

***COLLEGE FRANCAIS CONSEIL  
SCOLAIRE VIAMONDE***

100 Carlton Street  
Toronto, ON

Project Number: 23-003

**SPECIFICATIONS**

Lebel & Bouliane  
February 2026

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**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY OF WORK**

- .1 Work of this Contract comprises the following:
  - .1 Interior renovation at existing College Francais Conseil Scolaire Viamonde.
  - .2 Municipal Address: 100 Carlton Street, Toronto, Ontario.
- .2 Owner will supply Contractor with a complete set of Contract Documents in electronic form before commencement of the Work. Contractor may print hard copies for construction purposes as required.
- .3 Division of the Work among Subcontractors and Suppliers is solely Contractor's responsibility. Consultant and Owner assume no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of the Work.
- .4 These specifications are written in the imperative mood and in streamlined form. The imperative language is directed to Contractor, unless stated otherwise.
- .5 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.
- .6 Specifications, Schedules and Drawings are complementary and items mentioned or indicated on one may not be mentioned or indicated on the others.
- .7 Mention in the specifications or indication on the drawings of materials, Products, operations, or methods, requires that the Contractor Provide each item mentioned or indicated of the quality or subject to the qualifications noted; perform according to the conditions stated each operation prescribed; and provide labour, materials, Products, equipment and services to complete the Work.
- .8 Where the singular or masculine is used in the Contract Documents, it shall be read and construed as if the plural, feminine or neutral had been used when the context or the statement so requires and as required to complete the Work, and the rest of the sentence, clause, paragraph, or Article shall be construed as if all changes in grammar, gender or terminology thereby rendered necessary had been made.

### **1.02 ALLOWANCES**

- .1 Refer to Owner's Request for Quotations for a listing of Cash Allowances including the values.

- .2 Supply Only allowances:
  - .1 Amount of each cash allowance includes Cost of Products as invoiced by the Supplier, including delivery and applicable taxes but excluding Value Added Taxes.
  - .2 Amount of each cash allowance does not include costs of the following items, which costs shall be included in the Contract Price and not in the cash allowance:
    - .1 Unloading, handling and storage on site.
    - .2 Installation and all other related costs.
    - .3 Overheads and profits related to the cash allowance.
- .3 Supply and Installation allowances:
  - .1 Amount of each cash allowance includes:
    - .1 All costs to provide the specified Products, including supply, installation, and related costs, excluding Value Added Taxes.
    - .2 Subcontractor's and sub-Subcontractor's overheads and profits related to the cash allowance.
  - .2 Amount of each cash allowance does not include Contractor's overhead and profit, and other related costs, which shall be included in the Contract Price and not in the cash allowance.
- .4 Services:
  - .1 Amount of each cash allowance includes:
    - .1 All costs related to the services, excluding Value Added Taxes.
    - .2 Subcontractor's and sub-Subcontractor's overheads and profits related to the cash allowance.
  - .2 Amount of each cash allowance does not include Contractor's overhead and profit, and other related costs, which shall be included in the Contract Price and not in the cash allowance.

### 1.03 SUBSTITUTION PROCEDURES

- .1 Contractor may propose a Substitution wherever a Product or manufacturer is specified by proprietary name(s) and accompanied by language such as "or equal", "or approved equal", or other similar words. Do not construe such language as an invitation to unilaterally provide a Substitution without Consultant's prior acceptance in writing. Do not order or install any Substitution without a Supplemental Instruction or Change Order.
- .2 Consultant may accept a Substitution if satisfied that:
  - .1 the proposed substitute Product is the same type as, is capable of performing the same functions as, interfaces with adjacent work the same as, and meets or exceeds the standard of quality, performance and, if applicable, appearance and maintenance considerations, of the specified Product,

- .2 the proposed substitute manufacturer has capabilities comparable to the specified manufacturer, and
- .3 the Substitution provides a benefit to Owner.

#### 1.04 CONTRACT MODIFICATION PROCEDURES

- .1 Change Order:
  - .1 Unless otherwise agreed, the adjustment of the Contract Price on account of a proposed change in the Work shall be based on a quotation for a fixed price increase or decrease to the Contract Price regardless of the Contractor's actual expenditures and savings.
  - .2 Upon issuance by the Consultant to the Contractor of a proposed change in the Work, submit to the Consultant a fixed price quotation for the proposed change in the Work within 5 days after receipt of the proposed change in the Work.
- .2 Change Directives:
  - .1 Unless the Owner and the Contractor reach an earlier agreement on the adjustment to the Contract Price by means of a Change Order that cancels the Change Directive, the adjustment in the Contract Price for change carried out by way of a Change Directive shall be determined as specified in the General Conditions of Contract after the change in the Work is completed.
  - .2 If a Change Directive is issued for a change in the Work for which a proposed change was previously issued, but no Change Order has yet been signed, the Change Directive shall cancel the proposed change and any Contractor quotations related to that change in the Work.
  - .3 When proceeding with a change in the Work under a Change Directive, keep accurate records of daily time sheets for labour and Construction Equipment, and invoices for Product and Construction Equipment costs. Submit such records to the Consultant weekly, until the Change Order superseding the Change Directive is issued.
- .3 Supplemental Instructions:
  - .1 The Consultant may issue Supplemental Instructions to provide clarifications to the Contract Documents, provide additional information, or make minor variations in the Work not involving adjustment in the Contract Price or Contract Time.
  - .2 If the Contractor considers a Supplemental Instruction to require an adjustment in Contract Price or Contract Time, the Contractor shall promptly notify the Consultant and the Owner in writing and shall not proceed with any work related to the Supplemental Instruction pending receipt of a Change Order, a Change Directive, or, in accordance with the dispute resolution provisions of the General Conditions of Contract, a Notice in Writing of a dispute and instructions to proceed.

### 1.05 PROJECT MEETINGS

- .1 Construction Start-Up Meeting: Promptly after Contract award, Consultant will establish the time and location of a construction start-up meeting to review and discuss administrative procedures and responsibilities. Consultant will notify Contractor at least 5 Working Days before the meeting.
- .2 Construction Progress Meeting:
  - .1 Schedule regular bi weekly construction progress meetings for the duration of the Work. Contractor shall prepare meeting agendas, chair the meetings, and record and distribute the minutes.
  - .2 Arrange for and provide physical space for meetings.
  - .3 Contractor shall record and distribute the meeting minutes covering significant decisions and identifying action items and action dates by attendees or the parties they represent.

### 1.06 CONSTRUCTION PROGRESS DOCUMENTATION

- .1 Construction Progress Schedule:
    - .1 Submit schedule to Owner and Consultant within 10 Working Days after Contract award in form of a Critical Path Method (CPM) Gantt chart. Update and resubmit schedule bi-weekly indicating actual and projected start and finish dates with report date line and progress.
    - .2 Provide a work breakdown structure identifying key activities, work packages, and major milestones, including long delivery Products, inspection and testing activities, preparation and review of mock-ups, Owner decisions for cash allowances, shutdown or closure activities, and similar items, at a sufficient level of detail to effectively manage construction progress.
    - .3 Indicate milestone dates for Ready-for-Takeover and Substantial Performance of the Work.
  - .2 Submittals Schedule:
    - .1 Submit initial schedule to Consultant within 15 Working Days after Contract award. Update and resubmit schedule weekly.
    - .2 Prepare schedule identifying all required Shop Drawing, Product data, and sample submissions, including samples required for testing.
    - .3 Prepare schedule in electronic format.
    - .4 Allow time in schedule for resubmission of submittals, should resubmission be necessary.
  - .3 Recording Actual Site Conditions on As-Built Drawings:
    - .1 Obtain from Consultant an electronic copy of the construction Drawings for the purpose of creating as-built drawings. Record information in electronic form, clearly identifying as-built deviations from the originally obtained construction Drawings.
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- .2 Clearly label each drawing as "AS-BUILT DRAWING". Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

#### 1.07 SUBMITTAL PROCEDURES

- .1 Where required by authorities having jurisdiction, provide submittals to such authorities for review and approval.
- .2 Do not proceed with Work affected by a submittal until review is complete.
- .3 Present Shop Drawings, Product data, and samples in SI metric units. Where items or information is not produced in SI Metric units, converted values are acceptable.
- .4 Review submittals, provide verified field measurements where applicable, and affix Contractor's review stamp prior to submission to Consultant. Contractor's review stamp represents that necessary requirements have been determined and verified, and that the submittal has been checked and coordinated with requirements of the Work and Contract Documents.
- .5 Verify field measurements and that affected adjacent work is coordinated.
- .6 Submittals not meeting specified requirements will be returned with comments.
- .7 Product data submittals shall include material safety data sheets (MSDS) for all controlled Products. Where a submittal includes information not applicable to the Work, clearly identify applicable information and strike out non-applicable information.
- .8 Shop drawings shall indicate the following minimum criteria and any additional criteria as required to clearly show required construction:
  - .1 Clear and concise notes of any proposed changes from Contract Documents.
  - .2 Fabrication and erection dimensions.
  - .3 Provisions for allowable construction tolerances and deflections provided for live loading.
  - .4 Details to indicate construction arrangements of components and their connections, and interconnections with other work.
  - .5 Location and type of anchors and exposed fastenings.
  - .6 Materials, physical dimensions including thicknesses, and finishes.
  - .7 Information to verify that superimposed loads will not affect function, appearance, and safety of the work detailed as well as of interconnection work.
  - .8 Assumed design loadings, and dimensions and material specifications for load-bearing members.

- .9 Submit samples as follows:
  - .1 Submit duplicate samples for Consultant's review. Label samples as to origin, Project name, and intended use.
  - .2 Consultant selection from samples is not intended to change the Contract Price or Contract Time. If a selection would affect the Contract Price or Contract Time, notify Consultant in writing prior to proceeding with the Work.
  - .3 Reviewed and accepted samples will establish the standard against which installed Work will be reviewed.
  
- .10 Provide samples in sufficient size and quantity to illustrate:
  - .1 Quality and functional characteristics of Products, with integrally related parts and attachment devices.
  - .2 Full range of colours available.
  - .3 Notify the Consultant in writing, at time of submission, of any deviations in samples from requirements of the Contract Documents, and state the reasons for such deviations.

#### 1.08 QUALITY REQUIREMENTS

- .1 Reference Standards:
    - .1 "Reference standards" means consensus standards, trade association standards, guides, and other publications expressly referenced in Contract Documents.
    - .2 Where an edition or version date is not specified, referenced standards shall be deemed to be the latest edition or revision issued by the publisher at the time of bid closing. However if a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the regulatory referenced edition or version shall apply.
    - .3 Reference standards establish minimum requirements. If Contract Documents call for requirements that differ from a referenced standard, the more stringent requirements shall govern.
  
  - .2 Except as otherwise specified, Owner will retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the Work.
  
  - .3 Retain and pay for inspection and testing that is for Contractor's own quality control or is required by regulatory requirements.
  
  - .4 Employment of inspection and testing agencies by Contractor or Owner does not relieve Contractor from responsibility to perform the Work in accordance with Contract Documents.
  
  - .5 Allow and arrange for inspection and testing agencies to have access to the Work, including access to off site manufacturing and fabrication plants.
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- .6 For inspection and testing required by Contract Documents or by authorities having jurisdiction, provide Consultant and inspection and testing agencies with timely notification in advance of required inspection and testing.
- .7 For inspection and testing required by Contract Documents or by regulatory requirements, and performed by Contractor retained inspection and testing agencies, submit to Consultant [and Owner] copies of reports. Submit within 7 days after completion of inspection and testing.
- .8 Provide labour, Construction Equipment and temporary facilities to obtain and handle test samples on site.
- .9 Mock-Ups:
  - .1 Prepare mock-ups of Work as specified in the technical Specifications. If a mock-up location is not indicated in the Drawings or Specifications, locate where directed by Consultant.
  - .2 Approved mock-ups establish an acceptable standard for the Work.
  - .3 Unless otherwise specified in the technical Specifications, approved mock-ups forming part of the Work may remain as part of the Work.
  - .4 Remove mock-ups only when the Work they represent is complete or when otherwise directed by Consultant.

#### **1.09 TEMPORARY UTILITIES**

- .1 Provide temporary utilities including water, heating, ventilation, electrical power, lighting, sanitary facilities, site office, and other facilities as necessary to perform the Work expeditiously.
- .2 Remove temporary utilities after use.
- .3 Existing Building Heating, Ventilation, Power, and Lighting:
  - .1 Existing building heating, ventilation, power, and lighting may be relied upon and used during construction.
  - .2 Coordinate and make arrangements with the building operator for provision of these services during hours or days when the building is not operational.

#### **1.10 CONSTRUCTION FACILITIES**

- .1 Provide temporary construction facilities as necessary for performance of the Work and in compliance with applicable regulatory requirements.
- .2 Maintain temporary construction facilities in good condition for the duration of the Work.

- .3 Remove temporary construction facilities from Place of the Work when no longer required.
- .4 Limited parking will be permitted at Place of the Work provided it does not disrupt continuing operation of the facility.
- .5 Provide and maintain adequate access to Place of the Work.
- .6 Provide and keep clean sanitary facilities for workers. Do not use permanent washroom facilities during construction.

#### **1.11 TEMPORARY BARRIERS AND ENCLOSURES**

- .1 Provide temporary barriers and enclosures necessary to protect the public and building occupants and to secure Place of the Work during performance of the Work.
- .2 Comply with applicable regulatory requirements.
- .3 Maintain temporary barriers and enclosures in good condition for the duration of the Work.
- .4 Remove temporary barriers and enclosures from Place of the Work when no longer required.
- .5 Erect temporary security and safety site fencing with lockable gates of type and height determined by Contractor, subject to applicable regulatory requirements.
- .6 Provide weather tight enclosures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .7 Erect, maintain, and relocate partitions as required to facilitate construction operations and Owner's operational requirements.
- .8 Maintain fire access routes, including overhead clearances, for use by emergency response vehicles.
- .9 Provide necessary temporary barriers and enclosures to protect [existing and] completed or partially completed finished surfaces from damage during performance of the Work.

#### **1.12 COMMON PRODUCT REQUIREMENTS**

- .1 Provide Products that are not damaged or defective, and suitable for purpose intended, subject to specified requirements. If requested by Consultant, furnish evidence as to type, source and quality of Products provided.

- .2 Unless otherwise specified, maintain uniformity of manufacture for like items throughout.
- .3 Permanent manufacturer's markings, labels, trademarks, and nameplates on Products are not acceptable in prominent locations, except where required by regulatory requirements or for operating instructions, or when located in mechanical or electrical rooms.
- .4 Promptly upon Contract award and periodically during construction, review and confirm Product availability and delivery times. Order Products in sufficient time to meet the construction progress schedule and the Contract Time.
- .5 Store, handle, and protect Products during transportation to Place of the Work and before, during, and after installation in a manner to prevent damage, adulteration, deterioration and soiling.
- .6 Comply with manufacturer's instructions for storage, handling and protection.
- .7 Store packaged or bundled Products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.

