

# **UNIVERSITY OF TORONTO**

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## **TECHNICAL SPECIFICATIONS FOR**

### **33 URSULA FRANKLIN – MATH OFFICE RENOVATION**

33 URSULA FRANKLIN STREET  
TORONTO, ONTARIO  
**UNIVERSITY PROJECT NUMBER: P164-24-165**

**ISSUED FOR TENDER: APRIL 22, 2026**

**DIVISIONS 2 – 12, 27**

**CONSULTANT:**  
**UNIVERSITY, PLANNING, DESIGN AND CONSTRUCTION –**  
**DESIGN AND ENGINEERING**

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**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      as listed in Section 00 31 00.49. – Designated and Hazardous investigation Report.
- .2      Section 00 31 00.49 – Asbestos Abatement Scope of Work.

**1.3            ALTERATION PROJECT PROCEDURES**

- .1      Remove and cut Work in a manner to minimize damage and to provide means of restoring Products and finishes to specified condition.
- .2      Where new Work abuts or aligns with existing, provide a smooth and even transition.
- .3      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.

**1.4            ADMINISTRATIVE REQUIREMENTS**

- .1      Sequencing: Sequence work to requirements of Section 01 10 00.
  - .1      Sequence activities to demolish the Work in the following stages order:
    - .1      Hoarding and enclosures for asbestos abatement by asbestos abatement contractor.
    - .2      Asbestos abatement by asbestos abatement contractor.
    - .3      Selective demolition in abated project site as required by abatement or demolition contractor.
- .2      Scheduling: Schedule work to requirements of Section 01 30 00.
  - .1      Schedule Work to precede new construction work.
  - .2      Describe demolition removal procedures and schedule.
- .3      Perform dusty, noisy and hazardous work:
  - .1      Between the hours as specified in Section 01 10 00.

**1.5            SUBMITTALS FOR REVIEW**

- .1      Section 01 30 00: Submission procedures.
- .2      Shop Drawings: Indicate demolition and asbestos abatement sequence and schedule.

**1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39: Submission procedures.
- .2 Record Documentation: Accurately record actual locations of subsurface obstructions and capped utilities.

**1.7 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for demolition work, dust control, products requiring electrical disconnection reconnection.
- .2 Obtain required permits from authorities.
- .3 Do not close or obstruct egress width to any building or site exit.
- .4 Do not disable or disrupt building fire or life safety systems without prior written notice to Owner as specified in Section 01 35 13.
- .5 Conform to applicable regulatory procedures when discovering hazardous or contaminated materials and notify Consultant and University Project Manager.

**1.8 PROJECT CONDITIONS**

- .1 Conduct demolition to minimize interference with adjacent and occupied building areas.
- .2 Cease operations immediately if structure appears to be in danger and notify Consultant. Do not resume operations until directed.

**Part 2 Products**

**2.1 MATERIALS**

- .1 Not Used.

**Part 3 Execution**

**3.1 PREPARATION**

- .1 Erect and maintain temporary partitions to prevent spread of dust, odours, and noise. Coordinate with Section 01 50 00.
- .2 Protect existing materials which are not to be demolished.
- .3 Prevent movement of structure; provide bracing and shoring.
- .4 Mark location and termination of utilities.
- .5 Provide appropriate temporary signage including signage for exit or building egress.

**3.2 DEMOLITION**

- .1 Coordinate the work of removal of existing wall coverings with Section 09 91 10 – Painting. Determine if the removal of existing wall covering is being done by Section 02 41 19 - Selective Demolition or by Section 09 91 10 – Painting and agree to follow the guidelines of MPI Maintenance Repainting Manual for the removal of wallcoverings.
- .2 Disconnect, remove and cap identify designated utilities within demolition areas.
- .3 Demolish in an orderly and careful manner. Protect existing supporting structural members.

- .4 Remove unused suspended ceiling system hangers, unused conduit and all manner of attached fasteners, blocking and fixturing at concrete surface which are scheduled as exposed finishes.
- .5 Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- .6 Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- .7 Remove temporary Work.

### **3.3 SCHEDULES**

- .1 Remove the following equipment and materials for the Owner's retention. Deliver to location designated by Consultant
  - .1 Salvage existing 12" x 12" acoustic ceiling tiles which are not damaged.
- .2 Fully remove and dispose of:
  - .1 Existing doors and frames as indicated on drawings.
  - .2 Existing door locksets.
  - .3 Cutting into existing plaster finishes as indicated on drawings.
  - .4 Existing gypsum board partitions as indicated on drawings.
  - .5 Floor and ceiling finishes indicated to be removed.

**END OF SECTION**

**Part 1 General**

**1.1 GENERAL REQUIREMENTS**

- .1 Read and conform to:
  - .1 Sections of Division 00 and The General Conditions of the Contract.
  - .2 Schedule 1, Supplementary Conditions.
  - .3 Conform to Sections of Division 01 as applicable.

**1.2 SECTION INCLUDES**

- .1 Liquid applied cementitious self-leveling floor underlayment as required to provide level floor within tolerance and to requirements of other trades providing floor finishes, partition systems, door frames and glazed screen framing systems.

**1.3 RELATED SECTIONS**

- .1 Section 02 41 19 - Selective Demolition
- .2 Section 09 21 16 - Gypsum Board Assemblies
- .3 Section 09 65 10 - Resilient Flooring
- .4 Section 09 68 13 - Tile Carpeting
- .5 Section 10 22 26 - Operable Partitions

**1.4 REFERENCES**

- .1 ASTM C109M, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).
- .2 CSA-A23.1-09/A23.2-09 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

**1.5 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide physical characteristics, product limitations, .
- .3 Shop drawings:
  - .1 Submit shop drawings in indicating Sections, details, materials, dimensions, thicknesses of each layer, maximum and minimum thicknesses, 3, 7, and 28 day load characteristics, and surface finishes.

**1.6 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Manufacturer's Instructions: Indicate mix instructions.
- .3 Certificate: Certify that Products meet or exceed specified requirements.
- .4 Certificates: Submit certification from manufacturer, stating that materials proposed for use are compatible with specified floor finishes.

**1.7 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

**1.8 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Applicator Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience .

**1.9 ENVIRONMENTAL REQUIREMENTS**

- .1 Section 01 70 00: Environmental conditions affecting products on site.
- .2 Do not install underlayment until floor penetrations and peripheral work are complete.
- .3 Maintain minimum ambient temperatures of 10 degrees C, 24 hours before, during and 72 hours after installation of underlayment.
- .4 During the curing process, ventilate spaces to remove excess moisture.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Ardex Engineered Cements; Product: Ardex V1200 and Ardex Ardex P 51 Primer.
- .2 Other acceptable manufacturers offering functionally and aesthetically equivalent products.
- .3 Substitutions: Refer to Section 01 60 00.

**2.2 MATERIALS**

- .1 Underlayment: Cementitious based mix.
- .2 Water: Potable and not detrimental to underlayment mix materials.
- .3 Primer: Ardex P 51 Primer Manufacturer's recommended type.
- .4 Joint and Crack Filler: Latex based.

**2.3 MIXING**

- .1 Site mix materials in accordance with manufacturer's written instructions.
- .2 Mix to achieve following characteristics:
  - .1 Compressive strength to ASTM C109, 28 day 4100 psi.
  - .2 Flexural strength to ASTM C109: 28 day 1000 psi.
  - .3 Fire Hazard Classification: Flame Spread/Smoke Developed rating of 0/0.
- .3 Mix to self-leveling consistency.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.



