MASSEY CENTRE CHILD CARE RENOVATION
1102 BROADVIEW AVE.

FOR

MASSEY CENTRE

ISSUED FOR TENDER
01 AUGUST 2019

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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 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 new paragraph 6.2.8:

6.2.8 Allowance for overhead and profit shall be limited to ten percent (10%) for Contractor's work, or where work is subcontracted, for Subcontractor's work. The Contractor shall be entitled to five percent (5%) of a Subcontractor's total cost. Where a Sub-Subcontractor is pricing to a Subcontractor, the Subcontractor shall be entitled to five percent (5%) of the Sub-Subcontractor's total cost. Overhead and profit may not be charged on credits to the Contract. Where a change involves both extras and credits, overhead and profit shall apply only to the net extra of the change, if any.

GC 6.3 CHANGE DIRECTIVE

Add new paragraph 6.3.14:

6.3.14 Allowance for overhead and profit shall be limited to ten percent (10%) for Contractor's work, or where work is subcontracted, for Subcontractor's work. The Contractor shall be entitled to five percent (5%) of a Subcontractor's total cost.

Where a Sub-Subcontractor is pricing to a Subcontractor, the Subcontractor shall be entitled to five percent (5%) of the Sub-Subcontractor's total cost. Overhead and profit may not be charged on credits to the Contract. Where a change involves both extras and credits, overhead and profit shall apply only to the net extra of the change, if any.

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…".

PART 1 - GENERAL

1.1 Approved Alternates and Approved Equals

.1 Named Product alternates or equals, indicated by the phrases “or approved alternate by XYZ Manufacturing” or “or approved equal by XYZ Manufacturing”, shall be interpreted to mean that named Product alternate or equal, if selected for use in lieu of indicated or specified Product, meets or exceeds performance, appearance, general arrangement, dimensions, availability, code and standards compliance, and colour of specified Product. Be responsible for costs and modifications associated with the inclusion of named Product alternate or equal at no additional cost to the Owner.

.2 The process for proposing and approving alternates or equals shall be the same process as for proposing and approving substitutions (refer to paragraph 1.2 below)

.3 Confirm delivery of specified items prior to proposing alternates or equals.

1.2 Substitutions

.1 Submission of substitutes

.1 Proposal for substitutions of Products and materials must be submitted in accordance with procedures specified in this section.

.2 Consultant may review submissions, if directed by Owner, but in any case with the understanding that the Contract Time will not be altered due to the time required by the Consultant to review the submission and by the Contractor to implement the substitution in the Work.

.3 Consultant’s services to review substitutions will be performed on an additional services basis to their contract with the Owner. Costs of these services will be discounted from any reductions in the Contract Price that might be forthcoming form the substitution. Therefore, to be acceptable, a substitution must present a reduction in the construction cost at least equal to the cost to the Owner of the Consultant’s additional services to review the substitution. Contractor shall cover directly costs and administration associated with courier services, reproduction costs, and other direct costs associated with these substitution reviews.

.2 Submission requirements

.1 Description of proposed substitution, including detailed comparative specification of proposed substitution with the specified Product.

.2 Manufacturer’s Product data sheets for proposed Products.

.3 Respective costs of items originally specified and the proposed substitution.

.4 Confirmation of proposed substitution delivery, in writing by Product manufacturer.

.5 Compliance with the building codes and requirements of authorities having jurisdiction.

.6 Affect concerning compatibility and interface with adjacent building materials and components.

.7 Compliance with the intent of the Contract Documents

.8 Effect on Contract Time

.9 Reasons for the request

.3 Substitutions submitted on shop drawings without following requirements of this section prior to submission of the affected shop drawings will cause the shop drawings to be rejected.

.4 Proposed substitutions shall include costs associated with modifications necessary to other adjacent and connecting portions of the Work.

.5 Consultant’s decision concerning acceptance or rejection of proposed substitutions is final. Should it appear to the Consultant that the value of services required to evaluate the substitution exceeds

the potential reduction, the Consultant will advise the Owner that the substitution does not merit consideration before proceeding with a full evaluation. If the substitution will produce a reduction commensurate with or exceeding the value of Consultant's services to evaluate the substitution, the Consultant will request the Owner's direction to proceed with evaluation.

END OF SECTION

PART 1 - GENERAL

1.1 Provide labour, Products, equipment, services tools and supervision necessary for submittals. Make submittals specified in this Section to Consultant unless otherwise specified.

.1 Verify accuracy and completeness of submittals prior to submission.

.2 Verify field measurements, field construction criteria, catalogue numbers and similar data.

.3 Co-ordinate each submittal with requirements of the Work and the Contract Documents.

.4 Notify Consultant in writing at time of submission, of any deviation in submittals from requirements of the Contract Documents.

1.2 Prepare a schedule identifying all submittals requested within the Contract Documents and corresponding issued dates for review by the Consultant.

1.3 Submit in accordance with dates established under Schedule of Submittals, fabrication, manufacture, erection and installation to provide adequate time for reviews, securing necessary approvals, possible revisions and resubmittals, placing orders, securing delivery and to avoid construction delays.

1.4 Accompany each submittal with a letter of transmittal containing all pertinent information required for identification and checking of submittals including but not limited to the following:

.1 Date of initial submission and date of each subsequent submission if required.

.2 Project title and Consultant’s project number.

.3 Names of:

.1 Contractor.

.2 Subcontractor.

.3 Supplier/manufacturer as applicable.

.4 Specification section numbers to which submission is related.

.5 Countersigned stamp of Contractor certifying that they have reviewed and accepted the submission.

PART 2 - PRODUCT DATA

2.1 Before delivery of Products to the Site, submit Product data for approval as specified in each section or as requested by the Consultant.

2.2 Submit manufacturer's Product data for systems, materials, and methods of installation proposed for use. Such literature shall identify systems, each component, and shall certify compliance of each component with applicable standards.

PART 3 - SAMPLES

3.1 Before delivery of Products to the Site, submit samples of Products as specified or as requested by the Consultant. Label samples as to origin and intended use in the Work and in accordance with the requirements of the Specification Sections. Samples must represent physical examples to illustrate materials, equipment or work quality and to establish standards by which completed Work is judged.

3.2 Ensure samples are of sufficient size and quantity, if not already specified, to illustrate:

.1 The quality and functional characteristics of Products, with integrally related parts and attachment devices.

.2 Full range of colours available.

3.3 Notify the Consultant in writing, at time of submission, of any deviations in samples from requirements of the Contract Documents, and state the reasons for such deviations.

3.4 Identify samples with Project name, Contract number, date, Contractor's name, number and description.

3.5 If samples are not acceptable, both samples will be returned. If samples are acceptable, one sample will be so indicated and returned. Be responsible for the cost of samples that are not accepted and for resubmission of samples.

3.6 Acceptable samples shall serve as a model against which the products incorporated in the work shall be judged.

3.7 Each Product incorporated in the Work shall be precisely the same in all details as the acceptable sample.

3.8 Should there be any change to the accepted sample, submit in writing for approval of the revised characteristics and resubmit samples of the Product for approval if requested.

3.9 When samples are very large, require assembly, or require evaluation at the Site, they may be delivered to the Site, but only with approval and as directed by Consultant.

PART 4 - SHOP DRAWINGS

4.1 Arrange for the preparation of shop drawings as called for in the Contract Documents or as may be reasonably requested by the Consultant. The Contractor and each Subcontractor shall operate as experts in their respective fields and all shop drawings and samples shall conform to the requirements of the Contract Documents.

4.2 The term “shop drawings” means drawings, diagrams, schematics, illustrations, schedules, performance charts, brochures and other data which are required to illustrate details of the Work.

4.3 In addition to shop drawings specified in the specification sections, submit shop drawings required by jurisdictional authorities in accordance with their requirements.

4.4 Shop drawings for openings, sleeving and conduit

.1 Prior to preparation of shop drawings, coordinate sizes of all structural openings and sleeves with respective fabricators for mechanical ducting. Adjustments to the opening sizes indicated on the Contract Drawings shall not be made without the approval of the Consultant.

.2 Prior to detailing structural reinforcement on shop drawings, arrange for the Engineer of structure to review formed holes, recesses and sleeving. Completely dimension openings, recesses and sleeves and relate to suitable grid lines and elevation.

.3 Prior to forming of the structure, arrange for the preparation of shop drawings for review by the Consultant showing embedded conduit to be cast within the structure. Shop drawings shall include conduit from all sources.

4.5 Shop drawings shall indicate the following minimum criteria and any additional criteria indicated in the individual specification sections requiring shop drawings:

.1 Clear and obvious notes of any proposed changes from the Contract Documents.

.2 Fabrication and erection dimension.

.3 Provisions for allowable construction tolerances and deflections provided for live loading.

.4 Details to indicate construction arrangements of the parts and their connections, and interconnections with other work.

.5 Location and type of anchors and exposed fastenings.

.6 Materials, physical dimensions including thicknesses, and finishes.

.7 Descriptive names of equipment.

.8 Mechanical and electrical characteristics when applicable.

.9 Information to verify that superimposed loads will not affect function, appearance, and safety of the work detailed as well as of interconnection work.

.10 Assumed design loadings, and dimensions and material specifications for load-bearing members.

4.6 Include in shop drawing submissions detailed information, templates, and installation instructions required for incorporation and connection of the Work.

4.7 Before submitting to the Consultant, review all shop drawings to verify that the Products illustrated therein conform to the Contract Documents. By this review, the Contractor agrees that it has determined and verified all field dimensions, field construction criteria, materials, catalogue numbers and similar data and that it has checked and coordinated each shop drawing with the requirements of the Work and of the Contract Documents. The Contractor's review of each shop drawing shall be indicated by stamp, date and signature of a qualified and responsible person possessing the appropriate authorization.

4.8 Be responsible for dimensions to be confirmed and correlated at the Site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the Work of all subtrades.

4.9 Submit shop drawings for the Consultant's review with reasonable promptness and in orderly sequence so as to cause no delay in the Work nor in the work of Other Contractors. At the time of submission, notify the Consultant in writing of any deviations in the shop drawings from the requirements of the Contract Documents. The Contractor will be held responsible for changes made from the Contract Documents which are not indicated or otherwise communicated in writing with the submission.

4.10 Drawings submitted by the Contractor as required herein are the property of the Owner who may use and duplicate such drawings where required in association with the Work.

4.11 Submit shop drawings, as indicated in each section of the Work, signed and sealed by a licensed Professional Engineer registered in the place of the Work.

4.12 Shop drawings shall have distinct, uniform letters, numerals and line thicknesses that will ensure the production of clear legible prints and also facilitate microfilming and reduced reproduction.

4.13 Submissions shall be on 8.5" x 11" or 11" x 17" page format. However, in instances where catalogue items are specified, three clean copies of the manufacturer's catalogue may be submitted.

4.14 Shop drawings shall contain the following identification:

.1 Project name and Contract number.

.2 Applicable 5-digit Contract Specification number describing the item.

.3 Location (unit, level, room number, etc.).

.4 Name of equipment or Product.

.5 Name of Subcontractor or supplier.

.6 Signature of Contractor certifying that Shop drawing is in conformance with Contract Documents.

.7 On submissions subsequent to the first, the following additional identification:

.1 The revision number.

.2 Identification of the item(s) revised.

4.15 Dimensions and designations of elements shall be shown in the same system of measurement used on the applicable Contract Drawings.

4.16 The Consultant reserves the right to refuse acceptance of drawing submissions not meeting the above requirements.

4.17 The Consultant's review will be for conformity to the design concept and for general arrangement only and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the Contract Documents unless a deviation on the shop drawings has been approved in writing by the Consultant.

4.18 The Contractor shall make any changes in shop drawings which the Consultant may require consistent with the Contract Documents and re-submit unless otherwise directed by the

Consultant. When re-submitting the shop drawings, the Contractor shall notify the Consultant in writing of any revisions other than those requested by the Consultant.

4.19 Only drawings noted for revision and resubmission need be resubmitted.

4.20 File one copy of each submitted shop drawing at the Site.

4.21 Shop drawings submitted to Consultant that do not bear a stamp or are incomplete will not be reviewed and will be returned to Contractor, any delay in Construction Schedule as a result will be the full responsibility of the Contractor.

PART 5 - CERTIFICATES

5.1 Submit certificates that are required by authorities having jurisdiction or that are requested in the specification sections.

5.2 Clearly show on each certification the name and location of the Work, name and address of Contractor, quantity and date of shipment and delivery and name of certifying company.

5.3 Certificates shall verify that Products and/or methods meet the specified requirements and shall include test reports of acceptable testing laboratories to validate certificates.

5.4 Submit certificates in duplicate and signed by an authorized representative of the certifying company.

PART 6 - CERTIFICATION OF TRADESMEN

6.1 Provide certificates, at the request of the Consultant, to establish qualifications of personnel employed on the Work where such certification is required by authorities having jurisdiction, by the Consultant or by the Contract Documents.

END OF SECTION

PART 1 GENERAL

.1 GENERAL INSTRUCTIONS

.1 Read and be governed by Conditions of the Contract and other Sections of Division 1.

.2 The purposes of the special project procedures are as follows:

.1 Special project procedures shall ensure the Contractor provides full accessibility to the existing building(s) under renovation or alteration forming the Work of the Contract to the patrons, staff suppliers, other contractors, visitors and the Public.

.2 RULES AND REGULATIONS FOR CONSTRUCTION PERSONNEL

.1 Fundamental to any and/or all rules and regulations, whether written and/or unwritten, is the fact that the Owner is the guardian of, and has full responsibility for the welfare and well-being of the patrons and staff.

.2 The following rules and regulations shall be construed as being general in nature and designed a guide for behavior of all construction personnel, including suppliers and their employees while performing the Work of this Contract in and/or on the properties of the Owner.

.3 Communication with the Owner's personnel and staff shall all be routed through the Consultant

.4 Where the Work of this Contract causes results which are detrimental to the operations of the Owner, or is distressing or disturbing to patrons, staff and personnel, to the point where the Project Manager feels that such work should stop until conditions change, then such work shall stop on order of the Project Manager.

.5 Where construction personnel perform Work of this Contract in more than one area of the building(s), such work shall be scheduled so that occupied areas are avoided during scheduled class times and activities. Where the aforementioned regulation is not possible, the Contractor shall have a frank discussion with the Project Manager and Consultant, and amicable arrangements shall be made.

.6 Objectionable work as deemed by the Owner must cease upon notification by the Owner. Said work must be rescheduled to after hours and/or weekends as approved by the City or actions are taken by the contractor to control/eliminate the deemed objectionable work. Objectionable work includes but is not limited to the following: chipping, hammer drilling, coring, grinding of steel/concrete, torquing, or any other activities that disturb the normal function of the building.

.3 RESTRICTIONS

.1 The Work shall be confined to the Place of the Work (Site) limits indicated on Drawings and/or within area defined by property lines. Work on the Municipal property shall be carried out under regulations of respective Municipality and authorities having jurisdiction including without any limitations any associated fees, permits, insurance or bonding required.

.2 Assume responsibility for care, custody and control of the Place of the Work (Site) and perform the Work to extent covered in Contract Documents. Make good damage to the existing Site and existing building(s) (if any) due to the Work of this Contract.

.3 Bring the following restrictions to the attention of the construction personnel and workers on the Work and enforce them;

.4 Restrict construction personnel and workers to Place of the Work and necessary access routes to it. Restrict non-construction personnel from the Place of the Work (Site), except for Contractor authorized visitors.

.5 Restrict construction activities in public, in Owner occupied areas, in locations designated to off-hours agreed in Preconstruction Meeting without additional cost to the Owner, and return these areas to normal operations as soon as possible.

4 OCCUPANCY OF THE EXISTING BUILDING(S)

.1 The existing building(s) will remain in full use and occupancy throughout the duration of construction of the Work of this Contract. Contractor shall schedule and perform the Work of this Contract so that conflict is minimized. The approximate extent of the building that will be made available to the Contractor is identified within the Contract Documents.

.2 Contractor shall perform the Work of this Contract in and around the existing building(s) at approved times and as mutually agreeable to the Owner, so not to inconvenience or hinder the occupation of the building(s) by the Owner, the Owner's personnel/staff and patrons.

.3 Give the Owner a minimum of seven (7) working days written notice of intention to commence work in a room, or area(s) of existing building outside of the areas identified for Contractor us so that he may prepare the space(s). Any disruption to the operation of the facility must be requested at least 48 hours in advance of the proposed work being carried out.

.4 Before the Work of this Contract begins and on a routine basis, construction personnel shall be thoroughly informed of the necessity to exercise **extreme** caution in any of their activities, which may interrupt an essential service serving the "occupied areas" for which an alternate supply, service or facility has not been provided.

.5 The Owner and/or his separate contractors reserve the right to enter the area(s) of Work of this Contract for the purpose of placing and/or fitting equipment before completion of the Work of this Contract. Such entry shall not interfere with or prevent the Contractor from performing the Work of this Contract. Also, such entry shall not in any way be considered as acceptance of the Work of this Contract by the Owner, or in any way relieve the Contractor from responsibilities under Work of this Contract.

.6 Any interruption(s) of mechanical and electrical services to "occupied areas" **must** be pre-arranged with the Consultant. Where any such interruption(s) is impossible to avoid, it shall be of the shortest duration possible and restricted to times acceptable to the Project Manager in writing. Contractor shall apply in writing to the Consultant well in *advance* of any contemplated and/or intended interruption(s).

.7 Construction personnel shall be confined to the enclosed construction areas except when absolutely necessary to perform work and duties directly connected to the Work of this Contract. Contractor shall make arrangements with the Consultant well in advance of work and/or duties required outside the enclosed construction areas.

.8 In order to reduce to a minimum the period of time required for Work of this Contract within the existing building(s), each area of Work of this Contract shall be pre-planned in complete detail and all materials for the entire work within the area shall be on hand or readily available. Before work in each area of the work of this Contract begins, the Contractor shall well in advance make arrangements to measure and review the areas to be *renovated* for the purposes of pre-planning.

5 RELOCATED COMPONENTS

.1 Disconnect services on items for relocation forms part of the work of Divisions 15 and 16.

.2 Disconnect fastening and anchorage of items to be relocated. Patch abandoned fastening and anchorage holes to match with and flush with adjacent surfaces.

.3 Carefully relocate items indicated and repair any damage received as a result of relocation in accordance with the Owner's written directions. Install relocated items level, plumb, square and in accordance with manufacturer's instructions. Re-fasten and anchor securely in place. Services re-connection of relocated items shall form part of the work of Divisions 15 and 16.

.4 Take delivery of existing components from the Owners storage to be incorporated in locations indicated. Modify existing items to suit new design requirements. Where modifications of the existing components is not possible to suit new locations, then augment and supply new components matching existing in every respect. Contract Price shall include for such conditions.

6 DUST FREE ENVIRONMENT

.1 It is imperative that the Owner's operational areas remain clean and dust free. It will be the Contractors responsibility to insure this. If the Contractor fails to maintain these conditions, the Owner reserves the right to retain the services of a professional maintenance company to fine clean the areas in question, and the invoiced costs for the cleaning services of the professional maintenance company shall be deducted from the Contractor's next progress payment.

.2 Be responsible to keep operational areas clean and dust free. Prevent contamination of and nuisance to adjacent areas and properties near the Work from dust by taking appropriate dust control measures. Take measures to prevent dust and dirt rising and migrating to occupied areas including return air systems and/or adjacent properties. Respond immediately to complaints of dust received from the Public, authorities having jurisdiction and the Owner.

.3 Adjacent work areas remaining in use by the Owner during construction period shall have furnishings and equipment covered and protected from dust under this Contract. Completely install the dust covers and prior to commencement of each of the Contractor's working periods and shall be also be removed upon the end of the Contractor’s work period. If required by the Owner, the Contractor shall also provide additional dust covers and keep them in clean and usable conditions.

.4 Before the Work proceeds, the Contractor shall provide temporary dust-proof partitions and screens constructed as specified in this Section, sealed at the floor, walls, ceilings, or intersecting members in a manner to prevent dust and dirt infiltration into adjacent areas of the building(s).

.5 Contractor shall leave work area(s) remaining in use by the Owner clean and ready for use between each work period.

7 TEMPORARY DUST TIGHT PARTITIONS, RIGID HOARDING AND WEATHER BARRIERS

.1 Provide temporary dust tight partitions or rigid hoarding where nature of Work requires access to floor areas above or below the floor being worked on to control dust migration and/or as specified herein and noted on Drawings. Maintain area of Work under negative pressure to prohibit migration of dust into other areas of the building. Refer also to Division 15 requirements for isolation of existing mechanical systems.

.2 Separate construction areas from occupied areas. Construct dust tight and wind proof screens as required to completely enclose the Work areas and the access passages to the Work areas from the other areas of the existing building(s). Maintain passage for Fire Department if required.

.3 Coordinate location of dust tight partitions, hoarding, protective coverings, weather barriers and doors with the Owner. Obtain the Owner’s approval of type, location and protection methods before proceeding with the renovation/alteration work.

.4 Protective coverings shall be fire retardant coated, dust-proof fabric of premium grade, weighing minimum of 4.3 oz/sq.yd. (145 g/m 2), Polyweave® Flame -Retardant Fabric by Polytrap Products, or P9M Fire Retardant Fabric by Inland Plastics Ltd., or other manufacturer acceptable to the Owner.

.5 Rigid hoarding: fabricate and erect screens of 3-5/8" (92mm) metal studs at 16" (450mm) O.C., with 1/2" (13mm) gypsum board on both sides with closed joints. Provide acoustic batt insulation within framing cavity of rigid hoarding.

.6 Tape or seal between adjacent boards and provide painted finish.

.7 Seal perimeter of cutouts around fixtures, fittings and penetrations.

8 Extend screens from floor to underside of structure above unless otherwise shown, noted or approved otherwise.

.9 Where applicable, construct screen partitions to provide required fire resistance ratings and smoke-tight separation to the approval of the authorities having jurisdiction.

.10 Where exposed to the weather, fully cover the temporary screens with a heavy waterproof and dust proof fabric or polyethylene with lapped and sealed joints. Where required to have sound

attenuation, fill spaces between studs with 4" (100mm) thick, glass fibre or mineral fibre insulation batts to deaden sound.

.11 Thoroughly pack framing at junctions of screens with floors, walls and underside of structure with batt insulation and seal in a manner to prevent infiltration of dust, dirt, etc. Ensure that rooms within closed off areas which are not being altered are kept dust free.

.12 Install temporary packing at bottom of doors through screens and to elevator entrances not being used during demolition and construction. Prevent dust seepage into existing adjacent spaces and occupied areas.

.13 Remove screens and other temporary protection and make good damaged or blemished adjoining work when directed by the Owner and/or Consultant.

.14 Provide daily vacuuming of construction dust from corridors and connecting areas as the Work progresses. This shall be considered a minimum requirement; increase vacuuming as necessary.

8 PROTECTION

.1 Protect existing services, structures, landscaping and other items required to remain and newly installed Work during construction with secure and durable coverings, barricades, hoardings or guards suitable for the various conditions and as specified herein. Protect adjacent surfaces and structures against damage which may occur from falling debris or other causes. Perform the Work in a manner to avoid damage.

.2 The Owner’s patrons, staff, personnel shall be occupying the existing building(s) during the Performance of the Work. Provide for the safety of the existing building occupants and for the security of occupied areas. Provide protection and keep clear areas that are required for access to, and exit from, occupied areas. Maintain free, safe, protected, clear passage to and from the building(s) and the work area(s), refer to the Drawings for any specific hoarding or temporary partition locations. Maintain clear and safe fire exit routes as specified herein.

.3 Particular attention will be paid to the prevention of fire and the elimination of fire hazards which would endanger the work or adjacent building and premises. Contractor will provide and maintain all necessary fire extinguishers during the Work at all times, located at convenient and accessible points, and meeting the approval of the Owner.

.4 Where construction operations must be executed or traffic routed over finished floors, lay minimum ¼” (6mm) thick plywood coverings tightly fitted over surface in such areas. Secure plywood to prevent movement in a manner which will not damage finished surfaces.

.5 Where construction operations must be performed over finished roofs and waterproofed areas lay minimum ½” (13mm) thick plywood covering. Secure plywood to prevent damage and penetration of roof and waterproofed surfaces. Provide means to prevent wind uplift.

.6 Protect, relocate and maintain active building services to adjoining areas of building(s) without interruptions, except those required for connection for the Work which shall be coordinated with the Owner as specified herein. Make good all damage.

