



ESPANOLA REGIONAL RECREATION COMPLEX ARENA BUILDING UPGRADES

175 Avery Drive
Espanola, Ontario
P5E 1C9

PROJECT MANUAL and SPECIFICATIONS

2016

July 5, 2021

OWNER: The Corporation of the Town of Espanola ("Owner")

PROJECT TITLE: Arena Building Upgrades

PROJECT LOCATION: 175 Avery Drive, Espanola, ON, P5E 1C9

PROJECT DESCRIPTION: New mechanical dehumidification system, roof eave heat tracing, low emissivity ceiling and related work to the existing Arena Building located at the Espanola Regional Recreation Complex.

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: May be obtained at the office of the Architect no sooner than **Wednesday, September 22nd, 2021 @ 12:00 p.m.**

QUOTATIONS RECEIVED: On or before **Wednesday, October 6th, 2021 @ 2:00 p.m.** at the office of the Architect.

MANDATORY SITE MEETING: **Wednesday, September 29th, 2021 @ 10:00 a.m.**
175 Avery Drive, Espanola, ON, P5E 1C9

End of Section

OWNER: The Corporation of the Town of Espanola ("Owner")

PROJECT TITLE: Arena Building Upgrades

PROJECT LOCATION: 175 Avery Drive, Espanola, ON, P3E 1C9

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End of Section

OWNER: The Corporation of the Town of Espanola ("Owner")

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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;

(b) CCDC2 2008 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 or Consultants 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, October 6th, 2021, 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. MATERIAL SAFETY DATA SHEETS

- 10.1 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.

11. QUALIFICATIONS

- 11.1 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.
- 11.2 The resumé of the Bidders' proposed superintendent is to be provided to the Owner on request.

12. WORK SEQUENCE

- 12.1 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 **January 31st, 2021**.
- 12.2 The above date is based on contract award no later than **October 19th, 2021**.
- 12.3 If the time limit above specified is not sufficient to permit completion of the work by the Contractor working a normal number of hours each day or week on a single shift basis, it is expected that additional shifts will be required throughout the life of the contract to the extent deemed necessary by the Contractor to insure that the work will be completed within the time limit specified. Any additional costs occasioned by compliance with these provisions will be considered to be included in the prices for the various items of work and no additional compensation will be allowed therefore.

13. COVID PROCEDURES

- 13.1 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.

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: 2016
PROJECT TITLE: Arena Building Upgrades
PROJECT LOCATION: 175 Avery Drive, Espanola, ON, P3E 1C9

Submitted To: The Corporation of the Town of Espanola ("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 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 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 _____, 2021

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: 2016

PROJECT TITLE: Arena Building Upgrades

PROJECT LOCATION: 175 Avery Drive, Espanola, ON, P3E 1C9

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 July 5, 2021

Drawings:	A000	Title Page
	A100	Arena Floor Plan
	A101	Arena Reflected Ceiling Plan
	A102	Arena Roof Plan
	ME100	Mechanical-Electrical Removals Plan
	ME101	New Mechanical-Electrical Plan
	ME200	Mechanical-Electrical Schedules and Specifications

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

PROJECT NUMBER: 2016

PROJECT TITLE: Arena Building Upgrades

PROJECT LOCATION: 175 Avery Drive, Espanola, ON, P3E 1C9

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
Miscellaneous Metals	
Low Emissivity Ceiling	
Mechanical HVAC	
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.

PROJECT NUMBER: 2016
PROJECT TITLE: Arena Building Upgrades
PROJECT LOCATION: 175 Avery Drive, Espanola, ON, P3E 1C9

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

TENDER COST BREAKDOWN (2016)		
CODE	DESCRIPTION	TOTAL
A01	GENERAL CONDITIONS	
A02	DEMOLITION/REMOVALS	
A03	MISCELLANEOUS METALS	
A04	ROUGH CARPENTRY	
A05	FLASHING AND SHEET METAL	
A06	FIRESTOPPING/JOINT SEALANTS	
A09	PAINTING	
A10	LOW EMISSIVITY CEILING	
A11	ROOF SNOW GUARDS	
A12	MECHANICAL HVAC	
A13	ELECTRICAL	
A14	ALLOWANCES	
A15	OTHER	
	TOTAL	

(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.

1. **GENERAL**

- 1.1 The General Conditions of the Stipulated Price Contract Canadian Standard Construction Document - CCDC 2-2008, Articles GC1 through GC12 inclusive, form part of this Contract.
- 1.2 The following Supplementary Conditions modify, change, delete from and/or add to the Articles of Agreement, the Definitions, and the General Conditions of the Stipulated Price Contract, Standard Construction Document CCDC 2-2008.
- 1.3 Where any Article, Definition, General Condition, Paragraph, or Sub-paragraph in the Agreement and/or General Conditions is supplemented by one of the following paragraphs, the provisions of such Article, Paragraph or Sub-paragraph shall remain in effect and the supplemental provisions shall be considered as added thereto.
- 1.4 Where any Article, Definition, General Condition, Paragraph, or Sub-paragraph in the Agreement and/or General Conditions is amended, voided, or superseded by any of the following paragraphs, the provisions of such Article, Definition, General Condition, Paragraph, or Subparagraph not so amended, voided, or superseded shall remain in effect.
- 1.5 The term "provide" as used in the Contract Documents, shall mean the furnishing of all labour, materials, equipment, transportation and all other services required, including all costs in connection therewith, to complete the Work.
- 1.6 Wherein the word "submit", "satisfactory" or similar term is used throughout the Contract Documents, it shall be followed by the words "to the Consultant" unless the context provides otherwise. Wherein the word "approved", "designated", "directed", "inspected", "instructed", "permitted", "required", "ordered", "satisfactory", "selected" or similar term is used in the Contract Documents, it shall be followed by the words "by the Consultant" unless the context provides otherwise.
- 1.7 Wherein the words "by others" are used in the Specifications or on the drawings they will not mean by someone other than the Contractor. The only means by which something shown or specified will be indicated as not being in the Contract is by the use of the initials "NIC" or the words "not in (the) Contract" or "by Owner".
- 1.8 Throughout the Contract Documents, wherein the term "Day" is used, amend to read: "Working Day", as defined in Definitions.
- 1.9 The following Articles, Definitions, General Conditions, Paragraphs, Subparagraphs or Clauses thereof have been modified in these Supplementary Conditions:

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

Delete Article A-6.1 and substitute new article 6.1:

- 6.1 *Notices in Writing* between the parties or between them and the *Consultant* shall be considered to have been received by the addressee on the date of receipt if delivered by hand or by commercial courier or if sent during normal business hours by fax and addressed as set out below. Such *Notices in Writing* will be deemed to be received by the addressee on the next business day if sent by fax after normal business hours or if sent by overnight commercial courier. Such *Notices in Writing* will be deemed to be received by the addressee on the fifth *Working Day* following the date of mailing, if sent by pre-paid registered post, when addressed as set out below. An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

DEFINITIONS

Add the following definition:

- 19a. 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*.

1 GENERAL

- 1.1 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.

GC 1.1 CONTRACT DOCUMENTS

- .1 Add to the end of subparagraph 1.1.2.2:

Except where the *Consultant* shall be indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4, 9.5.3.4 and in 12.1.3.

- .2 Add new subparagraph 1.1.7.5:

1.1.7.5 In case of discrepancies, noted materials and annotations shall take precedence over graphic indications in the *Contract Documents*.

GC 2.2 ROLE OF THE CONSULTANT

- .1 Add at the end of paragraph 2.2.9. "The *Owner* and the *Contractor* shall waive any claims against the *Consultant* arising out of the making of such interpretations and findings made in accordance with paragraphs 2.2.7., 2.2.8. and 2.2.9".
- .2 Delete the comma after the word "*submittals*" and add the words "which are provided" before the words "in accordance" in paragraph 2.2.14.

GC 2.4 DEFECTIVE WORK

- .1 Add new subparagraphs 2.4.1.1 and 2.4.1.2:
 - 2.4.1.1 The *Contractor* shall rectify, in a manner acceptable to the *Owner* and the *Consultant*, all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Consultant*.
 - 2.4.1.2 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*.

GC 3.1 CONTROL OF THE WORK

- .1 Add new paragraph 3.1.3:
 - 3.1.3.1 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 3.4 DOCUMENT REVIEW

- .1 Delete paragraph 3.4.1 in its entirety and substitute new paragraph 3.4.1:

3.4.1 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.14.1 of the *Contract*. Except for its obligation to make such review and report the result, the *Contractor* does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

GC 3.8 LABOUR AND PRODUCTS

- .1 Add new paragraph 3.8.4:

3.8.4 The *Contractor* is responsible for the safe on-site storage of *Products* and their protection (including *Products* supplied by the *Owner* and other contractors to be installed under the *Contract*) in such ways as to avoid dangerous conditions or contamination to the *Products* or other persons or property and in locations at the *Place of the Work* to the satisfaction of the *Owner* and the *Consultant*. The *Owner* shall provide all relevant information on the *Products* to be supplied by the *Owner*.

GC 3.10 SHOP DRAWINGS

- .1 Add the words "AND OTHER SUBMITTALS" to the Title after SHOP DRAWINGS.
- .2 Add "and *Submittals*" after the words "*Shop Drawings*" in paragraphs 3.10.1, 3.10.2, 3.10.4, 3.10.7, 3.10.8, 3.10.8.2, 3.10.9, 3.10.10, 3.10.11, and 3.10.12.
- .3 Delete 3.10.3 in its entirety and substitute new paragraph 3.10.3:

GC.3.10.3 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 any *Submittals*.

- .4 Delete the words "with reasonable promptness so as to cause no delay in the performance of the *Work*" and replace

with “within 10 working days or such longer period as may be reasonably required” in paragraph 3.10.12.

GC 3.14 PERFORMANCE BY CONTRACTOR

.1 Add new General Condition 3.14.1:

3.14.1 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*.

.2 Add new General Condition 3.14.2:

3.14.2 The *Contractor* further represents covenants and warrants to the *Owner* that:

- .1 The personnel it assigns to the *Project* are appropriately experienced;
- .2 It has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation.

GC 4.1 CASH ALLOWANCES

.1 Delete paragraph 4.1.4 in its entirety and substitute new paragraph 4.1.4:

4.1.4 Where costs under a cash allowance exceed the amount of the allowance, unexpended amounts from other cash allowances shall be reallocated at the *Consultant's* direction to cover the shortfall.

.2 Delete paragraph 4.1.5 in its entirety and substitute new paragraph 4.1.5:

4.1.5. The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order*.

- .3 Delete paragraph 4.1.7 in its entirety and substitute new paragraph 4.1.7.

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 3.5, that items called for under cash allowances and 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*.

- .4 Add new paragraph 4.1.8:

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.

GC 6.2 CHANGE ORDER

Add the following new Paragraphs:

- .1 "6.2.3 The value of a change shall be determined in one or more of the following methods to be determined by the Consultant:
- .1 by estimate and acceptance in a lump sum substantiated by an itemized cost breakdown satisfactory to the Consultant with the applicable overhead and profit percentage fees applied;
 - .2 by unit prices set out in the Contract or subsequently agreed upon;
 - .3 by cost and a fixed or percentage fee.
- .2 6.2.4 In the case of changes in the *Work* to be paid for under methods (.1) and (.3) of Paragraph 6.2.3, the Contractor and Subcontractor, respectively, may add to the reasonable net cost of additional work a fee, or mark-up, inclusive of overhead and profit, limited to the following:
- .1 The Subcontractor may add to the total net cost of labour and materials, a fee, or mark-up, equal to fifteen percent (15%) of such cost.
 - .2 The Contractor may add to the net cost of additional work by a Subcontractor, a fee, or mark-up, equal to ten percent (10%) of the total sum quoted by such Subcontractor.

