

# **ARCHITECTURAL SPECIFICATIONS**

**Issued for Tender**

## **GBGH Minor Works - Pharmacy**

**1112 St. Andrew Drive  
Midland, ON L4R 4P4**

### **Cumulus Architects Inc.**

**160 Pears Avenue - Suite 300  
Toronto, Ontario  
M5R 3P8**

**Tel: 416-539-0763**

**Project No. 24013B**

**December 19, 2025**

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Document Responsibility and Project Directory

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## 1.1 Document Responsibility

- .1 Refer to Project Manual, Section 00 01 10 - Table of Contents, for indication of document responsibility (DR). Abbreviations for entity responsible for document preparation are as follows:
  - .1 A - Denotes documents prepared by Architect.
  - .2 E - Denotes documents prepared by Electrical Engineer.
  - .3 H - Denotes documents prepared by Architectural Hardware Consultant.
  - .4 M - Denotes documents prepared by Mechanical Engineer.
  - .5 O - Denotes documents prepared by Owner.
- .2 Professional seals if applied next to company names in the project directory (below) govern only those specification sections and schedules identified by the corresponding document responsibility (DR) abbreviation in Section 00 01 10.

## 1.2 Project Directory

- .1 Owner:  
**Georgian Bay General Hospital**  
1112 St Andrews Drive  
Midland, Ontario  
L4R 4P4  
  
Tel: 705-526-1300
- .2 Architect (the *Consultant*):  
**Cumulus Architects Inc.**  
160 Pears Avenue, Suite 300  
Toronto, Ontario  
M5R 3P8  
  
Tel: 416-539-0763
- .3 Mechanical Engineer:  
**Quasar Consulting Group**  
250 Rowntree Dairy Road  
Woodbridge, Ontario  
L4L 9J7  
  
Tel: 905-507-0800

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Document Responsibility and Project Directory

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.4 Electrical Engineer:

**Quasar Consulting Group**

250 Rowntree Dairy Road  
Woodbridge, Ontario  
L4L 9J7

Tel: 905-507-0800

.5 Architectural Hardware Consultant:

**Spyder SC**

26 Dale Crescent,  
Bradford West Gwillimbury, Ontario  
L0L 1L0

Tel: 647-271-6489

**END OF SECTION**

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**END OF SECTION**

## 1.1 Information Available for Review

- .1 The following documents are made available for review:
  - .1 Hazardous materials/designated substances report(s):
    - .1 "Hazardous Building Materials Assessment (Pre-Construction) Kitchen and Office Renovations, Georgian Bay General Hospital, 1112 St. Andrew Drive, Midland, ON" dated December 4, 2025, prepared by Pinchin Ltd.
    - .2 "333903 Asbestos Reassessment Report, 1112 St. Andrew Drive, Midland, GBGH, Jan 8, 2024".
  - .2 Owner's guidelines and policies:
    - .1 GBGH Contractor Regulations.
- .2 The accuracy of the information contained in the above listed documents has not been independently verified by the *Consultant*.

**END OF SECTION**

Summary of Work

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 *Contract Documents* conventions.
- .2 *Contract Documents* for construction purposes.
- .3 Law, notices, permits and fees.
- .4 Documents at the *Place of the Work*.
- .5 Use of premises and the *Place of the Work*.
- .6 Items supplied by *Owner*.
- .7 Electronic files.

### **1.2 Contract Documents Conventions**

- .1 The *Contract Documents* have been arranged into various divisions, sections, drawings, and schedules for the purpose of presenting the *Work* in a logical and organized form and to enable ease of reference and interpretation, and are not intended to be an arrangement of precise and independent *Subcontractors*, or jurisdiction of responsibility for the various parts of the *Work*.
  - .1 The *Contractor* shall be solely responsible for coordinating the execution of the *Work* of this *Contract* in accordance with the requirements of the *Contract Documents*.
  - .2 The *Consultant* and *Owner* shall not be required to decide on questions arising with regard to agreements or contracts between the *Contractor* and *Subcontractors* or *Suppliers*, nor to the extent of the parts of the *Work* assigned thereto, nor to establish subcontract limits between Sections or Divisions of the *Work*.
  - .3 No extra will be allowed as a result of the failure to coordinate and allocate the *Work* such that the *Work* is provided in accordance with the *Contract Documents*.
- .2 The *Specifications* are written in the imperative mood and in streamlined form. The imperative language is directed to *Contractor*, unless stated otherwise.
- .3 Complete sentences by reading "shall", "*Contractor* shall", "shall be", and similar phrases by inference. Where a colon (:) is used within sentences and phrases, read the words "shall be" by inference.
- .4 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.
- .5 When used in the context of a *Product*, read the word "provide" to mean "supply and install to result in a complete installation ready for its intended use".
- .6 Named *Products* alternates or equals, indicated by the phrases "or approved alternate by XYZ Manufacturing" or "or approved equal by XYZ Manufacturing", shall be interpreted to mean that named *Product* alternate or equal, if selected for use in lieu of indicated or specified *Product*, meets or exceeds performance, appearance, general arrangement, dimensions, availability, code and standards compliance, and colour of specified *Product*. Be responsible for costs and modifications associated with the inclusion of named *Product* alternate or equal at no additional cost to the *Owner*.

## Summary of Work

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- .7 The use of the words “include” or “including”, or variations thereof, within the *Contract Documents* is not limiting.
- .8 The words “make good” or “making good” shall mean that, when a finish or material has been altered, the material or finish shall be repaired or replaced, and refinished to match existing quality and appearance to acceptance of *Consultant*, and that repaired or replaced and refinished *Work* shall not be discernible from existing materials or finishes when judged by the *Consultant* from a viewing distance of 1830 mm (6'), and that such work is included in the *Contract Price*.
- .9 Where a component, device, item or part of materials or equipment is referred to in the singular number, such reference shall require the provision of as many components, devices, items or parts of material or equipment necessary to complete the *Work*.
- .10 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, except as follows:
    - .1 If a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the edition or version referenced in the applicable code or other regulatory requirement shall apply.
  - .3 The *Contract Documents* may specify, indicate, or schedule requirements that exceed the requirements of the building code, other applicable codes, requirements of authorities having jurisdiction, and standards cited in the *Contract Documents*. In such cases, the requirements specified, indicated, or scheduled in the *Contract Documents* shall govern.
  - .4 If compliance with two or more reference standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to *Consultant* for clarification.

### 1.3 **Contract Documents for Construction Purposes**

- .1 *Owner* shall supply *Contractor* with a complete set of *Contract Documents* in electronic form before commencement of the *Work*.

### 1.4 **Laws, Notices, Permits, and Fees**

- .1 The building code - Ontario Regulation 163/24, including amendments, shall govern the *Work*.
- .2 Comply with codes, by-laws, and regulations of authorities having jurisdiction over the *Place of the Work*. Codes and regulations form an integral part of the *Contract Documents*.
- .3 *Owner* shall apply and pay for the building permit. The *Contractor* shall pick up building permit from the municipal department having jurisdiction at the *Place of the Work*. Obtain and pay for all other permits, licenses, deposits and certificates of inspection as part of the *Work*.
- .4 Arrange for inspection, testing and acceptance of the *Work* required by the authorities having jurisdiction. Be responsible for necessary preparations, provisions and pay costs.

### Summary of Work

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- .5 Obtain permits required to execute work on municipal rights of way. Obtain damage deposits for sidewalks, roads and services, unless otherwise indicated.
- .6 It is the responsibility of the *Contractor* to schedule notifications and inspections required by authorities having jurisdiction such that notifications can be properly received and that inspections can be properly undertaken without causing a delay in the *Work*. The *Contractor*, at no additional cost to the *Owner*, shall be solely responsible for any delay in the *Work* caused by failure to properly schedule required notifications and inspections.
- .7 The *Contractor* shall provide to the chief building official or the registered code agency, where a registered code agency is appointed under the Ontario Building Code Act in respect of the construction to which the notice relates, the required notices set out in Division C – Part 1 Sentence 1.3.5.1(2) and Sentence 1.3.5.2 of the Ontario Building Code, O. Reg. 332/12 as amended. The *Contractor* shall be present at each site inspection by an inspector or registered code agency as applicable under Division C – Part 1 Sentence 1.3.5.2 of the building code.
  - .1 It is the responsibility of the *Contractor* to schedule notifications to the chief building official or the registered code agency such that the inspection pertaining to the notifications can be made within the time frame as required under Division C – Part 1 Sentence 1.3.5.3 of the Ontario Building Code, O. Reg. 332/12 as amended, without causing a delay in the *Work*. The *Contractor*, at no additional cost to the *Owner*, shall be solely responsible for any delay in the *Work* caused by failure to properly schedule required notifications and inspections.

#### 1.5 Documents at the *Place of the Work*

- .1 Maintain at the *Place of the Work*, one copy of each of following:
  - .1 *Contract Documents* including drawings, specifications, addenda, and other modifications to the *Contract*.
  - .2 'Reviewed' or 'Reviewed as Noted' submittals.
  - .3 Construction and submittal schedules.
  - .4 *Supplemental Instructions*, proposed *Change Orders*, *Change Orders*, and *Change Directives*.
  - .5 RFI responses and RFI log.
  - .6 Field test reports and independent testing reports.
  - .7 *Consultant's* field review reports and deficiency reports.
  - .8 Manufacturer's field review reports.
  - .9 Reports by authorities having jurisdiction.
  - .10 Building and other applicable permits, and related permit documents.
  - .11 Daily log including:
    - .1 Number of workers actively working at the *Place of the Work* by each subcontract.
    - .2 *Subcontractors* working at the *Place of the Work*.
    - .3 Parts of the *Work* being worked on.

### Summary of Work

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- .4 Working hours worked at the *Place of the Work*.
- .5 Activities with intermittent progress.
- .6 Time lost and explanation for such time lost.
- .7 Difficulties (work scheduled to start but did not with the reason why, delays, labour inefficiencies, labour shortage, weather).
- .8 *Products* and materials delivered.
- .9 Equipment mobilized and/or demobilized.
- .10 Demolition conditions.
- .11 Start and finish date of each part of the *Work*.
- .12 As-built drawings recording as-built conditions, instructions, changes for structure, equipment, wiring, plumbing, and the like, as called for in Section 01 78 00 and Divisions 21, 22, and 23 and Divisions 26, 27, and 28, prior to being concealed.
- .2 Make above material available to *Consultant* upon request.

#### **1.6 Use of Premises and the *Place of the Work***

- .1 Except as otherwise specified, *Contractor* has unrestricted use of *Place of the Work* from time of *Contract* award until *Ready-for-Takeover*.

#### **1.7 Not In Contract Items and Items Supplied by Owner**

- .1 NIC (Not In *Contract*) shall be used to designate various items of equipment that require coordination for installation although are not provided as part of the *Work*.
- .2 OS/CI (*Owner* supplied, *Contractor* install) shall be used to designate various items of equipment that will be supplied by the *Owner* for installation by the *Contractor* as part of the *Work*.
- .1 **Owner Responsibilities:**
  - .1 Order and pay for items supplied by *Owner* not already in *Owner's* possession.
  - .2 Arrange and pay for delivery of items supplied by *Owner* F.O.B. the *Place of the Work*, within time frames required by *Contractor's* progress schedule. If delivered sooner than required by *Contractor's* latest progress schedule submitted to *Owner*, arrange and pay for delivery to a temporary storage location and subsequent delivery to the *Place of the Work*.
  - .3 Advise *Contractor* in writing of the value of items supplied by *Owner* for *Contractor's* insurance purposes.
  - .4 Arrange and pay for delivery to *Contractor* of reviewed *Shop Drawings*, *Product* data, samples, and manufacturer's installation instructions.
  - .5 Inspect deliveries jointly with *Contractor*.
  - .6 Submit claims for transportation damage.
  - .7 Arrange for replacement of damaged, defective or missing items identified at time of delivery.
  - .8 Arrange for manufacturer's field services.

## Summary of Work

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- .9 Arrange for delivery of manufacturer's warranties to *Contractor* for inclusion in operation and maintenance manual.
- .2 **Contractor Responsibilities:**
  - .1 Designate in progress schedule, time frames for delivery of items supplied by *Owner* to the *Place of the Work* and for receipt of related submittals. If the *Place of the Work* is not ready to receive delivery of items supplied by *Owner* within the time frame indicated in the latest progress schedule submitted to *Owner*, arrange and pay for delivery to a temporary storage location and subsequent delivery to the *Place of the Work*.
  - .2 Review all required submittals and notify *Consultant* of any observed discrepancies or anticipated problems.
  - .3 Ensure that course of construction insurance is adequate to cover items supplied by *Owner*.
  - .4 Receive and unload items supplied by *Owner* at the *Place of the Work*.
  - .5 Inspect deliveries jointly with *Owner*. Record and notify *Owner* and *Consultant* of shortages and visibly damaged or defective items.
  - .6 Handle items supplied by *Owner* at the *Place of the Work*, including uncrating and storage. Dispose of waste materials and debris.
  - .7 Take appropriate precautions to protect items supplied by *Owner* from loss or damage.
  - .8 Repair or replace items damaged at the *Place of the Work*.
  - .9 Assemble, install, connect, adjust, and finish items supplied by *Owner* as specified.
  - .10 Arrange for inspections required by authorities having jurisdiction as specified.
  - .11 Arrange for or perform testing as specified.
  - .12 Workmanship warranty for installation.

### 1.8 Electronic Files

- .1 In the event that the *Contractor*, a *Subcontractor*, or a *Supplier* requests AutoCAD files from the *Consultant*, the *Consultant* will be allowed to use their discretion whether or not they will provide them. The *Consultant* may charge a fee for providing the electronic files and/or require a copyright waiver to be signed, also at the *Consultant's* discretion.

### PART 2 - PRODUCTS

Not applicable.

### PART 3 - EXECUTION

Not applicable.

**END OF SECTION**

## Work Sequence

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### PART 1 - GENERAL

#### 1.1 Sequencing Guidelines

- .1 *Work* of this *Contract* is divided into distinct but interrelated Phases as indicated on the drawings.
- .2 In general, the Phases of the *Work* shall be based on maintaining *Owner's* operation uninterrupted; and maintaining continuous operation of the *Owner's* facilities and *Owner's* egress from, and access to, the buildings during construction. This refers to both internal building egress and access and external site and building egress and access.
- .3 The intent of the Phases is to maintain operation and access to all areas of the existing building by the *Owner* necessary to provide uninterrupted medical and support services. The *Owner's* plant and facilities will remain in full operation throughout the *Work*. The Phasing described herein shall be used for the purpose of establishing a construction schedule and shall set a minimum level of performance for any other proposal. The Phasing indicated on the Phasing diagram shall be the governing sequence unless agreed to in writing by *Owner*, *Consultant* and *Contractor*.
- .4 The Phasing described herein does not describe the construction process in its entirety nor does it describe all construction consequences of the Phasing. It remains the *Contractor's* sole responsibility to schedule all aspects of the construction within the general requirements described herein.
- .5 Any suggested changes to the Phasing, Phasing procedures, and construction schedule are subject to agreement by the *Owner* and *Consultant*.
- .6 Instructions issued under various sections throughout the *Contract Documents* with regard to conditions related to the Phasing of this *Project* shall be carried out in conjunction with work specified herein.
- .7 The *Work* for each Phase may include mechanical and electrical work outside the boundaries shown on the Phasing Plan to complete construction and ensure proper functioning of all building systems for that area.
- .8 Submit interference drawings for existing building conditions as required by the Phasing work and in accordance with Section 01 33 00.
- .9 Include for certain work to be done outside of regular working hours such as system changeovers, reconnecting existing services and other such work which would disrupt continuity of building services, building occupancy or *Owner's* operation. The times for performing such work shall be subject to the *Owner's* approval.
- .10 Maintain and/or provide services and facilities (both temporary and permanent) when required during construction, to allow existing and/or occupied portions of the *Owner's* plant and facilities to function and operate as a hospital during the *Work*.

#### 1.2 Phases

- .1 The Phases of the *Work*, described generally under paragraph 1.2.1 above, are described more particularly as follows:
  - .1 Phase 0 – Early Works that allow the subsequent Phases, some decant, minor and will not require occupancy approvals.



#### Work Sequence

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- .2 Phase 1 – New pharmacy, will require occupancy after completion.
- .3 Phase 2 – Decant to allow Phase 3 construction, move into new pharmacy, relocate staff functions to Phase 0 area.
- .4 Phase 3 – Remainder of pharmacy renovation, second and final stage of occupancy.

#### **PART 2 - PRODUCTS**

Not applicable.

#### **PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Allowances

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## PART 1 - GENERAL

### 1.1 Section Includes

- .1 Cash allowances.

### 1.2 Cash Allowances

- .1 Expenditure of cash allowances:
  - .1 The *Owner*, through the *Consultant*, will provide the *Contractor* with documentation required to permit pricing of a cash allowance item.
  - .2 The *Owner*, through the *Consultant*, may request the *Contractor* to identify potential *Suppliers* or *Subcontractors*, as applicable, and to obtain at least three competitive prices for each cash allowance item.
  - .3 The *Owner*, through the *Consultant*, will determine by whom each cash allowance item will be performed and for what amount. Obtain *Owner's* prior written approval before entering into a subcontract, amending an existing subcontract, or before performing by own forces, work that is covered by a cash allowance. Upon issuance of *Owner's* written approval, the *Contractor's* responsibilities for a cash allowance item shall be the same as for other work of the *Contract*.
- .2 Cash allowances are for supply and installation unless otherwise specified.
- .3 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 Cash allowances for supply only:
  - .1 Amount of each cash allowance includes:
    - .1 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 at the *Place of the Work*.
    - .2 Installation and all other related costs.
- .5 Cash allowances for install only:
  - .1 Amount of each cash allowance includes:
    - .1 Unloading, storing, handling of *Products* at the *Place of the Work*.
    - .2 Installation, finishing, and commissioning of *Products*.
    - .3 Applicable taxes and duties (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 Net cost of *Products*.
    - .2 Delivery to the *Place of the Work*.

Allowances

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.6 Cash allowances for supply and install:

.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.
- .3 All costs related to the services, excluding Value Added Taxes.
- .4 *Subcontractor's* and sub-*Subcontractor's* overheads and profits related to the cash allowance.

.7 List of cash allowances

- .1 The *Contract Price* includes a total cash allowance of \$80,000 which covers the following items:
  - .1 Fire Separation Remediation - \$10,000.
    - .1 Remedy any inherited deficient fire separation conditions as required.
  - .2 Plumbing - \$50,000.
    - .1 Damaged plumbing replacement.
    - .2 Plumbing re-routing.
  - .3 Additional Mechanical Demolition - \$20,000.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Substitution Procedures

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## **PART 1 – GENERAL**

### **1.1 Section Includes**

- .1 Substitution procedures.
- .2 Submission requirements for proposed substitutions.

### **1.2 Definition**

- .1 In this Section “Substitution” means a *Product*, a manufacturer, or both, not originally specified in *Contract Documents* by proprietary name but proposed for use by *Contractor* in place of a *Product*, a manufacturer, or both, specified by proprietary name.

### **1.3 Substitution Procedures**

- .1 Proposals for substitutions of *Products* and materials must be submitted in accordance with procedures specified in this section.
- .2 *Contractor* may propose a Substitution wherever *Product* specifications include the phrases "or equal", "or approved equal", "Substitutions: in accordance with Section 01 25 00", or words conveying this intent. Where specifications do not include such language, *Contractor* proposed substitutions shall not be permitted.
- .3 Do not order or install any substitution without a *Supplemental Instruction* or *Change Order*.
- .4 Provided a proposed Substitution submission includes all of the information specified in this Section under Submission Requirements For Proposed Substitutions, *Consultant* may review submissions, if directed by *Owner*, but in any case with the understanding that the *Contract Time* will not be altered due to the time required by the *Consultant* to review the submission and by the *Contractor* to implement the substitution in the *Work*.
- .5 *Consultant* may recommend to *Owner* acceptance of a Substitution proposed by *Contractor* 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.
  - .3 The Substitution provides a benefit to *Owner*.
- .6 If *Contractor* fails to order a specified *Product* or order a *Product* by a specified manufacturer in adequate time to meet *Contractor's* construction schedule, neither *Consultant* nor *Owner* will consider that a valid reason to accept a Substitution. Refer to Section 01 60 00, paragraph 1.2 “Availability of Products”.
- .7 If *Owner* accepts a Substitution, the change in the *Work* will be documented in the form of either a *Supplemental Instruction* or *Change Order* as specified in Section 01 26 00.
- .8 If a Substitution is accepted in the form of a *Supplemental Instruction* or *Change Order*, *Contractor* shall not revert to an originally specified *Product* or manufacturer without *Consultant's* prior written acceptance.

## Substitution Procedures

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### 1.4 Submission Requirements for Proposed Substitutions

- .1 Include with each proposed Substitution the following information:
  - .1 Identification of the Substitution, including *Product* name and manufacturer's name, address, telephone numbers, and web site.
  - .2 Reason(s) for proposing the Substitution.
  - .3 A statement verifying that the Substitution will not affect the *Contract Price* and *Contract Time* or, if applicable, the amount and extent of a proposed increase or decrease in *Contract Price* and *Contract Time* on account of the Substitution.
  - .4 A statement verifying that the Substitution will not affect the performance or warranty of other parts of the *Work*.
  - .5 Manufacturer's *Product* literature for the Substitution, including material descriptions, compliance with applicable codes and reference standards, performance and test data, compatibility with contiguous materials and systems, and environmental considerations.
  - .6 *Product* samples as applicable.
  - .7 A detailed comparison of the physical properties and performance characteristics of the specified *Product* and the Substitution, with any significant variations clearly highlighted.
  - .8 Availability of maintenance services and sources of replacement materials and parts for the Substitution, as applicable, including associated costs and time frames.
  - .9 If applicable, estimated life cycle cost savings resulting from the Substitution.
  - .10 Details of other projects and applications where the Substitution has been used.
  - .11 Identification of any consequential changes in the *Work* to accommodate the Substitution and any consequential effects on the performance of the *Work* as a whole. A later claim for an increase to the *Contract Price* or *Contract Time* for other changes in the *Work* attributable to the Substitution will not be considered.
  - .12 Confirmation of proposed substitution delivery, in writing by *Product* manufacturer.
  - .13 Compliance with the building codes and requirements of authorities having jurisdiction.
  - .14 Copy of manufacturer's warranty for any *Product* or system for which an extended warranty has been specified, along with copy of manufacturer's warranty for specified *Product* or system with differences highlighted.
- .2 Substitutions submitted on *Shop Drawings* without following requirements of this section prior to submission of the affected *Shop Drawings* will cause the *Shop Drawings* to be rejected.
- .3 Proposed substitutions shall include costs associated with modifications necessary to other adjacent and connecting portions of the *Work*.

### PART 2 - PRODUCTS

Not applicable.

Substitution Procedures

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**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Payment Procedures

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## PART 1 - GENERAL

### 1.1 Section Includes

- .1 Schedule of values.
- .2 Cash flow projection.
- .3 Payment for *Products* stored off site.

### 1.2 Schedule of Values

- .1 Prior to the first application for payment, submit for *Consultant's* review an initial schedule of values. Modify the initial schedule of values if and as requested by *Consultant*. Obtain *Consultant's* written acceptance of the initial schedule of values prior to the first application for payment.
- .2 Together with the first and all subsequent applications for payment, submit updated versions of the schedule of values to indicate the values, to the date of application for payment, of work performed and *Products* delivered to *Place of the Work*.
- .3 Provide the schedule of values in an electronic spreadsheet format acceptable to *Consultant* and *Owner* and that includes the following:
  - .1 Identifying information including title and location of the *Work*, name of *Contractor*, number and date of application for payment, and period covered by the application for payment.
  - .2 A work breakdown structure based on *Contractor*, *Subcontractor*, and sub-*Subcontractor* work, systems description, Specification sections, or material and labour breakdown, as appropriate.
  - .3 Provisions for approved unit price work, assignable contracts, *Change Orders*, and allowances, so that the breakdown amounts indicated in the schedule of values aggregate to the current total *Contract Price*. Also provide for indicating the estimated value of *Change Directives* within the schedule of values, separately from the current total *Contract Price*.
  - .4 Line items identifying full costs for the following:
    - .1 Preparation of coordination and interference drawings in accordance with the requirements of Section 01 31 00, with a value not less than 0.5% of the *Contract Price* or \$10,000.00, whichever is greater.
    - .2 To provide mock-ups in accordance with Section 01 45 00.
    - .3 Progressive cleaning, specified under Section 01 74 00, as distinct from final cleaning, also specified under Section 01 74 00.
    - .4 Final cleaning, specified under Section 01 74 00, as distinct from progressive cleaning, also specified under Section 01 74 00.
    - .5 Preparation and submission of closeout submittals in accordance with the requirements of Section 01 78 00, with a value not less than 0.5% of the *Contract Price* or \$10,000.00, whichever is greater.
    - .6 Preparation and submission of the deficiency list in accordance with the requirements of Section 01 77 00.

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Payment Procedures

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- .5 For each item in the work breakdown structure, provide as a minimum the following information, under headings as indicated:
  - .1 Breakdown Amount: A dollar amount, including an appropriate pro rata portion of *Contractor's* overhead and profit.
  - .2 Performed to Date: The value of *Work* performed and *Products* delivered to *Place of the Work* up to the date of the application for payment, stated as a percentage of the *Contract Price* and in dollars.
  - .3 Previously Performed: The value of *Work* performed and *Products* delivered to the *Place of the Work* for which payment has been previously certified, stated in dollars.
  - .4 Current Period: The value of *Work* performed and *Products* delivered to *Place of the Work* for which *Contractor* is currently applying for payment, stated in dollars.
  - .5 Balance to Complete: The value of *Work* not yet performed and *Products* not yet delivered to *Place of the Work*, stated in dollars.

### 1.3 Cash Flow Projection

- .1 Prior to the first application for payment submit, for *Consultant's* review, a forecast of approximate monthly progress payments for each month of the *Contract Time*.
- .2 Submit revised cash flow forecasts monthly. Submit additional revised cash flow forecasts when there are significant changes in rate of progress of the *Work* or significant changes in the *Contract Price* as determined by the *Consultant*. Submit additional revised cash flow forecasts when requested by *Consultant*.

### 1.4 Payment for Products Stored Off Site

- .1 *Owner* may, due to extraordinary circumstances and at *Owner's* sole discretion, make payments for *Products* delivered to and stored at a location other than *Place of the Work*, subject to:
  - .1 A request submitted by *Contractor* in writing, with appropriate justification.
  - .2 Whatever conditions *Owner* or *Consultant* may establish for such payments, as required to protect *Owner's* interests.

## PART 2 - PRODUCTS

Not applicable.

## PART 3 - EXECUTION

Not applicable.

END OF SECTION



## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Building dimension, templates, built-ins, and coordination.
- .2 Coordination and interference drawings.
- .3 Superintendent.
- .4 Discrepancies and clarifications.
- .5 Request for interpretation (RFI) procedures.

### **1.2 Building Dimension, Templates, Built-ins, and Coordination**

- .1 Take necessary dimensions for the proper execution of the *Work*. Assume complete responsibility for the accuracy and completeness of such dimensions, and for coordination.
- .2 Verify dimensions at the *Place of the Work* before commencing *Shop Drawings*. Before fabrication commences report discrepancies to *Consultant* in writing. Incorporate accepted variances on shop drawings and as-built records.
- .3 Supply forms, templates, anchors, sleeves, inserts and accessories required to be fixed to or inserted in the *Work* and set in place or instruct separate *Subcontractors* as to their location.
- .4 Supply items to be built in, as and when required together with templates, measurements, shop drawings and other related information and assistance.
- .5 Pay the cost of extra work and make up time lost as a result of failure to provide necessary information and items to be built in.
- .6 Verify that the *Work*, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the *Contract Documents*, and ensure that work installed in error is rectified before construction resumes.
- .7 Check and verify dimensions referring to interfacing of services. Verify such dimensions with interconnected portions of the *Work*.
- .8 Do not scale directly from drawings. Obtain clarification from *Consultant* if there is ambiguity or lack of information.
- .9 Details and measurements of any work which is to fit or to conform with work installed shall be taken at the *Place of the Work*.
- .10 Prepare and submit setting drawings, templates and other information necessary for the location and installation of material, holes, sleeves, inserts, anchors, accessories, fastenings, connections and access panels.
- .11 *Subcontractors* shall direct related *Subcontractors* on site of specific locations required for sleeves and openings.

Project Management and Coordination

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### 1.3 Coordination and Interference Drawings

- .1 The *Contractor* shall be responsible for preparing and submitting to the *Consultant* for review, a consolidated set of installation coordination/interference drawings for the building showing how the building systems (including, but not limited to, domestic heating and cooling piping, air distribution systems, air control boxes, reheat coils, fire protection piping, electrical distribution, fire alarm systems, lighting, communication cabling, security cabling) will fit together above ceiling areas and in exposed ceiling, to allow ceiling heights required by the *Contract Documents* and by maintenance and control access.
  - .1 Each *Subcontractor* whose work is affected by the information presented on the coordination and interference drawings shall sign-off on the drawings prior to submission to the *Consultant* and thereby agrees to coordinate their parts of the *Work* to preserve the coordination and interference guidelines represented by the coordination and interference drawings.
- .2 Prepare sleeve drawings for work of Divisions 21, 22, and 23, and Divisions 26, 27, and 28 showing size and location of penetrations through load bearing elements. Submit sleeving drawings in electronic form to *Consultant* for review not less than 10 *Working Days* prior to construction of affected work.
- .3 Prepare embedded conduit drawings, showing size and location of penetrations through load bearing elements. Submit embedded conduit drawings in electronic form to *Consultant* for review not less than 10 *Working Days* prior to construction of affected work.
- .4 Prepare insert setting drawings for work to be cast into concrete and/or mortared into masonry elements. Submit insert setting drawings in electronic form to *Consultant* for review not less than 10 *Working Days* prior to construction of affected work.
- .5 Coordinate placement of equipment to ensure that components will be properly accommodated within spaces provided prior to commencement of *Work*. In areas where equipment and services are exposed care shall be taken to organize and layout services in an organized and orderly manner. Where possible services are to run parallel or at right angles to one another as required. *Consultant* may request that service layout be reconfigured to suit sightline concerns during the coordination drawings review phase. These drawing changes are to be executed at no additional cost to the *Owner*.
- .6 Take complete responsibility for remedial work that results from failure to coordinate the *Work* prior to fabrication and installation.
- .7 Ensure that accesses and clearance required by jurisdictional authorities and/or for easy maintenance of equipment are provided in layout of equipment and services.
  - .1 Indicate required access points, clearances, and sizes for equipment and pieces of equipment required in the *Work*. Note areas where access is compromised by interferences with other services for review by the *Consultant*. Do not proceed with installation of equipment in such compromised areas until a proposed means of providing access has been accepted by the *Consultant*.
- .8 Prepare and circulate coordination, interference and sleeving drawings prior to placing orders for equipment and materials.
- .9 Coordination and interference drawings shall be circulated for mark-ups by *Subcontractors* responsible for work of Divisions 3, 5, 6, 9, 11, 13, 14, Divisions 21, 22, and 23, and Divisions 26, 27, and 28, as applicable.

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Project Management and Coordination

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- .10 Coordinate preparation and submission of coordination and interference drawings with *Shop Drawings*.
- .11 Show cross sections in key areas, as required, and as defined by *Consultant*. Show re-bar, structural elements, piping, air handling and heating systems distribution, sprinkler system distribution, lighting, gypsum board wall and ceiling assemblies, acoustical isolation, *Products* and systems involving life safety, conveying systems, electrical distribution.
- .12 Show ductwork as 2 lines. Show cross sections in key areas, as required, and as directed by *Consultant*. Show re-bar, structural elements, air handling and heating systems distribution, gypsum board wall and ceiling assemblies, acoustical isolation, *Products* and systems involving life safety, conveying systems, and electrical distribution.
- .13 Coordination and interference drawings shall be produced in uniform scale on media that will allow overlays to be assembled. Upon incorporation of details, drawings shall be submitted to *Consultant* for review. Areas of conflict or interference shall be resolved in a mutually agreed manner between *Subcontractors* and resubmitted on coordination and interference drawings until accepted by *Consultant*.

#### **1.4 Superintendent**

- .1 Provide superintendent and necessary supporting staff personnel who shall be in attendance at the *Place of the Work* while *Work* is being performed, with proven experience in erecting, supervising, testing and adjusting projects of comparable nature and complexity.
- .2 The *Contractor* shall appoint superintendent at the *Place of the Work* who shall have overall authority at the *Place of the Work* and shall speak for the *Contractor* and represent the *Contractor's* interest and responsibilities at meetings at the *Place of the Work* and in dealings with the *Consultant* and the *Owner*.

#### **1.5 Discrepancies and Clarifications**

- .1 Advise *Consultant* of discrepancies discovered in requirements of the *Contract Documents* and request clarification in written form.
- .2 Advise *Consultant* when clarifications are required pertaining to meaning or intent of requirements of *Contract Documents* and request clarification from *Consultant* in written form.
- .3 Do not proceed with related work until written clarification is provided by *Consultant*.
- .4 Failure to notify *Consultant* shall result in *Contractor* incurring responsibility for resulting deficiencies and expense at no additional cost to the *Owner*.
- .5 Written requirements issued by *Consultant* for the purpose of clarification, implicitly supersede applicable and relevant aspects of the *Contract Documents* irrespective of whether or not these documents are explicitly or specifically cited in clarification requests or clarification requirements.

#### **1.6 Request for Interpretation - RFI**

- .1 A request for interpretation (RFI) is a formal process used during the *Work* to obtain an interpretation of the *Contract Documents* pursuant to GC 2.2.6 through GC 2.2.9 (inclusive).

Project Management and Coordination

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- .1 An RFI shall not constitute notice of claim for a delay.
- .2 Submittal procedures:
  - .1 RFI form:
    - .1 Submit RFI on "Request for Interpretation" in form acceptable to the *Consultant*, an example of which is appended to this section. The *Consultant* shall not respond to an RFI except as submitted on this form.
    - .2 Where RFI form does not provide sufficient space for complete information to be provided thereon, attach additional sheets as required.
    - .3 Submit with RFI form necessary supporting documentation.
  - .2 Submit RFI form as follows:
    - .1 Submit RFIs sufficiently in advance of affected parts of the *Work* so as not to cause delay in the performance of the *Work*. Costs resulting from failure to do this will not be paid by the *Owner*.
    - .2 RFIs shall be submitted only to the *Consultant*.
    - .3 RFIs shall be submitted only by *Contractor*. RFIs submitted by *Subcontractors* or *Suppliers* shall not be accepted.
    - .4 Number RFIs consecutively in one sequence in order submitted.
    - .5 Submit one distinct RFI per RFI form.
  - .3 RFI log:
    - .1 Maintain log of RFIs sent to and responses received from the *Consultant*, complete with corresponding dates.
    - .2 Submit updated log of RFIs with each progress draw submittal.
  - .4 *Consultant* shall review RFIs from the *Contractor* submitted in accordance with this section, with the following understandings:
    - .1 *Consultant's* response shall not be considered as a *Change Order* or *Change Directive*, nor does it authorize changes in the *Contract Price* or *Contract Time* or changes in the *Work*.
    - .2 Only the *Consultant* shall respond to RFIs. Responses to RFIs received from entities other than the *Consultant* shall not be considered.
  - .5 Allow 5 *Working Days* for review of each RFI by the *Consultant*.
    - .1 *Consultant's* review of RFI commences on date of receipt by the *Consultant* of RFI submittal and extends to date RFI returned by *Consultant*.
    - .2 When the RFI submittal is received by *Consultant* before noon, review period commences that day; when RFI submittal is received by *Consultant* after noon, review period begins on the next *Working Day*.

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Project Management and Coordination

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- .3 If, at any time, the *Contractor* submits a large enough number of RFIs such that the *Consultant* cannot process these RFIs within 5 *Working Days*, the *Consultant*, will confer with the *Contractor* within 1 *Working Day* of receipt of such RFIs, and the *Consultant* and the *Contractor* will jointly prepare an estimate of the time necessary for processing the RFIs and determine the order of priority between the RFIs submitted. The *Contractor* shall accommodate such necessary time at no increase in the *Contract Time* and at no additional cost to the *Owner*.
- .6 Undertake a review of the *Contract Documents* to determine that the matter in question relating to the interpretation of the *Contract Documents* cannot be resolved by direct reference to the *Contract Documents*. Describe this review in detail on the RFI form. RFI submittals that lack a detailed review description, or where the detail provided is insufficient, in the sole opinion of the *Consultant*, shall not be reviewed by the *Consultant* and shall be rejected.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

**Contractor's Request for Interpretation**

**Consultant's Supplemental Instructions**

Date	# of Pages
To	From
Co.	Co.
Phone #	Phone #
Fax #	Fax #
Email	Email

Project:	_____	RFI No.:	_____
Owner:	_____	Date of Request:	_____
To:	_____	Contractor:	_____
	(Consultant's Representative)		
Project No.:	_____	Contractor's Representative:	_____
Consultant's Fax No.:	_____	Fax No.:	_____

Interpretation Requested: (Description of request for interpretation and references to relevant portions of *Contract Documents*)

Attachments: \_\_\_\_\_

Requested by: \_\_\_\_\_

**Consultant's Supplemental Instruction:**

Attachments: \_\_\_\_\_

Reply By: \_\_\_\_\_

The work shall be carried out in accordance with these *Supplemental Instructions* issued in accordance with the *Contract Documents* without change in *Contract Price* or *Contract Time*. Prior to proceeding with these instructions, indicate acceptance of these instructions as being consistent with the *Contract Documents* by returning a signed copy to the *Consultant*.

Supplemental Instruction Issued:	Supplemental Instruction Accepted:
By: _____	By: _____
Consultant	Contractor
Date	Date
Cc: <input type="checkbox"/> Owner <input type="checkbox"/> Consultant <input type="checkbox"/> Contractor	<input type="checkbox"/> Field <input type="checkbox"/> Other:

Project Meetings

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**PART 1 - GENERAL**

**1.1 Section Includes**

- .1 Project meeting requirements.

**1.2 Administrative**

- .1 The *Contractor* shall schedule meetings as specified herein.
  - .1 Such scheduling shall be in consultation both with the *Owner* and with the *Consultant*.
- .2 The *Contractor* shall prepare agendas for meetings specified herein.
  - .1 Agendas shall include, as a minimum, the agenda items specified in the *Contract Documents*.
- .3 The *Contractor* shall distribute written notice of each meeting specified herein, complete with meeting agenda, 5 *Working Days* in advance of meeting date to the *Consultant* and the *Owner* and other affected parties.
- .4 The *Contractor* shall chair and record the minutes of meetings specified herein.
  - .1 *Contractor* shall distribute copies of minutes to the *Owner*, the *Consultant*, and all others in attendance within 3 *Working Days* after date of meeting.
- .5 Representatives of parties attending meetings shall be authorized to act on behalf of the parties they represent.
- .6 *Subcontractors* and *Suppliers* shall attend meetings only when directed by the *Consultant*, or when specifically called for in the *Contract Documents*.
- .7 The *Contractor* shall prepare, and distribute to the *Consultant* and the *Owner* 4 days in advance of next progress meeting date, the following:
  - .1 Monthly progress reports containing updated construction schedule, submittal logs, requests for interpretation logs, and budget.

**1.3 Contract Start-Up Meeting**

- .1 Within 5 days after award of *Contract*, request a meeting of parties in *Contract* to discuss and resolve administrative procedures and responsibilities prior to the commencement of the *Work*.
- .2 Attendees at *Contract* start-up meeting shall include the following:
  - .1 *Contractor*.
  - .2 *Contractor's* site superintendent(s).
  - .3 *Contractor's* waste management coordinator.
  - .4 *Consultant*.
  - .5 *Owner*.
  - .6 Independent inspection and testing company.
- .3 Agenda to include the following:

### Project Meetings

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- .1 Owner's guidelines and policies.
- .2 Appointment of official representative of participants in the *Project*.
- .3 Status of permits, fees and requirement of authorities having jurisdiction. Action required.
- .4 Establishing a schedule for progress meetings.
- .5 Requirements for *Contract* modification and interpretation procedures, including, but not limited to: requests for interpretation, contemplated change orders, *Change Orders*, *Change Directives*, *Supplemental Instructions*, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .6 Submittal requirements and procedures.
- .7 Schedule of submission of samples, colour chips, and items for Owner's and/or *Consultant's* consideration.
- .8 Construction schedule and progress scheduling.
- .9 Delivery schedule of specified equipment.
- .10 Appointment of independent inspection and testing agencies or firms.
- .11 Requirements for notification for reviews. Allow a minimum of 48 hours' notice to *Consultant* for review of the *Work*.
- .12 Requirements for *Temporary Work*.
- .13 Requirements for firestopping coordination and preparation of firestopping manual (refer to Section 01 33 00).
- .14 Security requirements at and for the *Place of the Work*.
- .15 Owner supplied *Products*.
- .16 As-built documents.
- .17 Operation and maintenance manuals.
- .18 Take-over procedures, acceptance, warranties.
- .19 Publication to be used for publishing certificate of substantial performance.
- .20 Progress claims, administrative procedures, holdbacks.
- .21 Insurances, transcripts of policies.
- .22 *Contractor's* safety procedures.
- .23 Cleaning area for vehicles.
- .24 Certificate of Clearance from the Workplace Safety and Insurance Board (WSIB).

#### 1.4 Pre-Installation Meetings

- .1 During the course of the *Work* prior to *Substantial Performance of the Work*, schedule pre-installation meetings as required by the *Contract Documents* and coordinated with the *Consultant*.



### Project Meetings

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- .2 As far as possible, pre-installation meetings shall be scheduled to take place on the same day as regularly scheduled progress meetings.
- .3 Attendees at pre-installation meetings shall include the following:
  - .1 *Contractor*.
  - .2 *Subcontractors* affected by the work for which the pre-installation meeting is being conducted.
  - .3 *Consultant*.
  - .4 Manufacturer's representatives, as applicable.
  - .5 Independent inspection and testing company, as applicable.
- .4 Agenda to include the following:
  - .1 *Owner's* guidelines and policies.
  - .2 Appointment of official representatives of participants in the *Project*.
  - .3 Review of existing conditions and affected work, and testing thereof as required.
  - .4 Review of installation procedures and requirements.
  - .5 Review of environmental and site condition requirements.
  - .6 Schedule of the applicable portions of the *Work*.
  - .7 Schedule of submission of submittals, samples, mock-ups, and items for *Consultant's* consideration.
  - .8 Requirements for *Temporary Work*.
  - .9 Requirements for notification for reviews. Allow a minimum of 48 hours' notice to *Consultant* for review of the *Work*.
  - .10 Requirements for inspections and tests, as applicable. Schedule and undertake inspections and tests.
  - .11 Delivery schedule of specified equipment.
  - .12 Special safety requirements and procedures.
  - .13 Publication to be used for publishing certificate of substantial performance.

### 1.5 Progress Meetings

- .1 During the course of the *Work* prior to *Substantial Performance of the Work*, schedule regular progress meetings to occur every other week.
- .2 Attendees at progress meetings shall include the following:
  - .1 *Contractor*.
  - .2 *Contractor's* site superintendent(s).
  - .3 *Consultant*.
  - .4 *Owner*.
- .3 Agenda to include the following:
  - .1 *Owner's* guidelines and policies.

### Project Meetings

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- .2 Review, approval of proceedings of previous meeting.
- .3 Review of items arising from proceedings.
- .4 Review of progress of the *Work* since previous meeting and *Contractor's* monthly progress report.
- .5 Field observations, problems, conflicts.
- .6 Update construction schedule.
- .7 Problems that impede compliance with construction schedule.
- .8 Review of off-site fabrication delivery schedules.
- .9 Review material delivery dates/schedule.
- .10 Corrective measures and procedures to regain construction schedule.
- .11 Revisions to construction schedule.
- .12 Progress, schedule, during subsequent period of the *Work*.
- .13 Review submittal schedules.
- .14 Review status of submittals.
- .15 Maintenance of quality standards.
- .16 Pending changes and substitutions.
- .17 Review of *Contract* modifications and interpretations including, but not limited to: requests for interpretation and log, contemplated change orders, *Change Orders*, *Change Directives*, and *Supplemental Instructions* for effect on construction schedule and on *Contract Time*.
- .18 Review of status of as-built documents.
- .19 Other business.

#### 1.6 Pre-Takeover Meeting

- .1 30 days prior to application for *Substantial Performance of the Work*, schedule a pre-takeover meeting.
- .2 Agenda to include the following:
  - .1 Review, approval of proceedings of previous meeting.
  - .2 Review of items arising from proceedings.
  - .3 Review of procedures for *Substantial Performance of the Work*, completion of the *Contract*, and handover of the *Work*.
  - .4 Field observations, problems, conflicts.
  - .5 Review of outstanding *Contract* modifications and interpretations including, but not limited to: requests for interpretation and log, contemplated change orders, *Change Orders*, *Change Directives*, and *Supplemental Instructions* for effect on construction schedule and on *Contract Time*.
  - .6 Problems which impede *Substantial Performance of the Work*.
  - .7 Review of procedures for deficiency review. Corrective measures required.

### Project Meetings

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- .8 Review of arrangements for hydro, heating, and other services.
- .9 Progress, schedule, during succeeding period of the *Work*.
- .10 Review submittal requirements for warranties, manuals, and all demonstrations and documentation required for *Substantial Performance of the Work*.
- .11 Review of keying and hardware requirements.
- .12 Review of status of as-built documents and record drawings.
- .13 Status of commissioning and training.
- .14 Review *Contractor's* deficiency list and status.
- .15 Cleaning for occupancy.
- .16 Other business.

#### 1.7 Post-Construction Meeting

- .1 Prior to application for completion of *Contract*, schedule a post-construction meeting. 5 *Working Days* prior to date for meeting, *Consultant* shall confirm a date for meeting based on evaluation of completion requirements.
- .2 Agenda to include the following:
  - .1 Review, approval of proceedings of previous meeting.
  - .2 Confirmation that no business is arising from proceedings.
  - .3 Confirmation of completion of the *Contract*, and handover of reviewed documentation from the *Consultant* to the *Owner*.
  - .4 Confirmation of completion of contemplated change orders, *Change Orders*, *Change Directives*, and *Supplemental Instructions*.
  - .5 Problems that impede *Contract* completion.
  - .6 Identify unresolved issues or potential warranty problems.
  - .7 Confirmation of completion of deficiencies.
  - .8 Corrective measures required.
  - .9 Confirmation of arrangements for hydro, heating and other services.
  - .10 Confirm submittal requirements for warranties, manuals, and demonstrations and documentation for *Contract* completion are in order.
  - .11 Review of procedures for communication during post-construction period.
  - .12 Handover of reviewed record documents by the *Contractor* to the *Owner*.
  - .13 Submission of final application for payment.
  - .14 Review and finalize outstanding claims, pricing, and allowance amounts.
  - .15 Status of commissioning and training.
  - .16 Demobilization and the *Place of the Work* restoration.
  - .17 Review of requests for interpretation log.
  - .18 Other business.

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Project Meetings

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**1.8 Special Meetings**

- .1 *Owner* and/or *Consultant* reserves the right to require special meetings which may be held on short notice and at which attendance by *Contractor* and representatives of affected *Subcontractors* and *Suppliers* is mandatory. *Contractor* shall keep detailed and accurate meeting notes and distribute copies within 3 *Working Days* to all in attendance and those affected by agreements made at such meetings.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Construction Progress Documentation

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## **PART 1 - GENERAL**

### **1.1 Section includes**

- .1 Construction progress schedule.
- .2 Submittals schedule.
- .3 Inspection and testing schedule.
- .4 Schedule management.
- .5 Recording actual site conditions on as-built documents.
- .6 Digital photographs.

### **1.2 Summary**

- .1 This Section specifies *Contractor's* responsibilities for preparation and submission of schedules and other documentation related to tracking construction progress.
- .2 The schedule shall:
  - .1 Show actual progress versus planned progress.
  - .2 Demonstrate that scheduling issues are being proactively identified and addressed in a timely manner, and that planned progress is being maintained as closely as possible.

### **1.3 Schedule Format**

- .1 Prepare schedules in the form of a Critical Path Method (CPM) GANTT chart method.
- .2 Include horizontal time scale identifying the first *Working Day* of each week.
- .3 Include a separate bar for each trade, work package, or operation.
- .4 Format for listings: The chronological order of the start of each item or part of the *Work*.
- .5 Identification of listings: By systems description.

### **1.4 Construction Progress Schedule**

- .1 Format and content:
  - .1 Include the complete sequence of construction activities, including provision for climate and weather.
  - .2 Provide a work breakdown structure identifying key activities, work packages, and major milestones at a sufficient level of detail to effectively manage construction progress, including:
    - .1 Long delivery *Products*.
    - .2 Dates for the commencement and completion of inspection and testing.
    - .3 Preparation and review of mock-ups.
    - .4 *Owner* decisions for cash allowances.
    - .5 Shutdown or closure activities.

Construction Progress Documentation

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- .6 Delivery of items supplied by *Owner*.
- .7 *Owner* performed work.
- .8 Demonstration and training activities.
- .9 Dates for the commencement and completion of each major element of the *Work* parallel to the sections of the specifications.
- .10 Dates for *Ready-for-Takeover* and *Substantial Performance of the Work*.
- .11 Dates for delivery of *Products*, equipment, finish items, factory-finished manufactured items. Show last dates for order, shipment, and delivery in order to meet construction schedule.
- .3 Show projected percentage of completion for each item as of the first *Working Day* of each week.
- .2 Submission:
  - .1 Submit initial schedule to *Owner* and *Consultant* in accordance with GC 3.4.1.1 as amended.
  - .2 Submit schedule in pdf format to *Consultant* using the *Consultant's* document management system.
  - .3 *Consultant* will review format and content of initial schedule and request necessary changes, if any, within 10 *Working Days* after receipt.
  - .4 If changes are required, resubmit finalized initial schedule within 5 *Working Days* after return of review copy.
  - .5 Submit updated progress schedule to *Owner* and *Consultant* at each regularly scheduled progress meeting in accordance with Section 01 31 19. In addition to requirements specified in Section 01 32 00 for each submission of construction schedule, include a written report on the activities completed in the week preceding the progress meeting, and a summary indicating the activities planned to be undertaken in the 2 weeks subsequent to the progress meeting, including human resource loading.
  - .6 Submit updated progress schedule to *Owner* and *Consultant* with each application for progress payment, indicating actual and projected start and finish dates with report date line and progress. Submit more frequently if requested by *Owner* or *Consultant*.
  - .7 At each date of submission of construction schedule, indicate progress of each activity.
    - .1 Show changes occurring since previous submission of the construction schedule:
      - .1 Major changes in scope.
      - .2 *Change Orders* and *Change Directives*.
      - .3 Activities modified since previous submission.
      - .4 Revised projections of progress and completion.
      - .5 Other identifiable changes.

Construction Progress Documentation

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- .2 Include a narrative report to define:
  - .1 Problem areas, anticipated delays, and the impact on the schedule.
  - .2 Corrective action recommended and its impact on the schedule.
- .3 Include cash flow projection with minimum look ahead as directed by the *Consultant*.

## 1.5 Submittals Schedule

- .1 Format and content:
  - .1 Prepare a detailed schedule of submittals required by the *Contract Documents*, including samples required for testing, and including those for items supplied by *Owner*.
  - .2 Provide a separate line for each required submittal, organized by *Specifications* section names and numbers, and further broken down by individual *Products* and systems as required.
  - .3 Indicate dates for submitting, review time, resubmission time, float time, and last date for meeting construction schedule.
  - .4 Schedule submissions of submittals well in advance of scheduled dates for installation, to provide lead time for reviews and possible resubmissions and for placing orders and securing delivery so as to avoid delays in the *Work*.
  - .5 Make provisions in schedule for at least 10 *Working Days* for *Consultant's* review of submittals. When submittals have to be reviewed by one or more of *Consultant's* subconsultants, add 5 more *Working Days* for a total 15 *Working Days* review period.
  - .6 If the *Consultant* requires resubmission of submittals, allow for an additional 10 *Working Days* review for each resubmission.
  - .7 If, at any time, the *Contractor* submits a large enough number of submittals such that the *Consultant* cannot process these submittals within 10 *Working Days*, the *Consultant*, in consultation with the *Contractor* within 3 *Working Days* of receipt of such submittal, will provide the *Contractor* with an estimate of the time necessary for processing same. The *Contractor* shall accommodate such necessary time at no increase in the *Contract Time* and at no additional cost to the *Owner*.
  - .8 Changes in the construction schedule shall maintain the minimum review periods for the *Consultant's* review specified above.
- .2 Submission:
  - .1 Submit initial schedule to *Consultant* within 15 *Working Days* after *Contract* award.
  - .2 Submit schedule in pdf format to *Consultant* using the *Consultant's* document management system.
  - .3 *Consultant* will review format and content of initial schedule and request necessary changes, if any, within 10 *Working Days* after receipt.

Construction Progress Documentation

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- .4 *Consultant* will review submittal schedule and advise *Contractor* if volume and timing of submittals will permit review of and response to submittals within timeframes specified under Section 01 32 00. *Consultant* may require modifications to submittals schedule in order to allow adequate time for review of submittals. Adjust submittals schedule and construction schedule as required to comply with *Consultant's* needs.
- .5 If changes are required, resubmit finalized schedule within 5 *Working Days* after return of review copy.
- .6 Submit updated submittals schedule monthly to the *Consultant* or more frequently as directed by the *Consultant*.
- .7 Schedule shall be accompanied by a checklist, correlated to each of the schedule of submittals, the construction schedule, and the schedule of inspections and tests, listing the following:
  - .1 *Shop Drawings*.
  - .2 Samples.
  - .3 Mock-ups.
  - .4 Reviews, tests and inspections by:
    - .1 Manufacturers.
    - .2 Authorities having jurisdiction.
    - .3 The *Owner*.
    - .4 The *Consultant*.
    - .5 Independent inspection and testing companies.
  - .5 Demonstration and training.

## 1.6 Inspection and Testing Schedule

- .1 Prepare schedule for inspection and testing by advance discussion with the selected independent inspection and testing company to determine the time required for the independent inspection and testing company to perform its tests and to issue each of its findings, and allow for required time in the construction schedule.
- .2 Refer to Section 01 45 00 for additional requirements for inspection and testing scheduling.

## 1.7 Schedule Management

- .1 A schedule submitted as specified and accepted by *Consultant* shall become the baseline schedule and shall be used as the baseline for updates.
- .2 At each regular progress meeting, review and discuss current construction progress and submittals schedules with *Consultant* and *Owner*, including activities that are behind schedule and planned measures to regain schedule slippage in key areas on or near the critical path.
- .3 Activities considered behind schedule are those with start or completion dates later than the dates shown on the baseline schedule.



