locations indicated or where required by Canadian Electrical Code.

.8 Confirm mounting heights, colour, style and location with Engineer prior to rough in.

2.12 COVERPLATES

.1 Polished stainless steel cover plates, thickness 1.0mm for wiring devices.

.2 Install cover plates only after painting and other work is finished.

.3 Install suitable common cover plates where wiring devices are grouped.

.4 Cover plates from one manufacturer throughout project

2.13 PULL BOXES

.1 Provide pull boxes where runs exceed 30 meters in length and have more than 2-90° bends.

2.14 LIGHTING

.1 Supply and install all fixtures as noted in fixture schedule complete with all accessories, lamps, and ballasts for a complete operational installation.

.2 Provide power packs, control relays, mounting accessories and programming as required for complete and operational lighting system. Coordinate location of all occupancy and vacancy sensors on site to provide complete coverage. Locations shown are for reference purposes only. Set all occupancy sensors shown to turn off connected light fixtures when sensor is inactive.

.3 LED lighting as shown. Each LED luminaire shall be a complete assembly consisting of: housing, power supply, LED engine, and optical system.

.4 The luminaire shall be a high reliability system with design features and components that provide for a minimum life expectancy of 80,000 operating hours.

.5 The LED luminaire shall be certified to CSA standards. All aspects of the LED luminaire shall facilitate electrical connections that comply with the Canadian Electrical Code.

.6 Totally encased and designed for 40°c ambient temperature.

.7 Power factor: minimum 95%.

2.15 EXIT LIGHTS

.1 To CAN/CSA-C860-01 and as follows:
- .1 With arrows
- .2 Provide single and double face as required.
- .3 Suitable for wall, ceiling, and end mount.
- .4 Housing: heavy duty extruded aluminum housing, white finish.
- .5 Lettering: Green running man with directional arrows. Coordinate and confirm directional arrows with the engineer prior to ordering.
- .6 Self-contained illumination module including all electronic power components.
- .7 Suitable for operation at 120 VAC and 24 VDC emergency input.
- .8 Lamps: energy efficient LED. 25 years of continuous operation without re-lamping.

.2 Wire size to be a minimum #10 AWG for DC installations.

.3 Connect to emergency battery pack.

2.16 EMERGENCY LIGHTING

. 1 Units to be CSA approved.

.2 Supply voltage: 120 VAC.

.3 Output voltage: 24 VDC.

.4 Operating time: 1-hr min with sufficient capacity to provide 91% voltage with connected load plus 25% spare capacity.

.5 Battery: sealed, minimum 10-year maintenance free.

.6 Charger: solid state, multi rate, voltage/current regulated, inverse temperature compensated, short circuit protected.

.7 Solid state transfer.

.8 Low voltage disconnect: solid state, modular, operates at 80% battery output voltage.

.9 Signal lights: solid state, life expectancy 100,000 h minimum, for 'AC Power ON' and 'High Charge'.

.10 Lamp heads: integral on unit or remote, as indicated, 360º horizontal and 180 vertical adjustment. Lamp type: LED – min 500 lumen.

.11 Cabinet: CEMA 4 type constructed of grey molded high impact polycarbonate. Suitable for direct or shelf mounting to wall and c/w knockouts for conduit. Fully gasketed hinged front panel for easy access to batteries.

.12 Auxiliary equipment:
- .1 Lamp disconnect switch.
- .2 Test switch.

.3 ac input and dc output terminal blocks inside cabinet.
.4 Cord and plug connection for ac.
.5 RFI suppressors.

2.17 HANGERS AND EQUIPMENT SUPPORT

. 1 All equipment provided under the Electrical Division shall be complete with all necessary supports and hangers required for a safe and workmanlike installation and to avoid strain on conduit, etc. Auxiliary supports where required shall be provided under this Division.

.3 Expansion bolts, inserted after concrete has been poured are acceptable.

.4 Paint all hangers, eg. U-bolts, trapeze hangers, etc. BEFORE INSTALLATION.

.5 Wire is not an acceptable conduit support.

3. Execution

3.1 EXISTING CONDITIONS AND DEMOLITION

.1 This project involves renovations to existing building, therefore examine the site and local conditions to determine the difficulties in carrying out the work indicated and specified. The Contractor shall visit the site to familiarize himself with all site conditions.