- .3 The Contractor may add to the total net cost of labour and materials of additional work to be carried out by his own forces a fee, or mark-up equal to fifteen percent (15%) of such cost.
- .4 For substitution of building material(s) and/or building component(s) with no additional labour content by the Contractor, a total mark-up of five percent (5%) shall be allowed on such change regardless of the value of the change.
- .5 For substitution of building material(s) and/or building component(s) with no additional labour content by Subcontractor(s), the Subcontractor(s) shall be allowed a total mark-up of five percent (5%) and the Contractor shall be allowed an additional total mark-up of five percent (5%) regardless of the value of the change.
- .6 Such fee or mark-up, by the Contractor and Subcontractor respectively, shall be based on net additional cost for any one change in the Work, such net additional cost being derived by deducting credits for labour and materials involved in deleted work from the cost of labour and materials involved in additional work. When quantities of the same product or material are changed in the same Change in the Work, the change in the Contract Price shall be based on the net difference in quantity between the product or material deleted and the same product or material added. The procedure of crediting deleted material at a certain unit cost and then charging the aggregate quantity of the same material at a higher unit cost will not be accepted.
- .3 6.2.5 In the case of a Change in the Work to be paid for under method (.2) of Paragraph 6.2.3, involving a class of work for which a unit price was required to be quoted in the Tender proposal, the cost to be paid for such class of work, derived by deducting quantity of deleted work involved in such change from the quantity of additional work involved in such change, multiplied by the applicable unit prices quoted.
- .4 6.2.6 'Overhead' shall include any additional charges and/or premiums for Permits, Bonds, Insurance and the like, which may result from Changes in the Work, whether calculated on the basis of quoted Unit Prices, or on the basis of Cost Plus Fee or Mark-up.
- .5 6.2.7 Except where Unit Prices have been quoted, the value of a change in the Work shall be determined by method (.3) of

Paragraph 6.2.3.

- .6 6.2.8 Where the additional cost of a change in the Work has been quoted by the Contractor and accepted by the Owner in the form of a lump sum as evidenced by the issuance of a Change Order, such quoted cost shall be deemed to have included all costs, including any costs for delay of work, which are or may be occasioned by such change. No later claims for additional costs will be considered.
- .7 6.2.9 The Contractor's fee, or mark-up, inclusive of overhead and profit, is understood to include, without limitation, the following:
 - .1 the Contractor's head office and administration expenses, associated travelling / accommodation / meal costs, financing costs including holdback, bonding and insurance costs;
 - .2 all supervision, co-ordination, administration, margin and risk of undertaking within stipulated amount;
 - .3 the salaries of superintendents, project managers, engineers, timekeepers, accountants, clerks, and all other Site supervision staff above foreperson level employed directly on the Work;
 - .4 the Contractor's mark-up and profit;
 - .5 use of temporary offices, sheds and other general temporary Site support facilities and all utilities used therein;
 - .6 miscellaneous additional costs related to:
 - .1 licences, building permit and statutory fees, except when these are special for a particular item of Work;
 - .2 purchase of rental material, plant and equipment;
 - .3 purchase of small tools and supplies;"

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- .1 Add new subparagraph 6.4.5:

6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully investigated the *Place of the Work* and applied to that investigation the degree of care and skill described in paragraph 3.14.1, 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 careful investigation undertaken prior to the submission of the bid.

GC 6.5 DELAYS

- .1 Delete the period at the end of paragraph 6.5.1, and substitute the following words:

“, but excluding any consequential, indirect or special damages.”

- .2 Add new subparagraph 6.5.6.

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone employed or engaged by the *Contractor* directly or indirectly, or by any cause within the *Contractor's* control, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may decide in consultation with the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including all services required by the *Owner* from the *Consultant* as a result of such delay by the *Contractor* and, in particular, the cost of the *Consultant's* services during the period between the date of *Substantial Performance of the Work* stated in Article A-1 herein as the same may be extended through the provisions of these General Conditions and any later, actual date of *Substantial Performance of the Work* achieved by the *Contractor*.

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.

GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

- .1 Add the following new paragraphs 8.2.9, 8.2.10, 8.2.11, 8.2.12., 8.2.13., and 8.2.14.

8.2.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.2.6, the *Owner* and the *Contractor* shall give the *Consultant* a written notice containing:

- a) a copy of the notice of arbitration
- b) a copy of supplementary conditions 8.2.9 to 8.2.14 of this *Contract*, and;
- c) 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

8.2.10 The *Owner* and the *Contractor* agree that the *Consultant* may elect, within ten days of receipt of the notice under paragraph 8.2.9, to become a full party to the arbitration under paragraph 8.2.6 if the *Consultant*:

- a) has a vested or contingent financial interest in the outcome of the arbitration;
- b) gives the notice of election to the *Owner* and the *Contractor* before the arbitrator is appointed;
- c) agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.2.6, and,
- d) agrees to be bound by the arbitral award made in the arbitration.

8.2.11 If an election is made under paragraph 8.2.10, the *Consultant* may participate in the appointment of the arbitrator and, notwithstanding the rules referred to in paragraph 8.2.6, 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.

8.2.12 The arbitrator in the arbitration in which the *Consultant* has elected under paragraph 8.2.10 to become a full party may:

- a) on application of the *Owner* or the *Contractor*, determine whether the *Consultant* has satisfied the requirements of paragraph 8.2.10, and;
- b) make any procedural order considered necessary to facilitate the addition of the *Consultant* as a party to the arbitration.

8.2.13 The provisions of paragraph 8.2.9 shall apply *mutatis mutandis* to written notice to be given by the *Consultant* to any sub-consultant;

8.2.14 In the event of notice of arbitration given by the *Consultant* to a sub-consultant, the sub-consultant is not entitled to any election with respect to the proceeding as outlined in 8.2.10, and is deemed to be bound by the arbitration proceeding.

GC 9.1 PROTECTION OF WORK AND PROPERTY

- .1 Delete subparagraph 9.1.1.1 in its entirety and substitute new subparagraph 9.1.1.1:

9.1.1.1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.14.1;

- .2 Delete paragraph 9.1.2 in its entirety and substitute the following new paragraph 9.1.2:

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 3.14.1.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

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

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 "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.2.7.4.

- .3 Add to paragraph 9.2.8 after the word "responsible", the following new words:

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 “and the *Consultant*” after “*Contractor*” in subparagraph 9.5.3.4.

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 3.14.1, the”.

GC 12.1 INDEMNIFICATION

- .1 Add new clause 12.1.1.3.

12.1.1. 3. The *Contractor* shall indemnify and hold harmless the *Consultant*, its agents and employees from and against 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 attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and caused by negligent acts or omissions of the *Contractor* or anyone for whose acts the *Contractor* may be liable, and made in writing within a period of 6 years from the date of *Substantial Performance of the Work* as set out in the certificate of *Substantial Performance of the Work*, or within such shorter such period as may be prescribed by any limitation statute or the province or territory of the *Place of Work*.

GC 12.3 WARRANTY

- .1 Delete from the first line of paragraph 12.3.2 the word, “The” and substitute the words: “Subject to paragraph 3.14.1, the...”

End of Document

1. **GENERAL**

1.1 **DESCRIPTION**

1.1.1 CCDC2 2008 Stipulated Price Contract Articles GC No.1 to GC 12 inclusive.

1.2 **DRAWING LIST**

1.2.1 A complete list of drawings is included in Appendix A – Bid Form.

1.2.2 Any revised drawings issued prior to closing of tenders shall become part of the List of Drawings.

1.3 **BUILDING CODES, SAFETY CODES, LAWS, REGULATIONS**

1.3.1 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.

1.3.2 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 apply and pay for the Building Permit.

1.4 **SCOPE OF WORK AND LOCATION**

1.4.1 The work of this Contract and Location comprises the work shown on the drawings and as stated in the specifications.

1.4.2 Include all incidental, casual or relatively subordinate work occurring as a necessary but minor result of the major part of the work if not shown on the drawings or specified, but required to complete the contract as intended.

1.5 **INTERPRETATION**

1.5.1 No oral interpretations shall be effective to modify the provisions of the Contract Documents. Every request for an interpretation shall be made at once to the Architect.

1.5.2 The Architect will not be responsible for oral instructions.

1.5.3 Any questions on finish or colours are to be answered only by the Architect. Submit questions in ample time before the requested information is required.

1.5.4 Take instructions only from the Architect or his appointed consultant or inspection company.

1.6 **CHANGE IN THE WORK**

1.6.1 Written orders will only be made on official forms as follows:

Contemplated Change Order - to determine the value of additional work to the contract.

Change Order - where the value of contractual obligation has been determined.

1.7 **OWNERS WORK**

1.7.1 The Contractor shall make himself aware of the extent of work performed by Owner's own forces. Refer to the list below of various items which may affect the work of this Contract.

1.7.1.1 Supply and installation of signage.

1.7.2 Cooperate with Owner to facilitate all aspects of this work, and include in Tender allowance for coordination.

1.7.3 The Owner reserves the right to take over any completed portion of the building contract and to proceed with installation of his furnishings and equipment.

1.8 **TERMS**

1.8.1 The term "Owner" for the purposes of this contract shall be understood to mean:

The Corporation of the Town of Espanola
100 Tudhope Street, Suite 2, Espanola, ON, P5E 1S6

1.8.2 The term "Architect" shall refer to:

Perry + Perry Architects Inc
174 Larch Street, Sudbury, Ontario P3E 1C6

1.8.3 The term "Contractor" and "Subcontractor" shall be as defined in the General Conditions of the Contract Documents.

1.9 **BUILDING CONDITIONS AND WORK SCHEDULE**

1.9.1 **EXISTING BUILDING AND ITS OPERATIONS**

1.9.1.1 Use existing services only by prior arrangements with the Building Owner.

1.9.2 **WORK SEQUENCE**

1.9.2.1 Submit a complete detailed completion schedule, including the estimated time of completion of each separate portion of the work.

1.9.3 **HOARDINGS**

1.9.3.1 Erect temporary exits, hoarding, snow fence or covered walkways to suit general progress of the work and maintain at all times during the construction to the approval of local Building Inspector.

1.9.3.2 The temporary exits, hoarding or covered walkway as required under above, may only be removed at the direction of the Architect, in specific cases.

1.9.4 **PUBLIC ACCESS DAMAGE**

1.9.4.1 Make good all damage done to public sidewalk, street and lanes to the satisfaction of the Local Authorities at no cost to the Owner.

1.10 **OVERLOADING**

1.10.1 Take precautions to prevent the overloading of any part of the existing structure, false work, or scaffolding, during operations, and make good, at own expense, any damage resulting from overloading. Do not cut bore or sleeve load-bearing members, without the written approval through the Architect and Structural Consultant.

1.11 **EXAMINATION OF SITE**

1.11.1 The General Contractor and Subcontractors will be deemed to have examined the drawings and specifications, visited the premises and site so as to compare them with the drawings and specifications and to have satisfied themselves as to the conditions of the premises, the means of access to same, the nature and quantity of works required before delivery of the tenders. Failure on the part of the General Contractor or his Subcontractors to fully acquaint themselves with local conditions will in no sense form the basis for any claims.

1.12 **SETTING OUT OF THE WORK**

1.12.1 On commencement of work, locate all general reference points and take action as is necessary to prevent their destruction; lay out own work, and be responsible for all lines, elevations and measurements of work executed under the contract. Exercise proper precautions to verify figures shown on the drawings, before laying out work, and be responsible for any error resulting from failure to exercise such precaution.

1.12.2 Verify existing conditions on the site and dimensions shown on the drawings and report any errors or inconsistencies to the Architect before commencing work. Note all irregularities affecting the work of any Section of the Specifications.

1.13 **COOPERATION OF PARTIES ON SITE**

1.13.1 The Contractor shall make himself aware of the requirements of every Section of the Specifications and be responsible for assisting and making proper preparations for the work of all trades.

1.13.2 The responsibility as to which subtrade provides required articles or materials to be built in or supplied rests entirely with the Contractor. Differences in interpretation of the Specifications or drawings shall not be grounds for extra payments.

1.13.3 Cooperate and coordinate the proper performance of work, and ensure continuity of the work to the satisfaction of the Contractor and requirements of the Contract.

1.13.4 Cooperate and coordinate the work with the staff.

1.14 **TAXES**

1.14.1 The Contractor to pay all Federal, Provincial and Municipal sales taxes and levies including all custom duties, excise taxes with respect to the contract as specified in the General Conditions of the Contract.

1.15 **MATERIAL, STORAGE AND HANDLING**

1.15.1 Handle and store materials in accordance with manufacturers' and suppliers' recommendations to prevent damage to materials during storage and handling.

1.15.2 Store packaged materials undamaged in their original wrappings or containers with manufacturer's labels and seals intact.