.7 It is essential that the existing building(s) be both water and weather-tight at all times. Therefore, the Contractor shall furnish all temporary protective enclosures, tarpaulins, etc… as may be required to protect openings made by the Work of this Contract.

.8 Protect the existing work to remain. Provide coverings and other protection materials.

.9 Where exterior weather barrier is required, it shall consist of minimum 12mm plywood on temporary framing across the full extent of any opening in the building envelope. Refer also to section 7.

.10 Cover openings in equipment, ducts and pipes until final connections are made.

.11 Protect exposed live electrical equipment during construction for personal safety.

.12 Shield and mark live electrical parts with appropriate warnings.

.13 Provide temporary doors for rooms containing electrical distribution equipment. Keep doors locked except when under the direct supervision of a qualified electrician.

.14 Wherever practical lock or barricade finished areas.

.15 As soon as construction is sufficiently advanced, enclose accessible openings to provide security. Provide temporary doors with security hardware.

.16 Ensure continuous security of the Work and construction equipment.

.17 Provide protection against the elements to maintain products and installations from damage and deterioration.

.18 Remove snow and ice immediately from parts of the Work except finished roofs. Do not use salt and avoid mechanical damage.

9 DESIGN AND SAFETY REQUIREMETNS FOR TEMPORARY FACILITIES

.1 Be responsible for design, erection, operation, maintenance and removal of temporary structural and other temporary facilities.

.2 Engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform these functions where required by law or by the Contract Documents, and in all cases where such temporary facilities and methods of construction are of such a nature that professional engineering skill is required to produce safe and satisfactory results.

.3 Submit shop drawings bearing the seal and signature of registered professional engineering personnel skilled in the appropriate disciplines, indicating and showing temporary structural and other temporary facilities and methods of construction intended for the Work.

10 HOURS OF WORK

.1 Existing facility is an occupied day care run by the Massey Centre. Contractor will have access to the site, Monday to Saturday, however will have to schedule their time of work with Massey Centre on a daily and weekly basis In order to ensure the ongoing operations of the facility during all phases of construction.

11 WASTE CONTAINERS AND BINS

.1 Provide waste containers and bins for the disposal of demolition waste and construction materials waste in compliance with the Owner’s waste management requirements.

.2 Waste containers and bins shall be “closed box” type to prevent the waste materials from being wind blown and contaminating the Owner’s property, adjacent private and Public properties.

.3 Sizes of the waste containers and bins shall be to fit the location(s) at the Place of the Work to the acceptance of the Project Manager and/or Consultant.

.4 The location(s) of the waste containers and bins shall be to the acceptance of the Owner. The Owner reserves the right to have the location(s) of the waste containers and bins re-located as required to suit the operations of the Owner and the building(s) at no additional cost to the Owner.

.5 Contractor and/or his subcontractors shall not use the Owner's and or the existing building's waste containers and bins for disposal of demolition waste and/or construction waste. If after investigation by the Owner, it is discovered that the Contractor and/or his subcontractors have used the Owner's and or the existing building(s) waste containers and bins for disposal of demolition waste and/or construction waste, the Owner reserves the right to back charge the said Contractor, deduct the equivalent costs from the Contractor's next progress payment for the use of the said waste containers and bins.

.6 If waste containers must be located on Municipal property, the Contractor shall be responsible for obtaining all necessary permissions/permits and bearing all associated costs.

END OF SECTION

1.0 GENERAL

1.1 DOCUMENTS

.1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

1.2 REQUIREMENTS INCLUDED

.1 Barriers.

.2 Environmental Controls.

.3 Construction Aids.

.4 Use of the work.

.5 Traffic controls.

.6 Utilities.

.7 Protection.

.8 Office and sheds.

.9 Signs.

1.3 REMOVAL OF TEMPORARY CONSTRUCTION

.1 Temporary office facilities, toilets, barricades, storage sheds, utilities and other construction of temporary nature erected by the Trade Contractor shall be removed from the site by the Trade Contractor as soon as the progress of the Work will permit.

1.4 BARRIERS

.1 Exterior Hoarding: The Contractor will -

.1 Erect and maintain hoarding around perimeter of work site as required by governing authorities to protect the public, workers, public and private property from injury or damage.

.2 Provide barricades and covered walkways required by governing authorities for public rights-of-way.

.3 Provide tree protection in accordance with landscape drawings/details or to the standard of the municipality in which work is being carried out.

.2 Guard Rails & Barricades:

.1 The Contractor will administer and maintain a health and safety program. Contractor shall provide all perimeter guard rails and/or barricades to the building and at all floor openings, shafts and stairwells, etc. within the building as required by the Work. Such protection will be to the requirements of the Workers' Safety Insurance Board (WSIB).

.2 Trade Contractor shall remove and replace such guard rails and barricades, to accommodate the Work.

.3 Trade Contractor shall provide, maintain and adjust any other guard rails, barricades or safety platforms required by law and authorities having jurisdiction for protection of the Work and the workmen and for protection of the public.

1.5 ENVIRONMENTAL CONTROLS

.1 Weather Enclosures: The Contractor will provide weathertight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs as necessary to expedite the work.

.2 Dust Tight Screens:

.1 The Contractor will provide dust tight screens or partitions as necessary to localize dust generating activities, and for the protection of workers and finished areas of Work and the public.

.2 Trade Contractor shall relocate and maintain to accommodate the Work.

.3 Dust Prevention: Trade Contractor, where necessary, shall effectively water-sprinkle and dampen the workings, and roads used in the operation, and involved portions of the site with such frequency as will satisfactorily allay any dust during all hours that work is being performed.

.4 Noise Abatement: Trade Contractor shall comply with the requirements of Municipal and/or Provincial by-laws regarding noise abatement and shall take all necessary steps to ensure the generation and transmission of noise and vibration due to the work is kept to a minimum. Any such noise or vibration which is found to be objectionable shall be corrected at no additional cost to the Owner and to the satisfaction of the Contractor and the Consultant.

.5 Refer to specification 01 35 00 for assembly requirements for dust proof screens.

1.6 USE OF THE WORK

.1 Site Storage/Loading:

.1 Contractor shall confine the Work and the operations of employees to limits indicated by the Contract Documents and as directed by the Owner and shall not unreasonably encumber the premises with products and materials.

.2 Contractor shall confine activities relevant to the work to areas within the designated working area. No fires, explosions or similar dangerous activities permitted on the site.

.3 Contractor shall conduct construction operations with minimum interference to adjacent roadways, sidewalks and access facilities in general and shall keep such areas free from materials, debris and equipment at all times.

.4 Contractor shall not load or permit to be loaded any part of the Work and existing structure with a weight or force that will endanger the Work and existing structure.

1.7 TRAFFIC CONTROL

.1 Access to Site:

.1 The Contractor will provide and maintain access road, sidewalk crossings, ramps and construction runways as may be required for access to the Work.

.2 Contractor shall co-operate and co-ordinate his operations with the Owner.

.3 Access to the site for all deliveries and removals shall be from Davenport Road only; access is not permitted from Designer’s Walk Lane to the east.

.4 Contractor is responsible for obtaining municipal Street Occupation Permit to temporarily occupy any portion of the public right of way during the Work.

.2 Public Traffic Flow:

.1 Contractor shall provide and maintain flagpersons, traffic signals, barricades and flares/lights/lanterns as required to perform the Work and protect the public.

.3 Construction Parking:

.1 Contractor shall be responsible for arranging their own parking requirements; parking shall not be provided by Owner.

1.8 TEMPORARY UTILITIES

.1 Sanitary Facilities:

.1 Contractor is permitted to use Owner’s sanitary facilities.

.2 Temporary Water

.1 Use of existing building water service shall be made available to the Contractor and shall be coordinated with the Owner prior to commencing work.

.3 Temporary Heating & Enclosure:

.1 Provide for the proper heating and drying out of the building until completion by the use of appropriate heating equipment. Do not use “salamanders’. Use forced hot air type heaters operated in well-ventilated locations. Protect the floors, walls and ceilings around the heating units. Ensure that no damage by staining result to finished floors during operation, servicing and refueling.

.2 Maintain the heated parts of the building(s) or temporary enclosures at not less than 50°F (10°C), or at such temperature specifically stated in the sections of the Specifications, for the proper installation of the various Products. Maintain a temperature of not less than 68°F (20°C) within all occupied areas of the building.

.3 Provide at the Place of the Work and ready for operation between at least October 15th and April 30th, temporary plant and equipment for heating materials and forms and for maintaining the proper temperature and humidity of the concrete during curing. Refer to and comply with the requirements of CSA A23.1/A23.2-00.

.4 Duct carbon dioxide gas (CO2) or other noxious or harmful gases from heaters to the exterior of the building(s).

.4 Temporary Power & Light:

.1 Use of existing electrical power shall be made available to the Contractor by the Owner.

.2 Comply with the requirements of codes, by-laws and regulations governing temporary power and lighting at the location of the Work.

.3 Contractor will provide a power source on each floor in a central location. Each Subcontractor shall provide required extension cords from location where power is provided to location where it is needed.

.4 Contractor will arrange for general temporary lighting throughout Work areas. Each Subcontractor shall provide special task lighting required in the execution of the Work.

.5 Provide sufficient lighting to ensure sufficient visibility for the proper execution, safety and inspection of the Work.

.6 Comply with Construction Safety Association's "Temporary Wiring Standards on Job Sites", the Ontario Electrical Code, and other authorities having jurisdiction.

.5 Temporary first Aid Facilities

.1 Provide site equipment and medical facilities necessary to supply first-aid service to injured personnel in accordance with regulations of the Worker’s Compensation Act.

1.9 PROTECTION

.1 Protection for Off-Site & Public Property:

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

.2 Fire Protection:

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

.2 Open fires and burning of rubbish are not permitted on the site.

.3 Contractor shall take all necessary precautions to eliminate fire hazards and instruct Superintendent to make periodic inspections to ensure proper preventative measures are being complied with by all personnel working on the site.

.4 Paint and/or oil covered rags shall be stored in covered metal containers. Rubbish shall be removed daily, from building and site.

.5 Contractor shall comply with Provincial and Municipal fire safety requirements during the period of construction and other regulations pertaining to fire protection during construction work.

.6 Where torch cutting and electric welding are required by the Work, the trade concerned shall provide additional fire safety measures considered necessary to protect existing facilities from fire. A suitable fire extinguisher shall be provided by the applicable Trade Contractor adjacent to all welding operations.

.7 Precautions shall be taken at all times to prevent fire by spontaneous combustion.

.3 Protection of Building Finishes & Equipment:

.1 Contractor shall adequately protect his work at all stages of the operations and shall maintain the protection until his work is completed. Contractor shall remove and replace at his own expense any work and materials damaged, that cannot be repaired or restored to the Consultant's approval, due to inadequate protection being provided.

.2 Contractor shall be responsible for protection of existing work. If during the work, any existing work is damaged by the Trade Contractor, it shall be replaced without cost to the Owner and to the approval of the Consultant.

.3 Contractor shall provide, erect, and maintain adequate temporary barricades, warning signs, and lights for the protection of the public at all excavations, closures, detours, and points of danger where his work occurs outside the hoarding area.

.4 Security:

.1 Security for buildings and grounds will be provided by the Contractor.

1.10 OFFICES & SHEDS

.1 Offices & Sheds:

.1 Any temporary buildings, or other structures required by the Contractor, shall be provided by him in a condition and location acceptable to Owner. Contractor shall provide at his own expense, his own equipment for heating, lighting, plumbing and telephone for such buildings, subject to the approval of the Owner. Contractor may be required, at his own expense, to relocate his temporary building or buildings as often as required by the Owner to facilitate the efficient prosecution of the Work.

.2 First Aid: First aid facilities, including attendant, will be provided on the site by the Construction Manager, completely equipped in accordance with the requirements of the Workplace Safety Insurance Board (WSIB).

1.11 SIGNS & PUBLICITY

.1 Signs:

.1 Contractor will control the use of signs. Signs or advertising shall not be placed on site without the written prior approval of Owner.

.2 Trade signage shall not be erected or applied prior to approval of design and placement.

.2 Publicity: All publicity relating to this project is subject to the approval of the Owner and no mention of the project in advertising or articles in any publication will be permitted unless cleared through the Owner. Publicity or advertising implying endorsement of a product by the Owner will not be permitted.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Progressive cleaning.

.2 Final cleaning

1.2 Related Section

.1 Section 01770 - Closeout Procedures.

1.3 Reference Standards

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC2 2008, Stipulated Price Contract

1.4 Project Cleanliness

1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site containers for collection of waste materials and debris.

.5 Provide and use clearly marked separate bins for recycling.

.6 Remove waste material and debris from site and deposit in waste container at end of each working day.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.5 Final Cleaning

.1 Refer to CCDC2, GC 3.14.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 Related Sections

.1 Section 01780 - Closeout Submittals

1.3 References

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

1.4 Inspection and Declaration

.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Consultant's Inspection.

.2 Consultant's Inspection: Consultant and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Certificates required by Boiler Inspection Branch Fire Commissioner Utility companies have been submitted.

.5 Operation of systems have been demonstrated to Owner's personnel.

.6 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Owner, Consultant, and Contractor. If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Owner and Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. Refer to CCDC 2, General Conditions Article GC 5.4 - Substantial Performance of Work for specifics to application.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment: When Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to CCDC 2, General Conditions Article GC 5.7 for specifics to application. If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with CCDC 2, General Conditions Article 5.5.

END OF SECTION

PART 1 – GENERAL

1.1 Hand over to the Consultant comprehensive operations and maintenance manual and material suitable for the Owner's maintenance employees. Manuals shall cover all Products supplied and installed under the Contract.

1.2 Submit draft of the operation and maintenance manuals for the Consultant's review at least 15 days before testing systems and equipment, or as outlined in Supplemental Conditions 08800. Incorporate alterations and additions, as found to be necessary during testing, and prepare the final version of the manual from the corrected draft before Turnover.

1.3 Submit final version of operation and maintenance manuals prior to Contract Completion.

1.4 Testing of systems and equipment will not be deemed to be complete until the requisite number of copies of the final version of the manuals has been handed over to the Consultant.

1.5 If standard literature is incorporated into the operations and maintenance manual, any irrelevant information shall be deleted, or suitably noted.

1.6 The manuals shall have sufficient detail in order that the Owner can totally maintain the equipment without outside help.

1.7 Submit all material in English.

PART 2 – FORMAT

2.1 Organize data in the form of an instructional manual.

2.2 Provide both digital copy and hard copy as follows:

.1 Hard copy (1): Commercial quality, 219 x 279 mm, black 3-ring binder (thickness to suit).

.2 Digital copies (3): CD/DVD with jewel case

2.3 When multiple binders are used, correlate data into related consistent groupings.

2.4 Cover: Identify each Manual with type or printed title "Contract Record Documents"; list title of Contract, identify subject matter of contents.

2.5 Arrange content by systems or process flow, under Section numbers and sequence of Table of Contents.

2.6 Provide tabbed fly leaf for each separate Product and system, with typed description of Product and major component parts of equipment.

2.7 Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

2.8 Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

PART 3 - CONTENTS

3.1 Operation and maintenance manuals shall contain the following minimum information and data:

.1 Table of contents: Provide title of Contract; names, addresses, and telephone numbers of Consultants and Contractor with name of responsible parties; schedule of Products and systems, indexed to content of the volume.

.2 For each Product or system: List names, addresses and telephone numbers of Subcontractors, suppliers and service representatives, including local source of replacement supplies and parts including telephone numbers.

.3 Warranties: Warranties are between the Contractor and Owner. Warranties shall include, as a minimum:

.1 Description of warranty coverage.

.2 Date warranty starts.

.3 Date warranty expires.

.4 Contact name, address and phone number (the Contractor shall also be responsible for advising the Owner of changes in contact information during the warranty period).

.5 Equipment and components performance curves.

.6 Hydro certificates.

.4 Reports: For each Product or system provide the following:

.1 Manufacturer's certified reports

.2 Factory test reports.

.3 Field testing reports.

.5 Details of design, construction and/or fabrication features, component function and maintenance requirements, to permit effective start-up, operation, maintenance, repair, modification, extension and expansion of any portion or feature of the installation.

.6 Technical data, Product data, supplemented by bulletins, component illustrations, detailed views, technical descriptions of items and parts lists.

.7 Schematics, interconnection lists: Manuals shall be complete with schematic and wiring diagrams, wiring interconnection lists and diagrams fully cross referenced and coordinated, printed circuit board layouts including the component identification, component parts list with electronic substitution equivalent. Provide cross referenced components lists and sequence of operations.

.8 Trouble shooting and fault location guide: Instructions to facilitate quick return of malfunctioning equipment to operation.

.9 Routine servicing and preventative maintenance schedule for Products and/or estimated hours required for routine servicing and preventative maintenance tasks.

.10 List of recommended spare parts and recommended quantity of each item to be stocked based on spare part availability and re-order time.

.11 Complete set of all reviewed shop drawings.

.12 Product data: Mark each sheet to clearly identify specific Products and component parts, and data applicable to installation; delete inapplicable information.

.13 Drawings: Supplement Product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams and as required in the Specifications.

.14 Typed text: As required to supplement Product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions and as required in the Specification.

PART 4 - DRAWINGS

4.1 Prepare all required drawings on CAD, using Autocad Version 2006 or higher.

4.2 Prepare CAD drawings to meet the requirements of the Owners or Consultant's CAD Standards and Procedures.

4.3 Supply and hand over to the Consultant, one full sized, original whiteprint, for each final drawing prepared under this Contract. These drawings are to incorporate all addenda and changes made during the construction period.

4.4 Prior to Contract Completion, supply and hand over to the Consultant, one complete set of CAD Drawing Files in Autocad format on storage media acceptable to Consultant for each final drawing prepared under this Contract, including but not limited to circuit drawings, equipment layout drawings, and shop drawings.

4.5 Refer also to specific requirements for Divisions 15 & 16.

4.6 The Consultant shall provide to the Contractor for a fee, a CD containing graphic (electronic) representation of the drawings. Complete and return the "Standard License Agreement" in order to receive and use the electronic files. (To be provided by Consultant upon request).

END OF SECTION

PART 1- GENERAL

Work Included in Section

.1 Various demolition and removals of existing and for provision of new work, as shown on architectural drawings.

.2 Restoration of damaged or disturbed Work.

.3 Removal of surplus materials from the site.

1.2 Related Sections

.1 Architectural demolition requirements for existing and new work - Divisions 2 through 16.

1.3 Qualifications

.1 Work of this Section shall be executed by a company having a minimum of five (5) years continuous experience and able to deploy adequate equipment and skilled personnel to complete Work expediently in an efficient and orderly manner.

1.4 Examination

.1 Examine existing property. Determine nature and extent of materials to be removed.

.2 Examine adjacent properties. Determine extent of protection required.

1.5 Salvage

.1 Unless otherwise noted, materials from demolition shall become property of Contractor who shall promptly remove all salvageable material and debris from Site.

.2 Do not sell material on Site.

.3 The Owner will review Site prior to commencement of demolition and instruct the Contractor, in writing, as to the items to be retained for re-use or be turned over to the Owner.

.4 Store material to be salvaged, neatly on wooden pallets, where directed by Owner.

.5 Remove and store indicated items for future use by Owner. Remove, handle andtransport such items to storage area designated on Drawings or to an area within the site designated by Owner. Perform such work carefully and with diligence to prevent any damage to the items during removal and in storage.

1.6 Maintaining Traffic Hauling Operations

.1 Maintain and preserve Owner's access requirements within, to and from existing building in areas where demolition and removal work is being carried out.

.2 Do not close, obstruct, place or store material in Owner's driveways and passageways. Conduct operations with minimum interference with roads, streets, driveways, user traffic and passageways.

1.7 Hauling Operations

.1 Maintain roadways and paving in the hauling areas clean on a daily basis and as required by Municipal authorities.

1.8 Safety Requirements

.1 Undertake Work and effect arrangements required by authorities having jurisdiction for protection of public.

.2 Coordinate posting of danger signs conspicuously around property. Close doorways and thoroughfares giving access to area of demolition with barricades.

.3 Provide a competent, experienced supervisor in charge of the Work and on Site while Work is in progress.

.4 Demolition of spray or trowel-applied asbestos can be hazardous to health. Stop work and notify the Construction Manager immediately should material resembling spray or trowel-applied asbestos be encountered in the course of demolition work, which has not already been identified. Do not proceed until written instructions have been received from the Owner.

.5 Should any suspect designated substance not already identified, be encountered, cease work in the immediate area and immediately report, to the Owner. Owner is responsible for removal of designated substances.

1.9 Life and Fire Safety

.1 Provide fire extinguishers in acceptable locations to fire prevention authorities and of type suitable to enable personnel to cope with fire occurring during progress of Work.

1.10 Demolition Drawings

.1 Submit for approval; drawings, diagrams or details showing sequence of disassembly work and supporting structures.

.2 Submissions, if required, are to bear stamp of qualified professional engineer registered in Province of Ontario.

1.11 Protection

.1 Prevent movement, settlement or damage of adjacent structures, services, walks, paving, parts of existing building to remain. Make good damage caused by demolition.

.2 Take precautions to support affected structures and, if safety of building being demolished or adjacent structures or services appears to be endangered, cease operations and notify Owner.

.3 Provide temporary weather enclosures to requirements of Division 1.

.4 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.

.5 Provide and maintain necessary fire extinguishers throughout the work to the approval of the Fire Marshal, and located at convenient and accessible points.

.6 Protect work to remain against damage of any kind.

.7 Protect building floors and roofing against damage from operations under this Section, including lifting, moving, rolling, etc., of materials. Use 12.7 mm (1/2”) thick plywood covers with ends mechanically joined, over floor for any such handling. Over roof, provide 19 mm (3/4”) thick plywood under laid with 1” thick polystyrene insulation board adhered to same. Provide same when working from, or over roof surfaces. Be responsible for repairs to flooring or roofing for any damage caused. Execute such repairs to the satisfaction of, and at no cost to Owner.

PART 2 - PRODUCTS

Not applicable

PART 3 – EXECUTION

3.1 INSPECTION

.1 Visit and examine the site and note all characteristics and features affecting the Work of this Section.

.2 Ensure all services, whether buried; built-in or exposed are properly identified as to position, type of service, size, direction of flow.

.3 Inspect materials, equipment, components to be re-used or turned over to the Owner. Note their condition and advise the Consultant in writing of any defects or conditions which would affect their removal and re-use.

3.2 PREPARATION

.1 Prevent movement, settlement or damage of elements of the existing building which are to remain. Provide bracing, shoring and supports as required. Protect existing surfaces not to be restored from damage during concrete removal procedures.

.2 Cut and/or cap existing services within the work area, if any, prior to start of Work as required, but do not affect the services of areas not under construction or essential to the ongoing operation of the building.

.3 In all cases, exercise all reasonable care during removal operations to avoid damaging items to be salvaged, re-used, or items that are not part of the Scope of Work.

.4 Seal off all work areas to prevent dust and debris from affecting other areas outside of work area. Prevent public access to areas being repaired.

.5 Tape and/ or seal and provide protection to all mechanical and electrical services and all fire alarm and security devices still functioning adjacent to the work areas to prevent damage resulting from dust, water, or impact.

.6 Cover floor drains as required to prevent concrete, abrasive blasting debris or any other material from entering the drains. Ensure that all drains continue to operate as required during construction.

.7 Remove or protect in place all surface mounted or permanent fixtures not to be demolished from damage during demolition procedure.

.8 Apply filter cloth to all exhaust and ventilation vents within work area to prevent dust generated by the construction activity from escaping.

.1 Contractor shall clean, or replace filter cloth if the filter cloth becomes unsuitably dirty as determined by Consultant.

3.3 Demolition

.1 Execute Work in accordance with requirements of authorities having jurisdiction.

.2 At end of each day's work, leave Site in a safe condition and erect safety barriers and lights as required. Ensure that no parts of existing structure are in danger of collapsing.

.3 Perform demolition work where not specifically indicated, but required to make provisions for new Work.

.4 Provide any additional materials, labour and services required, not specifically mentioned or shown on Drawings, but necessary for proper completion of Work.

.5 Dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

.6 Leave work in safe condition so that no part is in danger of toppling or falling. Protect interiors of areas not to be demolished from exterior elements.

.7 Demolition of concrete shall be performed by percussive techniques to prevent damage to the embedded reinforcing to remain and the supporting structural steel framing below.