- .2 Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum bi-products, or other compounds detrimental to underlayment material bond to substrate.

### **3.2 PREPARATION**

- .1 Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- .2 Vacuum clean surfaces.
- .3 Prime substrate to manufacturer's written instructions. Allow to dry.
- .4 Close floor openings.

### **3.3 APPLICATION**

- .1 Install underlayment to manufacturer's instructions.
- .2 Place to thickness indicated .
- .3 Place to minimum 3 mm thickness and maximum thickness as stated by material manufacturer.
- .4 Place before partition installation.

### **3.4 CURING**

- .1 Air cure to manufacturer's written instructions.

### **3.5 APPLICATION TOLERANCE**

- .1 Top Surface: Level to 3 mm in 3 m.
- .2 Install underlayment to tolerances listed in CSA-A23.1/A23.2.

### **3.6 PROTECTION OF FINISHED WORK**

- .1 Section 01 70 00: Protecting installed work.
- .2 Do not permit traffic over unprotected floor underlayment surfaces.

### **3.7 SCHEDULES**

- .1 Create level floor in work area.
- .2 Transition to existing floor surface; use stiff mix to slope to align with existing floor.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Shop fabricated miscellaneous metal items:
  - .1 Provide new stainless-steel top and bottom shoes, where missing at toilet partition pilasters in Washrooms.

**1.2 RELATED SECTIONS**

- .1 Section 09 21 16 - Gypsum Board Assemblies
- .2 Section 10 28 14 - Toilet and Bath Accessories

**1.3 REFERENCES**

- .1 AWS D1.6/D1.6M-2007 - Structural Welding Code - Stainless Steel.
- .2 CSA-W48-14 - Filler Metals and Allied Materials for Metal Arc Welding.
- .3 CSA-W55.3-08 (R2013) - Certification of Companies for Resistance Welding of Steel and Aluminum.
- .4 ASTM A53/A53M-12 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- .5 ASTM A153/A153M-09 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- .1 ASTM A240/A240M-15a - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .2 ASTM A307-12 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
- .3 ASTM A500/A500M-13 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- .4 ASTM A501-07 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- .5 ASTM B177/B177M-11 - Standard Guide for Engineering Chromium Electroplating.
- .6 CSA-G40.20-13/G40.21-13 - General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steel.
- .7 CSA-W47.1-09 - Certification of Companies for Fusion Welding of Steel.
- .8 CSA-W48-14 - Filler Metals and Allied Materials for Metal Arc Welding.
- .9 CSA-W55.3-08 (R2013) - Certification of Companies for Resistance Welding of Steel and Aluminum.
- .10 CSA-W59-13 - Welded Steel Construction (Metal Arc Welding).
- .11 Ontario Painting Contractors Association – Architectural Painting Specifications Manual and Maintenance Repainting Manual.
- .12 SSPC (The Society for Protective Coatings) - Steel Structures Painting Manual.

**1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Shop Drawings:
  - .1 Submit shop drawings stamped and signed by Professional Engineer licensed in the Province of Ontario and specializing in metal fabrications.
  - .2 Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - .3 Indicate welded connections using standard welding symbols. Indicate net weld lengths.

**1.5 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.

**1.6 QUALITY ASSURANCE**

- .1 Items requiring design, engineering submittal shall be designed and engineered and require a submitted stamped Shop Drawing by one of the following a Professional Engineer registered in Ontario.
- .2 Welders' Certificates: Submit to Section 01 30 00 requirements, certifying welders employed on the Work, verifying qualification within the previous twelve (12) months to CSA-W47.1 (steel) .
- .3 Welded Steel Construction: CSA-W59.
- .4 Design the items of metal fabrication and connections not detailed on the Drawings by a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located. Design the work in compliance to the Ontario Building Code.

**Part 2 Products**

**2.1 MATERIALS - STEEL**

- .1 Steel Sections and Plates: CSA-G40.20/G40.21, Grade 300W .
- .2 Steel Pipe: ASTM A53/A53M, Schedule 40, standard weight , galvanized finish.
- .3 Steel Tubing: ASTM A501 , galvanized finish.
- .4 Fasteners: galvanized.
- .5 Bolts, Nuts, and Washers: ASTM A307, galvanized to ASTM A153/A153M for galvanized components.
- .6 Welding Materials: Type required for materials being welded.
- .7 Welding Filler Material: CSA-W48.
- .8 Shop and Touch-Up Primer: SSPC-Paint 25, zinc oxide, alkyd .
- .9 Primer: As specified in Section 09 91 10.
- .10 Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic SSPC-Paint 20, Type II - Organic zinc-rich primer.

## **2.2 FABRICATION**

- .1 Fit and shop assemble items in largest practical sections, for delivery to site.
- .2 Fabricate items with joints tightly fitted and secured.
- .3 Continuously seal joined members by continuous welds.
- .4 Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- .5 Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- .6 Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## **2.3 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: 3 mm in 1.2 m (1/8 inch in 4 ft).
- .5 Maximum Deviation from Plane: 1.6 mm in 1.2 m (1/16 inch in 4 ft).

## **2.4 FINISHES - STEEL**

- .1 Stainless steel: 305 stainless steel, polished finish.
- .2 Prepare surfaces to be primed in accordance with SPCC SP 2.
- .3 Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- .4 Do not prime surfaces in direct contact with concrete or where field welding is required.
- .5 Prime paint items with one (1) coat .
- .6 Structural Steel Members: Galvanize after fabrication ASTM A123/A123M, with zinc coating thickness appropriate grade for type and size of steel material indicated 600 g/sq m (2.0 oz/sq ft).
- .7 Non-structural Items: Galvanized after fabrication to ASTM A123/A123M, with zinc coating thickness appropriate grade for type and size of steel material indicated 380 g/sq m (1.25 oz/sq ft).

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that field conditions are acceptable and are ready to receive work.
- .3 Verify dimensions, tolerances, and method of attachment with other work.

### **3.2 PREPARATION**

- .1 Clean and strip primed steel items to bare metal where site welding is required.

- .2 Supply steel items required to be cast into concrete and embedded in masonry with setting templates to appropriate sections.

### **3.3 INSTALLATION**

- .1 Install items plumb and level, accurately fitted, free from distortion or defects.
- .2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- .3 Field weld components indicated on Shop Drawings.
- .4 Perform field welding to CSA requirements.
- .5 Obtain approval prior to site cutting or making adjustments not scheduled.
- .6 After erection, prime welds, abrasions, and surfaces not shop primed galvanized, except surfaces to be in contact with concrete.

### **3.4 ERECTION TOLERANCES**

- .1 Section 01 70 00: Tolerances.
- .2 Maximum Variation From Plumb: 6 mm (1/4 inch) per story, non-cumulative.
- .3 Maximum Offset From True Alignment: 6 mm (1/4 inch).
- .4 Maximum Out-of-Position: 6 mm (1/4 inch).