### 1.13 EXAMINATION AND PREPARATION

- .1 Existing Utilities and Structures:
  - .1 Before commencing excavation, drilling or other earthwork, establish or confirm location and extent of all existing underground utilities and structures in work area.
  - .2 Promptly notify Consultant if underground utilities, structures, or their locations differ from those indicated in Contract Documents or in available project information. Consultant will provide appropriate direction.
  - .3 Record locations of maintained, re-routed and abandoned utility lines.
- .2 Verification of Existing Conditions:
  - .1 Where work specified in any Section is dependent on the work of another Section or Sections having been properly completed, verify that work is complete and in a condition suitable to receive the subsequent work. Commencement of work of a Section that is dependent on the work of another Section or Sections having been properly completed, means acceptance of the existing conditions.
  - .2 Verify that ambient conditions are suitable before commencing the work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of Products used.
  - .3 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.

- .4 Notify Consultant in writing of unacceptable conditions.

#### 1.14 EXECUTION

- .1 Notify Consultant, in writing, of conflicts between Contract Documents and manufacturer's instructions where, in Contractor's opinion, conformance with Contract Documents instead of the manufacturer's instructions may be detrimental to the Work or may jeopardize the manufacturer's warranty.
- .2 When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with fire-stopping materials, smoke seals, or both, in full thickness of the construction element as required to maintain the integrity of the fire rated assembly.
- .3 Consider location of fixtures, outlets, and devices indicated on Drawings as approximate.
- .4 Adequately protect parts of the Work completed and in progress from any kind of damage.
- .5 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety or integrity of the Work.
- .6 Notify Consultant of, and perform remedial work required to, repair or replace defective or unacceptable work. Ensure that properly qualified workers perform remedial work. Coordinate adjacent affected work as required.

#### 1.15 CUTTING AND PATCHING

- .1 Coordinate and perform the Work to ensure that cutting and patching work is kept to a minimum.
  - .2 Perform cutting, fitting, patching, and remedial work to make the affected parts of the Work come together properly and complete the Work.
  - .3 Provide openings in non structural elements of the Work for penetrations of mechanical and electrical work.
  - .4 Perform cutting by methods to avoid damage to other work
  - .5 Provide proper surfaces to receive patching, remedial work, and finishing.
  - .6 Perform cutting, patching, and remedial work using competent and qualified specialists familiar with the Products affected, in a manner that neither damages nor endangers the Work.
  - .7 Do not use pneumatic or impact tools without Consultant's prior approval.
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- .8 Ensure that cutting, patching, and remedial work does not jeopardize manufacturers' warranties.
- .9 Refinish surfaces to match adjacent finishes. For continuous surfaces refinish to nearest intersection. For an assembly, refinish entire unit.
- .10 Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces with suitable allowance for deflection, expansion, contraction, acoustic isolation, and firestopping.
- .11 Maintain fire ratings of fire rated assemblies where cutting, patching, or remedial work is performed. Completely seal voids or penetrations of assembly with firestopping material to full depth or with suitably rated devices.

#### **1.16 CLEANING AND WASTE MANAGEMENT**

- .1 Comply with applicable regulatory requirements when disposing of waste materials.
- .2 Obtain permits from authorities having jurisdiction and pay disposal fees where required for disposal of waste materials and recyclables.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.
- .4 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .5 Prevent cross-contamination during the cleaning process.
- .6 Notify the Consultant of the need for cleaning caused by Owner or other contractors.
- .7 Maintain the Work in a tidy and safe condition, free from accumulation of waste materials and construction debris.
- .8 Remove waste materials and recyclables from work areas, separate, and deposit in designated containers at end of each Working Day. Collect packaging materials for recycling or reuse.
- .9 Clean interior building areas prior to start of finish work and maintain free of dust and other contaminants during finishing operations.
- .10 Remove from Place of the Work surplus Products, waste materials, recyclables, Temporary Work, and Construction Equipment not required to perform any remaining work.

- .11 Provide professional cleaning by a qualified, established cleaning company.
- .12 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.
- .13 Re-clean as necessary areas that have been accessed by Contractor's workers prior to Owner occupancy.
- .14 Remove stains, spots, marks, and dirt from finished surfaces, electrical and mechanical fixtures, furniture fitments, walls, floors and components of Work.
- .15 Waste Management and Disposal:
  - .1 Dispose of waste materials and recyclables at appropriate municipal landfills and recycling facilities in accordance with applicable regulatory requirements.
  - .2 Do not burn or bury waste materials at Place of the Work.
  - .3 Do not dispose of volatile and other liquid waste such as mineral spirits, oil, paints and other coating materials, paint thinners, cleaners, and similar materials together with dry waste materials or on the ground, in waterways, or in storm or sanitary sewers. Collect such waste materials in appropriate covered containers, promptly remove from Place of the Work, and dispose of at recycling facilities or as otherwise permitted by applicable regulatory requirements.
  - .4 Cover or wet down dry waste materials to prevent blowing dust and debris.

#### 1.17 CLOSEOUT PROCEDURES

- .1 Ready-For-Takeover: The prerequisites to attaining Ready-for-Takeover of the Work are described in the General Conditions of the Contract.
- .2 Contractor's Inspection: Before applying for the Consultant's review to establish Ready-for-Takeover of the Work:
  - .1 Ensure that the specified prerequisites to Ready-for-Takeover of the Work are completed.
  - .2 Conduct an inspection of the Work to identify defective, deficient, or incomplete work.
  - .3 Prepare a comprehensive and detailed list of items to be completed or corrected.
  - .4 Provide an anticipated schedule and costs for items to be completed or corrected.

- .3 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant and the Contractor shall arrange a mutually satisfactory agreed date and time to jointly review the Work. The Consultant will advise the Contractor whether or not the Work is Ready-for-Takeover. Add additional items, if any, to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the revised list.
- .4 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Ready-for-Takeover and no items remain on the Contractor's list of items to be completed or corrected.
- .5 When the Consultant determines that the Work is Ready-for-Takeover, the Consultant will notify the Contractor and the Owner in writing to that effect.
- .6 After Ready-for-Takeover of the Work and before submitting an application for final payment in accordance with the General Conditions of Contract:
  - .1 Correct or complete all remaining defective, deficient, and incomplete work.
  - .2 Remove from the Place of the Work all remaining surplus Products, Construction Equipment, and Temporary Work.
  - .3 Perform final cleaning and waste removal necessitated by the Contractor's work performed after Ready-for-Takeover.
- .7 The prerequisites to, and the procedures for, attaining substantial performance of the Work, or similar such milestone as provided for in the lien legislation applicable to the Place of the Work, shall be:
  - .1 independent of those for attaining Ready-for-Takeover of the Work, and
  - .2 in accordance with the lien legislation applicable to the Place of the Work.

#### 1.18 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Manual:
  - .1 Prepare a comprehensive operation and maintenance manual, in the languages of the Contract, using personnel qualified and experienced for this task.
  - .2 Organize data in the form of an instructional manual.
  - .3 Submit an initial draft of the operation and maintenance manual for Consultant's review. If required by Consultant's review comments, revise manual contents and resubmit for Consultant's review. If required, repeat this process until Consultant accepts the draft manual in writing.
  - .4 Submit final version to Owner in electronic format.
- .2 Operation and Maintenance Manual Content:
  - .1 Table of contents for each volume.

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- .2 Introductory information including date of manual submission, complete contact information for Consultant, subconsultants, other consultants, and Contractor, with names of responsible parties and Schedule of Products and systems indexed to content of volume.
  - .3 For each Product or system, include complete contact information for Subcontractors, Suppliers and manufacturers, including local sources for supplies and replacement parts.
  - .4 Product Data: mark each sheet to clearly identify specific products, options, and component parts, and data applicable to installation. Delete or strike out inapplicable information. Supplement with additional information as required.
  - .5 Reviewed Shop Drawings.
  - .6 Permits, certificates, letters of assurance and other relevant documents issued by or required by authorities having jurisdiction.
  - .7 Warranties.
  - .8 Operating and maintenance procedures, incorporating manufacturer's operating and maintenance instructions, in a logical sequence.
  - .9 Each Item of Equipment and Each System: include description of unit or system and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
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- .3 Submit final as-built drawings to Owner and Consultant.
  - .4 Project Record Drawings:
    - .1 Transfer all information marked up on the as-built drawings during the progress of the Work to a master set of record drawing files provided by Consultant, in electronic format.
    - .2 Mark revised drawings as "RECORD DRAWINGS".
    - .3 Submit completed record drawings in electronic form to Owner and Consultant.
  - .5 Spare Parts, Maintenance Materials, and Special Tools:
    - .1 Supply spare parts, maintenance materials, and special tools in quantities specified in technical Specifications sections.
    - .2 Ensure spare parts and maintenance materials are new, not damaged nor defective, and of same quality, manufacturer, and batch or production run as installed Products.
    - .3 Provide tags for special tools identifying their function and associated Product.
    - .4 Deliver to and store items at location directed by Owner at Place of the Work. Store in original packaging with manufacturer's labels intact and in a manner to prevent damage or deterioration.
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- .5 Catalogue all items and submit to Consultant an inventory listing organized by Specifications section. Include Consultant reviewed inventory listing in operation and maintenance manual.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.
- .2 Work may include, but is not limited to;
  - .1 Alterations and renovations to existing building.
  - .2 Patching and making good of all openings and chases in walls, floors, ceilings and including the supply and installation of lintels, channels, supports and finishes as necessary.
  - .3 Removal of all abandoned services such as conduits, pipes, wiring, ducts, fixtures, or equipment as necessary for the Work of this Section.

### **1.02 REFERENCES**

- .1 Ontario Regulation 102/94 - Waste Audits and Waste Reduction Work Plans.

### **1.03 ADMINISTRATIVE REQUIREMENTS**

- .1 Site Meetings: Convene pre-demolition meeting one week prior to beginning work of this Section in accordance with Section 01 00 00 to:
  - .1 Verify project requirements.
  - .2 Review existing conditions adjacent to demolition work.
  - .3 Co-ordinate with other building subtrades.
  - .4 Ensure key personnel attend.
  - .5 Waste management coordinator must provide written report on status of waste diversion activity at each meeting.
- .2 Scheduling: Meet project time lines without compromising specified minimum rates of material diversion. Notify Consultant in writing when unforeseen delays occur.

### **1.04 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by authorities having jurisdiction.

- .3 Waste reduction workplan: Prior to beginning of Work on site, submit detailed Waste Reduction Workplan in accordance with Ontario Regulation 102/94 indicating:
  - .1 Descriptions of and anticipated quantities in percentages of materials to be reused, recycled and landfilled.
  - .2 Schedule of demolition.
  - .3 Number and location of dumpsters.
  - .4 Anticipated frequency of tippage.
  - .5 Name and address of waste facilities.
- .4 Certificates:
  - .1 Submit copies of certified receipts from authorized disposal sites and reuse and recycling facilities for material removed from site upon request of Consultant.
  - .2 Written authorization from Consultant is required to deviate from facilities listed in Waste Reduction Workplan.

#### 1.05 QUALITY ASSURANCE

- .1 Regulatory Requirements: Ensure Work is performed in compliance with CEPA, CEAA, TDGA and applicable Provincial/Territorial and Municipal regulations.

#### 1.06 SITE CONDITIONS

- .1 Environmental Requirements:
  - .1 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
  - .2 Fires and burning of waste or materials is not permitted on site.
  - .3 Do not bury rubbish waste materials.
  - .4 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.
  - .5 Ensure proper disposal procedures are maintained throughout the project.
  - .6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
  - .7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
  - .8 Protect trees, plants and foliage on site and adjacent properties where indicated.
  - .9 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
  - .10 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

- .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 TDGA and other applicable regulatory requirements.

## **2 PRODUCTS**

### **2.01 N/A**

## **3 EXECUTION**

### **3.01 PREPARATION**

- .1 Protection of in-place conditions:
  - .1 Prevent movement, settlement or damage of parts of existing building to remain.
    - .1 Provide bracing as required.
    - .2 Repair damage caused by demolition as directed by Consultant.
  - .2 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.
- .2 Inspect site with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .3 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .4 Notify and obtain approval of utility companies before starting demolition.
- .5 Disconnect and cap mechanical services:
  - .1 Natural gas supply lines: remove in accordance with gas company requirements.
  - .2 Sewer and water lines: remove as indicated on drawings.
  - .3 Do not disrupt active or energized utilities designated to remain undisturbed.
- .6 Perform rodent and vermin removal as required by Consultant.

### **3.02 DEMOLITION**

- .1 Blasting operations are not permitted during demolition.
- .2 Remove contaminated or dangerous materials as 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.

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- .3 Remove contaminated or dangerous materials defined by authorities having jurisdiction, from Site and dispose of at designated disposal facilities in safe manner and in accordance with TDGA and other applicable requirements.
  - .4 Demolish parts of structure to permit renovation work as indicated.
  - .5 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
  - .6 At end of each day's work, leave Work in safe and stable condition.
  - .7 Protect interiors of parts not to be demolished from exterior elements at all times.
  - .8 Demolish to minimize dusting. Keep materials wetted as directed by Consultant.
  - .9 Demolish masonry and concrete walls.
  - .10 Remove structural framing.
  - .11 Contain fibrous materials to minimize release of airborne fibres while being transported within facility.
  - .12 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.
  - .13 Remove doors including door frames and door hardware.
  - .14 Remove interior partitions, fittings, fixtures and accessories as indicated on drawings. Partitions and walls shall be removed full height to structure above.
  - .15 Remove interior finishes including ceiling, wall and floor finishes where new finishes are indicated on drawings:
    - .1 Removal of existing ceilings shall include complete removal including bulkheads and suspension system.
    - .2 Removal of adhesive applied finishes shall include complete removal to substrate including adhesive. Take adequate care to prevent damage to substrate.
    - .3 Removal of existing tile finishes shall include mortar bed, underlayment, base, and transition strips.
    - .4 Removal of damaged area of stage flooring to include plywood sheets and all fasteners.
  - .16 Use natural lighting to do Work where possible. Shut off lighting except those required for security purposes at end of each day.
-

### 3.03 CLEANING

- .1 Waste Management: separate waste materials for reuse and recycling as outlined in Waste Management Plan.
- .2 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .3 Divert excess materials from landfill to site approved by Consultant.
- .4 Designate appropriate security resources/measures to prevent vandalism, damage and theft.
- .5 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. Label stockpiles, indicating material type and quantity.
- .6 Supply separate, clearly marked disposal bins for categories of waste material.
- .7 Remove stockpiled material as directed by Consultant, when it interferes with operations of project construction.
- .8 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete.
- .9 Transport material designated for alternate disposal using approved facilities listed in Waste Reduction Workplan and in accordance with applicable regulations. Written authorization from Consultant is required to deviate from facilities listed in Waste Reduction Workplan.
- .10 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
  - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
  - .2 Written authorization from Consultant is required to deviate from disposal facilities listed in Waste Reduction Workplan.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 REFERENCES**

- .1 ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- .2 ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
- .3 CSA A23.1/A23.2 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

### **1.03 ADMINISTRATIVE REQUIREMENTS**

- .1 Site Meetings: Arrange a pre-installation meeting on Site to be attended by Consultant, Contractor, concrete sealer manufacturer's representative, and any other parties directly affecting work of this Section to:
  - .1 Review division of responsibilities, floor joint layout and mock-up requirements.
  - .2 Examine substrate conditions for compliance with manufacturer's requirements.
  - .3 Review methods and procedures related to installation.
  - .4 Review all typical and special details as required to complete the work of this section.