.2 Not all existing equipment and devices are shown on the drawings. Unless otherwise indicated, equipment and devices not indicated in areas beyond the areas shown for renovation is existing to remain. Unless otherwise indicated, all electrical equipment and devices not shown for reuse within the area indicated for renovation shall be removed complete with all conduit and wiring back to source.

.3 The Bidders shall obtain clarification from the Engineer on conflicts arising from unidentified equipment. The Contractor shall be responsible for restoring power to all equipment and devices in and beyond the area affected by this renovation. Reroute and extend conduit and wiring as required where existing wiring is installed in wall and ceiling assemblies to be removed. Contractor shall visit the site to accurately determine the scope of demolition.

.3 Existing equipment and devices shown as existing to remain or to be relocated shall be cleaned and made operational by this Contractor. Contractor shall include in their bid the cost of removal and reinstallation of devices and equipment shown as existing to remain.

.4 Removed equipment and devices shall be handed over to the Owner for storage. All equipment and devices rejected by the Owner shall become the property of the Contractor and shall be removed from the site at the Contractor's cost. Dispose of PCB ballasts in accordance with Provincial and Federal Law.

.5 Contractor to co-ordinate with other trades to ensure that electrical equipment and feeders associated with existing mechanical equipment being demolished is made safe and removed.

.6 Contractor to co-ordinate with other trades to ensure that electrical devices and equipment mounted on wall, ceiling, and floor assemblies to be demolished and feeders associated with the devices is made safe and removed.

.7 This Contractor shall make good all damages to the building and equipment resulting from electrical demolition and renovations.

.8 Remove, relocate, and reconnect existing electrical as required for renovation and expansion.

.9 Support existing conduit and electrical equipment to CEC standards.

.10 Remove all redundant electrical material from ceiling space, including conduit, computer cables, telephone cables, etc. Remove all redundant wall outlets, including associated conduits, wires, and boxes (power and low tension, and lighting) back to base building ceiling outlets. This includes outlets below the perimeter radiation cabinets.

.11 All modifications and additions to the existing electrical distribution system as well as communication systems shall be carried out in such a way that the interruptions to normal operations are kept to an absolute minimum, if at all. All such work shall be scheduled to the satisfaction of the Engineer and for approval by the Owners, whose convenience shall be of the foremost importance. Maintain service to occupied areas.

.12 Where existing electrical equipment is to be reused, the Electrical Contractor shall be responsible for disconnecting this equipment, removing, and reinstalling in the new locations and reconnecting as detailed on the drawings. Do not reuse existing unless otherwise noted.

.13 All existing materials, including lighting fixtures, etc., specifically indicated for reuse shall be cleaning prior to reinstallation.

.14 Render safe the installations at locations from which existing equipment has been removed, by withdrawing the existing wiring and removing conduits unless these conduits can be reused for the new installation. Where conduit are cast in concrete or are inaccessible they will be sealed and left in place.

.15 Trace all existing circuits to the source panel and update all directories with new typewritten panel board directories where circuits have been modified or new circuits added.

3.2 EXAMINATION OF OTHER WORK

.1 This Division requires the examination of the material and work for all other Divisions under which the work of this Section depends for proper completion. Any defect in work, levels or materials shall be reported to the Engineer and Owner. The work of this Division shall not commence until such defects have been corrected. This also applied to existing work installed under other Contracts.

3.3 MOUNTING HEIGHTS

.1	Switches:		1200mm AFF to top.
.2	Receptacles/Data:		
	.1	General:	400mm AFF to bottom.
	.2	Above Counters:	150mm Above counter.
	.3	Above Baseboard Heaters:	
	.4	Utility Rooms:	750mm AFF to bottom.
	.5	Exterior:	1200mm after finished grade to bottom.

3.4 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.5 CONDUIT AND CABLE INSTALLATION

.1 Install conduit and sleeves prior to pouring of concrete. Sleeves through concrete: schedule 40 steel pipe, sized for free passage of conduit, and protruding 50 mm.

.2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.

.3 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

.4 non-galvanized hangers, racks and fastenings to prevent rusting.

3.6 WIRE AND CONDUIT INSTALLATION

.1 Install electrical conduits and wiring at least 4 feet away from network cables to avoid electric field noise.