.8 Provide shoring to support the slab when removals reduce its load-carrying capacity, as directed by the Consultant. No payment will be made for such shoring as it is to be included in the cost of repair as outlined in these documents.

.9 Materials forming permanent part of the building that require removal become contractor's property and must be removed from site daily, unless such materials are otherwise specified or shown on Drawings to be reused under this Contract (or turned over to Owner). Remove materials not suitable for reuse as shown on Drawings (as specified) from site.

.10 Leave building in a "broom-clean" condition on completion of work to Owner's satisfaction.

.11 Clean existing surfaces specified to receive new applied finishes to assure proper adherence.

.12 Clean existing surfaces to receive paint finish to paint manufacturer's written specifications and/or recommendations.

.13 Confine operations and workers to those parts of the building which are defined on Drawings, and exercise great care not to damage existing construction beyond that necessary for the carrying out new work and make good any such damage in every respect.

.14 Do not disturb adjacent items designated to remain in place.

.15 All required re-painting due to damage, overspray, etc. is the Contractor’s responsibility.

3.4 WASTE DISPOSAL

.1 Disposal of waste products and material is to be in strict accordance with the product manufacturer’s material safety data sheets and in accordance with the governing waste control regulations.

.2 The existing drainage system is not to be used to dispose of project wastes and / or materials

.3 Store volatile wastes or material in covered metal containers. All wastes which create hazardous conditions must be removed from the premises daily.

END OF SECTION

PART 1 – GENERAL

1.0 General Instructions

.1 Read and be governed by Conditions of the Contract and Sections of Division 1

1.1 Reference Standards

.1 CAN/CSA-A23.1-94, Concrete Materials and Methods of Construction.

.2 Construct Municipal sidewalks to requirements of jurisdictional authorities.

PART 2 – PRODUCTS

2.1 Materials

.1 Cement: to CAN/CSA-A5-93, type 10, normal.

.2 Water and aggregates: to CAN/CSA-A23.1-94.

.3 Admixtures: to ASTM C 494 for air entraining admixtures.

.4 Granular base: MTO Form 1010, Granular A.

.5 Joint filler: 12.7mm (1/2") thick asphalt impregnated fibreboard to ASTM D1751.

.6 Joint filler: 12.7mm (1/2") thick sponge rubber to ASTM D1752.

.7 Lumber: plywood and wood formwork to CAN/CSA-A23.1-94.

.8 Form stripping agent: colourless, mineral oil, free of kerosene, with viscosity minimum 70, maximum 110 second Saybolt Universal at 38°C, flashpoint minimum 150°C open cup.

.9 Curing compound: chlorinated rubber type compound to ASTM C309-97, Type 2 (white), Class A.

2.2 Concrete Mixes

.1 Except where indicated or specified otherwise use concrete mix designed to produce 32MPa minimum compressive strength at 28 days. Exposure to C-2 to CAN/CSA-A23.1-94.

.2 Accelerating admixtures may be used subject to approval in cold weather. If approved use of admixture shall not relax cold weather placement requirements of CAN/CSA-A23.1-94. Use of calcium chloride is not permitted.

.3 Provide 5-8% air entraining agent to mix to improve frost resistance. Comply with CAN/CSA-A23.1-94.

2.3 Accessories

.1 Vitrified Polymer Composite (VPC) Cast in Place Detectable/Tactile Warning Surface tile.

.1 Size: as per drawings/details.

.2 Colour: to be selected by Consultant from manufacturer's standard colour range.

.2 Acceptable product/system:

.1 Tactile systems by Armor Tile as distributed by Engineered Plastics Inc.

PART 3 – EXECUTION

3.1 Examination

.1 Ensure that subgrade of compacted fill conforms to elevations and sections before placing granular base material.

3.2 Granular Base

.1 Place granular base to minimum 150mm (6”) compacted thickness.

.2 Compact granular base to 90% Standard Proctor density to ASTM D698-91.

3.3 Forms

.1 Construct wood forms for unsupported concrete edges, to provide straight lines and smooth flowing curved lines as indicated. Apply form stripping agent to surfaces in contact with concrete. Remove forms when concrete fully cured.

.2 Locate saw-cut crack control joints at 6000mm (20’-0”) o.c. at curbs and elsewhere where indicated and/or required.

3.4 Concrete

.1 Maintain accurate records of poured concrete items to indicated date, location of pour, quality, air temperature and test samples taken.

.2 Screed concrete to required levels, to tolerance of 12.7mm (1/2”) in 3050mm (10’-0”).

.3 Finish concrete sidewalks with consistent directional screeded broom finish.

.4 Provide tooled crack control joints to sidewalks at 1525mm (5’-0”) o.c.

.5 Apply curing compound to manufacturers specification.

3.5 Clean-Up

.1 Clear away excess waste and materials and debris resulting from the work of this section.

END OF SECTION

PART 1 - GENERAL

1.1 Definition

.1 Architectural woodwork: Shall mean custom fabricated cabinetry, counters/countertops, wood door frames, custom fabricated wall/ceiling panels.

1.2 Quality Assurance

.1 The "Quality Standards" of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), Edition 2, 2014 together with authorized additions and amendments, shall be used as a reference standard and shall form part of this Project Specification.

.2 Where modifications to the AWMAC Quality Standards contained within the Manual are included in this Project Specification, then such modifications shall govern in case of conflict.

.3 Any reference in Custom or Premium grade in this Specification shall be as defined in the AWMAC Quality Standards.

.4 Any 'item not given a specific quality grade shall be Premium grade as defined in the AWMAC Quality Standards.

.5 All architectural woodwork to be used in the Project shall meet the requirements of the AWMAC Quality Standards for the particular grade specified.

.6 References in this Specification to part and item numbers mean those parts and items contained within the AWMAC Quality Standards Manual.

1.3 Submittals

.1 Shop Drawings:

.1 Prepare and submit to the Consultant for review Shop Drawings for architectural woodwork in accordance with 01330.

.2 Shop Drawings shall show wood and metal construction details of all architectural details of all general arrangements, locations of all service outlets: typical and special installation conditions; materials being supplied and all connections, attachments, anchorage and location of exposed fastenings, as applicable, field measured dimensions and coordination with other trade Contractors.

.3 Shop Drawings shall incorporate plans, elevations, sections and details for all architectural woodwork included in this Section.

.4 No Work shall be fabricated until the Shop Drawings have been reviewed and all other related submittals, and samples as required by the Specifications, have been approved by the Consultant.

.5 Submission of Consultant’s Drawings for Shop Drawings is not acceptable.

.2 Samples:

.1 Provide 3 samples of each plastic laminate, wood veneer and solid polymer surface to Consultant for review.

.3 Brochures:

.1 Submit manufacturer's descriptive literature of specialty items not manufactured by the architectural woodwork manufacturer as required by the Consultant.

1.4 Product Handling and Storage

.1 The architectural woodwork manufacturer and the Contractor shall be jointly responsible to make certain that architectural woodwork are not delivered until the building and storage areas are sufficiently dry so that the architectural woodwork will not be damaged by excessive changes in moisture content.

.2 Architectural woodwork delivery, storage, and handling shall be in accordance with AWMAC Quality Standards.

.3 Delivered, materials which are damaged in any way or do not comply with these Specifications will be rejected by the Consultant and shall be removed from the job site and replaced with acceptable materials.

1.5 Warranty

.1 Warrant labour, materials and Workmanship against defects and deficiencies for a period of two (2) years after the date of Substantial Performance.

PART 2-PRODUCTS

2.1 Millwork

.1 General: Use clean stock only and comply with AWMAC Quality Standards grades as indicated.

.2 **Plastic Laminate (Plam)**: 1.6 mm thick, (allow for a maximum of 5 colours)

.1 Manufacturer: Abet Laminati, Wilsonart, Nevemar, Pionite or Formica

.2 Colour: to be selected by Consultant from full colour range

.3 **Solid Polymer Fabrication (SO)**: Solid, mineral based, non-porous surfacing material, acrylic; not coated, laminated or of composite construction; in accordance with ANSI Z124 Type 6 and meeting the following:

.1 Properties:

.1 Tensile strength (ASTM D638-84): 6000psi.

.2 Tensile modulus (ASTM D638-84): 1.5 x 10 psi.

.3 Elongation (ASTM D638-84): 0.4%

.4 Hardness (Rockwell “M” Scale): 94.

.5 Hardness (Barcol Impressor): 60.

.6 Gloss – 60 deg. Gardner 9ANSI Z124-80, HUD Bulletin UM-73-84): 5 – 20.

.7 Colour stability (NEMA LD3): no change 200 hours.

.8 Wear, cleanability (ANSI Z124-80, HUD Bulletin UM-73-84): pass.

.9 Fire hazard (ASTM E84):

.1 Flame spread: maximum 15.

.2 Smoke developed: maximum 25.

.10 Water absorption (ASTM D570-81): 0.04% @ 24 hours/0.4% @ long term for 19 mm thickness sample.

.11 Stain resistance (ANSI Z124).

.2 Acceptable Manufacturers:

.1 Quartz by Caesarstone, Zodiaq by DuPont or equivalent.

.3 Colour: To be selected from Consultant from manufacturer’s Group 2-3 colour range.

.4 **Wood Veneer (WV)**: Plain sliced maple with clearcoat finish.

.5 Hardwood lumber: moisture content 12 % or less in accordance with National Hardwood Lumber Association (NHLA) and AWMAC premium grade.

.1 Species: poplar where scheduled to receive paint finish, maple where scheduled to receive stain finish/to match wood veneer.

.6 Plywood: veneer core, softwood, 19 mm thick typical unless otherwise indicated.

.1 Softwood: to CSA 0151.

.2 Fir to CSA0121-M1978.

.3 Hardwood plywood: to CSA O115.

.4 Poplar plywood (PP): to CSA O153, standard construction

.5 Where plywood is used for wall construction, the Flame Spread rating must be 150 or less on any exposed surface, or any surface that would be exposed by cutting through the material in any direction.

.6 Where plywood is used in ceiling construction, the Flame Spread rating must be 25 or less on any exposed surface, or any surface that would be exposed by cutting through the material in any direction.

.7 Particle board: not permitted

.8 Medium density fibreboard (MDF): to ANSI A208.2, density 769 kg/m. Medium density fibreboard must:

.1 meet the performance requirements of ANSI A208.2.

.2 be manufactured such that formaldehyde emissions do not exceed [0.15] ppm (180 g/m) when tested in accordance with ASTM E 1333.

.3 contain at least [15] % recycled materials by weight.

.4 Where MDF is used for wall construction, the Flame Spread rating must be 150 or less on any exposed surface, or any surface that would be exposed by cutting through the material in any direction.

.5 Where MDF is used in ceiling construction, the Flame Spread rating must be 25 or less on any exposed surface, or any surface that would be exposed by cutting through the material in any direction.

.9 Sealant: As per 07920.

2,2 Millwork Hardware

.1 As per Drawings/details.

2.3 Millwork Finishing - General

.1 Finish all interior millwork surfaces in plastic laminate, unless otherwise indicated.

2.4 Fabrication - General

.1 Obtain all on-Site dimensions before fabricating items. Obtain all relevant data and incorporate provisions for items of equipment enclosed by millwork.

.2 Verify wall alignment prior to proceeding with fabrication. Site conditions at variance with reviewed Shop Drawings shall be specifically noted on reviewed Drawings and forwarded to Consultant. Variances, due to Site conditions necessitating revisions to Shop Drawings shall be accepted prior to fabrication.

.3 Fabricate running members in maximum standard lengths obtainable for the particular species wherever possible.

.4 Fit all joints tight. Locate joints at points which will not interfere with, affect strength or detract from appearance of materials.

.5 Securely fasten intersecting framing members together at corners in an approved manner. Reinforce as required for rigid assembly designed for applicable loads.

.6 Wherever practicable, install, fit and adjust all hardware specified, in shop.

.7 Incorporate adequate provisions for scribing and fitting to adjoining surfaces in a manner acceptable to Consultant.

.8 Provide for and incorporate provisions to recognize inherent shrinkage characteristics of materials specified.

.9 Casework core material: 19 mm veneer core plywood.

.10 Casework edge trim: Plastic laminate with plastic laminate millwork and solid wood lippings with wood veneer millwork.

.11 Plastic laminate finish at all exposed surfaces, including cabinet/drawer interiors unless noted otherwise.

2.5 Accessories

.1 Nails and staples: to CSA B111; galvanized to CAN/CSA-G164 for exterior work, interior humid areas and for treated lumber; stainless steel finish elsewhere.

.2 Wood screws: to CSA B35.4 stainless steel, type and size to suit application.

.3 Splines: wood.

.4 Adhesive: recommended by manufacturer.

.5 Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.

PART 3 - EXECUTION

3.1 Job Conditions

.1 Job conditions for installation of architectural woodwork shall be as specified under AWMAC Quality Standards.

3.2 Installation

.1 Cabinet and Casework: Install in accordance with Section 705 of the AWMAC Quality Standards.

.2 Panelling and Trim: Install in accordance with Section 706 of the AWMAC Quality Standards.

.3 Finish Hardware: Install finish hardware in accordance with Section 711 of the AWMAC Quality Standards.

.4 All cutting and fitting of trim around fixtures and receptacles to be done as no extra cost to Contract.

.5 Scribe countertops to wall during installation. Install silicone sealant at backsplash/wall junction at time of installation. Colour to Consultan’s selection.

END OF SECTION

PART 1 – GENERAL

1.1 General Requirements

.1 This section of the Specification forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

1.2 Description of Work

.1 This sub trade is responsible for the supply and installation of the following items, including all related labour and materials necessary to successfully complete the installation of same whether or not in the Contract Documents:

.1 Fiber reinforced composite cladding panels

.2 Fastening system

.3 Closures and related trim

.4 Caulking and sealants

.5 Other related Work as indicated on Drawings, Details and Specifications

1.3 Submittals

1. Submit Shop Drawings of panel installation, material, panel layout, and accessories in accordance with Section 01330. No Work shall be fabricated before Shop Drawings have been reviewed/ returned. **Submitting the Architect's Drawings for this purpose is not acceptable.**
2. Indicate on Shop Drawings all information required to fabricate and install the components of this system. This shall include dimensions, connection and jointing details, gauges, finishes, etc. Ensure that plan and section details of interior and exterior corners, horizontal and vertical joints, fascias and soffits, cut-outs, miscellaneous trim, fastening methods etc are shown at a minimum scale of 1:5.
3. Shop Drawings indicating connection and support of cladding panels shall be sealed by a qualified professional engineer licensed to designs structures and registered in Place of Work.
4. Submit 100mm x 150mm sample of proposed color for review.
5. Submit samples of accessories if requested by the architect.
6. Submit manufacturer's data sheets covering the care and recommended maintenance procedures of siding for incorporation into maintenance manuals.
7. Submit copies of manufacturer's warranties.

1.4 Quality Assurance

1. Installers shall have a minimum of ten (10) years of proven experience in the installation of similar products specified on projects of a similar size and scope.
2. Install a mockup on the building in a location as directed by the architect. Mockup shall incorporate panels, and all required finishing accessories and adjacent materials including flashing, windows, doors and trim. Mock up may form part of the work.

1.5 Delivery, Storage and Handling

1. Deliver, store and handle materials in accordance with the site and environmental conditions prescribed by the manufacturer.
2. Remove damaged materials from the site.

1.6 Coordination with Other Trades

1. All penetrations through the siding for the work of other trades shall be fitted with a watertight sleeve.

1.7 Warranty

1. Provide manufacturer's ten (10) year warranty from date of production to maintain the mechanical qualities, water tightness and frost resistance with exception of a gradual change caused by normal wear (aging), provided the panels are correctly installed on a ventilated construction according to the installation prescriptions of the producer.
2. The following will be deemed as defective Work; leakage, failure to stay in place, undue cracking, chipping or adjacent deformations, panel deformation, buckling, spalling, deterioration of surface. Failure of 15% of surface area of panels shall be deemed a total failure of the installation requiring complete re-application of panels.

PART 2 – PRODUCTS

2.1 Panel System

1. Material: Cement, calcium-silicate strengthened with cellulose fibers and resins without asbestos, fiberglass or formaldehyde.
2. Size:
   .1 1200mm wide x maximum practical length. Where joints are required, they shall be aligned with adjacent window mullions
3. Thickness:
   .1 Minimum 8mm thick, suitable for face fastening according to panel sizes indicated on Drawings
4. Panels shall be non-combustible when tested to ASTM E-136-81/CAN4-S114M80 and shall meet a maximum flame spread rating of 5 and a maximum smoke development rating of 25 when tested in accordance with CAN4-S102M
5. Surface: smooth
6. Colour: as selected by consultant from manufacturer standard colour range
7. Face fastened
8. Acceptable Manufacturers/Distributors:
   .1 Natura Fibre Cement Panel as manufactured by Equitone. Distributed by Engineered Assemblies.
   .2 Carat Fibre Cement Panel as manufactured by Swisspearl. Distributed by Muralis Architectural.

2.2 Fasteners

.1 As recommended by panel manufacturer, to suit backup assembly as detailed.

.2 All fasteners to have sufficient corrosion resistance or be coated with corrosion resistant products.

2.3 Panel Support Framing

.1 Galvanized sheet steel, G90 (Z275) zinc coating and shall confirm to the applicable requirements of the latest version of ASTM 635M. Profile: z-girt or hat channel, ¾" thickness, or as recommended by panel manufacturer.

2.4 Continuous Weather Barrier Sheathing Membrane

.1 Triple layer, spun bonded polypropylene, water resistant, breathable underlayment for rainscreen wall systems. Acceptable product: SRP Outshield UV or equivalent. Include all auxiliary materials such as tapes, primers, and fasteners required for a complete system installation.

2.5 Sealants

.1 As per Specification 07900.

PART 3 – EXECUTION

3.1 Inspection

1. Inspect the Work and notify the architect of any conditions that would affect the installation or performance of the Work.

3.2 Preparation

1. Verify site dimensions prior to commencement of the Work,
2. Clean and prepare to existing substrate to provide a surface free of frost, loose nails, dirt, debris or other contaminants that would adversely affect the installation of the breathable underlayment.
3. Seal all penetrations using a combination of tapes, self adhered membranes and other compatible sealants and products. Ensure all laps and details allow water to flow to the exterior
4. Starting at base of wall, unroll sheathing membrane horizontally across wall. Extend 6” over starting corner. Fasten at top and bottom of roll within 2” of edge 12 “on centre and at a maximum of 2’ 0” on centre in field. Do not place vertical laps above windows.

3.3 Installation

1. Only installers approved by cladding manufacturer shall install panels.
2. Install panels, and accessories in accordance with manufacturer’s printed instructions and reviewed Shop Drawings.
3. Fasten panels with fasteners and equipment as recommended by the manufacturer.
4. Install panels with joints over middle of wall framing, maintain a 8mm gap between panels.
5. Keep minimum distance to corners and edges as recommended by the manufacturer.
6. Install panels true to line and level with clean cut edges and joints.
7. Seal around all items penetrating siding with sealant in accordance with Section 07920.
8. Any penetrations of the panel system must be properly sealed with a sealant in accordance with Section 07900.
9. Finished installation shall be properly secured, free of rattles, distortions, waviness, protrusions, damaged or chipped components.

3.4 Clean Up

1. Remove any concrete dust from cutting/drilling panels with clean water and a compressor hose or brush.
2. Upon completion of Work remove all equipment, tools, surplus materials and garbage.
3. Panel installation site shall be left in a clean condition free from construction debris.

- END OF SECTION

1.0 GENERAL

1.1 DOCUMENTS

.1 This Section of the Specifications forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.

1.2 SUMMARY

.1 Section Includes: Furnishing of all labour, materials, services and equipment necessary for the supply and installation of firestopping as indicated on drawings and as specified.

.2 Related Work:

.1 Cast-In-Place Concrete: Section 03300

.2 Concrete Masonry Units: Section 04220

.3 Joint Sealants: Section 07920

.4 Gypsum Wall Board: Section 09250

.5 Mechanical: Division 15

.6 Electrical: Division 16

1.3 REFERENCES

.1 CAN4-S115-M85, "Standard Method of Fire Tests of Firestop Systems".

1.4 SUBMITTALS

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

.2 Product Data: Submit three copies of manufacturer's specification and installation instructions for each type of material required. Include data substantiating that materials comply with specified requirements.

.3 Shop Drawings: Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.

.4 Samples: Submit duplicate 300 mm x 300 mm (12" x 12") samples showing actual firestop material proposed for project.

1.5 DELIVERY, STORAGE, & HANDLING

.1 Comply with manufacturer's recommendations for handling, storage and protection during installation.

.2 Do not allow materials to become wet or soiled, or covered with ice or snow.

1.6 JOB CONDITIONS

.1 Examine substrate and the conditions under which the insulation work is to be performed. Do not proceed with firestopping work until unsatisfactory conditions have been corrected.

1.7 FIRE-RESISTANCE RATINGS

.1 Ratings of firestop systems shall be not less than the fire-resistance ratings noted on drawings and required by authorities having jurisdiction for firestopping of the floor, wall, ceiling and roof assemblies involved.

.2 Ratings of firestop assemblies for service penetrations shall be not less than the fireresistance rating of the floor, wall, ceiling or roof assembly being penetrated.

.3 Use only ULC tested firestopping assemblies as approved by the Consultant prior to firestop installations.

2.0 PRODUCTS

2.1 MATERIALS

.1 Firestopping Systems: In accordance with CAN4-S115-M85. All firestopping systems installed shall be from single manufacturer. Trade Contractors shall coordinate with General Contractor.

.1 Accepted Products:

.1 "Fire & Smoke Containment Systems" by Tremco Ltd., Construction Division.

.2 "Firebarrier Firestop Systems" by A/D Fire Protection Systems Inc.

.3 "Fire Protection Products" by Electrical Products Division/3M.

.4 "Firestop Systems" by Hilti (Canada) Limited.

. 5 Or approved alternative.

.2 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115-M85 and not to exceed opening sizes for which they are intended.

.3 Firestop System Rating: Equal to fire separation rating as noted on drawings.

.2 Service Penetration Assemblies: Certified by ULC in accordance with CAN4-S115-M85 and listed in ULC Guide No. 40 U19.

.3 Service Penetration Firestop Components: Certified by ULC in accordance with CAN4-S115-M85 and listed in ULC Guide No. 40 U19.13 and ULC Guide No. 40 U19.15 under the Label Service of ULC.

.4 Fire-resistance rating of installed fire stopping assembly not less than the fire-resistance rating of surrounding floor and wall assembly.

.5 Firestopping at openings intended for ease of re-entry such as cables: Elastomeric or resilient seal; do not use cementitious or rigid seal at such locations.

.6 Firestopping at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: Elastomeric or resilient seal; do not use a cementitious or rigid seal at such locations.

.7 Primers: To manufacturer's recommendation for specific material, substrate, and end use.

.8 Water (if applicable): Potable, clean and free from injurious amounts of deleterious substances.

.9 Damming and backup materials, supports and anchoring devices: To manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.10 Sealants for vertical joints: Non-sagging.

3.0 EXECUTION

3.1 PREPARATION

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

.2 Prepare surfaces in contact with firestopping materials to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

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

3.2 INSTALLATION

.1 Install firestopping material and components in accordance with ULC certification and manufacturer's instructions.

.2 Seal holes or voids made by through penetrations, poke-through termination devices, and un-penetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to a neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.3 INSPECTION

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

3.4 SCHEDULE

.1 Firestop at:

.1 Edges of floor slabs and rated roof slabs at slab edge covers, aluminum windows/curtain wall.

.2 Deflection space at top of fire-resistance rated masonry and gypsum board walls.

.3 Intersections of fire-resistance rated masonry walls to concrete and to gypsum board walls and of fire-resistance rated gypsum board walls to concrete and to masonry.

.4 Penetrations through fire-resistance rated masonry, concrete and gypsum board walls.

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

.6 Openings and sleeves installed for future use through fire separations.

.7 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.

.8 Firestopping around mechanical and piping assemblies penetrating fire separations by Division 15 - Mechanical. Firestopping systems and products to be coordinated with this specification section.

.9 Firestopping around electrical assemblies penetrating fire separations by Division 16 - Electrical. Firestopping systems and products to be coordinated with this specification section.

3.5 CLEAN-UP

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

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

END OF SECTION.

PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Labour, Products, equipment and services necessary for sealant Work in accordance with the Contract Documents.

.2 Work of this Section does not include sealants in firestopping and smoke sealed assemblies.