1.15.3 Crating and packing may only be removed to the extent necessary to permit inspection of the contents and replaced after inspection.

1.16 **SHOP DRAWING**

1.16.1 Submit shop drawings in accordance with GC3.10 of General Conditions. The cost of all shop drawings to be paid for under the respective Section.

1.17 **SAMPLES**

1.17.1 Submit in duplicate samples when requested by the Architect showing materials, colour and finish. The materials used in the construction shall correspond to the approved samples. Do not order materials until the samples are approved.

1.17.2 Identify each type of material, manufacturer and sub-contractor.

1.18 **TEMPORARY FACILITIES**

1.18.1 In existing rental premises, light, water, heat, power and other services may be used during construction at cost to the General Contractor.

1.18.2 During any interruptions of services provide adequate temporary light, water, heat and power.

1.18.3 Provide washroom facilities to meet the approval of local Authorities.

1.19 **PROGRESS PHOTOGRAPHS**

1.19.1 Provide monthly dated high resolution digital colour photographs, showing all work in progress and e-mail to Consultant.

2. **PRODUCTS**

2.1 **MATERIAL QUALITY**

2.1.1 Use manufactured products in accordance with specified manufacturer's instructions.

2.1.2 Submit tenders based solely on the various trade names as may be mentioned in that specific section of the Specifications and/or drawings. Trade names are used for the purpose of determining the quality, type or capacity of equipment and/or materials, and shall not be construed as excluding the products of the other manufacturers, except as noted. Comply with specified standards where trade names are not mentioned. The latest edition of specified standards shall apply, whether indicated or not.

2.2 **MATERIAL AVAILABILITY**

2.2.1 Should materials specified not be available for any reason, make recommendations covering the use of alternate materials and/or alternate construction methods to those shown in these documents which could cause earlier completion of the building or result in a cost saving to the Owner, while providing the intended quality of work.

3. **EXECUTION**

3.1 **QUALIFICATION OF WORKMEN AND INSTALLERS**

3.1.1 Provide at least one person with each trade, to be present at all times during execution of the work of that trade, and thoroughly trained and experienced in performing the work, and to direct all work performed under that Section. Continuously inspect all work to ensure it is properly executed.

3.1.2 For operating equipment, use only through trained and experienced operators.

3.1.3 For installation of various items of work, or for finishing work of any trade, use only personnel thoroughly trained and experienced operators.

3.1.4 In the acceptance or rejection of finished work, no allowance will be made for lack of skill on the part of people employed.

3.2 **INSPECTION AND TESTING**

3.2.1 Independent Inspection and Testing Companies where called for in the Specification shall be appointed by the Architect and will be under the technical direction of the Architect, with all costs paid from the cash allowances specified.

3.2.2 The Services performed by the Inspection and Testing Companies are a function to assist in the Architect's review of the work and are not intended to replace the Contractor's responsibility for conforming to the requirements of the Contract Documents. The Contractor shall be responsible for continuous checking and inspection to ensure the Contract performance is in accordance with the specified requirements as the work proceeds.

3.3 **CLEAN-UP**

3.3.1 In addition to the cleaning outlined in other Divisions, undertake the following special cleaning at completion of the work.

3.3.1.1 Clean glass. (Removal of dirt, stains and paint splashing are the responsibility of the trade concerned and are to have been done prior to the trade leaving the job.)

3.3.1.2 Remove all labels from fixtures, glazing, etc., excepting Underwriters and Canadian Standard labels.

3.3.1.3 Remove dust, dirt, stains and fingerprints from newly painted, decorated work, and from all floor and ceiling finishes. Touch up painted surfaces, ceiling tile, etc., where required.

3.3.1.4 Promptly as the work proceeds and upon completion, clean up and remove from premises, rubbish and surplus waste materials. Broom clean exterior walks, steps, ramps, pavements, etc. Remove all surplus materials and tools daily.

3.3.1.5 Remove all temporary facilities previously specified and make good any damaged finishes.

3.3.1.6 Wax or seal floors, as called for in the specifications.

3.4 **TOUCH-UP/REPAIRS/START-UP**

3.4.1 Conduct an inspection of the work and instruct all trades, and own forces to repair, touch-up, adjust, etc., all defective work or damages and leave ready for final review by Architect.

3.4.2 All items of equipment, mechanical or electrical systems, other operating items, parts or systems shall be pre-tested, tried, started up, operated, etc., for a period

of time to reveal any faults which shall be promptly corrected and left in a fully operational order or condition prior to final acceptance.

3.4.3 Notify the Architect in writing of any mechanical, electrical or other operating items to be adjusted, balanced or corrected at a later date after completion of the project.

3.5 **TAKE-OVER PROCEDURE**

3.5.1 Prior to inspection, verify the following work is performed.

3.5.1.1 All glass cleaned, and all painted and finished work shall have all marks removed, as Article 3.3.

3.5.1.2 Site - cleaned and free of all construction debris.

3.5.1.3 Work under Electrical Divisions - in full operating condition, when specified in this Contract.

3.6 **RECORD DRAWINGS**

3.6.1 During the progress of the work, together with the Mechanical and Electrical trades, keep on the site at all times, a complete and separate set of black line prints and note thereon clearly, neatly, accurately and promptly, all Architectural, Mechanical and Electrical changes, revisions and additions to the work and deviations from the Contract Documents. Accurate locations, depth, size and type of outside underground utilities are to be included in these record drawings. Drawings are to be presented at each job meeting.

3.7 **PERFORMANCE ASSURANCE**

3.7.1 Guarantees, Warranties and Bonds shall commence from the date of substantial completion of the work.

3.7.1.1 The Contractor shall assemble and prepare two 3-ring binders containing all guarantees called for in the Specifications, including an air balance report enclosed in plastic envelopes, and all maintenance requirements.

3.7.1.2 All guarantees shall be in the name of the Owner and be delivered to the Architect prior to the final inspection of the building.

3.7.1.3 Guarantees, warranties and bonds shall show the following: name and address of project, guaranty commencement date (date of substantial completion), duration of guarantee, clear indication of what is guaranteed and remedial action which will be performed, signature and seal of Contract.

End of Section

1. SUBMISSION OF QUOTATION

1.1 If the Architect determines that the cost of the work will be affected due to a contemplated change, the Contractor shall submit a quotation to the Architect 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 Architect 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 Architect.

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 Architect 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 Architect.
- 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 Architect.
- 2.13 Upon acceptance of the Contractor's quotation by the Architect, the Architect 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 Architect.

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 A mark-up, equal o 15% 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, architecting, as-built drawings, commissioning and site office.

6. ALLOWANCE ON WORK BY SUBCONTRACTORS

- 6.1 A mark-up, equal to 10% of 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.

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 01010 – General Requirements.
- .2 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 price of \$50,000.00 for use upon Owner's written instruction via Change Order.
- .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.
- .3 Funds will be drawn from the Contingency Allowance only by Change Order.

End of Section

1. **GENERAL**

1.1.1. **BEFORE COMMENCEMENT OF WORK**

- 1.1.1.1 Obtain the documents listed under this heading and supply to Consultant before issue of the first Certificate.
- 1.1.1.2 Insurance Policies required under General Conditions of Contract Insurance.
- 1.1.1.3 Certificates of good standing from the Workers' Compensation Board for the Contractor and all Subcontractors
- 1.1.1.4 Shop Drawing Schedule.
- 1.1.1.5 Permits required for work of Division 16-Electrical Trades.
- 1.1.1.6 Permits for temporary structures, hoists, etc.
- 1.1.1.7 Estimate of monthly progress claims (cash flow schedule)
- 1.1.1.8 Construction Schedule.

1.2 **DOCUMENTS AND ACTION REQUIRED DURING PROGRESS OF CONTRACT**

- 1.2.1. Perform the action and/or obtain the documents listed under this heading and supply to the Consultant, within the time stipulated in the Specification or, if not stipulated, as soon as possible following Consultant's request.
- 1.2.2. Any permits required from authorities having jurisdiction enabling the Owner to occupy the work (or part thereof) prior to substantial performance of the Contract.
- 1.2.4. Record Drawings:
 - 1.2.4.1. During the progress of the work, together with the Mechanical and Electrical Trades, keep on the site at all times, a complete and separate set of black line prints and note thereon clearly, neatly, accurately and promptly, all Architectural, Mechanical and Electrical changes, revisions and additions to the work and deviations from the Contract Documents. Accurate locations, depth, size and type of outside underground utilities are to be included in these record drawings. Drawings are to be presented at each job meeting.
 - 1.2.4.2. Record following information:
 - 1.2.4.2.1. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.
 - 1.2.4.2.2. Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

- 1.2.4.2.3. Field changes of dimension and detail.
- 1.2.4.3.4. Changes made by Change Order or Supplementary Instructions.
- 1.2.4.4. Final completion of Project Record Drawings shall be a condition precedent to the issuance of Consultant's final payment certificate.
- 1.2.4.6. Progress Photographs:

Provide weekly dated high resolution digital colour photographs, showing all work in progress and e-mail to Project Manager and Architect.
- 1.3 **DOCUMENTS AND ACTION REQUIRED AT SUBSTANTIAL PERFORMANCE**
 - 1.3.1 Perform the action and/or obtain the documents listed under this heading during the 45 day waiting period following the issue of the Certificate of Substantial Performance. Delivery of these documents is a condition precedent to the issue of a Certificate for Payment of the Holdback Monies.
 - 1.3.2. Certificates of Good Standing from the Worker's Compensation Board for the Contractor and all Subcontractors.
 - 1.3.3. Record Drawings as specified in this Section.
 - 1.3.4. Operating and Maintenance Instructions and Brochures.
 - 1.3.5. Inspection Certificate required by provincial, municipal and other authorities having jurisdiction.
 - 1.3.10. Certificate of inspection from Consultant, Mechanical and Electrical Engineers.
 - 1.3.11. Final adjustments of allowances, specified in Section 01210.
 - 1.3.12. Extended warranties - refer to Section 01740.
 - 1.3.13. Provide Owner with extra materials, for future maintenance use, as specified in Trade Sections of the Specification.
- 2. **PRODUCTS** (Not Applicable)
- 3. **EXECUTION** (Not Applicable)

End of Section

1. **GENERAL**

1.1 **SCHEDULE**

1.1.1 As soon as possible after award of Contract but prior to submission of the first application for payment, prepare and submit to Consultant for comment, a schedule fixing the dates for the submission and return of Shop Drawings.

1.1.2 Allow a minimum of 15 working days for each Consultant to review each submission, exclusive of Consultant and Contractor inter-office(s) transmission period and mail periods.

1.2 **GENERAL**

1.2.1 Submit to Consultant, for review, Shop Drawings, Product Data and Samples specified.

1.2.2 Until submittal is reviewed, Work involving relevant product may not proceed.

1.2.3 Do not use for Construction, Shop or setting out Drawings or diagrams which do not bear Consultant's stamp and signature.

1.2.4 Submission and subsequent review of Shop Drawings constitute a service and does not entitle the supplier or subcontractor to the right to remuneration until the materials are supplied and installed on the Site in accordance with the Contract.

1.3 **SHOP DRAWINGS**

1.3.1 Drawings shall be copies of original drawings prepared by Contractor, subcontractor, supplier or distributor, for the work of the contract which illustrate appropriate portions of the Work; showing fabrication layout, setting or erection details as specified in appropriate Sections. Provide drawings on same size sheets as Contract Drawings generally.

1.3.2 Submit Shop Drawings with transmittal forms listing the name of the manufacturer, the job, the drawing number, the number of copies and reference in the Specification to which the Shop Drawings refer.

1.3.3 Submit Shop Drawings to authorities having jurisdiction and obtain approval.

1.3.4 On Shop Drawings for fire rated assemblies show required fire rating and U LC design numbers.

1.3.5 Submit Shop Drawings to the Consultant in electronic format as per Consultant's requirement and a minimum of two prints. Provide two additional prints for structural, mechanical and electrical items. After review, the Consultant will retain one white print and return the other white print to the Contractor. On completion of the revisions, a revised set of Shop Drawings in electronic format plus one complete set of new white prints of Shop Drawings used for construction shall be supplied to the Consultant, unless otherwise specified.