### **3.5 SCHEDULES**

- .1 The following Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled:
  - .1 Provide new stainless steel top and bottom shoes, where missing at toilet partition pilasters.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1    Miscellaneous rough carpentry, including:
  - .1        Miscellaneous wood furring and grounds.
  - .2        Concealed wood blocking for support of metal door jambs.
  - .3        Concealed wood blocking for support of cabinets and shelves.
  - .4        Concealed wood blocking for support of visual display specialties such as blackboards and writable whiteboards.
  - .5        Concealed wood blocking for support of audio visual display system items such as monitors and speakers.
  - .6        Electrical/ Communications panel mounting back board.
- .2    Fasteners.
- .3    Preservative treatment.
- .4    Fire retardant treatment.

**1.2            RELATED SECTIONS**

- .1    Section 08 11 13 - Standard Metal Doors and Frames
- .2    Section 08 31 13 - Access Doors and Frames
- .3    Section 09 21 16 - Gypsum Board Assemblies
- .4    Section 09 51 13 - Acoustic Panel Ceilings
- .5    Section 10 11 00 - Visual Display Surfaces
- .6    Electrical Division – Fire Rated Plywood backing for Electrical Panels
- .7    Section 27 41 00 – Audio-Video Systems
- .8    Section 27 41 01 – Audio-Video Systems - Owner's Statement of Requirements

**1.3            REFERENCES**

- .1    ASTM A123/A123M-15 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .2    ASTM A153/A153M-09 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- .3    ASTM A653/A653M-13 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .4    CANPLY (Canadian Plywood Association) - Canadian Plywood Handbook.
- .5    CAN/CSA-O80 Series-08 (R2012) - Wood Preservation.
  - .1        CSA-O80.1-15 - Specification for Treated Wood.
  - .2        CSA-O80.3-15 - Preservative Formulations.

- .6 CSA-O121-08 (R2013) - Douglas Fir Plywood.
- .7 CSA-O151-09 - Canadian Softwood Plywood.
- .8 CSA-O153-13 - Poplar Plywood.
- .9 NLGA (National Lumber Grades Authority) - Standard Grading Rules for Canadian Lumber, 2010 edition.
- .10 NPA A208.1-2009 - Particleboard.

#### **1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide technical data on wood preservative and fire retardant materials and application instructions.

#### **1.5 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.
- .2 Sustainable Design Closeout Documentation: .

#### **1.6 QUALITY ASSURANCE**

- .1 Perform Work in accordance with the following agencies:
  - .1 Lumber Grading Agency: Certified by NLGA.
  - .2 Plywood Grading Agency: Certified by CANPLY.
  - .3 Wood Based Panel Products: Marked with a recognized, visible grade stamp showing Grade or span rating as required.
- .2 Pressure Preservative Treated Wood: Marked with certification mark authorized by the Canadian Wood Preservers Bureau (CWPB) indicating producer, preservative type, retention and Use Category (UC).

#### **1.7 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Store plywood panels flat and level.
- .3 Keep finish faces inward and cover stacks to protect from bumping and abrasion.
- .4 Protect tongue and groove plywood panel edges and corners.
- .5 Protect panels from sunlight, water or excessive humidity.
- .6 Store materials indoors in dry, well-ventilated area.

### **Part 2 Products**

#### **2.1 LUMBER MATERIALS**

- .1 Dimension Lumber: CSA-O141, softwood lumber unless indicated otherwise, S4S, maximum moisture content 19%; graded to NLGA Standard Grading Rules for Lumber. Finger jointed lumber not acceptable.

- .1 Studs - Non-Structural: Grade Standard , species Spruce-Pine-Fir .
- .2 Utility Shelving: Grade No. 2, species: any species.
- .3 Furring Blocking Nailing Strips Grounds and Rough Bucks s: Grade Construction Standard No. 3 , species: any species; exterior wood pressure preservative treated.

## **2.2 PANEL MATERIALS**

- .1 Plywood: CSA-O153 as indicated in schedule below, certified and graded by CANPLY, meeting the requirements of CSA-O325.
  - .1 Telephone and Electrical Panel Back Boards: Plywood, thickness as indicated 19 mm, S1S.

## **2.3 FASTENERS AND ANCHORS**

- .1 Screws and Nails: Galvanized steel and Electroplated steel ; type and size suitable for application.
- .2 Anchors: Stainless steel Type 304 ; toggle bolt type for anchorage to hollow masonry, expansion shield and lag bolt type for anchorage to solid masonry or concrete and bolt or ballistic fastener for anchorages to steel.
- .3 Galvanized Coating for Exterior Work and Interior High Humidity Areas: Hot dip galvanized to ASTM A153/A153M.
- .4 Galvanized Coating for Treated Wood: Hot dip galvanized to ASTM A153/A153M, Class A or B1 (G185) zinc coating .

## **2.4 MISCELLANEOUS ACCESSORIES**

- .1 Adhesives: Waterproof adhesive, approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.
- .2 Building Paper: No. 15 unperforated asphalt saturated felt .
- .3 Polyethylene: Sheet polyethylene, 0.25 mm (10 mil) thick.

## **2.5 PRESERVATIVE TREATMENT**

- .1 Wood Preservative (Pressure Treatment): CAN/CSA-O80 Series, and in accordance with Table 2 - Use Categories for Specific Products, Uses, and Exposures of CSA-O80.1.
  - .1 UC1: Interior construction, above-ground and dry applications; use inorganic boron (SBX) preservative.
  - .2 UC2: Interior construction, above-ground and potentially damp applications; use inorganic boron (SBX) preservative waterborne alkali-based, type CA ACQ.
- .2 Wood Preservative (Surface Application): CSA-O80.3, copper naphthenate.
- .3 Fire Retardant (FRT): CAN/ULC-S102, chemically treated and pressure impregnated; capable of providing a maximum flame spread/smoke development rating required to OBC.



**Part 3                    Execution**

**3.1                    EXAMINATION**

- .1                    Section 01 70 00: Verify existing conditions before starting work.
- .2                    Verify that site conditions are ready to receive work and opening dimensions are as indicated on Shop Drawings .

**3.2                    INSTALLATION**

- .1                    Set members level and plumb, in correct position. Place horizontal members, crown side up.
- .2                    Place horizontal members, crown side up.
- .3                    Space furring at 400 mm on centre.
- .4                    Install wood panels with Good One Side facing out.

**3.3                    SITE APPLIED WOOD TREATMENT**

- .1                    Apply preservative treatment to manufacturer's written instructions.
- .2                    Brush apply two (2) coats of preservative treatment on wood requiring cutting or drilling after treatment and on wood in contact with cementitious materials.
- .3                    Allow preservative to dry prior to erecting members.

**3.4                    ERECTION TOLERANCES**

- .1                    Framing Members: 6 mm from true position, maximum.

