Municipality of
French River
Municipalité de la Rivière des Francais

ALBAN COMMUNITY CENTRE
BUILDING UPGRADES

796 Highway 64
Alban, Ontario
P0M 1A0

PROJECT MANUAL
and
SPECIFICATIONS

#2023-02

2209

January 31, 2023

Issued for Tender February 17, 2023

OWNER:	The Municipality of French River ("Owner")
PROJECT TITLE:	Alban Community Centre Building Upgrades
PROJECT LOCATION:	796 Highway 64, Alban, ON, P0M 1A0
PROJECT DESCRIPTION:	Interior and exterior building upgrades to an existing community centre and related site work for the Municipality of French River located at 796 Highway 64, Alban, ON, P0M 1A0.
ARCHITECT	Perry + Perry Architects Inc. 174 Larch Street, Suite 201, Sudbury, Ontario, P3E 1C6 (705) 688-0440 (705) 688-0439 fax Attention: Chris Perry
DOCUMENTS ISSUED:	Electronic Tender Documents may be obtained from Municipality of French River Tenders Website no sooner than **Friday, February 17th, 2023 @ 12:00 p.m.**
QUOTATIONS RECEIVED:	On or before **Wednesday, March 8th, 2023 @ 2:00 p.m**.
MANDATORY SITE MEETING:	**Tuesday, February 28th, 2023 @ 10:00 a.m**.

End of Section

OWNER: Municipality of French River *("Owner")*

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

End of Specifications

Attachments

PVC Membrane Cleaning Guidelines IB Roof Systems PVC Roofing Solutions 2 Pages

OWNER: Municipality of French River *("Owner")*

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

1. BID DOCUMENTS

1.1 The Bid Documents include:

(a) These Instructions to Bidders, together with the attached Bid Form, which include the following appendices:

Appendix A List of Drawings;
Appendix B List of Subcontractors;
Appendix C Alternates;
Appendix D Tender Breakdown;
Appendix E Separate Prices

(b) CCDC2 2020 Stipulated Price and Supplementary General Conditions;

(c) General Requirements;

(d) Project drawings, specification books and addenda prepared by, or on behalf of Perry + Perry Architects Inc ("Owner's Consultant");

1.2 The Bidder shall verify in its Bid that it has received and reviewed all Bid Documents and shall assume responsibility for the said Bid Documents received as being complete. Any missing Bid Documents shall be reported immediately, in writing, to the Owner's Consultant at the address set out below.

1.3 It is agreed that the Bid Documents are made available only for the purpose of obtaining Bids for this project. Their use does not confer a license or grant for any other purposes.

1.4 The drawings and specifications remain the property of the Owner and must be returned unmarked, in good condition, after the Bid has been awarded, except for the successful Bidder.

1.5 It is understood and agreed that the Bid Documents and information that the Bidder may learn regarding the business of the Owner is a corporate asset belonging to the Owner and is strictly confidential in nature. The Bidder agrees that in the event of a breach of this confidentiality, either by it, its employees, agents, or assigns, the Owner shall be entitled to seek all remedies at law and in equity.

2. BID SUBMISSION

2.1 Only electronic submissions will be accepted for the project. Bid documents must be submitted in the form of a password protected pdf document to cperry@pparchitects.com Subject line should include the Bid reference number. After the official closing time, respondents will be requested to submit the password.

2.2 It is the respondent's responsibility to ensure submissions are received by the Municipality by the submission deadline. The Municipality assumes no obligation for issues caused by electronic or

telecommunications issues affecting the delivery of the submission, even if originating from the Municipality's IT systems. Respondents are encouraged to submit their response early and to call the Municipality contact person after submitting their proposal to confirm the Municipality's receipt of the proposal.

2.3 Bids using the prescribed Bid Form supplied herewith, electronically submitted, will be received no later than **Wednesday, March 8th, 2023, 2:00:00 PM** local time, according to the clock at the Owner's location for receiving Bids, which shall be the only measure for the exact time (*date and time*). Submit Supplementary Bid Information electronically and clearly marked within 1 hour after Tender Close.

2.4 Bid Forms and appendices shall be completed in ink or typewritten and shall provide the telephone number, address and name of the individual to be contacted. All blank spaces of the Bid Form and appendices must be filled in. Non-applicable sections must be lined out and initialled. Bid prices must be stated both in words and figures. Penciled entries may be considered invalid or informal by the Owner.

2.5 Bid Forms shall be signed by a Bidder's duly authorized signing officer under the Bidder's corporate seal. If the Bidder operates its business as a sole proprietorship, the Bid Form must contain the signature of the sole proprietor in the presence of a witness who will also sign the Bid Form. The words "Sole Proprietor" must be added below the signature.

2.6 Bid prices must include all government taxes (except HST), custom duties and excise taxes in effect at Closing.

2.7 Bids shall be irrevocable and shall remain open for acceptance by the Owner for a period of sixty (60) calendar days from Closing.

2.8 No oral, faxed or written transmitted Bid will be considered.

2.9 Bidders shall be solely responsible for the delivery of their Bids in the manner and time prescribed. Bids that are incomplete, unsigned, improperly signed or sealed, conditional, illegible, obscure, or that contain arithmetical errors, erasures, alterations, reservations or irregularities of any kind, may, at the sole discretion of the Owner, be declared informal and rejected.

2.10 Bids that contain prices which appear to be so unbalanced that they may adversely affect the interests of the Owner may be rejected. Bids may also be rejected if they are based on an unreasonable period of time for completion of the work.

3. BID MODIFICATION AND WITHDRAWAL OF BIDS

3.1 A Bidder may withdraw its Bid at any time prior to Closing provided the withdrawal:

(i) is in the form of an electronic transmittal and all pages of such electronic transmittal are received by the Municipality at the email address specified in Section 2.1, above, by the receipt time recorded by the Municipality;

(ii) states the name of the Bidder and clearly identifies the Bid that is being withdrawn; and

(iii) is signed by the Bidder's duly authorized signing officer.

No oral, written transmitted or other means of Bid withdrawal will be considered by the Owner.

3.2 A Bid submitted in accordance with these Instructions to Bidders may be modified at any time prior to Closing provided the modification:

(i) is in the form of an electronic transmittal and all pages of such electronic transmittal are received by the Municipality at the email address specified in Section 2.1, above, by the receipt time recorded by the Municipality;

(ii) states the name of the Bidder and the nature of the modification, subject to the requirements of Section 3.3, below; and

(iii) is signed by the Bidder's duly authorized signing officer.

3.3 Where a modification directs a change to the Bid price, the modification shall not reveal the original Bid price nor the revised Bid price and:

(i) on lump sum Bid prices, only the amount to be added to or deducted from the original Bid price shall be stated; and

(ii) when unit prices are used, only the amount to be added to or deducted from each original unit price shall be stated.

3.4 The Owner has no responsibility for the content of modifications or modifications that are, for any reason, delayed, illegible or otherwise improperly submitted or received, and the Owner may, in its sole discretion, disregard any modifications that are improperly submitted or received.

4. ALTERNATIVE MATERIALS AND PROCEDURES

4.1 If, for any reason, the Bidder should propose to use different materials, equipment or methods which, in the Bidder's opinion, would improve the operation of the installation specified, the Bidder shall:

(a) base its Bid on the exact requirements of the Bid Documents;

(b) submit with its Bid a proposal, in the prescribed form, describing in full detail the different materials, equipment or methods which the Bidder is proposing, the Bidder's reasons for such deviation from the requirements of the Bid Documents and any increase or decrease applicable to the Bidder's price or completion time resulting from the alternative proposal. The Bidder agrees that the use of alternatives will not affect the Bidder's base bid amount and that the Bidder will be responsible for any cost charges relating thereto, as all alternatives may be deemed inappropriate, but that the Owner may consider the Bidder's alternative proposal and indicate at the time of the acceptance of a Bid, whether or not the alternative proposal is acceptable to the Owner.

4.2 The Owner reserves the right, in its sole discretion, to accept or reject any or all substitutions and alternatives.

5. EXAMINATION OF CONDITIONS

5.1 In submitting a Bid, it will be assumed that the Bidder has carefully examined the site of the proposed work and the Bid Documents including the provisions of the Contract, has fully informed itself as to the existing conditions and limitations under which the work is to be performed, the conditions which may be encountered, the materials it will be required to supply and other materials which are required in carrying out the Contract to a satisfactory conclusion, and has included in its Bid the complete cost of the work shown and/or specified in the Bid Documents.

5.2 No claims or allowances will be considered based on the assertion by the Bidder that it was not aware of existing site conditions or the provisions or conditions covered by the Bid Documents.

5.3 Drawings may not reflect all existing elements, and exact locations of those elements may vary: Bidders are responsible for reviewing site conditions and reporting in writing any discrepancies which may affect the Bid Price and/or Contract schedule. Extra's will not be allowed for discrepancies unless reported during the Bid period.

5.4 Bidders and other persons intending to carry out investigations relative to the proposed work shall make arrangements with the Owner before entering and carrying out investigations on the site.

5.5 Bidders and other persons wishing to carry out destructive investigations relative to the proposed work shall be bonded and shall obtain the Owner's consent in writing before entering and carrying out such investigations on the site.

6. INTERPRETATIONS AND ADDENDA

6.1 Bidders finding discrepancies, ambiguities, or omissions in the drawings, specifications or other Bid Documents, or having doubt as to the meaning or intent thereof shall immediately address all queries, in writing, to the Owner's Consultant at:

Perry + Perry Architects Inc, 174 Larch Street, Suite 201, Sudbury, Ontario, P3E 1C6 (705) 688-0439 fax

6.2 The Owner's Consultant may issue instructions and/or clarifications in the form of addenda. Bidders may also be advised by addenda of any other additions, deletions or alterations to the drawings and specifications. All such addenda shall become part of the Bid Documents.

6.3 No oral interpretation or instructions shall be effective to modify the provisions of the Bid Documents. Neither the Owner nor the Owner's Consultant will be responsible for any oral interpretation or instruction.

6.4 All addenda, if issued, during the bid period shall become part of the Bid Documents and shall supersede and amend the Bid Documents, as required.

7. BONDS

7.1 The Bidder shall include with its Bid a Bid Bond for 10% of the Bid price, valid for the full length of the bid acceptance period and issued by a recognized Surety Company licensed to operate in the Province in which the Contract is to be performed.

7.2 The Bid Bond shall be forfeited to the Owner if the successful Bidder fails to enter into a Contract and provide the required Performance Bond and Labour and Material Payment Bond as described below.

7.3 The Bidder shall include with its Bid an Agreement to Bond issued by a Surety Company licensed to operate in the Province in which the Work is to be performed, stating that a 100% Performance Bond and a 100% Labour and Material Payment Bond will be provided to the Owner. If a Bid is accepted by the Owner within the aforementioned time period by written notification of acceptance of the Bid, the successful Bidder shall deliver to the Owner's Consultant a 100% Labour and Material Payment Bond and a 100% Performance Bond issued by the Surety Company. The cost of the bonds shall be included in the Bid price.

8. ACCEPTANCE OF BID

8.1 The Owner reserves the right, in its sole discretion, to reject any or all Bids as the interests of the Owner may require, without stating the reasons therefore, including without limitation, the lowest priced Bid.

8.2 The Owner reserves the right, in its sole discretion, to accept the Bid that in the Owner's sole discretion it deems the most advantageous, notwithstanding any custom, usage or agreement in the industry or trade, or any other policy or practice. The successful Bid, if any, will be selected by the Owner based on any number of criteria that the Owner, in its sole discretion, considers relevant, including without limitation (and not listed in order of importance), any combination of: stipulated price, separate prices, alternative prices and product options, schedule, proposed subcontractors, proposed supervision and project management, related qualifications and experience with similar work projects, and any other factor the Owner deems relevant. The submission of Bids does not obligate the Owner to accept any Bid or to proceed further with this invitation, or with the Project.

8.3 By submitting a Bid, the Bidder acknowledges the Owner's rights as stated herein and absolutely waives any right of action against the Owner and the Owner's Consultant for the Owner's failure to accept the Bidder's Bid whether such right of action arises in contract, negligence, bad faith, or any other cause of action.

8.4 Bidders shall bear all costs of preparing and submitting Bids in response to this Invitation. The Owner will not be responsible for any costs, expenses, loss, damage or liabilities incurred by the Bidder as a result of or arising out of tendering for the proposed Contract, or due to the acceptance or non-acceptance of any Bid.

8.5 It shall be understood by all Bidders that the Bids shall be valid and irrevocable subject to acceptance by the Owner and that no adjustment shall be made to the Bid amount for a period of up to and including sixty (60) calendar days from Closing.

8.6 Bids not received by the stated Closing will not be considered and will be returned.

8.7 If a Bid is accepted by the Owner within the aforementioned time period by written notification of acceptance of the Bid, the successful Bidder shall execute and deliver to the Owner the Contract within seven (7) calendar days of receipt of such Contract from the Owner, and shall commence work immediately thereafter.

8.8 It is understood and agreed that if the successful Bidder fails to commence work immediately after the written notification of acceptance of its Bid, the Owner will be entitled to all remedies available at law and in equity, including but not limited to damages amounting to the difference between the accepted Bid and the price of the Contract that is subsequently and consequently signed.

8.9 Without limiting the foregoing, the Owner further reserves the right, in its sole discretion, to cancel this invitation if the Bid prices received exceed the Owner's internal budget for the Project, or should the Owner not receive any satisfactory Bids, or should the Owner receive an insufficient number of Bids, or should unforeseen circumstances arise at any time before the Bid irrevocability period expires, or for any other reasons relevant to the Owner.

8.10 Where the Owner does not receive any satisfactory Bids, including any number of Bids which the Owner deems non-compliant with any aspect of the invitation, these Instructions, or the requirements set forth in the Bid Documents, the Owner may, at its sole discretion, either: revise the Project work scope identified in the Bid Documents and invite one or more of the Bidders to

resubmit revised prices; or enter into negotiations for the whole or any part of the Project work with any Bidder, or with more than one Bidder, concurrently. The Owner is not required to offer any revised scope of work or negotiations to any Bidder, and shall incur no obligation or liability to any Bidder in the exercise of this right.

9. INSURANCE

9.1 If a Bid is accepted by the Owner within the aforementioned time period by written notification of acceptance of the Bid, the successful Bidder shall deliver to the Owner within seven (7) calendar days of receipt of the Owner's notification of acceptance, certificate(s) of insurance from an approved insurance company licensed to carry on business where the Work is to be performed, evidencing the insurance coverage as required under the Contract.

10. QUALIFICATIONS

10.1 Bidders submitting Bids shall be actively engaged in the type of work required by the Bid Documents and on request shall provide the Owner with a list of similar work performed by the Bidder.

10.2 The resumé of the Bidders' proposed superintendent is to be provided to the Owner on request.

11. WORK SEQUENCE

11.1 Time shall be of the essence of the contract. The Contractor shall begin work immediately after receiving written instructions to do so and shall diligently execute the Work on this contract to substantial completion on or before **September 30th, 2023**.

11.2 The above date is based on contract award no later than **March 16th, 2023.**

12. COVID PROCEDURES

12.1 The Contractor must provide a copy of their COVID-19 specific health and safety policy before any work is undertaken. Government guidelines for the construction sector are available at https://news.ontario.ca/opo/en/2020/04/health-and-safety-association-guidance-documentsfor-workplaces-during-the-covid-19-outbreak.htm & https://www.ihsa.ca/Urgent-Notices/COVID-19-Links-Resources.aspx. As applicable, the Contractor's policies and procedures should address communication, project meetings, site access for visitors, transfer of documents, physical distancing, personal hygiene, personal protective equipment, portable restrooms, site cleaning, worksite monitoring and worker self–assessment. It is the responsibility of the Contractor to communicate this policy to subcontractors and all other persons on site. The Contractor may be required to update its COVID-19 safety policy during the contract if the government policies and recommendations due to COVID-19 change.

12.2 The Municipality reserves the right to cancel and/or postpone this contract at any time as a result of the current and ongoing COVID-19 Pandemic.

End of Section

PROJECT NUMBER: 2209

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

Submitted To: The Municipality of French River ("Owner")

We, _____
(Company Name)

of _____
(Business Address)

_____

having examined the bid documents for the Project and Addenda No. _____ to No. _____ inclusive, all as issued by Perry + Perry Architects Inc, *(Consultant)*

and listed in Appendix “A” (the “Bid Documents”) and having visited and examined the Project Site, hereby offer to enter into a contract to perform the work required by the Bid Documents (the ”Work”) inclusive of all specified allowances for the stipulated price of

_____

Dollars $ _____

in Canadian funds, which price includes any specified cash and contingency allowances, Separate Prices and all applicable taxes in force at this date, excluding H.S.T., except as may be otherwise provided in the Bid Documents.

Appendices to Bid:

The information on List of Bid Documents, List of Subcontractors, Alternative Prices, and Tender Cost Breakdown, Separate Price forms, are provided in the attached Appendices, and form an integral part of this Bid.

Declarations:

We hereby declare that:

1. we acknowledge and agree to abide by all of the terms and conditions as set out in the Instructions to Bidders.

2. we agree to perform the Work in compliance with the terms and conditions stated in the Bid Documents and within the required completion schedule stated in the Bid Documents, or if no schedule is stated, to attain Substantial Performance of the Work within _____ weeks after receiving notice of Contract award;

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

4. this Bid is irrevocable and open to acceptance for a period of sixty (60) days from the date of Bid closing, irrespective of the acceptance by the Owner of any other Bid or the issuance of a notice of acceptance of any other Bid;

5. We will execute and deliver to the Consultant a Contract for the Work in the form prescribed in the Bid Documents, within seven (7) days of receiving the Contract from the Owner, or the Consultant;

6. We agree that the Owner has the absolute right to accept or to reject the offer that this Bid comprises, for any reason whatsoever, without explanation, including if it contains the lowest stipulated price of the Bids received by the Owner;

7. If this Bid is accepted by the Owner within the time period stated, we undertake and agree to furnish the following documents, in addition to the signed Contract, all within seven (7) days from the date of acceptance:

   (a) shall deliver to the Owner's Consultant a 100% Labour and Material Payment Bond and a 100% Performance Bond issued by the Surety Company. The cost of the bonds shall be included in the Bid price;

   (b) shall deliver to the Owner's Consultant certificate(s) of insurance from an approved insurance company licensed to carry on business where the Work is to be performed, evidencing the insurance coverage as required under the Contract;

8. We acknowledge and agree that we shall not be entitled to any compensation for the cost of preparing this Bid, nor shall the Owner have any obligation to compensate us for the cost of preparing this Bid. We further acknowledge that neither the Owner, nor the Consultant, nor their representatives or agents, shall be liable to us for any cost, loss or damages suffered or incurred as a result of the rejection of this Bid.

Signatures:

Signed, sealed and submitted for and on behalf of:

Company: _____
(Name)

_____
(Street Address or Postal Box Number)

_____
(City, Province & Postal Code) *(Apply SEAL above)*

Signature: _____

Name & Title: _____
(Please Print or Type)

Witness: _____

Dated at _____ this _____ day of _____, 2023

N.B. Where legal jurisdiction or Owner requirement calls for proof of authority to execute this Bid, proof of such authority in the form of a certified copy of a resolution naming the person or persons in question as authorized to sign this Bid for and on behalf of the Corporation or Partnership should be attached.

PROJECT NUMBER: 2209

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

BID SUBMITTED BY: _____

LIST OF BID DOCUMENTS

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

Project Manual and Specifications dated January 31, 2023

Drawings:

A000	Title Page
A100	Main Floor Plan
A100	Gym Floor Plan
A200	Elevation and Wall Section
A400	Millwork
ME-1	Mechanical-Electrical Systems Specification Notes
ME-2	Mechanical-Electrical Systems Generator & Propane Gas Systems
ME-3	Plumbing Systems
ME-4	Hydronic Heating Systems
ME-5	Kitchen Hood Systems
ME-6	Electrical Systems-Electrical Service & Boiler Systems
ME-7	Electrical Systems-Kitchen & Bar Area

Appendix A must be submitted with Supplementary Bid Information no later than 3:00 p.m. local time on the specified Tender Close date.

APPENDIX "B" to Bid

PROJECT NUMBER: 2209

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

BID SUBMITTED BY: _____

LIST OF SUBCONTRACTORS

The following are the Subcontractors we propose to use for the Divisions or Sections of Work listed hereunder.

(If not used, bar and initial the space below)

Division or Section of Work	Name of Subcontractor
Metal Siding	
Finished Carpentry & Millwork	
Resilient Sheet Flooring	
Mechanical HVAC	
Mechanical Plumbing	
Electrical	

Appendix B must be submitted with the Bid Form no later than 2:00 p.m. local time on the specified Tender Close date.

APPENDIX "C" to Bid

PROJECT NUMBER: 2209

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

BID SUBMITTED BY: _____

ALTERNATIVE PRICES

The following are our prices for the Alternative Work listed hereunder. Such Alternative Work and amounts are **NOT** included in our Stipulated Price.

(If not used, bar and initial the space below)

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

Appendix C must be submitted with Supplementary Bid Information no later than 3:00 p.m. local time on the specified Tender Close date.

APPENDIX "D" to Bid

PROJECT NUMBER: 2209

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

BID SUBMITTED BY: _____

TENDER COST BREAKDOWN (2209)		
CODE	DESCRIPTION	TOTAL
A01	GENERAL CONDITIONS	
A02	EXTERIOR UPGRADES (Metal Siding/Insulation)	
A03	EXTERIOR ROOFING CLEANING	
A04	ROUGH CARPENTRY	
A05	FINISHED CARPENTRY & MILLWORK	
A06	JOINT SEALANTS/FIRE STOPPING	
A07	ACOUSTIC CEILINGS	
A08	RESILIENT SHEET FLOORING	
A09	PAINTING	
A10	DIVISION 10 - SPECIALTIES	
A11	MECHANICAL	
A12	ELECTRICAL	
A13	ALLOWANCES	
A14	OTHER	

	T O T A L	

(TOTAL SHALL EQUAL TENDER PRICE)

Appendix D must be submitted with Supplementary Bid Information no later than 3:00 p.m. local time on the specified Tender Close date.

APPENDIX "E" to Bid

PROJECT NUMBER: 2209

PROJECT TITLE: Alban Community Centre Building Upgrades

PROJECT LOCATION: 796 Highway 64, Alban, ON, P0M 1A0

BID SUBMITTED BY: _____

SEPARATE PRICES

Separate prices shall be included in the Stipulated Price and shall exclude HST. The total sum of the Separate Prices shall equal the total stipulated sum in the Bid Form:

Separate Price No 1: Building Envelope Upgrades

Supply the labour, materials and equipment for the scope of work related to the exterior building envelope upgrades.

_____

Dollars $ _____

Separate Price No 2: Interior Renovation Upgrades

Supply the labour, materials and equipment for the scope of work related to the interior renovations (except for Boiler Room Upgrades).

_____

Dollars $ _____

Separate Price No 3: Boiler Room & Generator Upgrades

Supply the labour, materials and equipment for the scope of work related to the boiler room upgrades as per the Mechanical and Electrical drawings and specifications.

_____

Dollars $ _____

Appendix E must be submitted with Supplementary Bid Information no later than one (1) hour local time after the specified Tender Close date.

CCDC 2-2020 - SUPPLEMENTARY CONDITIONS

The Standard Construction Document for Stipulated Price Contract, 2020 English version, consisting of the Agreement Between Owner and Contractor, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 13 inclusive, governing same is hereby made part of these Contract Documents, with the following amendments, additions and modifications specifically reference a change to the Agreement Definitions, or General Conditions, these amendments, additions and modifications shall govern.

Where a General Condition or paragraph of the General Conditions of the Stipulated Price Contract is deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of the deleted item will be retained, unused.

AMENDMENTS TO AGREEMENT

ARTICLE A-5 – PAYMENT

.1 In paragraph 5.1.1 of Article A-5 add the following words to the end:

"or, where there is no Payment Certifier, jointly by the Owner and Contractor"

ARTICLE A-6 – RECEIPT AND ADDRESSES FOR NOTICES IN WRITING

.1 Delete paragraph 6.5 of Article A-6 in its entirety and replace it with the following:

"6.5 Contact information for a party may be changed by Notice in Writing to the other party setting out the new contact information in accordance with this Article."

AMENDMENTS TO DEFINITIONS

.1 Add the following definition: Proper Invoice**:**

"Proper Invoice means a "proper invoice" as defined in the Payment Legislation, if any, and as may be modified by written agreement between the parties to the extent permitted by such Payment Legislation."

.2 Add the following definition: Submittals**:**

"Submittals are documents or items required by the Contract Documents to be provided by the Contractor such as:

- Shop Drawings, samples, models, mock ups to indicate details or characteristics, before the portion of the Work that they represent can be incorporated into the Work, and

- As-built drawings and manuals to provide instructions to the operation and maintenance of the Work."

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

.1 Delete paragraphs 1.1.3 and 1.1.4 in their entirety and replace them with the following:

"1.1.3 The Contractor shall review the Contract Documents for the purpose of facilitating and co-ordination and execution of the Work by the Contractor. The Contractor shall report promptly to the Consultant any ambiguities, design issues or other matters requiring clarification made known to the Contractor or that the Contractor may discover from such a review. Such review by the Contractor shall comply with the standard of care described in paragraph 3.9.1 of the Contract.

1.1.4 Except for its obligation to review the Contract Documents and report the result pursuant to paragraph 1.1.3, the Contractor is not responsible for ambiguities, design issues or other matters requiring clarification in the Contract Documents and does not assume any responsibility to the Owner or to the Consultant for the accuracy of the Contract Documents. Without limiting the foregoing, the Contractor shall not be liable for any damages or costs resulting from any ambiguities, design issues or other matters requiring clarification in the Contract Documents which the Contractor could not reasonably have discovered from such a review in accordance with the standard of care. If the Contractor does discover any ambiguities, design issues or other matters requiring clarification in the Contract Documents, the Contractor shall not proceed with the work affected until the Contractor has received modified or additional information from the Consultant. The impacts of any ambiguities, design issues or other matters requiring clarification in the Contract Documents, including to the Contract Price and Contract Time, shall be addressed by the parties in accordance with Part 6 – Changes

.2 Add the following to the end of subparagraph 1.1.6.2:

"Except to the extent the Consultant is indemnified as a third-party beneficiary as provided in subparagraphs 9.2.7.4 and 9.5.3.4 and in paragraph 13.1.3."

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.2 ROLE OF THE CONSULTANT

.1 In paragraph 2.2.3 add the following to the end:

"Without limiting the foregoing, the Consultant may appoint one or more authorized representatives in writing who may fulfill the obligations of the Consultant under this Contract."

.2 In paragraph 2.2.8 add the words ", written statements" after the word "interpretations" in both the first and second sentences; and

i. add the following to the end of paragraph 2.2.8:

"The Owner and the Contractor shall waive any claims against the Consultant arising out of its making of any interpretations, written statements or findings in accordance with paragraphs 2.2.6, 2.2.7, 2.2.8, and 7.1.2, but only to the extent that any such interpretations, written statements, and findings are made by the Consultant in an unbiased manner, and in accordance with the Consultant's professional standard of care at law."

.3 In paragraph 2.2.13 add the words "which are provided" before the words "by the Contractor".

GC 2.4 DEFECTIVE WORK

.1 In paragraph 2.4.1:

i. Add after the words "shall promptly correct" the phrase "in a manner acceptable to the Owner and the Consultant"; and

ii. Add after the words "Contract Documents" the phrase "or work that the Contractor discovers to be defective, whether or not the defective work had been identified by the Consultant, and".

.2 Add new paragraph 2.4.4 as follows:

"2.4.4 The Contractor shall prioritize the correction of any defective work which, in the sole discretion of the Owner, adversely affects the day-to-day operation of the Owner."

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

.1 Add new paragraph 3.1.3 as follows:

"3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the Contractor shall verify, at the Place of the Work, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the Work and shall further carefully compare such field measurements and conditions with the requirements of the Contract Documents. Where dimensions are not included or contradictions exist, or exact locations are not apparent, the Contractor shall immediately notify the Consultant in writing and obtain written instructions from the Consultant before proceeding with any part of the affected work."

GC 3.2 CONSTRUCTION BY OWNER AND OTHER CONTRACTORS

.1 Add new paragraph 3.2.7 as follows:

"3.2.7 At the commencement of the Work, the Contractor shall prepare for the review and acceptance of the Owner and the Consultant, a schedule indicating the times, within the construction schedule referred to in GC 3.4, that items that are specified to be Owner purchased and Contractor installed or hooked up are required at the site to avoid delaying the progress of the Work."

GC 3.7 LABOUR AND PRODUCTS

.1 Add the following to the end of paragraph 3.7.1:

"The Contractor represents that it has sufficient skilled employees to replace, subject to the Owner's approval, acting reasonably, its designated supervisor and project manager in the event of death, incapacity, removal or resignation."

.2 Add new paragraphs 3.7.4 and 3.7.5 as follows:

"3.7.4 The Owner shall provide the Contractor in a timely manner with all relevant information (including storage, protection, and installation requirements) regarding Products to be supplied by the Owner or other contractors and, prior to delivery of any such Products to the Place of the Work, the Owner shall obtain the Contractor's written approval of the delivery date and proposed storage, protection and installation requirements.

3.7.5 Once the Contractor has accepted delivery of Products, the Contractor shall be responsible for the safe storage and protection of Products as required to avoid dangerous conditions or contamination to the Products or other persons or property. Products shall be stored in locations and at the Place of the Work to the satisfaction of the Owner and the Consultant as agreed and approved by the Contractor pursuant to paragraph 3.7.4.

Notwithstanding the foregoing, the Contractor shall not be responsible for any Products supplied by the Owner or other contractors unless:

(i) the Contract Documents expressly stipulate that such Product is to be the Contractor's responsibility and to be installed by the Contractor as part of the Work;

(ii) the Contractor has or has received from the Owner proof of insurance coverage sufficient, at a minimum, to cover the replacement cost of such Product; and

(iii) the Owner obtained the Contractor's approval as required by paragraph 3.7.4."

GC 3.8 SHOP DRAWINGS

.1 Add the words “AND OTHER SUBMITTALS” to the title of GC 3.8 after the words “SHOP DRAWINGS”.

.2 Add the words “and Submittals” after the words “Shop Drawings” in paragraphs 3.8.1, 3.8.2, 3.8.3, 3.8.3.2, 3.8.5, 3.8.6, and 3.8.7.

.3 Delete paragraph 3.8.2 in its entirety and replace it with new paragraph 3.8.2 as follows: “3.8.2 Prior to the first application for payment, the Contractor and the Consultant shall jointly prepare a schedule of the dates for submission and return of Shop Drawings and Submittals in an orderly sequence.”

.4 Delete the words “with reasonable promptness so as to cause no delay in the performance of the Work” and replace them with the words “within 10 Working Days or such longer period as may be reasonably required” in paragraph 3.8.7.

GC 3.9 PERFORMANCE BY CONTRACTOR

.1 Add new General Condition GC 3.9 as follows:

“GC 3.9 PERFORMANCE BY CONTRACTOR

3.9.1 In performing its services and obligations under the Contract, the Contractor shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The Contractor acknowledges and agrees that throughout the Contract, the Contractor’s obligations, duties and responsibilities shall be interpreted in accordance with this standard. The Contractor shall exercise the same standard of due care and diligence in respect of any Products, personnel, or procedures which it may recommend to the Owner.”

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

.1 Delete paragraph 4.1.7 in its entirety and replace it with the following:

“4.1.7 At the commencement of the Work, the Contractor shall prepare for the review and acceptance of the Owner and the Consultant a schedule indicating the times within the construction schedule referred to in GC 3.4 that items called for under cash allowances are required to be delivered to the Place of the Work to avoid delaying the progress of the Work.”

.2 Add new paragraph 4.1.8 as follows:

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

PART 5 PAYMENT

GC 5.4 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Delete all paragraphs of GC 5.4 in their entirety and replace them with the following paragraphs:

"5.4.1 When the Contractor considers that the Work is substantially performed, or if permitted by the lien legislation applicable to the Place of the Work a designated portion thereof which the Owner agrees to accept separately is substantially performed, the Contractor shall, within five (5) Working Days, deliver to the Consultant and to the Owner a comprehensive list of items to be completed or corrected, together with a written application for a review by the Consultant to establish Substantial Performance of the Work or substantial performance of the designated portion of the Work. Failure to include an item on the list does not alter the responsibility of the Contractor to complete the Contract.

5.4.2 The Consultant will review the Work to certify or verify the validity of the application and shall promptly, and in any event, no later than 10 calendar days after receipt of the Contractor's application: .1 advise the Contractor in writing that the Work or the designated portion of the Work is not substantially performed and give reasons why, or .2 state the date of Substantial Performance of the Work or a designated portion of the Work in a certificate and issue a copy of that certificate to each of the Owner and the Contractor.

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

5.4.4 Subject to the requirements of any Payment Legislation, all holdback amounts prescribed by the applicable lien legislation for the Place of the Work shall become due and payable to the Contractor no later than 10 Working Days following the expiration of the holdback period stipulated in the lien legislation applicable to the Place of the Work, as certified or verified by the Consultant when permitted by any Payment Legislation.

5.4.5 The Contractor shall submit an application for release of the lien holdback amount in accordance with the lien legislation applicable to the Place of the Work. Except to the extent required by any Payment Legislation, such application for release of the holdback shall not constitute an application for payment that is subject to Proper Invoice requirements.

5.4.6 Where legislation permits progressive release of the holdback for a portion of the Work and the Consultant has certified or verified that the part of the Work has been performed prior to Substantial Performance of the Work, the Owner hereby agrees to release, and shall release the holdback for such portion of the Work to the Contractor in accordance with such legislation.

5.4.7 Notwithstanding any progressive release of the holdback, the Contractor shall ensure that such parts of the Work are protected pending the issuance of a final certificate for payment or until the Owner takes early occupancy in accordance

with GC12.2, whichever comes first, and shall be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released."

GC 5.5 FINAL PAYMENT

.1 Add to the end of paragraph 5.5.1 the following sentence:

"The application for final payment shall meet the requirements of a Proper Invoice."