Changes and corrections shall be clearly noted on the electronic files and new prints of the reviewed files shall be made for pricing and issue. Prints which state reviewed for correction or revise and resubmit, shall not be delivered to site but must be resubmitted to Consultant.

1.4 **PRODUCT DATA**

1.4.1 Certain Specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of Shop Drawings.

1.4.2 The above will be accepted if they conform to the following:

1.4.2.1 Delete information which is not applicable to project.

1.4.2.2 Supplement standard information to provide additional information applicable to project.

1.4.2.3 Show dimensions and clearances required.

1.4.2.4 Show performance characteristics and capabilities.

1.4.2.5 Show wiring diagram and controls.

1.4.2.6 Add to standard sheet the Project identification data.

1.5 **SAMPLES**

1.5.1 Submit samples in duplicate as called for by the Consultant.

1.5.2 Where colour is criteria, submit full range of colours.

1.5.3 Construct field samples and mock-ups at locations acceptable to Consultant.

1.5.4 Construct each sample or mock-up complete, including Work of all trades required to finish work. Ensure all materials used in samples or mock-up conform to materials specified. Use of materials not specified does not mean acceptance of those materials for the work as a whole.

1.5.5 Reviewed samples or mock-ups will become minimum standards of workmanship and material against which installed work will be checked on project.

1.6 **CONTRACTOR'S RESPONSIBILITY**

1.6.1 Check and certify as correct Shop Drawings, Product Data and Samples prior to submission.

1.6.2 Verify Field measurements, field construction criteria, and Catalogue numbers and similar data.

- 1.6.3 Coordinate each submittal with requirements of Work and Contract Documents.
- 1.6.4 Notify Consultant, in writing at time of submission, of any deviation in submittal from requirements of Contract Documents.
- 1.6.5 Stamp, initial or sign each Drawing, certifying approval of submission, verification of field dimensions and measurement and compliance with Contract Documents. Failure to provide the Certification will be just cause for Consultant to reject drawings and return unreviewed and as if not reviewed.
- 1.6.6 After Consultant's review, distribute copies as follows:
Job Site file (2 copies).
Record documents file.
Other prime contractors.
Subcontractors.
Supplier.
Fabricator.
Authorities having jurisdiction, where required by codes and/or by-laws, i.e. structural steel and sprinklers.
Owner and Data Book where applicable.
- 1.6.7 Distribute samples as directed by Consultant.
- 1.6.8 Ensure that all samples are approved by authorities having jurisdiction, supplier for correct application in Project, and other parties such as Owner in time to permit approval prior to ordering of quantity delivery to Site.
- 1.6.9 The Contractor shall advise all Trades, Subcontractors and suppliers of the limits of the Consultant's responsibility with respect to Shop Drawings and other submittals as detailed under paragraph .7 below.

1.7 **CONSULTANT'S RESPONSIBILITIES**

- 1.7.1 Within 5 working days of the receipt of samples and shop drawings (10 days for structural, mechanical, electrical items), the Consultant shall return to the Contractor indicating that the items have been Reviewed (No resubmittal required); Reviewed as indicated (no resubmittal required); Resubmit (resubmittal required).
- 1.7.2 Review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approved the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor, and such review shall no relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the processes or techniques of construction and installation and for coordination of the work of all subtrades.

2. **PRODUCTS** (Not Applicable)

3. **EXECUTION** (Not Applicable)

End of Section

Part 1 General

1.1 SECTION INCLUDES

- .1 Safety requirements and adherence.

1.2 RELATED SECTIONS

- .1 Section 01310 - Project Managing and Coordination.
- .2 Section 01330 - 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 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.

1.5 RESPONSIBILITY

- .1 The APrime Contractor@ according the 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.

1.6 SUBMITTALS

- .1 Make submittals in accordance with Section 01330.
- .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.

1.7 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 01410 - Regulatory Requirements and this section.

1.8 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.

1.9 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.

1.10 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.

1.11 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Building Owner, Tenants and Tenants new furniture supplier and voice/data/security contractor.

1.12 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.

1.13 WORK STOPPAGE

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

1.14 FIRE PROTECTION

- .1 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

1. **GENERAL**

1.1 **MAINTENANCE MANUAL**

1.1.1 Prior to substantial performance, submit to Consultant two copies of Operations Data and Maintenance Manual made up as follows:

1.1.1.1 Bind data in vinyl hard covered, three-ring binder for 8 1/2" x 11" size paper.

1.1.1.2 Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.

1.1.1.3 Organize contents into applicable sections of work to parallel project specification breakdown. Mark each section by labeled tabs protected with celluloid covers fastened to hard paper dividing sheets.

1.1.2 Include following information plus data specified.

1.1.2.1 Maintenance instruction for finished surfaces and materials.

1.1.2.2 Copy of hardware and paint schedules.

1.1.2.3 Description, operation and maintenance instructions for equipment and system, including complete list of equipment and parts list. Indicate name plate information such as make, size, capacity, serial number.

1.1.2.4 Names, addresses and phone numbers of Subcontractors and suppliers.

1.1.2.5 Guarantees, warranties and bonds showing:

1.1.2.5.1 Name and address of project.

1.1.2.5.2 Guarantee commencement date (date of Certificate of Substantial Completion).

1.1.2.5.3 Duration of warranty.

1.1.2.5.4 Clear indication of what is being guaranteed and what remedial action will be taken and source of supply.

1.1.2.5.5 Signature and seal of Contractor.

1.1.2.6 Additional material used in project listed under various sections showing name of manufacturer and source of supply.

1.1.2.7 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.

1.2 **MAINTENANCE MATERIALS**

1.2.1 Where supply of maintenance materials is specified, deliver to Consultant as follows:

1.2.1.1 Materials in unbroken cartons, or if not supplied in cartons, they shall be strongly packaged.

1.2.1.2 Clearly marked as to content.

1.2.1.3 If applicable give colour, room number of area where material is to be used.

1.3 **AS-BUILT DRAWINGS**

1.3.1 Provide as-built record drawings as specified in Section 01330.

2. **PRODUCTS** (Not Applicable)

3. **EXECUTION** (Not Applicable)

End of Section

1. **GENERAL**

1.1 **GENERAL**

1.1.1 Standard twelve-month (one year) warranty shall commence at date of Substantial Performance of the Work. Ensure that all warranties comply with this stipulation prior to submission of same.

1.1.2 The Owner shall give prompt notice in writing to the Consultant of any defects noted during the warranty period(s).

1.1.3 During month prior to end of standard one year warranty period, the Owner's representative, Consultant and Contractor will conduct an inspection of the project and Contractor shall promptly remedy any defects due to faulty materials or workmanship.

1.1.4 Use of permanent heating system for temporary heat shall not affect requirement that all warranties start at date of issue of Certificate of Substantial Completion.

1.1.5 At the expiry of the standard twelve-month warranty period, Contractor shall formally assign to the Owner all extended warranties given by Subcontractors for their work on the project and such Subcontractors shall be formally advised of assignment.

1.2 **EXTENDED WARRANTIES**

1.2.1 Provide extended warranties specified in trade sections of the Specification. Extended warranties shall commence immediately after the expiration of the standard twelve-month warranty. Extended warranties must be co-signed by Manufacturer or Supplier.

1.2.2 Extended warranties are to be submitted through the General Contractor.

1.2.3 If validity of extended warranties is related to proper maintenance and servicing of equipment, similar procedures, full details must be provided in the Manufacturer's Data Book.

2. **PRODUCTS** (Not Applicable)

3. **EXECUTION** (Not Applicable)

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

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 DESCRIPTION

- .1 The work described in this section includes but is not limited to the supply and installation of miscellaneous metals, including fabrication, assembling, and erection as follows:
 - .1 Steel angle lintels.
 - .2 Handrails and guards.
 - .3 Other items identified on the drawings.
- .2 Unless otherwise specified, extent of work shall also include all items listed in Article 2.3 of the Canadian Institute of Steel Construction Code of Standard Practice for Structural Steel for Buildings, latest revision.

1.3 QUALITY ASSURANCE

- .1 Manufacture & Fabrication
 - .1 Companies to be certified under Division 1 or 2.1 of CSA-W47.1 for fusion welding, and CSA-W55.3 for resistance welding. Provide certification that all welded joints are certified by Canadian Welding Bureau.
- .2 Installation
 - .1 Work shall be performed in strict accordance with reviewed shop drawings.

1.4 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01010.
 - .2 Each shop drawing submitted shall bear the stamp and signature of a qualified Professional Engineer registered in the Place of the Work.
 - .3 Submit all necessary shop drawings, bearing the professional seal and signature of the Subcontractor' Engineer, including design calculations for review by the Consultant. Shop drawings to include all necessary shop details and erection diagrams with;
 - .1 member sizes, locations, thickness (exclusive of coatings), metallic coatings and mechanical properties,
 - .2 connection details for attaching framing to itself and to the structure,
 - .3 dimensions, requirements of related work, and critical installation procedures,
 - .4 temporary bracing required for erection purposes,

- .5 design loads, and
- .6 welds indicated by welding symbols as defined in CSA-W59.

.4 Submit copies of engineering calculations and/or certified data verifying the capacity of members, connectors, connections, and the ability of assemblies to meet the design requirements, signed and sealed by the Subcontractor's Engineer.

.5 Do not fabricate until submittals are reviewed and approved by Consultant.

1.5 HANDLING AND STORAGE

- .1 Store and handle to prevent damage, warping, chipping and scraping of the paint coat.

2 PRODUCTS

2.1 MATERIALS

- .1 Steel Sections And Plates: to CAN/CSA-G40.21, grade 300W.
- .2 Steel Pipe: to ASTM-A53/A53M, standard weight, yield strength 35 KSI (240 MPa), black or galvanized finish.
- .3 Stainless Steel Sections And Plates: commercial grade, Type [304], to ASTM-A276, AISI No. 4 finish.
- .4 Stainless Steel Tubing: commercial grade, Type [302] welded, to ASTM-A269, AISI No. 4 finish.
- .5 Welding Materials: to CSA-W59.
- .6 Bolts And Nuts: to ASTM-A325 and ASTM-A563.
- .7 Galvanizing: hot dipped galvanizing with minimum zinc coating in accordance with Table 1 of CAN/CSA-G164.
- .8 Shop Primer: oil-alkyd type, to CAN/CGSB-1.40.
- .9 Galvanized Primer: zinc-rich, ready mix to CAN/CGSB-1.181.
- .10 Grout: to ASTM-1107, non-shrink, non-metallic, flowable, minimum compressive strength of 4300psi (30Mpa) after 24 hours, pull-out strength 1150psi (7.9 Mpa);
 - .1 M-Bed® Superflow by Sika Canada Inc., or
 - .2 Sealtight® CG-86™ by W.R. Meadows of Canada.

2.2 FABRICATION

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

- .2 Use self-tapping shake-proof oval headed screws on items requiring assembly by screws. Use screws for interior metal work. Use welded connections for exterior metal work unless otherwise detailed or approved by Consultant.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 SHOP PAINTING

- .1 Apply one shop coat of alkyd steel primer to steel items, with exception of galvanized or concrete-encased steel.
- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 45°F (7°C).
- .3 Clean surfaces to be field welded; do not paint.

3 EXECUTION

3.1 EXAMINATION

- .1 Before commencing work, make a thorough examination of other work upon which the miscellaneous metal work of this contract is dependent.

3.2 ERECTION

- .1 Do welding work in accordance with CSA-W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building-in by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with high tensile bolts, or weld.
- .7 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection, with primer.
- .8 Touch-up galvanized surfaces burned by field welding with zinc rich primer.
- .9 Fit and assemble work in the shop, where possible.

- .10 Provide separator membrane/mastic between steel and substrates of concrete, masonry, or dissimilar metals.
- .11 Hand over items for casting into concrete or building into masonry to appropriate trades together with setting templates.
- .12 Hot-dip galvanize all suitable metals, that would be otherwise susceptible to corrosion, to be installed exterior to the building.

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 Provision of all labour, materials, equipment and incidental services necessary to provide rough carpentry work, including but not limited to, the following:
 - .1 Miscellaneous furring and blocking,
 - .2 Wood nailers, curbs and sheathing for roofing,
 - .3 Electrical mounting boards, and
 - .4 Rough blocking in walls for support of wall-mounted items.