**3.5                    SCHEDULES**

- .1                    Miscellaneous wood furring and grounds.
- .2                    Concealed wood blocking for support of metal door jambs.
- .3                    Concealed wood blocking for support of cabinets and shelves.
- .4                    Concealed wood blocking for support of visual display specialties such as blackboards and writable whiteboards.
- .5                    Concealed wood blocking for support of audio visual display system items such as monitors and speakers.
- .6                    Electrical/ Communications panel mounting back board.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Custom shop fabricated lower Servery Cabinets units with doors, drawers, shelves, cabinet hardware.
- .2      Custom shop fabricated upper Servery Cabinets units with doors, shelves, cabinet hardware.
- .3      Cabinet finishes: exposed surfaces finished with high pressure decorative laminate finishes and concealed and semi-exposed surfaces with melamine finishes.
- .4      Custom shop fabricated upper Cabinet units with doors and cabinet hardware to mount over existing electrical panels. Cabinets and doors with high pressure decorative laminate finishes and concealed and semi-exposed surfaces with melamine finishes.
- .5      Countertops:
  - .1          Servery Cabinet units with solid surface countertops as specified in Section 06 62 00 - Simulated Stone Fabrications.
- .6      Replace existing Reception countertop with new countertop with high pressure decorative laminate finish.
- .7      At Reception counter, provide new MDF side and header jamb trim with paint finish.
- .8      Replace existing window sills with new window sills with high pressure decorative laminate finish.
- .9      Provide wall mounted plywood shelf with concealed shelf support and high-pressure decorative laminate finish.
- .10     Provide wood infill curb at bottom of washroom doors which are scheduled to be locked with inoperable hardware. Infill curb will be constructed with solid lumber with finished face of solid wood plywood with grade A veneer suitable for opaque paint.

**1.2            RELATED SECTIONS**

- .1      Section 06 10 53 Miscellaneous Rough Carpentry: Grounds and support framing.
- .2      Section 06 62 00 - Simulated Stone Fabrications
- .3      Section 07 92 00 - Joint Sealants
- .4      Section 09 21 16 - Gypsum Board Assemblies
- .5      Section 09 65 10 - Resilient Flooring
- .6      Section 09 68 13 - Tile Carpeting
- .7      Section 09 91 10 – Painting
- .8      Section 10 11 00 - Visual Display Surfaces
- .9      Mechanical Division: Plumbing fixtures.
- .10     Electrical Division – Power wiring and signal cabling for appliances
- .11     Section 27 41 00 – Audio-Video Systems
- .12     Section 27 41 01 – Audio-Video Systems - Owner's Statement of Requirements

### **1.3 REFERENCES**

- .1 ASTM A153/A153M-09 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- .2 BHMA A156.9-2010 - Cabinet Hardware.
- .3 CAN/ULC-S102-10 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .4 CAN/CSA-O80 Series-08 (R2012) - Wood Preservation.
- .5 NAAWS North American Architectural Woodwork Standards – Edition 3.1, 2017 as amended.
- .6 NEMA LD3-2005 - High Pressure Decorative Laminates (HPDL).
- .7 NPA A208.1-2009 - Particleboard.
- .8 NPA A208.2-2009 - Medium Density Fiberboard (MDF) for Interior Applications.

### **1.4 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Pre-installation Meetings: Convene one (1) week weeks before starting work of this section.

### **1.5 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
- .3 Product Data: Provide data for hardware accessories.
- .4 Samples:
  - .1 Submit two (2), 150 x 150 mm size samples, illustrating high pressure plastic laminate cabinet finish.
  - .2 Submit two (2), 150 x 150 mm size samples, illustrating countertop finish.
  - .3 Submit two (2) samples of drawer pulls hinges, illustrating hardware finish.

### **1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 10 and section 01 92 00: Submission procedures.

### **1.7 QUALITY ASSURANCE**

- .1 Perform work to NAAWS, Custom quality.
- .2 Perform cabinet construction to NAAWS, Custom quality.
- .3 Perform cabinet construction to NAAWS as follows:
  - .1 Millwork Items: Served Cabinets in: Counter, Upper and Lower Cabinets, Shelves, Drawers and Door Fronts Construction: Custom Grade.
  - .2 Millwork Items in Reception area.
    - .1 Wall Panels coordinated with custom sized Visual Display Boards with writable/erasable surfaces coordinated with custom sized Visual Display Boards with writable/erasable surfaces
    - .2 Infill Wall Panel coordinated with new wood door and re-used glazed sidelite

- .4 Fabricator Qualifications: Company in good standing with AWMAC and specializing in fabricating Products specified in this section with minimum five (5) years documented experience.
- .5 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.
- .6 Fire retardant Treated Wood: Marked with certification mark authorized by the Canadian Wood Preservers Bureau (CWPB) indicating producer, fire retardant type, retention and Use Category (UC).

**1.8 MOCK-UP**

- .1 Section 01 40 00: Requirements for mock-up.
- .2 Provide mock-up of one full size credenza cabinet which includes solid surface countertop fitments, and cabinet hardware.
- .3 Locate where directed by Consultant.
- .4 Approved mock-up may remain as part of the Work.

**1.9 DELIVERY, STORAGE, AND PROTECTION**

- .1 Transport, handle, store, and protect products.
- .2 Protect units from moisture damage as specified in NAAWS.

**1.10 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 During and after installation of work of this section, maintain the same temperature and humidity conditions in building spaces as will occur after occupancy as specified in Section 2 of NAAWS Standard.

**1.11 WARRANTY**

- .1 Correct defective Work within a two (2) year period after Date of Substantial Performance.

**Part 2 Products**

**2.1 LUMBER MATERIALS**

- .1 Lumber: To the requirements of NAAWS, grade specified.
- .2 Concealed Hardwood Lumber: Poplar/Maple/Birch, plain sawn, maximum moisture content of 6%; with vertical grain, of quality suitable for opaque finish.
- .3 Softwood Lumber: pine species, clear, plain sawn, maximum moisture content of 6% ; with vertical flat grain, of quality suitable for transparent finish.

**2.2 SHEET MATERIALS**

- .1 Sheet Materials: To the requirements of NAAWS, grade specified.
- .2 Softwood Plywood for Countertop at wet counters: Wood Veneer Core Fir species, plain sawn; of exterior grade quality, wood veneer facing Fir species plain sawn, Grade B G2S of quality suitable for support backing of solid surface countertop, surface knots filled with wood plugs.

- .3 Softwood Plywood for Countertop at dry counters, cabinet shelves. Wood Veneer Core Poplar species, plain sawn, wood veneer facing Poplar species plain sawn, Grade B G2S of quality suitable for opaque high pressure plastic laminate finish, surface knots filled with wood plugs.
- .4 Softwood Plywood for facing wood infill curbs at washroom door undercuts. Wood Veneer Core Poplar species, plain sawn, wood veneer facing Poplar species plain sawn, Grade A G1S of quality suitable for opaque paint finish.
- .5 Particleboard Core: NPA A208.1; composed of wood chips, medium density, moisture resistant, Class 1 fire retardant; of grade to suit application; sanded faces suitable for opaque high pressure plastic laminate finish.
- .6 Moisture resistant MDF.
- .7 Solid Surfaces: As specified in Section 06 62 00 - Simulated Stone Fabrications

## **2.3 LAMINATE MATERIALS**

- .1 High Pressure Decorative Laminate: High pressure laminate, General Purpose, 1.02 mm (0.04 inch) thick; printed pattern colour range, with matte textured finish.
- .2 High Pressure Decorative Laminate Types:
  - .1 Plastic Laminate for Millwork Items MW01, MW02, MW03, MW04, MW05, MW06: Servery Base Cabinets, Upper Cabinets, and Microwave Cabinet and Shelf, exposed surfaces:
    - .1 Cabinets, Doors, Drawer Fronts, and Microwave Cabinet and Shelf:
      - .1 Manufacturer: Wilsonart Premium laminate
      - .2 Colour: Linen D427K-01
      - .3 Finish: High glossy or fingerprint resistant
  - .3 High Pressure Decorative Laminate Types:
    - .1 Plastic Laminate for Millwork Item Cabinet to cover electrical panels Upper Cabinets, exposed surfaces:
      - .1 Cabinets, Doors:
        - .1 Manufacturer: As selected by Consultant.
        - .2 Colour: As selected by Consultant.
        - .3 Finish: As selected by Consultant.
  - .4 High Pressure Decorative Laminate Types:
    - .1 Plastic Laminate for Millwork Item Reception Countertop, exposed surfaces:
      - .1 Countertop:
        - .1 Manufacturer: As selected by Consultant.
        - .2 Colour: As selected by Consultant.
        - .3 Finish: As selected by Consultant.
  - .5 High Pressure Decorative Laminate Types:
    - .1 Plastic Laminate for new Window Sills , exposed surfaces:
      - .1 Window Sills:
        - .1 Manufacturer: As selected by Consultant.
        - .2 Colour: As selected by Consultant.
        - .3 Finish: As selected by Consultant.

