

**Scarborough Health Network
Mental Health Inpatient Consolidation Pod 3A**

3030 Birchmount Road, Scarborough, ON
Project No. 24-20

DIVISION 1 AND ARCHITECTURAL SPECIFICATIONS

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SUMMARY OF WORK AND GENERAL CONDITIONS

1 PROJECT OVERVIEW

- 1.1 An overview of the Work is provided herein. This overview is not intended to describe the full scope of the Work of this Contract. Refer to specification sections and construction documents for full scope of the Work and restrictions to carryout the work.
- 1.2 Facility name and address: Scarborough Health Network, Birchmount Hospital, 3030 Birchmount Road, Scarborough, ON
- 1.3 The project name is Mental Health Inpatient Consolidation Pod 3A , henceforth referred to as MHIC in this specification section.
- 1.4 This project is located on the third floor of a 5 storey fully operational hospital. All areas of the hospital are occupied. Carryout work in all areas outside of the MHIC to minimize interference to Owner's ongoing operation and in accordance with the Work Restrictions identified in drawings and specifications. The *Contractor* agrees to carryout the Work without disruptions to *Owner's* ongoing operations outside of the area of the Work except where specifically agreed to by the *Owner*.
- 1.5 The project is to fitout POD 3A located in the southeast quadrant of the 3rd floor to consolidate mental health inpatient services offered by the Scarborough Health Network. The MHIC consists of:
- .1 14 one bed psychiatric intensive care unit (PICU) beds with ensuites including 1 accessible unit
 - .2 10 one bed vulnerable patient room with ensuites including 1 accessible unit and 2 seclusion type patient rooms.
 - .3 Patient support and common spaces including lounges, dining, consultation rooms, showers, and patient sallyport
 - .4 Staff Team Stations
 - .5 Staff support and amenity spaces including lounges, medication room, and pantries
 - .6 Utility spaces.
- 1.6 The gross floor area of the space is approximately 1150m² (12,380 ft²)
- 1.7 To provide the building system infrastructure required to service the MHIC, the *Work* will extend to other parts of the building including but not limited to the 4th and SD levels as indicated in the drawings. The SD level is a full mechanical and electrical floor located immediately below the third floor. All areas of the hospital are occupied. Carryout work in all areas outside of the MHIC to minimize interference to Owner's ongoing operation and in accordance with the Work Restrictions identified in drawings and specifications.

SUMMARY OF WORK AND GENERAL CONDITIONS

- 1.8 Interior work:
- .1 Demolition: Work includes complete demolition back to shell space condition except service infrastructure and shafts that services other parts of the building that passes through the space, electrical room and exit stair. The demolition work generally includes but not limited to removal of non-structural partitions, ceilings, doors, glazed screens, finishes, mechanical and electrical systems and fixtures serving the 3rd floor and selective demotion in other areas of the building.
 - .2 New work: Work generally includes but not limited to provision of:
 - .1 new gypsum bd stud partitions,
 - .2 detention grade door with integrated blind glazed insert and standard hollow metal doors,
 - .3 HSS post reinforcement for HM frames, built in millwork,
 - .4 flooring (resilient sheet vinyl, epoxy mortar system),
 - .5 ceilings (gypsum bd and ACT),
 - .6 wall protection (wall panels, crash guard, bumper guards, corner guards),
 - .7 HVAC, plumbing systems and fixtures, sprinkler systems
 - .8 Fire Alarm, electrical systems and fixtures
 - .9 Code white and nurse call systems, CCTV, security access, comms cabling infrastructure,
 - .10 FFE as noted.
 - .3 Engage Hospital's vendor for sprinklers, fire alarm, nurse call, duress system, CCTV, security access and as noted in tender instructions.
- 1.9 Exterior work:
- .1 Replace existing windows with new aluminum curtainwall type profile complete with an integrated sill sash in all patient rooms, patient lounge, and exit stair on the 3rd floor.
- 1.10 Furniture, Fixture and Equipment (FFE)
- .1 Refer to **Equipment & Furniture Plan Key Notes** in drawing A-204 for work by Owner and work to be provided under this Contract.

2 PHASING

- 2.1 Work on the 4th floor is to be phased in order to minimise disruption to the occupants of the floor. The Contractor shall consider the impact to work sequence on the 3rd floor which other wise has no phasing requirements. Refer to phasing drawings for work in other parts of the building to accommodate the above referenced construction phasing.

SUMMARY OF WORK AND GENERAL CONDITIONS

3 STAGING:

- 3.1 No material and equipment staging area on exterior of site is available to the Contractor. Use loading dock for delivery of materials and equipment.
- 3.2 Refer to Section 01 14 00 Work Restrictions for additional information

4 PROJECT COMPLETION SCHEDULE

- 4.1 Refer to Mohawk Medbuy Request for Quotations for key Construction milestone dates.

5 DIVISION OF WORK

- 5.1 Division of the *Work* among *Subcontractors* and *Suppliers* is solely the *Contractor's* responsibility. *Consultant* and *Owner* assume no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of the *Work*.

6 CONSTRUCTION DOCUMENTS FOR CONSTRUCTION PURPOSES

- 6.1 *Owner* will supply to the *Contractor* a complete set of Construction Documents in PDF electronic format only before commencement of the *Work*. Contractor shall print hard copies for construction purposes as required at their own expense. Construction documents in other format will not be provided.

7 CONTRACTOR'S USE OF PREMISES

- 7.1 Confine Construction Equipment, Temporary Work, storage of Products, waste products and debris, and all other construction operations to limits required by laws, ordinances, permits, and Contract Documents, whichever is most restrictive. Do not unreasonably encumber Place of the *Work*.
- 7.2 Refer to Section 01 14 00 Work Restrictions for additional requirements.

8 CONTRACTOR'S SITE LEAD

- 8.1 The project site lead for the Contractor shall be trained in requirements and procedures contained in CSA Z317.13 Infection control during construction, renovation, and maintenance of health care facilities.
- 8.2 Provide proof of such training.

SUMMARY OF WORK AND GENERAL CONDITIONS

9 OWNERSHIP OF MATERIALS

- 9.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*. All *Work* and *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner*. The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Owner* or *Consultant*.

10 OWNER-SUPPLIED PRODUCTS

- 10.1 This sub-section refers to products supplied by the Owner for installation by Contractor under this Contract.
- 10.2 *Owner Responsibilities:*
- .1 Order and pay for *Owner-supplied Products* not already in *Owner's* possession.
 - .2 Arrange and pay for delivery of *Owner-supplied Products* F.O.B. the site, 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 site.
 - .3 Advise *Contractor* in writing of the value of *Owner-supplied Products* 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.
 - .9 Arrange for delivery of manufacturer's warranties to *Contractor* for inclusion in operation and maintenance manual.
- 10.3 *Contractor Responsibilities:*
- .1 Designate in progress schedule, time frames for delivery of *Owner-supplied Products* to the site and for receipt of related submittals. If the site is not ready to receive delivery of *Owner-supplied Products* 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 site.
 - .2 The installation of *Owner Supplied Equipment* is included in the *Work* and the *Contract Price*. There shall be no increase to the *Contract Price* or *Contract Time* for the installation of the *Owner Supplied Equipment*.

SUMMARY OF WORK AND GENERAL CONDITIONS

- .3 Review all required submittals and notify *Consultant* of any observed discrepancies or anticipated problems.
 - .4 Ensure that course of construction insurance is adequate to cover *Owner-supplied Products*.
 - .5 Receive and unload *Owner-supplied Products* at the site.
 - .6 Inspect deliveries jointly with *Owner*. Record and notify *Owner* and *Consultant* of shortages and visibly damaged or defective items.
 - .7 Ensure manufacturer's installation are included prior to installation.
 - .8 Handle *Owner-supplied Products* at site, including uncrating and storage. Dispose of waste materials and debris.
 - .9 Take appropriate precautions to protect *Owner-supplied Products* from loss or damage.
 - .10 Title to, all *Owner Supplied Equipment* in and all risk of loss, damage or destruction to any *Owner Supplied Equipment* will pass from *Owner* to *Contractor* when such *Owner Supplied Equipment* is delivered to *Contractor*. *Contractor* acknowledges and agrees that *Owner* may, from time to time, arrange for contractors or third parties to deliver *Owner Supplied Equipment* to *Contractor* on behalf of *Owner* and *Contractor* acknowledges and agrees that all such deliveries will be deemed to be deliveries of *Owner Supplied Equipment* by *Owner* to *Contractor* for the purposes of this Agreement. *Contractor* will remain responsible for the obligations under this Agreement performed by any third party to the same extent as if such obligations were performed by *Owner*.
 - .11 Repair or replace items damaged on site.
 - .12 Assemble, install, connect, adjust, and finish *Owner-supplied Products* as specified.
 - .13 Arrange for inspections required by authorities having jurisdiction as specified.
 - .14 Arrange for or perform testing as specified.
 - .15 Workmanship warranty for installation.
- 10.4 Refer to Appendix 2– FFE Responsibility Schedule for responsible parties to supply and install FFE items.

11 GENERAL

- 11.1 The requirements of the Articles of Agreement, Conditions of the Contract, Division 1 apply to and form all Sections of the Contract Documents and the Work.
- 11.2 Read and conform to:
 - .1 Division 1 requirements and documents referred to therein.

SUMMARY OF WORK AND GENERAL CONDITIONS

- 11.3 It is intended that *Work* supplied under these *Contract Documents* be complete and fully operational in every detail for the purpose required. Provide all items, articles, materials, services and incidentals, whether or not expressly specified or shown on Drawings, to make finished *Work* complete and fully operational, consistent with the intent of the *Contract Documents*.
- 11.4 Work designated as "N.I.C." is not included in this Contract.
- 11.5 Specifications, Schedules and Drawings are complementary and items mentioned or indicated on one may not be mentioned or indicated on the others.
- 11.6 *Contractor* finding discrepancies or ambiguities in, or omissions from the Drawings, Specifications or other *Contract Documents*, or having doubt as to the meaning and intent of any part thereof shall contact the *Consultant* for clarification. If the *Consultant* is not contacted for clarification, execute the *Work* in accordance with the most stringent requirements.
- 11.7 Where the singular or masculine is used in the Contract Documents, it shall be read and construed as if the plural, feminine or neuter had been used when the context or the statement so requires and as required to complete the *Work*, and the rest of the sentence, clause, paragraph, or Article shall be construed as if all changes in grammar, gender or terminology thereby rendered necessary had been made.
- 11.8 The terms "approved", "review", "acceptance", "acceptable", "satisfactory", "selected", "directed", "required", "submit", or similar words or phrases are used in standards or elsewhere in Contract Documents, it shall be understood, that words "by (to) the Consultant" follow, unless context provides otherwise.
- 11.9 The terms "exposed" or "exposed to view" refers to surfaces that are within the line of vision of persons from any accessible viewpoint, both within and without the building. Where any part of a surface is exposed to view, all other portions of that surface shall also be considered as exposed to view.

12 OWNER'S POLICIES

- .1 The *Contractor*, its employees, *subcontractors*, *suppliers* shall fully familiarize themselves and strictly adhere to the *Owner's* policies including but not limited to:
- .1 SHN Contractors Manual (General Conditions)
 - .2 SHN Infection Prevention and Control Manual
 - .3 SHN Planned Shutdown Policy
- .2 Contractor shall complete and submit forms as required by the Owner during the course of construction. These include but is not limited to:
- .1 SHN IPAC Activity Permit
 - .2 SHN ID Badge, Access Card, Building and Parking Access forms
 - .3 SHN Shutdown Request Form

SUMMARY OF WORK AND GENERAL CONDITIONS

13 PROGRESS AND COMPLETION

- 13.1 It is imperative that the areas of the hospital not under construction remain fully operational at all times.
- 13.2 Refer to Section construction documents for other work restrictions.

14 USE OF SITE

Accept full responsibility for assigned work and storage areas from the time of Contract award until Total Performance of the Work.

15 ACCESS/ PROPERTY CONSTRAINTS

- 15.1 Provide and maintain facilities to access to the Work.
- 15.2 Minimize disruption, noise and dust to the functions of existing operational areas of existing buildings. Times of entry, routes of access and time required to complete the Work outside of POD 3A shall be arranged and scheduled with the *Owner*.
- 15.3 Confine Work and operations of employees to limits indicated by the Contract Documents. Do not unreasonably encumber the premises with products.
- 15.4 Organize delivery of materials/equipment to and removal of debris and equipment from place of Work to permit continual progress of work and suitable for restricted site conditions.
- 15.5 Determine and make arrangement as required for loading and unloading of equipment and Products at times that will not affect the Hospital's use of the loading dock area.
- 15.6 All Products, materials and equipment required on Site shall be portable and/or size suitable for access and movement on Site and without causing damage to buildings.
- 15.7 Provide locked doors in barriers, permit access by Owner and Consultant to Work areas and to areas Contractor is responsible for.
- 15.8 Workers shall not enter existing building beyond construction areas except where required for connection or modification to existing services or other such work. Arrange such requirements with Owner prior to entering existing occupied areas.
- 15.9 Personnel access and material deliveries to the Site shall be only by routes designated by the Owner. Deliver Products between the hours of 8:00 am - 5:00 p.m. except when permitted otherwise by the Owner. Owner's equipment such as trucks, bins, dollies, and other such equipment/facilities shall not be used by

SUMMARY OF WORK AND GENERAL CONDITIONS

Contractors. Arrangements for handling bulky or heavy items requiring special procedures must be made and reviewed with the *Owner*.

- 15.10 Advise the *Owner* 48 hours in advance of large or cumbersome item deliveries. Give particulars of item size and weight, protection to existing surfaces to be provided and safety precautions during movement.

16 SECURITY

- 16.1 Be responsible for security of all areas affected by Work of this Contract until taken over by *Owner*. Take steps to prevent entry to the Work by unauthorized persons and guard against theft, fire and damage by any cause. Provide safe and secure access to and egress from existing premises at all times.
- 16.2 Provide suitable surveillance equipment and /or employ guard services, as required to adequately protect the work.
- 16.3 Make provisions to permit *Owner's* security personnel to view areas where all Work is being performed.
- 16.4 Use of facilities such as building entrances, elevators and access corridors as directed by *Owner's* security personnel and as specified.
- 16.5 Take acceptable precautions to guard Work site, premises, materials and the public during and after working hours due to the Work of this Contract.
- 16.6 A regular full-time watchman is generally not required on Site, however, if in the opinion of the *Consultant* or *Owner* the *Work* is not adequately protected, the *Owner* may request that a watchman be employed by the Contractor at no extra cost to the Contract.

17 CONSTRUCTOR

- 17.1 The *Contractor* will assume the role of Constructor as defined in the Ontario Occupational Health and Safety Act (OSHA) for the full duration of this project. The *Contractor* will carryout and be responsible for all the duties identified in OSHA for a Constructor.

END OF DOCUMENT

WORK RESTRICTIONS

1.1 RESTRICTIONS ON USE OF PREMISES

- .1 Limit use of premises to only those areas indicated as **POD 3A** in *drawings*.
- .2 Abide by *Owner's* restrictions and instructions to the use of areas outside of POD 3A that form part of the *Work*.
- .3 The *Owner* is under no obligation to allow the use of additional areas on the premises. Abide by any restrictions or conditions issued by the *Owner* for use of space not identified in the Construction Documents or required by the *Work*.
- .4 Coordinate use of premises under direction of *Owner*. The *Owner* reserves the right to further modify the use of any portion of the premises on a temporary or permanent basis without being charged additional costs by the Contractor.
- .5 Do not use or enter other areas of the premises that are not part of the *Work* or required to access the *Work*.
- .6 Seek approval to access *Work* areas that are outside of POD 3A. Provide minimum 72hr advance notice to *Owner*. Provide *Owner* with duration of access in such occupied areas. *Owner* reserves the right to deny, postpone or modify duration of access at no additional cost to the *Owner* or extension to project schedule. Access will not be unreasonably withheld. Durations lasting more than 1 day shall also be identified in the *Contractor's* construction schedule. Failure to provide such advance notice may result in denial or postponement of such access at Contractor's expense. No extension to the Construction Schedule or costs will be accepted by the Owner for delays resulting from failure to provide such advance notice.
- .7 *Contractor* will have use of an elevator designated by the *Owner* for construction related activities. **Owner may restrict use of the elevator by the Contractor.** *Contractor* shall use Stair 1A in southeast corner of work area for construction related activities when use of freight elevator is not permitted.

1.2 WORK SEQUENCE

- .1 Schedule and sequence the mechanical work within and outside of the area of work in phases to limit disruptions and to accommodate *Owner's* continued use of premises in other areas of the building. Extent of work area within each phase that may be indicated in the drawings are for reference only and may not constitute the number of phases actually required. Fully co-ordinate the phasing strategy with the *Owner*. **The Owner reserves the right to determine the number of phases that the Work is to be carried out in at their sole discretion.**

WORK RESTRICTIONS

- .2 Schedule, sequence, and construct *Work* in phases to provide for continuous public usage outside of POD 3A. Do not close off access to any exits within the building.

1.3 CONSTRUCTION STAGING

- .1 Consult with Owner if exterior staging area(s) for material and equipment is available. The Owner will provide if available but is under no obligation to provide the Contractor with a site staging area.
- .2 Additional staging areas requested by the *Contractor* will be subject to *Owner's* approval at their sole discretion. The Contractor shall execute the Work using the staging areas only authorized by the *Owner*.
- .3 Comply with all infection control measures in Section 01 59 00 within all staging, access, and work areas.
- .4 Such staging areas, if made available, are not to:
 - .1 block any fire lanes on the site.
 - .2 block any exits or access to exits required by *Owner* occupied areas.

1.4 WORK STOPPAGE OR INTERRUPTIONS

- .1 Refer to Supplementary Condition to CCDC 2 for work stoppage or interruptions relating to COVID
- .2 The Owner reserves the right to stop all or portions of the Work for non-COVID related reasons such as but not limited to, facilitating ongoing operations of the facility or building repairs/ maintenance. In such instances,
 - .1 the Contractor shall be entitled to an extension of the Contract Time for a reasonable time caused by such stop work order, other order, measure, or direction; and
 - .2 the Contractor shall not be entitled to any increase in compensation whatsoever, including, without limitation, any (a) increase to the Contract Price, payment of (b) costs, expenses or damages, and/or (c) any indirect, consequential, or special damages, such as loss of profits, loss of opportunity or loss of productivity."

1.5 OWNER OCCUPANCY

- .1 POD 3A is unoccupied. The *Owner* occupies all other areas where the Work is located.
- .2 Cooperate with *Owner* in scheduling operations to minimize disruptions and to facilitate *Owner* usage.

WORK RESTRICTIONS

1.6 OWNER OCCUPANCY

- .1 The *Owner* does not require occupancy of POD 3A until after “Ready for Takeover” procedures have been satisfactorily completed providing Contracted Project completion date is met.
- .2 All building life safety systems shall be fully tested and be operational at the time of takeover by the *Owner*.
- .3 *Contractor* shall carryout the *Work* and obtain all approvals from Authorities Having Jurisdiction to allow occupancy by the Contract completion date.

1.7 RESTRICTED HOURS OF WORK

- .1 All noisy work shall be performed between Monday to Sunday **7:30am to 5:30pm** only unless permitted otherwise by the *Owner*.
- .2 Deliveries, garbage removal, and temporary services shutdown shall be performed between **7:30pm to 5:30am** only.
- .3 Allow for hours of work restrictions in construction progress schedule.
- .4 *Work* within restricted hours is subject to the approval of the *Owner* which may be granted on a case-by-case basis.

1.8 NOISY WORK RESTRICTIONS IN OCCUPIED FACILITIES

- .1 Schedule excessively noisy work to avoid disturbance to building occupants. No noisy work is permitted between the hours of **7pm to 7am** unless prior consent on a case by case basis is provided by the *Owner*. Seek approval from *Owner* to carryout noisy work outside of the above referenced hours.
- .2 Co-ordinate such work in the schedule with the *Owner*. Provide minimum 72 hour advance notice. Abide by *Owner*’s restrictions on work stoppages within permitted working hours. Allow for occasional work stoppage within progress schedule and Contract.
- .3 Use powder actuated devices only with *Owner*’s written permission.

1.9 MAINTAINING BUILDING & LIFE SAFETY SYSTEMS IN OCCUPIED FACILITIES

- .1 Maintain all operational life safety systems and public access to exits in occupied areas during all stages of the *Work*.

WORK RESTRICTIONS

- .2 Be responsible for implementing all fire alarm by-pass and implementing fire watch and other procedures required by the Fire department and the *Owner* when disruption to the FA system is required by the *Work*.
- .3 Determine nature and exact locations of existing fire and smoke sensors prior to the commencement of the *Work*. Avoid direct or indirect jarring while working in adjacent areas and exercise caution to avoid triggering these devices.
- .4 Use plastic protection caps on sensor devices during by-pass. Taping of sensors is not permitted.
- .5 Be responsible for costs incurred by *Owner* on account of false fire alarms activated as a result of the execution of the *Work* without adequate precautions.
- .6 Seek approval from *Owner* for any disruption or temporary shutdown to building systems and building life safety systems required by the *Work*. Such shutdowns will not be unreasonably withheld. Requests for temporary disruption and shutdown must be made a minimum of 72 hours in advance. Failure to provide such advance notice may result in denial or postponement of such disruption or shut down at Contractor's expense. No extension to the Construction Schedule or costs will be accepted by the Owner for delays resulting from failure to provide such advance notice.

1.10 MAINTAINING ACCESS TO EXITS

- .1 Maintain full access in egress routes and to all exits in occupied areas at all time.
- .2 Do not block off or prevent usage of front entrances to the building at any time.
- .3 Co-operate with *Owner* to modify any constrictions made to existing access routes deemed to be unsafe, unsatisfactory to accommodate ongoing operations of the *Owner*, or is not code compliant.

1.11 COVID POLICY

- .1 Consult with *Owner* on the Facility's current COVID policy during regular construction meetings and as notified by *Owner* throughout the full duration of this project. Abide by such policies.

END OF SECTION

SPECIFICATIONS AND DOCUMENTS

PART 1 GENERAL

1.1 Section Includes

- .1 Complementary documents.
- .2 Precedence of Documents.
- .3 Specification grammar.

1.2 Related Documents

- .1 This section describes requirements applicable to all sections within Divisions 02 to 49.

1.3 Specifications Language and Style

- .1 These *specifications* are written in the imperative mood and in streamlined form. The imperative language is directed to *Contractor*, unless stated otherwise.
- .2 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.
- .3 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.
- .4 Words used in *specifications* and drawings that are defined in the CCDC Contract or Supplementary Conditions to the CCDC contract shall have the same meaning. Such words may be italicized in the *specifications* for ease of reference.
- .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".

1.4 Complementary Documents

- .1 Generally, drawings indicate graphically, the dimensions and location of components and equipment. *Specifications* indicate specific components, assemblies, and identify quality.
- .2 *Drawings, specifications, diagrams and schedules* are complementary, each to the other, and what is required by one, to be binding as if required by all.
- .3 Should any conflict or discrepancy appear between documents, which leave doubt as to the intent or meaning, apply the Precedence of Documents article below or obtain guidance or direction from *Consultant*.

SPECIFICATIONS AND DOCUMENTS

- .4 Examine all discipline drawings, specifications, schedules, diagrams and related Work to ensure that Work can be satisfactorily executed.
- .5 All specification sections of the Project Manual and *Drawings* are affected by requirements of Division 01 sections.

1.5 Precedence of Documents

- .1 In the event of conflict within and between the *Contract Documents*, the order of priority within specifications and *drawings* for this *Project* are - from highest to lowest:
 - .1 the Agreement and Definitions between the *Owner* and the *Contractor*,
 - .2 the Definitions,
 - .3 Supplementary Conditions,
 - .4 the General Conditions,
 - .5 Sections of Division 01 of the *Specifications*,
 - .6 Sections of Divisions 02 through 49 of the *Specifications*,
 - .7 Schedules and Keynotes:
 - .1 Material and finishing schedules within the *Specifications*, then
 - .2 Material and finishing schedules on *Drawings*, then
 - .3 Keynotes and definitions thereto, then
 - .8 Diagrams,
 - .9 *Drawings*:
 - .1 Drawings of larger scale shall govern over those of smaller scale of the same date, then
 - .2 Dimensions shown on drawings shall govern over dimensions scaled from drawings, then
 - .3 Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical drawings.
 - .10 Later dated documents shall govern over earlier documents of the same type.
- .2 In the event of conflict between documents, the decision of the *Consultant* shall be final.

1.6 Specification Grammar

- .1 *Specifications* and terms used are written in the imperative (command) mode, in an abbreviated form, terms which are commonly used in the Canadian construction industry.

SPECIFICATIONS AND DOCUMENTS

- .2 Imperative language of these technical *specification* sections is always directed to the *Owner* and *Contractor* identified as a primary constructor, and as executor of the *Contract*, unless specifically noted otherwise.
 - .1 This form of imperative (command) mode statement requires the primary constructor to perform such action or Work.
 - .2 Perform all requirements of the Contract Documents whether stated imperatively or otherwise.
- .3 Division of the *Work* among *Subcontractors*, *Suppliers*, or others is solely the *Contractor's* responsibility. The *Consultant(s)* and *specification* authors assume no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of Work.

END OF SECTION

SUBSTITUTION PROCEDURES

1.1 DEFINITION

- .1 In this Section "Substitution" means a *Product*, System, Assembly, and or a manufacturer 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.

1.2 SUBSTITUTION PROCEDURES

- .1 *Contractor* may propose a Substitution wherever a *Product*, System, Assembly, and or manufacturer is specified by proprietary name(s), unless there is accompanying language indicating that Substitutions will not be considered.
- .2 *Contractor* may propose a Substitution wherever a *Product*, System, Assembly, or manufacturer is specified by proprietary name(s) and accompanied by language such as "or equal", "or approved equal", or other similar words.
- .3 **Contractor may propose a Substitution for evaluation by the Consultant during the Tender only.** Accepted substitution will be provided in writing via addendum to all bidders. Only specified products or substitutions which have been accepted in writing via addendum are to be included in the bid price and will be the ONLY materials, products, systems, assemblies, or manufacturer accepted for use on this *Project*.
- .4 Provided a proposed Substitution submission includes all of the information specified in this Section under Submission Requirements. The *Consultant* will promptly review and accept or reject the proposed Substitution.
- .5 *Consultant* may accept a Substitution if satisfied that:
 - .1 the proposed substitute *Product*, System, or Assembly is the same type as, is capable of performing the same functions as, interfaces with adjacent work the same as, and meets or exceeds the standard of quality, performance and, if applicable, appearance and maintenance considerations, of the specified Product,
 - .2 the proposed substitute manufacturer has capabilities comparable to the specified manufacturer, and
 - .3 the Substitution provides a benefit to *Owner*.
- .6 Request for Substitution during construction will be reviewed **ONLY** if the Contractor can substantiate that the product specified is no longer available or manufactured after submission of the bid.
- .7 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,

SUBSTITUTION PROCEDURES

Consultant will not consider that a valid reason to accept a Substitution during construction or changes to contract value.

1.3 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 summarized 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.

END OF SECTION

CONTRACT MODIFICATION PROCEDURES

1.1 CCDC AND SUPPLEMENTARY CONDITIONS

- .1 Unless specified otherwise in the CCDC contract or Supplementary Conditions to the CCDC contract, the provisions contained in this section shall apply.

1.2 SCHEDULE OF LABOUR RATES

- .1 Prior to the first application for payment, submit for the *Consultant's* and SHN Project Manager's review a schedule of labour rates for all trades and classifications of trades, such as journeymen, apprentices, and foremen that will be employed in the Work. Provide a breakdown of payroll burden component of labour rates.
- .2 Labour rates shall reflect the salaries, wages, and benefits paid to personnel in the direct employ of the Contractor, Subcontractors, and sub-Subcontractors, stated as hourly rates, that will be used when:
 - .1 preparing price quotations for *Change Orders*, and
 - .2 determining the cost of work attributable to *Change Directives*.
- .3 Labour rates stated in the schedule of labour rates shall be consistent with rates that will actually be paid, and payroll burden costs that will actually be incurred, in the normal performance of the Work, during regular working hours. Labour rates shall not include any additional overhead and profit component.
- .4 Where collective agreements apply, the labour rates shall not exceed those established by collective agreement.
- .5 Obtain the Owner's written acceptance of the schedule of labour rates before submitting the first Change Order quotation.
- .6 Accepted schedule of labour rates will be used solely for evaluating *Change Order* quotations and cost of performing work attributable to *Change Directives*.
- .7 The Contractor may request amendments to the accepted schedule of labour rates if changes in the labour rates that will actually be paid, or payroll burden cost that will actually be incurred, in the normal performance of the Work can be demonstrated. Obtain the Owner's written acceptance of such changes.

1.3 SCHEDULE OF EQUIPMENT RATES

- .1 Prior to the first application for payment, submit for the Consultant's review a schedule of equipment rates for Contractor owned Construction Equipment.

CONTRACT MODIFICATION PROCEDURES

- .2 Equipment rates shall reflect the rates that will be used when:
 - .1 preparing price quotations for Change Orders, and
 - .2 determining the cost of work attributable to Change Directives.
- .3 Equipment rates stated in the schedule shall be consistent with local equipment rental market rates and shall not include any additional overhead and profit component.
- .4 Obtain the Owner's written acceptance of the schedule of equipment rates before submitting the first Change Order quotation.
- .5 Accepted schedule of equipment rates will be used solely for evaluating Change Order quotations and cost of performing work attributable to Change Directives.
- .6 The *Contractor* may request amendments to the accepted schedule of equipment rates if changes in local equipment rental market rates can be demonstrated. Obtain the Owner's written acceptance of such changes.

1.4 VALUATION OF CHANGES BASED ON AGREED UNIT PRICES

- .1 The Consultant may, at the outset of the Contract or at any other time, request the Contractor to submit unit prices anticipated to be required in valuing changes in the Work.
- .2 The Contractor shall submit such unit prices promptly upon request.
- .3 The unit prices shall be valid for a specified duration.
- .4 The unit prices shall exclude all fees for overhead and profit and shall be subject to the percentage fees specified in this Section under Fees for Overhead and Profit – Change Orders.
- .5 The Consultant will evaluate the Contractor's quoted unit prices and, if accepted by the Owner in writing, the agreed unit prices shall be used to value subsequent proposed changes in the Work wherever they are applicable.

1.5 METHOD OF CONTRACT PRICE ADJUSTMENT - CHANGE ORDERS

- .1 Unless otherwise agreed, the adjustment of the *Contract Price* on account of a proposed change in the *Work* shall be based on a quotation for a fixed price increase or decrease to the *Contract Price* regardless of the *Contractor's* actual expenditures and savings.

CONTRACT MODIFICATION PROCEDURES

1.6 CHANGE ORDER PROCEDURES

- .1 Upon issuance by the *Consultant* to the *Contractor* of a proposed change in the Work, and unless otherwise requested in the proposed change or unless otherwise agreed:
 - .1 Submit to the Consultant a fixed price quotation for the proposed change in the Work within 5 days after receipt of the proposed change in the Work.
 - .2 Provide a detailed breakdown of the price quotation including the following to the extent applicable, with appropriate supporting documentation:
 - .1 Estimated labour costs, including hours and applicable hourly rates based on the accepted schedule of labour rates.
 - .2 Estimated Product costs, including Supplier quotations, estimated quantities and unit prices.
 - .3 Estimated Construction Equipment costs.
 - .4 Enumeration of all other estimated costs included in the price quotation.
 - .5 Estimated credit amounts for labour and Products not required on account of the proposed change.
 - .6 Fees, not exceeding the applicable percentages for overhead and profit as specified in this Section.
 - .7 Where applicable, Subcontractor quotations, also including a detailed breakdown of all of the above.
 - .3 Include in the quotation the increase or decrease to the Contract Time, if any, for the proposed change, stated in number of days.
 - .4 Include in the quotation the number of days for which the quotation is valid.
 - .5 The quotation will be evaluated by the *Consultant* and the *Owner* and, if accepted by the Owner, be documented in the form of a signed Change Order.

1.7 FEES FOR OVERHEAD AND PROFIT – CHANGE ORDERS

- .1 Where the *Contractor's* price quotation for a *Change Order* result in a net increase to the Contract Price, the Contractor's entitlement to a fee for overhead and profit in the quotation shall be as follows, as applicable:
 - .1 For work to be performed by the *Contractor's* own forces, 10% of the Contractor's price quotation before the Contractor's fee is applied.
 - .2 For work to be performed by a Subcontractor, 5% of the Subcontractor's price quotation including the Subcontractor's fee.

CONTRACT MODIFICATION PROCEDURES

- .2 Where a *Subcontractor's* price quotation for a *Change Order* result in a net increase to the Subcontractor's contract price, the Subcontractor's entitlement to a fee for overhead and profit in the quotation shall be as follows, as applicable:
 - .1 For work to be performed by the *Subcontractor's* own forces, 10% of the Subcontractor's price quotation before the Subcontractor's fee is applied.
 - .2 For work to be performed by a sub-Subcontractor, 5 % of the sub-Subcontractor's price quotation including the sub-Subcontractor's fee.
- .3 Where the Contractor's or a Subcontractor's price quotation for a *Change Order* result in a net decrease in price before adjustment for fees for overhead and profit, such a price quotation shall be for the net decrease without any adjustment for fees for overhead and profit.

1.8 METHOD OF CONTRACT PRICE ADJUSTMENT - CHANGE DIRECTIVES

- .1 Unless the *Owner* and the *Contractor* reach an earlier agreement on the adjustment to the *Contract Price* by means of a *Change Order* that cancels the *Change Directive*, the adjustment in the *Contract Price* for change carried out by way of a *Change Directive* shall be determined as specified in the General Conditions of Contract after the change in the *Work* is completed.

1.9 CHANGE DIRECTIVE PROCEDURES

- .1 If a *Change Directive* is issued for a change in the *Work* for which a proposed change was previously issued, but *no Change Order* has yet been signed, the Change Directive shall cancel the proposed change and any *Contractor* quotations related to that change in the *Work*.
- .2 When proceeding with a change in the Work under a Change Directive, keep accurate records of daily time sheets for labour and Construction Equipment, and invoices for Product and Construction Equipment costs. Submit such records to the Consultant [daily] [weekly], until the Change Order superseding the Change Directive is issued.

1.10 FEES FOR OVERHEAD AND PROFIT – CHANGE DIRECTIVES

- .1 The Contractor's entitlement to a fee for overhead and profit on the Contractor's expenditures and savings attributable to a Change Directive shall be as follows, as applicable:
 - .1 For work performed by the Contractor's own forces, 10% of the Contractor's net increase in costs.
 - .2 For work performed by a Subcontractor, 5 % of the sum of the Subcontractor's net increase in costs plus the Subcontractor's fee.

CONTRACT MODIFICATION PROCEDURES

- .2 A Subcontractor's entitlement to a fee for overhead and profit on the Subcontractor's expenditures and savings attributable to a Change Directive shall be as follows, as applicable:
 - .1 For work performed by the Subcontractor's own forces, 10% of the Subcontractor's net increase in costs.
 - .2 For work performed by a Sub-subcontractor, 10 % of the sum of the Sub-subcontractor's net increase in costs plus the Sub-subcontractor's fee.
- .4 Where a Change Directive results in net savings on account of work not required to be performed and a net decrease in the Contractor's or Subcontractor's cost, the net savings to the Contractor or Subcontractor shall be calculated without any adjustment for fees for overhead and profit.
- .5 When a Change Directive is ultimately recorded as a Change Order, there shall be no additional entitlement to fees for overhead and profit beyond those specified in this article.

1.11 SUPPLEMENTAL INSTRUCTIONS

- .1 The *Consultant* may issue *Supplemental Instructions* to provide clarifications to the *Contract Documents*, provide additional information, or make minor variations in the Work not involving adjustment in the *Contract Price* or *Contract Time*.
- .2 If the *Contractor* considers a Supplemental Instruction to require an adjustment in Contract Price or Contract Time, the Contractor shall promptly notify the Consultant and the Owner in writing and shall not proceed with any work related to the Supplemental Instruction pending receipt of a Change Order, a Change Directive, or, in accordance with the dispute resolution provisions of the General Conditions of Contract, a Notice in Writing of a dispute and instructions to proceed.

END OF SECTION

PAYMENT PROCEDURES

1.1 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 Break out values to reflect the work identified in the release of holdback section in this specification section.
- .3 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*.
- .4 Provide the schedule of values in an electronic spreadsheet format that provides for inclusion of the following information:
 - .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 that is sufficiently detailed and comprehensive to facilitate *Consultant's* evaluation of applications for payment at an appropriate level of detail.
 - .3 Provisions for approved *Change Orders* allowances, unit price work and assignable contracts 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 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.

PAYMENT PROCEDURES

- .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.

1.2 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 when required due to significant changes in rate of progress of the *Work* or significant changes in the *Contract Price* or when requested by *Consultant*.

1.3 WORKERS' COMPENSATION CLEARANCE

- .1 Submit proof of workers' compensation clearance with each application for payment.

1.4 STATUTORY DECLARATIONS

- .1 Submit a statutory declaration in the form of CCDC 9A – Statutory Declaration of Progress Payment Distribution by *Contractor* with each application for payment except the first.

1.5 RELEASE OF HOLDBACK

- .1 Annual Release
 - .1 Holdback will be released annually on the anniversary of the contract date. Holdback will be released in accordance with the requirements of and procedures stipulated in the Construction Act R.S.O. 1990 , c. C.30
- .2 Payment of basic holdback
 - .1 Release of basic holdback 1 – upon certification by Payment Certifier the work has attained substantial performance and fit for the use intended. Holdback will be released in accordance with the requirements of and procedures stipulated in the Construction Act R.S.O. 1990 c. C.30.
- .3 Payment of Finishing holdback on a phased basis
 - .1 Release of finishing holdback – upon certification by Payment Certifier the

PAYMENT PROCEDURES

Work has attained total performance. Holdback will be released in accordance with the requirements of and procedures stipulated in the Construction Act R.S.O. 1990 c. C.30.

END OF SECTION

PROJECT MANAGING AND COORDINATION

PART 1 GENERAL

1.1 Section Includes

- .1 Coordination work under this *Contract* and with *other Contractors* engaged by the *Owner*.
- .2 Pre-installation and scheduled progress meetings.

1.2 Related Sections

- .1 Section 01 32 00 - Construction Progress Documentation
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 78 00 – Closeout Submittals
- .4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3 Project Management and Document Storage Software

- .1 Store construction related project documents on a cloud-based file share platform with access made available to the *Consultant*. Be responsible for managing the operation of the platform, keeping all stored documents current and organized in clearly marked folders.
- .2 Have platform available for use by first construction meeting.
- .3 Stored documents shall include but not be limited to:
 - .1 RFIs and Consultant Responses
 - .2 Shop drawings log, submitted and reviewed shop drawings shop drawings.
 - .3 progress photographs
 - .4 Construction Minutes
 - .5 Test Reports
 - .6 Supplemental Instructions (SI)
 - .7 Contemplated Change Notices (CCN)
 - .8 Quotations
 - .9 Change Orders (CO)
 - .10 Project Schedules
 - .11 Progress Claims
 - .12 Building permit documents
 - .13 Reports and other communications from Authorities Having Jurisdiction

PROJECT MANAGING AND COORDINATION

.14 As-built record drawings and all related closeout documents

1.4 Coordination

- .1 Perform coordination of the work of trades, purchase and delivery of products and materials, progress schedules, submittals, use of site, and temporary utilities, to meet the schedule for interim completion and substantial performance identified in the Contract

1.5 Construction Documents

- .1 A full set of "Issued for Construction" drawings and specifications will be issued by the *Consultant* in PDF format at the commencement of construction.
- .2 *Contractor* shall be responsible for printing all hardcopies of the construction documents including those issued through supplemental Instructions and Change orders as needed to execute the Work.

1.6 Project Meetings

- .1 Schedule and administer bi-weekly project meetings throughout progress of Work.
- .2 Schedule and administer pre-installation meetings when specified in sections and when required to coordinate related or affected Work.
- .3 Prepare agenda for meetings.
- .4 Distribute written notice of each meeting four (4) days in advance of meeting date to the Consultant and Owner.
- .5 Preside at meetings.
- .6 Record minutes. Include significant proceedings and decisions. Identify action by parties.
- .7 Reproduce and distribute copies of minutes within three (3) days after each meeting and transmit to meeting participants, the affected parties not in attendance the Consultant and Owner.

1.7 Construction Organization and Start-up

- .1 Within five (5) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of the Owner, Consultant, Contractor's Project manager and Site superintendent, major Subcontractors, and Owner's roofing inspector to be in attendance.

PROJECT MANAGING AND COORDINATION

- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include following:
 - .1 Appointment of official representative of participants in Work.
 - .2 Project Contact list
 - .3 Project Communications.
 - .4 Infection Procedures and Protocol
 - .5 Contractor's use of the premises
 - .6 Documents at the site
 - .7 Insurance and Certificates
 - .8 Phasing and Staging
 - .9 Contractor's use of premises.
 - .10 Owner-supplied Products.
 - .11 Assignable contracts.
 - .12 Work restrictions.
 - .13 Substitution procedures.
 - .14 Contract modification procedures.
 - .15 Payment procedures.
 - .16 Construction progress meetings.
 - .17 Construction progress schedule, including long lead time items.
 - .18 Submittals schedule and procedures.
 - .19 Special procedures.
 - .20 Quality requirements, including testing and inspection procedures.
 - .21 Contractor's mobilization.
 - .22 Planned Utility Shut Down Procedures
 - .23 Hot Work Permits
 - .24 Temporary utilities.
 - .25 Existing utility services.
 - .26 Construction facilities.
 - .27 Temporary barriers and enclosures.
 - .28 Temporary controls.
 - .29 Field engineering and layout of work.
 - .30 Appointment of inspection firms
 - .31 Site safety and Security
 - .32 Cleaning and waste management.
 - .33 Closeout procedures and submittals.

PROJECT MANAGING AND COORDINATION

.34 Commissioning and Takeover Procedures

- .6 Comply with Consultant's allocation of mobilization areas of site: for access, infection control, and contractors health and safety rules.
- .7 During construction, coordinate use of site and facilities through Consultant's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
- .8 Comply with instructions of Consultant for use of temporary utilities and construction facilities.
- .9 Coordinate field engineering and layout work with Consultant.

1.8 On-site Documents

- .1 Maintain at job site, one copy each of the following:
 - .1 *Contract Documents*
 - .2 "Issued for Construction" *Drawings and Specifications*.
 - .3 Reviewed *shop drawings, Product data* and samples
 - .4 *Change orders, Change Directives, and Supplemental Instructions*.
 - .5 Other modifications to Contract.
 - .6 Field test reports.
 - .7 Construction progress schedule.
 - .8 Meeting Minutes.
 - .9 Manufacturers' certifications, installation and application instructions.
 - .10 Permits, Permit drawings, inspection certificates, and other documents required by authorities having jurisdiction.
 - .11 Current as-built drawings.
 - .12 Material Safety Data Sheets (MSDS) for all controlled Products.
- .2 All job-site documents shall be:
 - .1 In electronic format.
 - .2 At minimum, the following documents shall also be in full size hardcopy:
 - .1 "Issued for Construction" drawings and specifications
 - .2 Drawings issued with Supplemental Instructions and Change Orders.

1.9 Schedules

- .1 Submit preliminary construction progress schedule as specified in Section 01 32 00 to *Consultant* coordinated with *Owner's* project schedule.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.

PROJECT MANAGING AND COORDINATION

- .3 During progress of Work revise and resubmit as directed by *Consultant*.

1.10 Construction Progress Meetings

- .1 During course of Work and weeks prior to project completion, schedule progress meetings weekly.
- .2 *Contractor*, major *subcontractors* involved in the *Work*, *Consultant*, and *Owner*, are to be in attendance.
- .3 Notify parties minimum 5 business days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 business days after meeting.
- .5 Agenda to include following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for effect on construction schedule and on completion date.
 - .12 Review site safety and security issues.
 - .13 Other business.

1.11 Submittals

- .1 Submit preliminary Shop Drawings, product data and samples as specified in Section 01 33 00 for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to *Consultant*.
- .2 Submit requests for payment for review, and for transmittal to *Consultant*.
- .3 Submit requests for interpretation of *Contract Documents* and obtain instructions through *Consultant*.
- .4 Process substitutions through *Consultant*.

PROJECT MANAGING AND COORDINATION

- .5 Process change orders through *Consultant*.
- .6 Deliver closeout submittals for review and preliminary inspections, for transmittal to *Consultant*.

1.12 Closeout Procedures

- .1 Notify *Consultant* when Work is considered ready for Substantial Performance.
- .2 Accompany *Consultant* on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with *Consultant's* instructions for correction of items of Work listed in executed certificate of Substantial Performance and for access to Owner-occupied areas.
- .4 Notify *Consultant* of instructions for completion of items of Work determined in *Consultant's* final inspection.

END OF SECTION

CONSTRUCTION PROGRESS DOCUMENTATION

1.1 SUMMARY

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

1.2 CONSTRUCTION PROGRESS SCHEDULE

- .1 Format and Content:
 - .1 Prepare schedule in the form of a Critical Path Method (CPM) Gantt chart using appropriate scheduling software.
 - .2 Provide a work breakdown structure identifying key activities, work packages, and major milestones, including long delivery *Products*, inspection and testing activities, preparation and review of mock-ups, shutdown or closure activities, delivery of *Owner* supplied *Products*, *Owner* performed work, demonstration and training activities, and similar items, at a sufficient level of detail to effectively manage construction progress.
 - .3 Indicate milestone dates for *Ready-for-Takeover* and *Substantial Performance of the Work*.
- .2 Submission:
 - .1 Submit initial schedule to *Owner* and *Consultant* within 10 *Working Days* after *Contract* award.
 - .2 Submit schedule via e-mail in PDF format in advance of construction start up meeting.
 - .3 *Consultant* will review format and content of initial schedule and request necessary changes, if any, within 5 *Working Days* after receipt.
 - .4 If changes are required, resubmit finalized initial schedule within 5 *Working Days* after return of review copy.

CONSTRUCTION PROGRESS DOCUMENTATION

- .5 Submit updated progress schedule monthly to *Owner* and *Consultant*, indicating actual and projected start and finish dates, progress, activity relationships, building service interruption dates, critical path, and baseline comparison to current progress.
- .6 Include a written report with each updated progress schedule. Indicate work status to date comparing baseline to actual progress, current forecasts, identifying problem areas, anticipated delays and impact on schedule, and planned corrective actions.

1.3 SUBMITTALS SCHEDULE

- .1 Format and Content:
 - .1 Prepare schedule identifying all required *Shop Drawing*, *Product* data, and sample submissions
 - .2 Prepare schedule in electronic format.
 - .3 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.
 - .4 For each required submittal, show planned submission date and return date required from *Consultant*.
 - .5 Allow time in schedule for resubmission of submittals, should resubmission be necessary.
- .2 Submission:
 - .1 Unless provisioned otherwise by the CCDC, CCDC supplementary conditions, or Division 0 documents, submit initial schedule to *Consultant* within 15 *Working Days* after *Contract* award.
 - .2 Submit schedule via e-mail in PDF format.
 - .3 *Consultant* will review format and content of initial schedule and request necessary changes, if any, within 5 *Working Days* after receipt.
 - .4 If changes are required, resubmit finalized schedule within 5 *Working Days* after return of review copy.
 - .5 Submit updated submittals schedule monthly to *Owner* and *Consultant*.

CONSTRUCTION PROGRESS DOCUMENTATION

1.4 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.

1.5 AS-BUILT DRAWINGS

- .1 Obtain from *Consultant* an electronic AutoCAD copy of the construction *Drawings* for the purpose of creating as-built drawings. Edit drawings to record as-built conditions by clearly identifying as-built deviations from the originally obtained construction *Drawings*.
- .2 Clearly label each drawing as "AS-BUILT RECORD DRAWING". Record information concurrently on hard copy with construction progress. Do not conceal *Work* until required information is recorded. Prepare Record AutoCAD drawings from the marked up hard copy drawings.
- .3 Record actual construction including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of pipes, ducts, conduits, outlets, fixtures, access panels, and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by *Change Orders* and *Supplemental Instructions*
 - .6 References to *Shop Drawings*, where *Shop Drawings* show more detail.
- .4 Do not use as-built drawings for construction purposes.

CONSTRUCTION PROGRESS DOCUMENTATION

1.6 DAILY REPORTS AND LOGS

- .1 *The Contractor's* site supervisor, or such competent person as it may delegate, to prepare a daily log or diary reporting on weather conditions, work force of the *Contractor, Subcontractors, Suppliers* and any other forces on site and also record the general nature of *Project* activities. Such log or diary shall also include any extraordinary or emergency events which may occur and also the identities of any persons who visit the site who are not part of the day-to-day work force.
- .2 The *Contractor* shall also maintain records, either at its head office or at the job site, recording manpower and material resourcing on the *Project*, including records which document the activities of the *Contractor* in connection with GC 3.4, and comparing that resourcing to the resourcing anticipated when the most recent version of the schedule was prepared pursuant to GC 3.4. The *Owner* and/ or *Consultant* has to right to review these records.
- .3 Photograph work completed on a daily basis. Upload to share file network and make available for Consultant review.

END OF SECTION

SUBMITTAL PROCEDURES

1.1 ADMINISTRATIVE

- .1 Submit specified submittals to *Consultant* for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in the *Work*. Failure to submit in ample time is not considered sufficient reason for an extension of *Contract Time* or for *Product* substitutions or other deviations from the *Drawings* and *Specifications*.
- .2 Where required by authorities having jurisdiction, provide submittals to such authorities for review and approval.
- .3 Do not proceed with *Work* affected by a submittal until review is complete.
- .4 Review submittals, provide verified field measurements where applicable, and affix *Contractor's* review stamp prior to submission to *Consultant*. *Contractor's* review stamp represents that necessary requirements have been determined and verified, and that the submittal has been checked and coordinated with requirements of the *Work* and *Contract Documents*.
- .5 Verify field measurements and that affected adjacent work is coordinated.
- .6 Submittals not meeting specified requirements will be returned with comments.
- .7 Reproduction of construction *Drawings* to serve as background for *Shop Drawings* is permitted. If construction *Drawings* are used for this purpose, remove references to *Consultant*.
- .8 **Do not** propose Substitutions or deviations from *Contract Documents* via *Shop Drawing*, *Product* data and sample submittals.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Indicate *Products*, methods of construction, and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of the *Work*.
- .2 Where *Products* attach or connect to other *Products*, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross-references to *Drawings*, *Specifications* and other already reviewed *Shop Drawings*.
- .3 Where requested in the technical specification, submit shop drawings sealed by a Professional Engineer licensed to practice in the Province of Ontario to indicate the system, component, and or its connections have been designed to meet the applicable requirements of the building code and referenced standards.

SUBMITTAL PROCEDURES

- .4 Accompany submittals with a transmittal information including:
 - .1 Date.
 - .2 *Project* title and number.
 - .3 *Contractor's* name and address.
 - .4 Identification of each submittal item and quantity.
 - .5 Other pertinent data.
- .5 *Shop Drawing* submittals shall include:
 - .1 Date and revision dates.
 - .2 *Project* title and number.
 - .3 Name and address of:
 - .1 *Subcontractor*.
 - .2 *Supplier*.
 - .3 Manufacturer.
 - .4 *Contractor's* stamp, date, and signature of *Contractor's* authorized representative responsible for *Shop Drawing* review, indicating that each *Shop Drawing* has been reviewed for compliance with *Contract Documents* and, where applicable, that field measurements have been verified.
 - .5 Details of appropriate portions of the *Work* as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationships to other parts of the *Work*.
- .6 *Product* data submittals shall include material safety data sheets (MSDS) for all controlled Products.
- .7 Submit PDF electronic copy of *Shop Drawings* unless specified otherwise in the technical *Specifications*. Submit *Shop Drawings* in *AutoCad* or *Revit* format when requested by the *Consultant*,
- .8 Submit PDF electronic copy of Product data sheets or brochures where specified in the technical *Specifications*. *Shop Drawings* shall be in PDF format.
- .9 The *Contractor* shall provide *Shop Drawings* and *Submittals* in the form specified, or if not specified, as directed by the *Consultant*.

SUBMITTAL PROCEDURES

- .10 Where a submittal includes information not applicable to the *Work*, clearly identify applicable information and strike out non-applicable information.
- .11 Supplement standard information to include details applicable to *Project*.
- .12 Allow 10 *Working Days* for *Consultant's* review of each submittal. Allow additional 5 *Working Days* where sub-*Consultant* review is required. If, for any reason, the *Consultant* cannot process them within the agreed-upon schedule or with reasonable promptness, the *Consultant* shall notify *Contractor* and they shall meet to review and arrive at an acceptable revised schedule for processing. *Contractor* shall update the *Shop Drawings* and *Submittals* Schedule to correspond to changes in the construction schedule. Changes in the *Contract Price* or *Contract Time* may be made only as otherwise provided in the *Contract*.
- .13 If upon *Consultant's* review no errors or omissions are discovered, or if only minor corrections are required as indicated, submittal will be returned and fabrication or installation of *Work* may proceed.
- .14 If upon *Consultant's* review significant errors or omissions are discovered, a so noted copy will be returned for correction and resubmission. Do not commence fabrication or installation.
- .15 The *Contractor* shall provide revised *Shop Drawings* and *Submittals* to correct those which the *Consultant* rejects as inconsistent with the *Contract Documents*, unless otherwise directed by the *Consultant*. The *Contractor* shall notify the *Consultant* in writing of any revisions to the *Shop Drawings* or other *Submittals* other than those requested by the *Consultant*.
- .16 *Consultant's* notations on submittals are intended to ensure compliance with *Contract Documents* and are not intended to constitute a change in the *Work* requiring change to the *Contract Price* or *Contract Time*. If *Contractor* considers any *Consultant's* notation to be a change in the *Work*, promptly notify *Consultant* in writing before proceeding with the work.
- .17 Resubmit corrected submittals through same procedure indicated above, before any fabrication or installation of the work proceeds. When resubmitting, notify *Consultant* in writing of any revisions other than those requested by *Consultant*.
- .18 *Shop Drawings* and *Submittals* which require approval of any legally constituted authority having jurisdiction shall be provided to such authority by the *Contractor* for approval.

1.3 SAMPLES

- .1 Submit samples for *Consultant's* review where specified in the technical *Specifications*. Label samples as to origin, *Project* name, and intended use.

SUBMITTAL PROCEDURES

- .2 Deliver samples prepaid to *Consultant's* business address.
- .3 Notify *Consultant* in writing of any deviations in samples from requirements of *Contract Documents*.
- .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 as required by *Consultant* to comply with *Contract Documents*.
- .7 Reviewed and accepted samples will establish the standard against which installed *Work* will be reviewed.

END OF SECTION

SPECIAL PROCEDURES

1.1 HOSPITAL RELATED PROVISIONS

- .1 The *Contractor* recognizes and understands that the *Owner* is a hospital approved under the *Public Hospitals Act* (Ontario) and is therefore subject to a highly regulated legal and operational environment. Without limiting the generality of any other provision in the *Contract*, the *Contractor* shall provide reasonable co-operation and assistance to the *Owner* during any evaluations of the *Work* (including, without limitation, any post-occupancy evaluation required by the Ministry of Health and Long-Term Care) and in obtaining required regulatory approvals prior to using the *Work* (including, without limitation, approvals required by Section 4(2) of the *Public Hospitals Act*).
- .2 The *Contractor* acknowledges that the security and safety of the patients, employees and other occupants of the existing hospital is paramount. If any of the employees of the *Contractor* or the *Subcontractors* is determined by the *Owner* to be a concern for the security or safety of such patients, employees or occupants, the *Owner* may require that the *Contractor* replace such employee.
- .3 The *Contractor* recognizes that the *Work* may consists of the renovation of existing buildings and structures or the addition of a structure to an existing building and that the provision of patient care during construction is a priority for the *Owner*. The *Contractor* shall comply with the reasonable instructions provided by the *Owner* (including, without limitation, the *Owner's* infection control practitioner) in regard to patient care and the operation and use of the hospital during the performance of the *Work*. Any costs incurred by the *Contractor* in complying with the said instructions shall be part of the *Contract Price*.
- .4 Notwithstanding any other provision in the *Contract*, paramountcy of access must be given to emergency vehicles and no claim may be made by the *Contractor* for any delay in the performance of the *Work* as a result of any temporary lack of access to the Place of *Work* resulting from this paramountcy of access by emergency vehicles, provided that the *Owner* will use commercially reasonable efforts to avoid and to limit the duration of any temporary lack of access for this reason.
- .5 The *Owner* has the authority, but without the obligation, to stop the *Work* in any circumstance affecting the safety of life or property or otherwise may cause an unsafe condition for the operation of the existing hospital. The *Contractor* shall abide by the *Owner's* instructions to stop the *Work* and to any related instructions pertaining to the circumstance without any increase in the *Contract Price* and extension in the *Contract Time* if such circumstance was caused by the *Contractor*, *Subcontractors* or *Suppliers*.
- .6 The *Contractor* shall, and shall cause the *Subcontractors* and *Suppliers* to, comply with hospital policies and procedures including, without limitation, environmental requirements, infection control measures and safety and emergency preparedness guidelines which are or come into force (including, without limitation, those forming part of the *Contract Documents*) as such documents are amended by the *Owner* from time to time, provided that a material amendment to the hospital policies and procedures by the *Owner* after the

SPECIAL PROCEDURES

date of the Agreement which gives rise to a significant change in the *Work* shall be dealt with in accordance PART 6 CHANGES IN THE WORK.” In CCDC 2 – 2020 Contract and as may be amended by the supplementary conditions.

END OF SECTION

QUALITY REQUIREMENTS

1.1 REFERENCE STANDARDS

- .1 "Reference standards" means consensus standards, trade association standards, guides, and other publications expressly referenced in *Contract Documents*.
- .2 Where an edition or version date is not specified, referenced standards shall be deemed to be the latest edition or revision issued by the publisher at the time of bid closing. However if a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the regulatory referenced edition or version shall apply.
- .3 Reference standards establish minimum requirements. If *Contract Documents* call for requirements that differ from a referenced standard, the more stringent requirements shall govern.
- .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.
- .5 Within the *Specifications*, reference may be made to the following standards writing, testing, or certification organizations by their acronyms or initialisms:
 - .1 AA Aluminum Association
 - .2 ACI American Concrete Institute
 - .3 AISC American Institute of Steel Construction
 - .4 ANSI American National Standards Institute
 - .5 ASME American Society of Mechanical Engineers
 - .6 ASTM American Society for Testing and Materials
 - .7 AWMAC Architectural Woodwork Manufacturers Association of Canada
 - .8 AWPA American Wire Producers Association
 - .9 CaGBC Canadian Green Building Council
 - .10 CGSB Canadian General Standards Board
 - .11 CISC Canadian Institute of Steel Construction
 - .12 CPCI Canadian Prestressed Concrete Institute
 - .13 CSA Canadian Standards Association
 - .14 CSSBI Canadian Sheet Steel Building Institute
 - .15 CWB Canadian Welding Bureau
 - .16 ICEA Insulated Cable Engineers Association
 - .17 IEEE Institute of Electrical and Electronics Engineers
 - .18 IGMAC Insulating Glass Manufacturers Association of Canada
 - .19 LEED Leadership in Energy and Environmental Design
 - .20 MPP Master Painters Institute
 - .21 MSS Manufacturers Standardization Society of the Valve and Fittings Industry
 - .22 NAAMM National Association of Architectural Metal Manufacturers
 - .23 NEMA National Electrical Manufacturers Association
 - .24 NFPA National Fire Protection Association
 - .25 NHLA National Hardwood Lumber Association
 - .26 NLGA National Lumber Grades Authority
 - .27 SSPC The Society for Protective Coatings

QUALITY REQUIREMENTS

- | | | |
|-----|-------|---|
| .28 | TTMAC | Terrazzo, Tile and Marble Association of Canada |
| .29 | ULC | Underwriters' Laboratories of Canada |

1.2 INDEPENDENT INSPECTION AND TESTING AGENCIES

- .1 Except as otherwise specified, *Owner* will retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the *Work*. Refer to specification sections for independent inspection and testing agencies to be engaged by the *Owner*.
- .2 Retain and pay for inspection and testing that is for *Contractor's* own quality control or is required by regulatory requirements.
- .3 Cash allowance for independent inspection and testing services if specified will be identified in Section 01 21 00 – Allowances. Such allowances exclude any inspection and testing that is for *Contractor's* own quality control or is required by regulatory requirements.
- .4 Employment of inspection and testing agencies by *Contractor* or *Owner* does not relieve *Contractor* from responsibility to perform the *Work* in accordance with *Contract Documents*.
- .5 Allow and arrange for inspection and testing agencies to have access to the *Work*, including access to off-site manufacturing and fabrication plants.
- .6 For inspection and testing required by *Contract Documents* or by authorities having jurisdiction, provide *Consultant* and inspection and testing agencies with timely notification in advance of required inspection and testing.
- .7 Submit test samples required for testing in accordance with submittals schedule specified in Section 01 32 00 – Construction Progress Documentation.
- .8 Provide labour, *Construction Equipment* and temporary facilities to obtain and handle test samples on site.

1.3 INSPECTION AND TESTING AGENCY REPORTS

- .1 For inspection and testing required by *Contract Documents* or by regulatory requirements, and performed by *Contractor* retained inspection and testing agencies, submit to *Consultant* and *Owner* copies of reports. Submit within 10 days after completion of inspection and testing.
- .2 For inspection and testing performed by *Owner* retained inspection and testing agencies, copies of inspection and testing agency reports will be provided to *Contractor*.

QUALITY REQUIREMENTS

1.4 MOCK-UPS

- .1 Prepare mock-ups of *Work* as specified in the technical *Specifications*. If a mock-up location is not indicated in the *Drawings* or *Specifications*, locate where directed by *Consultant*.
- .2 Modify mock-up as required until *Consultant* approval is obtained.
- .3 Approved mock-ups establish an acceptable standard for the *Work*.
- .4 Protect mock-ups from damage until the *Work* they represent is complete.
- .5 Unless otherwise specified in the technical *Specifications*, approved mock-ups forming part of the *Work* may remain as part of the *Work*.
- .6 Remove mock-ups only when the *Work* they represent is complete or when otherwise directed by *Consultant*.

1.5 INFECTION CONTROL QUALITY ASSURANCE PLAN

- .1 Submit quality assurance plan specified in section 01 59 00 – Infection Control.

END OF SECTION

TEMPORARY UTILITIES

1.1 TEMPORARY UTILITIES - GENERAL

- .1 Provide temporary utilities as specified and as otherwise necessary to perform the *Work* expeditiously.
- .2 Remove temporary utilities after use.

1.2 TEMPORARY WATER SUPPLY

- .1 Connect to and use *Owner's* existing water supply for temporary use during construction, subject to existing available volume and pressure. Usage at no cost to *Contractor*.
- .2 Arrange and pay for necessary water supply connections and disconnections.

1.3 TEMPORARY HEATING AND VENTILATION

- .1 Arrange and pay for temporary heating and ventilation required during construction.
- .2 *Contractor* may connect to and use *Owner's* existing supply of natural gas (if available) for temporary use during construction, subject to existing available volume and pressure. Usage at no cost to *Contractor*.
- .3 Vent construction heaters in enclosed spaces to the outside or use flameless type of construction heaters.
- .4 Provide temporary heat for the *Work* as required to:
 - .1 Facilitate progress of *Work*.
 - .2 Protect the *Work* against dampness and cold.
 - .3 Prevent moisture condensation on surfaces, freezing, or other damage to finishes or stored *Products*.
 - .4 Maintain specified minimum ambient temperatures and humidity levels for storage, installation and curing of *Products*.
 - .5 Maintain interior temperature of minimum 10 degrees C.
- .5 Provide temporary ventilation for the *Work* as required to:
 - .1 Prevent accumulations of fumes, exhaust, vapours, gases and other hazardous, noxious, or volatile substances in enclosed spaces, as required to maintain a safe work environment meeting applicable regulatory requirements.

TEMPORARY UTILITIES

- .2 Ensure that hazardous, noxious, or volatile substances do not migrate to *Owner* occupied spaces.
- .3 Ventilate temporary sanitary facilities.
- .6 Existing permanent building heating and ventilation systems may be used during construction, at *Contractor's* option. If used during construction:
 - .1 *Owner* will pay utility costs resulting from the use of permanent systems.
 - .2 Operate systems in a non-wasteful and energy efficient manner. Be responsible for any system damage.
 - .3 Just prior to *Ready-for-Takeover*, replace filters, clean premises and all fixtures and equipment, and perform other required maintenance to ensure systems are in as near as new condition as possible.
 - .4 Ensure that systems manufacturers' warranties do not commence until the date of *Substantial Performance of the Work* or, if manufacturers' warranties do commence earlier when systems are put into use, arrange for necessary extension of manufacturers' warranties or provide equivalent coverage under *Contractor's* warranty.

1.4 TEMPORARY ELECTRICAL POWER AND LIGHTING

- .1 *Owner's* existing electrical supply for temporary use during construction subject to available capacity, voltage and amperage. Usage at no cost to *Contractor*.
- .2 Confirm maximum existing power supply available for temporary use during construction. Do not use power supply required for *Owner's* operation of the Facility.
- .3 Arrange and pay for necessary connections and disconnections of temporary power and lighting in accordance with regulatory requirements.
- .4 Provide and pay for temporary power beyond existing available power supply.
- .5 New permanent building power and lighting systems may be used during construction, at *Contractor's* option. If used during construction:
 - .1 *Owner* will pay utility costs resulting from the use of permanent systems.
 - .2 Operate systems in a non-wasteful and energy efficient manner. Be responsible for any system damage.
 - .3 Just prior to *Ready-for-Takeover* replace lamps non-LED which have been used for more than 1 month.

TEMPORARY UTILITIES

- .4 Ensure that systems manufacturers' warranties do not commence until the date of *Substantial Performance of the Work* or, if manufacturers' warranties do commence earlier when systems are put into use, arrange for necessary extension of manufacturers' warranties or provide equivalent coverage under *Contractor's* warranty.

END OF SECTION

CONSTRUCTION FACILITIES

1.1 CONSTRUCTION FACILITIES

- .1 Provide temporary construction facilities as necessary for performance of the Work and in compliance with applicable regulatory requirements.
- .2 Maintain temporary construction facilities in good condition for the duration of the Work.
- .3 Remove temporary construction facilities from Place of the Work when no longer required.
- .4 Construction facilities shall not interfere with Owner's use of the facility.

1.2 CONSTRUCTION SIGNAGE

- .1 Provide all construction safety signage required by the *Owner* and the Ministry of Labour.
- .2 Provide Construction Notice signage in accordance with Owner's Signage Template.
- .3 Provide directional and wayfinding signage on hoarding as required by Owner to guide the public to other areas of the floor.

1.3 CONSTRUCTION PARKING

- .1 Limited parking will be permitted at a cost in lots designated for use by Contractors.
- .2 Do not park vehicles in non-designated areas including fire lanes, delivery spaces or other areas that disrupt the continuing operation of the facility.

1.4 VEHICULAR ACCESS

- .1 Provide and maintain adequate access to *Place of the Work*.
- .2 Existing roads at Place of the Work may be used for access to *Place of the Work*, provided Contractor assumes responsibility for any damage caused by construction traffic, and prevents or promptly cleans up any mud tracking or material spillage.

1.5 SITE OFFICES

- .1 *Owner* may at their sole discretion and subject to availability, provide space within the building for a site office.

CONSTRUCTION FACILITIES

1.6 SANITARY FACILITIES

- .1 Contractor may use designated public washrooms within the hospital during construction.
- .2 Keep sanitary facilities clean and tidy.

1.7 FIRE PROTECTION

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

1.8 USE OF EXISTING ELEVATORS

- .1 Use designated elevator for transport of all materials during hours of day as assigned by *Owner*.

1.9 USE OF THE WORK

- .1 The Contractor shall confine Construction Equipment, Temporary Work, storage of Products, waste products and debris, and operations of employees and Subcontractors to limits indicated by laws, ordinances, permits, or the Contract Documents and shall not unreasonably encumber the Place of the Work.
- .2 The Contractor shall not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety of the Work.
- .3 Except for those normally used during the performance of the Work, such as elevator, mechanical, electrical, hydro, the Contractor shall not use any service plant or equipment installed as part of the Work without prior written consent from the Owner. On receipt of such consent, the Contractor shall be subject to any conditions set out as part of such consent and shall be responsible for all costs, damage and compensation for wear and tear.
- .4 If storage or other areas are required for the Work in addition to the Work Site, Contractor shall be responsible for making arrangements to obtain the additional areas and obtaining any necessary permits, permission or authorization and, if required, for making permit, rental or other payments that may be required for such purpose."

END OF SECTION

TEMPORARY BARRIERS AND ENCLOSURES

1.1 BARRIERS AND ENCLOSURES - GENERAL

- .1 Provide temporary barriers and enclosures necessary to protect the public and building occupants and to secure *Place of the Work* during performance of the *Work*.
- .2 Comply with applicable regulatory requirements.
- .3 Maintain temporary barriers and enclosures in good condition for the duration of the *Work*.
- .4 Remove temporary barriers and enclosures from *Place of the Work* when no longer required.
- .5 All hoarding, barriers, screens, weather enclosures and procedures must follow and comply with CSA Z317.13 current edition and SJHH IPAC policies. IPAC approval and sign off required prior to commencing construction or removing hoardings.

1.2 RELATED SECTIONS

- .1 01 56 00 Infection Control – construction of infection control barriers and enclosure.

1.3 FENCING

- .1 Erect 6 feet (1.8m) high welded metal wire mesh modular construction fencing around all exterior staging areas. Provide higher fencing if requested by authorities having jurisdiction.
- .2 Provide lockable access gates as required to facilitate construction access.

1.4 WEATHER ENCLOSURES

- .1 Provide weather tight enclosures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

1.5 DUST TIGHT SCREENS AND PARTITIONS

- .1 Provide dust tight fire-retardant tarps on steel stud to localize interior building areas from dust generating activities. Tarp shall comply with CAN/ULC S109.
- .2 Erect, maintain, and relocate screens as required to facilitate construction operations and *Owner's* operational requirements.

TEMPORARY BARRIERS AND ENCLOSURES

1.6 FIRE ROUTES

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

1.7 PROTECTION OF BUILDING FINISHES

- .1 Provide necessary temporary barriers and enclosures to protect existing and completed or partially completed finished surfaces from damage during performance of the *Work*.

END OF SECTION

INFECTION CONTROL

PART 1 GENERAL

1.1 Scope of Work

- .1 Provide Infection prevention and control (IPAC) measures during construction of the *Work* as required by CSA Z317.13-17 (R2021), this specification section, other parts of the construction documents, and as required by Owner's infection control protocol.

1.2 Related Requirements

- .1 Comply with Infection Control requirements indicated in drawings.
- .2 Scarborough Health Network Infection Control guidelines for Construction.
- .3 The above referenced related requirements are complimentary to and shall be read in conjunction with this specification section.

1.3 References

- .1 CSA Z317.13-17 (R2021) Infection Control during Construction, Renovation, and maintenance of Health Care Facilities.

1.4 Definitions

- .1 The following describes the types of construction activity relating to the necessary infection control measures specified herein:
 - .1 Type A: Inspection and non-invasive activities: These include but are not limited to activities that require removal of ceiling tiles for visual inspection (limited to one [1] tile per 50 ft²), painting (but not sanding), wall covering, electrical trim work, minor plumbing (disrupts water supply to a localized patient care area (e.g. one [1] room) for less than fifteen [15] minutes), and other maintenance activities that do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.
 - .2 Type B: Small scale, short duration activities that create minimal dust. These include, but are not limited to activities that require access to chase spaces, cutting of walls or ceilings where dust migration can be controlled for the installation/repair of minor electrical work, ventilation components, telephone wires or computer cables and sanding of walls for painting or wall covering to only repair small patches. It also includes plumbing that requires disruption to the water supply of more than one patient care area (e.g. > two [2] rooms) for less than thirty (30) minutes.
 - .3 Type C: Work that generates a moderate to high level of dust or requires demolition or removal of fixed building components or assemblies (e.g.: counter tops, cupboards, sinks). These include, but are not limited to

INFECTION CONTROL

activities that require sanding of walls for painting or wall covering, removal of floor-coverings, ceiling tiles and casework, new wall construction, minor duct work or electrical work above ceilings, major cabling activities, and activity that cannot be completed within a single work shift. It also includes plumbing that requires disruption to the water supply of more than one (1) patient care area (e.g. > two [2] rooms) for more than thirty (30) minutes but less than one (1) hour.

- .4 Type D: Major demolition, construction and renovation projects. These include, but are not limited to, activities that involve heavy demolition or removal of a complete cabling system and new construction requiring consecutive work shifts to complete. It also includes plumbing that result in disruption to the water supply of more than one (1) patient care area (e.g. > two [2] rooms) for more than one (1) hour.
- .2 Risk group locations are as designated by the *Owner's* IPAC Manager.
- .3 Infection control measures applicable to any combination of construction activity and risk group shall be as set out in the following Construction Activity and Risk Group Matrix. Where two (2) alternate measures are indicated, provide the lower of the two (2) unless directed otherwise by the *Owner*.