1.2 REFERENCES

.1 ASTM C834, Specification for Latex Sealants.

.2 ASTM C920, Specification for Elastomeric Joint Sealants.

.3 ASTM C1330, Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

1.3 SUBMITTALS

.1 Product data: Submit copies of Product data in accordance with the Conditions of the Contract describing type, composition and recommendations or directions for surface preparation, material preparation and material installation.

.2 Samples: Submit following samples in accordance with the Conditions of the Contract.

.1 Two samples of sealant/caulking, for colour selection.

.2 Two samples of back-up material and primer for physical characteristics.

1.4 QUALITY ASSURANCE

.1 Qualifications: Work of this Section shall be executed by trained applicators approved by sealant manufacturer and having a minimum of 5 years proven experience.

1.5 SITE CONDITIONS

.1 Do not install materials when ambient air temperature is less than 5°C, when recesses are wet or damp, or to manufacturer's recommendations.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Arrange delivery of materials in original, unopened packages with labels intact, including batch number, and ensure that on-site storage is kept to a minimum. Do not store materials on site where there exists any danger of damage from moisture, direct sunlight, freezing and other contaminants.

1.7 WARRANTY

.1 Submit a warranty for Sealant Work in accordance with General Conditions, except that warranty period is extended to 2 years. Warrant against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion and staining adjacent surfaces. Warranty shall be for complete replacement including affected adjacent Work.

PART 2 - PRODUCTS

2.1 Materials

.1 General:

.1 All materials under Work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.

.2 Use materials as received from manufacturers, without additives or adulterations. Use one manufacturer's Product for each kind of Product specified.

.2 Sealant **Type A**: ASTM C920, Type M, Grade NS, Class 25; Two-part, Polyurethane non-sag type, in standard colours selected.

.1 Sikaflex 2C-NS by Sika Canada Inc.

.2 Dymeric 240 by Tremco Ltd.

.3 Sealant **Type B**: ASTM C920, Type S, Grade NS; One-part mildew-resistant silicone, in standard colours selected.

.1 786 Mildew Resistant Silicone Sealant by Dow Corning Inc.

.2 Tremsil 200 Silicone Sealant by Tremco Ltd.

.4 Sealant **Type C**: ASTM C834; Pure acrylic siliconized sealant; in standard white colour (paintable).

.1 Tremflex 834 Silconized Sealant by Tremco Ltd.

.2 CRL 800 Acrylic Latex Caulk with Silicone by CR Laurence Ltd

2.2 Accessories

.1 Primers: Type recommended by material manufacturers for various substrates, primers to prevent staining of adjacent surfaces encountered on project.

.2 Joint backing: ASTM C1330; Round, solid section, closed cell, skinned surface, soft polyethylene foam gasket stock, compatible w ith primer and sealant materials, 30 to 50% oversized, Shore A hardness of 20, tensile strength 140 to 200 kPa. Bond breaker type surface.

.3 Bond breaker: Type recommended by material manufacturers.

.4 Void filler around the window frames to be one part expanding polyurethane foam.

.5 Cleaning agents: As recommended by material manufacturer, non-staining, harmless to substrates and adjacent finished surfaces.

2.3 Mixing

.1 Follow manufacturers instructions on mixing, shelf and pot life.

PART 3 – EXECUTION

3.1 Preparation

.1 Prepare joints to receive sealants to manufacturer's instructions. Ensure that joints are clean and dry and ferrous surfaces are free from rust and oil.

.2 Clean recesses to receive sealant, to be free of dirt, dust, loose material, oil, grease, form release agents and other substances detrimental to sealant's performance.

.1 Remove lacquer or other protective coatings from metal surfaces, without damaging metal finish, using oil-free solvents. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sand blasting.

.2 Ensure recess is dry.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings. Remove incompatible coatings as required.

.3 Ensure that all materials in contact with sealant are compatible. Test substrate for adhesion.

.4 Depth of recess: Maintain depth to ½ joint width up to a maximum of 13 mm and not less than 6 mm at centre of joint. For greater depth, use joint backing under. Where recess is less than specified depth, cut back surface of recess to specified recess depth.

.5 Install polyethylene backing rod in joints 6 mm or more in width. Roll backing rod into joint. Do not stretch or bend backing rod. Install bond breaker to back of recess.

.6 Prime sides of recess, in accordance with sealant manufacturer's instructions.

.7 Condition products for use in accordance with manufacturer’s recommendations.

3.2 Installation

.1 Apply sealant immediately after adjoining Work is in condition to receive such Work. Apply sealant in continuous bead using gun with correctly sized nozzle. Use sufficient pressure to evenly fill joint.

.2 Ensure sealant has full uniform contact with, and adhesion to, side surfaces of recess. Superficial painting with skin bead is not acceptable. Tool sealant to smooth stains or other defects.

.1 At recesses in angular surfaces, finish sealant with flat profile, flush with face of material at each side.

.2 At recesses in flush surfaces, finish compound with concave face, flush with face of material at each side.

.3 Make sealant bead uniform in colour.

.4 Cure sealants in accordance with sealant manufacturer's instructions. Do not cover up sealants until proper curing has taken place.

.5 Immediately remove excess compound or droppings which would set up or become difficult to remove from adjacent finished surfaces, using recommended cleaners, as work progresses. Do not use scrapers, chemicals or other tools which could damage finished surfaces. Remove defective sealant.

.6 Clean recesses and re-apply sealant.

.7 Remove masking tape immediately after joints have been sealed and tooled.

3.3 Cleaning

.1 Clean surfaces adjacent to joints, remove sealant smears or other soiling resulting from application of sealants. At metal surfaces, remove residue. Do not mar or damage finishes on materials adjacent to joints. Repair or replace marred or damaged materials.

3.4 Schedule of Locations

.1 Following sealant location schedule is included for convenience and may not be complete. Examine Contract Drawings and other specification sections and determine entire extent of Work of this Section. Generally seal following locations:

.1 Concrete, masonry, wood and stone to metal.

.2 Wood to masonry, concrete and stone.

.3 Metal to metal.

.4 All dissimilar materials.

.2 Sealant **Type A**:

.1 Exterior joints between masonry and steel or aluminum.

.2 Exterior joints between masonry and shelf angle.

.3 Exterior joints between steel or aluminum and concrete or masonry.

.4 Interior and exterior control joints, except in floors.

.5 Door frames, louvre frames, interior and exterior side.

.6 Protrusions through interior and exterior walls and floors, interior and exterior side, except where fire rated seals are required.

.7 Seal thresholds.

.3 Sealant **Type B:**

.1 Control joints in tiled areas.

.2 Between vanity and tile.

.3 Between vanity and mechanical fixtures/fittings.

.4 Between access panels and tile.

.5 Between tiles and adjacent materials.

.4 Sealant **Type C:**

.1 Perimeter of interior windows.

.2 Perimeter of firehose cabinets.

.3 Junction between drywall and masonry.

END OF SECTION

PART 1 - GENERAL

1.1 Work Included

As detailed or scheduled in the contract documents, supply only of:

.1 Steel frame products including frames, transom frames (glazed or paneled), sidelight and window assemblies, fire-rated and non-rated.

.2 Steel panels, fixed or removable, flush or rabbetted, similar in construction to steel doors, for use in steel frame product.

.3 Steel doors, swing type, flush, with or without embossed face sheets, with or without glazed or louvered openings, fire-rated, with or without temperature rise ratings, and non-rated.

1.2 References

.1 ANSI/NFPA 80-1999, Standard for Fire Doors and Fire Windows

.2 ASTM A653/A653M-05a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

.3 ASTM C553-02, Specification for Mineral Fiber Blanket Insulation for Commercial and Industrial Applications

.4 ASTM C578-05, Specification for Rigid, Cellular Polystyrene Thermal Insulation

.5 ASTM C591-01, Specification for Un-Faced Pre-formed Rigid Cellular Polyisocyanurate Thermal Insulation

.6 ASTM C592-04, Specification for Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction

.7 ASTM C1289-05a, Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board

.8 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies

.9 CAN4-S106-M80, Standard Method for Fire Tests of Window and Glass Block Assemblies

.10 CGSB 41-GP-19MA (1984), Rigid Vinyl Extrusions for Windows and Doors

.11 CSA W59-2003, Welded Steel Construction (Metal Arc Welding)

.12 CSDMA, Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000

.13 CSDMA, Selection and Usage Guide for Steel Doors and Frames, 1990

.14 CSDMA, Recommended Specifications for Commercial Steel Door and Frame Products – 08 11 00, 2006

1.3 Submittals

.1 Submit shop drawings in accordance with Section 01330.

.2 Indicate each type of door, frame, steel, construction and core.

.3 Indicate material thickness, mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, paneled or louvered) and arrangement of standard hardware.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule of the Architect.

.5 Contractor responsible for coordination and installation of products provided under this Section shall;

.1 Verify and provide to the contractor responsible for the supply of steel door and frame products, actual opening sizes and field conditions by field measurement before fabrication. Submittal drawings shall reflect measurements and conditions provided, and product manufactured accordingly. Coordinate field measurements with fabrication and construction schedules to avoid delays.

.2 Verify that substrate conditions, whether existing or installed under other Sections, are as detailed in the Architect's drawings, and are acceptable for product installation in accordance with the manufacturer's instructions.

.6 Manufacturer shall not proceed with fabrication without receipt of approved submittal drawings and approved hardware schedule.

1.6 Warranty

.1 Materials and workmanship shall be warranted by the manufacturer for a period of one (1) year from date of substantial performance.

PART 2 - PRODUCTS

2.1 Materials

.1 Acceptable Materials: Steel doors and frame product manufactured in accordance with this Specification by CSDMA members, are eligible for use on this project.

.2 Steel: Commercial grade steel to ASTM A653, CS, Type B, Coating Designation ZF75 (A25) minimum. Minimum steel thicknesses shall be in accordance with Appendix 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".

.1 Interior Doors: Face sheets shall be 0.042 in. (1.0 mm) minimum thickness.

.3 Door Core Materials

.1 Fiberglass: Loose batt type, density 24 kg/m3 (1.5 pcf) minimum, conforming to ASTM C553 or ASTM C592.

.4 Primers

.1 Rust inhibitive touch-up only.

.6 Miscellaneous

.1 Door Silencers. Single stud rubber/neoprene type.

.2 Exterior Top Caps. Rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19MA.

.3 Frame Thermal Breaks. Rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19MA.

2.2 Fabrication - Frame Products

.1 Interior frame product shall be 18 gauge. Interior frames and window assemblies shall be welded type construction. Interior transom frames shall be welded type construction. Interior sidelight assemblies shall be welded type construction.

.2 Frame product shall be mortised, blanked, reinforced, drilled and tapped at the factory for templated hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.

.3 Mortised cutouts shall be protected with steel guard boxes.

.4 Frame product shall be reinforced only, where required, for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware. Drilling and tapping is by others, on site, at time of installation.

.5 Provide anchorage appropriate to floor, wall and frame construction. Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb. For rebate opening heights up to and including 1520 mm (60")

provide two (2) anchors, and an additional anchor for each additional 760 mm (30") of height or fraction thereof, except as indicated below. Frames in previously placed concrete, masonry or structural steel shall be provided with anchors located not more than 150 mm (6") from the top and bottom of each jamb, and intermediate anchors at 660 mm (26") on centre maximum. Fasteners for such anchors shall be provided by others.

.6 Minimum reinforcing, anchor and other component gauges shall be in accordance with Table 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".

.7 Each door opening shall be prepared for single stud rubber door silencers, three (3) for single door openings, two (2) for double door openings, except on gasketed frame product.

.8 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.9 Fire-rated frame products shall be provided for those openings requiring fire protection as determined and scheduled by the Architect. Frames, transom and sidelight assemblies shall be listed for conformance with CAN4-S104. Window assemblies shall be listed for conformance with CAN4-S106. All fire-rated frame products shall bear the label of, and be listed by a nationally recognized testing agency having a factory inspection service. Labeling shall be in accordance with NFPA 80, the listing authority's policies and label materials, and shall identify the manufacturer. Fire-rated frame products shall be constructed as listed for labeling in the Follow-Up Service Procedures/Factory Inspection Manuals issued by the listing agency to individual manufacturers

.10 Provide grout guards fabricated from not less than 0.016 in. (0.4 mm) thick steel at all hardware mortises on frame product to be grouted.

2.2.1 Welded Type

.1 Frame product shall be accurately mitered or mechanically jointed.

.2 As defined in Appendix 2 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products", frame product perimeter corner joints shall be:

.1 Face welded; continuously welded on the profile faces, with exposed faces filled and ground to a smooth, uniform, seamless surface.

.3 Joints at mullions, sills and center rails shall:

.1 Be coped accurately, butted and tightly fitted.

.2 At intersecting flush profile faces, be securely welded, filled and ground to a smooth, uniform, seamless surface.

.3 At intersecting recessed profile faces, be securely welded to concealed reinforcements, with exposed hairline face seams.

.4 At all other intersecting profile elements, have exposed hairline face seams.

.4 Welding shall conform to CSA W59.

.5 Where frame product is to be installed prior to the adjacent partition, a floor anchor shall be securely attached to the inside of each jamb profile. Each floor anchor shall be provided with two (2) holes for securing to the floor. For conditions that do not permit the use of a floor anchor, an additional wall anchor, located within 150 mm (6") of the base of the jamb, shall be substituted.

.6 Weld in two (2) temporary jamb spreaders per door opening to maintain proper alignment during shipment and handling, which shall not be used for installation.

.7 Glazing stops shall be formed steel channel, minimum 16 mm (0.625") height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.8 When required due to site access, when advised by the contractor responsible for coordination or installation, as specified on the Architect's drawings or due to shipping limitations, frame product for large openings shall be fabricated in sections as designated on the approved submittal drawings, with splice joints for field assembly and welding by others.

.9 Prior to shipment, mark each frame product with an identification number as shown on the approved submittal drawings.

.10 Refer to drawings/details/schedules for frame depth/throat opening sizes

2.3 Fabrication – Doors

.1 General

.1 Interior doors shall be welded stiffener construction.

.2 Longitudinal edges shall be continuously welded, filled and sanded with no visible edge seams.

.3 Doors shall be mortised, blanked, reinforced, drilled and tapped at the factory for template hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.

.4 Holes 12.7 mm (0.5") diameter and larger shall be factory prepared, except mounting and through-bolt holes, which are by others, on site, at time of hardware installation. Holes less than 12.7 mm (0.5") diameter shall be factory prepared only when required for the function of the device (for knob, lever, cylinder, thumb or turn pieces) or when these holes over-lap function holes.

.5 Doors shall be reinforced only, where required, for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware. Drilling and tapping is by others, on site, at time of installation.

.6 Top and bottom of doors shall be provided with inverted, recessed, welded steel channels. Exterior doors, and where otherwise scheduled by the Architect, shall be provided with flush steel top caps.

.7 Minimum reinforcing and component gauges shall be in accordance with Table 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".

.8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.9 Fire-rated doors shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Architect. Such products shall be listed for conformance with CAN4-S104. All fire-rated doors shall bear the label of, and be listed by a nationally recognized testing agency having a factory inspection service. Labeling shall be in accordance with NFPA 80, the listing authority's policies and label materials, and shall identify the manufacturer. Fire-rated doors shall be constructed as listed for labeling in the Follow-Up Service Procedures/Factory Inspection Manuals issued by the listing agency to individual manufacturers.

.10 Prior to shipment, mark each door with an identification number as shown on the approved submittal drawings.

.2 Welded Stiffener Construction

.1 Both face sheets for interior doors shall be formed from a sheet of 18 gauge steel.

.2 Doors shall be reinforced with vertical stiffeners, securely welded to each face sheet at 150 mm (6") on center maximum.

.3 Voids between vertical stiffeners shall be filled with fiberglass batt type insulation.

PART 3 - EXECUTION

.1 Site Storage and Protection of Materials

.1 Doors and frame product shall be removed from their wrappings or coverings upon receipt on site, be stored in a vertical position, and be spaced with blocking to permit air circulation between them.

.2 All materials shall be thoroughly inspected upon receipt and all discrepancies, deficiencies and/or damages shall be immediately reported, in writing, to the supplier.

.3 All damages incurred during shipment shall be noted on the carrier's Bill of Lading and immediately reported, in writing, to the supplier.

.4 Any scratches or disfigurement of doors or frame product caused by shipping or handling shall be promptly cleaned and touched-up with a zinc-rich primer.

.5 All materials shall be properly stored on planks or dunnage, out of water and covered to protect from damage from any cause.

.2 Installation

.1 Prior to installation, remove temporary shipping spreaders.

.2 Prior to installation, the area of floor on which the frame is to be installed, and within the path of the door swing, shall be checked and corrected for flatness.

.3 Door and frame product shall be checked for correct size, swing, rating and opening number.

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

.5 Set frames plumb, square, level and at correct elevation.

.6 Fire-rated door and frame product shall be installed in accordance with the terms of their listings, NFPA-80, or the local Authority Having Jurisdiction (AHJ).

.7 Secure anchorages and connections to adjacent construction.

.8 Brace frames rigidly in position while building-in. Install wood spreaders at third points of frame rebate height to maintain frame width. Provide vertical support at centre of head for openings exceeding 1200 mm (48") in width.

.9 During the setting of frame product, check and correct as necessary for opening width, opening height, square, alignment, twist and plumb, in accordance with the CSDMA, "Recommended Dimensional Standards for Commercial Steel Doors and Frames".

.10 Grout guards and junction boxes are intended to protect hardware mortises and tapped holes from masonry grout of 4 in. (101 mm) maximum slump consistency that is hand troweled in place.

.11 Frame products are not intended or designed to act as forms for grout or concrete. Grout hollow metal sections in "lifts" or take precautions otherwise to ensure that frames are not deformed or damaged by the hydraulic forces that occur during this process.

.12 Keep hollow metal surfaces free of grout, tar, and/or other bonding materials or sealers. Promptly clean grout, tar, and/or other bonding materials or sealers off of frame product and doors.

.13 Remove wood spreaders after frames have been built-in.

.14 Make allowance for deflection to ensure structural loads are not transmitted to frame product.

.15 Install doors, and hardware in accordance with hardware templates and manufacturer's instructions.

.16 Adjust operable parts for correct clearances and function.

.17 Install louvers, glazing and door silencers.

.18 Finish paint in accordance with Section 09900.

END OF SECTION

1.0 - GENERAL

1.1 References

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC)

.1 Quality Standards for Architectural Woodwork, latest edition.

1.2 Shop Drawings

.1 Submit Shop Drawings in accordance with Section 01330 - Submittal Procedures.

.2 Indicate door types, sizes, core construction, construction and cutouts.

1.3 Samples

.1 Provide sample of door construction, including face/edge finish.

1.4 Regulatory Requirements

.1 Wood fire rated doors: labeled and listed by an organization accredited by Standards Council of Canada.

1.5 Storage and Protection

.1 Protect doors from dampness. Arrange for delivery after Work causing abnormal humidity has been completed.

.2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.

1.6 Warranty

.1 Provide manufacturer's standard warranty against defects in materials and workmanship for the following duration:

.1 Warranty Period, Interior Doors: 3 years from date of Substantial Completion.

2.0 – PRODUCTS

2.1 Wood Flush Doors with Wood Veneer Finish or Primed for Paint Finish

.1 Solid core: to CAN/CSA-O132.2.1. The following manufacturers are approved for Work of this section:

.1 Algoma Hardwoods Inc.

.2 Buell Door Company

.3 JWS Manufacturing Inc

.4 Weyerhauser Door

.5 CDS Doors

.2 Flush interior doors 44mm (1 ¾”) thick, solid core construction, AWI type construction as indicated. Grade: Premium.

.3 Doors to be one piece core construction, no voids. Stiles and rails to be electronically glue bonded to particle core prior to abrasive sanding.

.4 Non-rated doors AWI SECTION 1300, Type PC-5, minimum 33 lbs/ft$_3$ particle core typical to ANSI A208.1 LD-2

.5 Edge: hardwood painted to match door face finish.

.6 Faces: Hardboard Face Panels, paint finish. Paint shall be from manufacturer’s premium line as outlined in Spec 09900 Painting.

.7 Adhesive: Type II (water resistant) for interior doors.

3.0 - EXECUTION

3.1 Installation

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install doors and hardware in accordance with manufacturer's printed instructions [and CAN/CSAO132.2 Series, Appendix A].

.3 Adjust hardware for correct function.

3.2 Adjustment

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

END OF SECTION

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements listed in Division 1

1.2 QUALITY ASSURANCE

.1 Meet all requirements of the local building code and all other applicable regulations.

.2 Qualified suppliers must have in their employ a Certified A.H.C. (Architectural Hardware Consultant) as licensed by the Door and Hardware Institute. The supplier must have a minimum of two (2) years experience furnishing hardware for similar projects. Only firms that can extend manufacturers warranty to the project are to be considered as suppliers.

.3 Inspection of supplied Finishing Hardware will be done by a Certified A.H.C. A complete Site Inspection Report will be issued to the Architect.

1.3 SUBMITTALS

.1 Upon request, provide mounted samples of hardware items to be supplied.

.2 Prepare and submit two (2) copies of a detailed hardware schedule listing product numbers, size and finishes. Include two (2) sets of catalog cuts.

.3 Furnish other sections with two (2) complete sets of hardware templates for related fabricating and installation.

.4 Submit for owner review and comments two (2) key schedules listing the door number, hardware heading or item, and the key group.

.5 Where electrical hardware is to be supplied, provide wiring diagrams showing all wire termination points. Where electrical hardware is to be supplied and installed provide the contractor with riser diagrams listing the correct wire runs and back box sizes as well as 115 VAC requirements.

.6 Where required in Division 1, provide two (2) operating manuals for the owners use. Include copies of the hardware schedule, templates, installation instructions and all maintenance data.

1.4 PRODUCT DELIVERY, HANDLING, AND STORAGE

.1 Deliver each hardware item in its original package complete with all fasteners, keys, templates, and installation instructions required for installation.

.2 Clearly mark each container with the door opening number and the hardware schedule item or heading number.

.3 The contractor must store hardware delivered in a secure area. The storage area must contain adequate shelf space to hold all the hardware off the floor. Ensure the area is kept dry and clean.

.4 When requested, package items of hardware separately for delivery to other

fabricators for their installation.

1.5 WARRANTY

.1 Provide a written warranty for a period of one (1) year for all hardware supplied and a five (5) year warranty for the door closers.

.2 When requested provide extended warranties listed in Division 1.

PART 2 PRODUCTS

2.1 See Hardware Schedule

PART 3 EXECUTION

3.1 INSPECTION

.1 The consultant will inspect all the door openings to ensure the specified products are supplied and installed in accordance with the manufacturers instructions. A written report will be furnished to the Architect detailing openings where products are missing, installed incorrectly or in need of proper adjustment.

3.2 INSTALLATION

.1 The general contractor shall obtain a copy of ANSI/DHI A115.1G-94,"Installation Guide for Doors and Hardware". It is the intent of this document to be used as a reference guide in the proper handling, storage, and installation of finishing hardware, and doors and frames. This document can be obtained through the Door and Hardware Institute.

.2 Other trades installing hardware must follow all manufacturers instructionsincluding door closer adjustment, handing of locksets as required, and degree of door swing. Advise the consultant if door frames are not square and plumb and prevent proper door hardware installation.

.3 Use only the original manufactures fasteners for the installation of all hardware products. Drill and tap doors and frames, where required, to properly install finishing hardware products.

.4 Mount hardware to suit door elevations. Unless otherwise directed by the consultant, install hardware at the following mounting heights:

Locksets	40"	(1015mm)
Exit device	40"	(1015mm)
Push/Pull	42"	(1065mm)
Deadlock	48"	(1200mm)

.5 Manufacturers of specified products are responsible to instruct hardware installers in the proper installation methods of their products.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Design, labour, Products, tool, equipment and services necessary for aluminum work in accordance with the Contract Documents.

1.2 REFERENCES

.1 AAMA 611, Voluntary Standards for Anodized Architectural Aluminum.

.2 AAMA CW-10, Care and Handling of Architectural Aluminum from Shop to Site.

.3 ANSI H35.1M, Alloy and Temper Designation Systems for Aluminum (Metric).

.4 ASTM A167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

.5 ASTM B209M, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.6 ASTM B221M, Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles and Tubes.

.7 ASTM C920, Specification for Elastomeric Joint Sealants.