- .6 High Pressure Decorative Laminate Types:
  - .1 Plastic Laminate for Wall Mounted Shelf in Women's Washroom 2040, exposed surfaces:
    - .1 Window Sills:
      - .1 Manufacturer: As selected by Consultant.
      - .2 Colour: As selected by Consultant.
      - .3 Finish: As selected by Consultant.

## **2.4 HARDWARE: MILLWORK ITEMS**

- .1 Hardware: BHMA A156.9.
- .2 Shelf Rests: Formed steel channels and rests, cut for fitted rests spaced at 25 mm (1 inch) centres; chrome finish. Model No. 255 or 256; chrome finish by Knape & Vogt Canada Inc., or other manufacturer acceptable to the Consultant. Standards at 6" from top and bottom.
- .3 Shelf Brackets: Formed steel brackets, formed for attachment with lugs; chrome finish. One support per 12" length of standard
- .4 Drawer and Door Pulls by Richelieu:
  - .1 Kitchenette Cabinets: Lower and Upper Cabinet Door Pulls, Cabinet Drawer Pulls: Modern Metal Pull – 2288, 4' centre to centre, satin nickel finish..
- .5 Cabinet Locks for Cabinets MW01, MW02, MW03, MW04, MW05, MW06: Deadbolt Rim Lock type, having zinc die cast body with minimum 1-1/4" (32mm) throw and Nickel-plated, Cat. No. 232.25.610 by Häfele Canada Inc., or other manufacturer acceptable to the Consultant. Provide offset cams where required. Provide two keys per lock. Locks shall be keyed alike in grouping for each cabinet location group, as directed later to meet the Consultant requirements.
- .6 Cabinet Locks for Cabinets covering existing electrical panels: Deadbolt Cabinet Lock 700LC by Olympus Lock, US26D finish, cylinder length 1-3/8", Standard Function (key removable when locked or unlocked), compatible with Medeco Cylinders, with through-bolt hardware: ETS1 through-bolt plate, ETS1-PL trim pull and ETST1 template, complete with spacers and strike plate (Note: use of spacers and strikes depends on application and cabinet material thickness).
- .7 Drawer Slides: Soft close, Self-closing, full extension, side mounting, zinc coated, steel ball bearing, minimum 100 lb. rated, by Knape & Vogt Canada Inc., Julius Blum Canada Ltd, Hettich or other manufacturer acceptable to the Consultant.
- .8 Upper and lower cabinets: Hinges: Spring hinges: 110 degree opening, nickel plated self-closing, soft closing steel hinge with zinc die cast screwed on cup by ., Julius Blum Canada Ltd, Hettich., or other manufacturer acceptable to the Consultant. Provide minimum of two (2) hinges per door and for doors over 3' - 0" in height provide one (1) additional hinges for every 12" in additional height. Provide heavy-duty hinges for 1-3/8" thick cabinet doors.
- .9 Press-In Plastic Bumpers: 59042011 by Richelieu, provide 2 per door and provide additional silencers for doors over 3'-0" in height.
- .10 Furniture bolts: Surface mounted, steel furniture bolts for screw mounting on inside of cabinet doors having "nickel plated" finish, and sized to suit cabinet door sizes, Cat. No. 251.10.703 by Häfele Canada Inc., or other manufacturer acceptable to the Consultant.
- .11 Base Cabinet Leveling Legs & Kickplate Support:
  - .1 Cabinet Leveling Legs: Richelieu Steel Leveler with Head - 345102G
  - .2 Leveler Clip: Richelieu Product number 226301, Material ABS

- .3 Kickplate core 19 mm solid core plywood
- .12 Concealed shelf support brackets for wall mounted shelves:
  - .1 Triade Rails mounted onto furred drywall with wood blocking: Product Number 1622410
  - .2 Triade Mounting Brackets: Product Number 1621512G.
  - .3 Mounting Hardware for Triade profile.

## **2.5 WOOD TREATMENT**

- .1 Fire Retardant: CAN/CSA-O80 Series, chemically treated and pressure impregnated; capable of providing a maximum flame spread/smoke development rating of 150, to CAN/ULC-S102 and in compliance to Ontario Building Code.

## **2.6 SHOP TREATMENT OF WOOD MATERIALS**

- .1 Shop brush apply wood materials requiring concealed wood blocking to ULC fire rating preservatives in compliance with Ontario Building Code
- .2 Provide ULC approved identification on fire retardant treated material.
- .3 Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

## **2.7 MILWORK ITEMS MW01, MW02, MW03, MW04, MW05, MW06: PLASTIC LAMINATE CASEWORK AT KITCHENETTES, SCANNING ROOMS AND PHOTOCOPY ROOMS – BASE CABINETS, UPPERCABINETS AND WALL MOUNTED CABINETS TO COVER ELECTRICAL PANELS**

- .1 Cabinet Construction:
  - .1 Flush overlay
  - .2 Cabinet gables, backs, doors, drawer fronts, drawer sides, bottoms, valances and adjustable shelves: particle board core.
  - .3 Cabinet top: solid wood veneer core marine grade plywood, Grade B G2S of quality suitable for backing support of solid surface countertop, surface knots filled with wood plugs.
- .2 Base Cabinet Leveling Legs, Kickplate Support and Kickplate:
  - .1 Cabinet Leveling Legs: Richelieu Steel Leveler with Head - 345102G
  - .2 Leveler Clip: Richelieu Product number 226301, Material ABS
  - .3 Cabinet Kick Plate:
    - .1 Solid lumber core
    - .2 Vinyl base finish by Section 09 65 10
- .3 Exterior Exposed Surfaces:
  - .1 Doors and Drawer Fronts: High pressure decorative laminate.
  - .2 Edges: High pressure decorative laminate .
  - .3 Base Cabinet Gable sides exposed on exterior face, High pressure decorative laminate
  - .4 Upper Cabinet gable sides exposed on exterior face, High pressure decorative laminate
  - .5 Countertop Finish:
    - .1 Solid Surface Countertop as specified in Section 06 62 00 - Simulated Stone Fabrications, adhered to plywood countertop backing.
  - .6 Backsplash:

- .1 Solid Surface wall mounted backsplash panel as specified in Section 06 62 00 - Simulated Stone Fabrications. Backsplash height is from top of Solid Surface Countertop up to underside of upper cabinets as shown on Drawings.