1.5 Roles And Responsibilities

- .1 Designate a member of the *Contractor's* Site staff as the IPAC site supervisor and will be the primary contact person for the *Contractor* for infection control issues.
- .2 The *Owner* will designate an infection control authority from the hospital henceforth referred to as the *Owner's* IPAC Manager.
- .3 Direct questions or requests for clarification of infection control requirements to the *Owner's* IPAC Manager.
- .4 The IPAC Manager will have the sole and ultimate authority to approve any constructed hoarding and construction process that impacts infection control.
- .5 Infection control directions issued by either the IPAC Manager or the *Owner's* Project Manager must be followed, including any stop Work orders and evacuation orders

1.6 Quality Assurance

- .1 Perform Work in accordance with CSA Z317.13. Maintain one (1) copy of each referenced document on Site.
- .2 *Contractor's* site superintendent and *Contractor's* IPAC site supervisor shall have training in CSA Z317.13-17(r2021) requirements from training providers such as CSA Group. Provide certification of such training.

INFECTION CONTROL

- .3 Submit an Infection Control Quality Assurance Plan containing at minimum the following information to Owner for review prior to commencing on site work.
 - .1 Floor and site plans indicating all areas where temporary construction hoarding will be installed.
 - .2 Proposed assemblies for various type of construction hoarding that will be implemented.
 - .3 Temporary construction measures within the different areas of work areas
 - .4 Cleaning procedures
 - .5 Procedures for maintaining and monitoring pressurization
 - .6 Training of construction personnel
- .4 Have *Owner's* IPAC personnel review and approve each infection control barrier before commencing any work within the area enclosed by the infection control barrier. Make modifications requested by *Owner's* IPAC personnel at no additional cost.

1.7 Infection Control Briefings

- .1 Meet with Owner's Project Manager and IPAC Manager before commencing operations on Site. The meeting is to review IPAC requirements and to confirm IPAC Construction Type Classification, and hoarding configuration within each area of work. Arrange for *Contractor* and *Subcontractor* personnel to attend infection control briefing arranged by Briefing will include Site and Project specific risks and requirements. Allow two (2) hours minimum for each infection control briefing.
- .2 Obtain and pay for copies of referenced documents at infection control briefing. Read and file at Site office.

1.8 Training

- .1 *Contractor's* Site Supervisor and IPAC Site Supervisor shall be familiar with and be trained in the implementation of CSA Z317.13 requirements.
- .2 Arrange for Contractor's IPAC Site Supervisor scheduled infection control training sessions.

1.9 Meetings

- .1 Include infection control on agenda of regular construction meetings
- .2 Include infection control on agenda of Subcontractor – sub-trade meetings.
- .3 *Contractor's* IPAC Site Supervisor shall meet regularly with the *Owner's* IPAC manager

INFECTION CONTROL

1.10 Project/Site Conditions

- .1 Some areas and buildings in the hospital enclose hazardous infection conditions or contain hazardous materials. Do not enter any building or area outside of the indicated Work area without prior approval from the Owner's project manager or the IPAC manager.
- .2 Travel routes for *Contractor's* activities, i.e. workers access, delivery of materials, removal of debris, etc. are to be reviewed and approved by Owner's Project Manager and IPAC Manager prior to use.
- .3 Vehicles making deliveries shall be parked in designated locations to avoid entrainment of vehicle exhaust into building air handling intakes and blocking of public, staff, or delivery vehicular routes. There will be no vehicle idling permitted.

1.11 General Requirements

- .1 The infection control measures described in this section are in addition to other temporary construction facilities and controls specified in other Division 01 General Requirements specifications.
- .2 All Contractor and Sub-Contractor's personnel to abide by *Owner's* COVID other infection prevention protocols. Failure to follow such protocol will result in expulsion of such personnel from the site. The Contractor is responsible for replacing any such lost human resource and making up any lost production time resulting from such infractions at no cost to the *Owner*.
- .3 Provide infection control measures as indicated and as specified and in accordance with particular directives arising out of the infection control briefing.
- .4 Install infection control measures prior to beginning actual demolition or construction work.
- .5 Relief from or substitution for any portion or provision of minimum infection control requirements specified herein must be submitted to *Owner* in writing. *Owner* will respond in writing, either accepting or refusing relief, or accepting subject to requested improvements.
- .6 In any infection control issue, directions from the *Owner's* IPAC Manager or Project Manager must be followed, including stop Work orders. If necessary, they have the authority to require the *Contractor's* personnel to leave the Site.

1.12 Unforeseen Hazards

- .1 Should unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of Work, immediately stop Work and advise *Owner* verbally and in writing.

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1.13 Correction Of Non-Compliance

- .1 Immediately address infection control non-compliance issues identified by *Owner*
- .2 Provide *Owner* with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 *Owner* may stop Work if non-compliance with health and safety regulations is not corrected.

1.14 Work Stoppage And Lost Productivity

- .1 Give precedence to infection control over cost and schedule considerations for Work.
- .2 Allow for lost productivity resulting for Infection Control procedures in the preparation of the Construction Schedule and Contract Price.
- .3 *Contractor* shall be responsible for all corrective costs and delay costs associated with non-compliance IPAC related issues. The Contractor is responsible for making up the time lost due to such issues at no additional cost to the *Owner*.

PART 2 PRODUCTS

2.1 Required Equipment

- .1 General: Provide the following equipment. Equipment shall be tested and certified for operation and to the satisfaction of the Owner's designated infection Control Authority Manager, Infection Prevention and Control and the Consultant.
 - .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with HEPA filter system.
 - .2 HEPA filter: capable of collected and retaining fibres greater than 0.3 microns in any direction at 99.97 % efficiency.
 - .3 Negative Air Units: Portable, purpose made units, equipped with HEPA filter system and capable of maintaining
 - .4 Polyethylene: Polyethylene sheeting or rip-proof fire resistant polyethylene sheeting with adhesive tape along edges around penetrating objects over cuts and tears and elsewhere as required to provide protection and isolation. Include re-enterable polyethylene doorway as necessary.
 - .5 Sprayer: Garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.
 - .6 Portable enclosure ("cube"): portable vestibule with fan powered HEPA and display pouch with

INFECTION CONTROL

PART 3 EXECUTION

3.1 General

- .1 Take necessary measures to minimize the quantities of dust generated by construction activities and to prevent dust migration to patient care and occupied areas, including but not necessarily limited to the following measures.
- .2 Maintain records of DOP testing for HEPA filters.

3.2 Special Access Requirements

- .1 During special infection alert conditions, such as COVID, Comply with Owner's special procedures, including:
 - .1 Arrange for workers to follow screening procedures.
 - .2 Use only designated entrances.
 - .3 Ensure workers sign in and out of building.

3.3 Work Area Enclosure

- .1 Infection control barriers indicated on drawings are schematic and approximate. Exact location shall be determined on Site by *Owner*.
- .2 Assume that Phases and sub-Phases of the Work will require enclosures around their entire perimeter.
- .3 Allow for in the construction schedule and bid, the time, labour and material costs to remove and reconstruct infection control barriers required to facilitate construction sequence and phases. No additional time or additional costs will be authorized by the Owner for multiple reconstruction and tear downs of infection control barriers.
- .4 Work that cannot be contained within a single room must have a suitable class of infection control barrier and related measures put in place prior to commencing Work. Maintain barriers and implement related measures at all times while Work is underway.
- .5 Maintain negative pressure within work area enclosures at all times to protect adjacent occupied areas.
- .6 Remove barrier materials, isolation of HVAC systems, and temporal ventilation system carefully to minimize spreading of dirt and debris associated with construction.
- .7 Remove work enclosure after completion of a continuous work activity in occupied areas. Re-erect work enclosure as needed where subsequent construction work is needed in the same area.

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- .8 After removal of work area enclosure patch and make good materials and finishes disturbed by enclosure including fireproofing and steel structures and floor finishes paint finish.

3.4 Access And Debris Removal

- .1 Restrict access to and from work area for personnel and materials to indicated pathways.
- .2 Contain construction waste in sealed, covered containers or cover with a moistened sheet before transporting for disposal.
- .3 Provide exterior enclosed chute for direct removal of debris to covered bin.
- .4 Where chute is not accessible, remove debris from the work area in covered carts. If a cloth material is utilized to cover the cart. It is to be sprayed with water to ensure that dust will not migrate from the refuse container.

3.5 Cleaning

- .1 Employ one (1) individual for the entire duration of the Contract dedicated to maintaining dust control enclosure, filters and cleaning horizontal and vertical surfaces through the use of germicidal cleaning solutions and water. This is of paramount importance on occupied floors where construction is being carried out.
- .2 Equip this individual with necessary tools to perform work. HEPA vacuum cleaner, mop. Pail, hospital grade germicidal cleaning solutions, etc.
- .3 Vacuum construction area daily or more frequently with HEPA filtered vacuums during periods of significant dust generation.
- .4 Wet mop area with hospital-grade disinfectant daily or more frequently to control dust. Repeat at final cleaning before removal of barriers.

3.6 Class 1 Infection Control Measures for Type A Construction Activity in Occupied Areas

- .1 Dust Control:
 - .1 Where single ceiling panels are displaced upward for visual inspection, replace immediately.
 - .2 Where ceiling panels are to be removed for performance of Work: erect temporary polyethylene enclosure from floor to ceiling.
 - .3 Where ceiling panels are removed for performance of Work, moisten top side with mister immediately after removal.
 - .4 Vacuum work area with HEPA vacuum cleaner.
- .2 Plumbing Activities:

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- .1 Schedule water interruptions during periods of low activity in affected areas. (e.g. evenings if at all possible).
- .2 Flush water lines prior to reuse.
- .3 Observe for discoloured water and repeat water line flush.
- .4 Perform plumbing work using methods to maintain as dry an environment as possible. Report water leaks that occur inside walls and other assemblies.

3.7 Class 2 Infection Control Measures for Type B Construction Activity in Occupied Areas

- .1 Provide the following in addition to all measures for Class 1 Infection Control.
- .2 Dust Control;
 - .1 Wet mop and/or vacuum as necessary.
 - .2 Provide active means as necessary to minimize dust generation and migration into the atmosphere, including:
 - .1 Use drop sheets to control dust;
 - .2 Control dust by water misting work surfaces while cutting;
 - .3 Seal windows and unused doors with duct tape;
 - .4 Seal HVAC air vents in construction/renovation area;
 - .5 Place dust mat at entrance to and exit from work areas.
 - .3 Ventilation;
 - .1 Disable the ventilation system in the construction/renovation area until the Project is complete. Seal diffusers, returns and openings.
 - .2 Provide temporary Merv 8 quality filter media over return air ducts within meters of the work area enclosure.
 - .3 Monitor need to change and/or clean filters in construction or renovation area.
 - .4 Debris removal and cleanup: Contain debris in covered containers or cover with a moistened sheet before transporting for disposal.

3.8 Class 3 Infection Control Measures for Type C Construction Activity in All Areas

- .1 Provide the following in addition to all measures for Class 1 and Class 2 Infection Control measures.
- .2 Dust Control:
 - .1 Except where temporary partition are stipulated or required, erect an impermeable dust barrier from underside of structure/deck to the floor consisting of two (2) layers of 6 mil fire retardant polyethylene sheet material with lapped and taped joints, support framing as necessary, including re-sealable entry way: or,

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- .2 Where temporary partition is required enclose work area with partition type indicated in drawings and with the following additional requirements:
 - .1 Provide double foam self-adhesive gaskets between tracks and structure/floor, and between end studs and adjacent surfaces.
 - .2 Provide openings with solid core, slab door in hollow metal frame, complete with continuous weather-strip air Seal: self-closing mechanism, lockset keyed to construction master key system during construction.
- .3 Provide mats inside and outside the entrance and the exit of the construction zone. Wet down mats periodically as necessary to control dust. Replace soiled mats daily and more often as necessary.
- .4 Ensure that windows, doors, plumbing penetrations, electrical outlets and intake and exhaust vents are properly sealed with plastic and duct taped within the construction/renovation area.
- .5 Vacuum air ducts and spaces above ceilings if they have been disturbed by the Work.
- .6 Ensure that construction workers wear protective clothing that is removed each time they leave the Site before going into patient care areas
- .7 Do not remove dust barrier until the Project is complete and the area has been cleaned thoroughly and inspected.
- .8 Remove dust barrier carefully to minimize spreading dust and other debris particles associated with the Project.
- .3 Ventilation:
 - .1 Maintain negative pressure within construction zone by using portable HEPA equipped air filtration units.
 - .2 Ensure air is exhausted directly outside and away from intake vents or filtered through a HEPA alter before being re-circulated.
 - .3 Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction or renovation project is complete.
- .4 Debris Removal and Cleanup;
 - .1 Remove debris at the end of the work day.
 - .2 Erect an external chute if the construction is not taking place on ground level.
 - .3 Vacuum work area with HEPA filtered vacuums daily or more frequently if necessary to control dust accumulation.
 - .4 Plumbing: Flush water lines at construction or renovation site and adjacent patient care areas.

3.9 Class 4 Infection Control Measures for Type D Construction Activity in All Areas

- .1 Provide the following in addition to all measures for Class 1, 2 and 3 infection control measures.

INFECTION CONTROL

- .2 Dust Control:
 - .1 Enclose work area with hoarding partition type indicated in drawings, and with the following additional requirements:
 - .1 Provide double foam self-adhesive gaskets between tracks and structure/floor and between end studs and adjacent surfaces.
 - .2 Provide openings with solid core, slab door in hollow metal frame, complete with continuous weather-strip air seal, self-closing mechanism, lockset keyed to construction master key system during construction.
 - .2 Provide anteroom enclosed with specified construction barrier, doors, hardware and frames where indicated.
 - .3 Equip anteroom with decontamination equipment including HEPA vacuum cleaner. Disposable overalls and disposable over boots.
 - .1 Equip anteroom with decontamination equipment including Hera vacuum cleaners disposable overalls and disposable over boots.
 - .2 Decontaminate clothing using a HEPA vacuum cleaner before leaving Site.
 - .3 Alternatively, provide disposable coveralls that are removed in anteroom and deposited in refuse bin.
 - .4 Provide disposable shoe covers to workers who must travel from high- risk patient areas and other areas.
 - .4 Place a walk-off mat outside and inside the anteroom to trap dust from the workers' shoes, equipment and debris that leaves the construction zone. Replace soiled mats daily and more often as necessary.
 - .5 Ensure that construction workers leave the construction zone through the anteroom so they can be vacuumed with a HEPA altered vacuum cleaner before leaving the Site: or that they wear cloth or paper coveralls that are removed each time they leave the Site.
 - .6 Direct personnel entering the construction zone to wear shoe covers.
 - .7 Repair holes in walls within eight (8) hours or seal them temporarily.
- .3 Ventilation:
 - .1 Ensure negative pressure is maintained within the anteroom and construction zone.
 - .2 Ensure ventilation systems are working properly in adjacent areas.
 - .3 Review ventilation system requirements in the construction area with ICP to ensure system is appropriate and is functioning properly.

3.10 Schedule

- .1 Third floor – Class 4 Infection Control for Type D construction
- .2 All other areas – Class 4 unless dictated otherwise by Owner's IPAC Manager.

END OF DOCUMENT

COMMON PRODUCT REQUIREMENTS

1.1 GENERAL

- .1 Provide *Products* that are not damaged or defective, and suitable for purpose intended, subject to specified requirements. If requested by *Consultant*, furnish evidence as to type, source and quality of *Products* provided.
- .2 Unless otherwise specified, maintain uniformity of manufacture and production runs for like items throughout.
- .3 Permanent manufacturer's markings, labels, trademarks, and nameplates on *Products* are not acceptable in prominent locations, except where required by regulatory requirements or for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT OPTIONS

- .1 Subject to the provisions of Section 01 25 00 –Substitution Procedures:
 - .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 *Products*.
- .2 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.
- .3 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.

1.3 PRODUCT AVAILABILITY AND DELIVERY TIMES

- .1 Promptly place material and product order upon Contract Award.
- .2 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*.
- .3 If a specified *Product* is no longer available, promptly notify *Consultant*. *Consultant* will take action as required.

COMMON PRODUCT REQUIREMENTS

- .4 If delivery delays are foreseeable, for any reason, promptly notify *Consultant*.
 - .1 If a delivery delay is beyond *Contractor's* control, *Consultant* will provide direction.
 - .2 If a delivery delay is caused by something that was or is within *Contractor's* control, *Contractor* shall propose actions to maintain the construction progress schedule for *Consultant's* review and acceptance.

1.4 STORAGE, HANDLING, AND PROTECTION

- .1 Store, handle, and protect *Products* during transportation to *Place of the Work* and before, during, and after installation in a manner to prevent damage, adulteration, deterioration and soiling.
- .2 Comply with manufacturer's instructions for storage, handling and protection.
- .3 Store packaged or bundled *Products* in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in *Work*.
- .4 Comply with the requirements of the workplace hazardous materials information system (WHMIS) regarding use, handling, storage, and disposal of hazardous materials, including requirements for labeling and the provision of material safety data sheets (MSDS).
- .5 Store *Products* subject to damage from weather in weatherproof enclosures.
- .6 Store sheet *Products* on flat, solid, supports and keep clear of ground. Slope to shed moisture.
- .7 Remove and replace damaged *Products*.

END OF SECTION

EXAMINATION AND PREPARATION

1.1 EXISTING SITE CONDITIONS

- .1 Make a careful examination of the site, and investigate and be satisfied as to all matters relating to the nature of the Work to be undertaken, as to the means of access and egress thereto and therefrom, as to the obstacles to be met with, as to the extent of the Work to be performed, any limitations under which the work has to be executed, and any and all matters which are referred to in the Contract Documents. Claims for additional costs will not be entertained with respect to conditions which could reasonably have been ascertained by an inspection prior to Tender closing.
- .2 Report any inconsistencies, ambiguities, discrepancies, omissions, and errors between Site conditions and Contract Documents to the Consultant prior to the commencement of Work. If inconsistencies, ambiguities, discrepancies, omissions, and errors are not reported and clarified, the most stringent requirement shall govern, as determined by the *Consultant*. Ensure that each *Subcontractor* performing work related to the site conditions has examined it so that all are fully informed on all particulars which affect the Work thereon in order that construction proceeds competently and expeditiously.
- .3 Before commencing the Work of any Section or trade, carefully examine the Work of other Sections and trades upon which it may depend, examine substrate surfaces, and report in writing to the Consultant, defects which might affect new Work. Commencement of Work shall constitute acceptance of conditions and Work of other sections, trades, and Other Contractors upon which the new Work depends. If repair of surfaces is required after commencement of specific work it shall be included in the work of the trade providing the specific system or finish.

1.2 EXISTING UTILITIES AND STRUCTURES

- .1 Before commencing work, establish or confirm location and extent of all existing utilities and structures in work area.
- .2 Promptly notify *Consultant* if concealed utilities, structures, or their locations differ from those indicated in *Contract Documents* or in available project information. *Consultant* will provide appropriate direction.
- .3 Record locations of maintained, re-routed and abandoned utility lines.

1.3 VERIFICATION OF CONDITIONS DURING THE WORK

- .1 Where work specified in any Section is dependent on the work of another Section or Sections having been properly completed, verify that work is complete and in a condition suitable to receive the subsequent work. Commencement of work of a Section that is dependent on the work of another Section or Sections having been properly completed, means acceptance of the existing conditions.

EXAMINATION AND PREPARATION

- .2 Verify that ambient conditions are suitable before commencing the work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of *Products* used.
- .3 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.
- .1 Notify *Consultant* in writing of unacceptable conditions.

1.4 SETTING OUT

- .1 Before commencing work, verify lines, levels and dimensions shown on the drawing and report discrepancies in levels or dimensions to the Consultant. Be responsible for work done prior to the receipt of the Consultant's decision regarding reported discrepancies.

1.5 COMMENCEMENT OF WORK

- .1 Commencement of work of a Section denotes examination and preparation procedures identified in this Specification Section and within those identified in the applicable trade Section has been conducted and found to be acceptable and the work of the trade section can be completed to meet the requirements of the trade section and design intent of the Contract Documents.

END OF SECTION

EXECUTION

1.1 SUMMARY

- .1 Except where otherwise specified in technical *Specifications* or otherwise indicated on *Drawings*, comply with requirements of this Section.

1.2 MANUFACTURER'S INSTRUCTIONS

- .1 Install, erect, or apply *Products* in strict accordance with manufacturer's instructions.
- .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 Do not rely on labels or enclosures provided with *Products*. Obtain written instructions directly from manufacturers.
- .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.

1.3 CONCEALMENT

- .1 Conceal pipes, ducts, and wiring in floors, walls and ceilings in finished areas:
 - .1 after review by *Consultant* and authority having jurisdiction, and
 - .2 where locations differ from those shown on *Drawings*, after recording actual locations on as-built drawings.
- .2 Provide incidental furring or other enclosures as required.
- .3 Notify *Consultant* in writing of interferences before installation.

1.4 FASTENINGS - GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials.
- .2 Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to avoid direct contact.
- .3 Use non-corrosive fasteners and anchors for securing exterior work and in spaces where high humidity levels are anticipated.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.

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- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.

1.5 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Bolts shall not project more than one diameter beyond nuts.

1.6 FIRE RATED ASSEMBLIES

- .1 When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with fire-stopping materials, smoke seals, or both, in full thickness of the construction element as required to maintain the integrity of the fire rated assembly.
- .2 Use listed products, material, and assemblies from ULC or other industry accepted testing authority that are suited for the application intended.

1.7 CONTINUITY OF EXISTING SERVICES

- .1 Shutdowns and planning of operations that may affect Owner's use of services shall be coordinated with, approved by, and in accordance with the Owner's written directions. Provide advanced notice as determined by the Hospital for all required interruptions to utility, heating, cooling, mechanical, electrical, and life safety systems.
- .2 Coordinate and provide necessary services, access, exiting and other facilities as required.
- .3 Make written requests for shutdown minimum 72 hours in advance, unless specifically stated herein or as otherwise instructed by the Owner.
- .4 Shutdowns shall be scheduled in advance with Owner and shutdown period shall be minimized to Owner's convenience. Facilities in existing adjacent areas will be occupied during the Work.
- .5 Major shutdowns shall take place on weekends or at night by prior arrangement with and at no additional cost to the Owner.
- .6 Tag and mark switches and valves used by the Contractor to isolate services with name of Contractor, tradesman's name, date and time of shut-off, and date and time to be turned back on.
- .7 Arrange work so that physical access to existing adjacent facilities is not unduly interrupted at any one time except as approved by the Owner.
- .8 Protect existing work to remain at the commencement of each work shift in occupied areas, as completely as possible to hold the replacing of damaged work

EXECUTION

to a minimum. Provide covering and other protection material. Include protection for access routes and temporary storage areas. Make good damage to existing surfaces caused by lack of adequate protection. Protection in such areas shall be removed at the end of each work shift.

- .9 All areas shall be cleaned and left in condition suitable for use by Owner and building operations before commencement of their work day.
- .10 Minimize disruption, vibration, noise and dust to the function of existing building.
- .11 These requirements are for security reasons and for the consideration of the Owner. Requirements shall not be construed as cause for elimination or restriction of Contractor's working schedule, claims for delay or work, nor additional cost.

1.8 LOCATION OF FIXTURES, OUTLETS AND DEVICES

- .1 Consider location of fixtures, outlets, and devices indicated on *Drawings* as approximate.
- .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.
- .3 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.
- .4 Remove old unused services as directed by the owner and consultant.

1.9 PROTECTION OF EXISTING BUILDING AND OVERLOADING

- .1 Adequately protect existing building(s) and its components from any kind of damage during the course of the Work.
- .2 Do not place any material, equipment, and temporary structures directly on existing roofing. Protect roofing with full sheets of plywood in all areas of the work including circulation paths. Provide sufficient weights on plywood to prevent blowoff.
- .3 Protect existing site including pavement, curbs, and landscaping from damage when carrying out work that is near, at, or on these components.
- .4 Promptly remove, replace, clean, or repair, as directed by *Consultant*, work damaged as a result of inadequate protection.
- .5 Do not load or permit any part of the existing building to be loaded with a weight or force that will endanger the safety or integrity of the existing building component or assembly.

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- .6 Do not overload or cause to overload existing building components with equipment, materials, temporary construction, or rolling loads of equipment. Engage a structural engineer to review capacity of the building structure to support the intended means and methods of construction.

1.10 PROTECTION OF COMPLETED WORK AND WORK IN PROGRESS

- .1 Adequately protect parts of the *Work* completed and in progress from any kind of damage.
- .2 Promptly remove, replace, clean, or repair, as directed by *Consultant*, work damaged as a result of inadequate protection.
- .3 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*.

1.11 REMEDIAL WORK

- .1 Make good damage to existing building and site caused by the construction. Notify and seek approval from the *Consultant* of proposed repair methods prior to carrying out the repair work. Failure to do so, may result in the *Consultant* rejecting the repair work. Redo rejected work in manner and quality acceptable to the *Consultant*.
- .2 Perform remedial work required to, repair or replace defective or unacceptable work. The *Consultant* will have absolute discretion to determine the acceptability of the repairs.
- .3 Use properly qualified workers to perform the remedial work. Coordinate adjacent affected work as required.

END OF SECTION

CUTTING AND PATCHING

1.1 REQUEST FOR CUTTING, PATCHING AND REMEDIAL WORK

- .1 Submit written request in advance of cutting, coring, or alteration which affects or is likely to affect:
 - .1 Structural integrity of any element of the *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 Work of *Owner* or other contractors.
 - .6 Warranty of *Products* affected.
- .2 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 work of *Owner* or other contractors.
 - .7 Written permission of affected other contractors.
 - .8 Date and time work will be executed.

1.2 PRODUCTS

- .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 - Substitution Procedures.

1.3 PREPARATION

- .1 Inspect existing conditions in accordance with Section 01 71 00 - Examination and Preparation.
- .2 Provide supports to ensure structural integrity of surroundings; provide devices and methods to protect other portions of the *Work* from damage.
- .3 Provide protection from elements for areas that may be exposed by uncovering work.

1.4 EXISTING UTILITIES

- .1 Where the *Work* involves breaking into or connecting to existing services, give

CUTTING AND PATCHING

authority having jurisdiction, the *Owner*, and *Consultant* the following notice:

- .1 4 weeks' notice with approved method statement for electrical power shut down (total building)
 - .2 2 weeks' notice for local shutdown for certain electrical panel boards impacting occupied areas of the facility
 - .3 3 weeks' notice for air system shutdown HVAC
 - .4 5 days' notice for other services like fire alarm, security. Etc.
 - .5 2 weeks' notice for gas shutdown after approval by owner. Shutdown period to be no longer than 24 hours at a time.
 - .6 2 weeks' notice for water shut downs with notification for duration of post shutdown remediation, and testing for legionella.
- .2 Keep duration of interruptions to a minimum.
 - .3 Carry out interruptions after regular working hours of occupants, preferably on weekends, unless *Owner's* prior written approval is obtained.
 - .4 Protect and maintain existing active services. Record location of services, including depth, on as-built drawings.
 - .5 Construct or erect barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures as required to protect pedestrian and vehicular traffic.

1.5 CUTTING, PATCHING, AND REMEDIAL WORK

- .1 Coordinate and perform the *Work* to ensure that cutting and patching work is kept to a minimum.
- .2 Perform cutting, fitting, patching, and remedial work including excavation and filling to make the affected parts of the *Work* come together properly and complete the *Work*.
- .3 Provide openings in non-structural elements of the *Work* for penetrations of mechanical and electrical work.
- .4 Perform cutting by methods to avoid damage to other work
- .5 Provide proper surfaces to receive patching, remedial work, and finishing.
- .6 Perform cutting, patching, and remedial work using competent and qualified specialists familiar with the *Products* affected, in a manner that neither damages nor endangers the *Work*.

CUTTING AND PATCHING

- .7 Do not use pneumatic or impact tools without *Consultant's* prior approval.
- .8 Ensure that cutting, patching, and remedial work does not jeopardize manufacturers' warranties.
- .9 Refinish surfaces to match adjacent finishes. For continuous surfaces refinish to nearest intersection. For an assembly, refinish entire unit.
- .10 Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces with suitable allowance for deflection, expansion, contraction, acoustic isolation, and firestopping.
- .11 Maintain fire ratings of fire rated assemblies where cutting, patching, or remedial work is performed. Completely seal voids or penetrations of assembly with firestopping material to full depth or with suitably rated devices.

1.6 CONCRETE CUTTING AND CORING

- .1 Prior to trenching, cutting or coring **any** slab-on-grade, suspended concrete slab or any concrete beams or walls, investigate by reviewing available as-built structural drawings and telemetrically scanning the element for presence of embedded services (piping, cabling, conduit, etc.), and for locations of reinforcing steel in suspended concrete slabs and beams.
- .2 A scan is to be performed for each proposed trench, cut or core through floor slabs and structural walls and beams.
- .3 **Professional Engineer Review**
 - .1 Engage and pay for the services of a Professional structural engineer licensed to practice in the Province of Ontario to review each scan on site to confirm the proposed trenching, cutting, and coring locations are acceptable and will not compromise the structure.
 - .4 The Engineer shall provide a summary of the scans reviewed. Submit written reports to Consultant summarizing investigations and conclusions.
 - .5 Obtain Consultant's direction for alternate locations where investigations reveal that cutting or coring required in Contract would cut or damage embedded services or cut or damage reinforcing steel in suspended concrete slabs or beams.
 - .6 **Provide scans of alternate location for Engineer review and approval. Include costs for any additional scans in contract.**
 - .7 Acceptable telemetric scanning systems include X-Ray scanning or ground penetrating radar of suspended slabs, concrete beams and walls.

CUTTING AND PATCHING

- .8 Magnetic radio scanners not acceptable for telemetric scanning.
- .9 The term x-rays include gamma ray methods, and procedures that use electrically generated x-rays.
- .10 Where x-rays employed:
 - .1 Provide Owner minimum 5 working days advance notice of scanning time in order to provide sufficient advance notice to personal that may be affected by the x-ray work.
 - .2 Conform to Owner's radiation protection requirements prior to start of any x-ray work.
- .11 Execute cutting and coring to prevent damage to all embedded services. Make good all damage arising from cutting embedded services.
- .12 Execute cutting and coring to prevent damage (cutting in whole or in part) reinforcing steel in suspended concrete slabs with Consultant's prior authorization.
- .13 Make good all damage arising from cutting reinforcing steel in suspended concrete slabs and beams. Include engagement of Professional Engineer to provide design of remedial measures.

1.7 FILLING OF HOLES IN CONCRETE SLAB AND WALLS

- .1 Fill all holes in existing suspended concrete slab and concrete or masonry walls left by removal of pipes and conduits as follows:
 - .1 Holes in floor slab up to 4" diameter – one-part, shrinkage compensated, cementitious, flowable, full depth repair mortar;
 - .2 Holes in floor slab larger than 4" diameter – pre-packaged repair concrete FA-S6 by King or equal
 - .3 Holes in concrete or masonry wall – hand patch application; one component, fiber-reinforced, shrinkage-compensated polymer modified, high build cementitious repair mortar for vertical application. Acceptable product Planitop X by Mapei or approved equal.
- .2 Refer to drawings of fill detail for holes in floor that have a diameter of 100mm (4") or larger
- .3 Prepare surface to receive patching material in accordance with manufacturer's instructions.

END OF SECTION

CLEANING AND WASTE MANAGEMENT

1.1 REGULATORY REQUIREMENTS

- .1 Comply with applicable regulatory requirements when disposing of waste materials.
- .2 Obtain permits from authorities having jurisdiction and pay disposal fees where required for disposal of waste materials and recyclables.

1.2 GENERAL CLEANING REQUIREMENTS

- .1 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.
- .2 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .3 Consult and obtain approval from the Owner for the type of cleaners and cleaning process to be used.
- .4 Prevent cross-contamination during the cleaning process.
- .5 Notify the *Consultant* of the need for cleaning caused by *Owner* or *other contractors*.

1.3 PROGRESSIVE CLEANING AND WASTE MANAGEMENT

- .1 Maintain the *Work* in a tidy and safe condition, free from accumulation of waste materials and construction debris including interior and exterior staging areas and along access routes.
- .2 Provide appropriate, clearly marked, containers for collection of waste materials and recyclables. Ensure containers used in both interior and exterior locations are covered. If any containers enter the building they should be covered and washed accordingly. Locate containers within exterior staging area designated by *Owner*.
- .3 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. Co-ordinate with *Owner* the time of day when wastes may be taken out of the work area.
- .4 Remove all waste materials and recyclables from *Place of the Work* daily unless permitted otherwise by *Owner*.
- .5 Clean interior building areas prior to start of finish work and maintain free of dust and other contaminants during finishing operations.

CLEANING AND WASTE MANAGEMENT

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

1.4 FINAL CLEANING

- .1 Before final cleaning, arrange a meeting at *Place of the Work* to determine the acceptable standard of cleaning. Ensure that *Owner*, *Owner's IPAC* representative, *Consultant*, *Contractor* and cleaning company 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.
- .3 Before applying for *Substantial Performance of the Work* as provided in GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK, the *Contractor* shall remove waste products and debris, other than that resulting from the work of the *Owner*, *Other Contractors* or their employees, and shall leave the *Place of the Work* clean and suitable for use or occupancy by the *Owner*. The *Contractor* shall remove products, tools, *Construction Equipment*, and *Temporary Work* not required for the performance of the remaining work.
- .4 Prior to application for the final payment, the *Contractor* shall remove any remaining products, tools, *Construction Equipment*, *Temporary Work*, and waste products and debris, other than those resulting from the work of the *Owner*, *Other Contractors*, or their employees.
- .5 Ensure cleaning meets the requirements of CSA Z317.13-07, and *Owner's* policies.
- .6 Provide professional cleaning by a qualified, established cleaning company.
- .7 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.
- .8 Re-clean as necessary areas that have been accessed by *Contractor's* workers prior to *Owner* occupancy.
- .9 Remove stains, spots, marks, and dirt from finished surfaces, electrical and mechanical fixtures, furniture fitments, walls, floors, appliances, and equipment.
- .10 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and all other finished surfaces, including mechanical and electrical fixtures. Replace broken, scratched or otherwise damaged glass.

CLEANING AND WASTE MANAGEMENT

- .11 Remove dust from lighting reflectors, lenses, lamps, bulbs, and other lighting surfaces.
- .12 Vacuum clean and dust exposed wall, floor, and ceiling surfaces, behind grilles, louvres and screens, and window blinds.
- .13 Clean mechanical, electrical, and other equipment. Replace filters for mechanical equipment if equipment is permitted to be used during construction.
- .14 Remove waste material and debris from accessible concealed spaces.
- .15 Remove stains, spots, marks, and dirt from exterior facades.
- .16 Clean exterior and interior window glass and frames.
- .17 Clean and sweep roofs. Remove debris obstructing roof drains.
- .18 Power wash, and remove snow and ice from exterior sidewalks, steps, driveways, roads, parking lots, and other paved surfaces.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Comply with Authorities Having Jurisdiction
- .2 Dispose of waste materials and recyclables at appropriate municipal landfills and recycling facilities in accordance with applicable regulatory requirements.
- .3 Deliver to nearest appropriate depot all materials accepted for recycling by the region or municipality having jurisdiction over the Place of Work, including but not limited to cardboard, paper, plastic, aluminum, steel, and glass. Deliver to nearest appropriate depot all scrap and excess gypsum wallboard for recycling of this material. Pay all costs for this work.
- .4 Do not burn or bury waste materials at *Place of the Work*.
- .5 Do not dispose of volatile and other liquid waste such as mineral spirits, oil, paints and other coating materials, paint thinners, cleaners, and similar materials together with dry waste materials or on the ground, in waterways, or in storm or sanitary sewers. Collect such waste materials in appropriate covered containers, promptly remove from *Place of the Work*, and dispose of at recycling facilities or as otherwise permitted by applicable regulatory requirements.
- .6 Cover dry waste materials to prevent blowing dust and debris.

END OF SECTION

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

PART 1 GENERAL

1.1 Scope of Work

- .1 Provide testing of integrated fire protection and life safety systems and related equipment in accordance with CAN/ULC-S1001 except as modified in accordance with this specification section.
- .2 This specification is limited to testing of the interconnections between life safety and/or fire protection systems. Refer to separate technical specification sections for the individual testing and commissioning requirements for those systems.

1.2 Related Sections

- .1 Without limiting the scope of work or applicability of other specification sections, the work under this section directly integrates with or refers to the applicable mechanical and electrical specifications pertaining but not limited to Divisions 23, 25 and 26.

1.3 Definitions and Abbreviations

- .1 The following definitions apply to this section.
 - .1 **Integrated Testing Coordinator* (ITC)** – The person, firm, corporation, or organization engaged by the *Contractor* to be responsible for the development and implementation of the integrated testing plan. Where a firm, corporation, or organization is responsible for integrated fire protection and life safety systems testing, a representative of that firm, corporation, or organization shall be designated as the integrated testing coordinator. (*as defined in CAN/ULC-S1001)
 - .2 **Integrated test plan (ITP) *** – A written specific document, prepared by the ITC, outlining the required tests and necessary functional results to conduct integrated fire protection and life safety systems testing. (*as defined in CAN/ULC-S1001).
- .2 Abbreviations:
 - .1 ITC – Integrated testing coordinator.
 - .2 ITP – Integrated testing plan
 - .3 FPLS – Fire protection and life safety systems.

1.4 Applicable Codes and Standards

- .1 Installation codes and standards:
 - .1 CAN/ULC-S1001 Integrated Systems Testing of Fire Protection and Life Safety Systems

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

1.5 Qualified Tradesperson

- .1 Work to be performed by a qualified, licensed and recognized firm with an established reputation in this field, using tradesperson holding applicable certificates of competency. The firm and its employees providing the ITC services shall be certified under the ULC-S1001 Certification of Integrated Testing Service Providers program.

1.6 Submittals

- .1 Submit the integrated test plan for review by the *Consultant* at least three (3) months prior to commencement of the first system integration test. The integrated test plan shall comply with the requirements of ULC-S1001 and as specified herein.

PART 2 PRODUCTS

- .1 Not used.

PART 3 EXECUTION

3.1 General Requirements

- .1 Notwithstanding the preface to CAN/ULC-S1001, the contractor shall be responsible for the procurement, including selection, payment and management, of the ITC company or personnel. ITC personnel may be a direct employee of the General Contractor or Construction Manager as applicable.
- .2 Include all labor, specialized personnel, material, and equipment as required to manage, develop and implement the integrated fire protection and life safety testing process.
- .3 Coordinate and jointly prepare with the applicable trade contractors whose equipment or systems are subject to the testing under this specification section, to conduct complete and thorough testing and documentation of the systems interface and integration between various FPLS systems provided under those Divisions.
- .4 Include all labor and material as required to coordinate with the ITC testing requirements, and to manage and implement with the applicable trade contractors whose equipment or systems are subject to the testing under this specification section, to conduct complete and thorough testing and documentation of the systems interface and integration between various FPLS systems provided under those Divisions.
- .5 The applicable Divisions of the Work that are subject to the FPLS integration testing are:

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

- | | | |
|----|-------------|---|
| .1 | Division 08 | Automatic fire doors |
| .2 | Division 14 | Vertical transportation |
| .3 | Division 21 | Fire protection systems, including fire pumps and water supplies |
| .4 | Division 23 | Smoke dampers, motorized fire dampers, smoke control and smoke venting equipment, fuel gas and liquid fuel safety interlocks, fuel systems for emergency generators, fire or explosion risk reduction control systems, freeze protection systems (for water-based fire protection piping) |
| .5 | Division 25 | Smoke control systems, smoke venting systems |
| .6 | Division 26 | Emergency power distribution systems, emergency lighting control systems |
| .7 | Division 27 | Audio-visual systems (where forming part of a notification system) |
| .8 | Division 28 | Fire alarm systems, smoke alarm systems, security systems, notification systems, door hold-open devices, magnetic door lock devices, hazardous protection monitoring |
- .6 The testing requirements specified under this section are the minimum required for the purpose of obtaining an occupancy permit, and the successful completion of this testing program is a condition precedent for obtaining substantial performance/completion of the Work.
- .7 Where the project includes a commissioning program, the testing requirements under this specification section may be incorporated into the commissioning program, subject to meeting the preceding requirements concerning occupancy permit and substantial performance/completion of the Work.

3.2 Integrated Test Plan - Development

- .1 Develop the integrated test plan as described in section 5 of CAN/ULC-S1001, including but not limited to the following elements:
- | | |
|----|---|
| .1 | coordinate with and obtain from the applicable Consultants the required information concerning the design performance criteria for the integration of FPLS equipment and systems, including |
| .1 | building floor plans, |
| .2 | control sequences between separate systems, |
| .3 | mechanical and electrical riser diagrams (if applicable), |
| .2 | obtain manufacturer's operating and testing instructions from the applicable trade contractors, |
| .3 | obtain any applicable alternate solutions to prescribed requirements of Code and Standards, from the applicable Consultant. |

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

- .2 Prepare the integrated testing plan, which is to include, but is not limited to, the following elements:
 - .1 the functional objectives of the various system integrations,
 - .2 the sequence of operation of the integration elements of the FPLS systems including;
 - .1 operation under normal operating conditions,
 - .2 operation under fire conditions,
 - .3 a procedure for notifying occupants of integrated systems testing,
 - .4 safety management procedures, such as safety protocols and notifications, for ensuring occupant and worker safety during integrated system testing,
 - .5 where a building is to be tested in phases, additional procedure requirements for
 - .1 testing of each area in the building, with consideration that such areas will need to be tested at different points in time to support staged occupancy permits, and
 - .2 testing of the entire building once all stage areas are completed, including if any or all areas are concurrently occupied for any final testing.
- .3 Include as appendices or as a separate volume, the test procedure for each system-to-system integration test. Organize the test procedures into separate sections for each system-to-system integration test.
- .4 Include in the test plan a workflow diagram that illustrates dependencies between systems, to clearly identify predecessor and successor relationships between the various systems.
- .5 Include a testing schedule that coordinates and integrates with the overall construction schedule, identifying key dates where other parties may participate in witnessing any of the tests.
- .6 Submit a completed draft of the test plan for review by the Consultant(s). After review by the Consultant(s) and any required modifications made to the test plan, provide a revised draft of the test plan to the applicable authority having jurisdiction (as a minimum, this is the building department and the fire department).
- .7 Where revisions are made to the design of FPLS equipment or systems that impact the integration of those systems, update the integrated test plan and submit to the Consultant for review prior to its use.
- .8 The ITC will develop the integrated test plan and test form documentation.
- .9 At the commencement of the Work, coordinate with the ITC to jointly develop the initial FPLS testing schedule and integrate the schedule into the project

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

construction schedule, including sufficient time for development of the test plan (by the ITC) and review by all participants in the testing program.

- .10 Structure the construction and testing schedule to allow completion of the FPLS testing as a predecessor to application for occupancy permit and for substantial completion/performance of the work.
- .11 Periodically update the construction and testing schedule as the development of the FPLS testing plan progresses.
- .12 Not more than two (2) weeks after release of the draft FPLS test plan, review the test plan with the applicable trade contractors and submit any necessary questions or clarification requests.
- .13 Be responsible to develop and implement;
 - .1 a procedure for notifying occupants of integrated systems testing,
 - .2 the safety management procedures, such as safety protocols and notification for ensuring occupant and worker safety during integrated system testing,
- .14 Where a building is to be tested in phases, allow for staged implementation including any required retesting, of the affected systems including:
 - .1 testing of each area in the building, with consideration that such areas will need to be tested at different points in time to support staged occupancy permits, and
 - .2 testing of the entire building once all stage areas are completed, including if any or all areas are concurrently occupied for any final testing.]

3.3 Test Procedures

- .1 At a minimum, develop test procedures and test forms in accordance with the requirements of section 6 and section 7 of CAN/ULC-S1001 and as specified herein or as specified in technical Division specifications.
- .2 Test procedures shall test the functional operation of the device or system, except simulation may be used tests would;
 - .1 involve activation of non-resettable devices to demonstrate the integration functions,
 - .2 result in harm to persons or damage to a device, system or a building.
- .3 The ITC will develop the test procedures and test forms, at a minimum, in accordance with section 6 and section 7 of CAN/ULC-S1001.
- .4 Where acceptance testing of two or more FPLS systems include verifying of the integration between those systems in accordance with required codes and standards (such as between a fire alarm system and a sprinkler or standpipe system), then documented test reports demonstrating the efficacy of such

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

integration will be considered as meeting the requirements of this specification section, subject to approval by the *Consultant*.

3.4 Integrated Test Plan - Implementation

- .1 Implement the FPLS integrated testing program in accordance with section 6 and section 7 of CAN/ULC-S1001 requirements. Before commencing any test, obtain the required documentation regarding completed installation verification, acceptance testing, notifications, and any applicable authority inspections of individual FPLS equipment and systems.
- .2 Provide minimum 1 month's notification of the testing schedule to the applicable authorities having jurisdiction and invite their participation in any test.
- .3 Provide the Owner with minimum 2 week's notice in advance of testing procedures that will temporarily disrupt any existing building service(s).
- .4 Provide any temporary installation measures, including wiring-jumpers, control open-circuits, or other temporary measures required for any test. If temporary measures are used, create a log report identifying each temporary measure, and the date they were installed, and for which integration test they are provided.
- .5 If, during testing, there is a defect or failure of the integration element, correct the defect and retest the affected integration element or system. Record on the test report forms the occurrence of the defect, the date and how the defect was corrected, and re-test date.
- .6 After the successful completion of integrated FPLS testing, return all systems to their normal operating state. If temporary measures were used, remove all such devices and return the system to their normal operating condition. Update the temporary measure log report to include date the temporary devices were removed, and include this log report in the final test report.

3.5 Final Test Results Report

- .1 Upon successful completion of the integrated FPLS systems testing, submit a final test report in accordance with section 7 of CAN/ULC-S1001, including
 - .1 the integrated testing plan,
 - .2 initial integration testing forms, filled-in with test results,
 - .3 re-test integration testing forms (if required), and
 - .4 supporting pre-integration testing verification documentation of applicable systems.
- .2 Submit copies of the final report as follows:
 - .1 one (1) hard-copy to each applicable authority having jurisdiction,
 - .2 one (1) hard-copy and one (1) PDF copy to the Consultant,

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

- .3 two (2) hard-copies and two (2) PDF copies on separate portable media devices to the Owner.
- .3 In addition, provide one copy of the test plan and test procedures, unmarked, in PDF format to the Owner. Ownership and copyright of the unmarked test plan and procedures shall remain vested with the author of those documents; provide the Owner with a non-exclusive, transferrable, royalty-free license to reproduce and use these documents for the sole purpose of allowing the Owner to retest these systems in the future.]
- .4 The ITC shall create the final test report.

3.6 Demonstration and Training

- .1 Demonstrate the operation of, and providing training on, the integration of FPLS systems to the Owners operations staff in accordance with the requirements of Division 1, the applicable technical specification sections, and as follows:
 - .1 the function of the integration,
 - .2 the method of integration – hardwired, network communication, operating protocols,
 - .3 the type of information – data, commands, monitoring,
 - .4 any temporary measures to be taken to retest in the future.
- .2 Document this training information and provide two (2) copies in PDF format on two separate removable media devices.

3.7 Schedules

- .1 Schedule A – General Requirements for Testing Procedures.

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

PART 4 SCHEDULE A – SUMMARY OF FPLS SYSTEM INTEGRATION

4.1 General

- .1 This Schedule A summarizes the typical integration between various FPLS systems. The ITC is to determine the FPLS system integration applicable to this *Project* in the ITP.

Originating System		Receiving System		
ULC-S1001 Section	Originating System	ULC-S1001 Section	Receiving System	Function
6.2	Fire Alarm	6.3	Mass Notification	Public address annunciation
6.2	Fire Alarm	6.4	Elevators	Elevator recall
6.2	Fire Alarm	6.7	Notification	Audible / visual notification of fire condition
6.2	Fire Alarm	6.16	Door Hold-Open	Doors release and close under fire alarm signal as applicable to the zone.
6.2	Fire Alarm	6.17	Electromagnetic Locks	Mag lock de-energizes on fire alarm signal
6.2	Fire Alarm	6.18	Building Automation Control	Fire alarm stage notification, Fire zone notification
6.2	Fire Alarm	6.18	Air handling units	Recirculating AHU shut-down on smoke detection
6.2	Fire Alarm	6.18	Smoke Control – High Rise buildings	Smoke control of applicable fans and dampers
6.2	Fire Alarm	6.18	Smoke Control – Interconnected Spaces	Smoke control of applicable fans and dampers
6.2	Fire Alarm	6.18	Smoke Venting for Fire Fighting	Smoke control of applicable fans and dampers

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6.2	Fire Alarm	---	Smoke and Motorized Fire Dampers	Where controlled by the FAS
6.2	Fire Alarm	---	Fire shutters	Release of fire shutters on fire alarm.
6.5	Emergency Generators	6.2	Fire Alarm	Generator trouble and alarm conditions
6.5	Emergency Generators	6.4	Elevators	
6.5	Emergency Generators	6.6	Emergency Lighting	Emergency lights are functional on loss of power
6.5	Emergency Generators	6.10	Fire Pumps	Emergency power transfers to fire pumps
6.8	Automatic Sprinklers	6.2	Fire Alarm	Flow, pressure, and valve position trouble and alarm conditions [Note 1]
6.9	Standpipe	6.2	Fire Alarm	Flow, pressure, and valve position trouble and alarm conditions [Note 1]
6.10	Fire Pumps	6.2	Fire Alarm	Fire pump status, trouble and alarm notifications
6.11	Storage Fire Water Supply	6.2	Fire Alarm	Water level, pressure, temperature supervisory status and alarms, Freeze protection systems [Note 1]
6.12	Private Fire Water Supply Control Valves	6.2	Fire Alarm	Valve position status [Note 1]
6.13	Water Freeze Protection	6.2	Fire Alarm	Freeze protection/temperature status and alarms [Note 1]
6.14	Fixed Fire Suppression System	6.2	Fire Alarm	Operating status, trouble and alarm conditions [Note 1]
6.15	Cooking Equipment Fire Suppression	6.2	Fire Alarm	Activation status
6.15	Cooking Equip Fire Suppression	---	Cooling energy source	Closing of gas valve or opening of distribution panel shunt-trip breaker

TESTING OF INTEGRATED FIRE PROTECTION AND LIFE SAFETY SYSTEMS

6.18	Fire Fighters Smoke Control Station	6.18	Building Automation Control	Fan shut-down/start-up commands
6.18	Building Automation System	6.18	Air handling units	Recirculating AHU shut-down on smoke detection
6.18	Building Automation System	6.18	Smoke Control – High Rise buildings	Smoke control of applicable fans and dampers
6.18	Building Automation System	6.18	Smoke Control – Interconnected Spaces	Smoke control of applicable fans and dampers
6.18	Building Automation System	6.18	Smoke Venting for Fire Fighting	Smoke control of applicable fans and dampers
6.18	Building Automation System	---	Smoke and Motorized Fire Dampers	Where controlled by the FAS
6.18	Building Automation System	6.18	Fire Fighters Smoke Control Station	Confirmation of fan and damper correction operating condition.
6.18	Smoke Fans and Dampers	6.2	Fire Alarm	Confirmation of fan and damper correction operating condition.
6.19	Hazardous Protection Monitoring	---	Building Automation Control	Detection trouble and alarm. Shut-down interlocks
6.19	Hazardous Protection Monitoring	6.2	Fire Alarm	Detection trouble and alarm. Shut-down interlocks
6.20	Smoke Alarms	6.4	Elevators	Elevator recall

Notes:

[1] Separate integration testing is not required where such testing is included as part of fire alarm verification in accordance with CAN/ULC-S537 Verification of Fire Alarm Systems

END OF SCHEDULE “A”

END OF DOCUMENT

CLOSEOUT PROCEDURES

1.1 READY-FOR-TAKEOVER

- .1 The prerequisites to attaining *Ready-for-Takeover* of the *Work* are described in the General Conditions of the *Contract* and as may be amended by the Supplementary Conditions to the General Conditions.
- .2 Abide by the process and provide all documentation indicated in the current edition of the OAA-OCGA Take-Over Procedures.
- .3 This specification section stipulates additional requirements to the above.

1.2 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.
 - .5 Provide close-out documentation draft
- .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* will review the *Work*. The *Consultant* will advise the *Contractor* whether or not the *Work* is *Ready-for-Takeover* and will provide the *Contractor* with a list of items, if any, to be added to the *Contractor's* list of items to be completed or corrected. Provide the *Consultant* with a copy of the *Contractor's* 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.

CLOSEOUT PROCEDURES

1.3 PREREQUISITES TO FINAL PAYMENT

- .1 After *Ready-for-Takeover* of the *Work* and before submitting an application for final payment in accordance with the General Conditions of Contract:
 - .1 Correct or complete all remaining defective, deficient, and incomplete work.
 - .2 Remove from the *Place of the Work* all remaining surplus *Products*, *Construction Equipment*, and *Temporary Work*.
 - .3 Perform final cleaning and waste removal necessitated by the *Contractor's* work performed after *Ready-for-Takeover*, as specified in Section 01 74 00 – Cleaning and Waste Management.

1.4 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.

1.5 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 lien legislation applicable to the *Place of the Work*, shall be:
 - .1 independent of those for attaining *Ready-for-Takeover* of the *Work*, and
 - .2 in accordance with the lien legislation applicable to the *Place of the Work*.

END OF SECTION

CLOSEOUT SUBMITTALS

1.1 RELATED SECTIONS

- .1 Section 01 31 00 Project Managing and Coordination – Closeout documentation on File sharing Platform.
- .2 Section 01 77 00 Closeout Procedures – Closeout documentation

1.2 OPERATION AND MAINTENANCE MANUAL

- .1 Prepare a comprehensive operation and maintenance manual, in the language[s] 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 final version to *Owner* in hard copy and electronic format. Provide two ()2 hard copies in tabbed binder format. Upload digital file to file sharing platform.

1.3 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, three D-rings, loose leaf, 216 x 279 mm, with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with typed or printed title "Operation and Maintenance Manual", name of Project or facility, and subject matter of contents.
- .1 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .2 Provide tabbed fly leaf for each separate *Product* or system, with typed description of *Product* and major component parts of equipment.
- .3 Text: Manufacturer's printed data, or typewritten data.
- .4 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .5 The digital version of the manual shall be organized and tabbed same as the hardcopy version. Provide electronic copy of manual in PDF format directly to *Owner* and upload a copy to the file sharing platform.

CLOSEOUT SUBMITTALS

- .6 Provide electronic copy of Shop *Drawings* in manual as 1:1 scaled CAD files in .dwg format on USB flash drive.

1.4 OPERATION AND MAINTENANCE MANUAL – GENERAL CONTENT

- .1 Table of contents for each volume.
- .2 Introductory information including:
 - .1 Date of manual submission.
 - .2 Complete contact information for *Consultant*, subconsultants, other consultants, and *Contractor*, with names of responsible parties.
 - .3 Schedule of *Products* and systems indexed to content of volume.
- .4 For each *Product* or system, include complete contact information for *Subcontractors*, *Suppliers* and manufacturers, including local sources for supplies and replacement parts.
- .5 *Product Data*: mark each sheet to clearly identify specific products, options, and component parts, and data applicable to installation. Delete or strike out inapplicable information. Supplement with additional information as required.
- .6 Reviewed *Shop Drawings*.
- .7 Permits, certificates, letters of assurance and other relevant documents issued by or required by authorities having jurisdiction.
- .8 Warranties.
- .9 Operating and maintenance procedures, incorporating manufacturer's operating and maintenance instructions, in a logical sequence.
- .10 Training materials as specified in Section 01 79 00 - Demonstration and Training.

1.5 OPERATION AND MAINTENANCE MANUAL - EQUIPMENT AND SYSTEMS CONTENT

- .1 The following are general requirements for operational and maintenance manual for Mechanical and Electrical Systems. Refer to Mechanical and Electrical sections for additional requirements.
- .2 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.

CLOSEOUT SUBMITTALS

- .3 Panel Board Circuit Directories: provide electrical service characteristics, controls, and communications.
- .4 Include installed colour coded wiring diagrams.
- .5 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.
- .6 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .7 Provide servicing and lubrication schedule, and list of lubricants required.
- .8 Include manufacturer's printed operation and maintenance instructions.
- .9 Include sequence of operation by controls manufacturer.
- .10 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .11 Provide installed control diagrams by controls manufacturer.
- .12 Provide *Contractor's* coordination drawings, with installed colour coded piping diagrams.
- .13 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .14 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .15 Include testing and balancing reports.
- .16 Include additional content as specified in technical *Specifications* sections.

1.6 OPERATION AND MAINTENANCE MANUAL - PRODUCTS AND FINISHES CONTENT

- .1 Include *Product* data, with catalogue number, options selected, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured *Products*.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

CLOSEOUT SUBMITTALS

- .3 Include an outline of requirements for routine and special inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.
- .4 Include additional content as specified in technical *Specifications* sections.

1.7 OPERATION AND MAINTENANCE MANUAL - WARRANTIES CONTENT

- .1 Separate each warranty with index tab sheets keyed to Table of Contents listing.
- .2 List each warrantor with complete contact information.
- .3 Verify that documents are in proper form and contain full information. Ensure that warranties are for the correct duration and are in *Owner's* name.

1.8 CONTRACTOR'S AS-BUILT DRAWINGS

- .1 Submit final as-built drawings in the form specified in Section 01 32 00 – Construction Progress Documentation to *Owner* and *Consultant*. The as-builts shall be provided in both pdf and .dwg formats.

1.9 SPARE PARTS, MAINTENANCE MATERIALS, AND SPECIAL TOOLS

- .1 Supply spare parts, maintenance materials, and special tools in quantities specified in technical *Specifications* sections.
- .2 Ensure spare parts and maintenance materials are new, not damaged nor defective, and of same quality, manufacturer, and batch or production run as installed *Products*.
- .3 Provide tags for special tools identifying their function and associated *Product*.
- .4 Deliver to and store items at location directed by *Owner* at *Place of the Work*. Store in original packaging with manufacturer's labels intact and in a manner to prevent damage or deterioration.
- .5 Catalogue all items and submit to *Consultant* an inventory listing organized by *Specifications* section. Include *Consultant* reviewed inventory listing in operation and maintenance manual.

1.10 OTHER SUBMITTALS REQUIRED

- .1 Wiring Diagrams
- .2 Supplier addresses and contact numbers

CLOSEOUT SUBMITTALS

- .3 Maintenance requirements, including recommended preventative maintenance tasks and frequencies, etc.
- .4 Start-up and Commissioning Reports
- .5 Factory Acceptance Tests
- .6 Cleaning requirements and cleaning agents recommended, etc.
- .7 Training requirements, including any training records of training done prior to hand over
- .8 Copies of permits and approvals
- .9 Hand-over records etc.

END OF SECTION

DEMONSTRATION AND TRAINING

1.1 SUMMARY

- .1 Demonstrate and provide training to *Owner's* personnel on operation and maintenance of equipment and systems prior to scheduled date of *Ready-for-Takeover of the Work*.
- .2 *Owner* will provide list of personnel to receive training and will coordinate their attendance at agreed upon times.
- .3 Coordinate and schedule demonstration and training provided by *Subcontractors* and *Suppliers*.

1.2 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*.
- .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, and
 - .3 including a list of attendees.
- .4 Submit video record of demonstration and training together with report.

1.3 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.
- .4 Conditions for demonstration and training comply with requirements specified in technical *Specifications*.
- .5 Maintenance materials and spare parts specified in technical *Specifications* are included in the demonstration and training sessions.

DEMONSTRATION AND TRAINING

1.4 DEMONSTRATION AND TRAINING

- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment and system.
- .2 Review operation and maintenance manual in detail to explain all aspects of operation and maintenance.
- .3 Prepare and insert additional information in operation and maintenance manual if required.

1.5 DEMONSTRATION AND TRAINING SCHEDULE

- .1 Code White System
- .2 Nurse Call System
- .3 Access Control Systems
- .4 Security Hardware
- .5 Headwall system
- .6 Lighting System and controls
- .7 All other Equipment and Systems identified in technical specifications.

END OF SECTION

GENERAL COMMISSIONING REQUIREMENTS

1.1 COMMISSIONING

- .1 The Contractor shall commission the *Work* and be the Commissioning agent on this *Project*. Engage a qualified third-party personnel or company to perform the services of the Commissioning Agent if such expertise is not available in-house.
- .2 Commissioning of Equipment and Systems shall be carried out by the *Contractor* acting as the commissioning agent and respective *Sub-Contractors*.
- .3 The services identified in this specification section is in addition to the commissioning requirements identified in the mechanical and electrical specifications. Refer to Mechanical and Electrical Specifications for commissioning requirements of the *Work* by the *Contractor and Sub-Contractors*.
- .4 *Consultant* will witness the commissioning services performed by the *Contractor and Sub-Contractors*.

1.2 CONTRACTOR AND SUB-CONTRACTORS' RESPONSIBILITIES

- .1 Prepare each system ready for commissioning. Verify systems installation is complete and in operation prior to actual commissioning.
- .2 *Contractor* shall coordinate commissioning activities between the *Sub-contractors*.
- .3 Perform and document verification, performance testing, adjusting, and balancing operations.
- .4 Cooperate with Consultant and provide access to equipment and systems.
- .5 Provide personnel and operate systems at designated times, and under conditions required for proper commissioning.
- .6 Participate in commissioning meetings.
- .7 Complete commissioning forms as requested by commissioning agency.
- .8 Correct deficiencies identified in commissioning process.
- .9 Incorporate commissioning data into operation and maintenance manual.
- .10 Provide instruments necessary for commissioning.

1.3 COMMISSIONING AGENCY RESPONSIBILITIES

- .1 The *Contractor* as the commissioning agency shall:
 - .1 Prepare a commissioning plan, including systems to be commissioned, forms, checklists and responsibilities of commissioning team members. Submit to

GENERAL COMMISSIONING REQUIREMENTS

Consultant for review. Incorporate *Consultant's* comments into commissioning plan. Distribute to all affected *Sub-Consultants*.

- .2 Implement the commissioning plan and lead the commissioning team through start-up, verification, performance testing, training, and document preparation.
- .3 Convene, chair, prepare and distribute minutes of commissioning meetings.
- .4 Contractor's site superintendent and commissioning agent shall supervise commissioning activities and witness inspections and tests together with the Consultant.
- .5 Make periodic site visits for the purpose of selective checking of accuracy of commissioning form submissions, witness testing, and review of mock-ups.
- .6 Review content of operations and maintenance manual prior to submission to *Consultant*.

1.4 CONSULTANT RESPONSIBILITIES

- .1 *Consultant* will:
 - .1 Participate in commissioning meetings.
 - .2 Review verification and performance test results and direct *Contractor* to correct defects or deficiencies in the *Work*.
 - .3 Initiate *Change Orders* or *Change Directives* identified as necessary by the commissioning process.
 - .4 Review final commissioning report.

1.5 OWNER RESPONSIBILITIES

- .1 *Owner* will:
 - .1 Assign operations and maintenance personnel to participate in meetings, and witnessing of demonstration, and training.
 - .2 Designate a person to acknowledge receipt of reports.

1.6 SCHEDULE OF EQUIPMENT AND SYSTEMS TO BE COMMISSIONED

- .1 Refer to mechanical and electrical specification sections.

END OF SECTION

SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 Section Includes

- .1 Alteration project procedures.
- .2 Removal of designated building equipment and fixtures.
- .3 Removal of designated construction.
- .4 Disposal of materials.
- .5 Identification of utilities.

1.2 Related Sections

- .1 Section 01 14 00 Work Restrictions – Hours of noisy work
- .2 Section 01 73 29 Cutting and Patching - coring
- .3 Designated Substances Report

1.3 Alteration Project Procedures

- .1 Materials: As specified in Product sections; match existing Products and work for patching and extending work.
- .2 Employ skilled and experienced installer to perform alteration work.
- .3 Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring Products and finishes to original or specified condition.
- .4 Patch all existing walls to receive new paint finish free of holes, fasteners, and defects.
- .5 Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified renewed condition for each material, with a neat transition to adjacent finishes.
- .6 Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- .7 When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Consultant for review.

SELECTIVE DEMOLITION

- .8 Where a change of plane of 6mm (1/4 inch) or more occurs, submit recommendation for providing a smooth transition; to Consultant for review. request instructions from Consultant.
- .9 Patch or replace portions of existing surfaces which are damaged, lifted, discoloured, or showing other imperfections.
- .10 Finish surfaces as specified in individual Product sections.

1.4 Submittals For Closeout

- .1 Section 01 78 10: Close Out Submittals
- .2 Project Record Documents: Accurately record actual locations of capped utilities, subsurface obstructions.

1.5 Regulatory Requirements

- .1 Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection.
- .2 Do not close or obstruct egress width to any building or site exit.
- .3 Do not disable or disrupt building fire or life safety systems without 14 days prior written notice to Owner. Follow Hospital's Shut Down Procedures.
- .4 Conform to procedures applicable when hazardous or contaminated materials are discovered.

1.6 Project Conditions

- .1 Conduct demolition to minimize interference with adjacent occupied building areas.

1.7 Sequencing and Scheduling

- .1 Sequence and schedule activities in accordance to accommodate work sequence and schedule.
- .2 Perform noisy, malodorous, or dust work after hours as directed by SJHC.

PART 2 PRODUCTS

- .1 Not Used

SELECTIVE DEMOLITION

PART 3 EXECUTION

3.1 Preparation

- .1 Provide, erect, and maintain temporary barriers at locations indicated or as required by the project. Refer to Architectural Drawing A-002.
- .2 Erect and maintain temporary partitions to prevent spread of dust, odours, and noise to permit continued Owner occupancy in adjacent spaces.
- .3 Protect existing materials and surfaces which are not to be demolished.
- .4 Prevent movement of structure; provide bracing and shoring.
- .5 Provide appropriate temporary signage including signage for exit or building egress.

3.2 Demolition

- .1 Disconnect remove, cap, and identify designated utilities within demolition areas. Refer to Mechanical and Electrical drawings for additional requirements.
- .2 Demolish in an orderly and careful manner. Protect existing supporting structural members and load bearing walls.
- .3 Remove demolished materials from site except where specifically noted otherwise.
- .4 Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- .5 Remove temporary Work.

3.3 Schedule

- .1 Refer to demolition drawings for scope and extent of architectural, mechanical, and electrical demolition work

END OF SECTION

METAL FABRICATIONS

PART 1 GENERAL

1.1 Sections Include

- .1 HSS posts on each side of PICU Patient Room Entry Doors.

1.2 Related Sections

- .1 Division 1, General Requirement, is part of this Section and shall apply as if repeated here.

1.3 References

- .1 Use latest edition of standards referenced below.
- .2 ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- .3 ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .4 ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- .5 ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .6 ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
- .7 ASTM A 312 Stainless Steel Pipe Specification
- .8 ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- .9 ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- .10 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .11 AWS D1.3/D1.3M-2008 - Structural Welding Code - Sheet Steel, Fifth Edition.
- .12 CAN/CGSB 1.40 - Anticorrosive Structural Steel Alkyd Primer.

METAL FABRICATIONS

- .13 CAN/CGSB 1.181 - Ready-Mixed Organic Zinc-Rich Coating. ASTM A269-10 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .14 CSA-G40.20/G40.21 - General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steel.
- .15 CSA-W47.1 - Certification of Companies for Fusion Welding of Steel.
- .16 CSA-W47.2 - Certification of Companies for Fusion Welding of Aluminum.
- .17 CSA-W48 - Filler Metals and Allied Materials for Metal Arc Welding.
- .18 CSA-W55.3 - Certification of Companies for Resistance Welding of Steel and Aluminum.
- .19 CSA-W59 - Welded Steel Construction (Metal Arc Welding).
- .20 SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.

1.4 Cooperation

- .1 Cooperate with other trades to ensure satisfactory and expeditious completion of Work.
- .2 Provide necessary forms, templates, anchors, sleeves, inserts and accessories required to be fixed to or inserted in the Work and set in place. Instruct related trades as to their locations.

1.5 Submittals

- .1 Shop Drawings:
 - .1 Submit shop drawings for all metal fabrications.
 - .2 Show and describe in detail all Work of this Section. Include large scale details of members and materials, of connection and joining details, and of anchorage devices, dimensions, thicknesses, finishes, description of materials, metal finishing specifications, and all other pertinent information.
 - .3 Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - .4 Indicate welded connections using standard welding symbols. Indicate net weld lengths.
 - .5 Shop drawings to be sealed and signed by a Professional Engineer licensed to practice in the Province of Ontario. Seal shall signify all metal fabrication components and connections have been designed to comply with design loads indicated in this specification section.

METAL FABRICATIONS

1.6 Quality Assurance

- .1 Welders' Certificates: welders employed on the Work within the previous twelve (12) months shall be qualified to carryout welding work to CSA-W47.1 (steel).
- .2 Welded Steel Construction: CSA-W59.
- .3 Prepare Shop drawings under direct supervision of an Engineer experienced in design of this work.

1.7 Product Handling

- .1 Store materials in dry area, free from dampness, and stacked to allow free air circulation.
- .2 Replace promptly, items received in a damaged condition.

PART 2 PRODUCTS

2.1 Design

- .1 Generally, drawings give information on specific shapes and dimensions required, and in certain cases loads imposed. For items where load information only is shown provide steel supports and anchorage of the general design indicated, sized to suit specified loads. Provide additional steel components not shown on drawings where required to meet stipulated load requirements or load requirements of the building code. Such alterations and additional components shall not impact or affect other design requirements unless authorized by the Consultant. Provide bracing as may be required to counter lateral loads and dynamic stresses where movement of support equipment may occur.

2.2 Materials

- .1 Miscellaneous Steel Shapes Including Plate and Hollow Sections: G40.21-M92, Grade 300 W.
- .2 Welding Materials: CSA W59-M1989
- .3 Fastenings:
 - .1 Exposed exterior fasteners, bolts, washers shall be stainless steel. This includes but not limited to fasteners used to mount light fixtures illuminating building signs.
 - .2 Provide fastenings, anchors and accessories required for fabrication and erection of Work.
 - .3 Fastenings include, without being limited to, anchor bolts, machine bolts, toggle bolts, self-drilling anchors, lag screws, expansion shields, sleeves, brackets, washers and nuts.

METAL FABRICATIONS

- .4 Ferrous fastenings and accessories within exterior walls and slabs, and for locations specifically so noted, shall be galvanized after fabrication.
 - .5 Supply bolts with all washers and nuts required for a complete installation. Provide lock washers where vibration may occur.
 - .6 Ensure thread dimensions are such that nuts and bolts will fit without re-threading or chasing threads.
 - .7 Bevelled hexagon head bolts; ASTM A307-92a.
 - .8 Concrete Anchors, (chuck end type); by Star Expansion, or Canadian Hilti, Phillips Drill Co. of Canada Ltd., or Dyna Drill by Ramset Limited.
 - .9 Toggle bolts; by Star Expansion or Phillips Drill Co. of Canada Ltd.
 - .10 Hammer-driven anchors; by Star Expansion, or Canadian Hilti Ltd., Phillips Drill Co. of Canada Ltd., or Dyna Drill by Ramset Ltd.
- .4 Primer:
- .1 Shop Primer: for use on non-hot dipped galvanized surfaces, CISC/CPMA 2-75.

2.3 HSS Reinforcing Posts

- .1 Design to withstand impact load force of 8900 Newtons (2,000 lbF)
- .2 Dimension of HSS shall be 89mm x 89mm.
- .3 Post to be full height anchored to floor and slab above.
- .4 Design base plate not to project beyond the face of the gypsum board partitions.:
- .5 Provide one on each side for attachment of door jamb anchors at each Patient Room entry door in PICU.

2.4 Fabrication – General Requirements

- .1 Fabricate in accordance with requirements of reviewed shop drawings. Workmanship shall be best trade, modern shop and field practice known to recognized manufacturers specializing in this type of Work.
- .2 Fabricate Work true to dimensions, square, plumb, and level. Joints and intersecting members shall be securely fitted with adequate fastenings. Make finished Work with true planes set to receive subsequent Work.
- .3 Fit and assemble Work in shop where possible in accordance with details and reviewed shop drawings. Where shop fabrication is not possible, make trial assembly in shop.
- .4 Use shop and field connections as detailed and shown on reviewed shop drawings. Comply with CAN/CSA-S16.1-M89 for structural connections.
- .5 Welding:

METAL FABRICATIONS

- .1 Steel Welding: For welding of structural components, comply with CSA W59-M1989. Welding shall be performed by a fabricator and mechanics fully approved by the Canadian Welding Bureau under requirements of CSA W47.1-92.
- .2 File or grind exposed welds smooth and flush with adjacent surface. Fill all grind marks and other imperfections to result in smooth surface. Finish Work free from weld spatter.
- .3 Cap exposed ends of hollow sections. Ease exposed edges to small uniform radius.
- .4 Continuous weld all connections.
- .6 Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- .7 Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- .8 Accurately form components required for anchorage of HSS to building structure.
- .9 Accommodate for expansion and contraction of members and building movement without damage to connection or member.
- .10 Refer to drawings for additional details.

2.5 Fabrication – Interior

- .1 Fabricate metal work using shapes and sizes indicated. Include all connection components.

2.6 Fabrication Tolerances

- .1 Squareness: 3 mm (1/8 inch) maximum difference in diagonal measurements.
- .2 Maximum Offset Between Faces: 1.6 mm (1/16 inch).
- .3 Maximum Misalignment of Adjacent Members: 1.6 mm (1/16 inch).
- .4 Maximum Bow: 1.6 mm in 1.2 m (1/16 inch in 4 ft).
- .5 Maximum Deviation from Plane: 1.6 mm in 1.2 m (1/16 inch in 4 ft).