1.3 QUALITY ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.

2 PRODUCTS

2.1 LUMBER MATERIAL

- .1 Lumber: SPF softwood, NLGA No. 2 Grade or better, S4S, kiln-dried with moisture content 19% or less in accordance with CAN/CSA-O141.
- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Glued end-jointed (finger-jointed) lumber is not acceptable. Products certified under NLGA Special Products Standard 1-81 are acceptable except for material for "A" appearance framing to be left unfinished or to be finished with transparent or translucent type coating.
- .4 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing, and sleepers:
 - .1 S2S is acceptable.
 - .2 Board sizes: "Standard" or better grade.
 - .3 Dimension sizes: "Standard" light framing or better grade.
- .5 Pressure Preservative Treated Lumber: SPF softwood, NLGA No. 2 Grade or better, S4S, kiln-dried with moisture content 19% or less in accordance with CAN/CSA-O141; pressure preservative treated with Copper Azole (CBA-A or CA-B), or Alkaline Copper Quaternary (ACQ) to CSA-O80 Series.

2.2 PANEL MATERIALS

- .1 Douglas Fir Plywood (DFP): to CSA-O121, standard construction, thickness as indicated.
- .2 Canadian Softwood Plywood (CSP): to CSA-O151, standard construction, thickness as indicated.
- .3 Pressure Preservative Treated Plywood: Canadian softwood plywood (CSP) to CSA-O151, standard construction; pressure preservative treated with Copper Azole (CBA-A or CA-B), or Alkaline Copper Quaternary (ACQ) to CSA-O80.9 and kiln-dried to a moisture content of 15% or less. Thickness as indicated.
- .4 Fire Retardant Treated Plywood: Douglas Fir Plywood (DFP) to CSA-O121, standard construction; fire retardant treated to CSA-O80.27, kiln-dried to a moisture content of 15% or less, Flame Spread Rating of less than 25 to CAN/ULC-S102. Product must be UL or ULC labeled. Thickness as indicated.

2.3 ACCESSORIES

- .1 Polyethylene Film: to CAN/CGSB-51.34, 6mil (0.15mm) thick.
- .2 Sealants: in accordance with Section 07900.
- .3 General Purpose Adhesive: to CSA-O112 Series.
- .4 Surface-applied wood preservative: to CAN/CSA-O80 Series; Copper Azole (CBA-A or CA-B) or Alkaline Copper Quaternary (ACQ).

2.4 FASTENERS

- .1 Nails, Spikes And Staples: to CSA-B111.
- .2 Proprietary Fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.
- .3 Nailing Discs: flat caps, minimum 1" (25mm) diameter, minimum 0.015" (0.4mm) thick, sheet metal or plastic, formed to prevent dishing. Bell or cup shapes not acceptable.
- .4 Fastener Finishes
 - .1 Hot-dip galvanized connectors and fasteners to CAN/CSA-G164 minimum 2.00oz/ft² (610g/m²) coating for:
 - .1 Exterior work (outside of building vapour barrier)
 - .2 Interior highly humid areas
 - .2 Stainless Steel: use Type 304 stainless steel fasteners for:
 - .1 Pressure-preservative treated wood, and
 - .2 Fire-retardant treated wood.

3 EXECUTION

3.1 PREPARATION

- .1 Treat cut surfaces of pressure preservative treated material exposed by cutting, trimming, or boring with wood preservative 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 one minute soak on plywood.

3.2 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- .4 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding, electrical equipment mounting boards, and other work as required.
- .5 Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing.
- .6 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .7 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .8 Install wood nailers, curbs, and other wood roof supports as required and secure using galvanized steel fasteners. Install sleepers and curbs with top set level as indicated.
- .9 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .10 Countersink bolts where necessary to provide clearance for other work.
- .11 Install wood blocking full length of all windows for blind support, above the ceiling.
- .12 Install wood blocking for electric blind as indicated
- .13 Install solid wood blocking in drywall partitions for securing of lavatory carriers (by others,) grab bars, overhead bins and washroom accessories.
- .14 Install bi-folding and/or sliding doors on tracks.
- .15 Install wood strapping over all exterior walls which are to be insulated and finished with drywall or both.

- .16 Install backboard for electrical, telephone and alarm equipment. Finish paint as per Section 09900.

2.3 SCHEDULES

- .9 Electrical Equipment Mounting Boards
 - .1 Fire Retardant Treated, S1S, square edges, minimum 3/4" (20mm) thick.

End of Section

- 1 General
- 1.1 **SCOPE**
 - .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 The contractor shall furnish and install a complete overhead suspended low emissivity ceiling curtain system with the appropriate coverage as called for in the drawings and specifications.
- 1.2 **SUBMITTALS**
 - .1 Shop Drawings and Samples
 - .1 Submit in accordance with Section 01301.
 - .2 The manufacturer shall prepare submittals of materials as well as construction detail for installation. Manufacturer will provide submittals to owner and/or his representative for any changes in print dimensions for approval before fabrication of materials.
- 1.3 **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.
- 1.4 **WARRANTY**
 - .1 Warrant work of this Section for entire ceiling system shall be warranted against defects in material and workmanship for a period of three (3) years from the date of installation.
- 2 Products
- 2.1 **MATERIALS**
 - .1 The system specified is based solely upon the characteristics and standards listed herein. The listed criteria have been established as the minimum acceptable values for any low emissivity ceiling system to be offered on this project. As all aspects and equipment within the ice rink have been designed to utilize the low emissivity ceiling principle, products not meeting the minimum requirements listed will not be accepted as they could adversely affect the performance of the rink.
 - .2 Only those materials or exceeding the following ASTM values and surface burning characteristics shall be acceptable.
- 2.2 **LOW EMISSIVITY MATERIAL**

- .1 Low Emissivity material shall be equal to EnerShield™-AD by Custom Ice Inc. It shall have an emissivity of 0.03 and a bursting strength of 130 beach units. Low emissivity ceiling material shall be composed of 0.0003” polished aluminum foil laminated to a 0.0005” polyester backing with flame resistant adhesive and a 4”x4” fiberglass reinforcing scrim. It shall have the physical properties as listed below and in compliance with ASTM C1136, Type II:

FACING COMPOSITION	DESCRIPTION	VALUES (ENGLISH)	VALUES (METRIC)
Foil	Aluminum	0.0003 INCH	7.6 MICRON
Film	Polyester	0.0005 inch	12.7 micron
Adhesive	Flame Resistant		
Reinforcing	Bi-directional	4/inch (MD)	16/100mm (MD)
	Fiberglass	4/inch (XD)	16/100mm (XD)
Foil	Aluminum	0.0003inch	7.6 micron

PHYSICAL PROPERTIES	TEST METHOD	VALUES (ENGLISH)	VALUES (METRIC)
Basis Weight	Scale	18 lbs./1000 ft ²	88 gm/m ²
Permeance (WVTR)	ASTM E96 Procedure A	0.02 perm (grains/hrft ² in HG)	1.15 ng/N s
Bursting Strength	ASTM D774	85 psi	6.0 kg/cm ²
Tensile Strength	ASTM C1136	55 lbs./inch width (MD) 55 lbs./inch width (XD)	9.6 kn/m (MD) 9.6 kn/m (XD)
Caliper/Thickness	Micrometer	0.009 inch	229 micron
Accelerated Aging	30 Days @ 95% RH, 120°F (49°C)	No Corrosion	No Corrosion
Low temperature Resistance	ASTM D1790 -40°F (-40°C)	No Delamination Remains Flexible	No Delamination Remains Flexible
High Temperature Resistance	4 hours@ 240°F (116°C)	Remains Flexible No Delamination	Remains Flexible No Delamination
Water Immersion	24 hours@73°F (23° C)	No Delamination	No Delamination
Mold Resistance	ASTM C665 / C1338	No Growth	No Growth
Dimensional Stability	ASTM D1204	0.5%	0.5%
Emissivity (Foil)	ASTM E408	0.03	0.03
Light Reflectance (Film)	ASTM C523	85%	85%

FIRE TESTING	
	UL-723/ASTM E84
Flame Spread	15
Smoke Developed	10

Physical Properties based upon statistical averages, Weight Thickness+/- 10%

2.3 SUSPENSION SYSTEM

- .1 Individual ceiling sections shall supported by a suspension system consisting of PVC coated aircraft cables running the length of the ice rink at approximately 6’ centers. Cables shall be galvanized 3/32” in diameter – PVC coated to a diameter of 3/16”. Cables shall have a minimum breaking strength of 920 lbs.

tension. Cables shall be secured at each end to structural building members and vertically with intermediate supports at a maximum spacing of 30' c/c.

- .2 All cables shall be connected using a minimum of one 6" hook and eye turnbuckle. Each connection shall be made with a minimum of two micro press aluminum crimping sleeves. Side cables shall be tensioned with a minimum of two (2) – 6" turnbuckles. All cable connections, supports and terminations shall be as specified in the project drawings.

2.4 **CLAMPING SYSTEM**

- .1 Each individual low emissivity ceiling section shall be terminated at each side by clamping to a 3/16" OD aircraft side cable using an extruded snap clip. Side termination cables shall be 3/16", 7x19 strand plain galvanized steel aircraft cable. Clamps shall be designed to tightly hold low emissivity material in place at adequate tension to prevent sags or gaps in low emissivity ceiling material. Clamps shall be removable to permit roof & beam inspections or other low emissivity ceiling adjustments. Permanent or non-removable fastening systems will not be accepted.

2.5 **PROTECTIVE NETTING**

- .1 Protective nylon netting should shall be horizontally installed to cover the low emissivity ceiling. Netting shall be equal to EverSafe™ by Custom Ice Inc. composed of 1.5" x 1.5" Dupont white mesh. This netting should be installed to cover a minimum of 50 feet at each end of the ice rink to protect the ceiling from wrinkling or damage caused by puck impact. The netting should be located and tensioned to create a space of at least 4" between the netting and the low emissivity ceiling.

3 Execution

3.1 **INSTALLATION**

- .1 Install work to details shown on Drawings.
- .2 Low emissivity ceiling shall be installed from side wall to side wall and end wall to end wall in the rink.
- .3 Low emissivity ceiling panels shall be suspended side by side above the cables with a minimum 6" overlap between panels. Panels shall be tensioned above cables to create a smooth finished surface and prevent any unevenness or gaps in the overlapping edges.
- .4 Small cuts or slits may be made in each panel to accommodate obstructions such as lights, fans, heaters, knee braces etc. All edge cuts shall be supported by the adjacent panel and shall be reinforced with EnerShield edge tape suitable for low emissivity ceiling applications.

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 (1/2") 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 (1/2") 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

1 GENERAL

1.1 Conform to Sections of Division 1 as applicable.

1.2 RELATED SECTIONS

1.2.1 Cutting and patching: Section 01010 General Instructions.

1.2.2 Demolition: Section 02225, Selective Demolition.

1.2.3 Sealants and caulking: Section 07900, Sealants.

1.2.4 Gypsum Board Walls: Section 09250.

1.2.5 Mechanical: Division 15, Mechanical.

1.2.6 Electrical: Division 16, Electrical.

1.3 REFERENCES

CAN4-S101-M89	Fire Endurance Tests of Building Construction and Materials
CAN/ULC -S102-88(R2000)	Building Materials and Assemblies, Standard Method of Tests For Surface Burning Characteristics
ULC-S115-1995(R2001)	Standard Method of Fire Tests of Firestop Systems
ULC Guide No. 40U19	FireStop Systems
ULC Guide No. 40U19.13	FireStop Systems Components

1.4 DESCRIPTION OF WORK

1.4.1 Work of this Section is inclusive of all firestopping specified herein and indicated on Drawings except for firestopping and smoke seal within mechanical assemblies (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside bus ducts) shall be provided as part of work of Divisions 15 and 16 respectively. Firestopping and smoke seals around outside of such mechanical and electrical assemblies, where they penetrate fire rated separations, shall be part of work of this Section.

1.4.2 This Section includes fire stopping materials and/or systems intended to act as firestop and smoke seal for any through-penetrating items, termination devices, receptacles or any unpenetrated openings or joints, including openings and spaces at perimeter edge conditions, with wall and floor assemblies having fire-resistance rating.