.8 ASTM E283, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.9 ASTM E331, Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

.10 ASTM F738M, Specification for Stainless Steel Metric Bolts, Screws, and Studs.

.11 CAN/CGSB 1.108-M, Bituminous Solvent Type Paint.

.12 CAN/CGSB 79.1-M, Insect Screens.

.13 CAN/ULC S702, Thermal Insulation, Mineral Fibre, for Buildings.

1.3 DEFINITION

.1 Aluminum work: Shall mean aluminum storefront, entrances, operable units, vestibules, doors, and framing mentioned in Part 2 of this Specification Section.

1.4 DESIGN REQUIREMENTS

.1 Design aluminum work in accordance with following Climatic Design Data for **Toronto** contained in the Ontario Building Code.

.2 Design aluminum work to accommodate following without producing detrimental effect:

.1 Cyclic 40°C daily thermal swing of components.

.2 Cyclic, dynamic loading and release of loads such as wind loads.

.3 13 mm vertical deflection in supporting structure and movement of supporting structure due to live, dead load, and creep or deflections, seismic load, sway displacement and similar items.

.3 Minimum condensation resistance expressed as Temperature Index (I) shall not be less than 59 as determined in accordance with CAN/SCA-A440.2 and using the following design conditions:

.1 Interior temperature: 20°C.

.2 Exterior temperature: -18°C.

.3 Interior RH: 30%.

.4 Restrict air infiltration/exfiltration, through aluminum work in accordance with ASTM E283 at pressure differential as indicated:

.1 Curtainwall and entrance assemblies: 0.0003 m^3/s m^2 at differential of 300 Pa.

.2 Doors (per door): 2.78 m^3/h m per linear metre of crack at differential of 75 Pa.

.3 Window: to CAN/CSA A440

.1 Minimum performance grade: Class AW-PG40-FW (fixed) and Class AW-PG40-AP (awning/hopper).

.2 Air tightness: A3 (0.5L/s*m2 at 300 Pa) at operable windows; 0.2L/s*m2 at 300 Pa for fixed windows.

.3 Water tightness: [B7].

.4 Wind load resistance: [C5].

.5 Forced Entry: [F10]

.5 Design and detail controlled drainage path to actively discharge water, which enters into or forms within aluminum work, to exterior; prevent accumulation or storage of water within aluminum work. Prevent water from entering interior when tested in accordance with ASTM E331.

.6 Design and detail air barrier, vapour retarder, and rainscreen products and assemblies into continuous and integrated aluminum work envelope. Optimize aluminum work design to align envelope layers and to minimize thermal bridges.

.7 Prevent deflection and permanent or progressive glazing displacement. Restrict horizontal and vertical mullion deflection to less than L/175 (under uniformly distributed positive design wind load), and 10 mm maximum regardless of span.

.8 Design anchorage inserts for installation as part of other Sections of Work. Design anchorage assemblies to accommodate construction and installation tolerances.

.9 Provide all reinforcing within aluminum members as required by design and OBC to provide structurally sound assembly. In any case, mullion size shall not be increased due to provision of reinforcing.

.10 Design aluminum work and connections to substrate where the bottom of the aluminum work extends to a point below 1070 mm above finished floor level and separates a floor level from an adjacent interconnected space to withstand the required guard and handrail loads in accordance with the OBC and applicable local regulations. When requested by Consultant, provide a letter signed and sealed by a Professional Engineer certifying that the aluminum work conforms to the OBC requirements.

1.5 SUBMITTALS

.1 Shop drawings: Submit shop drawings in accordance with the Conditions of the Contract indicating:

.1 Plans, sections, details, type of extrusions, profiles, finishes, panels, operating components, doors, related flashings, closures, fillers, and end caps, and sealants.

.2 Products and glazing types.

.3 Anchorage inserts, system installation tolerances.

.4 Section and hardware reinforcement, anchorage, assembly fixings.

.5 Detailing, locations, and allowances for movement, expansion, contraction

.6 Path of cavity drainage and air pressure equalization.

.2 Samples: Submit two samples of following in accordance with the Conditions of the Contract.

.1 250 mm long samples of each type of extrusion and finish.

.2 250 x 200 mm samples of insulating glass unit.

.3 One complete corner detail of door frame, glazing, and finish for each door type.

.4 Each door and window hardware item for Consultant’s approval.

.5 200 x 200 mm sample of insect screen for operable windows for Consultant's approval of fibreglass mesh.

.3 Reports:

.1 Submit substantiating engineering data, and independent test results of pretested, aluminum work to substantiate compliance with the design criteria including air leakage and water penetration conforming to ASTM E283 and ASTM E331.

.2 Submit documentation to substantiate ten years of experience in aluminum window and door manufacture and installation.

.4 Close-out submittals: Submit window data for incorporation into the Operations and Maintenance Manual as part of the Conditions of the Contract.

1.6 QUALITY ASSURANCE

.1 Retain a Professional Engineer, licensed in Province of Ontario, with experience in aluminum work of comparable complexity and scope to perform the following services as part of the Work of this Section:

.1 Design of aluminum work.

.2 Review, stamp, and sign shop drawings.

.3 Conduct on-Site inspections and prepare and submit inspection reports.

.2 Mock-up:

.1 Fabricate, deliver, and erect one, full scale mock-up of each type of aluminum work, in location acceptable to Consultant.

.2 Demonstrate full range of Products, finishes, textures, quality of fabrication, and workmanship.

.3 Mock-up may form part of final Work, if acceptable to Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Handle aluminum work in accordance with AAMA CW-10.

.2 Protect aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Do not remove before final cleaning of building.

1.8 EXTENDED WARRANTY

.1 Submit a warranty for aluminum work in accordance with General Conditions, except that warranty period is extended to 5 years.

.1 Warrant against failure to meet the design criteria and requirements such as interior leakage, insulating glass unit failure, finish degradation, frame condensation.

.2 Coverage: Complete replacement including affected adjacent Work.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER(S) AND SYSTEM(S)

.1 **Thermally Broken Aluminum Curtainwall System** (Basis-of-Design Product). To be used in exterior wall locations where scheduled: ThermaWall TW2200 thermally broken stick curtain wall system: 50.8mm x 127mm, as manufactured by Alumicor.

.2 Subject to compliance with requirements, provide a comparable product by the following

.1 1602 Series Thermally Broken Curtainwall system by Kawneer.

.2 5400 Series Thermally Broken Curtainwall system by Windspec.

.2 **Thermally Broken Aluminum Exterior doors**

.1 '250/425' Series Thermal Entrance Doors by Kawneer Inc.

.2 'ThermaPorte 7700' by Alumicor Limited.

.3 HTP Series by Windspec.

2.2 MATERIALS

.1 All materials under Work of this Section, including but not limited to, sealants are to have low VOC content limits.

.2 Aluminum extrusions and channels: ASTM B221 and ANSI H35.1 AA6063 alloy, T6 temper.

.1 Profile and dimensions: Refer to Contract Drawings.

.2 Thermal breaks in frame members: Vertically aligned with glazing.

.3 Aluminum sheet: ASTM B209 and ANSI H35.1 AA1100 aluminum alloy, H14 temper, minimum 1.29 mm for sheets less than 610 mm wide and minimum 2.05 mm for sheets of a greater dimension.

.4 Reinforcements and anchors: ASTM A167, Type 304 to AISI No. 2B finish. Size as shown.

.5 Glass and glazing materials: As per 2.5.

.6 Spandrel panel insulated panel airseal backpan: ASTM A653/A653M; 0.9 mm thick, Z275 galvanized steel sheet.

.7 Airseal and aluminum work sealant: ASTM C920, Type S, Grade NS, Class 100/50; One-part, low-modulus, moisture-curing, silicone. 'Dow Corning 790' by Dow Corning; 'Spectrem 1' by Tremco. Verify compatibility with insulating glass unit manufacturer's secondary sealant. Colour as selected by Consultant. Primer as recommended by manufacturer.

.8 Frame sealant: Type as recommended by the aluminum work manufacturer.

.9 Joint backing: Closed cell foam polyethylene rod, outsized minimum 30-50% larger than joint width and compatible with joint sealant. Product as recommended by sealant manufacturer.

.10 Airseal transition membrane: Blueskin SA by Henry Bakor or equivalent.

.11 Anchors, clips, and angles: Extruded aluminum or stainless steel.

.12 Shims and blocking for frame: Rigid plastic, wood is not permitted.

.13 Flashings, closures and trim: 1.0 mm minimum aluminum sheet, finish to match curtain wall/window framing finish.

.14 Screws, bolts and other fasteners: ASTM F738M; Stainless Steel Type 304.

.15 Isolation coating: CAN/CGSB-1.108-M; Bitumastic coating, acid and alkali resistant material.

.16 Spray Foam Insulation: CFC free, polyurethane foam in place, closed cell low expansion, one component, minimum density 15 kg/m3.

.1 'ENERFOAM' by Dow Chemical Canada.

.2 'IPF All Weather Pro' by Rivenco Industries.

2.3 FABRICATION

.1 Fabricate sections true to detail, free from defects impairing appearance, strength and durability. Fabricate extrusions with sharp, well defined corners.

.2 Fabricate aluminum work systems in accordance with reviewed shop drawings and manufacturer's written instructions.

.3 Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints. Apply frame sealant at joints for weatherproof seams.

.4 Conceal anchors, reinforcement and attachments from view. Fabricate reinforcement in accordance with design requirements.

.5 Do not expose manufacturer's identification labels on aluminum assemblies.

.6 Fabricate continuous sill flashings with intermediate anchor clips, and joint reinforcing, form to profile shown. Fabricate filler and closure pieces as necessary for a complete and weather tight installation.

.7 Position operable windows on main frame to provide direction of opening specified, free and smooth operation, without binding or sticking against main frame members.

.8 Fabricate doors and frames complete with internal reinforcements, cut-outs, and recesses to accommodate finish hardware. Reinforce cut-outs to assure adequate strength.

.9 Fabricate aluminum work closures and trim from aluminum sheet. Form to profile shown. Make weathertight.

.10 Double weatherstrip windows and doors. Install weatherstripping in specially extruded ports and secure to prevent shrinkage or movement.

.11 Fabricate glazing recess with drainage to exterior.

2.4 FINISH

.1 Exterior extrusion finish: exposed aluminum surfaces To AA DAF-45-M12C22A44, Architectural [Class I], anodized [18 µm (0.0007 inches)] minimum thickness coloured clear.

.2 Interior exposed aluminum surfaces: To AA DAF-45-M12C22A44, Architectural Class I, anodized [18 µm (0.0007 inches)] minimum thickness coloured [clear].

2.5 GLASS AND GLAZING

.1 General: All materials under work of this Section, including but not limited to, primers, coatings, sealers, sealants, adhesives and cleaners are to have low VOC content limits.

.2 Tempered glass **(TGL)**: CAN/CGSB-12.1-M, Type 2, Class B, Category II, minimum 6 mm thick, clear or tinted as per drawings/schedules.

.3 Insulating glass units: To CAN/CGSB-12.8-M and IGMA requirements utilizing approved non-metallic PVC or Fibreglass edge spacer in black. Dual seal with a PIB primary seal and silicone secondary seal.

At exterior doors and windows unless noted otherwise, 25mm overall thickness.

.1 Clear TGL outboard lite, minimum 6mm thickness

.2 Low-E coating to #2 surface (as per 2.2).

.3 Hermetically sealed, dehydrated air space,

.4 Clear TGL inboard lite, minimum 4mm thickness.

.5 Glass Unit Performance Requirements:

.1 Visible Light Transmittance (VLT): 62 minimum

.2 U-Value: 0.28 (IP) maximum

.3 Solar Heat Gain Coefficient (SHG): .38 maximum

.4 Argon gas: 100% pure.

.5 Low-E coating: High performance sputtered low-E coating. Provide insulating glass units with low-E coating edge deletion and low-E coating. Apply low-E coating to second surface unless otherwise indicated. Solarban 70XL by PPG Industries Inc, SunGuard SN68 by Guardian or equivalent capable of achieving performance values outlined in Section 2.5.3.

.6 Glazing and rebate primers, sealants, sealers, and cleaners: Compatible with each other. Type as recommended by glass manufacturer.

.7 Glazing sealant: Silicone sealant as recommended by glazing manufacturer. Verify compatibility with insulating glass unit secondary sealant.

.8 Heel & toe bead: Silicone sealant as recommended by glazing manufacturer.

.9 Glazing gasket: 'Visionstrip' by Tremco Ltd., extruded composite glazing seal, size as recommended by manufacturer.

.10 Glazing tape: 'Polyshim II' glazing tape EPDM shim.

.11 Glazing splines: EPDM or neoprene, extruded shape to suit glazing channel retaining slot, colour as selected.

3 EXECUTION

3.1 ALUMINUM WORK INSTALLATION

.1 Install aluminum work in accordance with reviewed shop drawings, manufacturer's written instructions, and CSA A440/A440.1.

.2 Install Work of this Section securely, in correct location, level, square, plumb, at proper elevations, free of warp or twist.

.3 Apply isolation coating at 0.8 mm dry film thickness to prevent corrosive or electrolytic action between dissimilar materials such as aluminum to concrete, masonry, galvanized steel and similar conditions.

.4 Install flashings, closures, and trim pieces.

.5 Fill voids between aluminum framing and adjacent construction with foam insulation.

.6 Install sills in maximum lengths possible. For sills over 1200 mm in length, maintain 3 mm to 6 mm space at each end.

.7 Refer to Contract Drawings for glazing type locations. Install glazing in accordance with Section 3.2.

.8 Automatic door operators to be supplied and installed by Section 08700. Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.

.9 Install aluminum door manufacturer's standard weatherstripping at door frame perimeter. Install weatherstripping throughout entire length and width of doors at jambs and heads.

.10 Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.

.11 Adjust operable parts for correct function.

.12 Remove damaged or unacceptable Products and assemblies from Site and replace to Consultant's acceptance.

.13 Install glass presence markers, in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

3.2 GLAZING INSTALLATION

.1 Provide glazing in accordance with IGMA recommendations. Provide continuous contact between glazing tapes and gasket to the glazing.

.2 Provide neat, straight sight lines. Trim excess glazing material flush with top of stops and fixed leg of frames.

.3 Remove protective coatings, glazing stops, clean rebate and glass contact surfaces with solvent, wipe dry.

.4 Apply primer/sealer to contact surfaces, prior to glazing.

.5 Apply glazing tape as per manufacturer’s instructions including recommended corner sealant.

.6 Use setting blocks at 1/4 points and spacers to centre glass unit in frame.

.7 Install glazing in accordance with reviewed shop drawings and manufacturer's written instructions. Install glazing with full contact and adhesion at perimeter. Maintain edge clearance recommended by glass manufacturer.

.8 Apply a continuous heel bead of sealant around perimeter of inboard lite of the sealed unit and the metal framing.

.9 Re-install glazing stops ensuring continuous contact and rattle-free installation. Do not distort glass. Trim tape protruding more than 2 mm above stop.

.10 Install glazing gasket in accordance with manufacturer’s recommendations

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

.12 Install glass presence markers in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

.13 Remove, dispose of, and replace broken, cut and abraded glass.

.14 Exterior glass: Glaze units with sealant on exterior side and glazing tape on interior side. Seal gap between glazing and stop with sealant to depth equal to bite of frame. Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

.15 Interior glass: Glaze interior glass using glazing gasket glazing tape

3.3 ERECTION TOLERANCES

.1 Tolerances: Non-cumulative.

.1 Maximum variation from plumb: 1.5 mm/3 m non-cumulative or 12 mm/30 m, whichever is less.

.2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.

.3 Vertical and horizontal positions: +/- 3 mm.

.4 Racking of face: 6 mm, nil in elevation.

.5 Operable components: Consistent with smooth operation and weatherproof performance.

.6 Maximum perimeter sealant joint between aluminum work and adjacent construction: 13 mm.

3.3 GLAZING PERIMETER AIRSEAL

.1 Install glazing perimeter airseal at entire perimeter of each insulating glass unit to achieve an airseal from insulating glass unit to curtain wall frame. Do not obstruct path of cavity drainage and air pressure equalization.

.2 Perform sealant work in accordance with manufacturer’s written requirements.

3.4 AIRSEAL TRANSITION MEMBRANE

.1 Install primer and airseal transition membrane in accordance with manufacturer's instructions. Install airseal transition membrane into extrusion reglet as indicated ondrawings. If there is no extrusion reglet, mechanically fasten airseal transition membrane to frame with batten bar fastened at 150 mm o.c.

.2 Overlap airseal transition membrane 75 mm minimum and lap in direction of waterflow.

.3 Coordinate airseal transition to adjacent parts of Work.

3.5 JOINT BACKING AND ALUMINUM WORK SEALANT

.1 Prepare substrate surface and mask as recommended by sealant manufacturer.

.2 Install joint backing and sealant at aluminum work and perimeter joints for weather tight installation in accordance with sealant manufacturer's instructions. Tool sealant. Remove excess sealant.

3.6 CLEANING

.1 Maintain aluminum work, inside and outside, in clean condition throughout construction period.

.2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

.3 Remove CSA A440/A440.1 certification labeling when directed by Consultant, in writing.

.4 Wash aluminum work with solution of mild detergent in warm water, with particular attention to recesses and corners. Wipe surfaces clean and dry.

END OF SECTION

PART 1 - GENERAL

1.1 Description of System

.1 Non-load bearing steel framing includes non-load bearing steel studs framing members for interior framing systems (eg., partition walls, framed bulkheads, furring, etc.) as well as interior suspension systems (eg., supports for ceilings, suspended bulkheads, etc.).

.2 Lightweight Steel Framing includes Axial Load Bearing Studs where indicated.

1.2 References

.1 CSA S136 North American Specification for the Design of Cold-Formed Steel Structural Members

.2 AISI North American Standard for Cold-Formed Steel Framing – Product Data

.3 ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

.4 ASTM A641/A641M Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire

.5 ASTM A792/A792M Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process

.6 ASTM A1003 Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-coated for Cold-Formed Framing Members

.7 ASTM C645 Standard Specification for Nonstructural Steel Framing Members

.8 ASTM C754 Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products

.9 ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements]

.10 ASTM E413 Classification for Rating Sound Insulation

.11 ASTM E488 Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements

.12 ASTM E1190 Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members

.13 CAN/ULC S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials

.14 CSSBI LSF Technical Bulletin Volume 7, Number 1 Maximum Height Tables for Interior Non-Load Bearing Partitions.

1.3 Quality Assurance

.1 Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate nonload bearing interior steel framing, provide materials and construction identical to those tested in assembly indicated according to CAN/ULS-S101.

.2 STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413.

.3 Retain a Professional Engineer registered in the province of Ontario to design the Lightweight Steel Framing System where indicated in drawings; to prepare, seal and sign all shop drawings; and to perform field review. Shop drawings shall show both design and installation requirements.

1.4 Design Criteria

.1 Conform to the requirements of fire-rated assemblies as scheduled in drawings/details which have been tested in accordance with CAN/ULC-S101 and provide fire resistance ratings as indicated.

.2 For Interior non-load bearing studs, conform to minimum design thickness, web depth and flange width as outlined in CSSBI Maximum Height Tables for interior non-load bearing partitions.

.3 A non-load bearing (non-structural) member is defined as a member in a steel-framed system which is limited to transverse (out-of-plane) load of not more than 480 PA, a superimposed axial load, exclusive of sheathing materials, of not more than 1460 N/m, or a superimposed axial load of not more than 890 N.

.4 A load bearing (structural) stud may be used in a non-load bearing application; however, non-load bearing members (studs or track) may never be used in a load bearing (axial and/or wind loading) applications.

.5 Track for interior walls and non-load bearing walls located at exterior walls shall have a thickness of not less than the thickness of the corresponding studs and shall have not less than 31.8 mm flanges.

.6 Connections between light steel framing members shall be by sheet metal screws, welding or crimping.

.7 Load bearing assemblies/applications/details:

.1 Design shall be based on Limit States Design principles using factored loads and resistances.

.2 Loads and load factors shall be in accordance with the National Building Code of Canada.

1.5 Submittals

.1 Make submittals in accordance with Section 01330 Submittals.

.2 Product data: For each type of products indicated.

PART 2 - PRODUCTS

2.1 Materials

.1 Non-load bearing Steel Framing, General

.1 Steel sheet components shall comply with ASTM C645 requirements for metal, unless otherwise indicated.

.2 Steel for non-load bearing members shall have metallic coatings that conform to ASTM A653M or ASTM A792M with minimum metallic coating weights (mass) of Z120 and AZM150 respectively. Alternative coatings shall be permitted to be used if proven to have equivalent corrosion protection.

.3 Framing members shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) for conditions indicated.

.2 Suspension System Components

.1 Tie wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 1.21 mm minimum diameter, or of a material and size having equivalent corrosion resistance and strength.

.2 Hanger attachments to concrete: Anchors shall be fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 2 times that imposed by construction as determined by testing by an independent testing agency according to ASTM E488.

.1 Type: Post-installed, expansion anchor

.3 Power-actuated fasteners, suitable for application indicated, shall be fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 2 times that imposed by

construction as determined by testing by an independent testing agency according to ASTM E1190.

.3 Hanger wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 3.77 mm minimum diameter, or of a material and size having equivalent corrosion resistance and strength.

.4 Carrying Channels

.1 Channels shall conform to ASTM C754 and shall be cold-firmed from steel with minimum 228 MPa yield strength and 1.37 mm base steel thickness.

.2 Channels shall have a minimum coating of Z120 galvanizing in accordance with ASTM A653/A653M. Other coatings (eg. Aluminum-zinc alloy to ASTM A792/A792M) providing equal or better corrosion protection may also be used.

.3 Carrying channels shall have minimum 12.7 mm wide flanges and minimum depth of 38 mm.

.5 Furring Members

.1 Furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and with minimum 12.7 mm wide flanges and a depth of 19.1 mm.

.2 Steel stud shall be manufactured from steel in accordance with the AISI North America Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base Steel thickness of 0.455 mm and depth as indicated on drawings.

.3 Hat-shaped, rigid furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and minimum depth of 22.2 mm. The minimum width of furring attachment flanges shall be 12.7 mm.

.4 Resilient furring channels are designed to reduce sounds transmission and shall have a minimum depth of 12.7 mm.

.6 Steel Framing for Framed Assemblies

.1 Steel studs and track shall be in accordance with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have minimum base steel thickness of 0.455 mm and a depth as indicated on drawings.

.2 Slip-Type Head Joints: Where indicated, provide one of the following:

.1 Deflection Track: steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and width to accommodate depth of studs.

.2 Single Long-Leg Track: track complying with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) with 50.8 mm deep flanges in thickness not less than indicated for studs, installed with studs frication-fit into top track and with continuous bridging located within 305 mm of the top studs to provide lateral bracing.

.3 Double-Track System: track complying with AISI North American Standard for Cold-Formed Steel Framing (Product Data), inside track with 50.8 mm deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction fit inside track.

.3 Flat Strap and Backing Plate

.1 Sheet steel for blocking and bracing in length and width indicated.

.2 Minimum base steel thickness is 0.455 mm.

.4 Channel bridging shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm with minimum 12.7 mm wide flanges and depth of 19.1 mm.

.5 Hat-shaped, rigid furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have minimum base steel thickness of

0.455 mm, a minimum depth of 22.2 mm. The minimum width of furring attachment flanges shall be 12.7 mm.

.6 Resilient furring channels are designed to reduce sound transmission and shall have a minimum depth 12.7 mm.

.7 Furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and with minimum 12.7 mm wide flanges and a depth of 19.1 mm.

.1 Furring Brackets: adjustable, corrugated-edge of steel sheet with minimum base steel thickness of 0.79 mm.

.2 Tie wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 1.21 mm minimum diameter, or of material and size having equivalent corrosion resistance and strength.

.9 Z-shaped Furring: with slotted web or non-slotted web, face flange of 31.8 mm, wall attachment flange of 22.2 mm, and depth steel thickness of 0.455 mm, and depth required to fit insulation thickness indicated.

.10 Fasteners for Metal Framing: of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates in accordance with ASTM C1002.

.11 Isolation strip at exterior walls: provide one of the following:

.1 Asphalt-saturated organic felt: ASTM D226, Type 1 (no. 15 asphalt felt), perforated.

.2 Foam gasket: adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 3.2 mm thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 Examination

.1 Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

.1 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Preparation

.1 Suspended Assemblies: coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangars at spacing required to support the work and that hangars will develop their full strength.