METAL FABRICATIONS

PART 3 EXECUTION

3.1 Examination

- .1 Examine Work and job conditions for anchorage, connections and building-in of miscellaneous metals.
- .2 Verify existing conditions before starting work.
- .3 Verify that field conditions are acceptable and are ready to receive work.
- .4 Verify dimensions, tolerances, and method of attachment with other work.

3.2 Installation

- .1 Install Work rigidly and securely. Erect Work true to dimensions, square, plumb, level and free from distortion or defects detrimental to appearance and performance.
- .2 Weld all connections, unless otherwise permitted. For hot dipped galvanized items and where not possible, bolt or secure connections. Provide permanent fastenings. After welding, grind off surplus welding material to provide clean, accurate lines and internal, external corners. At exposed locations, remove, fill and sand marks off.
- .3 Keep exposed fastenings to minimum. Exposed fastenings shall be spaced evenly in line, set neatly and counter-sunk or counterbored where practicable. Screws and bolts shall be set at adequate spacings and cut off flush with nuts.
- .4 After erection and installation, thoroughly clean Work and apply field touch-up of same formula as shop coat to all damaged or unpainted surfaces.
- .5 Exercise proper care in handling and erection of Work to prevent damage. Protect installed Work against damage.

3.3 Anchor Bolts and Other Means of Anchorage

- .1 Provide all anchor bolts and expansion bolts or other means of anchorage required for building into floors, walls and ceilings, where it is necessary to secure metal and wood to concrete, masonry or steel work, other than anchorages specified under other Sections. Fasten all components and items securely.
- .2 Where fastenings or anchoring devices have to be built into Work of other subcontractors, supply necessary templates, instructions and supervision to ensure satisfactory installation.

METAL FABRICATIONS

- .3 Provide adequate reinforcing and anchorage to ensure a safe, permanent and rigid installation. Set anchor bolts in locations indicated and spaced as shown or, if not shown, as may be required for properly securing Work.
- .4 Anchorage devices, where installed shall meet the load and design stresses with a safety factor of 3.

3.4 Schedule of Miscellaneous Steel Items

- .1 Interior:
 - .1 Steel HSS post reinforcement within walls on each side of door jambs at entrance to each patient rooms in PICU. See door schedule in drawings.
 - .2 Other items as shown on Architectural drawings
- .2 Supply and install steel sections and framing which are;
 - .1 Required support for ceiling or wall mounted equipment within the area of the Work whether such equipment is new provided under the Work, new supplied by Owner, or existing relocated.
 - .2 Required supports for exterior and interior ductwork, piping and conduits shown in M&E drawings but not indicated to be provided by respective M&E sections.
 - .3 Not noted on Drawings to be supplied by another Section of the Specifications.
 - .4 Not specified under another Section of the Specifications.
 - .5 Not indicated on drawings but noted in this schedule.
- .3 Supply and install such items complete with anchors, brackets, bearing plates and other accessories required for installation.
- .4 Where steel sections are required to be built into masonry or concrete, supply such members to respective trades for building in.

END OF SECTION

ROUGH CARPENTRY

PART 1 GENERAL

1.1 Section Includes

- .1 Wood furring and grounds.
- .2 Wood blocking within wall assemblies for support of wall mounted equipment, fixtures, etc.

1.2 References

- .1 ALSC (American Lumber Standards Committee) - Softwood Lumber Standards.
- .2 ANSI A208.1 - Mat-Formed Wood Particleboard.
- .3 APA (American Plywood Association) Product Guide - Grades and Specifications.
- .4 CAN/ CSA-080 wood preservation series
- .5 NFPA (National Forest Products Association) - Grading Rules.
- .6 SPIB (Southern Pine Inspection Bureau) - Grading Rules.
- .7 WCLIB (West Coast Lumber Inspection Bureau) - Grading Rules.
- .8 WWPA (Western Wood Products Association) - Grading Rules.

1.3 Quality Assurance

- .1 Perform Work in accordance with the following agencies:
 - .1 Lumber Grading Agency: Certified by ALSC.
 - .2 Plywood Grading Agency: Certified by APA.

PART 2 PRODUCTS

2.1 Materials

- .1 Lumber Grading Rules: NLGANFPA. RIS. SPIB. WCLIB. WWPA.
- .2 Miscellaneous Framing: Stress Group D, spruce species, 19 percent maximum moisture content, pressure preservative treat.
- .3 Plywood: APA Rated Sheathing Structural I, Grade C-D; Exposure Durability 1 2; sanded. Unsanded

ROUGH CARPENTRY

2.2 Accessories

- .1 Fasteners and Anchors:
 - .1 Fasteners: Hot dipped galvanized steel for high humidity and treated wood locations, unfinished steel elsewhere.
 - .2 Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.

2.3 Factory Wood Treatment

- .1 Fire-retardant treated plywood and lumber – pressure impregnated with fire retardant chemicals in accordance with CAN/ CSA-080 wood preservation series, with max flame spread rating of not more than 25. All interior wood blocking material and electrical panel backboards to be fire retardant treated.
- .2 Wood Preservative: treat in accordance with CAN/ CSA-080 wood preservation series to the requirements of Use Category UC1, UC2, UC3A as appropriate to the application location using water borne preservative.

PART 3 EXECUTION

3.1 Framing

- .1 Set members level and plumb, in correct position.
- .2 Coordinate installation of wood blocking with installation of metal framing.
- .3 Coordinate location and size of blocking with location of wall mounted equipment, wall mounted accessories and templates.
- .4 Firmly fasten blocking to stud framing.
- .5 Provide cutouts through all blocking as required for any electrical, data or communications outlets.
- .6 Coordinate sizes for all in wall wood blocking with consultant and client prior to enclosing walls with two sided gypsum board.

3.2 Schedules

- .1 Refer to drawings for equipment and accessory locations. Provide blocking for all wall mounted equipment and accessories including but not limited to handrails, coat hooks, millwork, shelves, angles, accent panels, monitors, smartboards, and any wall mounted objects, etc.
- .2 Electrical Panel or equipment backboards.

ROUGH CARPENTRY

- .3 Plywood backing for roofing assemblies
- .4 Blocking within exterior wall assemblies

END OF SECTION

FINISH CARPENTRY

PART 1 GENERAL

1.1 Summary

- .1 Division 01 and the General Requirements of the Contract are part of this section and shall apply as if repeated here.
- .2 Provide labour, materials, products, hardware, equipment and services to complete the work specified herein as follows:
 - .1 Laminate-clad cabinets and millwork (plastic-covered casework);
 - .2 Solid surfacing material countertop;

1.2 Related Sections

- .1 Section 06 10 13 - Wood Blocking: Verify wood blocking has been installed where required to support millwork
- .2 Section 07 92 00 – Joint Sealants: Sealants applied between millwork components and with adjacent surfaces

1.3 References

- .1 Use latest edition of standards referenced
- .2 General Standard
 - .1 AWMAC/ Woodwork Institute – North American Architectural Woodwork Standards 3.1 2017 hence forth referred in this specification section as NAAWS
- .3 Cabinet Hardware
 - .1 ANSI/BHMA A156.9– American National Standard for Cabinet Hardware
 - .2 ANSI/BHMA A156.11–Cabinet Locks
 - .3 ANSI/BHMA A156.18– Materials and Finishes
 - .4 ANSI/BHMA A156.26– Continuous Hinges
- .4 Fire Retardance & Flame Spread
 - .1 Underwriters' Laboratories, Test #723, ASTM E84-10b - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .2 CAN/CSA-O80 Series-08 - Wood Preservation; Clause 8.9 of CSA O80.1 and Clause 9.8 of CSA O80.2
 - .3 CAN/ULC-S102 Test for Surface Burning Characteristics of Building Materials and Assemblies
 - .4 NFPA 80, National Fire Protection Association
- .5 Hardboard
 - .1 AHA A135.4 - Basic Hardboard.
- .6 Hardwood Lumber

FINISH CARPENTRY

- .1 NHLA (National Hardwood Lumber Association) – Rules for the measurement & Inspection of Hardwood & Cypress January 1, 2019.
- .7 Hardwood Plywood
 - .1 CSA o115- Hardwood and Decorative Plywood
 - .2 ANSI/HPVA-1– American National Standard for Hardwood and Decorative Plywood
 - .3 CHPVA (Canadian Hardwood Plywood and Veneer Association) - Official Grading Rules for Canadian Hardwood Plywood.
- .8 High-Pressure Decorative Laminate (HPDL)
 - .1 NEMA LD3 - High Pressure Decorative Laminates.
- .9 Medium Density Fiberboard (MDF)
 - .1 ANSI A208.2-2016 Medium Density Fiberboard for Interior applications
- .10 Particle Board
 - .1 ANSI A208.1 2016 Particle Board – Composite Panel Association
- .11 Marine Plywood: APA MARINE, A-A Faces, EXTERIOR.
- .12 Solid Surface
 - .1 ANSI/ICPA SS-1
- 1.4 Submittals**
 - .1 Shop Drawings:
 - .1 Submit shop drawings;
 - .2 Indicate details of construction, profiles, jointing, fastening and other related details. Scales: profiles: full size, details: one half (½) full size;
 - .3 Indicate materials, thicknesses, finishes and hardware;
 - .4 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
 - .5 Provide data for hardware accessories.
 - .2 Samples:
 - .1 Submit samples;
 - .2 Submit duplicate samples: sample size 300 x 300 mm or 450 mm long unless specified otherwise;
 - .3 Submit duplicate colour samples of laminated plastic for colour selection;
 - .4 Submit duplicate samples of laminated plastic joints, edging, cut-outs and post-formed profiles.
 - .3 Product Data:
 - .1 Submit manufacturer's cutsheets for all millwork hardware and exposed fasteners. Clearly mark product number, options, and finishes being provided.

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- .2 Provide data sheet showing material compliance with required flame spread rating indicated in 1.4.4 of this specification.
- .3 Provide data sheet for fire retardant treatment materials and application instructions. Include ULC certification.

1.5 Quality Assurance

- .1 Quality Standard:
 - .1 Except as otherwise indicated, comply with all applicable parts of the following standard:
 - .1 NAAWS PREMIUM GRADE for wood cabinetry and panelling
 - .2 NAAWS PREMIUM GRADE for Plastic Laminate Cabinetry
 - .2 Comply with NAAWS Section 2 - care and storage including temperature and humidity requirements for storage and installation.
 - .3 Comply with NAAWS Section 10 – Casework and as follows:
 - .1 HPDL on all exposed exterior and interior surfaces
- .2 Fabricator Qualifications: experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units without delaying the Work.
- .3 Installer Qualifications: Arrange for interior architectural woodwork installation by a firm that can demonstrate successful experience in installing architectural woodwork items similar in type and quality to those required for this Project.
- .4 Fire-Test-Response Characteristics:
 - .1 Provide materials with the following fire-test-response characteristics as determined by testing identical products per ASTM test method indicated below by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify fire retardant-treated material with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation;
 - .2 Surface-Burning Characteristics: Not exceeding values indicated below, tested per ASTM E 84 for standard time period of ten (10) minutes:
 - .1 Flame Spread: 75;
 - .2 Smoke Developed: 450.
- .5 Finished cabinets to be delivered to site a minimum of 96 hours from application of final finish to minimize the off gassing in the finished space.

1.6 Delivery, Storage, And Handling

- .1 Deliver, handle, store and protect materials of this section.

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- .2 Protect millwork against dampness and damage during and after delivery.
- .3 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

1.7 Project Conditions

- .1 Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- .2 Field Measurements:
 - .1 Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work;
 - .2 Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final shop drawings;
- .3 Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at Site and coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions.

1.8 Coordination

- .1 Coordinate sizes and locations of framing, blocking, framing re-enforcements, and other related units of Work specified in other sections to ensure that interior architectural woodwork can be supported and installed as indicated.

1.9 Regulatory Requirements

- .1 Wood Certification:
 - .1 Forest Stewardship Council
 - .2 Sustainable Forestry Initiative
 - .3 CSA Z809-96 Standards for Sustainable Forestry

PART 2 PRODUCTS

2.1 Materials

- .1 General: Provide materials and products that comply with requirements of the NAAWS grade specified and the quality standards in section 1.3 of this

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specification section as applicable for each type of woodwork and quality grade indicated. Provide proprietary products specified.

- .2 Certification: provide minimum 50% by volume of all wood products of this section to be certified under one or more of the certification programs referenced.
- .3 Lumber: Shall be sound and kiln dried. To requirements of NAAWS Premium grade.
- .4 Core:
 - .1 MDF: Use for all casework unless noted in drawings otherwise
 - .1 Moisture resistant, 100% pre-consumer recycled and recovered wood fibre, ultra low emission formaldehyde (ULEF) medium density fibreboard, maximum flame spread of 150
 - .2 Formaldehyde Emission Level for Medium-Density Fibreboard: Comply with requirements of NPA 9.
 - .2 Hardwood plywood: Base sheet for solid surface counter tops
 - .1 To requirements of NAAWS Premium Grade
 - .2 Veneer core plywood: hardwood with a non-telegraphing grain manufactured with exterior glue meeting requirements of NAAWS requirement.
 - .3 Maximum flame spread rating – 150
Use of veneer core for cabinet doors not permitted
 - .3 Particleboard:
 - .1 ANSI A208.1, Grade M-2, composed of wood fibres, medium density, sanded faces, ultra-low emission formaldehyde (ULEF), maximum flame spread of 150
- .5 Edgeband
 - .1 For Plastic Laminate Casework: High Pressure Decorative Laminate (HPDL). Colour to match exposed surface.
- .6 High-Pressure Decorative Laminate:
 - .1 NEMA LD 3, grades as indicated, or if not indicated, as required by woodwork quality standard;
 - .2 Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates as indicated on the Finish Schedule in drawings;
 - .3 High-Pressure Decorative Laminate Schedule: Refer to Architectural Drawings for exposed exterior surfaces. Allow for different colour in exposed interior surfaces to *Consultant* later selection.
- .7 Laminated plastic adhesive: contact adhesive to CAN/CGSB-71.20:
 - .1 Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832;

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- .2 Acceptable materials: as recommended by HPDL manufacturer
- .8 Nails and staples: to CSA B111.
- .9 Wood screws: type and size to suit application.
- .10 Splines: zinc metal.
- .11 Toe kick/ base: 1.5mm (16ga) #316 stainless steel sheet
- .12 Sealant: as per Section 07 92 00, Joint Sealing.

2.2 Cabinet Hardware and Accessory Materials

- .1 Hardware Standard: Comply with BHMA A156.9 for items indicated by reference to BHMA numbers or referenced to this standard.
- .2 Exposed Hardware Finishes:
 - .1 For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated;
 - .2 Satin Stainless Steel, Stainless-Steel Base: BHMA 630.
- .3 For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.
- .4 Cabinet hardware and accessory schedule:
 - .1 Sub-contractor shall review drawings and be responsible for establishing quantities of hardware components required;
 - .2 Hinge: Blum 107 degree opening, self closing, Press In Richelieu, #75T158189
 - .3 Pilaster: K & V #255 ZC;
 - .4 Door bumper: Blum #TP1950 adhesive type (two [2] per door);
 - .5 Drawer slide: Accuride #3832, 100 lb rating, ball bearing, full extension, soft close, slide length as required to suit drawer box
 - .6 Cabinet or Drawer Pull: Richelieu Modern Stainless Steel Pull – 635 Satin Stainless Steel Finish, 132 mm long
 - .7 Anti- Ligature Pulls for Kitchenette L14-03 : Ligature Resistant – Kingsway Easy Grip Ligature Resistant Pull Handle (bolt Fixed)
 - .8 Magnetic catch: Amerock #9765;
 - .9 Elbow latch: Heavy Duty, nickel finish by Richelieu BP5540180 to secure inactive leaf on double cabinet doors
 - .10 Door/drawer lock: National Lock C8053, five (5) disc tumbler cam lock (keyed alike per room).
 - .11 Pilaster: steel inset mortise-mount with zinc finish; K & V #255 ZC
 - .12 Shelf clip:

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- .1 Shelf clip for use with inset pilaster; sinc shelf support pilaster;
Acceptable product: K&V #256 ZC
- .13 Cable grommets: flanged plastic sleeve complete with rotating black plastic cap, for pressing or gluing into 60 mm bored holes, purpose made to protect wiring from damage; Richelieu 60091090 – colour to match adjacent surface

2.3 Installation Materials

- .1 Screws: Select material, type, size, and finish required for each use. Comply with ASME B 18.6.1 for applicable requirements.
- .2 Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- .3 Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous metal or hot dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.

2.4 Fabrication – General

- .1 Frameless construction with flush overlay door and drawer fronts unless detailed otherwise in drawings.
- .2 Fabricate without visible fasteners on exposed exterior surfaces
- .3 Set nails and countersink screws apply plain wood filler to indentations, sand smooth and leave ready to receive finish.
- .4 Shop-install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- .5 Shelving to cabinetwork to be adjustable on flush pilaster standards.
- .6 Provide cut-outs for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- .7 Shop assemble work for delivery to Site in size easily handled and to ensure passage through building openings.
- .8 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.
- .9 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- .10 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide

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continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cut-outs.

- .11 Form shaped profiles and bends as indicated, using post-forming grade laminate to laminate manufacturer's instructions.
- .12 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 200. Do not mitre laminate edges.
- .13 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .14 Apply laminated plastic liner sheet to interior of cabinetry and/or where indicated.

2.5 Laminate-Clad Cabinets (Plastic-Covered Casework)

- .1 Quality Standard: Comply with AWI Section 400 requirements for laminate clad cabinets: Grade: Custom.
- .2 AWI Type of Cabinet Construction: Flush overlay.
- .3 Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
 - .1 Horizontal Surface other than Tops: GP-50, 0.050" nominal thickness;
 - .2 Postformed Surfaces: PF42, 0.042" nominal thickness;
 - .3 Vertical Surfaces: GP-50, 0.050" nominal thickness;
 - .4 Edges: GP-50, 0.050" nominal thickness.
- .4 Materials for Semi-exposed Surfaces: Provide surface materials indicated below:
 - .1 Surfaces Other than Drawer Bodies: High-pressure decorative laminate, Grade CL-20;
 - .2 Drawer Sides and Backs: Solid hardwood lumber, shop finished;
 - .3 Drawer Bottoms: Hardwood plywood, shop finished.

2.6 Solid Polymer Surfacing Material (SPS)

- .1 Provide SPS for all counter tops
- .2 Fabrication: Fabricate tops in one (1) piece with shop-applied backsplashes and edges, unless otherwise indicated. Comply with solid polymer surfacing material manufacturer's recommendations for adhesives, sealers, fabrication, and finishing: Drill holes in countertops for plumbing fittings in the shop. Blocking to be sized to support a 300 lb weight placed in the middle of the span between gables with no more than 3mm deflection or sag.
- .3 Solid Polymer Surfacing Material Thickness: 12.5mm unless indicated otherwise in drawings.

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- .4 Solid Polymer Surfacing Material:
 - .1 Refer to schedule in drawings
- .5 Counter edge profile: 6mm (1/4") roundover
- .6 SPS Backsplash
 - .1 Height:
 - .1 Provide from top of counter to underside of glazed screen in Pantry pass thru counter and at Team Stations
 - .2 100mm (4") all other counters
 - .2 Provide side splashes of matching height for all countertops
 - .3 Joints for back and side splashes
 - .1 Type 1: Cove. Provide integrated seamless SPS cove at pantry pass through counter
 - .2 Type 2: Straight at all other countertop locations Apply a continuous bead of specified sealant applied along seam

2.7 Shelving

- .1 Quality standard: comply with AWI section 400 requirements for cabinets: Grade: Custom.
- .2 Construction: wood veneer OR HDPL to match adjacent exposed panels products.
- .3 Core: MDF core unless noted otherwise, 19 mm thickness for spans up to 700 mm, 25 mm thickness for longer spans.
- .4 Panel edge band: to match exposed panel product finishes: solid wood same species or HDPL to match min 1.15 mm.
- .5 Provide adjustable shelves in all cabinets, set shelf standards flush with surface of gables unless shown or called for otherwise. Set shelf brackets within cabinets flush with underside of shelf.

2.8 Preparation

- .1 Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- .2 Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

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PART 3 EXECUTION

3.1 Pre-installation Meeting

- .1 Before framing completed hold a meeting with the contractor, paneling manufacturer, paneling installer, and framing sub-contractor.
- .2 Review locations of backing required for all wall and ceiling installation as shown on paneling shop drawings.
- .3 Review method of attachment for backing to wall system as shown on architectural drawings
- .4 Review location, configuration and spacing of light gauge metal ceiling assembly for acoustical wood ceiling planks.

3.2 Examination

- .1 Verify that field measurements are as instructed by the fabricator.
- .2 Verify adequacy of backing and support framing.
- .3 Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.3 Installation

- .1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC) Custom Grade, except where specified otherwise.
- .2 Install pre-finished millwork at locations shown on drawings. Position accurately, level, plumb straight.
- .3 Fasten and anchor millwork securely. Provide heavy duty fixture attachments for wall mounted cabinets.
- .4 Use draw bolts in countertop joints.
- .5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- .6 At junction of counter back splash and adjacent wall finish, apply small bead of sealant.
- .7 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.

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- .8 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

3.4 Cleaning

- .1 Clean millwork and cabinet work, inside cupboards and drawers and outside surfaces.
- .2 Remove excess glue from surfaces.

3.5 Protection

- .1 Protect millwork and cabinet work from damage until final inspection.

3.6 Schedule

- .1 Provide built-in millwork as indicated on Architectural Drawings.

END OF DOCUMENT

FIRESTOPPING AND SMOKE SEALS

PART 1 GENERAL

1.1 Summary

- .1 Section Includes:
 - .1 Labour, Products, equipment and services necessary to complete the work of this Section.

1.2 Related Requirements

- .1 Read and comply with Conditions of the Contract and Division 01 - General Requirements.

1.3 Related Sections

- .1 Section 01 73 29 Cutting and Patching – filling of core holes in concrete slab and walls

1.4 Allowance

- .1 Allow for and include in bid, firestopping and sealing of existing through penetrations not fire stopped in the following existing partitions in POD 3A
 - .1 Partitions forming part of POD 3A demising walls enclosing POD 3A
 - .2 Partitions enclosing service shafts
 - .3 Partitions enclosing Elec/Tel room 3135
 - .4 Partitions enclosing Stair 1A

1.5 Administrative Requirements

- .1 Coordination: Coordinate with Sections involved, and advise dates where work will take place throughout various areas of Work.
- .2 Pre-installation meeting: Prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review procedures to be adopted, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Consultant of the date and time of the meeting.

1.6 Requirements Of Regulatory Agencies

- .1 Fire rated assemblies: Labelled and listed by a nationally recognized testing agency having factory inspection service in conformance with CAN/ULC-S104 and CAN/ULC-S105 for ratings indicated.

1.7 Submittals

- .1 Product Data:

FIRESTOPPING AND SMOKE SEALS

- .1 For each type of product, confirming compliance with the specified or named product or material.
- .2 Prior to ordering products or materials, submit manufacturer's printed product datasheets for each type of product. Include product characteristics, performance criteria, physical size, finish and limitations for products listed in selected designs.
- .2 Shop Drawings: Submit complete and detailed shop for each condition encountered on Site. Indicate following:
 - .1 ULC assembly number certification, unless proposed assembly is approved by authorities having jurisdiction and meets Consultant's approval
 - .2 Required temperature rise and flame rating
 - .3 Hose stream rating (where applicable)
 - .4 Thickness
 - .5 Proposed installation methods
 - .6 Material of firestopping and smoke seals, primers, reinforcements, damming materials, reinforcements and anchorages/fastenings
 - .7 Size of opening
 - .8 Adjacent materials
 - .9 Number of penetrations
 - .10 Location of penetrations
- .3 Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories. Indicate location where material/system shall be used
- .4 Certification: Submit current ULC listings and certified copies of test reports and/or smoke seals indicating that firestopping material/systems conforms to or exceeds specified requirements.

1.8 Quality Assurance

- .1 Qualifications:
 - .1 Manufacturer has fabricated product of types under this Section, for projects of similar size and scope, for a continuous period of not less than five (5) years prior to award of Subcontract, has personnel and plant equipment capable of fabricating product of the types specified and has a written quality control system in place.
 - .2 Installer Qualification: Execute the work of this section only by a Subcontractor who has adequate equipment, and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past 5 years.
 - .1 Installer shall be authorized by the manufacturer and the work shall be supervised by a person having successfully completed a

FIRESTOPPING AND SMOKE SEALS

manufacturer training seminar regarding proper installation of the specified product.

- .2 Work of this Section shall be by one Sub-Contractor responsible for firestopping materials and systems for all of the Work except as outlined above.
- .3 Request inspection by Consultant of completed systems before they are covered.

1.9 System Description

- .1 Work of this Section is inclusive of all firestopping specified herein and indicated on Drawings except for firestopping and smoke seal within mechanical assemblies (i.e. inside ducts, dampers, intumescent pipe sleeves) and electrical assemblies (i.e. inside bus ducts) shall be provided as part of work of the Mechanical and Electrical Divisions respectively. Firestopping and smoke seals around outside of such mechanical and electrical assemblies, where they penetrate fire rated separations, shall be part of work of this Section.
- .2 Fire stopping materials and/or systems intended to act as firestop and smoke seal for any through-penetrating items, termination devices, receptacles or any cut-out openings or joints, including openings and spaces at perimeter edge conditions, with wall and floor assemblies having fire-resistance rating.
- .3 Fire stop and seal (draft-tight) gaps, expansion joints and penetrations in fire separations and fire walls against passage of fire, smoke, gasses, fire fighter's hose stream and, where designated, passage of liquids. Smoke seal at angle support at fire dampers.
- .4 Materials and systems capable of providing effective barrier against passage of fire, smoke, gasses, and where specifically indicated passage of liquids.
- .5 Ensure firestopping system provides fire-resistance rating (flame and temperature) not less than fire resistance rating of surrounding floor, wall or assembly, in accordance with requirements of OBC.
 - .1 Floor slabs – 2 hrs
 - .2 Walls enclosing vertical circulation and vertical service shafts
 - .3 Interior partitions – 1 and 2 hrs as indicated on drawings
- .6 Firestop system rating: Comply with F, FH, FT, or FTH ratings as required by authorities having jurisdiction.
- .7 Firestopping seals except for wall joints in visible areas must be of easily identifiable colour, such as red or yellow to be clearly distinguished from other building materials.
- .8 Supply asbestos-free and PCB-free materials and systems tested in accordance with CAN/ULC S115, be ULC listed, or be acceptable by authorities having jurisdiction.

FIRESTOPPING AND SMOKE SEALS

- .9 Ensure suitability of products for application and compatibility of materials with surfaces to which it will be applied.
- .10 Site system assembly shall be in accordance with ULC listed system design limitations, unless proposed assembly is approved by authorities having jurisdiction and meets Consultant's approval.
 - .1 Technical submissions that propose deviations from a listed assembly must be prepared, stamped and signed by a Professional Engineer, licensed to practice in the Province of Ontario.

1.10 Delivery, Storage, And Handling

- .1 Deliver materials to Site in manufacturer's sealed and labelled containers. Materials shall be subject to Consultant's inspection.
- .2 Store materials inside building for 24 hours prior to use; store in area designated by Consultant; protect from damage and environmental conditions detrimental to material.

1.11 Site Conditions

- .1 Maintain minimum temperature of 40 deg F for minimum period of 1 week before application, during application and until application is fully cured.
- .2 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for storage, mixing, application and curing of firestopping materials.
- .3 Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

1.12 Warranty

- .1 Warrant work of this Section against defects and deficiencies for period of 5 years commencing at the date of Substantial Performance. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional cost to Owner. Defects shall include but shall not be limited to cracking, breakdown of bond, failure to stay in place or bleeding.

PART 2 PRODUCTS

2.1 Materials

- .1 Primer: As recommended by firestopping material manufacturer for specific substrate and use.

FIRESTOPPING AND SMOKE SEALS

- .2 Damming and backup materials, support and anchoring devices: Non-combustible, in accordance with tested assembly and as recommended by manufacturer. Combustible material for damming purpose may be permitted only if they are removed after permanent firestop materials are cured. Sheet steel covers over temporarily unused sleeves shall be minimum 0.8 mm thick galvanized steel sheet.
- .3 Pipe and duct insulation and wrappings: Compatible with firestopping material; as recommended by manufacturer.
- .4 Fire stopping and smoke seals at opening intended for ease of re-entry such as cable: Elastomeric seal. Do not use cementitious or rigid seal at such locations.
- .5 Fire stopping and smoke seals at opening around penetrations for ductwork and other mechanical items requiring sound and vibration control: Elastomeric seal. Do not use cementitious or rigid seal at such locations.
- .6 Firestop Sealants at vertical surfaces: Non-sagging.
- .7 Firestop Sealants on floor surfaces requiring level finish: Self-levelling.
- .8 For floor locations not requiring sound and vibration control: use one-step cast-in firestop and smoke seals devices, complete with standoff components, tested and approved by UL/ULC.
- .9 Firestop Sealants in fire-rated acoustic partitions. Use flexible acrylic based firestop sealant
 - .1 top and bottom of 1 and 2 hr fire rated partitions
 - .2 through penetrations in all 1 and 2 hr fire rated partitions

PART 3 EXECUTION

3.1 Preparation

- .1 Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.
- .2 Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .3 Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.
- .4 Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on

FIRESTOPPING AND SMOKE SEALS

substrate during application and curing of materials. Surfaces shall be dry, dust and frost free.

- .5 Fully protect walls, windows, floors and other surfaces around areas to be firestopped from marring or damage.
- .6 Prime surfaces in accordance with manufacturer's directions. Mask where necessary to avoid spillage on to adjoining surfaces. Remove stains on adjacent surfaces as required.
- .7 Remove insulation from area of insulated pipe and duct where such pipes or ducts penetrate fire separation unless ULC certified assembly permits such insulation to remain within assembly.
- .8 Provide temporary forming, packing and bracing materials necessary to contain firestopping. Upon completion, remove forming and damming materials not required to remain as part of system.
- .9 Install damming and firestopping materials as per manufacturer's instructions.
- .10 Mix materials at correct temperature and in strict accordance with manufacturer's directions.

3.2 Installation

- .1 Seal penetrations through and gaps in fire rated separations. Fill gap in accordance with ULC details for tested system selected.
- .2 Apply firestopping materials in strict accordance with manufacturer's written instructions and tested designs to provide required temperature and flame rated seal. Apply with sufficient pressure to properly fill and seal openings to ensure continuity and integrity of fire separation. Tool or trowel exposed surfaces as required.
- .3 Remove excess compound promptly as work progresses and upon completion.
- .4 Examine sizes, anticipated movement and conditions of opening and penetration to establish correct system and depth of backup materials and of firestopping material required. Use firestopping and smoke seals best suited for specific application as required, indicated or specified. Use only components specified in fire test of system. Do not eliminate any component for firestop system that was present in fire tests.
- .5 Do not cover materials until full cure has taken place.
- .6 Refer to all other sections of Specifications and the Drawings to ascertain where firestops are to be used and, if noted, type of firestop required.
- .7 Cure materials in accordance with manufacturer's directions.

FIRESTOPPING AND SMOKE SEALS

3.3 Field Quality Control

- .1 Manufacturer's site inspection: Have the manufacturer's technical representative inspect the work at suitable intervals during application and at conclusion of the work of this Section, to ensure the work is correctly installed. Submit manufacturer's inspection reports and verification that the work of this Section is correctly installed.

3.4 Cleaning

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

3.5 Schedule

- .1 Provide firestop systems at following locations, without being limited to:
 - .1 At openings, voids and penetrations through floor slabs except openings within shafts constructed with a fire resistance rating and slabs on granular fill.
 - .2 At openings, voids and penetrations through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.
 - .3 At openings, voids and penetrations installed for future use through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.
 - .4 Around mechanical and electrical assemblies penetrating fire assemblies.
 - .5 Between perimeter of floor and roof slabs and exterior wall construction, and cladding systems.
 - .6 Between tops of fire rated walls and partitions and underside of floor or roof slabs.
 - .7 At all expansion joints in walls, floors and assemblies as detailed
 - .8 As indicated on drawings

END OF SECTION

JOINT SEALANTS

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.
- .2 Word “caulking” and “sealants” used in the documents are synonymous.

1.2 Section Includes

- .1 Exterior building sealants.
- .2 Interior building sealants.

1.3 Related Sections

- .1 Sealing of joints specified in following sections
- .2 07 84 00 Firestopping and Smoke Seals – sealing of joints and penetrations in fire rated assemblies
- .3 08 51 13 Aluminum Windows – joints within aluminum assemblies
- .4 10 26 13 Wall Protection – joints between sheet wall protection

1.4 References

- .1 All references are to current edition
- .2 ASTM C794 Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
- .3 ASTM C881/C881M Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
- .4 ASTM C920 Standard Specification for Elastomeric Joint Sealants
- .5 ASTM C1135 Standard Test Method for Determining Tensile Adhesion Properties of Structural Sealants
- .6 ASTM C1184 Standard Specification for Structural Silicone Sealants
- .7 ASTM C1193 Standard Guide for Use of Joint Sealants
- .8 ASTM C1248 Standard Test Method for Staining of Porous Substrate by Joint Sealants

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- .9 ASTM C1330 Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants
- .10 TM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- .11 ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics

1.5 Quality Assurance

- .1 Qualifications: Provide work of this section, executed by competent installers with experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers. Installer to comply with quality assurance articles referenced in ASTM C1193 for installation of joint sealants.
- .2 Test sealant for adhesion and staining in contact with the materials indicated below. Test shall be conducted by the Sealant manufacturer or independent third party testing company. Do not proceed with application of sealant until the test results of performance achieved has been reviewed by the Consultant. Use 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 Porous materials to be sealed to ensure adhesion and no staining of the material will result in accordance with ASTM C1248.
 - .2 Security film and interlayer of laminated security glass to ensure there is full adhesion and no staining of these materials has resulted.

1.6 Submittals

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Submit manufacturer's and Product name for each sealant which will be used in the Work prior to commencing the Work.
- .3 Product data sheets:
 - .1 Submit manufacturer's Product data sheets for:
 - .1 each sealant type
 - .2 primers and accessories
- .4 Sealant test report

1.7 Environmental Requirements

- .1 Verify substrates and ambient air temperature at the Place of the Work before, during and after application to ensure compliance with manufacturer's recommendations. Surfaces shall be frost-free, dust-free, clean and completely dry at time of installation.

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- .2 Weather Conditions: In accordance with manufacturer's instructions, do not apply silicone joint sealants in snow, rain, fog or mist, or when such conditions are expected. Allow joint surfaces to attain dry conditions as recommended by manufacturer before sealant application.
- .3 Sealant and substrate materials: Conform to sealant manufacturer's specifications and recommendations. Keep organic sealant materials heated to at least 16°C when working at temperatures below 10°C.

1.8 Warranty

- .1 Warrant Work of this section for a period of 2 years in accordance with Section 01 78 36.
- .2 Repair or replace joint sealants which fail to perform as air tight and water-tight joints; or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, or general durability; or appear to deteriorate or become unserviceable or causing an objectionable appearance resulting from either defective or non-conforming materials and workmanship or in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.
 - .1 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 by causes other than movement.
 - .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.
- .3 For silicone sealants applied to porous substrates, provide Product non-stain sealant warranty for period of 20 years, against migrating, bleeding into, or staining abutting materials.

PART 2 PRODUCTS

2.1 Sealants

- .1 General:
 - .1 Colours: Sealant colours to match colours of adjacent materials, from submitted samples approved by Consultant. Colours shall be selected from manufacturer's full range.
 - .2 Comply with ASTM C920-08 and other requirements indicated for each liquid-applied chemically curing sealant, including those referencing ASTM C920-08 classifications for type, grade, class, and uses.

JOINT SEALANTS

- .3 Provide joint sealants, primer(s) and backings that are compatible with one another and with joint substrates under conditions of service and application as demonstrated by joint sealant manufacturer based on proven test results and field experience.
- .4 For sealants to be applied to porous substrates: Provide products that have undergone testing according to ASTM D1248-05 and have not stained porous joint substrates indicated for Work.
- .5 Sealant supplied shall not exude any material(s) which travels into adjacent materials, or travels onto surfaces of adjacent materials; causing damage, or attracting soiling, which becomes apparent during the service life of the building.
- .2 Exterior sealants; joints in vertical surfaces:
 - .1 TYPE EXT1 Exterior Sealant -single component, moisture cure, low modulus, non-staining silicone sealant, in compliance with the following:
 - .1 ASTM C920-08, Type S, Grade NS, Class 100/50.
 - .2 CAN/CGSB 19.13-M87, MCG-2-40-B-N.
 - .3 Greenguard Gold certified
 - .4 Acceptable product: Tremco Spectrem 1 or approved equal
- .3 Interior sealants:
 - .1 TYPE INT1 General Use Interior Sealant – single component, low VOC, acrylic sealant
 - .1 Acceptable product: Tremflex 834 by Tremco or approved equal
 - .2 TYPE INT2 Acoustic Sealant: to comply with CAN/CGSB-19.21-M87, single component, non-hardening, non-skinning, synthetic rubber for use in conjunction with gypsum board as part of sound dampening assembly in non-fire rated partition
 - .1 Acceptable product: Acoustical/ Curtainwall Sealant by Tremco or approved equal
 - .3 TYPE INT3 Mildew Resistant Interior sealant, one part acetoxysilicone sealant.
 - .1 Comply with:
 - .1 ASTM C920-08, Type S, Grade NS, Use NT
 - .2 CAN/CGSB 19.22-M89.
 - .2 Colour:
 - .1 Colour 1 - white at plumbing fixtures or where colour of substrate on one side of the seam is white.
 - .2 Colour 2 – clear for all other locations
 - .3 Acceptable Product: Tremco Tremsil 200 or approved equal.
 - .4 TYPE INT4 Tamper resistant security sealant:
 - .1 Two-part, non-sag, high modulus, elastomeric polyurethane sealant with following performance characteristics:

JOINT SEALANTS

- .1 Shore A ultimate hardness to ASTM C661: 55.
- .2 Tensile ultimate strength to ASTM D412: 2.07-2.41 MPa (300 - 350 psi).
- .3 Tear strength to ASTM D624: 69.13 Kg/cm (60 lb/inch).
- .4 ASTM C920-08, Type M, Grade NS, Class 12.5.
- .2 Colour: To later selection by Consultant from manufacturer's full range of standard colours.
- .3 Acceptable Product: DynaFlex by Pecora Corporation or approved equal
- .5 TYPE INT5 Tamper resistant security sealant for glazing:
 - .1 One component, neutral curing, high impact silicone with the following performance characteristics:
 - .1 Shore D ultimate hardness to ASTM C661: 45.
 - .2 Tensile strength to ASTM C1135: 375 psi
 - .3 Tear strength to ASTM D624: 43 ppi
 - .4 Peel strength to ASTM C794: 45 pli
 - .5 ASTM C920, Class 25, Type S, Grade NS, Grade G,A,O.
 - .6 Colour: Translucent.
 - .7 Primer: as recommended by manufacturer.
 - .2 Acceptable Product: 896HIS by Pecora Corporation or approved equal

2.2 Primers and Accessories

- .1 General: Provide component joint sealant primers, backings and fillers that are compatible with joint substrates and other sealants or joint fillers specified and approved for applications indicated under joint sealant schedule.
- .2 Cylindrical sealant backings: Provide joint backings that meet ASTM C1330-02(2007), 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.

JOINT SEALANTS

- .4 Masking Tape: Non-staining, non-absorbent and compatible with joint sealants and adjacent surfaces.
- .5 Sealant primers: Use only primers recommended by sealant manufacturer for each sealant type 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: 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.
- .1 Provide cleaner conditioner required for glass and glazed surfaces as recommended by sealant manufacturer.

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 Prior to installation, clean substrates of substances that could impair the bond of joint sealants. Clean and prepare joint surfaces immediately before installing joint sealants. Protect adjacent work areas and finished surfaces from damage during joint sealant installation.
- .2 Clean porous joint surfaces by using heavy-duty brushing, light abrasive, mechanical abrading or combination of these methods to produce a clean, sound surface for optimum bond with joint sealants per manufacturer's recommendations. Provide a dry, dust-free and cleaned substrate for optimum results.
- .3 Non-porous surfaces should be cleaned using the two-cloth wipe method as referenced in ASTM C1193-09 and outlined by joint sealant manufacturer's instruction.
- .4 Rusting or scaling surfaces must be prepared using abrasive cleaning methods as recommended by joint sealant manufacturer prior to joint sealant installation. Efflorescence, mould, mildew and algae must be removed and neutralized prior to joint sealant installation.

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- .5 Coordinate cleaning, priming and installation to avoid contamination of wet, freshly coated or adjacent finished surfaces. Prepare finish-coated surfaces per joint sealant manufacturer's specific recommendations.
- .6 Test materials for indications of staining or poor adhesion before any sealing is commenced. Submit reports in writing to Consultant of results.

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 Review the complete Contract Documents for extent of sealant work required.
- .2 Comply with joint sealant manufacturer's installation instructions for products, primers and applications indicated unless more stringent project-specific instructions or requirements apply.
- .3 Apply joint sealants for continuous waterproof sealant joint protection. Vertical joints should be lapped over horizontal joints as recommended by sealant manufacturer. Comply with installation recommendations in ASTM C1193-09 for use of joint sealants as applicable to each specific sealant installation.
- .4 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.
- .5 Install joint sealants in accordance with joint sealant manufacturer's instructions 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 Install, providing uniform cross-sectional shapes and depths in relation to joint width for optimum sealant movement capability per joint sealant manufacturer's instructions.
- .6 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,

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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 C1193-09 unless otherwise indicated. Dry tooling is required for joint sealants, and wet tooling agents are not allowed.
- .2 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.
- .7 Allow single-component sealants to fully cure before adhesion testing is performed as recommended by joint sealant manufacturer.
- .8 Match approved sealant for colour, finish and overall aesthetics. Remove, refinish or reinstall work not in compliance with the Contract Documents.
- .9 When surfaces of adjacent materials are to be painted, perform sealant work before these surfaces are painted.
- .10 Check to make sure shop paint is compatible with primer and sealant. When incompatible, inform Consultant and change primer and sealant to compatible type acceptable to Consultant.
- .11 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.
- .12 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.
- .13 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.
- .14 On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.
- .15 Pack joints tightly with sealant backing set at depth specified for sealant. Fill other voids with filler.
- .16 Install bond breaker tape in bottom of joints in lieu of sealant backing where proper depth cannot be obtained when backing is installed.
- .17 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.

JOINT SEALANTS

- .18 Fillet bead sealant joints to be sized to provide proper contact area with substrates, in accordance with manufacturer's written recommendations.
- .19 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.
- .20 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.
- .21 Remove droppings and excess sealant as work progresses, before material achieves initial set. Do not use soap and water in tooling.
- .22 Install sealant materials and primers when surfaces are prepared, and ambient temperature and weather conditions are prevalent, consistent with manufacturer's recommendations. Primer is mandatory for gun applied sealants.
- .23 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.
- .24 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 Exterior Sealant Schedule

- .1 Include in work of this section joint sealants in exterior assemblies 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 TYPE EXT1 exterior sealant to:
 - .1 Perimeters of existing window openings where new frames meet exterior facade of building.
 - .2 Metal flashings
 - .3 Joints between aluminum window components and aluminum plates
 - .4 Joints within concealed sill sash framing and on non-patient side between sill sash framing and adjacent surfaces.

3.6 Interior Sealant Schedule

- .1 Include in work of this section sealants to seal open joints in surfaces exposed to view to mitigate ligature risks, safety and security risks, property damage risks, to incorporate as part of acoustic assembly, and to make building weather-tight and air-tight, as required, as applicable, as indicated, and as otherwise specified, except where specified under the work of other sections.

JOINT SEALANTS

- .2 General - Install interior sealant to following components using applicable sealant type indicated in 3.6.3 to 3.6.7.
 - .1 Perimeters of all door frames (both sides)
 - .2 Perimeters of all interior glazed screen frames (both sides)
 - .3 Interior side of exterior window frames.
 - .4 Exposed edges on corner guards
 - .5 Horizontal and vertical seams between induction unit cabinets and adjacent surfaces including joint at base of cover and flooring
 - .6 Interior control and expansion joints in floor and wall surfaces.
 - .7 Joints at tops of non-load bearing masonry walls at the underside of insitu concrete.
 - .8 Exposed interior control joints in gypsum board.
 - .9 Millwork and counter top junctions with walls and other dissimilar material.
- .3 TYPE INT1 General Use interior Sealant: Use in all areas except where sealant types listed below are to be used.
- .4 TYPE INT2 Acoustic Sealant: Use in joints along top and bottom of non-fire rated demising partitions between:
 - .1 patient rooms
 - .2 patient room and adjacent common spacesRefer to 07 84 00 Firestopping and Smoke Seals for application of sealant in above referenced demising partitions that are fire rated.
- .5 TYPE INT3 Mildew resistant sealant: Use in wet areas, except in areas where tamper proof security sealants are to be provided:
 - .1 Perimeter joints of wet fixtures such as:
 - .1 Urinals.
 - .2 Showers.
 - .3 Water closets.
 - .4 Wall-hung sinks.
 - .5 Janitor sinks.
 - .6 Bathtubs.
 - .7 Showers.
 - .2 Counter/wall junctions at countertops.
 - .3 Countertop and backsplash junction
- .6 TYPE INT4 Tamper resistant security sealant:
 - .1 Use in Secured Patient Areas
 - .1 All PICU 1 areas except within PICU Team station (Rm 3152)
 - .2 All PICU 2 areas except within PICU Team station and Pantry PICU 2 (Rm 3136) Team Station PICU 2 (Rm 3139)

JOINT SEALANTS

- .3 All Seclusion rooms
- .4 All Patient washrooms
- .5 All other Patient accessible areas including Patient Dining Rms 3137 and 3158, Patient Dining/ Lounge Rm 3153, Sallyport Rm 3157, Patient lounge Rm 3131, Shower 3133.
- .2 Additional components to receive tamper resistant security sealant:
 - .1 Jambs, head and sills of sll sashes
 - .2 Perimeter flange of door vision panels to patient rooms.
 - .3 Perimeter flanges of wall and ceiling installed fixtures such as but not limited to access hatches, diffusers, return air grilles, light fixtures, and security enclosure covers.
- .7 TYPE INT5 Tamper resistant security sealant for glass:
 - .1 Use at glazing at seam between hollow metal frame and glass at Team Stations on patient side.

3.7 Cleaning

- .1 Clean off excess sealant or sealant residue adjacent to sealant joint installations as the work progresses by methods approved by joint sealant manufacturer. Do not damage adjacent surfaces with harmful removal techniques and protect finished surfaces beyond those that have been masked. Protect installed sealants during and after final curing from damage resulting during construction. Remove and replace damaged joint sealants.
- .2 Remove temporary coverings and masking protection from adjacent work areas upon completion. Remove construction debris from the project site on a planned and regular basis.

END OF SECTION

STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Section Includes

- .1 Interior steel doors and frames.
- .2 Interior steel window frames/window screens.

1.3 Related Sections

- .1 05 50 00 Metal Fabrications – anchoring door frames to HSS posts at PICU door frames
- .2 08 71 00 Finish Hardware – Hardware for doors
- .3 08 80 16 Interior Glass and Glazing – glazing in doors and screens
- .4 08 87 00 Applied Films – film applied to glazing in doors and screens
- .5 08 88 16 Vision Control Insulating Glass – proprietary glazing unit insert into door
- .6 09 21 16 Gypsum Board Assemblies – Installing frames into framed stud assemblies
- .7 Appendix A Hardware Schedule: Prepping door and frame to receive specified hardware

1.4 References

- .1 Use latest edition of following standards.
- .2 ASTM A653/A653M - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .4 ASTM E413 - Classification for Rating Sound Insulation
- .5 CAN4-S104-M - Fire Tests of Door Assemblies.
- .6 CAN4-S105 - Fire Door Frames Meeting the Performance Required by CAN4-S104.

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- .7 CSA G40.20-04/G40.21-04 - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .8 CSA W59 - Welded Steel Construction (Metal Arc Welding).
- .9 Canadian Steel Door Manufacturers Association (CSDMA), Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.
- .10 Canadian Steel Door Manufacturers Association (CSDMA), Selection and Usage Guide for Steel Doors and Frames, 1990.
- .11 DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- .12 NFPA 80-1999 - Standard for Fire Doors and Fire Windows.
- .13 NFPA 252-03 - Standard Methods of Fire Tests of Door Assemblies.

1.5 Quality Assurance

- .1 Manufacturer shall be of recognized standing who has adequate plant, equipment, and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory application similar to that specified during a period of at least five years and is a member in good standing with the Canadian Steel Door & Frame Manufacturer's Association (CSDMA).
- .2 Work shall be carried out to CSDMA quality and standards for work specified in this section.
- .3 Coordination: cooperate fully with finish hardware distributor's representative during preparation of shop drawings and execution of shop fabrication.

1.6 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 Include details of each door and frame type, finish hardware types and locations, frame profiles, door and frame elevations, mitre details, 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.

STEEL DOORS AND FRAMES

- .3 Electrified hardware requirements and preparations shall be clearly indicated on shop drawings.
- .4 Shop drawings for work of this section as related to acoustical doors shall be reviewed by acoustical consultant in addition to Consultant prior to fabrication of work of this section.
- .4 Samples:
 - .1 Submit cut-away sample door, with provision for lockset and hinge, and corner section of frame.

1.7 Fire Rating Requirements

- .1 Fire rated labelled doors and frames:
 - .1 tested to CAN4-S104 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.
 - .2 Incorporate vision control insulating glass unit within door as part of fire rated labelled door and frame
- .2 Install fire labelled steel door and frame products in accordance with NFPA 80, current edition, except where indicated otherwise.

1.8 Design and Performance Requirements

- .1 Steel door frames, windows or sidelights specified in this section are not intended to be used for load bearing purposes.
- .2 Security doors and frames to meet and exceed requirements of the following tests:
 - .1 Tool resistant steel: ASTM A627 and ASTM A629.
 - .2 Static load test: ASTM F1450, grade 3.
 - .3 Rack test: ASTM F1450, grade 3.
 - .4 Impact test: ASTM F1450, grade 2.
 - .5 Door edge crush test: ASTM F1450, grade 3.
 - .6 Removable glazing stop test: ANSI/NAAMM HMMA 863.
- .3 Frames and anchors for doors and screens in interior and exterior windows shall be engineered to withstand the degree of impact anticipated, at minimum 2000 ft/lb / 1'-0" diameter soft body impact. Glazing must not provide access to shards or bits allowing either raking laceration, weaponization or ingestion. Glazing within such components shall be non-breakable. The anchoring itself shall also be engineered to withstand a high degree of impact.

STEEL DOORS AND FRAMES

1.9 Delivery, Storage, and Handling

- .1 Inspect materials thoroughly upon receipt and report immediately discrepancies, deficiencies and damages, in writing, to Supplier.
- .2 Note damages incurred during shipment on carriers' bill of lading and report immediately, in writing, to Supplier.
- .3 Store materials properly on planks, out of water and covered to protect from damage from adverse weather conditions. Remove wet packaging immediately.
- .4 Remove wrappings or coverings from doors upon receipt at the Place of the Work, and store in a vertical position, spaced with blocking to permit air circulation between them.

1.10 Warranty

- .1 Warrant work of this section for a period of 2 years.

PART 2 PRODUCTS

2.1 Materials

- .1 Steel:
 - .1 Fabricated from tensioned levelled steel to ASTM A924/A924M, galvanized to ASTM A653/A653M, Commercial Steel CS, Type B.
 - .2 Steel shall be free of scale, pitting, coil breaks, surface blemishes, buckles, waves, and other defects.
 - .3 Equivalent minimum base steel thicknesses for gauges shall be in accordance with Appendix 1 of CSDMA "Recommended Specifications for Commercial Steel Door and Frame Products".
 - .4 Finish:
 - .1 16 Ga doors: Galvanneal coating designation ZF120 (A40).
 - .2 14 Ga doors: Galvanized coating (G90)
 - .5 Steel: CSA G40.20/G40.21, Grade 300W.
 - .6 Hollow Structural Sections: CSA G40.20/G40.21, Grade 350W.
- .2 Door core materials:
 - .1 Honeycomb:
 - .1 For use in non-heavy gauge doors
 - .2 Structural small cell 25 mm (1") maximum Kraft paper 'honeycomb'.
 - .3 Weight: 36.3 kg (80 lb) per ream (minimum). Density: 16.5 kg/m³ (1.03 pcf) minimum, sanded to required thickness.

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- .2 Fire rated and security doors: Mineral fibre insulation to CAN/ULC S702, Type 1A; 24 kg/m³.
- .3 Temperature Rise Rated (TRR): Solid slab core of non-combustible, inorganic composite to limit temperature rise on the "unexposed" side of door to 250°C (482°F) at 60 Minutes to CAN4-S104, ASTM E2074 or NFPA 252.
- .4 Acoustic – composite: Core materials shall be door manufacturer's proprietary design, tested as part of a fully operable assembly in accordance with ASTM E90 and ASTM E413.
- .5 Steel stiffeners:
 - .1 For use in 14 gauge doors
 - .2 Continuous vertical formed steel sections, 0.813 mm (0.032") minimum thickness, spaced not more than 150 mm (6") apart, welded at 150 mm (6") on center maximum to each face sheet.
 - .3 Fill voids with 24 kg/m³ (1.5 pcf) density minimum fibreglass type material complying with ASTM C665.
- .3 Fasteners:
 - .1 Screws: Stainless steel screws with countersunk flat head.
 - .2 Tamper resistant fasteners: Fasteners on all products and systems exposed to view and accessible to patients to be tamper resistant, hexalobular (6-lobed), pinreject, internal drive system, conforming to ISO standard 10664.
- .4 Adhesives:
 - .1 Heat resistant, single component, polyurethane reactive (water) hot melt, thermoset adhesive.
 - .2 Rigid insulation cores: Heat resistant, epoxy resin based, low viscosity, contact cement.
- .5 Primer: rust inhibitive for touch-up.
- .6 Finishing hardware: in accordance with Section 08 71 00.
- .7 Miscellaneous:
 - .1 Door silencers single stud black neoprene type.
 - .2 Slip line, low profile bevelled frame glazing / lite kits (Non patient Areas):
 - .1 No step clean-room style, accurately fitted, mitred at corners and fastened to frame opening with counter-sunk sheet metal screws.
 - .2 Locate exposed fasteners to glazing face as directed by Consultant, and use tamperproof fasteners.
 - .3 Minimum 1 mm (0.039") (20 gauge) steel.
 - .4 Finish: primed.

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- .3 Glazing stops: formed channel of minimum 1 mm (0.039") (20 gauge) steel, 15.9 mm (5/8") high. Install in non-patient room side.
- .4 Louvres; Non-labelled doors: 1.6 mm (0.062") extruded aluminum chevron blade type.
- .5 Louvres; Labelled doors: Provide listed louvres for fire rated openings, sightproof fusible link louvre inserts, 1.51 mm (0.063") 16 gauge steel with listed 135°F (57°C) fusible links, stainless steel operating springs, 40% free air flow.
- .6 Labels for fire doors and door frame: Brass plate, riveted to door and door frame, in accordance with NFPA 80, current edition, except where indicated otherwise.
- .8 Standard HM Doors (Non Patient Areas)
 - .1 Frame: 1.34 mm (0.053") (16 gauge) steel with welded corner, Refer to schedule for throat width.
 - .2 Hardware as indicated in Hardware Schedule in Appendix A of specification
 - .3 Fire rated system as indicated.
 - .4 Door thickness: 45 mm (1 3/4")
- .9 Heavy Gauge Doors and screens: Patient Areas (Denoted on Drawings as Heavy Gauge Steel, Heavy Duty, or 14GA)
 - .1 Frame: 1.75mm (0.069") (14 GA) steel with welded corners. Mullion joints recessed component welding. Refer to schedule for throat width.
 - .2 Hardware as indicated in Hardware Schedule in Appendix A of specification
 - .3 Fire rated system as indicated.
 - .4 Door thickness: 48mm (1-7/8")

2.2 Fabrication - General

- .1 Fabricate steel doors, frames, 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, straight and uniform throughout their length, square and free from defects, warp, wave or buckle with all corners square unless otherwise indicated.
- .3 Fire rated doors with sidelights or integrated vision control units, shall have the whole assembly rated.
- .4 Fabricate and reinforce component parts and assemblies to support loads imposed without deflection detrimental to function, appearance, or safety.
- .5 Operating clearances:

STEEL DOORS AND FRAMES

- .1 Provide clearance at floor with allowance made for indicated finish flooring materials.
- .2 Clearances for Fire-Rated Doors: As required by NFPA 80.
- .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. Provide clearance at floor with allowance made for intended finish flooring.
- .6 Drill and tap or reinforce for mortised or surface mounted hardware in accordance with accepted hardware schedule, ANSI A115 Series, NFPA 80, or manufacturers recommendations.
- .7 Countersink exposed fasteners unless otherwise shown. Use flat or oval head screws.
- .8 Reinforce components to resist stresses imposed by hardware in use.
- .9 Allow for anticipated expansion and contraction of frames and supports.
- .10 Fit elements at intersections and joints accurately together, in true planes, and plumb and level.
- .11 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.
- .12 Perform welding to CSA W59.
- .13 Mortise, reinforce, drill and tap to receive hardware and security devices using templates provided by respective Supplier.
- .14 Touch up finish damaged during fabrication.
- .15 Prepare doors or frames to receive seals where seals are indicated.
- .16 Stamp labels into frame and door to suit required fire-protection and temperature rise ratings.

2.3 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 doors and panels:
 - .1 Face sheets fabricated from 14 Gauge Steel (Patient Areas) or 16 Gauge Steel (Non Patient Areas)
 - .2 Insulation core: mineral wool
 - .3 Longitudinal edges

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- .1 16 GA doors - mechanically interlocked, 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 edge seams.
- .2 14 GA doors – continuously welded, filled no sanded with no visible edge seams.
- .3 Doors shall be mortised, blanked, reinforced, drilled and tapped at the factory for templated hardware, in accordance with Consultant reviewed hardware schedule and templates provided by the hardware supplier.
- .4 Laminated Core Construction (non-rated):
 - .1 16 GA doors: both sheets of interior doors shall be from a 16 ga steel with honeycomb core
 - .2 14 GA doors: vertical steel stiffeners securely laminated to each face sheet at 150mm (6") on center maximum. Void between vertical stiffeners shall be filled with fiberglass batt type insulation
- .5 Holes 12.7 mm (0.5") diameter and larger shall be factory prepared, except mounting and through-bolt holes which will be made on site, at time of hardware installation. Holes less than 12.7 mm (0.5") diameter shall be factory prepared only when required for the function of the device (for knob, lever, cylinder, thumb or turn pieces) or when these holes over-lap function holes.
- .6 Reinforce doors where required, for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware.
- .7 Minimum reinforcing and component gauges shall be in accordance with Table 1 of the CSDMA, "Recommended Specifications for Commercial Steel Door and Frame Products".
- .8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .9 Fire-rated doors shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Architect. Such products shall be listed for conformance with CAN/ULC-S104. All fire-rated doors shall bear the label of, and be listed by an accredited testing agency having a factory inspection service. Labeling shall be in accordance with NFPA 80, the listing authority's policies and label materials, and shall identify the manufacturer. Fire-rated doors shall be constructed as listed for labeling in the Follow-Up Service Procedures/Factory Inspection Manuals issued by the listing agency to individual manufacturers.
- .10 Prior to shipment, mark each door with an identification number as shown on the approved submittal drawings. 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.

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- .11 Formed edges shall be true and straight with minimum radius for the thickness of steel used.
- .12 Lock and hinge edges shall be bevelled 3 mm in 50mm (1/8" in 2") unless hardware or door swing dictates otherwise.
- .13 Top and bottom of doors shall be provided with inverted, recessed, 1.51 mm (0.063") 16 gauge steel end channels, welded to each face sheet at 50 mm (2") on centre maximum.
- .14 Prior to shipment, mark each door with an identification number as shown on the approved submittal drawings.
- .15 Glazing:
 - .1 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 Interior glazing in accordance with Section 08 80 16.
 - .3 Insulating glass unit insert in PICU patient room doors in accordance with Section 08 88 16
- .16 Fabricate closing stiles of paired doors as indicated or scheduled.
- .17 Provide 2.5 mm (0.1") 12 gauge 'flat' or 'Z' astragal at meeting stiles on pairs of doors for fire rating according to the manufacturers listing and as scheduled in the Finish Hardware Schedule.
- .18 Where indicated, prepare doors and panels for installation of fire-rated door grilles. If required to meet door grille manufacturer's rated design, provide reinforcement around door grill opening.

2.4 Fabrication – Steel Frames

- .1 General: Applicable to frames, sidelights, and Interior window screen assemblies.
- .2 Interior frames (non-patient area); welded:
 - .1 Fabricated from: 1.34 mm (0.053") 16 gauge A40 steel.
 - .2 Supplied set-up and welded (SUW).
- .3 Heavy Gauge Interior frames (Patient Areas); welded:
 - .1 Fabricated from: 14 gauge G90 steel.
 - .2 Supplied set-up and welded (SUW).
- .4 Perimeter corners shall be accurately mitered or mechanically jointed
- .5 Welded Type:

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- .1 16 GA – Face welded
- .2 14 GA- Profile welded
- .6 Joints at mullions, sills and center rails shall:
 - .1 Be coped accurately, butted and tightly fitted.
 - .2 At intersecting flush profile faces, be securely welded, filled and ground to a smooth, uniform, seamless surface.
 - .3 At intersecting recessed profile faces, be securely welded to concealed reinforcements, with exposed hairline face seams.
 - .4 At all other intersecting profile elements, have exposed hairline face seams.
 - .5 Welding shall conform to CSA W59.
 - .6 Where frame product is to be installed prior to the adjacent partition, a floor anchor shall be securely attached to the inside of each jamb profile. Each floor anchor shall be provided with two (2) holes for securing to the floor. For conditions that do not permit the use of a floor anchor, an additional wall anchor, located within 150 mm (6") of the base of the jamb, shall be substituted.
 - .7 Frames shall be mortised, blanked, reinforced, drilled and tapped at the factory for templated hardware only, in accordance with the *Consultant* reviewed hardware schedule and templates provided by the hardware supplier. Reinforce frame for surface mounted hardware
- .7 Provide anchorage appropriate to floor, wall and frame construction. Locate each wall anchor immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb. Provide quantity of anchors on each jamb as follows:
 - .1 16 GA door - 3
 - .2 14 GA door - 4
- .8 Provide 3 rubber door silencers per leaf
- .9 Weld in two (2) temporary jamb spreaders per door opening to maintain proper alignment during shipment and handling, which shall not be used for installation.
- .10 Glazing stops: formed steel channel, minimum 16 mm (0.625") height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk tamper proof oval head sheet metal screws.
- .11 All frame products shall be fabricated and brought to site whole and not in sections.
- .12 Prior to shipment, mark each frame product with an identification number as shown on the approved submittal drawings.

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- .13 Factory assembled frame product shall be square, free of defects, warps or buckles.
- .14 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”.
- .15 Set-up and welded joints at mullions, sills and center rails:
 - .1 Coped accurately, butted and tightly fitted.
 - .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.
- .16 Glazing stops shall be formed 1.00 mm (0.039") 20 gauge steel, 16 mm (0.625") height channel, accurately fitted, butted at corners and fastened to frame sections with #6 x 32 mm (1¼") oval head Tek (self-drilling) type screws at 305 mm (12") on centre maximum.
- .17 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 1.60 mm (0.063") 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 1.60 mm (0.063") 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.
- .18 On factory assembled frame product, provide 2 temporary steel jamb spreaders welded to the base of the jambs or mullions to maintain alignment during shipping and handling. Remove spreaders prior to anchoring of frames to floor.
- .19 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.

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- .2 Pair of interior doors: 2 at header.
- .3 Dutch doors: 4 at strike jamb.
- .4 Weather-stripped doors: None required.
- .5 Sound, light, or smoke sealed doors: None required.
- .20 Prior to shipment, mark each frame with an identification number as shown on the approved submittal drawings.
- .21 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.
- .22 Conceal fastenings unless otherwise indicated.
- .23 Fasten removable stops by counter-sunk Phillips head screws at approximately 225 mm (9") on centre symmetrically spaced on stop length.
- .24 Anchor frames to floor by 1.60 mm (0.063") 16 gauge thick angle clips, welded to frame and Provide with 2 holes for floor anchorage.
- .25 Grind welded corners to a flat plane, fill with metallic paste filler and sand to uniform smooth finish.
- .26 Protect strike and hinge reinforcements using guard boxes welded to frames at masonry construction.
- .27 Reinforce head of frames wider than 1220 mm (48").
- .28 Brace frame units to prevent distortion in shipment and protect finish.
- .29 Cut-off door stops (hospital stops) where indicated, capped at 30°, terminating at the indicated height. Fully weld joints below cut-off door stop and grind flush with no visible seams or gaps.

2.5 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.

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- .4 Drill and tap doors and frames for hardware at reinforcement locations to template information.
- .5 Templated holes 12.7 mm (1/2") diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be 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.
- .6 Prepare doors and frames for finish hardware with mortises and minimum reinforcement, as follows:
 - .1 1.30 mm (0.051") 18 gauge. face sheets for low to medium frequency doors.
 - .2 1.60 mm (0.063") 16 gauge. face sheets for high frequency doors.
 - .3 1.98 mm (0.078") 14 gauge. face sheets for high abuse doors complete with steel stiffened core.
 - .4 1.00 mm (0.039") 20 gauge. Interior stiffener.
 - .5 1.60 mm (0.063") 16 gauge. for locks, strikes and flush bolts,
 - .6 3.51 mm (0.138") 10 gauge. for hinges, push-pulls, and panic devices,
 - .7 2.74 mm (0.108") 12 gauge. for surface mounted hardware, for door closer brackets and arms.
- .7 Hinge reinforcements for lead-lined doors shall be 3.51 mm (0.138") 10 gauge minimum with each cut-out provided with 114.3 mm (4.5") heavy weight 4.6 mm (0.180") high frequency type reinforcing.
- .8 Hinge reinforcements for acoustic rated doors shall be 3.51 mm (0.138") 10 gauge minimum with each cut-out provided with 114.3 mm (4.5") heavy weight 4.6 mm (0.180") high frequency type reinforcing.
- .9 Frames shall be prepared for hinge sizes in accordance with the Finish Hardware Schedule.
- .10 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.
- .11 Provide hardware mortises on perimeter frame members to be grouted in masonry or concrete partitions with 0.84 mm (0.033") 22 gauge steel grout guards.
- .12 Frames to be pre-wired with conduit to accept card readers for doors.
- .13 Electrified hardware:
 - .1 Where electrically or electronically operated hardware is specified on the schedules or details or the final approved schedule and templates

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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:
 - .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.

2.6 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.

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- .3 Frame products for installation in new masonry walls shall be provided with steel adjustable wall anchors, 1.20 mm (0.047") minimum T-strap jamb anchors. 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 0.9 mm (0.035") minimum steel anchors of suitable design securely welded inside each jamb.
- .5 Frames in precast: Countersunk galvanized expansion bolts complete with galvanized anchor, base anchors, and spacers behind hollow metal frame.
- .6 Labelled frames: In accordance with ULC requirements.
- .7 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 1.60 mm (0.063") 16 gauge anchor bolt guides.
- .8 Anchor bolts and expansion shell anchors for the above preparations shall be provided by the installation company.
- .9 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 2.74 mm (0.108") 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.

2.7 Sizes and Tolerances

- .1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of +1.6 mm (+0.063"), -0.8 mm (- 0.031").
- .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 ± 1.2 mm (± 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.

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- .4 Tolerances on door sizes shall be ± 1.2 mm (± 0.047 ").
- .5 Manufacturing tolerances on formed frame profiles shall be ± 0.8 mm (± 0.031 ") for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbets shall be ± 1.6 mm (± 0.063 ") and ± 0.4 mm (± 0.016 ") respectively. Hardware cut-out dimensions shall be as per template dimensions, $+0.4$ mm ($+0.015$ "), -0 mm (-0 ").

2.8 Hardware Locations

- .1 Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified in paragraph 2.8 of this section.
- .2 Top of upper hinge preparation for 114.3 mm (4.5") hinges shall be located 180 mm (7.5") down from head 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 in paragraph 2.8 of this section. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts. For dutch door frames, top and bottom hinge locations shall be as above, with the tops of intermediate hinges located at 930 mm (36.5") and 1403 mm (55.938") from finished floor.
- .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 series standards.

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.

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3.2 Installation – Steel Doors and Frames

- .1 Set frame product plumb, square, aligned, without twist at correct elevation in accordance with NAAMM-HMMA 840-07.
- .2 Provide structural steel vertical support for frames and screens as required to provide stability. Secure structural support to slab and structure above.
- .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 ± 1.6 mm ($\pm 1/16$ ").
 - .2 Squareness tolerance, measured through a line 90 from one jamb at the upper corner of the product, to the opposite jamb, shall be ± 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 ± 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 ± 1.6 mm ($\pm 1/16$ ").
- .4 Fire labelled product shall be installed in accordance with NFPA 80-1999.
- .5 Prevent galvanic corrosion; insulate between dissimilar metals, or between metal, and masonry or concrete with bituminous paint or other means.
- .6 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.
- .7 Provide vertical support at center of head for openings exceeding 1250 mm (48") in width.
- .8 Secure anchorages and connections to adjacent construction.
- .9 Execute installation and assembly using skilled forces under supervision of a competent joinery foreperson.
- .10 Install doors in accordance with NAAMM-HMMA 840-07, maintaining clearances outlined in paragraph 2.8 of this section.
- .11 Install finishing hardware in accordance with ANSI A115.1G, manufacturers' templates and instructions, and Section 08 71 00.
- .12 Install louvres and vents.
- .13 Adjust operable parts for correct clearances and function.

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- .14 Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.
- .15 Remove grout or other bonding material from products immediately following installation.
- .16 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.
- .17 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.
- .18 Prior to site touch-up, exposed surfaces of Galvanneal steel to be finished with latex paints shall be cleaned with soap and water to remove foreign matter. When alkyd paints are specified, turpentine or paint thinners shall be used. Refer to paint manufacturers recommendations for additional information and requirements of Section 09 91 00.
- .19 Touch-up exposed field welds shall be finished to present a smooth uniform surface and with a rust inhibitive primer.
- .20 Touch-up exposed surfaces that have been scratched or otherwise marred during shipment, installation, and handling shall be with a rust inhibitive primer.
- .21 Finish paint in accordance with Section 09 91 00.
- .22 Install door silencers.
- .23 Adequately fasten units and secure in place with concealed fixings wherever possible. Include grounds and furring where required.
- .24 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00.
- .25 Make allowance for deflection to ensure structural loads are not transmitted to frames.
- .26 Adjust operable parts for correct clearances and function.

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3.3 Installation - Finishing Hardware

- .1 Install finishing hardware in accordance with Section 08 71 00.

3.4 Adjustment 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 instructions.
- .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
- .4 Clean hardware after installation in accordance with Supplier's instructions.

END OF SECTION

ALUMINUM WINDOWS

PART 1 GENERAL

1.1 General Requirements

- .1 Comply with requirements of Division 00, Division 01, Supplementary Conditions to Contract, and additional general requirements contained in this section.

1.2 Section Includes

- .1 Thermally broken, shop fabricated window frame assembly using curtain wall extrusions.
- .2 Insulating glass units for site glazing.
- .3 Insulated Glass Spandrel Panel.
- .4 Insulated Aluminum Sheet Spandrel Panel.
- .5 Integral air barrier and vapour retarder.

1.3 Related Sections

- .1 Section 07 92 00 – Joint Sealants: System perimeter sealant and back-up materials.
- .2 Section 08 52 11 - Interior Aluminum Security Sull Sashes: Connection between sull sash and aluminum window mullion to be co-ordinated.

1.4 References

- .1 Use latest edition of standards referenced below;
- .2 AA (Aluminum Association) DAF 45 - Designation System for Aluminum Finishes.
- .3 AAMA CW-DG-1 - Aluminum Curtain Wall Design Guide Manual.
- .4 AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
- .5 AAMA CW-11 - Design Windloads for Buildings and Boundary Layer Wind Tunnel Testing.
- .6 AAMA CW-13 - Structural Sealant Glazing Systems.
- .7 AAMA 501 - Methods of Test for Exterior Walls.
- .8 AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.
- .9 AAMA 611 - Voluntary Specifications for Anodized Architectural Aluminum.
- .10 AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors, and Glazed Wall Sections.
- .11 AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

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- .12 AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .13 AAMA TIR A1-04 - Sound Control for Fenestration Products.
- .14 AAMA RPC-00 - Rain Penetration Control.
- .15 ASTM A36/A36M-08 - Standard Specification for Carbon Structural Steel.
- .16 ASTM A123/A123M-09 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .17 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .18 ASTM B209M-07 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .19 ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .20 ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .21 ASTM C794-10 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
- .22 ASTM E283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .23 ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .24 ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- .25 ASTM E413 - Classification for Rating of Sound Insulation.
- .26 ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
- .27 ASTM D2240, Standard Test Method for Rubber Property—Durometer Hardness.
- .28 CAN/CGSB 1.40-97 - Anticorrosive Structural Steel Alkyd Primer.
- .29 CAN/CGSB 1.181-99 - Ready-Mixed Organic Zinc-Rich Coating.
- .30 CAN/CSA-S157 [2005], Strength Design in Aluminum.
- .31 CAN/CSA-S136-[2007], North American Specification for the Design of Cold-Formed Steel Structural Members.
- .32 CAN/CSA W59.2 [M1991(R2003)], Welded Aluminum Construction.