.2 Add the following to the end of paragraph 5.5.3:

"Subject to any Payment Legislation, when the Consultant finds the Contractor's application for final payment to be not valid, the Contractor shall revise and resubmit the application when the Contractor has addressed the reasons given by the Consultant."

PART 6 CHANGES IN THE WORK

GC 6.3 CHANGE DIRECTIVE

.1 Delete the word "and" from the end of subparagraph 6.3.7.18.

.2 Delete the period from the end of subparagraph 6.3.7.19 and replace it with "; and".

.3 Add new subparagraph 6.3.7.20 as follows: ".20 safety measures and requirements."

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

.1 Add new paragraph 6.4.5:

"6.4.5 The Contractor confirms that, prior to bidding the Project, it carefully reviewed the Place of the Work and applied to that review the degree of care and skill described in paragraph 3.9.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the Contractor prior to submission of bid, and the sufficiency and completeness of the information provided by the Owner. The Contractor is not entitled to compensation or to an extension of the Contract Time for conditions which could reasonably have been ascertained by the Contractor by such review undertaken in accordance with this paragraph 6.4.5."

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

.1 Add the words "as noted in paragraph 6.6.3" after the words "of the claim" in paragraph 6.6.5 and add the words "and the Consultant", at the end of paragraph 6.6.5.

PART 8 DISPUTE RESOLUTION

GC 8.3 ADJUDICATION

.1 Delete the word “prescribed” from paragraph 8.2.1 and substitute the words “provided for”.

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

.1 Add the following new paragraphs 8.3.9 to 8.3.13:

“8.3.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.3.6, the Owner and the Contractor shall give the Consultant a written notice containing:

.1 a copy of the notice of arbitration;

.2 a copy of supplementary conditions 8.3.9 to 8.3.14 of this Contract, and;

.3 any claims or issues which the Contractor or the Owner, as the case may be, wishes to raise in relation to the Consultant arising out of the issues in dispute in the arbitration.

8.3.10 The Owner and the Contractor agree that the Consultant may elect, within ten days of receipt of the notice under paragraph 8.3.9, to become a full party to the arbitration under paragraph 8.3.6 if the Consultant:

.1 has a vested or contingent financial interest in the outcome of the arbitration;

.2 gives the notice of election to the Owner and the Contractor before the arbitrator is appointed;

.3 agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.3.6, and,

.4 agrees to be bound by the arbitral award made in the arbitration.

8.3.11 Without limiting and subject to the Owner and Contractor’s rights under paragraph 8.3.12 to challenge whether the Consultant has satisfied the requirements of paragraph 8.3.10, if an election is made under paragraph 8.3.10:

.1 the Owner or Contractor may request particulars and evidence of the Consultant’s vested or contingent financial interest in the outcome of the arbitration;

.2 the Consultant shall participate in the appointment of the arbitrator; and,

.3 notwithstanding the rules referred to in paragraph 8.3.6, the time period for reaching agreement on the appointment of the arbitrator shall begin

to run from the date the respondent receives a copy of the notice of arbitration.

8.3.12 The arbitrator in the arbitration in which the Consultant has elected under paragraph 8.3.10 to become a full party may:

.1 on application of the Owner or the Contractor, determine whether the Consultant has satisfied the requirements of paragraph 8.3.10,and;

.2 make any procedural order considered necessary to facilitate the addition of the Consultant as a party to the arbitration.

8.3.13 The provisions of paragraph 8.3.9 shall apply (with all appropriate changes being made) to written notice to be given by the Consultant to any sub-consultant."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

.1 Delete subparagraph 9.1.1.1 in its entirety and replace it with the following:

".1 errors or omissions in the Contract Documents which the Contractor could not have discovered applying the standard of care described in paragraph 3.9.1;"

.2 Delete paragraph 9.1.2 in its entirety and replace it with the following:

"9.1.2 Before commencing any Work, the Contractor shall determine the locations of all underground utilities and structures indicated in the Contract Documents, or that are discoverable by applying to an inspection of the Place of the Work the degree of care and skill described in paragraph 3.9.1."

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

.1 Add the following words to paragraph 9.2.6 after the word "responsible":

"or whether any toxic or hazardous substances or materials already at the Place of the Work (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the Contractor or anyone for whom the Contractor is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the Owner or others,"

.2 Add the words "and the Consultant" after the word "Contractor" in subparagraph 9.2.7.4.

.3 Add the following words to paragraph 9.2.8 after the word "responsible": "or that any toxic or hazardous substances or materials already at the Place of the Work (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the Contractor or anyone for whom the Contractor is responsible in a manner which does not comply with legal and regulatory

requirements, or which threatens human health and safety or the environment, or material damage to the property of the Owner or others,"

GC 9.5 MOULD

.1 Add the words "and the Consultant" after the word "Contractor" in subparagraph 9.5.3.4.

PART 10 GOVERNING REGULATIONS

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 Delete from the first line of paragraph 10.2.5 the word,

"The" and substitute the words "Subject to paragraph 3.9.1, the".

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

.1 After the second occurrence of the term "Ready-for-Takeover" insert before the term "Ready for-Takeover" in paragraph 12.1.3 the words "determination of".

GC 12.2 EARLY OCCUPANCY BY THE OWNER

.1 Delete the word "achieve" in paragraph 12.2.4 and replace it with the words "have achieved".

GC 12.3 WARRANTY

.1 Delete the word "The" from the first line of paragraph 12.3.2 and replace it with the words "Subject to paragraph 3.9.1, the ".

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

.1 Add new paragraph 13.1.0 as follows:

"13.1.0 The Contractor shall indemnify and hold harmless the Consultant, its agents and employees from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to the Contractor's performance of the Contract, provided such claims are:

.1 attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and

.2 caused by negligent acts or omissions of the Contractor or anyone for whose negligent acts or omissions the Contractor is liable, and

.3 made by Notice in Writing within a period of 6 years from the Ready-for Takeover date or within such shorter such period as may be prescribed by any limitation statute or the Province or Territory of the Place of Work."

.2 Add the words "13.1.0," after the word "paragraphs" in paragraph 13.1.3.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Documents and precedence.

.2 Description of the Work.

.3 Contract method.

.4 Documents provided.

.5 Performance of the Work.

.6 Work sequence.

.7 Work by Owner.

.8 Owner supplied Products.

.9 Work by others.

.10 Future work.

.11 Contractor use of premises.

.12 Owner occupancy.

.13 Building Codes, Safety Codes, Laws, Regulations

1.2 RELATED SECTIONS

.1 Section 01 21 00 - Allowances

.2 Section 01 78 10 - Closeout Submittals.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 RELATED DOCUMENTS

.1 Agreement, General Conditions, and Supplementary Conditions.

.2 Other Division 1 specification sections.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.4 WORDS AND TERMS

.1 Refer to and acknowledge other words, terms, and definitions in CCDC 2 2020 Definitions.

1.5 COMPLEMENTARY DOCUMENTS

.1 Drawings, specifications, and schedules are complementary each to the other and what is called for by one to be binding as if called for by all. Should any discrepancy appear

between documents which leaves doubt as to the intent or meaning, abide by Precedence of Documents article below or obtain direction from the Consultant.

.2 Drawings indicate general location and route of conduit and wire/conductors. Install conduit or wiring/conductors and plumbing piping not shown or indicated diagrammatically in schematic or riser diagrams to provide an operational assembly or system.

.3 Install components to physically conserve headroom, to minimize furring spaces, or obstructions.

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

.5 Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or additional work beyond work described to be brought to attention of Consultant.

1.6 PRECEDENCE OF DOCUMENTS

.1 In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings are - from highest to lowest:

- .1 Agreement - Between Owner and Contractor,
- .2 Supplementary Conditions (if any),
- .3 General Conditions of the Contract,
- .4 Sections of Division 1 of the specifications,
- .5 Specifications:
  - .1 Sections of Divisions 2 through 33 of the specifications, and
  - .2 Specifications specifically indicated on drawings.
- .6 Schedules and keynotes:
  - .1 schedules within the specifications, then
  - .2 schedules on drawings.
- .7 Drawings:
  - .1 Drawings of larger scale shall govern over those of smaller scale of the same date, then
  - .2 Dimensions shown on drawings shall govern over dimensions scaled from drawings, then
  - .3 Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical drawings.
- .8 Later dated documents shall govern over earlier documents of the same type.

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

1.7 DESCRIPTION OF THE WORK

.1 Work of this Contract includes the exterior, interior and boiler room building upgrades and related work located at the Alban Community Centre, 796 Highway 64, Alban, ON, P0M 1A0; and identified as Contract Number 2209.

.2 Division of the Work among other contractors, Subcontractors, suppliers or vendors is solely the Contractor's responsibility. The Owner assumes no responsibility to act as an arbiter to establish subcontract terms between sectors or disciplines of work.

1.8 CONTRACT METHOD

.1 Construct Work under single, CCDC2 2020 Stipulated Price Contract.

.2 Refer to Section 01 21 00 Allowances for cash allowance amounts applicable to assignable contracts.

.3 Assume responsibility for assigned contracts as Subcontracts forming part of the Work.

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

1.9 DOCUMENTS PROVIDED

.1 The Contractor may obtain additional sets of Contract Documents at the cost of printing, handling and shipping.

.2 An electronic set of documents will be provided near the end of the Project for purposes of transferring changed information recorded on as-built documents to the electronic Record Documents.

1.10 SPECIFICATION GRAMMAR

.1 Specifications are written in the imperative mood, in an abbreviated form.

.2 The imperative language of the technical sections is directed to the Contractor, unless specifically noted otherwise.

.1 This form of statement requires the Contractor to perform such action or work.

.2 Perform all requirements whether stated imperatively or otherwise.

1.11 PERFORMANCE OF THE WORK

.1 Substantial Performance of the Work is required for Owner occupancy before September 30th, 2023.

1.12 WORK SEQUENCE

.1 Coordinate Progress Schedule and with Owner use during construction.

.2 Maintain fire access and control of fire protection equipment.

1.13 WORK BY OWNER

.1 Reserved

1.14 OWNER-SUPPLIED PRODUCTS

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

.2 Equipment specifications for pre-purchased items are included at the end of the project specification, printed for confirmation only.

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

.4 Owner Responsibilities:

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

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

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

.4 Inspect deliveries jointly with Contractor.

.5 Submit claims for transportation damage.

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

.7 Arrange for manufacturer's field services; arrange for and deliver manufacturer's warranties and bonds to Contractor.

.5 Contractor Responsibilities:

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

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

.3 Receive and unload Products at site.

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

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

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

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

.8 Arrange for installation inspections required by public authorities.

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

.6 Schedule of Owner-supplied Products.

.1 Reserved.

1.15 WORK BY OTHERS

.1 Work of Project executed prior to start of and/or during Work of this Contract, and which is specifically excluded from this Contract:

.1 Reserved.

.2 Work of Project which will be executed after completion of Work of this Contract, and which is specifically excluded from this Contract:

.1 Reserved.

.3 Work of this Project must include provisions for coordinating additional and/or related work, identified in Contract Documents, for following principal items.

.1 Reserved.

1.16 FUTURE WORK

.1 Reserved

1.17 CONTRACTOR USE OF PREMISES

.1 Contractor has restricted use of site until Substantial Performance of the Work.

1.18 OWNER OCCUPANCY

.1 Owner will occupy premises during entire construction period.

.2 Cooperate with Owner in scheduling site visits and tours to minimize conflict and to facilitate Owner usage.

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

1.19 BUILDING CODES, SAFETY CODES, LAWS, REGULATIONS

.1 Give all required notices and comply with all laws, ordinances, rules, regulations, codes and orders relating to the work which are or come in force during the performance of the work, for the preservation of the public health and construction safety. If the work as shown on the drawings is required to be changed, as per the governing authorities, that shall be brought to the attention of the Architect before starting the work.

.2 Obtain and pay for all necessary permits, licences, certificates, and any other special permits required, except those specified, or which will be obtained and paid for by those subcontractors affected. The Owner will pay for the Building Permit however the Contractor shall prepare the Building Permit Application.

End of Section

1. SUBMISSION OF QUOTATION

1.1 If the Consultant determines that the cost of the work will be affected due to a contemplated change, the Contractor shall submit a quotation to the Consultant in accordance with the instructions specified herein.

2. GENERAL

2.1 Quotations for Contemplated Change Notices must include a detailed breakdown of all labour, material, plant and equipment costs incurred by the Contractor. Quotations from subcontractors involved in the change must also be supported by similarly detailed breakdowns of the subcontractors' costs.

2.2 It is the responsibility of the Contractor to ensure that all subcontractors' quotations included in the Contractor's quotation to the Consultant are fair and reasonable in view of the terms expressed herein.

2.3 The labour hours required for the contemplated change shall be based on the estimated number of hours to perform the work.

2.4 Time spent by a working foreman may be included in the number of labour hours, at a rate agreed to in writing by the Contractor and the Consultant.

2.5 Time attributable to material handling, productivity factors and approved rest periods is to be included in the number of hours required by the contemplated change and will not be paid as a separate item under hourly rates.

2.6 Mark-ups referred to in Sections 5 and 6 below are not to be included in the hourly labour rates.

2.7 Credit for work deleted will only be for the work directly associated with the changes stipulated in the particular Contemplated Change Notice.

2.8 When a change deletes work which has not yet been performed, the Consultant is entitled to an adjustment in the Contract Amount equal to the cost the Contractor would have incurred had the work not been deleted.

2.9 Mark-ups referred to in Sections 5 and 6 below shall not be applied to any credit amounts for deleted work.

2.10 In those cases where the change involves additions and deletions to the work, the percentage mark-ups referred to in Sections 5 and 6 below shall apply only when the cost of the additions minus the cost of the deletions would result in an increase in the Contract Amount. The percentage allowance shall only be applied to that portion of the costs of the additions that is in excess of the cost of the deletions.

2.11 If the contemplated change in the work necessitates a change in the contract completion date, or has an impact on the work, the Contractor shall identify and include the resulting cost in the breakdown of its quotation to the Consultant.

2.12 The work shall conform to the contract documents unless otherwise stated in the Contemplated Change Notice, Change Order or Site Instruction (1) signed by the Consultant.

2.13 Upon acceptance of the Contractor's quotation by the Consultant, the Consultant shall prepare and issue the formal Change Order.

3. HOURLY LABOUR RATES

3.1 The hourly labour rates listed in the Contractor's quotation shall be determined in accordance with the collective agreements that are applicable at the site of the work and shall include:

- .1 The base rate of pay.
- .2 Vacation pay.
- .3 Benefits which includes:
  - .1 Welfare contributions
  - .2 Pension contributions.
  - . .3 Union dues.
  - .4 Training and industry funds contributions.
  - .5 Other applicable benefits, if any, that can be substantiated by the Contractor.
- .4 Statutory and legislated requirements, assessed and payable under statutory authority, which includes:
  - .1 Employment Insurance contributions.
  - .2 Canada Pension Plan or Quebec Pension Plan contributions.
  - .3 Worker's Compensation Board or Commission de la santé et de la sécurité du travail premiums.
  - .4 Public Liability and Property Damage insurance premiums.
  - .5 Health tax premiums.

3.2 In the case of non-union labour, all rates claimed shall be in accordance with the terms of the Labour Conditions forming part of this contract and the Contractor must provide satisfactory proof of the rates actually paid. Non-union rates shall not exceed rates payable under any applicable collective trade agreement unless approved in writing by the Consultant.

4. MATERIAL, PLANT AND EQUIPMENT COSTS

4.1 The costs of all purchases and rentals must be based on the actual amount paid to the suppliers by the Contractor or subcontractor and said costs are to include all applicable discounts.

5. ALLOWANCE ON WORK BY OWN FORCES

5.1 Contractor's mark-up on its own work:

Overhead/Profit	Change Value
20%	between $0 to $1,999.99
15%	between $2,000.00 to $9,999.99
10%	over $10,000.00

The mark-up shall include all of the costs of all labour, material, plant and equipment furnished or supplied by the Contractor or subcontractor that is required by the contemplated change, shall be added to the Contractor's or subcontractor's quotation as full compensation for:

- .1 All supervision, coordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount.
- .2 Miscellaneous additional costs related to:
  - .1 The purchase or rental of material, plant and equipment.
  - .2 The purchase of small tools and supplies.
  - .3 Safety and protection measures.
  - .4 Permits, bonds, insurance, Consultanting, as-built drawings,

commissioning and site office.

6. ALLOWANCE ON WORK BY SUBCONTRACTORS

6.1 Contractor's mark-up on each individual Subcontractor's work:

Overhead/Profit	Change Value
15%	between $0 to $1,999.99
10%	between $2,000.00 to $9,999.99
5%	over $10,000.00

The mark-up shall include the total of all quotations received from subcontractors, shall be added to the Contractor's quotation as full compensation for:

.1 All supervision, coordination, administration, overhead, margin and the risk of undertaking the work within the stipulated amount.

.2 Miscellaneous costs related to:

- .1 Safety and protection measures.
- .2 Permits, bonds, insurance, engineering, as-built drawings, commissioning and site office.

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

- .1 Overhead: 10%
- .2 Profit: 5%

.4 Subcontractor's mark-up on sub-subcontractor's work:

- .1 Overhead: 5%
- .2 Profit: 5%

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Connecting to existing services.

.2 Special scheduling requirements.

1.2 RELATED SECTIONS

.1 Section 01 53 00 - Temporary Construction.

.2 Section 01 33 00 - Submittal Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 EXISTING SERVICES

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

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

.1 Keep duration of interruptions minimum.

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

.3 Provide for personnel and vehicular traffic.

.4 Construct barriers in accordance with Section 01 53 00.

1.4 SPECIAL REQUIREMENTS

.1 Perform noise generating work:

.1 from Monday to Friday from 08:00 to 17:00 hours, and

.2 on Saturdays, Sundays, and statutory holidays to Owner approval.

.2 Municipal Operations: The adjacent building will be operational as an Community Health Centre and shall be functional at all times.

.3 Submit schedule of special requirements or disruptions in accordance with Section 01 33 00.

1.5 SPECIAL DATES

.1 The following dates and/or events are considered to be dates that construction work cannot proceed unless approved by the Owner:

.1 Reserved

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Words and terms.

.2 Complementary documents.

.3 Specification grammar.

1.2 RELATED DOCUMENTS

.1 CCDC2 2020 - Agreement and Definitions.

.2 CCDC2 2020 - General Conditions.

.3 Section 00 73 03 - Supplementary Conditions.

.4 Section 01 10 00 - Summary of Work.

.5 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 WORDS AND TERMS

.1 Conform to Definitions and their defined meanings in the Definitions portion of CCDC2 2020 and Section 00 73 03 - Supplementary Conditions for supplementary words and terms.

1.4 COMPLEMENTARY DOCUMENTS

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

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

.3 Should any conflict or discrepancy appear between documents, which leave doubt as to the intent or meaning, apply the Precedence of Documents article below or obtain guidance or direction from Consultant.

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

.5 Install components to physically conserve headroom, to minimize furring spaces, or obstructions.

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

.7 Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed.

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

.9 All sections of the Project Manual are affected by the requirements of Division 1 sections.

1.5 SPECIFICATION GRAMMAR

.1 Specifications are written in the imperative (command) mode, in an abbreviated form.

.2 Imperative language of the technical sections is always directed to the Contractor as sole executor of the Contract, unless specifically noted otherwise.

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

.2 Perform all requirements of the Contract Documents whether stated imperatively or otherwise. Division of the Work among subcontractors, suppliers, or others is solely the Contractor's responsibility. The specification author assumes no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of work.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Cash allowances.

.2 Inspection and testing allowances.

.3 Contingency allowance.

1.2 RELATED SECTIONS

.1 Section 01 29 00 - Payment Procedures.

.2 Section 01 62 00 - Product Exchange Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 CASH ALLOWANCES

.1 Costs Included in Cash Allowances: Cost of Product to Contractor, less applicable trade discounts; delivery to site, and applicable taxes.

.2 If a Cash Allowance item described in the Allowances Schedule below indicates the inclusion of installation, include in the Cash Allowance amount, provision for Product handling at the site, including unloading, uncrating, storage, protection of Products from elements and from damage, labour for installation and finishing, insurance, labour costs, taxes, bonding if applicable, equipment rental, overhead and profit.

.3 If a Cash Allowance item described in the Allowances Schedule below indicates supply only, include in the Contract Price costs not included in Cash Allowances but included in the Contract Price: Product handling at the site including unloading, uncrating, storage, protection of Products from elements and from damage, labour for installation and finishing, insurance, labour costs, taxes, bonding if applicable, equipment rental, overhead and profit.

.4 Consultant Responsibilities:

- .1 Consult with Contractor for consideration and selection of Products, suppliers, and installers.
- .2 Owner and Consultant to select Products.
- .3 Prepare Change Order.

.5 Contractor Responsibilities:

- .1 Assist Consultant in selection of Products, suppliers and installers.
- .2 Obtain proposals from suppliers and installers and offer recommendations.
- .3 On notification of selection by Consultant or Owner, execute purchase agreement with designated supplier and installer.
- .4 Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
- .5 Promptly inspect Products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

.6 Differences in costs will be adjusted by Change Order.

1.4 CONTINGENCY ALLOWANCE

.1 Include in the Contract, a stipulated sum of $75,000.00 for a Construction Contingency Allowance for use upon Owner's written instruction via Change Order allocated as follows:

.1	Building Envelope Upgrades	$ 15,000.00
.2	Interior Renovation Upgrades	$ 40,000.00
.3	Boiler Room & Generator Upgrades	$ 20,000.00

.2 Contractor's costs for Products, delivery, installation, labour, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Schedule of values.

.2 Applications for progress payments.

.3 Substantial performance procedures.

.4 Release of hold-back procedures.

.5 Schedule of values.

.6 Price adjustments.

1.2 RELATED DOCUMENT

.1 Refer to CCDC2 2020 for specific requirements.

1.3 RELATED SECTIONS

.1 Section 01 62 00 - Product Exchange Procedures.

1.4 SCHEDULE OF VALUES

.1 Submit a printed schedule of values on CCDC 24 electronic form using an authorized electronic signature.

.2 Submit Schedule of Values within twenty (20) days after date established in Notice to Proceed.

.3 Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the primary associated specification section. Also identify site mobilization, bonds and insurance.

.4 Include in each line item, the amount of Allowances specified in this section.

.5 Include within each line item, a direct proportional amount of Contractor's overhead and profit.

.6 Revise schedule to list approved Change Orders, with each Application For Payment.

1.5 APPLICATIONS FOR PROGRESS PAYMENT

.1 Submit a CCDC 24 electronic form using a printed copy with an authorized signature.

.2 Make applications for payment on account as monthly as Work progresses.

.3 Accompany applications with a CCDC 9A-2001 Statutory Declaration form.

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

.5 Submit to Consultant for review, minimum fourteen (14) days before first application for payment, schedule of values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment.

.6 Submit required support documentation with applications for payment, including statutory declarations, workers= compensation clearance certificates.

1.6 SCHEDULE OF UNIT PRICE ITEMS

.1 Submit a separate price table of unit price items of Work CCDC 24 electronic form using a printed copy with an authorized signature.

.2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:

.1 Cost of material.
.2 Delivery and unloading at site.
.3 Sales taxes.
.4 Installation, overhead and profit.

.3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.7 PROGRESS PAYMENT

.1 Submit a progress payment schedule on CCDC 24 electronic form using a printed copy with an authorized signature.

.2 Accompany applications with a CCDC 9A-2001 Statutory Declaration form.

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

.4 If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

1.8 PROGRESSIVE RELEASE OF HOLD-BACK

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

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

1.9 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Submit a schedule of payments on CCDC 24 electronic form using a printed copy with an authorized signature.

.2 Accompany applications with a CCDC 9A-2001 Statutory Declaration form.

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

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

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

.6 No later than ten (10) days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than seven (7) days after completing review, will notify Contractor if the Work, or the designated portion of the Work, is substantially performed.

.7 Consultant will state in their certificate the date of Substantial Performance of the Work, or the date of the designated portion of the Work, as applicable.

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

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

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

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

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

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

.3 Where hold-back amount has not been placed in a separate hold-back account, Owner will, ten (10) days prior to expiry of hold-back period stipulated in lien legislation applicable to Place of the Work, place hold-back amount in bank account in joint names of Owner and Contractor.

.4 Amount authorized by certificate for payment of hold-back amount is due and payable on day following expiration of hold-back period stipulated in lien legislation applicable to Place of the Work.

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

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

1.11 FINAL PAYMENT

.1 Submit an application for final payment on a CCDC 24 form, using a printed copy with an authorized signature when Work is completed.

.2 Consultant will, no later than ten (10) days after receipt of an application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than seven (7) days after reviewing Work.

.3 Consultant will issue final certificate for payment when application for final payment is found valid.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Coordination Work with other contractors and work by Owner under administration of Consultant.

.2 Scheduled progress meetings.

1.2 RELATED SECTIONS

.1 Section 01 32 00 - Construction Progress Documentation.

.2 Section 01 33 00 - Submittal Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 COORDINATION

.1 Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of others and Work by Owner, under instructions of Consultant.

1.4 PROJECT SITE MEETINGS

.1 The Consultant shall schedule and administer monthly project site meetings throughout progress of Work as determined by Consultant.

.2 Contractor to schedule and administer pre-installation meetings when specified in sections and when required to coordinate related or affected Work.

.3 Consultant to prepare agenda for meetings.

.4 Contractor to provide physical space and make arrangements for meetings.

.5 Consultant shall record minutes. Include significant proceedings and decisions. Identify action by parties.

.6 Consultant shall reproduce and distribute copies of minutes within three (3) days after each meeting and transmit to meeting participants and affected parties not in attendance.

1.5 CONSTRUCTION ORGANIZATION AND START-UP

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

.2 Senior representatives of the Owner, Consultant, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.

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

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

.5 Agenda to include following:

.1 Appointment of official representative of participants in Work.

.2 Schedule of Work, progress scheduling in accordance with Section 01 32 00.

.3 Schedule of submission of shop drawings, samples, colour chips in accordance with Section 01 33 00.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00.

.5 Delivery schedule of specified equipment in accordance with Section 01 32 00.

.6 Site safety and security in accordance with Section 01 52 00.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.

.8 Owner-furnished Products.

.9 Record drawings in accordance with Section 01 78 40.

.10 Maintenance material and data in accordance with Section 01 78 40.

.11 Take-over procedures, acceptance, and warranties in accordance with Section 01 78 40.

.12 Monthly progress claims, administrative procedures, photographs, and holdbacks.

.13 Appointment of inspection and testing agencies or firms in accordance with Section 01 43 00 and 01 45 00.

.14 Insurances and transcript of policies.

.6 Comply with Consultant's allocation of mobilization areas of site; for field offices and sheds, refuse, access, traffic, and parking facilities.

.7 During construction, coordinate use of site and facilities through Consultant's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.

.8 Comply with instructions of Consultant for use of temporary utilities and construction facilities.

.9 Coordinate field engineering and layout work with Consultant.

1.6 ON-SITE DOCUMENTS

.1 Maintain at job site, one copy each of the following:

.1 Contract drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed shop drawings.

.5 Change orders.

.6 Other modifications to Contract.

.7 Field test reports.

.8 Copy of approved Work schedule.

.9 Manufacturers' installation and application instructions.

.10 Labour conditions and wage schedules.

.11 Applicable current editions of municipal regulations and by-laws. Current building codes, complete with addenda bulletins applicable to the Place of the Work.

1.7 SCHEDULES

.1 Submit preliminary construction progress schedule in accordance with Section 01 32 00 - Construction Progress Documentation to Consultant coordinated with Consultant's project schedule.

.2 After review, revise and resubmit schedule to comply with revised project schedule.

.3 During progress of Work revise and resubmit as directed by Consultant.

1.8 CONSTRUCTION PROGRESS MEETINGS

.1 During course of Work and two (2) weeks prior to project completion, schedule construction progress meetings bi-monthly.

.2 Contractor, major subcontractors involved in Work and Consultant and Owner are to be in attendance.

.3 Notify parties minimum four (4) days prior to meetings.

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

.5 Agenda to include following:

.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for affect on construction schedule and on completion date.
.12 Review site [safety and] security issues.
.13 Other business.

1.9 SUBMITTALS

.1 Submit preliminary shop drawings, product data and samples to Section 01 33 00 for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Consultant.

.2 Submit requests for payment for review, and for transmittal to Consultant.

.3 Submit requests for interpretation of Contract Documents, and obtain instructions through Consultant.

.4 Process substitutions through Consultant.

.5 Process change orders through Consultant.

.6 Deliver closeout submittals for review and preliminary inspections, for transmittal to Consultant.

1.10 COORDINATION DRAWINGS

.1 Provide information required by Consultant for preparation of coordination drawings.

.2 Review and approve revised drawings for submittal to Consultant.

1.11 CLOSEOUT PROCEDURES

.1 Notify Consultant when Work is considered ready for Substantial Performance.

.2 Accompany Consultant on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Consultant's instructions for correction of items of Work listed in executed certificate of Substantial Performance.

.4 Notify Consultant of instructions for completion of items of Work determined in Consultant’s final inspection.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Schedules, form, content, submission.

.2 Critical path scheduling.

.3 Progress photographs.

.4 Submittals schedule.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 **SCHEDULES** (After award of Contract)

.1 Submit schedules as follows:

- .1 Submittal Schedule for Shop Drawings and Product Data.
- .2 Submittal Schedule for Samples.
- .3 Submittal Schedule for timeliness of Owner-furnished Products.
- .4 Product Delivery Schedule.
- .5 Cash Allowance Schedule for acquiring Products only or Products and Installation, or Installation only.
- .6 Shutdown or closure activity.

.2 Schedule Format

- .1 Prepare schedule in form of a horizontal Gantt bar chart.
- .2 Provide a separate bar for each major item of work, subcontract or operation.
- .3 Split horizontally for projected and actual performance.
- .4 Provide horizontal time scale identifying first Working Day of each week.
- .5 Format for listings: Chronological order of start of each item of work.
- .6 Identification of listings: By systems description.

.3 Schedule Submission

- .1 Submit initial format of schedules within 15 working days after award of Contract.
- .2 Submit schedules in electronic format, forward as *.pdf files.
- .3 Submit one (1) opaque reproduction, plus two (2) copies to be retained by Consultant.
- .4 Consultant will review schedule and return review copy within 10 days after receipt.
- .5 Resubmit finalized schedule within 7 days after return of review copy.
- .6 Submit revised progress schedule with each application for payment.
- .7 Distribute copies of revised schedule to:
  - .1 Job site office.
  - .2 Subcontractors.
  - .3 Other concerned parties.

.8 Instruct recipients to report to Contractor within 10 days, any problems anticipated by timetable shown in schedule.

1.4 CONSTRUCTION PROGRESS SCHEDULING

.1 Submit initial schedule in duplicate within twenty (20) days after date established in Notice to Proceed.

.2 Revise and resubmit as required.

.3 Submit revised schedules with each Application for Payment, identifying changes since previous version.

.4 Submit a horizontal bar Gantt chart with separate line for each major portion of Work or operation, section of Work, identifying first work day of each week.

.5 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

.6 Indicate estimated percentage of completion for each item of Work at each submission.

.7 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.

.8 Include dates for commencement and completion of each major element of construction as follows.

.1 Site clearing.
.2 Site utilities.
.3 Foundation Work.
.4 Structural framing.
.5 Special Subcontractor Work.
.6 Equipment Installations.
.7 Finishes.

.9 Indicate projected percentage of completion of each item as of first day of month.

.10 Indicate progress of each activity to date of submission schedule.

.11 Indicate changes occurring since previous submission of schedule:

.1 Major changes in scope.
.2 Activities modified since previous submission.
.3 Revised projections of progress and completion.
.4 Other identifiable changes.

.12 Provide a narrative report to define:

.1 Problem areas, anticipated delays, and impact on schedule.
.2 Corrective action recommended and its effect.
.3 Effect of changes on schedules of other prime contractors.

1.5 PROGRESS PHOTOGRAPHS

.1 Digital Photography

.1 Submit electronic copy of colour digital photography in *.jpg format, 300 higher mega-pixel resolution.

.2 Identification: name and number of project and date of exposure indicated.

.2 Number of viewpoints: Locations of viewpoints determined by Consultant.

.3 Frequency: Monthly with progress statement.

1.6 SUBMITTALS SCHEDULE

.1 Include schedule for submitting shop drawings, product data, and samples.

.2 Indicate dates for submitting, review time, resubmission time, and last date for meeting fabrication schedule.

.3 Include dates when submittals and deliveries will be required for Owner-furnished products.

.4 Include dates when reviewed submittals will be required from Consultant.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates and transcripts.

1.2 RELATED SECTIONS

.1 Section 01 32 00 - Construction Progress Documentation.

.2 Section 01 78 10 - Closeout Submittals.

.3 Other sections requesting submittals.

.4 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 ADMINISTRATIVE

.1 Submit to Consultant submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

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

.3 Present shop drawings, product data, samples and mock-ups in Imperial inch-pound units.

.4 Where items or information is not manufactured or produced in Imperial inch pound units, converted values within the metric measurement tolerances are acceptable.

.5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.

.6 Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.

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

.8 Verify field measurements and affected adjacent Work are coordinated.

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

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

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

1.4 SHOP DRAWINGS AND PRODUCT DATA

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

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

.3 Allow ten (10) days for Consultant's review of each submission.

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

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

.6 Accompany submissions with transmittal letter, containing:

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

.7 Submissions shall include:

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

.9 Single line and schematic diagrams.

.10 Relationship to other parts of the Work.

.8 After Consultant's review, distribute copies.

.9 Submit six (6) prints and electronic copy of shop drawings for each requirement requested in specification Sections and as consultant may reasonably request.

.10 Submit six (6) and electronic copies of product data sheets or brochures for requirements requested in specification sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

.11 Delete information not applicable to project.

.12 Supplement standard information to provide details applicable to project.

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

1.5 SAMPLES

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

.2 Deliver samples prepaid to Consultant's business address.

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

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

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

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

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

1.6 MOCK-UP

.1 Erect mock-ups in accordance with 01 43 00 and 01 45 00.

1.7 CERTIFICATES AND TRANSCRIPTS

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

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

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Safety requirements and adherence.

1.2 RELATED SECTIONS

.1 Section 01 31 00 - Project Managing and Coordination.