.1 Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

.2 Coordination with Sprayed Fire-Resistive Materials

.1 Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling track to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 600 mm o.c.

.2 After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 Installation, General

.1 Installation Standard: ASTM C754, except comply with framing sizes and spacing indicated.

.1 Gypsum Plaster Assemblies: also comply with requirements in ASTM C841 that apply to framing installation.

.2 Portland Cement Plaster Assemblies: also comply with requirements in ASTM C1063 that apply to framing installation.

.3 Gypsum Veneer Plaster Assemblies: also comply with requirements in ASTM C844 that apply to framing installation.

.4 Gypsum Board Assemblies: also comply with requirements in ASTM C840 that apply to framing installation.

.2 Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

.3 Install bracing at terminations in assemblies.

.4 Do not bridge building control and expansion joints with non-load bearing steel framing members. Frame both sides of joints independently.

3.4 Installing Suspension Systems

.1 Install suspension system components in sizes and spacings indicated on drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

.2 Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

.3 Suspended hangers from building structure as follows:

.1 Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

.1 Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

.2 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

.1 Size supplemental suspension members and hangers to support ceiling loads Within performance limits established by referenced installation standards.

.3 Wire Hangers: secure by looping and wire tying, either directly to structure or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.

.4 Do not attach hangers to steel roof deck unless otherwise approved.

.5 Do not attach hangers to permanent mental forms. Furnish cast-in-place hanger inserts that extend through forms.

.6 Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.

.7 Do not connect or suspend steel framing from ducts, pipes, or conduit.

.4 For fire-resistance-rated assemblies, wire tie furring channels to supports.

.5 Installation Tolerances: install suspension systems that are level to within 3 mm in 3.6 m measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.5 Installing Framed Assemblies

.1 Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

.2 Install studs so flanges within framing system point in same direction.

.1 Space studs as follows:

.1 Single-layer application: 406 mm o.c., unless otherwise indicated.

.2 Multilayer application: 406 mm o.c., unless otherwise indicated.

.3 Tile backing panels: 406 mm o.c., unless otherwise indicated.

.3 Install track floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions of structure.

.1 Slip-Type Head Joints: where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies die to deflection of structure.

.2 Door Openings: screw vertical studs at jambs to jamb anchor clips to door frames; install track section (for cripple studs) at head and secure to jamb studs.

.1 Install two studs at each jamb, unless otherwise indicated.

.2 Install cripple studs at head adjacent to each jamb stud, with a minimum 12.7 mm clearance from jamb stud to allow for installation of control joint in finished assembly.

.3 Other Framed Openings: frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

.4 Fire-Resistance-Rated Partitions: install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

.5 Sound-Rated Partitions: install framing to comply with sound-rated assembly indicated.

.6 Curved Partitions

.1 Bend track to uniform curve and locate straight lengths so they are tangent to arcs.

.2 Begin and end each arc with a stud, and space intermediate stud equally along arcs. On straight lengths of not less than 2 studs at ends of arcs, place studs 150 mm o.c.

.4 Direct Furring

.1 Screw to wood framing.

.2 Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or power-driven fasteners spaced 610 mm o.c.

.5 Z-Furring Members

.1 Erect insulation as specified and hold in place with Z-furring members spaced 610 mm o.c.

.2 Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or power-driven fasteners spaced 610 mm o.c.

.3 At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 305 mm from corner and but insulation to fit,

.6 Installation Tolerance: install each framing member so fastening surfaces vary not more than 3 mm from the plane formed by faces adjacent framing.

END OF SECTION

PART 1 - GENERAL

1.1 References

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C1396 Standard Specification for Gypsum Board

.2 ASTM C 475-94, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.3 ASTM C 514-94, Specification for Nails for the Application of Gypsum Board.

.4 ASTM C 557-93a, Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.5 ASTM C 840-95, Specification for Application and Finishing of Gypsum Board.

.6 ASTM C 954-93, Specification for Steel Drill Screws for the Application of Gypsum Board.

.7 ASTM C 1047-94, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.8 ASTM C1177-08, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing

.9 ASTM C1178M -08, Standard Specification for Coated Glass Mat Water Resistant Gypsum Backing Panel

.10 ASTM C1658-06, Standard Specification for Glass Mat Gypsum Panels

.11 ASTM C1629M-06, Standard Classification for Abuse Resistant Non Decorated Interior Gypsum Panel Products and Fiber Reinforced Cement Panels

.12 ASTM D3273-00, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.3 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102-1988, Building Materials and Assemblies, Standard Method of Test for Surface Burning Characteristics of.

1.2 Site Environmental Requirements

.1 Maintain temperature minimum 10C, maximum 21C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

PART 2 - PRODUCTS

2.1 Materials

.1 Standard Gypsum Board: to ASTM C1396, Type X, 15.9mm (5/8" thick, 1200mm (4'-0") wide x maximum practical length.

.2 Tilebacker: Acrylic coated glass mat facers with water resistant gypsum core to ASTM C1178, 15.9mm (5/8") thick unless noted otherwise, 1200mm (4'0") wide x maximum practical length. Score of 10 (no mould growth) as per ASTM D3273, or Cement Board to ASTM C1325. To be installed at all areas scheduled to receive tile finish.

.3 Exterior Gypsum Sheathing Board: fiberglass mat on face/back/long edges manufactured to ASTM C1177, 15.9mm (5/8") thick unless noted otherwise, 1200mm wide x maximum practical length. Score of 10 (no mould growth) as per ASTM D3273, Microbial Resistance: will not support microbial growth as per ASTM D6329.

.1 Horizontal Soffit Board manufactured to ASTM C 931/C 931M, 5/8" (15.8mm) thickness.

.2 Sheathing to ASTM C1177, 5/8" (15.8mm) thickness unless noted otherwise.

.3 Provide Type X sheathing at fire rated assemblies and as scheduled/detailed.

.4 Steel drill screws: to ASTM C 1002.

.5 Stud adhesive: to CAN/CGSB-71.25 ASTM C 557.

.6 Laminating compound: as recommended by manufacturer, asbestos-free.

.7 Shadow gap: Bailey D300 Metal trim, CGC Dur-a-bead or Nicolson Rollforming No 114, fillable edge trim, 0.55mm (0.022") base thickness commercial grade sheet steel with zinc wiped coating to ASTM A 525-93; perforated flanges; one piece length per location. To be used at the junction of all dissimilar materials and/or as detailed.

.8 Corner bead: Bailey D100-90, 90-degree corner trim fillable edge trim, 0.55mm (0.022") base thickness commercial grade sheet steel with zinc wiped coating to ASTM A 525-93; perforated flanges; one piece length per location.

.9 Control joints: No 093 Zinc Control Joints by CGC Inc or Nicholson Rollforming. To be installed where indicated on drawings.

.10 Sealants: in accordance with Section 07900 - Joint Sealers.

.11 Acoustic sealant: concealed purpose made, non-skinning, non hardening type to CAN/CGSB-19.21-M87, as manufactured by Tremco or Monsey-Bakor, USE Hickson

.12 Sound attenuation insulation (acoustic batt insulation type 'C')

.1 Mineral or fiberglass sound attenuation batt or boards to ULC S702 and as required by fire rated tests.

.2 Thickness: full stud thickness or as otherwise stated on the Drawings and Schedule.

.13 Joint compound: to ASTM C 475, asbestos-free. Latex resin base, possessing good adhesion, mixed with fresh, unadulterated water having no detrimental effects on compounds. Type recommended by manufacturer for application indicated.

.14 Joint reinforcing tape; for gypsum board; 50mm (2") x 0.3mm (0.01") thick perforated paper with chamfered edges. **Use alkali resistant glass-fiber tape at tile backer locations**.

.15 1 hour rated walls to be filled with absorptive material processed from rock or slag with a mass of at least 2.8 kg/m^2 for 89mm thickness and completely filling the wall cavity.

PART 3 - EXECUTION

3.1 Erection

1 Do application and finishing of gypsum board in accordance with ASTM C 840 except where specified otherwise.

.2 Do application of gypsum sheathing in accordance with ASTM C 1280.

.3 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C 840 except where specified otherwise.

.4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.5 Install work level to tolerance of 1:1200.

.6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.

.7 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.

.8 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.10 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840, except where specified otherwise.

.11 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.12 Furr duct shafts, beams, columns, pipes and exposed services where indicated

3.2 Application

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply 12 mm (1/2”) diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts,in partitions where perimeter sealed with acoustic sealant.

3.3 Installation

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150mm oc using contact adhesive for full length.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Install shadow mould at gypsum board/ceiling juncture as indicated. Minimize joints; use corner pieces and splicers.

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

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

.8 Locate control joints where indicated at changes in substrate construction at approximate 10m spacing on long corridor runs at approximate 15m spacing on ceilings.

.9 Install control joints straight and true.

.10 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.

.11 Install expansion joint straight and true.

.12 Splice corners and intersections together and secure to each member with 3 screws.

.13 Install access doors to electrical and mechanical fixtures specified in respective Sections.

.1 Rigidly secure frames to furring or framing systems.

.14 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.15 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.16 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.17 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.18 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.19 Mix joint compound slightly thinner than for joint taping.

.20 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

.21 Allow skim coat to dry completely for walls receiving high gloss paint and where indicated.

.22 Remove ridges by light sanding or wiping with damp cloth.

.23 Fasten board to metal support members by metal gypsum board screws at, 9.5mm (0.374”) minimum to , and 12.7mm (1/2”) maximum from, center of joints. Space screw:

.1 At ceilings of fire rated board at 200mm (8”) o.c. at edges and in field unless indicated otherwise.

.2 At walls of fire rated board at 200mm (8”) o.c. at edges and 305mm (12”) o.c. in field Locate screws opposite one another in adjacent panels unless indicated otherwise.

.3 At typical board walls at 400mm (16”) o.c. at edges and field unless noted otherwise.

.4 At typical board ceilings at 305mm (12”) o.c. at edges and field unless noted otherwise.

.24 When installing fiberglass mat faced mould and moisture resistant gypsum board do so as per manufacturers recommendations. Tape joints with self adhesive fiberglass tape and embed the tape in setting type compound. Finish joint with two layers of all purpose joint compound. High build primer should be applied to surface before painting. As with regular paper faced gypsum board, in areas where gloss paint is to be applied or in areas of critical light a skim coat should be applied to the surface before priming and painting.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Labour, Products, equipment and services necessary for tile Work in accordance with the Contract Documents.

1.2 REFERENCES

.1 ANSI A108/A118/A136.1, Installation of Ceramic Tile.

.2 ASTM C144, Specification for Aggregate for Masonry Mortar.

.3 CAN/CSA A3000, Cementitious Materials Compendium.

.4 TTMAC Specification Guide 09300 Tile Installation Manual.

.5 TTMAC, Maintenance Guide.

1.3 SUBMITTALS

.1 Product data:

.1 Submit copies of manufacturer's Product data in accordance with Section 01330 indicating:

.1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations and warranties.

.2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:

.1 Submit shop drawings in accordance with Section 01330 indicating:

.1 Tile layout, patterns, and colour arrangement.

.2 Perimeter conditions, junctions with dissimilar materials.

.3 Setting details.

.3 Samples:

.1 Submit following sample panels in accordance with Section 01330.

.1 Each colour, texture, size, and pattern of tile.

.2 Adhere tile samples to 400 x 400 x 12.5 mm thick cement board complete with selected grout colour in joints.

.4 Certificates: Submit manufacturer's certificates stating that materials supplied are in accordance with this specification.

.5 Closeout submittals: Submit recommended maintenance instructions and listing of recommended maintenance Products for incorporation into Operations and Maintenance Manuals in accordance with Section 01730.

1.4 QUALITY ASSURANCE

.1 Perform Work of this Section by a company that is a member in good standing of the Terrazzo Tile and Marble Association of Canada with proven, acceptable experience on installations of similar complexity and scope.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in adequate crates or containers with manufacturer’s name and product description clearly marked.

.2 Handle and store tiles in a manner to avoid chipping, breakage or the instruction of foreign matter. Take precautions to protect the mortar and grout admixtures from freezing or from excessive heat.

1.6 SITE CONDITIONS

.1 Do not install Work of this Section outside of the following environmental ranges without the Consultant's and Product manufacturer's written acceptance:

.1 Ambient air and surface temperature: 15^0C to 45^0C.

.2 Precipitation: None.

.2 Install temporary protection and facilities to maintain the Product manufacturer's, and specified, environmental requirements for 7 Days before, during, and 7 Days after installation.

1.7 MAINTENANCE

.1 Submit extra tile amounting to 3% of gross area covered, allowing proportionately for each pattern and type specified and which are part of the same Production run as installed Products. Store maintenance Products as directed by the Consultant.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 General: All materials under Work of this Section, including but not limited to, primers, and sealers are to have low VOC content limits.

.2 Tile:

.1 Porcelain Floor Tile (POR)

.1 Quebec series through full body porcelain tile, manufactured by Olympia. Size 5cm x 5cm. Colour: to be selected by Consultant from Price Group 2, allow for up to 2 colours.

.2 Keystones series series through full body porcelain tile, manufactured by Daltile. Size 5cm x 5cm. Colour: to be selected by Consultant from Price Group 2, allow for up to 2 colours.

.3 Equivalent product as per Specification 01250.

.2 Ceramic Wall Tile (CER)

.1 Colour & Dimension Series Wall Tile as distributed by Olympia Tile. Format 4” x 4”, allow for 3 colours to be selected by Consultant.

.2 Festiva glazed ceramic wall tile as distributed by Daltile. Format 4” x 4”, allow for 3 colours to be selected by Consultant.

.2 Equivalent product as per Specification 01250.

.3 Thresholds: profile with sloped exposed surface, 5/32" (4 mm) tall leading edge, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer. Material: brushed stainless steel finish Type 304. Height: to suit site conditions. Acceptable product: Schluter RENO-U.

.4 Wall edge trim: L-shaped profile with top section width to suit tile thickness and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer. Material: Brushed stainless steel Type 304. Acceptable product: Schluter SCHIENE.

2.2 ACCESSORIES

.1 Cement: CAN/CSA A3000, Type 10.

.2 Sand: ASTM C144.

.3 Water: Potable and free of minerals and other contaminants which are detrimental to mortar and grout mixes.

.4 Polymer additive: Keralastic by Mapei Inc or approved alternative by Latricrete International or Flextile.

.5 Interior Pre-mixed thin set mortars ANSI 118

.1 Interior wall tile: Ker 121 by Mapei, 50 PM Mortar by Flextile or approved equal

.2 Interior large format floor tile: 61 PM mortar by Flextile or Ultraflex LFT by Mapei or approved equal

.6 Crack Isolation Membrane: 40-mil (1-mm) lightweight, load-bearing, fabric-reinforced “peel-and-stick” crack-isolation membrane to be installed over wood subfloor prior to installation of floor tile. Acceptable product: Mapeguard 2 by Mapei or equivalent.

.7 Primer: To meet specified requirements of adhesive manufacturer.

.8 Cleaner: To conform to #1000 Series of Terrazzo, Tile and Marble Association of Canada.

.9 Grout:

.1 Floors and bases (below 3 mm joint width): ‘Keracolor U’ by Mapei Inc. or approved alternative by Latricrete International.

.2 Floors and bases (3 mm to 10 mm joint width): ‘Ultra/Color’ by Mapei Inc. or approved alternative by Latricrete International.

.3 Walls (1.5 mm to 3 mm joint width): ‘Ker 800' by Mapei Inc. or approved alternative by Latricrete International.

.4 Walls (over 3 mm joint width): ‘Ultra/Colour’ by Mapei Inc. or approved alternative by Latricrete International.

.10 Joint backing: Round, closed cell, foam rod, oversized by 30% to 50%, Shore A hardness of 20, tensile strength 140 to 200 kPa.

.11 Sealer: Oil and grease resistant, to meet specified requirements of #3000 Series of Terrazzo, Tile and Marble Association of Canada.

.12 Tile sealant: In accordance with Section 07900.

2.3 MIXES

.1 Levelling bed mix:

.1 1 part Portland cement.

.2 4 parts sand.

.3 part water (including polymer additive), adjusted for water content of sand.

.4 1/10 part polymer additive.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

.1 Clean and dry surfaces thoroughly. Remove oil, wax, grease, dust, dirt, paint, tar, primers, form release agents, curing compound, and other foreign material from substrate surfaces which may prevent or reduce adhesion.

.2 Neutralize any trace of strong acids or alkali from the substrate.

3.2 CONTROL JOINTS

.1 Continue control, construction, and cold joints in the structural substrate up through the tile finish, and align with mortar joints where possible. Review joint locations on Site with the Consultant.

.2 Install joint widths to match grout joint widths, except where a minimum width is indicated.

.3 Install control joints in the following typical locations:

.1 Aligned over changes in type of substrate.

.2 At the restraining perimeters such as walls and columns.

.3 Interior areas (not subject to sunlight): 6 mm minimum width, at 7320 mm o.c. maximum.

.4 Interior areas (subject to sunlight): 6 mm minimum width, at 3660 mm o.c maximum.

.5 As indicated on the Contract Drawings.

.4 Seal control joints in accordance with Section 07900.

3.3 LEVELLING BED

.1 Install a levelling bed on uneven substrate surfaces, level and plumb substrates in accordance with the following tolerances:

.1 Vertical surfaces: 3 mm in 2.4 m maximum .

.2 Horizontal surfaces: 6 mm in 3 m from finished levels of the surface, or better.

.2 Clean structural substrate control joints and blow-clean with compressed air. Grout fill control joints flush to slab with levelling bed.

3.4 GENERAL INSTALLATION REQUIREMENTS

.1 Install tiles in accordance with manufacturer's instructions and TTMAC Specification Guide 09300 Tile Installation Manual. Manufacturer's installation instructions govern over TTMAC Installation Manual.

.2 Lay out Work to produce a symmetrical pattern with minimum amount of cutting. Ensure cut tile at room perimeter is not less than ½ full size.

.3 Install trim to be placed under tile in locations indicated on Drawings.

.4 Apply exterior grade mortar bed to substrate with flat trowel and press firmly into surface, apply additional mortar using notched trowel.

.5 Set tiles in place and rap or beat with a beating block as necessary to ensure a proper bond and to level surface. Align tile for uniform joints and allow to set until firm. Clean excess mortar from surface of tile with a wet cloth or sponge while mortar is fresh.

.6 Adjust joints between units uniform, plumb, straight, even, and true, with adjacent tile flush. Align grout joints in both directions unless indicated otherwise.

.7 Align floor, base and wall grout joints.

.8 Install tile accessory fittings for a complete and fully coordinated tile assembly.

.9 Install wall tile full height unless indicated otherwise.

.10 Cut and fit tile neatly around piping, fittings, projections and around recesses items e.g. washroom accessories. Where surface mounted equipment and accessories are installed on tile surfaces, extend tile over surfaces. Cut edges smooth, even, and free from chipping; chipped and broken edges are not acceptable.

.11 Do not proceed with grouting until minimum 48 hours after tile has set, to prevent displacement of tiles.

.12 Apply grout in accordance with grout manufacturer's directions to produce watertight, filled joints without voids, cracks and excess grout. Thoroughly compact and tool floor grout. Finish grout flush to edge thickness of tile and remove excess grout with soft burlap or sponge moistened with clean water.

3.5 CLEANING

.1 Clean off excess grout with soft burlap or sponge moistened with clean water.

.2 Polish floor and wall tile after grout has cured in accordance with TTMAC recommendations in the Maintenance Guide; do not use acid for cleaning.

.3 Re-point joints after cleaning as required to eliminate imperfections, then re-clean as necessary. Avoid scratching tile surfaces.

3.6 JOINT BACKING AND TILE SEALANT

.1 Install joint backing under sealant as necessary.

.2 Install tile sealant around piping and fittings extending through tiled surfaces.

.3 Seal tile control joints.

.4 Seal internal tile to tile junctions. Tool to a smooth, flush surface, free from air bubbles and contamination.

3.7 PROTECTION

.1 Prevent traffic over tiled areas, and protect tiled assemblies from weather, freezing, and water immersion, for 72 hours minimum, after final installation.

.2 Prevent direct impact, vibration and heavy hammering on adjacent and opposite walls for 24 hours minimum, after final installation.

.3 Cover work temporarily with building paper properly lapped and taped at joints until work has been approved by Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 References

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

.1 ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

.2 ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

.3 ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.

.4 ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.5 ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.

.6 ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

.7 STM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials.

.8 ASTM E 1414 Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.

.9 ASTM E 1111 Standard Test Method for Measuring the Interzone Attenuation of Ceilings Systems.

.10 ASTM E 1264 Classification for Acoustical Ceiling Products.

.11 ASTM E 1477 Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

.12 ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.13 ASTM E 119 Standard Test Methods for Fire Tests of Building Construction and Material.

.2 ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

1.2 Equivalent Products

.1 As per Section 01250 – Product Substitution Procedures.

.2 Submittals which do not provide adequate data for the product evaluation will not be considered. The proposed substitution must meet all requirements of this section, including but not necessarily limited to, the following: Single source materials suppliers (if specified); Underwriters' Laboratories Classified Acoustical performance; Panel design, size, composition, color, and finish; Suspension system component profiles and sizes; Compliance with the referenced standards.

1.3 SUBMITTALS

.1 Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.

.2 Samples: Minimum 6 inch x 6 inch samples of specified acoustical panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.

.3 Shop Drawings: Layout and details of acoustical ceilings. Show locations of items which are to be coordinated with, or supported by the ceilings.

.4 Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards. For acoustical

performance, each carton of material must carry an approved independent laboratory classification of NRC, CAC, and AC.

.5 If the material supplied by the acoustical subcontractor does not have an Underwriter's Laboratory classification of acoustical performance on every carton, subcontractor shall be required to send material from every production run appearing on the job to an independent or NVLAP approved laboratory for testing, at the architect's or owner's discretion. All products not conforming to manufacturer's current published values must be removed, disposed of and replaced with complying product at the expense of the Contractor performing the work.

1.4 QUALITY ASSURANCE

.1 Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.

.2 Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.

.1 Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.

a. Flame Spread: 25 or less

b. Smoke Developed: 50 or less

.2 Fire Resistance Ratings: As indicated by reference to design designations in UL Fire Resistance Directory, for types of assemblies in which acoustical ceilings function as a fire protective membrane and tested per ASTM E 119.

a. Protect lighting fixtures and air ducts to comply with requirements indicated for rated assembly.

.3 Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.

.2 Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

.3 Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.6 PROJECT CONDITIONS

.1 All ceiling products and suspension systems must be installed and maintained in accordance with manufacturer written installation instructions for that product in effect at the time of installation and best industry practice. Prior to installation, the ceiling product must be kept clean and dry, in an environment that is between 32°F (0°C) and 120°F (49°C) and not subject to Abnormal Conditions. Abnormal conditions include exposure to chemical fumes, vibrations, moisture from conditions such as building leaks or condensation, excessive humidity, or excessive dirt or dust buildup.

1.7 WARRANTY

.1 Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels that fail within the warranty period. Failures include, but are not limited to:

.1 Acoustical Panels: Sagging and warping as a result of defects in materials or factory workmanship.

.2 Grid System: Rusting and manufacturer's defects

.3 Acoustical Panels designated as inherently resistive to the growth of micro-organisms installed with corresponding suspension systems: Visible sag and will resist the growth of mold/mildew and gram positive and gram negative odor and stain causing bacteria.

.2 Warranty Period Humiguard:

.1 Acoustical panels: Ten (10) years from date of substantial completion.

.2 Grid: Ten (10) years from date of substantial completion.

.3 Acoustical panels and grid systems with HumiGuard Plus or HumiGuard Max performance supplied by one source manufacturer is thirty (30) years from date of substantial completion.

.3 The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.8 MAINTENANCE

.1 Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

.1 Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed, for each ceiling type/pattern.

.2 Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed, for each ceiling type/pattern.

PART 2-PRODUCTS

2.1 MANUFACTURERS

.1 Armstrong World Industries, Inc.

.2 Ceiling Panels: Model numbers for acoustic ceiling tiles and grid as manufactured by Armstrong World Industries, are listed to establish a standard of quality for design, function, materials, performance, workmanship, and appearance. The following manufacturers may be submitted for evaluation by the architect by following the conditions of the Product Substitutions Section 01250. The architect shall be the sole judge as to the acceptability of all products submitted for substitution.

.1 CertainTeed.

.2 Canadian Gypsum Company (CGC).