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- .33 Environmental Choice Program (ECP)
 - .1 CCD 45 [1995], Sealants and Caulking Compounds.
- .34 CAN/ULC-S710.1 [2005], Standard for Thermal Insulation – Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials Standard for Thermal Insulation - Bead - Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials.
- .35 SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.

1.5 System Description

- .1 System Assembly: shop fabrication of window frame with field glazing, spandrel panel, retainer installation and connection of AWB at curtain wall perimeter.

1.6 Performance Requirements

- .1 Design aluminum components to CAN/CSA S157.
- .2 System Design:
 - .1 Design components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to plane of wall using minimum design pressure of 0.95 kPa (20 PSF), as measured in accordance with AAMA CW-11.
 - .2 Design curtain wall system for expansion and contraction caused by cycling temperature range of 95 degrees C over 24 hour period without causing detrimental effect to system components.
 - .3 Thermal expansion: Ensure curtain wall system can withstand temperature differential of 85 degrees C and is able to accommodate interior and exterior system expansion and contraction without damage to components or deterioration of seals.
 - .4 Design system using mullion sizes indicated in drawings and as indicated in this specification section.
 - .5 Design system to accommodate without damage to system, components or deterioration of seals, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, deflection of structural support framing.
- .3 Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with the Ontario Building code.
- .4 Deflection: Limit mullion deflection to flexure limit of glass 19mm (0.75 inch) or L/175 which ever is less with full recovery of glazing materials.
- .5 Sealant Criteria: Limit working stress of sealants to 138 kPa (20 psi).
- .6 System Assembly: System to accommodate without damage to system, components or deterioration of seals, movement within system, movement between system and perimeter framing components, dynamic loading and release of loads, and deflection of structural support framing.
- .7 Thermal Resistance of Vision Areas: Refer to section 08 80 50.

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- .8 Sound Attenuation Through Structural Sealant Glazing System (Exterior to Interior): STC 33, measured to AAMA TIR - A1.
- .9 Air Infiltration: Limit air infiltration through assembly to 0.03 L/s/sq m (0.06 cfm/min/sq ft of wall area, measured at a reference differential pressure across assembly of 75 Pa (1.57 psf) as measured to AAMA 501.
- .10 Water Infiltration: None, when measured to AAMA 501.1 at differential pressure across assembly of 720 Pa (0.104psi).
- .11 Ensure interior surfaces have no condensation before exposed edges of sealed units reach dew point temperatures during testing to AAMA 501.
- .12 Maintain continuous air barrier and vapour retarder throughout building envelope and curtain wall assembly.
- .13 Expansion / Contraction: System to provide for expansion and contraction within system components caused by a cycling temperature range of 95 degrees C (170 degrees F) over a twenty-four (24) hour period without causing detrimental effect to system components.
- .14 System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.
- .15 Air and Vapour Seal: Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with [inside] pane of glass and heel bead of glazing compound. [Position thermal insulation on exterior surface of air barrier and vapour retarder].
- .16 Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

1.7 Submittals For Review

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow drainage diagrams.
- .3 Design Data: Provide framing member structural and physical characteristics and dimensional limitations.
- .4 Shop Drawings:
 - .1 Submit drawings stamped and signed by Professional Engineer licensed in Ontario attesting the system has been designed to meet the performance requirements of this section. Same engineer to review/stamp both Aluminum Window and Interior Security Sull Sashes and confirm that the combined system can withstand the required 2000ftlb testing.
 - .2 At minimum the shop drawings shall list all materials and components, contain curtain wall panel and component dimensions, framed opening

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requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details.

- .5 Samples:
 - .1 Submit two 300 x 300 mm (12 x 12 inch) samples of complete insulated glass unit assembly
 - .2 Submit two 300 x 300 mm (12 x 12 inch) samples of spandrel assembly complete with back painted glass, insulation metal backpan and caulking.
 - .3 Submit two 300 x 300 mm (12 x 12 inch) samples of Aluminum Sheet assembly complete, insulation metal backpan and caulking.
- .6 Test Reports: Submit reports, substantiating engineering data, test results of previous tests by independent laboratory to demonstrate compliance with following performance requirements specified in this section:
 - .1 Air Infiltration
 - .2 Water Infiltration
 - .3 Uniform Load Deflection
- .7 Installation Data: Special installation requirements.
- .8 Field Reports: Submit manufacturer's field reports within 3 days of manufacturer representative's site visit and inspection.

1.8 Quality Assurance

- .1 Perform Work to AAMA CW-DG-1 - Aluminum Curtain Wall Design Guide Manual.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the curtain wall framing products specified in this section with minimum Ten (10) years documented experience.
- .3 Fabricator Qualifications: Company specializing in performing the shop fabrication work of this section and approved by the manufacturer. Company shall have minimum five (5) years documented experience.
- .4 Installer Qualifications: Company specializing in performing the work of this section and approved by the manufacturer. Company and lead site foreman assigned to this project shall have minimum five (5) years documented experience.

1.9 Delivery, Storage, And Protection

- .1 Handle work of this Section to AAMA CW-10.
- .2 Delivery and Acceptance Requirements:
 - .1 Deliver materials and components in manufacturer's original packaging with identification labels intact and in sizes to suit project.
- .3 Storage and Handling Requirements:

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- .1 Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
- .2 Material storage: To AAMA CW-10. Protect prefinished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Puncture wrappings at ends for ventilation.

1.10 Environmental Requirements

- .1 Do not install sealants when ambient temperature is less than 5 degrees C (40 degrees F).
- .2 Maintain this minimum temperature during and after installation of sealants.

1.11 Warranty

- .1 Section 01 78 10: Warranties.
- .2 Warranty to include coverage for complete system for failure to meet specified requirements.
- .3 Warranty period: Five (5) years from date of Substantial Performance.
- .4 Warranty shall include provision of all material and labour necessary to rectify deficiencies at no cost to the Owner.
- .5 Warranty for Aluminum windows and related Sull Sashes to be covered under a single warranty.

PART 2 PRODUCTS

2.1 Acceptable Manufacturers and Products

- .1 Acceptable Product: ThermaWall 2600 by Alumicor or approved equal.
- .2 Approved Equal:
 - .1 Where "approved equal" is listed beside a manufacturer's product, other manufacturers offering functionally, dimensional, performance, and aesthetically equivalent products may be used providing it is approved by the Consultant prior to close of bid.
 - .2 Submit detailed information of proposed alternate manufacture's products, including reason for substitution request, to Consultant for review in form satisfactory to Consultant.
 - .3 Submit statement from proposed manufacturer that alternate product meets the specification requirements and do not affect the performance of other parts of the work. Identify all areas where product differs from specifications.
 - .4 Submit above information with the bid.
 - .5 Comply with Consultant's request for any additional information to allow for a review of the proposed alternate.

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- .3 Bid submitted for work of this section shall be based on products specified unless written confirmation from Consultant is received during the tender period accepting use of an alternate manufacturer's product(s) on the project.

2.2 Materials

- .1 Extruded Aluminum: ASTM B221, 6063-T6 alloy and temper.
- .2 Sheet Aluminum: To ASTM B209.
- .3 Sheet Steel: ASTM A653/A653M; galvanized with 275Z 90 g zinc coating designation.
- .4 Steel Sections: ASTM A36/A36M; shaped to suit mullion sections.
- .5 Fasteners: screws and bolts: Tamperproof, cadmium plated stainless steel 300 or 400 series to meet curtain wall requirements and as recommended by manufacturer.
- .6 Anchors: Ensure anchors have three-way adjustment.

2.3 Framing Components

- .1 Profile: 2 1/2" x 5 1/4" (63.5mm x 133.4mm) perimeter and mullion sections for double glazing; thermally broken with interior section insulated from exterior attachments; temporary glazing stops of sufficient size and strength to provide bite on glass panels prior to and during glazing; drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system; internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
- .2 Reinforced Mullion: Provide internal reinforcement of shaped steel structural section where required to meet performance requirements.
- .3 Cap depth: 3/4" (19mm)

2.4 Glass And Glazing Materials

- .1 Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace filled with argon gas, and complying with ASTM E 2188 / E 2189 for and with requirements specified in this Article and in Part 2 "Insulating-Glass Units" Article.
- .2 Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated for insulating-glass units are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites at unit's edge.
- .3 Heat-Treatment: All glass to be Tempered; CAN/CGSB-12.11, ASTM C 1048 and ASTM C11782 for laminated glass.
- .4 Sealing System: Dual seal, with primary and secondary sealants of polyisobutylene and silicone.
- .5 Spacer: Manufacturer's standard spacer material and construction complying with the following requirements:
- .1 Spacer Material: Aluminum with mill or clear anodic finish.

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- .2 Desiccant: Molecular sieve or silica gel, or blend of both.
- .3 Corner Construction: Manufacturer's standard corner construction.

2.5 Glazing/Glazing Components

- .1 Insulating Units: double pane insulating glass units for installation in glazed aluminium curtain wall.
 - .1 Standard unit thickness: 1" (25.4mm)
 - .2 Acceptable Glass manufacturer: Vitro Architectural Glass or approved equal
 - .3 Insulating Glass Unit Construction:
 - .1 6mm (1/4 inch) nominal thickness tinted tempered glass. Grey Tint of glass to match existing adjacent window units (Site Verify)
 - .2 12.7mm (1/2 inch) air space hermetically sealed and filled with argon gas
 - .3 6mm (1/4 inch) clear tempered glass. Solarban 70 solar control (sputtered) on second surface
- .2 Insulated Glass Spandrel Panel.
 - .1 Monolithic Spandrel Glass: CAN/CGSB-12.9, uncoated, tempered with backpainted glass.
 - .1 Acceptable manufacturer: Vitro Architectural Glass or approved equal
 - .2 Glass Product: Starphire tempered
 - .3 Thickness: 1/4" (6mm)
 - .4 Opacifier:
 - .1 back painted glass on surface 2. Allow for 2 different colours. OPACI-COAT 300 – Custom RAL Match – TBD
Provide physical samples as required for final selection.
 - .2 Panel Inner Face
 - .1 ASTM A653/A653M, steel sheet, galvanized, minimum 0.059 inch (1.5 mm)
 - .2 Core: Non-compressible, non-biodegradable, moisture-shedding, mineral wool radiant barrier batt insulation, foil-faced one side.
 - .3 Edge Closure: Square tube extruded aluminum, 7/8 inch x 7/8 inch (22 x 22 mm) size, around perimeter of panel and internally where required for structural rigidity.
 - .4 Panel Sealant: As required by manufacturer.
- .3 Aluminum Sheet Spandrel Panel.
 - .1 Monolithic Spandrel Aluminum: ASTM B209, Alloy 5005-H34, Flat Sheet, Coloured PVDF-Based Coating (Post Forming).
 - .1 Acceptable manufacturer: Alumatic or approved equal
 - .2 Sheet Product: Aluminum Sheet 8GA

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- .3 Colour: Custom RAL Colour Match to Existing - TBD
- .4 Thickness: 1/8" (3mm)
- .5 Refer to drawings for dimensions/profile - Bend to profiles indicated
- .6 Attachment:
 - .1 Provide all necessary sub framing to attach panels to curtain wall assembly
 - .2 Face fastened aluminum sheet to framing system.
 - .3 #410 stainless steel truss head self drilling sheet metal tek screws
- .2 Panel Inner Face
 - .1 ASTM A653/A653M, steel sheet, galvanized, minimum 0.059 inch (1.5 mm)
 - .2 Core: Non-compressible, non-biodegradable, moisture-shedding, mineral wool radiant barrier batt insulation, foil-faced one side.
 - .3 Edge Closure: Square tube extruded aluminum, 7/8 inch x 7/8 inch (22 x 22 mm) size, around perimeter of panel and internally where required for structural rigidity.
 - .4 Panel Sealant: As required by manufacturer.

2.6 Accessories

- .1 Gasketing: To CCD-45 Silicone compatible rubber or extruded silicone gaskets.
- .2 Setting Blocks: To CCD-45 and ASTM D2240, neoprene, 80 - 90 Shore A Durometer hardness.
- .3 Spacers: To CCD-45 and ASTM D2240, neoprene, 50 - 60 Shore A Durometer hardness.
- .4 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.
- .5 Sill Flashings: 3 mm (0.125 inches) thick aluminum flashing to profiles indicated, complete with end dams – Prefinished Colour to match existing.
- .6 Liquid Foam Insulation: Single component, moisture cure, low expansion rate spray-in-place polyurethane liquid foam insulation to ULC-S710.1 and in accordance with manufacturer's written recommendations.

2.7 Sealant Materials

- .1 Perimeter Sealant and Backing Materials: See Section 07 92 00
- .2 Perimeter and Framing Joint Sealant: Single-Component, Non-sag, Non-Staining, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, Use NT; SWRI validated.
 - .1 Acceptable product: Spectrum 2 by Tremco or approved equal

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2.8 Fabrication

- .1 Fabricate window frame assemblies in shop.
- .2 Fabricate frame components with minimum clearances and shim spacing around perimeter of assembly while enabling installation and dynamic movement of perimeter seal.
- .3 Do aluminum welding to CAN/CSA W59.2.
- .4 Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated in shop drawings reviewed by the Consultant.
 - .1 Ensure vertical and horizontal members are tubular extrusions designed for shear block corner construction.
 - .2 Mullion depth sizes as indicated.
- .5 Construct units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.
 - .1 Ensure curtain wall is fabricated with separate, integrated support for insulating glass unit.
- .6 Fabricate curtain wall with minimum clearances and shim spacing around panel perimeter and ensure installation and dynamic movement of perimeter seal is enabled.
- .7 Accurately fit and secure joints and corners. Make joints flush and hairline.
- .8 Prepare components to receive anchor devices. Fabricate anchors.
- .9 Arrange fasteners and attachments to ensure concealment from view.
- .10 Reinforce framing members for external imposed loads.
- .11 Visible manufacturer's labels are not permitted
- .12 Metal Spandrel Panels:
 - .1 Co-ordinate and field verify job site dimensions affecting work of this section. Ensure suitability of adjacent building components in relation to work of this section.
 - .2 Panels to be factory fabricated in a controlled environment.
 - .3 Fabricate work to profiles and sizes as indicated on the architectural drawings and confirmed site dimensions, as defined in this section's scope of work; complete with trims, flashings and filler components as required to interface with work of other sections. Make provisions for thermal and structural movements.
 - .4 Fabricate panel with true 90 degree corners and return edge without welding or grinding.
 - .5 Field verify with measurements openings to be covered. Co-ordinate with work of other trades prior to shop drawings for Consultant's approval.

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2.9 Finishes

- .1 PVDF-Based Coating: AAMA 2605, fluoropolymer finish containing minimum 70 percent PVDF resins, colour to match existing framing. Acceptable products; Duranar, Duranar XL by PPG; Fluoropon, Fluoropon Classic by Sherwin Williams
Location: Interior and exterior exposed aluminum surfaces.
 - .1 Colour:
 - .1 Interior: Custom RAL Colour Match to Existing - TBD
 - .2 Exterior: Custom RAL Colour Match to Existing – TBD
- .2 Shop and Touch-Up Primer for Steel Components: SPCC-Paint 25 red oxide.
- .3 Touch-Up Primer for Galvanized Steel Surfaces: SPCC-Paint 20 zinc rich.
- .4 Concealed Steel Items: Hot-dip galvanized, minimum coating thickness Grade to ASTM A123/A123M.
- .5 Concealed Steel Items: Primed with iron oxide paint.
- .6 Apply one (1) coat of bituminous paint to concealed steel or aluminum surfaces in contact with cementitious or dissimilar materials.

PART 3 EXECUTION

3.1 Examination

- .1 Section 01 71 00: Verify existing conditions before starting work.
- .2 Verify dimensions, tolerances, and method of attachment with other work, and compatibility of materials in the structural sealant glazing system.
- .3 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 Installation

- .1 Attach shop assembled frame to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .2 Field install glazing in accordance with glazing and curtain wall manufacturer's written instructions, including temporary glass retainers. Install pressure plate.
- .3 Provide alignment attachments and shims to permanently fasten system to building structure.
- .4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- .5 Install sill flashings.
- .6 Coordinate attachment and seal of perimeter air and vapour barrier materials. Refer to drawing details.
- .7 Install low expansion closed cell spray foam in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

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- .8 Install sealant along perimeter of curtainwall unit. Refer to drawing details.
- .9 Install mullion cap.

3.3 Erection Tolerances

- .1 Site Installation Tolerances:
 - .2 Variation from plumb: [12 mm per 30 m (0.5 inches per 100 feet)] maximum.
 - .3 Misalignment of two adjacent panels or members: [0.8 mm (0.03 inches)] maximum.
 - .4 Sealant space between curtain wall and adjacent construction: [13 mm (0.5 inches)] maximum.

3.4 Cleaning

- .1 Remove protective material from prefinished aluminum surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.5 Protection Of Finished Work

- .1 Protect finished Work from damage.
- .2 Repair damage to adjacent materials caused by glazed aluminum curtain wall and glazing installation.

END OF SECTION

INTERIOR ALUMINUM SECURITY SULL SASHES

PART 1 GENERAL

1.1 General Instructions

- .1 Read and conform to:
 - .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Summary

- .1 Work Included: Provide interior aluminum operable sull sash including but not limited to following:
 - .1 aluminum profiled forms with stops.
 - .2 Fixed / Removable security sull sash frame.
 - .3 concealed extra heavy duty multipoint locking system with stainless steel pins (minimum 12 keepers per sull sash)
 - .4 interior aluminum isolated closures and cover plates.
 - .5 integral seals at perimeters.
 - .6 security glass and glazing system
 - .7 glazing gaskets and glazing stops
 - .8 silicone sealant within aluminum work and between aluminum framing and adjacent construction.
- .2 Related Requirements: Following description of work is included for reference only and shall not be presumed to be complete:
 - .1 Sealing perimeter of frames: Section 07 92 00, Joint Sealants.
 - .2 Connection to Aluminum Mullions: Section 08 51 13, Aluminum Windows.

1.3 References

- .1 Definitions:
 - .1 Threat Side: Side of the glazing assembly from which threat is anticipated.
 - .2 Secured Side: Side of the glazing assembly intended to be protected from anticipated threat.
 - .3 Post-Disaster Building: This facility falls under category of post disaster under OBC. Post-disaster building means a building that is essential to provision of services in event of a disaster.
 - .4 Operational and Functional Component (OFC): Components within building which are directly associated with function and operation of facility. OFCs consist of architectural components, building services components, and building contents.

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.2 Reference Standards

- .1 ASTM A153/A153M-09: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- .2 AMMA 501.8-14 Standard Test Method for determination of Resistance to human impact of window system intended for use in a Psychiatric Application
- .3 AAMA 502: Voluntary Specification for Field Testing of Newly Installed Fenestration Products
- .4 AAMA 611: Voluntary Specification for Anodized Architectural Aluminum
- .5 AAMA CW-10: Care and Handling of Architectural Aluminum from Shop to Site
- .6 AAMA 2604: Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
- .7 AAMA 2605: Voluntary Specification, Performance Requirements and Test Procedures for Superior Performance Organic Coatings on Aluminum Extrusions and Panels
- .8 ASTM B209 - Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- .9 ASTM B221 - Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- .10 ASTM C864 - Specification for Dense Elastomeric Compression Seal Gaskets, Setting Block, and Spacers
- .11 ASTM C920 - Specification for Elastomeric Joint Sealants
- .12 ASTM C1115 - Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
- .13 ASTM D412 - Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension
- .14 ASTM D3935 - Standard Specification for Polycarbonate (PC) Unfilled and Reinforced Material
- .15 ANSI/NAAMM/HMMA 863-04- Guide Specifications for Detention Security Hollow Metal Doors and Frames.
- .16 ASTM F1233 : Standard Test Method for Security Glazing Materials And Systems
- .17 CAN/CGSB 19.13-M87- Sealing Compound, One-Component, Elastomeric, Chemical Curing
- .18 CAN/CGSB 19.24-M90- Multicomponent, Chemical-Curing Sealing Compound
- .19 ULC S332-93- Standard for Burglary Resisting Glazing Material
- .20 GANA - Glass Association of North America - Glazing Manual
- .21 CSA W59.2 - Welded Aluminum Construction

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1.4 Administrative Requirements

- .1 Sequencing: Coordinate installation with related Sections referenced herein.
- .2 Pre-Installation Meetings:
 - .1 Regulatory Requirement Review Meeting: Provide pre-start regulatory requirement review meeting to parties associated with work of this Section. As a minimum, discuss following:
 - .1 environmental procedure requirements,
 - .2 hospital health, safety and emergency response procedure and policy requirements,
 - .3 infection prevention and control requirements;
 - .4 and security requirements;
 - .2 Pre-construction Site Meeting:
 - .1 Prior to start of work, arrange for Project site meeting of parties associated with work of this Section, including non-exhaustively Subcontractor performing work of trade involved, testing company's representative and Contractor's Consultants of applicable discipline. Consultant may attend.
 - .2 Review Contract Documents to permit compliance with intent of this Section for work included under this trade, and ensure complete understanding of requirements and responsibilities relative to:
 - .1 work included,
 - .2 materials to be used,
 - .3 storage and handling of materials,
 - .4 installation of materials,
 - .5 sequence and quality control,
 - .6 Project staffing,
 - .7 restrictions on areas of work and other matters affecting construction.
- .3 Scheduling:
 - .1 Prior to commencing work of this Section arrange for manufacturer's technical representative to review with Contractor and Consultant, procedures to be adopted and conditions under which work shall be performed. Inspect surfaces to determine adequacy of existing and proposed conditions.
 - .2 Co-operate fully with other Subcontractors on The Work and promptly proceed with work of this Section as rapidly as job conditions permit.
 - .3 Co-operate with other Sections for application of all miscellaneous specialties.
 - .4 Supply items to be built-in in ample time to be incorporated into work of other Subcontractors, together with measurements and other information required for location of it.

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- .5 Ensure work which may create dust does not proceed during work related to painting and final finishing.

1.5 Submittals

- .1 Product Data: Submit manufacturer's literature and data sheets for each type of material provided under this Section for Project in accordance with requirements of Division 01. Ensure data sheets Provide required information including detailed instructions for installing as well as maintaining, preserving and keeping materials in clean and safe conditions. Provide adequate warning of maintenance practices or cleaning agents detrimental to specified materials.
- .2 Material Safety Data Sheets: Submit MSDS for inclusion in Operation and Maintenance Manual without limitations for adhesives, sealants and other materials later designated by Consultant.
- .3 Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Division 01. In addition to minimum requirements indicate following:
 - .1 Indicate with plans, sections, elevations and sufficient full size details to indicate all components and methods of assembly, materials and their characteristics relative to their purpose and all other fabrication information.
 - .2 Include with Shop Drawings, description of materials, metal thickness of metal components, glass thicknesses, metal finishes, allowances for thermal and structural movement between components, and other pertinent information as necessary or requested by Consultant to indicate compliance with the Contract Documents and all other pertinent information. cx
 - .3 Indicate details of field connections, anchorage, and relationship to work of others for coordination of work by other building trades.
 - .4 Show details of fastening and sealing methods and Product joinery to ensure proper performance of field installation. Clearly indicate details of field connections, anchorage, and their relationship to work of others for coordination of work by other building trades
 - .5 Identify and describe all material types and components being supplied, their manufacturers, wall thicknesses of extrusions, and shapes including all connections and grades, attachments, reinforcing, anchorage and locations of fastenings.
 - .6 Ensure Shop Drawings are stamped by Professional engineer registered in Province of Ontario as specified herein.
 - .7 Provide copies of final reviewed Shop Drawings as required for submission to authorities having jurisdiction.
 - .8 Do not fabricate Work until Shop Drawings have been reviewed by Consultant for fabrication.
 - .9 Field Measurements: Verify dimensions of supporting structure by field measurements before fabrication so that the curtain wall work will be accurately designed, fabricated and fitted to the structure. Indicate

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measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying The Work.

- .4 Samples: Submit samples in accordance with Division 01.
 - .1 Submit 2x - 75 mm x 140 mm (3" x 5-1/2") samples for each exposed metal finish required (extrusion and sheet.).
 - .1 Ensure samples are of specified alloy, temper, and thickness of metal required for The Work. Where finishes involve color and texture variations, include sample sets showing full range of variations expected.
 - .2 Mark direction of metal grain and rolling and paint application on back of control samples.
 - .2 Submit 460 mm x 600 mm (18" x 24") cut away samples of sull sash corner. Metal panel samples shall demonstrate welded corner joints, reinforcements, and stiffeners.
 - .3 Submit minimum 300 mm (12") square samples of glass/polycarbonate units in specified thicknesses
- .5 Test and Evaluation Reports:
 - .1 Attack Resistance Testing: For each type of glazing product, submit test reports conducted by a recognized testing agency substantiating that glazing units can withstand attack resistance loads specified in accordance with Mock-Ups test requirements specified herein.
- .6 Certificates:
 - .1 Signed by manufacturers of glass and glazing Products certifying that Products furnished comply with requirements.
 - .2 Obtain certificate from Professional Engineer responsible for design which includes seismic assessment and field review of this part of The Work, validating that work substantially complies with requirements of the OBC and that requisite field reviews have been completed.

1.6 Closeout Submittals

- .1 Operation and Maintenance Data: Provide maintenance data indicating cleaning instructions for inclusion into Maintenance Manual. Upon completion of installation, Supply to the Consultant five copies of instructions covering reglazing, adjustments and other relevant maintenance data.

1.7 Quality Assurance

- .1 Manufacturer Qualifications:
 - .1 Provide products by a firm specializing in the fabrication of behavioral security windows who has successfully produced work similar in design and extent to that required for the project, in not less than three (3) projects of similar size and scope and whose work has resulted in

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- construction with a record of successful in-service performance of specified product for a minimum period of ten (10) years.
- .2 Ensure security window manufacturer has sufficient production capacity, organized quality control and testing procedures, and published written and illustrated installation manuals to produce and properly install assemblies required without causing delay in progress of the Work.
 - .2 Licensed Professionals: Retain the services of a Professional Engineer, licensed to practice in the province of Ontario, with work experience of comparable scope and complexity, to design system and review, stamp and sign shop drawings. Same engineer to review/stamp both Aluminum Window and Interior Security Sull Sashes and confirm that the combined system can withstand the required 2000ftlb testing.
 - .3 Installer's Qualifications: Ensure work of this Section is performed by an experienced installer trained, experienced and familiar glass and glazing methods and standards specified herein and capable to instruct installation requirements of this Section. Ensure security, decorative and graphic films are installed by installers certified by product manufacturers.
 - .4 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers. Ensure consistent quality of performance by providing glazing sealant and seals from single manufacturer.
 - .5 Testing Agencies' Qualifications: Quality assurance protocols and capability of testing agencies to perform designated tests on construction materials shall be evaluated in accordance with ASTM E329 and ASTM E699.
 - .6 Preconstruction Testing: Submit to sealant manufacturer, samples of each type of glass, gasket, glazing accessory and glass framing member that will contact or affect glazing sealants for compatibility and adhesion testing. Submit test samples in sufficient time for testing and analysis of results to prevent delay in progress of work.
 - .7 Mock-ups :
 - .1 Erect a full size panel of sull sash assembly sample installation on Project complete with finish and glazing. Sample installations shall show flashings, anchors, shims, brackets and other related items.
 - .2 Revise or replace sample installations at no additional cost as directed until accepted. Do not proceed with job fabrication until sample installations are approved.
 - .3 Accepted sample installations shall be standard for remainder of work of this Section and may form part of finished installation.
 - .8 Performance Tests Mental Health Areas:

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- .1 Engage recognized certified independent testing laboratory or agency to perform tests specified herein. Provide certified test results showing that each type, grade, and largest size of operable sull sash unit complies with performance requirements specified herein this Section. Submit performance tests reports for body and hard object impact resistance tests.
- .2 Perform one on-site simulated service impact test as designated on each window following test procedures outlined in ANSI/NAAMM Standard 863 to determine adequacy of sull sash assembly and anchorage system.
- .3 Pre-construction Factory Mock-ups:
 - .1 Immediately after Contract award, retain services of qualified independent testing agency to test interior aluminum curtain walls for compliance with requirements specified herein. Arrange and pay costs for fabrication, shipping, erection, demolition and disposal of following test units representative of proposed materials and construction:
 - .2 Erect at factory 2 full size panel unit of glazing assembly for destructive testing purposes with following characteristics:
 - .1 Glass Type: 12.5 mm (0.50") thick polycarbonate glazing unit (GL-7) as specified herein.
 - .2 Framing: Interior aluminum sull sash framing.
 - .3 Mock-Ups Size: As recommended by manufacturer and size as designated by Consultant.
 - .3 Provide units complete with finish framing and glazing installed to demonstrate compliance of glazing assemblies with impact and attack resistance requirements specified herein.
 - .4 Revise or replace Mock-Ups at no additional cost and as directed until accepted. Do not proceed with job fabrication until Mock-Ups have been approved.
 - .5 Notify Consultant 7 days in advance of the dates and times when assemblies will be tested.
 - .6 Test each Mock-ups erected in accordance with following procedure and basic requirements:
 - .1 Conduct Soft Body Impact Test.
 - .2 For each test the impact, suspend weight by a rope having minimum length of 3048 mm (10'-0") tied to elevated point. Raise impact weight to required drop height and release such that impact weight swings in a pendulum arc and strikes test piece.
 - .7 Soft-Body Impact Test:
 - .1 Secure test specimen into test frame constructed in accordance with AMMA 501.8-14
 - .2 Conduct soft-body impact test using a 113 kg (250bs) sandbag dropped from maximum drop height of 3048 mm (120"). Subject glass lite to a 3 impacts, as per AMM 501.8-

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- 14 test procedure. Perform test on the threat side of security glazing assembly only. Generating 2000ftlb impact
- .8 Evaluation of Results: Mock-ups assemblies are deemed to be compliant if:
 - .1 The glazing does not fail and remains in the frame assembly, or
 - .2 The glazing breaks but due to the laminate, remains intact with holes no larger than 100 mm (4") in diameter, and the pane remains in the frame assembly.
 - .3 In case of glazing failure, no shards with any dimension greater than 100 mm (4") are separated from laminated pane.
 - .4 Site Mock-Ups:
 - .1 Erect a full size panel Mock-ups of glazing screen assembly at Project site complete with finish framing and glazing to demonstrate quality of workmanship. Provide Mock-Ups minimum 1 bay in width, with height sufficient to include 2 vision panels and 1 spandrel panel above and below such vision panels. Ensure Mock-Ups include flashings, anchors, shims, reinforcing, brackets and other related items.
 - .2 Testing Methodology: according to [AAMA 502].
 - .3 Revise or replace Mock-Ups at no additional cost and as directed until accepted. Do not proceed with job installation until Mock-ups have been approved.
 - .4 Accepted Mock-ups are standard for remainder of work of this Section and may form part of finished installation, if undisturbed at time of Substantial Performance of The Work.

1.8 Delivery, Storage And Handling

- .1 Transport materials to site storage in a manner to prevent in-transit damage. These measures include, but are not limited to, crating, polyethylene wrapping system, etc.
- .2 Deliver, store and handle materials conforming to manufacturer's written instructions [and requirements of Section 01 61 00 - Product Requirements].
 - .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Store in a dry, protected area on site, in original undamaged containers with manufacturer's labels and seals intact.
- .4 Store and protect fabricated units from damage until required for actual building in. Replace damaged units.

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- .5 Remove damaged or unsatisfactory materials from the site and replace with new materials to satisfaction of Consultant at no cost to Owner.
- .6 Protect The Work of this Section from damage. Protect work of other trades resulting from The Work of this Section.
- .7 Provide at factory, strippable coatings on exposed surfaces of aluminum. This coating and protective wrappings shall remain on the surfaces through the period other trades' works proceed on the building, and removed by this trade on completion of building.
- .8 Comply with unpacking procedures as recommended by framing and glass manufacturers.
- .9 Make Good damaged work caused by failure and to Provide adequate protection. Remove unsatisfactory work and replace at no expense to Owner.

1.9 Warranty

- .1 Warrant work of this Section for period of 5 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; glass breakage due to structural deflection, anodized finish will be nonfading, nonconvertible and permanently a part of the metal surface.
- .2 Warrant Polycarbonate for period of 5 years against defects and deficiencies in accordance with General Conditions of the Contract. Promptly correct defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional expense. Defects include but are not limited to: deterioration, edge separation, delamination, material obstructing vision glass and blemishes exceeding those allowed by ASTM Standards. Upon notification of such deterioration within the warranty period, Provide full replacement of poly carbonate units showing defects at no additional cost to Owner.
- .3 Warranty for Sull Sashes and related Aluminum Windows to be covered under a single warranty.

PART 2 PRODUCTS

2.1 Manufacturers

- .1 Materials specified in this Section are based on "Series MHW 6200 – Behavioral/Mental Health Security Windows" by;

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Sherwood Windows Limited
37 Iron Street, Toronto, Ontario, Canada M9W 5E3
Tel: (416) 675.3262 or 800.770.5256 (toll free)
Fax: (416) 675.1243
Web: www.sherwoodwindows.com as listed in this Specification.

- .2 Substitution Limitations: Conforming to requirements of Section 01 25 00 - Substitution Procedures.

2.2 Description

- .1 Regulatory Requirements:
 - .1 Comply with requirements of Ontario Building Code and regulations of authorities having jurisdiction, which shall be minimum, except where more stringent requirements are specified herein.
- .2 Design Requirements:
 - .1 Drawings and details are diagrammatic and are intended to show design concept, configuration, components and arrangements; they are not intended to identify nor solve completely problems of thermal and structural movements, assembly framing, fixings and anchorages and problems at the glass line associated with glazing installation, movements, pressure fracture or thermal shock.
 - .2 Seismic Performance: Design work of this Section to withstand seismic motions determined in accordance with requirements of OBC and CAN/CSA S832
 - .3 Design light gauge aluminum structural members in accordance with CSA S157.
 - .4 Design light gauge steel structural members in accordance with CAN/CSA S136 and CSA S136.1 under direct supervision of a Professional Engineer experienced in design of this work and licensed in Ontario.
 - .5 Have work of this Section designed by a professional engineer licensed to design structures and registered in the Province of Ontario.
 - .6 Design members and their connections to withstand within acceptable deflection limitations their own weight, the weight of the glass, loads imposed by the motion of operable elements and the minimum design loads, and combinations of loads, in accordance with the applicable building code, and internal pressure changes.
 - .7 Design operable sull sashes and their securement to miscellaneous structural framing in a manner to maintain flatness without distortion against forces imposed by building movements induced by control environment temperature change; panels shall be without bowing, twisting, racking and shall maintain correct alignment. Design operable sull sash with sealants and thermal separation as indicated on Drawings and as required to obtain design requirements.

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- .8 Design closures, cover plates, trims and required accessories as necessary to complete work.
- .9 Deflection limits for all members: A static air design uniform load of 20 psf shall be applied in positive and negative direction in accordance with ASTM E330. A maximum of 1/175 of span or 12 mm (½") whichever is less, under design loading. Limit deflection of any members, in direction parallel to wall plane, when members carries its full design load, not to exceed 75% of design clearance dimension between that member and panel, glass or other part immediately below it. Provide for deflection of the structure to ensure that structural loads are not transmitted to the glazing and related work.
- .10 Design assemblies, their connections, glazing clearances and glazing and sealing details to accommodate a material temperature changes without overstressing materials or generating sound.
- .11 Accommodate expansion and contraction without causing buckling, opening of joints, undue strain on fasteners or other detrimental effects. Make allowance for horizontal expansion in each vertical mullion.
- .12 All components shall be secured by concealed means. Attach in a manner which will permit replacement of components or units during construction and in subsequent usage of the building without dismantling or disturbing adjoining components or units. Such replacement shall be carried out without the use or addition of extra screws, splices, covers and similar items, that alter the original design features.

2.3 Materials

- .1 Aluminum sheet and plate: ASTM B209, Alloy 3003-H14 temper.
- .2 Extruded Aluminum: ASTM B221, Alloy 6063-T5/T6 temper.
- .3 Aluminum Sheet for Enclosures, Cover Plates and Trims: ASTM B221M, minimum thickness 3 mm (1/8") of type and characteristics to match finished extrusions; sheet which is not exposed shall be Alcan Utility, AA-3003 mill finished.
- .4 Fasteners: Tamper-resistant aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components. Exposed fasteners or pop rivets are not acceptable.
- .5 Sealant: to ASTM C920. Provide non-hardening, non-skimming, non-sagging, non-migrating, non-bleeding polyisobutylene or partially vulcanized rubber base sealant for use in concealed-sealing of thin joints in metal work. Where sealant is exposed, provide tamper-resistant types.
- .6 Interior Aluminum Sull Sash Frames: Medium Security Sash Framing; Extruded aluminum sections having a minimum wall thickness of 3 mm (1/8") suitably reinforced to ensure proper rigidity. Cross-section dimensions of frames for

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screens shall be based as specified herein with thermal break and glazing system as detailed on Drawings.

- .1 Compressible Filler: Supply "Unifoam R1009" by Goodco Limited.
- .2 Security Screws: Complying with ANSI B18.6.3; Provide only tamper-resistant (Torx-Plus 5 lobe complete with post) or break-off type screws as specified, unless otherwise indicated. Provide flathead (FH) security screws where Torx-Plus or Break-off is specifically indicated to be countersunk, otherwise Provide only Trusshead (TH) or buttonhead (BH) for Torx-Plus and only roundhead (RH) for Break-off type.
- .3 Fastenings: Stainless Steel austenitic, 300 Series;
- .4 Aluminum Screws and Bolts: AA 2024 or 6061 and nuts AA6262.
- .7 Internal Steel Reinforcing: If necessary, Provide manufacturer's shapes and profiles conforming to requirements specified to meet security performance criteria stipulated herein complete with corrosion-resistant primer applied immediately after surface preparation and pretreatment. Prepare surfaces according to applicable SSPC standards.
 - .1 Zinc-Coated Steel Sheet: ASTM A653/A653M, CS, Type B; with Z275 (G90) galvanized coating designation.
 - .2 Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- .8 Cover Caps: Extruded aluminum with factory applied clear anodized finish specified herein.
- .9 Internal Frame Sealant: One component silicone base sealant, chemical curing conforming to CAN/CGSB-19.13-M, Classification MGC-2-25-A-N or B-N, or ASTM C920, Type S, Grade NS, Class 25, Use NT, G, A, and O as applicable, unless otherwise directed. Acceptable types; "DC-795" or "DC-790" as applicable by Dow Corning Canada or approved equivalent.
- .10 Glass and Glazing:
 - .1 Polycarbonate Sheet: ASTM D3935, Type II, Class 1 (weatherable), UV-stabilized, security-grade polycarbonate, clear.
 - .1 Acceptable manufacturers: Makrolon (Covestro), Lexan (SABIC), Palram, or approved equal
 - .2 Product: Security glazing grade, minimum "containment" or "forced entry" rated per manufacturer
 - .3 Thickness: 1/2" (12mm)
 - .4 Finish: UV-protected both sides, clear matte or clear gloss; anti-abrasion coating required at patient access surfaces
- .11 Sull Sash Hardware:
 - .1 Aluminum perimeter subframe and operable frame complete with mitered corners, reinforced and welded;
 - .2 Fixed / Removable sash frame shall have:

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- .1 Concealed heavy duty extruded aluminum keepers with stainless steel pins that allow the sull sash be removed from the frames
- .2 Concealed multipoint locking system with removable cover plate for service
- .2 Horizontal Blinds: Provide manufacturer's standard, ligature-resistant, horizontal blinds with aluminum slats that are operated by removable anti-ligature hardware located on inside face of sash.
 - .1 Colour: As selected by Architect from manufacturer's standard range at a later date.
 - .2 Hardware: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to operate smoothly, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions. Provide removable, ligature-resistant hardware unless indicated otherwise.
- .12 Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- .13 Shims, spacers and glass setting blocks and gaskets in accordance with requirements of Section 08 80 00. All glazing materials, primers and cleaning solvents: Compatible with each other. Colours for glazing materials: As selected later and not necessarily standard colours.
- .14 Primers, Joint backing and Multi Component Sealant conforming to CAN/CGSB-19.24-M, Type 2, Class "B" in accordance with requirements of Section 07 92 00.
- .15 Insulation for packing into frame cavities: Resilient, fibrous glass having a nominal density of 12 kg/m² (0.75 lbs/ft³) in accordance with requirements of CAN/ULC S702-09: Standard for Mineral Fibre Thermal Insulation for Buildings
- .16 Zinc Chromate Prime conforming to CAN/CGSB-1.40, Touch-up paint: 'Zinc Clad No. 7 Organic Zinc Rich Primer' by Sherwin Williams Company of Canada Ltd., or other approved manufacture.
- .17 Bituminous Paint: Heavy bodied bituminous isolation coating to Provide acid and alkali resistant separator. Isolation coating shall be acid and alkali resistant material.

2.4 Fabrications

- .1 General:
 - .1 Take field measurements and levels required to verify or supplement those shown on Drawings for proper layout and installation of work. Coordinate dimensional tolerances in adjacent building elements and confirm prior to commencement of work.

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- .2 Extruded form shall be true to detail, free from defects impairing appearance, strength and durability. Members possessing sharply defined profiles, straight, square and true with surfaces in proper planes and exposed finished surfaces and edges smooth and free from defects. Frames shall be tubular extruded shapes with sharp, well-defined corners. Overall assembled profiles shall be as detailed on Drawings.
- .3 Accurately machine file and fit and rigidly frame together joints, corners and mitres. Match components carefully to produce perfect continuity of line and design. Make joints weathertight. Metal in contact shall have hairline joints unless otherwise shown on reviewed Shop Drawings. Location of exposed joints shall be subject to the approval of the Consultant. No exposed fixings are permitted.
- .4 Reinforce frames by concealed means as necessary to meet the specified design requirements and as shown. All reinforcing shall be hot-rolled mild steel and shall be securely anchored to horizontal and vertical members by positive mechanical means.
- .5 Shop assembled formed continuous enclosures and cover plates at isolated locations and adjacent to work of this Section to profile to meet design requirements complete with intermediate clips, anchorages and reinforcing. Supply filler and closure pieces as required. Fill corners and other open areas within construction with loose insulation. Aluminum enclosure profile shall suit wall conditions and abutting vertical surfaces. Open end at aluminum windows and sills shall be fitted with neatly applied closure plates.
- .6 Provide devices for anchoring the frame assemblies to the building structure with sufficient adjustment to permit correct and accurate alignment.
- .7 Fabricate units square and true to detail with maximum tolerance of ± 1.5 mm (1/16") for units with diagonal measurement of 1800 mm (6'-0") or less than 3.00 mm (1/8") for units with diagonal measurement over 1800 mm (6'-0"), free from defects impairing appearance, strength and durability. Overall assembled profiles shall be as detailed on Drawings.
- .8 Fabricate frames with continuous thermal breaks located on exterior side of glazing as detailed on Drawings and must be held by snap-in methods without use of metallic fasteners which could reduce the effectiveness of thermal barrier. Fill frame extrusion on warm side of thermal break with rigid insulation.
- .9 Blast clean and galvanize reinforcing, brackets and other steel items supplied under this Section in accordance with ASTM 153, coating weight 380 g/m² (1.25 oz/ft²). Galvanize after fabrication where possible. Follow standard precautions to avoid embrittlement of the base metal by overpickling, or overheating during galvanizing.
- .10 Do all fitting and assembly in factory. Trial fit units in shop if permanent shop assembly is not practical.
- .11 Metal sections drilled, tapped, welded, holed or slotted as may be required for proper installation and fixing of all components and accessories and supplied complete with all necessary anchors, clips,

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- bolts, screws, etc. Framing, bracing, reinforcing and anchors having structural properties adequate to safely sustain and withstand strains and stresses to which they will be subjected.
- .12 Make provision for proper expansion and contraction.
 - .13 Joints and intersections accurately formed and tightly fitted; units water and weather tight. Bolts tight and threads nicked to prevent loosening of nuts; bolting made as inconspicuous as possible.
 - .14 Fabricate frames and prepare frames for proper glazing. Glaze with snap-in methods without the use of any metallic fasteners which could reduce the effectiveness of the thermal barrier.
 - .15 Corners of formed work must be mitred and closely fitted. Back-up sealants designed for this purpose, shall be applied on inside of joints in aluminum work by this Section.
 - .16 Welding in accordance with requirements of CAN/CSA W59.2 Welding of component members shall not in any way mar surface appearance of metal. Welded joints shall be made tight and in true planes, ground and sanded smooth, flush with surface of base metal.
 - .17 Weld only concealed surfaces in order that pitting-discolouration, weld halo and other surface imperfections will not be visible after finishing.
- .2 Fixed Frames:
- .1 Fasten frames to support framing. Provide slotted connections as required to accommodate deflection of opening components.
 - .2 Seal hairline joints at junctions of frame members. Gun-inject sealant from inside ensuring a continuous seal of the joint. Ensure that bead in the glazing space does not impair seating of glazing materials. Remove excess sealant which is forced onto face of frame assembly.
 - .3 Provide snap-on aluminum extrusion glazing stops for frames designed for inside glazing. No exposed fixings permitted.
 - .4 Fabricate frame systems designed for glazing complete with mullions, head and sill frames, spigots, and plugs for horizontals, spline gaskets, pressure plates, filler pieces, snap-on caps and other necessary components.
 - .5 Provide fillers, cut-outs and reinforcement in door frames to receive hardware.
 - .6 Provide continuous extruded aluminum angles to form a reveal at junctions of head frames and suspended ceilings where applicable and junctions of jamb frames and adjacent construction.

2.5 Finishes

- .1 All aluminum screens and frames visible in completed work shall be Clear anodized, Class I complying with AAMA 611.
- .2 Exposed fastenings if occurring and where approved: Finish to match the finish of material in which they appear. Finish provided shall be permanent and durable.

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PART 3 EXECUTION

3.1 Manufacturer's Instructions

- .1 Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Examination

- .1 Ensure that openings to receive The Work of this Section are within acceptable tolerances.
- .2 Examine work site and notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

3.3 Preparation

- .1 Site Verification of Conditions: Take field measurements from actual structure and verify location of adjacent materials prior to commencement of fabrication.
- .2 Concealed surfaces of aluminum which would otherwise come in direct contact with structural steel, concrete, masonry or plaster shall be given a heavy protective coating of bituminous paint or zinc chromate primer prior to installation.

3.4 Installation

- .1 Frames
 - .1 Align frame with shims at top and bottom of frame. After alignment, positively lock anchorage devices to prevent movement other than that designed to accommodate deflection and thermal expansion and contraction.
 - .2 Set frames and sull sashes plumb and true in openings securely wedged and held in alignment during construction and provided with suitable and adequate anchorage to adjoining work.
 - .3 Erection tolerances for frame assemblies relate to the structural grid of the building, and apply to each individual assembly.
 - .1 Tolerances:
 - .1 vertical position; plus/minus 3 mm (1/8")
 - .2 horizontal position; plus/minus 3 mm (1/8")
 - .3 deviation from plumb; 3 mm (1/8") maximum each plane
 - .4 racking of face; 6 mm (1/4") maximum
 - .5 racking in elevation; nil.
 - .4 Perform necessary drilling of concrete, masonry and steel necessary to Install the Work of this Section. Site located fixings to the masonry and concrete shall be stainless steel lag screws and lead expansion shields.

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Bear cost of repair satisfactory to the Consultant of concrete chipped by drilling or fixing operations.

- .5 Apply a heavy brush-coat of bituminous paint to aluminum or galvanized steel placed in or in contact with concrete, masonry, mortar or dissimilar metals.
- .6 Group components with coloured aluminum finish so that those which relate most closely to one another, with regard to colour, will be installed adjacent to each other.
- .7 As erection progresses, pack cavities of frames and assemblies with low density fibrous glass insulation.
- .8 Make the completed installation free from objectionable noise, rattles, wind whistles, creak or noise due to thermal movement.
- .9 Gun-apply 3 continuous beads of sealant under extruded aluminum thresholds. Make bead diameter sufficient to ensure a full-width seal. Remove excess sealant by acceptable means.

.2 Sealants

- .1 Thoroughly clean joints and spaces to be sealed of foreign matter and keep them dry before applying gaskets, tapes and sealants. Apply gun grade sealants with an approved type of pressure gun having nozzles of proper size and shape to fit the various joints; drive sealants in with sufficient pressure to fill the joints full. Clean adjacent surfaces which have been soiled by tapes and sealants immediately before hardening. Apply surface primers, when used as per manufacturer's instructions.
- .2 Seal joints between masonry or other adjacent material and frames and between frames, sills and other material. Use methods specified in Section 07920, Sealants. Caulk inside and outside.
- .3 Seal joints continuous to produce weatherproof and visually acceptable joint installation.

.3 Glazing:

- .1 Perform glazing in accordance with Section 08800, where greater requirements are not specified herein. Conform to Glass Association of North America (GANA), Laminated Glass Design Guide.

3.5 Adjustments

- .1 Upon completion of The Work and just prior to the handing over to the Owner or at a time as directed, inspect, test and adjust installation.
- .2 Inspect all units for damage and correct same immediately.

3.6 Cleaning

- .1 Maintain aluminum work in a clean condition throughout construction period, so it will be without deterioration or damage at time of acceptance. Select methods of cleaning which will promote achievement of uniform appearance and stabilized colours and textures for anodized aluminum.

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- .2 Demonstrate proper cleaning methods to Owner during this final cleaning. Prepare a "Cleaning and Maintenance Manual" listing types of cleaning compounds, cleaning methods, sealants, and glazing materials of The Work and submit 2 copies to Consultant.
- .3 Remove protective covering and coating from aluminum surfaces, inside and out, and clean surfaces, remove labels, stripes and protective devices and polish glass surfaces, immediately prior to final acceptance of The Work by Consultant.
- .4 Upon completion of The Work, remove all debris, equipment and excess material resulting from The Work of this Section from the site.

END OF SECTION

FINISH HARDWARE

PART 1 GENERAL

1.1 General Instructions

- .1 Read and Conform to:
 - .1 Division 1 requirements and documents referred to therein.

1.2 Summary

- .1 Work Included: Supply and Installation of all finish hardware
- .2 Related Sections: Following description of work is included for reference only and shall not be presumed to be complete:
 - .1 Supply of hollow metal doors and frames: Section 08 11 13, Steel Doors and Frames.
 - .2 Hardware Schedule issued as "Appendix A" with this specification

1.3 References

- .1 CAN/CGSB 69.17/ANSI/BHMA A156.2-03: Bored and Preamsembled Locks and Latches
- .2 CAN/CGSB 69.18/ANSI/BHMA A156.1-06: Butts and Hinges
- .3 CAN/CGSB 69.20/ANSI/BHMA A156.4-00: Door Controls (Closers)
- .4 CAN/CGSB 69.21/ANSI/BHMA A156.5-01: Auxiliary Locks and Associated Products
- .5 CAN/CGSB 69.22/ANSI/BHMA A156.6-05: Architectural Door Trim
- .6 CAN/CGSB 69.23/ANSI/BHMA A156.7-03: Template Hinge Dimensions
- .7 CAN/CGSB 69.24/ANSI/BHMA A156.8-05: Door Controls - Overhead Holders
- .8 CAN/CGSB 69.28/ANSI/BHMA A156.12-05: Interconnected Locks and Latches
- .9 CAN/CGSB 69.29/ANSI/BHMA A156.13-05: Mortise Locks and Latches
- .10 CAN/CGSB 69.31/ ANSI/BHMA A156.15-06: Closer/Holder Release Device
- .11 CAN/CGSB 69.32/ANSI/BHMA A156.16-02: Auxiliary Hardware
- .12 CAN/CGSB 69.34/ANSI/BHMA A156.18-06: Materials and Finishes
- .13 CAN/ULC S104-10: Standard Method for Fire Tests of Door Assemblies

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- .14 CAN/ULC S105-09: Standard Specification for Fire Door Frames Meeting The Performance Required by CAN/ULC-S104
- .15 CSA: Canadian Standards Association
- .16 NFPA: National Fire Protection Association
- .17 NFPA 80-10: Standard for Fire Doors and Other Opening Protectives
- .18 UL: Underwriters' Laboratories Inc.
- .19 ULC: Underwriters' Laboratories of Canada

1.4 Submittals

- .1 Product Data:
 - .1 Submit manufacturer's literature, data sheets for each type of material provided under this Section for Project. Data sheets shall provide all required information. Submit 3 copies of detailed instructions for maintaining, preserving and keeping materials in clean and safe conditions and give adequate warning of maintenance practices or materials detrimental to specified materials. Submit manufacturer's installation instructions.
- .2 Finish Hardware to be supplied and installed by Upper Canada Specialty Hardware Contact: Mike Kamada mikek@ucsh.com
- .3 Shop Drawings:
 - .1 Submit Shop Drawings for hardware installation in accordance with Section 01 30 00.
 - .2 Submit Shop Drawings in schedule form, prepared by an Architectural Hardware Consultant (AHC), indicating manufacturers' names, Product descriptions, makes, models, materials, finishes, functions, location of each item, complete keying schedule and other pertinent information. Repeat hardware item numbers used in Finish Hardware Schedule. Include list of abbreviations and finish symbols and their meaning. Include manufacturer's cut sheets for each hardware item.
- .4 Samples:
 - .1 Submit samples in accordance with Section 01 30 00.
 - .2 Do not order hardware from manufacturer until samples have been approved by Consultant. Hardware and finishes supplied shall be identical to approved samples.
 - .3 Do not submit substitutions to accepted alternates.

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1.5 Quality Assurance

- .1 Supplier Qualifications: A recognized architectural door hardware Supplier for exit devices, cylinders, power supply, magnetic holders and similar items that has a record of successful in service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and employs an experienced AHC who is available to Owner, Consultant and Contractor at reasonable times during course of the work for consultation.
- .2 Supervision: Provide following Project services relative to Project co-ordination, supervision and inspection:
 - .1 Provide services of AHC familiar with type of work being performed, with type of Project, for preparation of hardware Shop Drawings (schedule), keying, coordination with other trades, consultation with Owner and Consultant and for performing on-site inspections
 - .2 Verify hardware listed in the Schedule is of proper selection for its apparent function and required fire rating or submit alternative proposals. Ensure hardware for fire-rated openings complies with requirements of authorities having jurisdiction, with door and frame manufacturers tested and labeled assemblies and that hardware items bear certification labels.
 - .3 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada. Ensure door and hardware are tested as an assembly to maintain labeling requirements. Hardware for fire rated door and frame assemblies shall conform to CAN/ULC S104-M, CAN/ULC S105-M and NFPA 80. Electronic hardware such as magnetic locks, power supplies, key switches and alarm panic bolts shall be ULC labeled.
 - .4 Ensure mortise locks, exit devices and door closers conform to both BMHA certified ANSI A156 Series Grade I classifications and to ADA (American Disabilities Act) standards.
 - .5 Inspect to verify hardware has been properly installed and is functioning satisfactorily.
 - .6 Recommend adjustments.
 - .7 Replace defective hardware.
 - .8 Check door closers after installation to ensure adjustment such as back checking degree has been properly made and if not, make such adjustments or instruct those installing hardware to make these adjustments.
 - .9 Submit digital copy of the finalized schedule to Consultant for acceptance.

1.6 Delivery, Storage And Handling

- .1 Supply scheduled hardware to the Place of the Work.
- .2 Pack hardware in suitable wrappings and containers to protect from damage during shipping and storage. Enclose accessories, fastening devices and other loose items with each item. Pack screws, bolts and fastenings necessary for

FINISH HARDWARE

proper installation in same package. Mark packages for easy identification legibly indicating manufacturer's numbers, types, sizes. Markings must include floor, item number and door number.

- .3 Provide assistance in counting hardware on major shipments to confirm hardware is shown as shipped. Provide inventory list with Finish Hardware Schedule. Obtain assistance from hardware Supplier to confirm hardware has been delivered to site correctly for all major shipments. Be responsible to unload hardware, to check hardware shipments and to set up shelving and organize hardware room.
- .4 Provide templates, template information, installation instructions and details necessary for preparation and installation of hardware.
- .5 Provide installation instructions for hardware supplied.

1.7 Warranty

- .1 Warrant work of this Section for period of 2 years for general, 10 years for closers and lifetime for butt hinges against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period including making good any work damaged by this work, to satisfaction of Consultant and at no expense to Owner.

1.8 Maintenance

- .1 Maintenance Instructions:
 - .1 Instruct Owner's designated representative in proper care and preventative maintenance of hardware to assure longevity of operation.
 - .2 Provide 3 copies of descriptive information, operating, adjustment and maintenance instructions, and "As-Built" record of location of each hardware group and other pertinent information.
 - .3 Provide maintenance data, parts list and manufacturer's instructions for each type of door closer, lockset, fire exit hardware and door holder. Provide manufacturer's instructions for proper care of hardware, including lubrication, for incorporation into operation and maintenance instruction manual.
 - .4 Provide this information in 3-ring binders suitably identified in accordance with requirements of Section 01 70 00.
- .2 Tools for Maintenance: Prior to date of Substantial Performance, Supply a complete set of specialized tools as needed for Owner's continued adjustment, maintenance and removal and replacement of builders hardware.

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PART 2 PRODUCTS

2.1 Finish Hardware

- .1 Provide door closers, locksets and latch sets meeting ANSI/BHMA Qualified Products List. Provide finish hardware in accordance with Finish Hardware Schedule appended to Document 00 01 20. No substitutions are allowed without written approval of Consultant.
- .2 Use one manufacturer's products only for all similar items, or except where noted in the specifications herein, or where practical to ensure that the door function is achieved and one manufacturer does not meet all standards. Products from alternate manufacturers not specifically listed in these specifications are not acceptable
- .3 Supply door hardware for work of Sections 08 11 13, 08 14 00 and 08 15 00 for installation as part of the work of Section 06 90 00.
- .4 Fire Rated Openings: Provide hardware for fire-rated openings in compliance with current issue of NFPA 80. Provide only hardware which has been tested and listed by ULC for the types and sizes of doors required and complies with requirements of door and door frame labels.
- .5 All hardware in patient areas to be ligature resistant.

2.2 Fastenings

- .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .2 Exposed fastening devices to match finish of hardware.
- .3 Where pull is scheduled on 1 side of door and push plate on other side, Supply fastening devices and Install so pull can be secured through door from reverse side. Install push plate to cover fasteners. Prepare holes or cutouts for cylinders or deadlocks in push plates where applicable.
- .4 Use fasteners with material through which they pass.
- .5 Only "3M" brand double sided tape for kick plates, armor plates and push plates is acceptable, where specified. Only areas in which patients are not permitted, or permitted under supervision only, may have kick plates applied with 3M tape.
- .6 Where required all exposed fasteners to be TORX, or equivalent, tamperproof fasteners.

2.3 Keying

- .1 Key locks to Owner's requirements (construction master keyed, grand master keyed, submaster keyed, as directed).

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- .2 Provide interchangeable cores to Owner's grand master key system. Number of keys to be determined by Owner. Provide a minimum of 2 cut keys per cylinder, but coordinate the "maximum" quantity per key group with Owner before ordering final amounts.
- .3 Provide operational construction cores for all locks and cylinders, NOT JUST exterior doors. Cores will be returned to manufacturer when permanent cores are provided.
- .4 Include and Provide for cost of permanent cores
- .5 Provide 20 construction keys for use by Contractor, as well as 4 construction control keys for use by Owner.

2.4 Hardware Products

- .1 Butt Hinges: Provide 3 or 5 knuckle, concealed bearing butt hinges, except where continuous hinges or pivots are specified. Provide heavy duty hinges for high traffic doors, doors over 900 mm (3'-0"), stair doors, corridor doors and doors where specified in Finish Hardware Schedule. Provide stainless steel hinges for showers, or doors in high humidity areas.
- .2 Any proposed alternated must be of the same quality, dimensions, finish and function as those specified.
- .3 All butt and continuous hinges in patient areas to have "hospital tips", non-removable pins and tamperproof fasteners.
- .4 All hinges will meet, or exceed, the strength, size and performance requirements set by the manufacturer.
- .5 Continuous Hinges: Prior to ordering verify compatibility with door thicknesses, specifically related to thermally broken doors. Provide continuous hinges on interior doors as determined by the requirements of the project. Provide extruded heavy duty geared continuous hinges on exterior aluminum doors. Hinges shall have no more than 12 mm (1/2") clearance at top and bottom of hinge in relation to door. All full height hinges shall be knuckle type with nylon bearings between each knuckle.
- .6 Cylinders: Rim and mortise cylinders shall be high security interchangeable core type. Ensure proper cams or tail-bars are specified and supplied correctly when used in locks other than manufacturers. Verify keying details. Provide factory master-keyed interchangeable core permanent cylinders. Provide proper cylinder collars and blocking rings as required by lock application. Refer to Finish Hardware Schedule for details and quantities of blocking rings and cylinder collars. Cylinders shall be provided with a high security keyway which cannot be ordered without written authorization from Owner to manufacturer. Key-blanks shall only be obtainable from manufacturer with only proper authorization and only duplicated by authorized staff on site or locally. Cut keys which require only

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to be cut by manufacturer shall not be acceptable. Where Owner requires their keys to be cut and minor key changes to cylinders on site and still has high security cylinders that cannot be duplicated by unauthorized staff or locksmiths. Provide [400] key-blanks for Owner's use in addition to the required cut keys.

- .7 Cylinders: All cylinders shall meet the requirements of UL437 including those for pick and drill resistance. Pick resistance shall incorporate two or more independent locking mechanisms including a pin tumbler device with six top pin chambers with mushroom shaped driver pins and/or a coded sidebar locking mechanism operated independently from the six top pin tumbler device. All cylinders shall be factory master keyed
- .8 Locksets and Latch sets: Provide heavy duty grade 1 mortise locks with solid steel levers, design. Provide locks and latches with field reversible latches and through bolted trim. Deadlocks shall be heavy duty small case mortise type, complete with ANSI strikes to suit application. On certain washroom doors where specified, Provide thumb turns both sides of door to allow quick emergency access to rooms without use of special tools or keys. Ensure proper cams on cylinders are provided where required. All locksets in patient areas to be equipped with tamperproof fasteners. All operating trim in patient areas to be of an "anti-ligature" design. Lever trim in areas not occupied by patients will meet ADA and OBC requirements for barrier free accessibility.
- .9 Locks and latches shall be mortise lever sets incorporating anti-ligature design. Latch bolts shall be anti-friction with separate latch guard, ULC labels for all fire rated doors and 19 mm (3/4") throw. Auxiliary dead bolts are to have hardened steel pin inserts. Where lever trim is required, trim shall have concealed through bolt mounting and lever shall be solid cast or forged material. Key all locksets to a registered factory system. When construction keying is listed, deliver permanent keys in individually marked envelopes with door numbers and keying information. When listed, Supply key cabinet with 2 tag control system.
- .10 Door Closers: Door closers shall have full adjustment features including back check, general speed, and latch speed control. All interior door closers shall have reduced opening force spring power to meet barrier free requirements of 22 N (5 lbs.). Provide mounting plates for door closers required to be mounted on special door and frame conditions. Provide options and arms for proper applications as specified in detailed Finish Hardware Schedule. Provide concealed closers for aluminum doors. Coordinate all dimensions, applications and related hardware compatibility with aluminum Shop Drawings before ordering hardware. Coordinate size and locations of cutouts for overhead stops where required. Provide magnetic hold open closers, complete with 24V transformers where specified. Coordinate electric requirements with electrical trades before ordering hardware. Provide heavy duty double acting closers concealed in head where self-closing doors are required on emergency double acting applications. Coordinate degree of opening with wall and site conditions before ordering.
- .11 Push plates, Pulls, Kick plates, Armor Plates, Door Channels, Door Edges and Guard Bars:

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- .1 Provide minimum 1.214 mm (18 gauge) type 304 brushed stainless steel push plates, kick plates, armor plates, door edges and channels unless specified otherwise, or as required by fire rating requirements in case of some armor plates and door channels. Kick plates and armor plates, except where specified otherwise shall be installed with 3M double sided tape. In patient areas, tamperproof fasters are required.
- .2 Be responsible to coordinate and confirm all dimensions, sizes and compatibility of above mentioned Products. Ensure proper cutouts are coordinated with other hardware items on same door. Generally leave 1.5 mm to 3 mm (1/16" to 1/8") of clearance around cutouts in door channels for deadlocks, lock and latch fronts, roller catches, flush bolts and strike plates where required.
- .3 Ensure exposed edges are free from burrs and sharp edges and cutouts are smooth and straight. Provide flat or oval head screw type fastenings and ensure corresponding plate is countersunk correctly to suit fastening.
- .4 Coordinate armor plate heights with Owner to ensure it is located in ideal location for door protection for beds and stretchers (generally top edge of "upper" plate is just below bottom of hospital push plate which is centered at 1150 mm (46")), if required. Door edges shall have no more than 6 mm to 12 mm (1/4" to 1/2") clearance at top and bottom of door after installation. Mount screws for door channels and door edges on door edge, not on door face. Supplied with #8 or #10 flat head wood screws. Ensure "edge mounted" screws are located to avoid butt hinges.
- .5 Clearance between door edges, door channels or continuous hinges in relation to kick plates and armor plates shall be between 6 mm to 12 mm (1/4" and 1/2") after installation. Door edges and channels with 19 mm (3/4") face (rather than 28 mm (1-1/4")) shall be preferred. Coordinate all sizes before ordering these Products
- .12 Wall Stops or Floor Stops: Wall stops shall only be used on proper wall conditions such as concrete or masonry surfaces, or, where the walls have been reinforced to accept them. Floor stops shall have sufficient height suit floor conditions and undercut doors. All floor and wall stops to be provided with tamperproof fasteners where required.
- .13 Seals, Thresholds: Where required, Provide perimeter seals to fully cover gaps between door, frame, and floor condition to seal against weather, sound and smoke. Frame gasket shall be closed cell neoprene, or silicon. Aluminum frames shall be equipped with felt inserts by frame Suppliers. Provide appropriate drop insert for carpet where required. Provide thermally broken thresholds for exterior doors.
- .14 Electric Strikes on all doors, where required, to be heavy duty type with cast stainless steel bodies and be complete with adjustable lip lengths. Coordinate voltages with security division. Electric strikes must be cUL, or ULC listed for use on fire doors when used in fire rated openings. The use of electric strikes in patient areas is to be kept to a minimum.

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- .15 Miscellaneous: Substitutions shall be of same material, quality, gauge, dimensions and finish of those specified. Warranty of proposed alternates shall also meet or exceed specified Products.

PART 3 EXECUTION

3.1 Examination

- .1 Before supplying any hardware and installation instructions, carefully check Drawings for work requiring hardware verify door swings, door and frame materials and operating conditions and assure 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. Ensure doors, frames and panels requiring additional support are reinforced.
- .3 Point out special requirements to installer and ensure final adjustment of hardware, in particular closer arms, valves and locksets has all been done properly.
- .4 Be responsible to check and confirm dimensions for all hardware for this Project, including door protection, overhead stop sizes, exit devices, power door operators and other related hardware items that may require coordination for sizing.
- .5 Be responsible to coordinate and confirm all electric hardware requirements with related trades and consultants.
- .6 Electric Hardware Responsibilities: Hardware Supplier is responsible for following:
- .1 Coordinate and confirm all Opening Schematics with related trades and consultants for electrical hardware applications, including but not limited to, electric latch retraction exit devices, power transfers, electric strikes, power door operators and associated accessories, mag-locks, electrically operated door equipment, power supplies and key switches for operators.
- .2 Ensure installation trades have installed equipment supplied in this Section correctly. Report any incorrect installation. Do not wire or commission equipment that has been incorrectly installed.
- .3 Install, adjust and test all mechanical operations of electric hardware. For example, electric strikes shall be adjusted to allow locks or exit devices to latch correctly taking into account seals, wind pressures, or any other issues affecting normal operation of door and hardware while electric hardware is not activated.
- .4 Ensure electric action of electric hardware supplied under this Section performs correctly.

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- .5 Where applicable, arrange to either remove item in order to make wire connections, or make connections during initial installation. Do not inhibit other trades from performing their work as a result of electrical connections.
- .6 Mag-lock installation shall be by hardware installer. Ensure mechanical operation of door and hardware is not impeded by mag-lock installation.
- .7 Be responsible to ensure related trades with respect to electric hardware are provided. Consult Owner to ensure proper coordination and commissioning of electric hardware.
- .8 Mag-lock permits to be provided by contractor.
- .9 Conduit, junction boxes, 120V connections and wire, including low voltage wire, shall be provided by Division 26. Coordinate and confirm Division 26 has applicable information from this Section in order to perform their work correctly.
- .10 Provide low voltage connections for push button actuators, motion detectors, presence sensors and key switches related to power door operators. Coordinate fire alarm, 120VAC connections, security system connections and any other related connections for power door operators with related trades. After all connections are made, commission equipment, test and adjust to suit requirements of hardware and operator applications.
- .7 Provide ULC or UL approved hardware where labeled doors are specified. Provide CSA approved electrical devices where required.

3.2 Installation

- .1 Supply finish hardware to the work of Section 06 90 00.

3.3 Field Quality Control

- .1 Inspection: After installation, have hardware inspected by an independent representative, an experienced architectural hardware consultant who is a member of the Door and Hardware Institute, who shall certify in writing with a copy to Consultant, items and their installation are in accordance with Specification requirements and are functioning properly and notify Consultant of any cases where it has not been properly installed, is defective or is not as specified. Replace or re-install defective or improperly installed hardware at no cost to Owner.

END OF SECTION

INTERIOR GLASS AND GLAZING

PART 1 GENERAL

1.1 Summary

- .1 This Section includes multiple glazing types/systems.

1.2 Section Includes

- .1 Laminated Security Glazing (GL- 1)
- .2 Fire Laminated Security Glazing (GL- 2)
- .3 Tempered Glazing. (GL- 3)
- .4 Fire Rated Tempered Glazing. (GL - 4)
- .5 Glazing accessories.

1.3 Related Sections

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- .2 08 51 13 Aluminum Windows – Insulated Glazing units GL-5 and Spandrel Glass GL-6 on exterior windows
- .3 08 52 11 Interior Aluminum Security Sull Sashes – Glazing for sull sash GL-6
- .4 08 88 16 Vision Control Insulating Glass Units – Security glazing for units
- .5 08 87 00 Applied Films – To be applied as scheduled.

1.4 References

- .1 Use latest edition of standards referenced below;
- .2 CAN/CGSB 12.20-M89 - Structural Design of Glass for Buildings
- .3 ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
- .4 ASTM C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
- .5 ANSI H35.1 - American National Standard Alloy and Temper Designation Systems for Aluminum

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- .6 ASTM C920 - Standard Specification for Elastomeric Joint Sealants
- .7 ASTM E119 - Standard Test Methods for Fire Tests.
- .8 UL 263: Fire Tests of Building Construction Materials.
- .9 ANSI Z97.1: Safety Glazing Materials Used in Buildings.
- .10 CPSC 16 CFR 1201: Safety Standard for Architectural Glazing.

1.5 Quality Assurance

- .1 Qualifications:
 - .1 Installers: Provide the work of this section executed by specialist Subcontractor who shall be thoroughly trained and experienced in skills required, be completely familiar with referenced standards and requirements of the work of this section, and personally direct installation performed under this section.
 - .2 Mirror installations: Installation only by applicator trained and approved by adhesive manufacturer for application of its products.
- .2 Single source requirements: Provide materials from a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source for each type and class required.

1.6 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 full-size details indicating each type of glazing condition; show dimensions and materials with complete notations.
- .4 Samples:
 - .1 Submit samples of each type of glass, minimum 2 - 305mm (12") x 305mm (12") indicative in respects of required characteristics for each type of glass specified to be used in the Work.
 - .2 Provide samples for security glazing Assemblies for Consultant's approval.
 - .3 Submit samples of glazing materials.

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- .5 Mock-ups:
 - .1 Construct a mock-up of an interior screen and fire rated door unit incorporating security glazing in location acceptable to Consultant.
 - .2 Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.
- .6 Closeout submittals:
 - .1 Submit closeout submittals in accordance with Section 01 77 00.
 - .2 Submit maintenance and cleaning instructions for glass and glazing for incorporation into the operating and maintenance manuals.

1.7 Design Requirements

- .1 Design glass to CAN/CGSB 12.20-M89. Perform stress analysis. Design units to accommodate live, dead, lateral, wind, seismic, handling, transportation, and erection loads.
- .2 Provide compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed for adhesion.
- .3 Glazing kits in interior doors and hollow metal screens as required to have no-step kits or clean room style kits to prevent patients from using window frames in doors or screens as a foothold for ceiling access.
- .4 Design glass and glazing as guards, where glazing is located less than 1070 mm (42") above finished floor, to requirements of the building code. Temper glass as required to meet requirements for guard.
- .5 Provide annealed, heat strengthened, and tempered lights where required by the building code.

1.8 Environmental Requirements

- .1 Proceed with glazing only when glazing surfaces are accumulating no moisture from rain, mist or condensation.
- .2 When temperature of glazing surfaces is below 4°C, obtain approval of glazing methods and protective measures which will be used during glazing operations.

1.9 Coordination

- .1 Coordinate with Work of Sections 08 11 13, 08 51 13 and 08 52 11.
- .2 Coordinate with Work of Section 08 52 11 for installation of security glazing at windows and curtain walls as required to meet safety requirements.

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1.10 Warranty

- .1 The glazing systems shall perform properly to the extent that the design and Contract Documents permit such performance for the duration of the warranty period.