.4 Semi-Exposed Surfaces: thermo fused laminate:

- .1 Cabinet Interior side surfaces: thermo fused laminate
- .2 Shelves: : Edge banded, thermo fused laminate.
- .3 Drawer Sides and Backs: Edge banded, thermo fused laminate.
- .4 Drawer Bottoms: Edge banded, thermo fused laminate.

.5 Semi-Exposed Surfaces: thermo fused laminate:

- .1 Cabinet Interior side surfaces: thermo fused laminate
- .2 Shelves: : Edge banded, thermo fused laminate.
- .3 Drawer Sides and Backs: Edge banded, thermo fused laminate.
- .4 Drawer Bottoms: Edge banded, thermo fused laminate.

**2.8 MILWORK ITEMS: SOLID SURFACE COUNTERTOPS AND COUNTER BACKSPLASH**

- .1 Comply with NAAWS Quality Standards, Custom grade requirements for counter construction supplemented as follows:
- .2 Base cabinet countertops shall be constructed of 19 mm marine grade plywood Grade B finished both sides. Seal edges to protect against moisture.
- .3 Solid Surface finish as detailed on Drawings and specified in Section 06 62 00 - Simulated Stone Fabrications.

**2.9 MILWORK ITEM: RECEPTION COUNTER - PLASTIC LAMINATE FINISH**

- .1 Countertop Construction:
  - .1 Plywood core.
- .2 Exterior Exposed Surfaces:
  - .1 Plastic laminate finish.
  - .2 Edge banded with plastic laminate finish to match panel face finish.

**2.10 MILWORK ITEM: RECEPTION COUNTER JAMB SURROUND - PAINT FINISH**

- .1 Jamb construction:
  - .1 Comply with NAAWS Quality Standards, Custom grade requirements for counter construction supplemented as follows:
  - .2 Moisture resistant MDF jamb trim, length, width and configuration as shown on Drawings.
  - .3 Finish: smooth exposed surfaces and edges, sanded ready for opaque paint finish by Section 09 91 10 - Painting.

**2.11 MILWORK ITEM: NEW WINDOW SILLS - PLASTIC LAMINATE FINISH**

- .1 Window Sill Construction:
  - .1 Plywood core.
- .2 Exterior Exposed Surfaces:



- .1 Plastic laminate finish.
- .2 Edge banded with plastic laminate finish to match panel face finish.

**2.12 MILWORK ITEM: WALL MOUNTED SHELF IN WOMEN'S WASHROOM RM 2040**

- .1 Shelf construction as detailed: 19 mm thick solid wood veneer core grade plywood, Grade B G2S of quality suitable for backing support for high pressure decorative laminate finish, surface knots filled with wood plugs.
  - .2 Concealed shell support hardware as specified.
- .2 Shelf Finish: high pressure decorative laminate finish with edge banding:

**2.13 MILWORK ITEM: WOOD INFILL CURBS UNDER WASHROOM DOOR UNDERCUTS WHERE DOORS ARE SCHEDULED TO BE LOCKED AND INOPERBLE**

- .1 Provide wood infill curb at bottom of washroom doors which are scheduled to be locked with inoperable hardware. Infill curb will be constructed with solid lumber with finished face of solid wood plywood with grade A veneer suitable for opaque paint.

**2.14 FABRICATION**

- .1 Shop prepare and identify components for matching during site assembly.
- .2 Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- .3 When necessary to cut and fit on site, provide materials with ample allowance for site cutting and scribing.
- .4 Apply plastic laminate finish and wood veneer finis in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline.
- .5 Apply laminate backing sheet to reverse side of laminate finished surfaces.
- .6 Fabricate Kitchenette countertop surfaces pressure glued to plywood core without visible joints. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and fixtures and fittings. Verify locations of cutouts from on-site dimensions. Seal cut edges.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify existing conditions before starting work.
- .2 Verify adequacy of backing and support framing.
- .3 Verify location and sizes of utility rough-in associated with work of this section.

**3.2 INSTALLATION**

- .1 Install Work to NAAWS, Custom Grade.
- .2 Set and secure casework in place; rigid, plumb, and level.
- .3 Use fixture attachments in concealed locations for wall mounted components.
- .4 Use concealed joint fasteners to align and secure adjoining cabinet units and counter tops.
- .5 Carefully scribe casework abutting other components, with maximum gaps of 1 mm (1/32 inch). Do not use additional overlay trim for this purpose.

- .6 Secure cabinets bases to floor using appropriate angles and anchorages.
- .7 Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

**3.3 ADJUSTING**

- .1 Test installed work for rigidity and ability to support loads.
- .2 Adjust moving or operating parts to function smoothly and correctly.

**3.4 CLEANING**

- .1 Cleaning installed work.
- .2 Clean casework, counters, shelves, hardware, fittings, and fixtures.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 This Section includes the following horizontal, vertical and trim solid surface product types:
  - .1 Countertops
  - .2 Countertop Backsplash

**1.2 RELATED SECTIONS**

- .1 Section 06 10 53 - Miscellaneous Rough Carpentry
- .2 Section 06 41 11 - Architectural Cabinetwork
- .3 Section 07 92 00 - Joint Sealants
- .4 Mechanical Division: Plumbing and plumbing fixtures.
- .5 Electrical Division: wiring devices at work surfaces

**1.3 DEFINITION**

- .1 Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

**1.4 REFERENCES**

- .1 American National Standards Institute (ANSI)
- .2 American Society for Testing and Materials (ASTM)
- .3 National Electrical Manufacturers Association (NEMA)
- .4 NSF International
- .5 Fire test response characteristics:
  - .1 Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
  - .2 Flame Spread Index: 25 or less.
  - .3 Smoke Developed Index: 450 or less.

**1.5 PERFORMANCE REQUIREMENTS**

- .1 Design all items with sufficient strength for handling and placement stresses.

**1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product data for Product
- .3 Shop drawings:

- .1 Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
- .2 Show full-size details, edge details, thermoforming requirements, attachments, etc.
- .3 Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
- .4 Show locations and sizes of cutouts and holes for fasteners and other items installed in solid surface.
- .4 Samples: For each type of product indicated submit:
  - .1 Minimum 150-mm by 150-mm samples in specified gloss.
  - .2 Cut sample and seam together for representation of seams of inside and outside edge joints mounted on backing
  - .3 Indicate color.
  - .4 Approved samples will be retained as a standard for work.
- .5 Product data:
  - .1 Indicate product description, fabrication information and compliance with specified performance requirements.

#### **1.7 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Maintenance Data:
  - .1 Submit manufacturer's care and maintenance data, including care, repair and cleaning instructions.
  - .2 Include instructions for stain removal, surface and gloss restoration.
- .3 Installation Data: Manufacturer's special installation requirements.

#### **1.8 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

#### **1.9 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Stock Materials: Provide two (2) containers of 2 L of polishing cream.

#### **1.10 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .3 Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.
- .4 Fabricator/installer qualifications: Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.
- .5 Applicable standards:
- .6 Comply with Standards as referenced herein.

**1.11 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for flame spread rating, smoke developed rating for a thickness of 12 mm in accordance with ASTM E84 requirements.

**1.12 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Coordination:
  - .1 Coordinate with other work having a direct bearing on work of this section.

**1.13 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver no components to project site until areas are ready for installation.
- .2 Store components indoors prior to installation.
- .3 Handle materials to prevent damage to finished surfaces.
- .4 Provide protective coverings to prevent physical damage or staining following installation for duration of project.