1.4.3 Fire stop and seal (draft-tight) gaps, expansion joints and penetrations in fire separations and fire walls against passage of fire, smoke, gasses, firefighter's hose stream and, where designated, passage of liquids. Smoke seal at angle support at fire dampers.

1.5 **QUALITY ASSURANCE**

1.5.1 Provide work of this Section using competent installers experienced trained and approved by material or system manufacturer for application of materials and systems being used. Installers shall have minimum 5 years experience in installation of firestopping materials as systems for multiple trade project.

1.6 **COORDINATION**

1.6.1 Coordinate with trades involved where work will take place throughout various areas of Work.

1.7 **DELIVERY, STORAGE AND HANDLING**

1.7.1 Deliver materials to Site in manufacturer's sealed and labelled containers. Materials shall be subject to Consultant's inspection.

1.7.2 Store materials inside building for 24 hours prior to use; store in area designated by Consultant; protect from damage and environmental conditions detrimental to material.

1.8 **ENVIRONMENTAL CONDITIONS**

1.8.1 Maintain minimum temperature of 5 deg C (40 deg F) for minimum period of 1 week before application, during application and until application is fully cured.

1.8.2 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for storage, mixing, application and curing of firestopping materials.

1.8.3 Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

1.9 **SUBMITTALS**

1.9.1 **Product Data:** Submit up-to-date manufacturer's product data proposed for use under this Section. Include manufacture printed instructions for installation.

1.9.2 **Certification:** Submit (if requested) current ULC listings and certified copies of test reports and/or smoke seals indicating that firestopping material/systems conforms to or exceeds specified requirements.

1.10 **WARRANTY**

1.10.1 Warrant work of this Section against defects and deficiencies for period of 5 years in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies that become apparent within warranty period, to satisfaction of Consultant and at no additional cost to OWNER. Defects shall include but shall not be limited to cracking, breakdown of bond, failure to stay in place or bleeding.

2 **PRODUCTS**

2.1 **General**

2.1.1 Supply materials and systems capable of providing effective barrier against passage of fire, smoke, gasses, and where specifically indicated passage of liquids.

2.1.2 Ensure firestopping system provides fire-resistance rating (flame and temperature) not less than fire resistance rating of surrounding floor, wall or assembly, in accordance with requirements of OBC.

2.1.3 **Firestop system rating:** Comply with F (FH)(FT)(FTH) rating.

2.1.4 Firestopping seals except for wall joints in visible areas must be of easily identifiable colour, such as red or yellow to be clearly distinguished from other building materials.

2.1.5 Supply asbestos and PCB-free materials and systems tested in accordance with ULC-S115, be ULC listed, or be certified by Building Code officials in locality in which building is situated.

2.1.6 Ensure suitability of products for application and compatibility of materials with surfaces to which it will be applied.

2.1.7 Site system assembly shall be in accordance with ULC listed system design limitations, unless proposed assembly is approved by authorities having jurisdiction and meets Consultant approval.

2.1.8 **Materials**

2.1.8.1 Materials of following manufacturers are acceptable provided they meet requirements of Specifications and are suitable for application as indicated:

- 3M Canada Inc.
- A/D Fire Protection System Inc.
- Bio-Fire Protection Inc.
- Canadian General Electric Company Limited
- Dow Corning Canada Inc.
- FireStop Systems (Canstrut Inc.)
- Instant Firestop Inc.
- Nelson Electric Ltd.
- Standard Oil Engineered Materials Company
- Thermal Ceramics FireMaster
- Tremco Canada Ltd.
- Wieland Electric

2.1.9 **Primer:** As recommended by firestopping material manufacturer for specific substrate and use.

2.1.10 **Damming and Backup Materials, Support and Anchoring Devices:** Non-

combustible, in accordance with tested assembly and as recommended by manufacturer. Combustible material for damming purpose may be permitted only if they are removed after permanent firestop materials are cured. Sheet steel covers over temporarily unused sleeves shall be minimum 0.9 mm (1/32") thick galvanized steel sheet and shall be supplied by Section 05999, Miscellaneous Metals.

2.1.11 **Pipe and Duct Insulation and Wrappings:** Compatible with firestopping material; as recommended by manufacturer.

2.2 **SYSTEMS**

2.2.1 Fire stopping and smoke seals at opening intended for ease of re-entry such as cable: elastomeric seal. Do not use cementitious or rigid seal at such locations.

2.2.2 Fire stopping and smoke seals at opening around penetrations for ductwork and other mechanical items requiring sound and vibration control: elastomeric seal. Do not use cementitious or rigid seal at such locations.

2.2.3 Sealants at vertical surfaces: non-sagging.

2.2.4 Sealants on floor surfaces requiring level finish: self-levelling.

2.3 **MIXING**

2.3.1 Mix materials at correct temperature and in strict accordance with manufacturer's directions.

3 **EXECUTION**

3.1 **PREPARATION**

3.1.1 Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.

3.1.2 Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, water repellent to other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

3.1.3 Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.

3.1.4 Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on substrate during application and curing of materials. Surfaces shall be dry and frost free.

3.1.5 Fully protect walls, windows, floors and other surfaces around areas to be

firestopped from marring or damage.

- 3.1.6 Prime surfaces in accordance with manufacturer's directions. Mask where necessary to avoid spillage on to adjoining surfaces. Remove stains on adjacent surfaces as required.
- 3.1.7 Remove insulation from area of insulated pipe and duct where such pipes or ducts penetrate fire separation unless ULC certified assembly permits such insulation to remain within assembly.
- 3.1.8 Provide temporary forming, packing and bracing materials necessary to contain firestopping. Upon completion, remove forming and damming materials not required to remain as part of system.
- 3.1.9 Install damming and firestopping materials as per manufacturer's instructions.

3.2 **INSTALLATION**

- 3.2.1 Seal penetrations through and gaps in fire rated separations. Fill gap in accordance with ULC details for tested system selected.
- 3.2.2 Mix and apply firestopping materials in strict accordance with manufacturer's written instructions and tested designs to provide required temperature and flame rated seal. Apply with sufficient pressure to properly fill and seal openings to ensure continuity and integrity of fire separation. Tool or trowel exposed surfaces as required.
- 3.2.3 Remove excess compound promptly as work progresses and upon completion.
- 3.2.4 Examine sizes, anticipated movement and conditions of opening and penetration to establish correct system and depth of backup materials and of firestopping material required. Use firestopping and smoke seals best suited for specific application as required, indicated or specified. Use only components specified in fire test of system. Do not eliminate any component for firestop system that was present in fire tests.
- 3.2.5 Do not cover materials until full cure has taken place.
- 3.2.6 Provide firestop systems at following locations, without being limited to:
 - 3.2.6.1 At all openings, voids and penetrations through all floor slabs except openings within shafts constructed with a fire resistance rating.
 - 3.2.6.2 At all openings, voids and penetrations through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.
 - 3.2.6.3 At all openings, voids and penetrations installed for future use through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.
 - 3.2.6.4 Around mechanical and electrical assemblies penetrating fire assemblies.

- 3.2.6.5 Between perimeter of all floor and roof slabs and exterior wall construction
- 3.2.6.6 Between tops of all fire rated walls and partitions and underside of floor slabs.
- 3.2.6.7 At all expansion joints in walls, floors and assemblies.
- 3.2.7 Refer to all other sections of Specifications and the Drawings to ascertain where firestops are to be used and, if noted, type of firestop required.
- 3.2.8 Manufacturer's representative shall inspect each firestop and certify its fire rating.
- 3.2.9 Request inspection by Consultant of completed systems before they are covered.
- 3.2.10 **Curing:** Cure materials in accordance with manufacturer's directions.

3.3 **INSPECTION AND TESTING**

- 3.3.1 Independent inspection and testing company may be appointed and paid for by OWNER to carry out inspection and testing, over and above what is specified or required by code, or as directed by Consultant.
- 3.3.2 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.

3.4 **CLEANING**

- 3.4.1 Remove excess materials and debris and clean adjacent surfaces immediately after application to satisfaction of Consultant. Remove and/or correct staining and discolouring of adjacent surfaces as directed.
- 3.4.2 Remove temporary combustible damming materials after initial set of firestopping materials. Such dams may be required to remain in place if flame spread rating is below 25, in accordance with CAN/ULC -S102.

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 Provision of all labour, materials, equipment and incidental services necessary to provide caulking and sealing of joints between building components, including joint preparation.
 - .1 Exterior Joints
 - .1 Perimeter of door, window, vent, & equipment frames in exterior walls,
 - .2 Joints between dissimilar materials,
 - .3 Full length of door thresholds,
 - .4 Control and expansion joints,
 - .2 Interior Joints
 - .1 Perimeter of metal frames in interior walls,
 - .2 Base of metal frames at floor,
 - .3 Joints between dissimilar materials,
 - .4 Full length of door thresholds,
 - .5 Control and expansion joints,
 - .6 Perimeter of plumbing fixtures,
 - .7 Perimeter of fixed equipment,

1.3 QUALITY ASSURANCE

- .1 Applicator Qualifications
 - .1 Work of this section shall be performed by applicators having a minimum of 3 years documented experience in the installation of joint sealants. 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.

1.4 SUBMITTALS

- .1 Submit samples of sealants and backing materials.
- .2 Submit product list with manufacturer's product name for each sealant to be used for this project, along with recommendations for use of the sealant, before commencing joint sealing.

1.5 ENVIRONMENTAL CONDITIONS

- .1 Apply sealants only to completely dry surfaces, and at air and material temperatures above minimum established by manufacturer's specifications.

1.6 EXTENDED WARRANTY

- .1 Submit a warranty for the work of this Section for a period of three (3) years from the Date of Substantial Performance, including materials and application.
- .2 Replacement of joint sealants shall include removal of defective materials, preparation for and application of new material, and the repair and making good of damaged adjacent materials.
- .3 Defective joint sealant installation shall include, but not be restricted to, joint leakage, hardening, cracking, crumbling, melting, bubbling, shrinkage, running, sagging, change of colour, loss of adhesion, loss of cohesion, and staining of adjoining of adjacent materials or surfaces.

2 PRODUCTS

2.1 APPROVED MANUFACTURERS

- .1 Tremco Canada (div. of RPM Canada)
- .2 Dow Corning
- .3 GE Silicones
- .4 Sika Canada Inc.

2.2 MATERIALS

- .1 All materials utilized in a sealant system shall be compatible and non-staining.
- .2 Specified proprietary products are minimum acceptable quality. Products of other manufacturers of equal or superior quality will be acceptable where specifically approved by Consultant.
- .3 Provide sealant formulation recommended by manufacturer for type of joint, substrate and service conditions applicable.
- .4 Sealants used for interior system should have no volatile organic components (VOC)

2.3 SEALANTS

- .1 Refer to Caulking Schedule for utilization of the following sealants:
 - .1 **Sealant Type 1:** Multi-component, chemical-cure polyepoxide polyurethane sealant, to CAN/CGSB-19.24, Type 2, Class B; equivalent to DYMERIC 240 by Tremco Canada (div. of RPM Canada).
 - .2 **Sealant Type 2:** One-part, moisture-cure polyurethane sealant, to CAN/CGSB-19.13, Classification MC-2-25-B-N; equivalent to DYMONIC or Vulkem 116, by Tremco Canada (div. of RPM Canada).
 - .3 **Sealant Type 3:** One-part, acrylic latex sealant, to CAN/CGSB-19-GP-5M; equivalent to TREMFLEX® 834, by Tremco Canada (div. of RPM Canada).

- .4 **Sealant Type 4:** One-part, acetoxysilicone sealant, to CAN/CGSB-19.13; equivalent to TREMSIL® 200, by Tremco Canada (div. of RPM Canada).
 - .5 **Sealant Type 5:** One-part, medium modulus, neutral cure silicone sealant, to CAN/CGSB-19.13, Classification MCG-2-25-A-L; equivalent to SPECTREM® 2, by Tremco Canada (div. of RPM Canada).
 - .6 **Sealant Type 6:** One-part, non-skinning, non-hardening, synthetic rubber acoustical sealant, to CGSB 19-GP-14M; equivalent to Tremco Acoustical Sealant, by Tremco Canada (div. of RPM Canada).
 - .7 **Sealant Type 7:** One-part, low modulus, non-staining, neutral-cure silicone sealant, to CAN/CGSB-19.13; equivalent to [SPECTREM®1] [SPECTREM®3], SPECTREM®4], by Tremco Canada (div. of RPM Canada).
 - .8 **Sealant Type 8:** Multi-component or single component, self-leveling or slope grade, polyurethane sealant to ASTM C920, Type M, Grade P, Class 25, Use T, M, A, and O; equivalent to Vulkem 245, Vulkem 45, or Vulkem 45SSL, by Tremco Canada (div. of RPM Canada).
- .2 Colours of sealants will be selected by the Consultant from manufacturers full standard range.