PART 2 PRODUCTS

2.1 Glass Materials

- .1 GL-1 Laminated Security glazing (laminated / heat strengthened glass):
 - .1 Laminated safety glass to CAN/CGSB 12.1-M90, Laminated glass shall consist of two panes with clear interlayer as indicated on glazing schedule, and applied security film, minimum overall 10.3 mm thick. Provide curved glass at reception desk where indicated on floor plan.
 - .2 Laminated glass products to be fabricated free of foreign substances and air or glass pockets in autoclave with heat plus pressure.
 - .3 Acceptable laminated security glazing assembly:
 - .1 10.3 mm Laminate consisting of the following:
 - .1 4mm heat strengthened glass.
 - .2 2.3 mm ionoplast interlayer.
 - .3 4mm heat strengthened glass.
 - .4 0.1524 mm (6 mil) security film in accordance with Section 08 87 00; provide film on patient side, where patients are on both side provide film on both sides.
- .2 GL-2 Fire Laminated Security glazing:
 - .1 Fire-rated multi-laminated safety glass to CAN/CGSB 12.1-M90 and CAN/ULC-S101. Laminated glass shall consist of float glass layers with clear intumescent interlayers as indicated on glazing schedule to provide fire resistance, impact safety, and thermal barrier performance.
 - .2 Laminated glass products to be fabricated free of foreign substances and air or glass pockets in autoclave with heat plus pressure.
 - .3 Acceptable laminated security glazing assembly:
 - .1 Pilkington Pyrostop multi-laminated fire-resistant glass consisting of the following:
 - .1 Multiple layers of clear float glass
 - .2 Clear, clear-turning-opaque intumescent interlayers
 - .3 Overall thickness, fire rating (45/60/90/120 minutes), and optional security/bullet-resistant laminations as indicated on drawings and glazing schedule.

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- .4 0.1524 mm (6 mil) security film in accordance with Section 08 87 00; provide film on patient side, where patients are on both side provide film on both sides.
- .3 GL-3 Tempered and heat treated glass: CAN/CGSB 12.1-M90, Type 2, Class B, Category II; minimum 6 mm thick.
 - .1 0.1524 mm (6 mil) security film in accordance with Section 08 87 00; provide film on patient side, where patients are on both side provide film on both sides.
- .4 GL-4 Non-wired fire rated security glazing:
 - .1 Clear ceramic laminated, fire rated glass for use in impact safety-rated locations such as doors, and borrowed sidelights.
 - .2 Thickness: 8 mm (5/16").
 - .3 Fire ratings: Minimum 45 minutes to 90 minutes.
 - .4 Impact Safety Resistance:
 - .1 Comply with Patient Safety Standards Materials and Systems Guidelines Recommended by the New York State Office of Mental Health, 4th Edition.
 - .2 Impact test performance: Glazing capable of withstanding minimum of ten 2000 ft-lb. impact loads from 1 foot diameter impact object without breach, dislodging or breakage of the glass or glazing materials.
 - .5 Surface finish: Premium grade finish.
 - .6 Approximate visible transmission: 85%.
 - .7 Approximate visible reflection: 9%.
- .5 GL-5 Exterior Insulated Glazing Unit
 - .1 Refer to 08 51 13 for details.
- .6 GL-6 Exterior Spandrel Glass
 - .1 Refer to 08 51 13 for details.
- .7 GL-7 Security Glazing (Sull Sash)
 - .1 Refer to 08 52 11 for details.
- .8 Glazing and rebate primers, sealants, sealers, tapes and cleaners: Compatible with each other. Type as recommended by glass manufacturer.

2.2 Glazing Materials (non-fire rated)

- .1 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.

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- .2 Glazing gaskets: Moulded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
 - .1 Preformed, EPDM, silicone compatible, to ASTM C864.
 - .2 Preformed silicone to ASTM C1115.
- .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 Preformed, EPDM, silicone compatible, to ASTM C864
 - .2 Preformed silicone to ASTM C1115.
- .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 Preformed, EPDM, silicone compatible, to ASTM C864
 - .2 Preformed silicone to ASTM C1115.
- .5 Edge blocks: Moulded or extruded material of hardness needed to limit glass lateral movement (side walking) made from one of the following:
 - .1 Preformed, EPDM, silicone compatible, to ASTM C864
 - .2 Preformed silicone to ASTM C1115.
- .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.
- .8 Glazing channel shapes:
 - .1 Extruded aluminum 6063-T5 alloy to ANSI H35.1 with a minimum yield of 138 MPa (20015 PSI), free from defects impairing appearance, strength and durability. Tracks susceptible to wear shall be extruded from aluminum 6061-T6 alloy to ANSI H35.1.
 - .1 Metal cladding:
 - .1 ANSI Type 304 stainless steel.
 - .1 Finish: No. 4 brushed.
 - .2 Stainless steel channel and shapes; Type 304:
 - .1 Finish: No. 4 brushed.
- .9 Butt glazing joint sealant:
 - .1 Medium-modulus, neutral-curing silicone sealant; complying with ASTM C920, Type S, Grade NS, Application G, Class 25.
 - .2 Colour: as selected by Consultant from full colour range.

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2.3 Glazing Accessories (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, 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, gray colour.
- .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.

2.4 Fabrication

- .1 Grind and polish exposed glass edges, unless otherwise indicated.

PART 3 EXECUTION

3.1 Inspection

- .1 Verify that openings to receive glazing are square and plumb, correctly sized, and within acceptable tolerances to maintain uniform face and edge clearances.
- .2 Inspect butt and mitre joints in framing. Seal joints found to be open with a compatible sealant prior to glazing.
- .3 Ensure glazing pockets and all surfaces to be sealed are free of dust, construction debris, and all contaminants, and ready to receive glazing.
- .4 Report to the Consultant in writing any defects in existing work or unsatisfactory conditions at the Place of the Work. Do not begin to install glass until all conditions are satisfactory. Starting of the installation of the work of this section shall imply acceptance of existing conditions and surfaces.

3.2 Preparation

- .1 Ensure fabricated glass will fit openings and that all required clearances to framing will be maintained.

INTERIOR GLASS AND GLAZING

- .2 Clean contact surfaces with solvent and apply primers to surfaces to receive tapes and sealants in accordance with the manufacturer's instructions.

3.3 Workmanship

- .1 Install materials in accordance with manufacturer's specifications, and ensure that each material in a glazing system is compatible with the others.
- .2 Ensure that projections are removed from rebates and that sufficient depths and widths are provided.
- .3 Place setting blocks per manufacturer's design.
- .4 Install glass, rest on setting blocks, ensure full contact and adhesion at perimeter. Locate setting blocks at 1/4 points to span typically, and 1/8 points to span at long span locations, and in accordance with design requirements.
- .5 Install removable stops, without displacing tape or sealant.
- .6 Provide edge clearance of 3 mm (1/8") minimum.
- .7 Insert spacer shims to center glass in space.
- .8 Do not cut or abrade tempered or heat-treated glass.

3.4 Glazing

- .1 Cut glass to fit openings and to allow clearance which will ensure that glass is held firmly in place and is not subjected to stresses.
- .2 Ensure that glass edges are clean cut.
- .3 Do not cut or nip tempered glass to fit. Replace oversize or flared lights with entirely new units of proper dimensions.
- .4 Set units of glass in each series with uniformity of pattern draw, bow and similar characteristics.
- .5 Where sealants are used at butt joints, apply sealant in thin continuous clear bead.
- .6 Glazing Preparation and Methods:
 - .1 Clean glazing rebate surfaces of traces of dirt, dust, or other contaminants.
 - .2 Use glazing sealants without addition of thinners and from only containers with seals unbroken until opened for use.

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- .3 Prime glass rebates except for aluminum or stainless steel, unless otherwise recommended by glazing material manufacturer. Primer shall be suitable for materials affected.
- .4 Ensure that glazing sealants and tapes are in full contact with glazing surfaces.
- .7 Position glazing tape for proper seal and bedding at fixed stops.
- .8 Install fire rated glazing in strict accordance with fire rated glazing material manufacturer's specifications. Field cutting or tampering is not permissible.

3.5 Installation: Transaction Window

- .1 Install transaction window in accordance with manufacturers printed instructions and recommendations.
- .1 Provide sealants to perimeter in accordance with Section 07 92 00.

3.6 Finishing

- .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 77 00.
- .3 Remove and replace glass that is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents, and vandalism.
- .4 Wash and polish glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of Substantial Performance of the Work. Comply with glass manufacturer's recommendations for final cleaning.

END OF SECTION

APPLIED FILMS

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Section Includes

- .1 Security / anti-spall film (GLF-1).

1.3 Qualifications

- .1 Qualifications: Provide the work of this section, executed by competent installers with experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

1.4 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 samples prior to commencement of work of this section.
 - .2 Submit 3 - 200 mm x 200 mm (8" x 8") representative samples of each specified Product for review.
- .4 Closeout submittals:
 - .1 Submit closeout submittals in accordance with Section 01 77 00.
 - .2 Submit maintenance and cleaning instructions for incorporation into operating and maintenance manuals.
 - .3 Instruct Owner's representative on proper care and maintenance for work of this section.

1.5 Environmental Requirements

- .1 Conform to manufacturer's written documented temperatures, relative humidity, and substrate moisture content and temperature for application of materials of this section.

1.6 Delivery, Storage and Handling

- .1 Package materials and identify on attached labels the manufacturer, contents and material specification number.

APPLIED FILMS

1.7 Protection

- .1 Comply with manufacturer's printed recommendations respecting protection.

PART 2 PRODUCTS

2.1 Materials

- .1 Security / anti-spall film: multi-ply applied film, to CPSC 16 CFR Category II (400 ft./lb.) and ANSI Z97.1-09 (GLF-1).
 - .1 Thickness: Approximately 0.2032 mm (8 mil).

PART 3 EXECUTION

3.1 Examination

- .1 Examine glass surfaces to receive new film and verify that they are free from defects and imperfections which will affect the final appearance. Correct such deficiencies before starting film application.

3.2 Preparation

- .1 Window and window framing will be cleaned thoroughly with a neutral cleaning solution. Inside surface of the window glass shall be bladed with industrial razors to ensure the removal of any foreign contaminants.
- .2 Towelling or other absorbent material shall be placed on the window sill or sash to absorb moisture accumulation generated by the film application.

3.3 Installation

- .1 Apply films in accordance with manufacturer's written specifications.

END OF SECTION

VISION CONTROL INSULATING GLASS UNITS

PART 1 GENERAL

1.1 Summary

.1 Section Includes:

- .1 Vision Control glass with adjustable cordless louvers.
- .2 Manual operators.

1.2 Related Sections:

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- .2 Section 08 11 13 Steel Doors and Frames
- .3 Section 08 80 16 Interior Glass and Glazing

1.3 References

- .1 Use latest edition of standards referenced below;
- .2 CPSC 16 CFR 1201
- .3 CAN/ULC-S106 - Standard Method for Fire Tests of Window and Glass Block Assemblies
- .4 CAN/ULC-S104 - Standard Method for Fire Tests of Door Assemblies
- .5 American National Standards Institute (ANSI) Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
- .6 ASTM International (ASTM):
 - .1 C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
 - .2 C920 - Standard Specification for Elastomeric Joint Sealants.
 - .3 C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
 - .4 C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
 - .5 C1172 - Standard Specification for Laminated Architectural Flat Glass.
 - .6 C1294 - Standard Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials.
 - .7 C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

VISION CONTROL INSULATING GLASS UNITS

- .8 E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- .9 E2190 - Standard Specification for Insulating Glass Units Performance and Evaluation.
- .7 Glass Association of North America (GANA) - Engineering Standards Manual.
- .8 National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.
- .9 Underwriters Laboratories of Canada (ULC):
 - .1 Product Directories.
 - .2 263 - Fire Tests of Building Construction and Materials.
- .10 Underwriters Laboratories(UL):
 - .1 UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives

1.4 Administrative Requirements

- .1 Pre-Installation Conference:
 - .1 Attendance: Architect, Owner, Contractor, installer, and related trades.
 - .2 Review: Project conditions, manufacturer requirements, delivery and storage, staging and sequencing, and protection of completed work.

1.5 Submittals

- .1 Action Submittals:
 - .1 Product Data: Descriptive data and performance attributes for vision control glass.
 - .2 Samples: 8-1/2 x 13-1/2 inch 216 x 343 mm vision control glass samples.
- .2 Closeout Submittals:
 - .1 Maintenance Instructions: Manufacturer's printed instructions for cleaning and maintenance of glazed units, including operators.

1.6 System Description

- .1 Vision Control Glass: Control vision through insulating glass unit assemblies by means of rotating, cordless, interlocking, horizontal, vertical, extruded aluminum louvers with rotation controlled manually. Rotation of louvers results in reduction in or elimination of vision through glazed assemblies.

1.7 Quality Assurance

- .1 Regulatory Requirements:

VISION CONTROL INSULATING GLASS UNITS

- .1 Provide tempered or laminated safety glass for locations subject to human impact as required by Ontario Building Code.
- .2 Safety glass: Tested and labeled to CPSC 16 CFR 1201.
- .2 Installer Qualifications: Minimum 2 years' experience in work of this Section.
- .3 Fire Rated Glass Assemblies: Conform to ASTM E119, CAN/ULC-S104 and CAN/ULC-S106.
- .4 Smoke Rated Door Assemblies: Provide vision control glass units certified for use in UL 1784 smoke-rated sliding and swing door assemblies.
- .5 Laser Radiation Protection: When louvers are in closed position, prevent passage of following laser light types through vision control glass assemblies; 10 second exposure duration, from 0, minus 45, and plus 45 degree angles, tested to IEC 60825-4: 2009-06:
 - .1 CO2: 10.6 um wavelength, 100W cw output power.
 - .2 YAG: 1064 nm wavelength, 100W cw output power.
 - .3 Fiber: 810 nm wavelength, 100W pk output power.
 - .4 KTP: 532 nm wavelength, 100W cw output power.
 - .5 Holmium: 2100 nm wavelength, 100W pk output power.
 - .6 Excimer: 353 nm wavelength, 100W pk output power.
- .6 120 Volt Electrical Components: Listed by ULC.
- .7 Mockup:
 - .1 Provide mockup of each vision control glass unit.
 - .2 Locate in doors within project for review of installation.
 - .3 Approved mockup may remain as part of the Work.

1.8 Warranties

- .2 Type 1: Manufacturer's 20 year warranty against malfunction, mechanism failure and premature wear of internal parts, and material obstruction of glass units by dust or film formation due to failure of hermetic seal.
- .3 Type 2: Manufacturer's 1 year warranty against malfunction, mechanism failure and premature wear of internal parts, and material obstruction of glass units by dust or film formation due to failure of hermetic seal.

PART 2 PRODUCTS

2.1 Manufacturers

- .1 Contract Documents are based on

VISION CONTROL INSULATING GLASS UNITS

- .1 **Type 1** - Vision Control Mini by Unicel Architectural Corp., 1-800-668-1580, www.unicelarchitectural.com.
- .2 **Type 2** – Duralux Secure Vision Panel D800 Series by Kingsway Group., (800) 783-7980, www.kingswaygroupglobal.com.
- .2 Substitutions: Under provisions of Division 01.

2.2 Type 1 – Vision Control Mini

- .1 Corridor Side - Fire-Rated Glass:
 - .1 Source: Pilkington Pyrostop manufactured by Pilkington Group and distributed by Technical Glass Products.
 - .2 Composition: Multiple sheets of Optiwhite high visible light transmission glass laminated with intumescent interlayer.
 - .3 Fire rating and thickness: 45 minute rating, 23mm [7/8"].
- .2 Patient Side - Polycarbonate Sheet:
 - .1 12.7mm Type: ANSI Z97.1; plastic compound, ultraviolet stabilized, non-yellowing, abrasion resistant coated.
 - .2 Color: Clear
- .3 Louvers, Frames, And Operators
 - .1 Vision Control Mini Louvers: Hollow extruded aluminum, interlocking profile, 3/16 inch [5 mm] thick x 7/8 inch [22 mm] deep; Duracron K-1285 Glossy White finish.
 - .2 Glass Frame (Trim Kit): Steel, factory-glazed, sized to accept Glazing as specified with Vision Control Mini glass within 1 inch [25 mm] airspace for insertion into 1-7/8 inch [48 mm] thick doors; Duracron K-1285 Glossy White finish.
 - .3 Manual Operators: Removable key operator type. Corridor Side.

.2 Type 2 – Duralux Secure Vision Panel D8050

- .1 Patient Side - 19mm Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.
- .2 Corridor/Staff Side – 9.5mm Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.
- .3 Louvers, Frames, And Operators
 - .1 Louvers - 3.2mm [1/8"] Polycarbonate
 - .2 Frame:
 - .1 Secure (Patient) Side:
 - .1 Ligature-resistant
 - .2 pressed stainless steel fascia
 - .3 bolted from Corridor (Staff) Side,
 - .4 no visible screws / mounting hardware

VISION CONTROL INSULATING GLASS UNITS

- .2 Corridor (Staff) Side:
 - .1 Ligature-resistant
 - .2 pressed stainless steel fascia
 - .3 through-bolted to Secure (Patient)
 - .4 Side with security screws
- .3 Operators: T-Handle Keys (Provide 6 keys Total)
- .4 Function: Privacy stripes automatically shut when the key control or thumb turn is released
- .4 Certified: UL rated to UL1784

2.3 Accessories

- .1 Setting Blocks: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 70 to 90 Shore A durometer hardness.
- .2 Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 50 to 60 Shore A durometer hardness.
- .3 Glazing Gaskets: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone or thermoplastic polyolefin rubber, molded or extruded shape to fit glazing channel retaining slot.
- .4 Glazing Sealant:
 - .1 ASTM C920, Type M, Grade NS, Class 25; two component silicone type, low modulus, non-sag.
 - .2 Sealant backing: ASTM C1330, Type O, size and density to control glazing sealant depth and produce optimum glazing sealant performance.
 - .3 Compatible with glass unit edge seals; tested to ASTM C1294.

2.4 Fabrication

- .1 Sealed Insulating Glass Units: Comply with ASTM E2190.
- .2 Laminated Glass: Comply with ASTM C1172 and ANSI Z97.1.

PART 3 EXECUTION

3.1 Preparation

- .1 Clean glazing rabbets; remove loose and foreign matter.
- .2 Remove protective coatings on metal surfaces.
- .3 Clean glass just prior to installation.

VISION CONTROL INSULATING GLASS UNITS

3.2 Installation

- .1 Install in accordance with glass manufacturer's instructions, approved Shop Drawings, and GANA Manual.
- .2 Maintain manufacturer's recommended edge and face clearances between glass and frame members.

END OF SECTION

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 Section Includes

- .1 Gypsum board and joint treatment.
- .2 Gypsum interior sheathing;
 - .1 Fire-rated Gypsum Board
 - .2 Abuse and impact resistant gypsum board.
 - .3 Mould and moisture resistant board.
- .3 Acoustic attenuation
- .4 Light gauge non-load bearing metal stud wall framing and furring.
- .5 Heavy gauge metal stud wall framing where noted on drawings
- .6 Vertical and Horizontal Shaft Wall Enclosures and Assemblies
- .7 Metal channel ceiling framing.
- .8 Patching of voids where existing delaminated wall plaster has been removed
- .9 Metal access panels in gypsum board ceilings
- .10 Cement board

1.2 Related Sections

- .1 Section 06 10 13 Rough Carpentry – Installing blocking into partition assembly
- .2 Section 07 84 00 Firestopping and Smoke Seals – fire stopping of joints in gypsum board assemblies
- .3 Section 07 92 00 Joint Sealants – Sealing of joints in gypsum board assemblies
- .4 Section 08 11 13 Steel Doors and Frames – framing door and screen openings and setting frames into stud assemblies
- .5 08 34 m00 Special Function Doors – framing door openings and setting frames into stud assemblies.

1.3 Unit Allowance

- .1 In addition to access doors shown in drawings, include for supply and installation of the following to be used where required.

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- .1 Surface mounted anti-ligature wall access door with flange:
 - .1 Up to 18" X18": quantity - 10
- .2 Surface mounted anti-ligature ceiling access door with flange:
 - .1 Up to 12" x12": quantity - 10
 - .2 Up to 24"x24": quantity – 10
- .3 Supply key operated cylinder cam latch for all access doors (Keyed alike)
- .4 The following surface mounted ceiling access doors are to be included in base contract and not as part of unit allowance:
 - .1 Any access panels shown or indicated in drawings or called for in the mechanical or electrical scopes of work.

1.4 References

- .1 All references are to current edition
 - .1 AISI North American Standard for Cold-Formed Steel Framing
 - .2 ANSI A118.9 - Specifications for Test Methods and Specifications for Cementitious Backer Units.
 - .3 ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .4 ASTM C553 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
 - .5 ASTM A641/A641M Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
 - .6 ASTM C645 - Specifications for Non-Structural Steel Framing Members.
 - .7 ASTM A653/A653M -Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - .8 ASTM C754 - Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board.
 - .9 ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
 - .10 ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - .11 ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.
 - .12 ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.
 - .13 ASTM C1396/C1396M - Standard Specification for Gypsum Board.
 - .14 ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions and Elements.
 - .15 CAN/ULC S102 Surface Burning Characteristics of Building Materials and Assemblies

GYPSUM BOARD ASSEMBLIES

- .16 CAN/ULC S114 Standard Method of Test for Determination of Non-combustibility in Building Materials
- .17 CAN/ULC S702 Mineral Fibre Thermal Insulation for Buildings
- .18 CSA S136 North American Specification for the design of cold-formed steel structural members
- .19 GA-201 (Gypsum Association) - Gypsum Board for Walls and Ceilings.
- .20 GA-214 (Gypsum Association) - Recommended Specification: Levels of Gypsum Board Finish.
- .21 GA-216 (Gypsum Association) - Application and Finishing of Gypsum Board.
- .22 GA-254 - Fire-Resistant Gypsum Sheathing.
- .23 GA-600 (Gypsum Association) - Fire Resistance Design Manual.
- .24 GA-801 (Gypsum Association) - Handling Gypsum Board.
- .25 UL - Fire Resistance Directory.
- .26 ULC - Fire Resistance.
- .2 Provide written confirmation that suspended ceilings provide adequate support for the electrical fixtures, as required by the Electrical Safety Authority.

1.5 System Description

- .1 Accessory components included in Acoustic Attenuated partitions:
 - .1 sound attenuation batt insulation
 - .2 acoustic caulking along top and bottom of gypsum board on both sides and penetrations through wall assemblies. See Section 07 92 00 – Joint Sealants
 - .3 Putty packs around all electrical, communication, medical air and vacuum backboxes located in patient seclusion/bedroom partitions – refer to product section of this specification
- .2 Fire rated partitions including shaft wall assemblies shall:
 - .1 include as part of assembly fire sealant along top and bottom of both sides of partitions and penetrations through wall assemblies. Refer to 07 84 00 – Fire stopping and Smoke Seals.
 - .2 UL/ULC listed for fire resistance
 - .3 Construct enclosure assemblies to prevent deflection of assemblies or distortion of framing and support members, under fire or smoke load conditions.
 - .4 Maintain air and smoke tight seals during pressures or deflections identified above.
- .3 Design and install gypsum ceiling systems to:

GYPSUM BOARD ASSEMBLIES

- .1 Post disaster requirements designation of the Ontario Building Code.
- .2 be suspended from concrete deck or structural steel framing systems but not structural steel deck. Do not suspend any items from structural steel deck.
- .3 applicable requirements of all reference standards identified in this specification.

1.6 Submittals For Review

- .1 Section 01 33 00 – Submittal Procedures
- .2 Shop drawings: Submit the shop drawings in accordance with **Section 01 33 00** bearing stamp or seal and signature of the Professional Engineer for:
 - .1 Partition layout/framing, wall & bulkhead support framing
- .3 Product Data:
 - .1 Submit manufacturer's Product data sheets for Products proposed for use in the work of this section, including additional data such as galvanizing coating thickness as may be required to demonstrate compliance with the Contract Documents.
- .4 Attestation – Upon completion of the work of this project, provide a letter sealed by a Professional engineer licensed in the Province of Ontario to indicate that the work of this section has been designed and installed in accordance with the requirements of the Ontario Building Code and the requirements of this specification section.
- .5 Fire-rated assembly listings:
 - .1 Submit fire-rated assembly listings for each required fire resistance rated assembly for work of this section.
- .6 Engineer Confirmation:
 - .1 Submit letter from Engineer licensed in the Province of Ontario for:
 - .1 Acceptable fasteners and installation to be used on existing concrete deck
- .7 Mock up:
 - .1 Prepare framing and drywall to facilitate a mock-up for the one patient bedroom including the location of all outlets + Accessories. Co-ordinate framing requirements with Contractor and M&E subtrades. Attend meeting to review mock-up of headwall components installation. Make necessary adjustment to framing at headwall stemming from comments provided by Consultant at meeting.

GYPSUM BOARD ASSEMBLIES

1.7 Environmental Requirements

- .1 Environmental requirements, general: Comply with requirements of referenced gypsum board application standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum boards.
- .2 Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too rapid drying.
- .3 Protection: Provide adequate protection of materials and work of this section from damage by weather and other causes. Protect work of other trades from damage resulting from work of this section. Make good such damage at no additional cost to the Owner.

1.8 Quality Assurance

- .1 Perform Work in accordance with ASTM C840. GA-201, GA-214, GA-216 GA-254 and GA-600. Maintain one copy on site.
- .2 Applicator Qualifications: Company specializing in performing the work of this section with 5 years documented experience. Approved by manufacturer.
- .3 Single source responsibility: Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.
- .4 Fire resistance rating: 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.
- .5 Handling Gypsum Board: Comply with GA-801.

1.9 Regulatory Requirements

- .1 Conform to applicable code for fire rated assemblies as follows:
 - .1 Fire Rated Partitions: Assemblies as listed by ULC, UL to achieve rating indicated.

PART 2 PRODUCTS

2.1 Materials for Non-Loadbearing Steel Framing

- .1 Studs and Tracks:

GYPSUM BOARD ASSEMBLIES

- .1 Steel studs and track shall be in accordance with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) galvanized sheet steel G60
- .2 Minimum base sheet steel thickness: 20 ga, 0.84 mm (0.033") except as noted otherwise or where thicker ga is needed to suit application,
- .3 Profile
 - .1 C shape for standard framing
 - .2 CH shape for shaftwall stud.
- .4 Depth: refer to drawings
- .5 Provide top and bottom track. Thickness not less than indicated for studs and in width to accommodate depth of studs.
- .6 Provide deflection tracks at top of all full height partitions (slab to slab). Thickness not less than indicated for studs and in width to accommodate depth of studs.
- .7 Flat Strap and Backing Plate
 - .1 Sheet steel for blocking and bracing in length and width required
 - .2 Minimum base sheet steel thickness: 16 ga, 1.37mm (0.054")
- .2 Suspension System Components:
 - .1 Tie wire: ASTM A641/A641M zinc-coated, soft annealed, 1.21 mm minimum diameter, or of a material and size having equivalent corrosion resistance and strength.
 - .2 Hanger wire shall comply with ASTM A641/A641M zinc-coated, soft-annealed, 3.77 mm minimum diameter, or of a material and size having equivalent corrosion resistance and strength. The applicability of ULC fire tests may require hanger wire with a diameter greater than the minimum specified.
 - .3 Carrying Channels:
 - .1 Channels shall conform to ASTM C754 and shall be cold-formed from steel with a minimum 228 MPa yield strength and 1.37 mm base steel thickness.
 - .2 Channels shall have a minimum coating of Z120 galvanizing in accordance with ASTM A653/A653M. Other coatings (e.g. Aluminum-zinc alloy to ASTM A792/A792M) providing equal or better corrosion protection may also be used.
 - .3 Carrying channels shall have minimum 12.7 mm wide flanges and a minimum depth of 38 mm.
- .3 Furring, Framing, and Accessories: ASTM C645. GA-216 and GA-600.
 - .1 Channel bridging shall comply with AIS North American Standard for Cold-Formed Steel Framing (Product Data) and shall have minimum base steel thickness of 0.455mm with minimum 12.7mm wide flanges and depth of 19.1mm for installation in up to 63.5 mm studs and 38.1mm depth for installation between 92mm to 203.2 mm studs.

GYPSUM BOARD ASSEMBLIES

- .2 Furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and with minimum 12.7mm wide flanges and a depth of 19.1mm.
- .3 Hat-shaped, rigid furring channels shall comply with the AISI North American Standard for Cold-Formed Steel Framing (Product Data) and shall have a minimum base steel thickness of 0.455 mm and a minimum depth of 22.2 mm. The minimum width of furring attachment flanges shall be 12.7 mm.
- .4 Resilient furring channels are designed to reduce sound transmission and shall have a minimum depth of 12.7 mm.
- .4 Fasteners: of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates in accordance with ASTM C1002. GA-216.
- .5 Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

2.2 Gypsum Board Materials

- .1 Standard Gypsum Board: ASTM C1396/C1396M, 12.7 mm (½" inch) and 15.9mm (5/8") thick, maximum available length in place; ends square cut, tapered and bevelled edges.
 - .1 Use 15.9mm (5/8") thickness on all wall surfaces and bulkheads unless noted otherwise on drawings or in this specification section.
 - .2 Use 12.7mm (1/2") thickness on all ceiling surfaces specified to be finished with gypsum board unless noted otherwise on drawings or in this specification section.
- .2 Fire Rated Gypsum Board: ASTM C1396/C1396M, fire resistive Type X/C, UL, ULC, or ITS rated; 15.9 mm (5/8 inch) thick, maximum available length in place; ends square cut, tapered and bevelled square round edges. Refer to ULC Assembly for specific acceptable products.
- .3 Abuse and impact resistant gypsum board:
 - .1 Performance:
 - .1 Surface abrasion surface damage: to ASTM C1629.
 - .2 Soft-body impact penetration: to ASTM E695.
 - .2 Thickness: 15.9 mm minimum.
- .4 Mould and moisture resistant board: to ASTM C1396.
 - .1 12.7mm thick water-resistant gypsum board for use in all shower rooms.
- .5 12.7 mm and 15.9mm cement board to match thickness of adjacent gypsum board. Acceptable product: CGC Durock Cement Board with Edgeguard or equal.

GYPSUM BOARD ASSEMBLIES

2.3 Accessories

- .1 Acoustic Insulation:
 - .1 **INSUL-1:** Sound Attenuation and fire-resistant mineral wool batt Insulation; CAN/ULC-S702 Type 1, ASTM C665, Type I, non-combustible per CAN/ULC-S114 Non-combustible, formaldehyde-free,
 - .1 Product: Rockwool AFB Evo Acoustical Fire Batt Insulation or approved equal
 - .2 Thickness: to fit full cavity width in which it is installed.
 - .3 Application: for use in all interior fire rated or sound attenuated partitions identified in this specification section and on drawings
- .2 Acoustic and Fire rated Putty Pads: 1/8" thick non curing butyl rubber, asbestos and formaldehyde free. Product: Hilti CP 617 Putty Pad or Approved Equal
- .3 Acoustic Sealant: See section 07 92 00 joint sealants
- .4 Fire Sealant: See section 07 85 00 Firestopping and smoke seals
- .5 Tamper resistant and tamper-proof sealants in accordance with Section 07 92 00.
- .6 Corner Beads: GA-216, Metal corner bead for 90° corners. Paper corner bead
- .7 Edge Trim: GA-216; Type L bead, LK bead, LC bead. Use LC bead at window jambs.
- .8 Control Joint Trim: GA-216; Control Joint with removable strip.
- .9 Joint Materials:
 - .1 Type 1 - ASTM C475; GA-201 and GA-216; reinforcing tape, joint compound, adhesive, and water.
 - .2 Type 2 – chemically setting, rapidly hardening for use in heavy fill of existing plaster filled wall surfaces and lamination of gypsum board onto existing plaster. Acceptable product: CGC Durabond 90
- .10 Fasteners:
 - .1 Gypsum Board and Sheathing Fasteners: ASTM C1002, Type S12 and GA-216.
 - .2 Tamper resistant fasteners: Fasteners on all products and systems exposed to view and accessible to patients to be tamper resistant, hexalobular (6-lobed), pin-reject, internal drive system, conforming to ISO standard 10664.
 - .3 Hangar and Track Fasteners to concrete deck: Anchors shall be fabricated from corrosion resistant materials. Fasteners type must be

GYPSUM BOARD ASSEMBLIES

approved by Engineer engaged by Contractor for use in the existing concrete floor structure in the area of work. Submit Engineers approval for review by Consultant

.11 Access doors:

.1 In accordance with Divisions 21, 22, and 23 and Divisions 26, 27, and 28.

.2 Ligature Resistant Access Doors (For use in Patient Areas):

.1 Description:

- .1 Door: 14 gauge steel
- .2 Frame; 14 gauge steel
- .3 Concealed Hinge
- .4 Tamper proof spanner head cam latch with cylinder lock
- .5 Bakes white prime coat (finish coat to be site applied)
- .6 Fully gasketed door
- .7 Product: Acudor AL-9500 Anti-Ligature Access Door

.3 Insulated access doors (For use in Non-Patient Areas):

.1 Description:

- .1 Door: 16 gauge galvanized steel, welded, watertight pan, continuous galvanized piano hinge, keyed compression latch.
- .2 Frame; 16 gauge galvanized steel.
- .3 Insulation: 25.4 mm (1") thick polystyrene with 5.0 R-value at 23°C (75°F) temperature.
- .4 Finish: Prime coat of rust inhibitive electrostatic powder, baked grey enamel. (finish coat to be site applied)
- .5 Corners of trim shall be welded and ground smooth.
- .6 Provide closed cell neoprene gasketing between door and frame, minimum 9.5 mm (3/8") wide by 3.2 mm (1/8").

PART 3 EXECUTION

3.1 Examination

- .1 Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings or instructed by the manufacturer. Commencement of work of this section indicates acceptance of existing conditions.

3.2 Preparation

- .1 Suspended Assemblies: coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for

GYPSUM BOARD ASSEMBLIES

anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

- .1 Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- .2 Coordination with Sprayed Fire-Resistive

3.3 Materials

- .1 Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling track to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 600 mm o.c.
- .2 After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load
- .3 General
 - .1 Install supplementary framing, and fire treated blocking to support fixtures, equipment services, heavy trim, handrails, grab bars, toilet accessories, built in millwork, furnishings, or similar construction.
 - .2 Expansion Joints: Do not bridge building expansion joints with non-loadbearing steel framing members. Frame both sides of joints independently.
 - .3 Fire rated assemblies: Use materials and install in strict accordance with requirements of the listed ULC assembly

3.4 Metal Stud Installation

- .1 Install studs in accordance with ASTM C754. GA-201, GA-216 and GA-600. manufacturer's written instructions.
- .2 Metal Stud Spacing: 400 mm (16 inches) on centre unless noted otherwise.
- .3 Refer to Drawings for indication of partitions extending stud framing through the ceiling to the structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners. Where stud framing is to extend to ceiling only, attach ceiling runner securely to acoustic ceiling track or ceiling framing in accordance with manufacturer's written instructions and details indicated.
- .4 Door Opening Framing: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.

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- .5 Blocking: Nail wood blocking to studs. Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, wood frame opening, toilet accessories, hardware
- .6 Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- .7 Install stud flanges within framing system pointing in the same direction.
- .8 Door Openings: screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - .1 Install two studs at each jamb.
 - .2 Install cripple studs at head adjacent to each jamb stud, with a minimum 12.7 mm clearance from jamb stud to allow for installation of control joint in finished assembly.
- .9 Installation Tolerance: install each framing member so fastening surfaces vary not more than 3 mm from the plane formed by faces of adjacent framing

3.5 Wall Furring Installation

- .1 Erect furring for direct attachment to concrete masonry and concrete walls.
- .2 Erect furring channels vertically or horizontally; space maximum 400 mm (16 inches) on centre, not more than 100 mm (4 inches) from floor and ceiling lines. abutting walls. Secure in place on alternate channel flanges at maximum 600 mm (24 inches) on centre.

3.6 Furring for Fire Ratings

- .1 Install furring as required for fire resistance ratings indicated and to GA-600 requirements.
- .2 Fire-Resistance-Rated Partitions: install framing to comply with fire-resistance rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

3.7 Ceiling Framing Installation

- .1 Install in accordance with ASTM C754. GA-201 and GA-216.
- .2 Coordinate location of hangers with other work.
- .3 Install ceiling framing independent of walls, columns, and above ceiling work.
- .4 Do not attach hangers to:
 - .1 Steel roof deck

GYPSUM BOARD ASSEMBLIES

- .2 Rolled-in hanger tables of composite steel floor deck.
- .5 Do not connect or suspend steel framing from ducts, pipes or conduit
- .6 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
- .1 Size supplemental suspension members and hangers to support ceiling loads within [performance limits established by referenced installation standards]
- .7 Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 600 mm (24 inches) past each end of openings.
- .8 Laterally brace entire suspension system.
- .9 Installation Tolerances: install suspension systems that are level to within 3 mm in 3.6 m measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.
- .10 Co-ordinate location with subtrades requiring access panels to gypsum board ceilings and install framing to receive access door per access door manufacturer's requirements.

3.8 Acoustic Accessories Installation

- .1 Place INSUL-1 acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
- .2 Install acoustic putty pads around all electrical and communication back boxes and around pipe penetrations in all partitions that separate semi-private bedrooms and private bedrooms from adjacent semi-private bedroom and private bedrooms and in partitions between shared WRs and semi-private bedrooms:
 - .1 Select appropriate putty pad size for application
 - .2 Cut and hand wrap around all sides of box per manufacturer's instructions. Firmly press pad onto surface
 - .3 Do not stretch pad
 - .4 Lap pads minimum 12.7mm (1/2")
 - .5 Wrap around all conduits and cables entering box. Extend pad up conduit and cables minimum 38mm (1 1/2")
 - .6 Leave 12.7mm (1/2") lip around the edges of the open side of box to allow for sealing against drywall
- .3 Install acoustic sealant at gypsum board perimeter at: (Refer to details)

GYPSON BOARD ASSEMBLIES

- .1 Metal Framing: Two beads continuously each along top and bottom track
- .2 Face Layer: one continuous bead in gap along edge of board and adjacent surface.
- .3 Calk all penetrations of partitions by conduit, pipe, duct work and rough-in boxes.

3.9 Gypsum Board Installation

- .1 Install gypsum board in accordance with GA-201, GA-216 and GA-600. manufacturer's written instructions.
- .2 Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- .3 Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
- .4 Use screws when fastening gypsum board to metal furring or framing.
- .5 Double Layer Applications: Secure second layer to first with fasteners. adhesive and sufficient support to hold in place. Apply adhesive in accordance with manufacturer's written instructions.
- .6 Place second layer perpendicular parallel to first layer. Offset joints of second layer from joints of first layer.
- .7 Erect exterior gypsum soffit board perpendicular to supports, with staggered end joints over supports.
- .8 Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.
- .9 Place control joints consistent with lines of building spaces as indicated. as directed.
- .10 Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials and where indicated elsewhere.
- .11 Install backing board over metal studs in accordance with manufacturer's written instructions.
- .12 Cement Board
 - .1 Install cement board in accordance with manufacturer's instructions. Tape and finish all joints using alkali resistant fiberglass mesh tape inset in thinset modified mortar product recommended by cement board manufacturer."

GYPSUM BOARD ASSEMBLIES

- .2 In lieu of gypsum board, install cement board of same thickness as gypsum board at base of all walls to height of coved base where resinous flooring is specified with integral resinous coved base. Start gypsum board immediately above cement board.

3.10 Joint Treatment

- .1 Finish in accordance with GA-214 Levels.

3.11 Tolerances

- .1 Maximum Variation of Finished Gypsum Board Surface from True Flatness: 3 mm in 3 m (1/8 inch in 10 feet) in any direction.

3.12 Joint Finish Schedules

- .1 Level 1: Above finished ceilings concealed from view.
- .2 Level 4: All walls (exposed to view or covered).
- .3 Level 4: Ceilings exposed to view.

END OF SECTION

ACOUSTIC TILE CEILING SYSTEMS

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Section Includes

- .1 Acoustical tile ceiling systems

1.3 Quality Assurance

- .1 Qualifications: Provide work of this section, executed by competent installers with experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.
- .2 Single source responsibility: Obtain each type of acoustical ceiling unit and suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- .3 Coordination of work: 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 and fire suppression system components.

1.4 Submittals

- .1 Product data sheets:
 - .1 Submit manufacturer's Product data sheets for Products proposed for use in the work of this section.
- .2 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 Shop drawings shall be sealed by a licensed professional engineer to attest the system has been design to support the ceiling loads and seismic requirements for a post disaster building classification as defined in the Ontario building code.
- .3 Samples:

ACOUSTIC TILE CEILING SYSTEMS

- .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.
- .4 Certificate of compliance:
 - .1 Submit certificate of compliance stating that the suspension system provided, including materials and installation, comply with the requirements of the Contract Documents.
- .5 Closeout submittals:
 - .1 Submit maintenance materials and manual in accordance with Section 01 78 10.
 - .2 Maintenance data:
 - .1 Submit maintenance and cleaning instructions for acoustical ceiling systems for incorporation into the maintenance manuals.
 - .3 Maintenance materials:
 - .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 Design and Performance Requirements

- .1 Provide fire rated ceilings exactly as specified in Underwriters' Laboratories of Canada test designs.
- .2 Provide written confirmation that suspended ceilings provide adequate support for the electrical fixtures, as required by the Electrical Safety Authority.
- .3 Design and install acoustical ceiling systems to be suspended from concrete deck or structural steel framing systems but not structural steel deck. Do not suspend any items from structural steel deck.
- .4 Cut pieces of tapered or tegular edged panels shall have the edge routed with machine to match fabricated tegular edge. Touch-up cut edges with paint to match tile faces.
- .5 Suspension systems shall be manufactured to minimum requirements of ASTM C635/C635M-07. Concealed and exposed members shall be heavy duty with support runners and stabilizer bars for Type 5 System.
- .6 Install ceilings within 3 mm of dimensioned height above floor unless approved otherwise by the Consultant, and level within a maximum tolerance of 3 mm in 3 m.

ACOUSTIC TILE CEILING SYSTEMS

- .7 When assembled all moving parts must move freely and without binding.
- .8 Maximum deflection: L/360 in accordance with ASTM C635/C635M-07 deflection test.
- .9 Design suspension system to support safely, and without distortion, the superimposed loads of:
 - .1 Air supply diffusers and return grilles.
 - .2 Lighting fixtures.
- .10 Coordinate installation and cooperate with mechanical and electrical Subcontractors, to accommodate mechanical and electrical items, or any other work required to be incorporated in or coordinated with the ceiling system.

1.6 Environmental Requirements

- .1 Interior temperature of building to range from 15°C to 30°C and relative humidity of not more than 70% before and during installation.

1.7 Delivery, Storage, and Handling

- .1 Ship exposed members and mouldings in rigid crates to avoid damage. Bent or deformed material shall be rejected. Baked enameled members shall be suitably wrapped and protected against damage.
- .2 Deliver acoustical ceiling units to the Place of the Work in original, unopened packages and store in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- .3 Before installing acoustical ceiling units, permit them to reach room temperature and stabilized moisture content.
- .4 Handle acoustical ceiling units carefully to avoid chipping edges or damaging units.

PART 2 PRODUCTS

2.1 Acoustical Tiles

- .1 Lay-in acoustical tiles:
 - .1 Lain-in acoustical tiles flame Spread: Class A Flame Spread 25 or under, to CAN/ULC S102 to match existing
 - .2 Refer to Architectural Drawings for acoustical tile specifications.

ACOUSTIC TILE CEILING SYSTEMS

2.2 Metal Suspension Systems

- .1 Standard suspension system, non fire-rated:
 - .1 For use with acoustic tile ceilings; two directional, 610 x 1220 mm; 24 mm wide; to ASTM C635/C635M-07, 24 mm (15/16") interlocking tee system, designed to support acoustical panels in patterns indicated, consisting of main tees and cross tees. The system shall provide lock joint intersections of cross and main tees with lower flange extended and offset to provide a flush level intersection.
 - .2 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.
 - .3 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 E488-96(2003), conducted by a qualified independent testing laboratory.
 - .1 Fasteners exposed to weather, condensation, and corrosion: Zinc-plated or stainless steel fasteners in applicable product lines specified in preceding paragraphs.
 - .4 Hangers:
 - .1 Hot dipped galvanized annealed steel wire; recommended by manufacturer of suspension system, minimum 2.66 mm (0.1") (12 gauge).to support a maximum weight of 68 kg/hanger, #9 ga. to support a maximum weight of 140 kg/hanger.
 - .2 Hot dipped galvanized annealed steel rod: 4.8 mm diameter to support a maximum weight of 227 kg/hanger.
 - .3 Inserts and Hanger Connections: Self-drilling for use in concrete deck, of appropriate size to take hanger; or suitable type for use in structural steel framing systems, galvanized after forming, and suitable for structure and ceiling conditions and loading. Do not suspend any items from structural steel deck.
 - .4 Tie wire: 1.519 mm (0.06") diameter, galvanized steel wire.
 - .5 Suspension system accessories:
 - .1 Miscellaneous clips, splicers, connectors, screws, and other standard accessories shall be steel, zinc coated or cadmium plated, of strength and design compatible with suspension methods and system specified. Work shall include special accessories required to provide a complete assembly.
 - .2 Angle wall mouldings; hemmed with prefinished exposed flanges:

ACOUSTIC TILE CEILING SYSTEMS

- .1 For 24 mm (15/16") grid applications; angle moulding with exposed bottom flange of 22 mm (7/8").
- .3 Hold-down clips; manufacturer's standard type. Hold-down clips shall not be provided or permitted within the secure inpatient or secure forensic zones of the facility.

2.3 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 all exposed metal components in the ceiling assemblies. Colour shall be flat white.

PART 3 EXECUTION

3.1 Installation – General

- .1 Do not start installation until exterior glazing has been completed and exterior openings are closed in. Ensure wet work is completed and dried out to a degree acceptable to panel manufacturer before installation is commenced. Maintain uniform temperatures of at least 16°C for 72 hours prior to commencement of the work of this section and maintain temperature until completion of the work of this section.
- .2 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.
- .3 Do not commence installation until all 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 - 08, 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. Space main runner hangers at

ACOUSTIC TILE CEILING SYSTEMS

- minimum 610 mm (24") on centre for APC-7 wood acoustical plank ceiling system.
- .5 Locate hangers at not more than 150 mm (6") from ends of main tee members.
 - .6 Erect suspension systems at required heights and water tube, transit, or laser beam level to tolerance of 1:1200.
 - .7 Allowable tolerances: to ASTM C636 / C636M - 08.
 - .8 Design suspension systems for a maximum mid-span deflection not exceeding L/360.
 - .9 Install exposed tee members to pattern indicated. Securely attach hangers to main tee members.
 - .10 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.
 - .11 Space tee bars to suit ceiling panels and as detailed, and to accommodate lighting fixtures, diffusers and return grilles.
 - .12 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.
 - .13 Restrict creep inside module panels so that in all cases strips are centred on module lines.
 - .14 Install edge moulding as detailed where ceiling abuts vertical surfaces. Lap corners, use maximum lengths to minimize joints. Make joints square, tight and flush.

3.3 Installation – Tiles

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

ACOUSTIC TILE CEILING SYSTEMS

3.4 Cleaning and Completion

- .1 Carefully examine suspended acoustical ceilings on completion and replace uneven or defective or damaged materials, eliminate all waves, remedy damaged exposed finished surfaces and 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

RESINOUS FLOORING

PART 1 GENERAL

1.1 Summary

- .1 This Section includes one resinous flooring system (one top coat variation), with one epoxy body.

- .1 Application Method: Flat metal or plastic blade, power or hand troweled.

1.2 Related Sections

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- .2 Section 07 85 00 – Firestopping and Smoke Seals
- .3 Section 07 92 00 – Joint Sealants

1.3 Extent Self-Levelling Work and Quantities

- .1 Provide resinous or manufacturer-approved cementitious leveling and patching compound for up to ½" depth in entirety of all rooms scheduled to receive resinous flooring. The leveller product shall be compatible as an underlayment for the flooring specified. Intent is to provide doorways at similar elevations along corridors. Install at other areas as instructed by the Architect.

1.4 References

- .1 Use latest edition of standards identified
- .2 ASTM C 307, "Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing"
- .3 ASTM C 579, "Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes"
- .4 ASTM C 580, "Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes"
- .5 ASTM D 2240, "Standard Test Method for Rubber Property—Durometer Hardness"
- .6 ASTM D 2369, "Standard Test Method for Volatile Content of Coatings"
- .7 ASTM D 2794, "Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)"

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- .8 ASTM E 648, "Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source"
- .9 ASTM E 662, "Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials"
- .10 ASTM F 2170, "Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes"
- .11 ASTM F1869, "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride"

1.5 Submittals

- .1 Product Data: Submit manufacturer's product data and application instructions for each product specified.
 - .1 Include Technical Data Sheets and Safety Data Sheets.
- .2 Samples for Verification: For each resinous flooring system required, 5 inches (150 mm) square, applied to a rigid backing.
- .3 Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.
- .4 Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- .5 Maintenance Data: For resinous flooring to include in maintenance manuals.

1.6 Quality Assurance

- .1 No request for substitution shall be considered that would change the generic type of floor system specified (i.e. Epoxy resin mortar-based flooring system with urethane sealers). Equivalent materials of other manufactures may be substituted only on approval of Architect or Engineer. Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.
- .2 Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
 - .1 Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
 - .2 Contractor shall have completed at least 10 projects of similar size and complexity.

RESINOUS FLOORING

- .3 Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- .4 Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
 - .1 Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
- .5 Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - .1 Apply full-thickness mockups on 48-inch- (1200-mm-) square floor area selected by Architect.
 - .1 Include 48-inch (1200-mm) length of integral cove base.
 - .2 Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- .6 Pre-installation Conference:
 - .1 General contractor shall arrange a meeting not less than thirty days prior to starting work.
 - .2 Attendance:
 - .1 General Contractor
 - .2 Architect/Owner's Representative.
 - .3 Manufacturer/Installer's Representative.
- .7 Concrete Moisture Test:
 - .1 Perform moisture level tests using test method acceptable to flooring manufacturer such as RH concrete moisture tests to ascertain moisture level is within manufacturer's acceptable range for installation of specified flooring material.
 - .2 Carryout tests in minimum 3 different areas on each floor. Redo up to 3 additional tests per floor if requested by Consultant or flooring manufacturer.
 - .3 Perform tests prior to installation of self-leveling compound. Do not proceed with installation of self-leveling compound until results of tests are within acceptable range of both self-leveling compound and flooring manufacturers.

RESINOUS FLOORING

- .8 Bond Test:
 - .1 Once self-leveling compound has fully cured, install 3' x 3' pieces of material adhered with the appropriate adhesive to verify quality of adhesion. Remove half of each piece after 24 hours, then the other half after 48 hours. To help assess resistance to indentation, place end user equipment onto a sample for 72 hours. Document all results. Provide results to Consultant.
 - .2 Perform one bond test on each floor.
 - .3 Redo up to 3 additional bond test per floor when requested by Consultant.
- .9 **DO NOT PROCEED WITH INSTALLATION UNTIL CONTRACTOR, FLOORING MANUFACTURER AND FLOORING INSTALLER IS SATISFIED THAT THE FLOORING CONDITION IN THE AREA OF WORK IS ACCEPTABLE TO RECEIVE THE FLOORING. COMMENCEMENT OF INSTALLATION WILL BE DEEMED ACCEPTANCE OF CONDITIONS BEING SUITABLE FOR APPLICATION OF THE FLOORING PRODUCT.**
- .10 Source Limitations: Provide all industrial flooring system materials from a single manufacturer.

1.7 Delivery, Storage, And Handling

- .1 Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
- .2 Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per product data.
- .3 All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.8 Project / Environmental Conditions

- .1 Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- .2 Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.
- .3 Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- .4 Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

RESINOUS FLOORING

- .5 Concrete substrate shall be properly cured. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring

1.9 Warranty

- .1 Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) full year from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

PART 2 PRODUCTS

2.1 Resinous Flooring and Base

- .1 Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include:
 - .1 Broadcast systems will not be accepted. Trowel mortar only.
- .2 Acceptable Manufactures
 - .1 Stonhard Basis of design.
- .3 Product: Subject to compliance with requirements:
 - .1 Stonhard, Inc.; Stonblend GSI®.
- .4 System Characteristics:
 - .1 Color and Pattern: STONE
 - .2 Wearing Surface: smooth Matte finish.
 - .3 Integral Cove Base: STONE
 - .4 Overall System Thickness: 3/16 inch (5 mm).
- .5 EP-1/EP-2 System Components: Manufacturer's standard components that are compatible with each other and as follows:
 - .1 Primer:
 - .1 Material Basis: Stonblend Primer
 - .2 Resin: Epoxy.
 - .3 Formulation Description: 2 component, 100% solids.
 - .4 Type: non pigmented.
 - .5 Finish: standard.
 - .6 Number of Coats: one.
 - .2 Mortar Base:
 - .1 Material Basis: Stonblend Mortar

RESINOUS FLOORING

- .2 Resin: Epoxy.
- .3 Formulation Description: 3 component, 100% solids.
- .4 Application Method: Flat Metal or plastic blade trowel.
- .5 Thickness of Coats: 3/16 inch (5 mm).
- .6 Number of Coats: One.
- .7 Aggregates: Pigmented quartz Blended aggregate.
- .3 Groutcoat:
 - .1 Material Basis: Stonblend Groutcoat
 - .2 Resin: Epoxy.
 - .3 Formulation Description: 2 component, 100% high solids.
 - .4 Type: Clear.
 - .5 Finish: standard.
 - .6 Number of Coats: one.
- .4 Sealer:
 - .1 Material Basis: Stonkote CE4.
 - .2 Resin: Epoxy
 - .3 Formulation Description: 2 component, 100% solids.
 - .4 Type: Clear.
 - .5 Finish: Matte.
 - .6 Number of Coats: one.
- .5 Topcoat (EP-2 Only - For the PICU Washroom Areas)
 - .1 Material Basis: Stonseal SK6-SF-GT
 - .2 Resin: VOC EPA Compliant, Waterborne, Aliphatic Polyurethane.
 - .3 Formulation Description: 2 component 100% high solids.
 - .4 Type: Clear.
 - .5 Finish: Satin, with gentle texture
 - .6 Number of Coats: Two.

Note: Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.

- .6 System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
 - .1 Compressive Strength: 6,000 psi after 7 days per ASTM C 579.
 - .2 Tensile Strength: 1,500 psi per ASTM C 307.
 - .3 Flexural Strength: 2,200 psi per ASTM C 580.

RESINOUS FLOORING

- .4 Flexural Modulus of Elasticity: 5.0 x 10⁵ psi per ASTM C 580.
- .5 Hardness: 85 to 90, Shore D per ASTM D 2240.
- .6 Impact Resistance: > 160 in. lbs. per ASTM D 2794.
- .7 Abrasion Resistance: 0.06 gm max. weight loss per ASEM D 4060, CS-17
- .8 If needed, insert, in first subparagraph below, requirements for extent of burning.
- .9 Flammability: Class 1 per ASTM E-648, E-662
- .10 Thermal Coefficient of Linear Expansion: 9 x 10⁻⁶ in./in oF
- .11 VOC Content per ASTM D 2369, Method E
 - .1 Stonblend Primer: 75 g/l
 - .2 Stonblend GSI Base: 17 g/l
 - .3 Stonblend Groutcoat: 52 g/l
 - .4 Stonkote CE4: 34 g/l
 - .5 Stonseal CF7: 47 g/l (Method C)
- .12 Cure Rate: 12 hours for foot traffic, 24 hours normal operations.

2.2 Accessory Materials

- .1 Primer: Type recommended by manufacturer for substrate and body coats indicated. Formulation Description: Stonhard Stonblend Primer, 100% solids.
- .2 Waterproofing Membrane: Type recommended by manufacturer for substrate and primer and body coats indicated. Formulation Description Only if application above grade Stonproof ME7.
- .3 Patching, Leveling and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- .4 Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.

PART 3 EXECUTION

3.1 Preparation

- .1 General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean and dry substrate for resinous flooring application.
- .2 Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

RESINOUS FLOORING

- .1 Mechanically prepare substrates as follows:
 - .1 Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup or Diamond Grind with a dust-free system.
- .2 Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
- .3 Verify that concrete substrates meet the following requirements.
 - .1 Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
 - .2 Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 6 lb of water/1000 sq. ft. of slab in 24 hours.
- .4 Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- .5 Remove concrete at transitions as required to create a flush transition and maintain minimum product thickness where epoxy meets adjacent flooring finishes.
- .6 Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for Stonflex MP7 joint fill material, and CT5 concrete crack treatment.

3.2 Application

- .1 General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - .1 Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - .2 Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - .3 At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
 - .1 Apply joint sealant to comply with manufacturer's written recommendations.
 - .4 Apply primer where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.
 - .5 Integral Cove Base: Stonblend GSI mortar, apply cove base mix to wall surfaces before applying flooring. Apply according to manufacturer's written instructions and details including those for taping, mixing, priming,

RESINOUS FLOORING

troweling, sanding, and topcoating of cove base. Round internal and external corners.

- .6 Integral Cove Base: TBD inches high.
- .7 Troweled Mortar: Mix mortar material according to manufacturer's recommended procedures. Uniformly spread mortar over substrate using manufacturer's specially designed screed box adjusted to manufacturer's recommended height. Hand trowel apply mixed material over freshly primed substrate using steel finishing trowels or power trowel material using manufacturer's specially designed power trowel blades.
- .8 Groutcoat: Remove excess unbonded granules by lightly abrading or scraping and vacuuming the floor surface. Mix and apply grout coat with strict adherence to manufacturer's installation procedures and coverage rates.
- .9 Sealer: Lightly sand or scrape surface to remove any floor surface irregularities. Mix and apply sealer with strict adherence to manufacturer's installation procedures.
- .10 Matte Finish: Lightly sand or scrape surface to remove any floor surface irregularities. Mix and roller apply mar resistant finish with strict adherence to manufacturer's installation procedures.

3.3 Terminations

- .1 Chase edges to "lock" the flooring system into the concrete substrate along lines of termination.
- .2 Penetration Treatment: Lap and seal coating onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
- .3 Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
- .4 Treat floor drains by chasing the flooring system to lock in place at point of termination.

3.4 Joints And Cracks

- .1 Treat control joints and to maintain monolithic protection.
- .2 Treat cold joints and construction joints to bridge potential cracks and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
- .3 Vertical and horizontal contraction and expansion joints are treated by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

RESINOUS FLOORING

3.5 Field Quality Control

- .1 Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.
 - .1 Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
 - .2 Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
 - .3 If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 Cleaning, Protecting, And Curing

- .1 Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.
- .2 Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. General Contractor is responsible for protection.
- .3 Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General Contractor is responsible for cleaning prior to inspection.

3.7 Coating Schedule

- .1 All Rooms as indicated on drawings and as follows;
 - .1 All Rooms indicated as "1-BED (PICU)"
 - .2 All Rooms indicated as "WR" Accessed via "1-BED (PICU)".

END OF SECTION

RESILIENT SHEET FLOORING

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Section Includes

- .1 Sheet vinyl flooring and cove base Standard type with heat welded joints, bonded to structural concrete slab.

1.3 Quality Assurance

- .1 Execute the work of this section only by a Subcontractor who has adequate equipment and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified and successful experience installing specific resilient safety flooring specified and heat welding seams of vinyl flooring during a period of at least the immediate past five years.
- .2 Subcontractor to be approved in writing by manufacturer as a qualified applicator of the manufacturer's flooring system.

1.4 Submittals

- .1 Product data sheets:
 - .1 Submit manufacturer's Product data sheets for Products proposed for use in the work of this section.
- .2 Samples:
 - .1 Samples for verification: In manufacturer's standard size, but not less than 150 mm x 230 mm (6" x 9") sections of each different color and pattern of floor covering required.
 - .1 For heat-welding bead, manufacturer's standard-size samples, but not less than 230 mm (9") long, of each colour required.
- .3 Shop drawings:
 - .1 Submit shop drawings to show layout, treatment at walls, floor drains, and other objects. Indicate details of proposed treatment, where flooring materials meet other floor materials.
- .4 Closeout submittals:
 - .1 Submit closeout submittals in accordance with Section 01 77 00.
 - .2 Maintenance data:
 - .1 Submit maintenance data sheets for maintenance of flooring for incorporation into maintenance manual.

RESILIENT SHEET FLOORING

- .3 Maintenance materials:
 - .1 Deliver 2000 mm x 4500 mm (6'6" x 14'8") of each colour in full running length, pattern and type flooring for this project for maintenance use.
 - .2 Maintenance materials to be same production run as installed materials.

1.5 Design and Performance Requirements

- .1 Perform work only by an applicator of recognized standing who has adequate plant, equipment, and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory applications similar to that specified during a period of at least the immediate past five years.
- .2 Weld joints in vinyl sheet floors with coloured rod to match field floor colour. Welded seams shall be straight and uniform in width.

1.6 Environmental Requirements

- .1 Install materials of this section only when surfaces, air temperatures and conditions are in accordance with manufacturer's written instructions.
- .2 Conduct the tests in accordance with ASTM F710-08 as recommended by the manufacturer.

1.7 Delivery, Storage and Handling

- .1 Package flooring materials and identify contents of each package.
- .2 Deliver, store, and handle materials in accordance with manufacturer's written instructions.

1.8 Warranty

- .1 Warrant work of this section for a period of 2 years.
- .2 Provide manufacturer's standard Product warranty.

PART 2 PRODUCTS

2.1 Materials

- .1 Provide each flooring material from same production run for one area, and from same manufacturer for entire Project.
- .2 Flooring Products:
 - .1 Refer to Architectural Drawings for floor finish specifications.
- .3 Flash cove accessories:

RESILIENT SHEET FLOORING

- .1 Resilient cove cap:
 - .1 Rounded top cap for resilient coved sheet material where noted on architectural drawings.
 - .2 Cap extends 6.35 mm (1/4") over coved material with 1.91 cm (3/4") glue surface. Manufactured from a homogeneous composition of polyvinyl chloride (PVC).
 - .3 Colour to later selection by Consultant.
- .2 Plastic filler; for sealing joints between top of wall base or integral cove cap and irregular wall surfaces: Low VOC, plastic filler applied according to flooring manufacturer's recommendations.
- .3 Fillet support strip; for integral cove base: minimum radius of 25 mm (1") of plastic.
- .4 Filler/Underlayment: Portland cement based, self-drying, trowelable, which develops a compressive strength of 4200 psi, as recommended by manufacturer for subfloor on which this material is installed. Slope to drain as required.
- .5 Resilient leveller strip and level strip extension system: sized to suit condition.
- .6 Primers and Adhesives:
 - .1 Low VOC, waterproof type as recommended by manufacturer of each material for each subfloor condition, except epoxy adhesive shall be used in all areas where plumbing fixtures or floor drains are installed in vestibules and floor area adjacent an exit.
 - .2 High strength pick resistant adhesive conforming to ASTM C881 to be used for resilient flooring and bases in secure areas. Where indicated or requested, provide fasteners for bases in secure areas to reinforce adhesives used.
 - .3 Use epoxy adhesive continuously at all seams for linoleum flooring to a minimum of 150 mm on both sides of seam and at terminations of material.
 - .4 Those primers and adhesives as recommended by applicable resilient flooring and base manufacturers which will produce strong and permanent bond between subfloor and flooring, and between wall surface and base. Ensure that bases are securely adhered to wall substrates and meet safety concerns as required by this Project and the approval of the Consultant.
- .7 Sealant: Low VOC, polyurethane Type, One Part moisture curing modified urethane sealant: To CAN/CGSB 19.13-M87.
- .8 Tamper resistant and tamper proof sealants in accordance with Section 07 92 00.

RESILIENT SHEET FLOORING

PART 3 EXECUTION

3.1 Examination

- .1 Ensure that environmental and site conditions have been provided as required and specified.
- .2 Ensure that substrates have been Provided as specified without holes, protrusions, cracks greater than 1.6 mm (1/16") wide, unfilled control joints, depressions greater than 3 mm (1/8") deep, or other major defects.
- .3 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 F710-08.
- .2 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
- .3 Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- .4 Alkalinity and adhesion testing: Perform tests and proceed with installation only after substrates pass testing. Document tests performed and submit in writing to Consultant.
- .5 Fill cracks, holes, and depressions in substrates with trowel-applied levelling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- .6 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 into spaces where they will be installed at least 48 hours in advance of installation.
- .7 Sweep and vacuum clean substrates to be covered by floor coverings immediately before installation.
- .8 Remove chalking and dusting from concrete surfaces with wire brushes.
- .9 Install substrate cementitious underlayment sloped to drain where indicated, minimum 1.5% to drain to eliminate ponding.
- .10 Where flooring adjoins thicker floor materials, apply epoxy levelling screed, feather out to make up difference in level between materials.

RESILIENT SHEET FLOORING

3.3 Flooring Application

- .1 Apply adhesive uniformly and install flooring in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .2 Overlap edges of sheet vinyl so all seams can be double cut to ensure a tight fit. Alternate sheets should be reversed to ensure better appearance.
- .3 Run sheets in direction of traffic. Double cut sheet joints. Hot weld joints according to manufacturer's printed instructions.
- .4 Lay flooring with joints parallel to building lines to produce symmetrical pattern and minimum joints. Use full sheet size to produce minimum joints. Lay sheet flooring centered in corridors, with equal sized sheet to either side of center sheet. Weld all joints.
- .5 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. Do not install flooring to floor drains occurring within finished floor areas.
 - .1 Install in accordance with Consultant's floor pattern.
- .6 As installation progresses, roll flooring with minimum 75 kg (165 lb) roller, or as recommended by manufacturer, to ensure full adhesion, remove adhesive ridges, and entrapped air.
- .7 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .8 Flooring installation shall not show unsightly telegraphing of substrate. Flooring installation shall be homogenous free of substrate lines, pockets, bumps and unevenness.
- .9 Heat-welded seams:
 - .1 Weld seams in accordance with ASTM F1516-08.
 - .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.

RESILIENT SHEET 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.
- .10 Flash cove wall base:
 - .1 Install flash coving in accordance with manufacturer's printed specifications.
 - .2 Terminate top of coving with purpose made rounded top trim.
 - .3 Taper/trim cove former to reduce radius to less than 12.7 mm (1/2") at door frame or similar abatement conditions.
 - .4 Seal trim to wall substrate with security sealant bead in locations as indicated on drawings, colour to Consultant's selection.

3.4 Accessories

- .1 Provide top edge resilient cove caps for integral flash cove applied according to the manufacturer's recommendations. Install straight and level to variation of 1:1000. Scribe and fit to door frames and other obstructions. Joints shall be tightly fitted, straight and vertical, and not less than 610 mm (24") from corners. Provide joints in base over substrate control joints.
- .2 Provide a fillet support strip for integral cove base.

3.5 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.

3.6 Protection

- .1 Protect new floors from time of final set of adhesive until final inspection. Install suitable protection sheeting, lap joints of material by 150 mm (6") and seal with non-asphaltic tape.
- .2 Prohibit traffic on floor for 48 hours after installation. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.
- .3 Install floor protection in areas where other work, repairs and installation of equipment, and foot traffic will occur.

END OF SECTION

PAINTING

PART 1 GENERAL

1.1 Section Includes

- .1 Surface preparation and field application of paints and coatings.

1.2 Related Sections

- .1 Section 08 11 13 – Standard Hollow Metal Frames
- .2 Section 09 21 16 – Gypsum Board Assemblies
- .3 Division 23 to 27 – Mechanical, electrical and communication Identification.

1.3 References

- .1 The Master Painters Institute (MPI) Architectural Painting Specification Manual, latest edition henceforth referred to as the MPI manual.

1.4 Submittals

- .1 Section 01330: Submission procedures.
- .2 Product Data: Provide data on all finishing products.
- .3 Samples: Submit 2 samples, 12" x 12" inch in size illustrating selected colours and textures for each colour selected.

1.5 Quality Assurance and Standard

- .1 Conform to MPI Specification Manual
- .2 All materials, preparation and workmanship shall conform to requirements of the MPI manual.
- .3 Applicator shall confirm that all surfaces to be painted have been constructed/ fabricated to allow the applicator to carry out surface preparation and field application of paint/ coatings to standards and quality identified in this specification section. Commencement of work of this section will signify acceptance of the surface to be painted/ coated.

1.6 Qualifications

- .1 Applicator: Company specializing in performing the work of this section with minimum five (5) years documented experience.
- .2 All painters carrying out work on this project shall have minimum 5 years' experience.

PAINTING

1.7 Regulatory Requirements

- .1 Conform to applicable code for flame and smoke rating requirements for finishes.

1.8 Delivery, Storage, and Handling

- .1 Deliver, store, protect and handle products to site.
- .2 Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- .3 Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and instructions for mixing and reducing.

1.9 Environmental Requirements

- .1 Conform to requirements of MPI Manual.
- .2 Do not apply materials when surface and ambient temperatures and humidity levels are outside the ranges required by the paint product manufacturer.
- .3 Do not apply finishes in areas where dust is being generated.

1.10 Extra Materials

- .1 Provide 1 gallon of each colour to Owner.
- .2 Label each container with colour, type, texture, room locations, and in addition to the manufacturer's label.

PART 2 PRODUCTS

2.1 Manufacturers and Products

- .1 Acceptable product:
 - .1 Refer to Architectural Drawings for product requirements. Where product has not been indicated, provide product from approved products list of the MPI manual for all other painted surfaces.
- .2 Paint and finishing materials: highest grade, first line quality of the manufacturer.
- .3 Paint materials for each system used shall be products of a single manufacturer.
- .4 Unless noted otherwise, use only materials from approved products list in the MPI manual with MPI environmentally friendly E2 or E3 rating base on VOC (EPA Method 24) content levels.

PAINTING

2.2 Mixing and Tinting

- .1 Unless otherwise specified herein or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity. Where thinner is used, addition shall not exceed paint manufacturer's recommendations.

2.3 Finish, Color, Gloss / Sheen:

- .1 Unless otherwise noted, all painting work shall be in accordance with MPI **Premium** Grade finish requirements.
- .2 Colors shall be as selected by the Consultant from a manufacturer's full range of colors. Refer to Finish Schedule for identification and location of colors or to later selection where not indicated. Allow for 4 additional accent colours in addition to the ones identified in the finish schedule.
- .3 Gloss level ratings of all painted surfaces shall be as noted Coating Schedule in this specification section. Refer to MPI Painting Manual for gloss level definitions and requirements

PART 3 EXECUTION

3.1 Examination

- .1 Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- .2 Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application. Commencement of work shall be deemed to be acceptance of surface to achieve satisfactorily the results specified in this section
- .3 Test shop applied primer for compatibility with subsequent cover materials.
- .4 Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - .1 Gypsum Wallboard: 12 percent.
 - .2 Interior Wood: 15 percent, measured in accordance with ASTM D2016.

3.2 Preparation

- .1 Prepare surfaces to receive paint and coatings per Chapter 3, Interior Surface Preparation Section of MPI Manual

PAINTING

- .2 Prepare and degrease all existing brick walls (according to paint manufacturer's instructions) to receive new paint finishes.
- .3 Remove and securely store all miscellaneous hardware and surface fittings / fastenings (e.g. electrical plates, mechanical louvers, door and window hardware (e.g. hinges, knobs, locks, trim, frame stops), removable rating / hazard / instruction labels, washroom accessories, light fixture trim, etc. from wall and ceiling surfaces, doors and frames, prior to painting. Carefully clean and replace all such items upon completion of painting work in each area. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes). Doors shall be removed before painting to paint bottom and top edges and then re-hung.
- .4 Substrate defects shall be made good and sanded by others ready for painting particularly after the first coat of paint. Start of finish painting of defective surfaces (e.g. gypsum board) shall indicate acceptance of substrate and any costs of making good defects shall be borne by the painter including re-painting of entire defective surface (no touch-up painting).
- .5 Correct defects and clean surfaces which affect work of this section. Remove existing coatings that exhibit loose surface defects.
- .6 Seal with shellac and seal marks which may bleed through surface finishes.
- .7 Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- .8 Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- .9 Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.
- .10 Sand, clean, dry, etch, neutralize and/or test all surfaces under adequate illumination, ventilation and temperature requirements.
- .11 Protect all adjacent interior surfaces and areas, including rating and instruction labels on doors, frames, equipment, piping, etc., from painting operations and damage with drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.
- .12 Confirm preparation and primer used with fabricator of steel items. Refer to Quality Assurance.

3.3 Application

- .1 Apply products in accordance with manufacturer's instructions.

PAINTING

- .2 Do not paint unless substrates are acceptable and/or until all environmental conditions (heating, ventilation, lighting and completion of other subtrade work) are acceptable for applications of products.
- .3 Apply paint or stain in accordance with noted MPI finish Grade requirements.
- .4 Painting coats specified are intended to be the minimum needed to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations. Apply additional coats as needed to attain satisfactory results as deemed so by the Consultant. Apply a minimum of four coats of paint where deep or bright colors are used to achieve satisfactory results.
- .5 Do not apply finishes to surfaces that are not dry.
- .6 Apply each coat to uniform finish.
- .7 Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- .8 Sand wood lightly between coats to achieve required finish.
- .9 Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
- .10 Allow applied coat to dry before next coat is applied.
- .11 Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- .12 Prime concealed surfaces of interior and exterior woodwork with primer paint.
- .13 Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.
- .14 Finish closets and alcoves the same as adjoining surfaces of rooms unless specifically noted in drawings otherwise.
- .15 Paint finish shall continue through behind all wall-mounted items (e.g. bulletin and white boards etc)

3.4 Finishing Mechanical and Electrical Equipment

- .1 In addition to requirements noted in mechanical and electrical drawings, paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside closets, cupboards and cabinet work. Colour and texture to match adjacent surfaces, except as noted otherwise in this section or in the drawings. Co-ordinate with mechanical trades applying banding and labeling after pipes have been painted.