.2 For all empty conduit systems use insulated metal bushings with insulated throat liners for all conductors leaving conduits.

.3 Route raceways and wiring in a neat, workmanship manner to satisfaction of Engineer. Run all raceways and wiring parallel to building lines and concentric right angle bends only shall be used.

.4 All outlet boxes shall be installed flush. Use 4" (101mm) square box complete with plaster ring, and squared corner opening for low-tension outlet. Attach boxes two (2) studs minimum if steel studs are used. Sectional boxes are not acceptable.

.5 Provide polyvapour hat where penetrating vapour barrier.

.6 Run a green insulated ground wire sized as per code in conduit runs.

3.7 SWITCHES AND OUTLET BOXES INSTALLATION

.1 Refer to architectural/interior design drawings for door swings when placing a light switch.

.2 Locate outlets as shown on drawings. Refer to architectural drawings for location of outlets which are dimensioned or otherwise located.

.3 Confirm mounting heights, colour, style and location with the Engineer prior to rough-in.

.4 Do not install outlets back-to-back in wall; allow minimum 150mm horizontal clearance between boxes and locate in separate stud cavities wherever possible.

.5 Change location of outlets at no extra cost or credit, providing distance does not exceed 3 meters and information is given before installation.

3.8 LIGHTING FIXTURE INSTALLATION

.1 Provide supporting devices, hangers to install fixtures below obstructions, junction boxes, and outlet boxes as required.

.2 All fixtures shown in continuous lines or rows to be carefully aligned so that all rows appear as straight lines. Crooked lines or misplaced fixtures will not be acceptable.

.3 Fixtures shall not be mounted above pipes, ducts or equipment. Provide longer threaded rod, unistrut hangers or aircraft cables to clear obstructions. Layout of all other trades shall be checked on the job and planned co-operatively to avoid conflicting installations. Confirm exact locations and methods for fixture supports on site prior to installations. Make any adjustments in the layout as required to accommodate all the work at no additional cost to the contract.

.4 At least 12 mm of free air space will be allowed between recessed fixture enclosures and any combustible material other than that to which they are attached.

.5 All fixtures will be installed in the standard manner for the type of fixture and in accordance with the manufacturer's instructions and to the approval of the Engineer.

.6 Individual fixture supports and hangers shall be capable of support independently the dead load of the fixture plus 115 kg.

.7 All mounting accessories for lighting fixtures are to be determined and provided by Contractor as to the installation. Contractor shall seek clarification from the Engineer if there is a conflict in part numbers specified or if otherwise shown on the drawings.

.8 Ensure that circuit breakers supplying exit lights and nightlights are equipped with "lock-on" devices.

.9 Align and clean all fixtures upon completion.

3.9 EXIT LIGHT INSTALLATION

.1 Install exit lights as indicated, in accordance with the National Building Code – Alberta Edition.

.2 Connect fixtures to exit light circuits and to emergency power source as indicated.

.3 Ensure that exit light circuit breaker is locked in on position.

.4 Mounting heights of exit lights to be 2500 mm A.F.F. unless noted otherwise.

3.10 EMERGENCY LIGHTING INSTALLATION

.1 Install battery pack unit at 8'-0" (2.5m) as measured from finished floor to center of unit or 12" (300mm) down from ceiling, whichever is lower.

.2 Adjust heads to provide illumination of exit path along corridor, stairway and rooms.

.3 Connect remote emergency lighting units & exit/emergency (combo) units to the general lighting circuit in that area of remote emergency lighting coverage.

.4 Supply and install all low voltage wiring and connections to remote mounted emergency lighting units and exit lamps. Connect remote heads to battery packs. Size conductors for maximum of 5% voltage drop.

.5 Battery sizing shall be by the manufacture. Contractor shall include sizing in the shop drawing submittal for the Engineer's review.

3.11 MECHANICAL EQUIPMENT, ELECTRIC MOTORS, AND CONTROLS

.1 The Electrical Contractor shall be responsible to supply all motor starters, (except on pre-wired packaged equipment), disconnect switches for all motors for the project, and all wiring to starters and motors except where shown or noted otherwise. Equipment requiring connection to an electrical power source shall be CSA approved for use at location of installation.