.2 Section 01 33 00 - Submittal Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 REFERENCES

.1 Occupational Health and Safety Act, Regulation and Code RSO 1990 c.01.

1.4 MUNICIPALILTY REQUIRMENTS

.1 Competent person: Contractor is responsible using their training, knowledge and experience to protect the health and safety of their workers and others, reporting to their supervisor the absence of, or defect in any protective equipment or device, and reporting to their supervisor, any circumstances or conditions that may limit their ability to comply with the requirements of the OHSA and the Municipality Safety policy.

.2 Equipment & tools: All equipment and tools used by the contractor shall conform to Canadian Standards Association (CSA) or manufacture specifications. The Municipality reserves the right to prohibit the use of any equipment and methods or practices that do not conform to acceptable standards. Defective equipment and tools shall be removed from the work site premises immediately.

.3 PPE: All workers must wear appropriate CSA approved eye protection, hearing protection, CSA approved hard hats, CSA approved foot protection and CSA approved gloves at all time while working on the job site.

.4 Fall protection: Safety harness and lanyard are required by anyone working more than 3 meters above a surface. The safety harness must be secured to a fixed support so that a worker cannot fall more than five feet. Proof of certification shall be submitted before starting any work at height.

.5 WHMIS: No hazardous material is to be stored or used on work site by the contractor unless the prescribed requirements concerning labelling material safety data sheets (MSDSs) and worker instruction and training are met.

.6 MSDS: Material safety data sheets for all hazardous products shall be kept on site for this project.

.7 Weekly safety meetings: Contractor shall conduct weekly safety meetings with their workers and identify concerns or potential hazards on the job site. Weekly safety meeting shall be signed by all workers and a copy of the safety meeting shall be submitted to the contract administrator weekly.

.8 Proof of training: The contractor shall submit within five (5) calendar days after the contract award, copies of WHMIS, copies of health and safety awareness, first aid

certificate and certificates pertaining to the work being done for all workers working on the job site.

.9 Reporting: Contractor must report immediately to the contract administrator all workplace incidents, near misses, injuries and illnesses and environmental damages. Contractor shall also report accidents/incidents to the ministry of labour or any other appropriate authority required by legislation.

.10 Supervision: Contractor shall comply with OHSA regulations.

.11 Health & Safety Station: Contractor shall provide at all time a dedicated station for workers to have access to the contractors H&S manual, the emergency response plan, the OH&S Pocket book, MSDS sheets, WSIB information, Eye wash stations and emergency aid kit.

.12 WSIB: Contractor shall provide the Municipality with a current WSIB Clearance Certificate within five (5) days of contract award. The successful Bidder shall submit material safety data sheets for all trades to the Owner's Consultant for review by the Owner, in accordance with the Canada Labour Code regulations for toxic and hazardous substances that will be used on the project. Material safety data sheets must be submitted to the Owner's Consultant at least three weeks prior to the hazardous substances being delivered to the site. The successful Bidder shall keep on site at all times copies of the material safety data sheets in a binder which will be handed over to the Owner at completion of the project.

1.5 SAFETY PLAN

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

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

1.6 RESPONSIBILITY

.1 The Prime Contractor according the Act, is responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

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

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

1.7 SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00.

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

.1 Results of site-specific safety hazard assessment.

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

.3 Submit one (1) copy of Contractor's authorized representative's work site health and safety inspection reports to Consultant monthly.

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

.5 Submit copies of incident and accident reports.

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

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

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

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

1.8 SAFETY ACTIVITIES

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

.2 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.

.3 Perform Work in accordance with Section 01 41 00 - Regulatory Requirements and this section.

1.9 HEALTH AND SAFETY COORDINATOR

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

.1 Have minimum two (2) years' site-related working experience specific to activities associated with the scope of the work.

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

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

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

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

1.10 POSTING OF DOCUMENTS

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

1.11 CORRECTION OF NON-COMPLIANCE

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

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

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

1.12 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Reserved.

1.13 HAZARDOUS WORK

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

.2 Use powder actuated devices only after receipt of written permission from Consultant.

1.14 WORK STOPPAGE

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

1.15 FIRE PROTECTION

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

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

.3 Maintain placed or installed fire resistive construction, fireproofing, firestopping, to protect the portions of the Work during construction.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Site fires.

.2 Disposal of wastes.

.3 Drainage.

.4 Site cleaning and plant protection.

.5 Work adjacent to waterways.

.6 Pollution control.

1.2 RELATED SECTIONS

.1 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 FIRES

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

1.4 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

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

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

1.5 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties where indicated.

.2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 metres.

.3 Protect roots of designated trees to drip-line during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated, or as designated by Consultant.

1.6 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast under water or within 100 metres of indicated spawning beds.

1.7 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this contract.

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

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

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

Part 2 PRODUCTS

Not Used.

Part 3 EXECUTION

Not Used.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Waste goals.

.2 Waste management plan.

.3 Third party responsibilities.

.4 Waste management plan implementation.

.5 Disposal of waste.

.6 Forms for documenting program.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 DEFINITIONS

.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

.2 Construction and Demolition Waste: Solid wastes typically including but not limited to, building materials, packaging, trash, debris, and rubble resulting from construction, re-modelling, repair and demolition operations.

.3 Hazardous: Exhibiting the characteristics of hazardous substances including, but not limited to, ignitability, corrosiveness, toxicity or reactivity.

.4 Non-hazardous: Exhibiting none of the characteristics of hazardous substances, including, but not limited to, ignitability, corrosiveness, toxicity, or reactivity.

.5 Non-toxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and re-manufactured into a new product for reuse by others.

.7 Recycle: To remove a waste material from the Project site to another site for re-manufacture into a new product for reuse by others.

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

.9 Return: To give back reusable items or unused products to vendors for credit.

.10 Reuse: To reuse a construction waste material in some manner on the Project site.

.11 Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.

.12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

.16 Volatile Organic Compounds (VOC=s): Chemical compounds common in and emitted by many building products over time through outgassing:

.1 Solvents in paints and other coatings,

.2 Wood preservatives; strippers and household cleaners,

.3 Adhesives in particle board, fibreboard, and some plywood; and foam insulation,

.4 When released, VOC=s can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

.18 Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.4 SUBMITTAL

.1 Submit requested submittals in accordance with Section 01 33 00.

.2 Prepare and submit the following submittals prior to project start-up:

.1 Submit two (2) copies of completed Waste Audit.

1.5 WASTE MANAGEMENT GOALS

.1 Owner has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.

.2 Owner recognizes that waste in any project is inevitable, but indicates that as much of the waste materials as economically feasible shall be reused, salvaged, or recycled.

.3 All waste generated from the project shall be removed from the Island. Contractor responsible to locate the nearest approved waste disposal site. Waste disposal in landfills shall be minimized.

.4 Contractor to develop a Waste Management Plan for this Project and submit to the Consultant for review.

1.6 WASTE MANAGEMENT PLAN

.1 Draft Waste Management Plan: Within ten (10) days after receipt of Notice of Award of Bid, or prior to any waste removal, whichever occurs sooner.

.2 Contractor to submit a Draft Waste Management Plan to the Consultant for review, refer to sample attached to the end of this Section.

.3 Draft Plan shall contain the following:

.1 Analysis of the proposed site waste generated, including types and quantities.

.2 Landfill Options: The name of the landfill where trash will be disposed, the applicable landfill fees, and the projected cost of disposing of Project waste in the landfill.

.3 Alternatives to Landfill: A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, the proposed local market for each material, and the estimated net cost savings or additional costs resulting from separating and recycling versus landfill each material; "Net" means that the following have been subtracted from the cost of separating and recycling:

.1 Revenue from the sale of recycled or salvaged materials, and

.2 Landfill tipping fees saved due to diversion of materials from the landfill. The list of these materials is to include, at minimum, the following materials:

.1 Cardboard.

.2 Clean dimensional wood.

.3 Beverage containers.

.4 Land clearing debris.

.5 Concrete.

.6 Brick.

.7 Concrete Masonry Units (CMU).

.8 Asphalt.

.9 Metals from banding, steel stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.

.10 Gypsum board.

.11 Plastic buckets; waste can be reduced by using plastic lined cardboard dry packed materials instead of premixed moist packed materials where this option is available.

.12 Carpet and carpet pad trim.

.13 Paint.

.14 Plastic sheeting and packaging, where recycling programs are available.

.15 Rigid plastic foam insulation, where recycling programs are available.

.4 Resources for Development of Waste Management Plan: The following sources may be useful in developing the Draft Waste Management Plan:

.1 Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into Waste Management Plan.

.2 Recycling Economics Information: Information available to bidders with regards to estimating the value of recyclable costs is included in Waste Reduction Information for Bidders.

.5 Final Waste Management Plan: Once the Owner has determined which of the recycling options addressed in the draft Waste Management Plan are acceptable, the Contractor

shall will submit, within ten (10) calendar days a Final Waste Management Plan, containing the following:

.1 Analysis of the proposed jobsite waste to be generated, including types and quantities.

.2 Landfill options: The name of the landfill where trash will be disposed of, the applicable landfill tipping fees, and the projected cost of disposing of all Project waste in the landfill.

.3 Alternatives to Landfill: A list of the waste materials from the Project that will be separated for reuse, salvage, or recycling.

.4 Meetings: A description of the regular meetings to be held to address waste management, refer to Section 01 31 00.

.5 Materials Handling Procedures: A description of the means by which any waste materials identified in 1.5.3 above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

.6 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site-separated and self-hauled to designated centres, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials

1.7 THIRD PARTY RESPONSIBILITY

.1 Subcontractors shall cooperate fully with Contractor to implement the Waste Reduction Plan.

1.8 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Consultant.

.2 Unless specified otherwise, materials for removal [do not become] [become] Contractor's property.

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

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

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Consultant.

.7 Protect surface drainage, storm sewers, sanitary sewers, and utility services from damage and blockage.

1.9 SCHEDULING

.1 Coordinate work with other activities at site to ensure timely and orderly progress of the work.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 PREPARATION

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

3.2 SITE VISIT

.1 Pre-bid site visit: Walk-through of project site prior to completion of bid submittal is mandatory. Date, time and location to be arranged by Consultant.

.2 Maintain at job site, one copy of following documents:

.1 Waste Audit (WA).

3.3 USE OF SITE AND FACILITIES

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

.2 Maintain security measures established by existing facility.

3.4 WASTE MANAGEMENT PLAN IMPLEMENTATION

.1 Manager: Contractor to designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.

.2 Distribution: Contractor to distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Consultant.

.3 Instruction: Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the Project.

.4 Separation facilities: Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

.5 Hazardous wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

.6 Application for Progress Payments: Contractor shall submit with each Application for Progress Payment a Summary of Waste Generated by the Project:

.1 Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment.

.2 The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:

.1 The amount in tonnes or cubic metres (tons or cubic yards) of material land filled from the Project,

.2 The identity of the landfill, the total amount of tipping fees paid at the landfill, and

.3 The total disposal cost. Include manifests, weight tickets, receipt, and invoices.

.3 For each material recycled, reused, or salvaged from the Project, the amount tonnes or cubic metres (tons or cubic yards), the date removed from the job site, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling each material.

.4 Attach manifests, weight tickets, receipts, and invoices.

3.5 DISPOSAL OF WASTE

.1 Burying of rubbish and waste materials is prohibited.

.2 Disposal of waste, volatile materials, mineral spirits, oil, paint thinner, etc.… into waterways, storm, or sanitary sewers is prohibited.

3.6 CLEANING

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

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.7 SPECIAL PROGRAMS

.1 Contractor to be responsible for final implementation of programs involving tax credits or rebates or similar incentives related to recycling, if applicable to the Project.

.2 Revenues or other savings obtained for recycling or returns shall accrue to the Contractor.

3.8 TABLE A - DIVERSION OF MATERIALS

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, to approval of Consultant, and consistent with applicable fire regulations. Mark containers or stockpile areas. Provide instruction on disposal practices.

.2 On-site sale of salvaged, recovered, reusable, recyclable, material is not permitted.

.3 Demolition Waste

Material Type	**Recommended Diversion %**	**Actual Diversion %**
Acoustic Tile	50	
Acoustical Insulation	100	
Carpet	100	
De-mountable Partitions	80	
Doors and Frames	100	

Material Type	Recommended Diversion %	Actual Diversion %
Electrical Equipment	80	
Furnishings	80	
Marble Base	100	
Mechanical Equipment	100	
Metals	100	
Rubble	100	
Wood (uncontaminated)	100	
Other		

.4 Construction Waste

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	
Plastic Packaging	100	
Rubble	100	
Steel	100	
Wood (uncontaminated)	100	
Other		

3.9 **WASTE AUDIT** (Sample):

Material Category	Material Quantity Unit	Estimated Waste %	Total Quantity of Waste (unit)	Generation Point	% Recycled	% Reused
Wood and Plastics:						
Off-cuts						
Warped Pallet Forms						
Plastic Packaging						
Cardboard Packaging						
Other						
Doors and Windows:						
Painted Frames						
Glass						
Wood						
Metal						
Other						

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Hazardous materials identification, handling, and disposal,

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 35 41 - Waste Managing and Disposal.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 DEFINITIONS

.1 Dangerous Goods: Product, substance, or organism that is specifically listed or meets the hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: Any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.4 Workplace Hazardous Materials Information System (WHMIS):

.1 A Canada-wide system designed to give employers and workers information about hazardous materials used in the workplace.

.2 Under WHMIS, information on hazardous materials is to be provided on container labels, material safety data sheets (SDS), and worker education programs.

.3 WHMIS is a combination of federal and provincial jurisdictions with regulations.

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00.

.2 Submit to Consultant current Material Safety Data Sheet (SDS) for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to Consultant that identifies all hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.5 REGULATORY REQUIREMENTS

.1 Export and Import of Hazardous Waste Regulations (EIHW Regulations), SOR/92-637.

.2 National Fire Code of Canada.

.3 Transportation of Dangerous Goods Act (TDG Act) [1992], (T-19.01).

.4 Transportation of Dangerous Goods Regulations (TDGR), (SOR/85-77, SOR/85-585, SOR/85-609, SOR/86-526).

1.6 STORAGE AND HANDLING

.1 Coordinate storage of hazardous materials with Consultant and abide by internal requirements for labeling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.

.4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use. Store all flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada (ULC) or Factory Mutual (FM) seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Consultant.

.5 Transfer of flammable and combustible liquids is prohibited within buildings.

.6 Transfer of flammable and combustible liquids will not be carried out in the vicinity of open flames or any type of heat-producing devices.

.7 Flammable liquids having a flash point below 38 degrees C, such as naptha or gasoline, will not be used as solvents or cleaning agents.

.8 Store flammable and combustible waste liquids for disposal in approved containers located in a safe, ventilated area. Keep quantities to a minimum.

.9 Observe smoking regulations at all times. Smoking is prohibited in any area where hazardous materials are stored, used, or handled.

.10 Abide by the following storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

- .1 Store hazardous materials and wastes in closed and sealed containers which are in good condition.
- .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
- .3 Store hazardous materials and wastes in containers compatible with that material or waste.
- .4 Segregate incompatible materials and wastes.
- .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
- .6 Store hazardous materials and wastes in a secure storage area with controlled access.
- .7 Maintain a clear egress from storage area.
- .8 Store hazardous materials and wastes in a manner and location which will prevent them from spilling into the environment.
- .9 Have appropriate emergency spill response equipment available near the storage area, including personal protective equipment.
- .10 Maintain an inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.11 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.12 Report spills or accidents immediately to authority having jurisdiction. Submit a written spill report to authority having jurisdiction and Consultant within 24 hours of incident.

1.7 TRANSPORTATION

.1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial and municipal regulations.

.2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.

.3 If hazardous waste is generated on site:

.1 Coordinate transportation and disposal with Consultant.

.2 Ensure compliance with applicable provincial laws and regulations for generators of hazardous waste.

.3 Use only a licensed carrier authorized by provincial authorities to accept subject material.

.4 Prior to shipping material, obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.

.5 Label container[s] with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Ensure that only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide a photocopy of all shipping documents and waste manifests to Consultant.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Consultant.

.9 Report any discharge, emission, or escape of hazardous materials immediately to Consultant and appropriate provincial authority. Take reasonable measures to control release.

Part 2 Products

2.1 MATERIALS

.1 Limit the quantity of hazardous materials required to perform work.

.2 Maintain MSDS information in proximity to where the materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 DISPOSAL

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is an approved, cost-effective recycling process available.

.3 Send hazardous wastes only to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

.6 Dispose of hazardous wastes in a timely fashion in accordance with applicable provincial regulations.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Laws, notices, permits and fees.

.2 Discovery of hazardous materials.: Section 01 35 43 Hazardous Materials

1.2 RELATED SECTIONS

.1 Section 01 35 43 - Hazardous Materials.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 LAWS, NOTICES, PERMITS AND FEES

.1 The laws of the Place of the Work shall govern the Work.

.2 The Owner shall obtain and pay for the building permit, permanent easements and rights of servitude. The Contractor shall be responsible for permits, licenses or certificates necessary for the performance of the Work which were in force at the date of executing the Agreement.

.3 Give the required notices and comply with the laws, ordinances, rules, regulations or codes which are or become in force during the performance of the Work and which relate to the Work, to the preservation of the public health and to construction safety.

.4 If the Contractor knowingly performs or allows work to be performed that is contrary to any laws, ordinances, rules, regulations or codes, the Contractor shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations or codes. Determine detailed requirements of authorities having jurisdiction.

.6 Pay construction damage deposits levied by municipality in connection with the issuance of a building permit.

1.4 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: If material resembling asbestos is encountered in course of demolition work, immediately stop work and notify Consultant.

.2 Refer to Section 01 35 43 – Hazardous Materials

1.5 PERSONNEL SMOKING

.1 Comply with regulatory and Owner imposed smoking restrictions during execution of the Work.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Defined acronyms for standards and industry agencies.

.2 Standards producing industry associations and their address.

1.2 RELATED SECTIONS

.1 Section 01 61 00 - Product Requirements.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 STANDARDS PRODUCING INDUSTRY ORGANIZATIONS

.1 The following associations and organizations are cited in specification sections. Acronym, name, address, and Internet URL addresses are as follows.

.2 Canadian Organizations:

.1 ACEC – Association of Consulting Engineers of Canada,130 Albert Street, Suite 616, Ottawa, ON. K1P 5G4 URL http://www.acec.ca

.2 AWMAC – Architectural Woodwork Manufacturers Association of Canada, 516-4 Street West, High River, Alberta T1V 1B6 URL http://www.awmac.com

.3 Canada Green Building Council; 330 – 55 rue Murray Street, Ottawa, ON, K1N 5M3; Tel: 613-241-1184 Fax: 613-241-5750, URL: www.cagbc.org

.4 CCA – Canadian Construction Association,75 Albert St., Suite 400 Ottawa, Ontario, K1P 5E7 URL http://www.cca-acc.com

.5 CCDC – Canadian Construction Documents Committee, Refer to ACEC, CCA, CSC or RAIC; www.CCDC.org

.6 CFFM – Canadian Forces Fire Marshal, 101 Colonel By Drive, 8NT Mgen George R. Pearkes Bldg., Ottawa, Ontario K1A 0K2 URL http://www.dnd.ca/admie/dgcps/CFFMe.htm

.7 CGA – Canadian Gas Association, 20 Eglinton Avenue West, Suite 1305, Toronto, Ontario M4R 1K8 URL http://www.cga.ca

.8 CGSB – Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 0S5 URL http://w3.pwgsc.gc.ca/cgsb

.9 CISC – Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, Ontario M2J 4G8 URL http://www.cisc-icca.ca

.10 CLA – Canadian Lumbermen's Association, 27 Goulburn Avenue, Ottawa, Ontario, K1N 8C7 URL http://www.cla-ca.ca

.11 CNLA – Canadian Nursery Landscape Association, RR #4, Stn. Main, 7856 Fifth Street, Milton, Ontario. L9T 2X8 URL http://www.canadanursery.com

.12 CRCA – Canadian Roofing Contractors Association, 155 Queen Street, Suite 1300, Ottawa, Ontario K1P 6L1 URL http://www.roofingcanada.com

.13 CSA – Canadian Standards Association International, 178 Rexdale Blvd., Toronto, Ontario M9W 1R3 URL http://www.csa-international.org

.14 CSC – Construction Specifications Canada, 120 Carlton Street, Suite 312, Toronto, Ontario M5A 4K2 URL http://www.csc-dcc.ca

.15 CSDMA – Canadian Steel Door Manufacturers Association, One Yonge Street, Suite 1801, Toronto, Ontario M5E 1W7; http://www.csdma.org/

.16 CSPI – Corrugated Steel Pipe Institute, 652 Bishop Street N, Unit 2A, Cambridge, Ontario N3H 4V6 URL http://www.cspi.ca

.17 CSSBI – Canadian Sheet Steel Building Institute, 652 Bishop St. N., Unit 2A, Cambridge, Ontario N3H 4V6 URL http://www.cssbi.ca

.18 CUFCA – Canadian Urethane Foam Contractor's Association, Box 3214, Winnipeg, Manitoba, R3C 4E7 URL http://www.cufca.ca

.19 CWC – Canadian Wood Council, 1400 Blair Place, Suite 210, Ottawa, Ontario K1J 9B8 URL http://www.cwc.ca

.20 EC – Environment Canada, Conservation and Protection, Inquiry Centre, 351 St. Joseph Blvd, Hull, Québec KIA 0H3 URL http://www.ec.gc.ca

.21 EFC – Electro Federation of Canada, 5800 Explorer Drive, Suite 200, Mississauga, Ontario L4W 5K9 URL http://www.electrofed.com

.22 EIMA – EIFS Industry Manufacturer's Association, 3000 Corporate Center Drive, Suite 270, Morrow, Georgia U.S.A. 30260 URL http://www.eima.com

.23 MPI – The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6 URL http://www.paintinfo.com

.24 NABA – National Air Barrier Association, PO Box 2747, Winnipeg, Manitoba R3C 4E7 URL http://www.naba.ca

.25 NLGA – National Lumber Grades Authority, 406-First Capital Place, 960 Quayside Drive, New Westminster, B.C. V3M 6G2; http://www.nlga.org/

.26 NRC – National Research Council, Building M-58, 1200 Montreal Road, Ottawa, Ontario K1A 0R6 URL http://www.nrc.gc.ca

.27 QPL – Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 1G6 URL http://www.pwgsc.gc.ca/cgsb

.28 RAIC – Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, Ontario, K1N 5M3 URL http://www.raic.org

.29 SCC – Standards Council of Canada, 270 Albert Street, Suite 2000, Ottawa, Ontario K1P 6N7 URL http://www.scc.ca

.30 TTMAC – Terrazzo, Tile and Marble Association of Canada, 30 Capston Gate, Unit 5 Concord, Ontario L4K 3E8 URL http://www.ttmac.com

.31 ULC – Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, Ontario M1R 3A9 URL http://www.ulc.ca

.3 USA Organizations:

.1 AA – Aluminum Association, 900 19th Street N.W., Washington, D.C., U.S.A. 20006 URL http://www.aluminum.org

.2 AASHTO – American Association of State Highway and Transportation Officials, 444 N Capitol Street N.W., Suite 249, Washington, D.C., U.S.A. 20001 URL http://www.aashto.org

.3 AHA – American Hardboard Association, 1210W Northwest Hwy., Palatine, Illinois, U.S.A. 60067 URL : http://www.hardboard.org

.4 AITC – American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, Colorado, U.S.A. 80112 URL http://www.aitc-glulam.org

.5 AMCA – Air Movement and Control Association Inc., 30 West University Drive, Arlington Heights, Illinois, U.S.A. 60004-1893 URL http://www.amca.org

.6 ANSI – American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, New York, U.S.A. 10036 URL http://www.ansi.org

.7 APA – The Engineered Wood Association, P.O. Box 11700, Tacoma, Washington, U.S.A. 98411-0700 URL http://www.apawood.org

.8 API – American Petroleum Institute,1220 L St. Northwest, Washington, D.C., U.S.A. 20005-4070 URL http://www.api.org

.9 ARI – Air Conditioning and Refrigeration Institute, 4100 N Fairfax Drive, Suite 200, Arlington, Virginia, U.S.A. 22203 URL http://www.ari.org

.10 ASHRAE – American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, Georgia, U.S.A. 30329 URL http://www.ashrae.org

.11 ASME – American Society of Mechanical Engineers, ASME Headquarters, 3 Park Avenue, New York, New York, U.S.A. 10016-5990 URL http://www.asme.org

.12 ASTM International, 100 Barr Harbor Drive West, Conshohocken, Pennsylvania 19428-2959 URL http://www.astm.org

.13 AWCI – Association of the Wall and Ceiling Industries International, 803 West Broad Street, Suite 600, Falls Church, UA, U.S.A. 22046 URL http://www.awci.org

.14 AWPA – American Wire Producer's Association, 801 N Fairfax Street, Suite 211, Alexandria, VA U.S.A. 22314-1757 URL http://www.awpa.org

.15 AWPA – American Wood Preservers' Association, P.O. Box 5690, Granbury Texas, U.S.A. 76049-0690 URL http://www.awpa.com

.16 AWS – American Welding Society, 550 N.W. LeJeune Road, Miami, Florida U.S.A. 33126 URL http://www.amweld.org

.17 AWWA – American Water Works Association, 6666 W. Quincy Avenue, Denver, Colorado, U.S.A. 80235 URL http://www.awwa.org

.18 ISAP – International Society for Asphalt Paving, 400 Selby Avenue, Suite 1, St. Paul, MN 55102 U.S.A. URL http://www.asphalt.org

.19 IEEE – Institute of Electrical and Electronics Engineers, IEE Corporate Office, 3 Park Avenue, 17th Floor, New York, New York U.S.A. 10016-5997 URL http://www.ieee.org

.20 MSS – Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street, N.E., Vienna, Virginia U.S.A. 22180-4602 URL http://www.mss-hq.com

.21 NAAMM – National Association of Architectural Metal Manufacturers, 8 South Michigan Avenue, Suite 1000, Chicago, Illinois U.S.A. 60603 URL http://www.naamm.org

.22 NEMA – National Electrical Manufacturers Association,1300 N. 17th Street, Suite 1847, Rosslyn, Virginia 22209 URL http://www.nema.org

.23 NFPA – National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101Quincy, Massachusetts, U.S.A. 02269-9101 URL http://www.nfpa.org

.24 NFSA – National Fire Sprinkler Association, P.O. Box 1000, Patterson, New York, U.S.A. 12563 URL http://www.nfsa.org

.25 NHLA – National Hardwood Lumber Association, 6830 Raleigh-La Grange Road,Memphis, TN, U.S.A 38184-0518 URL http://www.natlhardwood.org

.26 NSPE – National Society of Professional Engineers, 1420 King Street, Alexandria, VA U.S.A. 22314-2794 URL http://www.nspe.org

.27 PCI – Prestressed Concrete Institute, 209 W. Jackson Blvd., Suite 500, Chicago, Illinois, U.S.A. 60606-6938 URL http://www.pci.org

.28 PEI – Porcelain Enamel Institute, PO Box 920220, Norcross, GA U.S.A. 30010 URL http://www.porecelainenamel.com

.29 SSPC – The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh, Pennsylvania 15222-4656 URL http://www.sspc.org

.30 TPI – Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI, U.S.A. 53719 URL http://www.tpinst.org

.31 UL – Underwriters' Laboratories, 333 Pfingsten Road, Northbrook, Illinois, U.S.A. 60062-2096 URL http://www.ul.com

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Quality assurance criteria.

1.2 RELATED SECTIONS

.1 Section 01 45 00 - Quality Control.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 REFERENCES

.1 Associated Air Balance Council (AABC): National Standards For Field Measurements and Instrumentation, Total Systems Balance, Air Distribution-Hydronics Systems.

1.4 QUALITY ASSURANCE

.1 Cooperate with and provide testing organization services as specified in Section 01 45 00 - Quality Control.

.2 Testing organization: Current member in good standing of their respective professional or industry organization and certified to perform specified services.

.3 Comply with applicable procedures and standards of the certification sponsoring association.

.4 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

.5 Qualifications:

.1 Provide adequate workforce training through meetings and demonstrations.

.2 Have someone on site with deconstruction experience throughout project for consultation and supervision purposes.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Tests and mix designs.

.3 Mock-ups.

.4 Mill tests.

.5 Equipment and system adjust and balance.

1.2 RELATED SECTIONS

.1 Section 01 21 00 - Allowances.

.2 Section 01 43 00 - Quality Assurance.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 INSPECTION BY AUTHORITY

.1 Allow Authorities Having Jurisdiction access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by law in the Place of the Work.

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

1.4 REVIEW BY CONSULTANT

.1 Consultant may order any part of Work to be reviewed if Work is suspected to be not in accordance with Contract Documents.

.2 [If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.

.3 If such Work is found in accordance with Contract Documents, Owner will pay cost of review and replacement.

1.5 INDEPENDENT INSPECTION AGENCIES

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

.2 Allocate Costs: To Section 01 21 00.

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

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

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

1.6 ACCESS TO WORK

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

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

1.7 PROCEDURES

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

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

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

1.8 REJECTED WORK

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

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

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

1.9 REPORTS

.1 Submit four (4) copies of inspection and test reports to Consultant.

.2 Provide copies to Subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.10 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as may be requested.

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

1.11 MOCK-UPS

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

.2 Construct in all locations acceptable to Consultant or as specified in specific Section.

.3 Prepare mock-ups for Consultant's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

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

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

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

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

1.12 MILL TESTS

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

1.13 EQUIPMENT AND SYSTEMS

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

.2 Refer to Commissioning for definitive requirements.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Temporary utilities.

1.2 RELATED SECTIONS

.1 Section 01 52 00 - Construction Facilities.

.2 Section 01 53 00 - Temporary Construction.

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.4 DEWATERING

.1 Reserved.

1.5 WATER SUPPLY

.1 Supply of potable water for construction use.

.2 Arrange for connection with appropriate utility company and pay all costs for installation, maintenance and removal.

.3 Pay for utility charges at prevailing rates.

1.6 TEMPORARY HEATING AND VENTILATION

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

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

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

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

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

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

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

.6 Permanent heating system of building may not be used when available. Be responsible for damage to heating system if used.

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

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

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

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

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

1.7 TEMPORARY POWER AND LIGHT

.1 Not Used.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project identification.

1.2 RELATED SECTIONS

.1 Section 01 51 00 - Temporary Facilities.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 REFERENCES

.1 CAN/CSA-Z321- 96: Signs and Symbols for the Occupational Environment.

1.4 INSTALLATION AND REMOVAL

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, AND temporary stairs.

1.6 HOISTING

.1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists cranes shall be operated by qualified operator.

1.7 ELEVATORS/LIFTS

.1 Designated existing and permanent elevators/lifts may not be used by construction personnel and transporting of materials.

1.8 USE OF THE WORK

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with Products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.9 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

.3 Build and maintain temporary roads as required and provide snow removal during period of Work.

.4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

.5 Clean runways and taxi areas where used by Contractor's equipment.

1.10 SECURITY

.1 Contractor is responsible for security of site and contents of site after working hours and during holidays.

1.11 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.2 Provide a clearly marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors may provide their own offices as necessary. Direct location of these offices.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.13 SANITARY FACILITIES

.1 Existing sanitary facilities for work force are provided.

.2 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Site enclosure.

.2 Guardrails and barriers.

.3 Weather enclosures.

.4 Dust tight barriers.

.5 Protection for off-site and public property.

.6 Protection of applied finishes and surrounding Work.

1.2 RELATED SECTIONS

.1 Section 01 51 00 - Temporary Utilities.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.4 SITE ENCLOSURE

.1 Existing perimeter fencing is permitted to be used.

1.5 GUARD RAILS AND BARRIERS

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

.2 Provide as required by governing authorities.

1.6 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

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

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

1.7 DUST TIGHT BARRIERS

.1 Provide dust tight barriers and screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

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

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

.2 Be responsible for damage incurred.

1.9 PROTECTION OF APPLIED FINISHES

.1 Provide protection for finished and partially finished surfaces and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

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

1.10 PROTECTION OF SURROUNDING WORK

.1 Provide protection for finished and partially finished Work from damage.

.2 Provide necessary cover and protection.

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

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Product substitution procedures.

.3 Manufacturer's instructions.

.4 Quality of Work, coordination and fastenings.

.5 Existing facilities.

1.2 RELATED SECTIONS

.1 Section 01 42 00 - References: Other terms used in the Project Manual.

.2 Section 01 62 00 - Product Exchange Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 TERMINOLOGY

.1 New: Produced from new materials.

.2 Re-Newed: Produced or rejuvenated from an existing material to like-new condition to serve a new or existing service.

.3 Defective: A condition determined exclusively by the Consultant.

1.4 PRODUCT QUALITY

.1 Products, materials, equipment, parts or assemblies (referred to as Products) incorporated in Work: New, not damaged or defective, of best quality (compatible with specification requirements) for purpose intended. If requested, provide evidence as to type, source and quality of Products provided.

.2 Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Consultant.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

.1 Immediately upon signing Contract, review Product delivery requirements and anticipate foreseeable supply delays for any items.

.2 If delays in supply of Products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.3 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available Products of similar character, at no increase in Contract Price or Contract Time.

1.6 STORAGE AND PROTECTION

.1 Store and protect Products in accordance with manufacturers' instructions.

.2 Store with seals and labels intact and legible.

.3 Store sensitive Products in weather tight, climate controlled, enclosures in an environment favourable to Product.

.4 For exterior storage of fabricated Products, place on sloped supports above ground.

.5 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.

.6 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

.7 Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

.8 Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.7 TRANSPORTATION AND HANDLING

.1 Transport and handle Products in accordance with manufacturer's instructions.

.2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

.3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.8 PRODUCT CHANGES

.1 Change in Product(s): Submit request for substitution or alternative in accordance with Section 01 62 00.

1.9 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

1.10 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect Products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.

.3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.11 QUALITY OF WORK

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

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site any workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.12 COORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.13 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.14 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.15 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.16 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

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

1.17 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use Type 304 or 316 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.18 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of the Project.

.2 Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of Consultant.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Substitutions.

.2 Alternatives.

.3 Separate prices.

1.2 RELATED SECTIONS

.1 Section 01 21 00 - Allowances.

.2 Section 01 29 00 - Payment Procedures.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 SUBSTITUTIONS

.1 Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.

.2 Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

.3 Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

.4 A request constitutes a representation that the Bidder:

.1 Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.

.2 Will provide the same warranty for the Substitution as for the specified Product.

.3 Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

.4 Waives claims for additional costs or time extension which may subsequently become apparent.

.5 Will reimburse Owner [and Consultant] for review or redesign services associated with re-approval by authorities.

.5 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

.6 Substitution Submittal Procedure:

.1 Submit three (3) copies of request for Substitution for consideration. Limit each request to one (1) proposed Substitution.

.2 Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.

.3 The Consultant will notify Contractor in writing of decision to accept or reject request.

1.4 ALTERNATIVES

.1 Alternatives offered on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.

1.5 SEPARATE PRICES

.1 Separate Price items do NOT replace or substitute items already in the Bid Documents. Accepted Separate Prices will be:

.1 Identified in the Construction Agreement as an increase to the Bid Price, or

.2 in a subsequent Change Order.

.2 Submit Separate Prices to identify items that may be added to the Contract, at the Owner's option. Include in the quoted Separate Price, overhead and profit, the effect on adjacent or related components already in the Work described in the Bid Documents.

.3 Coordinate related Work and modify surrounding Work to integrate the work of each Separate Price.

.4 Schedule of Separate Prices: Refer to Bid Form.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Field engineering survey services to measure and stake site.

.2 Recording of subsurface conditions found.

.3 Survey services to determine measurement inverts for the Work.

.4 Requirements and limitations for cutting and patching the Work.

1.2 RELATED SECTIONS

.1 Section 01 62 00 - Product Exchange Procedures.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 REFERENCES

.1 Owner's identification of existing survey control points and property limits.

1.4 SUBMITTALS

.1 Submit name and address of Surveyor to Consultant.

.2 On request of Consultant, submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.5 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practise in the Place of the Work, acceptable to Consultant.

1.6 SURVEY REFERENCE POINTS

.1 Not Used.

1.7 SURVEY REQUIREMENTS

.1 Not Used.

1.8 SUBSURFACE CONDITIONS

.1 Not Used..

1.9 EXAMINATION

.1 Inspect existing conditions, including elements or adjacent Work subject to irregularities, damage, movement, including Work during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of the Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

1.10 PREPARATION

.1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.2 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.11 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.

.2 Remove abandoned service lines within 2 metres of structures. Cap or seal lines at cut-off points as directed by Consultant.

1.12 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Consultant of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.13 SURVEY RECORD

.1 Not used.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Submittal requirements associated with connecting to existing facilities.

.2 Execution requirements for all Work.

1.2 RELATED SECTIONS

.1 Section 01 70 00 - Examination and Preparation.

.2 This section describes requirements applicable to all Sections within Divisions 02 to 33.

1.3 SUBMITTALS - ATTACHING TO EXISTING WORK

.1 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of any element of Project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of any operational element.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.2 Include in request:

- .1 Identification of Project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching to complete the Work.

.2 Perform all required excavation and fill to complete the Work.

.3 Fit several parts together, to integrate with other Work.

.4 Uncover Work to install ill-timed Work.

.5 Remove and replace defective or non-conforming Work.

.6 Remove samples of installed Work for testing, if not designated in the respective Section as remaining as part of the Work.

.7 Provide openings in non-structural elements of Work for penetrations of mechanical, electrical, and associated Work. Limit opening dimensions to minimal sizes required, and performed in a neat and clean fashion.

.8 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.9 Employ competent qualified workers to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.10 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry or concrete work without prior approval.

.11 Restore work with new products in accordance with requirements of Contract Documents.

.12 Fit Work airtight and/or reasonably close to opening size to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.13 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, for full thickness of the constructed element.

.14 Re-finish surfaces to match adjacent finishes: For continuous surfaces re-finish to nearest intersection; for an assembly, re-finish entire unit.

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

End of Section

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Requirements and limitations for cutting and patching of Work.

1.2 RELATED SECTIONS

.1 Section 01 10 00 - Summary of Work: Work by Owner..

.2 Section 01 32 00 - Construction Progress Documentation: Submittals and scheduling.

.3 Section 01 61 00 - Product Requirements.

.4 Section 01 62 00 - Product Exchange Procedures: Product options and substitutions.

.5 Section 07 84 00 - Firestopping.

.6 Individual Product Specification Sections:

.1 Cutting and patching incidental to work of the section.
.2 Advance notification to other sections of openings required in Work of those sections.
.3 Limitations on cutting structural members.

1.3 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects:

.1 Structural integrity of any element of Project.
.2 Integrity of weather exposed or moisture resistant element.
.3 Efficiency, maintenance, or safety of any operational element.
.4 Visual qualities of sight exposed elements.
.5 Work of Owner or separate contractor.

.2 Include in request:

.1 Identification of Project.
.2 Location and description of affected Work.
.3 Necessity for cutting or alteration.
.4 Description of proposed Work and Products to be used.
.5 Alternatives to cutting and patching.
.6 Effect on work of Owner or separate contractor.
.7 Written permission of affected separate contractor.
.8 Date and time work will be executed.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Primary Products: Those required for original installation.

.2 Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 62 00.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

.2 After uncovering existing Work, assess conditions affecting performance of work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

.1 Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

.2 Provide protection from elements for areas which may be exposed by uncovering work.

.3 Maintain excavations free of water.

3.3 CUTTING

.1 Execute cutting and fitting [including excavation and fill] to complete the Work.

.2 Uncover work to install improperly sequenced work.

.3 Remove and replace defective or non-conforming work.

.4 Remove samples of installed work for testing [when requested].

.5 Provide openings in the Work for penetration of mechanical and electrical work.

.6 Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

.7 Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.4 PATCHING

.1 Execute patching to complement adjacent Work.

.2 Fit Products together to integrate with other Work.

.3 Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

.4 Employ original installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.

.5 Restore work with new Products in accordance with requirements of Contract Documents.

.6 Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.7 At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00 to full thickness of the penetrated element.

.8 Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Inspections and declarations.

.2 Closeout submittals

.3 Operation and maintenance manual format.

.4 Contents each volume.

.5 Recording actual site conditions.

.6 Record (as-built) documents and samples.

.7 Record documents.

.8 Final survey.

.9 Warranties and bonds.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 45 00 - Quality Control.

.3 This section describes requirements applicable to all Sections within Divisions 02 to 16.

1.3 INSPECTIONS AND DECLARATIONS

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

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

.2 Request Consultant's Inspection.

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

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

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

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

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

.4 Certificates required by authorities having jurisdiction have been submitted.

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

.6 Work is complete and ready for Final Inspection.

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

.5 Declaration of Substantial Performance: when Owner and Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Substantial Performance of the Work.

.6 Commencement of Warranty Periods: the date of Substantial Performance of the Work shall be the date for commencement of the warranty period.

.7 Commencement of Lien Periods: the date of publication of the certificate of Substantial Performance of the Work shall be the date for commencement of the lien period, unless required otherwise by the lien legislation applicable at the Place of the Work.

.8 Final Payment: When Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.

.9 Payment of Hold-back: After issuance of certificate of Substantial Performance of the Work, submit an application for payment of hold-back amount.

1.4 CLOSEOUT SUBMITTALS

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

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

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

.4 Four weeks prior to Substantial Performance of the Work, submit to the Consultant, four final copies of operating and maintenance manuals in Canadian English.

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

.6 If requested, furnish evidence as to type, source and quality of products provided.

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.8 Pay costs of transportation.

1.5 OPERATION AND MAINTENANCE MANUAL FORMAT

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

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

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

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

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

.7 Text: Manufacturer's printed data, or typewritten data.

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

1.6 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

.1 date of submission;

.2 names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; and

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

.2 For each product or system, list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00.

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

.5 Certificate of Acceptance: Relevant certificates issued by authorities having jurisdiction, including code compliance certificate, life safety systems performance certificate and pressure vessel acceptance.

.6 Training: Refer to Commissioning.

1.7 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and within the Project Manual.

.2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.

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

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

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

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

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

.2 Changes made by Addenda and change orders.

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

1.8 RECORD (AS-BUILT) DOCUMENTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Consultant and Owner one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to the Contract.

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

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

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

.3 Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.

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

.5 Keep as-built documents and samples available for inspection by Consultant.

1.9 RECORD DOCUMENTS

.1 Reserved.

1.10 FINAL SURVEY

.1 Not used.

1.11 WARRANTIES AND BONDS

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

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

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work.

.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

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

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittals.

End of Section

Part 1 General

1.1 SECTION INCLUDES

.1 Equipment and systems.

.2 Materials and finishes.

.3 Spare parts.

.4 Maintenance manuals.

.5 Special tools.

.6 Storage, handling and protection.

1.2 RELATED SECTIONS

.1 Section 01 78 10 - Closeout Submittals.

.2 Section 01 45 00 - Quality Control.

.3 Commissioning

1.3 EQUIPMENT AND SYSTEMS

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

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

.3 Include installed colour coded wiring diagrams.

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

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

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

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

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

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

.14 Include test and balancing reports as specified in Section 01 45 00.

.15 Additional requirements: As specified in individual specification sections.

1.4 MATERIALS AND FINISHES

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

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

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

.4 Building Envelope: include copies of drawings of building envelope components, illustrating the interface with similar or dissimilar items to provide an effective air, vapour and thermal barrier between indoor and outdoor environments. Include an outline of requirements for regular inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.

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

1.5 SPARE PARTS

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

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

.3 Deliver to site; place and store.

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

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

1.6 MAINTENANCE MATERIALS

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

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

.3 Deliver to site; place and store.

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

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

1.7 SPECIAL TOOLS

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

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

.3 Deliver to site; place and store.

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

1.8 STORAGE, HANDLING AND PROTECTION

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

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

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

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

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

End of Section

1. **GENERAL**

1.1. Conform to Sections of Division 1 as applicable.

1.2. **RELATED SECTIONS**

1.2.1. Non-friable asbestos handling: Type 1 Asbestos Procedures.

1.2.2. Firestopping and smoke seals: Section 07840 - Penetration Firestopping.

1.2.3. Disconnection and sealing off mechanical services to building; demolition, removal and making good of existing mechanical work: Division 15 - Mechanical.

1.2.4. Disconnecting and sealing off electrical services to building; demolition removal and making good of existing electrical work: Division 16 - Electrical.

1.3. **REFERENCES**
CSA S350 M80 (R2003) Code of Practice for Safety in Demolition of Structures

1.4. **QUALITY ASSURANCE**

1.4.1. **Regulatory Requirements:**

1.4.1.1. Conform to The Occupational Health and Safety Act, R.S.O. 1990 c.O.1, Ontario Regulation 213/91, Amended to O.Reg. 85/04 - Construction Projects.

1.4.1.2. Occupational Health and Safety Act Revised R.R.O. 1990,Regulation 838, Amended to O.Reg 278/05, Designated Substance - Asbestos on Construction Projects and in Building and Repair Operations;

1.4.1.3. Conform to OBC, especially Article 2.3.2.3 as applicable.

1.4.1.4. Conform to Fire Code, Regulation under Fire Marshals Act especially Part 8.

1.4.2. **Qualifications:** Employ for this work demolition company having 5 years Canadian experience in this type of work satisfactory to Consultant. If requested, submit proof of experience.

1.5. **SUBMITTALS** – Not Used

1.6. **PROJECT CONDITIONS**

1.6.1. Schedule work as per Item Section 01010 General Requirements.

2. **PRODUCTS**

2.1. Except as indicated on Drawings, materials forming permanent part of structure being demolished shall become property of this Section. Remove from Site.

2.2. Carefully remove, store, protect and re-install materials and equipment scheduled to be reused and/or relocated.

3. EXECUTION

3.1. **PREPARATION**

3.1.1. Conform to requirements of Section 01010, General Instructions, in particular article on Design and Safety Requirements for Temporary Work.

3.1.2. Do not interfere with use and activities of adjacent occupancies. Maintain free and safe passage to and from occupied space. Maintain integrity of existing fire exits.

3.1.3. Protect existing adjacent work against damages which might occur from falling debris or other causes due to work of this Section.

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

3.2. **PERFORMANCE**

3.2.1. Materials and debris shall not be stacked in building to extent that overloading of any part of structure will occur.

3.2.2. At end of each day's work leave work in safe condition ensuring that no parts of structure are in danger of collapsing.

3.2.3. Carry out demolition in accordance with requirements of CSA S350-M.

3.2.4. Demolish and remove interior partitions, walls, ceilings, flooring down to concrete substrate, except those specified and/or indicated to remain.

3.2.5. **Firestopping and Smoke Seal:** In event that work of this Section impacts on integrity of fire separations, ensure that trade performing firestopping is notified.

3.3. **DISPOSAL OF WASTE MATERIALS**

3.3.1. Conform to requirements of municipality's Works Department regarding disposal of waste materials.

3.3.2. Materials prohibited from municipality waste management facilities shall be removed from Site and dispose of at recycling companies specializing in recyclable materials.

End of Section

PART 1- GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 All miscellaneous metal items not specifically described in other Sections of these specifications but required for a complete and operable facility including all steel angles, supports, brackets, straps, anchors, runners, and other fixing members required by other trades;

1.2 RELATED SECTIONS

.1 Section 06 20 00 - Architectural Woodwork and Millwork

.2 Section 09 91 00 - Painting: Paint finish.

1.3 REFERENCES

.1 ASTM A53/A53M-12 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

.2 ASTM A153/A153M-09 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.3 ASTM A307-12 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

.4 ASTM A500/A500M-10a - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

.5 ASTM A501-07 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

.6 ASTM B177/B177M-11 - Standard Guide for Engineering Chromium Electroplating.

.7 ASTM B209-10 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.8 ASTM B209M-10 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.9 ASTM B210-12 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.

.10 ASTM B210-12 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.

.11 ASTM B211M-12e1 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.

.12 ASTM B211-12e1 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.

.13 ASTM B221-12a - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.14 ASTM B221M-12a - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.15 CAN/CGSB 1.40-97 - Anticorrosive Structural Steel Alkyd Primer.

.16 CAN/CGSB 1.181-99 - Ready-Mixed Organic Zinc-Rich Coating.

.17 CSA-G40.20-04/G40.21-04 (R2009) - General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steel.

.18 CSA-W47.1-09 - Certification of Companies for Fusion Welding of Steel.

.19 CSA-W47.2-11 - Certification of Companies for Fusion Welding of Aluminum.

.20 CSA-W48-06 (R2011) - Filler Metals and Allied Materials for Metal Arc Welding.

.21 CSA-W55.3-08 - Certification of Companies for Resistance Welding of Steel and Aluminum.

.22 CSA-W59-03 (R2008) - Welded Steel Construction (Metal Arc Welding).

.23 CSA-W59.2-M1991 (R2008) - Welded Aluminum Construction.

.24 SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Shop Drawings:

.1 Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

.2 Indicate welded connections using standard welding symbols. Indicate net weld lengths.

.3 Shop drawings for steel stairs, handrails and guards shall bear the stamp of a Registered Professional Engineer licensed to practice in the Province of Ontario.

.4 Submit for approval, sample sections of various components. Such samples shall be representative of colour, finish and dimension of materials to be supplied on this project. These samples will be retained by the Consultant for comparison with the actual job materials at the time of installation.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIRMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordinate with other work having a direct bearing on work of this section.

.3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

.2 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.

.3 Welders' Certificates: Submit to Section 01 33 00, certifying welders employed on the Work, verifying qualification within the previous twelve (12 months).

.4 Requirements of Regulatory Agencies:

.1 Metal fabrications which function to resist forces imposed by dead and live loads shall conform to requirements of jurisdictional authorities.

.5 Submit shop drawings to authorities along with required General Commitments to Review documents signed and sealed by Registered Professional Engineer overseeing the project.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Unless detailed or specified otherwise, standard products will be acceptable if construction details and installation meet intent of Drawings and Specifications.

.2 Include all materials, products, accessories, and supplementary parts necessary to complete assembly and installation of metal fabrications specified in this Section.

.3 Incorporate only metals that are free from defects which impair strength or durability, or which are visible. Install only new metals of best quality, and free from rust or waves and buckles, and that are clean, straight, and with sharply defined profiles.

.4 Rolled steel sections and plates to CAN/CSA-G40.21-M92, grade 300W.

.5 Hollow structural sections to CAN/CSA-G40.21-M92, grade 350W, Class H.

.6 Steel pipe to meet requirements of ASTM Specification 120, extra strong.

.7 Stainless steel to ASTM A269-85, Type 302, Commercial Grade, seamless welded to AISI No. 4 finish, exposed surface to have a No. 4 polished finish.

.8 Welding materials to C.S.A. W59-1989.

.9 Galvanizing: Hot dipped galvanized with minimum zinc coating of 600G/M2 to CAN/CSA-G164-M92.

.10 Shop coat primer to CAN/CGSB 1.40-M89.

.11 Bolts and Anchor Bolts: to ASTM A307-89 and ASTM A325M-89 (high strength) where exposed to view; to match metal anchored.

.12 Fastenings: Steel, cadmium plated screws and bolts.

.13 Grout: non-shrink, non-metallic, flowable 24h, MPa 15, pull out strength 7.9 MPa.

2.2 FABRICATION

.1 General

.1 Fabricate metal fabrications specified in this Section with machinery and tools specifically designed for the intended manufacturing processes and by skilled tradesmen.

.2 Fit and assemble metal fabrications in shop. When this is not possible, make a trial shop assembly.

.3 Incorporate anchors at 600mm (24") o.c. for metal fabrications located in cast-in-place concrete.

.4 Incorporate means for fastening of other installations secured to metal fabrications.

.5 Welding shall conform to C.S.A. Standard W59-M1989 and be undertaken by a fabricator approved by Canadian Welding Bureau to C.S.A. Standard W47.1-1992.

.2 Construction:

.1 Fabricate metal fabrications with materials, component sizes, metal gauges, reinforcing, anchors, and fasteners of adequate strength to withstand intended use, and within allowable design factors imposed by jurisdictional authorities.

.2 Ensure that metal fabrications will remain free of warping, buckling, opening of joints and seams, distortion, and permanent deformation.

.3 Construct railings and balustrades to withstand both required vertical and horizontal loadings of jurisdictional authorities.

.4 Construct items that are part of floor constructions, such as gratings and trench covers to support the same live loads for which surrounding floors are designed unless indicated otherwise.

.3 Assembly:

.1 Accurately cut, machine and fit joints, corners, copes and miters so that junctions between components fit together tightly and in true planes.

.2 Conceal fastenings from view unless otherwise indicated on Drawings.

.3 Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

.4 Weld all connections where possible; bolt where not possible, and cut off bolts flush with nuts. Countersink bolt heads, and provide method to prevent loosening of nuts. Ream holes drilled for fastenings.

.5 Weld joints tight, flush, and in true planes with base metals. Make welds continuous where steel work is exposed, at joints where entry of water into building, or into voids of members or assemblies is possible. Seal exterior steel fabrications to provide corrosion protection in accordance with CAN/CSA-S16.1-M89.

.6 Grind welds smooth where exposed to view.

.7 Provide for differential movements within assemblies and at junctions of assemblies with surrounding construction.

.4 Finish Work:

.1 Incorporate holes and connections for products installed under other Sections of the Specifications and for bolted connections. Burned holes are not acceptable.

.2 Cleanly and smoothly finish exposed edges of materials including holes.

.3 Cap open ends of sections exposed to view, such as pipes, channels, angles, and other similar members.

.4 Machine or grind components to ensure level bearings.

.5 Prime Painting of Steel:

.1 Clean all loose mill scale, rust, dirt, weld flux and spatter from work after fabrication. Grind smooth sharp projections. Unless otherwise specified apply to steel surfaces a shop prime coat of paint. Force paint into corners and cover open areas smoothly with a uniform coating. Deliver metal fabrications to site with primer undamaged. Paint all surfaces except those to be welded in field, encased in concrete, or that are machined or galvanized. Give surfaces that are inaccessible to finish filed painting two coats of primer.

.2 Paint steel members under cover in shop and keep them under cover until paint has dried.

.6 Galvanized Steel:

.1 Hot dip galvanize assemblies following their fabrication except where impossible.

.2 Fabricate items to be galvanized as recommended in Appendix A and Appendix B of CAN/CSA-G164-M92.

.3 Paint galvanized surfaces that are cut, welded or threaded with zinc rich paint to ensure a minimum coating of 0.102mm, immediately following damage to galvanized protection. Prepare and repair surfaces to meet specified requirements of ASTM Practice A780.

.7 Stainless Steel

.1 No. 304 finish.

.2 Provide acid cleaning in shop (pickling) to remove impurities.

2.3 FABRICATION TOLERANCES

.1 Squareness: 3mm (1/8 inch) maximum difference in diagonal measurements.

.2 Maximum Offset Between Faces: 1.6mm (1/16 inch).

.3 Maximum Misalignment of Adjacent Members: 1.6mm (1/16 inch).

.4 Maximum Bow: 3mm in 1.2m (1/8 inch in 4 ft).

.5 Maximum Deviation From Plane: 1.6mm in 1.2m (1/16 inch in 4 ft).

2.4 FINISHES

.1 Prepare surfaces to be primed in accordance with SPCC SP 2.

.2 Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

.3 Do not prime surfaces in direct contact with concrete or where field welding is required.

.4 Prime paint items with one (1) coat.

.5 Structural Steel Members: Galvanize after fabrication to appropriate grade for type and size of steel material indicated.

.6 Non-structural Items: Galvanized after fabrication to appropriate grade for type and size of steel material indicated.

.7 Chrome Plating: ASTM B177, nickel-chromium alloy, satin [Polished] finish.

2.5 PAINTING

.1 All exterior steel, before leaving the shop, shall be thoroughly cleaned and given one coat of steel zinc priming paint meeting CGSB 1-GP-181M + Amdt - Mar - 78 (interior steel to CAN/CGSB 1.40-1989).

.2 All painting shall be done under cover and steel shall remain under cover until the paint is dry. No painting shall be done on wet steel nor in a temperature below 7°C.

.3 Unless otherwise specified, all finished painting of steel shall be as specified under Section 09 91 00, Painting.

PART 3- EXECUTION

3.1 EXAMINATION

.1 Verify existing conditions before starting work.

.2 Verify that field conditions are acceptable and are ready to receive work.

.3 Verify dimensions, tolerances, and method of attachment with other work.

3.2 PREPARATION

.1 Clean and strip aluminum and/or primed steel items to bare metal where site welding is required.

.2 Supply steel items required to be embedded in masonry or cast into concrete with setting templates to appropriate sections.

3.3 INSTALLATION

.1 Install items plumb and level, accurately fitted, free from distortion or defects.

.2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

.3 Field weld components indicated on Shop Drawings.

.4 Perform field welding to CSA requirements.

.5 Obtain approval prior to site cutting or making adjustments not scheduled.

.6 After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

.7 Insulate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and concrete. Use bituminous paint, butyl tape, paper on other approved means.

.8 Supply all fastenings, anchors and accessories required for fabrication and secure installation of metal fabrications as required by loading and jurisdictional authorities. Make exposed metal fastenings and accessories of same material, texture, colour and finish as base metal on which they occur unless otherwise shown or specified. Keep exposed fastenings to an absolute minimum and inconspicuous, spacing them evenly and setting them out neatly. Make fastenings of permanent type. Make field connections with high tensile bolts to CAN/CSA-S16.1-M89 or weld.

3.4 ERECTION TOLERANCES

.1 Maximum Variation From Plumb: 6mm (¼ inch) per story, non-cumulative.

.2 Maximum Offset From True Alignment: 6mm (¼ inch).

.3 Maximum Out-of-Position: 6mm (¼ inch).

3.5 ADJUSTMENT

.1 Check all movable or removable items to ensure that everything operates correctly and as intended.

.2 After installation of each item, touch up rivets, field welds, bolts and burnt or scratched surfaces with primer. Touch up galvanized surfaces with zinc rich primer where burned by field welding.

3.6 CLEAN-UP

.1 At completion of work, remove all debris, rubbish surplus materials, scaffolding and equipment from the site.

.2 Aluminum finishes shall be thoroughly cleansed, and if necessary, a solution such as mild soap or detergent shall be used.

.3 Under no circumstances should abrasive acidic or alkaline cleansing materials be used.

3.7 SCHEDULES

.1 The following Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.

.1 Metal Window Surrounds

.1 Supply and install metal angle window surrounds at the perimeter of masonry openings for all aluminum windows, aluminum door frames, curtain walls, hollow metal door frames and mechanical louvres. The metal window surrounds form part of the air/vapour barrier system and also perform as anchor points for window and door frame installations.

.2 Angles shall be constructed from 11 GA (3.04mm / .12") galvanized sheet steel, bent to opening dimensions. Angles shall be predrilled in two rows at 300mm (12") o.c. maximum in each row, with rows staggered. Corners shall be mechanically fastened with rivets. Minimum of 2 points of connection at each corner.

.3 The metal surrounds shall be installed prior to the concrete block backup above the sill line. The metal surround shall be used as a form or template for the concrete block installation.

.4 The aluminum window, aluminum door frame, curtain wall, hollow metal door and mechanical louvre supplier shall be responsible for providing the exact dimensions for the metal surrounds.

.5 Paint all cut edges with zinc rich paint.

.2 Vanity Supports

.1 Supply for installation under Section 06 20 00, Finish Carpentry, bent plates and angle brackets all welded and drilled to receive anchor bolts and wood screws. Provide in size and quantity as shown on drawings.

.3 Access Panels

.1 Provide to the various trades concerned all insulated metal access panels and all access doors and frames as shown on the Architectural Drawings.

.2 Access panels shown on Mechanical and Electrical Drawings are specified in their respective sections.

.3 All access panels or doors shall be complete with frames, hinges and approved locking devices and shall be suitable for the wall construction in which they are to be incorporated and shall meet the fire rating requirements of the walls in which they are to be installed.

.4 All of the above metal work shall be delivered to the site with a prime coat of rust inhibitive paint.

.4 Miscellaneous Brackets, Support and Angles

.1 Supply for installation by respective trades, steel brackets, supports and angles, etc., as indicated on drawings. Drill for countersunk screws and anchor bolts. Prime paint for interior installations and hot-dipped galvanize for exterior installations. Items included but not limited to millwork support brackets, wall supports, light shelf brackets at bulkheads, projection screens and VDP ceiling supports etc.

.5 Universal Ceiling Mounted Projector Support (VDP)

.1 Refer to section and details shown on drawings.

.6 Bollards

.1 Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

.7 Welded Wire Mesh

.1 Resistance Welded Steel Wire Mesh: ASTM A 185/A 185M, 16 gauge Class 1 galvanized steel wire per ASTM A641/A641M, 51mm x 51mm (2 inch x 2 inch) mesh, stiffened with horizontal V-shaped braces.

.1 Wire Breaking Load: Minimum 80,000 psi.

.2 Weld Shears Strength: Minimum 476 kg (1,050 pounds).

END OF SECTION

PART 1- GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Provide all labour and materials for rough carpentry required on Site with the exception of concrete formwork which shall be performed as specified under Division 3.

.3 Furnish rough hardware, cements, glue, adhesives and fasteners for the complete fabrication and installation of carpentry items.

.4 Supply and install all wood framing, furring, rough bucks and nailing strips shown to be required and not otherwise specified in other Sections of this Division.

.5 Supply and install backboards for mounting electrical equipment.

.6 Supply and install wood preservative where required.

1.2 RELATED SECTIONS

.1 Section 06 20 00 – Architectural Woodwork and Millwork.

.2 Division 26 – Electrical

1.3 REFERENCES

.1 CAN/CSA-O80 Series 08 Wood Preservation

.2 CSA-O121-08 - Douglas Fir Plywood.

.3 CSA-O141-05 (R2009) - Softwood Lumber.

.4 CSA-O151-09 - Canadian Softwood Plywood.

.5 CSA-O153-M1980 (R2008) - Poplar Plywood.

.6 CSA-O437 Series 93 (R2006) Standards on OSB and Waferboard.

.7 NPA A208.1-2009 - Particleboard.

.8 APA (American Plywood Association) - Grades and Specifications.

.9 CANPLY (Canadian Plywood Association) - Canadian Plywood Handbook.

.10 NLGA (National Lumber Grades Authority) - Standard Grading Rules for Canadian Lumber, 2010 edition.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide technical data on wood preservative materials.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Procedures for submittals.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIRMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordinate with other work having a direct bearing on work of this section.

.3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

.1 Lumber Products: Graded and stamped to NLGA requirements.

.2 Plywood Products: Certified and graded to APA and CANPLY requirements.

1.9 DELIVERY, STORAGE AND PROTECTION

.1 Section 01 60 00 – Material and Equipment

.2 Protect work from moisture damage.

PART 2 - PRODUCTS

2.1 MANUFACTURES

.1 Acceptable Manufacturers: As listed in paragraphs below.

2.2 MATERIALS

.1 Lumber:

.1 Lumber shall be of same species and grade, equally seasoned and shall be processed and stamped at same mill.

.2 CSA O141 and NLGA Standard Grading Rules for Canadian Lumber.

.3 Board quality: Construction or better.

.4 Roof lumber: NLGA, Construction grade light framing, Jack Pine, S4S, pressure treated to CAN/CSA-O80 series using copper based waterborne preservative treatment, impregnated to a net retention of 4 kg/ m3 of preservative unless otherwise specified by preservative manufacturer.

.2 Sheet:

.1 Plywood: CSA O121-M, sheathing grade, laminated with waterproof adhesive, exterior grade.

.2 Sheathing: Douglas Fir, CSA 0121-M or CSA O151-M; sheathing grade.

.3 Nails, Staples, Screws for Pressure Treated Wood: Hot dip galvanized or stainless steel.

.4 Particleboard: NPA A208.1; sanded faces.

.5 Mat-Formed Panelboards: CSA-O437, OSB, waferboard.

.3 Treatments:

.1 Surface applied wood preservative: Green coloured copper napthenate or 5% pentachlorophenol solution, water repellant preservative or same copper based preservative as used for shop impregnation, in accordance with CAN/CSA O80.

.2 Fire retardant treatment of lumber and plywood: , conforming to CAN/CSA-O80.20 and CAN/CSA-O80.27 respectively, to provide a flame spread rating of 25 or less in accordance with CAN/ULC-S102.

2.3 ACCESSORIES

.1 Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.

.2 Anchors: Toggle bolt type for anchorage to hollow masonry, Expansion shield and lag bolt type for anchorage to solid masonry or concrete, bolt or ballistic fastener for anchorages to steel, as required.

.3 Rough Hardware: Nails, spikes, screws, bolts or other required to complete the work covered by this Section conforming to current C.S.A. Standard G164. Hardware for exterior applications shall be non-corrosive, hot dip galvanized.

.4 Glue: Waterproof, synthetic resins..

PART 3 - EXECUTION

3.1 PREPARATION

.1 Treat surfaces with wood preservative or fire-retardant applications before installation.

.2 Apply preservative by dipping or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak for plywood.

.3 Treat all material exterior and material within an envelope wall or exterior floor assembly.

.4 Coordinate with other Sections providing blocking, nailing strips and trims as required for installation of work.

3.2 INSTALLATION

.1 Properly frame together parts of The Work with members accurately cut to size, closely fitted, well spiked, and erected in a substantial manner, plumb, level, square and true to dimension.

.2 Locate joints over bearing or supporting surfaces.

.3 Provide running members full length wherever possible.

.4 Design for expansion and contraction of the materials.

.5 After cutting, drilling and fitting "treated" wood and plywood but before installation, apply 1 full coat of wood preservative to exposed surfaces, including ends of blocking, furring, nailers and rough carpentry. Retreat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative or fire retardant before application.

.6 Provide fasteners and rough hardware for a rigid and secure installation.

.7 Miscellaneous Interior Carpentry:

.1 Provide plywood, blocking, furring, nailers, rough carpentry, grounds and nailing strips as indicated and/or as required for proper installation. Provide furring, blocking as required to support miscellaneous work indicated on Drawings or as required to meet design requirements.

.2 Miscellaneous interior carpentry non-exhaustively includes supports for: fascia, composite wood panels, wall mounted equipment, crash rails, bumpers and other similar items.

.8 Equipment Mounting Panels:

.1 Install all wood panels required for mechanical, electrical and communication trades for mounting of controls, panel boards, pull boxes, splitters, switches, wall mounted switch gear, junction boxes in sizes to suit design, electrical cabinets,

data control equipment, disconnect switches, fire alarm control equipment, lighting control equipment, sound/communication equipment and other similar devices.

.2 Provide 19mm (¾") thick exposed plywood backboard panels in one piece screw-fastened to fire treated wood strapping. Refer to Electrical Drawings for sizes and locations and securely mount panels to wall surfaces.

.3 Panel size and mounting height shall suit mechanical and electrical requirements acceptable to Consultant. Apply all surfaces and edges of plywood panels with 1 coat of fire retardant wood preservative.

.4 Provide "fire treated" plywood.

3.3 CLEAN-UP

.1 Upon completion of each day's work, clean up and dispose of, off-site, all debris resulting from the work of this trade.

END OF SECTION

PART 1- GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Supply and install all finish carpentry items including all related millwork hardware and accessories.

1.2 RELATED SECTIONS

.1 Section 05 50 00 – Metal Fabrications.

.2 Section 06 10 00 – Rough Carpentry.

.3 Section 07 92 00 – Joint Sealants.

.4 Section 09 91 00 - Painting.

1.3 REFERENCES

.1 AHA A135.4-2004 - Basic Hardboard.

.2 ASTM E84-12c - Standard Test Method for Surface Burning Characteristics of Building Materials.

.3 BHMA A156.9-2010 - Cabinet Hardware.

.4 CAN/CGSB 11.3-M87 - Hardboard.

.5 CAN/CGSB 11.5-M87 - Hardboard, Pre-coated, Factory Finished, for Exterior Cladding.

.6 CAN/CSA-O80 Series-08 (R2012) - Wood Preservation.

.7 CSA-O121-08 (R2013) - Douglas Fir Plywood.

.8 CSA-O141-05 (R2009) - Softwood Lumber.

.9 CSA-O151-09 - Canadian Softwood Plywood.

.10 CSA-O153-13 - Poplar Plywood.

.11 NPA A208.1-2009 - Particleboard.