2.4 ACCESSORIES

- .1 Primer: Type recommended by sealant manufacturer.
- .2 Backer Rods: 30% greater diameter than joint width, with Shore-A hardness of 20, and 17,335-18,797psi(830-900Kpa) tensile strength;
 - .1 Vertical Surfaces [excluding EIFS]: extruded polyolefin rod; SofRod by Tremco Canada (div. of RPM Canada).
 - .2 Horizontal Surfaces [& EIFS Joints]: closed cell polyethylene rod; Standard Backer Rod by Tremco Canada (div. of RPM Canada).
- .3 Bond Breaker: pressure sensitive plastic tape, for installation where minimum specified depth of joint is unobtainable; 3M #266/#481, or Valley Industries #40.

3 EXECUTION

3.1 EXAMINATION

- .1 Before commencing joint sealing, verify at the site that joint configuration and surfaces have been provided as specified in other Sections to meet intent of sealant specification.
- .2 Verify that joint conditions will not adversely affect execution, performance or quality of completed sealed joints, and that they can be put into acceptable condition by means of preparation specified in this Section. If in doubt, verify site conditions together with manufacturer's representative of the sealant to be applied.

- .3 Verify that sealers and coatings applied to sealant substrates are compatible with the sealant used and that full bond between sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.
- .4 Verify that specified environmental conditions are ensured before commencing joint sealing.
- .5 Defective sealed joints resulting from application to unsatisfactory joint conditions will be considered the responsibility of this Section.
- .6 Examine joint sizes for anticipated movement, and for proper width/depth ratio per manufacturer's recommendations for specified sealant.

3.2 PREPARATION

- .1 Remove loose mortar, dust, oil, grease, oxidation, mill scale, coatings and all other materials affecting bond of compounds from surfaces to which sealant compounds must adhere, except for painted surfaces, by brushing, scrubbing, scraping or grinding.
- .2 Clean down caulked metal surfaces with clean cellulose sponges or rags soaked in solvent recommended by sealant manufacturer, and wipe dry with clean cloths. Ensure that solvent is not injurious to painted surfaces.
- .3 Use methods of preparation suitable for substrate as recommended by sealant manufacturer, and that does not damage adjacent surfaces.
- .4 Ensure that releasing agents, coatings or other treatments have either not been applied to joint surfaces, or that they are entirely removed.
- .5 Where necessary to protect adjacent surfaces, mask adjacent surfaces with tape prior to priming and/or caulking.

3.3 APPLICATION

- .1 Except where specified in other Sections, seal open joints in surfaces exposed to view, and to make the building weather-tight and airtight as applicable; as indicated typically on the Drawings, and as otherwise specified and instructed by Consultant. Refer to Caulking Schedule at the end of this section.
- .2 Prime surfaces to receive sealants as required by substrate and manufacturer's specifications to ensure positive and permanent adhesion, and to prevent staining.
- .3 Pack joints tightly with backer rod set at depth specified for sealant. Fill other voids with filler.
- .4 Install joint backing material or apply bond breaker tape to achieve correct joint depth and prevent three-sided adhesion. Install bond breaker tape in bottom of

joints in lieu of sealant backing where proper depth cannot be obtained when backing is installed.

.5 Maintain depth of sealant as follows:

JOINT WIDTH	JOINT DEPTH
1/4"(6mm) (minimum)	1/4"(6mm)
1/4" to 1/2"(6 to 13mm)	depth = joint width
1/2" to 3/4"(13 to 20mm)	depth = 1/2 joint width

.6 Maximum widths of joints are as follows:

- .1 Exterior: 3/4"(20mm).
- .2 Interior: 3/8"(10mm).

.7 Perform joint sealing in accordance with compound manufacturer's specifications, under manufacturer's supervision, and using pressure guns and other equipment as approved by the manufacturer.

.8 Finish joints with a full bead so that they are smooth; and free from ridges, wrinkles, air pockets and embedded foreign materials. Tool surface of joints to a slight concave profile.

.9 Caulk joints in site-painted materials after surfaces have been prime painted.

.10 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape protection to prevent coating of adjacent surfaces if necessary.

.11 All work shall be performed in accordance with manufacturer's specifications for sealants specified.

3.4 CLEANING

- .1 Remove sealant smears and droppings, and masking tape immediately on completion of joint sealing.
- .2 Do not use chemicals, scrapers, or other tools, which would damage surfaces from which excess compounds, or droppings are removed. Make good materials damaged by cleaning by the installer of the damaged material and at the expense of this Section.

3.5 CAULKING SCHEDULE

Sealant Type 1 & 2	<ul style="list-style-type: none"> • Interior joints between dissimilar materials. • Interior joints at perimeter of all built-in equipment. • Interior joints at perimeter of metal door and window frames.
Sealant Type 3	<ul style="list-style-type: none"> • Interior non-movement joints 1/4"(6mm) or less for painting (painter's caulk).
Sealant Type 4	<ul style="list-style-type: none"> • Interior joints where mildew resistance is

	<p>required.</p> <ul style="list-style-type: none">• Interior joints at perimeter of all plumbing fixtures• Interior joints between counter backsplash and wall surfaces.
Sealant Type 5	<ul style="list-style-type: none">• Glass to glass joints.• Glass to metal joints.• Metal to metal curtain wall joints.
Sealant Type 6	<ul style="list-style-type: none">• Perimeter of all gypsum board partitions where sound insulation is indicated.• All vapour barrier seams and seals.
Sealant Type 7	<ul style="list-style-type: none">• Exterior joints between dissimilar building veneer materials.• Exterior control joints in building veneers.• Exterior joints at perimeter of all door and window frames.• Exterior joints in EIFS systems.
Sealant Type 8	<ul style="list-style-type: none">• Exterior horizontal or sloped traffic joints.

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 Provision of all labour, materials, equipment and incidental services necessary to cover with paint the surfaces of the building or structure, and the building services and accessories not otherwise protected or covered, to the full intent of the drawings and specifications.
- .2 Surface preparation of substrates to receive painting and finishing is included in this section of work.
- .3 This section of work shall include the painting and finishing of all exposed surfaces of the following substrates:
 - .1 Exterior
 - .1 Steel (Prime painted)
 - .2 Steel (Galvanized)
 - .2 Interior
 - .1 Wood
 - .2 Steel (Prime painted)
 - .3 Steel (Galvanized)
 - .4 Concrete and Masonry
 - .5 Gypsum board
 - .6 Exposed Mechanical and Electrical equipment (Conduit, Piping, Ductwork, etc. Including hangers).

1.3 MATERIALS AND EQUIPMENT NOT TO BE PAINTED

- .1 Surfaces not to be painted shall be left completely free of droppings, over-spray, or accidentally applied materials resulting from the work of this Section.
- .2 Items not to be painted include concealed structural elements, and equipment furnished with complete factory-applied, coloured paints and finish systems.

1.4 COOPERATION WITH OTHER TRADES

- .1 Schedule and coordinate this work with other trades and do not proceed until other work and/or job conditions are as required to achieve satisfactory results.
- .2 Examine all specification sections for materials and products, and become thoroughly familiar with all provisions regarding painting.

1.5 QUALITY ASSURANCE

- .1 Material Manufacturers
 - .1 All paint and finish products shall be those listed in the CPCA manual, latest edition unless otherwise specified or listed herein.

- .2 Applicators
 - .1 The painting subcontractor shall have a minimum of five (5) years documented experience in commercial painting and finishing, and shall maintain a qualified crew of size necessary to fully satisfy the requirements of this section.

- 1.6 COMPLETION SCHEDULE
 - .1 Furnish the Consultant with a schedule showing expected completion of the respective coats of paint for the various areas and surfaces. Keep this schedule current as the job progresses.

- 1.7 COLOUR SCHEDULE
 - .1 A colour schedule will be prepared as the job progresses by the Consultant. The final selection of colours and surface textures of all finishes throughout shall rest solely with the Consultant.

- 1.8 SUBMITTALS
 - .1 Product Codes
 - .1 Submit a complete list of product codes from the manufacturer(s) proposed for use on this project, for all products listed in finish systems specified herein, in accordance with Section 01300.

 - .2 Samples
 - .1 Submit samples of all finishes specified herein, in accordance with Section 01300.

 - .2 Submit duplicate 8" x 12" (200 x 300mm) sample panels of each type of paint and finish application for approval by the Consultant.

 - .3 Where manufacturer of paint differs from that listed in the colour schedule, employ spectrograph technology to ensure accurate colour match. Selection of the "next nearest colour" by another manufacturer will not be acceptable.

 - .4 Use Maple plywood for wood finishes, gypsum board for paint finishes over smooth surfaces, and 4" (100mm) concrete block for concrete masonry.

 - .5 Finished work to match approved samples.

- 1.9 DELIVERY, STORAGE AND HANDLING
 - .1 Paint and finish materials shall be delivered to the site in sealed original labelled containers bearing manufacturer's name, type of paint, brand name, colour designation and instructions for mixing and/or reducing.

 - .2 Store materials in a heated, dry, well ventilated, indoor place having a minimum ambient temperature of 45°F (7°C).

 - .3 Keep waste rags in metal drums and remove all rags, waste and trash from the building at the end of each working shift.

 - .4 Provide CO₂ fire extinguisher of minimum 20 lb (9kg) capacity in storage area.

- .5 Ensure that health and fire regulations are complied with in storage area.

1.10 GENERAL COLOUR REQUIREMENTS

- .1 Refer to the Room Finish Schedule for type and extent of finishes, and to the Colour Schedule for individual colour and sheen selections.
- .2 Where manufacturer of paint differs from that listed in the colour schedule, employ spectrograph technology to ensure accurate colour match. Selection of the "next nearest colour" by another manufacturer will not be acceptable.
- .3 The following, generally, will be painted colour, and sheen to match adjacent surfaces
 - .1 Access doors
 - .2 Exposed piping and conduit

1.11 ENVIRONMENTAL CONDITIONS

- .1 Temperatures: No painting shall be performed when substrate or ambient air temperatures are below 41°F(5°C). Minimum allowable temperatures for application of Latex paints are 45°F(7°C) (interior work) and 50°F(10°C) (exterior work).
- .2 Relative humidity: shall not exceed 85%.
- .3 Moisture content of substrates: Masonry and concrete materials shall be allowed to cure for a minimum of 28 days before application of paints. Substrates shall be measured by electronic moisture meter, to the following maximums:
 - .1 Gypsum board: 12%.
 - .2 Masonry, concrete/concrete block: 12% for solvent based paints.
 - .3 Wood: 15%.
- .4 Lighting: Painting shall not proceed unless a minimum of 15 cd/ft²(1.3 lx) lighting is provided on the surfaces to be painted.
- .5 Ventilation: All areas where painting is proceeding require adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 45°F(7°C) for 24 hours before during and after paint application.

1.12 MAINTENANCE MATERIALS

- .1 Supply Owner with one clearly identified, new and unopened gallon of each colour and type of paint, stain and varnish used for this work, in accordance with Section 01780.
- .2 All colour mixing codes must be clearly labelled, and colour numbers (P1, P2, etc.) must be marked on the container.

1.13 EXTENDED WARRANTY

- .1 Provide upon completion of the work, a [Warranty Certificate][100% Maintenance Bond], in the name of the Owner, stating that the work of this section was performed in accordance with these specifications and the CPCA manual (latest edition), and is warranted against defects in material or installation, for a period of two (2) years from Date of Substantial Performance.

2 PRODUCTS

2.1 MATERIALS

- .1 Paint shall be Benjamin Moore, ICI Paints Dulux Lifemaster (Glidden) or ICI Paints Dulux Inspirations (Color Your World) and applied in strict accordance with the manufacturer's directions.
- .2 Paint materials such as linseed oil, shellac, turpentine, and any materials not specified herein but required for first class work with the finish specified shall be the highest quality product of an approved manufacturer. All materials shall be compatible with finish paint or coating materials.