### **1.04 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for concrete floor sealer including product characteristics, performance criteria, and limitations. Include application instructions for concrete floor treatments.
- .3 Samples: Submit 300 mm x 300 mm samples illustrating colour and finish of concrete floor sealer.

### 1.05 QUALITY ASSURANCE

- .1 Installers: Perform Work of this Section by a company that has a minimum of five (5) years proven experience in the application of concrete floor sealers of a similar size and nature.
- .2 Mock-ups:
  - .1 Construct one (1) mock-up of each type of concrete finish in location as directed by Consultant.
  - .2 Mock-up shall be 300 mm x 300 mm and demonstrate methods, materials, and procedures proposed to achieve concrete finishes using materials indicated for completed work.
  - .3 Mock-up may form part of the Work if accepted by the Consultant.

### 1.06 SITE CONDITIONS

- .1 Electrical power: Provide sufficient electrical power to operate equipment normally used during construction.
- .2 Work area: Make work area water tight protected against rain and detrimental weather conditions.
- .3 Ambient Conditions and relative humidity: Work of this Section shall be performed when air and surface temperatures are above 4 degree C from 7 days before application to minimum 48 hours after completion of work.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 Concrete floor sealer: Clear, high gloss sealer for concrete.
  - .1 Moisture retention: ASTM C309, Type 1.
  - .2 UV light degradation: ASTM C1315, Type 1, Class A.
  - .3 Basis of Design:
    - .1 Florseal WB-25 by Sika.
    - .2 Or approved equal.
- .2 Sealant: Two-part, semi-rigid epoxy joint filler
  - .1 Euco 700 by Euclid Chemical.
  - .2 Reziweld-Flex by W.R. Meadows.
  - .3 or approved equal.

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Verify that slab surfaces are ready to receive work and elevations are as indicated on Shop Drawings and as recommended by manufacturer's written instructions.

#### **3.02 PREPARATION OF EXISTING SLAB**

- .1 Repair any defective joints or spalling and areas around existing drains. Ensure surface is structurally sound and remove any rubber tire marks.
- .2 Use mechanical stripping to remove existing surface coatings.
- .3 Thoroughly rinse area and allow to dry.

#### **3.03 APPLICATION**

- .1 Apply concrete floor sealer in two coats in accordance with manufacturer's written instructions.
- .2 Seal control joints and joints at junction with vertical surfaces with sealant.
- .3 Clean over spray. Clean sealant from adjacent surfaces.

#### **3.04 PROTECTION**

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

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 REFERENCES**

- .1 ASTM D1056 - Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber.
- .2 ASTM D2240 - Standard Test Method for Rubber Property—Durometer Hardness.
- .3 CSA A23.1/A23.2 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .4 CSA A165 Series - CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3).
- .5 CAN/CSA A179 - Mortar and Grout for Unit Masonry.
- .6 CAN/CSA A370 - Connectors for Masonry.
- .7 CAN/CSA A371 - Masonry Construction for Buildings.
- .8 CSA A3000 - Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .9 CSA G30.18 - Carbon Steel Bars for Concrete Reinforcement.
- .10 CSA S304 - Design of Masonry Structures.
- .11 CSA W186-M - Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .12 International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications.

### **1.03 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-installation meetings: Conduct pre-installation meeting prior to commencing work of this Section to:
  - .1 Verify project requirements, including mock-up requirements.
  - .2 Verify substrate conditions.
  - .3 Co-ordinate products, installation methods and techniques.
  - .4 Sequence work of related sections.

- .5 Co-ordinate with other building subtrades.
- .6 Review manufacturer's installation instructions.
- .7 Review masonry cutting operations, methods and tools and determine worker safety and protection from dust during cutting operations.
- .8 Review warranty requirements.

#### 1.04 ACTION SUBMITTALS

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for concrete block unit masonry work including product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Shop Drawings to illustrate details, dimensions, reinforcing, detailing and installation details including patterns (if required) and control joints.
  - .3 Reinforcing drawings shall include bar bending details, anchorage details and placement drawings. On placement drawings, sizes, spacing, location and quantities of reinforcement and connectors shall be indicated.
- .4 Samples: Submit samples including, but not limited to:
  - .1 Four full size samples of each concrete unit.
  - .2 Two full size samples of anchorage and reinforcing.
  - .3 Two 300 mm long samples of each colour of mortar.
  - .4 Two 300 mm long samples of flashing materials.
- .5 Certificates: Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 Reports: Submit the following reports:
  - .1 Test Reports: submit certified test reports, including sand gradation tests in accordance with CAN/CSA A179, showing compliance with specified performance characteristics and physical properties.

#### 1.05 QUALITY ASSURANCE

- .1 Mock-ups:
    - .1 Construct one (1) mock-up of each type of concrete block unit masonry assembly in location as directed by Consultant.
    - .2 Mock-up shall be 1200 mm x 1800 mm and demonstrate use of reinforcing and connections to adjacent construction.
    - .3 Mock-up may form part of the Work if accepted by the Consultant.
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## 1.06 DELIVERY, STORAGE, AND HANDLING

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address:
  - .1 Offload concrete unit masonry packages using equipment that will not damage the surfaces.
  - .2 Do not use brick tongs to move or handle masonry.
- .2 Storage and Handling Requirements:
  - .1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Do not double stack cubes of concrete unit masonry.
  - .3 Cover masonry units with non-staining waterproof membrane covering.
  - .4 Allow air circulation around units.
  - .5 Installation of wet or stained masonry units is prohibited.
  - .6 Replace defective or damaged materials with new.

## 1.07 SITE CONDITIONS

- .1 Weather Requirements: to IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- .2 Cold weather requirements:
  - .1 To CAN/CSA A371 with following requirements:
    - .1 Maintain temperature of mortar between 5 degrees C and 50 degrees C until batch is used or becomes stable.
    - .2 Maintain ambient temperature of masonry work and it's constituent materials between 5 degrees C and 50 degrees C and protect site from windchill.
    - .3 Maintain temperature of masonry above 0 degrees C for minimum of 3 days, after mortar is installed.
    - .4 Preheat unheated wall sections in enclosure for minimum 72 hours above 10 degrees C, before applying mortar.
- .3 Hot weather requirements:
  - .1 To CAN/CSA A371 with following requirements:
    - .1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
    - .2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.
    - .3 Spray mortar surface at intervals and keep moist for maximum of 3 days after installation.

## 2 PRODUCTS

### 2.01 CONCRETE BLOCK MASONRY

- .1 Standard concrete block units: to CSA A165 Series:
  - .1 Classification: H/15/A/M.
  - .2 Dimensions Nominal: As indicated on drawings.
  - .3 Basis of Design:
    - .1 Brampton Brick.
    - .2 Day & Campbell Ltd.
    - .3 Richvale York Block.
    - .4 Shaw Brick.
    - .5 Or approved equal.
- .2 Special shapes: Provide bull-nosed or double bull-nosed units for exposed corners unless noted otherwise. Provide purpose-made shapes for lintels, beams and bond beams. Provide additional special shapes as indicated.

### 2.02 REINFORCEMENT AND CONNECTORS

- .1 Bar reinforcement: Steel to CAN/CSA-A371 and CSA G30.18, Grade 400.
- .2 Connectors: to CAN/CSA-A370 and CSA S304.
- .3 Corrosion protection: to CSA S304, galvanized to CSA S304 and CAN/CSA-A370.
- .4 Ties: hot dip galvanized to CAN/CSA-A370 Table 5.2 steel finish. Proprietary type ties, type, style and size to suit application in accordance with manufacturer's recommendations:
  - .1 Adjustable Unit Ties: to CAN/CSA-A370.
  - .2 Joint Reinforcement Ties: CAN/CSA-A371 with corrosion protection to CSA S304 and CAN/CSA-A370:
    - .1 Single Wythe Joint Reinforcement: Continuous truss type fabricated from minimum 3.8 mm side and cross rods.
    - .2 Basis of Design:
      - .1 Blok-Lok Limited.
      - .2 Fero Corporation.
      - .3 Hohmann & Barnard Inc.
      - .4 Or approved equal.
- .5 Anchors: to CAN/CSA A370.

### 2.03 MORTAR AND GROUT

- .1 Use same brands of materials and source of aggregate for entire project.

- .2 Cement:
  - .1 Portland Cement: to CSA A3000, Type GU - General use hydraulic cement (Type 10). Provide white cement where required for light coloured mortars.
  - .2 Masonry Cement: to CSA A3002 and CAN/CSA A179.
  - .3 Mortar Cement: to CSA A3002 and CAN/CSA A179.
- .3 Aggregate: to CAN/CSA A179. Provide white aggregate where required for light coloured mortars.
- .4 Water: clean and potable.
- .5 Lime: to CAN/CSA A179.

#### **2.04 FLASHING AND ACCESSORIES**

- .1 Flexible flashing: 40 mil thick self-adhering, flexible membrane:
  - .1 Construction: cross-laminated polyethylene film with SBS rubberized asphalt compound.
  - .2 Primer: As recommended by manufacturer.
  - .3 Basis of Design:
    - .1 Self-Adhering Thru-Wall Flashing by Carlisle Coatings and Waterproofing.
    - .2 Blueskin TWF by Henry Company.
    - .3 Air-Shield Thru-Wall Flashing by W.R. Meadows.
- .2 Movement joint filler: Purpose-made closed-cell neoprene, to ASTM D1056, Grade 2A of size and shape indicated.
  - .1 NS Neoprene Sponge by Blok-Lok.
  - .2 NS - Closed Cell Neoprene Sponge by Hohmann & Barnard Inc.
  - .3 Or approved equal.
- .3 Control joint filler: Purpose-made extruded rubber with durometer hardness of 80 to ASTM D2240 of size and shape indicated.
  - .1 RS Series by Blok-Lok.
  - .2 RS Series by Hohmann & Barnard Inc.
  - .3 Or approved equal.
- .4 Cleaning compounds:
  - .1 Compatible with substrate and acceptable to masonry manufacturer for use on products.
  - .2 Cleaning compounds compatible with concrete unit masonry and in accordance with manufacturer's written recommendations and instructions.

## 2.05 FABRICATION

- .1 Fabricate reinforcing in accordance with CSA A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by Reinforcing Steel Institute of Canada.
- .2 Fabricate connectors in accordance with CAN/CSA A370.
- .3 Obtain Consultant's approval for locations of reinforcement splices other than shown on placing drawings.
- .4 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.

## 2.06 TOLERANCES

- .1 Tolerances for standard concrete unit masonry tolerances in accordance with CSA A165.1, supplemented as follows:
  - .1 Maximum variation between units within specific job lot not to exceed 2 mm.
  - .2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
  - .3 Out of square tolerance not to exceed 2 mm.
- .2 Tolerances for architectural concrete masonry units in accordance with CSA A165.1, supplemented as follows:
  - .1 Maximum variation in length or height between units within specific job lot for specified dimension not to exceed 2 mm.
  - .2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
  - .3 Out of square tolerance not to exceed 2 mm.
  - .4 Maximum variation in width between units within specific job lot for specified dimension not to exceed 2 mm.

## 2.07 MIXES

- .1 Mortar mixes:
    - .1 Mortar for interior masonry:
      - .1 Load Bearing: type S based on proportion specifications.
    - .2 Mortar for grouted reinforced masonry: type S based on proportion specifications.
  - .2 Mortar mixing requirements:
    - .1 Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.
    - .2 Maintain sand uniformly damp immediately before mixing process.
    - .3 Add mortar colour in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.
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- .4 Using anti-freeze compounds including calcium chloride or chloride based compounds is prohibited.
  - .5 Adding air entraining admixture to mortar mix is prohibited.
  - .6 Use a batch type mixer in accordance with CAN/CSA A179.
  - .7 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.
  - .8 Use mortar within 2 hours after mixing at temperatures of 32 degrees C, or 2-1/2 hours at temperatures under 5 degrees C.
- .3 Grout mixes:
- .1 Bond Beams: grout mix 10 to 12.5 MPa strength at 28 days; 200-250 mm slump; mixed in accordance with CAN/CSA A179 grout.
  - .2 Lintels: grout mix 10 to 12.5 MPa strength at 28 days; 200-250 mm slump; mixed in accordance with CAN/CSA A179 grout.
  - .3 Grout: Minimum compressive strength of 12.5 MPa at 28 days. Maximum aggregate size and grout slump: CAN/CSA A179.
- .4 Grout mixing requirements:
- .1 Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179, grout.
  - .2 Add admixtures in accordance with manufacturer's instructions; mix uniformly.
  - .3 Using calcium chloride or chloride based admixtures is prohibited.

## **2.08 SOURCE QUALITY CONTROL**

- .1 Provide Consultant with certified copy of mill test report of reinforcement steel and connectors, showing physical and chemical analysis.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### **3.02 PREPARATION**

- .1 Protect adjacent finished materials from damage due to masonry work.
- .2 Direct and coordinate placement of metal anchors for masonry supplied to other Sections.

### 3.03 GENERAL INSTALLATION

- .1 Perform masonry work in accordance with CAN/CSA A371 except where specified otherwise.
  - .2 Build masonry plumb, level, and true to line, with vertical joints in alignment, respecting construction tolerances permitted by CAN/CSA A371.
  - .3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.
  - .4 Exposed masonry: Remove chipped, cracked, and otherwise damaged units, in accordance with CSA A165, in exposed masonry and replace with undamaged units.
  - .5 Jointing:
    - .1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, joints true to line, compressed, uniformly concave joints where concave joints are indicated.
  - .6 Cutting:
    - .1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.
    - .2 Make cuts straight, clean, and free from uneven edges.
  - .7 Building-In:
    - .1 Build in items required to be built into masonry.
    - .2 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
    - .3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
    - .4 Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.
  - .8 Support of loads:
    - .1 Use grout to CAN/CSA A179 where grout is used in lieu of solid units.
    - .2 Install building paper below voids to be filled with grout; keep paper 25 mm back from faces of units.
  - .9 Provision for movement:
    - .1 Leave 3 mm space below shelf angles.
    - .2 Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
    - .3 Built masonry to tie in with stabilizers, with provision for vertical movement.
  - .10 Loose steel lintels: Install loose steel lintels. Center over opening width.
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- .11 Control joints: Construct continuous control joints as indicated.
- .12 Movement joints:
  - .1 Build-in continuous movement joints as indicated.
  - .2 Install movement joints and keep free of mortar where indicated.
- .13 Interface with existing work:
  - .1 Cut openings in existing work as indicated.
  - .2 Openings in walls: as indicated on reviewed Shop Drawings.
  - .3 Make good existing work. Use materials to match existing.
- .14 Site Tolerances: to CAN/CSA A371.
- .15 Hollow Units: spread mortar setting bed from outside edge of face shells. Gauge amount of mortar on top and end of unit to create full joints, equivalent to shell thickness. Avoid excess mortar.
- .16 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar.
- .17 Ensure compacted head joints. Use full or face-shell joint as indicated.
- .18 Tamp units firmly into place.
- .19 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.
- .20 After mortar has achieved initial set up, tool joints.
- .21 Do not interrupt bond below or above openings.