2.2. ACOUSTICAL CEILING UNITS

.1 Surface Texture: Medium

.2 Composition: Wet formed mineral fibre

.3 Color: White

.4 Size: 24in X 24in X 5/8in

.5 Edge Profile: Square

.6 Noise Reduction Coefficient (NRC): 0.55.

.7 CAC: .35

.8 Fire Performance: ASTM E84 and CAN/ULC S102 surface burning characteristics. Flame Spread Index 25 or less. Smoke Developed Index 50 or less (UL labeled.)

.9 Flame Spread: ASTM E 1264; Type XII, Form 2, Pattern E Fire Class A

.10 Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.85.

.11 Antimicrobial Protection: Inherent - Resists the growth of mold/mildew and bacterial growth.

.12 Acceptable Product: School Zone Fine Fissured 465 as manufactured by Armstrong World Industries, or equivalent.

2.3 SUSPENSION SYSTEMS

.1 Components: All main beams and cross tees shall be commercial quality hot-dipped galvanized (galvanized steel, aluminum, or stainless steel) as per ASTM A 653. Main beams and cross tees are double-web steel construction with 15/16 IN type exposed flange design. Exposed surfaces chemically cleansed, capping pre-finished galvanized steel (aluminum or stainless steel) in baked polyester paint. Main beams and cross tees shall have rotary stitching (exception: extruded aluminum or stainless steel).

.1 Structural Classification: ASTM C 635 LD.

.2 Color: White Aluminum and match the actual color of the selected ceiling tile, unless noted otherwise.

.3 Acceptable Product: Prelude XL 15/16" Exposed Tee as manufactured by Armstrong World Industries, Inc.

.2 Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

.3 Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three design load, but not less than 12 gauge.

.4 Edge Moldings and Trim: Metal or extruded aluminum of types and profiles indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations, including light fixtures, that fit type of edge detail and suspension system indicated. Provide moldings with exposed flange of the same width as exposed runner.

.5 Accessories

.1 Shadow molding with ½” (13mm) reveal, exposed flange same width as exposed runners, to be used at interface with walls/bulkheads.

.2 2” Floating Edge Trim Channel to be provided at all locations where ACT ceiling terminates away from walls/bulkheads. See also details.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations. (Exception: HumiGuard Max Ceilings)

3.2 PREPARATION

.1 Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

.2 Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

.1 Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.3 INSTALLATION

.1 Install suspension system and panels in accordance with the manufacturer's instructions, and in compliance with ASTM C 636 and with the authorities having jurisdiction.

.2 Suspend main beam from overhead construction with hanger wires spaced 4-0 on center along the length of the main runner. Install hanger wires plumb and straight.

.3 Install wall moldings at intersection of suspended ceiling and vertical surfaces. Miter corners where wall moldings intersect or install corner caps.

.4 For reveal edge panels: Cut and reveal or rabbet edges of ceiling panels at border areas and vertical surfaces.

.5 Install acoustical panels in coordination with suspended system, with edges resting on flanges of main runner and cross tees. Cut and fit panels neatly against abutting surfaces. Support edges by wall moldings.

3.4 INTERFACE WITH OTHER WORK

.1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.5 ADJUSTING AND CLEANING

.1 Replace damaged and broken panels.

.2 Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.

.1 Ceiling Touch-Up Paint, (Item #5760, 8oz. bottles) (Item #5761, quart size cans), "global white" latex paint should be used to hide minor scratches and nicks in the surface and to cover field tegularized edges that are exposed to view.

.3 Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

.1 This section includes labor, materials and other services necessary to complete vinyl wall coverings.

.2 Conform with requirements of all Sections of Division 1, General Requirements, as it applies to the work of this Section.

1.02 REFERENCES

.1. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

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

1. AST ASTM E 84-05 Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM D5420 Gardner Impact Exceeds 160 inch pounds

1.03 SYSTEM DESCRIPTION

.1 Performance Requirements: Provide hygienic wall covering which has been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

.1 Product Data: Submit manufacturer’s current printed product literature, specifications, installation instructions, and field reports in accordance with Section 01330 - Submittal Procedures.

.2 Shop Drawings: Submit shop drawings to indicate materials, details, and accessories in accordance with Section 01330 - Submittal Procedures including but limited to the following:

1. Submit a layout diagram indicating the location of each panel and joining method.

.3 Samples: Provide 3no 6”x6” samples of material in each colour/texture..

.4 Quality Assurance Submittals: Submit the following:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
2. Manufacturer’s Instructions: Current published manufacturer’s installation and maintenance instructions.

.5 Closeout Submittals: Submit the following:

1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Warranty: Warranty documents specified herein

1.05 QUALITY ASSURANCE

.1 Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

.2 Mock-ups: Install at project site a job mock-up using acceptable products and manufacturer

approved installation methods. Obtain Owner's and Consultant's acceptance of finish color, texture and pattern, and workmanship standards.

.1 Mock-Up Size: 4' x 8'

.2 Incorporation: Mock-up may be incorporated into final construction upon Owner's approval.

.3 Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.06 DELIVERY, STORAGE & HANDLING

.1 Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

.2 Deliver, store and handle panels in accordance with Section 01610 - Basic Material Requirements.

.3 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

.4 Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.

.5 Store panels in temperature controlled environments. Leave protective blue film on panel until ready to use.

1.07 WASTE MANAGEMENT AND DISPOSAL

.1 Deposit all packaging materials in appropriate container on site for recycling or reuse.

.2 Avoid using landfill waste disposal procedures when recycling facilities are available.

.3 Keep all discarded packaging away from children.

1.08 PROJECT CONDITIONS

.1 Temperature Requirements: If storage temperature is below 65F (18C), hygienic wall panels must be moved to a warmer place and allowed to reach this temperature before installation. For further information, refer to manufacturers current Installation Guide.

.2 Maintain air temperature and structural base temperature at installation area between 65F (18C) and 80F (26C) for 48 hours before, during and 24 hours after installation.

1.09 WARRANTY

.1 Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

.2 Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

.3. Warranty Period for Hygienic Wall Panels shall be 10 years commencing on Date of Substantial Completion.

1.10 EXTRA MATERIALS

A. Provide extra materials of product and adhesives in accordance with Section 01780 - Closeout Submittals.

C. Provide 64sqft (6m2) of extra materials in one piece and from same production run as installed materials (for each colour/texture scheduled).

D. Clearly identify each wall panel and each container of adhesive.

E. Deliver to Owner, upon completion of the work of this section and store where directed.

PART 2 PRODUCTS

2.01 MATERIALS

.1 100% pure vinyl, extruded, homogenous, semi-rigid PVCu sheet containing no plasticizers or fillers. Acceptable Manufacturers:

.1 Whiterock as manufactured by Altro

.2 Equivalent products as per Specification 01250

.2 Panels

.1 Thickness: 0.10" (2.5 mm); Panel Width: 4’ (1.22m) Panel Height: Either 8’ or 10’ (2.5m or 3m); Weight 4’x8’ Panel: 24 lbs (10.4 kg) Weight 4’x10’ Panel: 29 lbs (12.7 kg).

.1 Colour: to be selected by Consultant from Standard Colour range.

2.02 ACCESSORIES

.1 Vinyl welding rod: Acceptable material:

1. Altro weld rod

.2 Joint Strips/Accessories:

1. 1-Part Stainless Steel Joint Strip – A855 Brushed Steel
2. 1-Part Transition Strip –G832
3. 1-Part Start and Edge Trim – G833
4. Stainless Steel Capping – [A865 Brushed Steel] Length 8’

.3 Acrylic Adhesive: For dry, climate controlled areas, use AltroFix W49, a one-part, water-based, acrylic adhesive as recommended by manufacturer.

.4 Polyurethane Adhesive: The default adhesive for most installations, suitable for wet area, non-climate controlled areas, and non-absorbent surfaces, use AltroFix W39, a two-part resin-based polyurethane adhesive as recommended by manufacturer. Provide written confirmation adhesive is compatible with liquid applied waterproof membrane as per item 5 below.

.5 Caulking and Sanitary Sealant:

1. Altro Sanitary Sealant Sealant, Colour: clear.

2.03 SOURCE QUALITY

.1 Source Quality: Obtain wall products from a single manufacturer.

PART 3 EXECUTION

3.01 MANUFACTURER’S INSTRUCTIONS

.1 Compliance: Comply with manufacturer’s product data, including product technical bulletins, product catalog, installation instructions and product label instructions for installation.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer’s instructions.

3.03 SUBSTRATE PREPARATION

.1 Walls should be smooth and level. High points must be removed and low points filled with filler

intended for the substrate and environmental conditions.

.2 Wall tiles must be fixed firmly to the wall. As long as the tile edges do not protrude you do not have to skim grout joints.

.3 Surfaces must be permanently dry and free from all substances that may contribute to adhesive bond failure.

.4 Remove loose paint and conduct an adhesive bond test with paint.

.5 Exterior walls must be adequately damp-proofed and insulated.

.6 Dry wall substrates should be paint ready.

.7 Apply liquid waterproof membrane where scheduled.

3.04 PREPARATION

.1 All surfaces must be free from dust and cleaned prior to installation. The working environment must also be dust free. Failure to comply with these conditions will reduce the bond strength between the adhesive and substrate which may cause panels to de-bond.

.2 Very absorbent / porous substrates (particularly plaster finishes and unprimed sheetrock) must have a proprietary sealer e.g. PVA primer or similar, applied to the surface a minimum of 12 hours prior to the installation.

.3 All electrical switches, power points etc., should be in a first fix / installation state. All electrical equipment should only be moved or altered by a qualified electrician.

.4 All plumbing should have pipe-work removed to a first fix or installation state and “tails” left protruding from the substrate. Panels can then be drilled and slid over the pipe tails. All holes should be drilled 1/8” (3mm) oversize to allow for expansion, then sealed with Mastic caulking. Plumbing should always be done by a qualified plumber.

.5 Hot pipes and steam pipes should be insulated and a 1/8” to 1/4” (3-6mm) expansion gap should be created when installing panels around these pipes, then sealed with Mastic caulking.

.6 All pipes, fixing bolts, etc. extending through the panels should have a minimum 1/8” (3mm) expansion gap and be sealed using Mastic caulking.

.7 If fitting to door frames, these must be in place prior to installation of panels.

.8 Prior to installation, it is advisable to complete any painting which comes in contact with panels, as sealant used at junctions is non-paintable.

.9 Panels should be stored flat and be pre-conditioned a minimum of 24 hours in ambient temperatures similar to the prevailing operational conditions.

.10 The panels must be stored on a level flat surface off the ground (risk of condensation on the panels if stored on damp surfaces). Storage on uneven surfaces could cause the panels to distort prior to installation.

.11 First, check the room using a 6’ (2 m) level to ensure all walls are flat, paying particular attention to the corners, window reveals, and door entrances. These need to be inspected to ensure they are free of any debris or irregularities, which could prevent the panels laying flat to the substrate after the adhesive has been applied and the panel installed.

3.05 INSTALLATION

.1 **Heat Weld System installation shall be provided throughout**. Install panels in accordance with the manufacturers current published Installation Guide. All joints should be joined by Heat Weld Application methods as detailed in manufacturers installation guide.

3.06 FIELD QUALITY REQUIREMENTS

.1 Manufacturer’s Field Services: Upon Owner’s request, provide manufacturer’s field service

consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

1. Site Visits: 1

3.07 CLEANING

.1 Panels can be cleaned with a diluted soap/detergent solution, such as Altro 44 Cleaner.

.2 When cleaning the panel surface, we recommend the temperature of water does not exceed 140° F (60° C).

.3 Pressure cleaning with hot water may be used with the pressure nozzle a minimum of 2 feet (600mm) away from the surface.

.4 To reduce the buildup of static, cleaning the panels with an anti-static solution is recommended.

.5 Stubborn stains use AltroClean 44 cleaner or equivalent alkaline cleaner.

.1 Remove construction debris from project site and legally dispose of debris.

3.08 PROTECTION

.1 Do not install near open heat sources (ovens, etc). Stainless steel panels should be used in such areas.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections.

.1 Section 01330 - Submittal Procedures.

.2 Section 01780 - Closeout Submittals.

1.2 References

.1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).

.2 Systems and Specifications Manual, SSPC Painting Manual, Volume Two, Society for Protective Coatings (SSPC).

.3 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

.4 National Fire Code of Canada.

1.3 Quality Assurance

.1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.3 Conform to latest MPI requirements for interior painting work including preparation and priming.

.4 Materials primers, paints, fillers, thinners, solvents, etc. shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.

.5 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.

.6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

.7 Standard of Acceptance:

.1 Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: No defects visible from floor at 45degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.4 Environmental Performance Requirements

.1 Provide paint products meeting MPI "Environmentally Friendly" ratings based on VOC (EPA Method 24) content levels.

1.5 Scheduling of Work

1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant for any changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.7 Quality Control

.1 When requested by Consultant prepare and paint designated surface, area, room or item in each colour scheme to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.8 Delivery, Handling and Storage

.1 Deliver, store and handle materials in accordance with Section 01610 - Basic Product Requirements.

.2 Labels shall clearly indicate:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Provide and maintain dry, temperature controlled, secure storage.

.5 Observe manufacturer's recommendations for storage and handling.

.6 Store materials and supplies away from heat generating devices.

.7 Store materials and equipment in a well ventilated area with temperature range 7C to 30C.

.8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.

.10 Remove paint materials from storage only in quantities required for same day use.

.11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.12 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.9 Site Requirements

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces

.2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Coordinate use of existing ventilation system with Contractor and ensure its operation during and after application of paint as required.

.5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.6 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by General Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by the specifying body, Paint Inspection Agency and the applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10 C.

.2 Substrate temperature is over 32 C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is above 85% or when the dew point is less than 3 C variance between the air/surface temperature.

.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.2 Perform no painting work when the maximum moisture content of the substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.3 12% for plaster and gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Additional Interior Application Requirements:

.1 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

.2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Owner such that painted surfaces will have dried and cured sufficiently before occupants are affected

1.10 Extra Materials

1 Submit maintenance materials in accordance with Section 01015 – General Requirements.

.2 Submit – (one) four litre can of each type and colour of primer, stain, and finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Deliver to Contractor and store where directed.

PART 2 - PRODUCTS

2.1 Materials

.1 Paint and fillers shall be manufacture's premium quality, of type and brand herein specified and listed under "Paint Product Recommendations" premium grade as covered in the association manual, latest edition, for specific uses and only as supplied by **Pratt & Lambert Co., Benjamin Moore & Co., Para Paints Canada Inc., ICI Paints (Canada) Inc, (Glidden), Sherwin Williams Canada Inc., Pittsbugh Paints**. Paint material such as linseed oil, shellac, turpentine and the like, and any of the materials not specifically mentioned herein but required for first class work with finish specified shall be highest quality product of approved manufacturer. Where specific products are indicated in painting schedule, use product manufacturer as specified.

.2 Paint materials for paint systems shall be products of a single manufacturer.

.3 Only qualified products with "Environmentally Friendly" rating are acceptable for use on this project.

.4 Water-borne surface coatings must be manufactured and transported in a manner that steps of process, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

.5 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.6 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61.0 C or greater.

.7 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:

.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.8 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" rating.

.9 Recycled water-borne surface coatings must contain 50 % post-consumer material by volume.

.10 Recycled water-borne surface coatings must not contain:

.1 Lead in excess of 600.0 ppm weight/weight total solids.

.2 Mercury in excess of 50.0 ppm weight/weight total product.

.3 Cadmium in excess of 1.0 ppm weight/weight total product.

.4 Hexavelant chromium in excess of 3.0 ppm weight/weight total product.

.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

.11 The following must be performed on each batch of consolidated post-consumer material before surface coating is reformulated and canned. These tests must be performed at a laboratory or facility which has been accredited by the Standards Council of Canada.

.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.

.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.

.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

2.2 Finishes and Colours

.1 Generally and unless otherwise specified herein or noted on Finish Schedules the quantity of colors and finishes shall be based on the following criteria. Consultant will provide Colour Schedule after Contract award.

.2 Interior Colours will be based upon the selection of two (2) base colours and three (3) accent colours. No more than eight colours will be selected for the entire project and no more than three colours will be selected in each area. Include for 25% dark tones.

.3 Exterior colors will be based on two (2) base colors and two (2) accent colors with a maximum of two (2) deep or bright colors. No more than four (4) colors will be selected for the entire project. Note that this does not include pre-finished items by others, e.g. flashings, aluminum or vinyl windows, aluminum doors, etc

.4 Selection of colours will be from manufacturers full range of colours.

.5 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.6 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 Mixing and Tinting

1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Consultant's written permission.

.2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 Gloss/Sheen Ratings

.1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following values:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte of Flat finish	0 to 5	10 max
G2	Velvet Finish	0 to10	10 to 35
G3	Eggshell Finish	10 to 25	10 to 35
G4	Satin Finish	20 to 35	35 min
G5	Semi-Gloss Finish	35 to 70	
G6	Gloss Finish	70 to 85	
G7	High Gloss Finish	➢ 85	

.2 Gloss level ratings of painted surfaces shall be as specified herein and as noted on Finish Schedule

2.5 Interior Painting Systems

.1 Plaster and Drywall: Int 9.2A Latex (G3) finish over latex sealer

.2 Plaster and Gypsum Board Ceilings: Int 9.2A Latex (G1) finish over latex sealer

.3 Wood trim: Int 6.4A (G5) finish over alkyd sealer.

.4 Concrete Unit Masonry: PT: Int 4.2A Latex (G3) finish.

.5 Structural steel & metal fabrications: Int 5.1E (G5) finish.

.6 Galvanized metal/zinc coated steel: Int 5.3L (G5) finish

.7 Use fire retardant paint on fire rated plywood sheets behind electrical panels.

All Finishing System Codes are from the Ontario Painting Contractors Association.

2.6 Exterior Painting Systems

.1 Structural steel and metal fabrications: Ext 5.1B Water based light industrial coating (G3) over inorganic zinc primer.

.2 Galvanized metal (doors/frames/railings/etc): Ext 5.3A Latex (G5) finish

.3 Dimensioned lumber (columns/beams/soffits): Ext 6.2M Latex (G2) finish over latex primer

PART 3 - EXECUTION

3.1 General

.1 Perform preparation and operations for interior painting in accordance with MPI Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.2 Existing Conditions

1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Consultant. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.3 Maximum moisture content as follows:

.1 Stucco, Plaster and Gypsum Board: 12%.

.2 Concrete: 12%.

.3 Clay and Concrete Block/Brick: 12%.

.4 Wood: 15%.

3.3 Protection

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Consultant.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect passing pedestrians, building occupants and general public in and about the building.

.5 Removal of electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings shall be done prior to undertaking any painting operations by General Contractor. Items shall be securely stored and re-installed after painting is completed by General Contractor.

.6 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.7 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Consultant

3.4 Cleaning and Preparation

.1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

.2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger operated spray nozzles for water hoses.

.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.3 Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

.1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.

.2 Apply wood filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

.4 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.5 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air, or vacuum cleaning.

.6 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.7 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.5 Application

1 Method of application to be as approved by Consultant. Apply paint by brush or roller. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.

.4 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.6 Sand and dust between coats to remove visible defects.

.7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges and behind wall mounted items.

3.6 Mechanical/Electrical Equipment

.1 Unless otherwise specified, paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as noted otherwise.

.2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

.3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

.4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.5 Do not paint over nameplates.

.6 Keep sprinkler heads free of paint.

.7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

.8 Paint fire protection piping red, if required.

.9 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.10 Paint natural gas piping yellow.

.11 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

.12 Do not paint interior transformers and substation equipment.

3.7 Field Quality Control

.1 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

3.8 Restoration

.1 Clean and re-install all hardware items removed before undertaking painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

.1 Section Includes

Furnish, deliver and install all Toilet Partitions as indicated on the drawings and as required by actual conditions at the building. The Toilet Partitions shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields and all other devices necessary for the proper installation and application of the Toilet Partitions.

1.02 REFERENCES

.1 Standard

All Toilet Partitions must be scheduled, supplied and installed in accordance with: Local Building Code, CGSB (Canadian Government Specifications Board), CSA (Canadian Standards Association), ANSI (American National Standards Institute), ADA (Americans with Disabilities Act). In all cases the above references shall be taken to mean the latest edition of that particular standard including all revisions.

1.03 SUBMITTALS

.1 Make all submittals in accordance with Section: 01330

.2 Submit detailed shop drawings. Drawings must clearly indicate all methods of attachment at floor/ceiling/walls.

.3 Submit product sheets and/or catalogue cuts, of all products listed in the shop drawings.

.4 Samples

1. Upon request, a returnable sample of the Toilet Partitions shall be submitted to the Consultant/Owner for approval not later than (10) days after requested. All samples must be properly identified including: name of supplier, and name of manufacturer.

.5 Operations and Maintenance Data

1. Provide closeout documents in accordance with Specification 01780.
2. Include at a minimum documentation relating to proper care of toilet partitions, such as required lubrications, adjustments, cleaning, etc

1.04 QUALITY ASSURANCE

.1 Supplier Qualifications

1. Toilet Partition shop drawings and Toilet Partitions shall be procured from a source of supply approved by the Consultant/Owner/Architect. Supplier is responsible for the complete Toilet Partition subcontract.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Marking and Packaging

1. Toilet Partitions must be delivered to the job site in the manufacturers' original packages and marked to correspond with the approved shop drawings.

.2 Delivery

1. Toilet Partitions must be delivered in an amount of time deemed appropriate by the Consultant/Owner.

1.06 WARRANTY

.1 Written Guarantee

1. The Toilet Partition manufacturer shall guarantee all Toilet Partitions by written certification, for a period of (5) years from date of certified substantial performance of the project, against any defects in design, materials and workmanship. Any defects as described will be made good by the manufacturer at no additional cost to the owner.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

.1 Approved Manufacturers

1. Hadrian Manufacturing Inc.
2. ASI Global Partitions
3. Bradley Corporation

2.02 MATERIALS

.1 Screens shall be constructed of 19mm (3/4") thick solid phenolic core decorative plastic laminate with multiple resin-impregnated kraft and surface sheets fused at high temperature and pressure, edges being finished and polished. Colour to be selected by Consultant from manufacturers standard colour range.

.1 Sizes: as scheduled

.2 Hardware:

.1 Continuous 2-Ear bracket to run full height of wall mounted screens.

PART 3 - EXECUTION

3.01 EXAMINATION

.1 Site Preparation

1. The contractor must examine all site conditions that would prevent the proper application and installation of Toilet Partitions. Any defect must be immediately identified and corrected, prior to the installation of the Toilet Partitions.

3.02 INSTALLATION

.1 Mounting Locations

1. All Toilet Partitions must be mounted according Manufacturers standard locations and those specified on the drawings.

3.03 FIELD QUALITY CONTROL

.1 Inspection

1. After installation has been completed, provide for a site inspection of all Toilet Partitions to determine that all items have been supplied and installed as per the enclosed details. Also, check the operation and adjustment of all Toilet Partitions. Any discrepancies, or malfunctioning product, must be reported to the Architect immediately.

3.04 ADJUSTMENT AND CLEANING

.1 Final Preparation

1. At final completion, Toilet Partitions shall be left clean and free from disfigurement. Make all final adjustments. Where Toilet Partitions are found defective, repair or replace or otherwise correct as directed.

3.05 PROTECTION

.1 Site Protection

1. The Contractor must provide for the proper protection of all Toilet Partitions until the owner accepts the project as complete.

3.06 TOILET PARTITION SCHEDULE

.1 Schedule

1. Provide Toilet Partitions as specified in all above sections and as per the detailed Architectural Drawings.

END OF SECTION

PART 1. GENERAL

1.1 SUMMARY

.1 This section includes toilet and bath accessories in accordance with the Contract Documents. The Work of this Section shall include but not be limited to the following:

1. Surface, partition and recessed mounted toilet and bath accessories indicated on the Drawings and Schedules.

.2 Related work:

.1 Wall backing required to secure accessories

.2 Glazing

.3 Tile

.4 Toilet compartments

.5 Unit masonry

.6 Gypsum wallboard systems

.7 Plumbing fixtures

.8 Countertops

1.2 SUBMITTALS

.1 Comply with requirements of Section regarding submittals.

.2 Provide required number copies of:

.1 Product data sheets.

.2 Installation instructions.