.2 Manual motor starters shall be complete with pilot light. Where accessible to the public, install key switch type. Provide flush style in finished areas.

.3 Magnetic motor starters shall be EEMAC style contactor c/w adjustable overloads, LED type pilot light, HOA switch and 2 auxiliary convertible contacts, size as required. Coordinate with control trade. Size as required.

.4 Provide local disconnect switches at all motor locations.

.5 All mechanical low voltage control wiring (Below 50V) shall be supplied, installed, terminated and tested by Mechanical Contractor. All power wiring and line voltage control wiring shall be supplied and installed by Electrical Contractor. Coordinate and confirm requirements with Mechanical Contractor prior to installation.

.6 Coordinate all equipment locations prior to rough in. Confirm motor sizes prior to ordering motor starters and disconnects.

3.12 CLEANING

.1 During the course of the work, all surplus material and debris shall be removed, and at the final completion, the premises shall be left broom clean.

.2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.3 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

.4 At completion of project, all electrical equipment shall be left free of dust and paint. Interiors of panelboards, cabinets, and distribution equipment to be vacuumed and wiped cleaned. Light fixtures with metal reflectors are to be free of dust and fingerprints. Light lenses are to be cleaned of dust and debris.

.5 The Contractor shall at all times keep the premises free from the accumulation of waste material to the satisfaction of the Owner and Engineer. Place dust protection in the form of cover sheets over equipment and furniture to ensure no dust infiltration. Cleaning to be completed at the end of each shift to the satisfaction of the Owner and Engineer.

END OF SECTION

1. General

1.1 DESCRIPTION OF SYSTEM

.1 The fire alarm system consists of an existing control panel located at the main West entrance lobby.

1.2 REFERENCES

.1 Installation: Comply with requirements of CAN/ULC-S524, Installation of Fire Alarm Systems.

.2 Verification: Comply with requirements of CANULC-S537, Verification of Fire Alarm System Installations.

1.3 SUBMITTALS

.1 Submit in accordance with Division 01.

.2 Provide complete riser diagram and detail drawings indicating:
- .1 All alarm devices.
- .2 Control panel.
- .3 Annunciator panels.
- .4 Component layout.
- .5 Identification schedule.
- .6 Zone wiring designations.
- .7 Panel interconnect wiring.
- .8 Detailed wiring connections and wire designations.

.3 Provide factory data sheets for the following:

.1 Annunciator panels, indicating:
- .1 Materials.
- .2 Finishes.
- .3 Layouts.
- .4 Proposed labelling.

.2 System devices, indicating:
- .1 Typical wiring connection.
- .2 Installation instructions.
- .3 Control settings.
- .4 Component limitations.

1.4 SUPPLIER QUALIFICATIONS

.1 System supplier, manufacturer or manufacturer's authorized agent, shall have an office in Alberta established for a minimum of one-year, with full in-house technical service and maintenance capabilities. Suppliers utilizing third party or subcontracted maintenance services are not acceptable.

1.5 SOURCE OF SUPPLY

.1 Complete fire alarm system shall be supplied by a single manufacturer.

1.6 COORDINATION

.1 Coordinate installation of fire alarm system with Mechanical Division as required to provide a complete, integrated, functional system.

2. Products

2.1 COMPONENTS

.1 Components required for modification to the fire alarm system shall include, but not limited to:
- .1 New Signal Devices
- .2 New detection devices
- .3 New monitoring devices
- .4 New ancillary systems including smoke control system.

.2 Components required for modification to the control panel shall include, but not limited to:

- .1 New batteries sized to accommodate the new devices.
- .2 New control switches.

3. Execution

3.1 INSTALLATION - GENERALLY

.4 The Electrical Contractor shall be responsible for the complete fire alarm system including conduits for the fire alarm system. The Electrical Contractor shall install the cables. Termination will be by the Electrical Contractor. The Electrical Contractor shall provide and install all devices and perform all testing.

.5 The Electrical Contractor shall hire the services of an authorized agent of the panel manufacturer to modify and retrofit the control panel. The Electrical Contractor will have responsibility for the completion of the works, and shall include the manufacture's cost of programming and testing and verifying the fire alarm system.

.6 Control panel to carry out fire alarm and protection functions including receiving alarm signals, initiating general single stage alarm, supervising system continuously, actuating zone annunciators, and initiating trouble signals.