### **3.04 CONCRETE MASONRY UNIT PLACEMENT**

- .1 Concrete block units:
  - .1 Bond: running.
  - .2 Jointing: concave where exposed or where paint or other finish coating is specified.
- .2 Special Shapes:
  - .1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.
  - .2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
  - .3 End bearing: not less than 200 mm as indicated on drawings.
  - .4 Install special shaped units.

### 3.05 REINFORCEMENT

- .1 Supply and install masonry connectors and reinforcement in accordance with CAN/CSA A370, CAN/CSA A371, CSA A23.1/A23.2 and CSA S304 unless indicated otherwise.
  - .2 Bonding and tying:
    - .1 Bond walls of two or more wythes using metal connectors in accordance with CSA S304, CAN/CSA-A371 and as indicated.
    - .2 Install unit, adjustable, single wythe and multiple wythe joint reinforcement where indicated and in accordance with CAN/CSA-A370 and CAN/CSA-A371 and manufacturer's instructions:
      - .1 Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA-A371 and as indicated.
      - .2 Install horizontal joint reinforcement 400 mm on centre.
      - .3 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 400 mm each side of opening.
      - .4 Place joint reinforcement continuous in first and second joint below top of walls.
      - .5 Lap joint reinforcement ends minimum 150 mm.
      - .6 Connect joint corners and intersections with strap anchors 400 mm on centre.
  - .3 Reinforced lintels and bond beams:
    - .1 Reinforce masonry beams, masonry lintels and bond beams as indicated.
    - .2 Place and grout reinforcement in accordance with CSA S304, CAN/CSA A371, and CAN/CSA A179.
    - .3 Support and position reinforcing bars in accordance with CAN/CSA A371.
  - .4 Grouting: Grout masonry in accordance with CSA S304, CAN/CSA A371 and CAN/CSA A179 and as indicated.
  - .5 Anchors: Supply and install metal anchors in accordance with CAN/CSA A370 and CAN/CSA A371.
  - .6 Lateral support and anchorage: Supply and install lateral support and anchorage in accordance with CSA S304 and as indicated.
  - .7 Movement joints: Reinforcement shall not be continuous across movement joints unless otherwise indicated.
  - .8 Field bending:
    - .1 Do not field bend reinforcement and connectors except where indicated or authorized by Consultant.
-

- .2 When field bending authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars and connectors with cracks or splits.

### 3.06 FLASHING

- .1 Build in flashings in masonry in accordance with CAN/CSA A371.
- .2 Install flashings under masonry bearing on foundation walls, slabs-on-grade, and as shown on drawings.
- .3 Lap joints 150 mm and seal with adhesive.
- .4 Trim flexible flashing flush with exterior face of masonry to conceal it.

### 3.07 MORTAR AND GROUT PLACEMENT

- .1 Mortar Placement:
  - .1 Install mortar to requirements of CAN/CSA A179.
  - .2 Remove excess mortar from grout spaces.
- .2 Grout Placement:
  - .1 Install grout in accordance with manufacturer's instructions.
  - .2 Install grout in accordance with CAN/CSA A179.
  - .3 Work grout into masonry cores and cavities to eliminate voids.
  - .4 Installing grout in lifts greater than 400 mm, without consolidating grout by rodding is prohibited.
  - .5 Displacing reinforcement while placing grout is prohibited.

### 3.08 REPAIR

- .1 Upon completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.
- .2 Touch up damaged and cut ends of galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

### 3.09 CLEANING

- .1 Leave Work area clean at end of each day.
- .2 Standard Concrete Unit Masonry: Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.

**3.10 PROTECTION**

- .1 Temporary Bracing:
  - .1 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.
  - .2 Bracing approved by Consultant.
  - .3 Brace masonry walls as necessary to resist wind pressure and lateral forces during construction.
  
- .2 Moisture Protection:
  - .1 Keep masonry dry using waterproof, non staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until completed and protected by flashing or other permanent construction.
  - .2 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.
- .2 Work may include, but is not limited to;
  - .1 Angle Lintels.
  - .2 Bench legs.
  - .3 Miscellaneous metal fabrications as indicated on drawings.

### **1.02 REFERENCES**

- .1 ASTM A123/A123M - Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- .2 ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
- .3 ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.
- .4 CSA G40.20-13/G40.21 - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .5 CSA S16 - Design of Steel Structures.
- .6 CSA W47.1 - Certification of Companies for Fusion Welding of Steel.
- .7 CSA W47.2 - Certification of Companies for Fusion Welding of Aluminum.
- .8 CSA W48 - Filler Metals and Allied Materials for Metal Arc Welding.
- .9 CSA W59 - Welded Steel Construction (Metal Arc Welding).
- .10 NAAMM AMP 555 - Code of Standard Practice for the Architectural Metal Industry.
- .11 National Ornamental & Miscellaneous Metals Association (NOMMA).

### **1.03 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.

- .2 Product data: Submit manufacturers product data for metal fabrications including product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
  - .3 Stair construction details, sizes of steel sections and thickness of steel sheet.
- .4 Reports and certifications: Submit the following:
  - .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
  - .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### **1.04 QUALITY ASSURANCE**

- .1 Certification of companies: to CSA W47.1 and CSA W47.2 as applicable for fusion welding.
- .2 Workmanship: Fabricate work of this Section to meet the required class of workmanship indicated below in accordance with NAAMM AMP 555 (NOMMA), Class 2 as follows:
  - .1 Exposed surfaces retain mill marks and moderate irregularities not visible by naked eye at 10 metres. Ensure burrs and sharp edges are filed down or ground off.
  - .2 Exposed welds are ground with uniform sized cove.
  - .3 Minor distortions are permitted.
  - .4 Exposed joints have a maximum gap of 1.5 mm.

## **2 PRODUCTS**

### **2.01 PERFORMANCE CRITERIA**

- .1 Design metal fabrications to resist loads and climatic data as indicated, and in accordance with applicable building codes.

### **2.02 MATERIALS - GENERAL**

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 350W, minimum 30% recycled content.

- .2 Welding materials: to CSA W59.
- .3 Welding electrodes: to CSA W48 Series.
- .4 Bolts and anchor bolts: to ASTM A307.
- .5 High strength bolts: to ASTM F3125/F3125M.
- .6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

### **2.03 FABRICATION**

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

### **2.04 FINISHES**

- .1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup>, Coating Grade 85, to ASTM A123/A123M.
- .2 Shop coat primer: Refer to Section 09 91 00 for paint system.
- .3 Zinc-rich primer:
  - .1 Carbozinc 11WB by Carboline.
  - .2 Dimetcote 9H by PPG.
  - .3 Zinc Clad XL by Sherwin Williams.

### **2.05 ISOLATION COATING**

- .1 Isolate aluminum from following components, by means of bituminous paint:
  - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  - .2 Concrete, mortar and masonry.
  - .3 Wood.

### **2.06 SHOP PAINTING**

- .1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
- .3 Clean surfaces to be field welded; do not paint.

## **2.07 SCHEDULE OF FABRICATIONS**

- .1 Refer to drawings for metal fabrications items not specifically listed in this Section. Metal fabrications shall include, but not be limited to, the items listed below.
- .2 Angle Lintels:
  - .1 Steel angles: galvanized, sizes indicated for openings. Provide 150 mm minimum bearing at ends.
  - .2 Weld or bolt back-to-back angles to profiles as indicated.
  - .3 Finish: Shop painted.
- .3 Bench Legs:
  - .1 Steel pipe: Provide steel pipe bench legs as indicated on drawings, with 3 anchors each guard.
  - .2 Wood bench top: Refer to Section 06 20 00.
  - .3 Prime paint for interior.
- .4 Miscellaneous brackets, supports and angles:
  - .1 Provide all loose steel brackets, supports and angles as indicated or required to support Work.
  - .2 Allow for prime paint for interior use and galvanized for exterior use unless indicated otherwise.
  - .3 Pre-drill for countersunk fasteners, expansion anchors and anchor bolts.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### **3.02 INSTALLATION**

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

- .3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Supply components for work by other trades in accordance with Shop Drawings and schedule.
- .6 Make field connections with bolts to CSA S16 or weld field connections.
- .7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
- .8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion.
- .9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

**3.03 PROTECTION**

- .1 Protect installed products and components from damage during construction.

**END OF SECTION**

## 1 GENERAL

### 1.01 SUMMARY

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.
- .2 Work may include, but is not limited to;
  - .1 Bench top.
  - .2 Wood stage flooring.

### 1.02 REFERENCES

- .1 ANSI A208.1 - Particleboard.
- .2 ANSI A208.2 - Medium Density Fibreboard (MDF) for Interior Applications.
- .3 ANSI/HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood.
- .4 ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .5 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Woodwork Institute (WI) - NAAWS North American Architectural Woodwork Standards.
- .6 CSA O121 - Douglas Fir Plywood.
- .7 CSA O141 - Softwood Lumber.
- .8 CSA O151 - Canadian Softwood Plywood.
- .9 CSA O153 - Poplar Plywood.
- .10 CAN/CSA Z809 - Sustainable Forest Management.
- .11 ISO 4586 Series - High-Pressure Decorative Laminates (HPL, HPDL), Sheets based on thermsetting resins.
- .12 National Lumber Grades Authority (NLGA) - Standard Grading Rules for Canadian Lumber.

### 1.03 ACTION SUBMITTALS

- .1 Submit action submittals in accordance with Section 01 00 00.

- .2 Product data: Submit manufacturers product data for finish carpentry including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Shop Drawings to Indicate details of construction, profiles, jointing, fastening and other related details.
  - .3 Indicate materials, thicknesses, finishes and hardware.
- .4 Samples: Submit 150 mm x 150 mm samples illustrating colours, textures and finishes including, but not limited to:
  - .1 Two pieces of each species/type of wood to receive a exposed finish.
  - .2 Two samples of laminated plastic for colour selection.
  - .3 Two each of laminated plastic joints, edging, and postformed profiles.
- .5 Reports/certificates: Submit the following:
  - .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
  - .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### **1.04 QUALITY ASSURANCE**

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Lumber by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board (CLSAB).
- .3 Plywood, particleboard, OSB and wood based composite panels to CSA and ANSI standards.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 Store materials in a dry area. Cover materials with tarpaulins or polyethylene sheets to prevent moisture absorption and impairment of structural and aesthetic properties. Vent to allow air movement. Tie covering to keep in place.
- .2 Protect millwork against dampness and damage during and after delivery.
- .3 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

- .4 Store and protect finish carpentry from nicks, scratches, and blemishes.
- .5 Replace defective or damaged materials with new.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 General:
  - .1 CAN/CSA Z809, SFI or Forestry Stewardship Council (FSC) certified.
  - .2 Dimensional references to lumber are to nominal sizes unless actual dimensions are indicated. Such actual dimensions shall be dry size.
  - .3 AWMAC/WI North American Architectural Woodwork Standards premium grade, moisture content as specified.
  - .4 Perform work in accordance with the definition of First-Class Workmanship as defined in the NAAWS Quality Standards.
- .2 Softwood lumber: S4S, S-DRY graded and stamped in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 Hardwood lumber: moisture content 7 % or less in accordance with National Hardwood Lumber Association (NHLA).
- .4 Panel Material: Urea-formaldehyde free:
  - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
  - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
  - .3 Hardwood plywood: to ANSI/HPVA HP-1.
  - .4 Poplar plywood (PP): to CSA O153, standard construction.
  - .5 Particleboard: to ANSI A208.1.
  - .6 Medium density fibreboard (MDF) core: to ANSI A208.2, density 640-800 kg/m<sup>3</sup>.
- .5 Plastic laminate: Decorative surface papers impregnated with melamine resins and pressed over kraft paper core sheets to ISO 4586 series.
  - .1 Type: General purpose as follows:
    - .1 Grade: HGS.
    - .2 Size: 1.27 mm thick.
  - .2 Type: Postforming as follows:
    - .1 Grade: HGP.
    - .2 Size: 1.0 mm thick.
    - .3 Postforming product to be able to achieve 16 mm outside radii.
  - .3 Colours (PLAM-1): Refer to Finishes Type on Drawings.
  - .4 Basis of Design manufacturers:
    - .1 Arborite Company.

- .2 Formica Group.
- .3 Panolam Surface Systems.
- .4 Wilsonart Engineered Surfaces.
- .5 Laminated plastic adhesive:
  - .1 General purpose laminate: High solids, low VOC contact adhesive.
  - .2 Postforming purpose laminate: Non-flammable low VOC water-based contact adhesive.
- .6 Nails and staples: to ASTM F1667.
- .7 Wood screws: plain, type and size to suit application.
- .8 Splines: Type as recommended by fabricator.
- .9 Sealant: in accordance with Section 07 92 00.

## **2.02 FABRICATION**

- .1 Fabricate carpentry and millwork to AWMAC/WI NAAWS premium quality grade.
- .2 Set nails and countersink screws apply matching wood filler to indentations, sand smooth and leave ready to receive finish.
- .3 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .4 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .5 Perform plastic laminate work in accordance with NAAWS and ISO 4586 Series.
- .6 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .7 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.
- .8 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.
- .9 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.
- .10 Apply laminate backing sheet to reverse side of core of plastic laminate work.

- .11 Apply laminated plastic liner sheet where indicated.

## 2.03 FINISHES

- .1 Refer to Section 09 91 00.

## 3 EXECUTION

### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### 3.02 INSTALLATION

- .1 Do architectural woodwork to AWMAC/WI NAAWS.
- .2 Install prefinished millwork at locations shown on drawings.
- .3 Position accurately, level, plumb straight.
- .4 Fasten and anchor millwork securely.
- .5 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .6 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .7 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.
- .8 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
- .9 Fastening:
  - .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
  - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
  - .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.

- .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

### **3.03 PROTECTION**

- .1 Protect millwork from damage until final inspection.
- .2 Protect installed products and components from damage during construction.
- .3 Repair damage to adjacent materials caused by architectural woodwork installation.

### **3.04 SCHEDULE OF ITEMS**

- .1 Refer to drawings for details and further information.
- .2 Wood bench top:
  - .1 Fabricate bench top of plastic laminate.
  - .2 Install bench top to metal legs provided by Section 05 50 00.
- .3 Wood stage flooring:
  - .1 Provide plywood floor where indicated on drawings for stage floor repair.
  - .2 Install flooring with surface grain at right angles to supports and with joints parallel to supports and staggered.
  - .3 Where edges of flooring are required to be supported, such support shall consist of not less than 50 mm x 50 mm blocking or tongued and grooved edged plywood.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 REFERENCES**

- .1 ASTM C834 - Standard Specification for Latex Sealants.
- .2 ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- .3 ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

### **1.03 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for joint sealant including product characteristics, performance criteria, compatibility and limitations.
- .3 Samples: Submit 300 mm x 300 mm samples illustrating materials and colours, of each type and colour required for Work.