**1.14 WARRANTY**

- .1 Provide manufacturer's warranty against defects in materials.
- .2 Warranty shall provide material and labor to repair or replace defective materials.
- .3 Warranty shall be transferable to subsequent owner for remainder of warranty period.
- .4 This warranty covers all fabrication and installation performed by the certified/approved source subject to the specific wording contained in the Installed Warranty Card.
- .5 Manufacturer's warranty period: Ten years from date of substantial completion.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Kitchenettes:
  - .1 Countertops
    - .1 Corian.
      - .1 Solid Surface Colour: Cosmos Prima
      - .2 Sizes of countertops as shown on Drawings.
  - .2 Backsplashes
    - .1 Corian.
      - .1 Solid Surface Colour: Cosmos Prima
      - .2 Sizes of Backsplashes as shown on Drawings.
        - .1 Backsplash height is from top of Solid Surface Countertop up to underside of upper cabinets as shown on Drawings.
- .2 Substitutions: Refer to Section 01 60 00.

## **2.2 MATERIALS**

- .1 Solid polymer components for countertops and counter backsplash to dimensions and details as shown on Drawings.
  - .1 Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
  - .2 Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.
  - .3 Stain resistant to domestic chemicals and cleaners
- .2 Thickness: 13 mm
- .3 Edge treatment: Tight fitting mitred inside and outside corners to layout and pattern as indicated on Drawings. Edges shall be arisses 1 mm.
- .4 Polishing Cream: Compatible polishing cream to achieve specified sheen to gel coat.
- .5 Core Framing: Softwood lumber, clear and free of knots.
- .6 Adhesive type: Manufacturers recommend adhesive, cartridge dispensed.

## **2.3 ACCESSORIES**

- .1 Manufacturer's standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
- .2 Sealant: Manufacturer's standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

## **2.4 FABRICATION**

- .1 Shop assembly: Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
- .2 Form joints using manufacturer's standard joint adhesive, without voids and inconspicuous in appearance.
- .3 Attach reinforcing strip of like material under each joint on horizontal surfaces and unsupported vertical surfaces, minimum of 76 mm wide.
- .4 Provide holes and cut-outs for wiring, sinks and plumbing.
- .5 Rout and finish cut-out and component edges to smooth, uniform finish.
- .6 Rout and finish component edges with clean, sharp returns.
- .7 Rout cutouts, radii and contours to template.
- .8 Smooth edges.
- .9 Repair or reject defective and inaccurate work.

## **2.5 FINISHING**

- .1 Finish: Provide surfaces with uniform semi-gloss finish: gloss range of 20–50.
- .2 Finish, polish and touch up to uniform appearance.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that field measurements are as indicated as indicated on shop drawings instructed by the manufacturer.
- .3 Verify that joint preparation and affected dimensions are acceptable.

**3.2 PREPARATION**

- .1 Provide anchoring devices for installation .
- .2 Provide templates and rough-in measurements.

**3.3 INSTALLATION**

- .1 Install components in accordance with Shop Drawings and manufacturer's written instructions.
- .2 Align work plumb and level.
- .3 Rigidly anchor to substrate to prevent misalignment.
- .4 Provide product in the largest pieces available.
- .5 Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
- .6 Exposed joints/seams shall not be allowed.
- .7 Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
- .8 Cut and finish component edges with clean, sharp returns.
- .9 Rout radii and contours to template.
- .10 Anchor securely to base cabinets or other supports.
- .11 Align adjacent surfaces and form seams to comply with manufacturer's written recommendations using adhesive in color to match solid surface.
- .12 Carefully dress joints smooth, remove surface scratches and clean entire surface.

**3.4 ERECTION TOLERANCES**

- .1 Maximum Variation from True Dimension: 3 mm.
- .2 Maximum Offset from True Position: 3 mm.

**3.5 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Clean and polish fabrication surfaces in accordance with manufacturer's written instructions.

**3.6 PROTECTION OF FINISHED WORK**

- .1 Section 01 70 00: Protecting installed work.

- .2 Do not permit construction near unprotected surfaces.

### **3.7 SCHEDULES**

- .1 The following Schedule is a list of principal items of work for simulated stone fabrications. Refer to Drawing details for items not specifically scheduled:
  - .1 Millwork Item 01: Solid Surface Countertop and backsplash for Served base cabinet in Measurement Suite 5160-A.
  - .2 Millwork Item 02: Solid Surface Countertop and backsplash for Served base cabinet in Computation Suite 5160.

**END OF SECTION**



**PART 1 GENERAL**

**1.1 Read and conform to:**

- A. Division 00, General Conditions
- B. Comply with Division 01 General Requirements and documents referred to herein.

**1.2 SECTION INCLUDES**

- A. Portable, non-penetrating, rooftop support system for:
  - 1. Pipes.
  - 2. Conduits.

**1.3 RELATED SECTIONS**

- A. Section 07 72 01 - Roof Accessories - Precast Concrete Pavers
- B. Mechanical Division– Heating, Ventilating & Air Conditioning (HVAC)
  - 1. Supports for Pipes
- C. Electrical Division
  - 1. Supports for Conduit

**1.4 REFERENCES**

- A. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- C. ASTM D 1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
- D. ASTM A167-99(2009) - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

**1.5 SYSTEM DESCRIPTION - Portable, non-penetrating, rooftop support system**

- A. PP10 with Channel/Roller by Portable Pipe Hangers (Canada) Inc and RAH Series By Miro Industries Inc. with Channel/Roller:
  - 1. Designed to support gas pipe electrical conduit and condensate drain lines up to 3-1/2" OD, not exceeding 16" in height. The support is designed for installation without roof penetrations, flashings, or damage to the roofing material. The support can be used on virtually any roofing system from flat roofs to roofs sloped up to 2 in 12. The supports should be spaced according to the specifications. High Wind application.
- B. Conduit Support by Portable Pipe Hangers (Canada) Inc and Miro Industries Inc.:
  - 1. Designed to support electrical conduit and condensate drain lines up to 2-1/2" OD. The support is designed for installation without roof penetrations, flashings, or damage to the roofing material. The support can be used on virtually any roofing system from flat roofs to roofs sloped up to 2 in 12. The supports should be spaced according to the specifications. High Wind application.

**1.6 SUBMITTALS**

- A. Submit under provisions of Section 01 30 00.

- B. Submit shop drawings stamped and signed by Professional Engineer licensed in the Province of Ontario and specializing in metal fabrications.
- C. Product Data: Submit for all products proposed for use, describing physical characteristics and method of installation.
- D. Shop Drawings: Show installation layout, sizes of units, and details of installation.
- E. Verification Data: Product technical data sheets of bases, each type of support, hanger, and fasteners, and framing members.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing pipe support systems, with a minimum of five years of documented experience.
- B. Installer Qualifications: Company approved by manufacturer and with not less than five years of experience in installation of piping support systems.
- C. Pre-Installation Meeting: After approval of submittals, but before beginning installation, conduct a meeting at the project site attended by Consultant, Contractor, installers of mechanical and electrical systems.
- D. Items requiring design, engineering submittal shall be designed and engineered and require a submitted stamped Shop Drawing by a Professional Engineer registered in Ontario and specializing in metal fabrications.
- E. Welders' Certificates: Submit to Section 01 30 00 requirements, certifying welders employed on the Work, verifying qualification within the previous twelve (12) months to CSA-W47.1 (steel).
- F. Welded Steel Construction: CSA-W59.
- G. Design the items of metal fabrication and connections not detailed on the Drawings by a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located. Design the work in compliance to the Ontario Building Code.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials to project site in manufacturer's original packaging, marked with manufacturer's name, product model names and catalog numbers, identification numbers, and other related information.
- B. Store in the original, unopened containers, under cover, until needed for installation.