3.2 VERIFICATION AND CERTIFICATION

.1 The manufacturer shall make an inspection of the fire alarm equipment, including those components necessary to the direct operation of the system such as detectors and controls, whether or not manufactured by the manufacturer added under this contract. The inspector shall comprise an examination of such equipment for the following.

- .1 That the type of equipment installed is that designated by the specification.
- .2 That the wiring connections to all equipment components show that the installer undertook to have observed ULC and CSA requirements.
- .3 That equipment of the manufacturer's manufacture has been installed in accordance with the manufacturer's recommendations and that all signaling devices of whatever manufacture have been operated or tested to verify their operation.
- .4 That the supervisory wiring of those items of equipment connected to a supervised circuit is

operating and that the governmental regulations, if any, concerning such supervisory wiring have been met to the satisfaction of inspecting officials.

.5 To assist the Contractor in preparing his bid, the manufacturer shall indicate the number of hours necessary to complete this inspection, and the number of hours necessary to provide a seminar on the system for the building Owner.

.2 The system shall be tested and verified according to requirements of CAN/ULC S537 Standard for Verification of Fire Alarm System Installations. The complete verification procedure will be under the control and supervision of the Consultant. The services of the contractor and representatives of the fire alarm manufacturer are required for the verification. The following is a rough breakdown of the responsibilities of each party participating in the verification. This list does not necessarily note all the required work. The Contractor and fire alarm manufacturer shall provide equipment and manpower as necessary to complete the verification to the Consultant's requirements and approval.

.3 Contractor:

.1 Remove/reinstall devices.
.2 Activate alarms.
.3 Activate trouble alarms.
.4 Provide 1 pair of radios.
.5 All work to be 100% complete.
.6 Provide necessary manpower.
.7 Correct deficiencies
.8 Coordinate and schedule verification (all two weeks notice).

.4 Manufacturer:

.1 Ensure correct operation of all alarms, signals, auxiliary functions, trouble indication.
.2 Record all data and issue report and certificate of verification.
.3 Correct any deficiencies.
.4 Check, calibrate, adjust, and confirm correct operation of control panels, annunciator.
.5 Generally assure that all aspects of system function properly.
.6 Provide all test equipment, including sound pressure level meter, volt meter, aerosol test smoke.

.5 Consultant:

.1 Direct and supervise verification.
.2 Check and ensure that system is applied and installed to all applicable codes.
.3 Review test documentation, give to the Owner and fire authorities.

.6 All costs involved in this inspection, including manufacturer's, Electrical Contractor's and the Consultant's fees, shall be included in total price. The Consultants portion of the verification is $2,500 excluding GST.

3.3 INSTALLATION

.1 Install systems in accordance with CAN/ULC-S524.

.2 Locate and install manual alarm stations and connect to alarm circuit wiring.

.3 Locate and install detectors and connect to alarm circuit wiring. Do not mount detectors within 1 m of air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors. Locate duct type detectors in straight portions of ducts.

.4 Connect alarm circuits to main control panel.

.5 Locate and install audible signal and visual signal devices and connect to signaling circuits.

.6 Connect signaling circuits to main control panel.

.7 Install end-of-line devices at end of alarm and signaling circuits, in a separate box not more than 1730 mm above finished floor.

.8 Locate and install remote relay units to control fan shut down.

.9 Sprinkler system: wire alarm and supervisory switches and connect to control panel.

3.4 INSTALLATION

.1 Ensure conductors are routed in such a manner to provide required fire rating.

.2 Signal circuits to be wired with a minimum 2 - #14 R90 per zone. In no case shall the voltage drop to any signal exceed 10%.

.3 Alarm initiating devices to be wired with multi conductor #18 R90 cables as required in accordance with the Canadian Electrical Code. Circuit resistance shall not exceed 50 ohms.

.4 All wiring will be terminated into the terminal strips in the fire alarm cabinet with all wiring fully labeled. All cabling to be neat with cables bundled and wrapped inside the cabinets. No splicing will be allowed within the cabinets. A complete schedule of all wiring terminations will be mounted inside each control unit. A complete schematic with all devices, cable labeling information, destinations, etc. will be included with the shop drawings.

END OF SECTION