2.2 MIXING

- .1 Paints shall be ready-mixed unless otherwise specified, except that any coating in paste or powder form, or to field-catalyzed shall be field-mixed in accordance with the directions of its manufacturer. Pigments shall be fully ground and shall maintain a soft paste consistency in the vehicle during storage that can and shall be dispersed readily and uniformly by paddle to a complete homogeneous mixture.
- .2 The paint shall have good flow and brush properties and shall dry or cure free of sags or runs to yield the desired finish specified.

2.3 GLOSS LEVELS

- .1 Gloss Level Category Units @60 degrees & Units @85 degrees.
 - .1 Level 1 - (Flat): 0-5 & max. 10.
 - .2 Level 2 - (Velvet): 0-10 & 10-30.
 - .3 Level 3 - (Eggshell): 10-25 & 10-30.
 - .4 Level 4 - (Satin): 20-35 & min. 30.
 - .5 Level 5 - (Semi-Gloss): 35-70.
 - .6 Level 6 - (Gloss): 70.

3 EXECUTION

3.1 INSPECTION OF SURFACES

- .1 Examine surfaces to receive paint finishes for defects which cannot be corrected by procedures specified herein, and which may result in unsatisfactory paint finishes. Report items to Consultant and Contractor in writing, prior to commencement of work of this section, or after initial prime coat shows defects in substrate.
- .2 The application of subsequent prime and finish coats shall be construed as acceptance of the surfaces, and thereafter this subcontractor shall be fully responsible for satisfactory work as required herein.

3.2 PREPARATION OF SURFACES

- .1 Refer to the CPCA manual Chapter 3 for surface preparations not specified in this section.

3.3 PROTECTION

- .1 Protect all adjacent surfaces from paint and damage resulting from the work of this section, and make good any damage caused by failure to provide such protection.
- .2 Mask all adjacent finishes and surfaces with masking tape as required. Remove tape promptly after final finish coat has been applied and allowed to dry.
- .3 Furnish sufficient drop cloths, shields and protective equipment to prevent spray or dropping from fouling surfaces not being painted or where painting has been completed.
- .4 Cotton waste, cloths and material, which may constitute a fire hazard, shall be placed in closed metal containers and removed daily from the site.
- .5 Remove and protect, prior to painting operations, all hardware, accessories, device plates, lighting fixtures, factory finished work, and similar items, or provide ample in-place protection such as masking tape. If removed, these items shall be labelled, stored, cleaned if necessary and re-installed following successful completion of the work in each area. Solvents detrimental to lacquer finishes are not to be used for cleaning these items.

3.4 APPLICATION

- .1 Apply paints and coatings by currently accepted trade methods.
- .2 Painting coats specified are intended to cover surfaces satisfactorily when applied in strict accordance with manufacturer's recommendations. Where proper coverage has not been attained, the Consultant may ask for additional coats as required, at no additional cost.
- .3 Apply each coat at the proper consistency. Sand lightly between coats.
- .4 Tint primers to same colour range as finish coats.
- .5 Do not apply finishes on surfaces that are not sufficiently dry. Each coat of finish should be dry and hard before a following coat is applied unless specified otherwise by the manufacturer.
- .6 Tint filler to match wood for clear finishes. Work filler well into wood grain and remove excess prior to setting.
- .7 Exterior woodwork to receive paint finish shall be back-primed upon arrival on site with exterior primer paint, stain or varnish, as required by specified finish.
- .8 Interior woodwork to receive paint or enamel finish shall be back-primed upon arrival on site with enamel undercoater.
- .9 All edges of wood doors shall be primed with undercoater, stain, or varnish, as required by specified finish.
- .10 Spraying of paint will not be allowed, unless specified herein, or approved by the Consultant.

- .11 Where spray painting is specified, finish 100ft²(10m²) by spraying a sample of the finish upon the request of the Consultant, using materials specified.
- .12 Provide complete coverage and hide. When colour, stain, dirt or undercoats show through final coat of paint, provide additional coats until the paint film is of uniform finish, colour, appearance and coverage, at no additional cost to the Owner.
- .13 Allow all coats to dry to manufacturer's recommendations before applying succeeding coats.
- .14 Touch up all suction spots or "hot spots" in concrete after the application of the first coat, before applying the second coat.
- .15 Surfaces to be stained shall appear uniform in shading with colour variations caused only by the natural wood grain.
- .16 Barricade areas where finishing is in progress to prevent traffic or other activities, and otherwise protect work until dry. Post "Wet Paint" signs and remove when no longer required.
- .17 Replace at the expense of this section, materials soiled or damaged by finishing materials which cannot be removed.

3.5 PAINTING AND FINISHING OF EXISTING MATERIALS AND SURFACES

- .1 Remove, label and store, prior to painting of existing materials and surfaces the following items:
 - .1 Door hardware signage and accessories,
 - .2 Device plates,
 - .3 Lighting fixtures,
 - .4 Factory finished work,
 - .5 Signage where removable.
- .2 Where such items are not removable, provide proper masking and protection prior to commencement of painting:
- .3 Clean such items if deemed necessary by the Consultant, before being re-installed following successful completion of the work in each area. Solvents detrimental to lacquer finishes are not to be used for cleaning these items.

3.6 CLEAN-UP

- .1 Upon completion of the work, remove all paint and varnish spots from floors, glass and other surfaces. Remove from the premises all rubbish and accumulated materials of whatever nature, not caused by others, and leave this work in clean, orderly and acceptable conditions.

3.7 PAINTING AND FINISHING SCHEDULE

- .1 **PAINT SYSTEMS – EXTERIOR SURFACES**
 - .1 Woodwork: siding, trim, doors and door frames, window frames and sash, fences, plywood partitions, etc.

-
- .1 1 coat of Primer ICI Dulux Weatherguard 1535 Acrylic Latex Wood & Galvanized Primer. 2 coats of Finish ICI Dulux Weatherguard 1560 Exterior Acrylic Latex Gloss.
 - .2 Woodwork:
 - .1 Enamel finish (gloss, 70% reflectance) - 2 coats of Finish 4600 Series Polyurethane Floor
 - .2 Enamel finish (gloss, 70% reflectance) - 2 Coats of Finish Ultra 33800 Urethane Floor
 - .3 Natural finish (gloss, 70% reflectance) – 2 coats of Finish ICI Woodpride 1890 Exterior Spar Varnish, Gloss finish.
 - .3 Concrete: concrete block, masonry, stucco, stone, etc.
 - .1 Acrylic latex, breather type coating (Semi-Gloss,30-50 % reflectance) -1 coat of Primer ICI X-Pert 36250 Interior/Exterior Latex Blockfiller and 2 coats of Finish ICI Dulux Weatherguard 1550 Exterior Acrylic Latex
 - .2 Acrylic breather type coating (Semi-Gloss,30-50 % reflectance) – 1 coat of Primer ICI X-Pert 36250 Interior/Exterior Latex Blockfiller and 2 coats of Finish Devoe Devflex 4206 Series Acrylic.
 - .3 Clear water repellent coating - 2 coats of 5% Silicone solution.
 - .4 Asphalt or Cement: driveways, parking lots, floors, etc.
 - .1 Traffic or zone lines - Alkyd traffic paint.
 - .5 Ferrous Metals: iron and steel, control panels, doors, handrails, ornamental iron, sash, etc.
 - .1 Enamel finish (gloss, 70 % reflectance) – 1 coat of Primer Devguard 4100 Alkyd Metal Primer and 2 coats of Finish ICI Dulux Weatherguard 1560 Exterior Acrylic Latex Gloss
 - .2 Enamel finish (gloss, 70% reflectance) – 1coat of Metalclad 8496 Alkyd Metal Primer and 2 coats of Finish Metalclad 8400 Series Alkyd Gloss
 - .6 Galvanized Metal: flashings, eavestrough, downpipes, corrugated roof and wall sheets, etc.
 - .1 Galvanized metal shall first be primed with "prepaint" primer conforming to ASTM D2092.
 - .2 Oil - Alkyd finish (gloss) - 2 coats of Metalclad 8400 Series Alkyd
 - .3 Enamel finish (gloss) - 2 coats of Devoe 4308 Series Alkyd Industrial.
 - .2 **PAINT SYSTEM - INTERIOR SURFACES**
 - .1 Woodwork: doors and door frames, window sash and frames, bases and trim, ceiling, cabinets, paneling, partitions, plywood back-up board, etc.
 - .1 Prime 1 coat Ultra 9431-0 Interior Enamel Undercoat.

- .2 Acrylic finish (Semi-Gloss, 30-50 % reflectance) - 2 coats ICI Dulux Lifemaster 59211 Series Interior Acrylic.
- .3 Natural finish - close grained wood (Satin Finish) - 2 coats of ICI Woodpride Interior Acrylic Urethane (Satin) 1840
- .4 Stained and varnished finish - close grained wood (Satin Finish) - 2 coats of Urethane Alkyd interior satin.
- .5 Plywood back-up board shall be painted grey before the installation of electrical, telephone or alarm equipment.
- .2 Plaster & Cement Plaster
 - .1 Acrylic finish - dry surfaces (Eggshell or Semi-Gloss finish, 6-9 % reflectance) - one prime coat with ICI Dulux 11000 Interior Latex and 2 coats of ICI Dulux Lifemaster 59311 Series, Eggshell finish, in office areas only and ICI Dulux Lifemaster 59211 Series, Semi-Gloss finish, in service areas, stairs, corridors, etc. For surfaces previously painted with pigmented alkyd, apply prime coat of ICI X-Pert 250 Gripper.
- .3 Drywall Construction
 - .1 Acrylic finish (Eggshell or Semi-Gloss, 6-9 % reflectance) - one prime coat with ICI Dulux 11000 Interior Latex and 2 coats of ICI Dulux Lifemaster 59311 Series, Eggshell finish, in office areas only and ICI Dulux Lifemaster 59211 Series, Semi-Gloss finish, in service areas, stairs, corridors, etc. For surfaces previously painted with pigmented alkyd, apply prime coat of ICI X-Pert 250 Gripper.
- .4 Acoustic Plaster or Tile: As indicated in Room Finish Schedule.
 - .1 Acoustic Plaster (Flat) - one prime coat and two coats of Acrylic flat finish.
- .5 Concrete: concrete block, masonry, cement plaster, etc.
 - .1 Acrylic finish (Eggshell or Semi-Gloss, 6-9 % reflectance) – 1 coat of ICI X-Pert 36250 Int./Ext. Latex Blockfiller - 2 coats of ICI Dulux Lifemaster Series Eggshell or Semi-Gloss. For surfaces previously painted with pigmented alkyd, apply prime coat of ICI X-Pert 250 Gripper.
 - .2 Acrylic painted and filled concrete blocks - 1 coat of ICI X-Pert 36250 Int./Ext. Latex Blockfiller - 2 coats of ICI Dulux Lifemaster Series Eggshell or Semi-Gloss, 6-9 % reflectance.
- .6 Concrete Floors and Stairwells
 - .1 Catalyzed Epoxy finish (Gloss) - one coat of catalyzed epoxy enamel. Sample test existing surfaces for workmanship standard.
- .7 Cement Board: board, piping, transits, siding, etc.
 - .1 Acrylic paint system (Eggshell or Semi-Gloss, 6-9 % reflectance) - 2 coats of ICI Dulux Lifemaster Series Eggshell or Semi-Gloss.

- .8 Vinyl Wall Coverings
 - .1 Two prime coats of oil paint before vinyl fabric installation.

- .9 Miscellaneous Metals: shop-primed cabinets, connectors, doors, control panels, door frames, ornamental iron, partitions, rails, registers, tanks, vents, etc.
 - .1 Alkyd painted finish (Semi-Gloss, 60-65 % reflectance) - 2 coats of Semi-Gloss.

- .10 Ferrous Metals
 - .1 Pigmented Alkyd finish - 2 coats of Semi-Gloss, 60-65 % reflectance.

- .11 Aluminum Finish
 - .1 Two coats of aluminum paint. Note: 2 coats acceptable on existing painted surfaces if it completely eliminates previous colour.

End of Section