Construction Progress Documentation

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## 1.8 Recording Actual Site Conditions on As-Built Documents

- .1 *Owner* will provide 1 set of *Contract Documents* to the *Contractor* for as-built documentation purposes. Record information and maintain as-built documents in clean, dry and legible condition.
- .2 Clearly label each drawing as "AS-BUILT DRAWING" and each specification "AS-BUILT SPECIFICATION" and each schedule "AS-BUILT SCHEDULE". Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Accurately document as-built conditions and deviations from *Contract Documents* as the *Work* progresses.
- .4 Mark changes in red ink.
- .5 Document actual construction including:
  - .1 Survey of as-built conditions and survey logs prepared by the registered land surveyor responsible for setting out the work and field engineering.
  - .2 Depths of various elements of foundation in relation to survey datum.
  - .3 Horizontal and vertical location of utilities and appurtenances referenced to permanent surface improvement.
  - .4 Other underground installations and services set beneath slabs-on-grade referenced to visible and accessible features of structure.
  - .5 'As-built' elevations of paving, sidewalks, manholes and catchbasins.
  - .6 Field changes of dimensions/details.
  - .7 Changes by *Change Orders*, *Change Directives*, and *Supplemental Instructions*.
  - .8 References to *Shop Drawings*, where *Shop Drawings* show more detail.
  - .9 Locations of interior mechanical and electrical equipment and distribution.
  - .10 Elevations and location depths of services. Identify type and size of service and materials used.
  - .11 In specification as-builts: Document as-built *Products*, including manufacturer, manufacturer's model or system number.
- .6 Do not use as-built drawings for construction purposes.

## 1.9 Digital Photographs

- .1 Provide photographic documentation in digital format and in accordance with procedures and submission requirements specified in this section.
  - .1 No other photographs of the *Place of the Work* or of any portion of the *Work* will be permitted without written approval of the *Owner*.
- .2 Equipment: Provide photographs using minimum 10 megapixel digital camera.
- .3 Submit the required photographs to the *Consultant* and to the *Owner*.
- .4 Output: Supply date stamped maximum resolution colour photos to *Consultant* in JPEG format, on USB Flash Drive or via file transfer.

Construction Progress Documentation

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.5 Number of photos required:

- .1 Prior to construction: Provide necessary number of photographs, as required to document existing conditions and verify damage to adjacent streets and property that may have existed prior to construction or demolition work: Minimum 50 photos.
- .2 Each Progress draw: Provide 24 construction photographs each month to accompany each application for progress draw to document the stage of the *Work* from points selected by the *Consultant* showing as much as possible of the *Work* installed during the previous month.
- .3 Provide minimum of 8 photographs on each meeting report and for each progress meeting.
- .4 Completion: When the *Work* is completed, arrange to take final photographs of the *Work* from a minimum of 8 points of view.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Submittal Procedures

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Administrative requirements.
- .2 Submission procedures.
- .3 Certificates and Certification Submittals
- .4 *Product* data sheets.
- .5 *Shop Drawings*.
- .6 Engineered Judgements.
- .7 Project firestopping manual and coordination.
- .8 Samples.

### **1.2 Administrative Requirements**

- .1 Submit submittals as requested by the *Contract Documents*, as specified herein, and in accordance with the submittals schedule prepared in accordance with Section 01 32 00.
- .2 In addition to submittals specifically requested by the *Contract Documents*, submit other submittals as may be reasonably requested by the *Consultant*, or as are required to coordinate the *Work* and to provide the *Owner* with choices available, within the scope of *Contract Documents*.
- .3 Where required by authorities having jurisdiction, provide submittals to such authorities for review and approval.
- .4 Make submittals with reasonable promptness and in an orderly sequence so as to cause no delay in the *Work*. Be solely responsible for delays, make up time lost, and pay added costs incurred because of not making submittals in due time to permit proper review by *Consultant*.
- .5 Once submitted, a submittal shall not be re-submitted until original submission has been reviewed by *Consultant* and returned to *Contractor*.
- .6 Submittals that contain substitutions will be rejected. Substitutions are permitted only in accordance with Section 01 25 00.
- .7 Do not proceed with work affected by a submittal, including ordering of *Products*, until relevant submittal has been reviewed by *Consultant*.
- .8 Prepare submittals using SI (metric) units.
- .9 *Contractor's* responsibility for deviations in submittal from requirements of *Contract Documents* is not relieved by *Consultant's* review of submittal, unless *Consultant* gives written acceptance of specific deviations.
- .10 Keep copies of reviewed submittals at the *Place of the Work* in an organized condition. Only submittals that have been reviewed by the *Consultant* and are marked with *Consultant's* review stamp, as applicable, are permitted at the *Place of the Work*.

Submittal Procedures

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- .11 The *Work* shall conform to reviewed submittals subject to the requirements of this section. Remove and replace materials or assemblies not matching reviewed submittals at no increase in the *Contract Time* and at no additional cost to the *Owner*.
- .12 *Contractor's* review of submittals:
  - .1 Review submittals for conformity to *Contract Documents* before submitting to *Consultant*. Submittals shall bear stamp of *Contractor* and signature of a responsible official in *Contractor's* organization indicating in writing that such submittals have been checked and coordinated by *Contractor*. Review shall be performed by qualified personnel who have detailed understanding of those elements being reviewed and of the conditions at the *Place of the Work* proposed for installation.
  - .2 Check and sign each submittal and make notations considered necessary before submitting to *Consultant* for review. Where submittal is substantially and obviously in conflict with requirements of *Contract Documents*, reject submittal without submitting to *Consultant* and request resubmission. Note limited number of reviews of each submittal covered under *Consultant's* services as specified below.
  - .3 Assume sole responsibility for any conflicts occurring in the *Work* that result from lack of comparison and coordination of submittals required for the *Work*.
  - .4 Assume sole responsibility for dimensions to be confirmed and correlated at the *Place of the Work* for information that pertains to fabrication processes or to techniques of construction and installation, and for coordination of the *Work*.
  - .5 Submittals that have not been reviewed, checked, and coordinated by *Contractor* prior to submission to *Consultant*, or that do not bear the stamp and signature of *Contractor* as described above, will be stamped "REVISE AND RESUBMIT" and returned.
  - .6 No changes to the *Work* or the *Contract Documents* shall be made by way of submittals.
    - .1 Changes to the *Work* shall only be made following procedures specified for changes in the *Work*.
    - .2 Submittals that include changes to the *Work* or the *Contract Documents* shall be stamped "REVISE AND RESUBMIT" and returned.
- .13 *Consultant's* review of submittals:
  - .1 Review of submittals by *Consultant* is for the sole purpose of ascertaining conformance with the general design concepts and the general intent of the *Contract Documents*. This review shall not mean that *Consultant* approves the detail design inherent in the submittals, responsibility for which shall remain with the *Contractor*. Such review shall not relieve the *Contractor* of responsibility for errors or omissions in the submittals, nor of responsibility for meeting requirements of *Contract Documents*.

Submittal Procedures

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- .2 As part of their scope of work, *Consultant* shall review *Shop Drawings* no more than twice. Should three or more reviews be required due to reasons of *Contractor* omissions causing resubmission requests, then *Contractor* shall reimburse the *Consultant* for time expended in these extra reviews. Time shall be invoiced to the *Owner* (to be deducted from monies due to the *Contractor* and paid to *Consultant* by *Owner*) at rates recommended by *Consultant's* professional association and disbursements shall be invoiced at *Consultant's* cost. The *Contractor* shall cover directly costs and administration associated with courier services and the like for these extra *Shop Drawings* reviews.
  - .3 *Consultant's* review and markings on submittals do not authorize changes in the *Work* nor in the *Contract Time*, and shall be accommodated at no additional cost to the *Owner*. If, in the opinion of the *Contractor*, the *Consultant's* markings on submittals constitute a change in the *Work* or will effect a change in the *Contract Time*, then the *Contractor* shall so notify the *Consultant* in writing and request an interpretation following the procedures for requests for interpretation in accordance with Section 01 31 00. If the *Consultant* finds that the *Consultant's* markings on submittals do constitute a change in the *Work* or will effect a change in the *Contract Time*, then a *Change Order* will be prepared therefore. The time taken to process such a request for interpretation shall not, in and of itself, constitute a change in the *Work* nor an increase the *Contract Time*.
  - .4 Submittals that are not required by the *Contract Documents* or not requested by the *Consultant* will not be reviewed by the *Consultant* and will be marked 'NOT REVIEWED' by the *Consultant* and returned to the *Contractor*.
- .14 Engineered submittals:
- .1 Submittals for items required to be sealed by professional engineer (engineered) shall be duly prepared, sealed, and signed under the direct control and supervision of a qualified professional engineer licensed in the jurisdiction in which the *Place of the Work* is located, having in force professional liability insurance with minimum coverage limit of \$2,000,000 per claim and annual aggregate.
  - .2 Include with engineered submittal, proof of insurance identifying insurer, policy number, policy term, and limit of liability, on duly signed letterhead and / or certificates of insurance.
  - .3 Design includes life safety, sizing of supports, anchors, framing, connections, spans, and as additionally required to meet or exceed requirements of applicable codes, standards, regulations, authorities having jurisdiction, and design requirements of the *Contract Documents*.
  - .4 Engineered submittals shall include design calculations, complete with references to codes and standards used in such calculations, supporting the proposed design represented by the submittal.
  - .5 Professional engineer responsible for the preparation of engineered submittals shall undertake periodic field review, including review of associated mock-ups where applicable, at locations wherever the work as described by the engineered submittal is in progress, during fabrication and installation of such work, and shall submit a field review report after each visit. Field review reports shall be submitted to the *Consultant*, to authorities having jurisdiction as required, and in accordance with the building code.

### Submittal Procedures

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- .6 Field reviews shall be at intervals as necessary and appropriate to the progress of the work described by the submittal to allow the engineer to be familiar with the progress and quality of such work and to determine if the work is proceeding in general conformity with the *Contract Documents*, including reviewed shop drawings and design calculations.
- .7 Upon completion of the parts of the *Work* covered by the engineered submittal, the professional engineer responsible for the preparation of the engineered submittal and for undertaking the periodic field reviews described above, shall prepare and submit to the *Consultant* and authorities having jurisdiction, as required, a letter of general conformity for those parts of the *Work*, certifying that they have been provided in accordance with the requirements both of the *Contract Documents* and of the authorities having jurisdiction over the *Place of the Work*.
- .8 Costs for such field reviews and field review reports and letters of general conformity are included in the *Contract Price*.

### 1.3 Submission Procedures

- .1 Coordinate each submittal with requirements of the *Work* and *Contract Documents*. Individual submittals shall include related information.
- .2 Distribute copies of submittals to parties whose work is affected by submittals except *Consultant* and *Owner* before final submission for review by *Consultant*.
- .3 Accompany submittals with transmittal letter containing:
  - .1 Date.
  - .2 *Project* title and number.
  - .3 *Contractor's* name and address.
  - .4 *Contractor's* review stamp.
  - .5 Identification and quantity of each submittal.
  - .6 Other pertinent data.
- .4 Each submittal shall be identified numerically by relevant *Specifications* section number with a numeric indicator for multiple submittals by that section followed by revisions number, for example 04 05 19-01-R0.
- .5 Submit original PDF documents only: scanned documents shall not be accepted.
  - .1 PDF submittals shall be bookmarked and linked to a Table of Contents or cover letter identifying the contents of the submission.
- .6 Make any changes in submittal that *Consultant* may require, consistent with *Contract Documents*, and resubmit as directed by *Consultant*.
- .7 Notify *Consultant*, in writing, when resubmitting, of any revisions other than those requested by *Consultant*.
- .8 After *Consultant's* review, distribute copies to affected parties.

### 1.4 Certificates and Certification Submittals

- .1 Certificates and certifications submittals: Provide a statement that includes signature of entity responsible for preparing certification.

Submittal Procedures

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## 1.5 **Product Data Sheets**

- .1 Submit *Product* data sheets as follows:
  - .1 1 copy digitally as a bookmarked PDF to *Consultant* using the *Consultant's* document management system.
- .2 Submit *Product* data sheets as called-for by the *Contract Documents* or as the *Consultant* may reasonably request where shop drawings will not be prepared due to a standardized manufacture of a *Product*. Manufacturers' catalogue cuts will be acceptable in such cases, providing that they are 213 mm x 275 mm (8-1/2" x 11") originals, and that they indicate choices including sizes, colours, model numbers, options and other pertinent data, including installation instructions. Submissions showing only general information are not acceptable.
- .3 Where requirements of *Contract Documents* are more stringent than design proposed on *Product* data sheets, the requirements of the *Contract Documents* take priority.
- .4 Upon completion of review by *Consultant*, 1 marked set of *Product* data sheets will be returned to *Contractor* in digital format for reproduction and distribution.
- .5 Retain 1 complete set of reviewed *Product* data sheets for issuance as part of closeout submittals in accordance with Section 01 78 00.

## 1.6 **Shop Drawings**

- .1 Submit *Shop Drawings* as follows:
  - .1 1 copy digitally as a bookmarked PDF to *Consultant* using the *Consultant's* document management system.
- .2 Lettering on *Shop Drawings* shall be not less than 3 mm (1/8") high.
- .3 Reproduction of construction *Drawings* to serve as background for *Shop Drawings* is not permitted.
- .4 Where requirements of *Contract Documents* are more stringent than design proposed on *Shop Drawings*, the requirements of the *Contract Documents* take priority.
- .5 *Consultant* markings and resulting action required:
  - .1 *Shop Drawings* requiring no changes will be marked 'REVIEWED', and shall be submitted for as-built drawings purposes.
  - .2 *Shop Drawings* requiring several changes will be marked 'REVIEWED as NOTED' and shall be revised and submitted for as-built drawings purposes.
  - .3 *Shop Drawings* requiring substantial changes will be marked 'REVISE AND RE-SUBMIT' and shall be revised and resubmitted until *Consultant* stamps *Drawings* with 'REVIEWED' or 'REVIEWED as NOTED'.
- .6 *Shop Drawings* size shall be multiple of 213 mm and 275 mm (8-1/2" and 11") excluding 38 mm (1-1/2") binding margin and not larger than 838 mm x 1117 mm (33" x 44"). Leave minimum 150 mm x 100 mm (6" x 4") clear space for *Consultant's* comments.
- .7 Upon completion of review by *Consultant*, 1 marked set of *Shop Drawings* will be returned to *Contractor* in digital format for reproduction and distribution.
- .8 Retain 1 complete set of reviewed *Shop Drawings* for issuance as part of closeout submittals in accordance with Section 01 78 00.

Submittal Procedures

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.9 Submit copies of reviewed *Shop Drawings* to authorities having jurisdiction as required.

.10 *Shop Drawings* shall include:

- .1 Fabrication and erection dimensions.
- .2 Plans, sections, elevations, arrangements and sufficient full size details which indicate complete construction, components, methods of assembly as well as interconnections with other parts of the *Work*.
- .3 Design calculations for items that require design calculations.
- .4 Clear definition of the division of responsibility for the work described thereon. No *Products*, items or equipment, or description of work, shall be indicated to be supplied, or work to be done, "By Others" or "By Purchaser". *Shop Drawings* marked with either of these phrases shall be rejected without having been reviewed by the *Consultant*.
- .5 Location and type of exposed anchors, attachments and locations and types of fasteners, including concealed reinforcements to accept mounted fasteners.
- .6 Adhesives, joinery methods and bonding agents.
- .7 Kinds and grades of materials, their characteristics relative to their purpose, detailed description of finishes and other fabrication information.
- .8 Configurations, types and sizes required; identify each unit type on drawing and on *Product*.
- .9 Descriptive names of equipment and mechanical and electrical characteristics when applicable.
- .10 Data verifying that superimposed loads will not affect function, appearance and safety or work shown on shop drawings, as well as other interconnected work.
- .11 Assumed design loadings, dimensions of elements and material *Specifications* for load-bearing members.
- .12 Proposed chases, sleeves, cuts and holes in structural members.
- .13 Wall thicknesses of metals.
- .14 Location and types of welds. For structural welds use AWS symbols and clearly show net weld lengths and sizes.
- .15 Materials, gauges, and sizes being supplied including connections, attachments, reinforcement, anchorage and locations of exposed fastenings.
- .16 Installation instructions and details for *Products* to be installed by separate *Subcontractors*, including function of each part.
- .17 A list of *Products* covered by, or included on, the shop drawing. List of *Products* shall be complete and show manufacturer's name, *Product* name, generic description, standard certification where specified, manufacturer's complete installation data and precautions against wrong installation, operation and maintenance.
- .18 Refer to individual sections of the *Specifications* for more particular requirements for *Shop Drawings*.



### Submittal Procedures

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- .19 Compatibility statement: Include with each *Shop Drawings* a statement that each *Product* and material indicated on the *Shop Drawings* is compatible with each *Product* and material with which it comes into contact.

## 1.7 Engineered Judgements

- .1 When an engineered judgement is required by authorities having jurisdiction, such engineered judgement shall be prepared as an engineered submittal in accordance with Section 01 33 00.

## 1.8 Project Firestopping Manual and Coordination

- .1 The *Contractor* shall assign a firestopping and smoke seal firestopping coordinator to coordinate the firestopping details and systems required in the *Work*. Applicator shall designate a single individual as *Project* foreperson who shall be present at the *Place of the Work* throughout the *Work*.
- .2 Firestopping manual:
  - .1 *Contractor* and firestopping and smoke seal coordinator shall prepare a preliminary fire stopping manual, inclusive of all firestopping systems in the *Work*, to be submitted to the *Consultant* prior to the installation of any firestopping and smoke seal work.
  - .2 Manual shall include:
    - .1 Project key plans of each level, with enlarged key plans at areas where required, which identify and tag each anticipated penetration and fire stopping location and type (i.e. multiple metallic pipes through gypsum board wall assembly; single metallic pipe through concrete floor assembly, and the like).
    - .2 *Product* data sheets: data and installation instructions for *Products* providing descriptions sufficient for identification at the *Place of the Work*.
      - .1 Materials list of *Products* proposed for use in the *Work*; complying with listed systems designs.
      - .2 Listing agency's detailed drawing showing joint assemblies and firestopping materials, identified with listing agency's name and number or designation, fire rating achieved, and date of listing.
      - .3 Manufacturers' installation instructions and recommendations.
  - .3 *Shop Drawings*:
    - .1 Submit drawings indicating fire resistance rated assembly number, required temperature, hose stream, and flame rating, material thicknesses, installation methods and materials of firestopping and smoke seals, primers, supports, damming materials as applicable, reinforcements, anchorages, fastenings and methods of installation for each condition to be encountered.
    - .2 Designate on *Shop Drawings* static through penetrations and dynamic joint systems, relative positions, expansion and control joints in rated slabs and walls, and firestopping details.
    - .3 Engineered *Shop Drawings*; for engineering judgements:

### Submittal Procedures

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- .1 Where *Project* conditions require modification to an accredited third party testing agency's listed system design to address a particular firestopping condition that is not covered by a listed system, submit engineered shop drawings detailing the modifications to the listed system design as an engineering judgment or equivalent fire-resistance-rated assembly, for each *Project* location and condition.
- .2 Submit the manufacturer's engineering judgment identification number and *Shop Drawings* details prepared by a professional engineer. The engineering judgment submittal shall include both *Project* name, *Project* location, and *Subcontractor's* name who will install firestop system as described in engineering judgement *Shop Drawings*.
- .3 Provide complete details of specific application of listed system and its modifications upon which the engineered judgement is based upon.
- .4 For perimeter fire barrier systems:
  - .1 Submit engineered *Shop Drawings* for engineering judgements covering perimeter fire barrier systems. Identify each cladding assembly type in contact with each perimeter fire barrier system.
- .4 Fire resistance rating test listings for firestopping and smoke seal systems.
- .3 Firestopping manual shall be submitted within 4 weeks of *Contract* award.
- .4 Prior to concealment of firestopping conditions above a ceiling or by another assembly or finish, the *Contractor* shall submit an updated firestopping manual including as-built drawings that identify firestopping conditions and penetrations.
- .3 Closeout submittals:
  - .1 Submit closeout submittals in accordance with Section 01 78 00.
  - .2 Submit the following certification documents with closeout submittals:
    - .1 Manufacturer's certification: Submit manufacturer's certification that installed firestopping and smoke seal *Products* are suitable for the use indicated and comply with specified requirements.
    - .2 Installation certification: Installer shall submit certification that all joint firestopping system installations are completed and that installations comply with listed systems designs.
    - .3 As-built copy of the firestopping manual.

## 1.9 Samples

- .1 Submit a minimum of 3 samples unless a greater amount is specified.
- .2 Deliver samples to the following location with expenses, including carrying costs, prepaid, unless otherwise instructed:
  - .1 *Consultant's* office.
- .3 Identify samples or assemblies by *Project* number and name, name of *Consultant*, *Contractor* and *Subcontractor*, and date of submission. Identify location, specified material reference and any other pertinent information. Show construction by layered method if necessary, clearly displaying textures and patterns.

Submittal Procedures

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- .4 Where a required colour, pattern or texture has not been specified, submit full range of available *Products* meeting other specified requirements.
- .5 *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*.
- .6 Resubmit samples until written acceptance is obtained from *Consultant*.
- .7 Reviewed and accepted samples will establish the standard against which installed *Work* will be reviewed.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 General scope and responsibility.
- .2 Temporary ventilation.
- .3 Existing facilities.
- .4 Existing services.
- .5 Dust tight partitions and enclosures.
- .6 Infection prevention and control procedures.
- .7 Protection of the existing building.
- .8 Emergency and fire protection.
- .9 Missing patient search.

### **1.2 General Scope and Responsibility**

- .1 For the purposes of this section:
  - .1 The words "worker" or "workers" shall mean the *Contractor*, *Contractor's* staff or employees, *Subcontractors*, *Subcontractor's* staff or employees, *Suppliers*, *Supplier's* staff or employees, or anyone engaged for the *Work*, directly or indirectly, by the *Contractor*, unless specifically noted otherwise.
  - .2 The working day of the healthcare facility is from 7:00 a.m. to 7:00 p.m. every day of the week.
- .2 Conform to the *Owner's* construction procedures and safety manual. In case of conflict between the *Owner's* construction procedures and safety manual and the remainder of the *Contract Documents*, the *Owner's* construction procedures and safety manual shall govern.
- .3 Operational limitations:
  - .1 The existing building will remain in full use and occupancy throughout the *Work*, except for such parts of the building that have been vacated for the *Work*.
  - .2 *Contractor's* use of the *Place of the Work* is limited to permit regular use of *Owner's* facilities to continue with the least amount of interference possible.
  - .3 In consultation with, and to acceptance of, the *Consultant* in the presence of the *Owner*, designate an entrance and a circulation route that workers shall use and that shall not be used by *Owner's* staff, building occupants, or the public.
- .4 Dust tight enclosure and partition doors or flaps and entrance doors to the *Place of the Work* shall remain closed.
- .5 Areas of the existing building adjacent to the *Place of the Work* or areas affected by the *Work*, including circulation and access routes, shall be maintained in a clean state equivalent to the level of cleanliness maintained in the existing building, and as follows:

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Special Project Procedures for Healthcare Facilities

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- .1 Clean and vacuum the *Place of the Work* and areas surrounding the *Place of the Work* daily or more frequently as required.
- .2 Provide tack mats at access doors to the *Place of the Work* so that workers can remove dust and debris from their footwear when exiting the *Place of the Work*. Replace or clean daily, or more frequently as required.
- .3 Wet mop floor areas in vicinity of access doors to the *Place of the Work* daily, or more frequently as required.
- .4 Vacuum carpeted areas daily or more frequently as required.
- .5 Wet clean carpets in accordance with manufacturer's recommendations once work in such areas is complete.
- .6 Final cleaning shall be in accordance with Section 01 74 00.
- .6 Waste protection and removal:
  - .1 Waste management and disposal shall be in accordance with Section 01 74 00 as supplemented herein.
  - .2 Transport waste in containers with tightly fitting lids or cover waste with a wet sheet.
  - .3 Remove waste as it is created. Debris shall be contained and covered if it cannot be removed immediately.
  - .4 Do not transport waste through occupied areas of existing building.
  - .5 Remove waste at the end of each *Working Day* through construction access routes.
- .7 Document condition of the existing building in areas immediately adjacent to the *Place of the Work* by means of construction photographs in accordance with Section 01 32 00.
- .8 Workers shall remove dust from body and clothing by vacuum cleaning prior to traversing patient care areas.
- .9 In areas designated by the *Owner*, workers shall be required to wear protective clothing as directed by the *Owner*. Protective clothing shall be removed upon exiting designated areas.
- .10 Cellular phones shall not be used in the existing building.
- .11 Walkie-talkies shall not be used in the existing building without the express, written approval of the *Owner*.
- .12 Safety clearances are required before any cutting, welding, core drilling, or open flame work is done. A request in writing to the *Owner* must be made and approved a minimum of 1 *Working Day* prior to commencing such work.

### 1.3 Temporary Ventilation

- .1 Provide temporary ventilation in accordance with Section 01 51 00 supplemented as follows:
  - .1 Provide negative pressure air ventilation as described below.

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- .2 Ensure quality of intake air to existing building through existing intake louvres is not compromised by dust or noxious or odorous fumes.

#### 1.4 Existing Facilities

- .1 Restrict access, parking, material deliveries, execution of work, operations and procedures to designated locations and times and do not deviate from designated procedures without prior acceptance by the *Consultant* in the presence of the *Owner*.
- .2 Periodically review proposed construction operations with the *Consultant* in the presence of the *Owner* and cooperate as required to ensure that *Owner's* interests and requirements are not unduly compromised with regard to the normal operation and function of occupied areas on the existing building.
- .3 Workers shall not be permitted to use the hospital cafeteria.
- .4 While working in the existing hospital, workers shall not remain in areas in which they are working for meals and breaks. Workers shall not be permitted to have meals or take breaks in the existing hospital. Meals shall and breaks shall be taken in the site office, or away from the *Place of the Work*.
- .5 Traffic through existing occupied areas of the hospital shall be kept to a minimum. Travel within existing occupied areas of the hospital shall be via the most direct route that does not pass through patient wards or sensitive areas.
- .6 Noise, dust and debris, and odours shall be minimized to ensure hospital staff and patients in adjacent areas are disturbed as little as possible. Corrective action to cease or limit disagreeable annoyances to hospital staff and patients shall be implemented immediately upon notification by the *Consultant* or the *Owner*.
- .7 Use of existing containers and garbage bins shall not be permitted.
- .8 Existing fire protection equipment:
  - .1 Existing fire protection equipment, such as fire extinguishers and hoses, shall only be used in an emergency situation.
  - .2 Do not remove existing fire protection equipment.
  - .3 If any existing fire protection equipment is used or interfered with in any way, the *Owner's* fire equipment inspector shall be retained to inspect, test, recharge, and otherwise repair such equipment at no additional cost to the *Owner*.
- .9 Sanitary facilities: in accordance with Section 01 52 00.

#### 1.5 Existing Services

- .1 Service interruptions:
  - .1 Connection or disconnection of services that will interfere with the operation of the *Owner's* facilities shall not be done without the prior written acceptance of the *Consultant* in the presence of the *Owner* and during the times designated by the *Owner*. Premium charges associated with such work shall be included in the *Contract Price*.

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- .2 Provide at least 25 *Working Days* prior written notice to the *Consultant* and the *Owner* of requirement or intention to interrupt services, and obtain written permission of the *Consultant* in the presence of the *Owner* prior to commencing such interruption.
  - .3 As far as possible, coordinate interruptions with the *Owner's* regular maintenance of building services and systems.
  - .4 Areas adversely affected by changes in air flows outside the construction areas as a result of a required shut-down of portions of the existing HVAC system within the construction areas are to be re-balanced to comfortable levels as advised by the *Consultant*.
- .2 Should existing services be interrupted in breach of the above, make good immediately and provide protection against further such disruptions. Costs resulting from such interruptions and for making good shall be the responsibility of the *Contractor* at no additional cost to the *Owner*.

## 1.6 Dust Tight Partitions and Enclosures

- .1 Dust tight partitions and enclosures shall be in accordance with Section 01 56 00 and Section 01 57 00, as supplemented herein.
- .2 Dust tight partitions:
  - .1 Provide dust tight partitions to localize dust generating activities, and for the protection of workers, hospital staff, patients, the public, and finished areas of the *Work*.
  - .2 Dust tight partitions shall be temporary, weather tight, dust, tight, and lockable partitions between occupied areas of the existing hospital and areas where the *Work* is being performed, and shall include treatment of joints, cracks, and openings in partitions to prevent dust from entering occupied areas of the hospital.
  - .3 Dust tight partitions shall be assemblies with 1 hour fire resistance rating complete with doors and frames having 3/4 hour fire resistance ratings.
  - .4 Construct dust tight partitions as follows:
    - .1 Provide 92 mm (3-5/8") steel studs at 400 mm (16") on centre, with 2 rows of bracing between studs and additional bracing for gypsum board finish. Steel studs shall be in accordance with Section 09 22 00.
    - .2 Provide fire resistance rated tarpaulins fastened to studs on the side of the partition opposite to the occupied areas of the hospital. Lap joints 100 mm (4") minimum, and seal laps and perforations dust tight with 75 mm (3") wide plastic film tape.
    - .3 Provide 1 layer of 12.7 mm (1/2") thick square edge fire resistant gypsum board over both side of partition. Seal joints with 75 mm (3") wide plastic film tape. Gypsum board and installation shall be in accordance with Section 09 29 00.
    - .4 Provide felt gaskets around perimeter of partitions.
    - .5 Paint sides of partitions exposed to occupied areas of the existing building in accordance with Section 09 91 00, colour as to later selection by the *Consultant*.

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.3 Dust tight enclosures:

- .1 Where minor isolated alteration work occurs in the existing building and a dust tight partition is not feasible, provide a mobile containment system, extending floor to ceiling.
  - .2 Mobile containment system shall be fabricated of an adjustable aluminum frame, vinyl enclosure with pressure porthole, wheel base platform, and disposable plastic liner, and sized as required.
  - .3 Provide HEPA filter vacuum device and manometer and connect to pressure porthole.
  - .4 Acceptable *Product*: Kontrol Kube Topsider or Kontrol Kube Topsider Jr., as manufactured by Fiberlock Technologies Inc., or approved alternate.
- .4 Maintain and relocate dust tight partitions and enclosures until dust generating work is complete, or until directed otherwise in writing by the *Consultant* in consultation with the *Owner*.
- .5 Provide "Construction Zone" signage outside dust tight partitions and enclosures, manufactured by signage company, with minimum 75 mm (3") letters.

**1.7 Infection Prevention and Control Procedures**

- .1 Infection prevention and control procedures shall be in accordance with CAN/CSA Z317.13-22, and Health Canada document "Construction-Related Nosocomial Infections in Health Care Facilities".
- .2 Training:
  - .1 Provide workers with training in infection prevention and control procedures.
  - .2 Training shall be provided a specialized infection prevention and control consultant approved by the *Owner*.
  - .3 The *Contract Price* includes the cost for the required number of training sessions to adequately cover the duration of the *Project*.
  - .4 Proof of successful completion of such training shall be submitted to the *Owner* in the form of a certificate issued by the infection prevention and control consultant providing the training. Training certificate shall be submitted before a worker undertakes any work at the *Place of the Work*.
- .3 The *Owner* specialized infection prevention and control consultant shall assess the risks related to the *Project* utilizing the Risk Assessment and Preventative Measures Checklist contained in Health Canada Document "Construction-Related Nosocomial Infections in Health Care Facilities". The determination of risk will guide the need for barriers and other infection prevention and control measures required in the *Work*. The *Owner* will advise the *Contractor* of the results of the assessment. The specialized infection prevention and control consultant shall advise the *Owner* and the *Contractor* of the results of the assessment.
  - .1 The *Consultant* shall have no authority or role under the *Contract* with regard to infection prevention and control procedures.



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- .4 Field review of the *Work* and on-going infection prevention and control procedures shall be undertaken on a regular basis by the specialized infection prevention and control consultant in the presence of the *Contractor*. Procedures for such field reviews shall be the same as those for inspection and testing in accordance with Section 01 45 00.
- .5 At *Contract* start-up meeting, convened in accordance with Section 01 31 19, review infection prevention and control procedures. The specialized infection prevention and control consultant shall attend the *Contract* start-up meeting. Subjects to be reviewed include, but are not limited to, the following:
  - .1 General information on infection prevention and control procedures.
  - .2 Identification of patient populations that may be at risk.
  - .3 Prevention measures for essential services that may be disrupted.
  - .4 The integrity of the facility's exterior structure, spatial separations, ventilation and water supplies for any infection control problems.
  - .5 Methods for dust containment and removal of construction debris.
  - .6 Traffic patterns for construction workers and supply delivery routes to minimize risks to patients, staff and visitors.
  - .7 The need for increased filter changes during the *Work*.
  - .8 The need to close down dampers temporarily to reduce circulation of contaminated air or fumes.
  - .9 Systems that can provide the required air exchange rates and pressure relationships in critical areas near construction activity.
  - .10 Schedule of field reviews by the specialized infection prevention and control consultant.
- .6 Vacuum cleaners:
  - .1 Vacuums shall be commercial grade complete with HEPA filters.
  - .2 HEPA filter shall be changed as recommended by the manufacturer or required by use. Maintain a filter change log at the *Place of the Work*, available for review by the *Owner*.
- .7 The following precautions, as a minimum, shall be taken when working on existing walls, ceilings, floor spaces, ducts and piping systems as the dust and dirt collected in these areas may contain disease causing germs:
  - .1 Prior to work being done or the removal of ceiling tiles, or opening of ceiling access hatches, erect floor to ceiling dust tight partitions and enclosures as described above to completely enclose the area where such work is being performed.
  - .2 Remove acoustical ceiling panels keeping horizontal, and vacuum clean the panels immediately prior to removal.
  - .3 Existing air ducts, conduits, and spaces above the ceiling shall be vacuum cleaned prior to the start of work in such areas.

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- .4 Remove dust tight partitions and enclosures when work is finished or prior to the start of hospital working day, and remove marks left by tape or studs, and enclose ceiling areas with no obstructions to mechanical and electrical devices in the ceiling space.
- .5 Vacuum clean interior of dust tight partitions and enclosures prior to their removal.
- .6 Vacuum clean area enclosed by dust tight partitions and enclosures after removal of the dust tight partitions and enclosures.
- .8 Negative pressurization
  - .1 Areas where work is being undertaken shall be isolated from occupied areas of the hospital using dust tight partitions and enclosures as described above.
  - .2 The *Place of the Work* will be maintained under negative pressure at all times in relation to the occupied areas of the existing building to prevent dust and airborne pathogens from entering the occupied areas of the existing building.
  - .3 Negative pressure shall be achieved through the use of dedicated (window or otherwise) exhaust units or, if direct access cannot be achieved, by HEPA filtered recirculation units that transfer filtered air from the *Place of the Work* into the occupied areas. Exhaust points will be reviewed with the *Owner* to ensure that the exhaust air from the *Place of the Work* is not affecting pedestrian routes and is not re-entrained back into the existing building through fresh air intakes.
  - .4 Provide construction exhaust/HEPA units and remove at the completion of the *Work*.
  - .5 Air systems serving only the *Place of the Work* will be shut down and all supply, return and exhaust openings shall be sealed to prevent dust and construction debris from entering the air system. As a further precaution, the air system will be reviewed at the end of the *Work* to determine if cleaning is required.
  - .6 Supply and return air ducts entering the *Place of the Work* are to be fitted with a pre-filter unit and sealed within the *Place of the Work* near point of entry or exit prior to the start of disruptive activity to prevent dust and construction debris from entering the air system. As a further precaution, the air system will be reviewed at the end of the *Work* to determine if cleaning is required.
  - .7 During construction, the seal only on the supply air duct may be removed after demolition and clean-up to permit ventilation within the construction area provided no other means is available.

## 1.8 Protection of the Existing Building

- .1 Protection requirements shall be in accordance with Section 01 56 00, as supplemented herein.
- .2 Keep *Place of the Work* safe and secure, denying access to unauthorized personnel.
- .3 Protect existing work from damage. Make good any damage caused. The onus is on the *Contractor* to substantiate that damage existed prior to commencement of the *Work*.
- .4 Do not overload the existing structure due to the *Work*.

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- .5 Take special measures to protect existing work from damage when moving heavy loads or equipment. Protect areas used as passageways or through which materials are moved. Use resilient tired conveyances only when moving materials and equipment inside building. Provide coverings as required to protect existing work from damage.
- .6 Separate exterior access, work and storage areas from *Owner* occupied existing areas, with fencing and hoarding as specified in Section 01 56 00. Rearrange fencing/hoarding as *Work* progresses to suit extent and configuration of the *Work*.
- .7 Provide guards, barricades and other temporary protection to prevent injury to persons.
- .8 Protect existing building components and contents from damage by weather, when executing *Work* affecting integrity of the building envelope. provide temporary insulated and air tight weatherproof closures to protect openings made in existing building envelope. *Make Good* existing building components and contents damaged by weather resulting from inadequate temporary protection measures.
- .9 Protection of existing occupied areas:
  - .1 Existing exterior walls with windows of plain glazing, when exposed to the *Work*, shall be protected with 16 mm (5/8") gypsum board for interior surfaces and 9.5 mm (3/8") exterior grade plywood for exterior surfaces, mounted on suitable framing.
    - .1 Plywood: in accordance with Section 06 10 53.
    - .2 Metal framing: in accordance with Section 09 22 00.
    - .3 Gypsum board: in accordance with Section 09 29 00.
  - .2 Maintain such protection throughout the *Work*.
  - .3 Other openings in the existing exterior walls, such as doors and louvres, shall be similarly protected or replaced with doors of solid core wood or hollow steel construction.

## 1.9 Emergency and Fire Protection

- .1 Provide and maintain ready access to fire protection equipment, in accordance with Section 01 52 00.
- .2 Immediately implement any request or instruction made by the hospital's fire marshal.
- .3 Provide temporary fire resistant closures at existing areas openings exposed to construction areas for the *Work* to maintain fire and life safety of existing building.
- .4 *Contractor* shall coordinate the work with the *Owner* in order to ensure no disruption to the existing fire detection and annunciation systems. Failure to provide such coordination shall result in the *Contractor* incurring the responsibilities and expenses associated with disruption to the existing fire detection and annunciation systems at no additional cost to the *Owner*.
  - .1 Provide fire watch when existing fire detection and annunciation systems are not operational or on bypass.
  - .2 Whenever a changeover time occurs, which is an outage time of at least a portion of the fire alarm system, the municipal fire department shall be notified of the temporary shutdown and alternative measures shall be devised.

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- .5 *Contractor* shall coordinate the work with the *Consultant* in the presence of the *Owner* in order to prevent unapproved disruptions to the existing sprinkler system, standpipe system, or other fire protection systems.
  - .1 Where temporary shut-down is necessitated, such shut down shall be in accordance with the requirements of authorities having jurisdiction and the building code.
- .6 Obtain 'Hot Work Permit' from *Owner* prior to hot work operation, which may cause the building's fire alarm system to be activated or create an unwarranted fire risk condition. The prevention of fires and false fire alarms caused by hot work operations is the primary goal of this procedure. Gas hoses, backflow preventers, fire resistive tarpaulins, curtains and other cutting and welding equipment must be in good repair before the permit is issued.
  - .1 'Hot Work' is defined as work using open flames or sources of heat that could ignite materials in the work area.
- .7 Fire separations:
  - .1 Maintain the integrity of fire separations, fire protection systems, and fire rated assemblies.
  - .2 Make good fire separations, fire protection, and fire rated assemblies compromised as a result of the *Work*.
- .8 Maintaining existing building exit facilities:
  - .1 Maintain exit facilities serving the existing building.
  - .2 Where an exit is blocked-off or deleted as a result of the *Work*, an alternative exit shall be provided that is acceptable to the *Consultant*, the *Owner*, and authorities having jurisdiction.
  - .3 Where it is necessary for access to be gained to an exit through the *Place of the Work*, the access shall be clearly defined and protected so that it is separated from construction areas by a smoke tight fire separation equivalent to a minimum of 1 hour fire resistance rating, unless otherwise indicated.
- .9 Intersecting corridors:
  - .1 Provide temporary fire separations between existing corridors on occupied floor areas and new corridors under construction.
  - .2 Construct temporary fire separations out of steel studs and gypsum board to provide a construction equivalent to a minimum of 1 hour fire resistance rating, unless otherwise indicated.
    - .1 Firestopping and smoke sealant: in accordance with Section 07 84 00.
    - .2 Steel studs: in accordance with Section 09 22 00.
    - .3 Gypsum board: in accordance with Section 09 29 00.
  - .3 Where access is required, the doorway shall be protected by a door of solid core wood or hollow steel construction.
  - .4 Finish hardware equivalent to a minimum of 1 hour fire resistance rating, unless otherwise indicated.

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.10 Fire department access:

- .1 Do not obstruct access route designated for fire department equipment.
- .2 If it is necessary that existing access routes be obstructed or deleted, alternative access routes acceptable to the fire department and in accordance with the requirements of the *Contract Documents* and authorities having jurisdiction shall be provided prior to commencement of work that will obstruct or delete existing access.

.11 Combustible materials:

- .1 Stockpiling of combustible materials adjacent to or inside the existing building shall not be acceptable.

.12 Temporary protection of openings in fire separations:

- .1 Openings in existing floor assemblies and vertical fire rated assemblies required by the *Work*, shall be temporarily protected with materials as required to maintain continuity of the required fire resistance rating for existing fire rated assembly.

**1.10 Missing Patient Search**

- .1 In the event that the *Owner* is required to undertake a missing patient search, undertake a detailed search of the *Place of the Work*, under the direction of the *Owner*.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Quality Requirements

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 *Contractor's* quality assurance program.
- .2 *Contractor's* field quality control.
- .3 Subcontractor Qualification Statements
- .4 Independent inspection and testing – *Owner's* Quality Assurance.
- .5 Inspection and testing schedule.
- .6 Reports and documents.
- .7 Manufacturer's field review.
- .8 Mock-ups.

### **1.2 Contractor's Quality Assurance Program**

- .1 Submit to the *Owner* and the *Consultant* for their information, a quality assurance program (the "Quality Assurance Program").
- .2 The Quality Assurance Program shall meet the requirements of Canadian Standards Association CSA CAN3-Z299.3 or such other requirements as set out in the *Contract Documents*.
  - .1 The Quality Assurance Program shall be designed so that quality requirements are obtained by progressive implementation of the controls and inspection functions stated in the Quality Assurance Program.
  - .2 Make any modifications to the Quality Assurance Program as reasonably requested by the *Owner* and/or the *Consultant*.
  - .3 The Quality Assurance Program shall include, but shall not be limited to, the following:
    - .1 A system by which changes to the *Contract Documents* and correspondence with *Subcontractor* and other correspondence is handled in a controlled manner.
    - .2 A system for purchased or manufactured materials to be identified, inspected to the specified standard, and covered by a material test report.
    - .3 A system by which measuring and testing equipment is properly stored, handled, and calibrated to a known standard.
    - .4 A system by which incoming materials are: inspected to the specified standard; accepted; allocated safe storage; and properly recorded.
    - .5 A system by which process inspection requirements shall be clearly stated for operations and carried out by qualified personnel.
    - .6 A system by which final inspections will be carried out and accepted by authorized personnel prior to release for shipping or major assembly.

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- .7 A system by which non-conformance to requirements of the *Contract Documents* shall be recorded and solutions proposed by the *Owner* or the *Consultant* are also recorded.
  - .8 A system by which instructions for handling and storage of equipment shall be given.
  - .9 A system by which OS/CI items can be inspected and received in a manner which allows replacement or correction.
  - .10 A system by which a record of quality inspections, tests, and actions shall be kept, including field quality control.
  - .11 A system by which the *Owner* and the *Consultant* shall be afforded access to manufacturing areas and quality records and issued with copies of pertinent drawings and manufacturing schedules.
- .3 Provide the *Owner* and the *Consultant* with regular Quality Assurance Reports for their information according to an agreed schedule.

**1.3 Contractor's Field Quality Control**

- .1 Provide and be responsible for field quality control throughout the *Work*, including quality control of *Subcontractors* and major *Suppliers*.
- .2 Ensure that the only specified or approved *Products* and materials are used.
- .3 Provide and maintain an effective quality control program, in accordance with the Quality Assurance Program, and perform inspections and tests to ensure compliance with *Contract Documents*.
- .4 Furnish appropriate facilities, instruments, and testing devices required for performance of the quality control function.
- .5 Deliver inspection testing reports or approvals in accordance with the requirements of Section 01 45 00.
- .6 Develop a field quality control manual covering field installation. The form of the manual shall be acceptable to the *Owner* and the *Consultant*. This manual will document field quality control practices of the *Contractor*, *Subcontractors*, and major *Suppliers*. The manual shall include, but not be limited to:
  - .1 Concrete slab moisture and pH testing and surface preparation, including flatness and levelness.
  - .2 Surface preparation.
  - .3 Fastener and anchor installation.
  - .4 Material compatibility testing.
  - .5 On line fabrication quality control practices.
  - .6 Shipping.
  - .7 Field installation.
  - .8 Field inspection and testing by *Contractor*.
  - .9 Field inspection and testing independent.

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- .7 Inspection and testing shall be performed by company qualified to perform the inspections or tests specified or required by the building code, regulations, by-laws, or authorities having jurisdiction.
- .8 Retain and pay for inspection and testing that is for *Contractor's* own quality control or is required by regulatory requirements
- .9 Maintain a logbook (copies to be provided to the *Consultant* at completion of fabrication) documenting date, time, results, and significance of in-plant testing carried out, where applicable, linked to daily production. The form of this logbook shall be acceptable to the *Owner* and the *Consultant*.

#### 1.4 Subcontractor Qualification Statements

- .1 Upon request by the *Consultant*, submit proof, in the form of CCDC 11 - Contractor's Qualification Statement, of qualifications of *Subcontractors* to verify *Subcontractor's* qualifications and experience meet or exceed the requirements of the *Contract Documents*.
  - .1 If, upon review of the Contractor's Qualification Statement, it is found that the *Subcontractor* does not meet the qualification requirements specified in the *Contract Documents* pertaining to the parts of the *Work* for which the *Subcontractor* has been retained, the *Contractor* shall replace the unqualified *Subcontractor* with a qualified *Subcontractor*, satisfactory to the *Contractor* and the *Owner*, at no additional cost to the *Owner* and at no increase in the *Contract Time*.

#### 1.5 Independent inspection and Testing – Owner's Quality Assurance

- .1 Independent inspection and testing services are used by the *Owner* to verify compliance with requirements of the *Contract Documents*.
- .2 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*.
  - .1 Independent inspection and testing services do not relieve the *Contractor* of responsibility for normal shop and site inspection, and quality control of manufacturing and installation.
  - .2 Specified tests, inspections, and related actions do not limit the *Contractor's* other quality assurance and control procedures that facilitate compliance with the *Contract Documents* requirements.
  - .3 Requirements for the *Contractor* to provide quality control services required by the *Contract Documents*, *Consultant*, *Owner*, or authorities having jurisdiction are not limited by *Owner's* independent inspection and testing services.
  - .4 Inspections and tests specified or required that are not specified as independent inspection and testing are the responsibility of the *Contractor* and are not covered under the *Owner's* quality assurance requirements.
- .3 The *Owner* will appoint independent inspection and testing companies, representing, reporting and responsible to the *Owner*. Payment will be by *Owner*, unless otherwise specified.



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- .4 Additional inspection and testing required because of changes in materials proposed by *Contractor* or *Subcontractors*, by lack of proper notice for inspection and testing specified, or required as a result of failure of such materials to meet requirements of the *Contract Documents* when originally tested, shall be carried out at no additional cost to the *Owner*.
- .5 Inspection and testing required by codes or ordinances, or by an authority having jurisdiction, and made by a legally constituted authority, shall be the responsibility of the *Contractor* and shall be paid for by the *Contractor*, is not part of the *Owner's* quality assurance requirements, and shall not be paid by *Owner*, unless otherwise specified in the *Contract Documents*.
- .6 Inspection or testing performed exclusively for *Contractor's* convenience shall be sole responsibility of *Contractor*, is not part of the *Owner's* quality assurance requirements, and shall not be paid by *Owner*.
- .7 Independent inspection and testing shall be performed by company qualified to perform the inspections or tests specified or required.
- .8 Requirements of regulatory companies:
  - .1 Testing shall be conducted in accordance with requirements of the building code.
  - .2 Obtain certification where required by the building code and standards.
- .9 Cooperation with independent inspection and testing companies:
  - .1 Provide independent inspection and testing companies with materials and installation information as required and/or requested.
  - .2 Submit test samples required for testing.
  - .3 Cooperate with independent inspection and testing companies and give adequate notification of any changes in source of supply, additional work shifts, and other proposed changes.
  - .4 Provide access to the *Work* for independent inspection and testing companies wherever the *Work* is in progress, or wherever *Products*, materials, or equipment are stored prior to shipping.
  - .5 Provide labour, *Construction Equipment*, and temporary facilities required to assist independent inspection and testing companies in sampling and making tests.
- .10 Inspection and test specimens:
  - .1 Inspection and testing will, generally, consist of procedures listed in the following paragraphs, but additional tests may be performed as required to verify conformance to *Contract Documents*.
  - .2 Specimens and samples for testing, unless otherwise specified in the *Contract Documents*, shall be taken by the independent inspection and testing company; sampling equipment and personnel shall be provided by the independent inspection and testing company; and deliveries of specimens and samples to the testing company shall be performed by the testing company unless otherwise specified.
  - .3 Independent inspection and testing company shall take samples necessary to verify quality as specified. Taking of samples shall not endanger the structure or life safety, and shall be taken so as to best represent the *Work* as a whole.

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- .4 Samples shall be handled, packaged, stored and delivered in accordance with specified tests. Sample handling where required shall duplicate conditions at the *Place of the Work* (such as site-cured concrete cylinders).
- .11 Where evidence exists that defective workmanship may have occurred, or that the *Work* may have been carried out incorporating defective materials, or where tests demonstrate that installed conditions do not comply with the requirements of the *Contract Documents*, the *Consultant* reserves the right to have additional inspections, tests, analysis, and surveys performed in order to help determine the extent of defect and whether such work must be replaced. Inspections, tests, and surveys carried out under these circumstances will be made at the *Contractor's* expense, and will not be paid by *Owner*, unless the results indicate that the work so tested, inspected or surveyed is not defective or that, in *Consultant's* opinion, the work so tested, inspected, or surveyed may be accepted, in which case tests, inspections or surveys will be paid by *Owner*.
- .12 Repair work damaged as a result of independent inspection and testing work.

## **1.6 Inspection and Testing Schedule**

- .1 Prepare schedule for inspection and testing company services in accordance with Section 01 32 00 and as follows:
  - .1 Establishing schedule:
    - .1 By advance discussion with the selected independent inspection or testing company, determine the appropriate time necessary to perform the required services and to issue related reports.
    - .2 Allow for required time within construction schedule.
  - .2 Adherence to schedule:
    - .1 *Contractor* shall advise independent inspection and testing companies in advance when inspection and testing of the *Work* is required.
      - .1 Amount of advance notice shall be as required by the independent inspection and testing company, but shall be no less than 2 *Working Days*.
    - .2 When independent inspection and testing company is ready to perform inspection and testing according to predetermined schedule, but is prevented from inspection and testing or taking specimens due to incompleteness of the parts of the *Work* scheduled for inspection and testing, extra costs for inspection and testing attributable to the delay may be back-charged to *Contractor* at no additional cost to the *Owner*.
- .3 Notify independent inspection and testing company at least 3 *Working Days* before work required to be inspected commences, and arrange for a meeting at the *Place of the Work*, to be held 1 *Working Day* before the work starts with the following present:
  - .1 The *Contractor*, and the *Subcontractor* responsible for the work to inspected and/or tested, the inspection and testing company representatives, the product manufacturer's representative when required, and the *Consultant*.
- .4 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.

## Quality Requirements

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- .5 Give 2 *Working Days*' prior notice to independent inspection and testing company of the commencement of each phase of the *Work* requiring inspection, and provide independent inspection and testing company with materials and installation information.

### 1.7 Reports and Documents

- .1 Inspection and testing company, whether for Owner's quality assurance or for *Contractor's* quality assurance, shall submit shop inspection and site inspection reports within 5 *Working Days* of each inspection.
- .2 Distribute reports digitally as follows:
  - .1 *Owner*.
  - .2 *Consultant*.
  - .3 *Contractor*.
  - .4 Consulting engineers, as applicable.
- .3 Inspection and testing companies, whether for *Owner's* quality assurance or for *Contractor's* quality assurance, shall submit a written report for each inspection or test, including pertinent data such as conditions at the *Place of the Work*, dates, test references, locations of tested materials, actual *Product* identification, testing methodology, procedures, and descriptions, site instructions given, recommendations and/or any other information required by standard applicable to reporting of tests and inspections.
  - .1 Report shall clearly indicate failure of *Product* or procedures to meet applicable standards, give recommendations for retesting or correction. Inspector shall contact *Contractor* and *Consultant* immediately when *Product* or assembly fails to meet requirements of the *Contract Documents*.
- .4 Upon completion of portions of the *Work* subject to inspection and testing, whether for *Owner's* quality assurance or for *Contractor's* quality assurance, submit to the *Consultant* duplicate certificates of acceptance of the installation issued by the inspection and testing company.

### 1.8 Manufacturer's Field Review

- .1 Where manufacturer's field review is specified, manufacturer's representative shall review the relevant parts of the *Work* at the *Place of the Work*, or wherever such affected work is in progress, to verify that the relevant parts of the *Work* are being executed in accordance with manufacturer's written requirements and verify their product is fit for the purpose intended.
- .2 Manufacturer's field review is to verify that the *Products* specified are being used in the *Work* and are being applied on surfaces prepared in accordance with manufacturer's written requirements and the requirements of the *Contract Documents*.
- .3 Unless otherwise indicated, manufacturer's representative shall undertake a minimum of 3 field reviews, with additional reviews as required by the manufacturer, to verify that the relevant parts of the *Work* are in accordance with the manufacturer's written requirements.

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Quality Requirements

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- .4 Manufacturer's representative shall submit a type-written report on manufacturer's letterhead after each field review following procedures for reports and documents specified in Section 01 45 00. Report shall document manufacturer's representative's field observations and recommendations.

### **1.9 Mock-Ups**

- .1 Provide field or shop erected example of work complete with specified materials and workmanship.
- .2 Provide field or shop erected mock-ups of *Work* as specified in the *Specifications*. If a mock-up location is not indicated in the *Drawings* or *Specifications*, locate where directed by *Consultant*.
- .3 Do not proceed with work for which mock-ups are required prior to *Consultant's* review of mock-ups.
- .4 Modify mock-up as required until *Consultant* written acceptance is obtained.
- .5 Protect and maintain mock-ups until directed to be removed.
- .6 Commence work demonstrated in mock-up only after review and acceptance of workmanship.
- .7 Remove mock-ups only when the *Work* they represent is complete or when otherwise directed by *Consultant*.
- .8 If possible, mock-up may become part of finished work, at sole discretion, and with prior written acceptance of *Consultant*.
- .9 Reviewed and accepted mock-ups shall be the standard of workmanship and material against which installed work will be compared.
- .10 Remove and replace materials or assemblies appearing in the finished work that do not match reviewed and accepted mock-ups.

### **PART 2 - PRODUCTS**

Not applicable.

### **PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

## Temporary Utilities

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### PART 1 - GENERAL

#### 1.1 Section Includes

- .1 Temporary utilities - general.
- .2 Temporary electrical services.
- .3 Temporary water supply.
- .4 Temporary heating and ventilation.

#### 1.2 Temporary Utilities - General

- .1 Provide temporary utilities as specified and as otherwise necessary to perform the *Work* expeditiously.
- .2 Arrange and pay for required temporary services, unless otherwise specified.
- .3 Provide connection and disconnection of temporary services and facilities required in the *Work*, including connection to existing services made available by the *Owner*.
- .4 Remove temporary utilities after use.
- .5 Existing services:
  - .1 Do not use any existing services and facilities during construction unless specific written permission is provided by *Owner*.
  - .2 Protect and maintain without interruption, existing water, heating, drainage, and other services within the *Place of the Work* to existing buildings not within the scope of the *Work* of this *Contract*. Obtain written permission of the *Owner* for services required to be temporarily shut off, at least 2 full *Working Days* in advance.
  - .3 Do not use permanent mechanical, or electrical systems during the course of the *Work* unless specific written permission is provided by the *Consultant*. Use of permanent services for temporary construction service shall not prejudice warranties.

#### 1.3 Temporary Electrical Services

- .1 Provide and maintain an adequate temporary electrical service for performance of the *Work* including, but not limited to, operation of electric pumps, motors, vibrators and other power tools, hoisting and related construction and general illumination during the *Work*.
  - .1 Use existing electrical service into building. *Owner* will pay electrical bills.
  - .2 Do not use new building power systems during construction without prior written authorization from *Consultant* and *Owner*.
- .2 Provide and maintain any components and equipment necessary to transform supply power to necessary temporary power voltage.

#### 1.4 Temporary Water Supply

- .1 Provide and maintain a temporary supply of water for use in the *Work*.
  - .1 Use existing water supply. *Owner* will pay water bills.

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Temporary Utilities

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- .2 Extend supply pipe or pipes from nearest available sources and maintain in good condition until permanent system is installed and ready for use.

### **1.5 Temporary Heating and Ventilation**

- .1 Provide and pay for temporary heating, cooling and ventilating required for the *Work*, including attendance, maintenance and fuel.
- .2 Provide temporary heat and ventilation as required to:
  - .1 Facilitate continuous uninterrupted progress of the *Work*.
  - .2 Protect the *Work* and *Products* against damage and defacement caused by weather, harmful levels of temperature, humidity, and moisture.
  - .3 Protect the *Work* against dampness and cold.
  - .4 Prevent moisture condensation on surfaces, freezing, or other damage to finishes or stored *Products*.
  - .5 Provide ambient temperatures and humidity levels for proper storage, installation and curing of materials, in accordance with specified standards and manufacturer's requirements.
  - .6 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Prior to enclosing building, maintain work areas at not less than 7°C. After enclosing, keep premises heated to at least 13°C using temporary heating devices that do not cause moisture and humidity build-up within the facility. Increase temperatures in isolated areas to 20°C as required by various sections of the *Specifications* or by *Product* manufacturers.
- .4 Solid fuel salamanders will not be permitted.
- .5 Provide temporary heat or adequate protection by means of straw or other coverings to floor slabs, footings, or any part of building not specifically designed to withstand frost penetration.
- .6 Furnish other temporary heating as required by various sections of the *Specifications* or by *Product* manufacturers.
- .7 Ventilate to the exterior of the building work areas as required when toxic materials are being utilized or cured.
- .8 Replace with new, any work damaged due to failure to provide adequate heat at no cost to *Owner*.

### **PART 2 - PRODUCTS**

Not applicable.

### **PART 3 – EXECUTION**

Not applicable.

**END OF SECTION**

## Temporary Facilities

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### PART 1 - GENERAL

#### 1.1 Section Includes

- .1 General scope and responsibility.
- .2 Parking.
- .3 Temporary sanitary facilities.
- .4 Temporary site office.
- .5 Temporary telephone.
- .6 Fire protection.
- .7 Temporary site storage.

#### 1.2 General Scope and Responsibility

- .1 Temporary facilities specified in this section shall be supplemented as applicable in accordance with Section 01 35 13.
- .2 Arrange, obtain and pay cost for permits required for temporary facilities and controls.
- .3 Provide and maintain temporary facilities for the *Work* and remove them from the *Work* upon issuance of certificate of *Substantial Performance of the Work*.
- .4 Do not use permanent facilities, except standpipe for firefighting, during the course of the *Work* unless specific written permission is provided by the *Consultant*. Where use of permanent facilities is granted for temporary construction service, such use of permanent facilities shall not prejudice warranties.

#### 1.3 Construction Parking

- .1 A parking area has been designated for the use of workers engaged for the *Project*.
  - .1 Use of the parking area shall be by vehicles with parking permits only.
  - .2 Parking permits will be issued by the *Owner* on a monthly basis at no cost.
  - .3 Submit a list of vehicles for which permits are required to the *Owner*. The list shall include the make, model, year, and licence plate number for each vehicle. The list shall be updated at least once a month, or more frequently as required.
  - .4 There is no reserved parking. Parking is on a first-come-first-served basis however, occupants of and visitors to the existing building shall have priority over workers. It may be necessary for workers to park off-site.
- .2 Do not interfere with the operation of existing premises. Keep existing parking areas and road system remain free and clear of obstructions resulting from the *Work*.
- .3 Illegally parked vehicles that are ticketed and/or towed shall be the sole responsibility of the vehicle owner.

#### 1.4 Temporary Sanitary Facilities

- .1 Provide and maintain temporary sanitary facilities for use by workers, including separate, stand-alone, dedicated washrooms for women only. The use of existing building's sanitary facilities by workers shall be prohibited.

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Temporary Facilities

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- .2 Use of new sanitary facilities by workers is prohibited.

**1.5 Temporary Site Offices**

- .1 Provide heated, lighted, air conditioned and ventilated site office, of sufficient size to accommodate site meetings for 6 people, and furnished with drawing layout table, filing cabinets, and telephone.

**1.6 Temporary Telephone**

- .1 Provide and maintain a telephone in temporary site office for exclusive use of *Consultant*, *Contractor*, and *Subcontractors*. Pay phone is not acceptable.
- .2 Superintendent shall be equipped with mobile telephone device.
- .3 Long distance charges shall be paid by party making call.

**1.7 Fire Protection**

- .1 Provide and maintain temporary fire protection systems and equipment during construction.

**1.8 Temporary Site Storage**

- .1 Handle and store materials so as to prevent damage or defacement to the *Work* and surrounding property.
- .2 Construct weather-tight storage sheds for storage of materials that may be damaged or defaced by weather. Provide floors raised 150 mm (6") clear of ground for storage of *Products*.
- .3 *Owner* is not responsible for securing *Products* or materials at the *Place of the Work*.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 – EXECUTION**

Not applicable.

**END OF SECTION**



Temporary Barriers and Enclosures

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 General scope and responsibility.
- .2 Temporary enclosures and protection.
- .3 Protection of the public.
- .4 Protection of the *Work*.

### **1.2 General Scope and Responsibility**

- .1 Temporary facilities and controls specified in this section shall be supplemented as applicable in accordance with Section 01 35 13.
- .2 Provide and maintain signs, guard-rails, barriers, warning lights and other protection as required by authorities having jurisdiction for safety of the *Place of the Work*. Be responsible for adequacy of protection.
- .3 Plant, Machinery and Scaffolding:
  - .1 Provide formwork, scaffolding, equipment, tools, machinery and incidental appurtenances necessary for the proper execution of the *Work*.
  - .2 Erect plant, machinery and scaffolding to permit access to building and the *Work*.
  - .3 Use scaffolds in such manner as to interfere as little as possible with other trades' operations.
  - .4 Support scaffolds from finished surfaces only after taking precautions to prevent damage. No supports, clips, brackets, or similar devices shall be welded, bolted, or otherwise affixed to any finished member or surface without prior permission.
- .4 Maintain temporary barriers and enclosures in good condition for the duration of the *Work*.
- .5 Remove temporary barriers and enclosures from *Place of the Work* when no longer required.

### **1.3 Temporary Enclosures and Protection**

- .1 Provide temporary enclosures and protection of adequate construction to prevent dispersion of dust and dirt into other areas of existing building and to prevent dispersion of dust and dirt beyond the *Place of the Work*.
- .2 Provide temporary weather-tight enclosures and protection for exterior openings in building as soon as walls, floors and roofs are built so as to protect the *Work* from weather and vandalism. Provide doors in enclosures as necessary to maintain fire exits.
- .3 Erect, maintain, and relocate enclosures as required to facilitate construction operations and *Owner's* operational requirements.
- .4 Temporary enclosure and protection shall be of finished appearance and painted to colour approved by *Owner*.
- .5 Provide dust seal and sound resistant enclosures to protect existing building and operations as indicated. Include temporary doors, fastenings and keys.

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Temporary Barriers and Enclosures

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- .6 Insulate and airseal exterior enclosures to prevent condensation and drafts.

#### **1.4 Protection of the Public**

- .1 Provide fencing, barricades, hoarding, notices and warning boards and maintain lights and signals for protection of workers engaged on the *Work*, for protection of adjoining property and for protection of the public.
- .2 Where any special hazard exists from which it is not possible to protect the public safety by other means, watchpersons shall be employed to preserve public safety until the area of special hazard no longer poses a risk to public safety.

#### **1.5 Fire Routes**

- .1 Maintain fire access routes, including overhead clearances, for use by emergency response vehicles.

#### **1.6 Protection of the Work**

- .1 Protect the *Work* from damage, discolouring, and defacement. Maintain protection until the *Work* is complete.
- .2 Provide necessary temporary barriers and enclosures to protect existing surfaces from damage during performance of the *Work*.
- .3 Have damaged or defaced work corrected by workers meeting qualification requirements of the *Contract Documents*.

### **PART 2 - PRODUCTS**

Not applicable.

### **PART 3 – EXECUTION**

Not applicable.

**END OF SECTION**

## Temporary Controls

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### PART 1 - GENERAL

#### 1.1 Section Includes

- .1 General scope and responsibility.
- .2 Security.
- .3 Moisture control.
- .4 Pest control.
- .5 Dust, debris and noise control.
- .6 Pollution control.

#### 1.2 General Scope and Responsibility

- .1 Temporary controls specified in this section shall be supplemented as applicable in accordance with Section 01 35 13.
- .2 Arrange, obtain and pay cost for permits required for temporary controls.
- .3 Provide temporary controls as necessary for performance of the *Work* and in compliance with applicable regulatory requirements.
- .4 Maintain temporary controls in good condition for the duration of the *Work*.
- .5 Remove temporary controls and *Construction Equipment* used to provide temporary controls from *Place of the Work* when no longer required.

#### 1.3 Security

- .1 The *Contractor* shall be solely responsible for securing the *Place of the Work* and the *Work*, and for securing areas used for the storage of *Products* or construction machinery and equipment. The *Owner* shall have no responsibility in this regard.
  - .1 Provide and maintain security lighting.
  - .2 Provide and maintain temporary locks. Premises to be locked after working hours.
- .2 Provide security for the *Place of the Work* by methods compatible with the security system for the existing building.
  - .1 *Contractor* shall coordinate the work carefully with the *Owner* in order to ensure no disruption to the existing building's security system.
  - .2 Where existing building's security system is breached due to *Contractor's* negligence, be responsible for any damage or theft of property, regardless if area where damage or theft occurred is under *Contractor's* control or not.

#### 1.4 Moisture Control

- .1 Concrete slabs shall be properly cured and dried before installation of finished flooring assemblies.
  - .1 Allow for one of the following methods:
    - .1 Drying time.
    - .2 Drying action by mechanical methods.

### Temporary Controls

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- .3 Moisture mitigation coating as specified below.
- .4 Drying action by other method and/or materials as approved by affected flooring manufacturer.
- .2 Before installation of weather barriers, when materials are subject to wetting, protect as follows:
  - .1 Protect porous materials from water damage.
  - .2 Protect stored and installed material from flowing or standing water.
  - .3 Keep porous and organic materials from coming into prolonged contact with concrete.
  - .4 Remove standing water from decks.
  - .5 Keep deck openings covered or dammed.
- .3 After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture, protect as follows:
  - .1 Do not load or install gypsum board or other porous materials or components, or items with high organic content, into partially enclosed building.
  - .2 Keep interior spaces reasonably clean and protected from water damage.
  - .3 Periodically collect and remove waste containing cellulose or other organic matter.
  - .4 Discard or replace water-damaged material.
  - .5 Do not install material that is wet.
  - .6 Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- .4 After completing and sealing of the building enclosure but prior to the full operation of permanent heating, ventilation, and air conditioning systems, maintain as follows:
  - .1 Control moisture and humidity inside building by maintaining effective drying conditions.
  - .2 Use permanent heating, ventilation, and air conditioning system to control humidity subject to the prior written approval of the *Consultant*.
  - .3 Comply with manufacturer's written requirements for temperature, relative humidity, and exposure to water limits.

### 1.5 Pest Control

- .1 Provide rodent control and other pest control programs during the *Work* in accordance with the requirements of authorities having jurisdiction.

### 1.6 Dust, Debris and Noise Control

- .1 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .2 Control dust and dirt produced during the *Work* to prevent dispersion beyond the immediate work areas.
- .3 Prevent materials from contaminating air beyond application area, by providing temporary enclosures and ventilation/filtration.

### Temporary Controls

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- .4 Implement and maintain dust and particulate control measures in accordance with applicable regulatory requirements.
- .5 Execute *Work* by methods that minimize dust from construction operations and spreading of dust on site or to adjacent properties.
- .6 Provide temporary enclosures to prevent extraneous materials resulting from sandblasting or similar operations from contaminating air beyond immediate work area.
- .7 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .8 Use appropriate covers on trucks hauling fine, dusty, or loose materials.
- .9 Limit noise levels in accordance with requirements of authorities having jurisdiction and the *Owner*.
- .10 Prevent abrasive-blasting, pressure-washing spray, and other extraneous materials from contaminating air beyond application area.

#### 1.7 Pollution Control

- .1 Prevent contamination of soil, water, and atmosphere through uncontrolled discharge of noxious or toxic substances and other pollutants, potentially causing environmental damage.
- .3 Be prepared, by maintaining appropriate materials, equipment, and trained personnel on site, to intercept, clean up, and dispose of spills or releases that may occur. Promptly report spills and releases that may occur to:
  - .1 Authority having jurisdiction.
  - .2 Person causing or having control of pollution source, if known.
  - .3 *Owner and Consultant*.
- .4 Take immediate action to contain and mitigate harmful effects of the spill or release.

#### PART 2 - PRODUCTS

Not applicable.

#### 2.1 Moisture Mitigation Coating

- .1 100% solids epoxy one coat system, 0 VOC, suitable for application to 100% RH floors per ASTM F2170-19a, designed to protect moisture sensitive adhered flooring systems from elevated moisture and alkalinity levels, warranted by manufacturer to cover subsequent flooring materials and labour, compatible with finish flooring products.
- .2 ASTM E96/E96M-16 water vapour transmission (wet methods) performance shall be documented by independent testing laboratory at a minimum 97% for water vapour transmission reduction compared to untreated concrete.
- .3 ASTM E96/E96M-16 perm rating shall not exceed a 0.10 Perm rating.
- .4 ASTM D1308-02(2013) insensitivity to alkaline environment up to, and including, pH 14 in a 14 day bath test.
- .5 Manufacturer certifies acceptance and exposure to continuous topical water exposure after final cure.

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Temporary Controls

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- .6 Water vapour reduction system shall be a single coat, stand alone system with no requirements for additional components such as sand broadcast for adhesion of flooring systems.
- .7 System shall reduce Calcium Chloride readings of up to 25lbs/1000 ft<sup>2</sup>/24 hrs by 97% in one coat. System must be able to perform as required with RH Probe readings of 100%.
- .8 Acceptable manufacturers that provide *Products* which are known to meet above performance criteria as follows:
  - .1 Koster American Corporation as distributed by DRE Industries.
  - .2 Substitutions: in accordance with Section 01 25 00.

**PART 3 - EXECUTION**

Not applicable.

**3.1 Moisture Mitigation Coating**

- .1 Preparation and installation shall be in accordance with manufacturer's written requirements.
- .2 Field quality control:
  - .1 Conduct quality control in accordance with Section 01 45 00
    - .1 Field tests and inspections:
      - .1 Test for moisture vapour transmission in accordance with ASTM F710-22 and ASTM F1869-23 or ASTM F2170-19a in accordance with manufacturer's written flooring installation requirements. Results must not exceed 170 µg/m<sup>2</sup> (3 pounds per 1,000 square feet) in 24 hours when tested to ASTM F1869-23, or exceed 75% when tested to ASTM F2170-19a.
      - .2 Test for surface pH. Levels of pH shall not exceed the written recommendations of the flooring manufacturer and adhesive manufacturer. Test in accordance with ASTM F710-22.
      - .3 For each test type: Conduct 3 tests for flooring applications up to 93 m<sup>2</sup> (1000 square feet) in area, and 1 additional test for each additional 93 m<sup>2</sup> (1000 square feet) of flooring area.
      - .4 Testing shall be conducted by independent inspection and testing company and in accordance with Section 01 45 00.
  - .2 Manufacturer's field review to be in accordance with Section 01 45 00.

**END OF SECTION**

Product Requirements

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Availability of *Products*.
- .2 *Product* handling.
- .3 *Product* requirements and quality.

### **1.2 Availability of Products**

- .1 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*.
- .2 If a specified *Product* is no longer available, promptly notify the *Consultant*. The *Consultant* will take action as required.
- .3 In the event of delays in supply of *Products*, and should it subsequently appear that the *Work* may be delayed for such reason, *Consultant* reserves the right to substitute more readily available *Products* of similar character, at no additional cost to the *Owner*.

### **1.3 Product Handling**

- .1 Handle and store *Products* in a manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturers' and *Supplier's* recommendations and so as to ensure preservation of their quality and fitness for the *Work*, and protect from vandalism and theft.
- .2 Store packaged or bundled *Products* in original and undamaged condition with manufacturer's seals and labels intact, facing to outside. Do not remove from packaging or bundling until required in the *Work*.
- .3 Store materials susceptible to environmental damage in a weathertight enclosure raised clear of ground so that they are protected from weather, dampness and deterioration. Do not use such materials which have been damaged by exposure to moisture.
- .4 Keep sand, when used as ingredients for grout, mortar or similar mixed materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .5 Store sheet materials, lumber and other *Products* susceptible to deterioration on flat, solid supports and keep clear of ground or slab. Slope to shed moisture.
- .6 Handle materials to preclude damaging existing surfaces and work of others.
- .7 Remove damaged *Products* and replace with new undamaged *Products*.
- .8 Transportation:
  - .1 Pay cost of transportation of *Products* required in performance of *Work*.
  - .2 Transportation cost of *Products* supplied by *Owner* will be paid for by *Owner*. Unload, handle and store such *Products* at the *Place of the Work*.
  - .3 Reject *Products* damaged during transport.

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Product Requirements

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- .4 Transportation of *Products* must be undertaken to suit construction schedule. *Contractor* is responsible for determining mode of transport to ensure delivery, obtaining *Shop Drawings*, placement of orders, and on-time premium costs, air freight, and the like.

## PART 2 - PRODUCTS

### 2.1 *Product Requirements and Quality*

- .1 Compatibility of options: If given option of selecting between two or more *Products*, select *Product* compatible with products previously selected, even if previously selected products were also options.
  - .1 Unless otherwise indicated in the *Contract Documents*, maintain uniformity of *Product* and manufacturer for any like item, material, equipment or assembly for the duration of the *Work*.
- .2 *Products* used for temporary facilities may have been previously used, providing they are sound in structural qualities.
- .3 *Products* and *Product* installation shall be in compliance with building code, regulations and requirements of authorities having jurisdiction.
- .4 Specified options: The *Work* is based on materials, *Products* and systems specified by manufacturer's catalogued trade names, references to standards, by prescriptive *Specifications* and by performance *Specifications*.
  - .1 Wherever a *Product* or manufacturer is specified by a single proprietary name, provide the named *Product* only.
  - .2 Wherever more than one *Product* or manufacturer is specified by proprietary name for a single application, provide any one of the named *Product*.
  - .3 Wherever a *Product* is specified by reference to a standard only, provide any *Product* that meets or exceeds the specified standard. If requested by *Consultant*, submit information verifying that the proposed *Product* meets or exceeds the specified standard.
  - .4 Wherever a *Product* is specified by descriptive or performance requirements only, provide any *Product* that meets or exceeds the specified requirements. If requested by *Consultant*, submit information verifying that the proposed *Product* meets or exceeds the specified requirements.
  - .5 The onus is on the *Contractor* to prove compliance with governing published standards, prescriptive *Specifications* and with performance *Specifications*.
  - .6 Visual selection *Specifications*:
    - .1 Where *Specifications* include the phrase "as selected by *Consultant* from manufacturer's full range" or similar phrase, select a product that complies with requirements. *Consultant* will select colour, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
  - .7 Visual matching *Specifications*:



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Product Requirements

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- .1 Where *Specifications* require "match *Consultant's* sample", provide a product that complies with requirements and matches *Consultant's* sample. *Consultant's* decision will be final on whether a proposed product matches.
- .5 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.
  - .1 Defective *Products*, whenever identified prior to completion of the *Work*, will be rejected, regardless of previous reviews. Review of the *Work* by the *Consultant* or independent inspection and testing companies does not relieve the *Contractor* of the responsibility for executing the *Work* in accordance with the requirements of the *Contract Documents*, but is a precaution against oversight or error.
- .6 Basis of design:
  - .1 Where *Contract Documents* list "basis of design", this indicates the *Product* or system that was used in the preparation of the design included in the *Contract Documents*, and which shall be an acceptable *Product*.
  - .2 The basis of design establishes the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products from other manufacturers.
  - .3 The term "basis of design" does not preclude the use of other *Products* or systems in the *Work*, provided the proposed *Product* or system complies with the design and performance requirements contained in the *Contract Documents*.
    - .1 Proposals for use of *Products* or systems in the *Work* that are not the named "basis of design" shall follow procedures for product substitutions in accordance with Section 01 25 00.
- .7 Where *Contract Documents* require design of a *Product* or system, and minimum material requirements are specified, the design of such *Product* or system shall employ materials specified within applicable section. Where secondary materials or components are not specified, augment with materials meeting applicable code limitations, and incorporating compatibility criteria with adjacent work.
- .8 Should dispute arise as to quality or fitness of *Products*, the decision rests strictly with *Consultant* based upon the requirements of the *Contract Documents*.
- .9 *Products* exposed in the finished work shall be uniform in colour, texture, range, and quality, and be from one production run or batch, unless otherwise indicated.
- .10 *Owner* retains right to select from choices available within specified *Products* for colours, patterns, finishes or other options normally made available. Submit full range of *Product* options in accordance with Section 01 33 00 for such selection.
- .11 Exposed to weather: *Products* and materials in environments not protected by the building's HVAC and/or climate control systems shall be considered exposed to weather.

### **PART 3 – EXECUTION**

Not applicable.

**END OF SECTION**

Examination and Preparation

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Examination of the *Place of the Work*, documents, surfaces and conditions.

### **1.2 Examination of the *Place of the Work*, Documents, Surfaces and Conditions**

- .1 Examine the *Place of the Work* and investigate matters relating to the nature of the *Work*, means of access and egress, obstacles, rights and interests of other parties which may be interfered with during the execution of the *Work*, conditions and limitations including obstructions, existing structures or facilities, local conditions, actual levels, character and nature of the *Work*, documents related to existing building or buildings, as applicable and when available, and other consideration which may affect performance of the *Work*.
- .2 Examine the extent of work to be performed and matters which are referred to in the *Contract Documents* prior to start of the *Work*.
- .3 Examine work to which work is to be applied, anchored or connected, and relevant as-built conditions.
- .4 Each work operation following on a previous work operation of a differing *Subcontractor*, shall include a thorough examination of the condition of the previous work to verify that work is complete and in a condition suitable to receive the subsequent work. Conditions found unacceptable, either for the commencement of the new work or its satisfactory completion, shall be reported in writing to the *Consultant*.
- .5 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.
- .6 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.
- .7 Do not commence work until unsatisfactory conditions are corrected. Commencement of work shall mean acceptance of surfaces, tolerances, and conditions, and existing conditions will not be accepted as a contributing factor to subsequent failure or unacceptability of the *Work*.

## **PART 2 - PRODUCTS**

Not applicable.

## **PART 3 – EXECUTION**

Not applicable.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Inserts, anchors, and fasteners.
- .2 Penetrations.
- .3 Concealed services.
- .4 Trademarks and labels.
- .5 Interferences.
- .6 Publicity releases and photographs.
- .7 Manufacturer's instructions.
- .8 Galvanic/dissimilar metal corrosion.
- .9 Workmanship.
- .10 General construction tolerances.

### **1.2 Inserts, Anchors, and Fasteners**

- .1 Use only factory made, threaded or toggle type inserts as required for supports and anchors, properly sized for load to be carried.
- .2 Where inserts cannot be placed, use factory made expansion shields for light weights only.
- .3 Supply and locate inserts, holes, anchor bolts and sleeves during placement or fabrication of structural elements.
- .4 Fasteners stressed in withdrawal are not acceptable, except where otherwise indicated.
- .5 Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to prevent direct contact.
- .6 Use non-corrosive fasteners and anchors for securing exterior work and in spaces where high humidity levels are anticipated.
- .7 Space anchors within individual load limit or shear capacity and install such that they provide positive permanent anchorage.
- .8 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .9 Fastenings for prefinished materials shall be of concealed type unless otherwise indicated, and when exposed finish is required, of matching prefinishing materials.
- .10 Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.
- .11 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .12 Bolts shall not project more than one diameter beyond nuts.
- .13 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials being fastened.

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Execution

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.14 Power actuated fasteners:

- .1 Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E1190-21 conducted by a qualified independent testing agency.
- .2 Do not use power actuated fasteners which are stressed in withdrawal in finished work.
- .3 Do not use power actuated fasteners within 100 mm (4") of the edge of concrete or masonry, unless otherwise accepted in writing by *Consultant*.
- .4 Do not use power actuated fasteners in post-tensioned concrete.

**1.3 Penetrations**

- .1 Holes or voids created in assemblies or partitions for penetrating mechanical, electrical, or sprinkler service items, shall be of sufficient size to accommodate the penetrating item as well as additional required fill materials, such as sealants, firestopping and smoke sealants, insulation, and the like, without exceeding the maximum opening allowable by the manufacturer of the additional required fill material.
- .2 When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with firestopping materials, smoke seals, or both, in full thickness of the construction element as required to maintain the integrity of the fire rated assembly.

**1.4 Concealed Services**

- .1 Unless otherwise indicated, conceal pipes, ducts, and wiring in floors, walls, and ceilings in finished areas. Do not conceal until after:
  - .1 Review by *Consultant* and authority having jurisdiction.
  - .2 Recording actual locations on as-built drawings where locations differ from those shown on *Drawings*.
- .2 Provide incidental furring or other enclosures as required.
- .3 Notify *Consultant* in writing of interferences before installation.

**1.5 Trademark and Labels**

- .1 Trademarks and labels, including applied labels, shall not be visible in finished work in finished areas, unless otherwise accepted or indicated by *Consultant*, and except for trademarks and labels:
  - .1 That are essential to identify materials, systems, assemblies, and equipment for maintenance and replacement purposes.
  - .2 That are essential for life safety, fire resistance, and temperature rise ratings.

**1.6 Interferences**

- .1 Coordinate placement of equipment to ensure that components will be properly accommodated within spaces provided prior to commencement of the *Work*.
- .2 Take complete responsibility for remedial work that results from failure to coordinate aspects of work prior to its fabrication/installation.

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Execution

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- .3 Maintain accesses and clearance required by jurisdictional authorities and/or for easy maintenance of equipment in layout of equipment and services, Notify *Consultant* if indicated clearances are in conflict.
- .4 Prepare coordination and interference drawings in accordance with Section 01 31 00.

### 1.7 Publicity Releases and Photographs

- .1 No press or publicity releases, including photographs of the *Place of the Work*, will be permitted without prior written approval of the *Owner*.

## PART 2 - PRODUCTS

Not applicable.

## PART 3 - EXECUTION

### 3.1 Manufacturer's Instructions

- .1 Install, erect, or apply *Products* in accordance with manufacturer's written requirements. Do not rely on labels or enclosures supplied with *Products*. Obtain written requirements directly from manufacturers.
- .2 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.
- .3 Improper installation or erection of *Products*, due to failure in complying with these requirements, shall result in removal and re-installation of such *Products* as part of the *Work* at no additional cost to the *Owner*.
- .4 Provide manufacturer's representatives with access to the *Work* at all times. Render assistance and facilities for such access so that manufacturer's representatives may properly perform their responsibilities.

### 3.2 Galvanic/Dissimilar Metal Corrosion

- .1 Insulate dissimilar metals from each other by suitable plastic strips, washers or sleeves to prevent galvanic corrosion where conductive liquid or electrolyte exists or may reasonably be expected to exist.

### 3.3 Workmanship

- .1 General:
  - .1 Execute the *Work* using workers experienced and skilled in the respective duties for which they are employed.
  - .2 Do not employ an unfit person or anyone unskilled in their required duties.
  - .3 Remove *Products* or materials that have been broken, chipped, cracked, discoloured, abraded, or damaged during construction period and provide undamaged *Products* or materials meeting the requirements of the *Contract Documents*.
- .2 Coordination:

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- .1 Ensure cooperation of workers in layout of the *Work*. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.
- .3 Backer plates:
  - .1 Provide backer plates to support and provide anchorage base to carry loads from surface or recessed applied materials.
- .4 Cutting and remedial work:
  - .1 Perform cutting and remedial work required to make parts of the *Work* come together. Coordinate the *Work* to ensure this requirement is maintained. Comply with requirements of Section 01 73 29.
  - .2 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.
- .5 Location of fixtures:
  - .1 Locations of fixtures, access panels, outlets, and mechanical and electrical items indicated on *Drawings* are approximate only.
  - .2 Locate fixtures, outlets, and devices to provide minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements. Architectural drawings will relate these items to known dimensions, such as ceiling tile grid or wall locations and the like.
  - .3 Obtain *Consultant's* acceptance for precise locations of fixtures, access panels, outlets, mechanical, and electrical items.
  - .4 *Consultant* reserves the right to relocate electrical outlets and mechanical fixtures at a later date, but prior to installation, without cost, provided that the relocation per outlet does not exceed 3050 mm (10') from the original location.
  - .5 Promptly notify *Consultant* in writing of conflicting installation requirements for fixtures, outlets, and devices. If requested, indicate proposed locations and obtain approval for actual locations.
- .6 Protection of work in progress:
  - .1 Provide protection required by authorities having jurisdiction.
  - .2 Protect parts of the *Work* completed or in progress from soiling, abrasion, punctures, damage, and defacement, and maintain protection until the surrounding or overhead work is complete.
  - .3 Remove and replace materials damaged or defaced as a result of failure to provide adequate protection.
  - .4 Do not cut, drill, or sleeve any load bearing structural member without written permission of *Consultant*. Comply with requirements of Section 01 73 29.
  - .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*.

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- .6 Protect finished flooring from damage. Take special measures when moving heavy loads or equipment on them.
- .7 Keep surfaces free of oils, grease or other materials that may damage or deface them or affect bond of applied *Products*.
- .8 Protect existing buildings, curbs, roads and lanes. If, during the *Work*, any buildings, curbs, roads or lanes are damaged, bear costs for repairs.
- .7 Protection of mechanical and electrical *Products* or materials:
  - .1 Wrap in protective plastic and seal mechanical and electrical items and equipment prior to and during shipment, storage at the *Place of the Work* and after installation.
  - .2 Remove protective coverings only to the extent required for installation of the items. Re-install protection immediately following installation.
  - .3 Remove protective coverings in stages, as work areas are completed, or when directed by *Consultant*.
- .8 Operational requirements:
  - .1 Operable *Products* shall be provided fully operational and ready for intended use.
  - .2 Adjust operating hardware and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts for smooth squeak-free function, in accordance with manufacturer's requirements.
- .9 Alterations:
  - .1 Restore new or existing work which is altered as a result of the *Work* and *Make Good*.
  - .2 Materials and workmanship shall match existing materials and workmanship. Exposed materials shall match and blend in with the appearance of the existing undamaged surfaces in all respects including colours, textures, layout, jointing, and material types so as to not vary in appearance when compared to adjacent materials from a viewing distance of 1830 mm (6').

### 3.4 General Construction Tolerances

- .1 Match existing tolerances in every respect unless otherwise specified.
- .2 Where tolerances are not defined elsewhere in the *Contract Documents* or building code, construct the *Work* to the following tolerances:
  - .1 Maximum variation from plumb in vertical lines, surfaces of columns, walls, and arrises:
    - .1 6.4 mm (1/4") in 3 m (10 ft)
    - .2 9.6 mm (3/8") in a storey height not to exceed 6 m (20 ft)
    - .3 12.7 mm (1/2") in 12 m (40 ft) or more
  - .2 Maximum variation from plumb for external corners, expansion joints, and other conspicuous lines:
    - .1 6.4 mm (1/4") in any storey or 6 m (20 ft)

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- .2 12.7 mm (1/2") in 12 m (40 ft) or more
- .3 Maximum variation from level of grades for exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:
  - .1 6.4 mm (1/4") in any bay or 6 m (20 ft)
  - .2 12.7 mm (1/2") in 12 m (40 ft) or more
- .4 Maximum variation from drawing location of columns, walls, and partitions:
  - .1 12.7 mm (1/2") in any storey or 6 m (20 ft)
  - .2 19 mm (3/4") in 12 m (40 ft) or more.
- .5 Maximum variation in cross-sectional dimension of columns and thicknesses of wall from dimensions indicated:
  - .1 Minus 6 mm (1/4")
  - .2 Plus 12.7 mm (1/2")
- .6 Maximum variation from plane or from straight:
  - .1 3.2 mm (1/8") in 3 m (10 ft) under a 3 m (10 ft) straight edge.
- .7 Maximum variation from angle indicated:
  - .1 10 seconds.
- .8 Tolerances shall be non-cumulative.

**END OF SECTION**



Cutting and Patching

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Cutting, patching and remedial work.

### **1.2 Request for Cutting, Patching and Remedial Work**

- .1 Submittal Items:
  - .1 Comply with administrative requirements of Section 01 33 00.
  - .2 Submit written request in advance of cutting, coring, and alteration that affects or is likely to affect:
    - .1 Structural integrity of any element of *Work*.
    - .2 Integrity of weather-exposed or moisture-resistant elements.
    - .3 Efficiency, maintenance, or safety of any operational element.
    - .4 Visual qualities of sight-exposed elements.
    - .5 *Owner* or work of other contractors.
    - .6 Warranty of *Products* affected.
  - .3 Include in request:
    - .1 Identification of *Project*.
    - .2 Location and description of affected work, including drawings or sketches as required.
    - .3 Statement on necessity for cutting or alteration.
    - .4 Description of proposed work, and *Products* to be used.
    - .5 Alternatives to cutting and patching.
    - .6 Effect on *Owner* or work of other contractors.
    - .7 Written permission of affected separate contractor.
    - .8 Date and time work will be performed.
    - .9 Non-destructive structural survey: Location of reinforcement in concrete structure confirmed by non-destructive, positive method other than X-ray.
  - .4 Do not commence cutting, patching, or remedial work until request has been reviewed by *Consultant*.

## **PART 2 - PRODUCTS**

### **2.1 Materials**

- .1 Unless otherwise specified, when replacing existing or previously installed *Products* in the course of cutting and patching work, use replacement *Products* of the same character and quality as those being replaced.
- .2 If an existing or previously installed *Product* must be replaced with a different *Product*, submit request for substitution in accordance with Section 01 25 00.

## Cutting and Patching

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### PART 3 - EXECUTION

#### 3.1 Preparation

- .1 Inspect existing conditions in accordance with Section 01 71 00, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of the *Work*.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to maintain structural integrity of surroundings. Provide devices and methods to protect other portions of the *Work* from damage.
- .5 Provide protection from elements for areas which may be exposed by uncovering work.
- .6 Where uncovering of area exposes local deterioration, cracking, evidence of water infiltration, structural settlement, previous modifications, or other unexpected conditions, advise *Consultant* immediately in writing and leave conditions exposed until receipt of *Consultant's* written instructions. If area is exposed to the exterior, provide temporary protection from inclement weather.

#### 3.2 Existing Services and Utilities

- .1 Protect, relocate, or maintain existing active services or utilities except where breaking into or connecting to them. When inactive services are encountered, cap off in a manner approved by authority having jurisdiction and stake or otherwise record location of capped service. Record location of services, including depth, on as-built drawings.
- .2 When breaking into or connecting to existing active services or utilities, execute the *Work* at times approved by *Owner*, with a minimum of disturbance to *Owner's* ongoing operations, the *Work*, and traffic. Give notice to authorities having jurisdiction as required by such authorities.
- .3 Keep duration of interruptions to a minimum.
- .4 Carry out interruptions outside regular working hours of occupants unless *Owner's* prior written approval is obtained.
- .5 Construct or erect barriers in accordance with Section 01 56 00 as required to protect pedestrian and vehicular traffic.

#### 3.3 Cutting and Patching

- .1 Coordinate and perform the *Work* so that cutting and patching work is kept to a minimum.
- .2 Execute cutting, fitting, and patching to complete the *Work*. Under no circumstances will overcutting of corners of opening be accepted. Ensure corners of openings to be cut are predrilled or sawed.
- .3 Remove and replace defective and non-conforming work.
- .4 Remove samples of installed work for testing if directed by *Consultant*.
- .5 Provide openings in non-structural elements of the *Work* for penetrations of mechanical and electrical work.
- .6 Perform work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.

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Cutting and Patching

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- .7 Employ qualified installer with at least 3 years of relevant experience to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 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*.
- .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed to be used anywhere within existing buildings unless approved by *Consultant*.
- .10 Restore work with new *Products* in accordance with requirements of *Contract Documents*.
- .11 Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces and with suitable allowance for deflection, expansion, contraction, and firestopping.
- .12 Enclose pipes, ducts, conduit and wires passing through floors at areas where faucets occur in a 100 mm (4") high metal sleeve and make air and watertight with water resistant firestopping.
- .13 Completely seal voids of penetrations of fire rated wall, ceiling, and floor constructions with firestopping and smoke seals.
- .14 Execute cutting, patching, and remedial work in manner that does not jeopardize manufacturers' warranties.
- .15 Refinish surfaces to match adjacent finishes. Refinish continuous surfaces to nearest intersection. Refinish entire assembly units.

**END OF SECTION**

Cleaning and Waste Management

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Waste management.
- .2 Storage, handling, and protection.
- .3 Coordination.
- .4 Cleaning.
- .5 Disposal of waste.

### **1.2 Waste Management**

- .1 Comply with requirements of authorities having jurisdiction.
- .2 Remove waste material from the *Place of the Work* daily. If waste is collected in bins, bins to be removed from site once full.
- .3 Arrange and pay for removal of debris and waste from the *Place of the Work*.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. Pay fees.

### **1.3 Storage, Handling and Protection**

- .1 Store, materials to be reused, recycled and salvaged in locations to prevent contamination of materials being diverted from landfill.
- .2 Prevent contamination of materials to be salvaged and recycled, and handle such materials, in accordance with requirements for acceptance by designated facilities.

### **1.4 Coordination**

- .1 Coordinate waste management and disposal procedures and requirements with other activities at the *Place of the Work* so that there is no delay in the *Work*, and at no increase in either the *Contract Time* or the *Contract Price*.

## **PART 2 - PRODUCTS**

Not applicable.

## **PART 3 - EXECUTION**

### **3.1 Cleaning**

- .1 General cleaning requirements:
  - .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
  - .2 Store volatile wastes in covered metal containers, and remove from *Place of the Work* daily.
  - .3 Prevent accumulation of wastes which create hazardous conditions.
  - .4 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.

Cleaning and Waste Management

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- .5 Prevent cross-contamination during the cleaning process.
- .6 Notify the *Consultant* of the need for cleaning caused by *Owner* or other contractors.
- .2 Materials:
  - .1 Use only cleaning materials in accordance with written requirements of manufacturer of surface to be cleaned and in accordance with written requirements of cleaning material manufacturer.
- .3 Cleaning during construction/progressive cleaning:
  - .1 Clean-up the *Place of the Work* daily. Maintain clean and clear egress routes at all times.
  - .2 Maintain *Place of the Work*, grounds and public properties free from accumulations of waste materials and rubbish.
  - .3 Provide appropriate, clearly marked containers at the *Place of the Work* for collection of waste materials and rubbish. Remove waste materials and rubbish from the *Place of the Work* when containers become full.
  - .4 Clean interior building areas prior to start of finish work and maintain free of dust and other contaminants during finishing operations.
  - .5 Vacuum and clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis until *Substantial Performance of the Work*.
  - .6 Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces nor contaminate building systems.
  - .7 Promptly as the *Work* proceeds, on a daily basis and upon completion, clean up and remove rubbish, surplus materials and equipment.
  - .8 Remove as the work of this section progresses, corrosive and foreign materials which may set or become difficult to remove at time of final cleaning or which may damage members.
  - .9 Wash exposed surfaces with a cleaning solution approved by *Product* manufacturers.
  - .10 Debris and waste not permitted within cavities of *Work*.
- .4 Cleaning prior to *Ready-for-Takeover*:
  - .1 Immediately prior to *Consultant's* review to determine if *Ready-for-Takeover* has been achieved, remove surplus *Products* and construction machinery and equipment not required for the performance of the remaining *Work* and clean in accordance with Final Cleaning paragraphs in Section 01 74 00 to the greatest extent practicable given work remaining to be completed. Cleaning shall be to a sufficient extent to permit the *Consultant's* review to be performed properly and reasonably.
- .5 Final cleaning:

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Cleaning and Waste Management

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- .1 Before final cleaning, arrange a meeting at *Place of the Work* to determine the acceptable standard of cleaning. Ensure that *Owner*, *Consultant*, and *Contractor* are in attendance.
- .2 Remove from *Place of the Work* surplus *Products*, waste materials, recyclables, *Temporary Work*, and *Construction Equipment* not required to perform any remaining work and other than that caused by the *Owner*, and leave the *Work* clean and suitable for occupancy by *Owner*.
- .3 Remove waste material and debris from crawlspaces and other accessible concealed spaces.
- .4 Clean and polish prefinished and finished surfaces including: glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or otherwise damaged glass.
- .5 Clean exterior and interior window glass and frames.
- .6 Remove stains, spots, marks and dirt from decorative parts of the *Work*, electrical and mechanical fixtures, furniture fittings, walls, and floors.
- .7 Vacuum clean and remove dust from building interiors, exposed wall, floor, and ceiling surfaces, behind grilles, louvres, and screens, and above suspended ceiling tiles and panels. Vacuum clean interior of electrical equipment.
- .8 Clean floor finishes in accordance with manufacturer's written requirements.
- .9 Remove non-permanent labels.
- .10 Remove dirt and residue from surfaces.
- .11 Inspect finishes, fittings and equipment and ensure specified workmanship and operation.
- .12 Remove protective coatings, clean surfaces and remove excess compounds and sealant materials. Make good defective, scratched or damaged work.
- .13 Clean equipment and fixtures to a sanitary condition,
- .14 Remove seal wrap and protective coverings from mechanical and electrical *Products* and materials and clean as required.
- .15 Clean mechanical, electrical, and other equipment. Replace filters for mechanical equipment.
- .16 Clean and/or replace lighting reflectors, lamps, light fixtures, lenses, bulbs, and other lighting surfaces, and grilles.
- .17 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.
- .18 Re-clean as necessary areas that have been accessed by *Contractor's* workers prior to *Owner* occupancy.

### 3.2 Disposal of Waste

- .1 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.

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Cleaning and Waste Management

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- .2 Handle waste materials not reused, salvaged or recycled in accordance with appropriate regulations and codes.
- .3 Do not bury rubbish and waste materials at the *Place of the Work*.
- .4 Do not dispose of waste or volatile materials into waterways or storm or sanitary sewers.
- .5 Do not burn waste materials at the *Place of the Work*.
- .6 Comply with waste disposal requirements of authorities having jurisdiction.
- .7 Deliver to nearest appropriate depot materials accepted for recycling by region or municipality having jurisdiction over the *Place of the Work*, including but not limited to cardboard, paper, plastic, aluminum, steel, and glass. Deliver to nearest appropriate depot scrap and excess gypsum wallboard for recycling of this material. Costs for this work are included in the *Contract Price*.
- .8 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris. Pay fees.

**END OF SECTION**

Closeout Procedures

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 General *Contract* closeout procedures.
- .2 *Substantial Performance of the Work*.
- .3 *Ready-for-Takeover*.
- .4 Inspection and review before *Ready-for-Takeover*
- .5 Partial user occupancy.
- .6 Final inspection for completion of the *Contract*.
- .7 Warranty period.

### **1.2 General Contract Closeout Procedures**

- .1 The procedures for completing *Contract* and acceptance by the *Owner* shall be in accordance with the methods described in OAA/OGCA Document 100 (July 1, 2018, and reissued January 8, 2019) and any additional requirements described below.
- .2 Stages will be reviewed at the *Contract* start-up meeting to ensure that parties understand their responsibilities. Refer to Section 01 31 19 for procedures and requirements for *Contract* start-up meeting.
- .3 Within 4 weeks of commencement of the *Work*, submit to the *Consultant* a list of closeout submittals required by the *Contract Documents*.

### **1.3 Substantial Performance of the Work**

- .1 The prerequisites to, and the procedures for, attaining *Substantial Performance of the Work*, or similar such milestone as provided for in the Construction Act, shall be:
  - .1 As described in Section 01 77 00.
  - .2 Independent of those for attaining *Ready-for-Takeover* of the *Work*.
  - .3 In accordance with the Construction Act.
- .2 Deficiency review:
  - .1 Neither *Owner* nor *Consultant* will be responsible for preparation or issuance of extensive lists of deficiencies. *Contractor* assumes prime responsibility for ensuring that items shown and described in the *Contract Documents* are complete. Any reviews to approve the certificate of *Substantial Performance of the Work* will be immediately cancelled if it becomes obvious to the *Consultant* that extensive deficiencies are outstanding.
  - .2 The *Contractor* shall conduct an inspection of the *Work* to identify deficiencies and defects, which shall be repaired. When the *Contractor* considers that the *Work* is substantially performed, the *Contractor* shall prepare and submit to the *Consultant* a comprehensive list of items to be completed or corrected (the deficiency list) and apply for a review of the *Work* by the *Consultant* to determine if *Substantial Performance of the Work* has been achieved.



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Closeout Procedures

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- .3 The *Contractor's* request described above shall include a statement by *Contractor* that the *Work* to be reviewed by *Consultant* for deficiencies is, to the best of the *Contractor's* knowledge, in compliance with *Contract Documents*, reviewed *Shop Drawings*, and samples, and that deficiencies and defects previously noted by *Consultant* have been repaired.
- .4 No later than 10 *Working Days* after the receipt of the *Contractor's* request described above, but contingent upon the prior receipt, by the *Consultant*, of the closeout submittals in the manner and form specified in Section 01 78 00, the *Consultant* and the *Contractor* will review the *Work* to identify any defects or deficiencies. If necessary, the *Contractor* shall tabulate a list of deficiencies to be corrected prior to *Substantial Performance of the Work* being certified by the *Consultant*. During review, the *Consultant* and the *Contractor* will decide which deficiencies or defects must be rectified before *Substantial Performance of the Work* can be certified, and which defects are to be treated as warranty items.
- .5 Provide a schedule of planned deficiency review having regard to the foregoing.
- .3 Certification of *Substantial Performance of the Work*:
  - .1 When the *Consultant* considers that the deficiencies and defects have been completed and that it appears that the requirements of the *Contract Documents* have been substantially performed, the *Consultant* shall issue a certificate of *Substantial Performance of the Work* to the *Contractor*, stating the date of *Substantial Performance of the Work*.
  - .2 The certificate of *Substantial Performance of the Work* shall be prepared and issued in accordance with the Construction Act.
    - .1 Inform *Owner*, *Consultant*, *Subcontractors*, and *Suppliers* which publication is to be used for publishing certificate of substantial performance in accordance with Section 01 31 19.

#### **1.4 Ready-for-Takeover**

- .1 The prerequisites to attaining *Ready-for-Takeover* of the *Work* are described in the General Conditions of the *Contract*.

#### **1.5 Inspection and Review Before Ready-for-Takeover**

- .1 *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.

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Closeout Procedures

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- .2 *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.
- .3 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.
- .4 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.

#### **1.6 Partial User Occupancy**

- .1 If partial *Owner* occupancy of a part of the *Work* is required before the date of *Ready-for-Takeover* of the entire *Work* of the *Contract*, the provisions of this Section shall apply, to the extent applicable, to that part of the *Work* that the *Owner* intends to occupy.

#### **1.7 Final Inspection for Completion of the Contract**

- .1 Deficiencies and defects shall be made good before the *Contractor* submits a written request for final review of the *Work* and before the *Contract* is considered complete.
- .2 When *Contractor* is satisfied that the *Work* is complete, and after the *Contractor* has reviewed the *Work* to verify its completion in accordance with the requirements of the *Contract Documents*, the *Contractor* shall submit a written request for a final review by the *Consultant*, who in turn will notify the *Owner*.
- .3 If there are any deficiencies identified as a result of this review, they shall be listed by the *Consultant* and submitted to the *Contractor*. This list shall be recognized as the final deficiency list for purposes of acceptance of the *Work* under the *Contract*.
- .4 Such deficiencies shall be corrected by a date mutually agreed upon between *Consultant* and the *Contractor*, unless a specific date is required by *Contract*, and a further review by the *Consultant* shall be called for by the *Contractor* following his own review to take place within 7 days from date of request.
- .5 *Contractor* shall thereafter submit invoice for final payment.
- .6 Money withheld for deficiency work shall be released only when all deficiencies have been completed. No partial payment to be recognized until all work is completed.

#### **1.8 Warranty Period**

- .1 Provide on-going review and attendance to building call-back, maintenance and repair problems during the warranty periods.

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Closeout Procedures

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- .2 At the beginning of the 12<sup>th</sup> month after *Ready-for-Takeover*, the *Owner*, *Contractor* and *Consultant*, along with key *Subcontractors* as designated, shall carry out a complete review of building and its systems to determine which deficiencies are to be rectified under the warranty. *Contractor* shall be responsible for timely written notification of *Owner*, and *Consultant* prior to such end of warranty period inspection and any delay in such notification shall extend such warranty period until proper notification is received by *Owner*, and *Consultant*.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Closeout Submittals

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 As-built documents.
- .2 Operation and maintenance manuals.
- .3 Operation and maintenance book.
- .4 *Project* data book.
- .5 Shop drawing book.
- .6 Warranty book.
- .7 Posted operating instructions.
- .8 Spare parts, maintenance materials, and special tools.

### **1.2 Administrative Requirements**

- .1 Collect reviewed submittals, and assemble required closeout submittals executed by *Subcontractors*, *Suppliers*, and manufacturers. Prior to submitting closeout submittals to the *Consultant*:
  - .1 Review maintenance manual contents (operating, maintenance instructions, as-built drawings, materials) for completeness.
  - .2 Review supply and completeness of spare parts required by *Contract Documents* and manufacturers.
  - .3 Review in relation to *Contract Price*, *Change Orders*, *Change Directives*, holdbacks and other adjustments to the *Contract Price*.
  - .4 Review inspection and testing reports to verify conformance to intent of *Contract Documents* and that changes, repairs or replacements have been completed.
  - .5 Execute transition of performance bond and labour and materials payment bond to warranty period requirements.
  - .6 Submit a final statement of accounting giving total adjusted *Contract Price*, previous payments, and monies remaining at time of application for completion of the *Contract*. *Consultant* will issue a final change order reflecting approved adjustments to *Contract Price* not previously made.
- .2 No later than 10 *Working Days* prior to submitting request for *Consultant's* review to determine if *Substantial Performance of the Work* has been achieved, submit to the *Consultant* the closeout submittals specified in this section and elsewhere in the *Contract Documents*.
- .3 For equipment put into use with *Owner's* permission during the *Work*, submit required closeout submittals within 10 *Working Days* after start-up.
- .4 For items of the *Work* delayed materially beyond date of *Substantial Performance of the Work*, provide updated closeout submittals within 10 *Working Days* after acceptance, listing date of acceptance as start of warranty period.

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Closeout Submittals

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- .5 Neither the *Consultant's* review to determine if *Substantial Performance of the Work* has been achieved, nor acceptance of the *Work*, will take place until receipt, by the *Consultant*, of acceptable copies of the closeout submittals required herein and by the *Contract Documents*.

### 1.3 As-Built Documents

- .1 Prepare as-built documents in accordance with Section 01 32 00.
- .2 Submit as-built documents as follows:
  - .1 Submit 2 sets of as-built documents in hard copy.
  - .2 In addition, submit digital scanned copy as a bookmarked PDF of as-built documents. Submit using digital storage medium or transfer process acceptable to the *Consultant* and the *Owner*.

### 1.4 Operation and Maintenance Manuals

- .1 Prepare a comprehensive operation and maintenance manual, in the language of the *Contract*, using personnel qualified and experienced for this task.
- .2 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.
- .3 Submit operation and maintenance manuals as follows:
  - .1 Submit 2 copies of operation and maintenance manuals in hard copy.
  - .2 In addition, submit digital copies ("PDF" files) of operation and maintenance manuals. Submit using digital storage medium or transfer process acceptable to the *Consultant* and the *Owner*.

### 1.5 Operation and Maintenance Manual Format

- .1 Organize operation and maintenance manuals into the following general components:
  - .1 Operation and maintenance book.
  - .2 *Project* data book.
  - .3 Shop drawing book.
  - .4 Warranty book.
- .2 Organize data in the form of an instructional manual.
- .3 Bind each general component of the operation and maintenance books in separate vinyl hard covered, 3 ring loose leaf binders.
- .4 Enclose title sheet, labelled as applicable, with project name, date and list of contents.
- .5 Organize contents into applicable sections of work to parallel project *Specifications* breakdown. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.
- .6 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

Closeout Submittals

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- .7 Cover: Identify each binder with typed or printed title "Operation and Maintenance Manual", name of *Project* or facility, and subject matter of contents.
- .8 Text: Manufacturer's printed data, or typewritten data.

**1.6 Operation and Maintenance Book**

- .1 Operation and maintenance books shall contain operating and maintenance data and information specified below for supplied *Products*.
- .2 Neatly type lists and notes. Use clear drawings, diagrams of manufacturers' literature.
- .3 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.
- .4 Panel Board Circuit Directories: provide electrical service characteristics, controls, and communications.
- .5 Include installed colour coded wiring diagrams.
- .6 Description, operation and maintenance instructions for equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
- .7 Operating Procedures: include start up, break in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .8 Maintenance Requirements: include routine procedures and guide for trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .9 Provide servicing and lubrication schedule, and list of lubricants required.
- .10 Include manufacturer's printed operation and maintenance instructions.
- .11 Include sequence of operation by controls manufacturer.
- .12 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .13 Provide installed control diagrams by controls manufacturer.
- .14 Provide *Contractor's* coordination drawings, with installed colour coded piping diagrams.
- .15 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .16 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .17 Include testing and balancing reports.
- .18 Include additional content as specified in technical *Specifications* sections.

**1.7 Project Data Book**

- .1 *Project* Data Book shall include the following information supplemented by additional required data specified elsewhere in the *Contract Documents*:

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Closeout Submittals

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- .1 Maintenance instructions for finished surfaces and materials.
- .2 Copy of hardware and paint schedules.
- .3 Names, addresses and phone numbers of *Subcontractors* and *Suppliers*, as applicable.
- .4 Additional material used in the *Work* listed under various sections showing name of manufacturer and source of supply.
- .5 Report recording demonstration and instruction provided to *Owner* for operation and maintenance of building systems as described in Section 01 79 00.
- .6 Key construction photos.
- .7 Permits and forms:
  - .1 Certificate of Clearance from the Workplace Safety and Insurance Board (WSIB).
  - .2 Certificates of approval of the *Work* by local building department (if available).
  - .3 Electrical authority certificate of inspection.
- .8 Waste management and disposal reports, prepared in accordance with Section 01 74 00.

## **1.8 Shop Drawing Book**

- .1 Submit one copy of each final accepted *Shop Drawings* issued for the *Work* on which have been recorded changes made during fabrication and installation caused by unforeseen conditions.
- .2 Engineered *Shop Drawings* shall include copies of the certificate of insurance, the engineer's field review reports, and the engineer's letters of general conformity that were provided as part of the engineered submittal in accordance with Section 01 33 00 appended to the pertinent engineered *Shop Drawings* in the shop drawing manual.

## **1.9 Warranty Book**

- .1 Submit copies of bonds, guarantees, warranties and extended warranties together, complete with an indexed summary list of warranties and expiration dates. Warranties to be in accordance with Section 01 78 36.
- .2 Separate each warranty with index tab sheets keyed to Table of Contents listing.
- .3 List each warrantor with complete contact information.
- .4 Verify that documents are in proper form and contain full information. Warranties shall be for the correct duration and shall be in *Owner's* name.
- .5 Include maintenance bond(s).

## **1.10 Posted Operating Instructions**

- .1 Prepare operating instructions in English for posting near equipment and systems. Posted instructions to be glass covered, framed and mounted.

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Closeout Submittals

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- .2 Posted instructions to consist of simplified, consolidated equipment, control and power diagrams graphically representing the entire system, including concise instructions on how to start and stop systems, what settings and conditions are to be observed by the operators, and what control adjustments are to be made or maintained by the operator.
- .3 Posted instructions shall include control diagrams with added specific operating instructions, controls, interlocks, and the like.
- .4 Posted instructions shall include:
  - .1 HVAC controls for each system.
  - .2 One line schematic diagrams of water supply.
  - .3 One line isometric diagrams of sanitary drainage.
  - .4 One line diagrams of steam distribution, hot and cold water systems, including risers, valves, control devices, etc.

#### **1.11 Spare Parts, Maintenance Materials, and Special Tools**

- .1 Provide overage, extra stock, and maintenance materials, including keys, in quantities specified in the *Contract Documents*.
- .2 Submit to *Consultant* a typed inventory list of maintenance materials prior to application for *Substantial Performance of the Work*. List all items, complete with quantities, and storage locations. Include *Consultant* reviewed inventory listing in final submission to *Owner*.
- .3 Prepare and submit a master list identifying maintenance materials and maintain a log of when materials are turned over to *Owner* and signing authority for acceptance of materials on behalf of *Owner*.
- .4 Provide tags for special tools identifying their function and associated *Product*.
- .5 Supply spare parts, maintenance materials, and special tools in quantities specified in technical *Specifications* sections.
- .6 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*.
  - .1 Replace incorrect or damaged maintenance materials.
- .7 Deliver to and store items at location and time directed by *Owner*. Store in original packaging with manufacturer's labels intact and in a manner to prevent damage or deterioration.
  - .1 Clearly mark cartons or packaging as to contents, project name, and *Supplier*.
  - .2 If applicable give colour and finish, room number or area where material is used.
  - .3 Include necessary information for re-ordering of materials as part of packaging of materials.
- .8 Catalogue all items and submit to *Consultant* an inventory listing organized by *Specifications* section. Include *Consultant* reviewed inventory listing in operation and maintenance manual.

#### **PART 2 - PRODUCTS**

Not applicable.



**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

## Warranties

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### PART 1 - GENERAL

#### 1.1 Warranties

- .1 Warranties shall be in accordance with GC 12.3, as amended.

#### 1.2 Extended Warranties

- .1 Extended warranties shall be in accordance with GC 12.3, as amended, and as follows:
  - .1 Where specifically identified in the *Contract Documents*, extended warranties shall be furnished by individual manufacturer for particular product/system/assembly.
  - .2 Extended warranties shall include for proper performance of the portion of the *Work* as defined by the scope of the applicable *Specifications* section to the extent that the design and *Contract Documents* permit such performance.
  - .3 The *Owner* shall promptly give the warrantor notice in writing of observed defects and deficiencies which occur during the warranty period.
  - .4 Extended warranties shall commence at date of *Ready-for-Takeover*.
  - .5 Extended warranties specified shall be in addition to, and run concurrent with, other warranties required by the *Contract Documents*. Manufacturer's disclaimers and limitations on product warranty do not relieve *Contractor* of obligations under requirements of the *Contract Documents*.
  - .6 Submit extended warranty on warrantor's standard form specifically endorsed by the warrantor to the *Owner* and shall include the following information:
    - .1 Name and address of *Project*.
    - .2 Warranty commencement date.
    - .3 Warranty period.
    - .4 Specific warranty terms as required in applicable portion of *Contract Documents*.
    - .5 Name and title of authorized signing officer and seal of warrantor.

### PART 2 - PRODUCTS

Not applicable.

### PART 3 - EXECUTION

Not applicable.

**END OF SECTION**

Demonstration and Training

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## **PART 1 - GENERAL**

### **1.1 Section Includes**

- .1 Systems demonstration and training.

### **1.2 Preparation**

- .1 Prior to scheduling demonstration and training:
  - .1 Review condition of equipment or systems for which demonstration and training is required and that have been used in the course of the *Work* to ensure turning over at completion in "as new condition", with warranties dated and certified from time specified.
  - .2 When partial occupancy of uncompleted project is required by *Owner*, coordinate *Owner's* uses, requirements, access, and the like, with requirements to complete the *Work*.

### **1.3 Submittals**

- .1 Submit proposed dates, times, durations, and locations for demonstration and training of each item of equipment and each system for which demonstration and training is required. Allow sufficient time for training and demonstration for each item of equipment or system, or time as may be specified in technical *Specifications*.
  - .1 Correlate with construction schedule in accordance with Section 01 32 00.
- .2 *Consultant* and *Owner* will review submittal and advise *Contractor* of any necessary revisions.
- .3 Submit report(s) within 5 *Working Days* after completion of demonstration and training:
  - .1 Identifying time and date of each demonstration and training session.
  - .2 Summarizing the demonstration and training performed.
  - .3 Including a list of attendees.

### **1.4 Demonstration and Training**

- .1 Perform system demonstration work no later than 15 *Working Days* prior to submitting request for *Consultant's* review to determine if *Substantial Performance of the Work* has been achieved.
  - .1 Provide *Owner* with 5 *Working Days* prior written notice of dates scheduled for demonstration and training.
- .2 Submit required certificates of approval or acceptance from authorities having jurisdiction.
- .3 Prerequisites to demonstration and training:
  - .1 Testing, adjusting, and balancing has been performed in accordance with *Contract Documents*.
  - .2 Equipment and systems are fully operational.
  - .3 Copy of completed operation and maintenance manual is available for use in demonstration and training.

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Demonstration and Training

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- .4 Conditions for demonstration and training comply with requirements specified in technical *Specifications*.
- .4 Demonstration and training:
  - .1 Demonstrate and provide training to *Owner's* personnel.
  - .2 Instruct *Owner's* personnel in operation and maintenance of equipment and systems, using operation and maintenance data provided as the basis for instructions. Arrange and coordinate instruction of *Owner's* staff in care, maintenance, and operation of building systems and finishes
  - .3 *Contractor*, manufacturer's representatives, and responsible personnel from *Subcontractors* whose work is being demonstrated shall be present at these demonstrations, as well as *Owner's* personnel.
  - .4 *Owner* shall provide list of personnel to receive training and shall coordinate their attendance at agreed upon times.
  - .5 Demonstration shall include start up, operation, control, adjustment, troubleshooting, servicing, and maintenance of each item of equipment and system.
  - .6 Review operation and maintenance manual in detail to explain all aspects of operation and maintenance.
  - .7 Instruct *Owner's* representative on use of software required for operation and maintenance of building systems and provide a toll-free telephone number or website address for further assistance to the *Owner*.
  - .8 Prepare and insert additional data in the operation and maintenance data manuals when the need for additional data becomes apparent during demonstration or instruction.
- .5 Correct deficiencies and defects identified during demonstration, instruction, or commissioning.
- .6 Attend 'end-of-work' testing and break-in or start-up demonstration.

**PART 2 - PRODUCTS**

Not applicable.

**PART 3 - EXECUTION**

Not applicable.

**END OF SECTION**

Demolition

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Demolition and removal of selected non-structural portions of building.
  - .2 Removal of surplus materials from the *Place of the Work*.
  - .3 Related mechanical and electrical work and demolition requirements are covered under Divisions 21, 22, and 23 and Divisions 26, 27, and 28 respectively.
- .2 Section excludes:
  - .1 Demolition, removal, remediation, or abatement of designated substances or materials and toxic and hazardous substances.

### **1.2 Administrative Requirements**

- .1 Pre-demolition meeting:
  - .1 Schedule a pre-demolition meeting following the procedures specified for pre-installation meetings in accordance with Section 01 31 19.
  - .2 Review existing conditions at the *Place of the Work* thoroughly to establish full extent of items to be removed and items to remain. Commencement of demolition work will be considered to be acceptance of existing conditions at the *Place of the Work* and removal of such items.
  - .3 Examine adjacent properties to determine extent of protection required.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Special procedures submittals:
  - .1 Existing conditions documentation:
    - .1 Document existing conditions of adjoining construction and site improvements, including pre-existing damage to finish surfaces that might be misconstrued as damage caused by demolition operations.
    - .2 Comply with Section 01 32 00.
    - .3 Submit existing conditions documentation before demolition work begins.

### **1.4 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

## **PART 2 - PRODUCTS**

Not applicable.

## **PART 3 - EXECUTION**

### **3.1 Examination**

- .1 Verify that utilities have been disconnected and capped.
- .2 Observe existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- .3 When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to *Consultant*.
- .4 Survey of existing conditions: Record existing conditions by use of photographs in accordance with Section 01 32 00.

### **3.2 Utility Services and Mechanical / Electrical Systems**

- .1 Refer to Divisions 21, 22, and 23 and Divisions 26, 27, and 28 respectively.

### **3.3 Selective Demolition, General**

- .1 Demolish and remove existing construction only to the extent required by new construction, and as otherwise indicated. Use methods required to complete the work within limitations of governing regulations and as follows:
  - .1 Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
  - .2 Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  - .3 Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - .4 Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
  - .5 Maintain adequate ventilation when using cutting torches.
  - .6 Remove decayed, infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  - .7 Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  - .8 Dispose of demolished items and materials promptly.
- .2 Dispose of demolished materials from *Project* site except where noted otherwise and in accordance with authorities having jurisdiction. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- .3 Do not sell demolished material at the *Place of the Work*.

Demolition

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

**3.4 Selective Demolition Procedures for Specific Materials**

- .1 Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.
- .2 Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

**3.5 Protection**

- .1 Take precautions to support affected structures and, if safety of building being demolished or adjacent structures or services appears to be endangered, cease operations and notify demolition engineer, *Contractor* and *Consultant*.
- .2 Protect work to remain against damage. Repair or replace damaged work at no additional cost to the *Owner*.

**END OF SECTION**

Concrete Masonry Unit Assemblies

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Concrete unit masonry assemblies.

### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Submit shop drawings for masonry unit wall assemblies indicating:
    - .1 Types of masonry units, grade, typical dimensions, special shapes and shape dimensions.
    - .2 Layout/coursing for each type of masonry unit.
- .4 Test and evaluation reports: Submit test results confirming compliance of aggregates with CAN/CSA A179-14.

### **1.4 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

### **1.5 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.

## **PART 2 - PRODUCTS**

### **2.1 Mortar Materials**

- .1 Mortar: in accordance with CAN/CSA A179-14.
- .2 Portland cement:
  - .1 In accordance with CAN/CSA A3001-18, GU (Type 10)/ASTM C150/C150M-24.
  - .2 For exposed mortar: maintain uniformity of cement manufacturer and batch for colour uniformity.
- .3 Hydrated lime: in accordance with ASTM C207-24, Type S.



Concrete Masonry Unit Assemblies

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- .4 Sand: in accordance with CAN/CSA A179-14.
- .5 Maintain uniformity of mortar material manufacturers, mortar materials and source of aggregate throughout the *Work*.
- .6 Mortar types:
  - .1 Interior masonry:
    - .1 Loadbearing: Type S.
    - .2 Non-loadbearing: Type N.
  - .2 Mortar colour: Grey.

## 2.2 Grout

- .1 Grout following masonry components:
  - .1 Lintels and bond beams.
- .2 Place and grout reinforcing and bearing in accordance with CAN/CSA A371-14 and structural drawings. Use concrete of minimum 20 MPa compressive strength unless otherwise indicated.
- .3 Grout for block cores: in accordance with CAN/CSA A179-14.

## 2.3 Reinforcing and Connectors

- .1 Conform to minimum requirements of CAN/CSA A370-14 unless otherwise indicated.
- .2 Corrosion protection; metal materials: in accordance with building code and CAN/CSA A370-14:
  - .1 For metal located interior to air barrier location: Hot dipped after fabrication in accordance with ASTM A1064/A1064M-24, and ASTM A153/A153M-16a Class B2 (457 g/m<sup>2</sup>), mill galvanized.
- .3 Joint reinforcement:
  - .1 Acceptable manufacturers:
    - .1 Blok-Lok.
    - .2 Substitutions: in accordance with Section 01 25 00.
  - .2 Interior wall assemblies: 9 gauge mill galvanized wire ladder reinforcement.

## 2.4 Masonry Accessories

- .1 Deflection space filler (non-fire rated walls):
  - .1 Acceptable *Products*:
    - .1 Johns Manville 'MinWool Sound Attenuation Fire Batts'.
    - .2 Rockwool 'AFB'.
    - .3 Substitutions: in accordance with Section 01 25 00.
- .2 Slip-sheet flashing membrane (for lintel bearing locations):
  - .1 Minimum 0.5 mm (0.020") thick, PVC membrane, low temperature flexible to 40°C below zero.

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Concrete Masonry Unit Assemblies

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- .2 Acceptable *Products*:
  - .1 Blok-Lok 'Flex-Flash'.
  - .2 Lexcor F20.
  - .3 Substitutions: in accordance with Section 01 25 00.

## 2.5 Concrete Masonry Units

- .1 In accordance with CAN/CSA A165 SERIES-14.
- .2 Include shapes, such as end, bond, sash groove, ledge and lintel units, required to complete the *Work*, with uniform appearance.
  - .1 *Provide* open end blocks where vertical reinforcing occurs in walls.
  - .2 *Provide* knock-out blocks where horizontal reinforcing bars occur in walls.
  - .3 Solid concrete masonry units may be used where grouted block is indicated, whenever reinforcing is not indicated, in lieu of grouted solid installation method.
  - .4 Size: metric.
- .3 Normal weight units:
  - .1 Hollow units: H/15/A/M, H/20/A/M and H/25/A/M.
  - .2 Semi-solid units: SS/15/A/M, SS/20/A/M and SS/25/A/M.
  - .3 Full solid units: SF/15/A/M, SF/20/A/M and SF/25/A/M.
  - .4 Colour: grey.
  - .5 Profiles: as indicated.

## PART 3 - EXECUTION

### 3.1 Preparation

- .1 Prior to commencing masonry work, verify that conditions at the *Place of the Work* will allow construction of masonry within required limitations for wall heights, wall thicknesses, openings, bond, anchorage, lateral support, and compressive strengths of masonry units and mortars.
- .2 *Provide* protection where required at mixing areas to prevent damage attributed to mortar materials.

### 3.2 Workmanship

- .1 Build masonry plumb, level, and true to line, with vertical joints in proper alignment. Lay masonry to tolerances specified in CAN/CSA A371-14.
- .2 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.
- .3 Masonry mortar and grout work in accordance with CAN/CSA A179-14 except where specified otherwise.
- .4 Masonry work in accordance with CSA S304-14, CAN/CSA A370-14, and CAN/CSA A371-14 except where specified otherwise.

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Concrete Masonry Unit Assemblies

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### 3.3 Measurement and Mixing

- .1 Mix mortars as specified in CAN/CSA A179-14. Use only dry aggregate. Test for bulking to determine accurate proportioning.
- .2 Fine grout: mix one part Portland cement and three parts sand with water.
- .3 Coarse grout: ready mixed high slump pea gravel concrete.
- .4 Adjust water in mortar mix to suit absorption rates of masonry units.

### 3.4 Laying Masonry Units

- .1 Lay concrete masonry units in bond to match existing unless otherwise indicated.
- .2 Units shall be cut only upon acceptance of *Consultant*. Walls are to be laid-up with full size masonry units.
- .3 Where masonry surfaces serve as substrate for thin-set tile and direct applied coatings, build to tolerance of 1:500 (1/8" in any 6'-0") (3 mm in any 1.83 m) under a straight edge.
- .4 Remove loose and foreign materials from supporting bed surfaces to ensure bonding.
- .5 Stop off horizontal runs of walls by racking back a half unit in each horizontal course. Do not tooth.
- .6 Do not install defective, cracked, and broken masonry units.
- .7 Do not install masonry units with face or faces exhibiting chips, blemishes, texture variation, and other imperfections detracting from appearance when viewed from distance of 4600 mm (15 ft.).
- .8 Do not lay concrete masonry units that will appear smooth or slick where exposed to view, whether painted or not finished.
- .9 Maintain bracing of walls and piers continuously during construction until structure provides support.
- .10 Locate bearings and piers as indicated. *Provide* solid masonry units at bearings. Grout under bearing plates installed on masonry with non-shrink grout.
- .11 Extend walls and partitions to deck, slab or structural members, as applicable, except where otherwise noted in the *Contract Documents*. Incorporate both lateral support and deflection space at termination of walls as required by this section.
- .12 Lay masonry level, true to line, square, plumb, and as indicated. Lay masonry courses in vertical alignment to ensure vertical joints align for full height of masonry and full height of building face.
- .13 Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.
- .14 Fully bond intersections, and external corners.
- .15 Do not adjust masonry units after laying. Where resetting of masonry is required, remove, clean units and reset in new mortar.
- .16 Extend masonry to construction above, except where otherwise indicated. Cut and fill around obstructions.
- .17 Build chases, do not cut them.

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Concrete Masonry Unit Assemblies

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- .18 Exposed cuts shall be made clean and true with a suitable masonry saw.

### **3.5 Jointing**

- .1 Form tooled mortar joints whenever exposed to view, and behind cabinets, fitments, and wall accessories. Tool when mortar is thumb-print hard by tools having long bearing surface to avoid uneven depressions. Close cracks and crevices.
- .2 Concealed masonry: strike flush joints concealed in walls and joints in walls to receive plaster, acrylic stucco, tile, insulation, resilient base, or other applied material except paint or similar thin finish coating. Ensure that no mortar protrudes from joints on wall surfaces to receive materials and coatings.
- .3 Tool with round non-staining pointing tool to provide smooth, compressed, joints to match existing, except if specified or shown otherwise.
- .4 Joint thickness:
  - .1 Maintain mortar joint thickness of 10 mm (3/8"), unless otherwise specified or indicated.
  - .2 At masonry cut around obstructions: maximum joint size of 13 mm (1/2").
- .5 Make joints of uniform thickness with vertical joints in alignment.
- .6 Trowel point joints in unparged masonry in contact with earth.
- .7 Form reglets where indicated for metal flashing in masonry.
- .8 Remove loose or defective mortar when masonry is removed and replace.
- .9 Rake out joints at junctions of masonry with concrete walls and columns, and at intersection of masonry walls and partitions where joint reinforcement is installed. Seal these joints by Section 07 92 00.
- .10 Cut out defective mortar joints and repoint.

### **3.6 Joining of Work**

- .1 Where necessary to temporarily stop horizontal runs of masonry, and in building corners;
  - .1 Step-back masonry diagonally to lowest course previously placed.
  - .2 Do not "tooth" new masonry.
  - .3 Fill in adjacent courses before heights of stepped masonry reach 1220 mm (48").

### **3.7 Cutting**

- .1 Cut out neatly using a wet diamond blade saw for electrical switches, outlet boxes, and other recessed or built-in objects.
- .2 Make cuts straight, clean, and free from uneven edges.

### **3.8 Built-In Work**

- .1 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
- .2 Coordinate and cooperate in the provisions for setting, anchorage and alignment of built-in work.

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Concrete Masonry Unit Assemblies

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.3 Metal door frames:

- .1 Build masonry around metal door frames supplied and set in accordance with the various parts of the *Contract Documents*.
- .2 Secure anchors solidly, and verify that frames are true and plumb.
- .3 Fill back void of frames with mortar unless otherwise indicated.
- .4 Protect frame with protective covering and leave no mortar on exposed frame faces.

**3.9 Support of Loads**

- .1 Install building paper below voids to be filled with concrete; keep paper 25 mm (1") back from faces of units.

**3.10 Reinforced Masonry**

- .1 Conform to requirements of CAN/CSA A371-14.
- .2 Grouting beneath bearing plates: Completely fill voids beneath steel bases bearing on masonry with an approved non-shrink grout having a compressive strength at 28 days of at least 35 MPa. Where grout is exposed to view or weather, use non-ferrous expansion agents.
- .3 Reinforced block lintels:
  - .1 Install reinforced block lintels over doorways, other openings and recesses as indicated.
  - .2 Support masonry units of reinforced block lintels built in place. *Provide* a level platform, true to the proper elevation and of sufficient strength to support the load without visible deflection. Maintain supports in place for a minimum of 7 days and for a period sufficient to permit the concrete to cure and gain sufficient strength to safely support all loads.
- .4 Lay masonry units with full mortar coverage on all abutting edges with joints shoved tight. Where masonry construction is continued above the lintel, place the first course of masonry units on the lintel in a full mortar bed.
- .5 Reinforce masonry lintels and bond beams as indicated. Make joints in lintels and bond beams to match adjacent walls.
- .6 Reinforce masonry walls as indicated.
- .7 Grouted reinforced masonry: Construct masonry to meet indicated requirements.
- .8 Place 100% solid block at each jamb under lintels.

**3.11 Provision for Movement**

- .1 Deflection space:
  - .1 Incorporate deflection space between tops of non-load-bearing walls/partitions and structure to prevent transference of structural loads to masonry.
    - .1 Interior masonry partition deflection space: 25 mm (1").
- .2 Coordinate work of this section with installation of lateral supports.

Concrete Masonry Unit Assemblies

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**3.12 Deflection Space Filler**

- .1 Non-fire rated walls: Fill deflection space with deflection space filler. Where deflection space is exposed, tamp filler into deflection space 25 mm (1").
- .2 Fire-rated walls: Refer to requirements of Section 07 84 00.

**3.13 Loose Steel Lintels**

- .1 Set and level lintels, centred over opening width, on a slip-sheet membrane, placed over bed or mortar.
- .2 Allow suitable movement joint at ends of lintels for expansion and contraction movement at exterior lintels.

**3.14 Lateral Supports**

- .1 In addition to requirements of *Contract Documents*, *Provide* horizontal and vertical wall and partition lateral support anchors in accordance with CAN/CSA A370-14.

**3.15 Horizontal Reinforcing**

- .1 Joint reinforcement:
  - .1 Install joint reinforcement in cavity walls, solid walls and partitions.
  - .2 Place reinforcement continuously in horizontal joints at 400 mm (16") on centre, beginning with course 400 mm (16") above bearing, unless otherwise indicated.
  - .3 Do not carry reinforcement through intersections where lateral support anchors are installed, at intersections of walls and partitions with solid piers and at block movement joints.

**3.16 Bolts and Anchors**

- .1 Embed bolts and anchors solidly in mortar or grout to develop maximum resistance to design forces.

**3.17 Structural Reinforcement**

- .1 Install to indicated requirements.

**3.18 Temporary Bracing**

- .1 *Provide* temporary bracing to masonry walls.

**3.19 Field Quality Control**

- .1 Conduct quality control in accordance with Section 01 45 00.
  - .1 Source quality control: Perform tests on masonry units to determine compressive strength as required by jurisdictional authorities in accordance with CAN/CSA A165 SERIES-14.
- .2 Field tests and inspections:
  - .1 Supply and install mortar for strength testing in accordance with CAN/CSA A179-14 and Section 01 45 00.

Concrete Masonry Unit Assemblies

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**3.20 Adjusting and Cleaning**

- .1 Protect masonry and adjacent work from damage from cleaning work.
- .2 Clean masonry in accordance with masonry manufacturer's written requirements. Remove masonry and install new masonry, if masonry is damaged by cleaning work.
- .3 Test cleaning agent and procedures by cleaning small, inconspicuous sample location prior to commencement of overall cleaning work. Review cleaning test area with *Consultant* and obtain acceptance in writing prior to cleaning remainder of areas requiring cleaning.
- .4 Soak wall with clean water and flush off loose dirt and mortar.
- .5 Apply specified cleaning agent in accordance with the manufacturer's direction, working from top to bottom.
- .6 Rinse areas thoroughly with clean water to remove cleaning solutions, dirt, and mortar residue.
- .7 Remove mortar from exposed masonry face immediately and prior to full set to avoid mortar staining of masonry units. Remove masonry and install new masonry, if mortar staining cannot be removed without damaging masonry work.
- .8 Remove efflorescence and mortar deposits from surfaces to receive coatings and surfaces which are exposed to view. Remove efflorescence and mortar deposits from surfaces to receive coatings or surfaces which are exposed to view, occurring within a time period of 1 year after date of *Substantial Performance of the Work*.
- .9 Use proprietary PH-neutral cleaning solution with water as approved by manufacturer of masonry units in accordance with manufacturer's written directions. Use clean water to remove excess cleaning solution.
- .10 Remove mortar droppings from flashings and other materials immediately to prevent damage and discolouration.

**3.21 Protection**

- .1 Protect other materials and finishes from contamination by mortar droppings.
- .2 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

**END OF SECTION**

Metal Fabrications

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Work of this section includes metal fabrications as indicated.

### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Submit list of fabrications to be provided as part of the work of this section.
- .3 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .4 Shop drawings:
  - .1 Submit engineered shop drawings.
  - .2 Include plans, sections and large scale details, and indicate components and methods of assembly, materials and their characteristics, fastenings, metal finishes, welds, and their structural characteristics relative to their purpose, and other fabrication information required.
  - .3 Indicate proposed *Place of the Work* connections and methods.
  - .4 Submit coordination drawings indicating locations of concealed grounds, cutouts, plates, and other required fabrications.
  - .5 Show relation to adjoining construction, details of outside and inside corners and door openings.

### **1.4 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

### **1.5 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

- .1 Design, fabricate, and install work of this section in accordance with the building code and requirements of authorities having jurisdiction.



## Metal Fabrications

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### .2 Welding:

- .1 Steel: Weld components to conform to requirements of CSA W59-24, and by a fabricator fully certified by the Canadian Welding Bureau to conditions of CSA W47.1-19(R2024) and CSA W55.3-08 (R2023) as applicable.
- .3 Design assemblies and connections to withstand own dead load, live loads, super-imposed dead loads, and fabrication forces, without permanent distortions or deformation, to maximum allowable deflection of  $L/360$ , within the following construction tolerances:
  - .1 Maximum variation from plumb in vertical lines: 3.2 mm (1/8") in 3 m (10'-0").
  - .2 Maximum variation from level: 3.2 mm (1/8") in 9 m (30'-0").
  - .3 Maximum variation from straight: 3.2 mm (1/8") in 3 m (10'-0") under a 3 m (10'-0") straight edge.
  - .4 Maximum variation from angle indicated: 10 seconds.
  - .5 Tolerances shall be non-cumulative.

## 2.2 Materials

### .1 General:

- .1 Unless detailed or specified otherwise, standard *Products* will be acceptable if construction details and installation meet requirements of the *Contract Documents*.
- .2 Include materials, *Products*, accessories, and supplementary parts necessary to complete assembly and installation of work of Section 05 50 00.
- .3 Incorporate only metals that are free from defects that are visible, or that impair strength or durability. Install only new metals that are of best quality, free from rust or waves and buckles, clean, straight, with sharply defined profiles.

### .2 Steel:

- .1 Structural shapes, plate, bars: hot-rolled or cold-rolled to suit design requirements, in accordance with CSA G40.21-13, Grade 300W.
- .2 Hollow structural sections: hot-formed or cold-formed to suit design requirements, seamless, in accordance with CSA G40.21-13, Grade 350W, Class H or Class C.
- .3 Mild sheet and strip: hot rolled, in accordance with ASTM A1011/A1011M-18a.
- .4 Cold rolled sheet: stretcher levelled, fully pickled, in accordance with ASTM A1008/A1008M-18, Grade CS Type A exposed, matte finish, dry, unless otherwise indicated.
- .5 Steel pipe: in accordance with ASTM A53/A53M-18, Type E or S, Grade A or B, standard weight, Schedule 40 seamless black or AISI MT 1010/1015.

## 2.3 Accessories

### .1 Fasteners:

- .1 Exposed fasteners to match the appearance of the surface on which they occur.
- .2 For fastening steel: Zinc plated screws and bolts, and in accordance with ASTM A307-21, Type 304 stainless steel where exposed to exterior.

### Metal Fabrications

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- .3 High strength bolts: in accordance with ASTM A325-14.
- .4 Concrete anchors; exterior exposed to weather: embedded epoxy set anchors, unless otherwise indicated.
  - .1 Size: in accordance with manufacturer's written requirements and reviewed shop drawings. Embedment depth shall not be greater than 80% of concrete thickness.
- .5 Other types of fasteners as appropriate to meet design requirements.
- .6 Fasteners shall be tamperproof where exposed.
- .2 Welding materials:
  - .1 Steel: in accordance with CSA W59-24.
- .3 Grout:
  - .1 Epoxy grout; non-shrink, non-expanding.
    - .1 Acceptable *Products*:
      - .1 Hilti 'HY-200'.
      - .2 Sika 'Sika AnchorFix 3001'.
      - .3 W.R. Meadows 'REZI-WELD 3/2 EPOXY GROUT/PATCH'.
      - .4 Substitutions: in accordance with Section 01 25 00.
  - .2 Cementitious grout: non-shrink, non-expanding in accordance with ASTM C1107/C1107M-20:
    - .1 Acceptable *Products*:
      - .1 Sika 'Sika Grout 212' or 'Sika M-Bed Standard'.
      - .2 W.R. Meadows 'Sealtight CG-86 Construction Grout'.
      - .3 Substitutions: in accordance with Section 01 25 00.
- .4 Galvanic/dissimilar metal corrosion inhibitor (isolation coating): in accordance with Section 01 73 00 and written requirements of manufacturers of metals affected.

## 2.4 Finishes

- .1 Shop primer; steel:
  - .1 In accordance with CISC/CPMA 2-75 or SSPC-Paint 20, Paint Specification No. 20: Zinc-Rich Primers (Type I "Inorganic" and Type II "Organic").
- .2 Hot dip galvanizing: in accordance with ASTM A123/A123M-17, minimum zinc coating of 600 g/m<sup>2</sup>. Use air cooling method (no water or chromate dipping treatment permitted).
- .3 Zinc rich paint; steel: Two-component zinc-rich coating, zinc powder in accordance with ASTM D520-25 Type III, SSPC-Paint 20, Type 1 Inorganic or single-component zinc-rich coating to SSPC-Paint, Type 2 Organic, CAN/CGSB 1.181-M99, VOC content <100 g/l to ASTM D1475-13(2025).
  - .1 Acceptable *Products*:
    - .1 Aervoe Industries, Inc. 'Low VOC Cold Galvanize Coating 93% Zinc'.

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Metal Fabrications

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- .2 ZRC Worldwide 'ZRC Zero-VOC Galvanizing Compound'.
- .3 Substitutions: in accordance with Section 01 25 00.

## **2.5 Fabrication**

### **.1 General:**

- .1 Fabricate metal fabrications with machinery and tools specifically designed for the intended manufacturing processes and by skilled tradesmen.
- .2 Fit and assemble metal fabrications in shop. When this is not possible, make a trial shop assembly.
- .3 Incorporate means for fastenings of other work secured to work of this section.

### **.2 Construction:**

- .1 Fabricate with materials, component sizes, metal gauges, reinforcing, anchors, and fasteners of adequate strength to withstand intended use, and within allowable design factors imposed by jurisdictional authorities. Fabricate items from steel unless otherwise noted.
- .2 Metal fabrications shall remain free of warping, buckling, opening of joints and seams, distortion, and permanent deformation.
- .3 Construct items that are part of floor construction, such as gratings and trench covers, to support the same live loads for which surrounding construction is designed.

### **.3 Assembly:**

- .1 Accurately cut, machine and fit joints, corners, copes and mitres so that junctions between components fit together tightly and in true planes.
- .2 Provide smooth welds with splatter removed where exposed to view.
  - .1 Finish welds shall comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #4 - Good quality, uniform undressed weld with minimal splatter as shown in NAAMM-AMP 521-01(R2012).
- .3 Allow for differential movements within assemblies and at junctions of assemblies with surrounding *Work*.
- .4 Field welding of hot dipped galvanized members permitted only when other fastening methods are not possible. Locations of field welds to be clearly identified on reviewed shop drawings.
- .5 Incorporate holes and connections for work installed under other sections.
- .6 Cleanly and smoothly finish exposed edges of materials including holes.
- .7 Cap open ends of sections exposed to view, such as pipes, channels, angles, and other similar work.

### **.4 Shop prime painting:**

- .1 Clean loose mill scale, rust, dirt, weld flux and spatter from the work after fabrication.

### Metal Fabrications

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- .2 Prepare and prime paint in accordance with manufacturer's installation requirements. Prepare steel by methods specified in CISC/CPMA 2-75 or SSPC-SP3-18.
- .5 Galvanizing:
  - .1 Galvanize metal fabrications following fabrication.
  - .2 Paint damage galvanized surfaces with zinc rich paint, immediately following damage to galvanized protection. Prepare substrate to remove oil and grease to SSPC-SP1-16, rust scale to SSPC-SP3-18, mill scale to SSPC-SP6/NACE No. 3-07.
  - .3 At interior locations, fill vent and drain holes exposed in the finished *Work* by plugging with zinc solder and filing off smooth.

## PART 3 - EXECUTION

### 3.1 Examination

- .1 Take measurements at the *Place of the Work* to verify that metal fabrications fit surrounding construction, around obstructions and projections in place, or as indicated, and to suit service locations.

### 3.2 Installation

- .1 Install metal fabrications plumb, true, square, straight, level, and accurately and tightly fitted together and to surrounding work.
- .2 Include in work of this section anchor bolts, high tensile bolts, washers and nuts, expansion bolts, toggles, straps, sleeves, brackets, clips, and other items necessary for secure installation as required by loading and jurisdictional authorities.
- .3 Countersink holes at wood screw locations where wood is attached to metal fabrications.
- .4 Attach metal fabrications to interior concrete and masonry with corrosion resistant expansion bolts to support load with a safety factor of 3.
- .5 Attach metal fabrications to exterior concrete and masonry with non-shrink epoxy cement to support load with a safety factor of 3.
- .6 Provide galvanic/dissimilar metal corrosion inhibitor (isolation coating) in accordance with Section 01 73 00 and written requirements of manufacturers of metals affected.
- .7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

### 3.3 Field Quality Control

- .1 Conduct quality control in accordance with Section 01 45 00.

### 3.4 Adjusting and Cleaning

- .1 After erection, touch up primed surfaces that are burned, scratched or otherwise damaged with prime paint to match shop paint.

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Metal Fabrications

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- .2 Clean and repair areas of bare metal and welds on galvanized surfaces with zinc rich paint. Mask welded areas of members to minimize overpainting of adjacent undamaged surfaces. Prepare substrate to remove oil and grease in accordance with SSPC-SP1-16, rust scale in accordance with SSPC-SP3-18, mill scale in accordance with SSPC-SP6/NACE No. 3-07.
- .3 Remove damaged, dented, defaced, defectively finished, or tool marked components and replace with new.

**END OF SECTION**

## Rough Carpentry

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### **PART 1 - GENERAL**

#### **1.1 Summary**

- .1 Section includes:
  - .1 The work of this section includes, but is not necessarily limited to, the following:
    - .1 Miscellaneous wood furring and blocking.
    - .2 Plywood backing panels.

#### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Shop drawings:
  - .1 Submit engineered shop drawings.
  - .2 Clearly indicate details of construction, profiles, jointing, fastening and other related details, connections, and restraint of wall assemblies.

#### **1.3 Product Handling**

- .1 Product handling shall be in accordance with Section 01 60 00 as supplemented by the requirements of this section.
- .2 Where stability of wood dimensions and tolerances is required to ensure accurate installation of later work, store and install only in dry areas where no installation of moist or wet materials will be undertaken.

### **PART 2 - PRODUCTS**

#### **2.1 Wood Materials**

- .1 General requirements:
  - .1 Except as indicated or specified otherwise lumber shall be softwood, S4S, moisture content not greater than 19% at time of installation, in accordance with following standards:
    - .1 CSA O141-05.
    - .2 NLGA-2017 Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds:
  - .1 Use S2S material.
  - .2 Dimension lumber sizes: in compliance with Section 12 of the NLGA-2017.
  - .3 Dimension lumber species and grades:
    - .1 Spruce-Pine-Fir.
    - .2 Light framing in accordance with NLGA-2017 Construction grade, S-Dry.
    - .3 Planks in accordance with NLGA-2017 No. 2 grade, S-Dry.
    - .4 Boards in accordance with NLGA-2017 No. 4 Common grade, S-Dry.

## Rough Carpentry

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### 2.2 Panel Materials

- .1 Softwood plywood (CSP): in accordance with CSA O151-17.
- .2 Douglas Fir plywood (DFP): in accordance with CSA O121-17.

### 2.3 Fastenings and Hardware

- .1 General:
  - .1 *Provide* fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 38 mm (1-1/2") into wood substrate.
  - .2 Anchors to concrete and unit masonry: Capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing according to ASTM E488/E488M-22.
  - .3 Use surface fastenings of following types, except where specific type is indicated.
    - .1 To hollow masonry, plaster and panel surfaces use 9 mm (11/32") expansion bolts or other acceptable anchor.
    - .2 To solid masonry and concrete use expansion bolts.
    - .3 To structural steel use bolts through drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts.
  - .4 Fastener materials:
    - .1 Hot-dip galvanized fasteners: in accordance with ASTM A153/A153M-16a Class A or B1 G185 and connectors meeting ASTM A653/A653M-18 Class G-185 sheet or better.
  - .5 Hardware materials:
    - .1 Hot-dipped galvanized in accordance with ASTM A153/A153M-16a, Class A or B1, and connectors in accordance with ASTM A653/A653M-18, Class G185.

### 2.4 Construction Adhesive

- .1 Construction adhesive: to requirements of American Plywood Association AFG-01, ASTM C557-03(2017), ASTM D3498-19a, and FHA UM60.

### 2.5 Source Quality Control

- .1 Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

## PART 3 - EXECUTION

### 3.1 General

- .1 Layout work to accommodate work of others. Cut and fit accurately. Erect in position indicated. Align, level, square, plumb, and secure work permanently in place.

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Rough Carpentry

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- .2 Bore holes true to line and to same size as bolts. Drive bolts into place for snug fit, and use plates or washers for bolt head and nut bearings. Turn up bolts and lag screws tightly when installed, and again just before concealed by other work or at completion of work.
- .3 Include in work of this section rough hardware such as nails, bolts, nuts, washers, screws, clips, and connectors required for complete and proper installations; and operating hardware required on work of this section for temporary use.
- .4 Do not attach work by wood plugs or blocking in concrete or masonry.
- .5 Do not regard nailers, blocking, and such other fastening provision indicated as exact or complete. Install required provisions for fastening, located and secured to suit *Place of the Work* conditions, and adequate for intended support.
- .6 Verify that grounds required for fastening of components and equipment are located correctly, and sized for adequate support.

**3.2 Equipment Backboard**

- .1 *Provide* backboards for mounting equipment as required. Use 19 mm (3/4") Softwood Plywood.
- .2 Refer to Divisions 21, 22, and 23 and Divisions 26, 27, and 28 for requirements for electrical backboards.

**END OF SECTION**



## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Work of this section includes architectural woodwork including, but not limited to, the following:
    - .1 Standing and running trim.
    - .2 Cabinetry and hardware.
    - .3 Solid surfacing fabrications.
    - .4 Factory and site finishing of architectural woodwork.

### **1.2 Administrative Requirements**

- .1 Coordination:
  - .1 Coordinate with other work for satisfactory and expeditious completion of the work of this section. Coordinate with partition accessories, electrical, communications, and finish components to ensure that proper provisions are made for the installation of the work of this section and for work by others.
  - .2 Where woodwork is to be fitted to other construction, check actual dimension of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delays in the *Work*.
  - .3 Provide forms, templates, anchors, sleeves, inserts and accessories required to be fixed to or inserted in the work of this section and set in place. Instruct applicable *Subcontractors* as to their locations.
  - .4 Provide cut-outs for raceways, sleeves, grommets and other manufactured accessories which are required for the work of this section and for work by others.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data for each type of *Product* and process proposed for use in the work of this section and incorporated into items of architectural woodwork.
- .3 Shop drawings:
  - .1 Submit shop drawings for the work of this section complying with the North American Architectural Woodwork Standards 4.0 requirements.
  - .2 Indicate quality standards and grades.
  - .3 Include full scale drawings of exposed-to-view edge conditions.

### Architectural Woodwork

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- .4 Include plans, sections and large scale details, and indicate components and methods of assembly, fastenings, and other fabrication information required for the work of this section. Indicate assembly joint lines.
- .5 Include materials and their characteristics and finishes as applicable including the following:
  - .1 Panel core and material types, thicknesses, compliance with specified standards, special treatments.
  - .2 Adhesive types to be used and locations.
  - .3 Finishing requirements including North American Architectural Woodwork Standards 4.0 finish system number, sheen, and required application steps.
- .6 Submit coordination drawings indicating locations of concealed grounds, cut-outs, plates, and other required fabrications.
- .7 Show relation to adjoining construction, details of outside and inside corners and door openings.
- .8 Provide flame spread ratings of walls and ceiling finishes to meet building code requirements, tested and listed by accredited listing agency.
- .4 Verification samples:
  - .1 Submit samples for purpose of verification of compliance with specified requirements.
  - .2 Submit 3 sets of 200 mm x 200 mm (8" x 8") samples, or 200 mm (8") long as applicable, of each specified *Product*, material and finish, including but not limited to the following:
    - .1 Shop finished materials, showing each type of finish and colour.
    - .2 Samples of each specified *Product*, in each specified colour and finish.
    - .3 Solid surfacing in each specified colour and finish.
    - .4 Plastic laminates, in each specified colour and finish.

#### 1.4 Closeout Submittals

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit maintenance and cleaning instructions for finishes requiring specific care, noting particularly those procedures or materials which will cause damage to finished surfaces to be included in maintenance manuals.

#### 1.5 Quality Assurance

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified. In addition:
    - .1 Fabricators, finishers, and installers shall each be a member in good standing of the Architectural Woodwork Institute or the Architectural Woodwork Manufacturers Association of Canada or the Woodwork Institute.

## Architectural Woodwork

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- .2 Solid surfacing fabricator shall be a solid surface manufacturer's approved fabricator.
- .2 Quality standard:
  - .1 Work shall be in accordance with the North American Architectural Woodwork Standards 4.0, Premium Grade, or the highest grade available for performance and appearance characteristics of materials in Sections 3 – 5 used that apply to *Product* fabrication and installation requirements governed by Sections 6 – 12.

### 1.6 Product Handling

- .1 Product handling shall be in accordance with Section 01 60 00 as supplemented by the requirements of this section.
- .2 Protect architectural woodwork during transit, delivery, storage and handling to prevent damage, spoilage, and deterioration.
- .3 Do not deliver woodwork until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate architectural woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified under paragraph Site Conditions paragraphs of Section 06 40 00.
- .4 The architectural woodwork manufacturer and the *Contractor* shall be jointly responsible to make certain that architectural woodwork is not delivered until the building and storage areas are sufficiently dry so that the architectural woodwork will not be damaged by changes in moisture content.

### 1.7 Site Conditions

- .1 During storage and installation: Obtain and comply with North American Architectural Woodwork Standards 4.0 for optimum temperature and relative humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained. Woodwork shall be acclimatized for a minimum of 72 hours prior to commencing woodwork installation.
- .2 During finishing: Comply with Architectural Woodwork Standard's temperature and humidity requirements before, during, and after application of finishes.
- .3 During service life of woodwork: Obtain and comply with woodwork manufacturer's advice for optimum temperature and humidity conditions.

### 1.8 Warranty

- .1 Warrant work of this section in accordance with Section 01 78 36.

## PART 2 - PRODUCTS

### 2.1 Performance/Design Requirements

- .1 Casework integrity shall meet the minimum acceptance levels in accordance with SEFA 8-1999 as outlined in the North American Architectural Woodwork Standards 4.0 and additional or greater loading capacities as specified throughout the North American Architectural Woodwork Standards 4.0.

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Architectural Woodwork

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- .2 Maximum allowable adjustable shelf lengths shall comply with shelves assembly rules per the North American Architectural Woodwork Standards 4.0 based on shelf thickness indicated or scheduled.

## **2.2 Panel Materials**

- .1 Panel material schedule; except where indicated otherwise:
  - .1 Thickness: 19 mm (3/4") minimum.
  - .2 Core panels:
    - .1 At plastic laminate: MDF.
    - .2 Plywood backing; countertops, backsplashes, and where indicated: Exterior grade plywood with no added urea-formaldehyde used in composition.
  - .3 Maximum moisture content at time of installation: 10% to 12%.

## **2.3 Plastic and Composite Materials**

- .1 High pressure decorative laminate (PL1):
  - .1 General purpose grade: in accordance with ANSI/NEMA LD 3-2005, Horizontal General Purpose Grade (HGS).
  - .2 Colours, finishes, and patterns: as selected by *Consultant*.
    - .1 In accordance with Materials Finish Schedule.
  - .3 Acceptable *Product*:
    - .1 In accordance with Materials Finish Schedule.
- .2 Solid surfacing sheet:
  - .1 Homogenous (not coated, laminated or composite construction), filled material containing methyl methacrylate.
    - .1 Acceptable *Product*:
      - .1 In accordance with Materials Finish Schedule.
    - .2 Nominal sheet thickness: 13 mm (1/2") minimum, unless otherwise indicated.
    - .3 Colour/pattern/finish (gloss):
      - .1 In accordance with Materials Finish Schedule.
    - .4 Substitutions: in accordance with Section 01 25 00.

## **2.4 Fasteners and Adhesives**

- .1 Fasteners shall comply with North American Architectural Woodwork Standards 4.0.
- .2 Adhesives: Shall be used for intended purpose and manufacturer materials applications and installation, applied in accordance with manufacturer's written requirements and shall comply with the "adhesive usage guidelines" recommendations of North American Architectural Woodwork Standards 4.0.

## **2.5 Hardware**

- .1 Casework hardware; to be furnished and installed by the architectural woodwork manufacturer.

## Architectural Woodwork

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- .1 Where casework hardware is not specified or indicated on drawings or scheduled, casework hardware shall comply with ANSI/BHMA Standards, latest edition, minimum grades, loading and other basic rules per the North American Architectural Woodwork Standards 4.0.
- .2 Drawer slides: side mount slides, soft close.
- .3 Hinges: concealed, euro style.
- .4 Pulls; doors and drawers, except where otherwise indicated: 305 mm (12") vertical pull, satin finish.
- .5 Pilaster strips: recessed metals.
- .6 Pilaster clips: metal pin supports.

### 2.6 Finishes - Interior Architectural Woodwork

- .1 General: The entire finish of interior architectural woodwork is specified in this section, regardless of whether factory applied or applied after installation.
- .2 Preparations for finishing:
  - .1 Prior to finishing, exposed portions of woodwork shall have handling marks or effects of exposure to moisture removed with a thorough final sanding over surfaces of the exposed portions, using appropriate grit sandpaper, and shall be cleaned prior to applying sealer or finish. Sanding shall be completed just prior to stain or finishing application.
  - .2 Concealed surfaces of woodwork that might be exposed to moisture, such as those adjacent to exterior concrete or masonry walls, shall be back-primed.
  - .3 Comply with referenced quality standard in Part 1 for sanding, filling countersunk fasteners, sealing concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.
- .3 Finish for MDF:
  - .1 Comply with requirements indicated below for finish system, staining, and sheen.
    - .1 Sheen: Satin. Sheen range measurements in accordance with North American Architectural Woodwork Standards 4.0.
    - .2 Paint finish, where indicated or scheduled: in accordance with Section 09 91 00.

### 2.7 Fabrication

- .1 Fabricate woodwork to dimensions, profiles, and details indicated with openings and mortises pre-cut, where possible, to receive hardware and other items of work.
- .2 Complete fabrication, assembly, finishing, hardware application, and other work before shipment to maximum extent possible. Trial fit in shop and disassemble components only as necessary for shipment and installation. Where necessary, provide ample allowance for scribing, trimming, and fitting. Reassemble with concealed fasteners.

## Architectural Woodwork

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- .3 Provide woodwork, solid tops and other indicated materials with pre-cut openings, where possible, for hardware, appliances, plumbing fixtures, electrical work, telephone cut-outs and similar items. Locate openings accurately and provide proper size and shape. Smooth edges of cut-outs and, where located in countertops, seal edges of cut-outs with a water-resistant coating.
- .4 Provide framing for architectural woodwork, complete with bracing and fastening devices as required for a rigid installation, and as required to sustain the imposed loads.
- .5 Reinforcing shown is minimum. Provide additional reinforcing as required to ensure a rigid assembly. Take responsibility for the stability of furniture and fitments.
- .6 Provide balancing sheets as required, and specified, complying with the North American Architectural Woodwork Standards 4.0.
- .7 Provide surface mount blocking and strapping necessary to support the work of this section. Such blocking shall not be exposed upon completion of work.
- .8 Prefinish work at the factory, except where specified or indicated otherwise.
- .9 Solid wood edging: No end grain shall be visible; mitre external corners; house internal corners.

### 2.8 Fabrication - Solid Surfacing

- .1 Fabricate components in shop to greatest extent practical to size and shape indicated, in accordance with reviewed shop drawings and manufacturer's written requirements.
- .2 Form joints between components using manufacturer's standard joint adhesive. Joints shall be inconspicuous in appearance and without voids. Attach 100 mm (4") wide solid surfacing material reinforcing strip under joints.
- .3 Provide holes and cut-outs as indicated or as required.
- .4 Rout and finish component edges to a smooth, uniform finish. Rout cut-outs then sand edges smooth. Repair or reject defective or inaccurate work.
- .5 Surfaces shall have a uniform finish.

## PART 3 - EXECUTION

### 3.1 Preparation

- .1 Condition woodwork to field conditions in installation areas before installing. Ensure that field conditions have been provided as requested and specified.
- .2 Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.
- .3 Provide grounds, nailers and other required fabrications which are to be built into other work when required.
- .4 Ensure that wall and ceiling variations are not in excess of 6.4 mm (1/4") in 3658 mm (144") and that floors are not in excess of 12.7 mm (1/2") in 3658 mm (144") of being plumb, level, flat, straight, square, of the correct size. Variations shall be corrected prior to installation of work of this section.
- .5 Report conditions contrary to requirements preventing proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.

Architectural Woodwork

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**3.2 Installation**

- .1 Install woodwork to comply with North American Architectural Woodwork Standards 4.0 for same grade specified in Part 1 of this section for type of woodwork involved.
- .2 Install woodwork plumb, level, true, and straight with no distortions.
- .3 Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- .4 Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- .5 Complete the finishing work specified in this section to whatever extent not completed at shop or before installation of woodwork.

**3.3 Installation - Tolerances**

- .1 Install to a tolerance of 3 mm in 2400 mm (1/8" in 8'-0") for plumb and level (including tops) and with no variations in flushness of adjoining surfaces unless otherwise acceptable in accordance with the North American Architectural Woodwork Standards 4.0.

**3.4 Adjusting and Cleaning**

- .1 Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair, replace woodwork.
- .2 Clean, lubricate, and adjust hardware.
- .3 Clean woodwork on exposed and semi-exposed surfaces. Touch up factory-applied finishes to restore damaged or soiled areas.

**3.5 Protection**

- .1 Protect architectural woodwork during remainder of construction period to ensure that work will be without damage or deterioration at time of acceptance.
- .2 Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, that ensure that woodwork is without damage or deterioration at time of *Substantial Performance of the Work*.

**END OF SECTION**

Joint Firestopping and Smoke Seals

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Materials installed in joints to restrict the spread of fire and smoke.
  - .1 Joints in or between fire-resistance-rated constructions.
- .2 Section excludes:
  - .1 Firestopping and smoke seals, for mechanical, electrical and communications penetrations of fire resistant assemblies, and firestopping and smoke seals within their respective assemblies. Refer to Divisions 21, 22, and 23 and Divisions 26, 27, and 28.

### **1.2 Administrative Requirements**

- .1 Coordination:
  - .1 Coordinate joint firestopping and smoke seal work with requirements specified under "Project Firestopping Manual and Coordination" heading in Section 01 33 00.
  - .2 Coordinate with other sections to assure that pipes, conduit, cable, and other items that penetrate fire rated construction, have been permanently installed prior to installation of firestop assemblies.
  - .3 Schedule the *Work* to assure that penetrations and other construction that conceals penetrations are not erected prior to the installation of firestop and smoke seals.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.
  - .1 Representatives for mechanical and electrical work and independent inspection and testing company shall attend pre-installation meeting.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
  - .2 *Product* data sheets shall include the following information:
    - .1 Data and installation instructions for *Products* providing descriptions sufficient for identification at the *Place of the Work*.
    - .2 Materials list of *Products* proposed for use in the work of this section; complying with listed systems designs.
    - .3 Listing agency's detailed drawing showing joint assemblies and firestopping materials, identified with listing agency's name and number or designation, fire rating achieved, and date of listing.



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Joint Firestopping and Smoke Seals

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- .4 Submit fire resistance rating test listings for firestopping and smoke seal systems.
- .3 Shop drawings:
  - .1 Submit drawings indicating fire resistance rated assembly number, required temperature, hose stream, and flame rating, material thicknesses, installation methods and materials of firestopping and smoke seals, primers, supports, damming materials as applicable, reinforcements, anchorages, fastenings and methods of installation for each condition to be encountered.
  - .2 Designate on shop drawings static and dynamic joint systems, relative positions, expansion and control joints in rated slabs and walls, and firestopping details.
  - .3 Engineered shop drawings; for engineering judgements:
    - .1 Where *Project* conditions require modification to an accredited third party testing agency's listed system design to address a particular firestopping condition that is not covered by a listed system, submit engineered shop drawings detailing the modifications to the listed system design as an engineering judgment or equivalent fire-resistance-rated assembly, for each *Project* location and condition.
    - .2 Submit the manufacturer's engineering judgment identification number and shop drawing details prepared by a professional engineer. The engineering judgment submittal shall include both *Project* name, *Project* location, and *Subcontractor's* name who will install firestop system as described in engineering judgement shop drawings.
    - .3 Provide complete details of specific application of listed system and its modifications upon which the engineered judgement is based upon.
- .4 Manufacturers' instructions:
  - .1 Manufacturer of *Products* proposed for use in work of this section shall prepare firestopping manual scheduling products to be used for each assembly and installation required in the *Work*.
    - .1 Coordinate with project firestopping manual specified under Section 01 33 00.
  - .2 Manual shall include manufacturer's *Product* data sheets as specified under "*Product* data sheets" heading in Section 07 84 00.

#### 1.4 Closeout Submittals

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Submit the following for inclusion in the operation and maintenance manual:
  - .1 Letter signed by firestopping and smoke seal manufacturer on manufacturer's letterhead verifying that installed firestopping and smoke seal *Products* are suitable for the use indicated and comply with requirements of the *Contract Documents*.
  - .2 Letter signed by firestopping and smoke seal installer on installer's letterhead verifying that joint firestopping system installations are completed and that installations comply with listed systems designs and requirements of the *Contract Documents*.

Joint Firestopping and Smoke Seals

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## 1.5 Quality Assurance

### .1 Qualifications:

.1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified. In addition:

.1 Installer shall be approved in writing by the firestopping manufacturer.

.2 Applicator shall designate a single individual as *Project* foreperson who shall be present at the *Place of the Work* at all times throughout the work of this section when the work of this section is being performed.

## 1.6 Warranty

.1 Warrant work of this section in accordance with Section 01 78 36.

.2 Extended warranty:

.1 Labour, materials, and workmanship for work of this section.

.2 Duration: 2 years.

## PART 2 - PRODUCTS

### 2.1 Manufacturers

.1 General: Manufacturers of firestopping and smoke seal system *Products* and installation specialists for the work of this section are limited to applicable assemblies as required for the *Work* and having listing mark on packaging.

.2 Subject to compliance with requirements, provide products by one of the following:

.1 3M Canada Inc.

.2 Hilti Canada Corp.

.3 NUCO Inc.

.4 STI Firestop.

.5 Tremco Commercial Sealants & Waterproofing.

### 2.2 Performance/Design Requirements

.1 Single source responsibility:

.1 Provide *Products* from one manufacturer for the work of this section, including accessory *Products* and materials.

.1 Where manufacturer does not manufacture or supply required accessory *Products* and materials, any such accessory *Products* or materials supplied for use in the *Work* shall have approval from manufacturer for use as part of the final warrantied installation.

.2 Firestop and smoke sealant systems shall consist of material, or combination of materials installed to retain integrity of fire-rated construction by effectively impeding spread of flame, smoke, and/or hot gasses through perimeter joint or gaps, construction joints, or at perimeter fire containment in or adjacent to fire-rated barriers.

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Joint Firestopping and Smoke Seals

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- .3 Smoke sealants applied over firestopping materials or combination smoke seal/firestop seal material shall form air tight barriers to prevent passage of gas and smoke.
- .4 Fire-resistance rating of firestopping system shall be equivalent to rating of adjacent floor, wall or other fire separation assembly.
- .5 Firestopping system at fire rated assemblies with assembly STC rating requirements shall provide STC rating equal to STC rating of fire rated assembly.
- .6 Confirm locations of exposed/non-exposed firestopping/smoke seal surfaces with *Consultant* prior to application.
- .7 Provide movement capability at movement joints in accordance with design requirements for movement joint.
- .8 Head-of-wall joints; with dynamic designation:
  - .1 Joint assemblies shall permit vertical movement allowing wall to move independent of structure due to forces including, but not limited to, live loads, dead loads, thermal expansion/contraction, and wind sway. Such movement shall not damage the wall assembly or its fire protection components.
    - .1 Provide head-of-wall joints with dynamic designation.
- .9 Regulatory requirements:
  - .1 Joint firestop systems shall be listed in accordance with CAN/ULC-S115-11 and shall achieve required fire resistance rating in accordance with building code.
  - .2 Proposed firestopping and smoke seal materials and methods shall conform to applicable governing codes having local jurisdiction.

## 2.3 Materials

- .1 Firestopping and smoke seal systems shall conform to the following:
  - .1 Have a VOC limit of 250 g/L maximum, unless otherwise specified.
  - .2 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gasses in compliance with requirements of CAN/ULC-S115-11 and not to exceed opening sizes for which they are intended.
  - .3 Provide firestopping materials and systems with FT fire-resistance rating not less than the fire-resistance rating of applicable adjacent assembly.
  - .4 Listed in accordance with CAN/ULC-S115-11.
  - .5 Use only joint firestop systems that have been tested by an accredited third party testing agency for specific fire-rated construction conditions conforming to construction assembly type, joint type and fire-rating requirements for each separate instance.
    - .1 Where there is no specific third party tested and classified firestop system for a particular firestop configuration, submit engineered shop drawings.
  - .6 For joints in fire-separations, provide listed systems designs for the joint firestop and smoke seal systems as required by building code to maintain the integrity of the fire separations.

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Joint Firestopping and Smoke Seals

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- .7 *Products* shall be compatible with abutting dissimilar membranes, architectural coatings, finishes at floors, walls and ceilings. Check with requirements of *Contract Documents* and manufacturer of selected materials being installed.
- .2 Smoke sealants for overhead and vertical joints shall be non-sagging; sealants for floors shall be self-levelling.
- .3 Smoke seal sealant colour at exposed locations: Grey.

## **PART 3 - EXECUTION**

### **3.1 Preparation**

- .1 Examine sizes, anticipated movement and conditions to establish correct thickness and installation of back-up materials.
- .2 Prepare surfaces in accordance with manufacturer's written specifications and to requirements of listed system designs.

### **3.2 Installation**

- .1 Install joint firestopping and smoke seal systems in accordance with manufacturer's written requirements and in compliance with listed system designs. Products and installation requirements must comply with listed system designs.
- .2 For materials that will remain exposed after completing the *Work*, finish to achieve smooth, uniform surfaces. Tool or trowel exposed surfaces.
- .3 Notify *Consultant* when random completed installations are ready for review, as directed by *Consultant*, prior to concealing or enclosing firestopping and as applicable, smoke seals.
- .4 Protect materials from damage on surfaces subjected to traffic.

### **3.3 Identification and Documentation**

- .1 Provide documentation for each joint firestop system application addressed. This documentation is to identify each joint location on the entire Project.
- .2 Documentation for installed joint firestop systems is to include:
  - .1 Sequential location number.
  - .2 Project name.
  - .3 Date of installation.
  - .4 Detailed description of joint firestop system location.
  - .5 Listed firestop system design number or engineered judgment number.
  - .6 Type of joint.
  - .7 Width of joint.
  - .8 Overall length of joint.
  - .9 Number of sides addressed.
  - .10 Hourly rating of firestop joint system to be achieved.
  - .11 Installers name.

Joint Firestopping and Smoke Seals

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**3.4 Field Quality Control**

- .1 Conduct quality control to be in accordance with Section 01 45 00.
  - .1 Field tests and inspections:
    - .1 Examine completed firestop joint installations to ensure proper installation before concealing or enclosing areas. Keep areas of work accessible until inspections are completed.
    - .2 Inspection consultant to review installation of the work of this section and to perform random tests to verify its completion in accordance with the requirements of the *Contract Documents*.
    - .3 Give at least 48 hours notice before operations commence, and arrange for a pre-job conference with *Contractor*, installer, independent inspection and testing company, manufacturer, and *Consultant* present.
    - .4 Independent inspection and testing company shall examine installed firestopping in accordance with ASTM E2174-24 and ASTM E2393-20a. Independent inspection and testing company shall examine firestopping and shall determine, in general, that firestopping has been installed in accordance with requirements of the *Contract Documents* and in compliance with each listed firestop system design.
    - .5 Representatives of the manufacturer(s) shall have access to the *Work*. *Contractor* shall provide assistance and facilities for such access in order that the manufacturer(s) representative(s) may properly perform its function.

**END OF SECTION**

Joint Sealants

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## PART 1 - GENERAL

### 1.1 Summary

- .1 Section includes:
  - .1 Joint sealants – interior locations.
- .2 Section excludes:
  - .1 Glazing system assembly sealants.
  - .2 Mechanical and electrical sealants.
  - .3 Acoustic sealants.

### 1.2 Administrative Requirements

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.
  - .1 The following items shall be addressed at the pre-installation meeting:
    - .1 Analysis of the work and weather conditions.
    - .2 Shape factor of the joint.
    - .3 Recommendations for priming joints.
    - .4 Inspection of surfaces and joints.
    - .5 Compatibility of materials.
    - .6 Backing materials.

### 1.3 Submittals

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
  - .2 Submit manufacturer's and *Product* name for each sealant which will be used in the *Work* prior to commencing the *Work*.
- .3 Samples:
  - .1 Submit "wet sample" sealant colour samples for each sealant *Product* and colour.
- .4 Test and evaluation reports:
  - .1 Test sealant in contact with samples of materials to be sealed to verify adhesion will be achieved and no staining of the material will result. Prepare sample joints at the *Place of the Work* of each type of sealant for each joint condition.
    - .1 Submit test results to *Consultant* prior to application of sealants.
  - .2 Test sealant in contact with samples of porous materials to be sealed to ensure that no staining of the material will result in accordance with ASTM C1248-22.
    - .1 Submit test results to *Consultant* prior to application of sealants.

## Joint Sealants

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### 1.4 Closeout Submittals

- .1 Submit closeout submittals in accordance with Section 01 78 00.
  - .1 Include manufacturer's warranties.
- .2 Maintenance instructions:
  - .1 Submit maintenance instructions for all items for incorporation into the operation and maintenance manuals.

### 1.5 Quality Assurance

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

### 1.6 Warranty

- .1 Warrant work of this section in accordance with Section 01 78 36.

## PART 2 - PRODUCTS

### 2.1 Performance/Design Requirements

- .1 Interior sealants shall have a VOC limit of 50 g/L maximum, unless otherwise specified, and comply with South Coast Air Quality Management District (SCAQMD) Rule 1168, Adhesive and Sealant Applications.
- .2 Joint sealants:
  - .1 Shall perform as air tight and water-tight joints.
  - .2 Defects shall include, but are not limited to:
    - .1 Staining from abutting materials or filler.
    - .2 Migrating, bleeding into, or staining abutting materials.
    - .3 Unsightly surface deformation.
    - .4 Excessive colour change, chalking, or dust pick-up.
    - .5 Failing adhesively or cohesively where maximum elongation is less than 25% of designed width of exposed joints.
    - .6 Hardening to more than 25% over specified hardness.

### 2.2 Sealants

- .1 General:
  - .1 Colours: Sealant colours shall match colours of adjacent materials, as selected and approved by *Consultant*.
    - .1 Colours: shall be selected from manufacturer's full range of colours.
  - .2 In accordance with ASTM C920-18 and other requirements indicated for each liquid-applied chemically curing sealant, including those referencing ASTM C920-18 classifications for type, grade, class, and uses.

Joint Sealants

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- .3 For sealants to be applied to porous substrates:
  - .1 Provide products that have undergone testing in accordance with ASTM C1248-22 and have not stained porous joint substrates indicated for *Work*.
- .4 Sealant supplied shall not exude any material(s) which travel into adjacent materials, or travel onto surfaces of adjacent materials; causing damage, or attracting soiling, which becomes apparent during the service life of the building.
- .2 Interior general sealants:
  - .1 VOC limit: Maximum 50 g/L, unless otherwise indicated.
  - .2 Interior sealant; at joints with painted gypsum board: one-component paintable acrylic in accordance with ASTM C834-17 Type OP; or polyurethane in accordance with ASTM C920-18 Type S, Grade NS, Class 35.
    - .1 Acceptable *Products*:
      - .1 Acrylic sealants:
        - .1 Tremco, Inc. 'Tremflex 834'.
      - .2 Polyurethane sealants:
        - .1 Sika 'Sikaflex 1A'.
      - .3 Substitutions: in accordance with Section 01 25 00.
  - .3 Interior sealant; gap filler: at movement paintable joints in vertical surfaces: One-component polyurethane sealant in accordance with the following: ASTM C920-18, Type M or S, Grade NS, Class 25.
    - .1 Acceptable *Products*:
      - .1 Sika 'Sikaflex 15LM'.
      - .2 Substitutions: in accordance with Section 01 25 00.
  - .4 Interior sealant; at movement joints in vertical surfaces: one-component polyurethane sealant in accordance with the following: ASTM C920-18, Type M or S, Grade NS, Class 25.
    - .1 Acceptable *Products*:
      - .1 Sika 'Sikaflex NP 1'.
      - .2 Sika 'Sikaflex 15LM'.
      - .3 Tremco, Inc. 'Dymonic 100'.
      - .4 Substitutions: in accordance with Section 01 25 00.
  - .5 Interior sealant; at vertical and trafficable movement joints: one-component low modulus silicone sealant in accordance with the following: ASTM C920-18, Type S, Grade NS, Class 100/50.
    - .1 Acceptable *Products*:
      - .1 DOWSIL '790'.
      - .2 Momentive 'Silpruf LM SCS2700'.
      - .3 Sika 'Sikasil WS-290'.



## Joint Sealants

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- .4 Tremco, Inc. 'Spectrem 1'.
- .6 Interior sealant; mildew resistant one part silicone sealant; healthcare facilities: in accordance with FDA Regulation No. 21 CFR 177.2600, ASTM C920-18, Type S, Grade NS, Class 25, CAN/CGSB 19.22-M89.
- .1 *Acceptable Products:*
  - .1 DOWSIL '786'.
  - .2 Substitutions: in accordance with Section 01 25 00.

### 2.3 Accessories

- .1 General: Provide joint sealants, primers, backings, and fillers that are compatible with one another and with joint substrates and other sealants or joint fillers specified and approved for applications indicated under joint sealant scheduled and under conditions of service and application as demonstrated by joint sealant manufacturer based on proven test results and field experience. When incompatible, inform *Consultant* and change to compatible type acceptable to *Consultant*.
- .2 Cylindrical sealant backings (backer rods): Provide joint backings that meet ASTM C1330-18, Type O (open-cell polyurethane), or Type B (non-absorbent bi-cellular backing materials with surface skin), sized 25 percent or greater than joint opening with proper density to control sealant depth and profile. Follow joint sealant manufacturer's recommendations with backing selections for optimum joint sealant performance, in accordance with the following schedule:
  - .1 Use open cell foam with non-absorbing closed cell skin (Sof-Rod) for vertical joints; round shape for open joints and triangular shape for angular joints.
  - .2 Use closed cell foam for horizontal joints.
- .3 Bond-breaker tape: Polyethylene tape or other approved plastic tape as recommended by joint sealant manufacturer to prevent 3-sided joint adhesion to rigid, inflexible joint fillers or joint surfaces at back of joint where such adhesion would restrict proper sealant movement or result in sealant failure.
- .4 Masking tape: Non-staining, non-absorbent and compatible with joint sealants and adjacent surfaces.
- .5 Sealant primers: Use primers only as recommended by sealant manufacturer where required to enhance adhesion of sealant to specific joint substrates indicated and as determined for use from pre-construction mock-up testing. Select primers in consultation with sealant manufacturer and manufacturer of substrate material which do not have a detrimental effect on sealant adhesion or in-service performance.
- .6 Cleaners for nonporous surfaces:
  - .1 Provide non-staining, chemical cleaners of type which are acceptable to manufacturer of sealant and sealant backing material, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
  - .2 Provide cleaner conditioner required for glass and glazed surfaces as recommended by sealant manufacturer.

Joint Sealants

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## **PART 3 - EXECUTION**

### **3.1 Manufacturer's Recommendations**

- .1 Unless specified otherwise herein, comply with the recommendations and directions of the manufacturer whose materials are being used in the work of this section.

### **3.2 Preparation**

- .1 Protect adjacent work areas and finished surfaces from damage during joint sealant installation.
- .2 Clean and prepare joint surfaces and substrates in accordance with ASTM C1193-25 and outlined by joint sealant manufacturer's written requirements.
- .3 Prepare rusting or scaling surfaces using abrasive cleaning methods as recommended by joint sealant manufacturer prior to joint sealant installation. Remove and neutralize efflorescence, mould, mildew and algae prior to joint sealant installation.
- .4 Prepare finish-coated surfaces per joint sealant manufacturer's specific recommendations.
- .5 Test materials for indications of staining or poor adhesion before any sealing is commenced. Submit reports in writing to *Consultant* of results.
- .6 Do not proceed with installation of joint sealants under the following conditions:
  - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer, or are below 5°C (40°F).
  - .2 When joint substrates are wet.
  - .3 Where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
  - .4 Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

### **3.3 Masking**

- .1 Where necessary to prevent contamination or marring surfaces of adjacent materials, mask areas adjacent to joints with masking tape prior to priming or sealing application. Remove tape immediately after joint has been completed and an initial set achieved.

### **3.4 Installation**

- .1 Install in accordance with joint sealant manufacturer's installation written requirements for products, primers and applications indicated unless more stringent project-specific instructions or requirements apply.
- .2 Apply joint sealants for continuous waterproof sealant joint protection. Lap vertical joints over horizontal joints as recommended by sealant manufacturer. Comply with installation recommendations in ASTM C1193-25 for use of joint sealants as applicable to each specific sealant installation.

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Joint Sealants

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- .3 Install sealant primers only when recommended by sealant manufacturer and demonstrated at pre-construction tests after joint surface preparation has been completed and when surfaces are verified as clean and dry. Allow any primer installation to completely dry or cure prior to installation of backing or joint sealants. Primer is mandatory for gun applied sealants.
- .4 Install joint sealants using proven techniques that comply with the following and in proper sequence with installation of primers and backings.
  - .1 Using proper joint sealant dispensing equipment, place sealants by pushing sealant beads into opening to fully wet-out joint sealant substrates. Fill sealant joint opening to full and proper configuration.
  - .2 Provide uniform cross-sectional shapes and depths in relation to joint width for optimum sealant movement capability per joint sealant manufacturer's written requirements.
- .5 Joint sealant tooling is required for non-sag joint sealant installations. Immediately after placing fresh sealants and before skinning or curing begins, tool sealants using metal spatulas designed for this purpose in accordance with manufacturer's recommendations. Provide a smooth, uniform sealant finish, eliminating air pockets and ensuring good contact for optimum sealant adhesion within each side of the joint opening.
  - .1 Provide concave joint configuration as indicated per figure 5-A in ASTM C1193-25 unless otherwise indicated.
  - .2 Use tooling agents that are approved in writing by sealant manufacturer and that do not discolour sealants or adjacent surfaces.
  - .3 Remove excess sealant from surfaces adjacent to joint openings using metal spatula, promptly cleaning any sealant residue from adjacent finished surfaces. Remove masking after joint sealant is installed.
- .6 Allow single-component sealants to fully cure before adhesion testing is performed as recommended by joint sealant manufacturer.
- .7 Match approved sealant mock-up for colour, finish and overall aesthetics. Remove, refinish or re-install work not in compliance with the *Contract Documents*.
- .8 When surfaces of adjacent materials are to be painted, perform sealant work before these surfaces are painted.
- .9 Check form release agent used on concrete for compatibility with primer and sealant. If they are incompatible inform *Consultant* and change primer and sealant to compatible type, or clean concrete to sealant manufacturer's acceptance.
- .10 Install joint backing material, filler strips, gaskets, bond breakers and similar type material of comparable performance characteristics. Install bond breaker tape or packing over asphalt impregnated fibre board as recommended by sealant manufacturer.
- .11 Where joints are 12.7 mm (1/2") or deeper, insert backing material in continuous uniform compression with setback from finished face of adjoining materials equal to required depth of sealant (width/depth ratio) as specified herein.
- .12 On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.

### Joint Sealants

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- .13 Install bond breaker tape in bottom of joints in lieu of sealant backing where proper depth cannot be obtained when backing is installed.
- .14 Maintain correct sealant depth. Sealant depth shall be 1/2 the width of the joint, maximum depth shall be 12.7 mm (1/2"), minimum depth shall be 6 mm (1/4"). Comply with manufacturer's written recommendations.
- .15 Fillet bead sealant joints to be sized to provide proper contact area with substrates, in accordance with manufacturer's written recommendations.
- .16 Apply sealants using pressure-operated guns fitted with suitable nozzles in accordance with manufacturer's directions. Apply sealants in such manner as to ensure good adhesion to sides of joints and to completely fill voids in joints.
- .17 Apply sealants so that surfaces of joints are smooth, full bead, free from ridges, wrinkles, sags, air pockets and embedded impurities. Tool sealant surfaces to produce a smooth surface.
- .18 Install sealant with exterior face of sealant set back 10 mm (3/8") from face of adjacent materials at building movement joints, unless otherwise indicated.
- .19 Do not apply sealants to areas where installation of paints, coatings or flooring is in progress. Apply sealants after such work is complete and fully cured.

### 3.5 Interior Sealant Schedule

- .1 Include in work of this section sealants to seal open joints in surfaces exposed to view, and to make building weather-tight and air-tight, as applicable, as indicated, and as otherwise specified, except where specified under the work of other sections.
- .2 Install sealant to:
  - .1 Movement and control joints on exposed insitu concrete walls.
  - .2 Interior control and expansion joints in floor and wall surfaces.
  - .3 Raked out joints at junctions of masonry with concrete walls and columns, and at intersection of masonry walls and partitions where joint reinforcement is installed.
  - .4 Perimeters of exterior and interior door and window frames.
  - .5 Joints at tops of non-load bearing masonry walls at the underside of insitu concrete.
  - .6 Exposed interior control joints in gypsum board.
  - .7 Millwork junctions with walls.
  - .8 Laboratory casework and floor finishes.
- .3 Mildew resistant sealant:
  - .1 Perimeter joints of wet fixtures such as:
    - .1 Water closets.
  - .2 Counter/wall junctions at countertops.
  - .3 At wet areas not listed above.
  - .4 At resilient flooring and resilient base.

Joint Sealants

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**3.6 Adjusting and Cleaning**

- .1 Remove droppings and clean off excess sealant or sealant residue adjacent to sealant joint installations as the work progresses by methods approved by joint sealant manufacturer before material achieves initial set.
- .2 Do not damage adjacent surfaces with harmful removal techniques and protect finished surfaces beyond those that have been masked.
- .3 Remove and replace damaged joint sealants.
- .4 Remove temporary coverings and masking protection from adjacent work areas upon completion.

**3.7 Protection**

- .1 Protect installed sealants during and after final curing from damage resulting during construction.

**END OF SECTION**

Steel Doors and Frames

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Hollow metal doors and panels (steel doors).
  - .2 Metal frames (steel frames, transom frames).
  - .3 Metal frames (steel frames for screens, sidelights, window assemblies).

### **1.2 Administrative Requirements**

- .1 Coordination:
  - .1 Cooperate fully with finish hardware distributor's representative during preparation of shop drawings and execution of shop fabrication.
  - .2 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Submit copy of NAAMM-HMMA 840-17 standard.
- .3 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .4 Shop drawings:
  - .1 Include details of each door and frame type, finish hardware types and locations, frame profiles, door and frame elevations, mitre details, fire protection rating, glazing preparation details and anchor details and locations.
  - .2 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and in door schedule.
  - .3 Electrified hardware requirements and preparations shall be clearly indicated on shop drawings.

### **1.4 Quality Assurance**

- .1 Qualifications:
  - .1 Manufacturers:
    - .1 Provide doors and frames manufactured by a firm specializing in the design and production of hollow metal steel doors and frames.
    - .2 Manufacturer shall be a member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).

Steel Doors and Frames

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**1.5 Product Handling**

- .1 Product handling shall be in accordance with Section 01 60 00 as supplemented by the requirements of this section.
- .2 Product handling shall be in accordance with CSDMA Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

**1.6 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.
- .2 Extended warranties:
  - .1 System:
    - .1 Labour, materials, and workmanship for work of this section.
    - .2 The warranty is a total system warranty, and includes hardware, sealants, hanging and fitting, and finishing.
    - .3 Duration: 2 years.
  - .2 Glass and glazing: in accordance with Section 08 80 00.

**PART 2 - PRODUCTS**

**2.1 Manufacturers**

- .1 All Steel Doors 2000 Ltd.
- .2 Apex Industries Inc.
- .3 Artek Door (1985) Ltd.
- .4 Baron Steel Doors & Frames.
- .5 Daybar Industries Ltd.
- .6 De La Fontaine.
- .7 Diamond Manufacturing.
- .8 Fleming- Door Products.
- .9 M.J. Daley Manufacturing Co. Ltd.
- .10 Trillium Steel Doors Limited.
- .11 Vision Hollow Metal Limited.

**2.2 Performance/Design Requirements**

- .1 Insulated metal doors shall be tested to meet an operable U-value of 2.56 W/m<sup>2</sup>.K (0.450 Btu/hr.ft<sup>2</sup>.°F).
- .2 Fire rating requirements:
  - .1 Fire rated labelled doors and frames: tested in accordance with CAN/ULC-S104-15 and listed by a nationally recognized agency having a factory inspection service and shall be constructed as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

## Steel Doors and Frames

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- .2 Install fire labelled steel door and frame products in accordance with NFPA 80-2013, except where indicated otherwise.
- .3 Doors and frames shall function as intended, including but not limited to:
  - .1 Be in true alignment.
  - .2 Operate and swing freely, smoothly, and easily.
  - .3 Remain stationary at any point.
  - .4 Close evenly and tightly against stops without binding.
  - .5 Latch positively when doors are closed with moderate force.

### 2.3 Materials

- .1 Steel:
  - .1 Fabricated from tensioned levelled steel in accordance with ASTM A924/A924M-22a, galvanized in accordance with ASTM A653/A653M-18, Commercial Steel CS, Type B.
  - .2 Steel shall be free of scale, pitting, coil breaks, surface blemishes, buckles, waves, and other defects.
  - .3 Minimum sheet thickness; uncoated steel sheet: in accordance with Appendix 1 of ANSI/NAAMM HMMA 861-14 "Guide Specifications for Commercial Hollow Metal Doors and Frames".
  - .4 Finish: Minimum Galvanneal coating designation ZF120 (A40).
- .2 Door core materials:
  - .1 Honeycomb: Structural small cell 25 mm (1") maximum kraft paper 'honeycomb'. Weight: 36.3 kg (80 lb) per ream (minimum). Density: 16.5 kg/m<sup>3</sup> (1.03 pcf) minimum, sanded to required thickness.
- .3 Adhesives:
  - .1 Heat resistant, single component, polyurethane reactive (water) hot melt, thermoset adhesive.
  - .2 Lock seam doors: fire resistant, resin reinforced polychloroprene, high viscosity sealant-adhesive.
- .4 Primer: rust inhibitive for touch-up.
- .5 Finishing hardware: in accordance with Section 08 71 00.
- .6 Miscellaneous:
  - .1 Door silencers: single stud rubber or neoprene type.
  - .2 Vision frame light kits for doors:
    - .1 Accurately fitted, mitred at corners and fastened to frame opening with counter-sunk oval head sheet metal screws. Locate exposed fasteners to glazing face as directed by *Consultant*.
    - .2 Finish:
      - .1 Baked enamel finish.



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Steel Doors and Frames

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.3 *Acceptable Product:*

- .1 Air Louver 'VSLH Slimline' Metal Vision Frame.
- .2 Substitutions: in accordance with Section 01 25 00.

**2.4 Fabrication - General**

- .1 Fabricate steel doors, frames, transoms, sidelights and borrowed lights as applicable, to the design and dimensions indicated. Take field measurements where coordination with adjoining work is necessary.
- .2 Fabricate steel doors and frames to be rigid, neat in appearance and free from defects, warp, wave or buckle with all corners square unless otherwise indicated.
- .3 Operating clearances:
  - .1 Provide clearance at floor with allowance made for indicated finish flooring materials.
  - .2 Clearances for Fire-Rated Doors: As required by NFPA 80-2013.
  - .3 Clearances for Non-Fire-Rated Doors: Not more than 3 mm (1/8") at jambs and heads, except not more than 6 mm (1/4") between pairs of doors. Not more than 19 mm (3/4") at bottom.
- .4 Drill and tap or reinforce for mortised or surface mounted hardware in accordance with accepted hardware schedule, ANSI A115, NFPA 80-2013, or manufacturers recommendations.
- .5 Countersink exposed fasteners unless otherwise shown. Use flat or oval head screws.
- .6 Reinforce components to resist stresses imposed by hardware in use.
- .7 Allow for anticipated expansion and contraction of frames and supports.
- .8 Fit elements at intersections and joints accurately together, in true planes, and plumb and level.
- .9 Weld continuously at joints exposed to view or at joints through which air or water could penetrate from the exterior of building to the interior.
- .10 Perform welding in accordance with CSA W59-24.
- .11 Mortise, reinforce, drill and tap to receive hardware and security devices using templates provided by respective *Supplier*.
- .12 Touch up finish damaged during fabrication.
- .13 Prepare doors or frames to receive seals where seals are indicated.
- .14 Attach labels to suit required fire-protection ratings.

**2.5 Fabrication - Steel Doors and Panels**

- .1 Fabricate steel doors and panels to a thickness of 45 mm (1-3/4"), unless indicated otherwise.
- .2 Interior and non-insulated doors and panels:
  - .1 Face sheets fabricated from 1.06 mm (0.042") (18 gauge) steel.

### Steel Doors and Frames

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- .2 Honeycomb core.
- .3 Longitudinal edges mechanically interlocked.
  - .1 Adhesive assisted with edge seams visible. Tack welded at top and bottom of door, 150 mm (6") on centre, and above and below each edge cutout, filled and ground smooth with no visible seams.
- .3 Fabricate of composite metal face construction with each face formed from flush sheet steel without visible seams, free of scale, pitting, coil brakes, buckles and waves.
- .4 Formed edges shall be true and straight with minimum radius for the thickness of steel used.
- .5 Lock and hinge edges shall be bevelled 3 mm in 50 mm (1/8" in 2") unless hardware or door swing dictates otherwise.
- .6 Top and bottom of doors shall be provided with inverted, recessed, 1.34 mm (0.053") (16 gauge) steel end channels, welded to each face sheet at 50 mm (2") on centre maximum.
- .7 Prior to shipment, mark each door with an identification number as shown on the approved submittal drawings.
- .8 Blank, reinforce, drill and tap doors for mortised, templated hardware. Locate hardware to manufacturer's standard unless indicated otherwise.
- .9 Holes 12.7 mm (1/2") and larger shall be factory prepared.
- .10 Glazing:
  - .1 For glazing use vision frame light kits as specified above.
  - .2 Glazing trim and stops shall be accurately fitted (within 0.39 mm (0.015") tolerance), butted at corners, with removable glazing stops located on the 'push' side of the door.

## 2.6 Fabrication - Steel Frames

- .1 General: Applicable to frames, transom panel frames, sidelights, and window assemblies.
- .2 Interior and non-thermally broken frames; welded:
  - .1 Fabricated from:
    - .1 1.34 mm (0.053") (16 gauge) steel.
  - .2 Supplied set-up and welded (SUW).
- .3 Factory assembled frame product shall be square, free of defects, warps or buckles.
- .4 Set-up and welded corner joints (SUW):
  - .1 Profile welded—punch mitred, continuously welded on inside of the profile faces, rabbets, returns and soffit intersections, with exposed faces filled and ground to a smooth, uniform seamless surface, as defined in the CSDMA - "Recommended Specifications for Commercial Steel Door and Frame Products".
- .5 Set-up and welded joints at mullions, sills and center rails:
  - .1 Coped accurately, butted and tightly fitted.

Steel Doors and Frames

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- .2 At intersecting flush profile faces, securely weld, fill and grind to flush, smooth, uniform, seamless surface.
- .3 At intersecting recessed profile faces, securely weld to concealed reinforcements, with exposed hairline face seams.
- .4 At other intersecting profile elements make exposed face seams to hairline tolerance.
- .6 Where required due to site access, when required for co-ordination or installation, or shipping limitations, frame product shall be fabricated in sections for splicing in the field.
  - .1 Field spliced jambs, heads and sills shall be provided with 1.34 mm (0.053") (16 gauge) steel splice plates securely welded into one section, extending 100 mm (4") minimum each side of splice joint.
  - .2 Field splices at closed sections (mullions or center rails) shall be 1.34 mm (0.053") (16 gauge) steel splice angles securely welded to the abutting member. Face of splice angle shall extend 100 mm (4") minimum into closed sections when assembled.
  - .3 Field splice joints shall be welded, filled and ground to present a smooth uniform surface by the installation company responsible for installation after assembly.
- .7 On factory assembled frame product, provide 2 temporary steel shipping bars welded to the base of the jambs or mullions to maintain alignment during shipping and handling. Remove shipping bars prior to anchoring of frames to floor.
- .8 Each door opening shall be prepared for single stud door silencers. Silencers shall be shipped loose for installation by installer, after finish painting.
  - .1 Single interior doors: 3 at strike jamb.
  - .2 Sound, light, or smoke sealed doors: None required.
  - .3 Transom panels: 2 at each jamb.
- .9 Prior to shipment, mark each frame with an identification number as shown on the approved submittal drawings.
- .10 Provide mullions and transom bars of closed construction type. For fixed condition, attach members to frame with butt-welded joints. For removable condition, attach members with removable mullion anchors.
- .11 Conceal fastenings unless otherwise indicated.
- .12 Anchor frames to floor by 1.34 mm (0.053") (16 gauge) thick angle clips, welded to frame and provide with 2 holes for floor anchorage.
- .13 Grind welded corners to a flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .14 Protect strike and hinge reinforcements using guard boxes welded to frames at masonry construction.
- .15 Reinforce head of frames wider than 1220 mm (48").
- .16 Brace frame units to prevent distortion in shipment and protect finish.

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Steel Doors and Frames

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## **2.7 Hardware Reinforcements and Preparations**

- .1 Door and frame product shall be blanked, reinforced, drilled and tapped at the factory for fully templated mortise hardware only, in accordance with the approved hardware schedule and templates provided by the hardware supplier.
- .2 Door and frame products shall be factory blanked and reinforced only for mortised hardware that is not fully templated.
- .3 Where surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware are required frame product shall be reinforced only, with drilling and tapping done by field installation.
- .4 Templated holes 12.7 mm (1/2") diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be by installation on site. Templated holes less than 12.7 mm (1/2") diameter shall be factory prepared only when required for the function of the device (for knobs, levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.
- .5 Hinge reinforcements shall be 3.12 mm (0.123") (10 gauge) steel minimum, high frequency type shall be provided.
- .6 Frames shall be prepared for 114 mm (4.5") standard weight hinges minimum unless otherwise indicated.
- .7 Doors and frames in excess of 2450 mm (96") rabbet height shall be prepared for 114 mm (4.5") heavy weight 4.6 mm (0.180") hinges minimum.
- .8 Lock, strike and flush bolt reinforcements shall be 1.34 mm (0.053") (16 gauge) steel minimum, with extruded tapped holes that provide equivalent number of threads as 2.36 mm (0.093") (12 gauge).
- .9 Reinforcements for surface mounted hardware, concealed closers and holders and flush bolts shall be 1.06 mm (0.042") (18 gauge) steel minimum.
- .10 Reinforcements are not required for surface applied hardware supplied with thru-bolts and spacers or sex-bolts.
- .11 Provide hardware mortises on perimeter frame members to be grouted in masonry or concrete partitions with 0.66 mm (0.026") (22 gauge) steel grout guards.
- .12 Electrified hardware:
  - .1 Where electrically or electronically operated hardware is specified on the schedules or details or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on the templates, shall be provided and inter-connected with CSA approved 12.7 mm (1/2") diameter conduit and connectors.
  - .2 Refer to electrical documents for general electrical rough-in details. At door locations indicated in electrical documents as requiring rough-in only of electrical (ie. where no electrically or electronically operated hardware is specified in the hardware schedule), provide enclosures, boxes, and conduit to permit future installation of devices without removal of grout, demounting of frames, or installation of exposed conduits.
  - .3 Frames:

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Steel Doors and Frames

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- .1 Frames with electrified devices shall include electrical connection boxes sized to accommodate devices specified in Section 08 71 00. At time of frame manufacture, electrical connection boxes shall be supplied by Divisions 26, 27, and 28 for installation into frame by work of this section.
- .2 Frame electrical connection boxes shall be positioned flush to edge of frame face return. Clearance shall be maintained to allow wall material to be consistently applied for length of frame member. Frame connection boxes shall be welded in place and positioned to allow necessary clearance for electrical trade to install conduit and connection components, with conduit layout in a manner that takes conduit up to ceiling in an uninterrupted configuration and to accommodate wire installation.
- .4 Doors:
  - .1 Doors with electrified devices shall be manufactured to include wire raceway in door panel to accommodate electrified devices, such as electric hinge, power transfer units, electrified locks, electrified door closures and electrified exit devices. Construction of raceways shall provide a continuous conduit or channel between entry and exit points to accommodate wire installation after door manufacture.
  - .2 Doors with electrified locks may require extended space to accommodate plug-type connection components or wire collection space. Coordinate with work of Section 08 71 00 and obtain hardware templates for electrified hardware clearly indicated on reviewed shop drawings and prior to door manufacture.

## **2.8 Frame Anchorage**

- .1 Frame products shall be provided with anchorage appropriate to floor, wall and frame construction.
- .2 Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb.
- .3 Frame products for installation in new masonry walls shall be provided with steel adjustable wall anchors of the T-strap, stirrup or wire, 1.34 mm (0.053") (16 gauge) minimum or 3.96 mm (0.156") diameter wire. Straps shall be not less than 50 mm (2") x 254 mm (10") in size, corrugated and/or perforated.
- .4 Frame products installed in steel stud and drywall partitions shall be provided with 0.81 mm (0.032") (20 gauge) steel snap-in or "Z" stud type anchors.
- .5 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4 mm (1/4") diameter, located not more than 150 mm (6") from the top and bottom of each jamb. Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcing and directly opposite on the strike jamb. Each preparation shall be provided with 1.34 mm (0.053") (16 gauge) anchor bolt guides.
- .6 Anchor bolts and expansion shell anchors for the above preparations shall be provided by the installation company.

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Steel Doors and Frames

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- .7 Where frame product is installed prior to construction of the adjacent wall, each jamb shall be provided with 1.34 mm (0.053") (16 gauge) steel floor anchors. Each anchor shall be provided with 2 holes for mounting to the floor and shall be securely welded to the inside of the jamb profile.
- .8 On sidelights or windows exceeding 3 m (9'-10") in width, installed in stud partitions, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above. Extensions shall be fabricated from 2.36 mm (0.093") (12 gauge) steel formed channels, mounting angles and adjusting brackets, with mounting angles welded to the inside of frame head. Formed channels, adjusting brackets and fasteners shall be shipped loose. Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners, on site, by contractor responsible for installation.

## **2.9 Sizes and Tolerances**

- .1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of  $\pm 1.6$  mm ( $\pm 0.063$ ").
- .2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of  $\pm 1.2$  mm ( $\pm 0.047$ ").
- .3 Unless finishing hardware dictates otherwise, doors shall be sized so as to fit the above openings and allow a 3 mm (1/8") clearance at jambs and head. A clearance of 19 mm (3/4") between the bottom of the door and the finished floor (exclusive of floor coverings) shall be provided. Tolerances on door sizes shall be  $\pm 1.2$  mm ( $\pm 0.047$ ").
- .4 Manufacturing tolerances on formed frame profiles shall be  $\pm 0.8$  mm ( $\pm 0.031$ ") for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbets shall be  $\pm 1.6$  mm ( $\pm 0.063$ ") and  $\pm 0.4$  mm ( $\pm 0.016$ ") respectively. Hardware cut-out dimensions shall be as per template dimensions,  $\pm 0.4$  mm ( $\pm 0.015$ ").

## **2.10 Hardware Locations**

- .1 Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified under "Sizes and Tolerances" heading in Section 08 11 13.
- .2 Top of upper hinge preparation for 114.3 mm (4.5") hinges shall be located 180 mm (7.5") down from head, transom mullion or panel as appropriate. The top of the bottom hinge preparation for 114.3 mm (4.5") hinges shall be located 310 mm (12.625") from finished floor as defined under "Sizes and Tolerances" heading in Section 08 11 13. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts.
- .3 Strike preparations for unit, integral, cylindrical and mortise locks and roller latches shall be centered 1033 mm (40-5/16") from finished floor. Strikes for deadlocks shall be centered at 1220 mm (48") from finished floor. Strikes for panic or fire exit hardware shall be located as per device manufacturer's templates.
- .4 Push and/or pulls on doors shall be centered 1070 mm (42") from finished floor.
- .5 Preparations not noted above shall be as per hardware manufacturer's templates.
- .6 Hardware preparation tolerances shall comply with the ANSI A115 standards.

Steel Doors and Frames

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## **PART 3 - EXECUTION**

### **3.1 Examination**

- .1 Provide necessary grounds, bracing and strapping for fitting and adequate for securing of the work.
- .2 Cooperate with work of other sections to ensure fastenings set by others are provided and located, their work is installed to their specifications and that those responsible for back priming are notified in sufficient time for them to schedule work.

### **3.2 Installation - Steel Doors and Frames**

- .1 Set frame product plumb, square, aligned, without twist at correct elevation in accordance with NAAMM-HMMA 840-17, maintaining clearances and hardware locations specified in Section 08 11 13.
- .2 Fire labelled product shall be installed in accordance with NFPA 80-2013.
- .3 Frame product installation tolerances:
  - .1 Plumbness tolerance, measured through a line from the intersecting corner of vertical members and the head to the floor, shall be  $\pm 1.6$  mm ( $\pm 1/16$ ").
  - .2 Squareness tolerance, measured through a line  $90^\circ$  from one jamb at the upper corner of the product, to the opposite jamb, shall be  $\pm 1.6$  mm ( $\pm 1/16$ ").
  - .3 Alignment tolerance, measured on jambs, through a horizontal line parallel to the plane of the wall, shall be  $\pm 1.6$  mm ( $\pm 1/16$ ").
  - .4 Twist tolerance, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall, shall be  $\pm 1.6$  mm ( $\pm 1/16$ ").
- .4 Brace frame product rigidly in position while building-in. Remove temporary steel shipping jamb spreaders. Install temporary wood spreaders at mid-point of frame rabbet height to maintain frame widths. Remove wood spreaders after product has been built-in.
- .5 Provide vertical support at center of head for openings exceeding 1250 mm (48") in width.
- .6 Secure anchorages and connections to adjacent construction.
- .7 Adjust operable parts for correct clearances and function.
- .8 Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.
- .9 Remove grout or other bonding material from products immediately following installation.
- .10 Provide appropriate anchorage for floor and wall construction. Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite the strike jamb. On each jamb, install 2 anchors for openings up to and including 1525 mm (60") high and install 1 anchor for each additional height of 760 mm (30") of height or fraction thereof, except as indicated below. Frames placed in previously placed concrete, masonry or structural steel shall be provided with anchors located not more than 150 mm (6") from top and bottom of each jamb, and intermediate anchors at 660 mm (26") on centre maximum.
- .11 Secure frames set in previously constructed concrete or masonry openings by countersunk expansion bolts at same centres as for adjustable Tee wall anchors. Reinforce frame at fastening location to prevent indentation of frame by fastening device.

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Steel Doors and Frames

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- .12 Fill and grind smooth "punch and dimpled" frame installations.
- .13 Prior to site touch-up, exposed surfaces of galvanized steel to be finished shall be cleaned to remove foreign matter. Refer to paint manufacturers recommendations for additional information and requirements of Section 09 91 00.
- .14 Touch-up exposed field welds shall be finished to present a smooth uniform surface and with a rust inhibitive primer.
- .15 Touch-up exposed surfaces that have been scratched or otherwise marred during shipment, installation, and handling shall be with a rust inhibitive primer.
- .16 Finish paint in accordance with Section 09 91 00.
- .17 Install door silencers.
- .18 Properly fasten units and secure in place with concealed fixings wherever possible. Include grounds and furring where required.
- .19 Make allowance for deflection to ensure structural loads are not transmitted to frames.
- .20 Adjust operable parts for correct clearances and function.

### **3.3 Installation - Finishing Hardware**

- .1 Install finishing hardware in accordance with ANSI A115.1G-1994, manufacturers' templates and instructions, and Section 08 71 00.

### **3.4 Adjusting and Cleaning**

- .1 Adjust doors to swing freely, smoothly and easily, to remain stationary at any point, to close evenly and tightly against stops without binding, and to latch positively when doors are closed with moderate force.
- .2 Adjust hardware so that latches and locks operate smoothly and without binding, and closers act positively with the least possible resistance in use. Lubricate hardware if required by *Supplier's* requirements.
- .3 Adjust doors equipped with closers to close doors firmly against anticipated wind and building air pressure, and to enable doors to be readily opened as suitable for function, location, and traffic.
- .4 Clean hardware after installation in accordance with *Supplier's* requirements.

**END OF SECTION**



Interior Aluminum Screen Frames

---

## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Interior aluminum framing system.

### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Clearly indicate fabrication details, plans, elevations, hardware, and installation details.
- .4 Samples:
  - .1 Partition sample to show basic construction, glazed sections, door frames, trim, and finishes.

### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit operation and maintenance data for incorporation into maintenance manual.
- .3 Maintenance materials:
  - .1 Submit 3 extra surface applied mullion pieces and other components for each colour, pattern, and finish specified.

### **1.5 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

- .1 Design system to accommodate glass and glazing as specified or indicated.

Interior Aluminum Screen Frames

---

## **2.2 Manufacturers/Products**

- .1 Interior aluminum screen frames:
  - .1 Traditional profile: 102 mm (4").
  - .2 Surface applied mullions.
  - .3 Widths: as indicated.
  - .4 Acceptable *Product*:
    - .1 Partition Components Incorporated 'PC350 Elite Single Glass'.
    - .2 Substitutions in accordance with Section 01 25 00.

## **2.3 Materials**

- .1 Extruded aluminum: Controlled alloy billets of 6063 T5, to assure compliance with tight dimensional tolerances and maintain colour uniformity.

## **2.4 Finishes**

- .1 Exposed aluminum surfaces:
  - .1 Colour anodized to AAMA 611-24, designation AA-M12C22A44.
  - .1 Black.

## **2.5 Fabrication**

- .1 Pre-machine jambs and prepare for hardware, with concealed reinforcement plates, drilled and tapped as required and fastened within frame with concealed screws.
- .2 Fabricate components to allow secure installation without exposed fasteners.

# **PART 3 - EXECUTION**

## **3.1 Installation**

- .1 Provide manufacturer's information and templates required for installation of work of this section, and assist or supervise, or both, the setting of anchorage devices, and construction of other work incorporated with products specified in this section in order that they function as intended.
- .2 Install work in accordance with manufacturers' requirements and recommendations, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation. Adjust components to allow for irregularities in adjacent construction and relate accurately to finished ceiling and floor coverings.
- .3 Install frames plumb and square, securely anchored to substrates with fasteners recommended by frame manufacturer.
- .4 Use concealed installation clips to assure that splices and connections are tightly butted and properly aligned.
- .5 Secure clips to main structural components and not to snap-in or trim members.
- .6 Do not use screws or other fasteners that will be exposed to view when installation is complete.

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Interior Aluminum Screen Frames

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- .7 Fit joints and junction between components tightly and in true planes, conceal joints where possible.

**3.2 Field Quality Control**

- .1 Conduct quality control in accordance with Section 01 45 00.
- .2 Manufacturer's field review to be in accordance with Section 01 45 00.

**3.3 Adjusting and Cleaning**

- .1 Verify under work of this section that installed products function properly, and adjust them accordingly to ensure satisfactory operation.
- .2 Refinish damaged or defective *Work* so that no variation in surface appearance is discernible.

**END OF SECTION**

Sliding Mirrored Closet Doors

---

## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Sliding mirrored closet doors.

### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Further to requirements of Section 01 33 00, show the proposed system of anchorage and materials being supplied on shop drawings submitted for review.
  - .2 Show hardware items, anchorage devices, dimensions, description of materials and finishes, and all other pertinent information.
- .4 Samples:
  - .1 Submit 2 - samples measuring 305 x 610 mm (12" x 24"), of typical panel, frames and hardware, with final selected finishes.

## **PART 2 - PRODUCTS**

### **2.1 Manufacturer/Product**

- .1 Mirrored sliding door system:
  - .1 Acceptable *Product*:
    - .1 In accordance with Drawings.
- .2 Finish: refer to drawings.

### **2.2 Materials**

- .1 Metal framing: roll formed sheet metal with exposed and semi-concealed surfaces finished in baked enamel, except cut ends.
- .2 Panels: particle board in accordance with CSA CAN3-0188.1-M78, Grade "R", 4 mm (0.157") minimum thickness.
- .3 Mirrors: silvered glass.

### **2.3 Fabrication**

- .1 Fabricate doors from specially designed, roll formed steel framing comprising of panel frames, head tracks and sill tracks.
- .2 Panel stiles and rails shall be constructed of roll formed steel sections, to interlock and be secured with corner connectors. *Provide* top and bottom bumpers on each vertical stile contacting jamb (both ends of each panel).

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Sliding Mirrored Closet Doors

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- .3 *Provide* each panel with top mounted rollers fully adjustable after doors have been set into opening. Provide guide track at bottom. *Provide* neoprene rubber door bumpers.
- .4 Use three (3) panels for openings greater than 2440 mm (96") in width.
- .5 Fabricate panels rigid, rattle proof, flat.
- .6 Fabricate to requirements of CAN/CGSB 82.6-M86.

### **PART 3 - EXECUTION**

#### **3.1 Installation**

- .1 Install in accordance with manufacturer's requirements.
- .2 Install doors securely, flat, plumb and level; make necessary adjustments and ensure quiet, trouble free movement of products.
- .3 Inspect doors at completion and buff up defects or replace as directed.
- .4 Adjust *Work* to ensure free-running, tightly closing operation. Ensure that installation is free from warp, twist or other distortion. Lubricate operating hardware.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 Summary**

#### **.1 Section includes:**

- .1 Supply and off-load to place in a clean, dry, and secure room at the *Place of the Work*, which has been designated for storage of all finish hardware specified including necessary fastening devices.
- .2 Supply all finish hardware required and not supplied under other Sections.
- .3 Check and verify hardware information on door and frame shop drawings, prior to fabrication.
- .4 Packaging, labelling, provision of installation instructions, templates, fixings and similar items, and delivery to the *Work* site.
- .5 Give assistance at the *Place of the Work* to organize hardware storeroom and supply qualified staff to correctly categorize, mark, and arrange each item in groups to enable efficient dispensing in specified hardware groups for each door to installation trades.
- .6 Provide qualified staff at the *Place of the Work* promptly to assist installation trades subsequent to being requested and to ensure that hardware is being correctly installed.
- .7 Upon completion of installation of hardware, hardware *Supplier* shall arrange and conduct, in company of *Consultant* and *Contractor*, inspections to verify that all hardware is installed and functioning satisfactorily, and where necessary shall recommend adjustments of such items as closer arms, valves, door holders and latch and locksets. Report comments in writing to *Consultant* and *Contractor*.
- .8 Supply temporary locking cylinders and keys for construction purposes. Locks used for *Contractor* security shall be keyed as required to conform to building operations' security requirements.

### **1.2 Administrative Requirements**

#### **.1 Coordination:**

- .1 Coordinate work of this section to ensure information and material is promptly provided, to ensure orderly and expeditious progress of the *Work*, and to comply with schedule for completion.
- .2 Within 3 weeks of *Contract* Award, submit confirmed orders to manufacturers/*Suppliers* to *Consultant*.
- .3 Assist *Contractor* to organize hardware storeroom and supply qualified staff to correctly categorize, mark, and arrange each item in groups to enable efficient dispensing in specified hardware groups for each door to installation trades.
- .4 Coordinate the work of this section to ensure supplied hardware can function as required and can be installed within the particular details of the door and frame assemblies. Hardware that cannot be installed or will not function as intended will be replaced at no cost to the *Owner*.

Finish Hardware

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- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### 1.3 Submittals

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Schedules and samples:
  - .1 Prepare and submit for review, a finish hardware schedule for use in the *Work*. List type, selected manufacturer's name and number, location, mounting heights and finish of hardware, and complete cross reference to door schedule.
  - .2 The indication or omission of a hardware component on the hardware schedule does not remove the responsibility of this section to ensure that all hardware can be installed and will function as intended.
  - .3 Submit samples of complete line of hardware and finishes. Identify samples indicating hardware item numbers used in the Finish Hardware Schedule, manufacturer's numbers, names, types, finishes, sizes and indication of door location(s). Approved samples will be retained for comparisons and returned upon completion of the *Work*.
  - .4 Prepare and submit for review, a keying schedule recognizing *Owner* requirements which shall be determined after award of *Contract*.
- .4 Templates:
  - .1 Submit for distribution, 3 copies of templates, template information, installation instructions and details necessary to enable preparation for, and installation of finish hardware in accordance with Door Hardware Institute recommended procedures. Submit templates arranged and marked coincident with specified hardware designations.
  - .2 Submit promptly when requested, the foregoing information in 3-ring plastic hard-covered binders suitably identified.
  - .3 In lieu of templates and template information specified above, and at the sole discretion of door and frame manufacturers, submit manufacturer's standard book of template drawings for each hardware manufacturer.
- .5 Jigs:
  - .1 Submit template jigs for each component to be recessed to enable installation trades to prepare doors to preclude misalignment and improper fit.

### 1.4 Closeout Submittals

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Instruct the *Owner's* designated representative in proper care and preventative maintenance of hardware to assure longevity of operation.
  - .2 Submit maintenance data for cleaning and maintenance of finish hardware.

## Finish Hardware

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.3 Maintenance material:

- .1 Submit to building maintenance staff prior to date of *Substantial Performance of the Work*, two sets of wrenches for door closers, locksets and fire exit hardware.

### 1.5 Quality Assurance

.1 Qualifications:

- .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

### 1.6 Product Handling

- .1 Product handling shall be in accordance with Section 01 60 00 as supplemented by the requirements of this section.
- .2 Package each item of hardware individually, complete with trim and necessary fastenings, and accessories, including wrenches, keys, and other appurtenances required for correct installation. Mark each package as to contents and appropriate use in specified groups.
- .3 Items of hardware subject to handling when installed shall be submitted with an easily removable covering to protect against scratches, abrasions, coating with dissimilar finish materials on adjacent surfaces, and tarnishing.

### 1.7 Warranty

- .1 Warrant work of this section in accordance with Section 01 78 36.

## PART 2 - PRODUCTS

### 2.1 Performance/Design Requirements

- .1 Comply with codes and requirements of governing authorities, and as specified.
- .2 Provide hardware items with characteristics to meet specified fire ratings, and conform to exit requirements of governing authorities.

### 2.2 Materials

- .1 Finish hardware: in accordance with Finish Hardware Schedule.

## PART 3 - EXECUTION

### 3.1 Examination

- .1 Before furnishing any hardware, carefully check *Contract Documents*, verify door swings, door and frame materials and operating conditions, and assure that hardware will fit work to be attached.
- .2 Check shop drawings and frame and door lists affecting hardware type and installation, and verify to correctness thereof, or advise of required revisions. Check that doors, frames and panels requiring additional support are reinforced.
- .3 Point out special requirements to installer. Make final adjustment of hardware, in particular closer arms, valves and locksets, to work properly.



Finish Hardware

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### 3.2 Installation

- .1 Install in accordance with manufacturer's written installation requirements. Refer also to installation requirements indicated, and specified in other sections of specifications.
- .2 Accurately locate and adjust hardware to meet manufacturer's written requirements. Use special tools and jigs as recommended.
- .3 Locate door stops to contact doors 75 mm (3") from latch edge.
- .4 Take delivery of finishing hardware and install, except hardware specified as part of work of another section. Check each item as received.
- .5 Set, fit and adjust hardware according to manufacturer's directions, at heights later directed by *Consultant*. Hardware shall operate freely. Protect installed hardware from damage and paint spotting.
- .6 Sound and weather seals:
  - .1 Install seals to continuously seal entire perimeter of doors. Secure in place with non-ferrous screws, in accurate alignment.
  - .2 Maintain integrity of seal at head of doors fitted with closers. Adapt seals as required to achieve specified performance.
- .7 Pre-drill kickplates and doors prior to installation of kickplates. Apply with water-resistant adhesive and countersunk stainless steel screws.
- .8 Set thresholds on two continuous beads of polyurethane caulking fastened with a minimum of 4 countersunk screws.

### 3.3 Electrified Hardware

- .1 Install electronic components, security components such as magnetic locks, sentronic hold open devices door status switches, card readers, processors, transformers, and other electric devices.
- .2 Power wiring will be supplied and installed by Electrical Divisions 26, 27, and 28 including conduit, boxes and other electrical appurtenances, including connections and terminations. Be responsible for ensuring that all wiring work is done in accordance with the *Suppliers* wiring diagrams and directions.
- .3 Arrange for testing and commissioning of system by the distributor of the system. Submit a copy of reports to the *Consultant*.

### 3.4 Keying

- .1 Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
  - .1 Construction cylinders to be provided complete with IC core. Core will be replaced by Owner's locksmith at end of construction.
- .2 Submit Construction Master Keying (CMK) and Grand Master Keying (GMK) upon completion of the work of this section.

### 3.5 Field Quality Control

- .1 Field tests and inspections:

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Finish Hardware

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- .1 Inspect the installation of finish hardware on an agreed frequency.
- .2 Advise in writing of work being performed that will prejudice the installation or correct operation of items of hardware.
- .3 Ensure items have been installed complete with required trim and accessories, and fastenings are adequately secured and approved. Ensure closer arms, valves, holder devices, locksets and latchsets are correctly adjusted.

**3.6 Adjusting and Cleaning**

- .1 Adjust doors to swing freely, smoothly and easily, to remain stationary at any point, to close evenly and tightly against stops without binding, and to latch positively when doors are closed with moderate force.
- .2 Adjust hardware so that latches and locks operate smoothly and without binding, and closers act positively with the least possible resistance in use. Lubricate hardware if required by *Supplier's* requirements.
- .3 Ensure that doors equipped with closers operate to close doors firmly against anticipated wind and building air pressure, and to enable doors to be readily opened as suitable for function, location and traffic.
- .4 Clean hardware after installation in accordance with *Supplier's* requirements.

**END OF SECTION**

# DOOR HARDWARE

08 71 00

  
PROJECT: Georgian Bay General Hospital – Pharmacy  
1112 St Andrews Dr,  
Midland, ON

  
ARCHITECT: CUMULUS ARCHITECTS INC.  
160 Pears Ave. - Suite 300  
Toronto, ON

Prepared By: Krystal Bacon  
Date: November 26, 2025  
Revised:

## Architectural Hardware Finishes

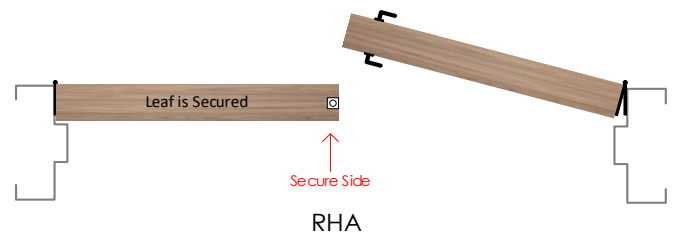
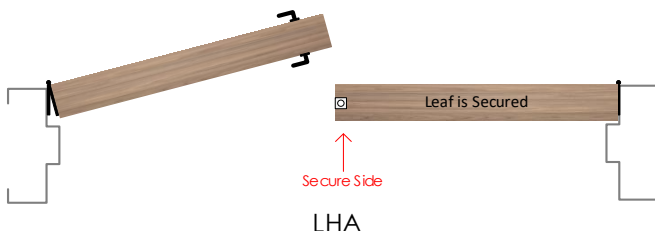
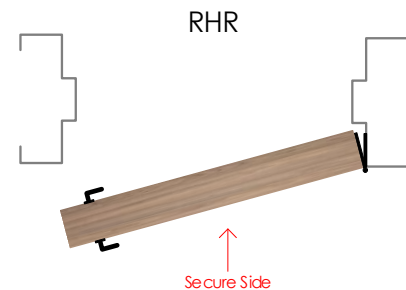
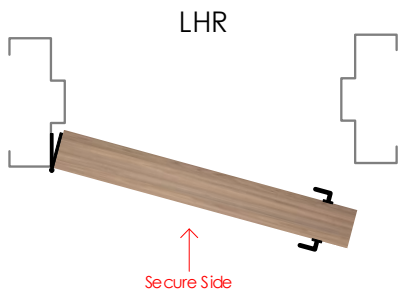
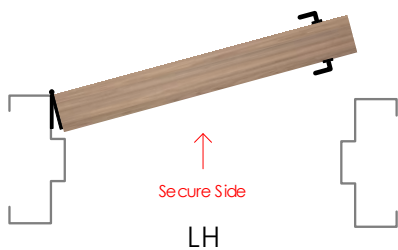
	Steel	Stainless Steel	Brass/Bronze	Aluminum	Paint/Powder Coat	US/CAN
Clear Anodized				628	689	US28
Satin Nickel	646		619	670		US15
Polished Nickel	645		618	669		US14
Satin Stainless Steel		630				US32D
Polished Stainless Steel		629				US32
Satin Chrome	652		626	702		US26D
Polished Chrome	651		625	672		US26
Satin Brass	633		606	667	678	US4
Polished Brass	632		605	666	677	US5
Satin Bronze	639		612	668	680	US10
Oil Rubbed Bronze	640		613	703	695	US10B
Flat Black / Anodized Black	631		622	671	693	US19

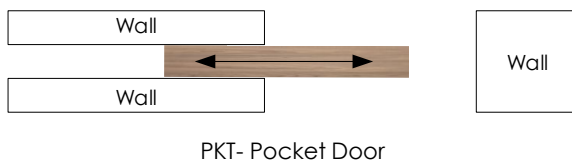
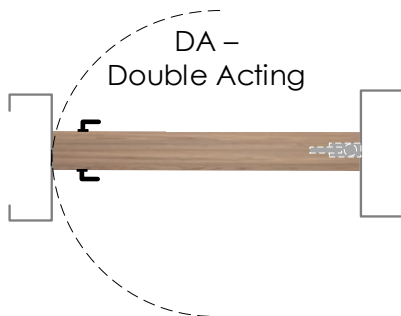
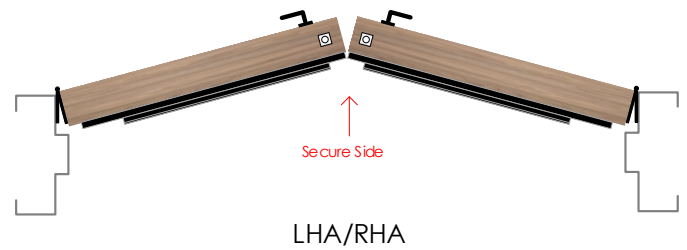
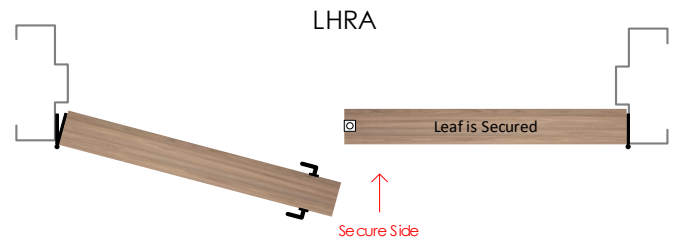
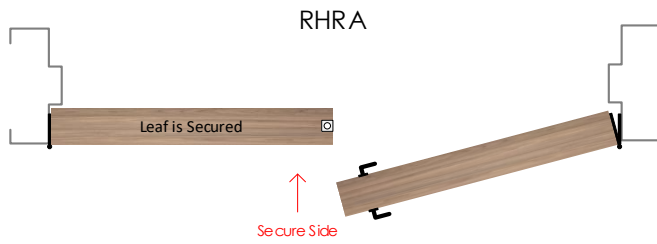
# Door Handing's

## Abbreviations

RH = Right Hand	RHA = Right Hand Active	SS = Single Slider
LH = Left Hand	LHA = Left Hand Active	BP = Bi-Parting Slider
RHR = Right Hand Reverse	RHA/LHA = Right & Left Hands Active	BF = Bi-Folding Slider
LHR = Left Hand Reverse	RHRA/LHRA = Right & Left Hand Reverse Active	TS = Telescopic Slider
RHRA = Right Hand Reverse Active	DA = Double Acting	PKT = Pocket Slider
LHRA = Left Hand Reverse Active	DE = Double Egress	

**NOTE:** The handing of a swing door is determined by placing yourself on the secured or keyed side of the door.





## Products & Alternatives

**NOTE:** Only those products / brands listed here are acceptable and should be used to form a bid price. No unsolicited products will be considered. If acceptable alternates are listed here those too can be used to form a bid price provided, they are exactly the same as the specified item. If using an alternate product to form a price it is the bidder's responsibility to ensure that product is identical in every way to the specified item. If no alternates are listed, no alternate products are acceptable.

[illegible]

## Symbols



- Door has a fire rating and all associated hardware must have a fire label to suit. Must comply with local requirements.



- Door is automatic and is equipped with an auto operator. Door must meet local barrier free codes



- Door has an electrical requirement and requires power to be brought to the appropriate location above the door or to the latch, for either security or barrier free applications. Refer to security & electrical drawings for further information.



- Door requires security card access. Refer to security / electrical drawings for further information.

## Abbreviations

### Door:

HMD = Hollow Metal Door  
IHMD = Insulated Hollow Metal Door  
ALD = Aluminum Door  
SSD = Stainless Steel Door  
ISSD = Insulated Stainless Steel Frame  
STL = Steel Door  
IC-ALD = Insulated Clad Aluminum Door  
SCWD = Solid Core Wood Door  
HCWD = Hollow Core Wood Door  
FGD = Frameless Glass Door  
FRP = Fiberglass Reinforced Plastic Door  
OHD = Overhead Door

### Frame:

HMF = Hollow Metal Frame  
ALF = Aluminum Frame  
Cased Open HMF = Cased Open Hollow Metal Frame  
SSF - Stainless Steel Frame  
STL = Steel Frame  
WDF = Wood Frame  
Cased Open WDF = Cased Open Wood Frame  
Cased Open Drywall = Cased Open Drywall

### Fire Ratings:

0 HR – Zero Hour Fire Rating / Smoke Barrier  
20 MIN – 20 Minute Fire Rating  
¾ HR – 45 Minute Fire rating  
1 ½ HR – 90 Minute Fire Rating  
2 HR – 120 Minute Fire Rating  
3 HR – 180 Minute Fire Rating

## Disclaimer

### Weblinks:

Weblinks do change from time to time as manufacturers move around their websites, please inform us if you have a none functioning weblink.











# HARDWARE SCHEDULE



Heading# 1

Opening Information					
Opening Type:	Single	Opening Size:	914 x 2134 x 44	STC Rating	None
Door Material:	HMD	Frame Material:	HMF	Fire Rating	None

1	Total Openings							
1	Door#	2307	Location:	Corridor 2305	To	Sterile Prep Workroom 2307	Handing:	LH

By Hardware Supplier					
3	Butt Hinge	TA714 – 114 x 102 x HT	652 / US26D / Satin Chrome	McKinney	
1	Passage Set	8215-LNJ	626 / US26D / Satin Chrome	Sargent	
1	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
1	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
1	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
1	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	
By Automatic Operator Supplier					
1	Auto Operator	SW200i-PULL-39" Header	628 / US28 / Clear Anodized	Besam	
2	Wave Buttons	CM-331/42-SSW-SGLR	630 / US32D / Satin Stainless Steel	Camden	

## Notes:

- 120VAC is required at the head of the door for all barrier free door operators, 15A dedicated circuit. Wall/Frame must be reinforced for automatic operator mounting, all conduit and back boxes for actuators, emergency call kits, and washroom locking kits with pull cords are to be provided by the electrical contractor.
- Electrician to confirm wire locations with auto door operator supplier prior to pulling wires.

-----End of Heading-----











Heading#

2

Opening Information					
Opening Type:	Single	Opening Size:	914 x 2134 x 44	STC Rating	None
Door Material:	HMD	Frame Material:	HMF	Fire Rating	None

1	Total Openings							
1	Door#	2310	Location:	Corridor A 2305	To	Office Manager 2310	Handing:	RH







By Hardware Supplier					
3	Butt Hinge	TA714 – 114 x 102 x HT x NRP	652 / US26D / Satin Chrome	McKinney	
1	Storeroom Lockset	70-8204-LNJ	626 / US26D / Satin Chrome	Sargent	
1	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
1	Closer	1431-O	626 / US26D / Satin Chrome	Sargent	
1	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
1	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
1	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	
1	Auto Door Bottom	CT-54 x 914	719 Milled Aluminum	KN Crowder	
By Security Supplier					
1	Card Reader	To Suit Building System, By Security Supplier			
1	Door Contact	To Suit Building System, By Security Supplier			
1	Access Controller	To Suit Building System, By Security Supplier			
1	Rex Sensor	To Suit Building System, By Security Supplier			
1	Power Supply	In Central IT Location			
By Owner					
1	Permanent Cylinder	By Facility Locksmith Hardware to accept 6- or 7-Pin SFIC permanent cores, disposable plastic core provided			

.....End of Heading.....

## Heading# 3

Opening Information					
Opening Type:	Single	Opening Size:	914 x 2134 x 44	STC Rating	None
Door Material:	HMD	Frame Material:	HMF	Fire Rating	None

1	Total Openings							
1	Door#	2311	Location:	Corridor 2305	From	Non Sterile Compounding 2311	Handing:	LHR

By Hardware Supplier					
3	Butt Hinge	TA714 – 114 x 102 x HT	652 / US26D / Satin Chrome	McKinney	
1	Passage Set	8215-LNJ	626 / US26D / Satin Chrome	Sargent	
1	Closer	1431-P9	626 / US26D / Satin Chrome	Sargent	
1	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
1	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
1	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	

.....End of Heading.....



Heading#

4







## Opening Information

<b>Opening Type:</b>	Single	<b>Opening Size:</b>	914 x 2134 x 44	<b>STC Rating</b>	None
<b>Door Material:</b>	HMD	<b>Frame Material:</b>	HMF	<b>Fire Rating</b>	3/4 HR

## 1 Total Openings

1	<b>Door#</b>	2270	<b>Location:</b>	Existing Corridor	To	Corridor 2270	<b>Handing:</b>	RH
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## By Hardware Supplier

3	Butt Hinge	TA714 – 114 x 102 x HT	652 / US26D / Satin Chrome	McKinney	
1	Storeroom Lockset	70-8204-LNJ	626 / US26D / Satin Chrome	Sargent	
1	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
1	Closer	1431-O	626 / US26D / Satin Chrome	Sargent	
1	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
1	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
1	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	
1	Auto Door Bottom	CT-54 x 914	719 Milled Aluminum	KN Crowder	

## By Security Supplier

1	Card Reader	To Suit Building System, By Security Supplier			
1	Door Contact	To Suit Building System, By Security Supplier			
1	Access Controller	To Suit Building System, By Security Supplier			
1	Rex Sensor	To Suit Building System, By Security Supplier			
1	Power Supply	In Central IT Location			

## By Owner

1	Permanent Cylinder	By Facility Locksmith Hardware to accept 6- or 7-Pin SFIC permanent cores, disposable plastic core provided			
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-----End of Heading-----











Heading#

5

Opening Information					
Opening Type:	Single	Opening Size:	914 x 2134 x 44	STC Rating	None
Door Material:	HMD	Frame Material:	HMF	Fire Rating	None

2	Total Openings							
1	Door#	2271	Location:	Corridor 2270	To	Staff Break room 2271	Handing:	LH
1	Door#	2272	Location:	Corridor 2270	To	Med Rec Room 2272	Handing:	RH

By Hardware Supplier					
6	Butt Hinge	TA714 – 114 x 102 x HT	652 / US26D / Satin Chrome	McKinney	
2	Passage Set	8215-LNJ	626 / US26D / Satin Chrome	Sargent	
2	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
2	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
2	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
2	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	
By Automatic Operator Supplier					
2	Auto Operator	SW200i-PULL-39" Header	628 / US28 / Clear Anodized	Besam	
4	Column Push / Wave Buttons	CM-7436VR/4	628 / US28 / Clear Anodized	Camden	

## Notes:

- 120VAC is required at the head of the door for all barrier free door operators, 15A dedicated circuit. Wall/Frame must be reinforced for automatic operator mounting, all conduit and back boxes for actuators, emergency call kits, and washroom locking kits with pull cords are to be provided by the electrical contractor.
- Electrician to confirm wire locations with auto door operator supplier prior to pulling wires.

.....End of Heading.....



Heading#

6

### Opening Information




<b>Opening Type:</b>	Single	<b>Opening Size:</b>	914 x 2134 x 44	<b>STC Rating</b>	None
<b>Door Material:</b>	HMD	<b>Frame Material:</b>	HMF	<b>Fire Rating</b>	None

<b>1</b>	<b>Total Openings</b>							
1	<b>Door#</b>	2273	<b>Location:</b>	Multipurpose Workstation 2274	To	Narcotics Room 2273	<b>Handing:</b>	RH

#### By Hardware Supplier

3	Butt Hinge	TA714 – 114 x 102 x HT	652 / US26D / Satin Chrome	McKinney	
1	Storeroom Lockset	70-8204-LNJ	626 / US26D / Satin Chrome	Sargent	
1	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
1	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
1	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
1	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	

#### By Automatic Operator Supplier

1	Auto Operator	SW200i-PULL-39" Header	628 / US28 / Clear Anodized	Besam	
2	Column Push / Wave Buttons	CM-7436VR/4	628 / US28 / Clear Anodized	Camden	
1	Logic Relay	CX-33		Camden	

#### By Security Supplier

1	Card Reader	To Suit Building System, By Security Supplier			
1	Door Contact	To Suit Building System, By Security Supplier			
1	Access Controller	To Suit Building System, By Security Supplier			
1	Rex Sensor	To Suit Building System, By Security Supplier			
1	Power Supply	In Central IT Location			

#### By Owner

1	Permanent Cylinder	By Facility Locksmith Hardware to accept 6- or 7-Pin SFIC permanent cores, disposable plastic core provided			
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#### Notes:

- 120VAC is required at the head of the door for all barrier free door operators, 15A dedicated circuit. Wall/Frame must be reinforced for automatic operator mounting, all conduit and back boxes for actuators, emergency call kits, and washroom locking kits with pull cords are to be provided by the electrical contractor.
- Electrician to confirm wire locations with auto door operator supplier prior to pulling wires.



Heading#








7

### Opening Information




<b>Opening Type:</b>	Single	<b>Opening Size:</b>	1050 x 2134 x 44	<b>STC Rating</b>	None
<b>Door Material:</b>	HMD	<b>Frame Material:</b>	HMF	<b>Fire Rating</b>	3/4 HR

<b>1</b>	<b>Total Openings</b>						
1	<b>Door#</b>	2275	<b>Location:</b>	Existing Corridor	To	Receiving 2275	<b>Handing:</b> RH

#### By Hardware Supplier

3	Heavy Weight Butt Hinge	TA786 – 127 x 114 x HT	652 / US26D / Satin Chrome	McKinney	
1	Storeroom Lockset	70-8204-LNJ	626 / US26D / Satin Chrome	Sargent	
1	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
1	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
1	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
1	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	
1	Auto Door Bottom	CT-54 x 914	719 Milled Aluminum	KN Crowder	

#### By Automatic Operator Supplier

1	Auto Operator	SW200i-PULL-39" Header	628 / US28 / Clear Anodized	Besam	
2	Column Push / Wave Buttons	CM-7436VR/4	628 / US28 / Clear Anodized	Camden	
1	Logic Relay	CX-33		Camden	

#### By Security Supplier

1	Card Reader	To Suit Building System, By Security Supplier			
1	Door Contact	To Suit Building System, By Security Supplier			
1	Access Controller	To Suit Building System, By Security Supplier			
1	Rex Sensor	To Suit Building System, By Security Supplier			
1	Power Supply	In Central IT Location			

#### By Owner

1	Permanent Cylinder	By Facility Locksmith Hardware to accept 6- or 7-Pin SFIC permanent cores, disposable plastic core provided			
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Notes:

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- 120VAC is required at the head of the door for all barrier free door operators, 15A dedicated circuit. Wall/Frame must be reinforced for automatic operator mounting, all conduit and back boxes for actuators, emergency call kits, and washroom locking kits with pull cords are to be provided by the electrical contractor.
  - Electrician to confirm wire locations with auto door operator supplier prior to pulling wires.

-----End of Heading-----





Heading#








8

### Opening Information


<b>Opening Type:</b>	Single	<b>Opening Size:</b>	914 x 2134 x 44	<b>STC Rating</b>	None
<b>Door Material:</b>	HMD	<b>Frame Material:</b>	HMF	<b>Fire Rating</b>	None

<b>2</b>	<b>Total Openings</b>							
1	<b>Door#</b>	2308	<b>Location:</b>	Sterile Prep Workroom 2307	To	Anteroom 2308	<b>Handing:</b>	RH
1	<b>Door#</b>	2309	<b>Location:</b>	Anteroom 2308	To	Sterile Compounding Room 2309	<b>Handing:</b>	LH


### By Hardware Supplier

6	Butt Hinge	TA714 – 114 x 102 x HT	652 / US26D / Satin Chrome	McKinney	
2	Passage Set	8215-LNJ	626 / US26D / Satin Chrome	Sargent	
2	Electric Strike	1500C	630 / US32D / Satin Stainless Steel	HES	
2	Overhead Stop	6ADJ-336	689 / US28 / Painted Aluminum	Rixson	
2	Kickplate	GSH80A – 203 x 876 x TAPE	630 / US32D / Satin Stainless Steel	Gallery	
2	Smoke / Sound Seal	W-22 x 5235	Black	KN Crowder	
2	Auto Door Bottom	CT-54 x 914	719 Milled Aluminum	KN Crowder	

### By Automatic Operator Supplier

2	Auto Operator	SW200i-PULL-39" Header	628 / US28 / Clear Anodized	Besam	
4	Wave Buttons	CM-331/42-SSW-SGLR	630 / US32D / Satin Stainless Steel	Camden	
2	Multi Function Relay	CX-EMF-2		Camden	

### By Security Supplier

2	Mag Lock	M82BD	628 / US28 / Clear Anodized	Securitron	
2	Card Reader	To Suit Building System, By Security Supplier			
x	Door Contact	In Mag Lock, Security to Wire			
2	Access Controller	To Suit Building System, By Security Supplier			
2	Rex Sensor	To Suit Building System, By Security Supplier			
2	Power Supply	In Central IT Location			
2	Pull Station	By Electrical			

SPYDER SC

2	Fire Alarm Integration	By Electrical			
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#### Theory of Operation:

- Door is normally closed and locked.
- To enter present valid credential at reader which will release maglock, electric strike & make wave buttons operational. Then push lever to open door or use wave buttons to activate ADO
- Multi-Function Relay controls card readers - door 2308 will not operate unless door 2309 is fully closed & vice versa. (mantrap)
- In the event of emergency – pull stations located within the mantrap will release the maglocks & strikes for egress

#### Notes:

- 120VAC is required at the head of the door for all barrier free door operators, 15A dedicated circuit. Wall/Frame must be reinforced for automatic operator mounting, all conduit and back boxes for actuators, emergency call kits, and washroom locking kits with pull cords are to be provided by the electrical contractor.
- Electrician to confirm wire locations with auto door operator supplier prior to pulling wires.

-----End of Heading-----

END OF SCHEDULE

Glass and Glazing

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Glass and glazing.

### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Show details of each type of glazing system in conjunction with the framing system indicating type of glass, sizes, shapes, glazing material and quantity. Show details indicating glazing material, glazing thickness, bite on the glass and glass edge clearance.
- .4 Samples:
  - .1 Submit minimum 305 mm (12") square samples of each type of glass indicated or scheduled.
    - .1 Submit 3 control samples for each glass type showing maximum range of visible difference between units.
    - .2 Submit samples of glass showing each type of shape and finish of glass edge for exposed glass edges.
  - .2 Submit 305 mm (12") long samples for each type of sealant or gasket exposed to view and for each color required, except black.
- .5 Test and evaluation reports:
  - .1 Obtain compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealant as well as other glazing materials including insulating units.
- .6 Submit sample glazing warranty.

### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit maintenance and cleaning instructions for glass and glazing for incorporation into the operating and maintenance manuals.

Glass and Glazing

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## **1.5 Quality Assurance**

### **.1 Qualifications:**

- .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 5 years' experience in application of *Products*, systems, and assemblies specified.
- .2 Manufacturers: manufacturers shall have a minimum of 10 years of fabrication experience.

## **1.6 Warranty**

### **.1 Warrant work of this section in accordance with Section 01 78 36.**

### **.2 Extended warranty:**

#### **.1 General extended warranty:**

- .1 Labour, materials, and workmanship for work of this section.
- .2 Duration: 2 years.

#### **.2 Special product warranty for tempered glass products:**

- .1 Warrant that tempered glass will not break spontaneously as a result of Nickel Sulfide (NiS) inclusions at a rate exceeding 0.8% (8/1000) for a period of five years from the date of manufacture. Warranty shall be manufacturer's standard form in which tempered-glass manufacturer agrees to replace tempered-glass units.
- .2 Duration: 5 years from date of manufacture for fully tempered glass.

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

#### **.1 General:**

- .1 Publications: Comply with recommendations in the publications below, except where more stringent requirements are specified or indicated. Refer to these publications for glazing terms not otherwise defined in this section.
  - .1 NGA's GANA Glazing Manual.
  - .2 NGA Engineering Standards Manual.
  - .3 NGA Laminated Glazing Reference Manual.
  - .4 GANA Sealant Manual.

#### **.2 Regulatory requirements:**

##### **.1 Fire rated glass:**

- .1 Each lite shall bear permanent, non-removable label by accredited and recognized independent testing agency certifying it for use in tested and rated fire protective assemblies.

#### **.3 Glass strength:**

## Glass and Glazing

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- .1 Design glass in conformance with the building code and under conditions indicated determined in accordance with ASTM E1300-16 and the following requirements:
  - .1 Minimum thickness of annealed or heat-treated glass products to be selected so the worst case probability of failure does not exceed the following:
    - .1 8 breaks per 1000 for glass installed vertically less than 15 degrees from the vertical plane and under wind action.
  - .2 Glass at guards, balustrades, and where glass is likely to be subjected to human impact shall comply with safety glass requirements of CAN/CGSB 12.20-M89 and CAN/CGSB 12.1-2017, DIN EN 14179-1:2005, where applicable, and building code.
  - .3 Provide annealed, heat strengthened, and tempered lights where required by the building code, and where required for the various solar exposures on the building.
  - .4 Glass thicknesses and glass types specified, indicated, or scheduled in the *Contract Documents* are minimums required. Modify glass thickness as required to satisfy design and building code requirements, and requirements of authorities having jurisdiction, and any such modifications shall be clearly indicated on shop drawings.
- .4 Provide glass *Products* of uniform appearance, reflectivity, hue, shade, visible light transmittance, and colour when viewed from distance of 3 m (10 ft) to 30 m (100 ft) perpendicular to the glass or from 45 degree angle to the glass.

### 2.2 Glass Manufacturers

- .1 Subject to compliance with the requirements of the *Contract Documents*, provide primary glass by one of the following float glass manufacturers:
  - .1 Cardinal Glass Industries.
  - .2 Guardian Industries, LLC.
  - .3 Pilkington North America.
  - .4 Vitro Architectural Glass.

### 2.3 Glass Materials

- .1 General:
  - .1 Single source responsibility:
    - .1 Coated glass and tinted glass; for each type and condition required:
      - .1 Provide primary glass obtained from a single source and plant.
      - .2 Provide coating obtained from single source.
    - .2 Provide each type of glazing accessory from a single manufacturer or fabricator and from a single production run.
- .2 Annealed (float) glass:
  - .1 Clear, annealed glass, 6 mm (1/4") thick minimum, in accordance with CAN/CGSB 12.3-M91, Glazing Quality.
- .3 Heat treated (tempered or heat strengthened) float glass; GL1:

## Glass and Glazing

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- .1 In accordance with CAN/CGSB 12.1-2017.
- .2 Minimum thickness: 6 mm (1/4").
- .3 Fabrication process: By horizontal (roller-hearth) process with roller-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- .4 For uncoated glass, comply with requirements for Condition A in accordance with ASTM C1048-25.
- .5 For coated vision glass, comply with requirements for Condition C (other coated glass) in accordance with ASTM C1048-25.
- .6 Heat strengthened glass shall have surface compression of 24-52 MPa (3,500-7,500 psi).

### 2.4 Fire-Rated Glass

- .1 Fire-protective rated, impact safety resistant glass, non-wired; GL2:
  - .1 In accordance with CAN/ULC-S104-15/CAN/ULC-S106-15, CPSC 16 CFR 1201 (Cat. I and II).
  - .2 Film faced and non-film faced glazing:
    - .1 Fire-protective-rated and impact safety-rated, transparent glazing material and listed for use in doors, sidelites, transoms, and borrowed lites in both interior and exterior applications, not functioning as a barrier.
    - .2 Surface finish:
      - .1 Premium Grade: transparent glass, polished for superior optical clarity.
    - .3 Acceptable *Product*:
      - .1 Safti First 'SuperLite II-XL'.
      - .2 Saint Gobain 'Keralite Select F'.
      - .3 Schott 'Pyran Platinum F'.
      - .4 Technical Glass Products 'FireLite NT'.

### 2.5 Glazing Materials (Non-Fire Rated)

- .1 Glazing materials; general: Select glazing sealants, tapes, gaskets and additional glazing materials of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
- .2 Glazing gaskets: Moulded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
  - .1 At silicone glazing: preformed silicone to ASTM C1115-17(2022).
- .3 Setting blocks: Moulded or extruded material with Shore, Type A Durometer hardness of 85, plus or minus 5, made from one of the following:
  - .1 At silicone glazing: preformed silicone to ASTM C1115-17(2022).

### Glass and Glazing

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- .4 Spacers: Moulded or extruded blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated made from one of the following:
  - .1 At silicone glazing: preformed silicone to ASTM C1115-17(2022).
- .5 Edge blocks: Moulded or extruded material of hardness needed to limit glass lateral movement (side walking) made from one of the following:
  - .1 At silicone glazing: preformed silicone to ASTM C1115-17(2022).
- .6 Cleaners, primers and sealers: Type recommended by sealant or gasket manufacturer.
- .7 Polyurethane foam glazing tape:
  - .1 High density, closed-cell, flexible, non-extruding tape, adhesive backed one side only; recommended by manufacturer for exterior applications with nominal pressure in glazing channel.
  - .2 Acceptable *Products*: As recommended by manufacturer suitable for conditions of application and use.
- .8 Butt joint glazing sealant:
  - .1 Medium-modulus, neutral-curing silicone sealant; complying with ASTM C920-18, Type S, Grade NS, Application G, Class 25.
  - .2 Colour: as selected by *Consultant* from full colour range.
  - .3 Acceptable *Products*:
    - .1 DOWSIL '999-A'.
    - .2 Momentive 'SCS1200'.
    - .3 Pecora '860'.
    - .4 Tremco 'Proglaze'.

## 2.6 Glazing Materials (Fire Rated)

- .1 Glazing tape; fire-rated glass (non-wired):
  - .1 Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air and vapour seal.
- .2 Silicone sealant: One-part neutral curing silicone, medium modulus sealant, to ASTM C920-18, Type S; Grade NS; Class 25 with additional movement capability of 50 percent in both extension and compression (total 100 percent); Use (Exposure) NT; Uses (Substrates) G, A, and O as applicable.
  - .1 Acceptable *Products*:
    - .1 DOWSIL '795'.
    - .2 Momentive 'Silglaze-II 2800'.
    - .3 Tremco 'Spectrem 2'.

## Glass and Glazing

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- .3 Setting blocks: Neoprene or other resilient blocks of 40 to 50 Shore A durometer hardness, adhesive-backed on one face only, tested for compatibility with specified glazing compound.
- .4 Cleaners, primers, and sealers: Type recommended by manufacturer of glass and gaskets.

### 2.7 Fabrication of Glazing Units

- .1 Fabricate glazing units in sizes required to fit openings, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
  - .1 Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
- .2 Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- .3 Grind smooth and chamfer, and polish exposed glass edges and corners, unless otherwise indicated.

## PART 3 - EXECUTION

### 3.1 Examination

- .1 Examine framing, glazing channels, and stops, with glazing installer present, for compliance with the following:
  - .1 Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
  - .2 Inspect butt and mitre joints in framing. Seal joints found to be open with a compatible sealant prior to glazing.
  - .3 Glazing pockets and surfaces are free of dust, construction debris, and contaminants.
  - .4 Presence and functioning of weep systems.
  - .5 Minimum required face and edge clearances in accordance with FGIA and NGA/GANA standards.
  - .6 Effective sealing between joints of glass-framing members.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 Preparation

- .1 Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- .2 Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.



## Glass and Glazing

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- .3 Clean contact surfaces with solvent and apply primers to surfaces to receive tapes and sealants in accordance with the manufacturer's requirements. Ensure surfaces are free of moisture and frost.

### 3.3 Glazing - General

- .1 Comply with combined written requirements of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- .2 Adjust glazing channel dimensions as required by conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- .3 Protect glass edges from damage during handling and installation. Remove damaged glass from *Project* site and legally dispose of off *Project* site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- .4 Clean glazing rebate surfaces of traces of dirt, dust, or other contaminants.
- .5 Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- .6 Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- .7 Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- .8 Provide spacers for glass lites where length plus width is greater than 1270 mm (50").
  - .1 Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
  - .2 Provide 3.2 mm (1/8") minimum bite of spacers on glass and use thickness equal to sealant width.
- .9 Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel.
- .10 Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- .11 Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- .12 Glaze hollow metal doors and frames specified under work of Section 08 11 13 using tape glazing installation.
- .13 Install fire rated glazing in accordance with fire rated glazing *Product* manufacturer's written requirements and with current fire-resistance listing for each *Product*. Field cutting or tampering is not permissible.

### 3.4 Tape Glazing

- .1 Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

## Glass and Glazing

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- .2 Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- .3 Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- .4 Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- .5 Do not remove release paper from tape until right before each glazing unit is installed.
- .6 Centre glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centres of openings.

### 3.5 Gasket Glazing (Dry)

- .1 Allow gaskets to relax and cut compression gaskets to lengths recommended by gasket manufacturer to fit openings to suit frame dimensions.
- .2 Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- .3 Installation with drive-in wedge gaskets: Centre glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centres of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- .4 Installation with Pressure-Glazing Stops: Centre glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- .5 Install gaskets so they protrude past face of glazing stops.

### 3.6 Sealant Glazing (Wet)

- .1 Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- .2 Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

### 3.7 Adjusting and Cleaning

- .1 Immediately remove sealant and compound droppings from finished surfaces. Remove labels after work is completed.
- .2 Final cleaning of glass in accordance with Section 01 78 00.

Glass and Glazing

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**END OF SECTION**

Metal Supports for Gypsum Board

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Metal support systems for interior gypsum board assemblies.

### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the *Work* of this section, including additional data as may be required to demonstrate compliance with the *Contract Documents*.
- .3 Submit engineered shop drawings for the following:
  - .1 Interior locations where noted as "engineered" or "structural".
- .4 Shop drawings; for shaftwalls:
  - .1 Submit written confirmation and design for shaftwall construction showing adequacy of system in meeting fire ratings and its ability to withstand pressures and deflections that may occur.
- .5 Test and evaluation reports:
  - .1 Submit certified test results for each required fire resistance rated assembly for work of Section 09 22 00.

### **1.3 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 5 years' experience in application of *Products*, systems, and assemblies specified. In addition:

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements - Engineered Interior Metal Support Systems**

- .1 Design system members to withstand own dead load and super-imposed dead loads to maximum allowable deflection of L/240 without permanent deformation.
- .2 Loads on walls acting as guards: Where the floor elevation on one side of a wall, including a shaftwall, is more than 600 mm (24") higher than the elevation of the floor or ground on the other side, design the wall to resist the lateral design loads prescribed in the building code or 0.5 kPa (0.07 PSI), whichever produces the greatest effect.
- .3 Metal support systems shall be engineered where indicated in *Contract Documents* as "engineered" or "structural". Horizontal framing of ceilings shall be engineered. Indicated framing depths are maximum permitted unless approved otherwise by *Consultant*.

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## **2.2 Performance/Design Requirements - Shaftwall System Description**

- .1 Gypsum board shaft systems include special purpose assemblies of gypsum boards and metal components designed for erection entirely from room side of shaft (except for application of finish layer on shaft side, where required to form an enclosure).
- .2 Provide gypsum board shaft systems designed and tested by manufacturer to withstand lateral design loading (air pressure) of  $48 \text{ kg/m}^2$  ( $10 \text{ lb/ft}^2$ ), applied transiently and cyclically, for maximum heights of partitions required, within deflection limit of  $1/240$  of partition height and in stairways.
- .3 Provide drywall shaft systems designed and tested by manufacturer to achieve a minimum STC rating of 35 in accordance with ASTM E90-09.

## **2.3 Performance/Design Requirements - Fire Resistance Rated Assemblies**

- .1 Where gypsum board systems with fire resistance ratings are indicated or required, provide materials and installations that are identical with those of applicable assemblies tested by fire testing laboratories acceptable to authorities having jurisdiction.

## **2.4 Materials - General**

- .1 Sheet metal thicknesses specified in Section 09 22 00 indicate the minimum base steel thickness excluding coating.
- .2 Protective coatings for metal supports and framing:
  - .1 Minimum corrosion protection: Z120 (G40) ASTM A653/A653M-18.
  - .2 Heavy duty corrosion protection where scheduled or indicated: Z275 (G90) ASTM A653/A653M-18.
- .3 Sheet metal screws: minimum coating thickness of 0.008 mm (0.0003") of zinc. Other coatings providing equal or better corrosion protection may be used, subject to acceptance of *Consultant*.
- .4 Screws:
  - .1 Steel screws: equal to or exceeding minimum diameter indicated on shop drawings.
  - .2 Penetration beyond joined materials shall be not less than 3 exposed threads.
  - .3 Thread types and drilling capability shall conform to manufacturer's recommendations.
- .5 Galvanic/dissimilar metal corrosion inhibitor (isolation coating): in accordance with Section 01 73 00 and written requirements of manufacturers of metals affected.

## **2.5 Partition Support Materials**

- .1 Interior non-loadbearing channel stud framing: in accordance with ASTM C645-24; roll formed from galvanized steel sheet, minimum thickness 0.836 mm (0.0329") unless otherwise indicated or required.
  - .1 Steel studs at door jambs and where indicated: 1.720 mm (0.0677") minimum thickness.

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- .2 Interior floor and ceiling tracks (runners): in accordance with ASTM C645-24; in widths to suit stud sizes.
  - .1 Metal thickness: to match studs.
  - .2 For openings wider than 914 mm (36"), provide 0.836 mm (0.0329") minimum thickness for header.
- .3 Deflection track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in metal thickness not less than indicated for studs and in width to accommodate depth of studs.
- .4 Interior floor and ceiling track (runner) fasteners:
  - .1 To concrete and masonry: Use stub nails or power-driven fasteners.
    - .1 Power actuated fastening systems are not permitted.
  - .2 To suspended acoustic ceiling tile grid: Manufactured to fit applicable ceiling grid profile:
    - .1 *Acceptable Products:*
      - .1 CGC 'Partition Clip'.
      - .2 Substitutions: in accordance with Section 01 25 00.
- .5 Bracing channels: Minimum 19 mm x 10 mm x 1.087 mm (3/4" x 3/8" x 0.0428") cold rolled galvanized steel.

## **2.6 Ceiling Support Materials and Systems**

- .1 General: Size ceiling support components in accordance with ASTM C754-20 unless otherwise indicated, connections and restraint of wall and ceiling assemblies.
- .2 Main runners: Steel channels, hot or cold rolled; Z180 (G60) galvanized.
- .3 Hanger wire:
  - .1 In accordance with ASTM A641/A641M-19(2025), soft, Class 1 galvanized, minimum 4.064 mm (0.160", 8 AWG).
- .4 Hanger rods and flats: Mild steel with zinc coating, galvanized for exterior applications.
  - .1 General: Size devices for 5 times load imposed by completed system as determined in accordance with ASTM E488/E488M-22.
    - .1 Power actuated fastening systems are not permitted.
  - .2 Screws, clips, bolts, concrete inserts or other devices for ceiling hangers whose suitability for use intended has been proven through standard construction practices or by certified test data.
  - .3 Fasteners exposed to weather, condensation, and corrosion: Zinc-plated or stainless steel fasteners in applicable product lines specified in preceding paragraphs.
  - .4 Hangers: in accordance with ASTM C754-20 for maximum ceiling area and loads to be supported.
  - .5 Interior concrete ceiling anchors:

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.1 *Acceptable Products:*

- .1 ITW Ramset/Red Head 'Dynabolt Sleeve Anchor TW-1614' or 'Redi-Drive Tie Drive' or 'Redi-Drive' with angle clip.
- .2 ITW Ramset/Red Head 'Trubolt' or 'Dynabolt' anchors complete with galvanized angle clip.
- .3 Hilti 'Kwik-Bolt 3' and 'HHDCA 1/4 Ceiling Hangers'.
- .4 Substitutions: in accordance with Section 01 25 00.
- .5 Tie wire: 1.19 mm (0.047", 18 AWG) minimum zinc coated, soft-annealed wire, in accordance with ASTM A641/A641M-19(2025).
- .6 Furring anchorages: 1.62 mm (0.0637", 16 AWG) galvanized wire ties, manufacturer's standard wire type clips, bolts, nails or screws as recommended by furring manufacturer and in accordance with ASTM C754-20.
- .7 Runner (carry) channels: 1.367 mm (0.0538") thick cold rolled steel, in accordance with ASTM C754-20, with minimum 228 MPa yield strength:
  - .1 38 mm x 12.7 mm (1-1/2" x 1/2") where supported at centres of 914 mm (36") maximum.
  - .2 38 mm x 19 mm (1-1/2" x 3/4") where supported at centres of 1220 mm (48") maximum.
  - .3 Finish: primer painted or zinc coated.

**2.7 Furring**

- .1 Furring channels: 0.836 mm (0.0329") minimum typical thickness, cold rolled steel, wiped coated, nominal size of 22 mm (7/8") depth x 35 mm (1-3/8") face, hat type with knurled face.
- .2 Z-furring members: Galvanized steel z-shaped furring members; in accordance with ASTM A653/A653M-18, G60, 0.836 mm (0.0329") minimum thickness of base metal, of depth indicated, designed for mechanical attachment of insulation boards or blankets.
- .3 Fasteners for furring members: Type and size recommended by furring manufacturer for substrate and application indicated, load rating, and spacing to support materials carried by assembly with factor of safety of 3x per fastener manufacturer data sheets.

**2.8 Shaftwall**

- .1 Shaftwall studs and accessories: 0.455 mm (0.0179"), rolled galvanized steel sheet fabricated specially for gypsum coreboard and facing boards.
- .2 Provide manufacturer's standard shapes for shaftwall construction; of profile, size and base metal thickness designed in accordance with AISI "Specification for Design of Cold Formed Steel Structural Members" for structural performance characteristics indicated. Fabricate from steel sheet in accordance with ASTM A653/A653M-18, Grade A or B, for structural performance of base metal, as well as with ASTM A653/A653M-18, G60, for hot dip galvanized products, and ASTM A463/A463M-25a for aluminized *Products*.

**2.9 Accessories**

- .1 Backer plates:

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- .1 Metal backer plates: Steel, galvanized; fastened to studs for attachment of surface mounted fittings and accessories; minimum 150 mm (6") wide x length and width to suit size of items to be attached x minimum base metal thickness as follows:
  - .1 0.836 mm (0.0329").
- .2 Elimination of backer plates or direct attachment of accessories or equipment to studs shall not be permitted.

## **PART 3 - EXECUTION**

### **3.1 Installation General**

- .1 Install in accordance with ASTM C754-20 and manufacturer's written requirements, except as modified by Section 09 22 00. Do not bridge building expansion joints with support system. Frame both sides of joints with furring and other supports as indicated.
- .2 Install studs, framing, shimming, and furring to provide proper support for gypsum board to achieve the following installation tolerances:
  - .1 Do not exceed 3 mm (1/8") in 3 m (10') variation from plumb, level, and plane.
  - .2 Do not exceed 10 mm (3/8") from drawings locations.
  - .3 Do not exceed 1.5 mm (1/16") variation between planes of abutting edges or ends.
  - .4 Install each framing member so fastening surfaces vary not more than 3.2 mm (1/8") from the plane formed by faces of adjacent framing.
  - .5 In double stud walls, do not bridge across studs on opposite sides of wall with gypsum board or metal cross bracing.
- .3 Cooperate with and give direction to trades erecting framing and furring over which the work of Section 09 22 00 is applied. Coordinate finished joint location with framing.
- .4 Coordinate installation and cooperate with mechanical and electrical work to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with the partitions, ceiling and soffit systems.
  - .1 Where the presence of suspended ductwork or other mechanical or electrical services or devices above ceiling framing conflicts with ceiling framing suspension points from structure above, provide bridging framing below conflicting work as required to support ceiling framing on specified intervals.
  - .2 Do not suspend ceiling framing from mechanical or electrical suspension systems unless agreement is obtained in writing from engineer for *Subcontractor* installing such framing that additional imposed loads are acceptable; obtain *Consultant's* acceptance before proceeding.
- .5 Provide clearances between work of Section 09 22 00 and structural elements to prevent transference of structural loads.
- .6 Do not bridge building expansion joints with steel framing or furring members. Independently frame both sides of joints with framing of furring members or as indicated.
- .7 Size framing systems in accordance with manufacturer's engineered load tables, to meet allowable deflection without permanent deformation.
  - .1 Maximum allowable deflection: L/240.



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- .8 Provide galvanic/dissimilar metal corrosion inhibitor (isolation coating) in accordance with Section 01 73 00 and written requirements of manufacturers of metals affected.

### **3.2 Blocking**

- .1 Attach to framing backer plates to support the load of, and to withstand the withdrawal and shear forces imposed by, items installed upon the work of Section 09 22 00.

### **3.3 Furring - General**

- .1 Furring indicated in *Contract Documents* is schematic. Do not regard as exact or complete. Provide all necessary framing and furring to support gypsum board in accordance with manufacturers' specifications.
- .2 Shim furring as required to achieve required installation tolerances.
- .3 Leave finished work rigid, secure, square, level, plumb, and erected to maintain finish gypsum board line dimensions and contours. Make allowance for thermal movement.
- .4 Thermally separate metal studs from exterior concrete or masonry.

### **3.4 Suspended and Furred Ceilings**

- .1 Arrange hangers for suspended gypsum board ceilings to provide support independent of walls, columns, pipes, ducts; erect plumb, and securely anchored to structural frame, or embed in concrete slabs.
- .2 Keep lateral braces at hangers back 450 mm (18") minimum unless otherwise noted.
- .3 Space hangers along runner channels in accordance with ASTM C754-20, and not more than 150 mm (6") from ends.
- .4 Space runner channels at 1220 mm (48") on centre, maximum, and not more than 150 mm (6") from boundary walls, interruptions of continuity, and changes in direction. Run channels transversely to structural framing members.
- .5 Where splices are necessary, lap members at least 200 mm (8") and wire each end with 2 loops. Avoid clustering or lining up of splices.
- .6 Attach to rod hangers by bending hanger sharply under bottom flange of runner, and securely wiring in place with saddle tie.
- .7 Erect cross furring channels transversely across runner channels at 400 mm (16") on centre maximum, 305 mm (12") on centre at fire rated assemblies, at not more than 150 mm (6") from boundary wall openings, interruptions in ceiling continuity, and changes in direction.
- .8 Secure furring channels to each support with purpose-made slips or wire tie. Splice joints by lapping channels and tying together.
- .9 Level cross furring channels to maximum tolerance of 3 mm in 3 m (1/8" in 10 ft).
- .10 Install ceiling framing assemblies at interface with suspended acoustical ceilings specified in Section 09 51 23, to project minimum of 100 mm (4") above acoustic tile suspension assemblies.

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### **3.5 Wall Furring**

- .1 Install steel furring for braced walls, free standing walls, walls that are furred out as indicated.
- .2 Frame openings and around built-in equipment, cabinets, access panels, on 4 sides, with channels. Extend furring into reveals. Check clearances with equipment suppliers.
- .3 Provide bulkheads and boxed-in duct shafts, for beams, columns, pipes and around exposed services where indicated. Install 19 mm (3/4") channels at corners and at 305 mm (12") on centre.

### **3.6 Metal Stud Partition Framing**

- .1 Provide partition tracks (runners) at floor and underside of structural assembly and as follows:
  - .1 Align accurately and lay out according to partition layout.
  - .2 Secure runners to concrete, access flooring and to concrete slabs, as applicable, with screwed or shot fasteners located 50 mm (2") from each end and spaced at maximum 610 mm (24") on centre.
  - .3 At partition corners, extend one runner to end of corner and butt other runner to it, allowing necessary clearance for gypsum board thickness. Runners should not be mitred.
- .2 Unless otherwise indicated, place interior studs vertically at centres as follows:
  - .1 Provide studs at 400 mm (16") on centre, and as specially spaced in accordance with details indicated.
  - .2 Provide studs not more than 50 mm (2") from abutting walls, openings and each side of corners.
  - .3 Provide freedom for 19 mm (3/4") deflection under beams, structural slabs and the like to avoid transmission of structural loads to studs, or install 50 mm (2") leg ceiling tracks.
- .3 Install studs in tracks at floor and ceiling.
- .4 Where horizontal runs of service lines are scheduled to be installed, arrange with applicable trades and install studs simultaneously with services.
- .5 At openings in stud walls, erect track at head and sills to accommodate intermediate studs. At each end of track, cut out flanges, turn up web, and fasten to studs. Install intermediate studs above and below openings in same manner and spacing as wall studs. Install double studs at each jamb, and double tracks at head of door openings.
- .6 At partitions requiring fire rating, erect in accordance with requirements of listing.
- .7 Size studs, connections, and runners to carry loads according to stud manufacturer's load tables, at 24 kg/m<sup>2</sup> (5 lb/ft<sup>2</sup>) live load to meet maximum allowable deflection limits. Where depth of stud is indicated, size metal thickness to meet allowable deflection limits.
- .8 Provide three studs at corner and intermediate intersections of partitions.

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- .9 Coordinate work with others installing horizontal runs of service lines so that work is done simultaneously. Where standard holes are too small for installed services, notch studs, and splice notched flanges with splice pieces 305 mm (12") longer than notches, each fastened with 2 screws.
- .10 Coordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .11 Coordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other sections.
- .12 Unless otherwise indicated, partitions, together with gypsum board facings, shall extend above ceilings to underside of structure above.
- .13 Chase walls:
  - .1 Provide chase walls consisting of two parallel steel stud partitions.
  - .2 Provide cross bracing consisting of metal furring, located at quarter points on each pair of studs. Attach cross bracing to studs with metal screws.
- .14 Lateral support bracing channels:
  - .1 Stiffen partitions over 3 m (10') in vertical span, at mid-height to maximum vertical spacing of 2440 mm (8') on centre, with at least one 19 mm (3/4") horizontal bracing channel, extending full length of partition, overlapping at least two stud spaces at ends of bracing channels.
  - .2 Stiffen partitions at not more than 150 mm (6") from the top and bottom of openings and across two full stud spaces at each side of openings with horizontal bracing channel.
- .15 Install steel stud reinforcement 1.720 mm (0.0677") at door frames and brace above ceiling. Secure to top and bottom structure with angle brackets and anchors.

### **3.7 Control Joints**

- .1 Control joints: in accordance with Section 09 29 00.

### **3.8 Concrete Anchors**

- .1 Provide anchors and anchorage points in reinforced concrete floor slab underside in accordance with gypsum board manufacturer's suspension requirements. Drill holes with carbide-tipped drill bits in accordance with ANSI B212.15-1994 (R2000).
- .2 Provide anchors; minimum installation depth, and method of expansion as recommended by the anchor manufacturer.

### **3.9 Field Quality Control**

- .1 Conduct quality control in accordance with Section 01 45 00.

**END OF SECTION**

Gypsum Board

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Gypsum board; wall and ceiling applications.
  - .2 Gypsum board accessories and miscellaneous related materials.

### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Fire-rated assembly listings and STC assembly ratings:
  - .1 Submit fire-rated assembly listings for each required fire resistance rated assembly for work of this section.
  - .2 Submit STC assembly ratings for each required STC rated assembly for work of this section.

### **1.3 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 10 years' experience in application of *Products*, systems, and assemblies specified. In addition:

### **1.4 Product Handling**

- .1 Product handling shall be in accordance with Section 01 60 00 as supplemented by the requirements of this section.
- .2 Handle gypsum panel products and accessories in accordance with GA 216-24 and GA 801-23.

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

- .1 Single source responsibility:
  - .1 Provide gypsum board *Products* from one manufacturer for the work of this section.
- .2 Fire resistance rating:
  - .1 Construct fire resistance rated assemblies in accordance with listing and CAN/ULC S101-14.
- .3 Paper-faced gypsum board: in accordance with ASTM C1396/C1396M-17.
- .4 Glass scrim gypsum board: in accordance with ASTM C1658/C1658M-18.

## Gypsum Board

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- .5 Fire rated in accordance with listed assemblies where indicated: Type X or Type C.
- .6 Set bottom edge of gypsum board at 12 mm (0.5") minimum above the finished floor level and seal the gap in accordance with CSA Z8000.

### 2.2 Gypsum Board Panels

- .1 Gypsum board; paper faced:
  - .1 Acceptable *Products*:
    - .1 CertainTeed 'Easi-Lite'.
    - .2 CGC 'Sheetrock Brand Ultralight Panel'.
    - .3 Georgia-Pacific 'ToughRock Lite-Weight Gypsum Board'.
  - .2 Gypsum board; fire-rated, paper faced:
    - .1 Acceptable *Products*:
      - .1 CertainTeed 'Type X Drywall and Type C Drywall'.
      - .2 CGC 'SHEETROCK Brand Firecode X and Firecode C'.
      - .3 Georgia-Pacific 'ToughRock Fireguard X Gypsum Board and ToughRock Fireguard C Gypsum Board'.
      - .4 PABCO Gypsum 'Flame Curb Type X'.
  - .3 Gypsum board; shaftwall assemblies, glass mat faced:
    - .1 Mould and moisture resistant: in accordance with ASTM D3273-16, with a panel score of 10.
    - .2 Acceptable *Products*:
      - .1 CertainTeed 'GlasRoc Shaftliner'.
      - .2 CGC 'SHEETROCK Glass-Mat Liner Panels'.
      - .3 Georgia-Pacific 'DensGlass Shaftliner'.

### 2.3 Attachment Materials

- .1 Screws; for gypsum board: bugle head, fine thread, self-tapping, Type G, Type W, Type S, or Type S-12 to suit framing type and metal gauge in accordance with GA GA 216-24, with corrosion resistant finish, and in accordance with ASTM C1002-07/ASTM C954-18.
  - .1 Screw sizing:
    - .1 #6 x 25 mm (1") for single thickness board fastening.
    - .2 #6 x 32 mm (1-1/4") for single thickness 15.9 mm (5/8") board fastening.
    - .3 #7 x 41 mm (1 5/8") for double thickness board fastening.
    - .4 25.4 mm (1"), 41 mm (1-5/8"), and 51 mm (2") for triple thickness board fastening, at stud locations, and 38 mm (1-1/2") Type G screws for attaching face sheet to base sheets, in accordance with board manufacturer's written requirements.

## Gypsum Board

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### 2.4 Accessories

- .1 Accessories: in accordance with ASTM C1047-19 unless otherwise indicated, maximum length pieces per location. Flanges shall be free from dirt, grease, or other material that adversely affects the bond of joint treatment or decoration.
- .2 Trims; one of the following:
  - .1 Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
    - .1 Shapes, including:
      - .1 Corner bead.
        - .1 Mechanically fastened corner beads at impact resistant gypsum walls.
      - .2 Casing trim.
      - .3 Reveal trims.
      - .4 Control joints, certified by manufacturer for use at fire resistance rated assemblies as required.
  - .2 Vinyl moulding:
    - .1 Trim-Tex 38 mm (1-1/2") inside radius corner trim including 3 way inside corner trim and termination trim.
  - .3 Aluminum: extruded accessories of profiles and dimensions as indicated or required.
    - .1 Alloy and temper with not less than the strength and durability properties in accordance with ASTM B221 (ASTM B221M), Alloy 6063-T5.
    - .2 Shapes:
      - .1 Z reveal.
      - .2 Reveals and moldings at round columns.
    - .3 Acceptable manufacturers:
      - .1 Fry Reglet.
      - .2 Gordon Interior Specialties.

### 2.5 Related Support Assemblies and Backer Plates

- .1 Metal support systems and backer plates at interior assemblies: in accordance with Section 09 22 00.

### 2.6 Joint Treatment Materials

- .1 General: in accordance with ASTM C475/C475M-17(2022).
- .2 Joint tape: in accordance with manufacturer's written requirements.
- .3 Joint compound for interior gypsum board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
  - .1 Prefilling: Use setting-type compound as recommended by panel board manufacturer.

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Gypsum Board

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- .2 Embedding and first coat: Use setting-type or taping compound as recommended by panel board and trim accessory manufacturers.
- .3 Fill and finish coats: Use sanding type setting-type or taping compound as recommended by panel board manufacturer.

## 2.7 Acoustic Wall Assembly Materials

- .1 Acoustic sealant; concealed locations: to meet material requirements as listed in Part 9 of ASTM C919-24, including ASTM C834-17 or ASTM C920-18:
  - .1 Acceptable *Products*:
    - .1 Hilti Canada Corp 'CS-S SA Light'.
    - .2 Pecora 'BA-98'.
    - .3 Pecora 'AC-20 FTR'.
    - .4 Tremco 'Tremflex 834'.
    - .5 Substitutions: in accordance with Section 01 25 00.
  - .2 Acoustic sealant; exposed locations, acrylic:
    - .1 Acrylic/latex acoustic sealant, Type S, Grade NS, Class 12.5 in accordance with ASTM C920-18, maximum VOC content 60 g/L, non-hardening or ASTM C834-17, Type OP, Grade -18° C.
    - .2 For exposed sealants use paintable sealant products, do use non-skinning type products where they are exposed to view or where sealant products may deteriorate (stain or bleed into) into painted surfaces.
    - .3 Acceptable *Products*:
      - .1 Hilti Canada Corp 'CS-S SA Light'.
      - .2 Pecora 'AC20 FTR'.
      - .3 Tremco 'Tremflex 834'.
      - .4 Substitutions: in accordance with Section 01 25 00.
  - .3 Smoke and acoustic sealant; concealed and exposed locations, non-fire-rated acoustic assemblies:
    - .1 Acrylic smoke and acoustic sealant, in accordance with ASTM C834-17 maximum VOC content 60 g/L, paintable, Flame Spread Value of maximum 25 in accordance with CAN/ULC-S102-10.
    - .2 Sealant shall not deteriorate (stain or bleed into) painted surfaces.
    - .3 Acceptable *Products*:
      - .1 Hilti Canada Corp 'CS-S SA Light'.
      - .2 Tremco 'Tremstop Smoke & Sound Sealant'.
      - .3 Substitutions: in accordance with Section 01 25 00.
  - .4 Acoustic sealant for plenum locations: Smoke-seal sealant with flame-spread not more than 25 and smoke developed classification not more than 50 in accordance with CAN/ULC-S102-10, in accordance with Section 07 84 00.

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- .5 Acoustic compound: premixed perlite plaster.
- .6 Acoustic (sound attenuation) insulation:
  - .1 Mineral-fibre sound attenuation batts: in accordance with CAN/ULC S702.1-14, Type 1, non-combustible in accordance with CAN/ULC-S114-18, formaldehyde-free.
    - .1 Acceptable *Products*:
      - .1 Rockwool 'AFB evo'.
      - .2 Substitutions: in accordance with Section 01 25 00.
    - .2 Fasteners: use mechanical fasteners where required to secure insulation into position in accordance with insulation manufacturer.

### 2.8 Access Doors

- .1 Access doors: in accordance with Divisions 21, 22, and 23 and Divisions 26, 27, and 28.

## PART 3 - EXECUTION

### 3.1 Board Installation - General

- .1 Before installation of board commences, verify that internal services have been installed, tested, and approved; conduits, pipes, cables, and outlets are plugged, capped, or covered; and that fastenings and supports are in place.
- .2 Remove debris and rubbish from wall and ceiling cavities before enclosing with board.
- .3 General:
  - .1 Installation shall be in accordance with ASTM C840-18b, GA 216-24, GA 214-21, GA 600-24, and manufacturer's written requirements, except as otherwise indicated.
- .4 Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1.6 mm (1/16") open space between boards. Do not force into place.
- .5 Cover both faces of stud partition framing with gypsum board in concealed spaces (above ceiling, and the like) unless otherwise indicated, except in chase walls which are properly braced internally.
- .6 Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cut-outs.
- .7 Apply components of fire-rated assemblies in conformance with indicated designs.
- .8 Do not apply gypsum board in close proximity to hot pipes or heating ducts.
- .9 Apply board with long dimension perpendicular to supports, unless otherwise indicated.
- .10 Locate joints on opposite sides of partitions on different studs, and at least 305 mm (12") from opening jambs.
- .11 Install materials with the minimum number of joints. Tightly butt joints, without force, and neatly align them.
- .12 Form smooth joints at ends and at field cut edges of board panels.



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- .13 Frame openings on every side. Provide clearances with services.
- .14 Work shall include bulkheads over doors, frames, screens, and changes in ceiling levels, pipe space and as indicated.
- .15 Provide clearances between work of this section and structural elements to prevent transference of structural loads in accordance with Section 09 22 00.
- .16 Fasten board to metal support members by metal gypsum board screws, 9.5 mm (0.374") minimum to, and 12.7 mm (1/2") maximum from, centre of joints.
  - .1 Space screws:
    - .1 At fire rated board as per fire-rated assembly.
    - .2 At typical board walls at 400 mm (16") on centre at edges and field unless otherwise required.
    - .3 At typical board ceilings at 305 mm (12") on centre at edges and field unless otherwise required.
- .17 No joint will occur within 305 mm (12") of the corner of an opening.
- .18 Locate gypsum panel product joints so that no joint will align with the edge of an opening unless control joints are to be installed at these locations.
- .19 Tolerances:
  - .1 Do not exceed 3 mm (1/8") in 3 m (10') variation from plumb, level, and plane in exposed surfaces, except at end joint between gypsum board panels.
  - .2 Do not exceed 10 mm (3/8") from indicated location.
  - .3 Do not exceed 1.5 mm (1/16") variation between planes of abutting edges or ends.
  - .4 Surface flatness shall not exceed 1.5 mm (1/16") within 305 mm (12") straight edge. For non-tapered-edge end joints between boards, measure flatness tolerance with end of straight end at centreline of joint.

### 3.2 Fire Separations

- .1 Install fire-rated assemblies in accordance with assembly listing requirements in order to obtain fire ratings indicated and as required by authorities having jurisdiction.
- .2 Vertical bulkheads in ceiling spaces over fire rated partitions, doors and the like shall have same fire rating as the partition over which they occur. Such bulkheads shall be of gypsum board construction unless otherwise indicated.
- .3 Use fire rated gypsum wallboard as specified.
- .4 Where lighting fixtures, diffusers, and the like are recessed into fire rated ceilings or bulkheads, provide enclosure to maintain required fire rating. Form removable panel to give access to fixture outlet box.
- .5 Where fire hose cabinets or other fixtures or equipment are recessed in fire rated walls or partitions, provide gypsum board enclosure or backing to maintain required fire rating, unless otherwise detailed.

### 3.3 Acoustic Wall Assemblies

- .1 Acoustical sealant and plaster:

### Gypsum Board

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- .1 Apply acoustical sealant to seal gaps in accordance with ASTM C919-24 and in accordance with the STC rated assembly.
- .2 Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Locate edge trim and close off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings, in accordance with ASTM C919-24 and manufacturer's written requirements.
- .3 Clean substrate, remove debris and deleterious substances.
- .4 Apply sealant to close voids; no leaks around track and gypsum board.
- .2 Sound attenuation insulation:
  - .1 Install sound attenuation insulation to fill cavity unless otherwise indicated.
  - .2 Trim insulation to provide close-fit contact to framing assemblies and fill the partition cavity or acoustic insulation assemblies to thicknesses specified or indicated.
  - .3 Maintain air space between backs of sound attenuation insulation and back of opposite partition face layer, as applicable.
  - .4 Cut insulation to provide close-fit contact around electrical boxes, pipes, and other obstructions and penetrations through and within acoustic assemblies.
  - .5 Extend acoustic partition assemblies to underside of structure. Incorporate approved provision to prevent transmittance of structural deflection to partition assembly.
  - .6 Staple sound attenuation insulation where required by manufacturer's installation requirements.
  - .7 Where studs are not faced with gypsum board on both sides, mechanically fasten wire mesh to non-faced side of stud to retain insulation.
  - .8 Mechanically attach sound attenuation insulation in wall assemblies where cavity of wall assembly is greater than 150 mm (6").
  - .9 Secure insulation in such a manner that it will not sag or settle away from required locations.
- .3 Sound flanking paths:
  - .1 Where sound rated partition walls intersect non rated gypsum board partition walls, extend sound rated construction to completely close sound flanking paths through non rated construction in accordance with ASTM C919-24 and with manufacturer's written requirements.
  - .2 Seal joints between face layers at vertical interior angles of intersecting partitions.

### 3.4 Accessories

- .1 At external corners install corner trim secured to framing at 230 mm (9-1/16") on centre on both flanges with screw fasteners or clinch tool.

### Gypsum Board

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- .2 Secure casing trim at board edges where exposed to view, where board butts against other materials with no trim to conceal junction, at perimeter of ceiling surfaces at tops of partitions where they stop against continuous ceiling surfaces, and where indicated.
- .3 Erect accessories straight, plumb or level, rigid and at proper plane.
- .4 Use full length pieces.
- .5 Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners, free from rough edges. Secure in accordance with manufacturer's specifications unless otherwise required.
- .6 Installation tolerances:
  - .1 Alignment with board panels shall not exceed tolerances specified above.
  - .2 End joints shall be flush aligned to maximum offset of 0.5 mm (0.020").

### 3.5 Access Doors

- .1 Install access doors as supplied by Divisions 21, 22, and 23 and Divisions 26, 27, and 28.
- .2 Install access panels in locations to be determined by coordination with trades installing mechanical, electrical and other building services. Locations to be reviewed and confirmed by *Consultant*.
- .3 Rigidly secure frames to furring or framing systems.

### 3.6 Finishing

- .1 Provide levels of gypsum board finish for locations as follows, in accordance with GA 214-21.
  - .1 Level 1: Ceiling plenum areas and concealed areas, except provide higher level of finish as required to comply with fire resistance ratings and acoustical ratings.
  - .2 Level 2: Gypsum board substrate at applied hard surfaces, except remove tool marks and ridges.
  - .3 Level 3: Gypsum board substrate at locations to receive the following:
    - .1 New commercial grade vinyl wall covering.
  - .4 Level 4: Exposed gypsum board surfaces, except where another finish level is indicated.
- .2 Interior gypsum board:
  - .1 Prefill:
    - .1 Use setting-type joint compound. Mix joint compound according to manufacturer's written requirements.
    - .2 Fill joints between boards flush to top of eased or beveled edge.
    - .3 Fill joints of gypsum board above suspended ceilings in fire rated partitions.
    - .4 Wipe off excess compound and allow compound to harden.
    - .5 Prefill joint gaps not greater than 3.2 mm (1/8") with either ready-mix or setting-type joint compound; prefill joint gaps greater than 3.2 mm (1/8") with setting-type joint compound.

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Gypsum Board

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- .2 Taping (Level 1):
  - .1 Butter taping compound into inside corners and joints.
  - .2 Centre tape over joints and press down into fresh compound.
  - .3 Remove excess compound.
  - .4 Tape joints of gypsum board above suspended ceilings.
- .3 First coat (Level 2):
  - .1 Use taping or all-purpose drying-type compound.
  - .2 Immediately after bedding tape, apply skim coat of compound and allow to dry completely in accordance with manufacturer's written requirements.
  - .3 Apply first coat of compound over flanges of trim and accessories, and over exposed fastener heads and finish level with board surface.
  - .4 Cover fastener heads and accessories with 1 coat of joint compound.
- .4 Second coat (Level 3): After first coat treatment is dried, apply second coat of compound over tape and trim, feathering compound 50 mm (2") beyond edge of first coat.
  - .1 Cover fastener heads and accessories with total of 2 separate coats of joint compound.
- .5 Third coat (Level 4):
  - .1 After second coat has dried, sand surface lightly and apply thin finish coat to joints, fasteners and trim, feathering compound 50 mm (2") beyond edge of second coat.
  - .2 Allow third coat to dry. Apply additional compound, and touch-up and sand, to provide surface free of visual defects, tool marks, and ridges, and ready for application of finish.
  - .3 Finished joints will be accepted with a camber not greater than 1 mm (1/32") and shall be seamless, plumb, true and flush and with square, neat corners.
  - .4 Cover fastener heads and accessories with total of 3 separate coats of joint compound.
  - .5 Where new partitions align with existing gypsum board, apply required amount of skim coats to make transition inconspicuous from a distance of 914 mm (36").
  - .6 Completed installation at interface between new and existing construction shall provide an inconspicuous joint.
- .3 Joint compound:
  - .1 Apply finish coat of compound feathering 75 to 100 mm (3" to 4") beyond tape edges.
  - .2 Feather coats onto adjoining surfaces so that camber is maximum 0.79 mm (1/32").
- .4 Trim:

### Gypsum Board

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- .1 Use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports, unless otherwise recommended by trim manufacturer.
- .2 Install metal corner beads at external corners.
- .3 Install metal casing bead trim whenever edge of gypsum base would otherwise be exposed or semi exposed, and where gypsum base terminates against dissimilar material.
- .4 Erect beads plumb or level, with minimum joints.
- .5 Control joints:
  - .1 Provide control joints set in board facing. Support control joints with studs or furring channels on both sides of joint.
  - .2 Provide control joints in locations required and as indicated on reviewed shop drawings.
    - .1 Review control joint locations with *Consultant* prior to installation.
  - .3 Install control joints where a partition, wall, or ceiling traverses a construction joint (expansion, or building control element) in the building structure.
  - .4 Install control joints where a wall or partition runs in an uninterrupted straight plane exceeding 9100 mm (30 linear feet).
  - .5 Install control joints in interior ceilings:
    - .1 With perimeter relief:
      - .1 Linear dimensions between control joints shall not exceed 15000 mm (50 ft) and total area between control joints shall not exceed 230 m<sup>2</sup> (2500 ft<sup>2</sup>).
    - .2 Without perimeter relief:
      - .1 Linear dimensions between control joints shall not exceed 9100 mm (30 ft) and total area between control joints shall not exceed 84 m<sup>2</sup> (900 ft<sup>2</sup>).
- .6 Install control joints where ceiling framing members change direction.
- .7 Where a control joint occurs in an acoustical or fire-rated system, provide blocking behind the control joint by using a backing material such as 16 mm (5/8") Type X gypsum panel products, mineral fibre, or other tested equivalent. Construct through-wall control joints at fire-rated assemblies in accordance with assembly listing requirements.
- .8 Line up control joints with joints in other construction or with centre lines of mullions, columns, piers, or similar building elements, where accepted by *Consultant*.
- .9 Install control joints straight and true.
- .10 Ceiling height door frames may be used as control joints. Less than ceiling height frames shall have control joints extending to the ceiling from both corners. If control joints are not used, additional reinforcement is required at corners to distribute concentrated stresses.
- .11 Locate board joints so that no joint will align with the edge of an opening unless control joints are to be installed at these locations.

Gypsum Board

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**3.7 Adjusting and Cleaning**

- .1 Clean up and remove surplus materials and rubbish resulting from the work of this section upon completion.
- .2 Clean off beads, casings, joint compound droppings and the like, leave the work of this section ready for painting trades.

**END OF SECTION**

Acoustical Tile Ceiling Systems

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Acoustical tile ceiling systems (ACT1).

### **1.2 Administrative Requirements**

- .1 Coordination:
  - .1 Cooperate with mechanical and electrical *Subcontractors*.
  - .2 Coordinate layout and installation of acoustic ceiling units and suspension systems components with other work supported by or penetrating through ceilings, including light fixtures, HVAC equipment, partition system, fire suppression system components and other work required to be incorporated in or coordinated with the ceiling system.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Submit manufacturer's standard details.
  - .2 Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, location of access splines, and acoustical unit support at ceiling fixture.
  - .3 Submit reflected ceiling plans for special grid patterns as indicated.
- .4 Samples:
  - .1 Submit sample of each component of ceiling system. Samples shall fully represent materials to be supplied in colour, texture, finish and construction.
  - .2 Submit samples, load test data and design tables for each type of insert to be used in the *Work* for hanger supports.

### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Maintenance data:
  - .1 Submit maintenance and cleaning instructions for acoustical ceiling systems for incorporation into the maintenance manuals.
- .3 Maintenance materials:

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Acoustical Tile Ceiling Systems

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- .1 Deliver for maintenance use, 2% of each type and colour of suspension components and acoustical tiles used in the *Work*.
- .2 Pack panels in suitable containers, clearly dated and identified as to type and location of installation in the *Work*, and store where directed by *Owner*.

## 1.5 Quality Assurance

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified. In addition:
- .2 Mock-ups:
  - .1 Construct in locations acceptable to *Consultant* a typical sample ceiling installation 10 m<sup>2</sup> (108 ft<sup>2</sup>) in area, complete with perimeter wall trim, and cut tegular tile demonstrating rectified edge. Modify sample as directed and as required to obtain approval. Upon acceptance retain sample as standard of quality for acoustical ceiling.
  - .2 Do not begin fabrication and erection of remainder of ceiling system until sample installation has been reviewed and accepted. Accepted sample may become a part of the final *Work*, subject of approval of *Consultant*.

## 1.6 Site Conditions

- .1 Interior temperature of building shall be between 15°C and 30°C, and relative humidity shall be not more than 70% before and during installation. Maintain uniform temperatures for 72 hours prior to commencement of the work of this section and maintain temperature until completion of the work of this section.

## 1.7 Warranty

- .1 Warrant work of this section in accordance with Section 01 78 36.

## PART 2 - PRODUCTS

### 2.1 Performance/Design Requirements

- .1 Single source responsibility:
  - .1 Provide *Products* from one manufacturer for the work of this section, including support systems, accessory *Products*, and materials.
    - .1 Where manufacturer does not manufacture or supply required accessory *Products* and materials, any such accessory *Products* or materials supplied for use in the *Work* shall have approval from manufacturer for use as part of the final warranted installation.
  - .2 Acoustical tile *Products* installed as part of the work of this section shall be from same production run.
- .2 Design suspension systems for a maximum mid-span deflection not exceeding L/360 in accordance with ASTM C635/C635M-22 deflection test.



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Acoustical Tile Ceiling Systems

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- .3 Design suspension system to support safely, and without distortion, the superimposed loads of:
  - .1 Air supply diffusers and return grilles.
  - .2 Lighting fixtures.

## 2.2 Acoustical Tiles

- .1 Lay-in acoustical tiles (ACT1):
  - .1 Acceptable *Products*:
    - .1 In accordance with Material Finishes Schedule.
    - .2 Substitutions in accordance with Section 01 25 00.

## 2.3 Metal Suspension Systems

- .1 Hanger anchorage devices: Screws, clips, bolts, concrete inserts or other devices applicable to the indicated method of structural anchorage for ceiling hangers and whose suitability for use intended has been proven through standard construction practices or by certified test data. Size devices for 3 x calculated load supported except size direct pull-out concrete inserts for 5 x calculated loads.
- .2 Concrete hanger anchors; post installed: Steel eye bolts and nuts to suit ceiling hangers with capability to sustain, without failure, a load equal to 4 times that imposed by ceiling construction, as determined by testing per ASTM E488/E488M-22, conducted by a qualified independent testing laboratory.
  - .1 Dynabolt Sleeve Anchor 'TW-1614' or Rendi-Tie-Drive 'TD4-112' tie wire anchor by ITW Ramset/Red Head.
  - .2 Kwik-Bolt III 'HHDCA 1/4' tie wire anchor by Hilti Corporation.
  - .3 Fasteners exposed to weather, condensation, and corrosion: Zinc-plated or stainless steel fasteners in applicable product lines specified in preceding paragraphs.
- .3 Hangers and tie wire: Galvanized wire, recommended by manufacturer of suspension system, minimum 2.66 mm (0.1") (12 gauge).
- .4 Suspension system accessories:
  - .1 Splices, clips, and perimeter moulding, of manufacturer's standard type to suit the applicable conditions unless special conditions and access area are shown or specified.
  - .2 Angle wall mouldings; hemmed with prefinished exposed flanges:
    - .1 For 24 mm (15/16") grid applications; angle moulding with exposed bottom flange of 22 mm (7/8").
      - .1 Armstrong '7803'.
      - .2 CertainTeed 'WA15-15'.
      - .3 CGC 'M7'.
- .5 Standard suspension system, non fire-rated:

### Acoustical Tile Ceiling Systems

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- .1 Intermediate duty in accordance with ASTM C635/C635M-22, 24 mm (15/16") interlocking tee system, designed to support acoustical panels in patterns indicated with deflection of main tees less than L/360, consisting of main tees and cross tees. The system shall provide lock joint intersections of cross and main tees.
- .2 *Acceptable Products:*
  - .1 Armstrong 'Prelude XL 15/16" Exposed Tee Systems'.
  - .2 CertainTeed '15/16" Classic Stab System'.
  - .3 CGC 'DX'.

#### **2.4 Miscellaneous Materials**

- .1 Acoustical sealant: Non-drying, non-hardening, non-skinning, non-staining, non-bleeding, gunnable sealant complying with requirements specified in Section 07 92 00.

#### **2.5 Metal Finish**

- .1 Metal exposed in finished work shall have a pre-coated baked enamel finish in non-yellowing colour. Submit paint formulation of grid system to lighting fixture, speaker grille, sprinkler and diffuser manufacturers to ensure consistency of colour, sheen and texture of exposed metal components in the ceiling assemblies.
  - .1 Colour: Flat white.

### **PART 3 - EXECUTION**

#### **3.1 Installation - General**

- .1 Install ceiling panels and metal suspension system in accordance with manufacturer's directions. Where manufacturer's directions are at variance with *Contract Documents*, notify *Consultant* before proceeding with installation.
- .2 Do not commence installation until work above suspended ceiling has been completed, inspected and accepted.

#### **3.2 Installation - Suspension System**

- .1 Install suspension system rigid, secure, square, level and plumb, framed and erected to maintain dimensions and contours indicated, and in accordance with ASTM C636/C636M-13, CISCA installation standards and any other applicable national or local code requirements. Make allowance for thermal and structural movement.
- .2 Attach hangers to structure with inserts and hanger supports. Do not use powder activated fasteners.
- .3 Support hangers for suspended ceiling grid independent of walls, columns, pipes and ducts.
- .4 Space hangers for ceilings at maximum 1220 mm (48") on centre in both directions. Provide additional hangers as required to comply with manufacturer's written installation requirements.
- .5 Locate hangers at not more than 150 mm (6") from ends of main tee members.

### Acoustical Tile Ceiling Systems

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- .6 Install exposed tee members to pattern indicated. Securely attach hangers to main tee members.
- .7 Exposed tees shall be as long as possible to minimize joints. Make joints square, tight, flush and reinforce with splines. Distribute joints to prevent clustering in one area.
- .8 Space tee bars to suit ceiling panels and as detailed, and to accommodate lighting fixtures, diffusers and return grilles.
- .9 Cooperate in the installation of ceiling systems, making adjustments where required to ensure that the lighting fixtures, supply diffusers, exhaust grilles and other built-in items properly fit into ceiling module and finish flush with rest of ceiling.
- .10 Restrict creep inside module panels so that strips are centred on module lines.
- .11 Install edge moulding as detailed where ceiling abuts vertical surfaces. Lap corners, use maximum lengths to minimize joints. Make joints square, tight and flush.
  - .1 Screw attach mouldings to substrates at intervals not more than 400 mm (16") on centre and not more than 210 mm (8") from ends, levelling with suspension system. Lap corners accurately and connect securely.

### 3.3 Installation - Tiles

- .1 Take precautions during installation to ensure tile edges are not chipped or otherwise damaged.
- .2 Minimize field cutting. Rectify cut tile edges of tile to match factory cut edge profile and colour.
- .3 Install acoustical tiles to form horizontal and level ceiling with parts flush and joints butted tightly to hairline appearance.
- .4 Distribute variations in colour and texture of panels to obtain a uniform appearance.

### 3.4 Installation - Tolerances

- .1 Allowable tolerances: in accordance with ASTM C636/C636M-19(2025).
- .2 Install suspension systems level to tolerance of 1:1200.
- .3 Install edge mouldings level to tolerance of 3 mm in 3660 mm (1/8" in 12'-0").

### 3.5 Field Quality Control

- .1 Conduct quality control in accordance with Section 01 45 00.

### 3.6 Adjusting and Cleaning

- .1 Replace uneven, defective or damaged materials and finishes, eliminate waves, remove soiled or stained areas.
- .2 Clean dirty and discoloured surfaces of acoustical units and suspension system according to manufacturer's recommendations.

**END OF SECTION**

Vinyl Sheet Flooring

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Vinyl sheet flooring (RSF1) (RSF2).

### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.
  - .1 In addition to the agenda specified under Section 01 31 19, the following items shall be addressed at the pre-installation meeting:
    - .1 Compatibility of materials.
    - .2 Preparation and type of substrate.
    - .3 Minimum requirements for lightweight concrete.
    - .4 Floor temperature.
    - .5 Climate controls.
    - .6 Testing requirements.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Show sheet flooring roll and width layout as related to *Consultant's* floor pattern including borders and accents including where flooring materials meet other floor materials.
  - .2 Show locations of seams, floor drains, floor plates, and where flooring meets other flooring.
- .4 Samples:
  - .1 Samples for verification:
    - .1 Submit sample of vinyl sheet flooring, minimum 150 mm (6") x 150 mm (6") of each different colour and pattern of vinyl sheet flooring.
    - .2 Submit sample of heat-welding bead, minimum 150 mm (6") length of each colour.
    - .3 Submit seam samples for each vinyl sheet flooring product and colour with heat-welded seam. Sample shall be a minimum of 150 mm (6") x 254 mm (10") and shall be adhered to a rigid backing material with the seam running lengthwise and in the center of the sample.
  - .4 Submit sample of fillet support at integral site formed flash cove bases,

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Vinyl Sheet Flooring

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Test and evaluation reports:

- .2 Submit moisture, alkalinity, and adhesive bond test results.

#### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.
- .3 Maintenance materials:
  - .1 Submit 2% of each colour in full running length, pattern and type flooring material required for this project for maintenance use.
  - .2 Maintenance materials to be same production run as installed materials.
  - .3 Suitably package for protection and storage, each identified with name of manufacturer and flooring material.
  - .4 Tag and store where directed by *Owner*.

#### **1.5 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 5 years' experience in application of *Products*, systems, and assemblies specified.
- .2 Mock-ups:
  - .1 Prior to commencing flooring installation for this section, prepare full room mock-up (room size at least 10 m<sup>2</sup> (100 ft<sup>2</sup>) in area) for acceptance by the *Consultant*.
  - .2 Location of installation shall be determined by *Consultant*.
  - .3 Do not proceed with flooring specified in this section until mock-up has been accepted by *Contractor* and *Consultant*.

#### **1.6 Site Conditions**

- .1 Install materials of this section only when surfaces and air temperatures have been maintained between 18.4°C and 29.4°C for 48 hours preceding installation, and will be so maintained during installation and for 48 hours thereafter. Maintain a minimum temperature of 13°C after above period. Relative humidity shall be 50 +/- 10%.

#### **1.7 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.
- .2 Extended warranty:
  - .1 Labour, materials, and workmanship for work of this section.
  - .2 Duration: 2 years.

Vinyl Sheet Flooring

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## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

- .1 Single source responsibility:
  - .1 Provide *Products* from one manufacturer for the work of this section, including accessory *Products* and materials.
    - .1 Where manufacturer does not manufacture or supply required accessory *Products* and materials, any such accessory *Products* or materials supplied for use in the *Work* shall have approval from manufacturer for use as part of the final warrantied installation.
  - .2 *Products* installed as part of the work of this section shall be from same production run.
- .2 Slip resistance: Floors shall have a wet Dynamic Coefficient of Friction (DCOF) of 0.42 or greater in accordance with ANSI A326.3.
- .3 Vinyl sheet flooring shall not:
  - .1 Become stained or discoloured due to slab markings.
  - .2 Delaminate from substrates.
  - .3 Have welded seams which separate.

### **2.2 Vinyl Sheet Flooring (RSF1) (RSF2)**

- .1 Vinyl sheet flooring:
  - .1 In accordance with ASTM F1303-04(2021), Type II, Grade 1.
  - .2 Thickness:
    - .1 2 mm (0.08").
  - .3 Colour: In accordance with Materials Finishes Schedule.
  - .4 Acceptable *Products*:
    - .1 In accordance with Materials Finishes Schedule.
    - .2 Substitutions in accordance with Section 01 25 00'.

### **2.3 Miscellaneous Materials**

- .1 Seam construction:
  - .1 Hot welded joints, provide welding rod matched to floor pattern/colour selected.
  - .2 Colours: To later selected by *Consultant* from manufacturer's full colour range.
- .2 Primer/adhesives:
  - .1 Types as recommended by resilient flooring manufacturer compatible with materials and to suit substrate types and to comply with warranty requirements.
  - .2 Adhesives shall be appropriate for equipment, cart, and patient bed/stretchers rolling load traffic where applicable.
- .3 Patching and levelling compound:

### Vinyl Sheet Flooring

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- .1 Trowel applied Portland cement based, moisture, mildew, and alkali-resistant.
- .2 Minimum compressive strength after 28 days shall be minimum 3,500 psi when tested in accordance with ASTM C109/C109M-24 or ASTM C472.
- .3 Gypsum based compounds are not acceptable.
- .4 Acceptable manufacturers:
  - .1 Ardex.
  - .2 Mapei.
  - .3 Substitutions: in accordance with Section 01 25 00.
- .5 Acceptable *Product*: type as recommended by flooring manufacturer.
- .4 Cleaning solution:
  - .1 Acceptable *Products*: type as recommended by flooring manufacturer.
- .5 Site fabricated flash cove base accessories:
  - .1 Cove base cap:
    - .1 Finish: In accordance with Materials Finishes Schedule.
    - .2 Acceptable *Product*:
      - .1 Schluter 'Schiene AE45'.
      - .2 Substitutions: in accordance with Section 01 25 00.
  - .2 Plastic filler:
    - .1 Filler shall be used for sealing joints between top of integral cove wall base or integral cove cap and irregular wall surfaces.
    - .2 Filler shall be type as recommended by vinyl sheet flooring manufacturer.
  - .3 Fillet cove support strip:
    - .1 Minimum radius of 25 mm (1").
    - .2 Plastic fillet support shall be approved by vinyl sheet flooring manufacturer and approved by *Consultant*.
    - .3 Supply in product manufacture's longest lengths available.
- .6 Sealant: Mildew resistant sealant in accordance with Section 07 92 00.

## PART 3 - EXECUTION

### 3.1 Examination

- .1 Verify that site conditions have been provided as requested and specified.
- .2 Verify that substrates have been provided as specified without holes, protrusions, cracks greater than 1.6 mm (0.06") wide, unfilled control joints, depressions greater than 3 mm (1/8") deep, or other major defects.
- .3 Substrates shall be firm, structurally sound, sufficiently porous, and dry.
- .4 Examine substrate to ensure clean lines, correct level and freedom from cracks, ridges, dusting, scaling and carbonation.

### Vinyl Sheet Flooring

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- .5 Examine floors in advance of application of flooring to ensure that floors are protected against entry of water and moisture. Perform compatibility test with primer/adhesive and substrate.
- .6 Report conditions contrary to requirements preventing proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.
- .7 Failure to call attention to defects or imperfections will be construed as acceptance and approval of the substrate. Installation indicates acceptance of substrates with regard to conditions existing at the time of installation.
- .8 Defective work resulting from application to unsatisfactory surfaces will be considered the responsibility of those performing the work of this section.

### 3.2 Preparation

- .1 Comply with recommendations of ASTM F710-22.
- .2 Allow products to acclimatize in installation area for a minimum 24 hour prior to installation.
- .3 Substrates shall be free of wax, oil, silicone, soap, grease, dust, solvents, sealers, curing compounds, hardeners, alkaline salts, excessive carbonation or laitance, mould, mildew, paints, varnish, asphalt, residual adhesives, adhesive removers, or other contaminants or deleterious material that may inhibit bond strength or act as a bond breaker. Remove such contaminants and deleterious material using mechanical methods recommended by manufacturer. Do not use chemical abatement methods.
- .4 Concrete substrates that are loose, sandy, scaly, or have a white powdery surface are not acceptable. Substrates shall be mechanically prepared.
- .5 Flooring substrates shall be smooth and level within a tolerance of 3 mm (1/8") in a 3 m (10'-0") radius.
- .6 Fill surface cracks, holes, score marks, depressions, and grooves, and repair surface spalls with Portland cement patching or levelling compound.
- .7 At door opening locations where finished flooring is adjacent to weather-stripping or automatic door bottoms provide trowel-applied levelling compound to provide full contact between finished flooring and weather-stripping or automatic door bottoms. Taper trowel-applied levelling compound to transition with adjacent flooring substrate to provide smooth and seamless transition at maximum slope of 3:1000 (height to distance) ratio.
- .8 Expansion joints, isolation joints, and other movement joints in substrates shall not be filled with patching or levelling compound.
- .9 Remove bumps, high spots, peaks and ridges to produce a uniform and smooth substrate.
- .10 Prepare substrates so that installation of flooring shall not show telegraphing of substrate.
- .11 Remove chalking and dusting and loose material from concrete surfaces with wire brushed or by scraping.
- .12 Sweep and vacuum clean substrates minimum 24 hours prior to alkalinity, moisture, and adhesion testing. Do not use sweeping compounds.
- .13 Notify *Consultant* of any substrate or levelling compound defects or installation conditions that may result in unsatisfactory performance.



### Vinyl Sheet Flooring

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- .14 Prepared concrete substrate shall have a finish equivalent to a magnesium trowel finish. Shiny, slick, non-porous, or overly porous substrates are not acceptable and shall require additional preparation prior to installation of flooring products. Prepared concrete substrates shall have a Concrete Surface Profile #3 to #5 in accordance with International Concrete Repair Institute (ICRI).
  - .1 Substrate to be approved in writing by flooring manufacturer prior to application of flooring.
  - .2 Submit written report to *Consultant* following procedures for manufacturer's field review in accordance with Section 01 45 00.
- .15 Alkalinity, moisture, and adhesion bond testing:
  - .1 Test substrates in accordance with Field Quality Control paragraphs of Section 09 65 16 after mechanically preparing subfloor or applying patching and levelling compounds.
  - .2 Proceed with installation only after substrates pass testing. Document tests performed and submit in writing to *Consultant*.
- .16 Do not install floor coverings until they are same temperature as space where they are to be installed.
  - .1 Move floor coverings and installation materials to acclimatize in spaces where they will be installed at least 48 hours in advance of installation.
- .17 Sweep and vacuum clean substrates to be covered by floor coverings immediately before installation. Do not use sweeping compounds.
- .18 Where flooring adjoins thicker floor materials, apply levelling screed, feather out to make up difference in level between materials to achieve flush floor finish between adjacent flooring materials unless otherwise indicated.
- .19 Spray paints, permanent markers and other indelible ink markers shall not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and permanently stain the flooring material. If such contaminants are present on the substrate they shall be mechanically removed prior to the installation of the flooring material.

### 3.3 Flooring Installation

- .1 Verify product type, size, thickness, and colour prior to commencing installation. Do not install flooring with visual imperfections, colour variations or apparent defects.
- .2 Allow material to relax unrolled overnight, minimum 12 hours in installation areas.
- .3 Install rolls and cuts in sequence following manufacturer's installation requirements/diagrams.
  - .1 Lay flooring with joints parallel to building lines to produce symmetrical pattern and minimum joints.
  - .2 Place seams in inconspicuous and low-traffic areas, at least 150 mm (6") away from parallel joints in levelling underlayment, concrete joints, saw cuts and other type of joints.
  - .3 Avoid cross seams.

### Vinyl Sheet Flooring

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- .4 Lay sheet flooring centered in corridors, with equal sized sheet to either side of center sheet.
- .5 Mitre intersections at corridors typically. "T" type corridors shall be butt type installation.
- .6 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .7 Layout seaming uniformly, using full length flooring typically, minimum flooring size of not less than roll width. Limit quantity of less than full length floor pieces at corridors to maximum of 1.
- .8 Layout flooring to match reviewed shop drawings floor pattern including borders and accents.
- .9 Match edges of floor coverings for colour shading at seams.
- .4 Cutting and fitting sheets:
  - .1 Cut pieces to length allowing approximately 75 mm (3") to 150 mm (6") excess for trimming.
  - .2 Remove 12.7 mm (1/2") off the factory seam edge using an edge trimmer or straight edge and knife.
  - .3 Cut sheet and fit neatly around fixed objects without gaps.
  - .4 Position remaining sheets so that the top sheet overlaps the previous sheet by 12.7 mm (1/2") to 19 mm (3/4").
  - .5 Install one sheet at a time in wet adhesive.
  - .6 Roll the flooring immediately in both directions using 45 kg (100 lb) three-section roller.
  - .7 After the material has been laid and rolled in wet adhesive, underscribe the seam using the short scribes with a scribed pin right away.
  - .8 Cut the material along the scribe line using a hooked blade knife and holding it at an angle so to slightly undercut the material.
  - .9 Roll the seam with a hand roller.
  - .10 Cross seams:
    - .1 Straight edge and undercut at an angle the end of the first sheet.
    - .2 Spread adhesive and lay in wet adhesive.
    - .3 Roll the flooring immediately in both directions using 45 kg (100 lb) three-section roller.
    - .4 Overlap the second sheet at butt seam approximately 25 mm (1").
    - .5 Adhere second sheet except for last 450 mm (18") of butt seam; wait 20 – 30 minutes.
    - .6 Spread the adhesive for the last 450 mm (18"), lay in material, underscribe the seam to a neat, fit cut, and roll flooring immediately in both directions using 45 kg (100 lb) three-section roller.

### Vinyl Sheet Flooring

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- .5 Install drain clamping rings.
- .6 As installation progresses, roll flooring with 45 kg (100 lb) three-section roller to ensure full adhesion, remove adhesive ridges, and entrapped air.
- .7 Where cove base is not required, seal joint at wall with manufacturer's approved sealant.
- .8 Apply adhesive uniformly and at spreading rates in accordance with adhesive manufacturer's requirements. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .9 Obtain 100% adhesive coverage to flooring backing.
- .10 Install flooring to entire area indicated or scheduled, including coverplates occurring within finished floor areas. Maintain overall continuity of colour and pattern with pieces of flooring installed on cover plates. Tightly butt edges to perimeter of floor around cover plates and to cover plates. Cut flooring to floor drains occurring within finished floor areas.
- .11 Heat-welded seams:
  - .1 Weld seams in accordance with ASTM F1516-13(2018).
  - .2 Wait minimum of 24 hours after flooring installation before grooving and heat welding seams.
  - .3 Prepare, weld, and trim seams to produce flat surfaces flush with adjoining floor covering surfaces.
  - .4 Rout joints to approximately 2/3 of the thickness of the material and use welding bead to permanently fuse sections into a seamless floor covering. Groove shall be between 3 mm (0.118") and 3.5 mm (0.138") wide.
  - .5 Using a weld plate and skiving knife to make first cut and allow weld rod to fully cure to room temperature.
  - .6 Using a skiving knife only, finish the trimming of the remainder of the weld. The finish should be smooth and on the same level as the flooring.
  - .7 Trimming of welded joint while warm is not permitted unless final trimming is performed after weld has cooled to flooring temperature. Excess weld shall be removed using a heated standard putty knife.
  - .8 Roll the seam area with 45 kg (100 lb) three-section roller.
  - .9 Maximum variation of welds from plane or from straight: 6 mm (1/4") in 3 m (10 ft) length using a 3 m (10 ft) straight edge.
- .12 Flooring installation shall not show telegraphing of substrate. Flooring installation shall be homogenous free of substrate lines, pockets, bumps and unevenness.

### 3.4 Site Fabricated Flash Cove Wall Base Installation

- .1 Filler shall be used for sealing joints between top of integral cove wall base or integral cove cap and irregular wall surfaces such as masonry.
- .2 Supply and install continuous fillet cove support strip without gaps. Mitre fillet cove support strip at corners.
  - .1 Install straight and level to variation of 1:1000.

### Vinyl Sheet Flooring

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- .2 When fillet cove is installed, there shall be no gaps between fillet cove support and floor substrate.
- .3 Joints shall be straight and vertical and not less than 610 mm (2'-0") from corners.
- .4 Locate joints of cove cap over substrate control joints.
- .5 Taper/trim cove former to reduce radius to less than 12.7 mm (1/2") at door frame or similar conditions to ensure that cove radius is concealed at locations where cove base terminates at projections.
- .3 Supply and install continuous cove caps without gaps in longest lengths available. Mitre cove caps at corners.
  - .1 Install straight and level to variation of 1:1000.
  - .2 Scribe and fit cove caps to door frames and other obstructions.
  - .3 Joints shall be straight and vertical and not less than 610 mm (2'-0") from corners.
  - .4 Locate joints of cove cap over substrate control joints.
  - .5 Seal cove cap to wall substrate with sealant bead.

### 3.5 Installation - Transition Trim

- .1 Protect exposed edges of flooring, where finished and unfinished areas adjoining, by means of a transition trim butting to and flush with the finished surface of the flooring covering material and securely adhered to the substrate material.
- .2 Coordinate transitions with work of other sections.
- .3 Allow coiled vinyl material to lay flat for at least 24 hours at ambient temperatures specified above prior to installation.
- .4 Set to ensure installation is free of gaps.
- .5 Install in longest lengths possible.
- .6 Install straight to maximum allowable variation of 3 mm (1/8") over 3 m (10'-0").
- .7 Scribe and fit to obstructions.
- .8 Fit joints tightly, straight and vertical as applicable and not less than 610 mm (24") from corners.
- .9 Mitre corners.

### 3.6 Field Quality Control

- .1 Conduct quality control in accordance with Section 01 45 00.
  - .1 Field tests and inspections:
    - .1 Test for moisture vapour transmission in accordance with ASTM F710-22 and ASTM F1869-23 or ASTM F2170-19a in accordance with manufacturer's written flooring installation requirements. Results must not exceed 170 µg/m<sup>2</sup> (3 lb per 1,000 ft<sup>2</sup>) in 24 hours when tested to ASTM F1869-23, or exceed 75% when tested to ASTM F2170-19a.

### Vinyl Sheet Flooring

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- .2 Test for surface pH. Levels of pH shall not exceed the written recommendations of the flooring manufacturer and adhesive manufacturer. Test in accordance with ASTM F710-22.
- .3 For each test type: Conduct 3 tests for flooring applications up to 93 m<sup>2</sup> (1000 ft<sup>2</sup>) in area, and 1 additional test for each additional 93 m<sup>2</sup> (1000 ft<sup>2</sup>) of flooring area.
- .2 Adhesion bond test:
  - .1 Proceed with bond test after substrates have been prepared and alkalinity and moisture test have been completed.
  - .2 Select six substrate test areas, each 915 mm (3'-0") x 915 mm (3'-0") in size. Test areas shall be spaced a minimum 1220 mm (48") apart.
  - .3 Cut 915 mm (3'-0") x 915 mm (3'-0") panels from specified material.
  - .4 Using the specified adhesive, glue down each panel using adhesive manufacturer's recommended trowel.
  - .5 After 72 hours, attempt to remove the panels of flooring by pulling up from the corners.
- .2 Manufacturer's field review to be in accordance with Section 01 45 00.

### 3.7 Adjusting and Cleaning

- .1 Remove excess adhesive from surfaces of the sheet flooring and base as work progresses.
- .2 Thoroughly clean surfaces in accordance with manufacturer's recommendations.

### 3.8 Protection

- .1 Prohibit foot traffic on installed flooring for a period of 24 hours after installation. No heavy traffic, rolling loads, or furniture placement are permitted for a minimum of 72 hours after installation.
- .2 Protect new floors from time of final set of adhesive until final inspection.
- .3 Install floor protection in areas where work, repairs and installation of equipment, and foot traffic will occur.

### 3.9 Maintenance

- .1 Perform initial maintenance in accordance with the manufacturer's written requirements.
- .2 Allow flooring to dry prior to applying protection.

**END OF SECTION**

## Wall Coverings

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### **PART 1 - GENERAL**

#### **1.1 Summary**

- .1 Section includes:
  - .1 Vinyl wall coverings (WG1).

#### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.

#### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Samples:
  - .1 Submit 305 mm (12") square samples of each colour and texture of wall covering.

#### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.

#### **1.5 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

### **PART 2 - PRODUCTS**

#### **2.1 Performance/Design Requirements**

- .1 Fire resistance rating: Provide products that are identical with those of specified test method by qualified testing agency.
- .2 Flame spread: Maximum values in accordance with CAN/ULC-S102-10.
  - .1 Flame Spread Value (FSV): 25.
  - .2 Smoke Developed Value (SDV): 50.

#### **2.2 Wall Coverings**

- .1 Wall covering; WG1:
  - .1 Acceptable *Product*:
    - .1 Refer to Materials Finishes Schedule.
    - .1 Digital files shall be supplied to *Place of the Work* by Owner for fabrication of wall covering by *Contractor*.

## Wall Coverings

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.2 Substitutions in accordance with Section 01 25 00.

### 2.3 Accessories

- .1 Primer: Type as recommended by wall covering manufacturer to suit substrate type and compatible with wall covering adhesive.
- .2 Adhesive: Type as recommended by wall covering manufacturer to suit substrate type and compatible with wall covering and primer.

## PART 3 - EXECUTION

### 3.1 Examination

- .1 Examine substrates and conditions for compliance requirements affecting performance of *Work*. Proceed with installation only after unsatisfactory conditions have been corrected.
- .2 Examine substrates and installation conditions to ensure surface conditions meet or exceed a Level 4 finish, GA 214-21, Recommended Levels of Gypsum Board Finish.
- .3 Do not install wall coverings until wet-work in spaces is completed and dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at the levels specified for when the site is occupied for its intended use.

### 3.2 Preparation

- .1 Substrates surfaces shall be solid and dry.
- .2 Completely remove contaminants and deleterious substances and debris which may prevent, reduce, and affect adhesion.
- .3 Where gypsum board substrates do not have a Level 4 finish, prepare gypsum board surfaces to meet or exceed a Level 4 finish, GA 214-21, Recommended Levels of Gypsum Board Finish.
- .4 Work penetrating substrate shall be completed before installing wall covering.
- .5 Prime substrate surfaces to receive wall covering.
- .6 Unwrap wall covering and allow acclimatizing in installation area for 24 hours before application.

### 3.3 Installation - Vinyl Wallcoverings

- .1 Installation sequence shall be in accordance with wall covering manufacturer's written requirements.
- .2 Trim additional selvage where required to achieve colour and pattern match at seams.
- .3 Hang non-matched patterns by overlapping edges and double cutting through both thicknesses with 1 or 1.5 mm (4/100 or 6/100") thick zinc or aluminum strip back-up to prevent cutting substrate.
- .4 Wrap wall covering 150 mm (6") beyond inside and outside corners. No cutting at corners permitted, unless pattern or colour changes.
- .5 Horizontal seams are not permitted.

#### Wall Coverings

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- .6 Use stiff bristled brush or flexible broad knife to eliminate air pockets and to achieve 100% contact of wall covering to substrate.

### **3.4 Adjusting and Cleaning**

- .1 Remove excess adhesive with damp sponge from seams as work progresses, and wipe clean and dry with cloth towel.
- .2 Leave completed work smooth; clean, without wrinkles, gaps, overlaps or air pockets.

**END OF SECTION**



Hygienic Wall Panel System

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Hygienic wall panel system (sheet wall protection; WP).

### **1.2 Administrative Requirements**

- .1 Coordination:
  - .1 Coordination of work: coordinate layout, penetrations and installation of work of this section with work of other sections.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data:
  - .1 Submit *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Submit shop drawings to show layout, treatment at walls, and other objects. Indicated details of proposed treatment where materials meet other materials.
- .4 Samples:
  - .1 Submit sample panels in triplicate on 305 mm x 305 mm (12"x 12") showing each finish and colour.
  - .2 Submit samples of each accessory type product specified.
  - .3 Identify each sample as to project, finish, colour name, number.

### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.

### **1.5 Quality Assurance**

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.
- .2 Mock-ups:

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Hygienic Wall Panel System

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- .1 Provide full size panel system mock-up of each panel system, for review and acceptance by *Consultant*. Locate at the *Place of the Work* where directed by the *Consultant*.

## **1.6 Site Conditions**

- .1 Maintain surface and air temperatures between 18°C and 26°C for twenty four (24) hours preceding installation, during installation, and for forty eight (48) hours thereafter.

## **1.7 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

- .1 Flame spread:
  - .1 Maximum values in accordance with CAN/ULC-S102-10:
    - .1 Flame Spread Value (FSV): 15.
    - .2 Smoke Developed Value (SDV): 200.

### **2.2 Hygienic Panel Wall System**

- .1 WP; Description:
  - .1 Hygienic, impact resistant, water-resistant, low VOC, antimicrobial, PVC wall system.
  - .2 Surface: smooth.
  - .3 Antimicrobial: HACCP certified.
  - .4 Impact resistance: in accordance with ASTM D5420-21, exceeds 160 inch lbs.
  - .5 Fungi resistance: zero, in accordance with ASTM G21-15(2021)e1.
  - .6 Mold resistance: 10, in accordance with ASTM D3273-21.
  - .7 Colour: In accordance with Materials Finishes Schedule.
  - .8 Heights:
    - .1 WP1: as indicated.
    - .2 WP3: as indicated.
    - .3 WP4: as indicated.
    - .4 WP5: as indicated.
  - .9 Acceptable *Products*:
    - .1 In accordance with Materials Finishes Schedule.
- .2 Installation method: adhesive in accordance with manufacturer's instructions.
- .3 Trims, corners, seams: in accordance with Materials Finishes Schedule.
- .4 Welding rod: as recommended by panel manufacturer.

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Hygienic Wall Panel System

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- .5 Sealant: as recommended by panel manufacturer.
- .6 Panel cleaning materials: as recommended by panel manufacturer.

## **PART 3 - EXECUTION**

### **3.1 Examination**

- .1 Verify that specified site conditions exist before commencing the work of this section.
- .2 Examine surfaces to receive wall panel system. Report unsatisfactory conditions immediately to *Consultant*. The work of this section shall not proceed until unsatisfactory conditions have been corrected.
- .3 Substrate surface shall be straight to tolerance of  $\pm 3$  mm ( $\pm 0.12$ ") over 3000 mm (118").
- .4 Ensure that environmental conditions have been provided as requested and specified.
- .5 Defective *Work* resulting from application to unsatisfactory surfaces will be considered the responsibility of those performing the *Work* of this section.

### **3.2 Preparation**

- .1 Store materials for a minimum of 8 hours before installation on a solid flat surface and preconditioned for approximating the operating environment of the finished room.

### **3.3 Installation - Adhesive Method Application**

- .1 Cut and fit sheet as required. Clean back of panel using safe solvent cleaner. Avoid the use of ketones, acetones or any solvents that may cause damage to panel.
- .2 Apply double sided adhesive tape to top and bottom of sheet.
- .3 Apply adhesive tape to window and door openings where sheet has a tendency to pull away from substrate prior to adhesive cure.
- .4 Prime wall on area directly corresponding to tape position using a non-flammable contact adhesive.
- .5 Apply adhesive to back of sheet using trowel as recommended by panel manufacturer.
- .6 Apply sheet to wall and line up any reference marks before pressing into place.
- .7 Use a white rubber mallet for initial contact with adhesive tape.
- .8 Ensure adequate adhesive transfer by thoroughly rolling entire panel surface using a wall roller.
- .9 Allow 3 mm (1/8") gap at ceiling, door and window frames, pipes, and projections to accommodate panel expansion. Seal gaps with sealant.
- .10 Seal transition strip to flash-coved sheet vinyl with silicone sealant. Allow required gap between top of flash-coved flooring and panels to accommodate expansion.
- .11 Maintain at least 100% coverage of direct transfer of adhesive between panels and wall substrate.

### **3.4 Sheet to Sheet Jointing**

- .1 Heat welding:

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Hygienic Wall Panel System

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- .1 Apply double-sided adhesive tape flush to panel edges.
- .2 Remove burrs from panel edges.
- .3 Place each successive panel allowing for a 1.5 mm (1/16") gap between each panel.
- .4 Clean both the seam area and the weld rod with safe solvent cleaner - one that will not attach the vinyl or leave a film.
- .5 Test weld on a scrap piece of panelling before proceeding.
- .6 Proceed only when temperature and speed have been satisfied.
- .7 The weld may be trimmed flush when semi-cooled using the round part of the trimming spatula.

### **3.5 Jointing Sheet to Coved Vinyl Flooring**

- .1 High impact transition strip:
  - .1 The vertical joint strip should finish 9 mm (3/8") short of the bottom sheet.
  - .2 The back of the joint strip must be cut away.
  - .3 The transition strip should then be installed when all the panels have been installed.
  - .4 A bead of clear silicone sealant should then be applied between the flooring material and the bottom edge of the transition strip.
  - .5 Notch the transition strip for the thermoformed internal and external corners.
- .2 Overlapping:
  - .1 Extend the panel down a minimum of 25 mm (1") past the top of the flooring material.
  - .2 Use extra adhesive to fill the gap.
  - .3 Apply a bead of recommended sealant along the bottom edge of the panel.

### **3.6 Field Quality Control**

- .1 Manufacturer's field review to be in accordance with Section 01 45 00.

### **3.7 Adjusting and Cleaning**

- .1 Remove the protective film from the panels, clean panels with an anti-static solution.
- .2 Wash with water or a diluted neutral soap/detergent solution. Do not use materials containing abrasives or solvents.

### **3.8 Protection**

- .1 After materials have set, and until completion, co-ordinate *Work* to ensure that panels are not damaged by traffic or adjacent work.
- .2 At completion of panel installation, install protection in areas where finishing *Work*, repairs and installation of equipment will occur.

Hygienic Wall Panel System

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**END OF SECTION**

Painting

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Painting of interior paintable surfaces (PTX).
  - .2 Repainting of interior surfaces (PTX).
- .2 Paintable and non-paintable surfaces:
  - .1 Paint and finish paintable surfaces included in the *Work*, except where excluded by the *Contract Documents*.
  - .2 The following surfaces are considered non-paintable, except as otherwise indicated or scheduled:
    - .1 Material and equipment furnished prime and finish painted.
    - .2 Internal surfaces of steel tanks and stacks.
    - .3 Sprayed fire-resistive materials.
    - .4 Stainless steel, weathering steel, copper, bronze, chromium plate, nickel, anodized or lacquered or mill finished aluminum, Monel metal.
    - .5 Metallic and mastic insulation finishes.
    - .6 Abrasive material finishes on floors, stair treads, stair nosing and landings.
    - .7 Insulated electric cables.
    - .8 Machined parts of machinery and equipment.
    - .9 Concealed surfaces.
    - .10 Manufactured finish materials.

### **1.2 Administrative Requirements**

- .1 Conduct a pre-installation meeting in accordance with Section 01 31 19.
  - .1 Agenda shall include review of preparation requirements for surfaces to be repainted, including clear identification of responsibility for preparation of DSD-4 surfaces. *Contractor* shall be solely responsible for determining which *Subcontractor* shall prepare of each DSD-4 surface.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets and list of *Products* proposed for use in the work of this section as identified in 'Approved Product List' section of the MPI (Master Painters Institute) Architectural Painting Specification Manual and the MPI Maintenance Repainting Specification Manual (MPI Repainting Manual), as applicable. Correlate *Products* to Schedule furnished by *Consultant*.
- .3 Samples:

## Painting

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- .1 Samples for initial paint colour and finish selection:
  - .1 Submit manufacturer's colour charts showing full range of colours available, including light and deep dark tones, for each type of finish material indicated for colour selection by *Consultant*.
  - .2 *Consultant* shall have complete freedom in choice of colours in compiling colour schedule and will not necessarily select colours from standard colour charts of manufacturer of *Products* specified.
  - .3 Submit 3 drawdowns of each selected colour for review by *Consultant* and resubmit to *Consultant* as required to obtain approval. Drawdown to be of specified colour, sheen, and paint formula for applicable surface.
- .2 Samples for verification:
  - .1 Submit 3 samples on 200 mm x 305 mm (8"x 12") material of same type as that on which coating is to be applied, for *Consultant's* approval, at least 30 days before materials are required.
  - .2 Identify each sample as to *Project*, finish, formula, colour name, number, gloss name and number, date and name of *Contractor* and painting *Subcontractor*.
  - .3 Resubmit as required until colours and gloss value are approved.
- .4 MPI (Master Painters Institute) Manual:
  - .1 Provide and maintain 1 copy of MPI Manual, latest edition, at site office for reference.

### 1.4 Closeout Submittals

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.
- .3 Maintenance materials:
  - .1 Provide 2 sealed containers, each of 4 litres (1 gallon) capacity of each paint product in each colour used in the *Work* for *Owner's* maintenance use. Containers shall be new, clearly labelled with manufacturer's name, type of paint, colour and colour number. Store at *Place of the Work* where directed by *Owner*.

### 1.5 Quality Assurance

- .1 Qualifications
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.

### 1.6 Product Handling

- .1 Product handling shall be in accordance with Section 01 60 00 as supplemented by the requirements of this section.

## Painting

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- .2 Deliver painting materials in sealed, original labelled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.
- .3 Store paint *Products* and materials in original labelled containers in secure (lockable), dry, heated and well ventilated single designated area meeting minimum requirements of both paint manufacturer and authorities having jurisdiction, and at a minimum ambient temperature of 7°C.
- .4 Protect floor and wall surfaces of storage area. Protect floors with sheets or clean plywood or metal pans where mixing is being carried out.

### 1.7 Site Conditions

- .1 Comply with environmental requirements of MPI Manual.
- .2 Perform no painting work when ambient air and substrate temperatures are below 10°C for both interior and exterior work, unless suitable weatherproof covering and sufficient heating and ventilation facilities are in place in accordance with MPI Manual.
- .3 Perform no painting work when relative humidity is above 85% or when dew point is less than 3°C (5°F) variance between air/surface temperature.

### 1.8 Warranty

- .1 Warrant work of this section in accordance with Section 01 78 36.
- .2 Extended warranties:
  - .1 System:
    - .1 Labour, materials, and workmanship for work of this section.
    - .2 Duration: 2 years.

## PART 2 - PRODUCTS

### 2.1 Performance/Design Requirements

- .1 Except where more stringent requirements are specified, the following reference standard shall govern the work of this section:
  - .1 Master Painters Institute (MPI) Architectural Painting Specification Manual (MPI Manual) and the MPI Maintenance Repainting Specification Manual (MPI Repainting Manual), as applicable, including Identifiers, Evaluation, Systems, Preparation and Approved Product List, latest edition, and referenced herein as the MPI Manual, as issued by the local MPI Accredited Quality Assurance Association having jurisdiction.
- .2 Materials, preparation and workmanship shall conform to requirements of latest edition of Architectural Painting Specification Manual by the Master Painters Institute (MPI) (hereafter referred to as the MPI Painting Manual) as issued by the local MPI Accredited Quality Assurance Association having jurisdiction.
- .3 Painting systems:



## Painting

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- .1 Shall remain free from failure due to causes including: material failure; surface preparation less than that specified; and paint film thickness less than that specified, or when not specified, less than that coverage recommended by manufacturer.
- .2 Presence of any of following shall constitute failure: visible corrosion; film peeling, blistering, checking, scaling, embrittling or general film disintegration; and poor adhesion as determined by tape "peel-off" test procedures.

### 2.2 Materials

- .1 *Products* listed in MPI Manual shall be used in the *Work*, unless specified otherwise.
- .2 Paint and materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, and the like) shall be in accordance with the MPI Manual "Approved Product" listing and shall be from a single manufacturer for each system used.
- .3 Other paint materials, such as linseed oil, shellac, and the like, shall be highest quality *Products* of an approved manufacturer listed in the MPI Manual and shall be compatible with other coating materials as required.
- .4 Paint materials shall have good flowing and brushing properties and shall dry or cure free of blemishes or sags.
- .5 Where required, paints and coatings shall meet flame spread and smoke developed ratings designated by building code requirements and/or authorities having jurisdiction.
- .6 Paints and coatings materials used within the weatherproofing system shall not exceed the VOC content limits of the following criteria.
  - .1 Interior paints and coatings: to following Green Seal GS-11 VOC limits:
    - .1 Flat coating type: 50 gm/L.
    - .2 Non-flat coating type: 150 gm/L.
  - .2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: Green Seal Standard GC-03, Anti-Corrosive Paints, maximum 250 gm/L.
  - .3 Clear wood finishes, floor coatings, stains, and shellacs applied to interior elements: South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings.

### 2.3 Equipment

- .1 Painting and coating equipment in accordance with written requirements of MPI Manual.

### 2.4 Mixing and Tinting

- .1 Unless otherwise specified, paints shall be ready-mixed. Re-mix prior to application to ensure colour and gloss uniformity.
- .2 Paste, powder or catalysed paint mixes shall be mixed in accordance with manufacturer's written requirements.
- .3 Perform colour tinting operations prior to delivery of paint to *Place of the Work*.
- .4 Where thinner is used, addition shall not exceed paint manufacturer's recommendations.

## Painting

### 2.5 Colours and Gloss Levels

- .1 Paint colours and gloss levels shall be as selected by the *Consultant*. Locations as indicated or scheduled.
- .2 Colour and gloss schedule: in accordance with Materials Finishes Schedule.
- .3 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following MPI values:

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 maximum
G2	Velvet finish	0 to 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	35 minimum
G5	Semi-gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-Gloss finish	> 85	

## PART 3 - EXECUTION

### 3.1 Examination

- .1 Verify that specified site conditions exist before commencing the work of this section.
- .2 Prior to commencement of work of this section, examine surfaces scheduled to be painted.
  - .1 For surfaces to be repainted, the degree of surface deterioration (DSD) shall be assessed using assessment criteria in accordance with the MPI Repainting Manual.
- .3 Check moisture content and alkalinity of surfaces to be painted in accordance with Field Quality Control paragraphs of Section 09 91 00.
- .4 Inspect surfaces to be coated for gouges, marks, nibs, and other defects and properly prepare patching, filling, smoothing or other surface preparation necessary to ensure satisfactory finish.
- .5 Report in writing any condition adversely affecting work of this section.
- .6 Proceed with work only when surfaces and conditions are satisfactory. Remove dust, grease, rust, scale and extraneous matter, tool and machine marks and insects from surfaces which could be detrimental to a satisfactory and acceptable finish.

### 3.2 Preparation

- .1 Comply with manufacturer's written requirements and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- .2 Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

## Painting

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- .1 After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- .3 Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, mildew, grease, and incompatible paints, encapsulants, and other deleterious materials.
- .4 Paint surfaces when moisture content or alkalinity of surfaces to be painted comply with Field Quality Control paragraphs in Section 09 91 00.
- .5 Concrete substrates: Remove release agents, curing compounds, efflorescence, and chalk.
- .6 Masonry substrates: Remove efflorescence and chalk.
- .7 ZF75 and ZF120 galvanized-metal substrates: Remove grease and oil residue from galvanized sheet metal by methods to produce clean surfaces that promote adhesion of subsequently applied paints.
- .8 Substrates to be repainted:
  - .1 Prepare surfaces for repainting in accordance with MPI Repainting Manual requirements.

### 3.3 Installation

- .1 Do not paint unless substrates are acceptable and/or until Field Conditions (heating, ventilation, lighting and completion of work of other sections) are acceptable for applications of *Products*.
- .2 Apply primer, paint or stain in accordance with MPI Manual finish requirements based on Grade specified below in Section 09 91 00.
- .3 Schedule application of paints and coatings after cleaning to prevent field conditions causing flash-rusting, rusting, weathering or water damage to substrate, or other contamination of the substrate. Comply with MPI manual, MPI Repainting Manual, and manufacturer's written requirements, the most stringent of which shall govern.
- .4 Painting coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.
- .5 Tint each coat of paint progressively lighter to enable confirmation of number of coats.
- .6 Unless otherwise approved by *Consultant*, apply a minimum of 4 coats of paint where deep or bright colours are used to achieve satisfactory results.
- .7 Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1000 mm (39").
- .8 Do not apply finishes on surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, each coat shall be sufficiently dry and hard before a following coat is applied.
- .9 Prime coat of stain or varnish finishes may be reduced in accordance with manufacturer's directions.
- .10 Paint finish shall continue through behind wall-mounted items (i.e. chalk and tack boards) and exposed/ visible in complete work including interiors of cupboards and closets, tops of doors, trim, and the like, whether in sight line or not, including behind surface mounted fixtures and heating units.

## Painting

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- .11 *Consultant* shall have right to make changes in colour tone of finishes prior to final coat to obtain desired results without additional cost to *Owner*.
- .12 Access doors, prime coated butts and other prime painted hardware, registers, radiators and covers, exposed piping and electrical panels shall be painted to match adjacent surfaces in terms of colour, texture and sheen, unless otherwise indicated.

### 3.4 Mechanical and Electrical Items

- .1 Finish paint primed mechanical and electrical items with 2 coats of paint. Include for the following list unless otherwise indicated:
  - .1 Fire extinguisher cabinets.
  - .2 Prime and paint exposed insulated and bare pipes. Prime and paint exposed conduits and electrical raceways, fittings, outlet boxes, junction boxes, pull boxes and similar items. Use heat resistant epoxy paint on pipes and surfaces where operating surface temperature exceeds 65°C.
  - .3 Coordinate the painting of pipes, and coverings with mechanical contractor applying colour banding, flow arrows and pipe identification after the painting of pipes and coverings.
  - .4 Paint work to match adjacent walls and ceilings unless directed otherwise.
  - .5 Paint interior surfaces of air ducts and pipe trenches including heating pipes and elements that are visible through grilles and louvres with one coat of flat metal paint to limit of sight-line. Paint to be black or white as directed by *Consultant*.
  - .6 Gas pipes, whether concealed or exposed, shall be painted in accordance with gas code.
  - .7 Paint and finish wall surfaces behind convectors. Walls to be finished prior to installation of convector covers. Touch up walls after covers are installed as necessary to make good installation damage.

### 3.5 Field Quality Control

- .1 Conduct quality control in accordance with Section 01 45 00.
  - .1 Field tests and inspections:
    - .1 Field quality control shall be in accordance with Section 01 45 00
    - .2 Moisture and alkalinity testing:
      - .1 Check moisture content of surfaces to be painted using properly calibrated electronic moisture meter approved by paint manufacturer, and *Consultant*, or other approved method. Maximum moisture contents shall be in accordance with manufacturer's recommendations and as follows:
        - .1 Concrete and concrete masonry (clay and concrete brick/block): Maximum 12%.
        - .2 Gypsum board and plaster: Maximum 12%.
        - .3 Wood: Maximum 15%.
      - .2 Conduct moisture tests on concrete floors using cover patch test method.
      - .3 Test concrete, masonry and plaster surfaces for alkalinity.

## Painting

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- .3 Painted surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent to the *Consultant*:
  - .1 Brush / roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
  - .2 Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
  - .3 Damage due to touching before paint is sufficiently dry or any other contributory cause.
  - .4 Damage due to application on moist surfaces or caused by inadequate protection from weather.
  - .5 Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).
- .4 Painted surfaces shall be considered unacceptable if any of the following are evident under natural lighting source for exterior surfaces and final lighting source (including daylight) for interior surfaces to the *Consultant*:
  - .1 Visible defects are evident on vertical and horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39").
  - .2 Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
  - .3 When final coat on any surface exhibits a lack of uniformity of colour, sheen, texture, and hiding across full surface area.
- .5 Painted surfaces rejected by the *Consultant* shall be made good at the expense of the *Subcontractor*. Small affected areas may be touched up; large affected areas or areas without sufficient dry film thickness of paint shall be repainted. Runs, sags of damaged paint shall be removed by scraper or by sanding prior to application of paint.
- .6 Painting *Subcontractor* shall obtain from *Contractor* written confirmation of specific surface preparation procedures and primers used for fabricated steel items from the fabricator/*Supplier* to ascertain appropriate and manufacturer compatible finish coat materials to be used before painting any such work.

### 3.6 Adjusting and Cleaning

- .1 Promptly as work proceeds and on completion of *Work*, remove paint where spilled, splashed or spattered during the progress of the *Work*. Keep the premises free from unnecessary accumulation of tools, equipment, surplus materials and debris; at the conclusion of the work leave the premises clean.

### 3.7 Interior Paint Systems (PTX)

- .1 System references listed are based on MPI Manual and are Premium Grade, Low VOC (Green Seal GS-11), unless otherwise indicated:
  - .1 Concrete horizontal surfaces: (floors and stairs)
    - .1 INT 3.2A Latex floor enamel finish; gloss level G5.

Painting

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- .2 Ferrous architectural metal fabrications: Prepared and primed in accordance with Section 05 50 10.
- .3 INT 5.1R High performance architectural latex (over alkyd primer); gloss level G5.
- .2 Galvanized metal: (doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.)
  - .1 INT 5.3M High performance architectural latex (over water based galvanized primer); gloss level G5.
- .3 Plaster and gypsum board: (gypsum wallboard, drywall and textured finishes)
  - .1 INT 9.2B High performance architectural latex finish (over latex primer/sealer):
    - .1 Gloss level:
      - .1 Walls, except as otherwise indicated: G3.
      - .2 Ceilings, except as otherwise indicated: G1.
      - .3 Wet and service areas; walls and ceilings: G5.
    - .2 Use high-hide primer sealer type at glass mat finished gypsum board.
- .4 Epoxy paint (EPT1) in accordance with Materials Finishes Schedule.

### **3.8 Interior Repaint Systems**

- .1 System references listed are based on MPI Repainting Manual and are Premium Grade, Low VOC (Green Seal GS-11), unless otherwise indicated:
  - .1 Concrete horizontal surfaces: (floors and stairs)
    - .1 RIN 3.2A Latex floor enamel finish; gloss level G5 G6.
  - .2 Galvanized metal: (doors, frames, etc.)
    - .1 RIN 5.3J High performance architectural latex (do not use flat finish on doors and door frames).
  - .3 Plaster and gypsum board: (gypsum wallboard, drywall and textured finishes)
    - .1 RIN 9.2B High performance architectural latex finish:
  - .4 Epoxy paint (EPT1) in accordance with Materials Finishes Schedule.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Coat hooks, CH-1 and CH-2.
  - .2 Mirrors, MIR-1 and MIR-2.
  - .3 Coordination and installation of room accessories as supplied by *Owner*.

### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Templates:
  - .1 Submit templates to *Contractor* for use by installers and fabricators as required for proper location and installation of hardware.

## **PART 2 - PRODUCTS**

### **2.1 General**

- .1 Incorporate reinforcing, fastenings and anchorage required for building in of *Products*.

### **2.2 Room Accessories**

- .1 Coat hooks; CH-1 and CH-2:
  - .1 Acceptable *Products*:
    - .1 American Specialties Inc. (ASI) '7308 Single Robe Hook'.
    - .2 Bobrick 'Fino Collection B-9542'.
    - .3 Substitutions: in accordance with Section 01 25 00.
- .2 Mirrors:
  - .1 MIR-1:
    - .1 Size: as indicated.
    - .2 Acceptable *Products*:
      - .1 Uline 'Full Length H-11920'.
      - .2 Substitutions: in accordance with Section 01 25 00.
  - .2 MIR-2:
    - .1 Size: as indicated.
    - .2 Acceptable *Products*:
      - .1 Bobrick 'B-165'.

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Room Accessories

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- .2 Substitutions: in accordance with Section 01 25 00.
- .3 Room accessories supplied by *Owner*, installed by *Contractor*, locations as indicated or scheduled:
  - .1 Hand sanitizer, HS-1.
  - .2 Paper towel dispenser; PTD-1 and PTD-2.
  - .3 Soap dispenser; SD-1.
  - .4 Glove dispenser; GD.
  - .5 Head covering dispenser.
  - .6 PPE dispenser.
  - .7 Shoe cover dispenser.
  - .8 Glass drying rack.
- .4 *Owner* supplied, *Contractor* installed (OS/CI), locations as indicated or scheduled:
  - .1 Biosafety cabinet.
  - .2 Narcotics C-Safe.

## **PART 3 - EXECUTION**

### **3.1 Installation**

- .1 Comply with product manufacturers written requirements.
- .2 Install work to meet manufacturers' recommended specifications, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.
- .3 Include reinforcing, anchorage and mounting devices required for the installation of each *Product*.
- .4 Fit joints and junction between components tightly and in true planes, conceal and weld joints where possible.
- .5 Fabricate *Products* with materials and component sizes, metal gauges, hardware, reinforcing, anchors, and fastenings of adequate strength to ensure that specified items will remain free of warping, buckling, opening of joints and seams, and distortion within limits of intended use.
- .6 Supply handling instructions, anchorage information, roughing-in dimensions, templates and service requirements for installation of the work of this section, and assist or supervise, or both, the setting of anchorage devices and construction of other work incorporated with *Products* specified in this section.
- .7 Back paint components where contact is made with building finishes to prevent electrolysis.
- .8 Verify locations and mounting heights with *Consultant* before roughing-in.

### **3.2 Barrier Free Installation Heights**

- .1 Install accessories to permit operable parts and controls to be accessed in accordance with authorities having jurisdiction.



### **3.3 Adjusting and Cleaning**

- .1 Verify under work of this section that installed *Products* function properly, and adjust them accordingly to ensure satisfactory operation.
- .2 Do not remove protective coatings until final cleaning, or earlier if directed by *Consultant*.
- .3 Refinish damaged or defective work so that no variation in surface appearance is discernible. Refinish work at *Place of the Work* only if approved.

**END OF SECTION**

Corner Guards

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Corner guards (CG1).

### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Samples:
  - .1 Submit 3 samples, 300 mm (12") long or 300 x 300 mm (12 x 12") in size as applicable, for each *Product* in specified finish.
- .4 Shop drawings:
  - .1 Include plans, elevations, hardware, and installation details.
  - .2 Show seam locations.
- .5 Templates:
  - .1 Submit templates to *Contractor* for use by installers and fabricators as required for proper location and installation of hardware.

### **1.3 Quality Assurance**

- .1 Mock-up:
  - .1 Provide full mock-up of each of the following types of wall protection specified in location as designated by *Consultant*.
    - .1 Corner guards.
  - .2 Mock-up may be incorporated in the completed work upon acceptance of *Consultant*.

### **1.4 Site Conditions**

- .1 Install materials of this section only when surfaces and air temperatures have been maintained between 18°C and 24°C for 48 hours preceding installation, and will be so maintained during installation and for 48 hours thereafter. Maintain a minimum temperature of 13°C after above period. Relative humidity shall be 50% +/- 10%.

### **1.5 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.

Corner Guards

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## **PART 2 - PRODUCTS**

### **2.1 General**

- .1 Incorporate reinforcing, fastenings and anchorage required for building-in of *Products*.
- .2 Heights of corner guards: in accordance with Materials Finishes Schedule.

### **2.2 Corner Guard Protection**

- .1 Type (CG1):
  - .1 Finish: in accordance with Materials Finishes Schedule.
  - .2 Adhesives: as recommended by corner guard manufacturer.
  - .3 Acceptable Products:
    - .1 In accordance with Materials Finishes Schedule.
    - .2 Substitutions: in accordance with Section 01 25 00.

## **PART 3 - EXECUTION**

### **3.1 Installation**

- .1 Install work to meet manufacturer's written requirements, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.
- .2 Clean substrates to remove dirt, debris and loose particles prior to installation.
- .3 Fit joints and junction between components tightly and in true planes.
- .4 Install units on solid backing as indicated, and erect with materials and components straight, tight and in alignment.
- .5 Corner guards:
  - .1 Corner guard edges shall be smooth.
  - .2 Adhere corner guards with continuous adhesive beads in accordance with manufacturer's written requirements.
  - .3 Visible fasteners are not permitted.
  - .4 Install corner guard shall be tightly fitted without gaps.

**END OF SECTION**

Solid Phenolic Lockers

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Solid phenolic lockers.

### **1.2 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Indicate thicknesses of panels, fabricating methods, assembled banks of lockers, bases, trim, numbering, filler panels, end panels and manufacturer's installation instructions.
- .4 Samples:
  - .1 Submit sample of colour and finish.

## **PART 2 - PRODUCTS**

### **2.1 Materials**

- .1 Lockers:
  - .1 Type:
    - .1 2-tier Z shaped locker.
  - .2 Size:
    - .1 380 mm wide x 380 mm deep x 1830 mm high (15" x 15" x 72").
  - .3 Solid Phenolic:
    - .1 Solidly fused plastic laminate with matte-finish melamine surfaces, coloured face sheets, and black phenolic-resin core that is integrally bonded with exposed black edges milled and polished
    - .2 Thicknesses; solid phenolic panels:
      - .1 Doors and frames: 12.7 mm (1/2").
      - .2 Tops, bottoms, and shelves: 10 mm (3/8").
      - .3 Backs: 6 mm (1/4").
      - .4 Sides: 8 mm (5/16").
      - .5 Filler and end panels: 12.7 mm (1/2").
    - .3 Finish: rough matte finish.
    - .4 Colours:

Solid Phenolic Lockers

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- .1 To later selection by *Consultant* from manufacturer's full range.
- .4 Locking system:
  - .1 Hasp latch suitable for padlocks.
- .5 Hinges: 5 knuckle stainless.
- .6 Coat hooks: two single prong side hooks per door opening.
- .7 Base:
  - .1 Manufacturer's standard, 100 mm (4") high, fabricated from solid phenolic, colour to match lockers.
- .8 Acceptable *Products*:
  - .1 Spectrum Lockers 'Classic Locker'.
  - .2 Substitutions in accordance with Section 01 25 00.

### **PART 3 - EXECUTION**

#### **3.1 Installation**

- .1 Assemble and install lockers complete with bases in accordance with manufacturer's written installation requirements.
- .2 Securely fasten at least every third locker through to wall studs, masonry or concrete substrate.
- .3 Install trim and filler panels where required for continuous appearance and where obstructions occur. Specific conditions as indicated.
- .4 Install finished end panels to exposed ends of locker banks.

#### **3.2 Installation Tolerances**

- .1 Install plumb, level, tight and secured.
- .2 Comply with the following maximum tolerances:
  - .1 Plumb and level: Maximum 3 mm (1/8").
  - .2 Variation from indicated position: plus/minus 3 mm (1/8").

**END OF SECTION**

Pass-Through Hatches

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Pass through hatch with interlock.

### **1.2 Quality Assurance**

- .1 Qualifications:
  - .1 Manufacturers:
    - .1 Work of this section shall be fabricated by one manufacturer, by skilled workers in shop of a company specializing in work specified.
    - .2 Manufacturer shall have minimum of 5 years of continued experience, having successfully completed other laboratory projects of similar or greater magnitude.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Shop drawings:
  - .1 Further to requirements of Section 01 33 00, prepare drawings of general arrangement of pass-through hatches and loads to be carried by building structure.
  - .2 Obtain review of drawings by *Consultant* and authorities having jurisdiction, before proceeding with installation.

### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.
  - .2 Parts, maintenance, operating and servicing manuals: Upon completion, submit maintenance, servicing and operating catalogues individually bound.

### **1.5 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.

## **PART 2 - PRODUCTS**

### **2.1 Performance/Design Requirements**

- .1 Conform to Laboratory Biosafety Guidelines published by Laboratory Centre for Disease Control, Health Protection Branch, Health Canada and as follows:
  - .1 In Bio Containment Level 3 Lab: Biosafety Level 3 is required.

## Pass-Through Hatches

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### 2.2 Hatch

- .1 Acceptable *Product*:
  - .1 Terra Universal 'Pass-Through; CleanMount CleanSeam, Flush Wall Mount'.
  - .2 Substitutions: in accordance with Section 01 25 00.
- .2 Size: 18" W x 18" D x 18" H ID.
- .3 Envelope and liner :
  - .1 Shall be constructed of 316 stainless steel typically, 316L stainless steel where steel is to be welded, bright polished finish, of internal space dimensions as indicated.
  - .2 Mounting flange shall be on clean side end face for flush mounting to wall.
  - .3 Envelope shall encompass 2 door arrangement for pass-through operations.
- .4 Doors:
  - .1 20 mm (3/4") thick acrylic, with edges polished and chamfered.
  - .2 3 point side hinged.
  - .3 Closed silicone rubber seals.
  - .4 Door shall provide an air tight assembly.
  - .5 Doors shall be equipped with a mechanical interlock latch system fabricated of Type 316 stainless steel, typically, 316L stainless steel where steel is to be welded, bright polished finish. Interlock shall allow only one door to be open at any time.
- .5 Sealant; for interface of frame with existing epoxy finished surfaces:
  - .1 One-part, moisture curing, gun-grade elastomeric polyurethane sealant to ASTM C920-18, Type S, Grade NS, Class 25.
  - .2 Acceptable *Products*:
    - .1 Vulkem 116.
    - .2 Sikaflex NP1.

### 2.3 Fabrication

- .1 Take site measurements for proper fabrication of work of this section; assume complete responsibility for accuracy and completeness thereof.

## PART 3 - EXECUTION

### 3.1 Installation

- .1 Install pass-through hatches in existing openings at the *Place of the Work* in accordance with manufacturer's recommendations and requirements of authorities having jurisdiction.
- .2 Secure to face of finished walls and partitions, using anchorage indicated on reviewed shop drawings.
- .3 Install components to effect a secure, neat and complete installation.

Pass-Through Hatches

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**3.2 Field Quality Control**

- .1 Conduct quality control in accordance with Section 01 45 00.
- .2 Permits, Inspection and Testing: Arrange pay for permits, inspections, tests and test certificates, except operation and ownership licenses, required by authorities having jurisdiction. Make tests required by regulations of governing authorities in presence of authorized representatives of such authorities. Do adjustments as required by test results. Submit test certificates to *Consultant*.
- .3 Permits and Inspections: Provide licenses and permits and perform required inspections and tests.

**3.3 Demonstration and Training**

- .1 Conduct demonstration and training in accordance with Section 01 79 00.
- .2 Demonstration
  - .1 At a time to be identified by *Consultant*, the *Subcontractor* responsible for the work of this section shall instruct *Owner's* personnel in proper use, operations, and daily maintenance of pass-through hatches. *Subcontractor* shall train *Owner's* personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.
  - .2 Instruction shall also include advice on the maintenance of each item of equipment.

**END OF SECTION**



Metal Laboratory Casework

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## PART 1 - GENERAL

### 1.1 Summary

- .1 Section includes:
  - .1 Metal laboratory casework; stainless steel types:
    - .1 Laboratory furniture system.
  - .2 Provide cut-outs and holes in casework necessary for installation of service fittings.

### 1.2 Administrative Requirements

- .1 Coordination:
  - .1 Work of this section is closely integrated with laboratory work of other sections. Coordinate work of this section with work of:
    - .1 Laboratory countertops under Section 12 36 53.
  - .2 Coordinate metal backer plate locations with work of Section 09 22 00.
  - .3 Coordinate with mechanical, electrical, and other *Subcontractors* for installation and connections.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### 1.3 Submittals

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Clearly indicate materials, finishes, connections, attachments, reinforcing, locations of exposed fastening.
  - .2 Completely detailed shop drawings including plans, elevations, sections and details shall clearly indicate:
    - .1 Laboratory casework, leg frame assembly, countertops, plumbing/mechanical service fittings, sinks, and miscellaneous items.
    - .2 Location of each furniture unit in plan and elevation for each assembly.
    - .3 Location for roughing-in of plumbing and electrical services.
    - .4 Coordinate elevations with floor plan for each room and indicate locations and dimensions required for services.
- .4 Samples:
  - .1 3 sets of 200 mm x 200 mm (8" x 8") samples, or 200 mm (8") long as applicable, of each specified *Product*, material and finish.
    - .1 Finished stainless steel.

Metal Laboratory Casework

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- .2 Hardware, one unit of each type and finish.

#### 1.4 Closeout Submittals

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.

#### 1.5 Quality Assurance

- .1 Qualifications:
  - .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.
  - .2 Manufacturers:
    - .1 Shall have 10 years' of continued experience, minimum, having successfully completed other laboratory projects of similar or greater magnitude.

#### 1.6 Warranty

- .1 Warrant work of this section in accordance with Section 01 78 36.

### PART 2 - PRODUCTS

#### 2.1 Acceptable Manufacturers / Products

- .1 *Contract Documents* are based on *Products* by Mott Manufacturing Ltd.
- .2 Subject to compliance with requirements of *Contract Documents*, acceptable equivalent *Products* and systems of manufacturers listed below may be used upon *Consultant* approval:
  - .1 CiF Lab Solutions.
  - .2 Jamestown Metal Products.
  - .3 Kewaunee Scientific Corporation.
  - .4 Substitutions in accordance with Section 01 25 00.

#### 2.2 Performance Requirements

- .1 Conform to recommended practices of the Scientific Equipment and Furniture Association (SEFA), current version, except as superseded by this specification:
  - .1 SEFA 2: Installation.
  - .2 SEFA 8-M Laboratory Grade Metal Casework.
- .2 Static load performance of furniture units:

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- .1 Furniture units shall withstand the following maximum static loads without causing deformation, drawer, or door malfunction, or tipping of the unit.
- .2 Floor supported base cabinets shall carry 227 kg (500 lb) per linear feet of width evenly distributed over the full width and depth.
- .3 Suspended cabinets shall carry 136 kg (300 lb) evenly distributed inside the cabinet on the lower surface and shelves or drawers with the cabinet suspended.
- .4 Post-supported shelves shall carry 18 kg (40 lb) per square foot evenly distributed over the full width and depth of shelf up to a maximum of 90.7 kg (200 lb).
- .5 Cabinet levelling device shall carry 227 kg (500 lb) and capable of adjustment after load is removed.
- .6 Cabinet door shall withstand 69 kg (150 lb) applied at outer edge of cabinet door that is swung 180 degrees.
- .7 Wall cabinets: Each shelf and cabinet bottom shall carry 23 kg (50 lb) per linear foot of width with load evenly distributed on shelves and cabinet bottom over full width and depth.
- .8 Base cabinet shelves shall carry 46 kg (100 lb) evenly distributed over full width and depth.
- .3 Dynamic load performance of furniture components:
  - .1 Furniture components shall withstand following performance requirements without deformation of malfunction.
  - .2 Cabinet drawers: 50,000 opening and closing cycles with evenly distributed 46 kg (100 lb) load in drawer.
  - .3 Positive door catches: 100,000 opening and closing cycles without breakdown.
  - .4 Door hinges: 100,000 opening and closing cycles with no static load added to the door.
  - .5 Self-closing drawers: Drawers shall close when 25.4 mm (1") open and have no static interior load.
  - .6 Drawers 1219 mm (48") wide: Fully operable from either front corner with an interior 46 kg (100 lb) static load without racking or bending.
  - .7 Drawer opening: Operate with maximum opening force to fully open drawer with interior static load of 69 kg (150 lb) in properly levelled cabinet at 2.3 kg (5 lb).
- .4 Chemical resistance performance:
  - .1 Test procedure:
    - .1 One sample panel measuring 355.6 mm x 609.6 mm (14" x 24") shall be tested for chemical resistance in accordance with SEFA 8-M procedures.
  - .2 Test results:
    - .1 Finish should result in no more than four Level 3 conditions. The levels are described as follows:
      - .1 Level 0 - No detectable change.
      - .2 Level 1 - Slight change in color or gloss.

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.3 Level 2 - Slight surface etching or severe staining.

.4 Level 3 - Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.

.3 Panel shall be tested to following chemical reagents. Concentrations are noted as percent by weight.

.1 Acids:

Hydrochloric Acid	37%
Hydrofluoric Acid	48%
Sulphuric Acid	96%, 77%, 33%
Sulphuric + Nitric Acid	77% + 70%, equal parts
Phosphoric Acid	85%
Acetic Acid	98%
Formic Acid	90%
Chromic Acid	60%
Dichloroacetic Acid	Saturated
Acid Dichromate	5%
Nitric Acid	70%, 30%, 20%
Phenol	90%

.2 Bases and salts:

Sodium Hydroxide	40%, 20%, 10%, flake
Ammonium Hydroxide	28%
Potassium Hydroxide	40%, 10%
Hydrogen Peroxide	3%
Zinc Chloride	Saturated
Sodium Sulphide	Saturated
Silver Nitrate	Saturated

.3 Solvents:

Ethyl Alcohol	Butyl Alcohol
Methyl Alcohol	Ethyl Acetate
Ethyl Ether	Chloroform
Toluene	Acetone
Benzene	Carbon Tetrachloride
Formaldehyde (37%)	Gasoline
Naphthalene	Cresol
Xylene	Dioxane
Furfural	Dimethylformamide
Amyl Acetate	Tincture of Iodine
Trichlorethylene	Mono Chlorobenzene
Methylene Chloride	

## 2.3 Materials

.1 Stainless steel:

.1 Sheet: ASTM A240/A240M-25a, Type 316 alloy.

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- .2 Sealant: One component, clear silicone base sealant, chemical curing conforming to ASTM C920-18, antifungus composition.
  - .1 Acceptable *Products*:
    - .1 DOWSIL '786'.
    - .2 Mumentive 'Sanitary SCS1700 Sealant'.
- .3 Cabinet hardware:
  - .1 Pulls:
    - .1 Handles for drawers and hinged doors: 100 mm (4") satin finish stainless steel.
  - .2 Door catches: Adjustable zinc-plated, spring-loaded, nylon roller, Richelieu Martin Hardware '5526-2G'.
  - .3 Strike plates: Strike plates fabricated of stainless steel, deigned to be secured to cabinet stile without twisting, fixed with a single self-tapping screw, Mott '100274'.
  - .4 Door hinges:
    - .1 For stainless steel casework: Five knuckle-type barrel door hinges of 1.9 mm (14 gauge) stainless steel screwed into door and fastened to cabinet side stile with 2 countersunk 8 - 32 stainless steel machine screws and captive serrated tooth washer nuts.
  - .5 Drawer slides: 508 mm (20") full-extension, load capacity 46 kg (100 lb), Knappe & Vogt '8400B'.
  - .6 Drawer and hinged door bumpers: Two tongue-type white rubber, press-fit bumpers per door or drawer, '132699' by Carson Rubber Products.
  - .7 Press plugs: Plugs for cabinet levelling device holes in floors in black PVC, '245-006' by Ohio bolt & Nut Supply.
  - .8 Shelf clips:
    - .1 Clips for base cabinets, wall hung and tall storage cabinets; zinc-finished steel, Waterloo Furniture 'F607M'.
  - .9 Leg leveller bolt: 10 mm (3/8") diameter hex-head leg leveller bolt, Ohio Nut & Bolt 'OPC-0349-FH'.
  - .10 Split pin for door handle, 15.9 mm (5/8"), Bolt & Nut Supply '607-293'.

## 2.4 Conventional Base Cabinet Construction - Stainless Steel

- .1 Materials and thicknesses: Minimum sheet metal thicknesses for furniture manufacturing:
  - .1 14 gauge drawer slides, side suspension channels, and levelling both gusset plates.
  - .2 16 gauge for tubular rails, legs for tables, gusset plates, cabinet top and intermediate horizontal rails.
  - .3 18 gauge for door and drawer fronts, cabinet floor, cabinet sides, vertical front members, cabinet toe kick, service cover panels, table and kneehole frames, front rails, gable legs and duct caps, false panels, furring and filler panels.

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- .4 20 gauge for drawer backs, door backs, vertical closure channel, removable back panels, shelves, drawer bodies, drawer dividers, bin bodies, and pull-out shelves.
- .2 Cabinet frame:
  - .1 One-piece die-formed cabinet bottom construction with return side flanges turned up. Spot weld flanges to cabinet sides.
    - .1 At sink cabinets:
      - .1 For stainless steel cabinets: Stainless steel bottom in stainless steel cabinets.
  - .2 Cabinet bottoms shall be turned down at front to form "U" channel to accept toe kick and turn down at back with return to form the back lower member of cabinet base. *Provide* punched corner holes for access to levellers and to accept PVC press plugs.
  - .3 *Provide* additional vertical "HAT" shaped channels, spot-welded over the rear vertical corner returns. Channel shall be *Provided* with pre-punched holes to receive shelf clips, and slotted holes to receive drawer suspension tracks. Cabinets 762 mm (30") wide and larger shall be with intermediate "HAT" channels to brace cabinet and accept shelf clips and drawer tracks.
  - .4 Where applicable, the corner posts shall be pre-punched and slotted to accept drawer suspension systems and suspension pull-out shelves. Front vertical posts shall form inboard flush front construction for doors and drawers acting as the cabinet main member side gable tying the cabinet bottom and horizontal member together to form rigid case. Front post closure channels shall be "J" shaped. *Provide* channel with pre-punched holes to receive shelf clips.
  - .5 Doors and drawers shall overlap top intermediates and floor horizontal members, with no reveal.
  - .6 Top horizontal front framing member shall form "J" shaped section.
  - .7 Intermediate horizontal framing members shall form a "U" channel.
  - .8 Top rear horizontal framing member shall be angle section welded to back corner lapped post and side gables with welded corner gusset plates acting as cabinet bracing and counter top material fixing member.
  - .9 Enclosed cabinetry toe space shall act as a total enclosure to bottom of cabinet. Toe space section shall key up into "U" shaped front floor member and act as reinforcement. Toe space, front floor of cabinet and corner post sections spot welded together forming one structural member.
  - .10 Toe space members, side gable returns, and black lower member shall form all welded structural corner to accept leveller gussets and levelling bolts.
  - .11 Cabinet construction shall be electro spot-welded to form a strong well fitted, one-piece unit.
  - .12 Exposed horizontal structural cabinet members between doors and drawers shall be unacceptable.
- .3 Base cabinet components:

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- .1 Removable back panels for cupboard and drawer sections of base cabinets. Back panels for cabinets shall be formed with upper and lower return flanges to position panel and semi-anchored into cabinet interior rear structure to form a flush finish. Upper flange shall friction press fit behind cabinet upper horizontal member, and lower flange shall drop in place and fit over the floor return. *Provide* finger pull for ease of removal without tools.
- .2 Shelving edges; turned down on four sides and returned under on front and back. Shelves 914 mm (36") and longer shall be provided with "HAT" channel reinforcement at front edge.
- .3 Doors:
  - .1 Fabricate doors of 2 telescoping metal panels, 19 mm (3/4") thick, painted internally with a sound-deadening material extending continuously full-width, and top to bottom. Reinforce hinged side of door adequately with hinge machine screws to prevent sagging. Secure recessed hinges to cabinet posts with machine screws and concealed self-locking nuts. *Provide* positive door closer by nylon roller friction catches, mounted on horizontal top or intermediate members pull side of doors. *Provide* each hinged door with 2 rubber bumpers.
  - .2 Doors, drawers, tracks and back panels shall be interchangeable in the field without requiring special tools.
  - .3 Standard double door cabinets fabricated without centre stiles to maximize access to cabinet.
- .4 Drawers:
  - .1 Fabricate drawer fronts of 2 telescoping metal panels, stainless steel for stainless steel casework; and totally filled with sound-deadening material to eliminate possible drumming effect. Form removable outside panel with lip to fit over inside panels on top edge, and to lock into position at bottom with locking table to form a rigid, one-piece 19 mm (3/4") thick drawer front.
  - .2 Drawer operation on nylon wheels with steel ball bearings, with 1 wheel on drawer slide and 1 on drawer suspension track. Mechanically fix and lock drawer suspension tracks to vertical posts.
  - .3 Drawers suspended on 25.4 mm (1") diameter nylon rollers with steel ball bearing in radius galvanized steel track. Drawer to be self-closing last 150 mm (6") of travel.
  - .4 Drawer body shall consist of one piece construction including the bottom, two sides, back and inner front flanged end which shall be welded to the interior drawer front head. The exterior drawer front shall have a channel formation on the top edge with ground smooth and fully finished return edges telescoping together to be fully cove cornered at interior bottom on all 4 sides for easy cleaning, and have a reinforcing curl on top edges.
  - .5 Built-in stops to prevent inadvertent removal of drawers, with allowance for drawer to be removed by lifting front of drawers and pulling out.
  - .6 Drawer pulls in central location of drawer face. Provide two handles on units 762 mm (30") wide or larger.

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.5 Front rails:

- .1 Front rail units shall be fabricated from a single metal channel-shaped skirting panel in modular widths the same as standard base cabinets. Channel ends shall be turned to fit into end mounting brackets. Rails are 95 mm (3-3/4") high.

.6 Filler panels:

- .1 Fabricate front filler panels complete with flanges on both sides and a toe space along working face.
- .2 Scribe filler panels shall be flanged on one side and flat on the other, to be cut on jobsite to suit wall conditions, and shall fit into double angles secured to the wall. No visible mounting screws permitted.
- .3 Corner filler panels shall be a two-piece construction, one fixed panel and the other a variable panel to facilitate room dimensions. Each shall have flanges and an integral toe space filler to interlock with its counterpart.
- .4 End closing filler panels shall be flanged on one side and secured to back of cabinet. The edge extending to wall shall be flat and fit into a double angle secured to wall. No visible screws permitted.

## **2.5 Adjustable Wall Shelving**

- .1 Wall pilasters for adjustable shelving shall consist of vertical slotted posts 42 x 21 mm (1-5/8" x 13/16"), material and finish to match shelving.
  - .1 Vertical posts slotted on 25.4 mm (1") centres to accept notched shelf bracket; shelves fully adjustable without use of tools.
- .2 Shelf bracket notched to fit into slotted post and positively lock when weight is applied. Bottom flanged to support horizontal shelf, tabbed and pre-punched to mount shelf, material and finish to match shelving.
- .3 Shelves shall be stainless steel construction. Rear of shelf blocked with matching finished metal angle upturn to prevent items falling over edge. Provide matching finished flush metal closure panel to underside of shelf.
  - .1 Shelves reinforced to support load of 115 kg (250 lb) per shelf.
  - .2 Size and quantity of shelves: as indicated on drawings.
  - .3 Light valance:
    - .1 Provide light valances to indicated shelving.
    - .2 Coordinate lighting with work of Divisions 26, 27, and 28.

## **2.6 Cabinetry Finishes**

- .1 Stainless steel finish:
  - .1 AISI No. 4 Brushed finish, unless otherwise indicated.
  - .2 Grain direction shall be horizontal except where cabinet dimensions do not permit.



## **PART 3 - EXECUTION**

### **3.1 Installation**

- .1 Install casework systems, aligned and set level with levelling devices, in accordance with reviewed shop drawings and in compliance with system manufacturer's written requirements.
  - .1 Casework installation is not to proceed until completion of floor finishes. Flooring to be continuous below floor supported casework, unless otherwise indicated.
- .2 Provide 150 mm (6") high integral cove base to service strip, cabinet toekicks and exposed sides. Provide prefabricated outside corners.
  - .1 Colour: as selected by *Consultant*.
- .3 Install components to effect a secure, neat and complete installation.

### **3.2 Installation Tolerances**

- .1 Plumb between cabinet joints: 0.794 mm (1/32").
- .2 Counters; level: 3.2 mm in 3048 mm (1/8" in 10 ft).
- .3 Base cabinets:
  - .1 Adjust top rails and subtops to a single plane within: 1.588 mm (1/16").
  - .2 Align similar adjoining doors and drawers within: 1.588 mm (1/16").

### **3.3 Field Quality Control**

- .1 Conduct quality control in accordance with Section 01 45 00.
- .2 Manufacturer shall provide field review in accordance with Section 01 45 00.

**END OF SECTION**

Laboratory Countertops and Sinks

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## **PART 1 - GENERAL**

### **1.1 Summary**

- .1 Section includes:
  - .1 Stainless steel countertops.
  - .2 Stainless steel sinks.

### **1.2 Administrative Requirements**

- .1 Coordination:
  - .1 Work of this section is closely integrated with laboratory work of other sections. Coordinate work of this section, including pre-installation meeting, with work of:
    - .1 Metal laboratory casework under Section 12 35 53.
- .2 Conduct a pre-installation meeting in accordance with Section 01 31 19.

### **1.3 Submittals**

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 *Product* data sheets:
  - .1 Submit manufacturer's *Product* data sheets for *Products* proposed for use in the work of this section.
- .3 Shop drawings:
  - .1 Submit shop drawings of countertops, and sinks, including plans, elevations, sections and details. Clearly indicate materials, finishes, connections, attachments, reinforcing, locations of exposed fastening, and locations of plumbing and electrical services, fixtures and fittings.
- .4 Samples:
  - .1 450 mm (18") x 450 mm (18") stainless steel countertop.
- .5 Test reports:
  - .1 Submit independent testing laboratory report certifying that work surface meets or exceeds applicable chemical resistance test criteria specified in Section 12 36 53.

### **1.4 Closeout Submittals**

- .1 Submit closeout submittals in accordance with Section 01 78 00.
- .2 Operation and maintenance data:
  - .1 Submit manufacturer's operation and maintenance instructions for inclusion in the operation and maintenance manuals.

### **1.5 Quality Assurance**

- .1 Qualifications:

Laboratory Countertops and Sinks

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- .1 Execute the work of this section using workers skilled in the respective duties for which they are employed, and with minimum 3 years' experience in application of *Products*, systems, and assemblies specified.
- .2 Manufacturers:
  - .1 Manufacturer shall have minimum of 10 years of continued experience, having successfully completed other laboratory projects of similar or greater magnitude.

**1.6 Warranty**

- .1 Warrant work of this section in accordance with Section 01 78 36.

**PART 2 - PRODUCTS**

**2.1 Stainless Steel Countertops**

- .1 *Contract Documents* are based on *Products* by Mott Manufacturing Ltd.
- .2 Subject to compliance with requirements of *Contract Documents*, acceptable equivalent *Products* of the following manufacturers may be used upon *Consultant* approval:
  - .1 Jamestown Metal Products.
  - .2 CiF Lab Solutions.
  - .3 Kewaunee Scientific Corporation.
  - .4 Substitutions: in accordance with Section 01 25 00.
- .3 Fabricate of 1.5 mm (16 gauge) stainless steel Type 316/316L, No. 4 satin finish.
- .4 Counter top core:
  - .1 Reinforced with corrugated stainless steel core. Spray sound-deadening undercoat to underside.
- .5 Counter top edge:
  - .1 Marine edge 25.4 mm (1") wide, align front edges and exposed or open ends. From inner edge of 25.4 mm (1") wide surface, provide a downward slope of 30° with vertical drop of 6.4 mm (1/4"). Extend stainless steel under counter top minimum of 12.7 mm (1/2") and form drip edge.
- .6 Splash backs and sides: Form splash backs and sides integrally with tops to finished thickness of 19 mm (3/4").
- .7 Weld by argon arc process. Fillers, solders or spot-welding will not be permitted. Make welds continuous, crevice free, ground and polished to original No. 4 satin finish. At right angle return tops, joints shall be mitred at 45° joint line.
- .8 Fabricate tops in lengths as long as necessary to join in field, provide field-welded joints properly ground and finished to smooth surface indistinguishable from surrounding surfaces.
- .9 Stainless steel counter top butting to different top material shall be square, return edge faced same as front edge.

Laboratory Countertops and Sinks

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## **2.2 Stainless Steel Sinks**

- .1 Fabricate of 1.5 mm (16 gauge) stainless steel Type 316/316L, No. 4 satin finish.
- .2 Sink: Tested and labelled to ASME A112.19.3-2017/CAN/CSA-B45.4-17 - Stainless Steel Plumbing Fixtures.
- .3 Sink sizes: as indicated.
- .4 Sinks shall be formed from one piece of steel with 90° radiused inside corners. Sink bottoms shall have a 1° slope to drain fitting cut-out.
- .5 Sinks shall be integrally welded into countertop without visible seams or joints. Weld by argon arc process. Fillers, solders or spot-welding will not be permitted. Make welds continuous, crevice free, ground and polished to original No. 4 satin finish.
- .6 Spray sound-deadening undercoat to underside.
- .7 Drain board; where indicated:
  - .1 Provide fluted level drain board, as indicated, sloped to sink, integrally welded to top and sink without visible seam or joint.

## **PART 3 - EXECUTION**

### **3.1 Installation**

- .1 Install countertops and sinks in accordance with reviewed shop drawings and in compliance with manufacturer's written requirements, securing them in position by rigid, concealed fixing methods allowing no movement or rocking.
  - .1 Installation is not to proceed until completion of floor finishes so that flooring is continuous below floor supported assemblies, unless otherwise specified.
- .2 Joints between 2 lengths of tops of either similar or dissimilar materials shall be level, flush and shall form a 1.5 mm (1/16") joint. Fill joints with sealant. Install same types of tops to each other using bead sealant. Clean sealant from exposed surfaces in manner precluding surface damage.
- .3 Tops fabricated with abutting ends machined flush, fitted to watertight joint with acid resistant epoxy resin adhesive and secured with tite-joint fasteners on underside.
- .4 Tops shall be fabricated as large as practicable but in no case greater than the span between 3 leg frames or 3 pairs of table legs with abutting ends machined flush, fitted to a watertight joint with acid resistant cement.
- .5 Where tops are supported by leg frame or table assemblies and butt joints are required, joints shall always occur over centre of leg frame.
- .6 Mechanically fix tops to leg frames and tables from underside.
- .7 Counter tops and sinks to be protected, after their installation, with cardboard until final inspection of this work.

### **3.2 Field Quality Control**

- .1 Conduct quality control in accordance with Section 01 45 00.

Laboratory Countertops and Sinks

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- .2 Manufacturer shall provide field review in accordance with Section 01 45 00.

**END OF SECTION**