PAINTING

- .2 Refer to mechanical and electrical drawings for schedule of colour coding and identification banding of equipment, duct work, piping, and conduit. Unless specified otherwise, paint gas piping standard yellow where visible.
- .3 Paint shop primed equipment.
- .4 Paint surfaces inside of duct work and elsewhere behind grilles where visible using primer and one coat of matte black paint.
- .5 Remove unfinished louvres, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- .6 Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
- .7 Paint exposed conduit and electrical equipment occurring in finished areas.
- .8 Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- .9 Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
- .10 Leave factory finished equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 Field Quality Control/ Standard of Acceptance:

- .1 Painted exterior and interior surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent:
 - .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 the weather.
 - .5 damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).
- .2 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:

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- .1 visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39").
- .2 visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39").
- .3 visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
- .4 when the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.
- .5 Painted surfaces rejected by the inspector shall be made good at the expense of the Contractor. 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

3.6 Cleaning

- .1 Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.7 Painting and Coating Systems

- .1 Systems references listed are based on Chapters 3 (Interior) of MPI (Master Painter Institute) and are **Premium Grade**, unless noted otherwise.

3.8 Coating Schedule - Interior Surfaces

- .1 Paint all interior surfaces identified in Schedule – Painted Surfaces using following coating and finishing systems. (refer to MPI for additional details):
 - .1 INT 9.2A Gypsum Board and plaster:
 - .1 Walls: eggshell
 - .2 Ceilings: flat
 - .2 INT 5.1S Structural and miscellaneous steel (unprimed or previously painted)
 - .1 Primed: semi-gloss
 - .2 Galvanized: semi-gloss
 - .3 INT 5.3A Galvanized metal (zinc coated steel)
 - .1 HM Doors and frames: semi-gloss

3.9 Schedule – Painted Surfaces

- .1 Interior
 - .1 All new and existing exposed wall surfaces
 - .2 All new and existing HM doors and frames (both sides, top and bottom)
 - .3 All new and existing gypsum board ceilings and bulkheads

PAINTING

- .2 All surfaces identified on drawings to receive paint

3.10 Schedule – Colours

- .1 Refer to Drawings for Colours. Allow for up to 10 different colours on this project
- .2 Seek instructions from Consultant where a colour for a surface designated to receive paint has not been identified.

END OF SECTION

WALL PROTECTION

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Section Includes

- .1 Sheet Wall protection
- .2 Handrail/Crash Rail
- .3 Corner Guards

1.3 Related Sections

- .1 Section 06 10 13 Rough Carpentry – Wood blocking for handrails.
- .2 Section 07 92 00 Sealants: Tamper resistant caulking along exposed edges of sheet wall protection
- .3 Section 09 65 16 Resilient Sheet Flooring: Floor to wall overlap transition; floor to wall welded transition

1.4 References

- .1 Use latest edition of standards referenced below
- .2 ASTM D256 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
- .3 ASTM D543 – Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
- .4 ASTM D635 – Standard Test Method for Rate of Burning and/ or Extent and Time of Burning of Plastics in a Horizontal Position
- .5 ASTM D5420 Gardner Impact Exceeds 160 inch pounds
- .6 ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .7 ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- .8 ASTM G22 – Standard Practice for Determining Resistance of Plastics to Bacteria

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- .9 CAN/ULC-S102.2 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

1.5 Substitutions

- .1 Refer to Section 01 25 00

1.6 Submittals

- .1 Submit required submittals in accordance with Section 01 33 00.
- .2 Product Data Sheet
 - .1 Submit product data sheets for materials in this section.
- .3 Shop drawings:
 - .1 Sheet wall protection: Submit layout diagram indicating the location of each panel and seams. Provide detail of joining methods and transition detail at base.
 - .2 Handrail/ Crash Rail: indicate in plan location where handrail is to be installed. Indicate fastening points for coordination for wood blocking. Provide hardware and installation details.
- .4 Samples:
 - .1 Sheet wall protection:
 - .1 Submit two (2) 12"x12" (300mm x 300mm) samples of each type of sheet wall protection in colours specified.
 - .2 Submit two (2) 24"x24" (600mm x 600mm) samples of sheet wall protection with custom printed artwork. Submit for each different artwork.
 - .3 Submit two (2) 12" (300mm) accessory trim
 - .4 Submit two (2) 12" (300mm) long piece of each corner guard type
- .5 Templates:
 - .1 Submit templates to Contractor for use by installers and fabricators as required for proper location and installation of hardware.
- .6 Quality Assurance Submittals: Submit the following:
 - .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

WALL PROTECTION

- .2 Manufacturer's Instructions: Current published manufacturer's installation and maintenance instructions.
- .3 Manufacturer's Field Reports: Specified herein.
- .7 Closeout Submittals: Submit the following:
 - .1 Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.7 Quality Assurance

- .1 Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work in healthcare environments and similar to products and installation methods required for this project.
 - .1 Installers shall have attended manufacturer's installation training clinic.
- .2 Mock-up
 - .1 Comply with requirements of Mock-ups in 01 40 00 Quality Requirements.
 - .2 Locations of mock-ups to be determined by Consultant
 - .3 Install following sheet wall protection mock-ups after installation of flooring:
 - .1 ACR series in sufficient size to illustrate floor to wall overlap transition, caulked seams, top trim, outer corner condition. Incorporate corner guard as part of mock-up
 - .2 WR series wall protection in sufficient size to illustrate floor to wall transition, welded seams and thermo-formed outer corners. Provide one mockup at epoxy floor and at resilient sheet flooring.
- .3 Pre-installation meeting: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.
- .4 Field Quality Assurance: See part 3 of this specification section

1.8 Design and Performance Requirements

- .1 Manufactured units shall not have attached plates, nor shall they be imprinted or labelled with manufacturer's name or trademark.

WALL PROTECTION

- .2 Fabricate work of this Section at least within tolerances specified for work into which it is built.
- .3 Verify that installed products function properly, and adjust them accordingly to ensure satisfactory operation.
- .4 Wall substrates upon which wall and corner guards are to include sufficient blocking, grounds, and other solid backing prior to installation of these items.

1.9 Delivery, Storage and Handling

- .1 Package or crate, and brace Products to prevent distortion in shipment and handling. Label packages and crates, and protect finish surfaces by sturdy wrappings.
- .2 Deliver Products to location at the Place of the Work designated by Contractor.
- .3 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- .4 Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.
- .5 Store panels in temperature controlled environments. Leave protective film on panel until ready to use.
- .6 Store panels flat and allow 72 hours to acclimatize before installation.

1.10 Extra Materials

- .1 Provide extra materials of product and adhesives in accordance with Section 01 78 00 - Closeout Submittals
- .2 Provide extra material of each color, pattern and type from same production run for maintenance use in quantities as follows.
 - .1 Two (2) full sheets of WR series used in patient rooms
 - .2 One (1) full sheet of all other WR and ASR series material used on project.
 - .3 Additional sheets of DigiClad wall protection not required.

1.11 Warranty

- .1 Warrant work of this section from delamination, cracking, or buckling for a period of 2 years. Repair such deficiencies identified during the warranty period including provision of all material, labour, and inspections at no cost to the Owner.
- .2 Provide manufacturer's standard material warranty.

WALL PROTECTION

PART 2 PRODUCTS

2.1 General

- .1 Incorporate reinforcing, fastenings and anchorage required for building-in of Products.
- .2 Tamper resistant fasteners: Fasteners on all products and systems exposed to view and accessible to patients to be tamper resistant, hexalobular (6-lobed), pinreject, internal drive system, conforming to ISO standard 10664.

2.2 Wall Protection

- .1 Sheet Wall Protection - ACR Series (Refer to Wall Finish Schedule in drawings)
 - .1 Rigid, impact-resistant sheet wall covering: Fabricated from unplasticized polyvinyl chloride (uPVC) with impact resistant modifier additive. No plasticizer additives. Minimum 1.5 mm (0.06") thick.

Acceptable Product: Palladium Rigid Sheet by Inpro Corporation
 - .2 Performance Characteristics
 - .1 Flame spread rating: Class A to CAN/ULC-S102-03 with following surface burning characteristics:
 - .1 Flame spread: 15
 - .2 Smoke Developed: 30
 - .2 Self Extinguishing: CC1 classification to ASTM D635
 - .3 Impact Strength: 30.4 ft-lbs/ inch of thickness when tested to ASTM D256
 - .4 Chemical and Stain Resistance: Resistance to specific stains when tested in accordance with ASTM D543
 - .5 Fungal and Bacterial Resistance: Does not support fungal or bacterial growth when tested to ASTM G-21 ASTM G-22
 - .6 GREENGUARD Certified: Provide GREENGUARD Certified material. Profiles shall meet the requirements of GREENGUARD Certification Standards for Low-Emitting Products and GREENGUARD Product Emission Standard for Children & Schools.

WALL PROTECTION

- .7 Color Consistency: Provide components matched in accordance with SAE J-1545 - (Delta E) with a color difference no greater than 1.0 units using CIE Lab, CIE CMC, CIE LCh, Hunter Lab or similar color space scale systems.
- .3 Sheet Size: 4'x8' (1.22m x 2.44m)
 - .1 Colour/finishes/texture: Refer to Architectural Drawings
 - .2 Install to full height unless noted otherwise in drawings. Install sheet in vertical direction for full height installation.
 - .3 Adhesives: As recommended by flooring manufacturer
- .4 Joint Sealant:
 - .1 As recommended by sheet wall protection manufacturer for butt joint seams. Colour matched caulk to sheet wall protection. Refer to section
 - .2 Refer to section 07 92 00 for caulking of seams along exposed edges.
- .2 Sheet Wall Protection - WR Series (Refer to Wall Finish Schedule in drawings)
 - .1 Extruded semi-rigid, high impact, lightly textured, heat formable wall system, fully heat welded seamless panel. Material of low VOC virgin PVCu with a tight molecular structure and incorporated UV stabilizers.
Acceptable products: Type 1 Altro Whiterock
 Type 2 Altro Whiterock Matte
 Type 3 Altro Whiterock Wall Designs
 Type 4 Altro Whiterock Digiclad – Matt finish
 - .1 Thickness: 2.5mm.
 - .2 Sheet Size: 4' (1.22m) wide panels x 9'10" (3.0m) long.
 - .6 Butt joint inner corners, thermal form outer corners
 - .7 Primers, Adhesives, and Accessories – Altro Whiterock sheet wall protection shall be furnished as a complete packaged system from the manufacturer, containing all primers, adhesives, tapes, cut-tile transition strips, vinyl backer, colour matching vinyl weld rods, colour matching sealant.

WALL PROTECTION

- .1 All products by sheet wall protection manufacturer. No third party products permitted unless accepted in writing by sheet wall protection manufacturer.
- .2 Primer and adhesive materials shall be water based and non-hazardous.
- .8 Full height application.
- .9 Refer to Finish schedule, plans, and elevations for location of each WR type.
- .10 Allow for printing of 3 different artwork images onto Altro Whiterock Digiclad. Artwork files will be supplied by Owner.
- .11 Substrate Primer as recommended by sheet wall protection manufacturer.
- .3 Corner Guards – General Requirements
 - .1 Provide 90° outer corners and odd angle outer wall corners at locations indicated in drawings or not. All corner guards to be match height of sheet wall protection.
 - .2 Place corner guards starting from top of integrated cove base
 - .3 Additional corner guards:
 - .1 Provide four (4) additional type CG-1 and CG-2 corner guards
- .4 Corner Guards (CG-1 and CG-2):
 - .1 89mm x 89 mm x 1.5mm thick 304 stainless steel with counter sunk pre-drilled holes for mechanical fastening to wall. Provide 11 degree tapered edges for stainless steel corner guards applied over other wall cladding material. Fabricate for 90 ° corners. Stainless steel flat head spanner drive tamper proof screws. No sharp exposed edges.
 - .2 Finish: brushed
 - .3 CG-1: Full Height
 - .4 CG-2: Half height to match height of sheet wall protection
- .5 Corner Guard (CG-3)
 - .1 Custom fabricated full height 'U' shaped end wall cap to cover exposed wall ends. 1.5mm thick 304 stainless steel with counter sunk pre-drilled holes on wings for mechanical fastening to wall. Width to suit partition

WALL PROTECTION

thickness. Round smooth and polish all exposed edges. Stainless steel flat head spanner drive tamper proof screws.

.6 Panel Sealants

.1 Type: Mildew and mold resistant as recommended by sheet wall protection manufacturer for application in panel joints. Colour matched to sheet wall protection.

.2 Sealant at exposed panel edges: See section 07 92 00

.7 Handrails

.1 Handrails/Crashrail (HRBH): Ligature Resistant 1000BH by Inpro. Assembly consisting of continuous snap-on plastic cover installed over continuous retainer complete with 1.5 mm (0.60") bracket enclosure.

.1 Performance to meet:

.1 ASTM E-84: Class A

.2 ASTM D-256: no non-break, partial or complete break

.3 Meets UL Greenguard Gold low VOC standard.

.4 ASTM G-21 and 22 – does not support fungal or bacteria growth

.2 Cover: Extruded rigid plastic, scratch and stain resistant vinyl cover, minimum 2.0-mm wall thickness with shadow grain texture.

.3 Retainer: Minimum 2.0-mm thick, 1-piece, extruded aluminum.

.4 End caps and corners: Prefabricated, injection-moulded plastic; field adjustable for close alignment with snap-on cover.

.5 Accessories: Concealed splices and tamper resistant mounting hardware.

.6 Colour: Refer to Architectural Drawings. Allow for 2 colours where colours have not yet been selected.

WALL PROTECTION

PART 3 EXECUTION

3.1 Field Quality Requirement

- .1 Manufacturer's Field Services:
 - .1 Engage manufacturer for each product type to carryout visits during construction to:
 - .1 provide recommendations for product use,
 - .2 inspect that the installation has been carried out in accordance with manufacturer's instructions and good practice
 - .3 Identify deficiencies in the installed work.
 - .4 Recommend repair procedures where required
 - .2 Submit report for each site review to Consultant within 48 hours of review.
 - .3 Site Visits: Allow for start up meeting with Contractor and installers and 2 visits during construction.

3.2 Examination and Preparation

- .1 Verify substrate is solid, smooth, level, plumb and without projections, divots and other defects which prevent full adhesion, reduce bond strength, or will telegraph through the panel. Remove all high points and fill in low. Verify there are no irregularities in the substrate especially in corners, window, and door frames that would prevent the panels from lying flat to the substrate.
- .2 Gypsum board wall surface to be paint ready, cleaned, and dust free.
- .3 Prime or paint wall surfaces prior to installation of sheet wall protection. Confirm with sheet wall protection manufacturer the duration of the cure period for newly primed or painted wall surfaces before sheet protection can be installed.
- .4 Complete painting of surfaces that comes in contact with sheet wall protection prior to installation of sheet wall protection.
- .5 Door and screen frames must be in place prior to installation of sheet wall protection. Rectify substrate deficiencies prior to installation. Commencement of installation work denotes acceptance of substrate conditions.

3.3 Installation

- .1 General:

WALL PROTECTION

- .1 Install wall protection in accordance with manufacturer's latest instructions
- .2 Install work to meet manufacturer's recommended specifications, 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 Apply adhesive with notched trowel to wall surface. Apply in direction and pattern recommended by sheet wall protection manufacturer. Use extension roller to affix panel to adhesive. Roll from centre of sheet to edges.
- .4 Install straight, and in alignment.
- .5 ACR Series Panels:
 - .1 Install sheet wall protection with gap dimension between sheets required by manufacturer for butt jointed sealant sealed seams application.
 - .2 Clean joints and install sealant in joints and exposed edges accordance with manufacturer's written instructions. Apply two coats of sealant to fully seal gap.
 - .3 Bring sheets to edge of all outer corners where sheets are not to be installed full height. Install corner guards over sheet wall protection. Bring sheets to edge of corner guard where guards are specified to be full height.
- .6 WR Series Wall Protection
 - .1 Install panels in accordance with manufacturer's current installation guide.
 - .2 All joints must be joined by manufacturer's approved details.
 - .3 Install wall panels in largest piece possible. Minimize splicing and joints.
 - .4 Install wall panel to underside of ceilings.
 - .5 Overlap wall panel 2" (50mm) over integral sheet flooring wall base in accordance with wall panel manufacturer's detail including application of sufficient sealant to back of panel at base and application of continuous bead of sealant along exposed bottom edge of panel.
 - .6 Butt joint wall panels at vertical inside corners and thermos form outside corners.
 - .7 Accurately make cutouts in panels to accommodate wall projects and outlets. Leave gap for expansion as recommended by manufacturer.
 - .8 Leave gaps at panel joints and top of all panels to manufacturer's instructions.
 - .9 Dry fit panel for fit prior to applying adhesives. Apply adhesives using 5mmx5mm notched trowel on back side of sheet. Spread to achieve 100% coverage except where setback from edges is required by panel manufacturer. Refer to manufacturer's instructions. Apply adhesive in

WALL PROTECTION

pattern and fully to back of panel material or wall surface as required by sheet wall protection manufacturer.

- .10 Fully roll panels right up to the edge to ensure good transfer of the adhesive.
- .11 Width of heat welded joints to dimension indicated in manufacturer's instruction. Clean joints with cleaner primer before heat welding.
- .12 Install corner guard over wall panels at all outer corner.
- .13 Apply continuous bead of sealant at following locations:
 - .1 Interior corner of sheet wall protection
 - .2 Corner guards and sheet wall protection
- .14 Along exposed bottom edge of sheet wall protection and floor cover base

3.4 Cleaning

- .1 General: Immediately upon completion of installation, clean covers and accessories in accordance with manufacturer's recommended cleaning method.
- .2 Remove surplus materials, rubbish and debris resulting from installation as work progresses and upon completion of work.
- .3 Clean surface with diluted soap/ detergent solution recommended by product manufacturer.

3.5 Protection

- .1 Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION

WASHROOM AND JANITOR ACCESSORIES

PART 1 GENERAL

1.1 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

1.2 Section Includes

- .1 Toilet, Washroom, Sink, Housekeeping and Soiled Utility accessories.

1.3 Quality Assurance

- .1 Manufacturer/fabricator: shall be manufactured by a firm having experience on work of similar size and quality to that indicated and specified.
- .2 Installation to be performed by manufacturer authorized installers.

1.4 Submittals

- .1 Product data sheets:
 - .1 Submit manufacturer's Product data sheets for Products proposed for use in the work of this section.
- .2 Shop drawings:
 - .1 Clearly indicate fabrication details, plans, elevations, hardware, and installation details.
- .3 Samples:
 - .1 Submit 300 x 300 mm (minimum) samples of each type of washroom accessory for secure areas for Owner's approval.
- .4 Mock-ups:
 - .1 Construct a mock-up each washroom accessory required for secure areas, in location acceptable to Change Orders.
 - .2 Demonstrate that product meets required safety requirements and the quality of workmanship.
 - .3 Mock-up may form part of final Work, if acceptable to Change Orders. Remove and dispose of mock-ups which do not form part of Work.
- .5 Maintenance data:
 - .1 Submit operation and maintenance data for incorporation into maintenance manual specified in Section 01 77 00.
- .6 Templates:
 - .1 Submit templates to Contractor for use by installers and fabricators as required for proper location and installation of hardware.

WASHROOM AND JANITOR ACCESSORIES

1.5 Design and Performance Requirements

- .1 General: washroom accessories are to be approved by the Owner for both safety and standard areas prior to ordering. All accessories are to be ligature resistant unless noted otherwise.
- .2 Accessories and fixtures shall not contain material capable of supporting growth of bacteria, fungi or other disease-causing organism, or encourage the harbourage of insects or mites.
- .3 Accessories and fixtures design shall be such that when installed they will not generate dust or dirt, and that they may be effectively cleaned and disinfected by facility cleaning methods.
- .4 Accessories and fixtures shall not, to any appreciable degree, develop or discharge any electrostatic charge.
- .5 Fixings shall be selected based upon the construction of the supporting wall or partition and the proprietary manufacturers recommendations.
- .6 Insulate between dissimilar metals, and metal and masonry materials to prevent electrolysis.
- .7 Manufactured units shall not have attached plates, nor shall they be imprinted or labelled with manufacturer's name or trademark.
- .8 Fabricate work of this Section at least within tolerances specified for work into which it is built.
- .9 In some cases, where a given fixture or hardware type cannot be of a secure or tamper proof nature in of itself (due to lack of availability of a specialty product to fit the requirement), its installation must be secure. Fasteners, fixtures, hardware and accessories or their method of secure installation will be subject to evaluation and approval by the facility prior to final selection for use in secure areas.
- .10 Fabricate Products with materials and component sizes, metal gauges, hardware, reinforcing, anchors, and fastenings of adequate strength to ensure that Products specified in this section will remain free of warping, buckling, opening of joints and seams, and distortion within limits of intended use.
- .11 All accessories shall be anti-ligature in patient care or public areas.

1.6 Delivery, Storage and Handling

- .1 Package or crate, and brace products to prevent distortion in shipment and handling. Label packages and crates, and protect finish surfaces by sturdy wrappings.
- .2 Deliver products to location at the Place of the Work designated by Contractor.

WASHROOM AND JANITOR ACCESSORIES

PART 2 PRODUCTS

2.1 Materials

- .1 Stainless Steel: AISI Type 302/304 with No. 4 satin finish, unless otherwise indicated.
- .2 Sheet Steel: Cold rolled, commercial quality, ASTM A 366.
- .3 Galvanized: Zinc coated, ASTM A 123.
- .4 Mounting devices and fasteners:
 - .1 Tamper resistant fasteners: Fasteners on all products and systems to be tamper resistant, hexalobular (6-lobed), pin-reject, internal drive system, conforming to ISO standard 10664.
 - .2 Tamper proof torx fasteners
- .5 Bituminous paint to meet specified requirements of CAN/CGSB-1.108; or with methacrylate lacquer, CAN/CGSB-1.159 if exposed to view.
- .6 Tamper resistant security sealant in accordance with Specification section 079200

2.2 Products

- .1 Incorporate reinforcing, fastenings and anchorage required for building-in of Products.
- .2 Provide products which have been accepted or approved by SJHH during mockup review.
- .3 Lettering: for identification of accessories and operation instructions shall be silk screened using international symbols unless otherwise specified.
- .4 Refer to Architectural Drawings for additional product specifications.
- .5 Accessories:
 - .1 Grab bars:
 - .1 All public and secure areas:
 - .1 Grab bar to have anti ligature design. Provide sample of grab bar for Owner's approval.
 - .2 Be installed to resist a load of at least 1.3 kN applied vertically or horizontally.
 - .3 Grab bars to have V shaped closure strip welded to bottom of all bars.
 - .4 Grab bar to have one piece configuration, be graspable and anti-ligature and cleanable.

WASHROOM AND JANITOR ACCESSORIES

- .5 Grab bar fabricated from aluminum with powder coat and peened anti slip finish.
- .6 30 - 40mm diameter with clearance of not more than 50mm from the wall to the inside surface of the grab bar.
- .7 Finish and colour to match Owner approved sample.
- .8 Grab bar to be complete with kit and installed with tamperproof screws. Sizes as selected by the Consultant.
- .9 The use of flat plates on bottom of bar models is prohibited.
- .10 All exposed edges rounded and finished.
- .11 Provide 1 mm (3/64") diameter holes at the bottom end of grab bar for drainage; or provide an anti-ligature drainage end cap.
- .12 Provide necessary reinforcements as required.
- .13 Refer to drawings and accessories schedule for grab bar configuration and mounting heights.
- .2 Coat / towel hooks:
 - .1 Secure areas:
 - .1 Ligature resistant coat hook with flexible rubber part with low load release secured in a stainless steel surround with security screws. Selection of rubber finish by Architect.
- .3 Mirrors:
 - .1 Secure areas:
 - .1 Ligature resistant mirror
 - .2 Frame constructed of solid surface with type 400 stainless steel polished to a mirror surface, furnished with 20 UNC steel studs, heavy washers and nuts, plaster flange and tamper proof fasteners.
 - .3 Provide sample of secure area mirror for Owner's approval.
 - .4 Mirror Backing: Shock absorbing material over entire back mirror surface.
 - .5 Provide adequate backing in wall for support.
- .4 Toilet Tissue / Paper Dispenser:
 - .1 Secure areas:
 - .1 Security type toilet tissue roll holder with suicide resistant design recessed into wall assembly. Provide sample of toilet tissue dispenser for Owner's approval.
 - .2 Single roll, 16 GA type 304 stainless steel housing, all exposed surfaces powder coated white.
 - .3 Spring loaded spindle buttons with 1/2" – 20 UNC tamper resistant screws, recess mounted.
 - .4 Provide adequate in wall blocking to support accessory.

WASHROOM AND JANITOR ACCESSORIES

- .5 Paper towel dispensers / towel holder:
 - .1 Non-secure areas unless otherwise specified:
 - .1 Recess mounted Ligature Resistance Auto-Release Towel Holder, 16 GA. (1.5 mm) type 304 stainless steel housing, all exposed surfaces powder coated white, 464 mm (18-1/4") x 102 mm (4") x 254 mm (10"), spring loaded spindle buttons, furnished with 1/4" - 20 UNC tamper resistant screws, recess mounted. Provide adequate backing in wall for support and comply to local codes for barrier-free requirements.
- .6 Soap Dispenser:
 - .1 Secure areas:
 - .1 Stainless steel surface mounted manual liquid soap dispenser. Manual type and anti-ligature.
- .7 Soap Dispenser:
 - .1 Non-Secure areas:
 - .1 Wall mount Dispenser. One hand operation suitable with refills.
- .8 Soap dish:
 - .1 Secure areas:
 - .1 Recess mounted soap dish
 - .2 Die formed from type 30 stainless steel, exposed surfaces powder coated white, anti-ligature, raised dimples to provide air circulation around the soap bar, wide flange is turned back and trimmed providing a uniform flat surface and a tight fit between the rim and the wall.
- .9 Recessed shelf
 - .1 Secure area (select Washrooms):
 - .1 Recess Mounted Shelf, Satin finish fabricated from 16 gauge (1.59 mm) type 304 stainless steel, exposed surfaces powder coated white, furnished with 1/4"-20 UNC tamper resistant screws with installer provided wall anchors.
 - .2 Provide adequate support in wall for mounting.
- .10 Recessed shelf
 - .1 Secure area (select Shower Rooms):
 - .1 Prefabricated, factory formed, recessed shelf unit in Whiterock.
 - .2 Recessed into drywall wall and heat-welded flush to adjoining wall panel.
- .11 Utility shelf with mop and broom holder:
 - .1 Type 304 stainless steel, satin finish with welded construction.
 - .2 Shelf to be 18 gauge, approximately 200 mm (8") deep with 19 mm (3/4") return edges and hemmed front edge.

WASHROOM AND JANITOR ACCESSORIES

- .3 Provide spring-loaded rubber cam holders for broom and mop handles.
- .4 Hooks; 18 gauge, Type 304 stainless steel with satin finish attached to mounting strip with two rivets.

PART 3 EXECUTION

3.1 Installation

- .1 Submit 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 to meet manufacturers' recommended specifications, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.
- .3 Provide additional reinforcing as required, mounting devices, fastenings, and necessary anchorage 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 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.
- .6 Insulate between dissimilar metals, and metal and masonry materials to prevent electrolysis with bituminous paint.
- .7 Verify that installed products function properly, and adjust them accordingly to ensure satisfactory operation.
- .8 Install continuous tamper resistant security sealant around all flanges, trims, objects and all interfaces between accessory and wall/fixture/ceiling/floor where a ligature point may occur.

3.2 Barrier Free Installation Heights

- .1 Install accessories to permit operable parts and controls to be accessed at 1100 mm (43") maximum above finished floor, unless otherwise indicated.

3.3 Installation of Washroom Accessories

- .1 Install washroom accessory fixtures, accessories, and items in accordance with manufacturer's instructions and CAN/CSA B651-M.

WASHROOM AND JANITOR ACCESSORIES

- .2 Install washroom accessories plumb, level, and securely and rigidly anchored to substrate surfaces and framing.
- .3 Provide manufacturer's handling instructions, anchorage information, roughing-in dimensions, and templates for installation of the work of this section.
- .4 Install and secure fixtures rigidly in place as follows:
 - .1 Use expansion shields in solid masonry or concrete, toggle bolts in hollow masonry or sheet metal screws at metal studs.
- .5 Install grab bars in accordance with manufacturer's recommendations, on built-in plywood backing.
- .6 Install only as specified by manufacturer.
- .7 Verify locations and mounting heights with Consultant before roughing-in.
- .8 Insulate surfaces to prevent electrolytic action due to contact with dissimilar metals, or concrete or masonry if required. Use bituminous paint or other approved means.
- .9 Install continuous tamper resistant security sealant around all flanges, trims, objects and all interfaces between accessory and wall/fixture/ceiling/floor where a ligature point may occur.

3.4 Adjustment and Cleaning

- .1 Verify under work of this section that installed Products function properly, and adjust them accordingly to ensure satisfactory operation. Test mechanisms, hinges, locks, and latches and adjust and lubricate to ensure washroom accessories are in perfect working order.
- .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

Appendix A

Hardware Schedule

SHN Mental Health

Job No. 23745

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Submittal Date: **May 28, 2026**

SHN Mental Health
Job No. 23745

Submittal Date: May 28, 2026

Openings Schedule

Hardware Group	Qty	Opening Number(s)	Location 1	To/ From	Location 2	Door Type	Nominal Width	Nominal Height	Door Thickness	Door Mat'l	Frame Mat'l	Hand	Label
001	1	D3101	CORRIDOR (PICU 1) 3125	FROM	1-BED (PICU) 3101	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
002	1	D3102	CORRIDOR (PICU 1) 3125	FROM	1-BED (PICU) 3102	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
003	1	D3103	CORRIDOR (PICU 1) 3125	FROM	1-BED (PICU) 3103	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
004	1	D3104	CORRIDOR (PICU 1) 3125	FROM	1-BED (PICU) 3104	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
005	1	D3105	CORRIDOR (PICU 1) 3125	FROM	1-BED ACCESSIBLE (PICU) 3105	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
006	1	D3106	CORRIDOR (PICU 1) 3125	FROM	1-BED (PICU) 3106	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
007	1	D3107	CORRIDOR (PICU 1) 3126	FROM	1-BED (PICU) 3107	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
008	1	D3108	CORRIDOR (PICU 2) 3127	FROM	1-BED (PICU) 3108	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
009	1	D3109	CORRIDOR (PICU 2) 3127	FROM	1-BED (PICU) 3109	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
010	1	D3110	CORRIDOR (PICU 2) 3127	FROM	1-BED (PICU) 3110	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
011	1	D3111	CORRIDOR (PICU 2) 3127	FROM	1-BED (PICU) 3111	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
012	1	D3112	CORRIDOR (PICU 2) 3127	FROM	1-BED (PICU) 3112	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
013	1	D3113	CORRIDOR (PICU 2) 3128	FROM	1-BED (PICU) 3113	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
014	1	D3114	CORRIDOR (PICU 2) 3128	FROM	1-BED (PICU) 3114	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
015	1	D3101A	1-BED (PICU) 3101	TO	WR 3101A	H/F	1000	2134				RH-DA	
016	1	D3102A	1-BED (PICU) 3102	TO	WR 3102A	H/F	1000	2134				LH-DA	
017	1	D3103A	1-BED (PICU) 3103	TO	WR 3103A	H/F	1000	2134				RH-DA	
018	1	D3104A	1-BED (PICU) 3104	TO	WR 3104A	H/F	1000	2134				RH-DA	
019	1	D3105A	1-BED ACCESSIBLE (PICU) 3105	TO	WR 3105A	H/F	1000	2134				RH-DA	
020	1	D3106A	1-BED (PICU) 3106	TO	WR 3106A	H/F	1000	2134				LH-DA	
021	1	D3107A	1-BED (PICU) 3107	TO	WR 3107A	H/F	1000	2134				LH-DA	
022	1	D3108A	1-BED (PICU) 3108	TO	WR 3108A	H/F	1000	2134				RH-DA	
023	1	D3109A	1-BED (PICU) 3109	TO	WR 3109A	H/F	1000	2134				RH-DA	
024	1	D3110A	1-BED (PICU) 3110	TO	WR 3110A	H/F	1000	2134				LH-DA	
025	1	D3111A	1-BED (PICU) 3111	TO	WR 3111A	H/F	1000	2134				RH-DA	
026	1	D3112A	1-BED (PICU) 3112	TO	WR 3112A	H/F	1000	2134				LH-DA	
027	1	D3113A	1-BED (PICU) 3113	TO	WR 3113A	H/F	1000	2134				LH-DA	
028	1	D3114A	1-BED (PICU) 3114	TO	WR 3114A	H/F	1000	2134				LH-DA	
029	1	D3115	CORRIDOR - VULNERABLE PATIENT 3129	TO	1-BED 3115	B/E	1219	2134	45			RH-DA	
030	1	D3116	CORRIDOR - VULNERABLE PATIENT 3129	TO	1-BED 3116	B/E	1219	2134	45			LH-DA	
031	1	D3117	CORRIDOR - VULNERABLE PATIENT 3129	TO	1-BED (ACCESSIBLE) 3117	B/E	1219	2134	45			LH-DA	
032	1	D3118	CORRIDOR - VULNERABLE PATIENT 3129	TO	1-BED 3118	B/E	1219	2134	45			RH-DA	
033	1	D3119	CORRIDOR - VULNERABLE PATIENT 3130	TO	1-BED 3119	B/E	1219	2134	45			RH-DA	
034	1	D3120	CORRIDOR - VULNERABLE PATIENT 3130	TO	1-BED 3120	B/E	1219	2134	45			LH-DA	
035	1	D3121	CORRIDOR - VULNERABLE PATIENT 3130	TO	1-BED 3121	B/E	1219	2134	45			RH-DA	
036	1	D3122	CORRIDOR - VULNERABLE PATIENT 3130	TO	1-BED 3122	B/E	1219	2134	45			LH-DA	
037	1	D3123	CORRIDOR - VULNERABLE PATIENT 3130	FROM	SECLUSION ROOM 3123	A/A	1219	2134	48	HG HM	HG PRS	LHR	45 MIN
038	1	D3124	CORRIDOR - VULNERABLE PATIENT 3130	FROM	SECLUSION ROOM 3124	A/A	1219	2134	48	HG HM	HG PRS	RHR	45 MIN
039	1	D3115A	1-BED 3115	TO	WR 3115A	H/F	1000	2134				RH-DA	
040	1	D3116A	1-BED 3116	TO	WR 3116A	H/F	1000	2134				LH-DA	
041	1	D3117A	1-BED (ACCESSIBLE) 3117	TO	WR 3117A	H/F	1000	2134				RH-DA	
042	1	D3118A	1-BED 3118	TO	WR 3118A	H/F	1000	2134				RH-DA	
043	1	D3119A	1-BED 3119	TO	WR 3119A	H/F	1000	2134				RH-DA	
044	1	D3120A	1-BED 3120	TO	WR 3120A	H/F	1000	2134				LH-DA	
045	1	D3121A	1-BED 3121	TO	WR 3121A	H/F	1000	2134				RH-DA	
046	1	D3122A	1-BED 3122	TO	WR 3122A	H/F	1000	2134				LH-DA	
047	1	D3123A	SECLUSION ROOM 3123	TO	WR 3123A	H/F	1000	2134				RH-DA	
048	1	D3124A	SECLUSION ROOM 3124	TO	WR 3124A	H/F	1000	2134				LH-DA	

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Hardware Group	Qty	Opening Number(s)	Location 1	To/ From	Location 2	Door Type	Nominal Width	Nominal Height	Door Thickness	Door Mat'l	Frame Mat'l	Hand	Label
049	1	D3125	CORRIDOR 3155	TO/FROM	CORRIDOR (PICU 1) 3125	FX/D	1100, 1100	2134	45	HG HM	HG PRS	LHR-LHR	45 MIN
050	1	D3126	CORRIDOR (PICU 1) 3126	TO/FROM	CORRIDOR (PICU 1) 3127	FX/D	1100, 1100	2134	45	HG HM	HG PRS	LHR-LHR	45 MIN
051	1	D3128	CORRIDOR (PICU 1) 3128	TO/FROM	CORRIDOR (PICU 1) 3129	F/D	1100, 1100	2134	45	HG HM	HG PRS	LHR-LHR	
052	1	D3132	CORRIDOR - VULNERABLE PATIENT 3130	TO	LOCKERS (V.PT) 3132	D1/B1	965	2134	45	HG HM	HG PRS	RH	
053	1	D3133	CORRIDOR - VULNERABLE PATIENT 3130	TO	SHOWERS (V.PT) 3133	C2/C2	1000	2134	45	HG HM	HG PRS	LH-DA	
054	1	D3134A	CORRIDOR - VULNERABLE PATIENT 3129	TO	CONSULTATION ROOM 3134	E1/B1	965	2134	45	HG HM	HG PRS	LH	
055	1	D3134B	CONSULTATION ROOM 3134	TO	CLEAN UTILITY 3141	D1/B1	965	2134	45	HG HM	HG PRS	RH	
056	1	DX3135	CORRIDOR (PICU 2) 3128	TO	EX. ELEC/TEL. ROOM					EX	EX	RH	
057	1	D3136A	PATIENT DINING (PICU 2) 3137	TO	PANTRY (PICU 2) 3136	E1/B1	965	2134	45	HG HM	HG PRS	LH	
057A	1	D3136B	PANTRY (PICU 2) 3136	FROM	TEAM STATION 2 (PICU 2) 3139	E2/B2	965	2134	45	HG HM	HG PRS	RHR	
058	1	D3140	CORRIDOR 3143	TO	STORAGE 1 3140	D2/B2	965	2134	45	HM	PRS	LH	
059	1	D3141	CORRIDOR 3143	TO	CLEAN UTILITY 3141	D2/B2	965	2134	45	HM	PRS	LH	
060	1	D3142	CORRIDOR 3143	TO	SOILED UTILITY 3142	D2/B2	965	2134	45	HM	PRS	RH	
061	1	D3143A	CORRIDOR - VULNERABLE PATIENT 3130	TO	CORRIDOR 3143	E1/B1	965	2134	45	HG HM	HG PRS	LH	
062	1	D3143B	CORRIDOR (PICU 2) 3127	TO	CORRIDOR 3143	E1/B1	965	2134	45	HG HM	HG PRS	RH	
063	1	D3144	CORRIDOR 3145	TO	MEDICATION 3144	E2/B2	965	2134	45	HM	HM	RH	
064	1	D3146	PATIENT LOUNGE (V.PT) 3131	TO	CENTRAL STN/TEAM STN (V.PT) 3146	E1/B1	965	2134	45	HG HM	HG PRS	LH	
065	1	D3147	CORRIDOR 3145	TO	STAFF WR 3147	D2/B2	965	2134	45	HM	HM	LH	
066	1	D3148	CORRIDOR 3145	TO	STORAGE 2 3148	D2/B2	965	2134	45	HM	HM	LH	
067	1	D3149	CORRIDOR (PICU 2) 3137	TO	LOCKER (PICU) 3149	D1/B1	965	2134	45	HG HM	HG PRS	RH	
068	1	D3150	CORRIDOR (PICU 2) 3137	TO	SHOWER (PICU 2) 3150	C1/C1	950	2134	45	HG HM	HG PRS	LH-DA	
069	1	D3151	CORRIDOR (PICU 1) 3126	TO	SHOWER (PICU 1) 3151	C1/C1	950	2134	45	HG HM	HG PRS	RH-DA	
070	1	D3152A	CORRIDOR (PICU 1) 3125	TO	TEAM STATION (PICU 1) 3152	E1/B1	965	2134	45	HG HM	HG PRS	RH	
071	1	D3152B	CENTRAL STN/TEAM STN (V.PT) 3146	TO	TEAM STATION (PICU 1) 3152	E2X/B2	965	2134	45	HG HM	HG PRS	LH	45 MIN
072	1	D3154A	PATIENT DINING/LOUNGE (PICU 1) 3153	TO	PANTRY (PICU 1) 3154	E1X/B1	965	2134	45	HG HM	HG PRS	RH	45 MIN
072A	1	D3154B	PANTRY (PICU 1) 3154	FROM	CENTRAL STN/TEAM STN (V.PT) 3146	E2/B2	965	2134	45	HG HM	HG PRS	LHR	
073	1	EX3155	CORRIDOR 3155	FROM	ROOF TERRACE					EX	EX	LHR	
074	1	D3156	CORRIDOR 3155	TO	STAFF LOUNGE 3156	E1/E1	965	2134	45	HG HM	HG PRS	LH	
075	1	D3157A	CORRIDOR 3003	TO/FROM	SALLYPORT 3157	FX/FX	1100, 1100	2134	45	HG HM	HG PRS	LHR-LHR	90 MIN
076	1	D3157B	SALLYPORT 3157	TO/FROM	CORRIDOR 3155	F/F	1100, 1100	2134	45	HG HM	HG PRS	LHR-LHR	
077	1	D3158	CORRIDOR 3155	TO	PATIENT DINING (V.PT) 3158	E1/B1	965	2134	45	HG HM	HG PRS	RH	
078	1	D3159A	PATIENT DINING (V.PT) 3158	TO/FROM	PANTRY (V.PT) 3159	E1/B1	965	2134	45	HG HM	HG PRS	LH	90 MIN
078A	1	D3159B	CORRIDOR 3003	TO	PANTRY (V.PT) 3159	D2X/B2	965	2134	45	HG HM	HG PRS	LH	90 MIN
079	1	D-B	STAIR 1A B	TO/FROM	CORRIDOR (PICU 2) 3128	G1/C2	1100	2134	45	HG HM	HG PRS	RHR	90 MIN
080	1	D-BT	STAIR 1A B	FROM	CORRIDOR (PICU 2) 3128	G2/C2	1100	2134	45	HG HM	HG PRS	RHR	90 MIN

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Hardware Schedule

Heading #001

1 Single door D3101, CORRIDOR (PICU 1) 3125 FROM 1-BED (PICU) 3101

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #002

1 Single door D3102, CORRIDOR (PICU 1) 3125 FROM 1-BED (PICU) 3102

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #003

1 Single door D3103, CORRIDOR (PICU 1) 3125 FROM 1-BED (PICU) 3103

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #004

1 Single door D3104, CORRIDOR (PICU 1) 3125 FROM 1-BED (PICU) 3104

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #005

1 Single door D3105, CORRIDOR (PICU 1) 3125 FROM 1-BED ACCESSIBLE (PICU) 3105

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #006

1 Single door D3106, CORRIDOR (PICU 1) 3125 FROM 1-BED (PICU) 3106

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #007

1 Single door D3107, CORRIDOR (PICU 1) 3126 FROM 1-BED (PICU) 3107

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #008

1 Single door D3108, CORRIDOR (PICU 2) 3127 FROM 1-BED (PICU) 3108

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #009

1 Single door D3109, CORRIDOR (PICU 2) 3127 FROM 1-BED (PICU) 3109

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #010

1 Single door D3110, CORRIDOR (PICU 2) 3127 FROM 1-BED (PICU) 3110

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #011

1 Single door D3111, CORRIDOR (PICU 2) 3127 FROM 1-BED (PICU) 3111

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #012

1 Single door D3112, CORRIDOR (PICU 2) 3127 FROM 1-BED (PICU) 3112

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #013

1 Single door D3113, CORRIDOR (PICU 2) 3128 FROM 1-BED (PICU) 3113

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #014

1 Single door D3114, CORRIDOR (PICU 2) 3128 FROM 1-BED (PICU) 3114

RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #015

1 Single door D3101A, 1-BED (PICU) 3101 TO WR 3101A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #016

1 Single door D3102A, 1-BED (PICU) 3102 TO WR 3102A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #017

1 Single door D3103A, 1-BED (PICU) 3103 TO WR 3103A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #018

1 Single door D3104A, 1-BED (PICU) 3104 TO WR 3104A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #019

1 Single door D3105A, 1-BED ACCESSIBLE (PICU) 3105 TO WR 3105A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #020

1 Single door D3106A, 1-BED (PICU) 3106 TO WR 3106A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #021

1 Single door D3107A, 1-BED (PICU) 3107 TO WR 3107A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #022

1 Single door D3108A, 1-BED (PICU) 3108 TO WR 3108A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #023

1 Single door D3109A, 1-BED (PICU) 3109 TO WR 3109A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #024

1 Single door D3110A, 1-BED (PICU) 3110 TO WR 3110A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #025

1 Single door D3111A, 1-BED (PICU) 3111 TO WR 3111A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #026

1 Single door D3112A, 1-BED (PICU) 3112 TO WR 3112A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #027

1 Single door D3113A, 1-BED (PICU) 3113 TO WR 3113A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #028

1 Single door D3114A, 1-BED (PICU) 3114 TO WR 3114A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #029

1 Single door D3115, CORRIDOR - VULNERABLE PATIENT 3129 TO 1-BED 3115

RH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 RH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #030

1 Single door D3116, CORRIDOR - VULNERABLE PATIENT 3129 TO 1-BED 3116

LH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 LH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #031

1 Single door D3117, CORRIDOR - VULNERABLE PATIENT 3129 TO 1-BED (ACCESSIBLE) 3117

LH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 LH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #032

1 Single door D3118, CORRIDOR - VULNERABLE PATIENT 3129 TO 1-BED 3118

RH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 RH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #033

1 Single door D3119, CORRIDOR - VULNERABLE PATIENT 3130 TO 1-BED 3119

RH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 RH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #034

1 Single door D3120, CORRIDOR - VULNERABLE PATIENT 3130 TO 1-BED 3120

LH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 LH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #035

1 Single door D3121, CORRIDOR - VULNERABLE PATIENT 3130 TO 1-BED 3121

RH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm - KINGSWAY SWING DOOR SYSTEM

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 RH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #036

1 Single door D3122, CORRIDOR - VULNERABLE PATIENT 3130 TO 1-BED 3122

LH-DA

Type: B/E, 1219 x 2134 x 45 - HM DR x HM FR

VISION PANEL 432mm x 737mm

1	Double Acting Hinge	Double Acting Hinge - Supplied By Kingsway	
1	Emergency Release	Emergency Release - Supplied By Kingsway	
1	Lockset	L9056L XL13-439 HSLR-5 630 LH-DA	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Double Acting Closer	Double Acting Transom Closer - Supplied By Kingsway	
1	Kick Plate	Kick Plate - Supplied By Kingsway	
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #037

1 Single door D3123, CORRIDOR - VULNERABLE PATIENT 3130 FROM SECLUSION ROOM 3123

LHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LHR	630
1	Dead Lock	L462L 630 LHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

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Heading #038

1 Single door D3124, CORRIDOR - VULNERABLE PATIENT 3130 FROM SECLUSION ROOM 3124 RHR

Type: A/A, 1219 x 2134 x 48 - HG HM DR x HG PRS FR - 45 MIN

FIRE RATED VISION PANEL 739mm x 1034mm

1	Continuous Hinge	CH-953 HT x 2111mm RHR C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 RHR	630
1	Dead Lock	L462L 630 RHR XL11-000	630
3	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
3	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI LH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1180) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 1219 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 1219 TORX	

Heading #039

1 Single door D3115A, 1-BED 3115 TO WR 3115A RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #040

1 Single door D3116A, 1-BED 3116 TO WR 3116A LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #041

1 Single door D3117A, 1-BED (ACCESSIBLE) 3117 TO WR 3117A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #042

1 Single door D3118A, 1-BED 3118 TO WR 3118A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #043

1 Single door D3119A, 1-BED 3119 TO WR 3119A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #044

1 Single door D3120A, 1-BED 3120 TO WR 3120A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #045

1 Single door D3121A, 1-BED 3121 TO WR 3121A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #046

1 Single door D3122A, 1-BED 3122 TO WR 3122A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #047

1 Single door D3123A, SECLUSION ROOM 3123 TO WR 3123A

RH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #048

1 Single door D3124A, SECLUSION ROOM 3124 TO WR 3124A

LH-DA

Type: H/F, 1000 x 2134 x ___ - HM DR x HM FR

1	Ensuite Door System	Kingsway SFD01 Door System - Supplied By Kingsway
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Heading #049

1 Pair of doors D3125, CORRIDOR 3155 TO/FROM CORRIDOR (PICU 1) 3125

LHR-LHR

Type: FX/D, 1100, 1100 x 2134 x 45 - HG HM DR x HG PRS FR - 45 MIN

2	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
2	Exit Device	9847EO-F-630 4' Bar LHR LBR-AFL TORX 1100 x 2134 Door 45	630
2	Electromagnetic Lock	M490P 450/490-ATS/LED	
2	Filler Plate	TWD T&M M490 12.5" x 2.5" x 5" AL	AL
2	Concealed Closer	2214 689 SRI RH TORX	689
2	Kick Plate	GSH 80A C32D (305 x 1075) TORX MS	C32D
2	Frame Guard	GSH 50N 2PC Half Wrap x 864mm TORX MS C32D	C32D
2	Wall Door Stop	1841 C32D TORX	C32D
2	Head Seal	2891APK x 1100mm TORX	A
2	Jamb Seal	290APK x 2134mm TORX	A
2	Door Sweep	18100CNB x 1100mm TORX	C
1	Astragal	18041CNB 2x2134mm TORX	C
1	Power Supply	PS902- 900-FA	
2	Door Contact	1078B	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	

NOTE: MAGLOCKS TO TIE INTO FIRE ALARM.

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Heading #050

1 Pair of doors D3126, CORRIDOR (PICU 1) 3126 TO/FROM CORRIDOR (PICU 1) 3127

LHR-LHR

Type: FX/D, 1100, 1100 x 2134 x 45 - HG HM DR x HG PRS FR - 45 MIN

2	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
2	Exit Device	9847EO-F-630 4' Bar LHR LBR-AFL TORX 1100 x 2134 Door 45	630
2	Electromagnetic Lock	M490P 450/490-ATS/LED	
2	Filler Plate	TWD T&M M490 12.5" x 2.5" x 5" AL	AL
2	Concealed Closer	2214 689 SRI RH TORX	689
2	Kick Plate	GSH 80A C32D (305 x 1075) TORX MS	C32D
2	Frame Guard	GSH 50N 2PC Half Wrap x 864mm TORX MS C32D	C32D
2	Wall Door Stop	1841 C32D TORX	C32D
2	Head Seal	2891APK x 1100mm TORX	A
2	Jamb Seal	290APK x 2134mm TORX	A
2	Door Sweep	18100CNB x 1100mm TORX	C
1	Astragal	18041CNB 2x2134mm TORX	C
1	Power Supply	PS902- 900-FA	
2	Door Contact	1078B	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	

NOTE: MAGLOCKS TO TIE INTO FIRE ALARM.

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Heading #051

1 Pair of doors D3128, CORRIDOR (PICU 1) 3128 TO/FROM CORRIDOR (PICU 1) 3129

LHR-LHR

Type: F/D, 1100, 1100 x 2134 x 45 - HG HM DR x HG PRS FR

2	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
2	Electromagnetic Lock	M490P 450/490-ATS/LED	
2	Filler Plate	TWD T&M M490 12.5" x 2.5" x 5" AL	AL
2	Push Plate	GSH 81A C32D (127 x 508) RC TORX MS	C32D
2	Concealed Closer	2214 689 SRI RH TORX	689
2	Kick Plate	GSH 80A C32D (305 x 1075) TORX MS	C32D
2	Frame Guard	GSH 50N 2PC Half Wrap x 864mm TORX MS C32D	C32D
2	Wall Door Stop	1841 C32D TORX	C32D
2	Head Seal	2891APK x 1100mm TORX	A
2	Jamb Seal	290APK x 2134mm TORX	A
2	Door Sweep	18100CNB x 1100mm TORX	C
1	Astragal	18041CNB 2x2134mm TORX	C
1	Power Supply	PS902- 900-FA	
2	Door Contact	1078B	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	

NOTE: MAGLOCKS TO TIE INTO FIRE ALARM.

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Heading #052

1 Single door D3132, CORRIDOR - VULNERABLE PATIENT 3130 TO LOCKERS (V.PT) 3132

RH

Type: D1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

Heading #053

1 Single door D3133, CORRIDOR - VULNERABLE PATIENT 3130 TO SHOWERS (V.PT) 3133

LH-DA

Type: C2/C2, 1000 x 2134 x 45 - HG HM DR x HG PRS FR

1	Double Acting Continuous Hinge	DSH1000C x 2110mm SSHT-ALP TORX	C
1	Emergency Stop	ERSBHC x 2134mm NBP x HT x LH-DA	C
1	Lockset	L9056L XL13-439 HSLR-5 630 LH-DA OS-LOC	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Kick Plate	GSH 80A C32D (305 x 890) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #054

1 Single door D3134A, CORRIDOR - VULNERABLE PATIENT 3129 TO CONSULTATION ROOM 3134

LH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #055

1 Single door D3134B, CONSULTATION ROOM 3134 TO CLEAN UTILITY 3141

RH

Type: D1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

Heading #056

1 Elevation DX3135, CORRIDOR (PICU 2) 3128 TO EX. ELEC/TEL. ROOM

RH

___ x ___ x ___ - EX DR x EX FR

1	Note:	Existing To Remain
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Heading #057

1 Single door D3136A, PATIENT DINING (PICU 2) 3137 TO PANTRY (PICU 2) 3136

LH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

Heading #057A

1 Single door D3136B, PANTRY (PICU 2) 3136 FROM TEAM STATION 2 (PICU 2) 3139

RHR

Type: E2/B2, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RHR C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RHR	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #058

1 Single door D3140, CORRIDOR 3143 TO STORAGE 1 3140

LH

Type: D2/B2, 965 x 2134 x 45 - HM DR x PRS FR

1	Continuous Hinge	CH-953 HT x 2111mm LH C32D TORX	C32D
1	Lockset	L9080L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #059

1 Single door D3141, CORRIDOR 3143 TO CLEAN UTILITY 3141

LH

Type: D2/B2, 965 x 2134 x 45 - HM DR x PRS FR

1	Continuous Hinge	CH-953 HT x 2111mm LH C32D TORX	C32D
1	Lockset	L9080L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #060

1 Single door D3142, CORRIDOR 3143 TO SOILED UTILITY 3142

RH

Type: D2/B2, 965 x 2134 x 45 - HM DR x PRS FR

1	Continuous Hinge	CH-953 HT x 2111mm RH C32D TORX	C32D
1	Lockset	L9080L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #061

1 Single door D3143A, CORRIDOR - VULNERABLE PATIENT 3130 TO CORRIDOR 3143

LH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #062

1 Single door D3143B, CORRIDOR (PICU 2) 3127 TO CORRIDOR 3143

RH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #063

1 Single door D3144, CORRIDOR 3145 TO MEDICATION 3144

RH

Type: E2/B2, 965 x 2134 x 45 - HM DR x HM FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Overhead Door Stop	104S C32D	C32D
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #064

1 Single door D3146, PATIENT LOUNGE (V.PT) 3131 TO CENTRAL STN/TEAM STN (V.PT) 3146

LH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

Heading #065

1 Single door D3147, CORRIDOR 3145 TO STAFF WR 3147

LH

Type: D2/B2, 965 x 2134 x 45 - HM DR x HM FR

1	Continuous Hinge	CH-953 HT x 2111mm LH C32D TORX	C32D
1	Lockset	L9056L XL13-439 HSLR-5 630 LH OS-LOC	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	

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Heading #066

1 Single door D3148, CORRIDOR 3145 TO STORAGE 2 3148

LH

Type: D2/B2, 965 x 2134 x 45 - HM DR x HM FR

1	Continuous Hinge	CH-953 HT x 2111mm LH C32D TORX	C32D
1	Lockset	L9080L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #067

1 Single door D3149, CORRIDOR (PICU 2) 3137 TO LOCKER (PICU) 3149

RH

Type: D1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #068

1 Single door D3150, CORRIDOR (PICU 2) 3137 TO SHOWER (PICU 2) 3150

LH-DA

Type: C1/C1, 950 x 2134 x 45 - HG HM DR x HG PRS FR

1	Double Acting Continuous Hinge	DSH1000C x 2110mm SSHT-ALP TORX	C
1	Emergency Stop	ERSBHC x 2134mm NBP x HT x LH-DA	C
1	Lockset	L9056L XL13-439 HSLR-5 630 LH-DA OS-LOC	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Kick Plate	GSH 80A C32D (305 x 840) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

Heading #069

1 Single door D3151, CORRIDOR (PICU 1) 3126 TO SHOWER (PICU 1) 3151

RH-DA

Type: C1/C1, 950 x 2134 x 45 - HG HM DR x HG PRS FR

1	Double Acting Continuous Hinge	DSH1000C x 2110mm SSHT-ALP TORX	C
1	Emergency Stop	ERSBHC x 2134mm NBP x HT x RH-DA	C
1	Lockset	L9056L XL13-439 HSLR-5 630 RH-DA OS-LOC	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Kick Plate	GSH 80A C32D (305 x 840) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D

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Heading #070

1 Single door D3152A, CORRIDOR (PICU 1) 3125 TO TEAM STATION (PICU 1) 3152

RH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

Heading #071

1 Single door D3152B, CENTRAL STN/TEAM STN (V.PT) 3146 TO TEAM STATION (PICU 1) 3152

LH

Type: E2X/B2, 965 x 2134 x 45 - HG HM DR x HG PRS FR - 45 MIN

1	Continuous Hinge	CH-953 HT x 2111mm LH C32D TORX	C32D
1	Lockset	L9070L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Electronic Closer	4040SE STDTRK 689 TBTRX (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	

NOTE: CLOSER TO BE TIED INTO THE FIRE ALARM

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Heading #072

1 Single door D3154A, PATIENT DINING/LOUNGE (PICU 1) 3153 TO PANTRY (PICU 1) 3154

RH

Type: E1X/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR - 45 MIN

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #072A

1 Single door D3154B, PANTRY (PICU 1) 3154 FROM CENTRAL STN/TEAM STN (V.PT) 3146

LHR

Type: E2/B2, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LHR C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LHR	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 RH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

Heading #073

1 Elevation EX3155, CORRIDOR 3155 FROM ROOF TERRACE

LHR

___ x ___ x ___ - EX DR x EX FR

1	Note:	Existing To Remain
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Heading #074

1 Single door D3156, CORRIDOR 3155 TO STAFF LOUNGE 3156

LH

Type: E1/E1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #075

1 Pair of doors D3157A, CORRIDOR 3003 TO/FROM SALLYPORT 3157

LHR-LHR

Type: FX/FX, 1100, 1100 x 2134 x 45 - HG HM DR x HG PRS FR - 90 MIN

2	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LHR C32D TORX	C32D
2	Exit Device	LX-QEL-9847EO-F-626 4' Bar LHR 1100 x 2134 Door 45	626
2	Electromagnetic Lock	M490P 450/490-ATS/LED	
2	Filler Plate	TWD T&M M490 12.5" x 2.5" x 5" AL	AL
1	Auto Operator	8100 Single Push MTG TORX 628 (Mount In Sallyport)	
1	Auto Operator	8100 Single Pull MTG TORX 628 (Mount in Sallyport)	
2	Kick Plate	GSH 80A C32D (305 x 1075) TORX MS	C32D
2	Frame Guard	GSH 50N 2PC Half Wrap x 864mm TORX MS C32D	C32D
2	Wall Door Stop	1841 C32D TORX	C32D
2	Head Seal	2891APK x 1100mm TORX	A
2	Jamb Seal	290APK x 2134mm TORX	A
2	Door Sweep	18100CNB x 1100mm TORX	C
1	Astragal	18041CNB 2x2134mm TORX	C
1	Power Supply	PS914- 900-4RL-FA	
1	Power Supply	PS902- 900-FA For Mag Lock	
2	Wire Harness	CON-12	
2	Wire Harness	CON-192	
2	Door Contact	1078B	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	
1	Remote Release	Remote Release - By Security	

NOTES:

DOORS TO BE INTERLOCKED WITH D3157B.

MAGLOCKS TO TIE INTO FIRE ALARM.

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Heading #076

1 Pair of doors D3157B, SALLYPORT 3157 TO/FROM CORRIDOR 3155

LHR-LHR

Type: F/F, 1100, 1100 x 2134 x 45 - HG HM DR x HG PRS FR

2	Continuous Hinge	CH-953 HT x 2111mm LHR C32D TORX	C32D
2	Electromagnetic Lock	M490P 450/490-ATS/LED (Mount In Sallyport)	
2	Filler Plate	TWD T&M M490 12.5" x 2.5" x 5" AL	AL
2	Push Plate	GSH 81A C32D (127 x 508) RC TORX MS	C32D
1	Auto Operator	8100 Single Push MTG TORX 628 (Mount In Sallyport)	
1	Auto Operator	8100 Single Pull MTG TORX 628 (Mount In Sallyport)	
2	Kick Plate	GSH 80A C32D (305 x 1075) TORX MS	C32D
2	Frame Guard	GSH 50N 2PC Half Wrap x 864mm TORX MS C32D	C32D
2	Wall Door Stop	1841 C32D TORX	C32D
2	Head Seal	2891APK x 1100mm TORX	A
2	Jamb Seal	290APK x 2134mm TORX	A
2	Door Sweep	18100CNB x 1100mm TORX	C
1	Astragal	18041CNB 2x2134mm TORX	C
1	Power Supply	PS902- 900-FA	
2	Door Contact	1078B	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	
1	Remote Release	Remote Release - By Security	

NOTES:

DOORS TO BE INTERLOCKED WITH D3157A.
MAGLOCKS TO TIE INTO FIRE ALARM.

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Heading #077

1 Single door D3158, CORRIDOR 3155 TO PATIENT DINING (V.PT) 3158

RH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 RH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Concealed Closer	2214 689 SRI RH TORX	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Heading #078

1 Single door D3159A, PATIENT DINING (V.PT) 3158 TO/FROM PANTRY (V.PT) 3159

LH

Type: E1/B1, 965 x 2134 x 45 - HG HM DR x HG PRS FR - 90 MIN

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electronic Locking Device	LX-L9095EU L HSLR-5 630 LH	630
2	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
2	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	

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Heading #078A

1 Single door D3159B, CORRIDOR 3003 TO PANTRY (V.PT) 3159

LH

Type: D2X/B2, 965 x 2134 x 45 - HG HM DR x HG PRS FR - 90 MIN

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire LH C32D TORX	C32D
1	Electric Lockset	LX-RX-L9092EU L HSLR-5 630 LH	630
1	Mortise Cylinder	9852IC-#6 x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 925) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Perimeter Gasket	290AV x 1 @ 965 x 2 @ 2134 TORX	
1	Auto Door Bottom	420AVL x 965 TORX	
1	Door Contact	1078B	
1	Power Supply	PS902	
1	Wire Harness	CON-50	
1	Wire Harness	CON-192	
1	S.I.P Box	B994-04R1	
1	Card Reader	Card Reader - By Security	

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Submittal Date: May 28, 2026

Heading #079

1 Single door D-B, STAIR 1A B TO/FROM CORRIDOR (PICU 2) 3128

RHR

Type: G1/C2, 1100 x 2134 x 45 - HG HM DR x HG PRS FR - 90 MIN

1	Elect Continuous Hinge	CH-953 HT x 2111mm x 8 Wire RHR C32D TORX	C32D
1	Exit Device	98-L-F-626 4' Bar x M996L-R/626 FSE #17 Lever RHR 1100 x 2134 Door 45	626/626
1	Rim Cylinder	9852IC-H x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Electromagnetic Lock	M490P 450/490-ATS/LED	
1	Surface Closer	4511T 689 LH TBTRX 45mm Thick Door (Pull Side Mount)	689
1	Kick Plate	GSH 80A C32D (305 x 1060) TORX MS	C32D
1	Wall Door Stop	1841 C32D TORX	C32D
1	Head Seal	2891APK x 1100mm TORX	A
2	Jamb Seal	290APK x 2134mm TORX	A
1	Door Sweep	18100CNB x 1100mm TORX	C
1	Power Supply	PS902- 900-FA	
1	Power Supply	PS902	
1	Door Contact	1078B	
1	S.I.P Box	B994-04R1	
2	Card Reader	Card Reader - By Security	

NOTE: MAGLOCK TO TIE INTO FIRE ALARM.

Heading #080

1 Single door D-BT, STAIR 1A B FROM CORRIDOR (PICU 2) 3128

RHR

Type: G2/C2, 1100 x 2134 x 45 - HG HM DR x HG PRS FR - 90 MIN

3	Standard Hinge	LH199BB 5" x 4" 32D NRP HT TORX	32D
1	Exit Device	98-L-NL-F-626 4' Bar x 996L-NL-R/626-#17 Lever RHR 1100 x 2134 Door 45	626/626
1	Rim Cylinder	9852IC-H x RED CORE 626	626
1	Permanent Core	Permanent Keying By Peace Of Mind Lockset	
1	Surface Closer	4040XP SCUSH 689 TORX	689
1	Kick Plate	GSH 80A C32D (305 x 1060) TORX MS	C32D

NOTE : TEMPORARY DOOR.

SHN Mental Health
Job No. 23745

Submittal Date: May 28, 2026

LH199BB



Full Mortise Hinges - Heavy Weight

LAWRENCE®
HARDWARE INTL.

For use on heavy weight doors that have high frequency of service
Suitable for wood and metal doors

Hinge Size		Gauge of Metal	
Inches	mm	Inches	mm
4-1/2 x 4	114 x 102	0.180	4.6
4-1/2 x 4-1/2	114 x 114	0.180	4.6
5 x 4	127 x 102	0.190	4.8
5 x 4-1/2	127 x 114	0.190	4.8
5 x 5	127 x 127	0.190	4.8



HOSPITAL TIPS & TORX SCREWS REQUIRED

Certification: ANSI/BHMA A156.1 and A156.7
Description: 5 Knuckle, 4 Ball Bearing Butt Hinge - for heavy weight door applications
Finish: US32D
Base Material: Stainless Steel
Options: NRP/ETW/PIC/RC

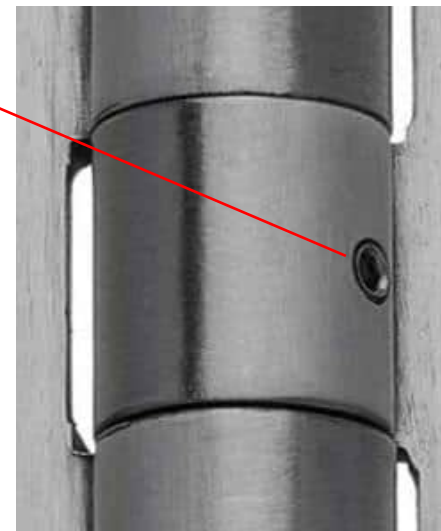
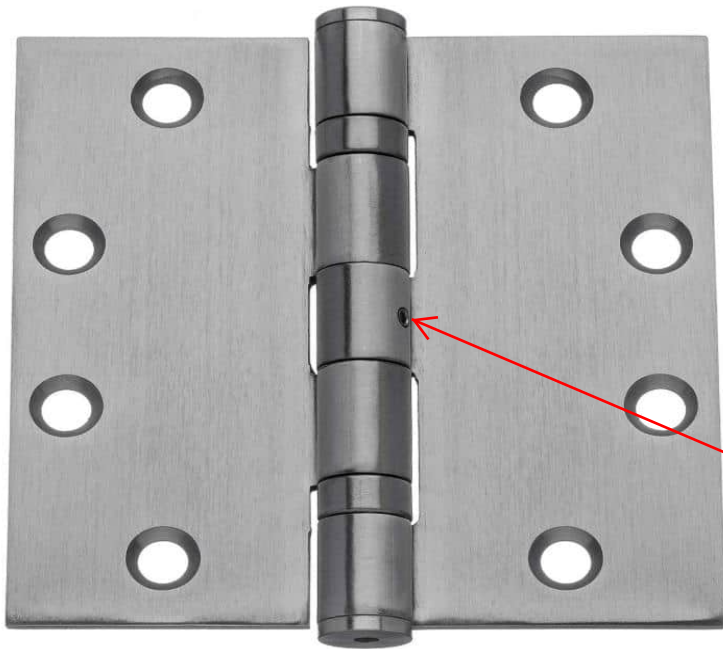


Upper Canada Specialty Hardware

Item Code:	LH199BB HEAVY WEIGHT HINGE	
Manufacturer:	LAWRENCE HARDWARE	
Date:	SEPT 7/18	Page 1 of 1

NON-REMOVABLE PIN (NRP)

Butt Hinge
OPTION



Set screw in barrel intercepts groove in loose pin as shown.
This set screw is tightened down against the pin. In most cases, the pin has a groove in the position where the set screw makes contact, allowing the set screw to seat.
Set screw is not accessible when door is closed.
Specify "NRP" (non-removable pin) when ordering.



Upper Canada Specialty Hardware

Item Code:	NRP-NON REMOVABLE PIN OPTION	
Manufacturer:	LAWRENCE	
Date:	OCT 22/19	Page 1 of 1

Butt Hinges OPTIONS

LAWRENCE[®]
HARDWARE INTL.



PLUG IN CONNECTOR (PIC)

- Plug In Connector makes a connection in field faster and creates a positive interlocking between the hinge side of the door and the device.
- Specify "PIC", wire gauge and number of wires when ordering.