.3 Service and parts manual

1.3 WORK INCLUDED

.1 Toilet Room Accessories

1.4 REFERENCES (INCLUDING BUT NOT LIMITED TO)

.1 Ontario Building Code (latest edition)

.2 City of Toronto Barrier Free Design Guidelines (latest edition)

1.5 QUALITY ASSURANCE

.1 Model numbers for toilet room accessories manufactured by Frost Products Limited, are listed to establish a standard of quality for design, function, materials, workmanship, and appearance. The following manufacturers may be submitted for evaluation by the architect by following the conditions of the Product Substitutions Section 01250. The architect shall be the sole judge as to the acceptability of all products submitted for substitution.

.1 Bobrick Washroom Equipment, Inc.

.2 American Specialties, Inc.

.3 Bradley

.2 Accessories with tumbler locks shall be keyed alike with the exception of coin boxes in vending equipment.

.3 Regulatory Requirements

.1 Operation of accessories shall comply with guidelines set forth by the Ontario Building Code and the City of Toronto Barrier Free Design Guideline. Documentation and samples to be provided to architect upon request.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

.1 Deliver items in manufacturer's original unopened protective packaging.

.2 Store materials in original protective packaging to prevent physical damage or wetting.

.3 Handle so as to prevent damage to accessories.

1.6 WARRANTY

.1 Furnish one year guarantee against defects in material and workmanship on all accessories.

.2 In addition to the above the following shall apply:

.1 Welded stainless steel framed mirrors shall have a fifteen year guarantee against silver spoilage.

PART 2. PRODUCTS

2.1 TOILET ROOM ACCESSORIES SCHEDULE

.1 Provide the following toilet and bath accessories in the locations indicated on the drawings/schedules:

Type	Model/Series	Description
W1	Bobrick B-983	Vandal Resistant Coat Hook
W2	Dyson Airblade V HU02	Sprayed nickel finish, surface mounted hand dryer, ADA compliant, 120V
W3	Bobrick B-2111	Wall mounted soap dispenser
W4	Bobrick B-293 180	18”x30” Angled Mirror
W5	Bobrick B-5806	24” straight grab bar, SS peened finish, concealed mounting snap flange, 1 per accessible toilet
W6	Bobrick B-5898.99	30”x30” 90-degree grab bar, SS peened finish, concealed mounting snap flange, 1 per accessible toilet
W7	Bobrick B-165 1824	18”x24” Mirror, tempered glass, 1 per washroom lavatory and/or as shown on drawings
W8	Bobrick B-273	Toilet Paper Dispenser
W9	Bobrick B-3620	Paper Towel Dispenser
W10	Bobrick B-270	Napkin Disposal

2.2 MATERIALS

.1 All cabinets shall be constructed of 18-8, type-304 stainless steel.

.2 All waste receptacles shall be constructed of 18-8, type-304 stainless steel or rigid molded leak-proof plastic.

.3 Waste receptacles or cabinets manufactured of type-400 stainless steel are not acceptable.

.4 All tumbler locks to be fastened to accessories with lock nuts. Fastening locks to units with spring clips is not acceptable

PART 3. EXECUTION

3.1 INSPECTION

.1 Check wall open for dimensions, plumbness of blocking or frames that would affect installation of recessed accessories. For surface mounted accessories check condition of wall and confirm installation of backing within wall.

.2 Verify spacing of plumbing fixtures and toilet compartments that affect installation of toilet room accessories.

3.2 INSTALLATION

.1 Install accessories at locations and heights indicated, straight, plumb and level and in accordance with manufacturer's installation instructions.

.2 Install items with non-corrosive anchoring devices.

.3 Installation methods shall conform to manufacturer's recommendations for backing and proper support.

.4 Conceal evidence of drilling, cutting, and fitting to room finish.

.5 Fit flanges of accessories snugly to wall surfaces.

3.3 ADJUSTMENT AND CLEANING

.1 Upon completion of the work, or when directed, remove all traces of protective coatings or paper.

.2 Adjust accessories for proper operation. Test mechanisms, hinges, locks and latches and where necessary adjust and lubricate.

.3 Clean and polish exposed surfaces prior to final installation.

.4 Deliver accessories schedule, keys, and parts manual as part of project closeout documents. For owner's permanent records, provide two sets of the following items of manufacturer's literature:

.1 Technical data sheets of each item used for the project.

.2 Service and parts manuals.

.3 Name of local representative to be contacted in the event of need of field service or consultation.

END OF SECTION

PART 1 - GENERAL

1.1 General Instructions

.1 Read and be governed by Conditions of the Contract and Sections of Division 1.

1.2 Section Includes:

.1 Custom Work Counters

.2 Cabinetry including Cupboards

1.3 Quality Assurance

.1 Execute Work of this Section only by a Subcontractor who has adequate plant, equipment, and skilled workers to perform Work expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.

1.4 Reference Standards

.1 Do welding work in accordance with CSA W59-M1989 unless specified otherwise.

.2 Weld structural components in steel, to conform to requirements of CSAW59-M1989, and by a fabricator fully certified by the Canadian Welding Bureau to conditions of CSA Standard W47.1 and W55.3 as applicable.

1.5 Design Criteria

.1 Work of this Section which functions to resist forces imposed by dead and liveloads shall conform to requirements of jurisdictional authorities.

1.6 Shop Drawings

.1 Submit shop drawings in accordance with Section 01330.

.2 Clearly indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.7 Delivery, Storage and Handling

.1 Label, tag or otherwise mark Work supplied for installation by other Sections to indicate its function, location in building and shop drawing designation.

.2 Protect Work from damage during delivery, storage and handling

PART 2 - PRODUCTS

2.1 Materials

.1 General:

.1 Unless detailed or specified otherwise, standard products will be acceptable if construction details and installation meet intent of Drawings and Specifications.

.2 Include materials, products, accessories, and supplementary parts necessary to complete assembly and installation of Work of this Section.

.3 Incorporate only metals that are free from defects which impair strength or durability, or which are visible. Install only new metals of best quality, and free from rust or waves and buckles, and that are clean, straight, and with sharply defined profiles.

.4 All Stainless Steel to be type 304, number 4 finish, analysis 18-8.

.2 Metals:

.1 Stainless Steel millwork to be as follows:

.1 14 GA. (1.8mm) S/S for sinks & countertops, bulkheads, column cladding, baseboards.

.2 18 GA. (1.2mm) S/S for body & liners

.3 16 GA. (1.5mm) S/S for shelving

.4 20 GA. S/S for wall panels

.5 Drainboards shall pitch to sink 1/8" (3mm) per foot of length to provide complete draining without pooling. The 3" (75mm) high raised rolled rim at the sink shall decrease in height toward the outer ends of the drainboard.

.6 Each sink compartment to be pitched and creased to waste to assure complete draining without pooling.

.3 Finishes:

.1 Brushed Stainless Steel number 4 "Blend S" type finish.

.2 Fastenings: stainless steel, type 304

2.2 Fabrication

.1 General:

.1 Fabricate Work of this Section with machinery and tools specifically designed for intended manufacturing processes and by skilled workers.

.2 Fit and assemble Work in shop. When this is not possible make a trial shop assembly.

.3 Incorporate means for fastenings of other Work secured to Work of this Section.

.2 Construction:

.1 Fabricate Work with materials, component sizes, metal gauges, reinforcing, anchors, and fasteners of adequate strength to withstand intended use, and within allowable design factors imposed by jurisdictional authorities. Fabricate items from steel unless otherwise noted.

.2 Ensure that Work will remain free of warping, buckling, opening of joints and seams, distortion, and permanent deformation to expansion and contraction forces and loads.

.3 Drill drainage holes at exterior steel fabrications to permit drainage of trapped moisture.

.4 Surfaces of counter tops, dish tables, drain boards, etc. shall be one-piece construction. All joints, including field joints, shall be welded and polished.

.5 Body front on cabinets shall be welded and polished to simulated one-piece construction.

.6 Components

Undershelves:

.1 1.6 mm SS as specified for individual items, removable in sections formed over crossrails at front and side down 25mm and in 15mm at joint.

Drawers:

.1 Type: Kason Industries, 304 SS heavy duty welded drawer assembly 7102C00020

.2 Insert: 508 x 508 x 127mm Heavy Duty Thermoplastic Drawer Pan.

.3 Front: 1.6mm SS insulated double pan c/w integral formed handle

.4 Frame: 1.6mm SS internal frame assembly

.5 Housing: 1.2mm SS outer drawer housing complete full extension drawer slides, and self-closing drawer feature

Counter Construction:

.1 Top: 1.6 mm SS on galvanized sub top all welded formed down 40 mm and in 20 mm. Food well openings turned down 25 mm with corners welded and polished or 19 mm thick Quartz (as selected by Architect) or 12 mm solid surface material on 19 mm plywood subtop.

.2 Body: 1.0 mm SS turned in 40 mm, back 40 mm and returned 40 mm at openings, unless double wall is specified in which case omit 40 mm return. Where units occur on a curb base, toe space shall be 100 mm with overhang completely enclosed and sealed with clear colourless silicone sealant to 19-GP-18 M87.

.3 Intermediate Shelf: 1.6 mm SS mounted on SS pilasters for adjustment on 25 mm centres. Pilasters to extend to within 50 mm of top and bottom. Shelf edge to turn down 25 mm and in 15 mm at front and sides with corners welded. Shelf rear turned up 75 mm and folded with 25 mm gap at rear of shelf and cabinet. At single gable pilasters shall be mounted on 40 mm SS fully enclosed channels for easy removal of shelf. Where removable undershelf is specified it shall be mounted on 100 mm long SS pilaster strip complete with SS clips for removal.

.4 Bottom: 1.6 mm SS with rear and (2) two sides turned up 40 mm with corner welded, front turned down 40 mm and boxed.

.5 Saddle: 2.0 mm galvanized 25 x 100 mm top hat type, fully enclosed.

.6 Legs and Feet: 40 mm (outside diameter) SS tubing and adjustable feet as specified.

.7 Overshelves: 1.6 mm SS turned down 25 mm and in 15 mm on all edges. Uprights 25 mm sq. SS tubing inserted through top and fully welded around upright at counter top.

.8 Locks: Doors and drawers complete with chrome plated cylinder locks, keyed alike.

Hinged Door:

.1 Doors: 1.0 mm SS double pan construction with 15 mm honeycomb interior deadening. Liner 1.0 mm SS #4 finish.

.2 Handle: As specified for utility drawers.

.3 Hinge: Continuous SS piano hinge 30 mm minimum.

.4 Catch: Roller bearing friction catch.

.5 Lock: Cylinder type as specified for drawers, keyed alike, chrome plated.

.3 Assembly:

.1 Accurately cut, machine and fit joints, corners, copes and miters so that junctions between components fit together tightly and in true planes. Note: spot welding, riveting or filling with solder is not acceptable.

.2 Fasten Work with concealed methods unless otherwise indicated on Drawings.

.3 Weld connections where possible, bolt where not possible, and cut off bolts flush with nuts. Countersink bolt heads, and provide method to prevent loosening of nuts. Ream holes drilled for fastenings. Method – electric seamless using low carbon filler rid containing sufficient chromium and nickel to give approximately the same composition in welds as adjoining parts. Heli-arc welding method shall be used wherever practical. Welds shall be complete welds, strong and ductile.

.4 Joints shall be invisible butt welded, properly jigged and ground smooth. Grind welds smooth where exposed to view.

.5 Provide for differential movements within assemblies and at junctions of assemblies with surrounding Work.

.4 Finish work:

.1 Incorporate holes and connections for Work installed under other Sections of this Specification.

.2 Cleanly and smoothly finish exposed edges of materials including holes.

.3 Cap open ends of sections exposed to view, such as pipes, channels, angles, and other similar Work.

.4 Machine or grind floor plates, gratings, covers, or their bearings to provide level support.

PART 3 - EXECUTION

3.1 Examination

.1 Take site measurements to ensure that Work is fabricated to fit surrounding construction, around obstructions and projections in place, or as shown on Drawings, and to suit service locations.

3.2 Installation

.1 Install Work plumb, true, square, straight, level, and accurately and tightly fitted together and to surrounding Work and as required for proper performance.

.2 Include with Work of this Section anchor bolts, high tensile bolts, washers and nuts, expansion bolts, toggles, straps, sleeves, brackets, clips, and other items necessary for secure installation as required by loading and jurisdictional authorities. Weld to CAN/CSA-S16.1-94.

.3 Countersink holes provided for wood screws where wood is attached to Work of this Section.

.4 Attach Work to interior concrete and masonry with corrosion resistant expansion bolts to support load with a safety factor of three (3).

.5 Attach Work to exterior concrete and masonry with non-shrink epoxy grout to support load with a safety factor of three (3).

.6 Insulate between dissimilar metals or between metal, and masonry or concrete with bituminous paint to prevent electrolytic action.

.7 Grout metal posts, pickets, balusters, and the like, in metal sleeves cast into concrete, with non-shrink quick setting epoxy anchor cement, unless detailed otherwise. Fabricate sleeves of 75 mm (3") minimum depth.

.8 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

3.3 Adjustment and Cleaning

.1 Remove damaged, dented, defaced, defectively finished, or tool marked components and replace with new.

3.4 Protection

.1 Maintain protection of Work of this Section from time of installation until final finishes are applied or to final cleanup.

.2 Protect prime and finish painted and galvanized surfaces from damage.

END OF SECTION

1.0 GENERAL

1.1 SECTION INCLUDES

.1 Entrance flooring systems: floor grids & frame assemblies

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.2 The Aluminum Association

.3 The Carpet and Rug Institute (CRI)

.4 The National Floor Safety Institute (NFSI)

.5 International Organization for Standardization (ISO)

.6 Cradle to Cradle Products Innovation Institute (C2C)

1.3 RELATED SECTIONS

.1 Section 01330 - Submittal Procedures.

.2 Section 01610 - Basic Product Requirements.

1.4 SUBMITTALS

.1 General: Submit the following in accordance with conditions of contract and Division 1 specification section 01330.

.2 Product data for each type of floor grid and frame specified, including manufacturer's specifications and installation instructions.

.3 Shop drawings in sufficient detail showing layout of grid and frame specified including details indicating construction relative to materials, direction of traffic, spline locations, profiles, anchors and accessories.

.4 Samples for verification purposes: Submit an assembled section of floor grid and frame members with selected tread insert showing each type of color for exposed floor grid, frame and accessories required.

.5 Maintenance data in the form of manufacturer's printed instructions for cleaning and maintaining floor grids.

1.5 QUALITY ASSURANCE

.1 Flammability in accordance with ASTM E648, Class 1, Critical Radiant Flux, minimum 0.45 watts/m2.

.2 Slip resistance in accordance with ASTM D-2047-96, Coefficient of Friction, minimum 0.60 for accessible routes.

.3 Standard rolling load performance is 400 lb./wheel with larger loading requirements as specified (load applied to a solid 5” x 2” wide polyurethane wheel, 1000 passes without damage).

.4 Single Source Responsibility: Obtain floor grids and frames from one source of a single manufacturer.

.5 Utilize superior structural aluminum alloys 6105-T5 & 6016-T6for rail components.

.6 Utilize a manufacturer that is ISO 9001 & 14001 certified.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to the project site ready for use and fabricated in as large sections and assemblies as practical, in unopened original factory packaging clearly labeled to identify manufacturer.

1.7 PROJECT CONDITIONS

.1 Field measurements: Check actual openings for grids by accurate field measurements before fabrication. Record actual measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

.2 Recessed Conditions: Coordination with Division 03 Concrete specifications is required. For proper installation, the concrete recess must be flat and smooth throughout. If the recess is formed by a concrete contractor, the pour dimensions may require leveling grout to achieve the proper depth and a smooth finish. The final recess depth will match the specified product and must be field verified. For proper frame installation, the side walls of the concrete recess must also be straight and smooth. Inconsistencies with the recess and side walls must be remediated prior to product installation.

2.0 PRODUCTS

2.1 MANUFACTURERS

.1 Drawings and specifications are based on manufacturer's literature from Construction Specialties, Inc. unless otherwise indicated. Other manufacturers must comply with the minimum levels of material and detailing indicated on the drawings and specified herein.

2.2 MATERIALS

.1 Aluminum - ASTM B 221, alloy 6105-T5 for rail extrusions and 6061-T6 for key lock bars.

.2 Tread insert options - refer to section 2.05.

2.3 FLOOR GRIDS

.1 Model and Description - G1 Pedigrid- Cradle 2 Cradle Silver certified (carpet insert only). Shall be extruded 6105-T5 aluminum alloy tread rails joined mechanically by extruded 6106-T6 aluminum alloy key lock bars. (welding or bolting shall not be permitted.) Rail finish to be mill (standard) or one of 9 optional colors as offered by manufacturer. Choose from anodized or heavy-duty powder coat finish.

2.4 Grid Frames

.1 Shallow Pit Frame with drain pan shall be 6063-T5 aluminum alloy with 1/2" (12.7mm) exposed surface and a depth of 2-3/4" (69.9mm). These assemblies receive 1/4" (6.4mm) thick heavy gauge TPE support cushions 1" (25.4mm) long mounted to each continuous foot at 24"(0.61m) on center. These assemblies shall also include a 16-gauge aluminum pan provided by manufacturer. Frame color shall be supplied in mill (standard) or one of 9 optional colors as offered by manufacturer. Choose from anodized or heavyduty powder coat finish. Note: Mill finish frames in contact with wet concrete to be primer coated.

2.5 TREAD INSERT OPTIONS

.1 EC - Exterior Carpet shall be solution dyed polypropylene fibers with 50/50 blend of 600/12-denier multi filament and 595/D1 monofilament, available in one of 4 standard colors as offered by manufacturer. The texturized fibers have ultraviolet blockers and color as an integral part of the filament. Each carpet fiber and monofilament shall be fusion-bonded to a rigid two ply backing to prevent fraying and supplied in continuous splice-free lengths. Waterproof fibers do not get soggy, rot, fade or stain. Carpet weight shall be 32-oz./yd².

3.0 EXECUTION

3.1 Examination

.1 Verification of conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

.2 Do not proceed until unsatisfactory conditions have been corrected.

3.2 Preparation

.1 Manufacturer shall offer assistance and guidance to provide a template of irregular shaped grid assemblies to ensure a proper installation.

3.3 Installation

.1 Install the work of this section in strict accordance with the manufacturer's recommendations.

.2 Set grid at height recommended by manufacturer for most effective cleaning action.

.3 Coordinate top of grid surfaces with bottom of doors that swing across to provide ample clearance between door and grid.

3.4 Cleaning

.1 It is important to the life cycle of the entrance mat that a maintenance schedule be developed which includes regular vacuuming and extraction that correctly matches the amount of traffic the mat incurs.

3.5 Protection

.1 After completing required frame installation and concrete work, provide temporary filler of plywood or fiberboard in recess, and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and project is near time of substantial completion.

.2 Defer installation of floor grids until time of substantial completion of project.

END OF SECTION

1.0 GENERAL

1.1 SECTION INCLUDES

.1 Manually operated, roll-up fabric interior window shades including mounting and operating hardware.

1.2 REFERENCES

.1 All window coverings offered must meet the HAZARDOUS PRODUCTS ACT, Regulation SOR/2009-112, Sep 8, 2009 - Corded Window Covering Products Regulations

.2 All window coverings offered must meet the CSA Z600-08 - Safety of Corded Window Covering Products standard including but not limited to meeting the product safety requirements of section 4 and the labeling and information requirements of section 5

1.3 SUBMITTALS

.1 Submit under provisions of Section 01330 - Submittal Procedures:

.2 Product Data: Manufacturer's data sheets on each product specified, including:

.1 Preparation instructions and recommendations.

.2 Installation and maintenance instructions.

.3 Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.

.4 Storage and handling requirements and recommendations.

.5 Mounting details and installation methods.

.3 Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings, field verified window dimensions, quantities, type of shade, controls, fabric, and color, and include opening sizes and key to typical mounting details.

.4 Verification Samples: For each finish product specified, two complete sets of shade components, unassembled, demonstrating compliance with specified requirements. Shade fabric sample and aluminum finish sample as selected, representing actual product, color, and patterns. Mark face of material to indicate interior faces.

.5 Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

.6 Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Do not deliver window shades until building is enclosed and construction within spaces where shades will be installed is substantially complete.

.2 Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.

.3 Label containers and shades according to Window Shade Schedule.

.4 Store products in manufacturer's unopened packaging until ready for installation.

1.5 SEQUENCING

.1 Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

.2 Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.6 PROJECT CONDITIONS

.1 Install roller shades after finish work and ambient temperature, humidity and ventilation conditions are maintained at levels recommended for project upon completion.

2.0 PRODUCTS

2.1 MANUFACTURERS

.1 SOLARFECTIVE/LEGRAND.

.2 HUNTER DOUGLAS CANADA.

.3 Equivalent products as per 01250.

2.2 MANUALLY OPERATED WINDOW SHADES

.1 Manually Operated Window Shades with Independent Control: Manually operated, vertical roll-up, fabric window shade with components necessary for complete installation.

.1 Operation: Bead chain and clutch operating mechanism allowing shade to stop when chain is released. Designed never to need adjustment or lubrication. Provide limit stops to prevent shade from being raised or lowered too far.

.1 Clutch mechanism: Fabricated from high carbon steel and molded fiberglass reinforced polyester or injected molded nylon.

.2 Bead chain loop: Stainless steel bead chain hanging at side of window.

.3 Idler Assembly: Provide roller idler assembly of molded nylon with adjustable length idler pin to facilitate easy installation, and removal of shade for service.

.2 Mounting:

.1 Mounting brackets.

.2 Endcaps and headbox.

.3 Roller Tube: Fabricated from extruded aluminum, galvanized steel, or enameled steel. Diameter, wall thickness, and material selected by manufacturer to accommodate shade type and size. Fabric connected to the roller tube with LSE (low surface energy) double sided adhesive specifically developed to attach coated textiles to metal. Adhesive attachment to eliminate horizontal impressions in fabric.

.4 Endcaps: Stamped steel with universal design suitable for mounting to ceiling, wall, and jamb. Provide size compatible with roller size.

.1 Endcap covers: To match fascia or headbox color.

.5 Brackets: Plated stamped steel. Provide size compatible with roller size.

.1 Mounted to wall.

.6 Coupling system: Provide system to operate shades from single crank by coupling shade rollers together. System to consist of endcaps, plus couplings to connect rollers.

.1 2 shades operated from single control when indicated on drawings.

.7 Fascia/back fascia: aluminum extrusion to conceal shade roller and hardware from both interior and exterior sides.

.1 Attachment: Snaps onto endcaps without requiring exposed fasteners of any kind. Fascia can be mounted continuously across two or more shade bands.

.2 Finish: Clear anodized.

2.4 FABRIC

.1 Light Filtering Fabrics

.1 Shade cloth shall be woven of .018 opaque, vinyl coated polyester yarn consisting of approximately 79% vinyl and 21% 500 dernier polyester core yarn. The fabric shall be

tensioned in the finishing range prior to heat setting to keep the warp ends straight and minimize or eliminate weave distortion to keep the fabric flat. The fabric shall be dimensionally stable. Colour to be as selected from standard range.

.2 Average 3% open.

.2 Performance – As a “shade cloth” the fabric shall hang flat without buckling or distortion. The edge, when trimmed, shall hang straight without raveling. An unguided roller shade Cloth shall roll true and straight, without shifting sideways more than +1/8” in either direction due to warp distortion, or weave design.

.3 Flame Retardance - Fabric shall be certified by an Independent Laboratory to pass the Small Scale Vertical Burn Requirements test CAN and ULC-S109-M87 and NFPA 701.

.4 The fabric supplied shall be GREENGUARD certified or approved equivalent.

2.5 Schedule

.1 Provide rollershades at all exterior windows and as indicated on drawings.

3.0 EXECUTION

3.1 EXAMINATION

.1 Do not begin installation until substrates have been properly prepared.

.2 If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

.1 Coordinate requirements for blocking and structural supports to ensure adequate means for installation of window shades.

3.3 INSTALLATION

.1 Install in accordance with manufacturer's instructions.

.2 Install roller shades level, plumb, square, and true. Allow proper clearances for window operation hardware.

.3 Install the following items to conceal roller and operating mechanism. Do not use exposed fasteners.

.1 Fascias.

.2 Closure panels.

.3 Endcaps.

3.4 TESTING AND DEMONSTRATION

.1 Test window shades to verify that operating mechanism, fabric retainer, and other operating components are functional. Correct deficiencies.

.2 During daylight hours, lower shades and turn off interior lights. Verify that there are no light leaks at perimeter or within shade assembly. Correct deficiencies.

3.5 PROTECTION

.1 Protect installed products until completion of project.

.2 Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION