HUMBER

# PROJECT SPECIFICATIONS

**HUMBER FOOD SERVICE PHASE 4**
205 HUMBER COLLEGE BLVD, ETOBICOKE, ON M9W 5L7
Project # 21-1436

Each Section and Subsection of the Specification is numbered to conform to six-digit NMS MASTERFORMAT, Division 00 to 49.

The Sections are written as parts of work and have been assigned permanent numbers. They are arranged in sequence for this particular Project. Any gaps in the order of numerical sequence do not indicate that a Specification Section or Subsection has been omitted, but rather that a Section or Subsection is not included in work required for this Project. Neither the organization of the specifications into divisions, sections and parts, nor the arrangement of the drawings, is intended to control the Contractor in dividing the Work among Subcontractors and Suppliers, or in establishing the extent of the work to be performed by any trade.

SPECIFICATION CONTENTS

DIVISIONS 000 & 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

000 - INTRODUCTORY INFORMATION



DIVISION 1 – GENERAL CONDITIONS



SPECIFICATIONS GROUP
GENERAL REQUIREMENTS SUBGROUP

DIVISION 2 – EXISTING CONDITIONS

PROJECT INFORMATION:

A PROJECT PHASING

THIS PROJECT IS PHASE 4, FOR THE INTERIOR RENOVATIONS OF THE EXISTING BOOKSTORE AT HUMBER COLLEGE IN ETOBICOKE. THE PROJECT IS AT 205 HUMBER COLLEGE BLVD. THIS WORK IS TO TAKE PLACE IN TWO DISTINCT PHASES (4A & 4B) ENSURING THE BOOKSTORE STAYS OPERATIONAL THROUGHOUT THE ENTIRE CONSTRUCTION. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE BOOKSTORE REMAINS OPERATIONAL DURING THE CONSTRUCTION. ALL ARCHITECTURAL, HVAC, ELECTRICAL, PLUMBING AND LOW VOLTAGE ELEMENTS REQUIRED FOR THE BOOKSTORE TO RUN MUST REMAIN FUNCTIONAL.

THE HOARDING PLANS PROVIDED ARE SUGGESTIONS. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO PROVIDE A WORKING HOARDING PLAN COORDINATED WITH THEIR MEANS AND METHODS STRATEGY TO COMPLETE THIS CONTRACT TO ENSURE THAT THE ADJACENT SCHOOL AREAS ARE SAFE AND ARE ACCESSIBLE TO THE PUBLIC.

PHASE 4 WILL BE THE CONVERSION OF THE EXISTING BOOKSTORE SPACE INTO:

- A NEW SMALLER BOOKSTORE
- A NEW PUBLIC TOWN SQUARE
- NEW SHELL RETAIL SPACES ADJACENT TO THE TOWN SQUARE
- DESIGNATED SUBSTANCE SURVEY WILL BE IMPLEMENTED. SEE THE SURVEY IN THE SPECIFICATION.
- AFTER THE DSS WORK IS COMPLETE, THE EXISTING CEILING STEEL STRUCTURE IS TO BE FIRE-PROOFED TO A 1-HOUR RATING
- NEW SPRINKLERS ARE TO BE ADDED THROUGHOUT THE SPACE

B STUDENT PATHWAYS
STUDENT PATHWAYS OF TRAVEL ARE TO REMAIN OPEN DURING THE ENTIRE PROJECT. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO DESIGN, SUPPLY AND INSTALL ALL PROTECTION HOARDING TO ALLOW THE BUILDING TO REMAIN OCCUPIED BY THE STUDENTS DURING CONSTRUCTION.

SEE THE DRAWINGS FOR MORE DETAILS.

C PHASES
THE PHASES ARE AS FOLLOWS:

- PHASE 4A – IS THE RENOVATION OF THE UPPER LEVEL OF THE EXISTING BOOKSTORE, AREA A INTO A NEW BOOKSTORE. DURING THIS TIME, AREA B WILL FUNCTION AS THE EXISTING BOOKSTORE.
- AFTER PHASE 4A IS COMPLETE, HUMBER COLLEGE WILL MOVE THE BOOKSTORE INTO THE NEW PHASE 4A SPACE.
- PHASE 4B – IS THE RENOVATION OF THE LOWER LEVEL OF THE EXISTING BOOKSTORE, AREA B, INTO THE HUMBER NEW TOWN SQUARE + SHELL RETAIL SPACES.

D GENERAL NOTES:
1. GENERAL CONTRACTOR IS TO LOCATE AND PHASE CONSTRUCTION HOARDING AS REQUIRED. ALL HOARDING WALLS AND DOORS ARE TO BE 1 HOUR RATED AS PER THE DETAILS.

2. GENERAL CONTRACTOR IS TO PROVIDE A FINAL DETAILED HOARDING & PHASING PLAN TO HUMBER COLLEGE FOR THEIR REVIEW.
3. ALL WORK TAKING PLACE OUTSIDE OF THE CONSTRUCTION HOARDING IS TO TAKE PLACE AFTER HOURS. COORDINATE WITH HUMBER COLLEGE ON TIMING OF ALL AFTER HOURS WORK.
4. PEDESTRIAN PATHWAYS ARE TO REMAIN ACCESSIBLE TO THE PUBLIC THROUGHOUT THE CONSTRUCTION. WORK WITHIN THE PEDESTRIAN PATHWAYS IS TO BE PHASED APPROPRIATELY.
5. SEE THE DESIGNATED SUBSTANCES SURVEY DOCUMENT IN THE SPECIFICATIONS.
6. NEW SPRINKLER SYSTEM IS TO BE OPERATIONAL, PRIOR TO REMOVING ANY HOARDING.

E) ENGINEERING & MOCKUPS:

1. PODS ARE TO BE ENGINEERED AND STAMPED BY A PROFESSIONAL ENGINEER BY THE MILLWORK CONTRACTOR.
2. GENERAL CONTRACTOR IS TO COORDINATE ALL ELECTRICAL AND SPRINKLER CONNECTIONS WITHIN THE PODS.
3. ENGINEERED SHOP DRAWINGS ARE TO BE PROVIDED FOR ALL GLAZING SYSTEMS. THIS IS TO BE PROVIDED BY THE GLAZING CONTRACTOR.
4. ENGINEERED SHOP DRAWINGS ARE TO BE PROVIDED FOR THE GLAZING BOOKSTORE WINDOW DISPLAYS - SEE A9.0.
5. MOCKUPS ARE TO BE CREATED AS SHOWN IN THE DRAWINGS PRIOR TO CONSTRUCTION. MOCKUP LOCATIONS ARE SHOWN ON A3.1

F) ALLOWANCES

1. FOR ALLOWANCES SEE 01 21 00 - ALLOWANCES.

G) ALTERNATE PRICES

PROVIDE ALTERNATE PRICES AS PER 00 31 00 - FOR THE FOLLOWING:

.1 M431A – CARRY M431 FOR THE MAIN TENDER. PROVIDE AN ALTERNATE PRICE REPLACING M431A WITH M431 B.

END OF DOCUMENT

.1 CONTRACT DOCUMENTS

.1 Work will be performed under one Contract, bound by a purchase order issued by Humber College and the Canadian Standard Construction Document CCDC-2, 2008, which will be used to govern this project and any discrepancies.

.2 GENERAL CONDITIONS

.1 The General Conditions of the Contract form an integral part of the Specifications.

.3 DIVISIONS 00 and 01

.1 The provisions of all Sections of Divisions 00 and 01 shall apply to each Section of this Specification.

.4 SUPPLEMENTARY DEFINITIONS

.1 Wherever in the Specification the word "Owner" is used in any form, it shall mean the **"Humber College"**.

.2 Wherever in the Specification the word "Consultant" is used in any form, it shall mean **"ATA Architect Inc."**.

.3 In the Specification, reference such as "Shown on the Drawings", "Specified", "Scheduled", "Called for" and the like shall be deemed to include work required by any of the Contract Documents.

.4 In the Specifications the expression Trade(s) is synonymous with Subcontractor(s) if the context permits. The expression "All Trades" shall be deemed to include the Contractor.

.5 MATERIAL HANDLING AND STORAGE

.1 Store packaged materials in original, undamaged containers with manufacturer's labels and seals intact.

.2 Prevent damage to materials during handling and storage.

.3 Damaged materials are not acceptable; remove damaged or rejected materials from site immediately at contractors' own expense.

.6 TEMPORARY WORK

.1 The expression "Provide" shall be deemed to include the provision, installation and finishing, maintenance, servicing and removal of the work described. All work damaged by temporary installation shall be repaired and made good at no expense to the Owner.

.7 EXAMINATION

.1 Each Trade shall examine surfaces prepared by Other Trades which effect its work and shall ensure that defects are corrected. Commencement of work shall imply acceptance of prepared work.

.2 All Trades shall check and verify with the Contractor all dimensions, especially those pertaining to the work of more than just their Trades.

.3 All details and measurements of any work which is to fit to, or conform with, work already installed by Other Trades, shall be taken at the job site by the Trades concerned.

.8 SATISFACTION/APPROVAL

.1 The expression "to the satisfaction or approval of the Consultant" shall be implied throughout the Specification in regard to the materials and workmanship.

.2 "Submit for approval" means that the item in question is to be submitted to the Consultant for approval and that a written acceptance of it and authorization for its use in the work shall be obtained before it is incorporated in the work. Trades shall submit items for approval to the Consultant via the Contractor.

.3 An "approved method" means that which has the manufacturer's recommendation, or which is generally accepted as good trade practice. The Consultant's approval is also required.

.9 BURIED SERVICES

.1 Make all necessary enquiries to determine the location of any existing services such as hydro, telephone, water, gas, sewer, etc. This applies to interior as well as exterior work.

.2 Ascertain the location of any services buried in floor slabs prior to cutting. Unless all existing services can be visually located, all concrete floor to be cut must be **x-ray** to determine possible buried services, submit all pertinent information to consultant to obtain approval before work commences. Contractor shall be responsible for any damages which result from negligence.

.10 EMERGENCIES

.1 Notify the Department of Labour immediately should an emergency arise on the site, including personal injuries and accidents. Provide complete details on extent of emergency, cause and the action being taken. This notification shall be by telephone or facsimile immediately after the occurrence.

.11 EXISTING SERVICES

.1 The Owner will not be liable for any loss, damage, delay or claim whatsoever resulting or arising from the absence in whole or in part of services.

.2 Without limiting the generality of the foregoing, this includes roads, water, storm and sanitary services, electricity and condition of drainage from or to the site.

.12 WASTE AUDIT AND WASTE REDUCTION

.1 Comply with requirements of jurisdictional authorities.

.2 Deliver to nearest appropriate depot materials accepted for recycling by region or municipality having jurisdiction over the Place of the Work, including but not limited to cardboard, paper, plastic, aluminum, steel, and glass. Deliver to nearest appropriate depot scrap and excess gypsum wallboard for recycling of this material. Costs for this work are to be included in the Contract Price.

.3 Refer to Section 01 74 11 - Cleaning and Waste Management, for additional requirements.

.13 SECURITY

.1 Contractor shall be responsible for security of the Place of the Work and material from time the Work commences until completion of the Work.

.2 Provide and maintain signs, hoardings, guard rails, barriers, warning signs, warning lights, and other protection as required by authorities having jurisdiction for safety of the Place of the Work. Be responsible for adequacy of protection.

.14 PUBLICITY RELEASES AND PHOTOGRAPHS

.1 No press or publicity releases will be permitted without prior written approval of the Owner.

.2 No photographs of the Place of the Work or of any portion of the Work will be permitted without written approval of the Owner, except as provided by the Contracts Documents.

.15 ELECTRONIC FILES

.1 In the event that the Contractor, a Subcontractor, or a Supplier requests AutoCAD files from the Consultant, the Consultant will be allowed to use their discretion whether or not they will provide them. The Consultant will charge a fee for providing such electronic files and will require a signed endorsement of disclaimer form to the Contractor.

.16 OPERATIONAL LIMITATIONS

.1 The existing Humber College and grounds will remain in full use and occupancy throughout the Work. The Contractor will be responsible for keeping the public safe during the renovations inside and outside the building..

.2 Contractor's use of the Place of the Work is limited to permit regular use of existing Owner's facilities to continue with the least amount of interference and disruptions possible and as specified herein.

.1 The Contractor shall organize the Work in cooperation with the Owner so that the operation of the existing building is not disrupted. Such organization shall take place at least 48 hours prior to commencing work except where a longer lead time is specified in the Contract Documents, in which case the longer lead time shall govern.

.2 Any potential interferences with the ongoing operation of the existing facility required for the proper execution of the Work shall be coordinated with the Owner prior to undertaking such operations. Owner shall require a minimum of ten (10) working days notice of such potential interruptions and any requirements or restrictions that the Owner might reasonably have in connection with such disruptions shall be accommodated by the Contractor at no increase in either the Contract Price or the Contract Time.

.3 In consultation with, and to acceptance of, the Consultant and the Owner, designate an entrance and a circulation route into and around the Place of the Work that workers shall use and that shall not be used by Owner's staff or the public.

.1 Deliveries to the Place of the Work shall be closely coordinated with the Owner. There shall be no increase in either the Contract Price or the Contract Time on account of such restrictions.

.2 Work within the project hoarding line shall be done between 0730 hours and 1700 hours. The Contractor shall make special arrangements with the Owner to perform work outside of these hours. Requests for special arrangement shall be made at least 48 hours in advance except where a longer lead time is specified in the Contract Documents, in which case the longer lead time shall govern.

.3 Any cost associated with work outside of regular hours will be charged to and shall be the responsibility of the Contractor. On-site access problems are to be referred to the Owner.

.4 In addition to the requirements for waste removal and disposal specified in Section 01 74 11 and elsewhere in the Contract Documents, the Contractor shall clean-up and remove debris on a daily basis. Under no circumstances shall the Contractor or workers involved in or retained for the purpose of the Work use the Owner's garbage disposal containers.

.5 The Contractor shall provide proper and adequate protection for all Owner's property and equipment. The Contractor shall ensure that dust is kept to a minimum. Refer also to Section 01 74 11 in this regard. The Contractor shall make good, at no additional cost to the Owner, all surfaces disturbed by the execution of the Work whether such surfaces are located within the area of work or not.

.6 The Contractor is confined to areas within the project hoarding line for storage of equipment and materials that are to be stored at the Place of the Work. Such storage shall not violate the terms and conditions set forth in the fire insurance policies of the Owner, or any other jurisdictional authority.

.17 FIELD MARKING

.1 Do not use wick pens to mark face of products to be installed in the work. Such pen marks will show through applied paint or vinyl coatings in due course. The Contractor will be held responsible and required to remedy such defects, classified as "latent defects" regardless of when they occur.

.18 TRADEMARKS AND LABELS

.1 Trademarks and labels, including applied labels shall not be visible in the finished work. Such trademarks or labels shall be removed by grinding if necessary, or painted out where the particular material has been painted.

.2 The exception of this requirement shall be those essential to obtain identification of mechanical and electrical equipment and those required to be visible by Authorities having jurisdiction and those on plumbing fixtures and trims, i.e. all U.L.C., C.S.A., and A.S.T.M. labels.

.19 FASTENINGS

.1 Unless otherwise specified fasteners shall be concealed. Use where not possible to conceal, exposed metal fasteners and accessories of a permanent type that are of same texture, colour and finish as base metal on which they occur.

.2 Use metal fastenings of the same materials as the metal component they are anchoring or of a metal which will not set up an electrolytic action which would cause damage to the fastening or metal component.

.3 Use fastenings of a type and size and install them in a manner to provide positive anchorage of the unit to be anchored in position. Install anchors at required spacing to provide required load bearing or shear capacity.

.4 Keep exposed fastenings to a minimum, evenly spaced and neatly laid out. To be shown on Shop Drawings.

.5 Fastenings which cause spalling or cracking of material to which anchorage is being made are not permitted.

.6 Limitations for Use of Powder Actuated Tools:

.1 The use of powder activated fasteners is prohibited without the written authorization of the Consultant.

.2 Where such authority is given, it will be for low velocity type powder activated fasteners and for horizontal application only.

.3 The manufacturer of the equipment selected, Ramset, Omark or equal, shall send a representative to the site to demonstrate the equipment prior to its use, and this representative shall make periodic inspections to ensure compliance with instructions issued by him and correct application of material. In all cases a shield shall be used where fasteners are to be applied to concrete. The use of fasteners in pre-cast concrete is to be avoided if possible as there is an increased tendency to shatter surfaces.

.4 Fasteners shall be not nearer than 63 mm to the edge of any cast-in-place formed concrete member.

.5 Under no circumstances shall such fasteners be used on concrete members less than 75 mm in thickness.

.6 Such fasteners shall not be in areas where corrosion can take place, for instance due to high humidity or condensation.

.7 Generally use support anchorage of cast-in-place type set into concrete forms prior to pouring concrete, or self-drilling type such as "Red Head" T-32 tie wire type. When drilling upwards, use jig to hold drill steady and plumb.

.8 Provide pull-out tests on anchors, or otherwise test to ensure anchorage is sufficient for the particular application including a minimum safety factor of seven. Provide evidence of such tests if requested.

.9 Submit samples of proposed anchoring or hanging devices with technical data and test data.

.20 MECHANICAL AND ELECTRICAL WORK

.1 Install and arrange ducts, piping, tubing, equipment and fixtures in such a way as to conserve headroom and space as much as possible, to provide minimum interference and to be neat, orderly and tidy. Unless otherwise noted, run pipes, ducts, tubing and conduit, vertical, horizontal and square with building grid. Conceal pipes, ducts, tubing and conduit above ceiling, rooms and unfinished spaces, unless indicated or specified otherwise. Dimensions and elevations of ceiling heights on Drawings must be maintained.

.2 The Contractor shall include for all cutting, patching, leveling and make good to affected areas or surfaces indicated on Mechanical and Electrical drawings and as required to meet the requirements and specifications of Divisions 15 and 16.

END OF SECTION

1 GENERAL

1.1 CONTRACT DOCUMENTS

.1 Refer to GC 1.1 – Contract Documents

.2 Work of this Contract comprises of:

This project is Phase 4, for the interior renovations of the existing corridor at Humber College in Etobicoke. The existing building site is at 205 Humber College Blvd, Etobicoke, ON. and is further identified as ATA Architect Inc. Project No. 21-1436. See Section 00 31 00. See the Allowance Section 01 21 00.

.3 Division of the Work among Subcontractors and Suppliers is solely the Contractor's responsibility, and the Consultant assumes no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of work.

.4 The Contract Documents were prepared by the Consultants for the account of the Owner. The material contained herein reflects the Consultant's best judgement in light of the information available to him at the time of preparation. Any use which a third party makes of the Contract Documents, or any reliance on or decisions to be made based on them, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on the Contract Documents.

.5 These specifications are written in imperative mode in an abbreviated form. The imperative language of the technical sections is directed to the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall" and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" will be supplied by inference where a colon (:) is used within sentences and phrases. Except where worded to the contrary, fulfil and perform all indicated requirements whether stated imperatively or otherwise.

1.2 CONTRACT METHOD

.1 Single Contract: Construct the Work under a single lump sum contract.

1.3 CONTRACTOR USE OF PREMISES

.1 Contractor has unrestricted use of the Place of the Work until Substantial Performance of the Work where upon Contractor and Subcontractors may be restricted access to and may require approval from the Owner to areas in the Place of Work in order to complete deficiencies in the Work in a timely manner.

1.4 PARTIAL OWNER OCCUPANCY OF THE WORK

.1 Owner may occupy designated areas of the Work for the purpose of storing furnishings and equipment, and installing equipment.

.2 Refer to GC 5.9 – Non-Conforming Work.

1.5 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Refer to GC 5.4 – Substantial Performance of the Work.

END OF SECTION

1 GENERAL

1.1 REFERENCES

.1 CCDC 2-2008, Stipulated Price Contract.

1.2 CASH ALLOWANCES

.1 Refer to CCDC 2-2008, GC 4.1.

.2 Include in Contract Price specified cash allowances.

.3 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation (where applicable) and other authorized expenses incurred in performing Work.

.4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.

.5 Contract Price will be adjusted by written order to provide for excess or deficit to cash allowance allocations.

.6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.

.7 Include progress payments on accounts of work authorized under cash allowance allocations in Consultant's monthly certificate for payment.

.8 Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.

.9 List of Cash Allowances

.1 The following cash allowances are included in the *Contract Price*:

| | | |
|---|---|---|
| 0.1 | **Testing and Inspections**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services for Testing and Inspections. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. | $5,000.00 |

| | | |
|---|---|---|
| 0.2 | **Finish Hardware – Supply and Install of Door Hardware**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing and installing Finish Hardware meeting Humber College requirements. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber College reserves the right to accept or reject the Contractors recommendation. All hardware devices and any electrical cabling connected to the devices are to be included in the General Contractor's quotation. | $15,000.00 |
| 0.3 | **Cutting / Patching / Levelling / Underlayment of Existing Concrete Floor**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. The existing floor in this area can be inconsistent. | $25,000.00 |
| 0.4 | **Glass 3M – Signage, and accessible glass denotations (as per Humber)**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. | $15,000.00 |
| 0.5 | **Engineered Structure for TV in Bookstore, Sliding Security Screen.**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. Red steel is to be used to support the security screen, and the sliding security screen. | $10,000.00 |
| 0.6 | **Asbestos Removal**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. The Contractor is to refer to the DSS report for areas that have Asbestos containing materials. Refer to drawings for area(s) that are to have removal and reinstallation of sprayed fireproofing compound. | 55,000.00 |
| 0.7 | **Fire proofing repair / replacement due to construction activities**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. Existing 1 hr rated fire proofing to remain. This allowance is to replace/repair fireproofing that was removed or damaged during the construction process. | 25,000.00 |

| | | |
|---|---|---|
| 0.8 | **Infinity TV Wall in Townsquare**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation.<br>See drawings A7.5. Allowance to include all low voltage connections, extrusions, mirrors, mounts, glass, and window film, led lights.<br>Supporting back wall, cooling fans, and blocking are by GC.<br>TV/monitor will be provided by Humber.<br>Humber logo is covered by Glass 3M - Signage Allowance | 150,000.00 |
| 0.9 | **Removal of all redundant mechanical items in the ceiling space**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. | 25,000.00 |
| 1.0 | **Removal of all redundant electrical items in the ceiling space**<br>The Contractor is to solicit fee proposals from three (3) firms specializing in providing services above. The Contractor is to review and evaluate each of the submissions and provide a formal recommendation to the Owner's Representative for the acceptance of the preferred firm. Humber reserves the right to accept or reject the Contractors recommendation. | 25,000.00 |

The Proposal Price, and not the cash allowances, includes the Proponent's coordination, overhead and profit in connection with such cash allowances.
The Owner reserves the right to reallocate the prescribed purpose of the cash allowances as deemed necessary.
All expenditure claims against the cash allowances shall be made in accordance with the CCDC 2 (2008) Stipulated Price Contract and Appendix A – Supplementary General Conditions.
Unexpended amounts of the cash allowances shall be deducted from the Contract at G;completion of Work.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Product substitution procedures

1.2 PRODUCT SUBSTITUTION PROCEDURES

.1 Request for substitution will only be considered when submitted in sufficient time, in the opinion of the Consultant, to permit proper evaluation by the Consultant

.2 When requesting Consultant review of a proposed Product substitution, demonstrate that the proposed substitution will perform equally as well as better as the specified Product.

.3 Accompany each request for substitution with a list of properties for both the specified Product and the proposed substitution, including the following information:
- .1 Product identification, including manufacturer's name, address, telephone and fax numbers, and web site address where available.
- .2 Manufacturer's Product data sheets, including material descriptions, compliance with applicable reference standards, and performance and test data.
- .3 A summarized comparison of physical properties and performance characteristics for the specified Product and the proposed substitution, and clearly highlighting significant variations.
- .4 Indication of availability of maintenance services and sources of replacement materials and parts, including associated costs and time frames.
- .5 Indication of cost savings and reduction of construction schedule.
- .6 Verification that the substitute will not result in additional costs or a reduction in performance to other portions of the Work.
- .7 Reason for requesting the substitution.

.4 The clauses "or equal", or "approved equal", or "equivalent", or other similar clauses, will not be construed as an invitation to submit requests for substitution or to unilaterally substitute Products in place of the specified Products and/or systems.

.5 Failure to order specified Products in adequate time to meet the approved construction schedule will not be a valid reason to submit a request for substitution. In accordance, with CCDC 2, GC 6.5 – Delays, such delays remain the responsibility of the Contractor, and will not result in an extension to the Contract Time or be subject to reimbursement by the Owner.

.6 The Owner is under no obligation to consider Product or System substitution recommended by the Contractor.

.7 Remove and replace substitutions incorporated into the Work without the Consultant's written approval.

END OF SECTION

1 GENERAL

1.1 COORDINATION

.1 Coordinate the Work to ensure the Work proceeds safely and expeditiously.

.2 Ensure adequate communication among involved parties.

.3 Allocate mobilization areas of the Place of the Work, for field offices, sheds, access, traffic and parking facilities.

.4 Coordinate use of the Place of the Work and facilities through procedures for submittals, reports and records, schedules, coordination of Drawings, recommendations, and resolution of ambiguities and conflicts.

.5 Submit information required for preparation of coordination and interference drawings. Review and approve revised drawings for submission to Consultant.

1.2 OTHER CONTRACTORS

.1 Cooperate with any separate contractor employed by the Owner and, if necessary, co-ordinate with their work.

.2 Submit necessary information to Owner to assist in the required scheduling of such contractors.

1.3 CONTINUANCE OF OWNER OPERATIONS

.1 Coordinate and schedule the Work to minimize any disruption of the normal functions of the existing building.

.2 Changes to the traditional scheduling of construction may be required and certain portions of the Work may not be able to proceed in continuous sequence.

.3 Every reasonable effort will be made to cooperate with the construction process.

.4 The Owner may modify proposed scheduling where such changes are in the best interests regarding the operation of the existing building.

1.4 ADMINISTRATIVE

.1 Schedule and administer project meetings in consultation with Consultant and Owner, throughout the progress of the Work. Meetings to occur at regular two-week (14 day) intervals.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting five (5) days in advance of meeting date to Consultant and Owner.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to meeting participants, affected parties not in attendance, Consultant and Owner.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.5 PRECONSTRUCTION MEETING

.1 Within fifteen (15) days after award of Contract, upon notification, attend at a location to be determined, a pre-construction meeting along with authoritative representatives of certain key sub-contractors as specifically requested by the Consultant and Owner.

.2 Consultant shall chair and issue minutes associated with the pre-construction meeting.

.3 Purpose of meeting is to discuss and review items of agenda as noted below.

Agenda to include but may not necessarily be limited to items as listed below:

.1 Appointment of official representative of participants in the Work.
.2 Schedule of Work: in accordance with Section 01 32 16 - Construction Progress Documentation - Bar Chart.
.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 50 00 - Temporary Facilities and Controls.
.5 Delivery schedule of specified equipment.
.6 Site security in accordance with Humber
.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
.8 Owner provided products.
.9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
.10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
.11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 Closeout Submittals.
.12 Monthly progress claims, administrative procedures, photographs, hold backs.
.13 Appointment of inspection and testing agencies or firms.
.14 Insurances, transcript of policies.

1.6 PROJECT/PROGRESS MEETINGS

.1 During course of Work General Contractor shall chair project (progress) meetings on site, on a bi-weekly basis and will send out notices stating time and place to Owners Representative, Consultants, Contractor and sub-contractors, and/or other persons whose presence may be required.

.2 During course of Work, a pre-arranged scheduled progress draw meeting will be held once monthly, to be chaired by the General Contractor.

.3 All parties will be notified a minimum five (5) days prior to meetings.

.4 Minutes of meetings to be circulated to attending parties and affected parties not in attendance within three (3) days after meeting.

.5 Agenda for project/progress meeting to include but may not necessarily be limited to the following:

.1 Health and Safety issues to be reviewed and discussed.
.2 Review, approval of minutes of previous meeting.
.3 Review of Work progress since previous meeting.
.4 Field observations, problems, conflicts.
.5 Problems which impede construction schedule.
.6 Review of off-site fabrication delivery schedules.
.7 Corrective measures and procedures to regain projected schedule.
.8 Revision to construction schedule.
.9 Progress schedule, during succeeding work period.
.10 Review submittal schedules: expedite as required.

.11 Review of CCN log, CO log, Cash Allowance Allocation log and shop drawing log.
.12 Maintenance of quality standards.
.13 Review proposed changes for affect on construction schedule and on completion date.
.14 Other business.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Construction Schedules

.2 Construction Photographs

1.2 SUBMISSION REQUIREMENTS

.1 Submit initial schedules within fifteen (15) days after award of Contract and resubmit updated schedules with each application for payment.

.2 The scheduling shall be done on MS-Project Latest Version; the initial schedule shall be the baseline schedule, and schedule re-submission shall include the baseline schedule with the schedule updates superimposed on same, so schedule issues can readily be identified.

1.3 CONSTRUCTION SCHEDULE - CRITICAL PATH METHOD

.1 Include complete sequence of construction activities.

.2 Include dates for commencement and completion of each major element of Work.

.3 Show projected percentage of completion of each item as of the first day of the month.

.4 Indicate progress of each activity to date of submission of the schedule.

.5 Update schedule monthly and resubmit with each application for progress payment. The Consultant will not review an application for payment that does not include an updated construction schedule. Update schedules shall show the baseline schedule as well as the updates.

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

.7 Provide a narrative report to define:
.1 Problem areas, anticipated delays, and impact on schedule
.2 Corrective action recommended and its effect
.3 Effect of changes on schedules of other contractors (sub).

1.4 ADDITIONAL SCHEDULES

.1 Concurrently with construction schedule, submit a schedule of values, a shop drawing schedule, a change management schedule and an equipment delivery schedule in formats acceptable to Consultant.

.2 Schedule of Values: to requirements of the Contract.

.3 Submittal Schedule:
.1 Refer to GC 3.10 - Shop Drawings
.2 Indicate anticipated submission dates and review periods for shop drawings, samples, lists or materials and other documentation.
.3 Highlight critical items, including latest date for submittal review by Consultant.
.4 Design sequence of submissions to reflect requirements of construction schedule.

.4 Equipment Delivery Schedule: indicate list of manufactured equipment complete with order dates and anticipated delivery dates.

.5 Change management schedule broken down by Contemplated Change Order Log, Change Order Log Cash Allowance Log and Cash Allowance Allocation Log.

1.5 PROGRESS PHOTOGRAPHS

.1 10 JPEG photos will be sent to the project team weekly at a minimum resolution of 1080P.

.2 Positions of photographs may be determined by Consultant.

.3 Photographs will be properly exposed and in focus, with unobstructed views of various aspects of the Work.

.4 Identify each photograph with:
- .1 name of Project
- .2 name of photographer
- .3 description of view, and
- .4 date photograph was taken.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Shop Drawings and product data

1.2 ADMINISTRATIVE

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

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

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

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

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

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

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

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

1.3 SUBMITTALS PRIOR TO START OF WORK

.1 Submit the following documents within the time stipulated, or, if not stipulated, prior to first application for payment:
- .1 Insurance certificates
- .2 Bonds
- .3 Workplace Safety and Insurance Board certificates
- .4 Construction schedule
- .5 Interference drawings
- .6 Schedule of values
- .7 Shop drawing schedule
- .8 Equipment delivery schedule.

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to CCDC 2-2008 GC 3.10 – Shop Drawings, in addition to the following.

.2 Accompany submissions with transmittal letter, in duplicate, containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.

.5 Other pertinent data.

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

.4 After Consultant's review, distribute copies to affected parties.

.5 Submit six (6) prints of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

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

.7 Submit six (6) copies of test reports for requirements requested in specification Sections and as requested by Consultant.
- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.

.8 Submit six (6) copies of certificates for requirements requested in specification Sections and as requested by Consultant.
- .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
- .2 Certificates must be dated after award of project contract complete with project name.

.9 Submit six (6) copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
- .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.10 Submit six (6) copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.11 Submit six (6) copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.

.12 Delete information not applicable to project.

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

.14 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, transparency and five (5) copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.5 INTERFERENCE DRAWINGS

.1 Prepare a set of interference drawings, identifying and resolving potential conflicts among various parts of the Work, including fire suppression systems, HVAC ductwork, plumbing and drainage lines, lighting and electrical systems.

.2 Submit three (3) copies of interference drawings to Consultant prior to start of Work.

.3 Coordinate and review interference drawings with affected Subcontractors prior to commencement of their respective portions of Work.

1.6 SAMPLES

.1 No later than three (3) weeks after award of Contract, submit to Consultant the following information:
.1 a complete list of Suppliers and/or manufacturers intended for use in the completion of the Contract.
.2 all colour samples required by the individual sections for selection by Consultant. Include the preparation of any representative panels of materials or colours deemed necessary by the Consultant.

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

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

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

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

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

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

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

1.7 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

END OF SECTION

1 GENERAL

1.1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Consultant and Owner. Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.

.3 Address topics at level of detail commensurate with environmental issue and required construction task.

.4 Environmental protection plan: include:
.1 Name of person responsible for ensuring adherence to Environmental Protection Plan.
.2 Name and qualifications of person responsible for manifesting hazardous waste to be removed from site.
.3 Erosion and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
.4 Drawings showing locations of proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
.5 Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.
.6 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
.7 Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.3 FIRES

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

1.4 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site unless approved by Consultant.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.6 POLLUTION CONTROL

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

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

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

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

1.7 NOTIFICATION

.1 Consultant and/or Owner will notify Contractor in writing of observed noncompliance with Federal Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Consultant of proposed corrective action and take such action for approval by Consultant.

.3 Consultant will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

END OF SECTION

1 GENERAL

1.1 RELATED SECTIONS

.1 Refer to individual Sections for quality control requirements.

.2 Section 01 21 00 - Allowances.

1.2 REFERENCES

.1 CCDC 2-2008, Stipulated Price Contract.

1.3 INSPECTION

.1 Refer to CCDC 2, GC 2.3 – Review and Inspection of Work.

1.4 INDEPENDENT INSPECTION AND TESTING AGENCIES

.1 From time to time during progress of the Work, the Owner will require that inspection and testing be performed to determine that materials Provided in the Work meet the requirements of the Contract Documents. Independent Inspection/Testing Agencies will be engaged by the Contractor for purpose of inspecting and/or testing portions of Work.

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

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

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

.5 Subcontractors shall verify with Contractor, in writing, portions of the Work that will require inspection and/or testing prior to commencing such affected work.

.6 Inspection and testing services shall be required for, but not limited to the following:
.1 Slab Moisture for installation of porcelain tiling
.2 Firestopping and smoke seals
.3 Sprinkler installation.
.4 Fire Proofing

1.5 ACCESS TO WORK

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

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

1.6 PROCEDURES

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

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

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

1.7 REJECTED WORK

.1 Refer to CCDC, GC 2.4 – Defective/Rejected Work.

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

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

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

1.8 REPORTS

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

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

1.9 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Engineer and/or Consultant and may be authorized as recoverable.

1.10 MOCK-UPS

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

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

.3 Prepare mock-ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.

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

.5 If requested, Engineer and/or Consultant will assist in preparing schedule fixing dates for preparation.

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

1.11 MANUFACTURER’S FIELD REVIEW

.1 Where manufacturer’s field review is specified, manufacturer’s representative shall review the relevant parts of the work at the Place of the Work, or wherever such affected work is in progress, to ensure that work is being executed in accordance with manufacturer’s written recommendations.

.2 Manufacturer’s field review is to ensure that the Products specified are being used in the Work and are being applied on surfaces prepared in accordance with their recommendations and the requirements of the Contract Documents.

.3 Unless otherwise indicated, manufacturer's representative shall undertake a minimum of one (1) field review, with additional reviews as deemed necessary by the manufacturer, to determine that the work of such sections is in accordance with the manufacturer's written recommendations.

.4 Manufacturer's representative shall submit a type-written report on manufacturer's letterhead within two (2) working days after each field review. Report shall document manufacturer's representative's field observations and recommendations.

.5 Manufacturer's field review reports shall be prepared and distributed following the procedures specified for preparation and submittal of inspection and testing reports given above.

1.12 MILL TESTS

.1 Submit mill test certificates as may be requested.

1.13 EQUIPMENT AND SYSTEMS

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

.2 Refer to facility services Sections for definitive requirements.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Administrative Requirements
.2 Temporary Utilities
.3 Construction Facilities
.4 Temporary Enclosures and Barriers
.5 Construction Aids
.6 Temporary Drainage
.7 Project Identification
.8 General Protection

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Provide and maintain temporary utilities, facilities and controls in order to execute the Work expeditiously.

.2 Maintain temporary utilities, facilities and controls in a neat and tidy condition.

.3 Remove temporary utilities, facilities and controls from the Place of Work after use.

1.3 TEMPORARY UTILITIES

.1 Temporary Electricity
  .1 Provide and pay for temporary power during construction to provide adequate temporary lighting, operation of power tools, temporary heating and ventilation, and to ensure the proper completion of the Work.
  .2 Arrange for connection with appropriate utility company. Pay all costs for installation, maintenance and removal.
  .3 Provide and maintain temporary electrical systems to CSA C22.1-1990, Canadian Electrical Code, Part 1 – Temporary Wiring.

.2 Temporary Heating, Cooling and Ventilating
  .1 Provide and pay for temporary heating and cooling required during construction period, including attendance, maintenance and fuel.
  .2 Maintain temperatures of minimum 10°C and maximum of 35°C in areas where construction is in progress, unless indicated otherwise in specifications.
  .3 Temporary heaters will be forced hot air type, operated in a well ventilated location. Vent direct fired heaters directly to exterior and extend vent beyond wall face to avoid staining. Open flame heaters or salamanders are not permitted.
  .4 Uniformly distribute heat to avoid hot and cold areas and to prevent excessive drying.
  .5 Upon approval of the Owner, the permanent heating system of the building, or portions thereof, may be used when available. Be responsible for damage thereto.
  .6 On completion of Work, replace filters in permanent heating system and clean all ducts.
  .7 Provide minimum one air change per hour for enclosed areas receiving architectural finishes.
  .8 Prior to commencement of Work using hazardous or volatile adhesives, coatings or substances, install adequate mechanical ventilation.
  .9 Do not allow excessive build up of moisture in the building.

.3 Temporary Lighting: Provide and maintain suitable lighting during hours of darkness at danger points.

.4 Temporary Phone: Provide temporary telephones and fax machines necessary for both own, Consultant and Owners use.

.5 Temporary Water:
  .1 Provide and pay for a continuous supply of potable water for construction use.
  .2 Arrange for connection with appropriate utility company and pay costs for installation,

maintenance and removal.

1.4 CONSTRUCTION FACILITIES

.1 Field Offices and Sheds:
- .1 Provide and maintain in clean condition during progress of Work, adequately lighted, heated and ventilated Contractors office with space for filing, layout of Contract documents and site meetings
- .2 Subcontractors may provide their own offices as necessary. Contractor to direct the location of these offices.
- .3 Do not store building materials or equipment in construction office.
- .4 Provide storage sheds for all perishable goods and articles, including hardware and finished millwork, of ample size for the purpose, built with tight wooden floors, weatherproof walls and roofs, and door fitted with locks.

.2 Sanitary Facilities:
- .1 Provide sanitary facilities for work force in accordance with the municipal regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition. Have toilets maintained in sanitary conditions under contract.
- .3 Do not permit construction personnel to use new or existing washroom and toilet facilities unless so approved by Owner.

1.5 TEMPORARY ENCLOSURES and BARRIERS

.1 Protective Enclosures:
- .1 Provide and maintain fully safety protection at open shafts in floors, roof decks and other working surfaces, to protect the public, workers and private property from injury or damage in accordance with applicable regulations and by-laws.
- .2 Provide and maintain suitable warning signs as required by all applicable regulations and by-laws.

.2 Weather Enclosures:
- .1 Provide weather tight closures to unfinished door and window openings, tops or shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished, seal off other openings, enclose building Interior work for temporary heat.

.3 Dust Barriers;
- .1 Provide dust tight screens or partitions between new addition and existing building, to localize dust generating activities, and for the protection of workers, public (including Town personnel), and finished areas of Work.
- .2 Maintain and relocate protection from time to time as Work proceeds and is complete in various areas.

.4 Security Measures:
- .1 Maintain security of construction site by control of access through enclosing fences, barricades, and hoardings during times work is in progress, and by locking hardware otherwise.
- .2 After new building is enclosed, maintain its security by adequate barriers to entry, and by temporary doors equipped with locking hardware.
- .3 Maintain security at all times construction is shut down due to strikes or lockouts.
- .4 Make good damage resulting from vandalism or other breach of security.
- .5 Replace stolen and damaged products resulting from breach of security.

1.6 CONSTRUCTION AIDS

.1 Select, operate and maintain hoisting equipment and cranes as may be required. Operate such equipment only by qualified hoist or crane operators. Make hoist available for Work of each Section.

.2 Erect scaffolding, independent of walls. Use scaffolding so as to interfere as little as possible with the

work. When not in use, move scaffolding as necessary to permit other work. Construct and maintain scaffolding in rigid, secure and safe manner. Remove scaffolding promptly when no longer required. Scaffolding shall permit convenient access to all levels for all workmen and inspection staff.

1.9 TEMPORARY DRAINAGE

.1 Provide and maintain adequate temporary pumping and drainage systems to keep excavations and structures free of water. Prevent flow of surface water into excavations. Locate sumps away from foundations. Prevent pumped water from carrying soil in suspension in sufficient quantity to cause settlement of adjacent earth. Provide sufficient standby equipment to ensure continuity of pumping systems.

.2 Dewater site as required to protect excavations and to permit execution of the work.

.3 Control drainage on site to prevent flooding, erosion and run-off onto adjacent properties as a result of construction operations.

.4 Dispose of water containing silt in suspension in accordance with requirements of jurisdictional authorities.

.5 Conform to sedimentation and erosion control requirements of the conservation authority having jurisdiction. Provide and maintain until completion of work or until directed by
Consultant to be removed, sediment control devises at catch basins, drainage courses and at other locations on site as directed.

.6 Clean catch basins and storm lines on site as required to ensure their continuous operation during the execution of the Work.

1.10 PROJECT IDENTIFICATION

.1 Provide and erect, within 3 weeks of signing Contract, a project sign in a location designated by the Consultant.

.2 Sign to be 2.4M x 2.4M, of plywood construction on wood framing, painted with exhibit lettering produced by a professional sign painter.

.3 Indicate on sign, of a design style established by Consultant,
- Name of Project
- Name of Owner
- Name of Consultant
- Name of Contractor

.4 Maintain sign in clean and legible condition during construction period.

.5 Remove and dispose of sign when directed by Consultant.

1.11 GENERAL PROTECTION

.1 Without limiting the Contractor's responsibility to provide all necessary protection, the Contractor shall:
.1 Protect materials and equipment delivered to the Site in the Owner's name for installation in the Work.

.2 Any Work damaged by failure to provide protection as required or damaged as a result of lack of adequate temporary heat, shall be removed and replaced with new, at no additional cost to the Owner.

.3 Each Trade shall avoid damaging the Work of other Trades. Conduct the Work and provide protective covering as necessary to meet this requirement. Make good at own expense any damage resulting from failure to meet this requirement. Protective measures shall be to Consultant's approval.

END OF SECTION

1 GENERAL

1.1 SECTIONS INCLUDES

.1 Product requirements

.2 Workmanship requirements

1.2 REFERENCES

.1 Refer to GC 3.8 - Labour and Products.

.2 Within text of each specification section, reference may be made to reference standards.

.3 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.4 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.5 Cost for such testing will be borne by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.3 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

.1 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, l on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Consultant.

.9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products.

1.7 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant in writing, if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant and Owner reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.9 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.13 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.14 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.15 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.16 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, building occupants and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

END OF SECTION

1 GENERAL

1.1 SECTIONS INCLUDES

.1 Field engineering

.2 Concealed conditions

.3 Acceptance of existing conditions

1.2 SUBMITTALS AND RECORDS

.1 Submit name and address of surveyor to Consultant.

.2 On request of Consultant, submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by surveyor certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

.4 Maintain a complete, accurate log of control and survey work as it progresses.

.5 On completion of foundation and major site improvements, prepare a certified survey record showing dimensions, locations, angles and elevations of Work.

.6 Record locations of maintained, re-routed and abandoned service lines.

1.3 QUALITY ASSURANCE

.1 Surveyor: registered land surveyor, acceptable to Owner.

1.4 FIELD ENGINEERING

.1 Make no changes or relocations without prior written notice to and approval of Consultant.

.2 Establish pipe invert elevations.

.3 Establish lines and levels for mechanical and electrical work.

1.5 CONCEALED CONDITIONS

.1 Refer to GC 6.4 - Concealed or Unknown Conditions.

1.6 EXAMINATION AND ACCEPTANCE OF CONDITIONS

.1 Verify conditions are ready to receive installation.

.2 Ensure substrate surfaces are clean, dimensionally stable, cured and free of contaminants such as oil, sealers and curing compounds.

.3 Notify Consultant in writing of unacceptable conditions.

.4 Commencement of installation means acceptance of conditions.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Execution requirements, previously titled “Cutting and Patching”.

1.2 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written request in advance of cutting or alteration which affects:
.1 Structural integrity of elements of project.
.2 Integrity of weather-exposed or moisture-resistant elements.
.3 Efficiency, maintenance, or safety of operational elements.
.4 Visual qualities of sight-exposed elements.
.5 Work of Owner or separate contractor.
.6 Owner occupied areas.

.3 Include in request:
.1 Identification of project.
.2 Location and description of affected Work.
.3 Statement on necessity for cutting or alteration.
.4 Description of proposed Work, and products to be used.
.5 Alternatives to cutting and patching.
.6 Effect on Work of Owner or separate contractor.
.7 Effect of use of Owner occupied areas.
.8 Written permission of affected separate contractor.
.9 Date and time work will be executed.

1.3 EXISTING UTILITIES

.1 When breaking into or connecting to existing service utilities, execute Work at times directed by local governing authorities, with a minimum of disturbance to Work, pedestrian and vehicular traffic, and with little or no disruption to the hospital site.

.2 Protect, relocate or maintain existing active services and security. When services are encountered, cap off in a manner approved by authority having jurisdiction and stake otherwise record location of capped services.

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work at no additional cost to Owner.

.4 Remove and replace defective and non-conforming Work at no cost to Owner.

.5 Remove samples of installed Work for testing where applicable.

.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.10 Restore work with new products in accordance with requirements of Contract Documents.

.11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 – Firestopping and Smoke Seal, full thickness of the construction element to achieve required fire rating.

.13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

.15 Every exterior horizontal surface must be slopped (Min. 2%)to drain. This includes, but not limited to, window sills, door sills, masonry wall projections, landings, canopies and any projections beyond the roof.

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

.1 Project Cleanliness

.2 Final Cleaning

.3 Waste management and disposal procedures

.4 Hazardous waste disposal procedures

1.2 REFERENCES

.1 CCDC 2-2008, Stipulated Price Contract.

.2 Section 01 00 50 - General Instructions.

1.3 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 daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

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

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

.6 Dispose of waste materials and debris off site.

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

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

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

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

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

1.4 FINAL CLEANING

.1 Refer to CCDC 2-2008, GC 3.13 - Cleanup.

.2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review remove surplus products, tools, construction machinery and equipment.

.5 Remove waste products and debris other than that caused by Owner or other Contractors.

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

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

.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors, ceilings and all exposed surfaces.

.10 Clean lighting reflectors, lenses, and other lighting surfaces.

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.14 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.15 Remove dirt and other disfiguration from exterior surfaces.

.16 Clean and sweep roofs, gutters, areaways, and sunken wells.

.17 Sweep and wash clean paved areas.

.18 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.19 Clean roofs, downspouts, and drainage systems.

.20 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.21 Remove snow and ice from access to building.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Fire and burning of rubbish and waste materials at the Place of the Work is not permitted.

.2 Burying of rubbish and waste materials at the Place of the Work is not permitted.

.3 Disposal of waste or volatile materials, such as kerosene, mineral spirits, oil or paint thinner into storm or sanitary sewers is prohibited. Collect such waste materials in appropriate containers and dispose of in accordance with the regulations and guidelines of the authority having jurisdiction.

.4 Provide on-site disposal service for rubbish accumulated by Contractor, Subcontractors and suppliers, in accordance with the requirements of the local municipality.

.5 Prevent extraneous materials from contaminating air beyond application areas by providing temporary enclosures as specified in Section 01 50 00.

.6 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.7 Deposit packaging materials in appropriate container at the Place of the Work for recycling or reuse.

.8 Avoid using landfill waste disposal procedures when recycling facilities are available.

.9 Keep discarded packaging away from children.

1.6 HAZARDOUS WASTE DISPOSAL

.1 If and when required, remove and dispose of contaminated material in accordance with the regulations and guidelines of the authority having jurisdiction.

.2 Contaminated material shall be transported by a licensed waste hauling company. Submit a copy of the "Certificate of Approval" to the Consultant prior to the transport of any contaminated material.

.3 Stockpile suspected contaminated material temporarily in neat and secure stockpiles overlying a double layer of 0.20mm thick high density polyethylene. Isolate stockpiles from remainder of the site and cover with a single layer of 0.20mm thick polyethylene to prevent entry, wind disturbance or the collection of surface water.

.4 Do not transport potentially contaminated material until such material has been identified by the appropriate authority.

END OF SECTION

1 GENERAL

1.1 SECTIONS INCLUDES

.1 Protection of installed construction

1.2 PROTECTING INSTALLED CONSTRUCTION

.1 Adequately protect parts of the Work that are completed and in progress of being completed.

.2 Protect Products from cold-weather during construction. Make good damage to the Work resulting from lack of adequate heating protection.

.3 As soon as the Work is sufficiently advanced, and in order to prevent delay, enclose the Work using tarpaulins, plastic sheeting or glazing and temporary doors, with locks to doors as required.

.4 Following completion of the roof system, adequately ventilate the Work to prevent moisture build-up under the new roof membrane. Coordinate requirements with roofing Subcontractors recommendations.

.5 Provide protection for finished and partially finished building components and equipment during performance of the Work.

.6 Protect existing trees and vegetation designated to remain from construction damage. Provide snow fencing or other protection where directed by Consultant.

.7 Make good parts or portions of the Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

END OF SECTION

1 GENERAL

1.1 SECTIONS INCLUDES

.1 Closeout procedures

1.2 CLOSEOUT PROCEDURES

.1 Conform to OAA/OGCA Document 100.

.2 Above Ceiling Work:

.1 Prior to installation of gypsum board ceilings and placement of acoustical lay-in ceiling tiles advise Consultant that above-ceiling work is complete and ready for review. Allow minimum 72 hours notice for any cancellation or changes; failure to do so may result in back charges to Contractor for costs of Owner's personnel.

.2 Owner, Consultant and affected Subconsultants will conduct above-ceiling review and prepare list of deficiencies.

.3 Correct deficiencies and advise Consultant when they have been corrected.

.4 Do not install gypsum board ceiling, or acoustical lay-in ceiling tiles until Consultant has verified that all above-ceiling deficiencies have been corrected.

.5 The substantial performance inspection may not proceed until all above-ceiling deficiencies have been corrected.

.3 Substantial Performance of the Work:

.1 Prior to requesting Substantial Performance of the Work, prepare and submit a complete deficiency list.

.2 Owner, Consultant and affected Subconsultants will review the Work and may require additional items to be added to the deficiency list.

.3 Prior to requesting Substantial Performance of the Work, submit the following:

.1 Written statement that the Work has been substantially performed in accordance with the Contract Document, and is ready for use.
.2 Verification that operation of systems has been demonstrated to Owner.
.3 Two (2) copies of complete and reviewed operations and maintenance manuals.
.4 inspection and acceptance certificates required from all regulatory agencies.
.5 Life safety systems verification and acceptance.

.4 Final Payment:

.1 When all deficiencies have been corrected, but not later than 60 days after the date of Substantial Performance of the Work, request a final review of the Work.

.2 Owner, Consultant and affected Subconsultants will review the Work and notify the Contractor of outstanding deficiencies.

.3 After expiry of 60 day period, Owner may elect to correct all outstanding deficiencies and deduct resulting costs from final payment. Deficient work shall be valued at 150% of normal cost with no item less than $50.00.

.4 Prior to claiming final payment, submit:

.1 record drawings

.2 a complete set or reviewed shop drawings, folded to 8 ½"x11" size, contained in heavy duty manila envelopes, numbered and labeled. Follow specification format with no more than one Section per envelope.

.3 maintenance manuals

.4 as-built documents

.5 a final accounting of all approved changes to the Contract Price, including adjustments to cash allowances.

END OF SECTION

1 GENERAL

1.1 SECTIONS INCLUDES

.1 Closeout submittals

1.2 OPERATION AND MAINTENANCE MANUALS

.1 Submit one (1) final copy of operating and maintenance manuals to Consultant as described Section 01 33 00 Submittal Procedures.

.2 Organize data in the form of an instructional manual in binders of commercial quality, 8 ½"x11" size, maximum ring size.

.3 Cover: Identify each binder with typed or printed title "Project Record Documents", list title of Project, identify subject matter or contents.

.4 Arrange content by systems, under Section numbers and sequence of Table of Contents.

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

.6 Extended Warranties: arranged in systematic order matching specification format; include a listing of extended warranties as noted but limited to those as listed in Section 01 80 00. Each warranty must indicate the name and address of the Project the name of the Owner and the corresponding Section number and title, and the issuer's name, address, telephone and fax numbers, contact person, seal and signature.

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

.8 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.9 As a minimum requirement, include the following materials as applicable:
- .1 Table of Contents. If more than one volume is required, provide a cross reference contents page at the front of each volume.
- .2 Complete list of Subcontractors and Suppliers, indicating name, address, telephone and fax numbers, contact person, and description of work performed.
- .3 Complete list of Products used in the Work, indicating Product name, part number or code and manufacturer for each listing.
- .4 Finish hardware schedule, as amended.
- .5 Schedule of paints and coatings, including identification of each surface with applicable paint or coating used. Enclose a copy of colour schedule.
- .6 Maintenance instructions for all finished surfaces.
- .7 Brochures, cuts of equipment and fixtures.
- .8 Operating and maintenance instructions for equipment.
- .9 Valve manual
- .10 Controls schematics
- .11 Air and water balancing reports.
- .12 Extended warranties
- .13 Maintenance contracts.
- .14 Other data that may be required by the Contract Documents.

1.3 MAINTENANCE OF AS-BUILT DOCUMENTS

.1 Promptly record revisions, omissions and additions on a set of black line opaque Drawings and in the Project Manual. These documents must be kept up to date at all times. Failure to do so may result in postponement of final payment.

.2 During construction, promptly record information concurrently with construction progress.

.3 Do not conceal work until all required information has been recorded.

.4 Specifications: legibly mark each item to record actual construction, including manufacturers, trade name, and catalog number of each product installed, particularly optional items and substitute items.

.5 Other Documents: maintain manufacturer's certifications, inspection certifications, hardware schedules, colour schedules and field test records as required by the individual specification Sections.

1.4 RECORD DOCUMENTS FOR SUBMITTAL

.1 Prior to Substantial Performance of the Work, collect as-built documents and have information electronically transferred to a master set of drawing files provided by the Consultant, in AutoCAD Release 2010.

.2 Mark revised drawings as "RECORD DRAWINGS". Include all revisions, with special emphasis on mechanical, electrical, structural steel and reinforced concrete.

.3 Employ a competent computer draftsperson to indicate changes on the electronic set of Record Drawings.

.4 Submit to Owner one completed set of Record Drawings to Owner on AutoCAD Release 2010, or more current, accompanied by a hard copy.

1.5 SPARE PARTS AND MAINTENANCE MATERIALS

.1 Two (2) weeks prior to Substantial Performance of the Work, submit to Consultant any special tools or equipment supplied for maintenance purposes.

.2 Spare parts and maintenance materials provided shall be new, not damaged or defective, and of same quality and manufacture as Products provided in the Work. If requested, furnish evidence as to type, source and quality of Products provided.

.3 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.4 Store spare parts and maintenance materials in a manner to prevent damage, or deterioration.

.5 Provide spare parts, special tools, maintenance and extra materials in quantities specified in individual specification Sections.

.6 Provide items of same manufacture and quality as items in Work.

END OF SECTION

PART 1 - GENERAL

1.1 WARRANTIES

.1 Warranties shall be in accordance with General Conditions GC 12.3, as amended, and as follows:

.1 Warranties shall commence at date of Substantial Performance of the Work.

.2 Submit warranties for applicable items, signed by the applicable company responsible for each warranty.

.3 Submit warranties on form approved by Owner including, but not limited to the following information:
.1 Name and address of Project.
.2 Warranty commencement date (date of Substantial Performance of the Work).
.3 Duration of warranty.
.4 Clear indication of what is being warranted and what remedial action will be taken under warranty.
.5 Authorized signature and seal of company providing each warranty.

.4 Owner shall be named in manufacturer's Product warranties. Submit on relevant Product manufacturer's standard warranty or guarantee form.

.5 See the individual specification sections for product warranty requirements.

PART 2 - PRODUCTS

.1 Not applicable

PART 3 - EXECUTION

.1 Not applicable

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS 2015).
.1 Safety Data Sheets (SDS).

.2 Transport Canada (TC).
.1 Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.

1.2 DEFINITIONS

.1 Demolition: rapid destruction of building following removal of hazardous materials.

.2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well-being or environment if handled improperly.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: submit WHMIS 2015 SDS - Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.

.3 Shop drawings.
.1 Submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by authorities having jurisdiction.
.2 Submit drawings stamped and signed by qualified professional engineer registered or licensed in Province of Ontario.

.4 Hazardous Materials: provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements: ensure Work is performed in compliance with applicable Provincial/Territorial regulations.

.2 Site Meetings.
.1 Convene pre-installation meeting one week prior to beginning work of this Section on-site to:
.1 Verify project requirements.
.2 Review installation and substrate conditions.
.3 Co-ordination with other building subtrades.
.4 Review manufacturer's installation instructions and warranty requirements.
.5 Arrange for site visit with Engineer, Consultant and Owner to examine existing site conditions adjacent to demolition work, prior to start of Work.
.6 Ensure site supervisor, project manager and subcontractor representatives attend.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Perform Work in accordance with Section 01 35 43 - Environmental Procedures.

.2 Storage and Protection.
- .1 Protect in accordance with Section 01 76 00.
- .2 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.
- .3 Remove and store materials to be salvaged, in manner to prevent damage.
- .4 Store and protect in accordance with requirements for maximum preservation of material.
- .5 Handle salvaged materials as new materials.

.3 Waste Management and Disposal.
- .1 Separate waste materials for reuse and/or recycling as applicable and place in designated containers as may be required by authorities.
- .2 Excess materials to be disposed of at landfill site or other approved sites that may be required by authorities.
- .3 Place materials defined as hazardous or toxic in designated containers.
- .4 Handle and dispose of hazardous materials in accordance with Regional and Municipal, regulations.
- .5 Label location of salvaged material's storage areas and provide barriers and security devices.
- .6 Ensure emptied containers are sealed and stored safely.
- .7 Source separate for recycling materials that cannot be salvaged for reuse including wood, metal, concrete and asphalt, and gypsum.
- .8 Remove materials that cannot be salvaged for reuse or recycling and dispose of in accordance with applicable codes at licensed facilities.

1.6 SITE CONDITIONS

.1 Site Environmental Requirements.
- .1 Perform work in accordance with Section 01 35 43 - Environmental Procedures.
- .2 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Do not dispose of waste of volatile materials including but not limited to, mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.
- .4 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
- .5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities and as directed by Consultant.
- .6 Protect trees, plants and foliage on site and adjacent properties where indicated.

.2 Existing Conditions.
- .1 Remove contaminated or hazardous materials as directed by Consultant from site, prior to start of demolition Work, and dispose of at designated disposal facilities in safe manner in accordance with applicable regulatory requirements and Section 02 81 01 - Hazardous Materials.
- .2 List of hazardous materials: List of hazardous materials that may be encountered at the Place of Work is provided by Owner, see Document 00 31 00, Available Project Information.

1.7 SCHEDULING

.1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.

.2 Notify Consultant in writing when unforeseen delay[s] occur.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 PREPARATION

.1 Inspect site with Owner and Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

.4 Disconnect and Cap Designated Mechanical Services.
- .1 Natural Gas Supply Lines: contact utility company to arrange for removal as directed by Consultant.
- .2 Sewer and Water Lines: remove as directed by Consultant and securely plug to form watertight seal. Where applicable, contact utility company for arrangement of removal and/or relocation.
- .3 Other Underground Services: remove and dispose of as directed by Consultant in accordance with Division 26.

3.2 REMOVAL OF HAZARDOUS WASTES

.1 Remove contaminated or dangerous materials defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

3.3 REMOVAL OPERATIONS

.1 Remove items as indicated.

.2 Do not disturb items designated to remain in place.

.3 Removal of Pavements, Curbs and Gutters:
- .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Consultant.
- .2 Protect adjacent joints and load transfer devices.
- .3 Protect underlying and adjacent granular materials.

.4 Prevent contamination with base course aggregates, when removing asphalt pavement for subsequent incorporation into hot mix asphalt concrete paving,

.5 Remove designated trees during demolition.
- .1 Where applicable, obtain permits for tree removal
- .2 Obtain written approval of Consultant prior to removal of trees not designated to be removed.

.6 Stockpile topsoil for final grading and landscaping.
- .1 Provide erosion control and seeding if not immediately used.

.7 Salvage.
.1 Dismantle items containing materials for salvage and stockpile salvaged materials at locations as indicated.

.8 Disposal of Material.
.1 Dispose of materials not designated for salvage or reuse on site as instructed by Consultant at authorized facilities.

.9 Backfill.
.1 Backfill in areas as indicated and in accordance with applicable laws.

3.4 STOCKPILING

.1 Label stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Locate stockpiled materials convenient for use in new construction to eliminate double handling wherever possible.

.4 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

3.5 REMOVAL FROM SITE

.1 Remove stockpiled material as directed by Consultant, when it interferes with operations of project.

.2 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.

.3 Transport material designated for alternate disposal using approved haulers and facilities in accordance with applicable regulations. Written authorization from Consultant is required to deviate from approved haulers and facilities.

3.6 RESTORATION

.1 Restore areas and existing works outside areas of demolition to conditions that existed prior to beginning of Work and to match condition of adjacent, undisturbed areas.

.2 Use soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.7 CLEANING

.1 Remove debris, trim surfaces and leave work site clean, upon completion of Work

.2 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)
.2 CSA S350-[M1980(R1998)], Code of Practice for Safety in Demolition of Structures.

1.2 SUBMITTALS

.1 Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures

.2 Before proceeding with demolition of load bearing walls and where required by authority having jurisdiction submit for review by Engineer and Consultant and underpinning drawings prepared by qualified professional engineer registered or licensed in the Province of Ontario, showing proposed method.

.3 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Sections 01 74 11
.1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
.2 Schedule of selective demolition.
.3 Number and location of dumpsters.
.4 Anticipated frequency of tippage.
.5 Name and address of haulers, waste facilities or [waste receiving organizations.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 11

1.4 SITE CONDITIONS

.1 Review "Designated Substance Report" and take precautions to protect environment.

.2 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
.3 Do not proceed until written instructions have been received from Consultant.

.4 Notify Consultant before disrupting building access or services.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Inspect building and site with Consultant or Owner and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

.4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Consultant and utility company concerned in case of damage to any utility or service, designated to remain in place.

.2 Immediately notify the Engineer should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PROTECTION

.1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.

.2 Keep noise, dust, and inconvenience to occupants to minimum.

.3 Protect building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

3.3 SALVAGE

.1 Refer to demolition drawings and specifications for items to be salvaged for reuse.

.2 Remove items to be reused, store as directed by Consultant, [and re-install under appropriate section of specification].

3.4 SITE REMOVALS

.1 Remove items as indicated.

.2 Removal of Pavements, Curbs and Gutters:

.1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Consultant.

.2 Protect adjacent joints and load transfer devices.

.3 Protect underlying and adjacent granular materials.

3.5 DEMOLITION

.1 Remove parts of existing building to permit new construction. [Sort materials into appropriate piles for recycling and re-use.

.2 Trim edges of partially demolished building elements to tolerances as defined by Consultant to suit future use.

3.6 DISPOSAL

.1 Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Document 00 31 00 - Available Project Information.

1.2 REFERENCES

.1 Canadian Environmental Protection Act,1999 (CEPA 1999), or most up to date version.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS 2015)
.1 Safety Data Sheets (SDS).

.3 National Fire Code of Canada most up to date version.

.4 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400).

1.3 DEFINITIONS

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

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

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

.4 Workplace Hazardous Materials Information System (WHMIS 2015): Canada-wide system designed to give employers and workers information about hazardous materials used in workplace. Under WHMIS 2015, information on hazardous materials is provided on container labels,safety data sheets (SDS), and worker education programs. WHMIS is put into effect by combination of federal and provincial laws.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

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

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

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

.4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
- .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.

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

.6 Do not transfer of flammable and combustible liquids in vicinity of open flames or heat-producing devices.

.7 Do not use flammable liquids having flash point below 38 degrees C, such as naphtha or gasoline as solvents or cleaning agents.

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

.9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.

.10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
- .1 Store hazardous materials and wastes in closed and sealed containers.
- .2 Label containers of hazardous materials and wastes in accordance with WHMIS 2015.
- .3 Store hazardous materials and wastes in containers compatible with that material or waste.
- .4 Segregate incompatible materials and wastes.
- .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
- .6 Store hazardous materials and wastes in secure storage area with controlled access.
- .7 Maintain clear egress from storage area.
- .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
- .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
- .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.11 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS 2015) requirements.

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

1.6 TRANSPORTATION

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

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 DISPOSAL

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

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

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

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

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

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

.7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Concrete slabs on grade - See Structural Specifications

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-25.20-95, Surface Sealer for Floors or most recently revised version.

.2 Canadian Standards Association (CSA)
.1 CSA-A23.1-04, Concrete Materials and Methods of Concrete Construction or most recently revised version.

.3 ASTM C309-07: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.4 CSA A23.2-04: Methods of Test and Standard Practices for Concrete.

1.3 PERFORMANCE REQUIREMENTS

.1 Product quality and quality of work in accordance with Section 01 45 00 – Quality Control.

.2 Submit written declaration that components used are compatible and will not adversely affect finished flooring products and their installation adhesives.

1.4 PRODUCT DATA

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

.2 Submit WHMIS 2015 SDS - Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials. WHMIS 2015 SDS acceptable to Labour Canada and Health and Welfare Canada for concrete floor treatment materials. Indicate VOC content.

.3 Include application instructions for concrete floor treatment.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 71 00 – Examination and Preparation.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away for children.

.4 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC's.

.5 Dispose of surplus chemical and finishing materials in accordance with federal, provincial and municipal regulations.

.6 Dispose of waste from stripping of floors in a manner that will not have unfavourable effects on the environment.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Temporary lighting: Minimum 100 watt light source, placed 2.5 m above floor surface, for each 40 sq. m. of floor being treated.

.2 Electrical power: Provide sufficient electrical power to operate equipment normally used during construction.

.3 Work area: Make the work area water tight protected against rain and detrimental weather conditions.

.4 Temperature: Maintain ambient temperature of not less than 10 °C from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.

.5 Moisture: Ensure concrete substrate is within moisture limits prescribed by flooring manufacturer.

.6 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

.7 Ventilation:
.1 Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.
.2 Provide continuous ventilation during and after coating application.

PART 2 PRODUCTS

2.1 Hardeners: Non-Metallic type; eg. Diamag 7 by Sika Canada Inc.

2.2 Water: potable.

2.3 Curing-Sealing Compounds: 100 percent water-based acrylic copolymer, to ASTM C309, Type 1, Class B; eg. Vocomp20 by W.R. Meadows of Canada Ltd.

2.4 Concrete Stains: (where required) Low VOC, concrete stains.

2.5 Mixes: Mixing, ratios and application in accordance with manufacturer's instructions.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Verify that concrete slab surfaces are ready to receive work and elevations are as indicated on drawings.

.2 Verify concrete slabs contain no admixtures which would be incompatible with floor hardener materials or other applied finishes.

3.2 FLOOR FINISHING

.1 Finish concrete floor surfaces to CSA A23.1.

.2 Wood float surfaces which will receive porcelain or ceramic tile with full bed setting system

.3 Steel trowel surfaces which will receive carpeting, resilient flooring, and thin-set porcelain or ceramic tile finishes.

.4 Steel trowel surfaces which are scheduled to be exposed.

.5 In areas with floor drains, maintain floor elevations at walls; slope surfaces uniformly to drains at 10 mm/M nominal.

.6 Tolerances: Maximum variation of surface flatness not to exceed 3 mm in 3 meters.

.7 In existing slab areas, use strong solvent to remove chlorinated rubber or existing surface coatings.

.8 Use protective clothing, eye protection, and respiratory equipment during stripping of chlorinated rubber or existing surface coatings.

3.3 APPLICATION

.1 Water cure concrete floor slabs using ponding method for a minimum of 7 days.

.2 Where ponding method is not possible or practical, apply a cure and seal compound to manufacturer’s recommended coverage. Apply in a minimum of two (2) layers, applied in opposite directions to ensure complete coverage.

.3 Apply dry shake hardener at a rate of 4 kg per square meter of floor area to concrete floors scheduled to remain exposed.

.4 After floor treatment is dry, seal control joints and joints at junction with vertical surfaces with sealant.

.5 Apply floor treatment in accordance with Sealer manufacturer's written instructions.

.6 Clean overspray. Clean sealant and curing compounds from adjacent surfaces.

3.4 PROTECTION

.1 Protect finished installation in accordance with manufacturer's instructions.

.2 Ensure that finished concrete floor areas are protected from abrasion from foot or wheeled traffic, and from damage caused by spillage or oil or other harmful materials.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Self levelling materials to be used under finish flooring.

1.2 RELATED WORK

.1 Section 09 30 00 - Porcelain & Ceramic Tiling

1.3 QUALITY ASSURANCE

.1 Applicators shall be licensed or approved by material manufacturer and shall use equipment and tools as recommended by manufacturer.

.2 Underlayment shall meet the following requirements:

.1 Self-levelling.
.2 Free of shrinkage, cracks and spalling.
.3 Minimum compressive strength of 24 MPa at 28days.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in their original unopened packages and protect from freezing, direct sun exposure and exposure to moisture.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Primer for self-levelling underlayment to be one of the following:

.1 Ardex P-51 by Ardex Inc.
.2 Top X Primer by Ultratex
.3 Other products approved by Consultant.

.2 Underlayment: (cement based, self-levelling, one of the following):

.1 Ardex K-15 by Ardex Inc.
.2 Top X by Ultratex
.3 Other products approved by Consultant.

.3 Water: clean and potable.

2.2 MIXING

.1 Mix materials to proportions and with equipment as directed by manufacturer.

.2 Mix thoroughly for a sufficient time to obtain a lump-free mixture.

PART 3 EXECUTION

3.1 PREPARATION

.1 All surfaces shall be solid, thoroughly clean and properly primed.

.2 Concrete subfloors shall be free of oil, grease, dirt, curing compound and any other substance which might act as a bond breaker. Mechanically clean if necessary by shot blasting or other suitable method. Acid etching is not acceptable.

.3 Prime substrates with primer. Apply evenly with soft pushbroom. Do not leave any bare spots. Remove puddles and excess primer. Allow to dry to clear thin film. Do not install underlayment until primer is dry.

3.2 UNDERLAYMENT, SELF-LEVELLING

.1 Pour liquid underlayment at areas below vinyl tile flooring in locations where indicated and where required to fill minor depressions in existing floors, and to produce a smooth level surface for installation of finish flooring. Spread in place with suitable spreader. Use smoother for feather-edge and touch up.

.2 Workers shall wear footwear with cleats to avoid leaving marks in underlayment.

.3 Pour underlayment so as to achieve level and smooth top surface; apply multiple layers if necessary. Provide forms where required to retain underlayment.

.4 Provide protection to allow underlayment to cure for length of time recommended by manufacturer before allowing installation of finish flooring.

END OF SECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

.1 This Section includes the following:

1. Stainless steel handrails and railings.

.2 Related Sections include the following:

1. Division 5 Section “Pipe, Tube and Malleable Iron Handrails and Railings”
For handrails and railings fabricated from steel pipe and tube components.

1.3 PERFORMANCE REQUIREMENTS

.1 General: In engineering handrails and railings to withstand structural loads indicated, determine allowable design working stresses of materials based on the following:

.1 SEI/ASCE 8-02.
.2 Cold-Formed Structural Steel: AISI SG-673, Part I, “Specification for the Design of Cold-Formed Steel Structural Members.”

.2 Structural Performance of Handrails and Railings. Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors, and connections:

.1 Top Rail of Guards: Capable of withstanding the following loads applied as indicated:
.1 Concentrated load of 200 lbf applied at any point and in any direction.
.2 Uniform load of 50 lb. per linear foot applied horizontally and concurrently with uniform load of 50 lb. per linear foot applied vertically downward.
.3 Concentrated and uniform loads above need not be assumed to act concurrently.

.2 Handrails Not Servicing As Top Rails: Capable of withstanding the following loads applied as indicated:

.1 Concentrated load of 200 lbf applied at any point and in any direction.
.2 Uniform load of 50 lbf/ft. applied in any direction.
.3 Concentrated and uniform loads above need not be assumed to act concurrently.

.3 Infill area of Guards: Capable of withstanding a horizontal concentrated load of 50 lb. applied to 1 sq. ft. at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area.

.1 Load above need not be assumed to act concurrently with loads on top rails in determining stress on guard.

.3 Thermal Movements: Provide handrails and railings that allow for thermal movements resulting form the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, over stressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 SUBMITTALS

.1 Product Data: For manufacturers product lines of handrails and railings assembled from standard components.

.1 Include Product Data for grout, anchoring cement, and paint color products and metal finishing.

.2 Shop Drawings: Show fabrication and installation of handrails and railings. Include plans, elevations, sections, details, and attachments to other work.

.3 Samples for Initial Selection: Manufacturer’s color charts showing the full range of colors available for products with factory-applied color finishes.

.4 Samples for Initial selection: Short sections of railing or flat sheet metal Samples showing available mechanical finishes.

.5 Samples for Verification: For each type of exposed finish required, prepared on components indicated below and of same thickness and metal indicated for the Work. If finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.

.6 6-inch-(150-mm-) long sections of each different linear railing member, including handrails, and top rails.
.7 Fittings and brackets.
.8 Assembled Samples of railings, made from full-size components, including top rail, post, handrail, and infill. Show method of finishing members at intersections. Samples need not be full height.

.9 Qualification Data: For firms and persons specified in “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

.10 Product Test Reports: Indicating products comply with requirements, based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

.1 Source Limitations: Obtain each type of railing through one source form a single manufacturer.

1.6 STORAGE

.1 Store handrails and railings in a dry, well-ventilated, weather tight place.

1.7 PROJECT CONDITIONS

.1 Field Measurements: Verify handrail and railing dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the work.

.1 Established Dimensions: Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating handrails and railings without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

.1 Coordinate installation of anchorage for handrails and railings. Furnish Setting Drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to project site in time for installation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:

.1 Stainless Steel Handrails and Railings:

a. C.R. Laurence Co., Inc.
2503 E. Vernon Ave.
Los Angeles, CA. 90058
Toll Free: (800) 421-6144 Ext 7730
Toll Free Fax: (800) 587-7501
International Phone: (323) 588-1281
International Fax: (323) 584-5289
www.crlaurence.com www.crl-arch.com
E-mail: railings@crlaurence.com

2.2 METALS

.1 General: Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view on finished units.

.2 Stainless Steel: Type 304 (Brushed Stainless #4 finish)
.1 Bar: ASTM A 167
.2 Pipe and Tubing: HRH15BS (Brushed Stainless finish)

.3 Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

.1 Provide cast brackets with flange tapped for concealed anchorage to threaded hanger bolt.
.2 Provide formed or cast brackets with predrilled hole for exposed bolt anchorage.
.3 Provide formed steel brackets with predrilled hole for bolted anchorage and with snap-on cover that matches rail finish and conceals bracket base and bolt head.
.4 Provide brackets with interlocking pieces that conceal anchorage. Locate screws on bottom of bracket.

2.3 FASTENERS

.1 Fasteners for Anchoring Handrails and Railings to other Construction: Select fasteners of type, grade and class required to produce connections suitable for anchoring handrails and railings to other types of construction indicated and capable of withstanding design loads.

.2 Fasteners for Interconnecting Handrail and Railing Components: Use fasteners fabricated from same basic metal as fastened metal, unless other wise indicated. Do not use metal that are corrosive or incompatible with material joined.

.1 Provide concealed fasteners for interconnecting railing components and for attaching them to other Work, unless exposed fasteners are unavoidable or are standard fastening method for handrail and railing indicated.
.2 Provide Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.

.3 Cast-in-Place and Post installed Anchors: Anchors of type indicated below, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by qualified independent testing agency.

.1 Cast-in-place anchors.
.2 Chemical anchors.
.3 Expansion anchors.

2.5 GROUT AND ANCHORING CEMENT

.1 Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

.2 Interior Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for missing with water at Project site to create pourable anchoring, patching, and grouting compound. Use for interior applications only.

2.6 FABRICATION

.1 Assemble handrails and railing in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.

.2 Form changes in direction of railing members as follows:

.1 As detailed.

.3 Mechanical Connections: Fabricate handrails and railings by connecting members with railing manufacturer’s standard concealed mechanical fasteners and fittings, unless other-wise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

.4 Brackets, Flanges, Fittings, and Anchors: Provide manufacturer’s standard wall brackets, flanges, miscellaneous fittings, and anchors to connect handrail and railing members to other construction.

.5 Provide inserts and other anchorage devices to connect handrails and railing to concrete or masonry. Fabricate anchorage device capable of withstanding loads imposed by handrails and railings. Coordinate anchorage devices with supporting structure.

.6 Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

.7 Cut, reinforce, drill, and tap components, as indicated, to receive finish hardware, screws, and similar items.

.8 Close exposed ends of railing members with prefabricated end fittings.

.9 Provide wall returns at ends of wall-mounted handrails, unless other wise indicated. Close ends of returns, unless clearance between end of railing and wall is ¼ inch (6 ram) or less.

2.7 FINISHES, GENERAL

.1 Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

.2 Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 STAINLESS STEEL FINISHES

.1 Finish: ASTM A480 No.4.

PART 3 – EXECUTION

1.1 EXAMINATION

.1 Examine substrates, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

.1 Fit exposed connections together to form tight, hairline joints.

.2 Cutting, Fitting, and Placement: Perform Cutting, drilling, and fitting required for installing handrails and railings. Set handrails and railing accurately in location, alignment, and elevation, measured from established lines and levels and free from rack.

.1 Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
.2 Align rails so variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed ¼ inch in 12 feet (5 mm in 3 m).

.3 Corrosion Protection: Coat concealed surfaces of aluminum and copper alloys that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

.4 Adjust handrails and railings before anchoring to ensure alignment at abutting joints. Space posts at interval indicated, but not less than that required by structural loads.

.5 Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing handrails and railing and for properly transferring loads to in-place construction.

3.3 RAILINGS CONNECTIONS

.1 Nonwelded Connections: Use mechanical joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings.

3.5 CLEANING

.1 Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.

3.6 PROTECTION

.1 Protect finishes of handrails and railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at the time of Substantial Completion.

.2 Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

1 General

1.1 SECTION INCLUDES

.1 The Work of this section provides non-axially loaded steel stud exterior and interior wall framing for the project. Wind bearing steel stud exterior wall framing assemblies shall support windows and doors; and, applied cladding assemblies, of sheathing, insulation, masonry veneer and exterior insulating finish systems.

.1 Wall studs subjected to lateral loads (no axial load other than self weight and the weight of applied finishes).

.2 Steel bridging.

.3 Top and bottom track.

.4 Head and sill members and Wall studs supporting wall openings.

.5 Stud, bridging and track connections between light steel framing.

.6 Top and bottom track connections to main structure including detailing to accommodate floor deflections.

1.2 RELATED SECTIONS

.1 Other Sections related to Architectural components.

1.3 REFERENCES

.1 CAN/CGSB-1-GP-181-99: Ready-Mixed Organic Zinc-Rich Coating.

.2 CAN/CGSB-7.1-98: Cold-Formed Steel Framing Components.

.3 CAN/CSA-S16-01: Limit States Design of Steel Structures.

.4 CSA-S136-01: Cold Formed Steel Structural Members.

.5 CSA W47.1-03: Certification of Companies for Fusion Welding of Steel Structures.

.6 CSA W59-03: Welded Steel Construction (Metal Arc Welding).

.7 CAN/ULC-S101: Standard Methods of Fire Endurance Tests of Building Construction and Materials.

.8 ANSI/AWS D1.3 Structural Welding Code – Sheet Steel.

.9 ASTM A653/A653M-07: Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.10 ASTM A792/A792M-99: Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

1.4 QUALITY ASSURANCE

.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 Ontario Building Code.

.3 Resistances and resistance factors shall be determined in accordance with the Ontario Building Code and CAN/CSA-S136-01.

.4 Conform to requirements of fire rated assemblies. Provide fire separations and fire protection as specified in Underwriters' Laboratories of Canada test design specification Design Numbers;

.5 Design bridging to prevent rotation and member translation perpendicular to the minor axis. Provide for secondary stress effects due to torsion between lines of bridging. Collateral sheathing may be used to help restrain member rotation and translation perpendicular to the minor axis for wind bearing studs. Provide bridging at 1500 mm c/c maximum. Closer spacing may be required to satisfy structural requirements.

.6 Maximum deflections under specified loads shall conform to the following:

.1 Wall studs supporting masonry veneer, L/360.

.2 Wall studs supporting other finishes, L/360.

.7 Design components or assemblies to accommodate specified erection tolerances of the structure.

.8 The spacing of members shall not exceed 400mm o/c. Space at 300mm o/c where wall is supporting equipment.

.9 Allow for movement of the structure. Design wind bearing stud end connections to accommodate floor and or roof deflections such that studs are not loaded axially by such loads other than cladding imposed loads.

.10 Connections between light steel framing members shall be by bolts, welding or sheet metal screws.

.11 Acoustically caulk all connecting drywall joints and track joints to the ceiling.

.12 Acoustical Ratings: Where sound ratings are indicated, provide materials and application procedures identical to those tested by manufacturer to achieve Sound Transmission Class (STC) in accordance with ASTM E90

1.5 SUBMITTALS

.1 Submit certified copies of mill reports covering chemical and mechanical properties, and coating designation of steel used in this work.

.2 Submit representative pieces of all framing component parts including mechanical fasteners if used. The length of pieces submitted need not exceed 300mm. Tag pieces with the name of the part, the metal thickness exclusive of coating, coating type and grade, date of manufacture, and the name of manufacturer.

.3 Submit copies of engineering calculations.

.4 Submit copies of shop drawings in accordance with Section 01 33 00 and as follows:

.1 Each shop drawing submitted shall bear the stamp and signature of a qualified Professional Engineer registered in Canada in the Province of Ontario.

.2 Include all necessary shop details and erection diagrams. Indicate member sizes, location, thicknesses (exclusive of coating), coatings and their thicknesses, and materials. Include connection details for attaching framing to itself and for attachment to the structure. Show splice details where permitted. Indicate dimensions, openings, requirements of related work and critical installation procedures. Show temporary bracing required for erection purposes.

.3 Indicate design loads.

.5 Do not fabricate until all submittals for this trade are reviewed, amended as noted by review, or, as necessary, re-submitted and reviewed.

.6 Submit copies of field review reports as required in Section 3.7.1 or as directed by Consultant.

2 Products

2.1 MANUFACTURERS

.1 Acceptable manufacturer shall be certified in accordance with CAN/CSA-A660-M91

2.2 MATERIALS

.1 Steel shall have protective metallic coatings that conform to one of the following ASTM Standards:

.1 A525M general Requirements for Steel Sheet, Zinc-coated (Galvanized) by the Hot-Dip Process [Metric]

.2 A591/591 M Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.

.2 Steel shall conform to the requirements of CAN/CSA-S136 and shall be identified as to specification, type, grade and mechanical properties.

.3 Roof and wall members forming part of the exterior building envelope shall have a minimum coating of Z180 (180g/m2) galvanizing provided in accordance with A525M. Other coatings (eg., aluminum-zinc alloy) providing equal or better corrosion protection may be used, as approved.

.4 Interior members not forming part of the exterior building envelope shall have a minimum coating of Class C electro galvanizing in accordance with A591 Other coatings providing equal or better corrosion protection may be used, as approved.

.5 Sheet metal screws at interior side of vapour retarder membrane shall have a minimum coating thickness of 0.008mm of zinc or cadmium – other coatings providing equal or better corrosion protection may be used as approved. At exterior of air vapour retarder membrane fasteners shall be stainless steel, type 304.

.6 Welding electrodes shall be of the 480 Mpa minimum tensile strength series.

.7 Zinc rich paint for touching up welds and damaged metallic coatings shall conform to CGSB 1-GP-181M.

.8 The design thickness of CWT 4 stud exclusive of coating shall not be less than 1.118 mm (0.044”) black metal thickness. Thicker material shall be used where required to satisfy structural requirements. Material used to fabricate steel framing shall comply with the thickness tolerance requirements of CAN/CSA-S136.

.9 Zinc metal dip-galvanized coating of exterior wall members shall be not less than 0.086 mm or 610 g/m2 (3.4 mil), where stainless steel securement and resilient channel are specified.

3 Execution

3.1 GENERAL

.1 Fabrication and erection shall conform to approved shop drawings. Modifications required to accommodate as-built conditions shall be submitted for and obtain review before proceeding with any such unreviewed modifications.

3.2 WELDING

.1 Companies engaged in welding shall be certified by the Canadian Welding Bureau to CSA Standard W47.1. companies shall have welding procedures approved and welders qualified for the base material types and thicknesses that are to be welded.

.2 Welds shall conform to CSA W59 and/or ANSI/AWS D1 3, whichever is applicable.

.3 For material less than 3 mm thick, shop drawings may show nominal weld leg sizes. For such material, the effective throats of welds shall not be less than the thickness of the thinnest connected part.

.4 Touch-up welds with zinc rich paint.

3.3 SCREWS

.1 Steel screws shall be of the minimum diameter indicated on shop drawings.

.2 Penetration beyond materials joined shall be not less than 3 exposed threads.

.3 thread types and drilling capability shall conform to the manufacturer’s recommendations.

.4 Screws covered by sheathing shall have low profile heads.

3.4 FABRICATION

.1 Except as noted herein, fabricate wall framing components to CAN/CGSN-7.1 and in accordance with approved Shop Drawings.

.2 Where specified, provide cut-outs centred in the webs of members to accommodate services and though-the-knockout style bridging. Unreinforced cut-outs shall be limited to the following dimensions. Limit the distance from the centre line of the last unreinforced cut-out to the end of the member to be not less than 300 mm. The effect of cut-outs on the strength and stiffness of the member shall be considered.

.1 92 mm and 102 mm Deep Members
.1 Perpendicular to the Length of the Member: 40 mm.

.2 Parallel to the Length of the Member: 105 mm.
.3 Centre to Centre Spacing: 600 mm.

.2 152 mm Deep Members
.1 Perpendicular to the Length of the Member: 65 mm
.2 Parallel to the Length of the Member: 115 mm.
.3 Centre to Centre Spacing: 600 mm.

.3 Length tolerances for members:

.1 Tracks: none.

.2 Wind Bearing Studs: plus or minus 3 mm.

.3 Joists and Rafters: plus or minus 3 mm.

.4 Cross sectional geometry tolerances for members shall conform to the following:

.1 Member Depth: minus 1 mm, plus 2 mm.

.2 Flange depth: minus 1 mm, plus 2 mm; minimum 31 mm width.

.3 Lip Length: plus 4 mm.

.4 Thickness: to CSA S136.

.5 Corner Angles: plus or minus 3 degrees.

.5 Mark the steel thickness, exclusive of coating, on each member by embossing, stamping with indelible ink or by colour coding.

3.5 STORAGE OF MATERIALS

.1 Products shall be protected from conditions that may cause physical damage or corrosion.

3.6 ERECTION

.1 Methods of construction shall be piece by piece (stick-built) field installation. Panelization shall not be permitted, unless specifically reviewed as an alternate and approved.

.2 Lightweight steel framing shall be erected true and plumb within the specified tolerances. Temporary bracing shall be employed wherever necessary to withstand all loads to which the Structure may be subject during erection and subsequent construction. Temporary bracing shall be left in place as long as required for the safety and integrity of the structure. The design engineer and erector shall insure that during erection a margin of safety consistent with the requirements of the Ontario Building Code and CAN/CSA-S136 exists in the uncompleted structure.

.3 Erection Tolerances

.1 For the purposes of this section, camber is defined as the deviation from straightness of a member with respect to its major axis, and sweep is defined as the deviation from straightness of a member or any portion of a member with respect to its minor axis.

.2 For wind bearing studs plumbness shall not exceed 1/500th, of the member length. Out of straightness (camber and sweep) shall not exceed 1/1000th of the member length.

.3 Track deviation shall not exceed 1/1000th of the member length.

.4 Studs shall seat into top and bottom tracks. The gap between the end of the stud and the web of the track shall not exceed 4 mm for wind bearing studs.

.5 Align adjacent prefabricated panels to provide continuity of plane at their interface.

.6 Spacing of studs shall be not more than □3 mm from the design spacing in any given bay, and be not cumulative.

.4 Make all field measurements necessary to ensure the proper fit of all members.

.5 Cutting of members shall be by saw or shear. Torch cutting members is not permitted.

.6 Holes that are field cut into lightweight steel framing members shall conform to the requirements of Section 3.4.2 and 3.6.5.

.7 Insulation equal to that specified shall be placed in all jamb and header, and like voids in assemblies that will be inaccessible after their installation into the wall. Ensure that insulations are kept dry and not compressed.

.8 Handling and lifting of prefabricated panels shall not cause permanent distortion to any member or collateral material.

3.7 INSPECTION

.1 The lightweight steel framing design engineer, responsible for the production of the shop drawings, shall provide periodic field review during construction and shall submit reports in accordance with Section 1.5.6.

.1 The cost of the field review shall be paid for by the Contractor.

.2 Additional inspection and testing of materials and workmanship shall be carried out by a qualified Independent Inspection Agency appointed by the Consultant.

.1 The cost of this additional inspection shall be paid for out of the Cash Allowances for Inspection and Testing.
.2 Any testing or inspection required by the Consultant because of a deemed error by the Contractor or due to possible departure from the Contract Documents by the Contractor shall be paid for by the Contractor regardless of the results of such testings or inspections.

.3 Inspection shall include:

.1 Checking that mill test reports are properly correlated to materials,

.2 Sampling fabrication and erection procedures for general conformity to the requirements of the specification,

.3 checking that the welding conforms to the requirements of Section 3.2

.4 Checking fabricated members against specified member shapes.

.5 Visual inspection of all welded connections including sample checking of joint preparation and fit-up,

.6 Sample checking of screwed and bolted joints.

.7 Sample checking that tolerances are not exceeded during fit-up or erection,

.8 Additional inspection and testing of welded connections as required by CSA W59.

.9 General inspection of field cutting and alterations required by other trades.

.10 Submission of reports to the Consultant, the Contractor and the authorities having jurisdiction covering the work inspected with details of deficiencies discovered.

.4 The Contractor shall provide the necessary cooperation to insure inspection can proceed.

.5 The inspection provided in this section does not relieve the Contractor of his responsibility for the performance of the Contract. The Contractor is solely responsible for quality control and he shall implement his own supervisory and quality control procedures.

.6 Materials or workmanship not conforming to the requirements of Contract Documents may be rejected at any time during or after the progress of work.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

.1 This section includes the following:

.1 Stair nosings

1.2 REFERENCES:

1. Americans with Disabilities Act (ADA)
2. ASTM D4828-94(2003), Standard Test Methods for Practical Washability of Organic Coatings.
3. ASTM B136-84(1998), Standard Test Method for Measurement of Stain Resistance of Anodic Coatings on Aluminum.
4. Underwriters Laboratories, Inc. (UL) UL 1994 Standard for Safety, Luminous Egress Path Marking Systems.

1.3 QUALITY ASSURANCE

.1 Manufacturer Qualifications: to have minimum of 5 years experience with similar work.

.2 Installer Qualifications: to be manufacturer trained/authorized installer.

1.4 SUBMITTALS

.1 Submit the following [in accordance with Section 01 33 00 – Submittal Procedures]:

.1 Product Data: Manufacturer's product data sheets for product used.

.2 Installation instructions

.3 Samples: 12" size for review showing final color. Label samples with product codes and intended use.

.4 Substitutions: Substitutions must be submitted and approved prior to bid date. All requests shall include test results, product descriptions, confirmation of piece design and engineering calculations meeting design criteria.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Handle and store Products in a manner to prevent damage, deterioration and soiling to Products, other building components, assemblies, other Products, the structure, the Site and surrounding property and in accordance with manufacturer's instructions.

.2 Store products subject to damage from weather in weatherproof enclosures.

1.6 WARRANTY

.1 Provide manufacturer's limited warranty. Warranty to cover defects in materials and workmanship.

.1 Aluminum Base Products: (5) years from the date of Substantial Performance of the Work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Contract Documents are based on products by Schluter Systems

.2 Substitutions: See Section 01 25 00. Submit for consideration prior to bid closing.

2.2 MATERIALS

.1 Schluter Trep-B 2-1/8" Tread Black – coordinate tile depth with nosing specification. This is a stair nosing profile with a slip resistant thermoplastic rubber wear surface.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Before installation, examine surfaces on which the work of this section depends. Notify [Contractor] if substrates do not comply with requirements of this section

.2 Ensure any painted surfaces are fully cured.

.3 Do not proceed with work of this Section until all unsatisfactory conditions have been corrected, if any.

.4 Commencement of Work will imply acceptance of surfaces.

3.2 PREPARATION

.1 Clean surfaces to remove dirt, dust, grease, oil, loose material, frost, paint, coatings, or other matter that may affect bonding or installation of products.

.2 Test substrates for fit with products before using adhesives or mechanical fastening.

3.3 INSTALLATION

.1 Unless otherwise indicated in the specifications, install Products in accordance with manufacturer's instructions. Obtain written instructions directly from manufacturer.

3.4 CLEANING

.1 Trim any excess adhesive with a sharp blade.

.2 At completion of installation, clean soiled Product surfaces in accordance with manufacturer's instructions.

3.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for [reuse] [and] [recycling] at nearest used building materials facility.

.2 Divert unused caulking, sealants and adhesive materials from landfill through appropriate disposal procedure listed in material safety data sheets (MSDS).

3.6 PROTECTION

.1 Allow 24 hours for adhesive cure with no foot traffic permitted if products are installed without mechanical fasteners.

.2 Protect areas from damage using barriers, markers or temporary signs as required.

.3 Do not allow heavy objects to come in contact with installed products.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Wood Casework, Plastic Laminate Casework
.2 Plastic Laminate countertops.
.3 Hardware typically furnished by casework manufacturer.
.4 Shelving.
.5 Decorative metalwork incorporated into wood casework
.6 Structural supports incorporated into wood casework.
.7 Factory finishing
.8 Metal Framing: Metal backing and structure inside finished millwork
.9 Plumbing: Fixtures and fittings installed in countertops.
.10 Wood Doors.
.11 Finish Carpentry: Standing and running trim and wall paneling.

1.2 REFERENCES

.1 Work in conformance with the Architectural Woodwork Manufacturer's Association of Canada quality standards manual (current edition at date of tender).

.1 If there is conflict between plans and/or specifications and AWMAC's STANDARDS (NAAWS), plans and specifications shall govern.

1.3 SUBMITTALS

.1 Product Data: Manufacturer's specifications, data, and installation instructions for each manufactured product specified.

.2 Shop Drawings:

.1 Submit shop drawings conforming to AWMAC's STANDARDS (NAAWS). Pod millwork must be engineered. Shop drawing must be stamped by reviewing engineer. It is the General Contractor's responsibility to ensure that the PODS are engineered and coordinated with electrical and sprinklers.
.2 Submit two copies, one of which will be returned with reviewed notations. Make corrections noted (if any), and distribute required copies prior to start of work
.3 On casework and countertop elevations show location of backing required for attachment within walls.

.3 Samples:

.1 Submit three sample sets of [finished] samples of each species and cut of wood to be used. Veneer samples minimum 304 mm x 304 mm. Each sample set of three to represent range of color and grain expected.

.4 Mockups:

.1 Provide mockups of one Pod, and one countertop. Base cabinet to have minimum one drawer.

1.4 QUALITY ASSURANCE

.1 Work in accordance with Grade or Grades specified in AWMAC's STANDARDS (NAAWS).

.2 Guarantee and Inspection Service:

.1 Architectural woodwork shall be manufactured and installed to the current AWMAC's STANDARDS (NAAWS) and shall be subject to an inspection at the factory and/or site by an appointed AWMAC Certified Inspector. Inspection costs shall be included in the tender price for this project. (Contact your local AWMAC Chapter for details of inspection costs). Shop drawings submitted to the AWMAC Chapter office for review before work commences. Work that does not meet the AWMAC's STANDARDS (NAAWS), as specified, shall be replaced, reworked and/or refinished by the architectural woodwork contractor, to the approval of AWMAC, at no additional cost to the Owner.

.3 Woodwork Manufacturer Qualifications:

.1 Member in Good Standing of AWMAC.

.2 Minimum 5 years of production experience similar to this project, whose qualifications indicate ability to comply with requirements of this Section.

.3 Minimum one project in past 5 years where value of woodwork within 20 percent of cost of woodwork for this Project.

1.5 PRE-INSTALLATION MEETING

.1 Before framing completed hold a meeting with the contractor, casework manufacturer, casework installer, and framing sub-contractor.

.1 Review locations of backing required for casework installation as shown on casework shop drawings.

.2 Review method of attachment for backing to wall system as shown on architectural drawings.

1.6 DELIVERY STORAGE AND HANDLING

.1 Deliver materials only when project ready for installation and clean storage area provided.

.1 Delivery of architectural millwork made only when area of operation enclosed, plaster and concrete work dry and area broom clean.

.2 Maintain indoor temperature and humidity within range recommended by AWMAC's STANDARDS (NAAWS) for location of project.

1.7 SCHEDULING

.1 Coordinate fabrication, delivery, and installation with contractor and other applicable trades.

Part 2 PRODUCTS

2.1 COMPONENTS

.1 Lumber: In accordance with AWMAC's STANDARDS (NAAWS) Grade specified for product being fabricated.

.2 Veneers: As required by AWMAC's STANDARDS (NAAWS) for its use and Grade specified.

.3 Core:

.1 Veneer core plywood: hardwood with a non telegraphing grain manufactured with exterior glue meeting requirements of AWMAC's STANDARDS (NAAWS).

.2 Use 16mm Cement board at all areas where tile is applied on the millwork. All tile is to be terminated at edges with Schluter Qadec Edge Protection – Stainless Steel.

.4 Veneer core plywood: hardwood with a non telegraphing grain manufactured with exterior glue.

.5 Plastic Laminate:

.1 Of NEMA LD-3 Grade required by AWMAC's STANDARDS (NAAWS) for its use.

.6 Edgeband

.1 For Plastic Laminate Casework: PVC or ABS

.7 Adhesives Type I

.8 Hardware:

.1 Unless otherwise specified: Meeting requirements of AWMAC's STANDARDS (NAAWS) for grade specified

.2 Standard Cabinet Hardware: If the hardware is not noted on the drawings, the following standard hardware should be used: Products listed below are a standard of acceptance. Products of other manufacturers of equal quality and finish may also be provided subject to review and approval of Consultant. Refer to Section 01 25 00.

.3 Hinges for 19mm door: Blum 91-650, 90° with self closing spring.

.4 Hinges for 1 35mm door: Hager 1279 76x76.

.5 Door and drawer pull: Hafele 126.22.909 Silver Coloured Anodized Aluminum Extruded
Handle and Hafele 101.79.904 Aluminum Coloured Matt Metal Flush Handle

.6 Drawer slides: Full extension for 45kg load x length to suit by K&V or Accuride.

.7 Cloth racks: A.S.P. Model STL 1001

.8 Cabinet Locks: Olympus 078 or National Cabinet Lock C8702 or Corbin CCL02067.

.9 Elbow catch: Ives 20A14 on inactive door of locked pair or Hafele 245.70.107.

.10 Door locks for 1 ½" and 1 ¾" doors: by Section 08 71 00.

.11 Door lock: 63 CR, chrome flush bolt, mortised into wood door by Richelieu.

.12 Pilaster and clips: KV 255, 256, or as recommended by the manufacturer for the use proposed
and related maximum loading of the shelf or metal legs.

.13 Hardware finish: unless otherwise indicated chrome or nickel plated.

.14 Leveller heads: Richelieu #8410090.

.15 Leveller legs and foot: Richelieu #45110-90.

.16 Non-pneumatic typical hinges for upper cabinet (Hafele Product)

2.2 FABRICATION

.1 General:

.1 Materials and methods of construction to meet requirements of AWMAC's STANDARDS (NAAWS) for grade or grades specified.

.1 If there is conflict between plans and/or specifications and AWMAC's STANDARDS (NAAWS), plans and specifications shall govern.

.2 Plastic Laminate Casework:

.1 Grade: AWMAC's STANDARDS (NAAWS) Premium Grade

.2 Construction Type: AWMAC's STANDARDS (NAAWS) construction type, Frameless.

.3 Cabinet and door interface: flush overlay

.4 Exposed Surfaces High Pressure Decorative Laminate (HPDL), requirements of AWMAC's STANDARDS (NAAWS) for Grade specified.

.5 Exposed interior surfaces: HPDL matching exposed surfaces

.6 Semi-exposed surfaces: vertical grade laminate matching exposed surfaces

.7 Edgeband: PVC or ABS

Edgeband at doors, drawer fronts, and false fronts: 2mm thick

…

.3 Laminated Plastic Countertops:

.1 Laminate: see material schedule

.2 Core material: exterior grade hardwood plywood with a non-telegraphing grain

.1 Wet tops: Veneer core plywood with type II adhesive

.3 Front edges: see drawings

.4 Factory Finishing

.1 Grade: AWMAC's STANDARDS (NAAWS) Match grade of product to be finished.

Part 3 EXECUTION

3.1 EXAMINATION

.1 Verify mechanical, electrical, plumbing, HVAC and other building components, affecting work in this Section are in place and ready.

3.2 INSTALLATION

.1 Install work in conformance with AWMAC's STANDARDS (NAAWS).

.2 Conform to AWMAC's STANDARDS (NAAWS) Grade(s).

.3 Secure all work in place, square, plumb, and level.

.4 Fit and scribe work abutting other building components.

.5 Countersink mechanical fasteners used at exposed and semi-exposed surfaces, excluding installation attachment screws and those securing cabinets end to end.

.6 Cut equipment cutouts shown on plans using templates provided.

3.3 ADJUSTING & TOUCH UP

.1 Adjust all moving and operating parts to function smoothly and correctly.

.2 Fill and retouch all nicks, chips and scratches. Replace all un-repairable damaged items.

3.4 CLEANUP

.1 Upon completion of installation, clean installed items of pencil and ink marks and broom clean the area of operation.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 06 40 00 - Architectural Woodwork.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)
.1 ANSI 208.1-99, Particleboard.
.2 ANSI A208.2-02, Medium Density Fibreboard (MDF) for Interior Applications.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC); Architectural Woodwork Quality Standards Illustrated.

.4 ASTM E84-07b: Standard Test Method for Surface Burning Characteristics of Building Materials.

.5 National Electrical Manufacturers Association (NEMA)
.1 NEMA LD3-[2000], High Pressure Decorative Laminates.

1.3 SUBMITTALS

.1 Product Data: Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Samples: Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.4 Closeout Submittals: Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Refer to Section 01 61 00.

.2 Deliver laminated plastic finished surfaces with heavy kraft paper protection and store in cartons during shipping.

.3 Protect laminated plastic surfaces during fabrication and installation stages. Do not remove protective covering until final clean-up prior to final inspection.

.4 Maintain relative humidity between 25 and 60% at 22 degrees C during storage and installation.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Refer to Section 01 74 11 - Cleaning and Waste Management.

1.7 WARRANTY

.1 Submit an extended system warranty in accordance with the General Conditions of the Contract.

.2 Extended System Warranty: 2 year extended warranty including coverage against warping, splitting, or delaminating, subject to normal usage excluding excessive moisture or heat.

PART 2 PRODUCTS

2.1 MATERIALS

.1 See material schedule.

2.2 FABRICATION

1 Comply with NEMA LD 3, Annex A.

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.3 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 2400 mm. Keep joints 600 mm from sink cutouts.

.5 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

.6 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.7 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.8 Apply laminated plastic liner sheet to interior of cabinetry.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Install work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

.3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm on centre, 75 mm from edge. Make flush hairline joints.

.4 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

.5 At junction of laminated plastic counter back splash and adjacent wall finish, apply small bead of sealant.

.6 Where applicable, site apply laminated plastic to units as indicated. Adhere laminated plastic over entire surface. Make corners with hairline joints. Use full sized laminate sheets. Make joints only where indicated and approved. Slightly bevel arises.

.7 For site application, offset joints in plastic laminate facing from joints in core.

3.3 PROTECTION

.1 Cover finished laminated plastic veneered surfaces with heavy kraft paper or put in cartons during shipment. Protect installed laminated surfaces by approved means. Do not remove until immediately before final inspection.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
.2 Perform care and cleaning with NEMA LD 3, Annex B.
.3 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.

END OF SECTION

# PART 1 GENERAL

## 1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

.1 Section includes Sprayed-Applied Fire-Resistive Materials (SFRMs).

## 1.3 PREINSTALLATION MEETINGS

.1 Preinstallation Conference: Conduct conference at Project site.

.1 Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

## 1.4 ACTION SUBMITTALS

.1 Product Data: For each type of product.

.2 Shop Drawings: Framing plans, schedules, or both, indicating the following:

.1 Extent of fireproofing for each construction and fire-resistance rating.
.2 Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
.3 Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
.4 Treatment of fireproofing after application.

## 1.5 INFORMATIONAL SUBMITTALS

.1 Qualification Data: For Installer and testing agency.

.2 Product Certificates: For each type of fireproofing.

.3 Evaluation Reports: For fireproofing, from ICC-ES.

.4 Preconstruction Test Reports: For fireproofing.

.5 Field quality-control reports.

1.6 QUALITY ASSURANCE

.1 Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

.2 Mockups: Build mockups Indicate portion of Work represented by mockup on Drawings or draw mockup as separate element.

.1 Build mockup of as shown on Drawings.
.2 Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
.3 Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

.3. It is recommended that industry guidelines as noted in National Fireproofing Contractors Association (NFCA) 100 – Standard Practice for the Application of Spray-Applied Fire Resistive Materials (SFRMs) be maintained on the project site.

1.7 PRECONSTRUCTION TESTING

.1 Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on fireproofing.

.1 Provide test specimens and assemblies representative of proposed materials and construction.

.2 Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.

.1 Bond Strength: Test for cohesive and adhesive strength according to ASTM E 736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
.2 Density: Test for density according to ASTM E 605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
.3 Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with fireproofing.
.4 Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
.5 For materials failing tests, obtain applied-fireproofing manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

1.8 FIELD CONDITIONS

.1 Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 40 deg F 4.4 deg C or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours prior to, during, and for 24 hours after product application.

.2 Ventilation: Ventilate building spaces during and after application of fireproofing, providing a minimum 4 complete air exchanges per hour and according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

PART 2 PRODUCTS

1.9 MATERIALS, GENERAL

.1 Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.

.2 Source Limitations: Obtain fireproofing from single source.

.3 Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119/UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

.1 Steel members are to be considered unrestrained unless specifically noted otherwise.

.4 VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction.

.5 Low-Emitting Materials: Fireproofing used within the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

.6 Asbestos: Provide products containing no detectable asbestos.

1.10 SPRAY-APPLIED FIRE RESISTIVE MATERIALS

.1 SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application or conveyed in a dry state and mixed with atomized water at place of application.

.2 Products: Subject to compliance with requirements, provide one of the following:

.1 Concealed/Commercial SFRMs:

a. Isolatek International; CAFCO® 300 Series, CAFCO® BLAZE-SHIELD® II

b. Physical Properties:

1) Bond Strength: Minimum 150-lbf/sq. ft. (7.18-kPa) cohesive and adhesive strength based on field testing according to ASTM E 736.

2) Density: Not less than 15 lb/cu. ft. (240 kg/cu. m) as specified in the approved 1 hour fire-resistance design, according to ASTM E 605.

3) Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design.

4) Combustion Characteristics: When tested in accordance with ASTM E 136 shall be noncombustible.

5) Surface-Burning Characteristics: When tested in accordance with ASTM E84 or CAN4-S102, the material shall exhibit the following surface burning characteristics:

a) Flame Spread Index [10] or less

b) Smoke Developed [10] or less

6) Compressive Strength: When tested in accordance with ASTM E761, the material shall not deform more than 10 percent when subjected to a crushing force of 750 psf (35.9 kPa).

7) Corrosion Resistance: No evidence of corrosion according to ASTM E 937.

8) Deflection: No cracking, spalling, or delamination according to ASTM E 759.
9) Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
10) Air Erosion: Maximum weight loss of 0.025 g/sq. ft. (0.270 g/sq. m) in 24 hours according to ASTM E 859.
11) Fungal Resistance: When tested in accordance with ASTM G21, the material shall show resistance to mold growth for a minimum period of 28

1.11 AUXILIARY MATERIALS

.1 General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.

.2 Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:

.1 Fireproofing manufacturer shall be contacted for procedures on handling primed/painted steel.
.2 Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.

.3 Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.

.4 Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.

.5 Reinforcing Fabric: Glass or carbon fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.

.6 Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.

.7 Sealer: If required, a transparent-drying, water-dispersible, tinted protective coating as recommended by fireproofing manufacturer.

.1 Product: Subject to compliance with requirements, provide CAFCO® BOND-SEAL or CAFCO® BOND-SEAL Type X" by Isolatek International.

.8 Topcoat: If required, a topcoat suitable for application over applied fireproofing; of type recommended by fireproofing manufacturer.

.1 Cement-Based Topcoat: Factory-mixed, cementitious hard-coat formulation for trowel or spray application over SFRM.

a. Product: Subject to compliance with requirements, provide CAFCO® FENDOLITE® M-II/CAFCO® FENDOLITE® TG by Isolatek International.

.2 Water-Based Permeable Topcoat: Factory-mixed formulation for brush, roller, or spray application over applied SFRM.

a. Product: Subject to compliance with requirements, provide CAFCO® TOP-COTE by Isolatek International.

PART 3 EXECUTION

1.12 EXAMINATION

.1 Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:

.1 Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
.2 Clips, hangers, supports, sleeves and other attachments to the substrate are to be placed by others prior to the application of the fireproofing materials.
.3 The installation of ducts, piping, conduit or other suspended equipment shall not take place until the application of the fireproofing is complete in an area.

.2 Fire protection shall not be applied to steel floor decks prior to the completion of concrete work on that deck.

.3 The application of fireproofing to the underside of roof deck shall not commence until the roof is completely installed and tight, all penthouses are complete, all mechanical units have been placed, and construction roof traffic has ceased. When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers shall be installed as a walkway to distribute loads.

.4 Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

.5 Proceed with installation only after unsatisfactory conditions have been corrected.

1.13 PREPARATION

.1 Cover other work subject to damage from fallout or overspray of fireproofing materials during application.

.2 Clean substrates of substances that could impair bond of fireproofing.

.3 For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

1.14 APPLICATION

.1 Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.

.2 Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

.3 Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.

.1 Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
.2 Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.

.4 Metal Decks:

.1 Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, has been completed.
.2 Do not apply fireproofing to underside of metal roof deck until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.
.3 When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers shall be installed as a walkway to distribute loads.

.5 Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.

.6 Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.

.7 Extend fireproofing in full thickness over entire area of each substrate to be protected.

.8 Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.

.9 For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fireproofing that differs in color from that of encapsulant over which it is applied.

.10 Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.

.11 Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.

.12 Cure fireproofing according to fireproofing manufacturer's written recommendations.

.13 Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.

.14 Finishes: Where indicated, apply fireproofing to produce the following finishes:

.1 Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
.2 Spray-Textured Finish: Finish left as spray-applied with no further treatment.
.3 Rolled, Spray-Textured Finish: Even finish produced by rolling spray-applied finish with a damp paint roller to remove drippings and excessive roughness.
.4 Skip-Troweled Finish: Even leveled surface produced by troweling spray-applied finish to smooth out the texture and neaten edges.
.5 Skip-Troweled Finish with Corner Beads: Even, leveled surface produced by troweling spray-applied finish to smooth out the texture, eliminate surface markings, and square off edges.

1.15 FIELD QUALITY CONTROL

.1 Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

.1 Test and inspect as required by the IBC, 1704.10.

.2 For reference, utilize AWCI - Inspection Procedure for Field-Applied Sprayed Fire-Resistive Materials, Technical Manual 12-A; an annotated guide.

.2 Test and inspect completed work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.

.3 Fireproofing will be considered defective if it does not pass tests and inspections.

.1 Remove and replace fireproofing that does not pass tests and inspections, and retest.
.2 Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

.4 Prepare test and inspection reports.

1.16 CLEANING, PROTECTING, AND REPAIRING

.1 Cleaning: Immediately after completing spraying operations in each containable area of project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

.2 Protect fireproofing, according to advice of manufacturer and installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.

.3 As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.

.4 Repair fireproofing damaged by other work before concealing it with other construction.

.5 Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Firestopping and smoke seals through penetrations at wall, floor and roof openings.

1.2 RELATED SECTIONS

.1 Section 07 92 00 - Joint Sealants

.2 Section 09 21 16 – Interior Board Assemblies

1.3 REFERENCES

.1 Underwriter's Laboratories of Canada (ULC)
.1 ULC-S115-1995, Standard Method of Fire Tests of Fire Stop Systems.
.2 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.

.2 American Society for Testing Materials (ASTM)
.1 ASTM E119.07a, Standard Test Methods for Fire Tests of Building Construction and Materials.
.2 ASTM E814-06, Standard Test Method for Fire Tests of Through-Penetration Fire Stops.

.3 Canadian Government Standards Board (CGSB)
.1 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.
.2 CAN/CGSB-19.24-M90, Multicomponent, Chemical Curing Sealing Compound.

1.4 DEFINITIONS

.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.

.4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
.1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.5 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

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

.4 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
.1 Test reports: in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.
.2 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
.3 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
.4 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures and waste management.
.5 Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.6 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company specializing in fire stopping installations with 5 years documented experience and approved by manufacturer.

.2 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section with contractor's representative and Consultant to:
.1 Verify project requirements.
.2 Review installation and substrate conditions.
.3 Co-ordination with other building subtrades.
.4 Review manufacturer's installation instructions and warranty requirements.

.3 Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
.1 After delivery and storage of products, and when preparatory Work is complete, but before installation begins.
.2 Twice during progress of Work at 25% and 60% complete.
.3 Upon completion of Work, after cleaning is carried out.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:
.1 Deliver, store and handle materials in accordance with Section 01 61 00.
.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
.3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate [brand name], [manufacturer], [ULC markings].

.2 Storage and Protection:
.1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

.3 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 11.

1.8 PROJECT CONDITIONS

.1 Do not apply sealants when temperature of substrate material and surrounding air is below 5°C.

.2 Maintain sealant at a minimum 18°C for best workability.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Manufacturers of firestop sealants have Product considered acceptable for use:
.1 3M
.2 AD Fire Protection
.3 Hilti Canada
.4 Tremco
.5 Nuco Inc.

.2 Substitutions: Refer to Section 01 25 00

2.2 MATERIALS

.1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
.1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN- ULC-S115 and not to exceed opening sizes for which they are intended.

.2 Fire stop system rating: as indicated on Drawings.

.3 Service penetration assemblies: systems tested to CAN-ULC-S115.

.4 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.

.5 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.6 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.7 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.8 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

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

.10 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.

.11 Sealants for vertical joints: non-sagging.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.

.2 Ensure that substrates and surfaces are clean, dry and frost free.

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

.4 Maintain insulation around pipes and ducts penetrating fire separation [without interruption to vapour barrier].

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

3.3 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.

.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated 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 neat finish.

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

3.4 SEQUENCES OF OPERATION

.1 Proceed with installation only when submittals have been reviewed by Consultant.

.2 Install floor fire stopping before interior partition erections.

.3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.

.4 Mechanical pipe insulation: certified fire stop system component.
.1 Ensure pipe insulation installation precedes fire stopping.

3.5 FIELD QUALITY CONTROL

.1 Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

.2 Manufacturer's Field Services:
- .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
- .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.6 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning and Waste Management.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

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

3.7 SCHEDULE

.1 Provide firestop and smoke seals as indicated on Drawings, and in locations as noted below:

- .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
- .2 Top of fire-resistance rated masonry and gypsum board partitions.
- .3 Intersection of fire-resistance rated masonry and gypsum board partitions.
- .4 Control joints in fire-resistance rated masonry and gypsum board partitions and walls.
- .5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
- .6 Openings and sleeves installed for future use through fire separations.
- .7 Around mechanical and electrical assemblies penetrating fire separations.
- .8 Rigid ducts: greater than 129 $cm^2$: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

.2 Text to complete other various Sections containing sealant or caulking specifications.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
  .1 ASTM C 919- [02], Standard Practice for Use of Sealants in Acoustical Applications.

.2 Canadian General Standards Board (CGSB)
  .1 CGSB 19-GP-5M- [1984], Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
  .2 CAN/CGSB-19.13-[M87], Sealing Compound, One-component, Elastomeric, Chemical Curing.
  .3 CGSB 19-GP-14M- [1984], Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
  .4 CAN/CGSB-19.17-[M90], One-Component Acrylic Emulsion Base Sealing Compound.
  .5 CAN/CGSB-19.24-[M90], Multi-component, Chemical Curing Sealing Compound.

1.3 SUBMITTALS
.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's product to describe.
  .1 Caulking compound.
  .2 Primers.
  .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit samples in accordance with Section 01 33 00.

.4 Submit duplicate samples of each type of material and colour.

.5 Cured samples of exposed sealants for each color where required to match adjacent material.

.6 Submit manufacturer's instructions in accordance with Section 01 33 00.
  .1 Instructions to include installation instructions for each product used.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 11

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.7 Divert unused joint sealing material from landfill to official hazardous material collections.

.8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

1.6 CONDITIONS

.1 Environmental Limitations:

.1 Do not proceed with installation of joint sealants under following conditions:
.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
.2 When joint substrates are wet.

.2 Joint-Width Conditions:
.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:
.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 Contractor will arrange for ventilation system to be operated on maximum outdoor air and exhaust during installation of caulking and sealants. Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.

PART 2 PRODUCTS

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.

2.2 SEALANT MATERIAL TYPES

.1 TYPE 1 - Exterior Weatherseal Sealant: to CAN/CGSB-19.24-M, Type II, three-part epoxidized polyurethane, chemically curing, accommodating joint movement of plus or minus 50%; DYmeriac 240FC by Tremco or Sonneborn MP2 by BASF. Colour as selected by Consultant.

.2 TYPE 2 - Glazing Sealant: one part, moisture curing, acetoxy sealant, to CAN/CGSB-19.13-M, Type MG-2-25-A-L; Tremco Proglaze or Dow Corning 999A. Clear colour.

.3 TYPE 3 - Mildew-Resistant Interior Sealant for Washroom Areas: to ASTM C920, Type S, Grade NS, Class 25, Use NT, one-part, fungicidal silicone rubber; Dow Corning 786. White colour.

.4 TYPE 4 - Acoustical and General Purpose Interior Sealant: to CAN/CGSB-19.17-M, one-part, siliconized acrylic laytex, mildew-resistant, accommodating joint movement of plus or minus 12 ½ %; Tremco Tremflex 834. White colour

2.3 ACCESSORIES

.1 Primer: non-staining type, recommended by sealant manufacturer to suit application.

.2 Joint Cleaner: non-corrosive and non-staining type, recommended by sealant manufacturer, compatible with joint forming materials.

.3 Joint Backing: open cell polyethylene foam core wrapped in a closed cell polyethylene skin.

.4 Bond Breaker: pressure sensitive tape recommended by sealant manufacturer to suit application.

2.4 SEALANT SELECTION

.1 A partial list of locations is specified in the following paragraph.

.1 Perimeters of exterior openings where frames meet exterior facade of building (i.e. brick, block, precast masonry): Sealant Type 1.

.2 Control and expansion joints in exterior surfaces of unit masonry walls: Sealant Type 1.

.3 Seal interior perimeters of exterior openings as detailed on drawings: Sealant Type 1.

.4 Control and expansion joints on the interior of exterior surfaces of unit masonry walls: Sealant Type 1.

.5 Perimeters of interior frames, as detailed and itemized: Sealant Type 4.

.6 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): Sealant Type 4.

.7 Perimeter of fixtures (e.g. sinks, tubs, urinals, stools, waterclosets, basins, vanities): Sealant Type 3.

.8 Exposed interior control joints in drywall: Sealant Type 4.

PART 3 EXECUTION

3.1 PROTECTION

.1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 Sealant.
- .1 Apply sealant in accordance with manufacturer's written instructions.
- .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
- .3 Apply sealant in continuous beads.
- .4 Apply sealant using gun with proper size nozzle.
- .5 Use sufficient pressure to fill voids and joints solid.
- .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.

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

.3 Cleanup.
  .1 Clean adjacent surfaces immediately and leave Work neat and clean.
  .2 Remove excess and droppings, using recommended cleaners as work progresses.
  .3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 GENERAL

1.1 DEFINITION

.1 Hollow Metal Door and Frames = Metal Doors and Frames

1.2 RELATED SECTIONS

.1 Section 07 92 00 – Sealant/Caulking
.2 Section 08 71 00 – Finish Hardware
.3 Section 08 80 50 – Glazing
.4 Section 09 91 23 – Interior Painting

1.3 REFERENCES

.1 ASTM A653M-11 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.2 ASTM A792 / A792M - 10 Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
.3 ASTM C1289-07 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
.4 CAN/CSA-S157-2005, Strength Design in Aluminum.
.5 CAN/CSA W59.2-M1991 (R2003), Welded Aluminum Construction.
.6 CAN/CGSB -12.1-Tempered or Laminated Safety Glass
.7 CAN/CGSB-12.8-M90 Insulating Glass Units
.8 CAN/ULC-S770-09 Standard Test Method for Determination of Long-term Thermal Resistance of Closed-Cell Thermal Insulating Foams
.9 CSA S478-95(R2001), Guidelines on Durability in Buildings.
.10 The Canadian Steel Door Manufacturers Association (CSDMA)
.11 Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000
.12 Selection and Usage Guide for Steel Doors and Frames, 1990
.13 Recommended Specifications for Commercial Steel Door and Frame Products, 2006.

1.4 SYSTEM DESCRIPTION

.1 Design Requirements:
  .1 Design exterior frame assembly to accommodate expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
  .2 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 [NFPA 252] for ratings specified or indicated.

.2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with [CAN4-S104], [ASTM E 152] [or] [NFPA 252] and listed by nationally recognized agency having factory inspection services.

1.5 QUALITY ASSURANCE

.1 Acceptable manufacturers: Member of The Canadian Steel Door & Frame Manufacturers' Association or approved by the Consultant prior to bid closing.

.2 Reference Standards: Unless otherwise specified, meet requirements of "Canadian Manufacturing Specification for Steel Door and Frames", published by the Canadian Steel Door & Frame Manufacturers' Association.

.3 Fire protection requirements: fire rated doors, frames and screens shall bear ULC Labels. Protect labels from damage; cover with heavy tape or other method acceptable to Consultant, until completion of work.

1.6 WORK SUPPLIED BUT NOT INSTALLED

.1 Supply frames and anchors to other Sections where it is necessary to build frames in to work of other Sections.

.2 Supply instructions required for accurate positioning and proper installation of components supplied to other Sections.

1.7 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.

.3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
.1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware and fire rating and finishes.
.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings reinforcing and fire rating finishes.
.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

.4 Do not fabricate until Shop Drawings have been reviewed by the Consultant, and returned.

1.8 MEASUREMENTS

.1 Where work is to be built into existing opening, measurements shall be taken on site at the actual location of the work. The work shall be fabricated to job site measurements.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00
.2 Store hollow metal frames to HMMA 840.

.3 Tag doors and frames at shop with identification marks indicating proper location for installation.

1.10 WARRANTY

.1 At no cost to Owner, remedy any defects in the work of this Section due to faulty materials and/or workmanship appearing within three (3) years from Substantial Performance.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Steel Sheet – Commercial grade hot rolled steel to ASTM-A526 with “wiped coated” zinc finish to ASTM-A525,0.25 oz. per sq. ft.

.2 Reinforcing Steel – To CAN/CSA-G40.21-M92 Grade 300W, hot dip galvanized to CAN/CSA-G164-M92.

.3 Core Materials:

.1 Interior doors, except fire rated doors: honeycomb core of rigid, pre-expanded resin impregnated paper with maximum 25mm hexagonal shaped cells.

.2 Door Bumpers – Black neoprene.

.3 Primer – Zinc rich to CGSB-1-GP-181M.

2.2 METAL THICKNESS

| | | Ga. | Inches | mm |
|---|---|---|---|---|
| .1 | Interior Doors<br>Top & bottom end channels | 18 | .048 | 1.2 |
| .2 | Accessories: | | | |
| | - lock and strick reinforcement | 16 | .060 | 1.6 |
| | - hinge reinforcement | 10 | .135 | 3.5 |
| | - flush bolt reinforcement | 16 | .060 | 1.6 |
| | - surface applied hardware reinforcement | 12 | .105 | 2.8 |
| | - mortar guard boxes | 20 | .039 | 0.9 |
| | - jamb floor anchors | 16 | .060 | 1.6 |
| | - jamb spreaders | 18 | .048 | 1.2 |
| .3 | Anchors | | | |
| | 'T' strap type | 16 | .060 | 1.6 |
| | Stirrup-strap type (50 x 250 mm) | 16 | .060 | 1.6 |
| | 'L' strap type | 18 | .048 | 1.2 |

2.3 HARDWARE PREPARATION

.1 Templated hardware: prepare work in accordance with templates supplied in Section 08 71 00. ANSI standards will not necessarily be used. Drill and tap doors for templated hardware. Provide door latch guide.

.2 Blank, reinforce, drill and tap doors and frames for concealed and mortised hardware where required. Reinforce doors and frames for surface mounted hardware. Provide door closer reinforcement at all steel doors and frames whether closer is required by hardware list or not. Provide exterior doors and frames to receive alarm system contact switches where required.

2.4 DOORS

.1 All hollow metal doors shall be 45mm (1 ¾") thick unless noted otherwise.

.2 Construct fire rated doors in accordance with fire test requirements. Double doors shall be labelled without need for mullions, astragals or coordinating devices. Doors with transom panels shall be labelled with rebated interlocking head condition.

.3 Provide all doors of seamless construction with no visible seams or joints on faces.

.4 Exterior doors and interior high traffic doors shall be of hollow steel construction with all spaces filled with Polyisocyanurate Core: CAN/ULC S705 rigid foam, closed celll type, 32 kg/cu. m minimum density, thermal value RSI 1. 9.. Skins shall be 1.5mm thick. Join door faces at vertical door edges by continuous weld, extending full height of door; grind, full and dress smooth.

.5 Interior doors except high traffic doors shall be of honeycomb core construction. Skins shall be 1.2mm thick. Join door faces at vertical door edges with tight fitting mechanical interlock joints.

.6 Provide flush end closures made of steel at top edge of exterior doors and where required for attachment of hardware and weatherstripping.

.7 Hardware reinforcements shall be minimum 3.4mm thick exclusive of door skin thickness. Provide continuous reinforcement for full height hinges.

.8 Surround openings in flush doors with minimum 1.2mm thick steel edge channels, welded to both face sheets.

.9 Provide removable glazing stops of zinc coated steel channels mitred at corners, accurately fitted into position and fastened with countersunk tamperproof screws.

.10 Glazing stops at exterior doors shall be located on the interior side of doors and frames.

.11 Construct oversized doors to sizes indicated; frame and reinforce doors as required to maintain shape.

.12 Door Fabrication: Insulation stiffened cores insulated with foam core laminated under pressure to each min. 1.6 mm base metal thickness face sheet; longitudinal edges mechanically interlocked, edge seams spot welded and filled with auto body filler and sanded flush. Mortised, blanked, reinforced, drilled and tapped for templated hardware. Make provisions in doors for electrical supply and electrified hardware. Reinforce for surface mounted hardware, continuous hinges, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware.

.13 Top and Bottom Channels: Inverted, recessed, welded steel channels and flush steel top and bottom caps. Provide flush PVC top caps.

.14 Removable Glazing Stops: Formed from galvanized steel channel, type to suit glass type and thickness, accurately fitted, and screw fastened on the interior.

.15 Panels: Same materials, construction and finish as indicated for doors.

2.5 FRAMES

.1 Provide welded frames of 1.6 mm thick sheet steel to profiles shown on Drawings, and as required to suit wall conditions. Provide T-style centre mullions.

.2 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Weld joints on inside of profile; grind welds flush and sand to smooth uniform finish.

.3 Fit and assemble work in the shop wherever possible, eliminating field joints.

.4 Glazing Stops: rolled steel shape, 0.9 mm thick steel, mitred at corners, drilled and secured with countersunk tamperproof screws.

.5 Side light and transom framing shall be of same thickness metal as adjacent door frame.

.6 Drill interior door frames for rubber bumpers. Drill strike jamb of each single door frame for 3 bumpers. Drill head member of double door frames for 2 bumpers.

.7 Provide angle or channel door head reinforcement for doors wider than 915 mm.

.8 Tack weld two removable minimum 1.2 mm thick steel spreader channels to inside face of door frames at base.

.9 Provide adjustable base clips for anchorage to floor at bottom of each door jamb.

.10 Protect hardware reinforcements at frames located in masonry elements with 0.9 mm thick guard boxes.

.11 Hardware reinforcements shall be minimum 3.4 mm thick exclusive of frame thickness. Provide continuous reinforcement for doors with full length hinges.

.12 Where indicated, provide removable mullions.

.13 Make provisions to accommodate door intrusion alarm equipment at all interior and exterior door locations where required. Coordinate with alarm system supplier, and Division 16.

.14 Make provisions to accommodate automatic door openers where required. Coordinate with Division 16.

.15 Provide welded on metal drip at heads of exterior doors.

.16 Frame: Provide one piece, mitred, fully welded corners, welded continuously along inside profile with flush filled and smooth finished faces; min. 1.98 mm with frame, throat and frame width to suit wall construction. Provide thermally broken frames where FRR is not required.
Insulating Glass Units for Exterior Glazed Door: CAN/CGSB-12.8, double glazed, hermetically sealed, argon filled insulating glass units with low conductance stainless steel warm edge spacer.
.1 Outer lite: 6 mm clear tempered glass with low-E coating.
.2 Inner lite: 6 clear tempered glass.
.3 Transparent Vision Glass: CAN/CGSB-12.1.

2.6 THERMALLY BROKEN FRAMES

.1 All exterior hollow metal doors and frames are to be thermally broken.

.2 Interior and exterior sections of thermally broken frames shall be separated by a continuous PVC thermal break.

.3 Thermally broken sections shall not be assembled by means of screws, grommet or other fasteners.

.4 Welds shall not cause thermal transfer between interior and exterior surfaces of the frame sections.

.5 Closed sections (mullions and center rails) of thermally broken frames shall be factory insulated with 24 kg/m³ loose batt type fiberglass material.

2.7 FINISHES

.1 Fill seams, corner joints and other depressions with filler and sand smooth.

.2 Clean and remove all traces of oil, grease and other foreign substances to ensure proper bond of touch up after fabrication

.3 Wipe coated steel frames: touch up areas where wipe coating has been removed using zinc rich paint.

.4 Wipe coated steel doors: touch up areas where wipe coating has been removed using zinc rich paint, and apply one full coat of rust inhibitive primer to CGSB-1-GP-105M.

.5 Uncoated Steel: apply one coat rust inhibitive primer conforming to CGSB-1-GP-105M.

.6 Insulate, where necessary to prevent electrolysis, metal surfaces in contact with dissimilar metals or cementitious materials.

PART 3 EXECUTION

3.1 FRAME AND SCREEN INSTALLATION

.1 In general, setting of frames shall be executed by the General Contractor, to HMMA 840 specifications.

.2 Installation of steel frames in masonry or gypsum board wall systems shall be set by that Trade whose work requires such installations. Steel frames in masonry to be filled solid with non-shrink grout or mortar as specified in Section 04 05 12.

.3 Install all Georgian Wired Glass to doors and screens as indicated on Drawings, with proper glazing strips and required fasteners.

.4 Install insulated glazing panels as detailed with proper glazing stops and required fasteners.

.5 Allowable limit of distortion shall be 1.5 mm out of plumb at each jamb, measured on face of frame, resulting in maximum twist of frame of 3 mm measured from upper corner to lower diagonal corner.

.6 Generally, anchorage of frames shall be by means of standard anchors. Where standard anchors cannot be used, provide special anchors to ensure proper installation. Method of anchorage shall not be visible when frames are installed.

.7 Provide minimum 3 anchors at each jamb. At frames exceeding 2150 mm in height, provide one additional anchor for each additional 600 mm, or part thereof.

.8 Anchor intermediate vertical frame members to structure above as required to ensure stability. Where required, provide steel frame extensions. Provide flexible connection at structure to allow for deflection.

.9 Brace frames solidly in position while being built in.

.10 Remove spreader channels only after frames are securely anchored in place.

.11 Seal openings between frames and walls as specified in Section 07 92 00.

3.2 DOORS

.1 Install steel doors and panels to HMMA 840, ANSI/DHI A115.IG and CSDGMA standards.

.2 Install hardware in accordance with hardware supplier’s instructions.

.3 Adjust operable parts to ensure proper operation.

END OF SECTION

Part 1 General

1.01 General
A. Supply and install where indicated
folding aluminum closure model “SYSTEM S-126 Brick Pattern” as manufactured by MobilFlex Inc.
TEL 418-831-6652 (1-800-501-FLEX-3539)
FAX 418-831-7817 (1-800-470-FLEX-3539)

1.02 Exclusions
A. Work not included in this section: preparation of the opening, overhead track supports, storage pockets, miscellaneous trim and field painting.

1.03 Submittals
A. Submittals (shop drawings, installation instructions, operation and maintenance instructions) shall be in accordance with general instructions.

Part 2 Product
2.01 Model type
A. “SYSTEM S-126 Straight Pattern” by MobilFlex Inc.

2.02 Curtain
A. The curtain is constructed of vertical rods of 5/16” (8mm) in diameter. The spacing between the rods is 2-5/8” (67mm) in a straight pattern. These rods are linked together by flat horizontal bars of 1/8” x 5/8” x 6-5/8” (3mm x 16mm x 168mm). These bars are spaced vertically every 12” (305mm) by aluminum sleeves of 1/2“ (13mm) in diameter. The top and bottom of each section is fitted with an aluminum panel 4” (102mm) high. This panel consists of an aluminum extrusion 1/16” (1,6mm) thick and composed of modules with a 15° angle between them to facilitate the operation of the closure.

2.03 Locking
A. Lead post shall be equipped with a hook bolt lock with MobilFlex cylinders each side.
B. Lead post shall engage a full height wall jamb.
C. Trailing post shall be self-locking at the top and bottom inside the storage pocket.
D. Free floating intermediate posts shall be located at all curves and at recommended intervals of 10 feet (3m) or 5 feet (1,5m) for counter top units. Intermediate posts shall be equipped with self-adjusting spring loaded drop bolts activated from the inside only. Drop bolts shall engage dustproof stainless steel receptacles.
E. Top and bottom locking posts with key cylinders one or both sides are available for either end of the curtain.
F. Large sections may be divided by incorporating bi-part units as intermediate posts.
G. Second hook bolts on lead, end or bi-parts (recommended for closures over 12’ (3,7m) high or for more security).
H. High security or master keyed lock cylinders (Medeco, Best, U change It, etc) Humber supplied and factory fitted.
I. Solid aluminum block covering cylinder lock for additional protection (specify Mobilguard cylinder protection).
J. Architect to decide side of lock cylinders.

2.04 Track
A. Curtain shall be hung from an overhead track
1-5/16” (33mm) wide by 1-9/16” (40mm) high. Track shall be tempered aluminum alloy 6063-T5.
B. Curves where required shall be 14” (356mm) radius standard.
C. Coordinate with the structural drawings

2.05 Stacking
A. Stacking shall not exceed a depth of 1.15” per foot of closure width plus 3” for each post (lead, end or intermediate). (95mm/lin. m + 76mm per post). Full egress doors add 7” (178mm).

2.06 Finish
A. Finish shall be standard clear anodized.

Part 3 Installation

3.01 Inspection

A. Verify that other trades have completed all preparation work.
B. Verify dimensions of opening prior to installation.

3.02 Installation
A. Install closure as per printed instructions from MobilFlex and approved shop drawing.
B. Clean and adjust closure to ensure smooth operation.

MobilFlex closures are complete as described in the above specifications.
Following options are available if modifications or improvements are required.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Steel Doors and Frames Section 08 11 00

1.3 QUALITY ASSURANCE

.1 Meet requirements of Ontario Building Code and other applicable regulations.

.2 Upon completion of finish hardware installation, hardware supplier shall inspect work and shall certify in writing that all items and their installation are in accordance with requirements of Contract Documents and are functioning properly. This document to be included in maintenance manuals.

1.4 HARDWARE SUBCONTRACT

.1 Supply and install of finish hardware as per the requirements listed in 01 21 00 - Allowances . Contractor is required to enter into a subcontract agreement with successful finish hardware bidder.

1.5 SUBMITTALS

.1 Upon Consultant request, submit samples of finish hardware.

.2 Prepare and submit six (6) copies of a detailed hardware schedule for review by Consultants, prior to placing order.

.3 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware lists have been reviewed by Consultants and returned.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

.1 Deliver hardware as and when required for each opening. Package hardware separately for each opening in a package which contains all the hardware for that opening and bears the number of the opening. Supply hardware to those who are to install it, complete with keys, templates and installation instructions together with all required screws, expansion shields, anchors, jigs and other related accessories for satisfactory attaching or installing hardware.

1.7 GENERAL REQUIREMENTS

.1 All door closers shall have back checking features and shall be of proper size to operate door efficiently.

.2 Confirm all kick plate and threshold sizes before ordering them.

.3 Exposed screws for installing hardware shall have Phillips or Robertson heads.

.4 Rim panic device strikes shall be mortise type application.

.5 Confirm degree of swing for door holders, closers, etc.

1.8 KEYING

.1 All locks shall be keyed as required to Grand Master keying system as later provided by Owner.

1.9 FIELD QUALITY CONTROL

.1 Check all hardware when it has been installed and notify Consultant of any cases where it has been improperly installed, is defective or is not as specified.

.2 The door closer supplier shall review installation and operation of all door closers on Site and issue a written report to the Consultant.

1.10 WARRANTY

.1 All hardware to be Warranted for an extended period of five years.

PART 2 PRODUCTS

2.1 FINISH HARDWARE - GENERAL

.1 See 01 21 00 Allowances

PART 3 EXECUTION

3.1 INSTALLATION

.1 Confirm locations and mounting heights of finish hardware with Consultant.

.2 Install finish hardware in accordance with hardware supplier's directions. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.

.3 Unless otherwise directed by Consultant, or otherwise dictated by glass height or rail heights and location, install finish hardware at the following heights, above finish floor:

| | |
|---|---|
| Locksets / Latchsets | 1025 mm to centre of strike (40") |
| Deadlocks | 1200 mm to centre of strike (48") |
| Panic Bolts | 1055 mm to centre of strike (41.5") |
| Push Plates | 1015 mm to centre of plate (40") |
| Door Pulls | 965 mm to centre of pull (36.5") |

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

1.1.1 Architectural Window Film:
1.1.1.1 Single patterned film 3M CRYSTAL Glass Finishes. Dusted – See Allowances

1.2 REFERENCES

1.2.1 ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

1.2.2 ASHRAE - American Society for Heating, Refrigeration, and Air Conditioning Engineers; Handbook of Fundamentals.

1.2.3 ASTM International (ASTM):
1.2.3.1 ASTM D 882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
1.2.3.2 ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers -- Tension.
1.2.3.3 ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
1.2.3.4 ASTM D 1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
1.2.3.5 ASTM D 1044 - Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).
1.2.3.6 ASTM D 2240 - Standard Method for Rubber Property - Durometer Hardness.
1.2.3.7 ASTM D 2582 - Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting.
1.2.3.8 ASTM D 5895 - Standard Test Methods for Evaluating Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders.
1.2.3.9 ASTM D 4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
1.2.3.10 ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
1.2.3.11 ASTM E 308 - Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System.
1.2.3.12 ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
1.2.3.13 ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
1.2.3.14 ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
1.2.3.15 ASTM F1642 - Standard Method of Test for Glazing and Glazing Systems Subject to Airblast Loadings
1.2.3.16 ASTM F2912 - Standard Specification for Glazing and Glazing Systems Subject to Airblast Loadings.

1.2.4 Consumer Products Safety Commission 16 CFR, Part 1201 - Safety Standard for Architectural Glazing Materials.

1.2.5 GSA-TS01 - Standard Test for Glazing and Glazing Systems Subject to Airblast Loadings.

1.2.6 NFRC 100/200 (Formerly ASTM E903) - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

1.2.7 IES LM-83-12: IES Spatial Daylight Autonomy (sDA) and Annual Sunlight Exposure.

1.2.8 ISO 16933, International Standard for Glass in Building: Explosion-resistant security glazing - Test and classification for arena air-blast testing.

1.2.9 Underwriters Laboratories Inc. (UL): UL 972 - Burglary Resisting Glazing Material.

1.2.10 Window 6.3 - A Computer Tool for Analyzing Window Thermal Performance; Lawrence Berkeley Laboratory.

1.3 SUBMITTALS

1.3.1 Submit under provisions of Section 01 30 00.

1.3.2 Product Data: Manufacturer's current technical literature on each product to be used, including:
- 1.3.2.1 Manufacturer's Data Sheets.
- 1.3.2.2 Preparation instructions and recommendations.
- 1.3.2.3 Storage and handling requirements and recommendations.
- 1.3.2.4 Installation methods.

1.3.3 Verification Samples: For each film specified, two samples representing actual film color and pattern.

1.3.4 Performance Submittals: Provide laboratory data of emissivity and calculated window U-Factors for various outdoor temperatures based upon established calculation procedure defined by the ASHRAE Handbook of Fundamentals, Chapter 29, or Lawrence Berkeley Laboratory Window 5.2 Computer Program.

1.4 QUALITY ASSURANCE

1.4.1 Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten years experience.
- 1.4.1.1 Provide documentation that the adhesive used on the specified films is a Pressure Sensitive Adhesive (PSA).

1.4.2 Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five years demonstrated experience in installing products of the same type and scope as specified.
- 1.4.2.1 Provide documentation that the installer is authorized by the Manufacturer to perform Work specified in this section.
- 1.4.2.2 Provide a commercial building reference list of 5 properties where the installer has applied window film. This list will include the following information:
  - 1.4.2.2.1 Name of building.
  - 1.4.2.2.2 The name and telephone number of a management contact.
  - 1.4.2.2.3 Type of glass.
  - 1.4.2.2.4 Type of film and/or film attachment system.
  - 1.4.2.2.5 Amount of film and/or film attachment system installed.
  - 1.4.2.2.6 Date of completion.

1.4.3 Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
- 1.4.3.1 Finish areas designated by Architect.
- 1.4.3.2 Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
- 1.4.3.3 Refinish mock-up area as required to produce acceptable work.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Follow Manufacturer's instructions for storage and handling.

1.5.2 Store products in manufacturer's unopened packaging until ready for installation.

1.5.3 Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.6 PROJECT CONDITIONS

1.6.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.7 WARRANTY

1.7.1 At project closeout, provide to Owner or Owners Representative an executed current copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

1.7.2 In order to validate warranty, installation must be performed by an Authorized 3M dealer and according to Manufacturer's installation instructions. Verification of Authorized 3M dealer can be confirmed by submission of active 3M dealer code number.

2 PRODUCTS

2.1 MANUFACTURERS

2.1.1 Acceptable Manufacturer: 3M Commercial Solutions, which is located at: 3M Center Bldg. 220-12-E-04; St. Paul, MN 55144-1000; Toll Free Tel: 888-650-3497; Tel: 651-737-1081; Fax: 651 737 8241;

2.1.2 Substitutions: As per Section 01 25 00.

2.2 ARCHITECTURAL FINISH FILMS
2.2.1.1 Single patterned film 3M CRYSTAL Glass Finishes. Dusted

3 EXECUTION

3.1 EXAMINATION

3.1.1 Film Examination:
3.1.1.1 If preparation of glass surfaces is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
3.1.1.1.1 Glass surfaces receiving new film should first be examined to verify that they are free from defects and imperfections, which will affect the final appearance.
3.1.1.2 Do not proceed with installation until glass surfaces have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.
3.1.1.3 Commencement of installation constitutes acceptance of conditions.

3.2 PREPARATION

3.2.1 Clean surfaces thoroughly prior to installation.

3.2.2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.2.3 Refer to Manufacturer's installation instructions for methods of preparation for Impact Protection Adhesive or Impact Protection Profile film attachment systems.

3.3 INSTALLATION

3.3.1 Film Installation, General:

3.3.1.1 Install in accordance with manufacturer's instructions.

3.3.1.2 Cut film edges neatly and square at a uniform distance of 1/8 inch (3 mm) to 1/16 inch (1.5 mm) of window sealant. Use new blade tips after 3 to 4 cuts.

3.3.1.3 Spray the slip solution, composed of one capful of baby shampoo or dishwashing liquid to 1 gallon of water, on window glass and adhesive to facilitate proper positioning of film.

3.3.1.4 Apply film to glass and lightly spray film with slip solution.

3.3.1.5 Squeegee from top to bottom of window. Spray slip solution to film and squeegee a second time.

3.3.1.6 Bump film edge with lint-free towel wrapped around edge of a 5-way tool.

3.3.1.7 Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

3.3.1.8 If completing an exterior application, check with the manufacturer as to whether edge sealing is required.

3.4 CLEANING AND PROTECTION

3.4.1 Remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.

3.4.2 Touch-up, repair or replace damaged products before Substantial Completion.

3.4.3 After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents and bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Metal framing

.2 Gypsum board finish

.3 Tile backer board

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 11 – Cleaning and Waste Management.

.3 Section 06 10 00 – Rough Carpentry

.4 Section 07 92 00 – Sealant/Caulking

.5 Division 15 – Mechanical Equipment

.6 Division 16 – Electrical Fixtures

1.3 REFERENCES

.1 Aluminum Association
.1 Designation for Aluminum Finishes- [1997].

.2 American Society for Testing and Materials International, (ASTM)
.1 ASTM C 36/C 36M- [01], Specification for Gypsum Wallboard.
.2 ASTM C 442/C 442M- [01], Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board.
.3 ASTM C 475- [01], Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
.4 ASTM C 514- [01], Specification for Nails for the Application of Gypsum Board.
.5 ASTM C 840- [01], Specification for Application and Finishing of Gypsum Board.
.6 ASTM C 954- [00], Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
.7 ASTM C 1002- [01], Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
.8 ASTM C 1047- [99], Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
.9 ASTM C 1280- [99], Specification for Application of Gypsum Sheathing Board.
.10 ASTM C 1177- [01], Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
.11 Abuse Resistant Gypsum Board: ASTM C 1396 Section 5; Type X; fire resistive type, ITS rated; minimum 16 mm thick, maximum available length in place; ends square cut, tapered edges;
.1 Surface Abrasion: Level 2 Tested in accordance with ASTM C 1629 and ASTM D 4977.
.2 Indentation Resistance: Level 1 Tested in accordance with ASTM C 1629 and ASTM D 5420.
.3 Soft-body Impact: Level 1 Tested in accordance with ASTM C 1629 and ASTM E 695.

.3 Association of the Wall and Ceilings Industries International (AWEI)

.4 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-71.25-[M88], Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.5 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S102-[1988(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.

.6 Canadian Gypsum Company: CGC Gypsum Construction Handbook.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

.4 Allow panels to acclimate to the temperature and humidity conditions prior to installation.

.5 Framing shall be designed not to exceed L/360 deflection for tile applications. For fire-resistant or abuse-resistant construction, steel framing must be 20-gauge or heavier with corrosion-resistant metal coating equivalent to G40 hot-dipped galvanized.

1.5 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C 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.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.6 INSTALLATION PRACTICES

.1 Cut Interior Panels to size with a utility knife and straight edge. Use a power saw only if equipped with a Installation dust-collection device. Panels may be cut by scoring and snapping or by sawing, working from the face side. Practices When using the score-and-snap method, score the panel twice and snap the panel away from the cut face. The backside of the panels is then broken by snapping the panel in the reverse direction. If a power-operated saw is used, a low-RPM unit with 3-1/2□carbide blade is recommended. When necessary, use a rasp to smooth cut edges. Holes for pipes, fixtures and other small openings can be cut out with a saw or a drywall router equipped with a special bit (available from Rotozip Tool Corporation). When a router is used, hold panels away from the wall. Contractors installing tile and tile-setting materials should always follow current ANSI specifications, TCA guidelines and the specifications of the surfacing materials manufacturer.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 11 – Cleaning and Waste Management.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Divert unused gypsum from landfill to gypsum recycling facility for disposal.

.4 Divert unused metal materials from landfill to metal recycling facility.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Manufacturers of gypsum board having Product considered acceptable for use:
.1 G-P Gypsum Corporation

.2 Canadian Gypsum Company
.3 Certain Teed Gypsum, Canada Inc.

2.2 MATERIALS

.1 Standard Gypsum sheathing board to replace existing board or as per drawings: to ASTM C 36/C 36M regular, 16 mm thick Type X, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.

.2 Flexible Gypsum sheathing board (around curves): CGC Flexiboard – Flexible Plasterboard – 6.5mm thick ideal for convex and concave designs

.3 For areas with tile – use 16mm cement board or 16mm tile backer board.

.4 Metal furring runners, hangers, tie wires, inserts, anchors: to ASTM C645.

.5 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.

.6 Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.

.7 Nails: to ASTM C 514.

.8 Steel drill screws: to ASTM C 1002.

.9 Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, metal, 0.5 mm base thickness, perforated flanges, one piece length per location.

.10 Sealants: in accordance with Section 07 92 00 - Joint Sealing.

.11 Joint compound: to ASTM C 475, asbestos-free.

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, 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, sound attenuation, electrical and mechanical work are approved.

.2 Apply single layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws as recommended by board manufacturer.
- .1 Single-Layer Application:
  - .1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C 840. Center end or edge joints on framing. Stagger end joints in successive courses. Fit ends and edges closely but not forced together. Fasten boards to framing using recommended fastener table as per manufacturer's recommendations. Embed Joint Tape in Setting-Type Joint Compound and wipe with a joint knife, leaving a thin coating of joint compound over all joints and interior angles. Complete to level of finish specified in project requirements.
- .2 For Tiled Areas:
  - .1 Embed joint tape in latex-fortified mortar or latex-based Type I mastic over the joint. Use the same material as specified for tile setting.

.3 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

.4 Install gypsum board with face side out.

.5 Do not install damaged or damp boards.

.6 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

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.

.2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.3 Control Joints:
- .1 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
- .2 Locate control joints where indicated, at changes in substrate construction at approximate 10 M spacing on long corridor runs and at approximate 15 M spacing on ceilings.
- .3 Install control joints straight and true.
- .4 Surfaces should be isolated with surface control joints or other means where a wall abuts a structural element or when there are construction changes within the plane of a wall.

.4 Relief Joints:
- .1 Provide relief joints where indicated on Drawings and where gypsum board assemblies abut dissimilar construction.

.5 Expansion Joints:
.1 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
.2 Install expansion joint straight and true.

.6 Install access doors to electrical and mechanical fixtures specified in respective sections. Rigidly secure frames to furring or framing systems.

.7 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.

.8 Gypsum Board Finish and Fibrerock finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:

.1 **Drywall Levels of finish:**
**Level 4 (typical)**: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.

**Level 5 (for all finishes receiving M433 NI-NOC)**: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges. Finish must pass pull test required by 3M.

.9 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.

.10 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.

.11 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.12 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.13 Where applicable, apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.14 Mix joint compound slightly thinner than for joint taping.

.15 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

.16 Allow skim coat to dry completely.

.17 Remove ridges by light sanding or wiping with damp cloth.

.18 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Tile and Accessories:
   1. Porcelain Wall Tile.
   2. Ceramic Wall Tile
   3. Porcelain Floor Tile

1.2 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry
B. Section 06 20 00 - Finish Carpentry
C. Section 07 92 00 - Sealant/Caulking

1.3 REFERENCES

A. American National Standards Institute (ANSI):
   1. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile.
   2. ANSI A137.1 - Specifications for Ceramic Tile.
B. American International (ASTM):
   1. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
   2. ASTM C 150 - Standard Specification for Portland Cement.
   3. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.
   4. ASTM C 615 - Specification for Granite Dimension Stone.
   5. ASTM C 629 - Specification for Slate Dimension Stone.
   6. ASTM C 847 - Standard Specification for Metal Lath.
   7. ASTM C 1028 - Standard Test Method for Determining the Static Coefficient of Friction or Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
   8. ASTM D 4397 - Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
C. Tile Council of North America (TCNA): TCA Handbook for Ceramic Tile Installation, 2007.

1.4 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: Tile on walkway surfaces shall meet or exceed the following values as determined by testing in conformance with ASTM C 1028. A report shall be provided by the GC proving these values:
   1. Level Surfaces: Minimum of 0.6 (Wet).
   2. Step Treads: Minimum of 0.6 (Wet).
   3. Ramp Surfaces: Minimum of 0.8 (Wet).

1.5 SUBMITTALS

A. Submit under provisions of Section 01 33 00 - Submittal Procedure.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
   1. Submit duplicate 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
   2. Floor tile: submit duplicate 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
   3. Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.

E. Manufacturer's Certificates: Certify products meet or exceed specified requirements. When applicable, submit a Master Grade Certificate signed by the manufacturer and the installer certifying that products meet or exceed the specified requirements of ANSI A137.1.

F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and maintenance coatings.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum two years' experience.

B. Single Source Responsibility: Obtain each type and color of tile from a single source. Obtain each type and color of mortar, adhesive and grout from the same source.

C. General: Provide tile that complies with ANSI A137.1 where applicable for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors and pattern indicated on the Drawings.
   1. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.
   2. Mounting: For factory mounted tile, provide back or edge mounted tile assemblies as standard with the manufacturer, unless otherwise specified.
   3. Factory Applied Temporary Protective Coatings: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Packing, shipping, handling and unloading:
   1. Deliver, store and handle materials in accordance with Section 01 61 00 – Products and Workmanship.

B. Waste Management and Disposal:
   1. Separate waste materials for reuse and recycling in accordance with Section 01 74 11 - Cleaning and Waste Management.

1.8 PROJECT CONDITIONS

A. Do not install adhesives in an unventilated environment.

B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during tiling and for a minimum of 7 days after completion.

1.9 EXTRA MATERIALS

A. Extra Materials:
   1. Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
   2. Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
   3. Maintenance material same production run as installed material.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Stone Tile International Inc. Beth Braithwaite, bethb@stone-tile.com 416-515-9000x290
B. Centura, Liz Livingston, elivingston@centura.ca, 416-795-5165
C. ACME Slate, 416-293-3664
B. Manufacturers of tile setting accessories having Product considered acceptable for use, Schlüter Systems (Canada) Inc.
C. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 – Substitution Procedures.

2.2 TILE

See the materials schedule on the architectural drawings.

2.3 GROUT

A. Colouring Pigments – see the material schedule:
1. Pure mineral pigments, limeproof and nonfading, complying with ASTM C 979.
2. Colouring pigments to be added to grout by manufacturer.
3. Job coloured grout are not acceptable.
4. Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.
B. Cement Grout: to ANSI A108.1.
1. Use one-part white cement to one part white sand passing a number 30 screen.
C. Commercial Cement Grout: to CTI A118.6.
D. Dry-Set Grout: to CTI A118.6.
E. Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, un-sanded mix for walls and floors with polished tiles commercial tile grout.

2.4 TILE SETTING MATERIALS

A. Tile Setting Materials: Comply with ANSI A108/A118/A136.1 as applicable to the installation methods referenced in Part 3 of this Section.
B. Patching and Leveling Compound: As recommended by tile manufacturer and compatible with both substrate and setting materials.
C. Cleavage Membrane at Floors: Polyethylene film, ASTM D 4397, 4.0 mil thickness.
D. Membrane at Walls: Polyethylene film, ASTM D 4397, 4.0 mil thickness.
E. Cementitious Backer Board: High density, cementitious, glass fiber reinforced with 2 inch (50 mm) wide coated glass fiber tape for joints and corners. See millwork drawings.
1. Thickness: 5/8 inch (16 mm).

F. See Transition details on drawings for termination of tile. If not noted, tile is to be terminated with Stainless steel Schluter Schiene profile.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Acceptability of Surfaces: Inspect surfaces to be tiled to ensure proper bonding can be achieved, and to verify that surfaces are free of curing membranes, oil, grease, wax and dust.
B. Substrate Tolerances: Before tiling, inspect surfaces to be tiled to verify that the following tolerances are not exceeded. If tolerances are exceeded, provide specified leveling coat to achieve specified tolerances.
1. Walls: 1/8 inch in 8 feet (3 mm in 2.4 m) for dry-set mortar, epoxy and organic adhesives.
2. Floors: Ensure concrete slabs have been finished with a maximum permissible variation of 3 mm in 3 m from the required plane and not more than 1.5 mm in 305 mm when measured from

high points in the surface.

3.2 PREPARATION

A. Protect surrounding work from damage.
B. Remove any curing compounds or other contaminates.
C. Vacuum clean surfaces and damp clean.
D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
E. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.

F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.
G. Layout: Determine locations of control and expansion joints before starting tile work. Layout tile work to minimize cuts less than one-half tile in size.

3.3 INSTALLATION

A. Prior to installation, a meeting is to take place onsite reviewing the installation procedures of the tile system. Moisture levels of the existing slab need to be verified prior to installation of the new tile.
B. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
C. Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2 width is used. Do not interrupt tile pattern through openings.
D. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
F. Form internal angles square and external angles bull-nosed.
G. Install non-ceramic trim in accordance with manufacturer's instructions.
H. Install thresholds where indicated.
I. Sound tile after setting. Replace hollow sounding units.
J. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
K. Allow tile to set for a minimum of 48 hours prior to grouting.
L. Grout tile joints. Use standard grout unless otherwise indicated.
M. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 WALL INSTALLATION

A. Over cementitious backer units on studs, install in accordance with TCA Handbook Method W244, using membrane at toilet rooms.
B. Over cementitious backer units install in accordance with TCA Handbook Method W223, organic adhesive.
C. Over gypsum wallboard on wood or metal studs install in accordance with TCA Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat, unless otherwise indicated.
    1. Where mortar bed is indicated, install in accordance with TCA Handbook Method W222, one coat method.
    2. Where waterproofing membrane is indicated other than at showers and bathtub walls, install in accordance with TCA Handbook Method W222, one coat method.
D. Over interior concrete and masonry install in accordance with TCA Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.
E. Over wood studs without backer install in accordance with TCA Handbook Method W231, mortar

bed, with membrane where indicated.

F. Over metal studs without backer install in accordance with TCA Handbook Method W241, mortar bed, with membrane where indicated.

3.5 CLEANING

A. Clean tile and grout surfaces within time period recommended by manufacturer, using materials recommended by manufacturer.
B. Proceed in accordance with Section 01 74 11 – Cleaning and Waste Management.

3.6 PROTECTION OF FINISHED WORK

A. Do not permit traffic over finished floor surface for 72 hours after installation.
B. Cover floors with kraft paper and protect from dirt and residue from other trades.
C. Where floor will be exposed for prolonged periods cover with plywood or other similar type walkways

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Materials and application of acoustical units for direct application or for application and installation within a suspended ceiling.

1.2 SUSTAINABLE DESIGN REQUIREMENTS

.1 Target Recycled Content for Acoustical Lay-in Tile: minimum 5% post- consumer and 40% post-industrial.

1.3 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 35 43 - Environmental Procedures.
.3 Section 01 45 00 - Quality Control.
.4 Section 01 74 11 – Cleaning and Waste Management.
.5 Section 01 78 00 - Closeout Submittals.
.6 Division 15 - Mechanical Fixtures
.7 Division 16 - Electrical Fixtures

1.4 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.1 ASTM E 1264-[98], Standard Classification for Acoustical Ceiling Products.

.2 Underwriter's Laboratories of Canada (ULC)
.1 CAN/ULC-S102-[2003], Surface Burning Characteristics of Building Materials and Assemblies.

.3 Ceiling & Interior Systems Construction Association (CISCA): Ceiling Systems Handbook.

1.5 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 300 x 300 mm samples of each type of acoustical units.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements:
.1 Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by Canadian Certification Organization accredited by Standards Council of Canada.

.2 Installers: company specializing in installing or applying the work of this Section with a minimum of three (3) years documented experience.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Protect on site stored or installed absorptive material from moisture damage.

.2 Store Products in warm, dry area.

1.8 EXTRA MATERIALS

.1 Supply extra materials as specified in Section 01 78 00.

.2 Extra Materials: minimum two (2) full bundles of each lay-in ceiling tile specified, in original packaging clearly marked to identify:
.1 Manufacturer’s name

.2 Products name
.3 Product colour and pattern.

.3 Store bundles in original undamaged packages, in a warm, dry area, as directed by Consultant or Owner.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Permit wet work to dry before beginning to install.

.2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20 -40% before and during installation.

.3 Store materials in work area 48 hours prior to installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Manufacturers of acoustic lay-in tile who have Product considered acceptable for use:
.1 Armstrong World Industries
.2 Certainteed
.3 Canadian Gypsum Company
.4 Arktura

2.2 ACOUSTIC UNIT MATERIALS

.1 See material schedule.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 INSTALLATION

.1 Install acoustical panels and tiles in ceiling suspension system.

.2 In fire rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

.3 Install hold-down clips to retain panels tight to grid system within 6 m of an exterior door.

3.3 APPLICATION

.1 Install acoustic units to clean, dry and firm substrate.

.2 Install acoustical units parallel to building lines with edge unit not less than 50% of unit width with directional pattern running in same direction. Refer to reflected ceiling plan.

3.4 INTERFACE WITH OTHER WORK

.1 Co-ordinate with Section 09 53 00.01 - Acoustical Suspension.

.2 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 CLEANING

.1 After installation, clean and touch up minor surface defects on panels.

.2 Remove damaged and badly marked units and replace with new unmarked material.

END OF SECTION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Carpet tile.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 33 00 – Submittal Procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Verification Samples: For each finish product specified, two samples, representing actual product and finish.

D. Extra Stock: Submit extra stock equal to 5% of total installed.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5-year experience manufacturing similar products.

B. Installer Qualifications: Minimum 5-year experience installing similar products.

C. Performance: Fire performance meeting requirements of building code and local authorities.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

E. Warranty: 15-year Standard Carpet Warranty as provided by the Manufacturer.

F. Warranty: 1-year Installation Warranty as provided by the General Contractor

1.5 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handling: Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Shaw Contract

B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 – Substitution Procedures.

2.2 MATERIALS

A. Carpet Tile:
1. Material: See material schedule
2. Installation Method: Glue-down on existing slab.

3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction. Test for proper operation and adjust until satisfactory results are obtained.

B. Comply with recommendations of Carpet and Rug Institute 'Specifier's Handbook'.

C. Before installing, concrete floors in the library, must comply with the moisture and pH requirements stated by the manufacturer, and must otherwise be suitable for carpet tile installation. The moisture conditions of the concrete should be determined by use of the In-Situ probe relative humidity (RH) test method (ASTM F 2170). The testing device must be properly maintained and calibrated in accordance with the manufacturer's specifications and frequency recommendations. Certificates of calibration should be maintained for test validation. General Contractor is to test 4 locations for moisture and pH within the library. The architect will select the locations. Manufacturer is to confirm existing installation conditions.

D. Patch cracks and holes with one of the following approved patching compounds: Ardex Feather Finish, Ardex K-15, Henry's 547, Armstrong S-184 or similar cement-based compound. NOTE: Some patching compounds can be mixed with water while some must be mixed with latex. Follow the manufacturer's specifications and instructions for use. NOTE: All adhesives, solvent based materials and other contaminants should be removed and encapsulated prior to application of adhesive and installation of carpet. For the existing slab, carry 100m2 of patching at 25mm above the existing finished floor. For new concrete, all concrete floors must comply with moisture and alkalinity requirements prior to proceeding with installation Level the floor to the standards outlined in the American Concrete Institute specifications for Concrete Buildings in regard to troweled finish and finishing tolerances. Leveling compounds must be cementitious based.

E. Use the adhesive recommended by the manufacturer. Assume a Relative Humidity of 97%.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Architectural finish films for the following interior applications:
   1. Horizontal surfaces exposed to view.
   2. Vertical surfaces exposed to view.

1.2 RELATED SECTIONS

A. Section 06 20 00 - Finish Carpentry.

B. Section 06 40 00 - Architectural Woodwork.

1.3 REFERENCES

A. ASTM International (ASTM): ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. ASTM International (ASTM): ASTM E 308 - Standard Recommended Practice for Spectophotometry and Description of Color in CIE 1931 System.

C. ASTM International (ASTM): ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

D. Underwriters Laboratories, Inc. (UL): UL 723 - Test for Surface Burning Characteristics of Building Materials.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets for products specified, including but not limited to:
   1. Performance characteristics.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Maintenance data for installed products, including precautions against harmful cleaning materials and methods.
   5. Installation Instructions.

C. Shop Drawings: Submit shop drawings showing layout, profiles, and product components, including dimensions, anchorage, and accessories.

D. Verification Samples: For each film specified, 8 samples, 1000 mm x 1000 mm, representing actual architectural film print colors and patterns. Print the samples at varying brightness in order to match the colours within the library.

E. Manufacturer Qualifications: Regularly engaged in the manufacture of architectural finish films.

F. Installers: Installation shall be performed by a trained and qualified installer, specialized and experienced in work required for this project. A list of 3M Endorsed installers is below:

- INPS / Health Lalonde / heath@autographtrim.com
- Auto Trim Design Incorporated / Paul Hosie / paul.hosie@autotriminc.com
- Convenience Group Inc. (CGI) / Geoff Matheson (gmatheson@conveniencegroup.com) / Colin MacLeod (cmacleod@windowfilmcanada.ca)
- Mosaic Graphics / Christine Park / christine@mosaicgraphics.ca

G. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
1. Finish areas designated by Architect.
2. Do not proceed with remaining work until workmanship is approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.
4. Mock-up area may become part of finished work.
5. Mock-up area may not become part of finished work.

1.5 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.

B. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Store products protected from weather, temperature, and other harmful conditions as recommended by supplier. Conditions including but not limited to:
1. 40 degrees F to 90 degrees F (4 degrees C to 32 degrees C) maximum temperature.
2. Out of sunlight.
3. Clean dry area.
4. Original container.
5. Do not stack boxes over six (6) units high. Excessive weight can damage the film
6. Relative humidity below 80 percent.
7. Handle products in accordance with manufacturer's instructions.
8. Total Pre-installation Shelf Life: Apply within 2 years of date of purchase.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
1. Acceptable Temperature Range: 54 degrees F to 100 degrees F (12 degrees C to 38 degrees C).

B. Environmental Limitations: Do not install until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

A. Manufacturer's Standard Limited Warranty: For materials and workmanship.

1.10 EXTRA MATERIALS

A. Extra Materials: Furnish 2 percent extra materials in accordance with procedures established in pre-installation conference. Deliver in protective packaging for storage and label contents appropriately.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: 3M Commercial Solutions, which is located at: 3M Canada, 300 Tartan Drive | London, ON N5V 4M9 | Canadan Phone:1-226-828-8409 Email: cfulton@mmm.com

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 ARCHITECTURAL FINISH FILMS

A. Wood Bulkheads - 3M Di-Noc – Architectural Digital Print -3M Digital Print PW-2305MT.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine substrate(s) for compliance with requirements for non-porous, smooth surface and other conditions affecting the performance of work in this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

C. Responsibility for state of surfaces prior to installation to be pre-determined by installation specialist.

D. Proceeding with installation implies installer's acceptance of substrate and conditions.

3.2 SURFACE PREPARATION

A. Comply with manufacturers' instructions for surface preparation. Consider these factors in determining the suitability of the Product:
   1. Substrate texture affects Product adhesion and application ease.
      a. Unless the substrate is very smooth, its texture may be visible through product.
      b. Compounds used to smooth a textured substrate permanently change that substrate.
      c. Product removal may damage the substrate or its finish.
   2. Application surface conditions affect product adhesion.
      a. Ensure that the existing paint, surface finish, or wall covering has excellent bond to the substrate area where product will be applied.
      b. Repair, prime and paint the substrate, as needed.
      c. An adhesion promoter may be required to increase product adhesion.
   3. Human and environmental conditions affect product.
      a. Temperature and humidity in recommended range.
      b. Direct UV light (sunlight).
      c. Heating or cooling ducts in close proximity.
      d. Unsealed substrates in front of water sources.
      e. People or equipment that will be in contact with the product.
   4. The product contains a splice. The location of the splice is marked with a tab along the edge of the product. The installer will need to determine the impact of the splice and work around it to make the best use of the material layout.

B. Test and prepare application surfaces per instructions in the 3M Installation Guide.
   1. Use the 3M Wall Adhesion Test to determine the compatibility of the application surface with the Product.
   2. Use the 3M Enhanced Cleaning Method to ensure that the application surface is ready to receive and hold the product.

C. Repair damaged application surfaces per instructions in the 3M Installation Guide

D. Re-clean application surfaces with a lint-free cloth and 70/30 IPA cleaning solution, or use the 3M Enhanced Cleaning Method in the 3M Installation Guide.

3.3 APPLICATION

A. Refer to the 3M Installation Guide for specific application instructions.

B. Application must be performed by a qualified installer. Refer to 3M.com/AMD for a list of 3M-endorsed installers.

C. Do not proceed with installation until all finishing work has been completed in and around the work area.

D. Measure the application surface and cut film to size with a minimum 1/2 in. extra on all sides for trimming.

E. Install on application surfaces with no gaps, wire seams, or overlaps. Form smooth, wrinkle-free, bubble-free surface for finished installation.

F. No exposed joints on corners or other "open" type joints permitted.

G. Verify pattern prior to material acquisition as some part numbers do not allow three-dimensional forming.

H. Comply with manufacturer's installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

I. Apply 3M materials over properly prepared substrates.

J. Remove air bubbles, wrinkles, and blisters. Use approved procedures to prevent the formation of air bubbles, wrinkles, blisters and other defects.

3.4 SCHEDULE

A. See the architectural drawings.

B. Shop Drawing Reference: In addition to original A/E elevations, the installation specialist may be asked to provide elevation views of installation surfaces to confirm design intent upon request.

3.5 CLEANING AND PROTECTION

A. Use cleaning methods recommended by architectural surfacing manufacturer for applicable environment.

B. Protect completed graphic film during remainder of construction period.

C. Consult with authorized installation specialist for project specifics.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Material and installation of site applied paint finishes to new interior surfaces, including site painting of shop primed surfaces.

1.2 REFERENCES

.1 CAN/CGSB-85.100-93: Painting

.2 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.3 Ontario Painting Contractors Association (OPCA): Architectural Painting Specification Manual.

1.3 QUALITY ASSURANCE

.1 Qualifications:
.1 Contractor: minimum of five (5) years proven satisfactory experience. Provide list of last three (3) comparable jobs including, job name and location, specifying authority, and project manager.
.2 Manufacturer: use only paint manufacturers and products listed in the OPCA Architectural Painting Specification Manual - Paint Product Recommendation section.

1.4 SUSTAINABLE DESIGN REQUIREMENTS

.1 Use ECOLOGO paints and coatings with volatile organic compound (VOC) contents less than 150 g/L for non-flat sheen coatings and 50 g/L for flat sheen coatings.

1.5 SCHEDULING

.1 Submit work schedule for various stages of painting to Consultant for review. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant for changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Samples:
.1 Submit full range colour sample chips to indicate where colour availability is restricted.
.2 Submit duplicate 200 x 300 mm sample panels of each paint, stain, clear coating special finish with specified paint or coating in colours, gloss/sheen and texture.

.3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

.4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.5 Manufacturer's Instructions:
.1 Submit manufacturer's installation and application instructions.

.6 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.7 MAINTENANCE

.1 Extra Materials:
.1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
.2 Quantity: provide one (1), four (4) litre can of each type and colour of primer stain finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
.3 Delivery, storage and protection: comply with Consultant and Owners requirements for delivery and storage of extra materials.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Pack, ship, handle and unload materials in accordance with Section 01 61 00 and manufacturer's written instructions.

.2 Acceptance at Site:
.1 Identify products and materials with labels indicating:
.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 Storage and Protection:
.1 Provide and maintain dry, temperature controlled, secure storage.
.2 Store materials and supplies away from heat generating devices.
.3 Store materials and equipment in well ventilated area with temperature range 7° C to 30° C.

.5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.

.7 Remove paint materials from storage only in quantities required for same day use.

.8 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 National Fire Code of Canada requirements.

.9 Waste Management and Disposal:
- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 11 - Cleaning and Waste Management.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Unused paint and coating materials must be disposed of at official hazardous material collections site.

.10 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
- .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
- .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
- .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
- .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
- .5 Empty paint cans are to be dry prior to disposal or recycling (where available).

1.9 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:
- .1 Ventilate enclosed spaces in accordance with Section 01 50 00.
- .2 Provide heating facilities 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 Provide continuous ventilation for seven days after completion of application of paint.
- .4 Coordinate use of existing ventilation system with Owner 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 Provide minimum lighting level of 323 Lux on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:
- .1 Unless pre-approved written approval by product manufacturer, perform no painting when:
  - .1 Ambient air and substrate temperatures are below 10° C.
  - .2 Substrate temperature is above 32° C unless paint is specifically formulated for application at high temperatures.
  - .3 The relative humidity is under 85% or when the dew point is more than 3° C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3° C below the ambient or surface temperature.
  - .4 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
  - .5 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
- .2 Perform painting work when maximum moisture content of the substrate is below:
  - .1 Allow new concrete and masonry to cure minimum of 28 days.
  - .2 15% for wood.

.3 12% for plaster and gypsum board.
.4 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
.5 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:
.1 Apply paint finish 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 to adequately prepared surfaces and to surfaces within moisture limits.
.3 Apply paint when previous coat of paint is dry or adequately cured.

.4 Additional interior application requirements:
.1 Apply paint finishes 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 WARRANTY

.1 At no cost to Owner, remedy any defects in the work of this Section due to faulty materials and/or workmanship appearing within two (2) years of Substantial Performance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 Where OPCA code numbers are not referenced, use Products from one of the following manufacturers:
.1 Benjamin Moore & Co. Ltd.
.2 ICI (Glidden Paints)
.3 Sherwin-Williams Company
.4 SICO Coatings.
.5 Ralph Lauren
.6 Pratt & Lambert Inc.

2.2 MATERIALS

.1 Materials shall be "top line quality" products and shall be supplied by a single manufacturer except for specialty products not available from paint manufacturer.
.2 Paints shall be factory mixed unless otherwise specified, except any coating in paste or powder form, or to be field-catalysed, shall be field-mixed in accordance with manufacturer’s directions.
.3 Primers shall be as specified by manufacturer and fully compatible with finish coats.
.4 Stains shall be of the rapid dry, alkyd base type or pigment oil type.
.5 Varnishes shall be synthetic type.
.6 Shellac shall be pure white gum in pure grain alcohol.
.7 Thinners, cleaners: as manufactured by paint manufacturer.

2.3 FINISHES

.1 A variety of colours may be used. Consultant may select different colours for different

elements such as door frames, doors, glazed steel screen, window frames ductwork, bulkheads, exposed decks, slabs and structural steel. Include for up to 8 interior colours, and Of these colours, up to 80% to 90% may be deep tones.In each room or area, there will be a field colour on three walls, and an accent colour on the fourth wall. In some instances, there will be two (2) accent walls of two (2) different colours. In addition to the above, there will be additional elements and surfaces and/or wall planes as noted, which will require different paint colours to be applied.

.2 Confirm gloss levels for all surfaces with Consultant before starting work. Unless otherwise indicated, allow for semi-gloss finish.

.3 Paint exposed piping, ductwork and conduits to match walls.

.4 All visible surfaces in interior spaces and/or rooms shall be painted unless specifically indicated otherwise.

.5 Prefinished manufactured specialties pre painted in factory as selected by the Consultant shall not be painted unless specifically indicated otherwise.

2.4 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.4 Thin paint for spraying in accordance with paint manufacturer's instructions.

.5 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.

PART 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

1 Perform preparation and operations for interior painting in accordance with OPCA Architectural Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

.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 properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". 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 %.

3.4 PREPARATION

.1 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 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 building occupants and general public in and about the building.

.2 Surface Preparation:
.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
.3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant

.3 Clean and prepare surfaces in accordance with OPCA Painting Specification Manual requirements. Refer to OPCA Manual in regard to specific requirements and as follows:
.1 Remove dust, dirt, and other surface debris by vacuuming, and wiping with dry, clean cloths.
.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.

.4 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.

.5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
.1 Apply vinyl sealer 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.

.6 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.

.7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with OPCA requirements. Remove traces of blast products from and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air or vacuum cleaning.

.8 Touch up of shop primers with primer as specified.

.9 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 uniform layer using brush and/or roller type 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 free of roller tracking and heavy stipple.
- .5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application (where approved by Consultant):
- .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
- .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
- .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
- .4 Brush out immediately all runs and sags.
- .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 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.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

.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.

.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.

3.7 PRIMING AND BACKPRIMING

.1 Verify, by review of other Sections of the Specifications, the extent of surfaces primed by other Sections. Priming of unprimed surfaces shall be provided by thisSection.

.2 Backprime exterior and interior woodwork, fitments and similar wood installations as soon as it is delivered and before it is installed. Use exterior primer compatible to finish coat for exterior surfaces, and enamel undercoater for interior surfaces to receivepaint or enamel finishes. Prevent primer from running over faces.

.3 Backprime wood receiving clear finishes with gloss varnish reduced 25% by mineral spirits.

.4 Prime tops and bottoms of clear finished doors with gloss varnish. When doors are stained, apply varnish after staining.

.5 Remove doors to prime and finish.

.6 Prime alkaline surfaces with alkali resistant primer.

.7 Brush out and force primers into grain of wood, and into crevices, cracks and joints in all materials.

.8 Sand grind and fill existing wood, metal or drywall surfaces to create a smooth constant finish. Wood surfaces in particular must be filled to remove existing scratches, holes and gouges.

3.8 STAINING

.1 Pad filler well into pores of open-grained wood with a circular rubbing motion. Clean surplus off by rubbing across the grain before filler dries.

.2 Tint filler to match wood.

.3 Stain wood to obtain a uniformity of colour over entire stained surfaces. Adjust stain colours as necessary to obtain the same colour over variations between wood pieces. The stain colour on all pieces, shall match.

3.9 LIGHT AND DARK STAIN FINISH

.1 Stain wood to obtain a uniformity of colour over entire wood surfaces as demonstrated to Consultant for his approval. Ensure that colour variations between laminations of members, finger jointed pieces, and veneered pieces are matched to the darkest component of the installation.

3.10 FINISH SCHEDULE

.1 FORMULA

.1 The finish called for is eggshell, semi gloss or gloss may be ordered for specific applications at no additional charge. On drywall eggshell shall be mixed with flat to provide low sheen to hide imperfections to Consultant's approval or method agreed between Consultant and material manufacturer's representative.

.2 INTERIOR WORK

| | |
|---|---|
| Drywall | 1 Coat alkyd primer. Apply alkyd primer to walls to<br>2 Coats alkyd paint (where paint noted). Prime all walls whether paint scheduled at this time or not |
| Concrete Block | 1 Coat block filler. Apply at maximum coverage of 80 sq.ft. per gallon.<br>2 Coats alkyd paint. |
| Cast in Place Concrete | 1 Coat alkali resistant primer<br>2 Coats alkyd paint |
| Woodwork (Opaque Finish) | 1 Coat wood primer<br>2 Coats alkyd trim enamel |
| Woodwork (Stain Finish) | 2 Coat varnish<br>2 Coats stain |
| Acoustic Ceiling Ties | 1 Coat primer<br>2 Coats latex matt finish |

| | |
|---|---|
| Ferrous Metal | 1 Coat metal primer<br>2 Coats enamel |
| Shop Primed Ferrous Metal | Touch Up prime coat where damaged<br>2 Coats enamel |
| Galvanized Metal | 1 Coat zinc rich primer to touch up galvanizing only.<br>1 Coat galvanized iron primer<br>2 Coats enamel |
| Insulation on Pipes & Ducts | 1 Coat block filler at minimum rate of 80 sq.ft. per gal.<br>2 Coats enamel |
| Mechanical Equipment | 1 Coat alkyd enamel undercoat<br>2 Coats enamel, gloss |
| Piping, Conduit & Ductwork (uncoated) | 1 Coat metal primer<br>2 Coats enamel, gloss |
| Surfaces behind grilles, within l2" of grille | 2 Coats vinyl latex matt black |

NOTE: Use heat resistant paint where required.
Refer to appendix for colours.

3.11 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashing on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

3.12 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning and Waste Management, supplemented as follows:
- .1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- .2 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.
- .3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.
- .4 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as other cleaning and protective materials (e.g. rags, drop cloths,

and masking papers), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction and as noted herein.

.5 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations to be recycled or disposed of in manner acceptable to authorities having jurisdiction.

.6 Recycle paint and coatings in excess of repainting requirements as specified.

END OF SECTION

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Frameless glazed interior wall and door assemblies.

### 1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

### 1.03 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2012.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2013.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.

E. ASTM C1036 - Standard Specification for Flat Glass; 2011e1.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-installation Meeting: Convene at project site seven calendar days prior to scheduled beginning of construction activities of this section to review section requirements.
   1. Require attendance by representatives of installer, other entities directly affecting, or affected by, construction activities of this section.
   2. Notify Architect four calendar days in advance of scheduled meeting date.

### 1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each component in partition assembly.

C. Shop Drawings: Drawings showing layout, dimensions, identification of components, and interface with adjacent construction.
   1. Include field measurements of openings.
   2. Include Elevations Showing:
      a. Locations and identification of manufacturer-supplied door hardware and fittings.
      b. Locations and sizes of cut-outs and drilled holes for other door hardware.
   3. Include Details Showing:
      a. Requirements for support and bracing of overhead track.
      b. Installation details.
      c. Appearance of manufacturer-supplied door hardware and fittings.
      d. Integrated strip light (see electrical) General Contractor to coordinate installation.

D. Selection Samples: Two sets, representing manufacturer's full range of available metal materials and finishes.

E. Verification Samples: Two samples, minimum size 2 by 3 inches (50 by 75 mm), representing actual material and finish of exposed metal.

F. Design Data: Design calculations, bearing seal and signature of structural engineer licensed to practice in Ontario, showing loads at points of attachment to the building structure. Engineer is to include glazing and holes cut into the glass.

G. Certificates: Contractor to certify that installer of partition assemblies meets specified qualifications.

H. Operation and Maintenance Data: For manufacturer-supplied operating hardware.

I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

J. Specimen Warranty.

K. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

### 1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum three years of experience designing, assembling, and installing partition assemblies similar to those specified in this section.

### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until installation.

### 1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a one year period after date of Substantial Completion.

C. Provide five year manufacturer warranty against excessive degradation of metal finishes. Include provision for replacement of units with excessive fading, chalking, or flaking.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Spanlite Edge-lit glass, 105mm high, 12mm low iron glass solution edge lit from the top glazing shoe. Include Standard Cover trim and end cap finished in satin anodized aluminum. Manufacturer machined for drawing wiring from the bottom of the extrusion. GC to coordinate installation of electrical with electrical contractor. See electrical drawings. Contact Mike Otter (647 517 2450) See appendix.

2. Substitutions: See Section 01 25 00 - Product Requirements.

### 2.02 FRAMELESS GLAZED INTERIOR WALL

A. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels fastened with low profile sidelite aluminum rail fittings on top and bottom edge of glass wall. System is to be engineered by glazing installer.

1. Configuration: As indicated on drawings.
2. Full Length Top Sidelite Rails: as per above.
3. Full Length Bottom Sidelite Rails: as per above.
4. Glass Thickness: 1/2 inch (12.7 mm), tempered, See Material Schedule.
5. Engineered to withstand normal operation without damage, racking, sagging, or deflection.
6. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
7. Glazing rail covered with manufacturer trim cover and end caps: as per above.
8. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.
9. Glazing manufacturer to provide engineered shop drawings for the assembly

### 2.03 MATERIALS

A. Glass: Flat glass meeting requirements of ASTM C1036, Tempered in accordance with ASTM C1048, Kind FT, and as follows:

- 12MM PILKINGTON TOUGHENED OPTIWHITE GLASS – SYSTEM IS TO BE ENGINERED.

B. Aluminum Components: Conforming to ASTM B221 (ASTM B221M), Alloy 6063, T5 Temper.

C. Sealant: One-part silicone sealant, conforming to ASTM C920, clear.

### 2.05 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that track supports are properly braced, level within 1/4 inch (6 mm) of required position and parallel to the floor surface.

C. Verify floor flatness of 1/8 inch in 10 feet (3 mm in 3 m), non-cumulative.

D. Do not begin installation until supports and adjacent substrates have been properly prepared.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

F. Coordinate with electrical trade for installation of LED's. System is to include White LED light in top and bottom shoe. Driver is to be installed in remote location in the ceiling.

### 3.02 PREPARATION

A. Clean substrates thoroughly prior to installation.

B. Prepare substrates using the methods recommended by the manufacturer for achieving acceptable result for the substrate under the project conditions.

### 3.03 INSTALLATION

A. Install in accordance with glazed interior wall and door assembly manufacturer's instructions.

B. Fit and align glazed interior wall and door assembly level and plumb.

### 3.04 ADJUSTING

A. Adjust glazed interior wall and door assembly to operate smoothly from sliding or pivoting positions.

B. Adjust swing door hardware for smooth operation.

### 3.05 CLEANING

A. Clean installed work to like-new condition.

B. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

### 3.06 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. Demonstrate operation of glazed interior wall and door assembly and identify potential operational problems.

### 3.07 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before date of Substantial Completion.

**END OF SECTION**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specifications Section, apply to this Section.

1.2 DESCRIPTION

.1 This Section specifies furnishing and installing Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles where indicated. Not recommended for asphalt applications.

1.3 SUBMITTALS

.1 Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.

.2 Samples for Verification Purposes: Submit two (2) tile samples minimum 6"x6" of the kind proposed for use.

.3 Shop drawings are required for products specified showing fabrication details, tile surface profile, sound on cane contact amplification feature, plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.

.4 Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratories to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications. All tests shall be conducted on a Stainless Steel Cast In Place Detectable/Tactile Warning Surface Tile system as certified by a qualified independent testing laboratory and be current within a 24 month period.

.5 Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory as required.

1.4 QUALITY ASSURANCE

.1 Provide Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles and accessories as produced by a single manufacturer with a minimum of three (3) years experience in the manufacturing of Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles.

.2 Installer's Qualifications: Engage an experienced Installer certified in writing by Stainless Steel Cast In Place Detectable/Tactile Warning Surface Tile manufacturer as qualified for installation, who has successfully completed installations similar in material, design, and extent to that indicated for Project.

.3 Americans with Disabilities Act (ADA): Provide Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES).

.4 California Code of Regulations (CCR): Provide only approved DSAAC detectable warning products as provided in the California Code of Regulations (CCR) Title 24, Part 2, Section 205 definition of "Detectable Warning". Section 1117A.4 and 1127B.5 for "Curb Ramps" and Section 1133B.8.5 for "Detectable Warnings at Hazardous Vehicular Areas".

.5 Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles shall have an integral non-slip surface stamped into the stainless steel plate on the top of the domes and in the field area between the domes. It shall have an ultra violet stabilized coating. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2" height, 0.9" base diameter, and 0.45" top diameter, spaced center-to-center 2.4" as measured on a diagonal and 1.7" as measured side by side. For wheelchair and high heel shoe safety the field area shall consist of an integral non-slip surface (within the stainless steel plate) that measure 0.03" above the adjacent surface; "Advantage Tactile Systems" as manufactured by Advantage Tactile Systems Inc., Tel: 800-679-4022, or approved equal.

.1 Dimensions: Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:

Length and Width: 12x12 nominal

.2 Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.

.3 Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - saturated calcium chloride, red enamel spray paint, red lipstick, red wax crayon, black liquid ink, chewing gum, mustard, ketchup, urine, coffee, asphalt, tobacco juice, hydraulic oil and used motor oil.

.4 Abrasive Wear of Tile when tested by BYK – Gardener Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.04" after 1,000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.

.5 Abrasive Wear of Tile when tested by Taber Tester ASTM C 501-84 and US Specifications SS-T-308b with H22 coarse Calibrade Wheels with each testing coupon weighed to the nearest 0.01 gram. Average wear index shall be a minimum of 480 after 1,000 abrasion cycles with ASTM C 501-84 parameters and 210 with SS-T-308b parameters when measured on the top surface of the dome representing the average of four sample measurements.

.6 Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. lbf/in. A failure is noted when a crack is visible in coating or a 3mm depression on domes for coated tile.

.7 Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3,000 hours shall exhibit the following result – $\Delta E < 2.6$, as well as no deterioration, fading or chalking of surface of federal yellow color tile (Federal No. 33538).

.8 Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 100 hours of exposure.

.9 Tensile Strength of Concrete Repair and Overlay Materials by Direct Pull-off Method ASTM C 153-04 tensile bond strength shall not be less than 160 psi.

.10 Determining the Adhesion of Lamination Films to Prints Utilizing Mechanical Stress by Four (4) Different Test Methods -Score/Tape, Cross Hatch, X-Cut, and Crease Folding by ASTM F 2296-04 not to show any failure of coating delaminating from metal panel.

.11 Crazing resistance by thermal shock with breaches in coating by ASTM C 554-93 no failure up to 450°F.

.12 AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Cast In Place Tile shall be mounted on a concrete platform then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8,000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy plastic wrappings to protect tile from concrete residue during installation and tile type shall be identified by part number.

.2 Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles shall be delivered to location at building site for storage prior to installation.

1.6 SITE CONDITIONS

.1 Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

.2 The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the general public. Provide barricades or screens to protect the general public.

1.7 GUARANTEE

.1 Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of five (5) years (minimum) from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

PART 2 PRODUCTS

2.1 MANUFACTURERS

.1 The Stainless Steel Cast In Place Detectable/Tactile Warning Surface Tile specified is based on Advantage Tactile Systems manufactured by Advantage Tactile Systems Inc. (800-679-4022). Existing engineered and field tested products, which have been in successful service for a period of three (3) years are subject to compliance with requirements, may be incorporated in the work and shall meet or exceed the specified test criteria and characteristics.

2.2 MATERIALS

.1 Fasteners: Stainless steel, corrosion resistant, flat head drive anchor: ¼” diameter x 1 ½” long as supplied by Advantage Tactile Systems, Inc.

.2 Adhesive: Armor-Bond as supplied by Advantage Tactile Systems, Inc.

.3 Sealant: Armor-Seal as supplied by Advantage Tactile Systems, Inc.

PART 3 EXECUTION

3.1 INSTALLATION

.1 During all surface preparation and Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

.2 The application of all tiles, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers. Not recommended for asphalt applications.

.3 Coordinate with the Contractor or Engineer to ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Engineer.

.4 Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked / traced on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.

.5 Using a continuous rim diamond blade [for concrete] mounted on a grinder, carefully cut vertically into the concrete following the outline of the tile to a depth of approximately 1/8” to 3/16” depth around the perimeter. This process reduces the risk of broken edges along the exposed finished concrete surface. DO NOT OVERCUT THE CORNERS.

.6 Using a continuous rim diamond blade in a circular saw or hand grinder cut vertically into the concrete to

create a groove 1/4" wide and 3/4" deep inside the traced tile perimeter to accept the return flanges at the perimeter of the tile.

.7 Dry fit the tile to ensure the tile sits properly in the grooved area. If necessary using the procedure in "F" ensure the edges of the tile fit flush with the adjacent concrete surfaces.

.8 The concrete surface to receive the Stainless Steel Surface Applied Detectable/Tactile Warning Surface Tile is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include the entire area to receive the tile. The concrete and tile should then be cleaned with a debris-free rag soaked in Acetone.

.9 Use Armor-Bond adhesive on the backside of the tile. Place a bead of Armor-Bond on the underside around the perimeter of the tile and between domes along the longest dimension of the tile. The contents of 2 tubes minimum should be used for every 2'x4' or larger tile. Place tile on prepared surface.

.10 With the tile in place, stand on the tile, and using a 1/4" drill bit, drill through the tile into the substrate to a depth of 3". Remove the tile and vacuum or blow the dust from the holes. While standing on the tile carefully install the stainless steel fasteners. DO NOT OVERTIGHTEN THE FASTENERS.

.11 Following the installation of the fasteners, the concrete dust should be vacuumed, brushed or blown away from the tile's surface and adjacent concrete. Using Acetone on a rag, wipe the concrete around the tile's perimeter to ensure a clean, dry surface to receive perimeter sealant.

.12 Armor-Seal perimeter caulking sealant should be applied following the sealant manufacturer's recommendations. Tape all perimeter edges of the tile back 1/16" from the tile's perimeter edge and tape the adjacent concrete back 1/2" from the tile's perimeter edge to maintain a straight and even caulking line. Apply sealant around tile perimeter using care to work sealant into any void between the tile and concrete interface. Tool the perimeter caulking with a rounded plastic applicator or spatula to create a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.

.13 Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking. Curing time is weather dependant (average cure time at 75° F is 30 minutes). Adhesive or caulking on the surface of the Advantage Tile can be removed with Acetone.

## 3.2 CLEANING, PROTECTING AND MAINTENANCE

.1 Protect tiles against damage during construction period to comply with Tactile Tile manufacturer's specification.

.2 Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.

.3 Clean Tactile Tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean Tactile Tile by method specified by Tactile Tile manufacturer.

.4 Comply with manufacturers maintenance manual for cleaning and maintaining tile surface and it is recommended to perform annual inspections for safety and tile integrity.

END OF SECTION