HOSPITAL TIP (HT)

- Hospital Tip barrel ends are sloped, making it easier to clean and making it difficult to attach rope, clothing or other ligatures.
- The pin is held in place by a cross pin for security reasons
- Used primarily for security areas in hospitals and in prisons
- Specify "HT" when ordering
- Not available in all models

RADIUS CORNER (RC)

- Radius Corners are primarily used on Aluminum doors and frames.
- Available in 1/4" and 5/8" radius
- Specify "RC" and the radius when ordering



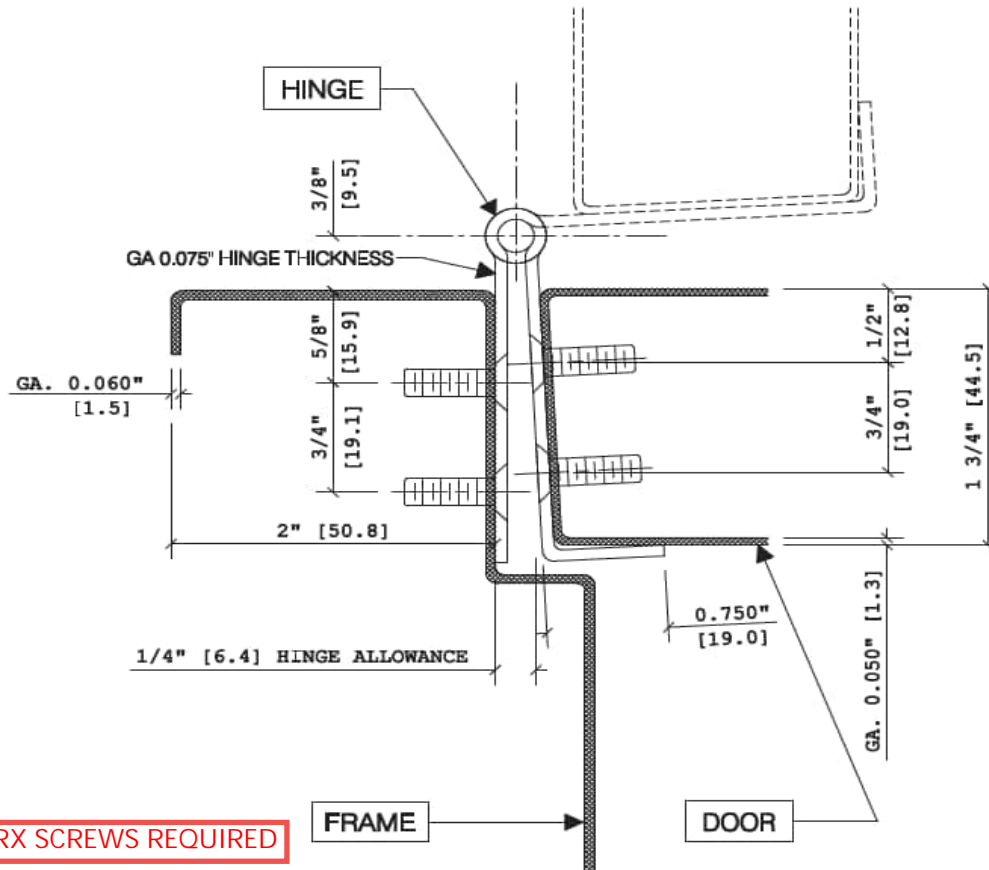
Upper Canada Specialty Hardware

Item Code:	PIC , RC & HT OPTIONS
Manufacturer:	LAWRENCE HARDWARE
Date:	SEPT 7/18

Page 1 of 1

CONTINUOUS HINGE

CH953 HALF WRAP EDGE GUARD/MOUNT



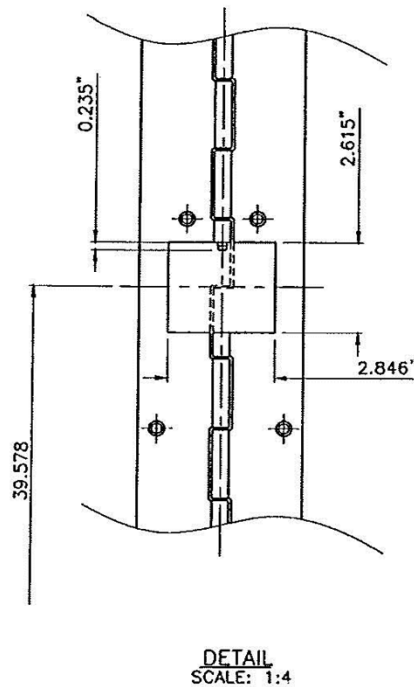
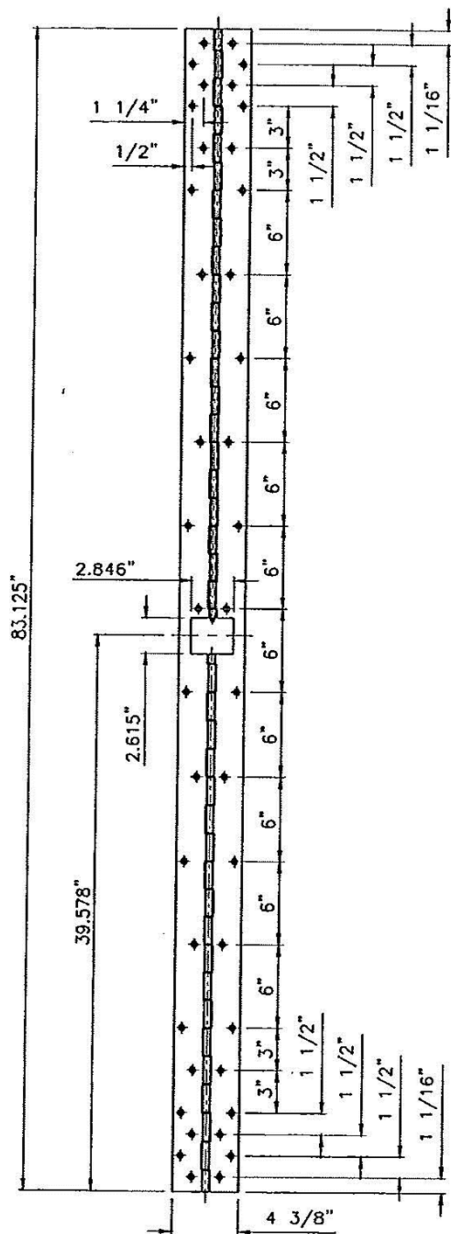
HOSPITAL TIPS & TORX SCREWS REQUIRED

- For Doors Weighing up to 600 pounds
- Non Handed
- 48" Maximum Door Width
- Bevel or Square Edge Door
- Standard Lengths 6'8" to 7'2", 8' and 10'
- Standard Mounting Hardware
- #10 x 1/2" Self Drilling and Tapping Screws
- #10 x 1" Wood Screws
- Material 953-14 Gauge Type 304 Stainless Steel
- Fire Rating ULC up to 3 hours
- Finishes 953
- BHMA 630
- US Number US32D



Upper Canada Specialty Hardware

Item Code:	CH953 HALF WRAP CONTINUOUS HINGE	
Manufacturer:	GALLERY	
Date:	MAR. 11/19	Page 1 of 1



Available Finishes

Prime

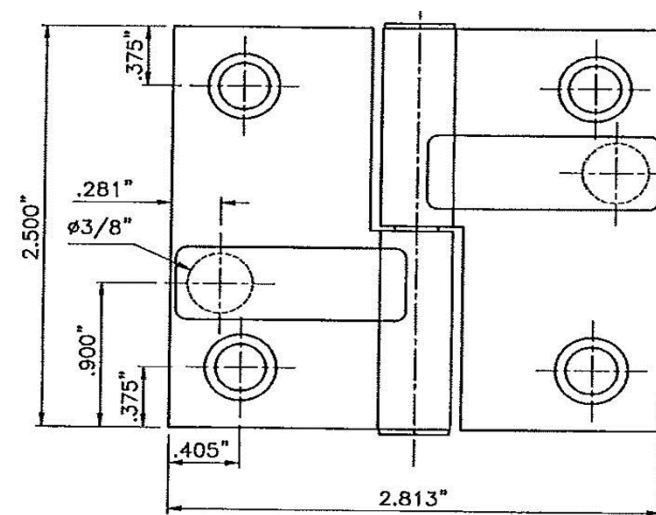
Length

10'

8'

6'-8" to 7'-2"

8 Wire Electric Hinge Kit

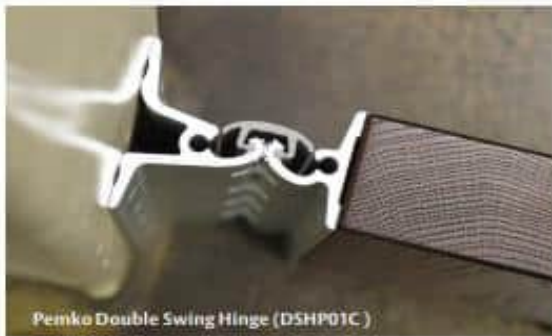


Upper Canada Specialty Hardware

Item Code: GSH CH-951 Continuous Hinge With Electric 8 Wire Hinge Kit

Manufacturer: Gallery Specialty Hardware

Date: 19/08/10



Pemko Double Swing Hinge (DSHP01C)

ASSA ABLOY designs and manufactures products to improve safety and mitigate risk in behavioral healthcare and assisted living environments. Applications include patient rooms, patient bathrooms and cross corridor bathrooms.

Combine complementary products from ASSA ABLOY Group brands to form an optimal healthcare door opening solution.

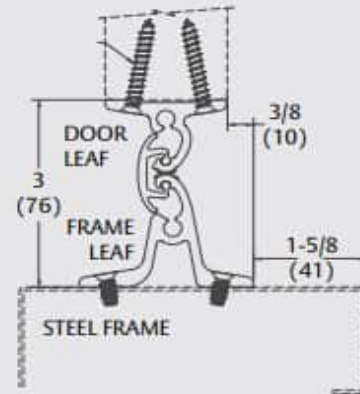
The Double Swing Hinge and Emergency Release Stop are accepted by the New York State Office of Mental Health (OMH) for use in high risk areas.



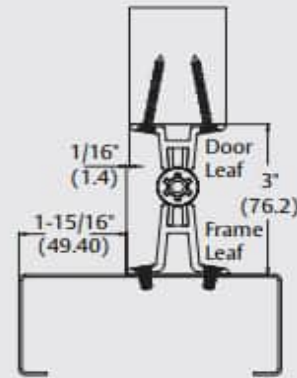
Double Swing Hinge: DSH_

Hinge Size	Opening	Gear Hinge Clear Anodized	Pin & Barrel Hinge Clear Anodized
84"	7' 0"	DSHP01C-84	DSH1000-84C
96"	8' 0"	DSHP01C-96	DSH1000-96C
120"	10' 0"	DSHP01C-120	DSH1000-120C

DSHP01C



DSH1000



Technical Specifications:

Hinge

Material: 6063-T6 Aluminum Alloy

Finishes: Clear Anodized Aluminum (other finishes available by special request)

Fasteners: Torx Security Machine Screws

BHMA: Double Swing Hinge ANSI/BHMA A156.26 certified.

ADA Compliance: DSH meets the barrier free requirements of ICC/ANSI A117.1-2009 and ADAAG-2010

Note: Although these products are better designed for behavioral health applications than traditional door hinges, they do not eliminate the risk that an object can be affixed to, or around them.

Features

Double-swing design opens 100°

Benefits

Opens wide in either direction

BL (Black Anodized) - special request only

C (Clear Anodized)

D (Dark Bronze Anodized) - special request only

PW (Painted White) - special request only

SN (Satin Nickel Anodized) - special request only



Upper Canada Specialty Hardware

Item Code: DOUBLE SWING HINGES

Manufacturer: PEMKO

Date: JULY 31/18

Page 1 of 1

Emergency Release Stop



Pemko ERS with Multipoint (ERSMP)



Pemko ERS with Special Flush Bolt (ERSBH)

Hinge Size	Opening
84"	7' 0"
96"	8' 0"
120"	10' 0"
84"	7' 0"
96"	8' 0"
120"	10' 0"

BL (Black Anodized) - special request only
C (Clear Anodized)
 D (Dark Bronze Anodized) - special request only
 PW (Painted White) - special request only
 SN (Satin Nickel Anodized)

The ERSBH Emergency Release Stop and ERSMP Emergency Release Stop with Multi-Point Latch can be used in combination with our DSH double swing hinge to create a complete anti-barricade system. This stop features a special flush bolt (ERSBH) or hooks (ERSMP) that is used to release the door in emergency situations and allow it to swing in the opposite direction.

Grade: Grade 1

Hinge Material: Aluminum

Hinge Mounting Type: Full Surface

Hinge Strength: Heavy Weight

Handing: Handed

Fastener: Teks

Fastener Type: Self Drilling

Maximum Door Width: 4'

Maximum Length: 120"

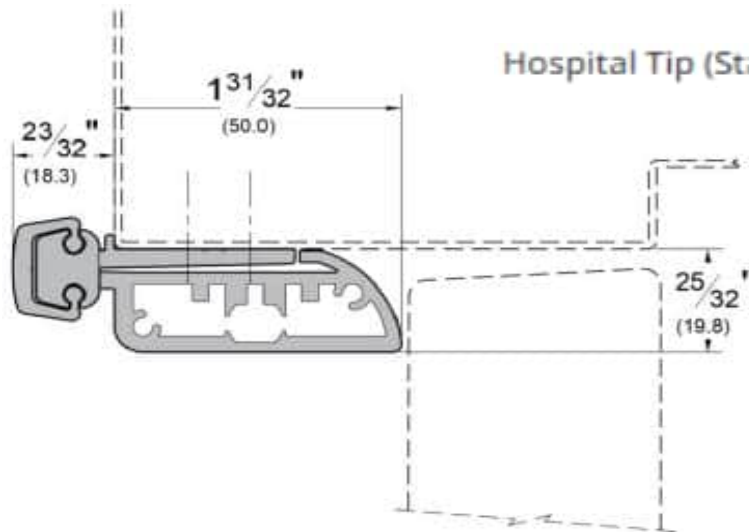
Minimum Length: 79"

Maximum Swing: 180°

Minimum Hinge Clearance: 1/8"

Weight: 1.43lbs. per foot

Hospital Tip (Standard)



ERS Notches

ERSBH: NPXXL, NBP and FBP
 ERSMP: NBP and FBP

Option Code	Description
MP	Multi point latch with Torx drive tool
BH	Flush bolt with key



Upper Canada Specialty Hardware

Item Code:	ERSBH & ERSMP EMERGENCY RELEASE STOP
Manufacturer:	PEMKO
Date:	MAR 17/25



Cylinder suffix

- P** = Conventional 6-pin full-face cylinder
- L** = Less conventional cylinder
- C** = Concealed cylinder
- W** = Less concealed cylinder
- Z** = Conventional Everest 29 SL 7-pin cylinder
- R** = Full size interchangeable core
- F** = Full size interchangeable core less Schlage logo
- M** = Full size interchangeable core Everest 29 SL 7-pin
- T** = Full size construction core
- J** = Less full size interchangeable core (FSIC)
- B** = Less small format interchangeable core (SFIC) (for Falcon, Best, etc.)
- G** = Small format Everest 29 Patented core
- H** = Small format keyed brass construction core
- BDC** = Small format plastic construction core

Key features

Exceeds ANSI/BHMA Grade 1 operational and security standards

Expansive list of configurations and options, including retrofit indicators

50 standard mechanical functions, custom functions also offered

"The Original" universal lock case allows creation of 10 functions from a single lock body

14 finishes and 33 levers, two knobs, five roses and three escutcheon designs

Supports standard, SFIC and FSIC cylinder formats

Multiple key systems available – open, patented, restricted, geographic exclusive, UL 437

Spring-loaded fusible link
inside lock case provides fail secure mode in case of fire

Security blocking hub
prevents lock picking by removing levers



Two piece anti-friction tongue
reduces wear

Field reversible latch bolt

Floating mounting tabs
automatically adjust to fit a beveled door edge



Breakaway spindle
prevents unsecured failures and provides easy replacement

Anti-saw pin
prevents cut through; included on deadbolt functions

SCHLAGE

L Series Mechanical

Applications

The Schlage L Series has long been the benchmark for mortise locks. Beyond strength and security – it offers tremendous flexibility to allow it to meet the needs of most every application.

The ability to suite across electronic, tubular, exit trim, and multi-point locks allows the Schlage L Series mortise lock to integrate seamlessly into any environment.

Bright brass	Satin brass	Antique bronze	Satin bronze	Oil rubbed bronze	Satin nickel	Matte black	Bright chrome	Satin chrome	Bright stainless steel	Satin stainless steel	Aged bronze
605	606	609	612	613	619	622	625	626/ 626AM	629	630/ 630AM	643e
US3	US4	US5	US10	US10B	US15	US19	US26	US26D	US32	US32D	US11



Upper Canada Specialty Hardware

Item Code: L SERIES MORTISE MECHANICAL LOCKS

Manufacturer: SCHLAGE

Date: JAN 16/2020

Page 1 of 1



Mechanical Key features

Exceeds ANSI/BHMA Grade 1 operational and security standards

Expansive list of configurations and options, including retrofit indicators

50 standard mechanical functions, custom functions also offered

"The Original" universal lock case allows creation of 10 functions from a single lock body

14 finishes and 33 levers, two knobs, five roses and three escutcheon designs

Supports standard, SFIC and FSIC cylinder formats

Multiple key systems available – open, patented, restricted, geographic exclusive, UL 437

Key features

All mechanical features plus:
Auto-detect 12/24 VDC

Selectable EL/EU

10 electrified functions

Advanced features: RX, DPS, latchbolt monitor and deadbolt monitor for application flexibility

Leading energy efficiency that eliminates "hot levers"

Advanced motor-driven electrified functions – quieter, smoother, more secure operation

Applications

The wired electrified L Series is ideal for new construction and high traffic areas where hardwired power ensures continuous operation and where electrified door prep, hinges and wiring can easily be incorporated into the building.

The electrified L Series is regularly used as part of an access control system for high security areas, or independently in areas that require a remote access switch.

SCHLAGE

L Series electrified lock

All mechanical features +

Universal Input voltage
Accepts 12V or 24V DC for inventory and installation flexibility

Modular RX design
Request to Exit (RX) can be added at a later time without opening the lock case

Standard Molex connector
for easy installation

Switch-selectable EL/EU
Change mode (electrically locked or unlocked) anytime via switch on lock case

Efficient motor-driven design
0.4 amp max current draw allows more locks per power supply
Low 0.01 amp holding current eliminates "hot levers"
Quiet operation



Color	Bright brass	Satin brass	Antique bronze	Satin bronze	Oil rubbed bronze	Satin nickel	Matte black	Bright chrome	Satin chrome	Bright stainless steel	Satin stainless steel	Aged bronze
ANSI/BHMA	605	606	609	612	613	619	622	625	626/ 626AM	629	630/ 630AM	643e
US	US3	US4	US5	US10	US10B	US15	US19	US26	US26D	US32	US32D	US11



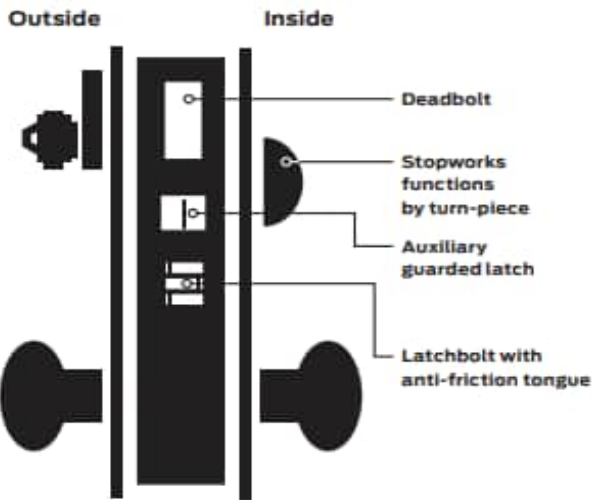
Upper Canada Specialty Hardware

Item Code: L SERIES MORTISE ELECTRIFIED LOCKS

Manufacturer: SCHLAGE

Date: JAN 17/2020

Page 1 of 1



L Series

- Cylinder
- Solid spindle
- Outside knob or lever
- Two-piece spindle
- Inside knob or lever
- Emergency turn piece
- Thumbturn
- Occupancy indicator
- Thumbturn cylinder
- Electrified function
- Coin turn

Key

- LV** Vandgard function allows exterior lever to rotate freely down, while remaining securely locked.
- 180 degree messaging indicator available.

Legend

Product identification guide

L/LV 9 4 53 P

- Lock series**
 - L = standard
 - LV = Vandgard®
- Function**
 - 0 = dummy trim without lock case
 - 9 = functions with lock case
 - 0 = no deadbolt
 - 1 = dummy trim
 - 4 = with deadbolt
- Cylinder suffix**
 - P** = Conventional 6-pin full-face cylinder
 - L** = Less conventional cylinder
 - C** = Concealed cylinder
 - W** = Less concealed cylinder
 - Z** = Conventional Everest 29 SL 7-pin cylinder
 - R** = Full size interchangeable core
 - F** = Full size interchangeable core less Schlage logo
 - M** = Full size interchangeable core Everest 29 SL 7-pin
 - T** = Full size construction core
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 - B** = Less small format interchangeable core (SFIC) (for Falcon, Best, etc.)
 - G** = Small format Everest 29 Patented core
 - H** = Small format keyed brass construction core
 - BDC** = Small format plastic construction core



Upper Canada Specialty Hardware

Item Code:	PRODUCT IDENTIFICATION GUIDE	
Manufacturer:	SCHLAGE	
Date:	OCT 22/19	Page 1 of 1

L-SERIES FULL LIST OF FUNCTIONS

L9010

Passage Latch

Latchbolt retracted by knob/lever from either side at all times. Inside lever is always free for immediate egress.

L9040/LV9040

Bath/Bedroom Privacy Lock

Lock Latchbolt retracted by knob/lever from either side unless outside is locked by inside thumbturn. Turning inside knob/lever or closing door unlocks outside knob/lever. To unlock from outside, remove emergency button, insert emergency thumbturn (furnished) in access hole and rotate. Inside lever is always free for immediate egress.

L9044/LV9044

Privacy With Coin Turn Outside

Latchbolt retracted by knob/lever from either side unless outside is locked by inside thumbturn or outside coin turn. Operating inside knob/lever, closing door, rotating inside thumbturn or rotating outside coin turn unlocks outside knob/lever. Specify per L283-056 for Torx® screws. Available with rose trim only. (Previously XL11-868)

L9440/LV9440

Privacy With Deadbolt

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by inside thumbturn. Throwing deadbolt locks outside knob/lever. Rotating inside knob/lever simultaneously retracts deadbolt and latchbolt, and unlocks outside knob/lever. To unlock from outside, remove emergency button, insert emergency thumbturn in access hole and rotate. Inside lever is always free for immediate egress. (Previously XL11-761)

L9444/LV9444

Privacy with Deadbolt and Coin Turn Outside

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by inside thumbturn or outside coin turn. Throwing deadbolt locks outside knob/lever. Rotating inside knob/lever simultaneously retracts deadbolt and latchbolt, and unlocks outside knob/lever. Rotating outside coin turn retracts deadbolt and unlocks outside knob/lever. Specify per L283-056 for Torx screws. Available with rose trim only. Inside lever is always free for immediate egress. (Previously XL11-868)

L0170

Half Dummy Trim

Knob/lever on one side fixed by mounting bar.

L0172

Full Dummy Trim

Knob/lever on both sides fixed by mounting bar.

L9175

Half Dummy Trim with Lock Case

Fixed knob/lever on one side inoperable. Includes lock case and armored front. Options same as L9176 below.

L9176

Full Dummy Trim with Lock Case

Fixed knob/lever on both sides. Includes lock case and blank armor front. May be ordered with optional XL11-743 armored front with cutout to receive deadbolt.

SINGLE CYLINDER NON-DEADBOLT FUNCTIONS

L9050/LV9050

Office and Inner Entry Lock

Latchbolt retracted by knob/lever from either side unless outside is made inoperative by key outside or by turning inside thumbturn. When outside is locked, latchbolt is retracted by key outside or by knob/lever inside. Outside knob/lever remains locked until thumbturn is returned to vertical or unlocked by key. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9056/LV9056**L9050 with Automatic Unlocking**

Latchbolt retracted by knob/lever from either side unless outside is made inoperative by key outside or by rotating inside thumbturn. Outside knob/lever unlocked by key outside or thumbturn. Rotating inside knob/lever simultaneously retracts latchbolt and unlocks outside knob/lever. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress. (Previously XL11-776)

L9070/LV9070**Classroom Lock**

Latchbolt retracted by knob/lever from either side unless outside is locked by key. Unlocked from outside by key. Inside knob/lever always free for immediate exit. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9076/LV9076**Classroom Holdback Lock**

Latchbolt retracted by knob/lever from either side unless outside is locked by key. When locked, latchbolt retracted by key outside or knob/lever inside. Auxiliary latch deadlocks latchbolt when door is closed. Depress inside knob/lever and turn key 360° for holdback feature. Inside lever is always free for immediate egress.

L9080/LV9080**Storeroom Lock**

Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always inoperative. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9080EL/LV9080EL**Electrically Locked (Fail Safe)**

Outside knob/lever continuously locked by 24VAC or DC. Latchbolt retracted by key outside or by knob/lever inside. Switch or power failure allows outside knob/lever to retract latchbolt. Auxiliary latch deadlocks latchbolt when door is closed. Inside knob/lever always free for immediate exit. Inside lever is always free for immediate egress.

L9080EU/LV9080EU**Electrically Unlocked (Fail Secure)**

Outside knob/lever unlocked by 24VAC or DC. Latchbolt retracted by key outside or knob/lever inside. Auxiliary latch deadlocks latchbolt when door is closed. Inside knob/lever always free for immediate exit. Inside lever is always free for immediate egress.

L9080EL-RX/L9080EU-RX**Request to Exit (RX) Electrified Lock**

Same as L9080EL and L9080EU functions. In addition, a micro switch positioned inside the lock case monitors the retractor crank, and is actuated when rotation of the inside or outside knob/lever rotates the retractor hub. The switch signals the use of that opening to security systems, allowing a non-disruptive means of immediate egress. Specify per L283-059 for normally closed contacts (default). Specify L283-125 for normally open contacts. Inside lever is always free for immediate egress. (Previously XL11-807)

SINGLE CYLINDER DEADBOLT FUNCTIONS**L9453/LV9453****Entrance Lock**

Latchbolt retracted by knob/lever from either side unless outside is locked by 20° rotation of thumbturn. Deadbolt thrown or retracted by 90° rotation of thumbturn. When locked, key outside or knob/lever inside retracts deadbolt and latchbolt simultaneously. Outside knob/lever remains locked until thumbturn is restored to vertical position. Throwing deadbolt automatically locks outside knob/lever. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9456/LV9456**Corridor Lock**

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside or inside thumbturn. Throwing deadbolt locks outside knob/lever. Turning inside knob/lever simultaneously retracts deadbolt and latchbolt and unlocks outside knob/lever. Inside lever is always free for immediate egress.

L9465**Closet/Storeroom Lock**

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside.

L9473**Dormitory/Bedroom Lock**

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside or thumbturn inside.

L9480/LV9480**Storeroom Lock With Deadbolt**

Latchbolt retracted by key outside or by lever or knob inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by key outside or thumbturn inside. Turning inside knob/lever simultaneously retracts both deadbolt and latchbolt. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress. (Previously XL11-591)

L9485/LV9485**Prison Function Lock**

Latch retracted by key outside or knob inside. Outside knob always free spinning. Deadbolt only thrown or retracted by guard's key. Inside knob becomes fixed when deadbolt is thrown. Prisoner's key only retracts latchbolt. Furnished standard with tamper resistant Torx® screws. Specify per XL11-557.

L9485/LV9485**Hotel or Restroom Lock**

Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown, all keys become inoperative except emergency or display keys. Turning inside knob/lever retracts both deadbolt and latchbolt simultaneously. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9486/LV9486**Hotel or Restroom Lock with****"Do Not Disturb" Indicator**

Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown, "DO NOT DISTURB" plate is displayed. All keys become inoperative except emergency or display keys. Turning inside knob/lever retracts both deadbolt and latchbolt simultaneously. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9486 x L583-375/LV9486 x L583-375**L9486 with "Occupied" Indicator**

Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown, "OCCUPIED" plate is displayed and all keys become inoperative except emergency keys. Turning inside knob/lever simultaneously retracts both deadbolt and latchbolt. Auxiliary latch deadlocks latchbolt when door is closed. (Previously XL11-580) Inside lever is always free for immediate egress.

L9496**Privacy with "Occupied" Indicator**

Knob/lever retracts latchbolt from either side. Deadbolt thrown or retracted by key outside (retraction by key required in the event of an emergency) or inside thumbturn. Throwing deadbolt locks outside knob/lever and displays "OCCUPIED" plate. Rotating inside knob/lever simultaneously retracts both deadbolt and latchbolt and unlocks outside knob/lever. Inside lever is always free for immediate egress. (Previously XL11-885)

DOUBLE CYLINDER NON-DEADBOLT FUNCTIONS

L9060/LV9060

Apartment Entrance Lock

Latchbolt retracted by knob/lever from either side unless outside is locked by key from inside. When locked, latchbolt retracted by key outside or knob/lever inside. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9071/LV9071

Classroom Security Lock

Latchbolt retracted by knob/lever from either side unless outside is locked by key from either side. When locked, latchbolt retracted by key outside or knob/lever inside. Auxiliary latch deadlocks latchbolt when door is locked. Inside lever is always free for immediate egress.

L9077/LV9077

Classroom Security Holdback Lock

Latchbolt retracted by knob/lever from either side unless outside is locked by key from either side. When locked, latchbolt retracted by key outside or knob/lever inside. Auxiliary latch deadlocks latchbolt when door is locked. Depress inside knob/lever and turn key 360° for holdback feature. Inside lever is always free for immediate egress.

L9082/LV9082

Institution Lock*

Latchbolt retracted by key from either side. Knob/lever on both sides always inoperative. Auxiliary latch deadlocks latchbolt when door is closed.

L9082EL/L9082EU

L9082 Electrically Locked or Electrically Unlocked Both Sides*

EEL: Outside and inside knob or lever continually locked electrically. Latchbolt retracted by key either side. Switch or power failure allows outside and inside knob/lever to retract latchbolt. Auxiliary latch deadlocks latchbolt when door is closed. EU: Outside and inside knob/lever unlocked electrically. Latchbolt retracted by key either side. Switch or power failure keeps inside and outside knob/lever locked. Auxiliary latch deadlocks latchbolt when door is closed. (Previously XL11-452)

DOUBLE CYLINDER DEADBOLT FUNCTIONS

L9457/LV9457

Classroom Security Lock

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key from either side. Throwing deadbolt locks outside knob/lever. Turning inside knob/lever simultaneously retracts deadbolt and latchbolt and unlocks outside knob/lever. Inside lever is always free for immediate egress.

L9466

Store/Utility Room Lock*

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key from either side.

L9482/LV9482

Institution Lock with Deadbolt*

Latchbolt retracted by key from either side. Knob/lever on both sides always inoperative. Deadbolt thrown or retracted by key either side. Auxiliary latch deadlocks latchbolt when door is closed. Specify per XL11-543.

FULL MORTISE DEADLOCKS

L9460

Cylinder x Thumbturn Lock

Deadbolt thrown or retracted by key outside or thumbturn inside.

L9462

Double Cylinder Lock*

Deadbolt operated by key from either side.

L9463

Classroom Lock

Deadbolt thrown or retracted by key from outside. Inside thumbturn cylinder retracts deadbolt, but cannot project it.

L9464

Cylinder Lock

Deadbolt thrown or retracted by key from one side. No trim on opposite side.

L9460 x XL11-635

L9460 with Pull

Knob/lever both sides fixed. Deadbolt thrown or retracted by key outside or thumbturn inside.

L9460 x XL11-886**Single Cylinder Deadlock with Pull**

Deadbolt thrown or retracted by key outside or thumbturn inside. No latch, but inside knob or lever is spring-loaded. Rotating inside knob/lever also retracts deadbolt. Fixed outside knob/lever.

L9462 x XL11-886**Double Cylinder Deadlock with Pull**

Deadbolt thrown or retracted by key from either side. No latch, but inside knob/lever is spring-loaded. Rotating inside knob/lever also retracts deadbolt. Fixed outside knob/lever.

L9464 x XL11-886**Deadlock with Pull**

Deadbolt thrown or retracted by key from one side. No latch, but inside knob/lever is spring-loaded. Rotating inside knob/lever also retracts deadbolt. Fixed outside knob/lever.

SPECIAL FUNCTIONS**L9040/LV9040****Privacy With Turns Both Sides**

Latchbolt retracted by knob/lever from either side unless outside is locked by inside or outside thumbturn. Operating inside knob/ lever, closing door or rotating either thumbturn unlocks outside knob/lever. Specify per XL11-446.

L9110 x XL11-741**Full Dummy Trim with Lock Case***

Spring-loaded knob/lever both sides. Includes lock case and blank armored front. May be ordered with optional XL11-743 armored front with cutout to receive deadbolt

SMALL MORTISE DEADLOCKS**L460****Cylinder x Thumbturn Lock**

Deadbolt thrown or retracted by key outside or thumbturn inside.

L462 Double Cylinder Lock*

Deadbolt operated by key from either side.

L463**Classroom Lock**

Deadbolt thrown or retracted by key from outside. Inside thumbturn cylinder retracts deadbolt, but cannot project it.

L464**Cylinder Lock**

Deadbolt thrown or retracted by key from one side. No trim on opposite side.

L480**Door Bolt**

Deadbolt thrown or retracted by thumbturn from one side. No trim on opposite side.

L496**Deadbolt with "Occupied" Indicator**

Deadbolt thrown or retracted by key outside or thumbturn inside. When deadbolt is thrown "OCCUPIED" plate is displayed. (Previously XL11-911)

Schlage	ANSI	Schlage	ANSI	Schlage	ANSI
L9090EL L9090EU		F13 L9492EL L9492EU		L9493EL L9493EU	
Electrically locking/unlocking outside lever, no cylinder		Electrically locking/unlocking outside lever, outside cylinder, inside thumbturn, with deadbolt		Electrically locking/unlocking both levers, outside cylinder, inside thumbturn, with deadbolt	
<ul style="list-style-type: none"> Outside lever continuously locked (EL) or unlocked (EU) by 12V or 24V DC Auxiliary latch deadlocks latchbolt when door is closed Inside lever always free for immediate egress 		<ul style="list-style-type: none"> Outside lever continuously locked (EL) or unlocked (EU) 12V or 24V DC Deadbolt actuation by key or thumbturn Inside lever retracts both deadbolt and latchbolt For EU outside lever retracts deadbolt and latchbolt Auxiliary latch deadlocks latchbolt when door is closed Inside lever always free for immediate egress 		<ul style="list-style-type: none"> Deadbolt actuation by key or thumbturn Inside lever retracts both deadbolt and latchbolt For EU both levers retract deadbolt and latchbolt Auxiliary latch deadlocks latchbolt when door is closed 	
Schlage	ANSI	Schlage	ANSI	Schlage	ANSI
L9095EL L9095EU		L9494EL L9494EU		L9094EL L9094EU	
Electrically locked or electrically unlocked both sides*		Electrically locking/unlocking outside lever, inside and outside cylinders, with deadbolt		Electrically locking/unlocking outside lever, inside and outside cylinder	
<ul style="list-style-type: none"> Both knobs/levers continuously locked (EL) or unlocked (EU) by 12V or 24V DC Latchbolt retracted by either key Auxiliary latch deadlocks latchbolt when door is closed EL: Switch or power failure unlocks both knobs/levers and allows knob/lever to retract latchbolt EU: Switch or power failure locks both knobs/levers 		<ul style="list-style-type: none"> Outside lever continuously locked (EL) or unlocked (EU) 12V or 24V DC Deadbolt actuation by either key Inside lever retracts both deadbolt and latchbolt For EU outside lever retracts deadbolt and latchbolt Auxiliary latch deadlocks latchbolt when door is closed Inside lever always free for immediate egress 		<ul style="list-style-type: none"> Outside lever continuously locked (EL) or unlocked (EU) by 12V or 24V DC Lathbolt retracted by either key or by inside lever Auxiliary latch deadlocks latchbolt when door is locked Inside lever always free for immediate egress 	
Schlage	ANSI	Schlage	ANSI	Schlage	ANSI
L9093EL L9093EU		L9091EL L9091EU		L9495EL L9495EU	
Electrically locking/unlocking both levers, outside cylinder*		Electrically locking/unlocking both levers, no cylinder*		Electrically locking/unlocking both levers, inside and outside cylinders, with deadbolt*	
<ul style="list-style-type: none"> Both levers continuously locked (EL) or unlocked (EU) by 12V or 24V DC Latchbolt retracted by key outside Auxiliary latch deadlocks latchbolt when door is locked 		<ul style="list-style-type: none"> Both levers continuously locked (EL) or unlocked (EU) by 12V or 24V DC Auxiliary latch deadlocks latchbolt when door is closed 		<ul style="list-style-type: none"> Both levers continuously locked (EL) or unlocked (EU) 12V or 24V DC Deadbolt actuation by either key When unlocked both levers retract deadbolt and opens door Auxiliary latch deadlocks latchbolt when door is closed 	

SCHLAGE

L Series electrified lock functions

L9092EL
L9092EU

Electrically locking/unlocking outside lever, outside cylinder

- Outside lever continuously locked (EL) or unlocked (EU) by 12V or 24V DC
- Latchbolt retracted by lever/knob inside or key outside
- Auxiliary latch deadlocks latchbolt when door is closed
- Inside lever always free for immediate egress
- EL: Switch or power failure allows outside lever to retract latchbolt
- EU: Switch or power failure locks (EU) outside lever

L9495EL
L9495EU

Electrically locking/unlocking both levers, inside and outside cylinders, with deadbolt*

- Both levers continuously locked (EL) or unlocked (EU) 12V or 24V DC
- Deadbolt actuation by either key
- When unlocked both levers retract deadbolt and opens door
- Auxiliary latch deadlocks latchbolt when door is closed

EU (fail secure)



Upper Canada Specialty Hardware

Item Code:	L SERIES MORTISE ELECTRIFIED LOCKS-FUNCTIONS	
Manufacturer:	SCHLAGE	
Date:	JAN 17/2020	Page 1 of 1

EL (fail safe)

DPS Door position sensor and RX Request to exit
LX Latchbolt monitor DM Deadbolt monitor

SCHLAGE

electrified lock options

Specifications

Door Position Sensor (DPS)

Door Position Sensor (DPS) detects the position of the door, open or closed, by utilizing a sensor in the mortise lock to detect a magnet located in the door strike. Normally open, normally closed, and common connections are provided.

Default status for normally open or normally closed is with the door open.

Note: DPS is not available on deadbolt models.

Max voltage: 30 V DC, max current 0.250 A

L-Series Request-to-Exit (RX) Lock

RX utilizes a microswitch inside the lock case to detect rotation of the inside knob/lever. The switch then signals the use of the opening to the security system. The RX is a removable module located on the bottom edge of the lock chassis. The module must be properly positioned to detect inside knob/lever rotation. If not properly positioned, the lock and/or microswitch may be damaged. Default status for normally open or normally closed is with door open. Use of RX module not evaluated by UL.

Note: RX is not applicable with LM929X-Series locks.

Deadbolt Monitor (DM)

Deadbolt Monitor (DM) identifies the status of the deadbolt (extended or retracted). Normally open, normally closed, and common connections are provided. **Note:** Deadbolt monitor is only available on deadbolt models.

Default status for normally open or normally closed is with the deadbolt retracted. Closing the door or extending the deadbolt reverses the status.

Electrical rating: 2 A, 30 V DC, Resistive or 1 pf

Latchbolt Monitor (LX)

Latchbolt Monitor (LX) identifies the status of the latchbolt (extended or retracted). Normally open, normally closed, and common connections are provided.

Default status for normally open or normally closed is with the door open.

Electrical rating: 2 A, 30 V DC, Resistive or 1 pf



Upper Canada Specialty Hardware

Item Code:	ELECTRIFIED LOCK OPTIONS-SPECIFICATIONS	
Manufacturer:	SCHLAGE	
Date:	MAR. 11/20	Page 1 of 1



HSLR cylindrical trim

Dimensions

Width	Height	Projection
6"	13.17"	2.27"



HSLR cylindrical trim

High risk areas

- Patient bedroom
- In-suite bathroom
- In-suite closet
- Time-out room

Patient difficult to manage; or risk of solitary and/or unsupervised areas.

Finishes



630
Satin stainless steel

Medium risk areas

- Living room
- Dining room
- Group room
- Kitchen
- Janitor's closet
- Hallway restroom

Low risk areas

- Medication room
- Nurse station
- Office
- Laundry room
- Staff restroom
- Classroom

Recommended for low, medium or high risk areas

ADA Compliant - "no pinch, no grasp"

Locks are ANSI/BHMA Grade 1 certified



The highest level of ligature resistance to positively contribute to healing environments

Cylindrical and mortise options

Specifications

	UL Listed 3-hour	Supplied with Torx® security screws
Door thickness	1 3/4" only	1 3/4" only
Handing	Must be specified on order	Must be specified on order
Trim materials	Lever: Stainless steel with aluminum spacer Plate: Stainless steel	Lever: Brass Plate: Stainless steel
Finishes	630 Satin stainless steel	630 Satin stainless steel
Backset	Standard: 2 3/4" Others available via RFQ	2 3/4"
Strike	ANSI curved lip strike 1 1/4" x 4 7/8" (32mm x 124mm) x 1 3/16" (30mm) lip to center with dust box	Deadbolt functions: ANSI curved lip strike Non-deadbolt functions: Ligature resistant ANSI curved lip strike 1 1/4" x 4 7/8" (32mm x 124mm) x 1 3/16" (30mm) lip to center with dust box
Cylinders and key systems	Standard: 6-pin Patented Everest 29, solid brass, keyed 6-pin with two nickel silver cut keys per lock.	
ANSI/BHMA¹	ANSI/BHMA A156.2-2017 Grade 1	ANSI/BHMA A156.13-2017 Series 1000, Grade 1 Operational and Security With FSIC cylinders: Grade 2 Security With SFIC cylinders: Grade 3 Security ASTM F476-76 Grade 40
ICC	Complies with ICC A117.1 Accessible and Usable Buildings and Facilities	
UL/cUL	UL10C and CAN/ULC-S104 3-hour Fire Listed	UL 10C and CAN/ULC-S104 3-hour Fire Listed (except L9076 and L9077)

Overview

Hospitals, behavioral health facilities and detention centers are at high-risk for sentinel suicide events, even when regular monitoring checks are in place. Statistics from 2010-2017 show that over 70 percent of suicide attempts during hospital inpatient treatment utilized a ligature or strangulation point and almost 54 percent of those used a door or door hardware¹. To mitigate suicide risk more effectively facilities are making an effort to create spaces to keep patients safe from self harm.

Schlage® offers a comprehensive portfolio of door hardware that reduces the risk of injury or death due to ligature strangulation in all areas, but the High Security Ligature Resistant (HSLR) trim is especially recommended for high risk applications. The patented crescent-style handle design has quickly become the standard for ligature resistance and accessibility and is recognized by the widely-accepted New York State Office of Mental Health (NYS-OMH) Patient Safety Standard.

The HSLR ligature resistant trim is available for both the Schlage L Series mortise lock and Schlage ND Series cylindrical lock.



Upper Canada Specialty Hardware

Item Code: HSLR-LIGATURE RESISTANT TRIM

Manufacturer: SCHLAGE

Date: JAN. 20/20

Page 1 of 1



Schlage ANSI
L464 **E06081**

Cylinder lock

- Deadbolt actuated by key
- No trim opposite side

Schlage ANSI
L480 —

Door bolt

- Deadbolt actuated by thumbturn
- No trim opposite side

Schlage ANSI
L460 **E06071**

Cylinder x thumbturn lock

- Deadbolt actuated by key or thumbturn

Schlage ANSI
L462 **E06061**

Double cylinder lock*

- Deadbolt actuated by either key

Schlage ANSI
L463 **E06091**

Classroom lock

- Deadbolt actuated by key
- Thumbturn retracts deadbolt but cannot extend it

Strikes

Standard for L400 Optional for L400

10-079	10-078
1 1/8" x 3 1/2"	1 1/4" x 4 7/8"
32 mm x 89 mm	32 mm x 124 mm

Schlage ANSI
L496 —

Deadbolt with "OCCUPIED" indicator

- Deadbolt actuated by key or thumbturn
- When deadbolt is thrown "OCCUPIED" message is displayed

Key features

- Six available functions
- 12 finishes
- 1" (25 mm) stainless steel throw deadbolt
- Deeper retainer groove in cylinder shell increases security against wrenching and pullout; all cylinders backward compatible
- 6-pin Everest® 29 cylinder with patented keys standard
- Steel case and parts are corrosion resistant



L400
mechanical

L400: ANSI/BHMA A156.36 Grade 1

Applications

L400 Series locks are designed for use as primary locks where no latching is required, such as restrooms and small doors to utility spaces.

L400 Series: Non-handed

It also offers optimum security when used as an auxiliary lock in other applications.

Case size

L400 Series: 4 7/16" x 3 5/8" x 1"
(113 mm x 92 mm x 25 mm)

Armor 09-717

L400 Series: 1 1/4" x 5 9/16" x 7/32"
(32 mm x 141 mm x 6 mm)



Color	Bright brass	Satin brass	Antique bronze	Satin bronze	Oil rubbed bronze	Satin nickel	Matte black	Bright chrome	Satin chrome	Bright stainless steel	Satin stainless steel	Aged bronze
ANSI/BHMA	605	606	609	612	613	619	622	625	626/ 626AM	629	630/ 630AM	643e
US	US3	US4	US5	US10	US10B	US15	US19	US26	US26D	US32	US32D	US11



Upper Canada Specialty Hardware

Item Code: L 400 SERIES MORTISE MECHANICAL LOCK

Manufacturer: SCHLAGE

Date: JAN. 20/20

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9847-F/9947-F Fire exit concealed vertical rod device for use on pairs of doors up to 8' x 10' (2438mm x 3048mm) , UL listed for fire exit hardware. See page 76 for detailed information on UL listed fire exit hardware label and door opening size information. Devices are ANSI A156.3 – 2008 Grade 1. The 9847-F device has a smooth mechanism case and the 9947-F device has a grooved case. The concealed vertical rod device is non-handed except when the following device option is used: SS (signal switch) devices. See opposite page for available outside trim and functions.

Finishes – US3, US3A, US4, US4A, US10, US26, US26D, US26D-AM Antimicrobial, US28, 313, 315 & 643E. US15 and US32D available with 98 Series only.

Specifications

Device functions	Device ships EO/DT/NL. Field selectable. For TP, K or L remove NL drive screw from device.
Device lengths	2' 2' (610 mm) Door size 3' 2'4" to 3' (711mm to 914 mm) Door size 4' 2'10" to 4' (864 mm to 1219 mm) Door size
Device centerline from finished floor	39 1/4" (1006 mm) Standard Adjustable from 35 1/4" (905mm) to 49 1/4" (1260mm)
Center case dimensions	8" x 2 1/4" x 2 1/4" (203mm x 70mm x 60mm)
Mechanism case dimensions	2 1/4" x 2 1/4" (57mm x 57mm)
Projection	Pushbar neutral – 3 1/8" (97 mm) Pushbar depressed – 3 1/8" (78 mm)
Latch bolt	Deadlocking top & bottom bolt, 1/2" (16mm) throw
Door undercut	1/4" (7mm) recommended
Top & bottom Latch case	3 1/4" x 1 1/4" x 1" (95mm x 38mm x 25mm)
Vertical rods	Round 2-piece adjustable rods – Top rod adjustable from 6'8" (2027mm) to 8'4" (2533mm). Bottom rod adjustable 35 1/4" (905 mm) to 49 1/4" (1260 mm). Extension rod kits available for doors over 8'4" (2533mm).
Fasteners & sex bolts (SNB)	Includes screw pack for 1 1/4" (44mm) to 2 1/4" (57mm) thick metal doors. Optional 425 SNB available.



VON DUPRIN

Electric options	LX	Latchbolt monitor switch
	RX	Pushpad monitor switch
	RX2	Double pushpad monitor switch
	E	Electric unlocking and locking trim
	EL	Electric latch retraction
	QEL	Quiet electric latch retraction
	SS	Signal switch
Mechanical options	CX	Chexit delayed exit
	ALK	Alarm exit kit
	WP-RX	Waterproof request to exit
	CON	Allegion Connect
	LBR	Less bottom rod
Dogging option	PN	Pneumatic latch retraction
	GBK	Glass bead kit
	SNB	Sex bolts
	SEC	Security screws
	SLM	Special laminate material blocking
Strikes	No mechanical dogging. EL and QEL option available.	
	Top – 338 - Unfinished, Bottom – 385A - Unfinished	

EL
Electric latch retraction
• Enables remote unlatching
• Alternative to manual dogging

QEL
Quiet electric latch retraction
• Bolt retraction via switch
• Converts exit door to push-pull operation

E (E996L)
Electrified breakaway lever
• Electrified remote locking/unlocking
• Standard in fail safe condition

LX
Latchbolt monitor switch
• Signals use of an opening
• SPDT switch to monitor latch bolt

PN
Pneumatic latch retraction
• For areas where electrical devices banned
• Special linkage for mechanical or pneumatic dogging

RX
Pushpad monitor switch
• Signals use of an opening
• SPDT switch to monitor pushpad

CX
Chexit delayed exit
• Meets NFPA 101 requirements
• Self-contained controls, locking, alarm

ALK
Alarm exit kit
• Unauthorized opening triggers 85-decibel horn
• Set in armed or disarmed mode by key

CON
Allegion Connectors
• Common connectors to connect various door hardware all the way to the power supply



Upper Canada Specialty Hardware

Item Code: 9847-F & 9947-F CONCEALED VERTICAL ROD FIRE DEVICE

Manufacturer: VON DUPRIN

Date: SEPT 5/18

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VON DUPRIN®



98-F/99-F Rim exit device

98-F and 99-F Rim fire exit devices for all types of single doors up to 4' x 10' (1219mm x 3048mm) or 8' x 10' (2438mm x 3048mm) double doors with 9954 or 9854 mullion, UL listed for fire exit hardware. See page 76 for detailed information on UL listed fire exit hardware label and door opening size information. Devices are ANSI A156.3 – 2014 Grade 1. The 98-F device has a smooth mechanism case and the 99-F device has a grooved case. The rim device is non-handed except when the following device options are used: -2 (double cylinder) or SS (signal switch). See opposite page for available outside trim and device functions.

Finishes – US3, US3A, US4, US4A, US10, US26, US26D, US26D-AM Antimicrobial, US28, 313, 315 and 643E. US15 and US32D available with 98 Series only.

QEL

Quiet electric latch retraction

- Bolt retraction via switch
- Converts exit door to push-pull operation

CX

Chexit delayed exit

- Meets NFPA 101 requirements
- Self-contained controls, locking, alarm



The 299F Strike ships standard, optional strikes available



499F Strike with 9854/9954 mullion

EL

Electric latch retraction

- Enables remote unlatching
- Alternative to manual dogging

ALK

Alarm exit kit

- Unauthorized opening triggers 85-decibel horn
- Set in armed or disarmed mode by key

XP

Extra protection

- 90° latch-to-strike contact
- Force resistance of 2,000+ lbs.

RX

Pushpad monitor switch

- Signals use of an opening
- SPDT switch to monitor pushpad

AX

Accessible device

- UL certified to meet new 5 lb. maximum operating force requirement
- Exceeds ANSI/BHMA requirements

SG

Safety glow

- Shows exit door location in darkness or smoke
- Developed to meet MEA standards

PN

Pneumatic latch retraction

- For areas where electrical devices banned
- Special linkage for mechanical or pneumatic dogging

CON

Allegion Connectors

- Common connectors to connect various door hardware all the way to the power supply

Specifications

Device functions	Device ships EO/DT/NL. Field selectable. For TP, K or L remove NL drive screw from device.	
Device lengths	3'	2'4" to 3' (711mm to 914 mm) Door size
	4'	2'10" to 4' (864 mm to 1219 mm) Door size
Device centerline from finished floor	39 ¹¹ / ₁₆ " (1011 mm) 39 ¹ / ₈ " (1008 mm) with mullion	
Center case	8" x 2 ³ / ₁₆ " x 2 ³ / ₁₆ " (203mm x 70mm x 60mm)	
Mechanism case	2 ¹ / ₄ " x 2 ¹ / ₄ " (57mm x 57mm)	
Projection	Pushbar neutral – 3 ¹¹ / ₁₆ " (97 mm) Pushbar depressed – 3 ¹ / ₈ " (78 mm)	
Latch bolt	Deadlocking, ³ / ₄ " (19mm) throw	
Fasteners and sex bolts (SNB)	Includes screw pack for 1 ¹ / ₂ " (44mm) and 2 ¹ / ₄ " (57mm) thick metal or wood doors. Optional 425 SNB available for metal doors. 425 and 825 SNB required on wood doors without SLM blocking. See page 11 for quantities.	
Electric options	LX	Latchbolt monitor switch
	RX	Pushpad monitor switch
	RX2	Double pushpad monitor switch
	E	Electric locking and unlocking trim
	EL	Electric latch retraction
	QEL	Quiet electric latch retraction
	SS	Signal switch
	CX	Chexit delayed exit
	ALK	Alarm exit kit
	WP-RX	Waterproof request to exit
	CON	Allegion Connect
Mechanical options	-2	Double cylinder
	-2SI	Double cylinder with Security Indicator
	AX	Accessible device
	GBK	Glass bead kit
	PN	Pneumatic latch retraction
	XP	Extra protection
	SNB	Sex bolts
	SEC	Security screws
	SLM	Special Laminate Material Blocking
Dogging option	No mechanical dogging. EL and QEL option available	
Strikes	299F – Dull black, 499F with mullions	







Upper Canada Specialty Hardware

Item Code: 98-F & 99-F FIRE RIM EXIT DEVICE

Manufacturer: VON DUPRIN

Date: JAN 15/2020

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	EO	DT	NL	NL-OP
				
Product description	QRFQ-F 99EO-F	QRDT-F 99DT-F	QRNI -F 99NL-F	QRNI -OP-F 99NL-OP-F
Trim description	—	990DT	990NL-R/V	110NL-MD 110NL-WD
Escutcheon plate size	—	3" x 14 11/16" x 7/8" (76x360x2mm)	3" x 14 11/16" x 7/8" (76x360x2mm)	—
Pull center to center	—	5 1/2" (140mm)	5 1/2" (140mm)	—
Projection	—	2" (51mm)	2" (51mm)	—
ANSI function	01	02	03	03
Cylinder type	—	—	Rim	Rim
Handing	—	—	—	—
Optional trim	x990EO x996EO	x996K-DT x996L-DT x696DT x697DT	x996K-NL x996L-NL x696NL x697NL	
#425 SNB optional - HMD req. WD w/o SLM pkg.	6	2	2	2
#825 SNB req. WD w/o SLM pkg.	2 (if using trim)	2	2	2
#425 SNB req. w/ 499F	2	2	2	2

VON DUPRIN



98-F/99-F

Standard trim

L	L-NL	L-BE	L-DT
			
Lever Key locks and unlocks	Lever - night latch Key retracts latchbolt	Lever - blank escutcheon Always operable (no cylinder)	Lever dummy trim pull when dogged (not recommended for fire device)
Product description	98L-F 99L-F	98L-NL-F 99L-NL-F	98L-BE-F 99L-BE-F
Trim description	996L-R/V*	996L-NL-R/V	996L-BE-R/V*
Escutcheon plate size	2 1/4" x 10 1/4" x 7/8" (70x273x21mm)	2 1/4" x 10 1/4" x 7/8" (70x273x21mm)	2 1/4" x 10 1/4" x 7/8" (70x273x21mm)
Pull center to center	—	—	—
Projection	2 1/4" (73mm)	2 1/4" (73mm)	2 1/4" (73mm)
ANSI function	08	03	14
Cylinder type	Rim	Rim	—
Handing	Handed/Reversible	Handed/Reversible	Handed/Reversible
#425 SNB optional - HMD req. WD w/o SLM pkg.	2	2	2
#825 SNB req. WD w/o SLM pkg.	2 (if using trim)	2	2
#425 SNB req. w/ 499F	2	2	2



Upper Canada Specialty Hardware

Item Code: 98-F & 99-F STANDARD TRIMS

Manufacturer: VON DUPRIN

Date: JAN 14/2020

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LX & RX Options

VON DUPRIN

LX Latch Bolt monitoring



The LX feature is used to signal the use of an opening. This device is equipped with one internal SPDT switch which monitors the latch bolt. The device can be connected to a security console, or may be used as a single door alarm when used with a horn and power supply. A continuous current electric transfer must be used for transferring power from the frame to the door.

The LX switch option should not be used to control a load, but as a signalling switch (0.5 amps. resistive maximum).

The LX switch is available in a low current (LC) switch. Most commonly used in computer operated monitoring systems.

To order, specify:

1. Standard – Use prefix LX, example LX33AEO
2. Low Current – Use prefix LX-LC, example LX-LC35AEO

Electrical rating for all switches:

- Standard – 2 Amp maximum @ 24VDC
- Low Current (LC) - below 50 Milliamps @ 24VDC

Note: All switches can be either factory or field installed

RX Request to exit



The RX feature is used to signal the use of an opening. This device is equipped with one internal SPDT switch which monitors the pushpad.

The device can be connected to a security console, or may be used as a single door alarm when used with a horn and power supply. A continuous current electric transfer must be used for transferring power from the frame to the door.

The RX switch option should not be used to control a load, but as a signalling switch (0.5 amps. resistive maximum). The RX switch is available in a low current (LC) switch. Most commonly used in computer operated monitoring systems.

To order, specify:

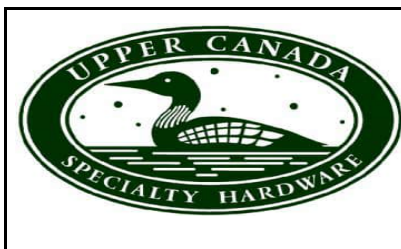
1. Standard – Use prefix RX, example RX33AEO
2. Low Current – Use prefix RX-LC, example RX-LC35AEO

RX2 Double request to exit

The RX2 feature uses 2 RX switches.

To order, specify:

1. Standard – Use prefix RX2, example RX233AEO



Upper Canada Specialty Hardware

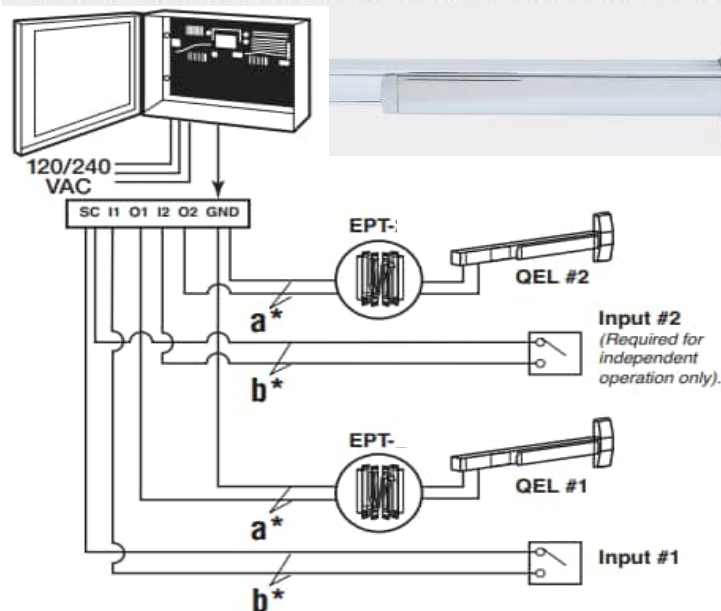
Item Code:	LX & RX OPTIONS	
Manufacturer:	VON DUPRIN	
Date:	DEC 9/19	Page 1 of 1

Quiet electric latch retraction (QEL) provides electronic control of an exit device for environments where limited operational noise is desired. The QEL option is Von Duprin's solution of choice for hospitals, libraries, museums and theaters where ambient noise can be disruptive. It is available on all Von Duprin 98/99, 94/95 and 33A/35A series exit devices.

These devices always provide mechanical egress. The electrified latch retraction can also be activated by an access system or building automation system to unlatch the exit device momentarily. Often the QEL is used with a credential reader and access control system to unlock the door momentarily for authorized users.

The QEL can also be configured to electronically retract the latch for an extended period of time to allow free entry. This is a convenient alternative to mechanical dogging. If manual dogging is required, the hex dogging option is available, to order specify HD-QEL. Special center case dogging is also available for 98/99 rim and vertical systems, specify SD-QEL.

The QEL option is available on panic devices and fire rated devices. Fire rated openings have several additional requirements. They must be self latching and self closing. To satisfy these requirements the QEL must be paired with an automatic operator and under the control of an automatic fire alarm system when used on fire rated openings.



QEL option available on all 98/99, 94/95 and 33A/35A series exit devices

Energy efficient motorized latch retraction utilizes standard 2 amp power supply, enabling longer wire runs from power source

Quiet operation in both mechanical and electronic states

Modular design allows for a simplified installation

On-board installation and troubleshooting diagnostics built into device

Auto adjust latch retraction – automatically adjusts latch throw and pull

VON DUPRIN®

QEL

Quiet Latch Retraction

Specifications compliance

- Devices are BHMA Certified to ANSI/BHMA A156.3 (2001) Grade 1 for Exit Devices
- Devices are UL and cUL Listed as "Panic Hardware" (UL 305) and as "Fire Exit Hardware" (UL 10C)
- The QEL Conversion Kit is UL Classified under "Accessories for Single-Point Locks and Latches and Fire Exit Hardware" (UL 10C)

Electronic specifications

QEL electrical load

Voltage	24 VDC
Current	1.0 A Inrush (0.5 sec) 0.14 A Holding

QEL wire run lengths

Distance (one way)	Wire gauge
200'	18 AWG
320'	16 AWG
500'	14 AWG
800'	12 AWG



Upper Canada Specialty Hardware

Item Code: QEL-ELECTRIC QUIET LATCH RETRACTION

Manufacturer: VON DUPRIN

Date: NOV 8/19

Page 1 of 1

Mortise and Rim IC Cylinders

Mortise Cylinder Key:

HD – Head Diameter

HT – Head Thickness

BL – Body Length

(Includes Cam)

BD – Body Diameter

BH – Body Height

BW – Body Width

CBL – IC Core Body Length

R – Retainer

ASSA®

ASSA ABLOY

Model#	Cam or Tailpiece (Specify)	Notes	Description	HD	HT	BL	BD	BH	BW	CBL	R
Maximum+ Mortise and Rim IC Cylinders											
9852IC	Cam		1-1/4" IC Mortise Cylinder	1.366"	0.175"	1.125"	1.157"	1.055"	0.655"	1.247"	0.036"
9852IC	H, V or L		1-1/4" IC Rim Cylinder								
7951IC	Cam		1-1/4" Corbin Jumbo IC Mortise Cylinder	1.643"							
7951IC	H, V or L		1-1/4" Corbin Jumbo IC Rim Cylinder								
Interchangeable Cores Only											
98600IC			ASSA IC 6 Pin Core Only	N/A	N/A	N/A	N/A	1.055"	0.655"	1.247"	0.036"
99060IC		†	Sargent IC 6 Pin Core Only					N/A	N/A	1.247"	
91060IC			Schlage IC 6 Pin Core Only					1.045"	0.628"	1.450"	
98060IC			Yale Style IC 6 Pin Core Only					1.045"	0.671"	1.415"	
95060IC		▲	Corbin Russwin Style IC 6 Pin Core Only					N/A	N/A	N/A	N/A
Maximum+ Restricted Mortise and Rim IC Cylinders											
R2852IC	Cam		1-1/4" IC Mortise Cylinder	1.366"	0.175"	1.125"	1.157"	1.055"	0.655"	1.247"	0.036"
R2852IC	H, V or L		1-1/4" IC Rim Cylinder								
Interchangeable Cores Only											
R28600IC			ASSA IC 6 Pin Core Only	N/A	N/A	N/A	N/A	1.055"	0.655"	1.247"	0.036"
R28060IC			Yale Style IC 6 Pin Core Only					1.045"	0.671"	1.415"	



Upper Canada Specialty Hardware

Item Code: MORTISE & RIM IC CYLINDERS

Manufacturer: ASSA

Date: APR. 7/21

Page 1 of 1



M490P/M492P

- Magnetic Bond Sensor (MBS) monitors the strength of the bond between the lock and armature so you know the door is secure
- Door Position Switch (DPS) monitors whether the door is open or closed
- Relock Time Delay (RTD) provides a relock delay that is adjustable from 0.5 to 30 seconds

All models

- Automatic Voltage Selection (AVS) senses the voltage applied to the lock and responds accordingly
- Optional accessories (P models only)
 - ATS/LED Combines anti-tamper switch (ATS) with magnetic bond sensor in one kit.
 - ATS provides an indication that the cover of the magnet is securely fastened to the lock and that the on board circuitry is secure
 - Magnetic bond sensor indicator (LED) provides visual indication of magnetic bond at the lock

Features and benefits

- 1500 lb. hold force rating for maximum security applications
 - "Plus" models offer magnetic bond sensor (MBS), adjustable relock time delay (RTD) and door position switch (DPS)
 - Automatic voltage selection (AVS)
 - Symmetrical design with field-selectable handing for optimum placement
- Bayonet mount simplifies installation by eliminating the need to hold lock overhead while securing



M490/492

Electromagnetic locks

- Armature mount pivot feature compensates for slight opening imperfections
- Optional mounting kits available for top jamb mount, double door and HERCULITE® brand glass doors
- Aluminum housing in 628 satin finish
- ANSI/BHMA 156.23 Grade 1, UL 1034, UL 10C, UL 294, cUL, CFSM certifications

Overview

M400 Series electromagnetic locks from Schlage are designed with the customer in mind to be robust, easy-to-install, and secure. The unique bayonet mounting feature makes installation easier, allowing the installer to have their hands free during the mounting process.

All M400 Series electromagnetic locks are symmetrical with field-selectable handing, allowing optimum placement of the magnet no matter the application. They are designed to provide automatic voltage sensing for 12 and 24 volts along with polarity protection to make wiring less complex. M490 models are tested and certified to meet or exceed UL 1034 and BHMA 1500 lb hold force requirements.

The M490 electromagnetic locks come in four configurations to meet your specific security needs. Single and double door models are offered in standard configurations. Plus versions of these models with "P" designations add intelligent sensing and reporting features needed to integrate with access control systems along with additional available options. Kits are also available for top jam, double door, and glass door applications.

M490/M492 electromagnetic lock specifications

Specification	M490/M490P	M492/M492P
Holding force	Meets or exceeds BHMA standard of 1500 lbs	Meets or exceeds BHMA standard of 1500 lbs
Door type	Single	Double
Input voltage (auto selected)	12/24 VDC	12/24 VDC
Current draw	.65A @ 12 VDC .35A @ 24 VDC	1.3A @ 12 VDC .7A @ 24 VDC
Height	3"	3"
Length	12 1/2"	25 1/16"
Depth	1 3/4"	1 3/4"
Weight (approximate)	14 lbs	28 lbs
Certifications	UL 10C, UL 1034, UL 294, ANSI/BHMA A156.23, cUL, CSFM	UL 10C, UL 1034, UL 294, ANSI/BHMA A156.23, cUL, CSFM
Temperature	0° to 49°C (32° to 120° F)	0° to 49°C (32° to 120° F)
Wire gauge	14-22 AWG	14-22 AWG



Upper Canada Specialty Hardware

Item Code: M490 & M492 MAGNETIC LOCKS

Manufacturer: SCHLAGE

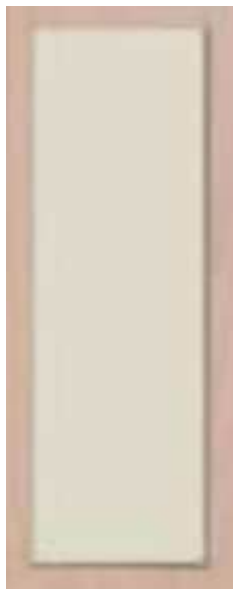
Date: JAN. 28/20

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GSH 81 PUSH PLATE



Tape Mount



Screw Mount



How to Order: Specify product number with gauge code.
(Ex. 81A = .050 (1.27) x size x finish =
GSH81A 5" x 34.5" C32D)

Available Finishes

Brushed Stainless Steel	C32D
Polished Stainless Steel	C32
Oil Rubbed Bronze	C10B
Brushed Bronze	C10
Brushed Brass	C4
Polished Brass	C3
Brushed Aluminum	C28

Optional Mounting:

No Screws/Tape

With Screws

Torx Screws Required

With Tape

Door Push Plates are made from 18ga material.

Suffix A = .050 (1.27)

Suffix B = .062(1.57)

Suffix C = .125(1/8" - (3.17))

Other thicknesses required must be specified.



Upper Canada Specialty Hardware

Item Code: GSH81 PUSH PLATE

Manufacturer: GALLERY

Date: SEPT 16/19

Page 1 of 1



The concealed 2210 Series, heavy duty, high security track closer features complete concealment with special components to minimize tampering and vandalism. Forged steel, single lever arm and heavy steel mounting plate are designed for correctional, vandal prone, institutional, and other high traffic applications. A choice of finishes and cylinder functions meet correctional and vandal resistant requirements.

LCN[®]

2210 Series

Certifications

Grade 1 - ANSI A156.4, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act

Body Construction

- Cast Iron Body
- Full Complement Bearing
- 1-1/2" Diameter Piston
- 11/16" Diameter Double Heat Treated Pinion Journal

Fluid

All Weather Liquid X Fluid

Handing

Handed

Size

Sized, interior, exterior and vestibule 3-5 (refer to chart)

Cover

Metal, standard

Fasteners

TORX machine screw pack

Mounting

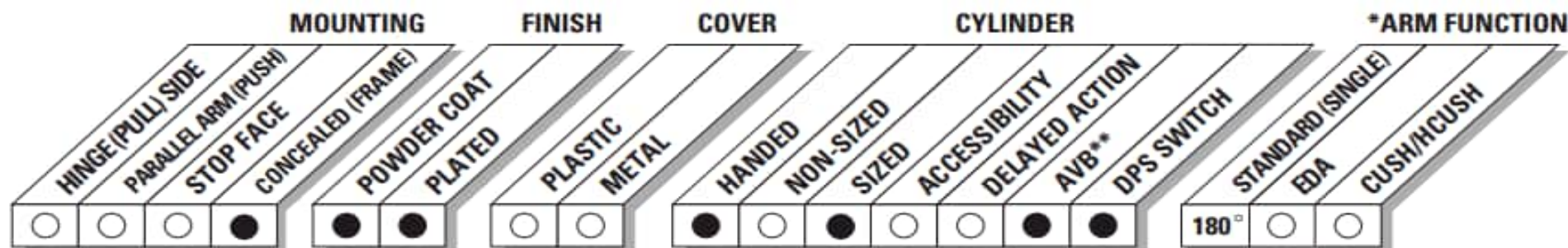
- Concealed, single acting cylinder in head frame
- Concealed, arm and track in top rail of door

Arms

Standard security arm and security track

Finishes/Colors/ Powder Coat

- Aluminum (689)
- Statuary Bronze (690)
- Light Bronze (691)
- Black (693)
- Dark Bronze (695)
- Brass (696)
- Custom colors optional
- Optional SRI primer - powder coat only
- Optional plated finishes



Upper Canada Specialty Hardware

Item Code: 2210 SERIES CLOSER

Manufacturer: LCN

Date: APR 27/20

Page 1 of 1



2213(4)(5)-3071
Cylinder Assembly

- Handed
- Cast iron
- Standard



2210DPS-3071
Cylinder Assembly

- Handed
- Cast iron



2210-12
Short Plate

- Heavy gauge metal plate
- Required for complete enclosure
- Four point TORX® mounting screws for extra security
- Closer adjustments not accessible with finish plates installed



2210-11
Long Plate

- Heavy gauge metal plate
- Required for complete enclosure
- Six point TORX® mounting screws for extra security
- Closer adjustments not accessible with finish plates installed

LCN®

2210 Series Accessories



2210DPS-3038



2210-3077T
2210DPS-3077T
Standard Security Arm

- Handed
- Solid forged steel and large cross section for potentially abusive installations
- Special threaded attachment of track roller for extra security
- Double slab arm/pinion attachment for maximum strength



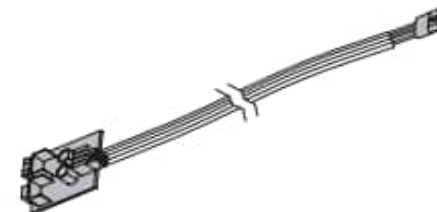
2210-3034
Security Track Roller

- Low friction track roller threads into 2210-3077T arm for extra strength and security
- Can only be used with high security track roller, 2210-3034 or 2210DPS-3034
- Roller is included with arm when either the 2210-3077T or 2210DPS-3077T are ordered separately



2210-3038
Security Track

- Non-handed
- Hold-open function not available
- Designed to eject foreign objects placed in track during either opening or closing motion
- Requires track roller, 2210-3034



2210-493
Test Kit

- Battery operated designed to verify switch signal response point
- Can be used directly at door location (used for 2210 DPS only)



Upper Canada Specialty Hardware

Item Code: 2210 SERIES CLOSER-ACCESSORIES

Manufacturer: LCN

Date: APR 27/20

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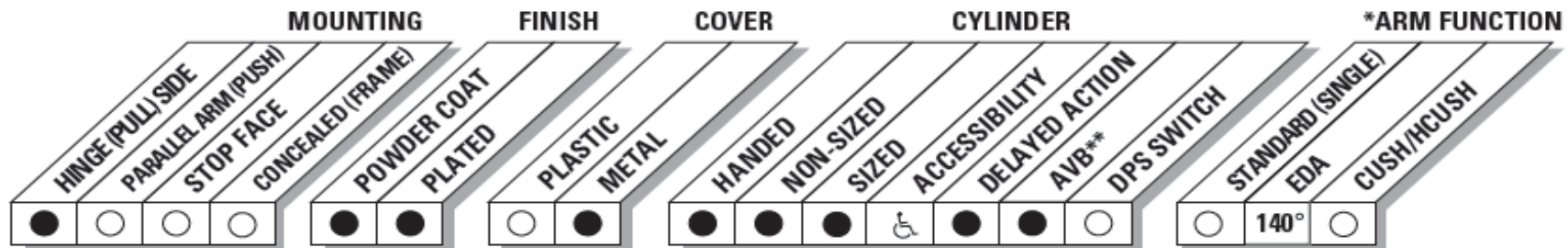
The 4510 SMOOTHIE® Series is a heavy duty, high security closer with special components to minimize tampering and vandalism. Forged steel double lever arms and heavy gauge metal security covers are designed for correctional, vandal prone, institutional and other high traffic applications. The closer has passed 10 million cycles in independent testing. A choice of finishes and cylinder functions meet correctional and vandal resistant requirements.

LCN®

4510 Series

Certifications	Grade 1 - ANSI A156.4, UL 10C, ADA*, 100 Hour Salt Spray, Meets BAA - Buy American Act
	<i>*4511 cylinder meets ADA requirements</i>
Body Construction	<ul style="list-style-type: none"> ■ Cast Iron Body ■ Full Complement Bearing ■ 1-1/2" Diameter Piston ■ 11/16" Diameter Double Heat Treated Pinion Journal
Fluid	All Weather Fluid
Handing	Handed
Size	Exterior and Vestibule, Adjustable Size 1-5 Interior, Adjustable Size 1-5

Cover	Metal Security
Fasteners	TORX machine screw pack
Mounting	Hinge (Pull Side)
Arms	Extra heavy duty, non-hold open
Finishes/Colors/ Powder Coat	<ul style="list-style-type: none"> ■ Aluminum (689) ■ Statuary Bronze (690) ■ Light Bronze (691) ■ Black (693) ■ Dark Bronze (695) ■ Brass (696) ■ Custom colors optional
	<ul style="list-style-type: none"> ■ Optional SRI primer - powder coat only ■ Optional plated finishes



● AVAILABLE
○ NOT AVAILABLE

♿ Closer available with less than 5.0 lbs. opening force on 36" door.
* Maximum opening with standard template.



Upper Canada Specialty Hardware

Item Code:	4510 SMOOTHIE SERIES CLOSER
Manufacturer:	LCN
Date:	FEB. 19/20

LCN®

4510 Series Accessories



4511(6)-3071
Cylinder Assembly

- Handed
- Cast iron
- Standard



4510-3077EDA
Extra Duty Arm

- Non-handed
- Solid forged steel main arm and forearm for potentially abusive installations
- Double slab arm/pinion attachment for maximum length standard



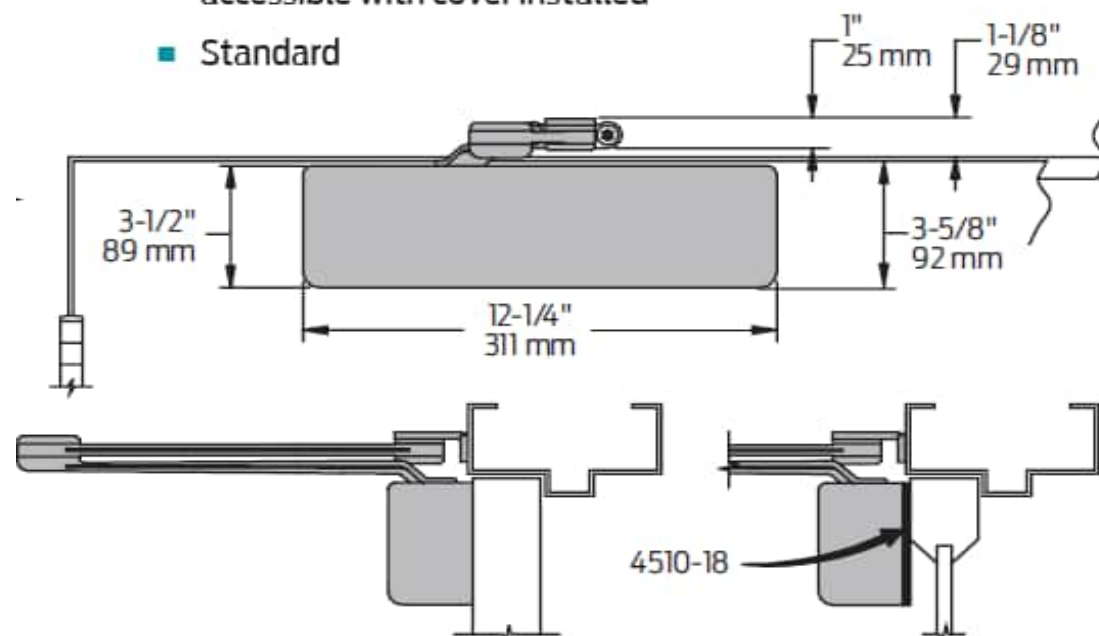
4510-72MC
Metal Security Cover

- Handed
- Four point mounting for extra security
- Closer adjustments not accessible with cover installed
- Standard



4510-18
Plate

- Required where top rail is less than 3-1/2" (89 mm)
- Requires minimum 2" (51 mm) top rail



Upper Canada Specialty Hardware

Item Code: 4510 SMOOTHEE SERIES CLOSER-ACCESSORIES

Manufacturer: LCN

Date: FEB. 19/20

Page 1 of 1



LCN®

4040SE Series

The 4040SE SENTRONIC® is a heavy duty, non-handed, nonsized closer/holder designed to provide single point hold-open for fire and smoke barrier doors. The door is held open until current interruption releases the holding mechanism and the door closes. Single lever (track) arm closer is specifically designed for interior doors. Choice of finishes, track functions, and installation accessories meet virtually all life safety requirements.

Certifications

Grade 1 - ANSI A156.15, UL 10C, 100 Hour
Salt Spray, Meets BAA - Buy American Act,
NFPA 101

Body Construction

- Cast Iron Body
- Full Complement Bearing
- 1-1/2" Diameter Piston
- 3/4" Diameter Double Heat Treated Pinion Journal

Fluid

All Weather Fluid

Handing

Non-Handed

Size

Adjustable Spring Size, up to 4

Cover

- Clip-on plastic, standard
- Metal, optional

Fasteners

Wood and machine screw pack

Mounting

Hinge (Pull Side), Stop Face (Push Side)

Arms

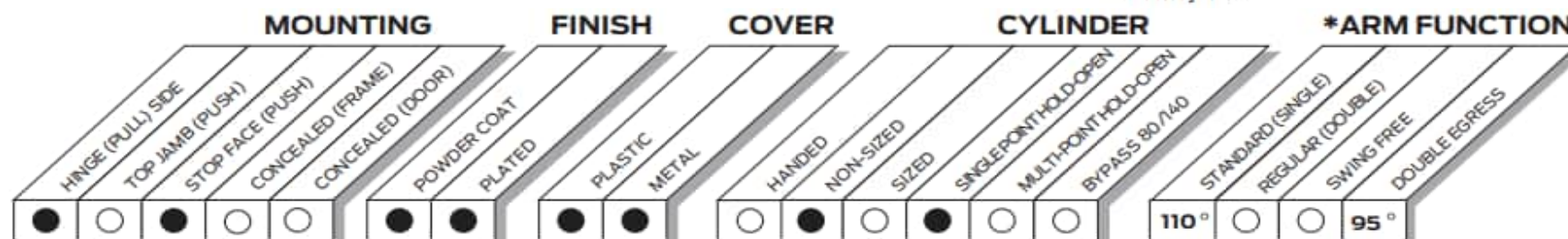
Standard arm and SE track, standard
Double egress arm and SEL track, optional

Finishes/Colors/ Powder Coat

- Aluminum (689)
- Statuary Bronze (690)
- Light Bronze (691)
- Black (693)
- Dark Bronze (695)
- Brass (696)
- Custom colors optional
- Optional SRI primer - powder coat only
- Optional plated finishes

Wiring

Concealed or surface, interfaces with fire alarm systems



● AVAILABLE
○ NOT AVAILABLE

* Maximum opening/hold-open point with standard template. See individual closer series for degrees of opening per installation.



Upper Canada Specialty Hardware

Item Code: 4040SE SENTRONIC SERIES CLOSER

Manufacturer: LCN

Date: OCT 30/19

Page 1 of 1



4040SE-3071
Cylinder Assembly

- Non-handed
- Cast iron
- Standard



4040SE-72
Plastic Cover

- Non-handed
- Clip-on
- Standard



4040SE-72MC
Metal Cover

- Handed
- Required for plated finishes and custom powder coat finishes
- Optional



4040SE-3077T
Standard Arm

- Non-handed
- Adjustable to select hold-open point

LCN®

4040SE
Series
Accessories



4040SE-3077DE
Double Egress Arm

- Handed
- For pull side installations on double egress doors and frames
- Not required for push side mounting on double egress frames
- Optional



4040SE-3038
SE Track

- Non-handed
- For SE closers. Mounts on either head frame or stop
- 24V or 120V AC/DC input for holding solenoid, please specify.
- Includes test switch assembly with fuse
- Standard



4040SEL-3038
SEL Long Track

- Non-handed
- Mounts on either head frame or stop
- 24V or 120V AC/DC input standard for holding solenoid, please specify
- Includes test switch assembly with fuse
- Optional



4040SE-18
Plate

- Required where top rail is less than 3-1/2" (89 mm)
- Requires minimum 2" (51 mm) top rail
- Installations require a SPECIAL TEMPLATE



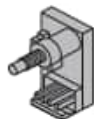
4040SE-18PA
Plate

- Required where top rail is less than 5-3/4" (146 mm)
- Requires minimum 2" (51 mm) top rail
- Installations require a SPECIAL TEMPLATE



4040SE-3210
Transformer

- Reduces line voltage from 120V to 24V AC
- Mounted on cover for 4" (102 mm) x 4" x 2-1/8" (54 mm) junction box (by others)



4040SE-3436
Test Switch



4040SE-81
Conduit Quick-Connector

- Two piece connector for use with 1/2" conduit



4040SE-3034SE
Track Roller & Track Slider

- Quiet, low friction roller assembly
- Shoulder dimension "X" = 1/8" (3 mm)
- Alloy metal slider for use in SE series tracks only



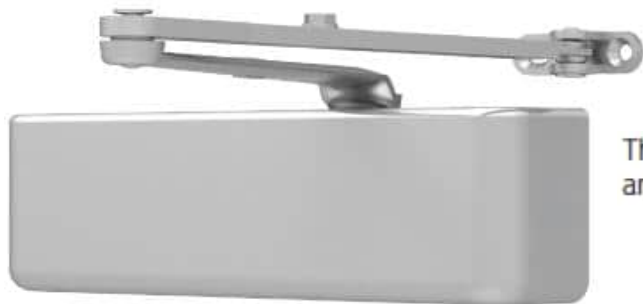
Upper Canada Specialty Hardware

Item Code: 4040SE SENTRONIC SERIES CLOSER-ACCESSORIES

Manufacturer: LCN

Date: OCT 23/19

Page 1 of 1



LCN®

4040XP Series

The 4040XP is LCN's most durable and flexible heavy duty closer designed for institutional and other demanding high traffic applications.

Certifications	Grade 1 - ANSI A156.4, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act
Body Construction	<ul style="list-style-type: none"> ■ Cast Iron Body ■ Full Complement Bearings ■ 1-1/2" Diameter Piston ■ 3/4" Diameter Double Heat Treated Pinion Journal
Fluid	All Weather Liquid X Fluid
Handing	Non-Handed
Templating	Peel-n-Stick templates - 2-1/4" x 5" Mounting Hole Pattern
Size	Adjustable Spring Size 1-6, includes Patented Green Dial
Warranty	30 years

Cover	<ul style="list-style-type: none"> ■ Plastic, Standard ■ Metal, Optional
Fasteners	Self Reaming and Tapping Screws (SRT)
Mounting	Hinge (Pull Side), Top Jamb (Push Side), Parallel Arm (Push Side)
Arms	Regular Arm
Finishes/Colors/Powder Coat	<ul style="list-style-type: none"> ■ Aluminum (689) ■ Statuary Bronze (690) ■ Light Bronze (691) ■ Black (693) ■ Dark Bronze (695) ■ Brass (696) ■ Custom colors optional
	<ul style="list-style-type: none"> ■ Optional SRI primer - powder coat only ■ Optional plated finishes

MOUNTING					FINISH		COVER		CYLINDER					*ARM FUNCTION				
HINGE (PULL) SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION***	AVB**	REGULAR (DOUBLE)	STANDARD (SINGLE)	HOLD-OPEN	FUSIBLE LINK	EDA/HEDA
●	○	●	●	○	●	●	●	●	●	●	○	○	○	○	○	○	○	○
○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

● AVAILABLE
○ NOT AVAILABLE

○ Closer available with less than 5.0 lbs. opening force on 36" door.
* Maximum opening/hold-open point with standard template.
** Advanced Variable Backcheck.
*** Delay feature incorporates standard 4040 cylinder (not XP).



Upper Canada Specialty Hardware

Item Code: 4040XP SERIES CLOSER

Manufacturer: LCN

Date: SEPT 20/19

Page 1 of 1



4040XP-3077
Regular Arm

- Non-handed
- Mounts pull side or top jamb with shallow reveal P4041 closer includes PA SHOE, 4040XP-62PA required for parallel arm mounting



4040XP-3077L
Long Arm

- Non-handed
- Includes LONG ROD AND SHOE, 4040XP-79LR for top jamb mount
- Optional



4040XP-3077ELR
Extra Long Arm

- Non-handed
- Includes EXTRA LONG ROD AND SHOE, 4040XP-79ELR for top jamb mount with deep reveal
- Optional



4040XP-3049
Hold-Open Arm

- Non-handed
- Mounts pull side or top jamb with shallow reveal, hold-open adjustable shoe
- 4040XP closer includes 4040XP-62PA shoe required for parallel arm mounting
- Optional



4040XP-3049L
Long Hold-Open Arm

- Non-handed
- Includes LONG HEAD AND TUBE, 4040XP-3048L for top jamb mount
- Optional

LCN®

4040XP Series

Arms



4040XP-3077EDA
Extra Duty Arm

- Non-handed
- Features forged, solid steel main and forearm for potentially abusive installations
- Optional



4040XP-3049EDA
Hold-Open Extra Duty Arm

- Handed
- Parallel arm features forged, solid steel main and forearm for potentially abusive installations
- Hold-open function is adjusted at the shoe
- Optional



4040XP-3077EDA/62G
Extra Duty Arm with 62G

- Non-handed
- Features forged, solid steel main and forearm for potentially abusive installations
- 62G shoe provides additional blade stop clearance



4040XP-3049EDA/62G
Hold-Open Extra Duty Arm with 62G

- Handed
- Features forged, solid steel main and forearm for potentially abusive installations
- 62G shoe provides additional blade stop clearance. Hold-open function is adjusted at the shoe
- Optional



4040XP-3077CNS
Cush-N-Stop® Arm

- Non-handed
- Features solid forged steel main arm and forearm with stop in soffit shoe.
- Optional



4040XP-3077SCNS
Spring CUSH Arm

- Non-handed
- For abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe
- Optional



4040XP-3049CNS
HCUSH Arm

- Non-handed
- Hold-open function with templated stop/hold-open points
- Handle controls hold-open function
- Optional



4040XP-3049SCNS
Spring HCUSH Arm

- Non-handed
- For abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe
- Handle controls hold-open function
- Optional



Upper Canada Specialty Hardware

Item Code: 4040XP SERIES CLOSER-ARMS

Manufacturer: LCN

Date: OCT 7/19

Page 1 of 1



8100 Series Swing Doors Heavy Duty Operator



The 8100 Series Electro-Mechanical Swing Door Operators is engineered to automate swing doors in high traffic situations. Designed to meet market demands for dependability, low noise, and application flexibility, the 8100 Series operator can successfully automate swinging door in Hospitals, Supermarkets, and airports, as well as dock doors, with smooth trouble free operation. As part of it's unique software platform, the 8100 can also be programmed to be utilized as a low energy operator to comply with ANSI 156.19.

Power Supply Connection

Connect 115VAC, 60 Hz, 10A, to Power Supply terminal strip

115VAC "Hot" (Line) to "L" terminal;

115VAC "Neutral" to "N" terminal

The second "L" and "N" terminals provide a convenient junction for dual operator systems.

Proper grounding must be provided for the unit. A grounding tab and screw are located adjacent to the Power Supply terminal strip.

The power supply cover must be installed after connecting 115VAC primary service.

A proven planetary gear system in tandem with a perfected lever system arm assures the smoothest, most quiet operation available without exception. Libraries, doctor offices, and healthcare facilities demand that their daily routines proceed without the common noisy distractions associated with many competitive products. Eliminate your worry of post install performance by specifying record-usa's 8100 series without hesitation.

Combined with World famed Swiss precision technology and a patented control system with 32 bit processor technology, the 8100 series is powerful and intelligent and guarantees rapid and reliable door control and operation, even when complex functions are desired.

The **multifunction pushbutton** can be used for the following functions:

- 1 flash of the red LED will actuate a standard open cycle (if the rocker switch is on).
- 3 flashes of the red LED will initiate a calibration run.
- 4 flashes of the red LED will initiate the parameter adjust mode of a Display Control Panel.
- 8 flashes of the red LED will reset the unit's parameters to factory defaults.
- 15-17 flashes will cause the unit to reset without affecting any of the field set parameters.



Upper Canada Specialty Hardware

Item Code: 8100 SERIES OPERATOR-SINGLE

Manufacturer: RECORD

Date: AUG 30/24

Page 1 of 1

100 Series concealed overhead door holders/stops



Options

Suffix ADJ (adjustable jamb bracket)

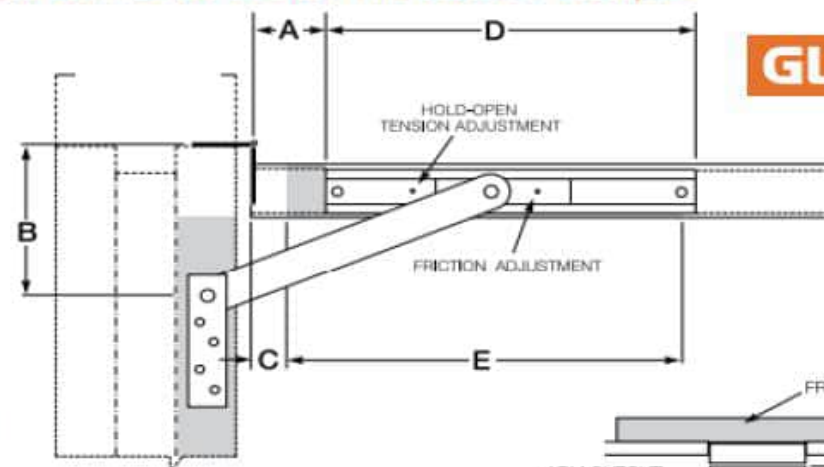
An additional option on the 100 Series is the adjustable jamb bracket, which allows the degree of hold-open or stop angle to be adjusted after installation. Suffix "ADJ" is available in all functions, but only in sizes 3, 4, 5 & 6. ADJ jamb bracket requires additional frame prep. The ADJ option cannot be added to an existing unit, it must be factory ordered.

Suffix CJ (closer jamb bracket)

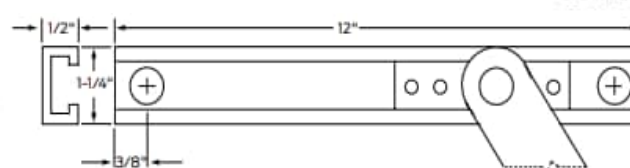
Provides a special jamb bracket needed for 100 Series units used with LCN 5030 closers. These special jamb brackets are handed, so handing will need to be specified when ordering the "CJ" option, CJLH for a left hand door and CJRH for a right hand door. The CJ option cannot be added to an existing unit, it must be factory ordered.

Suffix SOC (Pin-in-socket security screw package)

A screw package with pin-in-socket screws for mounting the jamb bracket to the frame is provided instead of the standard screw package.



GLYNN-JOHNSON



OPTIONAL JAMB BRACKET "ADJ"

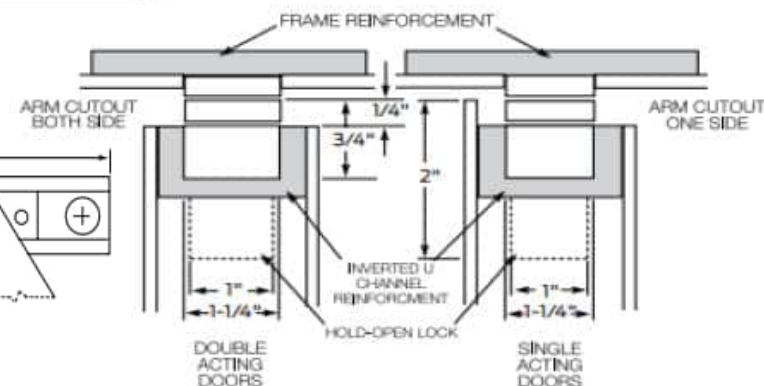
100 Series sizing chart

Butts/offset pivots

Size	Door opening	Stop only	Hold open	Friction
1	18" - 23"	101S*	101H*	101F*
2	23 1/16" - 27"	102S*	102H*	102F*
3	27 1/16" - 33"	103S	103H	103F
4	33 1/16" - 39"	104S	104H	104F
5	39 1/16" - 45"	105S	105H	105F
6	45 1/16" - 51"	106S	106H	106F

Center hung

Door opening	Stop only	Hold open	Friction
-	-	-	-
33 1/16" - 39"	103S	103H	103F
39 1/16" - 45"	104S	104H	104F
45 1/16" - 51"	105S	105H	105F
51 1/16" - 59"	106S	106H	106F



Upper Canada Specialty Hardware

Item Code: 100 SERIES-SIZES & OPTIONS

Manufacturer: GLYNN JOHNSON

Date: AUG 13/19

Page 1 of 1

1841 LIGATURE RESISTANT WALL BUMPER

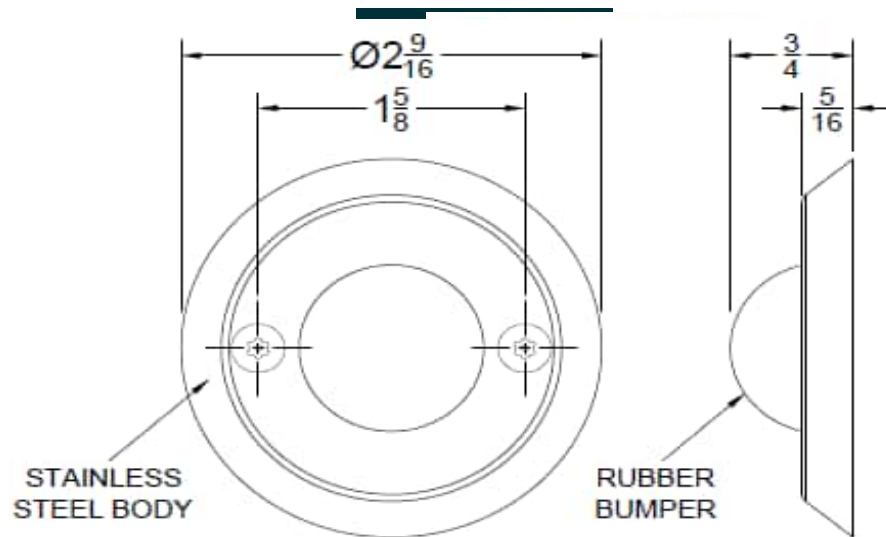


Standard Features

- Wall Plate supplied with chamfered edges to prevent ligature attachment
- Material - High Density Rubber Stop; 304 Stainless Steel Plate
- Stainless Steel - Other finishes by request
- "SEC" Security fasteners provided standard
- Sloped to eliminate ligature points

Specifications

- Low Projection - 1" projection from face of wall
- 2-1/2" Diameter Plate



Available Finishes

- US3 - Bright Brass
- US4 - Satin Brass
- US10 - Satin Bronze
- US10B - Satin Dark Bronze
- US32 - Bright Stainless
- US32D - Satin Stainless Steel



Upper Canada Specialty Hardware

Item Code:	1841 LIGATURE RESISTANT WALL BUMER	
Manufacturer:	ABH	
Date:	APR 22/22	Page 1 of 1

GSH 80 KICK PLATE

Tape Mount



Available Finishes

Brushed Stainless Steel	C32D
Polished Stainless Steel	C32
Oil Rubbed Bronze	C10B
Brushed Bronze	C10
Brushed Brass	C4
Polished Brass	C3
Brushed Aluminum	C28

Screw Mount



Optional Mounting:

No Screws/Tape

With Screws

Torx Screws Required

With Tape

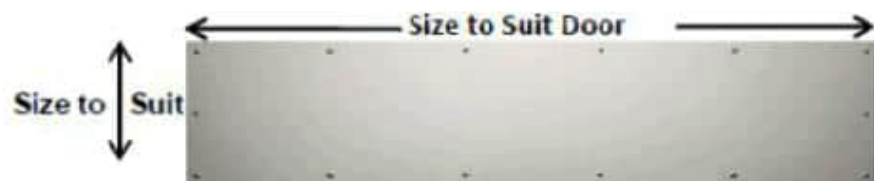
Metal Kick Plates are made from 18ga material.

Suffix A = .050 (1.27)

Suffix B = .062(1.57)

Suffix C = .125(1/8" - (3.17))

Other thicknesses required must be specified.



How to Order: Specify product number with gauge code.
(Ex. 80A = .050 (1.27) x size x finish =
GSH80A 5" x 34.5" C32D)



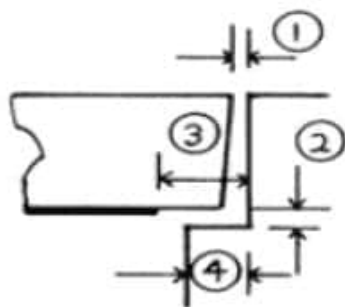
Upper Canada Specialty Hardware

Item Code: GSH80 SERIES KICK PLATE

Manufacturer: GALLERY

Date: JUNE 24/20

Page 1 of 1



- 1-Door to frame clearance
- 2-Door to stop clearance
- 3-Distance from plate to frame
- 4-Stop



GSH 50N FRAME WRAP



Half Wrap Constructed of 2 Pieces – For Mounting on Hinge Side of Frame.

- 1st Piece
 - Rabbet + Portion of Face
- 2nd Piece
 - Soffit + 1 Side Stop

Finishes

3, 4, 10, 10B, 28, 32D, 32

Full Wrap Constructed of 3 Pieces – For Mounting on Strike Side of Frame

- 1st and 2nd Pieces
 - Rabbet + Portion of Face
- 3rd Piece
 - Soffit + Both Stops

Mounting Options:

- 3M Tape
- TEK Screws
- TORX Screws

Single Piece Frame Guards are available



Upper Canada Specialty Hardware

Item Code: GSH50N FRAME WRAP

Manufacturer: GALLERY

Date: JULY 29/19

Page 1 of 1

2891_PK Heavy Duty Perimeter Gasketing

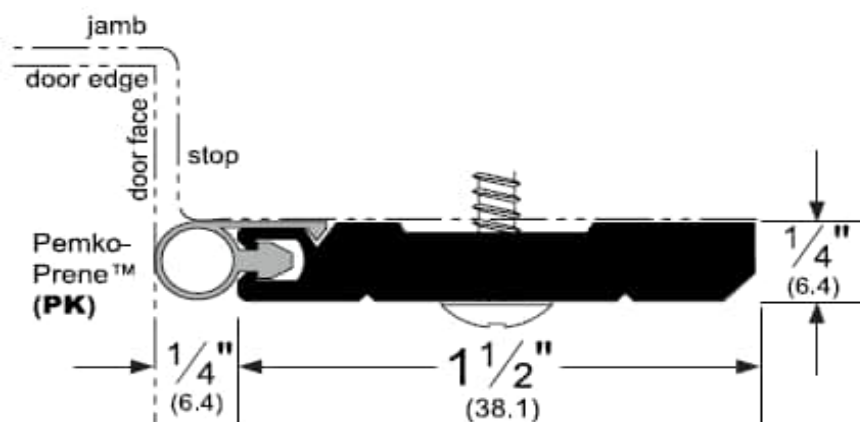


ASSA ABLOY

WIDTH: 1/4" (6.4 mm)

PROFILE HEIGHT: 1-1/2" (38.1 mm)

TOTAL HEIGHT WITH INSERT: 1-3/4" (44.5 mm)



1. Can be installed on a wood or metal frame.
2. Measure, mark and trim header piece to length. Close door and position header piece on header stop so that seal makes light even contact with door. Mark header stop in center of slotted holes.
3. Drill pilot holes in header stop at marks.
4. Secure header piece to header stop with supplied screws.
5. To install the 2 jamb pieces, repeat steps 2, 3, and 4. Jamb pieces should contact threshold (or floor) at bottom & contact header piece at top.
6. Open and close door several times to check jamb weatherstrip fit and seal, and to make sure latch bolt engages strike plate.
7. To adjust, loosen screws, re-position weatherstrip, and tighten screws.

Applied to header

This perimeter gasketing is furnished with PemkoPrene® ("PK") - item number PK47 (available in gray or black).

Torx Screws Required

Finishes



2891APK: A - Mill Finish Aluminum Aluminum with Gray PemkoPrene insert



2891DPK: D - Dark Bronze Anodized Aluminum with Black PemkoPrene insert



2891GPK: G - Gold Anodized Aluminum with Black PemkoPrene insert

Ratings



Air Infiltration Tested



BHMA Certified



Smoke Tested - UL1784



Fire Rated - UL10C - Positive Pressure



Underwriters Laboratory 4L10



GREENGUARD Gold Certified



Upper Canada Specialty Hardware

Item Code: 2891_PK HEAVY DUTY PERIMETER GASKETING

Manufacturer: PEMKO

Date: OCT 8/21

Page 1 of 1

290_PK Heavy Duty Perimeter Gasketing

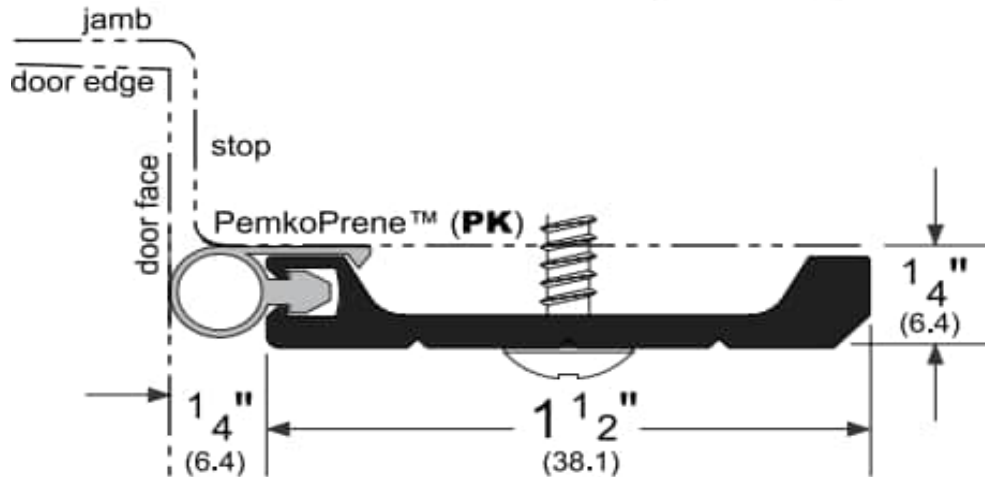


ASSA ABLOY

WIDTH: 1/4" (6.4 mm)

PROFILE HEIGHT: 1-1/2" (38.1 mm)

TOTAL HEIGHT WITH INSERT: 1-3/4" (44.5 mm)



Ratings



Air Infiltration Tested



BHMA Certified



Smoke Tested - UL1784



Fire Rated - UL10C - Positive Pressure



Underwriters Laboratory 4L10



GREENGUARD Gold Certified

Torx Screws Required

Finishes



290APK: A - Mill Finish Aluminum Aluminum with Gray PemkoPrene insert



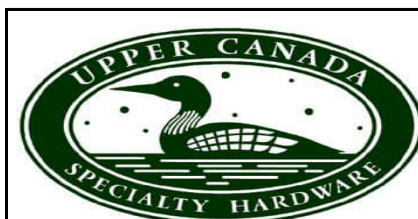
290DPK: D - Dark Bronze Anodized Aluminum with Black PemkoPrene insert



290GPK: G - Gold Anodized Aluminum with Black PemkoPrene insert

- Applied to jamb.
- This perimeter gasketing is supplied with a PemkoPrene® ("PK") insert - item number PK47 (available in gray or black).
- Drawings are shown in the standard mounting application for the side section of the jamb.

1. Can be installed on a wood or metal frame.
2. Measure, mark and trim header piece to length. Close door and position header piece on header stop so that seal makes light even contact with door. Mark header stop in center of slotted holes.
3. Drill pilot holes in header stop at marks.
4. Secure header piece to header stop with supplied screws.
5. To install the 2 jamb pieces, repeat steps 2, 3, and 4. Jamb pieces should contact threshold (or floor) at bottom & contact header piece at top.
6. Open and close door several times to check jamb weatherstrip fit and seal, and to make sure latch bolt engages strike plate.
7. To adjust, loosen screws, re-position weatherstrip, and tighten screws.



Upper Canada Specialty Hardware

Item Code: 290_PK HEAVY DUTY PERIMETER GASKETING

Manufacturer: PEMKO

Date: OCT 27/22

Page 1 of 1

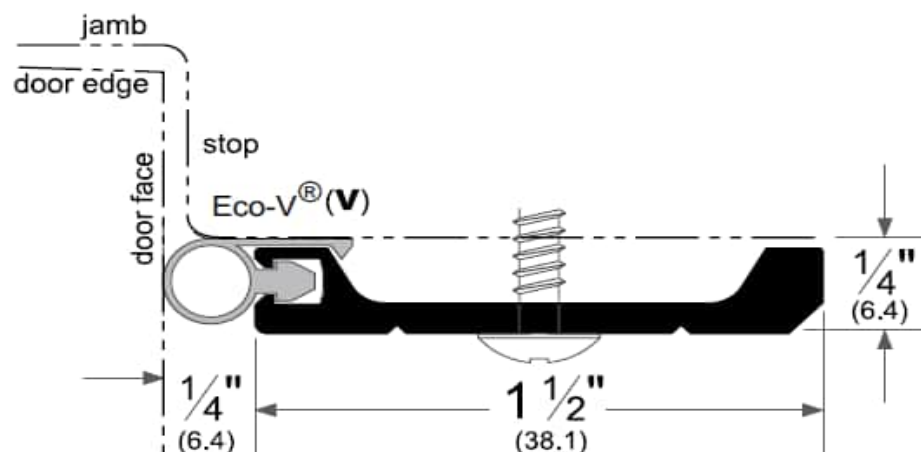
290_V Heavy Duty Perimeter Gasketing

PROFILE HEIGHT: 1-1/2" (38.1 mm)

TOTAL HEIGHT WITH INSERT: 1-3/4" (44.5 mm)



ASSA ABLOY



1. Can be installed on a wood or metal frame.
2. Measure, mark and trim header piece to length. Close door and position header piece on header stop so that seal makes light even contact with door. Mark header stop in center of slotted holes.
3. Drill pilot holes in header stop at marks.
4. Secure header piece to header stop with supplied screws.
5. To install the 2 jamb pieces, repeat steps 2, 3, and 4. Jamb pieces should contact threshold (or floor) at bottom & contact header piece at top.
6. Open and close door several times to check jamb weatherstrip fit and seal, and to make sure latch bolt engages strike plate.
7. To adjust, loosen screws, re-position weatherstrip, and tighten screws.

Torx Screws Required

- Applied to jamb.
- This perimeter gasketing is supplied with a Eco-V® ("V") insert - item number EV47 (available in gray, black, or white).
- Drawings are shown in the standard mounting application for the side section of the jamb.

Finishes



290AV: A - Mill Finish Aluminum Aluminum with Gray Eco-V insert



290DV: D - Dark Bronze Anodized Aluminum with Black Eco-V insert



290GV: G - Gold Anodized Aluminum with Black Eco-V insert

Ratings



Air Infiltration Tested



Underwriters Laboratory 4L10



GREENGUARD Gold Certified



Upper Canada Specialty Hardware

Item Code: 290_V HEAVY DUTY PERIMETER GASKETING

Manufacturer: PEMKO

Date: AUG 11/20

Page 1 of 1

Pemko 18041_NB (MS) Brush Seal/Meeting Stile

- When installing pairs of fire doors care must be taken to maintain the requirements of NFPA 80.
- Brush/Meeting Stile Application.
- Also available with soft brush (SB) insert.
- Note: brush should mesh from 1/32" to 1/16".
- This meeting stile is supplied with a Nylon Brush ("NB") insert - item number P516041 (available in gray and black).

Ratings



Air Infiltration Tested



BHMA Certified



Smoke Tested - UL1784



Fire Rated - UL10C - Positive Pressure



Underwriters Laboratory 4L10



GREENGUARD Gold Certified

Finishes



18041CNB: C - Clear Anodized Aluminum with Gray Nylon Brush insert



18041DNB: D - Dark Bronze Anodized Aluminum with Black Nylon Brush insert

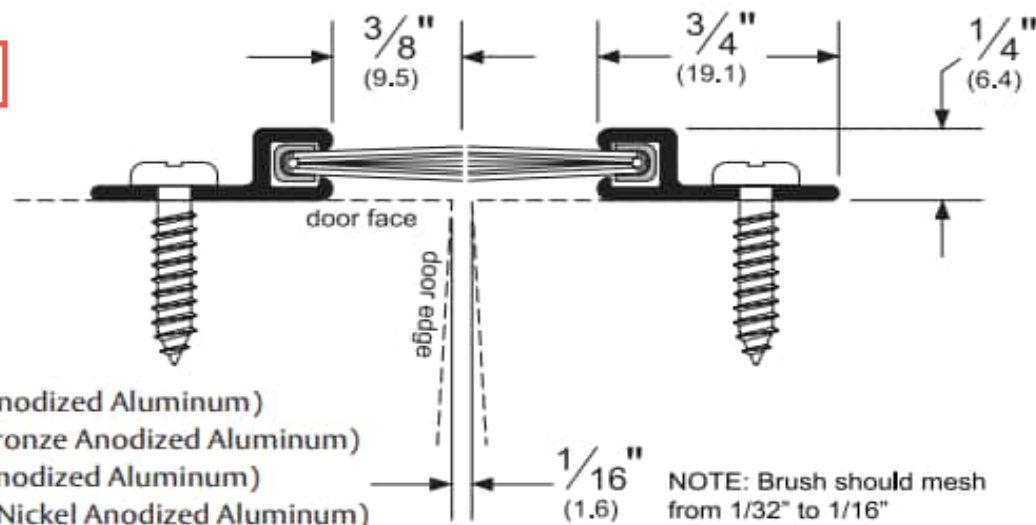


18041GNB: G - Gold Anodized Aluminum with Black Nylon Brush insert



18041SNNB: SN - Satin Nickel Anodized Aluminum with Black Nylon Brush insert

Torx Screws Required



Upper Canada Specialty Hardware

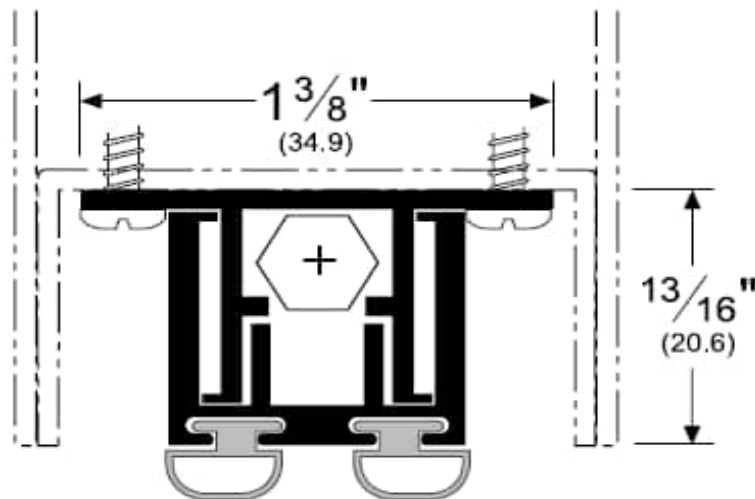
Item Code:	18041_NB Seal	
Manufacturer:	Pemko	
Date:	May 26/23	Page 1 of 1

420_VL Automatic Door Bottom



ASSA ABLOY

Pemko automatic door bottoms consist of an aluminum case which surrounds a movable drop bar seal. The drop bar seal is actuated by a plunger which contacts the jamb as the door is closing, forcing the drop bar seal down against the floor or threshold.



WIDTH: 1-3/8" (34.9 mm)
HEIGHT: 13/16" (20.6 mm)

- For hollow metal doors.
- Maximum drop is 1/2".

Torx Screws Required

Ratings



Air Infiltration Tested



Sound Tested - ASTM E90



Smoke Tested - UL1784



Fire Rated - UL10C - Positive Pressure



Underwriters Laboratory 4L10



GREENGUARD Gold Certified

Finishes



420AVL: A - Mill Finish Aluminum Aluminum with Gray Eco-V insert



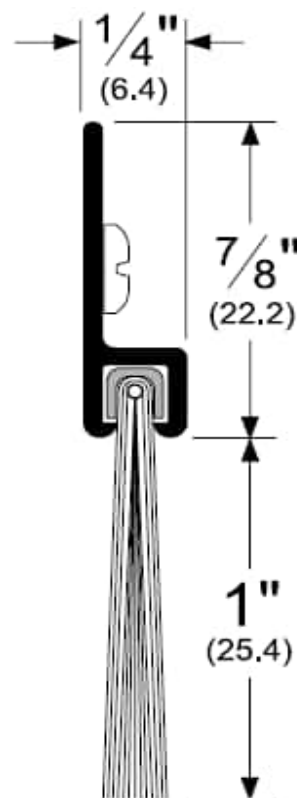
Upper Canada Specialty Hardware

Item Code: 420_VL AUTO DOOR BOTTOM

Manufacturer: PEMKO

Date: JUNE 30/20

Page 1 of 1



18100_NB Door Bottom Sweep

WIDTH: 1/4" (6.4 mm)

PROFILE HEIGHT: 7/8" (22.2 mm)

HEIGHT INCLUDING BRUSH: 1-7/8" (47.9 mm)



Brush Application

- This brush gasketing is supplied with a Nylon Brush ("NB") insert - item number P38100 (available in gray or black).

CUTTING BRUSH:

1. Remove brush prior to cutting.
2. Trim off excess brush using Lineman Side Cutting Pliers and crimp the brush filament ends.
3. Re-insert the brush until it is flush with one end of the retainer and crimp to hold in place.

Torx Screws Required

Ratings

BHMA BHMA Certified



Smoke Tested - UL1784



Fire Rated - UL10C - Positive Pressure



Underwriters Laboratory 4L10



GREENGUARD Gold Certified

Finishes



18100CNB: C - Clear Anodized Aluminum with Gray Nylon Brush insert



18100DNB: D - Dark Bronze Anodized Aluminum with Black Nylon Brush insert



18100GNB: G - Gold Anodized Aluminum with Black Nylon Brush insert



18100PWNB: PW - Painted White Aluminum with White Nylon Brush insert



Upper Canada Specialty Hardware

Item Code: 18100_NB DOOR SWEEP

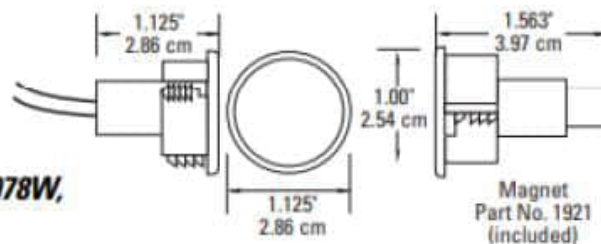
Manufacturer: PEMKO

Date: JULY 02/20

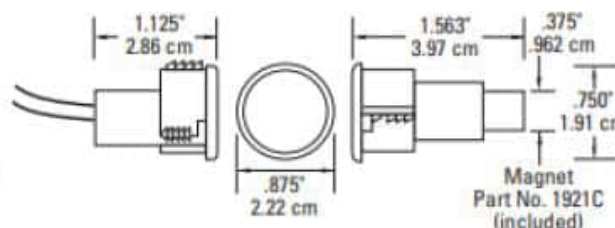
Page 1 of 1



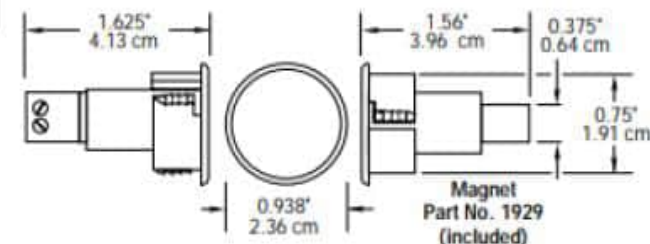
Models:
(R)1078, 1078W,



1078C,



1078CT,



Form A: (R)1078, 1078W, 1078C, 1078CT, 1078CTW

Voltage
Current
Power

100V AC/DC max.
0.5 A max.
7.5 W max.

Model	Dia.	Loop Type	Electrical Config.	Hole Required		Gap Distance*		
				Contact	Magnet	Wood*	Steel*	Rare Earth
1078	1"	Closed	N/O	1" x 1.125"	1" x 1.563"	1"	Up to 1/2"	Up to 5/8"
1078W	1"	Closed	N/O	1" x 1.125"	1" x 1.563"	2"	Up to 1"	
1078C	3/4"	Closed	N/O	.75" x 1.125"	.75" x 1.563"	1/2"	N/A	
(R)1078	1"	Closed	N/O	1" x 1.125"	1" x 1.563"	1"	Up to 1/2"	Up to 5/8"
1078CT	3/4"	Closed	N/O	.75" x 1.625"	.75" x 1.56"	7/8"	1/2"	5/8"
1078CTW	3/4"	Closed	N/O	.75" x 1.625"	.75" x 1.56"	5/8"	3/4"	N/A



Upper Canada Specialty Hardware

Item Code: 1078 STEEL DOOR CONTACT

Manufacturer: GE SECURITY

Date: JUNE 3/19

Page 1 of 1



B994-02

Connection Box + Back Pan Insert + 24 Pt. Terminal Labeled
Each terminal point on the block is provided with a numbered label strip from 1 to 24 that enables user to identify the wires connecting to each terminal. This box should be specified in following door configurations:

- 1 or 2 Card Readers with Electric Strike.
- 1 or 2 Card Readers with Maglock.
- 1 or 2 Card Readers with Electrified Lockset or Trim.
- 1 or 2 Card Readers with Exit Panic Device that does NOT use high-powered solenoid.



B994-02R1

Connection Box + Altronix Relay + 24 Pt. Terminal Labeled
Each terminal point on the block is provided with a numbered label strip from 1 to 24 that enables user to identify the wires connecting to each terminal. This box should be specified in following door configurations:

- 1 or 2 Card Readers with Exit Panic Device with high-powered solenoid.
 - 1 or 2 Card Readers with two different devices that are of opposite rest state.
- Example: Fail Secure Electric Strike and Fail Safe Maglock.
ADO with 2 Push Pads and 2 Card Readers.



B994-04

Connection Box + CX-11 Relay + 24 Pt. Terminal Labeled
Each terminal point on the block is provided with a numbered label strip from 1 to 24 that enables user to identify the wires connecting to each terminal. This box should be specified in following door configurations:

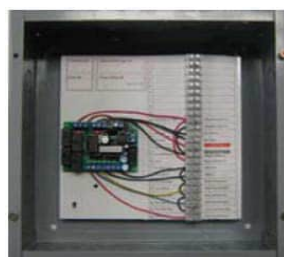
- Doors with ADO and Electric Strike or Exit Panic Devices that are activated by 1 or more Push Pads, Motion Detectors or other activation devices (excluding Card Readers).
- Doors that need a time by-pass module.



B994-04R1

Connection Box + CX-11 Relay + Altronix Relay + 24 Pt. Terminal Labeled. Each terminal point on the block is provided with a numbered label strip from 1 to 24 that enables user to identify the wires connecting to each terminal. This box should be specified in following door configurations:

- Doors with ADO and Electric Strike or Exit Panic Devices that are activated by 2 Push Pads and 1 Card Reader.



B994-12

Connection Box + Wash. Control Module + 24 Pt. Terminal Labeled.
Each terminal point on the block is provided with a numbered label strip from 1 to 24 that enables user to identify the wires connecting to each terminal.
This box should be specified in following door configurations:
A washroom with ADO that requires Push-to-Lock button and Occupied Light.
Two doors that need to be interlocked with each other.



Upper Canada Specialty Hardware

Item Code: B994 Series SIP Boxes

Manufacturer: UC Access

Date: 3/14/14

PAGE
1 of 1

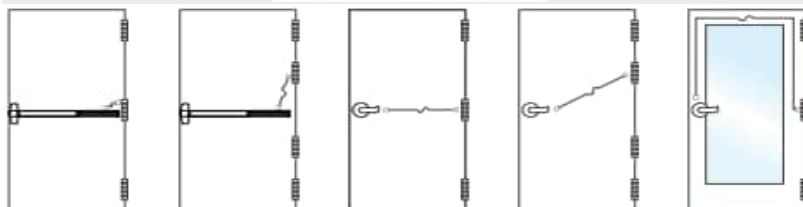
Overview

Allegion Connect is a cross-category electrified solution utilizing common interconnect components to our electrified options. Allegion Connect is a quick and easy way to connect power sources; all the way from your power supply to electrified door hardware. There is no wire cutting; reducing installation and maintenance time ultimately cutting cost. After installation, Allegion Connect continues to provide benefits throughout the lifetime of the opening by offering a comprehensive service kit. Our cross category product offering is interchangeable which allows for simple upgrades and replacements.

Features and benefits

- **Quick:** common connections reducing installation time
- **Perfect connections:** these factory installed connectors ensure the right wires match up every time
- **Protective:** the connectors protect the connection points throughout the installation process and lifetime of the opening
- **Interchangeable:** all Allegion Connect products utilize the same connectors
- **Maintenance:** you no longer need to cut away wire to disconnect Allegion products, also available are service kits specifically for Allegion Connect

Wire run options



Exits
Electric strikes
EPT
Locks

Exits
Locks

Architectural hinges
Geared hinges
Pin/barrel hinges



Allegion Connect

Wiring harnesses have 8 pin and 4 pin connectors on each end, or can be ordered with the connectors on one end only. Harnesses are available in several configurations and lengths to fit your opening requirements.
Options include: connector to connector, connector to pin end, connector to flying leads

Harness lengths

Harness length	Connectors on both ends	Connectors on one end, crimped pins on other end (recommended for doors with narrow channel)
6 inches	CON-6	CON-6P
12 inches	CON-12	CON-12P
26 inches	CON-26	CON-26P
32 inches	CON-32	CON-32P
38 inches	CON-38	CON-38P
44 inches	CON-44	CON-44P
50 inches	CON-50	CON-50P
192 inches	CON-192	CON-192P

Optional power supply wire harness: Connectors on one end, stripped leads on the other end, offering a direct connection to the power supply

6 inches CON-6W - wire extension to power supply



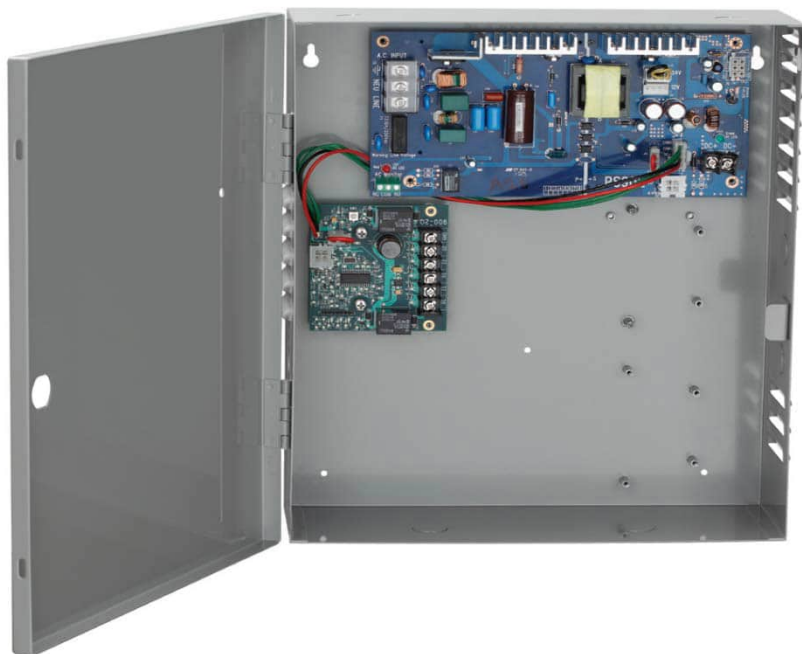
Upper Canada Specialty Hardware

Item Code: ALLEGION CONNECT

Manufacturer: ALLEGION

Date: JAN. 22/20

Page 1 of 1



Overview

Schlage's comprehensive line of power supplies and option boards were designed to address the changing needs of the access control market.

Installation is simplified by utilizing a flat mounting design and polarized locking connectors for option boards. This new design eliminates the need for racks and side connectors. The flat mounting of the option boards also provides for easier access to the terminal blocks for connection of electrified devices (such as electrified strikes, electromagnetic locks, card readers, etc).

Common to the line of PS900 Series power supplies is a constant output rating at both 12v and 24v settings, universal 120 VAC to 240 VAC input, and polarized option board connectors. New fire alarm interface board mounting allows outputs to be configured as switched (power cut) or unswitched (power continues) when signal provided.


* All PS900 Series of power supplies and option boards have been tested and certified to meet UL294.

PS902 2 amp Power Supply Features

- 2A @ 12/24 VDC output, field selectable with jumper
- UL294 listed
- Class 2 Rated power limited output
- Universal 120 -240 VAC input
- Low voltage DC, regulated and filtered
- Single polarized connector for distribution board
- Fused primary input
- AC input and DC output monitoring circuits w/ LED indicators
- Cover mounted AC input indication
- NEMA 1 enclosure
- Hinged cover w/ lock down screws
- High voltage protective cover

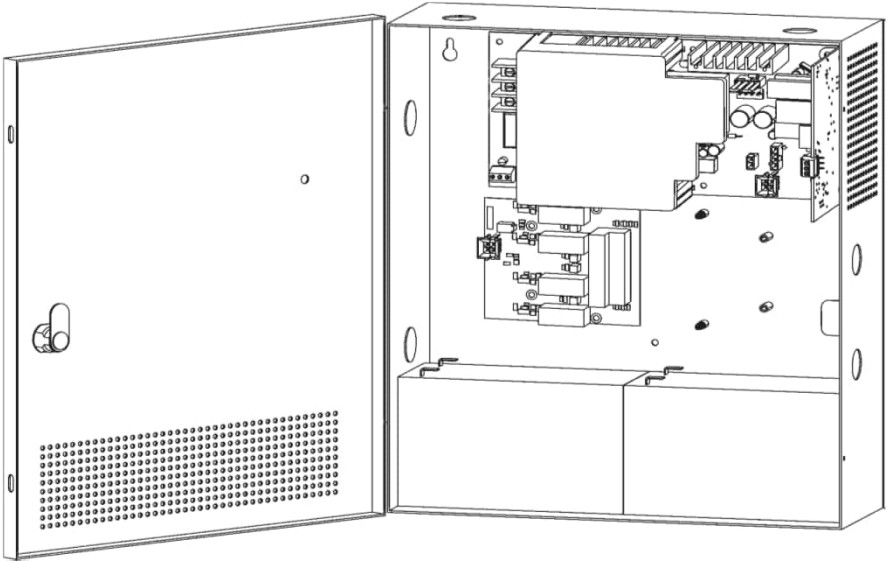
Options


- Emergency Interface Relay (FA)
- Battery Backup
- 2 relay QEL panic device control board
- 4 relay distribution board
- 4 relay distribution board with logic
 - Field configurable for:
 - Time delay function
 - Auto operator
 - Security interlock
- 8 fused output distribution board
- 8 PTC output distribution board

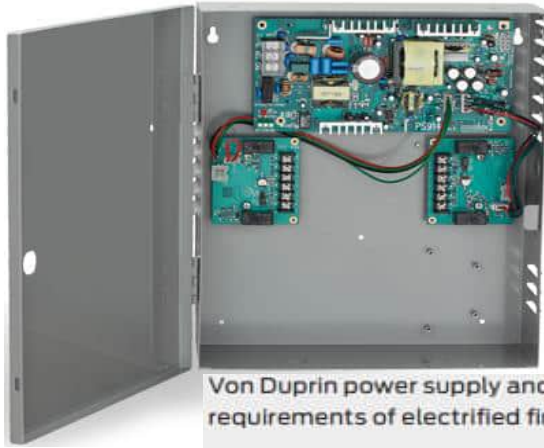
	Upper Canada Specialty Hardware		
	Item Code:	PS902 Power Supply	
	Manufacturer:	Von Duprin	
	Date:	04/12/11	PAGE
			1 of 2

PS902 Power Supply Specifications

Specification	Description	Weight (each Battery)	4.0 lbs
Input Voltage	120/240 VAC, 50/60 Hz, universal input	AC Input Termination	3 position terminal block with protective cover
Output voltage	2A @ 12 or 24 VDC		Wire capacity: 10 AWG max.
	Field selectable with jumper	DC Output Termination	2 position terminal block
	Switching supply, 5% regulation, 240mVpp max ripple		Wire capacity: 12 AWG max.
Enclosure	Grey / Baked enamel	Distribution board connectors	1
	14"H x 12"W x 4"D	Fire Alarm board connector	Yes
	Eight 1/2" x 3/4" Knockouts	Keylock	Optional
	NEMA Grade 1		
	Hinged cover with lock down screws		
Operating Temperature	32º-120º F (0º-49º C)		
Certifications	UL 294		
	Class 2		
	RoHS		
	FCC Part 15		
Option Board Compatibility	900-BB: Battery Backup		
	900-FA: Fire Alarm		
	900-2Q: 2 Relay QEL control Board		
	900-4R: 4 Relay Output Board		
	900-4RL: 4 Relay Logic Board		
	900-8F: Fused 8 Zone Distribution Board		
	900-8P: PTC 8 Zone Distribution Board		
AC Primary Fuse Size	3.15A, 250v, 5 x 20mm SLOW-BLOW		
Battery Fuse Size	7.5A 32v ATO blade style		
DC output Protection	Overload protection - current limited foldback circuit		
Indicators	LED indicators:		
	* AC Input (visible on outside of enclosure)		
	* DC Output		
	Isolated SPDT contacts to monitor AC power status		
Weight (Power Supply)	Approx. 9.0 lbs		



	Upper Canada Specialty Hardware		
	Item Code:	PS902 Power Supply	
	Manufacturer:	Von Duprin	
	Date:	04/12/11	PAGE
			2 of 2



PS914

4 amp high in rush power supply



Certifications ANSI/UL 294
ULC-S318
RoHS
FCC Part 15
Class 2

Battery backup
(Install on main board)

Available option boards

- 900-BB: Battery backup board only
- 900-BBK: Battery backup kit (backup board plus battery pack)
- 900-FA: Plug-in fire alarm (must be installed on option boards)
- 900-2RS*: 2 Relay option board capable of individual or sequential operation for single and pair door applications
- 900-4R*: 4 Relay option board
- 900-4RL*: 4 Relay option board with integrated logic and individual or sequential operation capability for controlling security interlocks, auto operators and time delay function
- 900-8F*: Fused, 8 zone option board
- 900-8P*: PTC, 8 zone option board

Von Duprin power supply and option board products were designed to meet the specific requirements of electrified fire exit devices.

Installation is simplified by utilizing a flat mounting design and polarized locking connectors for option boards. This design eliminates the need for racks and side connectors. The flat mounting of the option boards also provides for easier access to the terminal blocks for connection of electrified devices (such as electrified panic devices, strikes, card readers, etc.).

Common to the line of PS900 Series power supplies is a constant output rating at both 12v and 24v settings, universal 120 VAC to 240 VAC input, and polarized option board connectors. New fire alarm interface board mounting allows outputs to be configured as switched (power cut) or unswitched (power continues) when signal is provided.

- 6A @ 12/24 VDC constant output, field selectable with jumper
- Provides low-voltage, Class 1, filtered and regulated power (Class 2 when used with 900-8P option board)
- Universal 120-240 VAC, fused primary input
- Three polarized option board connectors eliminate need for racks and side connectors
- AC input and DC output monitoring circuit with LED indicators
- Externally visible AC input indicator with isolated SPDT contacts
- High-voltage protective cover for AC circuitry (not shown)
- Battery back-up board auto-selects voltage
- Optional Fire Alarm plug-in board available
- UL 294, ULC-S318, RoHS, and FCC Part 15 certified

Specification	Description	Fire alarm board connector	
		Yes	Optional
Input voltage	120/240 VAC, 50/60 Hz, universal input	Keylock	
Output voltage	4A @ 12 or 24 VDC Field selectable with jumper Switching supply, 5% regulation, 360mVpp max ripple		
Enclosure	Grey/baked enamel 14" x 12" x 4" (H x W x D) Eight 1/2" x 3/4" knockouts Hinged cover with lock down screws	AC primary fuse size	6.3A, 250v, 5 x 20 mm
		Battery fuse size	7.5A 32v ATO blade style
Operating temperature	32° - 120°F (0° - 49°C)	Weight (power supply)	Approx. 9.0 lbs
		Weight (each battery)	4.0 lbs



Upper Canada Specialty Hardware

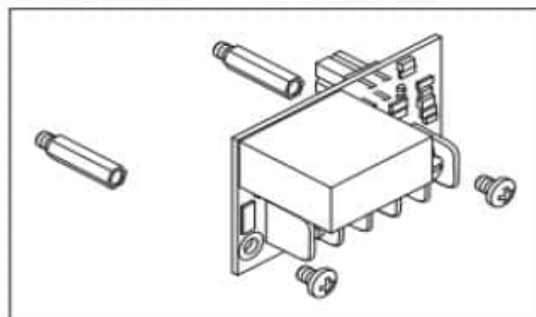
Item Code:	PS914 4 AMP HIGH RUSH POWER SUPPLY	
Manufacturer:	VON DUPRIN	
Date:	JAN. 30/20	Page 1 of 1

Product Type: Power Supply Option Board
Board Function: Emergency Interface Relay
Brand Proprietary: Yes
Amperage: 4 amps

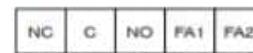
900-FA

Fire Alarm Relay

VON DUPRIN



Terminal Definitions



Supervision Output
Contacts Shown FA Active (open)

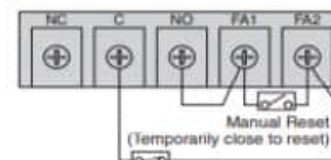
Fire Alarm Input

One 900-FA Board - Automatic Reset



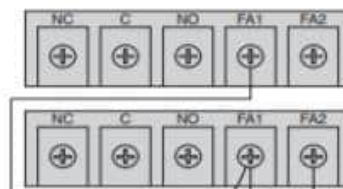
Fire Alarm Contact
Closed = no fire
Open = fire

One 900-FA Board - Manual Reset



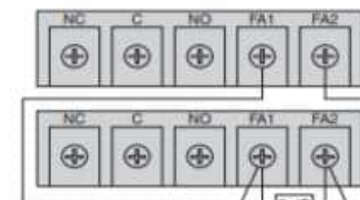
Fire Alarm Contact
Closed = no fire
Open = fire

Two 900-FA Boards on one power supply Automatic Reset



Fire Alarm Contact
Closed = no fire
Open = fire

Two 900-FA Boards on two power supplies Automatic Reset



Fire Alarm Contact
Closed = no fire
Open = fire

Emergency interface relay integrates with fire alarm and is used to cut power in case of emergency

Input (Fire Alarm)	Dry contacts required (Closed = no fire alarm) Connect control contacts between FA1 and FA2
Output (Supervision)	30VDC, 1A resistive dry contact
Board Input Power	Board requires 0.05A max. of power supply output current to operate
Temperature Range	32°-120° F (0°- 49° C)
Compliance	UL 294, ULC-S318, RoHS, & FCC Part 15



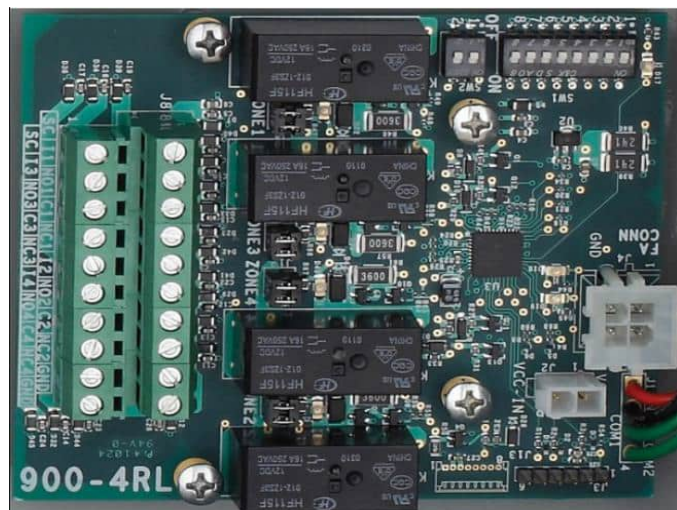
Upper Canada Specialty Hardware

Item Code: 900-FA FIRE ALARM RELAY

Manufacturer: VON DUPRIN

Date: SEPT 24/19

Page 1 of 1



900-4RL

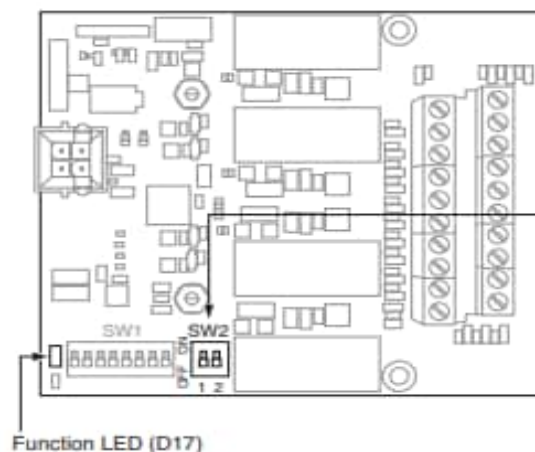
4 relay board

VON DUPRIN

Wire table (suggested maximum)			
Wire Ga (AWG)	Device Current (Amps DC)	Output* (max. ft)	Input (max. ft)
14	0.3	850	1200
	0.5	500	
18	0.3	340	200
	0.5	200	
12	Using EL device with EPT or Door Loop (PS914 required)	200	75
14		100	
12	Using EL device with Electric Hinge/Pivot (PS914 required)	150	
14		75	

Integrated logic to control
Interlocks, auto operators
And time delays

900-4RL Specifications	
Inputs I1-I4	Dry contacts required (Closed = Active) Connect control contacts between SC (Signal Common) and any input
Outputs O1-O4	• Form C contacts rated 30VDC, 3A (Dry) • 12/24VDC, 3A (Wet) when AC powered • 9.6-13.2VDC or 19.2-26.4VDC when battery powered • May be used with PS914 to power EL device at 24VDC, 16A, 300ms • Maximum load cannot exceed power supply ratings or 6A for outputs combined
Board Input Power	Board requires 0.18A max. of power supply output current to operate
Temperature Range	32°-120°F (0°- 49° C)
Compliance	UL 294, ULC-S318, RoHS, & FCC Part 15
Fire Alarm Input	Accepts 900-FA Fire Alarm Board (Optional)



ON OFF	1 2	4TD Four Zone Controller Function (4TD): Controls up to four inputs and four outputs with time delay. This is the default setting. Function LED will blink one time every 5 seconds
ON OFF	1 2	AO Auto Operator Function (AO): Coordinates the unlocking of one or two zones with the signaling of an auto operator. Function LED will blink two times every 5 seconds
ON OFF	1 2	SI Security Interlock Function (SI): Controls multi-door interlocks. Two through six door systems are possible (additional boards required for three to six doors). Function LED will blink three times every 5 seconds



Upper Canada Specialty Hardware

Item Code:	900-4RL RELAY BOARD	Page 1 of 1
Manufacturer:	VON DUPRIN	
Date:	JUNE 6/19	










Electric Hardware and Related Items
List of Product and Service Responsibilities

SHN Mental Health

Monday, April 13, 2026

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Swinging Aluminum Doors	08 11 16/17
Swinging All Glass Doors	08 42 26
Sliding Aluminum & All Glass Doors	08 42 29
Hardware Installer	DIV 6
Contractor	
Shared	

Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
1		Door Contact - Swinging WD & HM Doors	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
2		Door Contact - Swinging Alum. Doors	DIV 8	08 71 00	08 11 16/17	08 11 16/17	DIV 28	DIV 26, 28
3		Door Contact - Sliding Alum. Doors	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28
4		Door Contact - Sliding All Glass Doors	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28
5		Door Contact - Overhead Doors	By Door Supplier	By Door Supplier	By Door Supplier	DIV 28	DIV 28	DIV 26, 28
6		Door Contact - Overhead Doors	By Door Supplier	By Door Supplier	By Door Supplier	DIV 28	DIV 28	DIV 26, 28
7		Electric Strike - Swinging WD & HM Doors (Security Related)	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
8		Electric Strike - Swinging Alum. Doors (Security Related)	DIV 8	08 71 00	08 11 16/17	DIV 28	08 71 00, DIV 28	DIV 26, 28
9		Electric Strike - Swinging WD & HM Doors (Power Operator Related Only)	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28






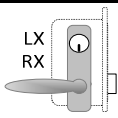



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List of Product and Service Responsibilities

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Hardware Installer	DIV 6
Contractor	
Shared	

Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
10		Electric Strike - Swinging Alum. Doors (Power Operator Related Only)	DIV 8	08 71 00	08 11 16/17	08 71 00	08 71 00, DIV 28	DIV 26, 28
11		Electric Strike - Swinging All Glass Doors (Power Operator Related Only)	DIV 8	08 71 00	08 42 26	DIV 28	DIV 28	DIV 26, 28
12		Magnetic Lock - WD & HM Doors	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
13		Magnetic Lock - Swinging Alum. Doors	DIV 8	08 71 00	08 11 16/17	DIV 28	DIV 28	DIV 26, 28
14		Magnetic Lock - Sliding Alum. Doors	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28
15		Electric Lock	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
16		Power Transfer - for WD & HM Doors (from Frame to Door)	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	DIV 26, 28
17		Power Transfer - for Swinging Alum. Door (from Frame to Door)	DIV 8	08 71 00	08 11 16/17	DIV 28	DIV 28	DIV 26, 28
18		Power Transfer - for Sliding Alum. Door (from Frame to Door)	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28

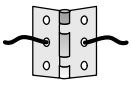
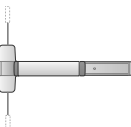
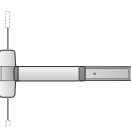
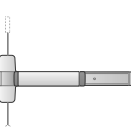
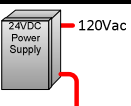
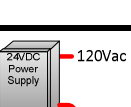


Electric Hardware and Related Items
List of Product and Service Responsibilities

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Hardware Installer	DIV 6
Contractor	
Shared	

Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
19		Electric Wire Through Hinge HM & WD Door	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	DIV 26, 28
20		Electrified Exit Device - HM & WD Door	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
21		Electrified Exit Device - Swinging Alum. Doors (for OPERATORS)	DIV 8	08 71 00	08 11 16/17	08 71 00	08 71 00	DIV 26, 28
22		Electrified Exit Device - Swinging Alum. Doors (for SECURITY)	DIV 8	08 71 00	08 11 16/17	08 71 00	08 71 00, DIV 28	DIV 26, 28
23		Power Supply - for Electric Strike, Magnetic Lock & Electrified Lock	Not Required	08 71 00	DIV 26	DIV 26	DIV 26	DIV 26, 28
24		Power Supply - for Electrified Exit Device w/ Electric Latch Retraction	Not Required	08 71 00	DIV 26	DIV 26	DIV 26	DIV 26, 28
25		Systems Integration Box - Security Related	Not Required	08 71 00	DIV 26	08 71 00	08 71 00, DIV 28	DIV 26, 28
26		Systems Integration Box - Barrier Free Operator Related	Not Required	08 71 00	DIV 26	08 71 00	08 71 00, DIV 28	DIV 26, 28










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Contractor	
Shared	

Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
27		Automatic Door Operator - WD & HM Door	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	DIV 26, 28
28		Automatic Door Operator - Swinging Alum. Door	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	DIV 26, 28
29		Automatic Door Operator - Sliding Alum. Door	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28
30		Automatic Door Operator - Swinging All Glass Door	DIV 8	08 42 26	08 42 26	DIV 28	DIV 28	DIV 26, 28
31		Automatic Door Operator - Sliding All Glass Door	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28
32		Operator Actuator - WD, HM, Swinging Alum. Door	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	DIV 26, 28
33		Operator Actuator - Swinging Glass Door	DIV 8	08 42 26	08 42 26	DIV 28	DIV 28	DIV 26, 28
34		Operator Actuator - Sliding Alum. Door	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28
35		Operator Actuator - Sliding All Glass Door	DIV 8	08 42 29	08 42 29	DIV 28	DIV 28	DIV 26, 28


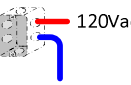


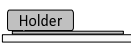
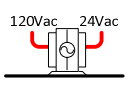

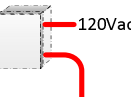
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Hardware Installer	DIV 6
Contractor	
Shared	

Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
36		Frame and/or Door Mounter Motion and Safety Sensors related to Operators	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	Not Required
37		Conduit and Junction Boxes for Automatic Door Operator Actuators, 120VAC & Low Voltage	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26
38		Key Switch - for Hardware Applications	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00	DIV 26, 28
39		Exit Button for Magnetic Lock	Not Required	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
40		Magnetic Hold Open Closer - Frame Mounted	DIV 8	08 71 00	08 71 00	DIV 26	DIV 26	DIV 26, 28
41		Junction Box Mounter 24VAC Transformer - for Frame Mounted Magnetic Hold Open Closer	Not Required	08 71 00	DIV 26	DIV 26	DIV 26	DIV 26, 28
42		Wall Mounted Hold Open Device (if any)	DIV 8	08 71 00	08 71 00	DIV 26	DIV 26	DIV 26, 28
43		All Fire Alarm Connections	Not Required	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26
44		All 120 VAC Connections	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26, 28








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Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
45		Wall or Frame Mounted PIR-REX Motion Sensors for Security	DIV 28	DIV 28	DIV 28	DIV 28	DIV 28	DIV 26, 28
46	LX	Latch Bolt Monitors in Hardware Devices (where applicable)	DIV 8	08 71 00	08 71 00	08 71 00	08 71 00, DIV 28	DIV 26, 28
47	 Permit	MagLock Permit	Not Required	Not Required	Not Required	Not Required	Not Required	General Contractor
48		Fire Alarm Pull Station	Not Required	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26
49		Key Switch - for Fire Alarm Activation	Not Required	DIV 26	DIV 26	DIV 26	DIV 26	DIV 26
50		Card Reader	Not Required	DIV 28	DIV 28	DIV 28	DIV 28	DIV 26, 28
51		Frame and/or Door Mounted Junction/Wrought boxes, Electric Hardware Protection	DIV 8	DIV 8	DIV 8	Not Required	Not Required	Not Required
52	 120Vac	Wire Conduit - for Electric Strikes and Door Contact (and all Electric Hardware Devices in Frames)	DIV 8	DIV 8	DIV 8	Not Required	Not Required	Not Required





Electric Hardware and Related Items
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Item#	Symbol/ Image	Product Description	Prepare Door/Frame	Supply Product	Install Product	Wire Product to Systems Integration Point Box	Test Applied Devices	Commission Opening (Card Readers, Fire Alarm, Security System, etc.)
53		All other Conduit not attached to the Frame (or not in Alum. Member)	DIV 26	DIV 26	DIV 26	Not Required	Not Required	Not Required
54		Power Supply/ Logic Control Set Up Drawings - Operator Related Equipment	Not Required	08 71 00	Not Required	Not Required	Not Required	Not Required
55		Low Voltage Wire from mounted device to SIP Box or "above door" mounted Power Supply or Junction Box	Not Required	08 71 00	DIV 26	08 71 00	08 71 00, DIV 28	DIV 26, 28
56		Blue Pull String in Conduit (not related to Frame Mounted Conduit)	Not Required	DIV 26	DIV 26	Not Required	Not Required	Not Required
57		Access Doors for Access to Control Boxes & Power Supplies in hard ceilings	Not Required	DIV 26	General Contractor	Not Required	Not Required	Not Required
58		Conduit from Hardware Devices to ceiling - for Alum. Frames	DIV 26	DIV 26	DIV 26	Not Required	Not Required	Not Required