.12 NPA A208.2-2009 - Medium Density Fiberboard (MDF) for Interior Applications.

.13 NAAWAS – North American Architectural Woodwork Standards– Most current edition.

.14 CHPVA (Canadian Hardwood Plywood and Veneer Association) - Official Grading Rules for Canadian Hardwood Plywood-2010.

.15 NEMA LD3-2005 - High Pressure Decorative Laminates (HPDL).

.16 NLGA (National Lumber Grades Authority) - Standard Grading Rules for Canadian Lumber, 2010 edition.

.17 NHLA (National Hardwood Lumber Association).

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data on fire retardant treatment materials and application instructions.

.3 Shop Drawings:

.1 Indicate materials, component profiles, fastening methods, jointing details, accessories, and plastic laminate types, to a minimum scale of 1:8 (38mm = 0.3m) (1½ inch = 1 ft).

.2 List all finish hardware being used.

.4 Samples:

.1 Submit two (2) samples of each plastic laminate selected.

.2 Submit two (2) samples of finish plywood, 305mm (12 inch) square in size illustrating wood grain and specified finish.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Procedures for submittals.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordinate with other work having a direct bearing on work of this section.

.3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

.1 Perform work to North American Architectural Woodwork Standards, most current edition, Premium Grade.

.2 Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three (3) years documented experience.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.

.4 Certification: Upon award of contract, register Work under this Section with the AWMAC Quality Certification Program, and provide at the end of the project certificates indicating that products and installation comply with the grades specified.

1.9 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire retardant requirements.

1.10 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 60 00 – Material and Equipment

.2 Protect work from moisture damage.

1.11 ENVIRONMENTAL REQUIREMENTS

.1 Maintain building and millwork temperature between 19 and 21°C for a period of at least 72 hours before and until takeover of project by Owner.

1.12 WARRANTY

.1 The warranty shall cover making good any defects in Millwork due to faulty workmanship or defective materials supplied by the Millwork Contractor which appears during a two (2) year period following Substantial Completion of the building contract.

.2 Submit three (3) copies of signed and written guarantee for incorporation in the Project Record Document Manuals in accordance with Section 01 77 00, Close-Out Procedures.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hardwood Lumber:

.1 Shall conform to AWMAC Premium Grade, AWS Section 3, conforming to NHLA requirements; Moisture Content: Kiln dried to 8% or less and of uniform grain and colour.

.2 Refer to Architectural Drawings for sizes and profiles.

.3 All hardwood lumber to receive paint finish will be Birch, custom grade.

.4 All hardwood lumber to receive clear finish will be maple, premium grade.

.2 Softwood Lumber:

.1 Shall conform to CAN/CSA-O141, and AWMAC, Premium Grade, AWS Section 3, Ontario White Pine, Yellow Pine or other Pine species.

.3 Framing Lumber (Concealed Framing): Select Merchantable Western White Spruce, kiln dried, or other sound material of other species for framing concealed members, free from sap, shakes, knots, splits and other defects. Grade marked by appropriate authorized association by National Lumber Grades Authority. Provide concealed wood of most appropriate grade required to satisfy fabrication, utility and structural requirements.

.4 Architectural Lumber (Exposed Framing): Conform to AWMAC Premium Grade, AWS Section 3. Clear, straight, kiln dried, Maple for fitments and door jambs. Provide kiln dried lumber to 7% moisture content, free from blemishes that would be apparent after finish is applied.

2.2 SHEET MATERIALS

.1 Shall conform to the requirements of AWMAC, Premium Grade, AWS Section

.2 Hardwood Plywood:

.1 Shall conform to the current C.S.A. Standard 0115-M1982 (R2001), the CHPVA Official Grading Rules for Canadian Hardwood and shall be of thickness and sizes as shown on details.

.2 Where two sides are exposed to view, provide interior type, medium density fiberboard, sound two sides with both veneers of Canadian Birch, without patches, all for stain finish.

.3 Where one side is exposed to view, provide interior type, medium density fiberboard, sound one side with exposed face veneer of Canadian Birch without patches, all for stain finish.

.4 All exposed edges shall be faced with veneer.

.3 Veneers:

.1 Open-grain species: minimum 0.71mm thick.

.2 Close-grain species: minimum 0.61mm thick.

.3 Matching edge banding on all edges exposed to view.

.4 Marine Grade Plywood: 19mm (¾") thick. to be used in all locker rooms, shower areas and washrooms.

.5 Plywood Backs:

.1 Shall be 6mm (¼") veneer core, good one side, with face veneer of Canadian Birch, to Architectural Woodworks Standard, Custom Grade.

.6 Medium Density Fiberboard (MDF):

.1 NPA A208.2; composed of fire retardant wood fibers, medium density, balanced designed, manufactured from 100% recycled materials, without the use of added formaldehyde resins. Finish and Texture: To match Consultant's sample.

.2 Provide industrial grade MDF certified to meet Class 1 surface burning characteristic of ATSM E84, CAN/ULC-S102 with a maximum Flame Spread rating of 25 and maximum Smoke Developed of 50.

.3 Do not use MDF panels in moist areas.

.4 Acceptable Products:

.1 Decorative panels, "Medite FR®" by Sierra Pine Ltd; www.sierrapine.com or approved equivalent products manufactured by Flakeboard Company Limited; www.flakeboard.com, Uniboard Canada Inc.; www.uniboard.com, or Tafisa Canada and Company, Ltd.; www.tafisa.ca.

.7 Hardboard: CAN/CGSB 11.3, Type 2; pressed wood fiber with resin binder, tempered grade, 6mm (¼"), minimum destiny 476 Kg/m^3.

.8 Banding:

.1 Door, drawers, shelving, gables and other exposed edges of plywood shall be finished on all exposed edges with matching solid T-edge hardwood 10mm (3/8") thick minimum, unless otherwise specified, applied using a hot glue process.

2.3 PLASTIC LAMINATE

.1 Products of the following manufactures are acceptable to conformance to requirements of Drawings, Schedules and Specifications:

.1 Abet Incorporated; www.abetlaminati.com

.2 Arborite; www.arborite.com

.3 Formica Inc.; www.formica.com

.4 Nevamar Company, LLC; www.nevamar.com

.5 Wilsonart Canada; www.wilsonart.com

.6 Pionite Decorative Laminates: www.pionite.com

.7 Uniboard; www.uniboard.com

.2 Provide following types and thicknesses conforming to NEMA LD3 and AWS Section 4, Item 4.2c:

.1 Horizontal General Purpose:HGS - 1.2mm (0.048").

.2 Vertical General Purpose:VGS - 0.7mm (0.028").

.3 Postforming Horizontal: HGP - 1.0mm (0.039").

.4 Postforming Vertical:VGP - 0.7mm (0.028").

.5 Fire Rated: HGF - 1.2mm (0.048")

.6 Cabinet Liner:CLS - 0.5mm (0.020").

.7 Backer Sheet: BKV - 0.7mm (0.028").

.8 Backer Sheet:BKH - 1.2mm (0.048").

.9 Special Purpose:HSM - 1.5mm (0.059").

.10 Flooring Grade, High Wear: HDS - 1.2mm (0.048").

.11 Flame Retardant:HGF - 1.2mm (0.048").

.3 Thermofused Decorative Overlay (Melamine): NEMA LD3, melamine-impregnated decorative paper thermally fused to MDF core; white colour.

.1 Shall be manufactured by the same manufacturer as facing sheet or approved equal.

.4 Backer sheet shall be supplied by the same manufacturer as facing sheet.

.5 Colours and Finishes:

.1 PLAM1:

.1 Manufacturer: TBD

.2 Style: TBD

.3 Colour: TBD

.2 PLAM2:

.1 Manufacturer: TBD

.2 Style: TBD

.3 Colour: TBD

2.4 PLASTIC LAMINATE CABINETRY

.1 Cabinet Construction: Flush overlay, adjustable shelving MDF core.

.2 Exposed Surfaces: High pressure laminate.

.3 Drawers and Drawer Fronts: High pressure laminate.

.4 Edges: PVC.

.5 Semi-exposed Surfaces:

.1 Surfaces (other than drawer bodies): Thermofused melamine.

.2 Shelves: Thermofused melamine.

.3 Edges: PVC.

.4 Drawer Sides and Backs: Edgebanded, thermofused Melamine.

.5 Drawer Bottoms: Edgebanded, thermofused Melamine.

2.5 PLASTIC LAMINATE COUNTERTOPS

.1 Comply with AWMAC Quality Standards, Premium grade requirements for counter construction supplemented as follows:

.1 High Pressure Laminate: NEMA LD3, high pressure laminate, Grade HGL; with gloss textured finish.

.2 Postformed OR Square edge Laminate: NEMA LD3, high pressure laminate, Grade HGP.

.3 Edge Treatment: Same as laminate cladding on horizontal surfaces.

.4 Core Material: MDF.

2.6 SOLID SURFACING

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.

.1 Corian; https://www.corian.com/

.2 Or approved alternate.

.2 Solid Acrylic Resin Surface: Solid, nonporous, homogeneous surfacing material consisting of natural minerals bound together with a matrix of acrylic resin (polymethyl methacrylate) and complying with the "Physical Characteristics of Materials": Article of ANSI SS1.

.1 Solid Surfacing (SS1): manufactured by Corian Solid Surface:

.1	Colour:	Silver Birch
.2	Model:	Terra Collection
.3	Thickness:	13mm (1/2").
.4	Location:	Refer to Architectural drawings for details.

.2 Solid Surfacing (SS2): manufactured by Corian Solid Surface:

.1	Colour:	Milky Way
.2	Model:	Solid Surface
.3	Thickness:	13mm (1/2").
.4	Location:	Refer to Architectural drawings for details.

2.7 QUARTZ SURFACING

.1 Reserved.

2.8 ACCESSORIES

.1 Adhesives:

.1 Polyvinyl adhesive to C.S.A. 0112.5-M1977. All wood and laminate adhesives must be free of added urea-formaldehyde.

.2 Plastic Laminate Adhesive: As recommended by plastic laminate manufacturer.

.3 Laminated Plastic Core Sealer: Water resistant sealer or glue as recommended by laminate manufacturer.

.4 Non Flammable Adhesive: Required where Fire Rated, Fire Retardant or Fire Resistant millwork is specified.

.2 Plastic Edge Trim (PVC): To be used only when approved by the consultant

.3 Aluminum Edge Trim: Extruded flat shape; smooth surface finish; self-locking serrated tongue; of width to match component thickness; clear anodized finish.

.4 Door bumpers.

.5 Glass: As specified in Section 08 80 50.

.6 Nails And Staples:

.1 Shall conform to the current C.S.A. Standard B111-1974 (R2003) plain finish. Use non-corrosive hardware for exterior applications.

.7 Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; Stainless steel finish were exposed.

.8 Concealed Joint Fasteners: Threaded steel.

.9 Bench seat cushion: Shall consist of high density 1850 foam with a fiber layer on top.

.10 Cushion upholstery shall be from the Softside collection as manufactured by J. Ennis Fabrics Ltd. Colour to be selected from full range of colours

.11 Sealant:

.1 Flexible plastic corrosion resistant silicone to CGSB-19-GP9. Colour to be selected by Consultant.

2.9 HARDWARE

.1 Door Hinges: Hafele 329.07.609 and 329.07618, as required.

.2 Drawer Slides: Ball bearing, carrier, fully extendable, heavy duty to operate adequately for size and capacity of drawer, Accuride or Hettiche.

.3 Pilaster Strips: Hafele 283.07.011 and 283.61.926.

.4 Door and Drawer Pulls. Silver coloured anodized finger pull 70mm wide x 42mm deep, Hafele 124.02.920

.5 Locks:

.1 Doors: Corbin 02067 x 7/8 x 125 C15

.2 Drawers: Corbin 02066 x 7/8 x 125 C15.

.6 Hanging file slides:

.1 Hafele 422.71.901

.7 Plastic grommets for data wiring (black)

.8 Metal pegs for adjustable shelves, polished chrome.

.9 Coat rod: 40 mm diameter, polished chromed steel with matching chromed metal brackets.

.10 Metal Hooks, polished chromed steel.

.11 Hook Rack: Richelieu Contemporary Hook Rack 700, BP700210, Aluminum, 8.5” long, 3 hooks each rack.

.12 Other: as noted on drawings.

2.10 WORKTOP COUNTER SUPPORT BRACKETS

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications:

.1 CounterBalance, www.counterbalanceshop.com Extended Concealed Flat Brackets, black powder coated (ECFLAT12-2.0 and ECFLAT24-2.0 to suit counter depth)

.2 Or approved alternate.

.2 Spacing of concealed supports is 16” o/c or as recommended by manufacturer.

.3 Install full height wood studs inside of or beside metal studs, secured top and bottom and independent of metal stud. Attach vertical leg to side of support wood stud.

.4 Load capacity per bracket 2400 pounds.

.5 Installation: Coordinate installation of concealed brackets with application of wall board finish specified in Section 09 21 16 – Wall Board Assemblies. Ensure that the brackets are delivered to site and installed in a timely manner to allow for vertical bracket leg to be concealed by wall board.

PART 3- EXECUTION

3.1 FABRICATION

.1 Standards: Fabricate all millwork to Architectural Woodwork Standard, Edition 1, 2009, Premium Grade – Flush Overlay.

.2 Finishing: Sand work smooth with the grain, set all nails and screws, apply wood filler, and leave ready to receive finish. Prepare all work which will be covered or otherwise hidden or inaccessible after installation ready for sealing.

.3 Plastic Laminate: Shop apply plastic laminate finish to units by pressure bonding. Adhere plastic laminate over entire surface. Make corners with hairline joints. Use full-sized laminate sheets. Make joints only where approved. Flat surfaces not fastened down rigidly to a frame shall have a bonded plastic laminate backing sheet.

.4 Banding: Fit all exposed plywood edges with hardwood banding.

.5 Hardware: Supply and install finish cabinet hardware.

.6 Miscellaneous Interior Finish: All members shall be finish sizes as shown. Trim members for application on flat surfaces shall normally have the reverse side "backed-out", except such members as will have exposed ends.

.7 Wood Cabinets, Cupboards and Drawers:

.1 Millwork shall be constructed of medium density fiberboard material to C.S.A. Standards with plastic laminate bonded to all fronts, backs and 3mm PVC nosing to the edges of all millwork members including shelving unless specified with a solid edging. The PVC edging will match the face materials all as selected by the consultant.

.2 Shelves shall be 19mm (¾") in thickness and supported in lengths not exceeding 1000mm (40").

.3 Open ends or skeleton frames against walls are not permitted.

.4 Web frames shall be mortised and tenoned, grooved and stub tenoned, or doweled, glued, and sanded.

.5 Face frames shall be fully glued and nailed to case bodies, with allowance made for scribing where required.

.6 Adjustable shelves shall normally be supported by metal standards, set flush.

.7 The finished case shall present first-class workmanship, with face nails countersunk and with all exposed surfaces sanded and free from tool marks or similar blemishes.

.8 Cases shall be protected with skids, bracing, or any other means as may be required for delivery in good condition.

.8 Plastic Laminate Counter Tops And Window Stools:

.1 Core material shall be dense particle board manufactured to C.S.A. Standards.

.2 The laminated plastic covering shall be glued to the core material with adhesive as specified.

.3 Plastic laminate tops requiring more than one sheet of laminate shall have the plastic pre-matched to minimize colour variations and shall be fabricated using 2400mm (96") minimum length stock.

.4 Where backsplashes are required, they shall be a minimum of 100mm (4") in height except where indicated otherwise or where job conditions do not permit.

.5 Plastic laminate shelves shall be fabricated as tops except face laminate shall be used on all surfaces.

.6 Where counter tops are continuous they shall be post-formed in one contoured piece with 6mm (¼") cove at junction between top and backsplash; with self-edged square nosing where open end occurs and with self-edged flat backsplash returns returned to counter front where unit ends butt against vertical surfaces. Square edge, self-edges with laminate. Top surface laminate shall overlap edging laminate and all corners and edges shall be chamfered. Exposed corners in plan shall be square.

.7 Make all cut-outs for sinks, services and other fittings with minimum 3mm (1/8") radiused corners and chamfered edges free from chips. All cut-outs shall be sealed with two coats of black waterproof paint. Reinforce at cut-outs as necessary.

.9 Refer to Architectural drawings for details.

3.2 INSTALLATION

.1 Install Work to AWMAC Premium Grade.

.2 Set and secure all materials and components in place, rigid, plumb and square.

.3 Use fixture attachments in concealed locations for wall mounted components.

.4 Use concealed joint fasteners to align and secure adjoining counter tops and cabinet units.

.5 Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

.6 Secure counter bases to floor using appropriate angles and anchorages.

.7 Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

.8 At junction of plastic laminate counter or backsplash and adjacent wall finish, apply small bead of silicon rubber sealant.

.9 Provide heavy fixture attachments for wall mounted cabinets.

.10 After installation, fit and adjust all operating hardware, for doors, drawers and shelves.

.11 Apply bituminous coating to wood materials in contact with masonry or cementitious construction and on exposed edges of cut-outs for sinks, drains, or water pipes in plastic laminate finished cabinet tops and backsplashes.

3.3 INSTALLATION OF SOLID SURFACES

.1 Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

.1 Provide product in the largest pieces available.

.2 Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.

.1 Exposed joints/seams shall not be allowed.

.3 Reinforce field joints with solid surface strips extending a minimum of 25mm on either side of the seam with the strip being the same thickness as the top.

.4 Cut and finish component edges with clean, sharp returns.

.5 Rout radii and contours to template.

.6 Anchor securely to base cabinets or other supports.

.7 Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in colour to match countertop.

.8 Carefully dress joints smooth, remove surface scratches and clean entire surface.

.9 Install countertops with no more than 1/8" (3mm) sag, bow or other variation from a straight line.

.2 Coved backsplashes and sidesplashes:

.1 Provide coved backsplashes and sidesplashes at all walls and adjacent millwork.

.2 Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on the drawings.

.3 Adhere countertops using manufacturer's standard colour-matched Joint Adhesive.

3.4 INSTALLATION TRIM

.1 Install in lengths as long as possible stagger joints and locate over solid blocking.

.2 Finish returns of stools and open ends to match faces.

.3 Install in accordance with details shown on drawings.

3.5 INSTALLATION OF HARDWARE

.1 Install all hardware applicable to work of this Section with the exception of hardware for cabinetwork being installed in the shop. Ensure that all hardware is in perfect working order at the completion of the work of this Section.

3.6 ADJUSTMENT

.1 Adjust hinged doors to swing freely and easily, to remain stationary at any point of swing, to close evenly and tightly against stops without binding, and to latch positively when doors are closed with moderate force. Ensure that when doors are installed with hinged stiles adjacent, both doors can open simultaneously without binding.

.2 Adjust hardware so that latches and locks operate smoothly and without binding, and closers act positively with the least possible resistance in use. Lubricate hardware if required by supplier's instructions. Use graphite powder, not oil or grease, for hinges.

.3 Ensure that door equipped with closers operate to close doors firmly against anticipated wind and building air pressure, and to enable doors to be readily opened as suitable for function, location and traffic.

3.7 CLEAN-UP

.1 Upon completion of work, clean up and dispose of, off site, all debris resulting from the work of this trade.

END OF SECTION

Part 1 General

1.1 SUMMARY OF WORK

.1 This Section specifies spray-applied polyurethane-based foamed-in-place insulation.

1.2 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealants.

1.3 REFERENCES STANDARDS

.1 ASTM International (ASTM).

- .1 ASTM C411-2011, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
- .2 ASTM C518-2015, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- .3 ASTM D1621-2016, Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.
- .4 ASTM D1622/D1622M-2014, Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- .5 ASTM D1623-2009, Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.
- .6 ASTM D2126-2015, Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
- .7 ASTM D2842-2012, Standard Test Method for Water Absorption of Rigid Cellular Plastics.
- .8 ASTM E96/E96M-2016, Standard Test Methods for Water Vapor Transmission of Materials.
- .9 ASTM E2178-2013, Standard Test Method for Air Permeance of Building Materials.

.2 Canada Green Building Council (CaGBC).

- .1 LEED v4-2014, LEED (Leadership in Energy and Environmental Design): Green Building Rating System.

.3 International Organization for Standardization (ISO).

- .1 ISO/IEC 17024-2012, Conformity Assessment. General Requirements for Bodies Operating Certification of Persons.

.4 National Research Council of Canada (NRC).

- .1 Canadian Construction Materials Centre (CCMC) Reports.

.5 Underwriters' Laboratories of Canada (ULC).

- .1 CAN/ULC S102 - 2010, Surface Burning Characteristics of Building Materials and Assemblies.
- .2 CAN/ULC S127 - 2014, Standard Corner Wall Method of Test for Flammability Characteristics of Non-Melting Foam Plastic Building Materials.
- .3 CAN/ULC-S705.1-2015, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Material - Specification.
- .4 CAN/ULC-S705.2-2005, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Application.

.5 CAN/ULC S770 - 2015, Standard Test Method for Determination of Long-term Thermal Resistance of Closed-Cell Thermal Insulating Foams.

.6 CAN/ULC S774 - 2014, Standard Laboratory Guide for the Determination of Volatile Organic Compound Emissions from Polyurethane Foam.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.2 Pre-Application Meeting: Convene pre- application meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and co-ordination with other building sub-trades, and to review manufacturer's written application recommendations.

.1 Comply with Section 01 31 00 - Project Meetings and co-ordinate with other similar pre-application meetings.

.2 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:

.1 Owner;

.2 Consultant;

.3 Spray foam insulation applicator;

.4 Manufacturer's technical representative.

.3 Ensure meeting agenda includes review of methods and procedures related to foamed-in-place polyurethane insulation application including co-ordination with related work.

.4 Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data: Submit product data including manufacturer's literature for foamed-in-place polyurethane insulation components and accessories, indicating compliance with specified requirements and material characteristics.

.1 Submit list on spray foam insulation manufacturer's letterhead of materials, components and accessories to be incorporated into Work.

.2 Include product VOCs.

.3 Include details of insulation joints with sealants.

.4 Include product names, types and series numbers.

.5 Include contact information for manufacturer and their representative for this Project.

.3 Test Reports: Submit test reports, verifying qualities of insulation meet or exceed requirements of this specification, in accordance with Section 01 45 00 - Quality Control.

.1 Submit test reports to CAN/ULC S102 for surface burning characteristics.

.4 Field Reports: Submit third party inspection agency's field reports within 10 days of agency representative's site visit and inspection.

.5 Applicator Qualifications: Submit letter on spray foam insulation manufacturer's letterhead verifying applicator's certification for work similar to work of this Section.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Supply maintenance data for foamed-in-place polyurethane insulation for incorporation into manual specified in Section 01 78 10 - Closeout Submittals.

.2 Record Documentation: In accordance with Section 01 78 10 - Closeout Submittals.

.1 List materials used in foamed-in-place polyurethane insulation work.

.2 Warranty: Submit warranty documents specified.

1.7 QUALITY ASSURANCE

.1 Applicator Qualifications: Verify that applicator of foamed-in-place polyurethane insulation is licensed by ISO/IEC 17024 certification organization recognized by CCMC.

.2 Quality Assurance Program: Use only third-party quality assurance providers certified to ISO/IEC 17024 and recognized by CCMC.

.3 Mock-up: Construct full size 3 x 3 m mock-up of foamed-in-place polyurethane insulation using proposed procedures, materials and quality of work where directed by Consultant and in accordance with Section 01 43 00 - Quality Assurance.

.1 Include window and sill, insulation, building corner condition, junction with roof system and how materials interface with sealants.

.2 Purpose: To judge quality of work and material application.

.3 Allow Consultant 24 hours minimum prior to inspection of mock-up.

.4 Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for work of this Section.

.6 Approved mock-up may remain part of finished work.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver foamed-in-place polyurethane insulation materials and components in manufacturer’s original packaging with identification labels intact and in sizes to suit project.

.2 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions.

.1 Store materials at temperatures between 23 and 30 ºC.

.3 Packaging Waste Management:

.1 Separate and recycle waste packaging materials in accordance with Section 01 74 19 - Construction Waste Management and Disposal.

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

.3 Collect and separate for disposal paper and plastic material in appropriate on-site storage containers in accordance with Waste Management Plan.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Apply foamed-in-place polyurethane insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.1 Substrate temperature for Standard Grade: 10 to 50 ºC.

.2 Substrate temperature for Winter Grade: minus10 to 25 ºC.

1.10 WARRANTY

.1 All work shall be covered by the third-party warranty program as set forth by the manufacturers Quality Assurance Program.

Part 2 Products

2.1 MANUFACTURER

.1 Elastochem Specialty Chemicals Inc.

.2 Contact Information:

.1 Address: 37 Easton Road, Brantford, Ontario, N3P 1J4.

.2 Phone: (519) 754-1678; (877) 787-2436.

.3 E-mail: info@elstochem-ca.com.

.4 Web site: www.elastochem-ca.com.

2.2 DESCRIPTION

.1 2-Component spray-applied medium density closed-cell polyurethane foam insulation and air barrier.

2.3 DESIGN CRITERIA

.1 Thermal Resistance:

.1 Long Term to CAN/ULC S770: ≥ 1.82 RSI at 50 mm thickness.

.2 Density to ASTM D1622: ≥ 29.6 kg/m^3.

.3 Vapour Permeability to ASTM E96: ≤ 56.3 ng/Pa.s.m^2 at 25 mm thickness.

.4 Water Absorption to D2842: ≤ 0.64 % volume.

.5 Air Permeability to ASTM E2178: ≤ 0.02 L/s m^2 at 75 Pa.

.6 Surface Burning Characteristics to CAN/ULC S102 & CAN/ULC S127.

.1 Flame spread: ≤ 500.

.2 Smoke developed: ≤ 500.

.7 Hot Surface Performance to ASTM C411: Pass

.8 Dimensional Stability to ASTM 2126:

.1 Volume change after 28 days: -9.6 % at 70 ºC and 97 % RH.

.9 Compressive Strength to ASTM D1621: ≥180 kPa minimum.

.10 Tensile Strength to ASTM D1623: ≥ 279 kPa minimum.

.11 VOC Emissions: Pass to CAN/ULC S774.

.12 Global Warming Potential of Blowing Agent: ≤ 1.

.13 Canadian Construction Materials Centre (CCMC): Report # 13697-L and 14030-R.

2.4 MATERIALS

.1 Insulation: Foamed-in-place, 2- component spray-applied polyurethane to CAN/ULC S705.1.

.1 Acceptable Materials:

.1 Elastochem Specialty Chemicals Inc., Insulthane® Extreme.

.2 Soprema Inc., Sopra-SPF 202

.3 BASF., Walltite CM01

.4 Demilec., Heatlok Soya HFO

2.5 ACCESSORIES

.1 Primers: In accordance with foamed-in-place polyurethane insulation manufacturer's written recommendations for surface conditions.

.2 Joint Sealants: In accordance with Section 07 92 00 - Joint Sealants.

.1 Ensure sealants are compatible with foamed-in-place polyurethane insulation.

.2 Acceptable material: Henry Company, BES 925 or in accordance with foamed-in-place polyurethane manufacturer’s written recommendations.

2.6 PRODUCT SUBSTITUTIONS

.1 Substitutions: In accordance with Section 01 62 00 - Product Exchange Procedures.

Part 3 Execution

3.1 APPLICATORS

.1 Use applicators who have been trained and certified by ISO/IEC 17024 certification organization recognized by CCMC.

3.2 EXAMINATION

.1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for foamed-in-place polyurethane insulation application in accordance with manufacturer’s written recommendations.

.1 Visually inspect substrate in presence of Consultant.

.1 Ensure substrates are clean of oil or excess dust.

.2 Ensure that substrate temperatures are within manufacturer’s parameters for product being applied.

.3 Ensure that there is no surface spalling.

.4 Ensure sealants completely fill gaps in substrate and at joints and are applied in accordance with Section [07 92 00 - Joint Sealants].

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with application only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

.4 Starting application of foamed-in-place insulation implies substrate conditions are acceptable for Work of this Section.

3.3 PREPARATION

.1 Remove loose or foreign matter, which might impair adhesion of materials.

.2 Fill open joints and voids in concrete greater 25 mm.

.3 Ensure substrate is free of frost and surface moisture prior to application of foamed-in-place insulation.

3.4 APPLICATION

.1 Apply foamed-in-place insulation to clean surfaces in accordance with manufacturer's printed instructions and with CAN/ULC S705.2.

.2 Apply primer to substrate in accordance with manufacturer's written recommendations.

.3 Site mix liquid components in accordance with manufacturer's written recommendations.

.4 Use only high-pressure sprayers to apply foamed-in-place insulation

.1 Apply evenly in 15 mm to 50 mm thick increments.

.5 Apply foamed-in-place polyurethane insulation to thicknesses as indicated.

.6 For Stud cavities applications:

.1 Installers are to utilize the "picture framing" installation technique whereby a thin (5mm to 25mm) flash coating is first applied to the outer perimeter of the stud cavity before filling in the cavity with foam.

.7 For Exterior Applications over transition and/or full field membranes:

.1 Installers are to apply an initial 1st pass of closed cell sprayed polyurethane foam no more than 32mm. Subsequent passes to be installed no more than 50.8mm in accordance with the CAN/ULC 705.2 STANDARD FOR THERMAL INSULATION- SPRAY APPLIED RIGID POLYURETHANE FOAM. MEDIUM DENSITY – INSTALLER'S RESPONSIBILITY.

3.5 FIELD QUALITY CONTROL

.1 Field Inspection: Co-ordinate field inspection in accordance with Section 01 45 00 - Quality Control.

.2 Third Party Inspection by CCMC recognized Certification body:

.1 Urethane Foam Consultants for Insulthane Extreme. www.foamexperts.ca

.2 Building Professionals for Sopra SPF 202. www.buildingprofessionals.com

.3 Caliber for Walltite CM01. www.qap.caliberqa.com

.4 Schedule [and pay for] site visits to review work at stages listed:

.1 Twice during progress of work at 25% and 60% complete.

.2 Upon completion of Work, after cleaning is carried out.

.3 Report deficiencies immediately to Consultant.

.4 Obtain reports within [10] days of review and submit immediately to Consultant.

.5 Site Application Tolerances:

.1 Thickness: ± 6 mm of thickness indicated.

.3 Manufacturer's Services:

.1 Co-ordinate manufacturer's services with Section 01 45 00 - Quality Control.

.1 Have manufacturer's technical representative review work involved in handling, application and protection of foamed-in-place insulation, and

submit written reports in acceptable format to verify compliance of Work with Contract conditions.

.2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product application review in accordance with manufacturer's written recommendations.

.1 Report any inconsistencies from manufacturer's recommendations immediately to Consultant.

.3 Schedule site visits to review work at stages listed:

.1 After delivery and storage of foamed-in-place polyurethane insulation, and when preparatory work on which Work of this Section depends is complete, but before application begins.

.2 Upon completion of Work, after cleaning is carried out.

3.6 CLEANING

.1 Progress Cleaning: Perform cleanup as work progresses.

.1 Leave work area clean at end of each day.

.2 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment.

.3 Waste Management:

.1 Co-ordinate recycling of waste materials with Section 01 35 41 - Waste Management and Disposal.

.2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

.3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

.1 Protect applied materials from damage during construction.

.1 Repair damage to foamed-in-place polyurethane insulation caused by ongoing construction.

.2 Repair damage to adjacent materials caused by foamed-in-place polyurethane insulation application.

End of Section

1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section, and all related sections.

.2 The work of this section, and related work specified in other sections shall comply with all requirements of Division 1 – General Requirements.

1.2 SECTION INCLUDES

.1 The work described in this Section consists of the supply and erection of the metal siding, trims and all associated components for a complete installation.

1.3 SUBMITTALS

.1 Samples

.1 Submit samples in accordance with Section 01300.

.2 Submit duplicate 12"x12" (300mm x 300mm) samples of siding material, of colour and profile specified.

1.4 QUALITY ASSURANCE

.1 Applicator Qualifications

.1 Work of this section shall be performed by mechanics having a minimum of 5 years documented experience in the installation of commercial metal siding. Submit proof of experience to Consultant.

.2 Installation

.1 Work shall be performed in strict accordance with manufacturer's printed instructions, and in accordance with all warranty requirements.

1.5 SYSTEM DESCRIPTION

.1 Design Requirements

.1 Deflection of sheet steel cladding components due to uniformly distributed loads (wind, snow) shall not exceed L/90 of the span for walls.

.2 Design wall systems to accommodate specified erection tolerances of structure.

.2 Performance Requirements

.1 All materials provided under this section shall meet or exceed CSSBI 20M-99.

.2 Air infiltration shall not exceed 0.09cfm/ft.^{2} (0.0006 m^3/s m^2) when tested in accordance with ASTM E283 at a pressure differential of 4 psf (192Pa).

.3 Water infiltration shall not exceed the limits set in ASTM E331.

.4 Design metal siding wall to provide for thermal movement of component materials caused by ambient temperature range of 80 degrees C. without causing buckling, undue stress on fasteners or other detrimental effects.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

.1 VicWest
.2 Ideal Roofing

2.2 MATERIALS

.1 Exterior Sheet Steel: exterior, commercial grade to ASTM A526-80 with Z275 zinc coating.

.2 Metal Siding:

.1 Refer to Architectural Drawings

.3 Soffit:

.1 Refer to Architectural Drawings

.4 Screening: ¼" x ¼" (6mm x 6mm) galvanized wire mesh

.5 Screws: cadmium plated steel to CSA B33.4-1973, head colour same as exterior sheet, dished steel / neoprene.

.6 Touch-up Paint: as recommended by siding manufacturer.

.7 Isolation Coating: bituminous paint.

3 EXECUTION

3.1 PREPARATION

.1 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with isolation coating.

3.2 INSTALLATION OF METAL SIDING

.1 Install sub-girts to structural supports, using self tapping screws.

.2 Install exterior finish siding to sub-grits with coloured fasteners.

3.3 SOFFIT INSTALLATION

.1 Install sub-girts and furring to structural framing level and true, laid out to properly support soffit and resist wind forces.

.2 Install soffit as indicated on drawings using metal fasteners.

.3 Allow for venting of concealed spaces with screened reveals as indicated on drawings.

.4 Install flashings, trims, and filler pieces for proper completion of the work.

3.4 TOLERANCES

.1 Maintain following installation tolerances:

.1 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 1/32" (0.793).

3.5 CLEANING

.1 Wash down exposed interior and exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths.

End of Section

1 General

1.1 **SUMMARY**

.1 Section Includes

.1 Labour, products, equipment and services necessary to complete the work of this Section.

.2 Work of this Section includes but is not necessarily limited to, the following:

.1 Brake forming and installation of prepainted metal coping flashings

.2 Miscellaneous metal flashings and accessories on roof such as:

.1 Sheet metal flashings at roof expansion joints

.2 Starter strips

.3 Flashings at roof openings

.3 Sealants

1.2 **REFERENCES**

.1 Conform to the latest edition of the following:

.1	ASTM A167	-	Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
.2	ASTM A653/A653M	-	Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Coated Alloy with Improved Formability
.3	ASTM B370	-	Specification for Copper Sheet and Strip for Building Construction
.4	ASTM C920	-	Standard Specification for Elastomeric Joint Sealants
.5	CAN/CGSB-37.29-M	-	Rubber Asphalt Sealing Compound
.6	CSA B111-74	-	Wire Nails, Splices and Staples

1.3 **SUBMITTALS**

.1 Shop Drawings and Samples

.1 Submit in accordance with Section 01301.

.2 Submit detailed shop drawings showing proposed method of shaping, forming, jointing, fastening, and application of sheet metal work. Submit lists of materials to be used.

.3 Submit a representative sample section of prepainted metal flashing illustrating "S" lock jointing, minimum 600 mm (24") long. Submit sample well in advance of material fabrication.

1.4 **DELIVERY, STORAGE AND HANDLING**

.1 Protect the work of this Section from damage. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, at no cost to Owner.

1.5 **WARRANTY**

.1 Warrant work of this Section for 1 year from damage including but not restricted to loosening and splitting of the flashing seams.

2 Products

2.1 **MATERIALS**

.1 Prepainted Sheet Steel: As supplied by Section 07 46 19 – Steel Siding.

.2 Prepainted Sheet Steel: 0.607 mm (24 ga) minimum thickness, commercial quality to ASTM A653/A653M, with Z275 zinc coating designation, prepainted with baked-on “WeatherX” or “Perspectra Series” in colour selected by Consultant.

.3 Sheet Steel: 0.607 mm (24 ga) minimum thickness, commercial quality to ASTM A653/A653M, with Z275 zinc coating designation.

.4 Utility Sheet Aluminum: Furnish plain pattern, 1.2 mm (0.050") minimum thickness.

.5 Copper Sheet: Conforming to ASTM B370 cold rolled with a mass of 4882 g/m² (16 oz. per sq.ft.)

.6 Stainless Steel Sheet: Conforming to ASTM A167, Type 304.

.7 Isolation Coating: Bakor "410-02" or approved alternative.

.8 Sealing Compound: Rubber asphalt conforming to CAN/CGSB-37.29-M.

.9 Sealant: 1 part polyurethane, Sika “RC-1”, Tremco “Dymonic”, or Sonneborn "NP-1”, conforming to ASTM C920, Type S, Grade NS, Class 25.

.10 Sealer for Sealant Boxes: “Chemlink M1 primer and 1-Part Pourable Sealer” as distributed by Building Resource.

.11 Starter Strips: Furnish a continuous run of starter strips of Z275 galvanized sheet metal, 20 ga. thick, of height shown on Drawings, with metal flashing interlocked to the starter strip. Where shown on the drawing or where starter strips are exposed to view use same prepainted metal as for flashing.

.12 Back-Up Plates: Of same material and gauge as flashing used, minimum 300 mm (12”) wide.

.13 Fasteners: Conforming to CSA B111 of same material as sheet metal secured, of type, length and size suitable for the particular conditions. Where exposed fasteners are permitted, use colour matched nylon heads with cupped neoprene washers.

2.2 **SHEET METAL FABRICATION**

.1 Brakeform supplied prepainted sheet material to form copings shown on Drawings. End joints where adjacent length of metal flashing meet shall be made in accordance with jointing method specified hereinafter.

.2 Use competent tradesmen and work accurately to details indicated and as herein specified.

.3 Hem exposed edges at least 12 mm (½") for appearance and stiffness. Mitre and seal corners with sealant. Provide 25 mm (1") upstand joint at corners.

.4 Apply a coat of isolation coating on the backside of aluminum in contact with dissimilar materials.

.5 Sealant Boxes and Sealant Fill

.1 Form sealant boxes as open topped boxes with topped edges stiffened by seaming. Make boxes not less than 50 mm larger than the object being flashed, 100mm depth, and with minimum 100 mm (4") flanges for stripping-in.

3 Execution

3.1 **INSTALLATION**

.1 Install work to details shown on Drawings.

.2 Exposed fastenings will not be permitted on horizontal work exposed to view from the building exterior.

.3 Install starter strips where indicated or required to present a true, non-waving, leading edge. Anchor to back-up to provide rigid, secure installation. Secure starter strips with screws only in accordance with FM 1-49 requirements.

.4 End joints where adjacent lengths of metal flashing meet shall be made using an "S-lock" joint. Execute by inserting the end of 1 coping length in a 25 mm (1") deep "S" lock formed in the end of adjacent length. Extend concealed portion of the "S" lock 25 mm (1") outwards and nail to substrate prior to installation of subsequent sheets. Face nailing of joints will not be permitted.

.5 Aluminum Coping Flashings: End joints where adjacent lengths of metal flashing meet shall be made using a 300 mm (12") long back-up flashing secured in place before installing flashing. Apply 2 beads of caulking compound on each side on the face of the back-up plate to seal ends of metal flashing. Leave 12 mm (½") wide space between ends of adjacent lengths of metal flashing. Fabricate back-up plates of the same material and finish as the metal flashing with which it is being used. Make back-up plate profile of the flashing allowing for metal thickness.

.6 Install sealant boxes at locations and to details indicated. Fill boxes with insulation and sealer and slope top away from object being flashed. Coordinate with ACCU manufacturer for number of conduits, wires, etc.

.7 Prepare and touch up scratches on prepainted material with air drying formulation of the coil coating paint. Replace material at no cost to Owner, if touching up is unacceptable to the Consultant.

3.2 **SEALANT**

.1 Apply sealant where required to form weathertight seal between flashing and adjoining surface and between flashing and other work of this Section. Sealant work consists of bedding between members where possible and with neatly formed sealant bead where exposed.

End of Section

Part 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 07311 – Asphalt Shingles.

.2 Section 07900 - Sealants.

1.2 REFERENCES

.1 The Aluminum Association Inc. (AA)

.1 Aluminum Sheet Metal Work in Building Construction.

.2 AA DAF45, Designation System for Aluminum Finishes.

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

.1 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A792/A792M, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.3 ASTM D523, Standard Test Method for Specular Gloss.

.4 ASTM D822, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.3 Canadian General Standards Board (CGBS)

.1 CAN/CGSB-37.5, Cutback Asphalt Plastic Cement.

.4 Canadian Standards Association (CSA International)

.1 CSA B111, Wire Nails, Spikes and Staples.

1.3 DELIVERY AND STORAGE

.1 Store products off ground and under cover in a dry, well ventilated enclosure.

.2 Stack pre-formed material in manner to prevent twisting, bending and rubbing.

.3 Provide protection for galvanized and pre-coated surfaces.

.4 Prevent contact of dissimilar metals during storage. Protect from acids, flux, and other corrosive materials and elements.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Sheet aluminum 0.64 mm thick. Color as selected by Owner's Representative.

.2 Trough size: 152 mm wide.

.3 Trough Supports: continuous aluminum with a perforated aluminum cover that covers the complete trough to prevent debris from getting stuck in the trough and downpipe.

.4 Downpipes: 0.64 mm thick aluminum.

.5 Downpipe straps: 0.72 mm thick aluminum.

.6 Sealant: As per Section 07900 – Joint Sealants.

.7 Elbows and tees: aluminum same as trough.

2.2 FABRICATION

.1 Fabricate sheet aluminum work in accordance with Aluminum Association Aluminum Sheet Metal Work in Building Construction.

.2 Fabricate eavestrough in continuous length up to a maximum length of 12 metres.

.3 Form eavestrough to an Ogee profile, 152 mm wide and a 305 mm girth.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Install trough supports/debris catchers to provide a continuous slope to drain all water from the trough.

.2 Cut opening in the trough to receive the downpipes.

.3 Install the trough and snap in to the supports (no exposed screws or nails permitted). Install elbows and tees as required. Provide for expansion joints to prevent warping where required.

.4 Install aluminum downpipes to a distance of 1.5 metres from the grade. Install aluminum straps 1200 mm o.c designed to match the pipe profile and fasten to building with aluminum or stainless steel screws.

.5 Install sewer type downpiping from the aluminum downpiping to a point 300 mm above the grade. Install aluminum straps designed to suit the pipe profile and fasten to the wall with aluminum or stainless steel screws.

.6 Install sealant as required to ensure all joints are watertight.

.7 When work is completed, provide a water test to ensure there are no leaks and that all the water runs from the trough.

3.2 CLEANING

.1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Leave works areas clean, free from grease, finger marks and stains.

End of Section

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 The work of this Section comprises the furnishing of all labour, materials and equipment required for the firestopping and smoke seals at penetrations through walls and floor openings as applicable on this Project.

.3 Firestopping and smoke seals, in vertical and horizontal openings in fire-rated assemblies, hereinafter titles "Joint Firestop Systems", will be installed as per U.L.C. numbers.

.4 Firestopping and smoke seals around mechanical assemblies, hereinafter titled "Service Penetration Firestop Systems", will be installed as per ULC numbers.

.5 Firestopping and smoke seals around electrical assemblies, hereinafter titled "Service Penetration Firestop Systems", will be installed as per ULC numbers.

.6 Firestopping and smoke seals within electrical assemblies (i.e. inside ducts, dampers) and electrical assemblies (ie. Inside cable trays) are specified in Division 21 and 26 respectively.

.7 Refer to the schedules attached to the end of this section for ULC data and detailed requirements.

1.2 RELATED SECTIONS

.1 Section 07 25 00 - Weather Barriers.

.2 Section 09 21 16 – Wall Board Assemblies.

.3 Division 23 – Heating, Ventilating, and Air-Conditioning (HVAC).

.4 Division 26 – Electrical.

1.3 REFERENCES

.1 ASTM E84-12c - Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 ASTM E119-12a - Standard Test Methods for Fire Tests of Building Construction and Materials.

.3 ASTM E814-11a - Standard Test Method for Fire Tests of Penetration Firestop Systems.

.4 ASTM E1966-07 (2011) - Standard Test Method for Fire-Resistive Joint Systems.

.5 CAN/ULC-S101-07 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.6 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.7 CAN/ULC-S115-11 - Standard Method of Fire Tests of Firestop Systems.

.8 FM (Factory Mutual) - FM 4991-2001, Approval Standard for Approval of Firestop Contractors.

.9 FCIA (Firestop Contractors International Association) - Manual of Practice.

.10 NFPA 251 - Standard Methods of Tests of Fire Endurance of Building Construction and Materials, 2006 edition.

.11 OPL (Omega Point Laboratories).

.12 UL 263-2011 - Standard for Fire Tests of Building Construction and Materials (14th Edition).

.13 UL 1479-2003 - Standard for Fire Tests of Through-Penetration Firestops (3rd Edition).

.14 UL 1709-2011 - Standard for Rapid Rise Fire Tests of Protection Materials for Structural Steel (4th Edition).

.15 UL 2079-2004 - Standard for Tests for Fire Resistance of Building Joint Systems (4th Edition).

.16 ULC - Building Materials Directory.

.17 WHI (Intertek/Warnock Hershey).

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data on product characteristics, performance and limitation criteria.

.3 System Design Listings: Submit system design listings, including illustrations from a qualified testing and inspection agency that is applicable for each firestop configuration.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

.2 Installation Data: Manufacturer's special preparation and installation requirements.

.3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

.4 MSDS Sheets

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordination: Coordinate with other work having a direct bearing on work of this section.

.3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten (10) years' experience.

.2 Contractor Qualifications: Company specializing in performing the work of this section and as follows:

.3 Successfully completed not less than five (5) comparable scale projects.

.4 Single Source Responsibility: Obtain firestop systems for each type of penetration and construction situation from a single primary firestop systems manufacturer.

1.9 SYSTEM DESCRIPTION

.1 Firestopping systems installed to resist spread of fire and passage of smoke and other gases at penetrations through fire resistance rated wall, roof or floor assemblies, materials and components.

1.10 PERFORMANCE REQUIREMENTS

.1 Use only materials, accessories and application procedures listed by cUL, ULC or tested to CAN/ULC-S115 to comply with building code requirements.

.2 Firestopping Materials: CAN/ULC-S101, ASTM E814, ASTM E119 to achieve a fire rating as noted on Drawings.

1.11 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire resistance ratings and surface burning characteristics.

.2 Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.12 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Deliver firestopping products in original, unopened containers with labels intact and legible, identifying product and manufacturer.

.3 Store and handle firestopping materials to manufacturer's instructions.

1.13 ENVIRONMENTAL REQUIREMENTS

.1 Do not apply materials when temperature of substrate material and ambient air is below 15°C (60°F) unless otherwise recommended by the manufacturer.

.2 Maintain this minimum temperature before, during, and for three (3) days after installation of materials.

.3 Provide ventilation to manufacturer's instructions in areas to receive solvent cured materials.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.

.1 3M Fire Protection Products; www.solutions.3m.com

.2 Hilti (Canada) Limited; www.ca.hilti.com

.3 A/D Fire Protection System Inc., www.adfire.com .

.4 Nuco Inc., www.firestops.sealantcentre.com .

.5 Tremco Ltd., www.tremco.com .

.6 Or approved alternate.

2.2 MATERIALS

.1 Service penetration firestop systems, if applicable: in accordance with requirements of CAN4-S115 and listed in ULC Guide No. 40U19.

.2 Joint firestop systems: in accordance with requirements of CAN4-S115 and listed in ULC Guide No. 40U19.

.3 Systems are to be of asbestos-free materials, capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115 and are not to exceed opening sizes for which they are intended.

.4 Primers: To manufacturer's recommendation for specific material, substrate and end use.

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

.6 Damming and backup materials and supports and anchoring devices: to manufacturer's recommendations and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.7 Sealants for vertical joints: non-sagging.

2.3 ACCESSORIES

.1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.

.2 Dam Material: Permanent.

.1 Mineral fiberboard.

.3 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verify existing conditions before starting work.

.2 Verify opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping are ready to receive the work of this section.

.3 Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

.1 Ensure surfaces to receive firestopping are free of dirt, dust, grease, oil, rust, loose materials, release agents, frost, moisture or any other matter which would impair bond of firestopping material to substrate of penetrating items.

.2 Prime substrates in accordance with manufacturer's written instructions.

.3 Do not apply firestopping and smoke seals to surfaces previously painted or treated with sealers, curing compounds, water repellents or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure that anchoring devices, back-up materials, clips, sleeves, supports and other related materials used in actual fire tests are provided.

.5 Mask where necessary to prevent firestopping materials from contacting adjoining surfaces that will remain exposed upon completion of work. Remove tape as soon as it is possible to do so without damaging firestop material or substrate.

3.3 APPLICATION

.1 Apply primer and firestopping materials to manufacturer's written instructions.

.2 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

.3 Apply firestopping material in sufficient thickness to achieve rating to uniform density and texture.

.4 Compress fibered material to achieve a density of 40% of its uncompressed density.

.5 Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

.6 Place intumescent coating in sufficient coats to achieve rating required.

.7 Dam Material: Remove dam material after firestopping material has cured.

.8 Tool or trowel exposed surfaces to a neat finish.

.9 Remove excess compound promptly as work progresses and upon completion.

3.4 CLEANING

.1 Section 01 74 00: Cleaning installed work.

.2 Clean adjacent surfaces of firestopping materials.

3.5 PROTECTION OF FINISHED WORK

.1 Protect installed work. Remove and replace all damaged areas.

.2 Protect adjacent surfaces from damage by material installation.

3.6 SCHEDULES

.1 Provide firestopping of all conduit, duct, piping and other miscellaneous penetrations as required by the Ontario Building Code current edition.

.2 Fire resistance rating of installed firestop system will not be less than the fire resistance rating of surrounding floor and wall assembly.

.3 Alternative U.L.C. Designs are acceptable providing the system complies with the requirements of the specified systems.

.4 If alternative U.L.C. Designs are proposed, the contractor must submit in writing within 30 days of award of contract, the systems intended to be used, along with all U.L.C. Design data.

.5 The contractor is responsible for including an updated schedule, listing all joint firestop systems (JF) and service penetration systems (SP) as part of the as-built drawing submittal. The location of each joint firestop system used will be indicated on the as-built drawings.

END OF SECTION

PART 1- GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Preparing substrate surfaces.

.3 Sealant and joint backing.

.4 Structural sealant for glazing assemblies.

.5 Supply and install all sealants as called for on drawings and in this Section to ensure a weather tight building.

.6 Supply and install all expansion and control joint sealant shown on drawings.

.7 Provide all skilled labour and equipment to perform this work.

.8 Sealing of roofing and drywall shall be supplied and installed under Sections 07 52 00 – Modified Bitumen Membrane Roofing and 09 21 16 – Wall Board Assemblies respectively.

1.2 RELATED SECTIONS

.1 Section 06 20 00 – Architectural Woodwork and Millwork.

.2 Section 07 62 00 – Prefinished Metal Flashing.

.3 Section 07 84 00 - Firestopping.

1.3 REFERENCES

.1 ASTM C834-10 - Standard Specification for Latex Sealants.

.2 ASTM C919-11 - Standard Practice for Use of Sealants in Acoustical Applications.

.3 ASTM C920-13 - Standard Specification for Elastomeric Joint Sealants.

.4 ASTM C1184-13 - Standard Specification for Structural Silicone Sealants.

.5 ASTM C1193-13 - Standard Guide for Use of Joint Sealants.

.6 ASTM C1401-09a - Standard Guide for Structural Sealant Glazing.

.7 ASTM E330-02 (2010) - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submittal Procedures.

.2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, colour availability.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submittal Procedures.

.2 Installation Data: Manufacturer's special installation requirements.

.1 Indicate special procedures, surface preparation, perimeter conditions requiring special attention.

.3 SDS Sheets

.4 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordination: Coordinate with other work having a direct bearing on work of this section.

.3 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

.2 Applicator Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.

.3 Testing Agency Qualifications: Retain an independent testing agency qualified in accordance with ASTM C1021 to conduct testing indicated, as documented according to sealant manufacturer’s recommendations. Ensure materials are verified for suitability in accordance with ASTM C719 and ASTM C661.

.4 Perform work to sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

.5 Perform sealant application work to ASTM C1481 ASTM C1193.

.6 Perform structural sealant application work to ASTM C1401.

.7 Perform acoustical sealant application work to ASTM C919.

.8 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

.9 Comply with ASTM C920 and other requirements indicated for each liquid-applied chemically curing sealant, including those referencing ASTM C920 classifications for type, grade, class, and uses.

.10 Provide joint sealants, primer(s) and backings that are compatible with one another and with joint substrates under conditions of service and application as demonstrated by joint sealant manufacture based on proven test results and field experience.

.11 For sealants to be applied to porous substrates: Provide products that have undergone testing according to ASTM D1245-05 and have not stained porous joint substrates indicated for Work.

.12 Sealants supplied shall not exude any material(s) which travels into adjacent materials, or travels onto surfaces of adjacent materials; causing damage, pr attracting soiling, which becomes apparent during the service life of the building.

1.9 PERFORMANCE REQUIREMENTS

.1 Sealant Design: Design structural sealant to withstand specified loads without breakage, loss, failure of seals, product deterioration, and other defects.

.2 Design installed sealant to withstand:

.1 Dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall as measured in accordance with ASTM E330.

.2 Movement and deflection of structural support framing.

.3 Water and air penetration.

1.10 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Deliver sealants products in original, unopened containers with labels intact and legible, identifying product and manufacturer.

.3 Store and handle sealant materials to manufacturer's instructions.

.4 Check that sealant tubes or sausages have not exceeded their shelf life prior to use.

.5 Store sealant so that it is not being subjected to extreme temperatures or variations.

1.11 ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.12 WARRANTY

.1 Section 01 78 10: Warranties.

.2 Provide a five (5) year warranty to include coverage for failure to meet specified requirements.

.3 Include coverage for installed sealants and accessories which fail to achieve water tight seal, air tight seal and, exhibit loss of adhesion or cohesion, or do not cure.

.4 Include coverage for installed sealants and accessories which fail to achieve water tight seal, air tight seal and, exhibit loss of adhesion or cohesion, or do not cure.

.5 Provide manufacturer's twenty (20) year material warranty for installed silicone sealant.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 ChemRex Inc.; www.chemrex.com

.2 CPD Construction Products; www.cpd.com

.3 Dow Corning; www.dowcorning.com

.4 Euclid Chemical Canada Ltd.; www.euclidchemical.com

.5 Momentive Performance Materials; www.gesilicones.com

.6 Sika Canada Inc.; www.sikacanada.com

.7 Tremco Canada; www.tremcosealants.com

.8 W. R. Meadows; www.wrmeadows.com

.9 Pecora Corporation: www.pecora.com

.10 Hilti: www.hilti.ca

2.2 SEALANTS

.1 Exterior Weatherseal and Structural Glazing Sealant: Low dirt pick-up, non-sag type, 1 component medium-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:

.1 “Dow Corning 756 SMS Building Sealant” by Dow Corning.

.2 “GE SilPruf NB SCS9000" by Momentive Performance Materials.

.2 Exterior Weatherseal Sealant: Non-sag type, 1 component ultra-low-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 100/50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:

.1 “Dow Corning 790 Silicone Building Sealant” by Dow Corning.

.2 “GE SilPruf LM SCS2700" by Momentive Performance Materials.

.3 “Spectrem 1" by Tremco Canada.

.3 Exterior All-purpose Weatherseal Sealant: Non-sag type, 1 component medium-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:

.1 “Dow Corning 795 Silicone Building Sealant” or “791 Silicone Weatherproofing Sealant” or Contractor’s Weatherproofing Sealant [CWS]” or “Contractor’s Concrete Sealant [CCS] by Dow Corning.

.2 “GE SilPruf SCS2000” or “GE Silpruf SCS9000" or “UltraPpruf II SCS2900” or "Silicone Weatherproofing Sealant [SWS]" by Momentive Performance Materials or by Dow corning.

.3 “Spectrem 2" or “Spectrem 3" or ”Tremsil 400" by Tremco Canada.

.4 Cast-In-Place Concrete Walls, Architectural Precast Panels and Exterior Unit Masonry Wall; Exterior Joints in Pre-cast and Cast In Place Concrete Horizontal Surfaces and Interior Joints of Underside of Precast Components:

.1 “790 Silicone Building Sealant” by Dow Corning.

.2 “Spectrem 1" by Tremco Canada.

.3 “GE SilPruf LM SCS2700" by Momentive Performance Materials

.5 Composite Metal Panels and Joints:

.1 “795 Silicone Building Sealant” by Dow Corning.

.2 “Spectrem 2" by Tremco Canada.

.3 “GE SilPruf SCS2000" by Momentive Performance Materials.

.6 Interior Sealants:

.1 VOC limit: Less than 250g/L.

.2 Interior sealant at Vertical Movement and Non-Movement Joints, no detectible odour: One-component sealant in accordance with the following:

.1 ASTM C920, Type M or S, Grade NS, Class 25.

.2 CAN/CGSB 19.13-M87.

.3 SWR Institute Sealant Validation Program.

.3 Interior Sealant at Horizontal Pedestrian Trafficable Movement Joints: one-component low modulus sealant in accordance with the following:

.1 ASTM C920, Type S, Grade NS, Class 100/50.

.2 CAN/CGSB 19.13-M87.

.3 SWR Institute Sealant Validation Program.

.4 Interior Sealant Mildew Resistant: One part silicone sealant in accordance with the following:

.1 ASTM C920, Type S, Grade NT, Class 25

.2 CAN/CGSB 19.22-M89.

.5 Interior Sealant Pick Proof: Two part 100% solids, hi9gh modulus epoxy resin security sealant for non-moving joints in accordance with the following:

.1 Shore D hardness to ASTM C661: 70.

.2 Compressive strength to ASTM D695: 75 MPa.

.3 Tear strength to ASTM D624: 178 gm/cm.

.6 Interior Sealant Tamper Resistant: One part polyurethane security sealant in accordance with the following:

.1 Shore A ultimate hardness to ASTM C661: 55.

.2 Tensile ultimate strength to ASTM D412: 2MPa.

.3 Tear strength to ASTM D624: 178gm/cm

.4 ASTM C920-08, Type S, Grade NT, Class 12.5.

.7 Interior Sealant Acoustical Sealing Materials: for sound isolation and for interior joints.

.1 Acoustic Sealant: ASTM C834 and ASTM C919, Non-hardening. Provide 1 of following:

.1 “QuietZone Acoustic Sealant” by Owens-Corning Canada Inc.

.2 “Smoke and Acoustic Sealant CP 506” by Hilti

.3 “QuietSeal” by Serious Materials or QuietSeal 350 by Serious Materials.

.2 Gaskets: Closed cell neoprene, 3mm (1/8") thick x 64mm (2½") wide.

.3 Asphalt Felt: CSA A123.3; No. 15 Type.

2.3 COMPONENTS

.1 Joint Backing: Preformed, compressible, resilient, non-waxing, non-extruding, non-staining strips of closed cell polyethylene or urethane foam, compatible with joint substrates and are approved by sealant manufacturer based on field experience and laboratory test. Sizes and shapes to suit various conditions, diameter 25% greater than joint width. Backing shall be compatible with sealant, primer and substrate.

.2 Bond Breaker Tape: As recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

.3 Joint Primer: Non-staining, suitable for substrate surfaces, compatible with joint forming materials and as recommended by sealant manufacturer for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

.4 Masking Tape: Provide non-staining, non-absorbent tapes and sheets which effectively mask sealant without leaving an adhesive residue compatible with joint sealants and surfaces adjacent to joints.

.5 Cleaning Material: Non-corrosive, non-staining, solvent type, xylol, methyl-ethyl-ketone (MEK), toluol, isopropyl alcohol (IPA) (Do not use IPS to clean concrete substrate) or as recommended by sealant manufacturer and acceptable to material or finish manufacturers for surfaces adjacent to sealed areas free of oily residues or other substances capable of

staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants with joint substrates.

2.4 ACCESSORIES

.1 Primer: Non-staining type, recommended by sealant manufacturer to suit application.

.2 Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

.3 Joint Backing: ASTM C1330, round, closed cell polyethylene foam rod, oversized 30% to 50% larger than joint width.

.4 Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

.5 Masking tape: Non-staining, non-absorbent type compatible with sealant and adjacent surfaces.

.6 Setting Blocks and Spacers: Compatible with silicone sealant and recommended by sealant manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Examine joints for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Ensure joints are suitable to accept and receive sealants.

.2 Verify that joint surfaces are clean, sound, free of defects and that dimensions are within sealant manufacturer's size requirements.

.3 Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of work implies acceptance of surfaces and conditions.

.4 Do not apply sealant to masonry until mortar has cured.

.5 Before any sealing work is commenced, test materials for indications of staining or poor

.6 Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

.1 Ensure joint interfaces are clean.

.2 Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

.3 Clean joints and spaces which are to be sealed and ensure they are dry and free of dust, loose mortar, oil, grease, oxidation, coatings, form release agents, sealers and other foreign material.

.4 Clean porous surfaces such as concrete, masonry or stone by wire brushing, grinding or blast cleaning, mechanical abrading or combination of these methods as required to obtain clean and sound surfaces.

.5 Remove laitance by grinding or mechanical abrading.

.6 Remove oils by sandblast cleaning.

.7 Remove loose particles present or resulting from grinding, abrading or sandblast cleaning by thorough brushing.

.8 Clean ferrous metals of rust, mill scale and foreign materials by wire brushing, grinding or sanding.

.9 Wipe non-porous surfaces such as metal and glass to be sealed, except pre-coated metals, with cellulose sponges or clean rags soaked with ethyl alcohol, ketone solvent, xylol or toluol and wipe dry with clean cloth. Where joints are to be sealed with silicone based sealants clean joint with methyl-ethyl-ketone (MEK) or xylol. Do not allow solvent to air-dry without wiping. Clean pre-coated metals with solutions or compounds which will not injure finish and which are compatible with joint primer and sealant. Check ferrous metal surfaces are painted before applying sealant.

.10 Examine joint sizes and where depth of joint exceed required depth of sealant correct to achieve proper following width/depth ratio:

.11 Maintain 2:1 width/depth ratio: minimum joint size to be 6mm x 6mm (¼" x ¼"), maximum depth of sealant to be 13mm (½").

.12 Install joint backing material to achieve correct, uniform joint profile and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

.13 Do not leave gap between ends of sealant backing; do not stretch, twist, puncture, or tear sealant backings; remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

.14 Where joint design or depth of joint prevents use of joint backing material, apply bond breaker tape to prevent 3-sided adhesion.

.15 Do not stretch, twist, puncture or tear joint backing. Butt joint backing at intersections. Install bond breaker tape at back of joint where joint backing is not required or cannot be installed.

.16 On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.

.17 Where surfaces adjacent to joints are likely to become coated with sealant during application, mask them prior to priming and sealing.

.18 Do not exceed shelf life and pot life of materials and installation times, as stated by manufacturer.

.19 Be familiar with work life of sealant to be used. Do not mix multiple component materials until required for use.

.20 Use materials as received from manufacturer, without additions, deletions and adulterations of materials.

.21 Mix multiple component sealants and bulks sealants using mechanical mixer capable of mixing without mixing air into material, in accordance with manufacturer's directions and recommendations. Continue mixing until material is homogeneously blended, uniform in colour and free from streaks of unmixed material. Install compound prior to start of hardening or curing cycle.

.22 Seal joints in surfaces to be painted before surfaces are painted. Where surfaces to be sealed are prime painted in shop before sealing check to make sure prime paint is compatible with primer and sealant. If they are incompatible, inform Consultant and change primer and sealant to compatible types approved by Consultant.

.23 Where irregular surface or sensitive joint border exists, apply masking tape at edge of joint to ensure joint neatness and protection.

.24 Prime exterior horizontal joints. Prime sides of joints for type of surface being sealed prior to application of joint backing, bond breaker or sealant as recommended by sealant manufacturer.

3.3 APPLICATION

.1 Apply in accordance with manufacturer's directions and recommendations unless more stringent requirements apply.

.2 Apply sealant by proven techniques using hand operated guns or pressure equipment fitted with suitable nozzle size and equipment approved by sealant manufacturer.

.3 Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill all voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead is not acceptable.

.4 Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.

.5 Compound may be tooled, provided such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.

.6 Tool sealant as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.

.7 Ensure joint surfaces are straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf-life Products.

.8 Do not use solvent curing sealants indoors.

3.4 EXTERIOR SEALANT SCHEDULE

.1 Include in work of this section joint sealants in exterior assemblies to seal open joints in surfaces exposed to view, and to make building weather-tight and air-tight, as applicable, as indicated, and as otherwise specified, expect where specified under work of other sections.

.2 Install exterior sealant to:

.1 Perimeters of exterior openings where frames meet exterior façade of building.

.2 Movement and control joints in exterior surfaces.

.3 Exterior joints between façade cladding materials.

.4 Exterior joints in horizontal wearing surfaces.

.5 Exterior control and expansion joints in masonry and concrete.

.3 Joint designation in preceding paragraphs and fact that Drawings do not show all locations to be sealed does not limit responsibility of this Section to seal all locations except those indicated in other Sections of work, required to create and ensure continuous enclosure.

3.5 INTERIOR SEALANT SCHEDULE

.1 Include in work of this section sealants to seam open joints in all surfaces exposed to view, and to make building weather-tight and air-tight, as applicable, as indicated, and as otherwise specified, expect where specified under work of other sections.

.2 Install Interior sealant to:

.1 Movement and control joints on exposed insitu concrete walls.

.2 Interior control and expansion joints in floor and wall surfaces.

.3 Raked out joints at junctions of masonry with concrete walls and columns, and at intersection of masonry walls and partitions where joint reinforcement is installed

.4 Perimeters of door and window frames

.5 Joints at tops of non-load bearing masonry walls at the underside of decking or slab.

.6 Exposed interior control joints in gypsum board.

.7 Millwork junctions with walls.

.8 Joints between dissimilar materials exposed to view.

.9 Interior control joints in masonry.

.3 Mildew Resistant sealant to:

.1 All interior locations listed above in all wet areas.

.2 Urinals

.3 Water closets

.4 Around washroom accessories

.5 Showers

.6 Between millwork and wall.

.4 Acoustical sealant to:

.1 Apply acoustical sealant to every air gap, such as gaps around perimeter of wall, between wall panels and around any penetrations made for plumbing or electrical wiring. Seal off any piping, electrical output boxes, and duct work with acoustical treatments. Treat junction boxes with acoustic putty, treat piping and duct work either with fiberglass duct liner or damping material or both. Treat frame with gasket material (weather-strip) and Install security flap on bottom of door to seal it off.

.2 Apply acoustical sealant around partition cutouts including, but not limited to, gaps between wall stud plates and subfloor, electrical outlets and boxes, plumbing and duct outlets, air ducts and boots, doors, windows and other miscellaneous wall and floor penetrations or gaps.

.3 Apply sealant between track or runner, walls, floors and ceiling; areas may require pre-moulded, loose-cell filler between tracks and drywall at top and bottom edges to meet design requirements.

.4 Apply minimum 13mm (½") diameter bead of acoustic sealant continuously around periphery of each face of partition to seal wall board/structure junction where partitions abut fixed building components in accordance with recommendations of “CGC Drywall/Steel Framed Systems, Folder SA923 09250".

.5 Pick Proof sealant to:

.1 Reserved

.6 Tamper Resistant sealant to:

.1 Reserved

.7 Joint designation in preceding paragraphs and fact that Drawings do not show all locations to be sealed does not limit responsibility of this Section to seal all locations except those indicated in other Sections of work, required to create and ensure continuous enclosure.

.8 Firestopping and Smoke Seal: Sealants part of firestopping systems and smoke seals provided within fire rated assemblies shall be part of work of Section 07 84 00 and shall be carried out under supervision of this Section.

3.6 FIELD QUALITY CONTROL

.1 Section 01 45 00: Quality Control.

.2 Independent inspection and testing company may be appointed to carry out inspection and testing as directed by Consultant.

.3 Inspect joints for complete fill, for absence of voids and for joint configuration complying with specified requirements. Record results in a manner acceptable to Consultant.

.4 Tests may include sampling of installed Product where adhesion, cohesion or reversion failure is suspected.

.5 Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.

.6 Confirm in writing by manufacturer's representative to be on site throughout construction period work to inspect application of sealant and surface preparation.

3.7 MANUFACTURER'S FIELD SERVICES

.1 Notify the product manufacturer prior to commencement of the application and obtain instructions as to recommended use of materials.

3.8 CLEANING

.1 Section 01 74 00: Cleaning installed work.

.2 Clean adjacent soiled surfaces.

.3 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess and droppings, using recommended cleaners as work progresses. Remove masking tape after tooling of joints.

.4 Remove all packaging and debris from project area.

3.9 PROTECTION OF FINISHED WORK

.1 Protecting installed work.

.2 Remove masking tape and excess sealant.

.3 Protect sealants until cured.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Supply and install multiple security grilles, manually operated, top supported, as indicated on drawings. One set is full height, the other countertop.

.3 Track and operating hardware.

.4 Keyed cylinders will be provided by allowance, factory fitted.

1.2 RELATED SECTIONS

.1 Section 05 50 00 - Metal Fabrications

.2 Section 06 10 00 - Rough Carpentry

.3 Section 06 20 00 – Architectural Woodwork and Millwork

1.3 REFERENCES

.1 AAMA 611, Voluntary Standards for Anodized Architectural Aluminum.

.2 ANSI, H35.1M Alloy and Temper Designation Systems for Aluminum (Metric).

.3 ASTM B209M, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.4 B221M, Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles and Tubes.

.5 ASTM F738M, Specification for Stainless Steel Metric Bolts, Screws, and Studs.

.6 CAN/CGSB-1.108-M, Bituminous Solvent Type Paint.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Shop Drawings: Indicate opening sizes, details of track and required supports, track loads, adjacent construction and finish trim, and stacking sizes. Show imbedded items and cutouts required in other work, including support beam punching template.

.3 Product Data: Provide data on door operation, hardware and accessories, colours and finishes available.

.4 Samples: Submit two (2) samples of surface finish, 300mm x 300mm (12" x 12") size, illustrating quality, weight, colour and texture.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

.2 Test Reports: Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.

.3 Installation Data: Manufacturer's special installation requirements.

.4 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordinate with other work having a direct bearing on work of this section.

.3 Coordinate work to ensure timely placement of insulation within construction spaces.

.4 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten (10) years documented experience.

.2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

1.9 REGULATORY REQUIREMENTS

.1 Conform to applicable code for combustibility requirements for materials.

1.10 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Transport, handle, store, and protect products.

.2 Protect partitions during delivery, storage and handling to comply with manufacturer's direction and as required to prevent damage.

.3 Protect pre-finished surfaces with wrapping.

1.11 WARRANTY

.1 Provide written warranty by manufacturer of partitions agreeing to repair or replace any components with manufacturing defects.

.2 Warranty period: Two (2) years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 PACKAGED COILING STEEL COUNTER SHUTTERS

.1 System Description: Shop assembled combination frame, sill and coiling shutter of galvanized steel (Type 304 - No. 4 finish stainless steel) construction, manually operated by (lift handles at shutter bottom) (crank operator with removable hand crank).

.2 Acceptable Products

.1 Kinnear/Wayne Dalton "Integral Frame Counter Shutters"

.2 Atlas Rolling Entry Systems "P-12"

.3 Richards-Wilcox "IPC"

.3 Guides: Extruded aluminum in anodized finish (Type 304 stainless steel), with a slot of sufficient depth to retain curtain in guides.

.4 Frames: Integrally welded consisting of minimum 1.5 mm (16 ga.) galvanized steel (Type 304 stainless steel) jambs and head and minimum 1.9 mm (14 ga.) Type 304 stainless steel sill.

.5 Slats: Minimum .762 mm thick (22 ga.) interlocking flat faced slats, with end locks.

.6 Counterbalance Assembly: Torsion spring counterbalance of 30,000 cycle quality.

.7 Locking Mechanism: Cylinder lock with slide bolts lockable from inside (outside) (inside and outside), and masterkeyed.

2.2 MISCELLANEOUS ACCESSORIES

.1 Supplementary Steel Supports: Steel conforming to Section 05 50 00 of this Specification.

.2 Supplementary Steel Supports: New material conforming to CAN/CSA-G40.20/G40.21-M, Grade 300W.

2.3 FABRICATION

.1 Fabricate work with materials and with component dimensions and gauges, reinforcing, attached anchors and fastenings of adequate strength to prevent warping, buckling, opening of joints and seams, loosening of hardware, distortion and displacement within limits of intended and specified use.

.2 Conceal and weld connections wherever possible.

.3 Fit joints and junctions between components tightly and in true planes.

.4 Isolate from each other dissimilar metals, and metal from concrete or masonry to prevent electrolysis.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Section 01 70 00: Verify existing conditions before starting work.

.2 Verify that field measurements are as indicated on Shop Drawings.

3.2 INSTALLATION

.1 Supply information and templates required for installing work of this Section. Assist and/or supervise setting of anchorage built into work of other Sections.

.2 Perform all drilling, tapping and cutting of frames and other work as required to install new (and relocated) doors, guides, operators, hardware, fittings, etc., and provide all necessary bolts, anchors, inserts, brackets, hangers and supports required to complete the work.

.3 Do not use fasteners which penetrate through walls.

.4 Furnish inserts and anchoring devices which must be set in concrete or built in masonry for the installation of doors. Provide setting drawings, templates and printed instructions for the installation of anchorage devices.

.5 Install units to fit tight at all edges of jambs and heads of frames and ensure smooth and free operation under all conditions of operation. Leave in proper condition in all respects, to the satisfaction of the Consultant.

3.3 ADJUSTMENT AND DEMONSTRATION

.1 Test operate new (and relocated) doors and demonstrate the operation of same to the satisfaction of the Consultant at the time of acceptance of the completed work.

.2 Adjust work to provide free-running, tightly closing and properly counterbalanced operation. Ensure that installation is free from warp, twist or other distortion.

3.4 ADJUSTING

.1 Adjust door assembly to provide smooth operation from stacked to full open position.

3.5 PROTECTION OF FINISHED WORK

.1 Section 01 78 40: Protecting installed work.

.2 Protect specially finished or delicate Work from damage.

3.6 CLEANING

.1 Clean partition surfaces upon completing installation of partitions to remove dust, dirt, adhesives and other foreign materials according to manufacturer's written instructions.

.2 Provide final protection and maintain conditions in a manner acceptable to the manufacturer and Installer that ensure operable partitions are without damage or deterioration at time of Substantial Completion.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Supply and installation of all acoustic tile, metal trims and suspension systems.

1.2 RELATED SECTIONS

.1 Section 07 21 00 – Building Insulation.

.2 Section 07 92 00 – Joint Sealants.

.3 Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC).

.4 Division 26 – Electrical: Light fixtures in ceiling system.

1.3 REFERENCES

.1 ASTM C635/C635M-12 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

.2 ASTM C636/C636M-08 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

.3 ASTM C665-12 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.4 ASTM E580/E580M-11b - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

.5 ASTM E1264-08e1 - Standard Classification of Acoustical Ceiling Products.

.6 CAN/CGSB-92.1-M89 - Sound Absorptive Prefabricated Acoustical Units.

.7 CAN/ULC-S702-09 - Standard for Mineral Fiber Thermal Insulation for Buildings (Includes Amendment 1, 2012).

.8 AWCCBC (Association of Wall and Ceiling Contractors of British Columbia).

.9 UL - Fire Resistance Directory.

.10 ULC - Fire Resistance Directory.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data on metal grid system components, acoustic units and accessories.

.3 Samples:

.1 Submit two (2) samples, 300mm (12") in size, illustrating material and finish of acoustic units.

.2 Submit two (2) samples each, 300mm (12") long, of suspension system main runner, perimeter molding and cross runner.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

.2 Installation Data: Manufacturer's special installation requirements, including perimeter conditions requiring special attention.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 77 00: Closeout procedures.

.2 Extra Stock Materials: Provide 5% of each tile type to Owner, at the completion of the project.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordination: Coordinate with other work having a direct bearing on work of this section.

.1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

.4 Sequencing:

.1 Sequence work to ensure acoustic ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

.2 Install acoustic units after interior wet work is dry.

1.8 QUALITY ASSURANCE

.1 Conform to AWCCBC requirements.

.2 Grid Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.

.3 Acoustic Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five (5) years documented experience.

.4 Install ceilings within 3mm (1/8") of dimensional height above floor unless approved otherwise, and level with a maximum tolerance of 3mm (1/8") in 3m (10'-0").

.5 Suspension System: Maximum deflection of 1:360 for acoustic ceiling system including integral mechanical and electrical components.

1.9 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire rated assembly and combustibility requirements for materials.

1.10 DELIVERY, STORAGE, AND PROTECTION

.1 Deliver materials in original packages, containers and bundles, bearing brand and manufacturer's name.

.2 Store materials in a covered area, off ground, on flat, smooth, dry surfaces. Protect from moisture. Remove damaged or deteriorated materials from site.

.3 Comply with ceiling panel manufacturer's recommendations regarding temperature and humidity conditions before, during and after ceiling installation.

1.11 ENVIRONMENTAL REQUIREMENTS

.1 Continuously maintain rooms or areas scheduled to receive acoustical treatment at not less than 21 deg C (70 deg F), and at occupancy humidity, at least 3 days prior to installation and 3 days after work is completed. Schedule work to eliminate risk of damage to these materials due to adverse environmental conditions in rooms or areas when and after work is installed.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.

.1 CGC Ceilings, www.usg.com .

.2 Armstrong Ceilings, www.armstrongceilings.com .

.3 Certainteed, www.certainteed.com .

.4 Or approved alternate.

2.2 MATERIALS

.1 General

.1 Acoustic ceiling tiles as manufactured by Armstrong Ceilings or CGC are specified.

.2 Metalworks Linear - Classics as manufactured by Armstrong Ceilings are specified.

.3 Suspension systems shall be as manufactured by Armstrong Ceilings or approved equal.

.2 Acoustic Ceiling Units

.1 Type ACT1 Units (Wall to Wall):

.1 Style: CGC Mars High-NRC High-CAC Acoustical Panels (24”x48” as per Drawings)

.3 Suspension System for Lay-In Ceilings:

.1 Components shall be formed from commercial quality cold-rolled steel, electro-galvanized.

.2 Main Tee: with a double web design and with a rectangular bulb shall be 0.5mm (.020") thick, 38.1mm (1½") high with 24mm (15/16") exposed flange with a rolled cap; with cross tee holes at 152.4mm (6") o.c.; with hangar wire holes at 50.8mm (2") o.c.; with integral reversible splice.

.3 Cross Tees: design same as main tees, designed to connect at main tees forming positive lock without play, loss or gain in grid dimensions with offset over-ride of face flange over main tee flange to provide flush joint.

.4 Wall Moulding: Standard L-shaped moulding, formed from commercial quality cold rolled steel, electro-galvanized with pre-painted flanges. Flanges shall be 19mm (¾").

.5 Accessories - Splices, clips, wire ties and retainers to complement suspension system components shall be as recommended by system manufacturer.

.6 Hold Down Clips:

.1 Grid hold down clip.

.2 Perimeter trim hold down clip.

2.3 ACCESSORIES

.1 Acoustic Batt Insulation: Refer to Section 07 21 00.

.2 Wall Board: Fire rated type X; 16mm (5/8 inch) thick, ends and edges square, paper faced.

.3 Acoustic Sealant: For perimeter moldings, as specified in Section 07 92 00.

.4 Gaskets (for perimeter moldings): Closed cell rubber sponge tape.

.5 Touch-up Paint: Type and colour to match acoustic and grid units.

.6 Hangers

.1 Galvanized annealed steel wire;

.2 2.6mm (12GA) diameter to support a maximum weight of 68kg (150lbs.) per hanger;

.3 3.8mm (9GA) to support a maximum weight of 140kg (308lbs.) per hanger; Galvanized annealed steel rod; 4.9mm (6GA) diameter to support a maximum weight of 250kg (550lbs.) per hanger.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Inspect substrates and previously placed work to determine suitability and completeness. Start of work constitutes an acceptance of existing conditions, and failure of work due to unsatisfactory existing conditions shall be corrected at no cost to Owner. Similarly, if work needs to be removed to correct defects in substrates or previously placed work, both removal and replacement shall be done at no cost to Owner.

.2 Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM

.1 Install suspension system to manufacturer's written instructions, and as supplemented in this section.

.2 Install system to ASTM E580/E580M.

.3 Install system capable of supporting imposed loads to a deflection of 1/360 maximum.

.4 Lay out system to a balanced grid design with edge units no less than 50% of acoustic unit size.

.5 Locate system on room axis according to reflected plan.

.6 Install after major above ceiling work is complete. Coordinate the location of hangers with other work.

.7 Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

.8 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

.9 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected carrying channels and/or hangers to span the extra distance.

.10 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 150mm (6") of each corner; or support components independently.

.11 Do not eccentrically load system, or produce rotation of runners.

.12 Perimeter Molding:

.1 Install edge molding at intersection of ceiling and vertical surfaces with continuous gasket or into bed of acoustic sealant.

.2 Use longest practical lengths.

.3 Miter corners.

.4 Provide molding at junctions with other interruptions.

.13 Form expansion joints as detailed. If not detailed, form to accommodate plus or minus 25mm (1") movement. Maintain visual closure.

3.3 INSTALLATION - ACOUSTIC UNITS

.1 Install acoustic units to manufacturer's written instructions.

.2 Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.

.3 Lay directional patterned units one way with pattern parallel to longest room axis. Fit border trim neatly against abutting surfaces.

.4 Install units after above ceiling work is complete.

.5 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.

.6 Cutting Acoustic Units:

.1 Cut to fit irregular grid and perimeter edge trim.

.2 Double cut and field paint exposed edges of tegular units.

.7 Where bullnose concrete block corners or round obstructions occur, provide preformed closures to match perimeter molding.

.8 Lay acoustic insulation for a distance of 1 200mm (48") either side of acoustic partitions where indicated.

.9 Install hold-down clips to retain panels tight to grid system within 3m (10ft) of an exterior door.

3.4 ERECTION TOLERANCES

.1 Maximum Variation from Flat and Level Surface: 3mm in 3m (1/8" in 10').

.2 Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 1 degree.

3.5 ADJUSTING AND CLEANING

.1 After interior finishing work has been substantially completed, or when directed by Consultant, inspect acoustical treatment work. Replace broken, chipped or damaged work, reset loose units or units out of place and touch up marred surfaces with matching paint. Upon completion of Project, acoustical treatment finished surfaces shall be clean and free from dirt and other markings and in good condition acceptable to Consultant.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Supply and installation of the indoor resilient multipurpose surfacing
B. Application of the game lines
C. References for the correct construction and preparation of concrete slabs to receive resilient flooring.

1.2 SUBMITTALS

A. Product Data:
   1. Manufacturer's promotional brochures, specifications and installation instructions
B. Manufacturer Certifications:
   1. Provide certification that accurately identifies the Original Equipment Manufacturer (OEM) of flooring furnished for this project including manufacturer's name, address and factory location.
   2. Suppliers of private label flooring for this project must identify themselves as such and fully disclose the OEM information listed above.
   3. All "manufacturer" requirements in these specifications must be complied with by the OEM, including warranties, certifications, qualifications, product data, test results, environmental requirements, performance data, etc.
C. Samples:
   1. Submit for selection and approval three (3) sets of the indoor resilient multipurpose surfacing, manufacturer's brochures, samples or sample boards of all of the available colors, textures and styles.
   2. Submit color samples of all the available game line paint colors for selection and approval.
D. Closeout Submittals:
   1. Submit three (3) copies of the indoor resilient multipurpose surfacing and manufacturer's maintenance instructions.
   2. Submit three (3) copies of the material and installation warranties as specified.

1.3 QUALITY ASSURANCE

A. Qualifications:
   1. The indoor resilient multipurpose surfacing shall have been actively marketed for a minimum of ten (10) years.
   2. The indoor resilient multipurpose surfacing shall be manufactured in an ISO 9001 certified plant.
   3. The indoor resilient multipurpose surfacing shall be manufactured in an ISO 14001 certified plant.
   4. The indoor resilient multipurpose surfacing supplier shall be an established firm, experienced in the field, and competent in the techniques required by the manufacturer.
   5. The installer of the indoor resilient multipurpose surfacing shall have a minimum of five (5) years of experience in the field installing indoor resilient multipurpose surfacing and have worked on at least five (5) projects of similar size, type and complexity.

B. Certifications:
   1. Installer to submit the indoor resilient athletic surfacing manufacturer's or distributor's certification attesting that they are an approved installer of the indoor resilient multipurpose surfacing.
   2. The ind**o**or resilient multipurpose surfacing manufacturer to submit official ISO 9001 certification for the facility in which the indoor resilient multipurpose surfacing is manufactured.

C. Testing:
   1. Tests shall be relative for multi-purpose use with certificates from independent testing resources to be made available upon request. Test results shall be performed according to ASTM standard testing procedures including ASTM F2772 "Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems".

1.4 DELIVERY, STORAGE AND HANDLING

A. Delivery:
   Material shall not be delivered until all related work is in place and finished and/or proper storage facilities and conditions can be provided and guaranteed stable according to Advantage Sport recommendations.

B. Storage:
   1. Store the material in a secure, clean and dry location.
   2. Maintain temperature between 55° and 85° Fahrenheit.
   3. Store the indoor resilient athletic surfacing rolls in an upright position on a smooth flat surface immediately upon delivery to jobsite.
   4. Rolls shipped in rigid protective cardboard containers can be laid horizontally prior to unpacking and installation.

1.5 PROJECT/SITE CONDITIONS

A. It is the responsibility of the general contractor/construction manager to maintain project/site conditions acceptable for the installation of the indoor resilient multipurpose flooring.

B. The area in which the indoor resilient multipurpose surfacing will be installed shall be dry and weather tight. Permanent heat, light and ventilation shall be installed and operable.

C. All other trades shall have completed their work prior to the installation of the resilient athletic flooring. The general contractor or construction manager shall maintain a secure and clean working environment before, during and after the installation.

D. Maintain a stable room temperature of at least 65°F for a minimum of one (1) week prior to, during and thereafter installation.

E. An effective low-permeance vapor barrier is placed directly beneath the concrete subfloor. For "on" or "below grade" installations, it is recommended to provide a permanent vapor barrier resistant to long term hydrostatic pressure/moisture exposure. Protrusions should be sealed to prevent moisture migration into the slab. Moisture should not be allowed to enter the slab after the completed construction.

F. Concrete subfloor surface pH level within the 7 to 10 range dependent upon installation type.

G. Concrete subfloor should be no greater than 1/8" within a 10 ft diameter. This tolerance can be measured in accordance with ASTM E1155. A specified (F_F) of 50 and an (F_L) of 30 should reach this degree of floor flatness and floor level. There is no numerical correlation between F numbers and the deviation from the straight edge. However, the above specified numbers should achieve a flat floor with minimal deviation in the slab. Reference ACI 117 and ACI 302.1R. The general contractor should provide a certificate of compliance with the above recommendations.

H. Concrete subfloor must be clean and free of all foreign materials or objects including, but not limited to, curing compounds and sealers.

I. Fill cracks, grooves, voids, depressions, and other minor imperfections. Follow the manufacturer's directions. Moveable joints must be treated utilizing specific transitioning joint devices depending upon the architect's recommendations. Follow current ASTM F710 guidelines for the preparation of concrete slabs to receive resilient flooring.
J. Refer to ACI 302.2R "Guidelines for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials" for concrete design and construction.
K. Concrete slab shall be fortified with continual steel reinforcement. Fiber reinforcement alone shall not be considered adequate fortification.

1.6 WARRANTY

A. Special Limited Warranty:
   1. Manufacturer's standard form in which manufacturer agrees to repair or replace sports flooring including labor that fails within specified warranty period.
B. Material warranty must be direct from the product manufacturer.
   1. Material warranties must come from original manufacturer or division thereof. Private label warranties from distributors or brokers are not valid. Supply original point of manufacturing upon request.
C. Failures include, but are not limited to, the following:
   1. Material manufacturing defects.
   2. Surface wear and deterioration to the point of wear-through of wear layer per ASTM F410/ASTM F1303.
   3. Failure due to substrate moisture exposure exceeding 98 percent relative humidity when tested according to ASTM F2170.
D. Warranty Period:
   1. For material defects and surface wear-through: **25** years from date of substantial completion.
E. Installer's Limited Warranty:
   1. Installer's standard form in which installer agrees to repair or replace sports flooring that fails due to poor workmanship or faulty installation within the specified warranty period.
   2. Warranty Period: 2 years from date of substantial completion.

1.7 ADDITIONAL MATERIALS

A. Furnish to the owner additional materials containing a total of at least 1% of each different color or design of the indoor resilient athletic surfacing used on the project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The basis of the design for the indoor resilient multipurpose surfacing is Omnisports Active+ as manufactured by Tarkett.
B. All other installation accessories and related components must be either made or approved by the indoor resilient athletic surfacing manufacturer.
C. Other products may be approved as equal if deemed qualified and submitted in accordance with the General Conditions.
D. Test reports confirming compliance from an independent sports laboratory must be provided along with samples, technical data, installation, maintenance, and warranty prior to acceptance as an alternative product.

2.2 MATERIALS

A. Omnisports Active+ - Prefabricated sport surface 8.1 mm with wood flooring design, single surface embossing and Extreme Three (3) Layers technology (X3LT) as supplied by Advantage Sport (888.605.3380).
   1. Embossing of wood design and solid colors must be the same; varying embossing or surface textures will not be allowed.
   2. Printing of wood design shall closely resemble standard wood strip flooring in size, color, board length, and grain appearance.
   3. Surface embossing combined with TopClean XP must offer proper balance of surface friction per the ASTM F2772.
   4. Surface embossing combined with TopClean XP must provide resistance to stains and scratches. Surface profile must not incorporate linear embossing.
   5. The wood design shall be protected by a clear layer of pure PVC (Polyvinyl Chloride) and TopClean XP, a factory-applied UV cured urethane treatment.
   6. Extreme Three (3) Layers technology (X3LT) includes Omnisports XCS cushion, glass veil and calendared sheet must offer improved shock absorbing comfort while providing better indentation recovery
   7. The XCS cushion force reduction layer shall be high-density closed cell PVC foam with honeycomb embossing, and is applied in one continuous manufacturing process.
   8. Laminated or adhered foam layers will not be allowed.
   9. Field constructed products will not be accepted.

B. Physical properties of the indoor resilient athletic surfacing shall conform to the following minimums:

Width	—	6’ 6” (2 m)
Length	—	85’ (25.9m) approx.
Wear Layer	—	2 mm
Total Thickness	—	8.1 mm
Wear Layer	Type 1– Grade 1	ASTM F1303/F410
Vertical Deformation	PASSED	ASTM F2772
Rolling Load	PASSED	0.30 (EN 1569 {11/1999})
Surface Finish Effect	PASSED	ASTM F2772 (80 – 110)
Chemical Resistance	Excellent	ASTM F925
Impact Resistance	PASSED	EN 1517
Abrasion Resistance	PASSED	0.10 (EN ISO 5470-1 {06/1999})
Static Load Limit	PASSED	ASTM F970- Load 175 Lbs
Sound Insulation	Excellent	+/= 19 dB (ISO 717/2)
In-Room Sound Insulation	Excellent	61dB (NF S31-074)
Ball Rebound	PASSED	ASTM F2772 > 90%
Force Reduction	PASSED	ASTM F2772 Class 3
Fire Rating	PASSED	ASTM E648 Class 1
Microbial Assays Test	No Growth	G21 ASTM - Backing
Asthma and Allergy Friendly™	ASP: 05-01/101	Certified Compliant
VOC	<10µg/m³	ASTM D5116 (small chamber)
Phthalate-free technology	—	YES
REACH Compliant	—	YES
Heavy Metals	—	NO
ISO 9001	—	YES
ISO 14001	—	YES

C. Design
   1. Color: As available from the indoor resilient athletic surfacing manufacturer's standard range.
   2. Hardwood Design Series: High-definition printing for a realistic wood surface appearance as available from the indoor resilient athletic surfacing manufacturer's standard range.
   3. Texture: Texture to remain consistent between solid colors and wood design when blending colors.

D. Welding Rod: As supplied by the indoor resilient athletic surfacing manufacturer or supplier.
   1. Color to blend with the indoor resilient athletic surfacing color or design.
   2. All seams shall be welded to create a monolithic and impermeable surface.

E. Adhesive: As approved by the indoor resilient athletic surfacing manufacturer.

F. Game Line Paint and Primer: As approved by the indoor resilient athletic surfacing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the responsibility of the general contractor/construction manager to ensure that project/site conditions are acceptable for the installation of the indoor resilient athletic flooring.

B. Verify that the area in which the indoor resilient athletic surfacing will be installed is dry and weather tight. Verify that permanent heat, light and ventilation are installed and operable.

C. Verify that all other work that could cause damage, dirt and dust or interrupt the normal pace of the indoor resilient athletic flooring installation is completed or suspended.

D. Verify that there is a stable room temperature of at least 65℉.

E. Verify that there are no foreign materials or objects on the subfloor and that the subfloor is clean and ready for installation.

F. For GreenLay™ Installation to Concrete Subfloor: moisture content less than 92% RH when tested per ASTM F2170.

G. Follow Advantage Sport installation recommendations.

H. Do not average the results of the tests. Report all field test results in writing to the General Contractor, Architect, and End User prior to installation.

I. Verify that the concrete subfloor surface pH level is within the 7 - 10 range.

J. Document the results confirming the slab is within manufacturer's tolerances for slab deviation.

3.2 PREPARATION OF SURFACES

A. Sand the entire surface of the concrete slab.

B. Sweep the concrete slab so as to remove all dirt and dust. If a sweeping compound is to be used it must be a sweeping compound that does not contain oil or other items that may inhibit the adhesive bond.

C. Slab must be dust free. In the event that dust impairs adhesive bond, priming the slab prior to application of adhesive may be necessary. Follow installation guidelines.

D. Follow OSHA guidelines

3.3 INSTALLATION

A. The installation area shall be closed to all traffic and activity for a period to be set by the indoor resilient athletic surfacing installer. The indoor resilient athletic surfacing installation shall not begin until the installer is familiar with the existing conditions.

B. All necessary precautions should be taken to minimize noise, smell, dust, the use of hazardous materials and any other items that may inconvenience others.
C. Install the indoor resilient athletic surfacing in strict accordance with the indoor resilient athletic surfacing manufacturer's written instructions.
D. Install the indoor resilient athletic surfacing minimizing cross seams. Provide a seam diagram during the submittal process for approval prior to installation. Vinyl Sheet Flooring Seams: Comply with ASTM F 1516. Rout joints and heat weld to permanently and seamlessly fuse sections together.
E. Paint game lines using approved game line paint primer and game line paint in strict accordance with the game line paint manufacturer's instructions.
F. Install appropriate threshold plates or transition strips where necessary.

3.5 CLEANING

A. Remove all unused materials, tools, and equipment and dispose of any debris properly. Clean the indoor resilient athletic surfacing in accordance with the manufacturer's instructions.

3.6 PROTECTION

A. If required, protect the indoor resilient athletic surfacing from damage using coverings approved by the manufacturer until acceptance of work by the customer or their authorized representative.

3.7 RELATED STANDARDS AND GUIDELINES

A. ASTM F2170 "Standard Test Method for Determining Relative Humidity In Concrete Floor Slabs Using In-Situ Probes"
B. ASTM F710 "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring"
C. ACI 302.2R-06 "Guideline for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials"
D. ASTM F2772-11 "Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems"

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Supply all labour, materials, tools and equipment necessary to properly execute and complete all painting and finishing according to the drawings and as specified herein. Paint Finish to be pin hole free to CCAC and OMAFRA standards.

.3 Colour Schedule and drawings will be issued by the Consultant for colour locations following award of contract.

1.2 RELATED SECTIONS

.1 Section 05 50 00 - Metal Fabrications: Shop primed items.

.2 Section 06 20 00 – Architectural Woodwork.

.3 Section 09 16 21 – Wall Board Assemblies.

.4 Division 23 - Heating, Ventilating, and Air-Conditioning (HVAC).

.5 Division 26 – Electrical: Electrical identification.

1.3 REFERENCES

.1 ASTM C472-99(2009) - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete.

.2 CSA-A23.1-09/A23.2-09 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.3 OPCA (Ontario Painting Contractors Association) - Architectural Painting Specification Manual.

.4 Paint systems shall be “Premium Grade” as referenced in the Systems Selection Guide of the MPI ASPM.

.5 CCAC – Canadian Council on Animal Care.

.6 OMAFRA – Ontario Ministry of Agriculture, Food and Rural Affairs.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data on all finishing products.

.3 Samples: Submit two (2) samples, 216mm x 280mm (8½" x 11") in size illustrating range of colours available for each surface finishing product scheduled at least 30 days before materials are required.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submittal procedures.

.2 Installation Data: Manufacturer's special installation requirements indicating special surface preparation procedures, substrate conditions requiring special attention.

.3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Closeout Submittals.

.2 Extra Stock Materials:

.1 Deliver to Owner on completion of painting and finishing, and as he directs, sealed containers of each finish painting material applied, and in each colour. Label each container as for original, including mixing formula. Provide 1L of extra stock when less than 50L are used for project, 4L of extra stock when 50 to 200L are used, and 8L of extra stock when over 200L are used.

.2 Submit to the owner, for endorsement, an Extra Stock Certificate as verification of receipt of the specified extra stock materials.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordination: Coordinate with other work having a direct bearing on work of this section.

.3 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.4 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

.1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.

.2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

.3 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

1.9 REGULATORY REQUIREMENTS

.1 Conform to applicable code for flame and smoke rating requirements for finishes.

.2 Apply coatings that require fire hazard classification exactly as specified in Underwriters' Laboratories test specification that validates specified rating.

.3 Coatings shall meet fire hazard classification requirements of jurisdictional authorities for each material in each installation location as applicable.

.4 Fire retardant coatings shall meet fire hazard classification requirements of jurisdictional authorities for each installation location.

.5 Fire hazard classification ratings shall not exceed for:

.6 Flame Spread: not to exceed the ratings.

.1 Smoke Developed and Fuel Contributed: Shown in Section 3.1.12.1 and 3.1.13.2 of the Ontario Building Code 2012.

1.10 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00: Product Requirements, handle, store, and protect products.

.2 Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

.3 Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and written instructions for mixing and reducing.

.4 Store paint materials at minimum ambient temperature of 7°C (45°F) and a maximum of 32°C (90°F), in ventilated area, and as required by manufacturer's written instructions.

1.11 ENVIRONMENTAL REQUIREMENTS

.1 Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

.2 Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

.3 Minimum Application Temperatures for Latex Paints: 7°C (45°F) for interiors; 10°C (50°F) for exterior; unless required otherwise by manufacturer's written instructions.

.4 Minimum Application Temperature for Varnish 21°C (70°F). Finishes: 18°C (65°F) for interior or exterior, unless required otherwise by manufacturer's written instructions.

.5 Provide lighting level of 860 lx (80 ft candles) measured mid-height at substrate surface.

.6 Ensure that all areas in which paint is applied are well ventilated and broom clean.

.7 Do not finish wood surfaces that contain over 15% moisture.

.8 Do not apply finishes on porous surfaces such as concrete, plaster, wall board, pipe insulation, masonry, that contain over 12% moisture.

.9 Do not apply finishes when dust is being raised.

.10 Do not apply finishes when relative humidity is over 85%, when condensation has formed or is likely to form, nor immediately following rain, frost or formation of dew.

1.12 WARRANTY

.1 Warrant work of this Section for period of 1 year against defects and deficiencies in materials and workmanship in accordance with General Conditions of the Contract. Promptly correct defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional expense. Material Defects include but are not limited to: material cracking and splitting. Workmanship defects include but are not limited to: bubbling, blistering and delamination.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.

.1 Benjamin Moore & Co. Ltd.
.2 Para Paint.
.3 Dulux Paints.
.4 Canadian Industries Ltd.
.5 Olympic Stains, Canfor Limited.
.6 Pratt & Lambert Inc.
.7 Sherwin-Williams Of Canada Ltd.
.8 Sikkens Stains, Thomes (Canada) Ltd.
.9 Flame Control Coatings

.2 All painting materials products are to be similar to **Ultra Spec Scuff-X** by Benjamin Moore & Co.

.3 All materials used on the work shall be exactly as specified in quality. No claim by the Painting Trade to the unsuitability or unavailability of a material specified, or his willingness to use same or his inability to produce first-class work with same, will be entertained, unless such claims are made in writing and submitted with his bid. All paint, varnishes, enamels, lacquers, stains, paste fillers and similar materials must be delivered in the original containers with the seals unbroken and labels intact.

.4 Paint materials to conform to MPI Standards listed in finishing formulae and as supplied by MPI Approved Product List manufacturers.

.5 Paint materials for each coating formulae to be products of a single manufacturer.

.6 All materials shall be used only as specified by the manufacturer's direction label on the container.

.7 All painting materials, such as linseed oil, shellac and turpentine shall be pure and of highest quality and approved by the Consultants. They shall bear identifying labels on the containers.

.8 Materials shall not exceed Flame Spread, Fuel Contributed and Smoke Developed ratings permitted by the Ontario Building Code, and Ontario Fire Marshal for rooms specified to receive application.

.9 Low VOC or zero VOC paints to be used for interior work.

2.2 MATERIALS

.1 Coatings: **Ultra Spec Scuff-X** by Benjamin Moore & Co. (or approved alternate) Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.

.2 Interior Intumescent Latex Paint: Flame Control E-119 2 Hour rating low VOC water based product.

.3 Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

.4 Patching Materials: Latex filler.

.5 Fastener Head Cover Materials: Latex filler.

2.3 MIXING

.1 Refer to room finish plans for surface finishes.

.2 Paints shall be supplied ready-mixed unless otherwise specified. Do not incorporate adulterants.

.3 Mix specified paste or powder coatings, or those that are field-catalysed at job, to meet specified requirements of manufacturer. Otherwise, all paints shall be shop tinted.

.4 Pigment shall be well ground to form a soft paste in the vehicle during its storage life. Paddle mixing at job shall evenly disperse paste throughout mixture to ensure paint of smooth-flowing, easy brushing, consistency.

.5 Mix paints only in mixing pails placed on suitably sized, non-ferrous or oxide resistant metal pans.

2.4 PAINT COLOURS (PT)

.1 Paint Colours:

.1 As selected by Consultant at a later date;

.1 Maximum six (6) interior colours;

.1 PT1: Colour to be selected.

.2 PT2: Colour to be selected.

.3 PT3: Colour to be selected.

.4 PT4: Colour to be selected.

.5 PT5: Colour to be selected.

.6 PT6: Colour to be selected.

.2 Maximum one (1) Bulkhead Colours;

.1 BH1: TBD

.3 Maximum two (2) Ceiling Colours;

.1 GB1: White.

.2 GB2: TBD

PART 3 EXECUTION

3.1 EXAMINATION

.1 Test shop applied primer for compatibility with subsequent cover materials.

.2 Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

.1 Plaster and Gypsum Wallboard: 12%.

.2 Masonry, Concrete, and Concrete Unit Masonry: 12%.

.3 Interior Wood: 15%.

.4 Exterior Wood: 15%.

.5 Concrete Floors: 8%.

.3 Defective painting and finishing applications resulting from failure to properly test surfaces and/or from application to unsatisfactory surfaces will be considered the responsibility of this Section.

.4 Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

.1 Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

.2 Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.

.3 Seal with shellac and seal marks which may bleed through surface finishes.

.4 Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

.5 Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high-pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

.6 Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply compatible sealer or primer.

.7 Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

.8 Concrete Floors: Remove contamination; acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

.9 Copper Surfaces Scheduled for a Paint Finish: Remove contamination by steam, high pressure water, or solvent washing. Apply vinyl etch primer immediately following cleaning.

.10 Copper Surfaces Scheduled for a Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.

.11 Wall Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

.12 Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

.13 Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

.14 Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

.15 Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

.16 Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

.17 Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

.18 Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.

.19 Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

.20 Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.

.21 Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.3 APPLICATION

.1 Apply products to manufacturer's written instructions. **Pin hole free application**.

.2 Do not apply finishes to surfaces that are not dry.

.3 Apply each coat to uniform finish.

.4 Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

.5 Sand metal wood lightly between coats to achieve required finish.

.6 Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.

.7 Allow applied coat to dry before next coat is applied.

.8 Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

.9 Prime concealed surfaces of interior exterior woodwork with primer paint.

.10 Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25% with mineral spirits.

.11 Finish glazing rebates before glazing commences.

.12 Do not paint caulked joints.

.13 Remove splatters of finished material from adjacent surfaces, including glass, before they set up, and by methods not harmful to the surfaces.

.14 All existing walls that require only a portion of the wall to be painted, shall be painted to the nearest corner and/or door frame or similar major elements as directed by the consultant.

3.4 FIELD QUALITY CONTROL

.1 Section 01 45 00: Quality Control.

.2 Arrange for periodic visits to site by paint manufacturers' representatives while painting and finishing applications are in progress. On each visit he shall verify that specified materials and methods are used, and that procedures agreed upon at the initial site meeting are followed.

.3 Manufacturers' representatives shall submit reports of each site visit to the Consultant as specified.

3.5 PAINTING SCHEDULE

.1 General

.1 This Section shall include painting and/or finishing of all surfaces exposed to view that have been installed with no final finish provided by the installer, unless otherwise specified.

.2 Finish interior surfaces, including objects within each area unless otherwise excluded, as indicated on Room Finish Plans.

.3 Wall surfaces partially finished with other finish materials shall have remainder of surfaces finished as for surrounding surfaces.

.4 Finish equipment, panels, fitments, services, structure, attachments, accessories, prime coated hardware, or similar appurtenances on or near finished surfaces to match finish of the surface.

.5 Finish edges and tops of trim, projecting ledges, fitments, cupboards, and similar surfaces to match adjacent surfaces, whether or not they are above or beyond sight lines.

.6 Finish interiors of alcoves, recesses, closets, cupboards, fitments, and similar spaces to match adjacent surfaces unless otherwise indicated.

.7 Finish surfaces visible through grilles, grille cloth, perforated metals, screening, convector covers, louvres, linear metal ceilings, and other openings, including inside of ductwork, with two coats of matte black paint. If it is the intention that finished surfaces be seen behind the elements listed above, finish the surfaces to match adjoining surfaces.

.8 Finish exposed wood and exposed ferrous metals, whether primed or galvanized or not, on surfaces that are indicated as unfinished.

.2 Doors and Drawers

.1 Finish wood edges of doors and drawers and edges of metal doors exposed to view with the same number of coats of material and colour adjoining surface finishes. Where not exposed to view, finish with two coats of varnish.

.2 Paint exposed plywood edges of doors to match stained finish.

.3 Paint metal door grilles to match door faces.

.4 Finish interior of drawers with two coats of natural varnish, except when prefinished.

.5 Ensure that all joints around openings for access panels and access doors are not to be bridged with paint.

.3 Finishing Mechanical and Electrical Equipment

.1 Refer to Division 23 and Division 26 for schedule of colour coding and identification banding of equipment, duct work, piping, and conduit.

.2 Paint shop primed equipment.

.3 Paint shop prefinished items occurring at interior areas.

.4 Remove unfinished louvres, grilles, covers, and access panels on mechanical and electrical components and paint separately.

.5 Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.

.6 Paint interior surfaces of air ducts convector and baseboard heating cabinets that are visible through grilles and louvres with one (1) coat of flat black paint, to visible surfaces. Paint dampers exposed behind convector and baseboard heating cabinets, louvres, grilles to match face panels.

.7 Paint exposed conduit and electrical equipment occurring in finished areas.

.8 Paint both sides and edges of plywood backboards for electrical and telephone (1) equipment before installing equipment.

.9 Colour code equipment, piping, conduit, and exposed duct work in accordance with colour schedule.

.10 Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

.4 Steel lintels where exposed to view.

.1 Interior ferrous metal hardware, fasteners and accessories.

.2 Interior galvanized hardware, fasteners and accessories.

.3 Exterior ferrous metal hardware, fasteners and accessories.

.4 Exterior galvanized hardware, fasteners and accessories.

.5 Sheet metal ducts in interior spaces where exposed to view.

.6 Access doors.

.7 Unfinished or primed convector covers.

.8 Unfinished or primed baseboard units.

.9 Prime painted louvres, grilles, and diffusers at interior.

.10 Prime painted louvres, grilles, and diffusers at exterior.

.11 Prime painted fire hose and extinguisher cabinets.

.12 Prime painted electrical panel doors and frames.

.13 Fill pipes.

.14 Electrical service entry.

.15 Mechanical, electrical and other equipment and accessories on roof.

.5 Surfaces That Require No Finishing

.1 Painting or finishing of the following surfaces is not included in this Section:

.1 Plastics; metals with porcelain enamel, baked enamel or plated finishes; sound absorbent surfaces; vitreous, glazed ceramic or plastic facings; special coatings; factory finished surfaces as specified in other Sections; control panels, circuit breakers, switches, receptacles or similar electrical components; or name and specification plates on equipment; ducts, pipes and conduit concealed from view.

.6 Gloss

.1 Gloss value shall be determined in accordance with ASTM D523 Tentative Method of Test for 60° specular gloss.

.7 Gloss values for terminology specified shall be: less than 10 for flat, 10 to 35 for eggshell, 35 to 60 for semi-gloss, 60 to 80 for gloss, 80 to 90 for high gloss.

.8 Gloss for various areas will be submitted by Consultant following award of Contract.

.9 Schedule - Shop Primed Items for Site Finishing

.1 Section 05 50 00 - Metal Fabrications: elevator pit ladders, Exposed surfaces of lintels.

.2 Section 05 50 00 - Metal Fabrications: Exposed surfaces of stringers exposed vertical risers.

.10 Schedule - Exterior Surfaces

.1 Wood - Painted (Opaque):

.1 One (1) coat of latex primer sealer.

.2 Two (2) coats of paint finish, semi-gloss.

.2 Wood - Transparent:

.1 Two (2) coats of stain.

.3 Concrete, Concrete Block, Cement Plaster:

.1 One (1) coat of block primer.

.2 One (1) coat of primer sealer latex.

.3 Two (2) coats of paint finish, flat.

.4 Steel - Unprimed:

.1 One (1) coat of latex primer.

.2 Two (2) coats of paint finish, semi-gloss.

.5 Steel - Shop Primed:

.6 Touch-up with zinc rich primer.

.1 Two (2) coats of latex alkyd enamel, semi-gloss.

.7 Steel - Galvanized:

.1 One (1) coat galvanize primer.

.2 Two (2) coats of paint finish, semi-gloss.

.8 Aluminum - Mill Finish:

.1 One (1) coat etching primer.

.2 Two (2) coats of alkyd enamel, gloss.

.11 **Schedule - Interior Surfaces** (**Pin Hole Free Finish**)

.1 Wood - Painted:

.1 One (1) coat of latex prime sealer.
.2 Three (3) coats of paint finish, semi-gloss.

.2 Wood - Transparent:
.1 Filler coat (for open grained wood only).
.2 One (1) coat of stain.
.3 One (1) coat sealer.
.4 Two (2) coats of polyurethane, satin.

.3 Concrete, Concrete Block:
.1 One (1) coat of block filler.
.2 One (1) coat of primer sealer latex.
.3 Three (3) coats of paint finish, semi-gloss.

.4 Steel - Unprimed:
.1 One (1) coat of latex primer.
.2 Three (3) coats of paint finish, semi-gloss.

.5 Steel - Primed:
.1 Touch-up with latex primer.
.2 Three (3) coats of paint finish, semi-gloss.

.6 Steel - Galvanized:
.1 One (1) coat galvanize primer.
.2 Two (2) coats of paint finish, semi-gloss.

.7 Concrete Floors:
.1 Refer to Section 09 67 00 Epoxy Floor Coatings.

.8 Wall Board (Walls and Ceilings – **Pin Hole Free Finish**):
.1 One (1) coat of latex primer sealer.
.2 Three (3) coats of paint finish.

.9 Fire Retardant Finish.
.1 One (1) coat of fire-retardant primer.
.2 Two (2) coats of fire-retardant finish, gloss.

.10 Flame and smoke rating of 25/5.

3.6 CLEANING

.1 Section 01 74 00: Cleaning and Waste Processing work.

.2 Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

.3 Touch up and refinish minor defective applications. Refinish entire wall, ceiling or similar surfaces where finish is damaged or not acceptable.

.4 Remove spilled or splattered finish materials from surfaces of installations provided by other Sections. Do not mark surfaces while removing.

.5 Leave storage and mixing areas clean and in same condition as equivalent spaces in Project.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Supply and install wall protection, at locations shown in the drawings.

.3 Supply and install corner guards, at locations shown in the drawings.

1.2 RELATED SECTIONS

.1 Section 06 10 00 – Rough Carpentry.

.2 Section 07 92 10 - Joint Sealants.

.3 Section 09 21 16 – Wall board Assemblies.

1.3 REFERENCES

.1 CAN/CSA-B651-04 (R2010) - Accessible Design for the Built Environment.

.2 ASTM B221

.3 ASTM D543

.4 ASTM A276- 10

.5 NAAMM: Metal Finishes Manual

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Indicate physical dimensions, features, anchorage detail, wall mounting brackets with mounted measurements, and rough-in measurements.

.3 Samples for verification purposes: Submit the following samples, as proposed for this work, for verification.

.1 305mm (12") long sample of each model specified.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

.2 Installation Data: Manufacturer's special installation requirements including special procedures, perimeter conditions requiring special attention.

.3 Manufacturer's Certificate: Certify that Products meet or exceed Products specified requirements.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Submission procedures.

.2 Extra Stock:

.1 Supply and install an additional fifteen (15) CG1 stainless steel corner guards, as directed by Owner/Consultant.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordination: Coordinate with other work having a direct bearing on work of this section.

.1 Coordinate the Work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.3 Pre-Installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks prior to commencing work of the Section to verify requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

1.8 QUALITY ASSURANCE

.1 Installer qualifications: Engage an installer who has no less than five (5) years' experience in installation of systems similar in complexity to those required for this project.

.2 Manufacturer's qualifications: Not less than five (5) years' experience in the production of specified products and a record of successful in-service performance.

.3 Single source responsibility: Provide all components of the wall protection system manufactured by the same company to ensure compatibility of colour, texture and physical properties.

1.9 PERFORMANCE REQUIREMENTS

.1 Corner Guards: Resist lateral impact force of 445 N (100 lbs) at any point without damage or permanent set.

1.10 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in containers with labels legible and intact and grade seals unbroken.

.2 Store material so as to prevent damage or contamination.

.3 Store materials in a dry area, protected from freezing, staining and damage.

.4 Material must be stored flat.

1.11 ENVIRONMENTAL REQUIREMENTS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12°C (54°F) for 48 h before, during and 48 h after, installation.

.2 Do not install corner guards at temperatures less than 12°C (54°F) or above 38°C (100°F).

.3 Do not apply adhesives at temperatures below 15°C (59°F) or above 25°C (77°F).

1.12 WARRANTY

.1 Provide written and signed warranty against defects in material and workmanship at no cost to the Owner, for a period of five (5) years from date of substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of drawings, schedules and specifications.

.1 Life Science Products (Sani-Rail), www.ispinc.com

.2 Construction Specialties Inc., www.c-sgroup.com

.3 Johnsonite, www.johnsonite.com

.4 Inpro Coporation IPC; www.inprocorp.com

.5 Koroseal Interior Products; www.koroseal.com

.6 Or approved equal.

2.2 WALL PROTECTION

.1 PVC Rigid Sheet Wall Protection:

.1 Shall be Puraguard PVCu Cladding, as manufactured by Altro. Composed of thermo-formable, 2mm gauge extruded unplasticized PVC sheet with heat welded joints,

.2 Colour: Architect to select from standard colour range.

.3 Refer to Section 09 21 16 Wall Board Assemblies.

.2 Stainless Steel Corner Guards:

.1 3 1/2" (89.0mm) legs manufactured from type 304 alloy with a #4 satin finish. 48" lengths.

2.3 .FABRICATION

.1 Fabricate components with tight joints, corners and seams.

.2 Pre-drill holes for attachment.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Verify existing conditions before starting work.

.2 Verify that field measurements are as instructed by the manufacturer.

.3 It is the responsibility of this Section to examine the site, area and anchoring condition. Commencement of work by this trade signifies acceptance of conditions.

.4 Take all necessary steps to prevent damage to material during installation and after.

3.2 INSTALLATION

.1 Surface preparation: Prior to installation, clean substrate to remove dirt, debris and loose particles. Perform additional preparation procedures as required by manufacturer's instructions.

.2 Install the work of this section in strict accordance with the manufacturer's recommendations, using only approved mounting hardware, and locating all components firmly into position, level and plumb.

.3 Installation of Corner Guards:

.1 Install the work of this section in strict accordance with the manufacturer's recommendations, using only approved mounting hardware, and locating all the components firmly into position, level and plumb.

.2 Temperature at the time of installation must be between 65°-75°F (18°-24°C) and be maintained for at least 48 hours after the installation.

.3 Anchorage devices shall effectively secure to wall on both side of corner. Refer to drawings for location.

.4 Adjust installed end caps as necessary to ensure tight seams.

.4 Installation of Wall Protection:

.1 Install wall protection covering to walls in accordance with manufacturer's written instructions.

.2 Allow protective wall covering and adhesive to precondition for a minimum of 24 hours before installation.

.3 Install sheets with texture running in the same direction for uniform appearance.

3.3 CLEAN-UP

.1 Promptly clean up and remove from premises all rubbish etc. from site after work of this section and leave installed items in clean condition.

.2 Immediately upon completion of installation, clean material in accordance with manufacturer's recommended cleaning method.

3.4 PROTECTION

.1 Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Riprap.

1.2 RELATED SECTIONS

.1 Section 31 22 13 - Rough Grading.

.2 Section 31 23 16 – Excavating, Trenching and Backfilling: Excavating for riprap.

.3 Section 33 42 13 - Pipe Culverts.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

.1 Riprap: Includes supply and placing riprap.

1.4 QUALITY ASSURANCE

.1 Perform Work in accordance with OPSS 511, Rip-Rap, Rock Protection, and Granular Sheeting.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Riprap: Provide in accordance with OPSS 511, Rip-Rap, Rock Protection, and Granular Sheeting.

Part 3 EXECUTION

3.1 PLACEMENT

.1 Place riprap as indicated on the contract drawings.

.2 Installed Thickness: 12” inch average.

.3 Place rock evenly and carefully over rock in one consistent operation to preclude disturbance or displacement of substrate.

End of Section

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Division 1, General Requirements is a part of this section and shall apply to this section. Conform with requirements of all sections of the General Requirements and any supplements and/or addenda, as it applies to the work of this section.

.2 Supply and install concrete walks, curbs and gutters.

.3 Furnish all labour, materials, equipment and tools necessary to complete both temporary and permanent works as shown on the Drawings.

1.2 RELATED WORK

.1 Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Section 32 11 23 – Aggregate Base Course.

.3 Section 32 11 19 - Granular Sub-Base.

1.3 REFERENCES

.1 CSA A23.1-14 - Concrete Materials and Methods Of Concrete Construction / Test Methods And Standard Practices For Concrete.

.2 ASTM C94/C94M-09 - Ready-Mixed Concrete.

.3 ASTM C260-06 - Air-Entraining Admixtures for Concrete.

.4 ASTM D1751-04(2008) - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

.5 ASTM D1752-04a(2008) - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

.6 CSA-A23.1-09/A23.2-09 - Concrete Materials and Methods of Concrete Construction / Methods of Test for Concrete.

.7 CAN/CSA-A3000-08 - Cementitious Materials Compendium.

.8 CSA-G30.18-09 – Carbon Steel Bars for Concrete Reinforcement.

.9 CAN/CSA-S269.3-M92 (R2008) - Concrete Formwork.

.10 CSA-W186-M1990 (R2007) - Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.4 SUBMITTALS FOR REVIEW

.1 Section 01 33 00: Submission procedures.

.2 Product Data: Provide data on joint filler, admixtures, and curing compounds.

1.5 SUBMITTALS FOR INFORMATION

.1 Section 01 33 00: Submission procedures.

.2 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

.1 Section 01 78 10: Submission procedures.

1.7 ADMINISTRATIVE REQUIREMENTS

.1 Section 01 31 00: Project management and coordination procedures.

.2 Coordinate with other work having a direct bearing on work of this section.

.3 Coordinate work to ensure timely placement of insulation within construction spaces.

.4 Pre-installation Meetings: Convene two (2) weeks before starting work of this section.

1.8 QUALITY CONTROL

.1 Installer must have a minimum of five (5) years' experience in concrete work.

.2 All materials must conform to C.S.A. A-23, latest edition (metric). A copy must be kept on site at all times during construction.

.3 Furnish the Consultant with a certificate prepared by the Ready-Mix concrete supplier stating that all requirements regarding strength, slump, air entrainment, mix, materials, and ratio have been met and maintained.

.4 Prior to pouring concrete, obtain the approval of the landscape inspector of all form work, placement of reinforcing steel, consolidation of sub-grade and placement and consolidation of granular base.

.5 When required by the Consultant, have core tests taken at not less than 30 meter intervals, to determine the actual thickness of the slab. Pay all costs incurred.

.6 Ensure work complies with the Ontario Building Code and all pertinent local by-laws and regulations. Obtain and pay for all necessary permits before starting work.

.7 Obtain cementitious materials from same source throughout.

1.9 DELIVERY, SSTORAGE & HANDLING

.1 Store all materials in accordance with C.S.A. A-23, latest edition.

.2 Store reinforcing steel on racks or skids. Protect from contamination by dirt or other materials. Maintain steel in its fabricated form.

.3 Store forms off the ground and sufficiently supported to prevent warping or distortion. Protect from contaminations by oil, grease, water, earth, etc.

.4 All concrete is to be mixed at the plant and transported to the site by truck in accordance with C.S.A. A-23. Hand mixed concrete is not allowed unless approved in writing by the Landscape Architect prior to placing of concrete.

.5 Convey concrete from the mixer to the place of final deposit as rapidly as possible, with as little re-handling as is practical, to avoid segregation and/or loss of material.

.6 Place concrete into final position and at such a rate that it remains plastic at all times and flows readily between reinforcement, into all corners and crevasses and around all embedded fixtures. Pour in a continuous operation between expansion joints.

.7 Thoroughly clean all equipment, used for mixing or transporting of concrete, of all hardened concrete and foreign material, prior to placing concrete.

.8 Do not allow concrete to be contaminated by foreign materials. Do not use re-tempered concrete unless approved, in writing by the Landscape Architect.

.9 Obtain the approval of the Landscape Architect of the type, number and method of use of mechanical vibrators. Do not operate a vibrator for longer than 10 seconds in any one location.

.10 Maintain constant control to ensure that finished concrete is dense, uniform, free of air holes or honeycombs, and that no segregation of aggregates and cement paste occurs.

1.10 ENVIORMENTAL REQUIREMENTS

.1 Protect all concrete surfaces from damage or harmful effects or weather, water, mechanical shock or trespassers until concrete is properly cured.

.2 Protect all concrete placed after Oct. 1 against de-icing salts by 2 application of boiled linseed oil thinned with naphtha, mineral spirits, or turpentine at the rate of 50% oil and 50% thinner.

.3 Clean surface of dirt and remove all surface water. Apply when concrete temperature is over 11℃. Apply at the rate of 4.5 liters per 50 square meters for the first coat. Apply the second coat, after the first coat has been absorbed and concrete has regained its dry appearance, at a rate 4.5 liters per 65 square meters.

.4 If temperature is expected to drop below 5℃, place and protect concrete in accordance with AC1.605.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Granular A: granular material conforming in all respects to M.T.C. Form 1010, latest edition.

.2 Granular B: granular material conforming in all respects to M.T.C. Form 1010, latest edition.

.3 Concrete in curbs and sidewalks to be Class C2, 32 MPa at 28 days with 6% air entrainment, Class C2 to CSA A23.1-14.

.4 Concrete walks as indicated on drawings must be white in colour and have a minimum weathered Solar Reflectance Index (SRI) value of at least 29. Data documenting the SRI of the concrete to be provided to the Architect for review prior to installation. Data does not have to be project specific with SRI values for new concrete, documentation certifying that the concrete mix used for the project is equivalent to a previously used and tested mix is acceptable. The admixtures required to achieve the SRI indicated are the responsibility of the contractor.

.5 Premoulded Joint Fillers 13mm (0.5") thick by full depth and width, bituminous impregnated fiber board to ASTM D1751-73 (1978).

PART 3 EXECUTION

3.1 EXAMINATION

.1 Before work commences ensure that sub-grading and filling as specified has been correctly completed and that the sub-grade is satisfactory in all aspects for placing of concrete walks and curbs. Report to Consultant any deficiencies before proceeding with work

3.2 INSTALLATION

.1 Concrete Walks:

.1 Lay concrete walks 125mm (5") thick on 150mm (6") of compacted Granular A. Compact granular base to at least 98% SPD.

.2 Finish wearing surfaces of walks with wood float or as directed by Consultant. Round off edges of walks with a 10mm radius edging tool.

.3 Score surface of walks as directed on Drawings using proper tool or as directed by Consultant.

.4 Slope concrete walks to one side, away from building, for drainage as indicted on Drawings.

.2 Concrete Curbs

.1 On site and external poured curb installation to be as indicated on Drawings, on 300mm (12") minimum of Granular B fill compacted to 98% Standard Proctor Density.

.2 Concrete Curb profile: in accordance with architectural drawings.

.3 Expansion Joints

.1 Provide expansion joints filled with 13mm (½") joint filler at the following locations.

.2 Where shown and noted on Drawings.

.3 At maximum 4.5m (15') intervals in sidewalks and concrete paved areas.

.4 Where two concrete walks intersect or meet.

.5 Where a concrete walk meets a building or curb.

.6 Seal expansion joints where concrete abuts building and at entrance.

.4 Contraction Joints

.1 Provide contraction joints in sidewalks at locations shown on Drawings or at approximately 1.5m (5') intervals.

.2 Form joints by scoring concrete with T shaped tool providing a score 25mm (1") deep.

.3 In straight or curved concrete curbs at 4.5m (15') intervals and at ends of circular curbs; full width and depth of curbs.

.5 Existing Concrete Walks and Curbs

.1 Where existing concrete walks and curbs are disturbed, make good to the satisfaction of the Consultant. Replace concrete to nearest joint in each direction.

.2 Remove and dispose of existing walks and curbs off the site as shown on Drawings.

END OF SECTION

IB Roof Systems™
PVC Roofing Solutions

PVC Membrane Cleaning Guidelines

Cleaning & Owner Maintenance

Of Your Installed IB PVC Roof Membrane

While a dirty roof can detract from its appearance, regular cleaning is not required for the watertightness or longevity of the roof system, except where exposed to harmful contaminants or harsh chemicals. IB membranes are manufactured with a finish that helps the roof remain cleaner for a longer period after installation, but all roofs get dirty. Dust, dirt and organic matter from trees and other materials will settle on the roof, adversely affecting its appearance. Cleaning your installed IB PVC roof membrane is an optional but typical part of routine annual Owner Maintenance to maintain and enhance its appearance; as with most exterior building materials. In humid, wet climates algae or other biologic growth can occur as local environmental contaminants and organic materials are deposited and may require more frequent cleaning and additional measures to control these conditions. Periodic cleaning will improve the appearance and assist the owner in addressing normal exposure and weathering conditions that diminish a roof's aesthetics and desired reflectivity benefits. More detailed cleaning information is provided on the back of this document.

General Membrane Cleaning Guidelines

For simple dirt removal, wash with a soft bristle broom and a plain powder detergent solution (such as plain Tide). More heavily soiled areas may require additional cleaning.

For heavier soiled areas, or where algae and/or difficult algae staining is present, cleaning may require use of stronger solutions (such as TSP) and a small amount of diluted household bleach. If your roof is located in an area prone to persistent algae formation, the use of cleaning compounds with a residual algaecide/mildewcide agent may be needed. While it may not be possible to remove all algae stains, especially if left in place too long, the appearance with proper cleaning can be improved and usually lightened.

It is very important to thoroughly rinse and remove all detergent/cleaning residues from the roof after cleaning. A garden hose with spray nozzle is usually sufficient.

Pressure washers can damage the roof and require care in their use. When used they should be no greater than 1500 psi and held no closer to the roof than 24". Algaecide/mildewcide agents, when used, should generally be applied after cleaning and rinsing is completed.

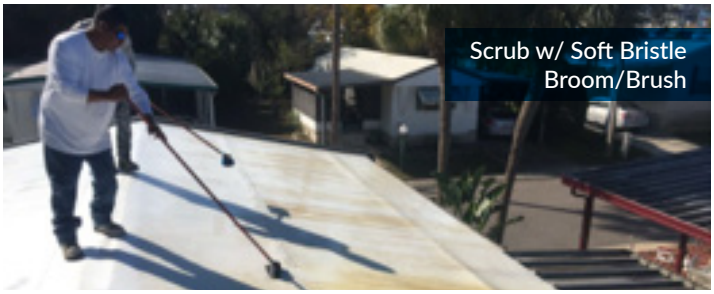
IMPORTANT NOTES: Read and follow all product labels on care, use, mixing and precautions on the use of cleaning materials. Small test areas are always recommended prior to cleaning. Use of harsh cleansers and bleach can result in color fade or damage to colors or printed membranes.

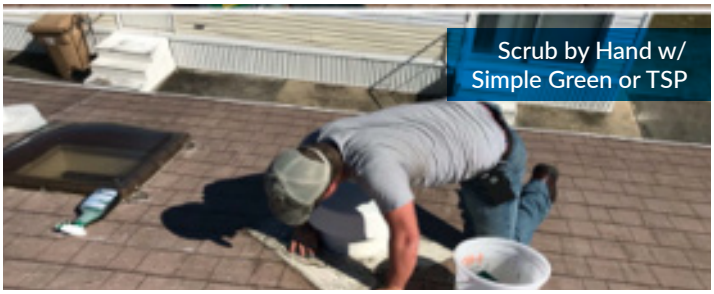
- Wear protective clothing, gloves and PPE (personal protective equipment). Read and follow all label / packaging directions, safety precautions and local ordinances. Avoid inhalation, eye or skin contact with cleaning materials and solutions.
- **Important:** Protect plants, shrubs, lawns and painted or incompatible material surfaces from contact with cleaning products and run-off. Before and after wetting/rinsing of plants and lawn areas is recommended, particularly with bleach based cleaners. Cover or remove sensitive plants, fabrics, personal items and similar materials.
- Test a small patch in inconspicuous area first with the selected cleaning material prior to washing full roof.
- Avoid use of bleach products on printed or color membranes where possible. Where algae may be present, follow cleaning with use of compatible cleaning material with residual algaecide/mildewcide (such as Wet and Forget) to retard biologic growth.
- IB does not endorse or warrant the performance of any cleaning product or materials. Materials listed below are provided based on field experience. Cleaning solutions should be mixed and applied to the roof surface. Sprinkling of dry powder and wetting in, is not recommended. Allow solution to stand for approximately 5 minutes but not to the point of drying. Broom and wash surface with soft fiber broom to remove dirt. Re-apply as needed and lightly scrub the roof surface as needed.
- Pressure washing may not adequately remove dirt and contaminants, and can result in damage to the roof. Cleaning the roof with a soft fiber broom/brush is recommended and usually offers the best results. Where pressure washers are used to rinse after cleaning, do not exceed 1500 psi or use closer than 24" from the roof surface; and/or do not use a spray tip containing less than a 30° arc.

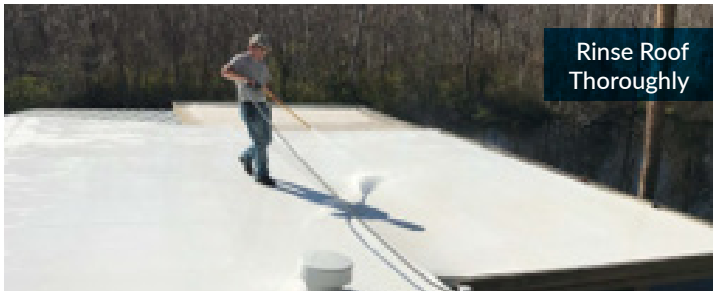
IB Roof Systems™
PVC Roofing Solutions

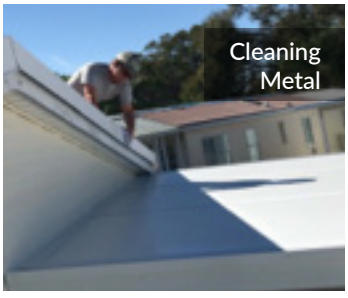
Recommended General Cleaning Options

MEMBRANE TYPE OR CONDITION	CLEANING SOLUTIONS	MIX RATIO PER GALLON	CLEANING METHODS
Basic Dirt Removal *Non-Printed or Printed PVC*	Tide, Spic-'N'-Span, or similar plain powder cleanser	• ¼ cup powder • 1 gal water	• Apply pre-mixed solution to roof area at the rate of 1.0 to 1.5 gallons solution per 100 square feet. • Let work/stand 5 minutes but not until dry. • Scrub with soft bristle broom or brush, wet slightly or add solution as needed. • Heavier soiled areas may require heavier mix concentration or re-application and agitation using soft bristle broom to loosen the dirt from the roof. • For heavier soiled non-printed membranes, TSP may be added to Jomax and substituted for Tide, etc. • For heavily soiled membrane penetrations, apply Simple Green or TSP directly to surface and scrub by hand with non-abrasive scrub pad or scrub brush. • **Rinse roof thoroughly.** Remove all cleaning residues and compounds. **Note: Cleaning materials may contain phosphates which if not removed, may result in rapid algae reoccurrence.**
	Jomax House Cleaner and Mildew Killer and Tide without household bleach	• ¼ cup Tide powder • ¾ cup Jomax • 15 cups water	
Heavy Dirt with Biological Material (e.g. Blue-Algae) *Non-Printed PVC*	Tri-Sodium Phosphate (TSP) + diluted mix of household bleach	• ¼–½ cup TSP powder • 13 oz bleach • 14 cups water	
	Jomax House Cleaner and Mildew Killer + diluted mix of household bleach	• ¾ cup Jomax • 18 oz bleach • 13 cups water	
Residual Algaecide/ Mildewcide	Wet and Forget Outdoor	Follow label directions	• Apply after cleaning and rinsing primary cleaning compounds from roof • Re-apply as needed to control algae and biologic growth
Cleaning of Metal Drip Edge	Simple Green	Follow label directions	• Clean dirty metal with non-abrasive scour pad such as Scotch-Brite and Simple Green • Wash and rinse with diluted bleach solution • Rinse clean
	Clean/rinse application of powder detergent and diluted bleach	Wash/Rinse: • 8 cups bleach • 8 cups water	


Scrub w/ Soft Bristle Broom/Brush


Scrub by Hand w/ Simple Green or TSP


Rinse Roof Thoroughly


Cleaning Metal


Preventative Measures

CAUTION: Roof surfaces can contain a variety of hazardous conditions and can be slippery particularly when wet. IB recommends strict adherence to all safe work practices, precautions, following applicable governmental and OSHA guidelines; including recommended Personal Protective Equipment (PPE) and slip resistant footwear. Care must be taken to guard against falls or injury due to slips while using cleaning materials and equipment; to avoid water being directed at vents, flashings, or other openings that could allow water into the building. Avoid conditions that could result in fire, electrical shock, unsafe handling, personnel exposure, or the uncontrolled run-off of cleaning materials. IB Roof Systems is not responsible for any harm, injury or losses incurred from any accident related to any activity on top of the roof.