### **1.04 QUALITY ASSURANCE**

- .1 Installers: Perform Work of this Section by a company that has a minimum of five (5) years proven experience in the installation of joint sealants of a similar size and nature.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 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.

### **1.06 SITE CONDITIONS**

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are above 5 degree C.
- .2 Do not proceed with installation of joint sealants when joint substrates are wet.

- .3 Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .4 Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 General:
  - .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.
  - .3 Where sealants are qualified with primers use only these primers.
  - .4 Colours of sealants to be selected by Consultant from manufacturers standard colour range.
- .2 Sealant (Type 1):
  - .1 Single-component, medium modulus, neutral cure, silicone sealant.
  - .2 Sealant properties: to ASTM C920, Type S, Grade NS.
  - .3 Basis of Design:
    - .1 Dowsil CWS by Dow.
    - .2 Sikasil WS-305 CN by Sika Canada.
    - .3 Tremsil 400 by Tremco.
    - .4 Or approved equal.
- .3 Sealant (Type 2):
  - .1 Single-component, non-staining, paintable, fast setting, acrylic latex sealant.
  - .2 Sealant properties: to ASTM C834, Type OP, Grade 18C.
  - .3 Basis of Design:
    - .1 Tremflex 834 by Tremco.
    - .2 Or approved equal.
- .4 Sealant (Type 3):
  - .1 Single-component, mildew-resistant, silicone rubber sealant.
  - .2 Sealant properties: to ASTM C920, Type S, Grade NS.
  - .3 Basis of Design:
    - .1 Dowsil 786 Silicone Sealant by Dow.
    - .2 Sikasil GP by Sika Canada.
    - .3 Tremsil 200 by Tremco.
    - .4 Or approved equal.

## 2.02 ACCESSORIES

- .1 Primer: As recommended by sealant manufacturer.
- .2 Joint backing: to ASTM C1330; Round, solid section, soft polyethylene foam gasket compatible with primer and sealant materials.
- .3 Bond breaker: Polyethylene bond breaker tape which will not bond to sealant.
- .4 Joint cleaner: Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

## 2.03 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

## 3 EXECUTION

### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### 3.02 PREPARATION

- .1 Protect installed Work of other trades from staining or contamination.
- .2 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .3 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .4 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.
- .5 Ensure joint surfaces are dry and frost free.
- .6 Prepare surfaces in accordance with manufacturer's directions.
- .7 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.
- .8 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.

### 3.03 APPLICATION

- .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.
- .9 Curing:
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.

### 3.04 CLEANING

- .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.

### 3.05 SCHEDULE

- .1 The following list has been provided for convenience and is not to be assumed to be complete. Review Contract Documents to determine the full extent of the Work of this Section.

- .2 Generally seal the following:
  - .1 Concrete, masonry, wood and stone to metal.
  - .2 Wood to masonry, concrete and stone.
  - .3 Metal to metal.
  - .4 All dissimilar materials.
  
- .3 Sealant Type 1:
  - .1 Interior joints between dissimilar materials.
  - .2 Interior joints at perimeter of all built-in equipment.
  - .3 Interior joints at perimeter of metal door and window frames.
  
- .4 Sealant Type 2:
  - .1 Interior non-movement joints 6 mm or less for painting.
  
- .5 Sealant Type 3:
  - .1 Interior joints where mildew resistance is required.
  - .2 Interior joints at perimeter of all plumbing fixtures.
  - .3 Interior joints between counter backsplash and wall surfaces.
  - .4 Interior tile work.

**END OF SECTION**

## 1 GENERAL

### 1.01 SUMMARY

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### 1.02 REFERENCES

- .1 ASTM A653/A653M - Specification for Steel Sheet, Zinc-coated Galvanized or Zinc-iron Alloy-coated Galvannealed by the Hot-dip Process.
- .2 CSA G40.20/G40.21 - General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
- .3 CSA W59 - Welded Steel Construction.
- .4 Canadian Steel Doors Manufacturers Association (CSDMA) - Recommended Specifications for Commercial Steel Door and Frame Products.
- .5 Canadian Steel Doors Manufacturers Association (CSDMA) - Installation and Storage of Hollow Metal Doors and Frames.

### 1.03 ACTION SUBMITTALS

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for metal doors and frames including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware and finishes.
  - .2 Indicate each type frame material, core thickness, reinforcements, location of anchors and exposed fastenings and finishes.
  - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .4 Samples: Submit 300 mm x 300 mm corner samples of each type frame illustrating cutouts, connections and trims.
- .5 Reports/certificates: Submit the following:
  - .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### 1.04 DELIVERY, STORAGE, AND HANDLING

- .1 Store metal doors and frames to the requirements outlined in the CSDMA Guide Specification for receiving and storage of doors.

### 2 PRODUCTS

#### 2.01 MANUFACTURERS

- .1 Daybar Industries Limited.
- .2 Fleming Doors Products (Assa Abloy).
- .3 Vision Hollow Metal Limited.
- .4 Or approved equal.

#### 2.02 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653/A653M, ZF120, minimum base steel thickness in accordance with CSDMA Specification, Table 1, Minimum Steel Gauges for Component Parts. Steel to have minimum 30% recycled content.
  - .2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653/A653M, ZF120, minimum 30% recycled content.
  - .3 Door Core Materials:
    - .1 Honeycomb construction (typical interior door): Structural small cell, 25.4 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m<sup>3</sup> minimum, sanded to required thickness.
  - .4 Adhesives:
    - .1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
    - .2 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.
  - .5 Zinc-rich primer:
    - .1 Carbozinc 11WB by Carboline.
    - .2 Dimetcote 9H by PPG.
    - .3 Zinc Clad XL by Sherwin Williams.
-

- .6 Door silencers: single stud rubber/neoprene type.
- .7 Metallic paste filler: to manufacturer's standard.

### 2.03 FRAME FABRICATION

- .1 Fabricate frames including steel frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Fabricate frames of the following construction unless specifically noted otherwise:
  - .1 Interior frames: 1.2 mm welded type construction.
  - .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
  - .5 Protect mortised cutouts with steel guard boxes.
  - .6 Prepare frame for door silencers, 3 for single door.
  - .7 Manufacturer's nameplates on frames and screens are not permitted.
  - .8 Conceal fastenings except where exposed fastenings are indicated.
  - .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
  - .10 Frame Anchorage:
    - .1 Provide appropriate anchorage to floor and wall construction.
    - .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
    - .3 Provide two anchors for rebate opening heights up to 1520 mm and one additional anchor for each additional 760 mm of height or fraction thereof.
    - .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.
  - .11 Welded Frames:
    - .1 Welding in accordance with CSA W59.
    - .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
    - .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

- .4 Grind welded joints and corners to flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in two temporary jamb spreaders per frame to maintain proper alignment during shipment.

#### 2.04 DOOR FABRICATION

- .1 Doors: swing type, flush, with provision for louvre openings as indicated.
- .2 Fabricate doors of the following construction unless specifically noted otherwise:
  - .1 Interior doors: laminated core construction.
- .3 Fabricate doors with longitudinal edges tack welded at top and bottom of door, above and below each edge cutout and at 150 mm on center, filled and sanded. Seams: Grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .4 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, which shall be completed on-site at time of hardware installation. Holes less than 12.7 mm diameter shall be factory prepared when required for function of device (knob, lever, cylinder, thumb or turn pieces) or when these holes over-lap function holes.
- .6 Reinforce doors where required, for surface mounted hardware. Provide inverted, recessed, spot welded channels to top and bottom of doors.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .8 Manufacturer's nameplates on doors are not permitted.
- .9 Laminated Core Construction:
  - .1 Form face sheets for interior doors from 1.2 mm sheet steel with honeycomb core laminated under pressure to face sheets.

#### 2.05 FINISHES

- .1 Field paint steel doors and frames in accordance with Section 09 91 00.
- .2 Provide final finish free of scratches or other blemishes.

### 3 EXECUTION

#### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Check all door and frame products for correct size, swing, rating and opening number.

#### 3.02 PREPARATION

- .1 Remove temporary shipping spreaders.
- .2 Check area of floor on which frames are to be installed, and within path of door swing for flatness. Report defects or unsatisfactory conditions to Consultant.

#### 3.03 INSTALLATION

- .1 Install doors and frames to CSDMA Installation Guide, reviewed Shop Drawings, and manufacturer's written instructions.
- .2 Install doors and hardware in accordance with hardware templates, manufacturer's instructions, and Section 08 71 00.
- .3 Frame Installation:
  - .1 Set frames plumb, square, level and at correct elevation.
  - .2 Secure anchorages and connections to adjacent construction.
  - .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
  - .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
  - .5 Caulk perimeter of frames between frame and adjacent material.
- .4 Door Installation:
  - .1 Adjust operable parts for correct function.

#### 3.04 REPAIRS

- .1 Touch up with primer finishes damaged during installation.

- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.
- .2 Contractor shall provide Door Schedule produced by Door and Hardware Consultant certified in accordance with DHI certification program.

### **1.02 REFERENCES**

- .1 BHMA - Builders Hardware Manufacturing Association.
- .2 CSA B651 - Accessible Design for the Built Environment.
- .3 DHI - Door and Hardware Institute.

### **1.03 ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination:
  - .1 Coordinate with door and frame manufacturer for components to receive hardware including internal reinforcement for door hardware, conduit, wiring and electrical work required for electrically operated hardware items.
  - .2 No extra cost will be allowed because of failure to coordinate door hardware requirements with door and frame manufacturer to ensure proper installation of hardware.

### **1.04 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for door hardware including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Shop Drawings to illustrate door locations, sizes and installation details, complete with manufacturer's catalogue numbers, finish symbols and quantities.
  - .2 Provide templates to door and frame manufacturer outlining sizes, locations and reinforcement required for hardware.
  - .3 Hardware Lists: Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

- .4 Samples:
  - .1 Submit two samples for any hardware item that deviates from hardware listed in Hardware Schedule. Verify list of samples to be provided with Consultant.
  - .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
  - .3 Hardware will not be ordered until samples have been approved.
- .5 Reports/certificates: Submit the following:
  - .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
  - .2 Submit manufacturer's certificate that finish hardware meets specified requirements.
  - .3 Manufacturer's Instructions: submit manufacturer's installation instructions.

#### **1.05 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.
- .3 Maintenance materials: Submit extra two sets of wrenches for door closers, locksets, fire exit hardware and any additional hardware requiring special tools.

#### **1.06 QUALITY ASSURANCE**

- .1 Manufacturers: Manufacturers to be certified under BHMA.
- .2 Suppliers: Provide Work of this Section by a company that supplies commercial door hardware and is acceptable to manufacturer.
- .3 Employ an Door and Hardware Consultant certified in accordance with DHI certification program to prepare hardware schedule and inspect completed installation and certify that hardware has been installed in accordance with manufacturer's printed instructions, Authorities having Jurisdiction and as specified.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- .1 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Accept Products of this Section on Site and ensure that each item is undamaged.
- .3 Catalogue and store hardware in secure area.

## 2 PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURERS

- .1 Ives (Allegion).
- .2 Schlage.
- .3 Alternatives will not be considered.

### 2.02 MATERIALS

- .1 Check and verify prepared Hardware List against Contract Drawings to confirm that hardware listed is designed to be used as specified. Inform Consultant of possible issues relating to selected hardware.
- .2 Furnish hardware made of new material by approved manufacturers, including electrical components.
- .3 Provide hardware items with accessories complete to function as intended.
- .4 Ensure that each hardware item is of same type, design and by same manufacturer.
- .5 Manufacturer's names or trade marks are not permitted on exposed surfaces of hardware.
- .6 Electrical: Make provisions and coordinate requirements for electrical devices in connection with hardware.
- .7 Reinforcing Units: Furnished by door manufacturer, coordinated by hardware manufacturer.
- .8 Concealed Hardware: Furnish items which must be concealed within metal work to metal door and frame manufacturer.
- .9 Keying: Owner to rekey areas to coordinate with base building master key.
- .10 Fasteners: Furnish as recommended by manufacturer and as required to securely install hardware:
  - .1 Furnish hardware fastened to concrete or masonry with expansion sleeve anchors.
  - .2 Through bolts are not permitted on wood or metal doors.
  - .3 Furnish fasteners for items applied to gypsum board sufficiently long to provide solid connection to framing or backing.

### 3 EXECUTION

#### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Inspect doors, frames and other surfaces to receive items of finish hardware and report any defects, which might adversely affect the installation and function of the hardware.
- .3 Verify that power supply is available to power operated devices.

#### 3.02 INSTALLATION

- .1 Install hardware in accordance with manufacturers' instructions and recommendations.
- .2 Fit hardware prior to painting, then remove prior to painting doors and frames; reinstall after painting is complete.
- .3 Accessibility: Comply with CSA B651 for positioning requirements for accessibility.
- .4 Mounting Heights Above Finished Floor:
  - .1 Hinges:
    - .1 Top: Frame manufacturer's standard, but not greater than 250 mm from head of frame to centre line of hinge.
    - .2 Bottom: Frame manufacturer's standard, but not greater than 318 mm from floor to centre line of hinge.
    - .3 Intermediate: Equally spaced between top and bottom hinges and from each other.
  - .2 Locks and Latches: 966 mm to centre line of lever.
  - .3 Panic Exit Devices: Manufacturer's standard for device specified.
  - .4 Door pulls, Push-Pull Bars, Push Plates: 1067 mm to centre of pull, bar or plate.
  - .5 Comply with recommendations of BHMA for heights of items not indicated.

#### 3.03 SITE QUALITY CONTROL

- .1 Hardware to be inspected by certified inspector qualified through the DHI certification program. Provide written certification of the following:
  - .1 That hardware has been supplied and installed in accordance with Specifications and hardware manufacturer's instructions and is functioning correctly.

**3.04 ADJUSTMENT**

- .1 Adjust closers, locks, and critical operation hardware.

**END OF SECTION**

## 1 GENERAL

### 1.01 SUMMARY

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### 1.02 REFERENCES

- .1 ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- .2 ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .3 ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
- .4 ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .5 ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
- .6 ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .7 ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .8 ASTM C1396/C1396M - Standard Specification for Gypsum Board.
- .9 AWCI - The Association of the Wall and Ceiling Industry.

### 1.03 ADMINISTRATIVE REQUIREMENTS

- .1 Site Meetings: Arrange a pre-installation meeting on Site to be attended by Consultant, Contractor, gypsum board manufacturer's representative, and any other parties directly affecting work of this Section to:
  - .1 Examine substrate conditions for compliance with manufacturer's requirements.
  - .2 Review methods and procedures related to installation.
  - .3 Review all typical and special details as required to complete the work of this section.

#### 1.04 ACTION SUBMITTALS

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for gypsum board assemblies including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Shop Drawings to illustrate framing, supports, bracing, reinforcing, details, dimensions, fabrication and installation details.
- .4 Reports/certificates: Submit the following:
  - .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
  - .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### 1.05 QUALITY ASSURANCE

- .1 Installers: Perform Work of this Section by a company that has a minimum of five (5) years proven experience in the installation of gypsum board assemblies of a similar size and nature.

#### 1.06 SITE CONDITIONS

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are between 10 degrees C and 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimum 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.

### 2 PRODUCTS

#### 2.01 PERFORMANCE CRITERIA

- .1 Design gypsum board assemblies to resist loads and climatic data as indicated, and in accordance with applicable building codes including seismic loads.

- .2 Design non-structural framing system in accordance with manufacturer's printed directions and ASTM C754.
- .3 Design suspension systems to support entire system including mechanical and electrical items not exceeding 25% of their ultimate load.

## **2.02 FRAMING MATERIALS**

- .1 Drywall furring channels: to ASTM C645, 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .2 Resilient drywall furring: to ASTM C645, 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
- .3 Hanger wires: to ASTM A641, galvanized soft annealed wire, minimum 2.0 mm (12 gauge) or as required to meet design.
- .4 Tie wire: Galvanized soft annealed wire, minimum 1.0 mm (18 gauge).

## **2.03 GYPSUM BOARD MATERIALS**

- .1 Acceptable manufacturers:
  - .1 Certainteed Gypsum Canada.
  - .2 CGC (USG) Inc.
  - .3 Georgia-Pacific Canada.
- .2 Moisture and mould resistant panel: to ASTM C1396/C1396M, minimum 40% recycled content, moisture and mould resistant core and face, 1200 mm wide x maximum practical length, ends square cut.

## **2.04 ACCESSORIES**

- .1 Steel drill screws: to ASTM C1002, corrosion resistant.
- .2 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, zinc-coated galvanized steel, 0.5 mm base thickness, perforated flanges, one piece length per location.
- .3 Joint compound: to ASTM C475/C475M, asbestos-free.
- .4 Joint tape: to ASTM C475/C475M.
  - .1 Glass mesh tape for water resistant gypsum board.

### 3 EXECUTION

#### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

#### 3.02 PREPARATION

- .1 Where existing gypsum board work has been demolished and/or damaged and repair work is required, prepare area for new gypsum board finish.
- .2 Prepare areas to be repaired ensuring neat, clean and straight cuts.
- .3 Finish all repair work as specified for new work to ensure consistent finish across all gypsum board surfaces.

#### 3.03 CEILING FRAMING INSTALLATION

- .1 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise.
- .2 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .3 Install work level to tolerance of 1:1200.
- .4 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, and other components.
- .5 Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
- .6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- .8 Install wall furring for gypsum board finishes to ASTM C840, except where specified otherwise.
- .9 Furr openings and around built-in equipment, cabinets, access panels, and other components, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

- .10 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .11 Erect drywall resilient furring transversely across studs, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.
- .12 Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

### **3.04 GYPSUM BOARD INSTALLATION**

- .1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise.
- .2 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
- .3 Apply water-resistant gypsum board where indicated on drawings. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.
- .4 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
- .5 Install gypsum board with face side out.
- .6 Ensure new board faces are flush with faces of abutting existing walls and ceilings.
- .7 Do not install damaged or damp boards.
- .8 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

### **3.05 ACCESSORIES AND FINISHING**

- .1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure using fasteners or adhesive as recommended by manufacturer.
- .2 Install casing beads around perimeter of suspended ceilings.
- .3 Construct control joints of preformed units or two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.

- .4 Provide continuous polyethylene dust barrier behind and across control joints.
- .5 Locate control joints at changes in substrate construction, and at approximate 15 m spacing on ceilings.
- .6 Install control joints straight and true.
- .7 Ensure that screws or nails are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.
- .8 Gypsum Board Finish: finish gypsum board ceilings to following levels in accordance with AWC I Levels of Gypsum Board Finish:
  - .1 Level 0: no tapping, finishing or accessories required. Provide for temporary construction.
  - .2 Level 1: embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable. Provide in plenum areas above ceilings, in attics or in areas where assembly will be concealed.
  - .3 Level 2: embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable. Provide where water resistant gypsum backing board is used as tile substrate.
  - .4 Level 3: embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges. Provide in areas to receive heavy or medium coat of textured materials are to be applied.
  - .5 Level 4: 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; surfaces smooth and free of tool marks and ridges. Provide where light textures are to be applied.
  - .6 Level 5: 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. Provide where gloss, semi-gloss, enamel or non-textural flat paints are specified or where severe lighting conditions occur.
- .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.

### **3.06 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by gypsum board assembly work.

**END OF SECTION**

## 1 GENERAL

### 1.01 SUMMARY

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### 1.02 REFERENCES

- .1 ANSI A108/A118/A136.1 - Installation of Ceramic Tile, including the following standards:
  - .1 ANSI A108.1 - Installation of Ceramic Tile.
  - .2 ANSI A118.3 - Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.
  - .3 ANSI A118.4 - Standard Specification for Modified Dry-Set Cement Mortar.
  - .4 ANSI A118.6 - Standard Specifications for Standard Cement Grouts for Tile Installation.
  - .5 ANSI A118.7 - Standard Specifications for High Performance Cement Grouts for Tile Installation.
  - .6 ANSI A118.10 - Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
  - .7 ANSI A118.12 - Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.
  - .8 ANSI A136.1 - Organic Adhesives for Installation of Ceramic Tile.
- .2 ANSI A137.1 - Specification for Ceramic Tile.
- .3 ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
- .4 ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- .5 ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- .6 ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- .7 CSA A3000 - Cementitious Materials Compendium.
- .8 Terrazzo Tile and Marble Association of Canada (TTMAC) - Tile Installation Manual and Maintenance Guide.

### 1.03 ACTION SUBMITTALS

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for tile, mortars and grouts, waterproofing, and sealants including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Shop Drawings to illustrate tile layout and patterns.
  - .2 Indicate perimeter conditions, connections to dissimilar materials and setting details.
- .4 Samples: Submit 300 mm x 300 mm samples illustrating colours, textures and finishes including, but not limited to:
  - .1 300 mm x 300 mm sample panels of each colour, texture, size, and pattern of tile. Adhere tile samples to 12 mm thick plywood and grout joints to represent project installation.
  - .2 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.

### 1.04 CLOSEOUT AND MAINTENANCE SUBMITTALS

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.
- .3 Maintenance materials: Submit extra 2% or to nearest full carton of each type and colour of tile.

### 1.05 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver materials in adequate crates or containers with manufacturer's name and product description clearly marked.
- .2 Store and handle tiles in manner to avoid chipping, breakage or the introduction of foreign matter.
- .3 Store mortar and grout admixtures in location to protect materials from freezing or from excessive heat.

## 1.06 SITE CONDITIONS

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are between 12 degrees C and 38 degrees C for 48 hours before, during and 48 hours after installation.
- .2 Do not apply epoxy mortar and grouts at substrate temperatures below 15 degrees C or above 25 degrees C.

## 2 PRODUCTS

### 2.01 TILE

- .1 Tile:
  - .1 to ANSI A137.1.
  - .2 Basis of Design: Refer to Finish Type on Drawings.

### 2.02 METAL TRIMS

- .1 Floor transition strips (TR-1):
  - .1 Stainless steel edge, continuous at all exposed tile edges, depth as required to suit tile thickness.
  - .2 Basis of Design:
    - .1 Proangle by Mapei Inc.
    - .2 Schiene by Schluter Systems.
    - .3 Or approved equal.

### 2.03 ACCESSORIES

- .1 Levelling Bed Mortar Materials:
  - .1 Cement: to CSA A3000, type GU.
  - .2 Sand: to ASTM C144, passing 16 mesh.
  - .3 Latex additive: formulated for use in cement mortar and thin set bond coat.
  - .4 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
- .2 Latex additive:
  - .1 Thin-set mortar: Two component to ANSI A108/A118/A136.1, provided with white mortar at glass, or light coloured tiles as recommended by tile manufacturer. Basis of Design:
    - .1 PremiumPlus With Mortar Admix by Custom Building Products.
    - .2 Flextile 51 with Flextile 44 by Flextile Ltd.
    - .3 Kerabond with Keralastic System by Mapei Inc.
    - .4 Or approved equal.

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- .2 Medium-bed mortar (large format tile): to ANSI A118.4, provided with white mortar at glass, or light coloured tiles as recommended by tile manufacturer.  
Basis of Design:
    - .1 ProLite Premium LFT by Custom Building Products.
    - .2 Flextile 56 SR by Flextile Ltd.
    - .3 220 Marble & Granite Thick Bed Adhesive by Laticrete International Inc.
    - .4 Ultraflex LFT by Mapei Inc.
  
  - .3 Grout:
    - .1 Cement Grout: to ANSI A118.6. Use one part white cement to one part white sand passing a number 30 screen.
    - .2 Latex Cement Grout: to ANSI A118.7, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles.
    - .3 Epoxy grout: to ANSI A118.3, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
    - .4 Colours: To be selected by Consultant from manufacturers full colour range.
    - .5 Basis of Design manufacturers:
      - .1 Ardex.
      - .2 Custom Building Products.
      - .3 Flextile Ltd.
      - .4 Laticrete International.
      - .5 Mapei Inc.
  
  - .4 Waterproofing System: Provide one of the following systems:
    - .1 Liquid applied system:
      - .1 Crack isolation membrane: to ANSI A118.12, flexible, thin, underlayment membrane. Provide manufacturers approved adhesive and/or primer as required. Basis of Design:
        - .1 EasyMat Underlayment by Custom Building Products.
        - .2 170 Sound & Crack Isolation by Laticrete International Inc.
        - .3 Mapesonic 2 by Mapei Inc.
        - .4 Ardex DS70 Acoustic Mat by Ardex.
        - .5 Or approved equal.
      - .2 Waterproof membrane: to ANSI A118.10, cold-applied, self-curing, liquid rubber polymer with integral reinforcing fabric. Basis of Design:
        - .1 Ardex 8+9 Waterproofing with SK Mesh by Ardex.
        - .2 RedGard Waterproofing and Crack Prevention Membrane by Custom Building Products.
        - .3 9235 Waterproofing by Laticrete International Inc.
        - .4 Maplelastic AquaDefense with Reinforcing Fabric by Mapei Inc.
        - .5 Or approved equal.
-

- .2 Sheet applied system:
  - .1 Bonded waterproofing membrane system consisting of 8 mil thick pliable sheet membrane of modified polyethylene (PEVA) core with non-woven polypropylene on both sides. Provide manufacturers prefabricated drain system. Basis of Design:
    - .1 Schluter-Kerdi by Schluter Systems.
    - .2 Or approved equal.
  
- .5 Sealant:
  - .1 Joint backing: to ASTM C1330; Round, solid section, soft polyethylene foam gasket compatible with primer and sealant materials.
  - .2 Primer: for use on porous tile surfaces as recommended by manufacturer.
  - .3 Tile sealant at horizontal floor joints: Multi-component polyurethane sealant with self levelling properties to ASTM C920, Type M, Grade P, Class 25. Colours: To be selected by Consultant from standard colour selection. Basis of Design:
    - .1 Commercial 100% Silicone Sealant by Custom Building Products.
    - .2 Mapesil T Plus by Mapei Inc.
    - .3 Vulkem 445SSL by Tremco Ltd.
    - .4 Or approved equal.
  - .4 Tile sealant for remainder of work: Refer to Section 07 92 00.
  
- .6 Cleaner:
  - .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
  - .2 Material in accordance with TTMAC's requirements and as recommended by tile manufacturer.

## **2.04 MIXES**

- .1 Cement bed for floors:
  - .1 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive as recommended.
  - .2 Measure mortar ingredients by volume.
  
- .2 Dry set mortar: mix to manufacturer's instructions.
  
- .3 Organic adhesive: pre-mixed.
  
- .4 Mix grout to manufacturer's instructions.
  
- .5 Adjust water volumes to suit water content of sand.

### 3 EXECUTION

#### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Concrete floors shall be tested to the following standards to ensure compliance with flooring manufacturer's recommendations.
  - .1 Moisture Test: Moisture emissions from concrete subfloors (cured for a minimum of 28 days) to be tested in accordance with ASTM F1869.

#### 3.02 PREPARATION

- .1 Clean and dry surfaces thoroughly. Remove oil, wax, grease, dust, dirt, paint, tar, primers, form release agents, curing compound, and other foreign material from substrate surfaces which may prevent or reduce adhesion.
- .2 Neutralize any trace of strong acids or alkali from the substrate.

#### 3.03 CEMENT LEVELLING BED

- .1 Install cement levelling bed on uneven substrate surfaces. Ensure level and plumb substrates conforming to the following tolerances:
  - .1 Vertical surfaces: 3 mm in 2.4 m maximum.
  - .2 Horizontal surfaces: 6 mm in 3 m from finished levels of the surface, or better.
- .2 Clean structural substrate control joints and blow-clean with compressed air. Fill control joints flush to levelling bed with grout.

#### 3.04 INSTALLATION

- .1 Waterproofing system:
  - .1 Liquid applied waterproofing system:
    - .1 Crack isolation membrane:
      - .1 Apply primer or adhesive over subfloor in accordance with manufacturer's written instructions.
      - .2 Roll out crack isolation membrane into primer/adhesive while still tacky, butting all edges and ends. Do not overlap.
      - .3 Roll membrane ensuring wrinkles, bubbles or objects trapped under membrane are removed.

- .2 Waterproofing Membrane:
  - .1 Roller apply to prepared substrate in multiple coats to a total dry film thickness of 20 mils in accordance with manufacturer's printed directions. Carry up walls minimum 50 mm high or as indicated on drawings.
- .2 Sheet applied waterproofing system:
  - .1 Apply thin set mortar to substrate with approved trowel and press sheet waterproofing into bond coat. Work sheet membrane into mortar by applying pressure with flat side of trowel in smooth diagonal sweeps to remove air bubbles.
  - .2 Finish seams by overlapping edges by 50 mm or with manufacturers approved joint material.
  - .3 Adhere preformed corners at inside and outside corners and detail all protrusions in accordance with manufacturers written recommendations.
  - .4 Install preformed drain system.
- .2 Perform tile work in accordance with TTMAC Tile Installation Manual, except where specified otherwise.
- .3 Apply tile to clean and sound surfaces.
- .4 Fit tile around corners, fittings, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .5 Maximum surface tolerance 1:800.
- .6 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .7 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .8 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .9 Make internal angles square, external angles rounded or bullnosed.
- .10 Install divider strips at junction of tile flooring and dissimilar materials.
- .11 Allow minimum 48 hours after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting has cured.

- .13 Make control joints in accordance with TTMAC guidelines unless indicated otherwise. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00. Keep building expansion joints free of mortar and grout. Control joints to be provided at perimeter walls, fixed objects, room thresholds, changes in directions and in spacing as outlined in TTMAC.

### **3.05 PROTECTION**

- .1 Prevent traffic over tiled areas, and protect tiled assemblies from weather, freezing, and water immersion, in accordance with mortar manufacturers recommendations.
- .2 Prevent direct impact, vibration and heavy hammering on adjacent and opposite walls for 24 hours minimum, after final installation.
- .3 Cover work temporarily with building paper properly lapped and taped at joints until work has been approved by Consultant.

**END OF SECTION**

## 1 GENERAL

### 1.01 SUMMARY

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### 1.02 REFERENCES

- .1 ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- .2 ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- .3 ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
- .4 ASTM E1264 - Standard Classification for Acoustical Ceiling Products.
- .5 ASTM E1477 - Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
- .6 CAN/ULC S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

### 1.03 ACTION SUBMITTALS

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for ceiling panels and suspension system including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Submit reflected ceiling plans for special grid patterns as indicated.
  - .3 Indicate insert and hanger spacing and fastening details, splicing method for main and cross runners, acoustical unit support at ceiling fixture and lateral bracing and accessories.
- .4 Samples: Submit full size samples of the following:
  - .1 One sample of suspension system.
  - .2 One sample of each type ceiling panel/tile.

#### 1.04 CLOSEOUT AND MAINTENANCE SUBMITTALS

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.
- .3 Maintenance materials: Submit extra 3% or to nearest full carton of each type of ceiling panel/tile.

#### 1.05 QUALITY ASSURANCE

- .1 Mock-ups:
  - .1 Construct one (1) mock-up of each type of ceiling system in location as directed by Consultant.
  - .2 Mock-up shall be 3 m<sup>2</sup> and demonstrate installation of typical light fixtures, and other mechanical and electrical fixtures.
  - .3 Mock-up may form part of the Work if accepted by the Consultant.

#### 1.06 SITE CONDITIONS

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are above 10 degrees C.
- .2 Work of this Section shall be performed when relative humidity is below 80% and ventilation is adequate to remove excess moisture.

### 2 PRODUCTS

#### 2.01 PERFORMANCE CRITERIA

- .1 Design acoustical ceiling system to resist loads and climatic data as indicated, and in accordance with applicable building codes.
- .2 Design ceiling suspension systems in accordance with ASTM C635/C635M and manufacturer's printed directions to provide a maximum deflection of 1/360.
- .3 Design entire suspension system including hanger anchors to not exceed 25% of their ultimate capacity including lighting fixture dead loads.
- .4 Design tile suspension system to support weight of mechanical and electrical items and with required support to allow rotation/relocation of light fixtures. Acoustic panels are not designed to carry weight of mechanical and electrical equipment.
- .5 Design subframing as necessary to accommodate and avoid conflicts and interferences where ducts or equipment prevent regular spacing of hangers.

## 2.02 ACOUSTICAL CEILING PANELS/TILES

- .1 Acoustic units panels (ACT):
  - .1 Type: to ASTM E1264; Type B, Form B2, Pattern E.
  - .2 Flame spread rating of 25 or less in accordance with CAN/ULC S102.
  - .3 Smoke developed 50 or less in accordance with CAN/ULC S102.
  - .4 Noise Reduction Coefficient (NRC) designation of: 0.90 or better.
  - .5 Light Reflectance (LR) range of: 0.88 to ASTM E1477.
  - .6 Edge type: tegular.
  - .7 Colour: White.
  - .8 Size: 610 mm x 610 mm x 25 mm thick.
  - .9 Basis of Design: Optima by Armstrong Ceilings Canada or approved equivalent by:
    - .1 Certainteed Ceilings Canada.
    - .2 CGC Inc.
    - .3 Rockfon.

## 2.03 SUSPENSION SYSTEM

- .1 Suspension system: non fire rated, two directional exposed tee bar grid system to ASTM C635/C635M. Colour: White.
  - .1 Basis of Design: Prelude XL by Armstrong World Industries Inc. or approved equivalent by:
    - .1 CGC Inc.
    - .2 Certainteed Ceilings Canada.
    - .3 Rockfon/Chicago Metallic.
- .2 Basic materials for suspension system:
  - .1 Commercial quality cold rolled steel, zinc coated.
- .3 Exposed tee bar grid components: shop painted satin sheen, white colour. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
- .4 Subframing and carrying channels: ASTM C645, formed from galvanized steel sheet in sizing as required to suit design.
- .5 Hanger wire: galvanized soft annealed steel wire, 3.6 mm diameter for access tile ceilings.
- .6 Hanger inserts: Purpose made.
- .7 Carrying channels: 38 mm x 19 mm channel of galvanized steel.

- .8 Accessories: splices, clips, wire ties, retainers and wall moulding flush, to complement suspension system components, as recommended by system manufacturer.

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

#### **3.02 SUSPENSION SYSTEM**

- .1 Install suspension system in accordance with ASTM C636/C636M and to manufacturers written instructions.
- .2 Erect ceiling suspension system after work above ceiling has been inspected.
- .3 Secure hangers to overhead structure using attachment methods as indicated, ensuring system is independent of walls, pipes, ducts, and metal deck. Provide additional framing, supports and hangers as required to bridge interference items.
- .4 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .5 Lay out centreline of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width.
- .6 Install wall moulding to provide correct ceiling height.
- .7 Completed suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles and speakers.
- .8 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
- .9 Interlock cross member to main runner to provide rigid assembly.
- .10 Ensure finished ceiling system is square with adjoining walls and level within 1:1000.

**3.03 ACOUSTIC PANEL/TILE**

- .1 Install acoustical panels and tiles in ceiling suspension system.
- .2 Co-ordinate ceiling work with work of other sections such as interior lighting, fire protection communication, and intrusion and detection systems.

**3.04 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by acoustical ceiling installation.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.
- .2 Work may include, but is not limited to;
  - .1 Resilient base.

### **1.02 REFERENCES**

- .1 ASTM F1861 - Standard Specification for Resilient Wall Base.

### **1.03 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for resilient base and accessories including product characteristics, performance criteria, and limitations.
- .3 Samples: Submit 300 mm long samples illustrating colours, textures and finishes including, but not limited to:
  - .1 Resilient base.

### **1.04 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual..
- .3 Maintenance materials: Submit extra 3% or to nearest full roll/carton of each type of resilient base and accessory.

### **1.05 SITE CONDITIONS**

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are above 20 degree C for 48 hours before, during and 48 hours after installation.
- .2 Ensure high ventilation rate, with maximum outside air, during installation as follows:
  - .1 Vent directly to outside.
  - .2 Do not let contaminated air recirculate through a district or whole building air distribution system.

- .3 Maintain extra ventilation for 1 month minimum after building occupation.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Resilient base (WB-1): ASTM F1861, continuous, top set base complete with premoulded end stops and external corners as follows:
  - .1 Type: TP - rubber, 3.175 mm thick.
  - .2 Style: tightlock.
  - .3 Height: 114.3 mm.
  - .4 Colour: Refer to Finishes Type on Drawings.
  - .5 Basis of Design:
    - .1 Tightlock Wall Base by Tarkett (Johnsonite).
    - .2 Or approved equal.
- .2 Primers and adhesives: Low VOC of types recommended by resilient base and accessory manufacturer for specific material on applicable substrate, above, on or below grade.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### **3.02 PREPARATION**

- .1 Prepare for installation in accordance with manufacturer's written recommendations.

### **3.03 RESILIENT BASE INSTALLATION**

- .1 Lay out base to keep number of joints at minimum.
- .2 Clean substrate and ensure compliance with manufacturers written instructions.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces in straight and level manner and roll with small hand roller.
- .5 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

- .6 Form corners using premoulded corner units for right angle external corners and formed straight base material for external corners of other angles. Provide field-made corners at locations where premoulded cannot be used.

### **3.04 CLEANING**

- .1 Remove excess adhesive from base and wall surfaces using manufacturers recommended methods.
- .2 Clean, seal and wax base surface to flooring manufacturer's printed instructions.

### **3.05 PROTECTION**

- .1 Protect installed products and components from damage during construction

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 REFERENCES**

- .1 ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
- .2 ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .3 ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
- .4 ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- .5 ASTM F1913 - Standard Specification for Vinyl Sheet Floor Covering Without Backing.
- .6 ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

### **1.03 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for resilient sheet flooring including product characteristics, performance criteria, and limitations.
- .3 Samples: Submit samples illustrating colours, textures and finishes including, but not limited to:
  - .1 300 mm x 300 mm each type sheet material.
  - .2 300 mm long of feature strips, coved base.

### **1.04 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.

- .3 Maintenance materials: Submit extra 3% or to nearest full roll of each type of sheet flooring.

## 1.05 SITE CONDITIONS

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are above 20 degree C for 48 hours before, during and 48 hours after installation.
- .2 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system.

## 2 PRODUCTS

### 2.01 MATERIALS

- .1 Sheet vinyl (VYL-1): ASTM F1913, Homogeneous, slip resistant sheet as follows:
    - .1 Thickness: 2 mm.
    - .2 Colour: Refer to Finishes Type on Drawings.
    - .3 Basis of Design:
      - .1 Classic Mystique PUR by Polyflor.
      - .2 Or approved equal.
  - .2 Vinyl sport flooring (SPT-1): Hard wearing vinyl sheet as follows:
    - .1 Thickness: Minimum 6.0 mm.
    - .2 Colour: Refer to Finishes Type on Drawings.
    - .3 Basis of Design:
      - .1 Tarkett Omnisports Multi-use
      - .2 Recreation 60 by Gerflor
      - .3 Or approved equal
  - .3 Primers and adhesives: Low VOC of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade and as required to suit test results of concrete subfloor.
  - .4 Game line paint: Refer to Section 09 91 30.
  - .5 Self-levelling sub-floor filler: Low VOC, self-levelling cement-based underlayment meeting ASTM F710 and providing a cured density of 2 kg/L. Basis of Design:
    - .1 NovoPlan 2 Plus by Mapei.
    - .2 Or approved equal.
  - .6 Metal edge strips: Aluminum extruded, smooth, mill finish trim with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.
-

- .7 Cove filler and top cap: Manufacturers recommended products.

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Concrete floors shall be tested to the following standards to ensure compliance with flooring manufacturer's adhesive recommendations. Ensure selected adhesive meets substrate's test results.
  - .1 Internal Relative Humidity Test: Humidity tested in accordance with ASTM F2170.
  - .2 Moisture Test: Moisture emissions from concrete subfloors (cured for a minimum of 28 days) to be tested in accordance with ASTM F1869.
  - .3 Subfloor surface pH level. Surfaces with pH over recommended level shall be neutralized.

#### **3.02 PREPARATION**

- .1 Remove sub-floor ridges and bumps.
- .2 Apply subfloor filler and leveller to fill low spots, cracks, joints, and other defects to provide a smooth monolithic surface.
- .3 Prime sub-floor to resilient flooring manufacturer's printed instructions.
- .4 Concrete subfloors shall conform to ASTM F710.

#### **3.03 APPLICATION**

- .1 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .2 Lay flooring with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.
- .3 Run sheets in direction of traffic. Double cut sheet joints and continuously seal or heat weld according to manufacturer's printed instructions.
- .4 As installation progresses, and after installation roll flooring with minimum 45 kg minimum roller to ensure full adhesion.

- .5 Cut flooring around fixed objects.
- .6 Continue flooring over areas which will be under built-in furniture.
- .7 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .8 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .9 Extend sheeting flooring 100 mm up wall at room perimeter and built-in fitment locations using cove fillers and top cap. Form cove with 25 mm radius unless otherwise noted.
- .10 Install metal edge strips at unprotected or exposed edges where flooring terminates.

#### **3.04 CLEANING**

- .1 Forty-eight hours after installation, clean sheet flooring surfaces with a mild soap solution approved by finish manufacturer. Rinse clean and allow to dry.

#### **3.05 PROTECTION**

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit traffic on floor for 72 hours after installation.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 REFERENCES**

- .1 Master Painters Institute (MPI) - Architectural Painting Specification Manual.

### **1.03 ADMINISTRATIVE REQUIREMENTS**

- .1 Scheduling:
  - .1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 48 hours in advance of proposed operations.
  - .2 Schedule painting operations to prevent disruption of occupants in and about the building.

### **1.04 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for paint and coating materials including product characteristics, performance criteria, and limitations including:
  - .1 Manufacturer's Product names, types, codes and names.
  - .2 Number of coats, and dry film thicknesses.
  - .3 Submit listing minimum of 8 weeks before materials are required with Product data listed for each required Painting Schedule code.
- .3 Samples: Submit 300 mm x 300 mm samples of each paint, stain and coating type illustrating colours, gloss/sheen and textures.
- .4 Reports/certificates: Submit the following:
  - .1 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
  - .2 Submit documentation confirming each worker has Qualification Certificate of Proficiency.

### **1.05 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.

- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.
- .3 Maintenance materials: Submit extra 3% or to nearest full L can of each type and colour of paint.

#### 1.06 QUALITY ASSURANCE

- .1 Installers: Perform Work of this Section by a company that has a minimum of five (5) years proven experience in the application of paint and coating systems of a similar size and nature.
- .2 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.
- .3 Conform to latest MPI requirements for painting work including preparation and priming.
- .4 Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.
- .5 Mock-ups:
  - .1 Construct one (1) mock-up of each type of paint schedule code material in location as directed by Consultant.
  - .2 Mock-up shall be 3 m<sup>2</sup> and demonstrate gloss/sheen, textures, workmanship, and coverage/hiding power of finish.
  - .3 Mock-up may form part of the Work if accepted by the Consultant.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- .1 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C. Ensure materials and supplies are kept away from heat generating devices.
- .2 Keep areas used for storage, cleaning and preparation, clean and orderly. After completion of operations, return areas to clean condition.
- .3 Remove paint materials from storage only in quantities required for same day use.
- .4 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area. 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. Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada (NFC).

## 1.08 SITE CONDITIONS

- .1 Ambient Conditions: Work of this Section shall be performed when air and surface temperatures are between 10 degrees C and 32 degrees C. Maintain temperature conditions for 24 hours before, during and 24 hours after painting.
- .2 Ensure relative humidity is below 85%.
- .3 Ensure no rain or snow are forecast to occur before paint has thoroughly cured. Do not apply paint when it is foggy, misty, raining or snowing at site.
- .4 Provide minimum lighting level of 323 Lux on surfaces to be painted.
- .5 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.
- .6 Do not apply paint when:
  - .1 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
  - .2 Surface to be painted is wet, damp or frosted.
- .7 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
- .8 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
- .9 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Consultant such that painted surfaces will have dried and cured sufficiently before occupants are affected.

## 2 PRODUCTS

### 2.01 MANUFACTURERS

- .1 AkzoNobel.
- .2 Benjamin Moore and Co. Ltd.
- .3 PPG Industries Inc.
- .4 Sherwin-Williams Company.

## 2.02 PERFORMANCE CRITERIA

- .1 Environmental Performance Requirements:
  - .1 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.
  - .2 Green Performance in accordance with MPI Standard GPS-1.

## 2.03 MATERIALS

- .1 Only paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Paint materials for paint systems: to be products of single manufacturer.

## 2.04 COLOUR SCHEDULE

- .1 Refer to Finishes Type on Drawings for Colour Schedule.
- .2 Selection of colours will be from manufacturers' full range of colours.
- .3 Where specific products are available in restricted range of colours, selection will be based on limited range.
- .4 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats if requested by Consultant.
- .5 Perform colour tinting operations prior to delivery of paint to site.
- .6 For deep and ultra deep colours 4 coats may be required.

## 2.05 GLOSS/SHEEN RATINGS

- .1 Paint gloss: defined as sheen rating of applied paint, in accordance with following values:

| Gloss Level Category | Units @ 60 Degrees | Units @ 85 Degrees |
|----------------------|--------------------|--------------------|
| G1 - matte finish    | 0 to 5             | max. 10            |
| G2 - velvet finish   | 0 to 10            | 10 to 35           |
| G3 - eggshell finish | 10 to 25           | 10 to 35           |
| G4 - satin finish    | 20 to 35           | min. 35            |

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|                        |          |  |
|------------------------|----------|--|
| G5 - semi-gloss finish | 35 to 70 |  |
| G6 - gloss finish      | 70 to 85 |  |
| G7 - high gloss finish | > 85     |  |

- .2 Gloss level ratings of painted surfaces as noted on Finish Schedule.

## 2.06 INTERIOR PAINTING SYSTEMS

- .1 Asphalt Surfaces: zone/traffic marking of interior drive and parking areas at underground parking:
  - .1 INT 2.1A Latex zone/traffic marking finish.
- .2 Concrete Masonry Units: smooth and split face block and brick:
  - .1 INT 4.2A Latex finish.
- .3 Structural Steel and Metal Fabrications: columns, beams, joists, etc.:
  - .1 INT 5.1R High performance architectural latex finish.
- .4 Galvanized Metal: doors, frames, misc. steel, pipes, overhead decking, ducts, etc.:
  - .1 INT 5.3A Latex finish. For use at ducts, pipes, metal deck.
  - .2 INT 5.3M High performance architectural latex finish. For use on hollow metal doors and frames.
- .5 Wood Floors and Stairs: including hardwood flooring, etc.:
  - .1 INT 6.5C Polyurethane varnish gloss finish.
- .6 Plaster and Gypsum Board: gypsum wallboard, drywall, "sheet rock type material", etc., and textured finishes:
  - .1 INT 9.2B High performance architectural latex finish.
  - .2 INT 9.2F Waterborne epoxy (tile-like) finish. For use in wet/damp areas.

## 3 EXECUTION

### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.
- .2 Test concrete, masonry and plaster surfaces for alkalinity as required.

- .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test". Perform no painting work when maximum moisture content of substrate exceeds:
  - .1 12% for concrete and masonry (clay and concrete brick/block).
  - .2 15% for hard wood.
  - .3 17% for soft wood.
  - .4 12% for plaster and gypsum board.

### 3.02 PROTECTION

- .1 Protect existing building surfaces and adjacent structures from paint splatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Consultant.
- .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
- .3 Protect factory finished products and equipment.
- .4 Protect passing pedestrians, building occupants and general public in and about the building.
- .5 Removal of electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings shall be done prior to undertaking any painting operations by General Contractor. Items shall be securely stored and re-installed after painting is completed by General Contractor.
- .6 As painting operations progress, place "WET PAINT" signs in occupied areas and restrict or prevent traffic as necessary.

### 3.03 PREPARATION

- .1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths.
  - .2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
  - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
  - .4 Allow surfaces to drain completely and allow to dry thoroughly.
  - .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.
- .2 Clean existing cementitious and masonry surfaces with high pressure water washing.
- .3 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.
- .4 Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - .2 Apply wood filler to nail holes and cracks.
  - .3 Tint filler to match stains for stained woodwork.
- .5 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.
- .6 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
- .7 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

### **3.04 APPLICATION**

- .1 Perform preparation and operations for painting in accordance with MPI Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 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.
- .4 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted herein.
- .5 Apply paint when previous coat of paint is dry or adequately cured.

- .6 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .7 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .8 Sand and dust between coats to remove visible defects.
- .9 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.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .12 Mechanical/Electrical Equipment:
  - .1 Coordinate painting of mechanical and electrical components with Divisions 21, 22, 23 and 26.
  - .2 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.
  - .3 Do not paint over nameplates.
  - .4 Keep sprinkler heads free of paint.
  - .5 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
  - .6 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .13 Pavement Markings:
  - .1 Paint parking space divisions and other pavement markings in accordance with manufacturers recommendations and as indicated.
  - .2 Painted lines and symbols shall be straight or uniformly curved with well defined edges and full paint coverage.
  - .3 Paint lines a minimum 100 mm wide unless noted otherwise on drawings.
  - .4 Protect newly painted markings from traffic or disturbance until dry.

### 3.05 SITE QUALITY CONTROL

- .1 Painted surfaces to be inspected as required. Cooperate with inspection firm and provide access to areas of work.

- .2 Standard of Acceptance:
  - .1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
  - .2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
  - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- .3 Defects include, but are not limited to;
  - .1 Improper cleaning and preparation of surfaces.
  - .2 Entrapped dust, dirt, rust.
  - .3 Alligatoring, blisters, peeling.
  - .4 Scratches, blemishes.
  - .5 Uneven coverage, misses, drips, runs, and poor cutting in.

### **3.06 CLEANING AND RESTORATION**

- .1 Clean and re-install all hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.
- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

### **3.07 PROTECTION**

- .1 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination: Coordinate the work of this Section with Section 09 65 16 to ensure compatibility approval of flooring manufacturer for coatings being applied to vinyl sports flooring.

### **1.03 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for gym floor marking paint including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Shop Drawings to illustrate layout conforming to Gym Floor Finish Plan.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Game line paint: Pigmented coating system approved by vinyl sport flooring manufacturer.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### **3.02 APPLICATION**

- .1 Game lines: Provide game lines at sport flooring to layout as indicated on approved Shop Drawings.

**3.03 PROTECTION**

- .1 Prohibit traffic on floor until full cure has been achieved.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 REFERENCES**

- .1 ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
- .2 ASTM F2285, Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use.
- .3 CSA B651 - Accessible Design for the Built Environment.

### **1.03 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for washroom accessories including product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings: Submit Shop Drawings to illustrate:
  - .1 Size and description of components, base material, surface finish inside and out, hardware and locks,
  - .2 Attachment devices, description of rough-in-frame, and building-in details of anchors for grab bars.

### **1.04 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual including product warranty documentation.
- .3 Maintenance materials: Submit special tools required for assembly, disassembly, or removal of washroom accessories.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 Pack, brace or crate products as required to prevent distortion in shipment and handling. All packages and crates to be labelled.

## 2 PRODUCTS

### 2.01 MANUFACTURERS

- .1 ASI Group Canada.
- .2 Bobrick Washroom Equipment Inc.
- .3 Or approved equivalent.

### 2.02 MATERIALS

- .1 Stainless steel sheet metal: to ASTM A480/A480M, Type 304, with finish as noted.
- .2 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
- .3 Fasteners: Concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

### 2.03 COMPONENTS

- .1 The following accessories are provided as a basis of design. Approved equivalents may be considered provided they are approved prior to purchase.
  - .2 Washroom mirror (AC-1):
    - .1 Standard mirror with channel frame in sizes as indicated on drawings with concealed wall hanger.
    - .2 Mirror: 6 mm thick glass mirror with galvanized steel back.
    - .3 Frame: 19 mm x 19 mm channel frame, Type 304 stainless steel with satin finish.
    - .4 Basis of Design: Model B-290 Series by Bobrick.
  - .3 Sanitary napkin disposal (AC-2):
    - .1 Surface mounted sanitary napkin disposal projecting 105 mm from wall. Disposal door to be mounted to cabinet with spring-loaded full-length piano hinge.
    - .2 Waste receptacle: Provide with leak-proof rigid moulded polyethylene liner with 4.6 litre capacity.
    - .3 Colour and finish: Type 304 stainless steel with satin finish.
    - .4 Basis of Design: Model B-254 by Bobrick.
  - .4 Soap holder (AC-3):
    - .1 Recessed heavy duty soap dish for masonry mounting.
-

- 
- .2 Colour and finish: Type 304 stainless steel with satin finish.
  - .3 Basis of Design: Model 9403 by Bradley.
  
  - .5 Straight grab bar (AC-4):
    - .1 32 mm diameter bar x length as indicated on drawings with flange secured by set screws.
    - .2 Colour and finish: Type 304 stainless steel with satin finish.
    - .3 Basis of Design: Model B-5806 Series by Bobrick.
  
  - .6 90 degree grab bar (AC-5):
    - .1 38 mm diameter bar x 760 mm x 760 mm with flange secured by set screws.
    - .2 Colour and finish: Type 304 stainless steel with satin finish and peened grip.
    - .3 Basis of Design: Model B-6898.99 by Bobrick.
  
  - .7 Folding shower seat (AC-6):
    - .1 Stainless steel framing complete with self locking mechanism and 8 mm thick phenolic seat. Folding seat unit to be designed for 227 kg (500 lb).
    - .2 Colour and finish: Type 304 stainless steel with satin finish framing, Ivory coloured phenolic seat.
    - .3 Basis of Design: Model B-5192 by Bobrick.
  
  - .8 Coat hook (AC-7):
    - .1 Surface mounted single hook, vandal and ligature resistant.
    - .2 Colour and finish: Type 304 stainless steel with satin finish.
    - .3 Basis of Design: Model B-983 by Bobrick.
  
  - .9 Toilet tissue dispenser (AC-8): Provided by Owner for installation under this Section.
  
  - .10 Soap dispenser (AC-9): Provided by Owner for installation under this Section.
  
  - .11 Back support (AC-10):
    - .1 Surface mounted toilet backrest.
    - .2 Colour and finish: Type 304 stainless steel with brushed finish tube and white polyurethane integral foam back.
    - .3 Basis of Design: Model B-5892 by Bobrick.
  
  - .12 Waste receptacle (AC-11):
    - .1 Surface mounted waste receptacle with 22.6 L capacity.
    - .2 Provide reusable vinyl liner.
    - .3 Colour and finish: Type 304 stainless steel with satin finish.
    - .4 Basis of Design: Model B-9279 by Bobrick.
  
  - .13 Change hook (AC-12):
    - .1 Surface mounted coat and hat hook.
-

- .2 Colour and finish: Brushed nickel.
- .3 Basis of Design: Modern Metal Hook 1253 by Richelieu.
  
- .14 Lockers (AC-13): Refer to Section 10 51 13.

## **2.04 FABRICATION**

- .1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.
- .2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.
- .3 Brake form sheet metal work with 1.5 mm radius bends.
- .4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- .5 Shop assemble components and package complete with anchors and fittings.
- .6 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .7 Provide steel anchor plates and components for installation on studding and building framing.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### **3.02 INSTALLATION**

- .1 Install washroom accessories in accordance with manufacturer's instructions, CSA B651 and reviewed Shop Drawings. Units to be installed rigid, straight, plumb, and level.
- .2 Install grab bars to built-in anchors provided by bar manufacturer. Installed grab bars to withstand minimum load of 1.3 kN applied in any direction to CSA B651.
- .3 Use tamper proof screws/bolts for fasteners.
- .4 Adjust washroom accessories components and systems for correct function and operation.

- .5 Lubricate moving parts to operate smoothly and fit accurately.
- .6 Fill units with necessary supplies shortly before final acceptance of building.

**3.03 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by washroom accessory installation.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.

### **1.02 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for metal lockers including product characteristics, performance criteria, finish and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Shop Drawings to illustrate details, dimensions, fabrication and installation details.
  - .2 Indicate type and class of locker, thicknesses of metal, assembled banks of lockers, tops and bases, interior fittings and shelves, numbering, filler panels, doors complete with handles and locking method, ventilation method, and finishes.
- .4 Samples: Submit 50 mm x 50 mm samples of finishes on metal illustrating colours, textures and finish.

### **1.03 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.

### **1.04 QUALITY ASSURANCE**

- .1 Manufacturers: Manufacturers to have a minimum of five (5) years experience manufacturing metal lockers of a similar size and nature.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 Store and protect metal lockers from nicks, scratches, and blemishes.

## 2 PRODUCTS

### 2.01 MANUFACTURED UNITS

- .1 Lockers:
  - .1 Size: 380 mm wide x 457 mm deep x 1828 mm high.
  - .2 Configuration: Triple tier.
  - .3 Doors and frames to be fabricated from 1.6 mm thick cold rolled commercial steel.
  - .4 Assembly: Knock down construction.
  - .5 Top: Sloped.
  - .6 Door handle: Recessed handle with hasp to accept padlock.
  - .7 Finish: Minimum 2 mil thick powder coat finish in colour to be selected by Consultant.
  - .8 Basis of Design:
    - .1 Traditional Collection by ASI Storage Solutions.
    - .2 Elite Lockers by Dasco Storage Systems.
    - .3 Emperor Corridor Lockers by Hadrian Manufacturing.
    - .4 Series 50 by Lincora Lockers.
    - .5 Or approved equal.

## 3 EXECUTION

### 3.01 EXAMINATION

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

### 3.02 INSTALLATION

- .1 Assemble and install lockers in accordance with manufacturer's written instructions.
- .2 Securely fasten lockers to walls using grounds and nailing strips as required.
- .3 Install wall trim around recessed locker banks.
- .4 Install filler panels (false fronts) where indicated and where obstructions occur.
- .5 Install finished panels to exposed ends or backs of locker banks.
- .6 Install locker numbers.

**3.03 ADJUSTING**

- .1 Adjust metal lockers for correct function and operation in accordance with manufacturer's written instructions.
- .2 Lubricate moving parts to operate smoothly and fit accurately.

**3.04 CLEANING**

- .1 Clean lockers prior to final acceptance by Consultant.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Section includes all methods, materials and installation as required to complete the Work of this Section in accordance with the Conditions of the Contract.
- .2 Work may include, but is not limited to;
  - .1 Acrylic signage.

### **1.02 ACTION SUBMITTALS**

- .1 Submit action submittals in accordance with Section 01 00 00.
- .2 Product data: Submit manufacturers product data for each specified Product including product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Submit Shop Drawings as follows:
  - .1 Shop Drawings to illustrate details, dimensions, materials, gauges, and finishes.

### **1.03 CLOSEOUT AND MAINTENANCE SUBMITTALS**

- .1 Submit closeout and maintenance submittals in accordance with Section 01 00 00.
- .2 Closeout Product data: Submit manufacturers maintenance and cleaning data for incorporation into operation and maintenance manual.

### **1.04 DELIVERY, STORAGE, AND HANDLING**

- .1 Pack, brace or crate products as required to prevent distortion in shipment and handling. All packages and crates to be labelled.

## **2 PRODUCTS**

### **2.01 MANUFACTURED UNITS**

- .1 Acrylic signage:
  - .1 Provide acrylic signage at all rooms noting the room name and number.

**3 EXECUTION**

**3.01 EXAMINATION**

- .1 Examine and verify previously installed Work upon which this Section depends. Report defects or unsatisfactory conditions to Consultant. Commencement of work of this Section means acceptance of existing conditions.

**3.02 INSTALLATION**

- .1 Install manufactured units in accordance with manufacturer's instructions, rigid and secure and to reviewed Shop Drawings.
- .2 Adjust and clean manufactured units after installation in accordance with manufacturer's written instructions.

**3.03 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by installation of manufactured units.

**END OF SECTION**