#### 1.9 WARRANTY

- A. Warranty:
  - 1. Portable Pipe Supports 5-year limited warranty to repair or replace, at Owner's option, any products found to be structurally defective in material or workmanship.

### PART 2 PRODUCTS

**2.1 MANUFACTURERS - Portable, non-penetrating, rooftop support systems**

**A. Acceptable Manufacturers:**

**1.Portable Pipe Hangers.**

5534 Harvey Wilson Drive, Houston, Texas 77020. ASD. Tel: (713) 672-5088. Fax: (713) 672-1170. [www.portablepipehangers.com](http://www.portablepipehangers.com) . Email: [info@portablepipehangers.com](mailto:info@portablepipehangers.com)

Represented by: Portable Pipe Hangers (Canada) Inc., Concord, ON. Phone (905) 731-8140, Fax (905) 731-8231.

**2.Miro Industries Inc.**

844 South 430 West, Suite 100, Heber City, UT 84032; Local Phone: (801) 975-9993; Toll Free Phone: (800) 768-6978; Fax: (800) 440-7958  
[sales@miroind.com](mailto:sales@miroind.com)

**C Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.**

**2.2 MATERIALS – Pipeline Support, Conduit Support**

**A. PRODUCT DATA: Portable Pipe Support System: Engineered, portable system specifically designed for installation without the need for roof penetrations or flashings, and without causing damage to the roofing membrane.**

**1.Property: Minimum Performance:**

**2.Base: Size: 10" x 16" x 3"**

**3.Weight: 5 1/2 lbs**

**4.Base Material: Injection molded high density/high impact polypropylene with UV-inhibitors and Antioxidants**

**5.Base Color: Black**

**6.Base Density: 55.8 lb/cu ft (894 kg/cu m)**

**7.Rod Type: Diameter: 1/2"**

**8.Length: 4" – 16"**

**9.Finish: Hot Dip Galvanized or Stainless Steel**

**10.Carbon Steel and Stainless-Steel Framing:**

**11.Channel Type: 13/16" x 12"**

**12.Form: Roll-formed 3-sided tubular shape, perforated with 2" slots at 2" centers on one side**

**13.Thickness: 12 gauge**

**14.Carbon Steel Finish: Hot dip galvanized per ASTM A 123**

**15.Stainless Steel Finish: Mill Finish**

**16.Hardware: Nuts and Washers: Hot Dip Galvanized or Stainless Steel**

**PART 1 EXECUTION**

**1.1 EXAMINATION**

- A. Verify that roofing system is complete and that roof surfaces are smooth, flat, and ready to receive work of this section.**
- B. Verify that roof surface temperature is at minimum 60 degrees F (15.5 degrees C), for proper adhesive performance.**

**1.2 PREPARATION**

- A. Clean surfaces of roof in areas to receive portable support bases.
  - 1. On BUR roof areas, scrape existing gravel back to facilitate installation of new sacrificial cap sheet membrane squares under duct support bases. Reset gravel surface in cold membrane adhesive after installation.
  - 2. Remove dirt, dust, oils, and other foreign materials.
- B. Use care in handling portable support system components during installation, to avoid damage to roofing, flashing, equipment, or related materials.

#### 1.1 INSTALLATION

- A. Pipe Support Systems
  - 1. Layout isolation pads (provided by contractor), according to design and layout.
  - 2. Layout Supports per spacing specification or Manufacturer's Layout.
  - 3. Run pipe on supports.
  - 4. Clamp down with channel clamp provided by Manufacturer.
  - 5. Adjust channel until height and weight of system is evenly distributed.

#### 1.2 FIELD QUALITY CONTROL

- A. When requested by the Consultant, provide a factory-trained representative of the manufacturer to visit the site while the work is in progress to ensure that the installation conforms to the design requirements and the manufacturer's installation requirements.

#### 1.3 CLEANING AND PROTECTION

- A. Remove all packaging, unused fasteners, adhesive and other installation materials from the project site.
- B. Remove adhesive from exposed surfaces of supports and bases and leave the work in clean condition.
- C. Provide protection as required to leave the work area in undamaged condition at the time of completion of work.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 Read and conform to:

- A. Division 00, The General Conditions
- B. Comply with Division 01 General Requirements and documents referred to herein.

### 1.2 SECTION INCLUDES

- A. Non-penetrating, rooftop pavers for walkways:

### 1.3 RELATED SECTIONS

- A. Section 07 72 00 - Roof Accessories - Pipe Supports
- B. Mechanical Division– Heating, Ventilating & Air Conditioning (HVAC)
- C. Electrical Division

### 1.4 REFERENCES

- .1 CSA-A23.1-09/A23.2-09 - Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Submit for all products proposed for use, describing physical characteristics and method of installation.
- C. Shop Drawings: Show installation layout, sizes of units, and details of installation.

### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing concrete pavers, with a minimum of five years of documented experience.
- B. Pre-Installation Meeting: After approval of submittals, but before beginning installation, conduct a meeting at the project site attended by Consultant, Contractor, installers of mechanical and electrical systems.

### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials to project site in manufacturer's original packaging, marked with manufacturer's name, product model names and catalog numbers, identification numbers, and other related information.
- B. Store in the original, unopened containers, under cover, until needed for installation.

### 1.8 WARRANTY

- A. Warranty:
  - 1. Concrete pavers 5 year limited warranty to repair or replace, at Owner's option, any products found to be structurally defective in material or workmanship.

## PART 2 PRODUCTS

### 2.1 MATERIALS –

#### A. PRODUCT DATA: Precast Concrete Pavers and Insulation Pads Underneath

1.Precast Concrete Pavers for non-penetrating walkways: 4.5 MPA with 5% air entrained precast concrete with maximum absorption 5% with formed pedestals. 24" x 24" x 2" PEDSLABS by Brooklin Concrete. Conforming to CSA A23.1.

2.Precast Concrete Pavers under non-penetrating pipe supports: 4.5 MPA with 5% air entrained precast concrete with maximum absorption 5% with formed pedestals. 24" x 24" x 2" PEDSLABS by Brooklin Concrete. Conforming to CSA A23.1.

3.Insulation Pads under Concrete Pavers; Extruded polystyrene insulation conforming to CAN/ULC S701 Type 4.

## PART 1 EXECUTION

### 1.1 EXAMINATION

- A. Verify that roofing system is complete and that roof surfaces are smooth, flat, and ready to receive work of this section.

### 1.2 Installation

- A. Clean surfaces of roof in areas to receive walkways.
  - 1. Sweep loose gravel from gravel surfaced roofs.
  - 2. Remove dirt, dust, oils, and other foreign materials.
- B. Use care in handling portable paver system components during installation, to avoid damage to roofing, flashing, equipment, or related materials.

### 1.1 CLEANING AND PROTECTION

- A. Remove all packaging, and other installation materials from the project site.
- B. Provide protection as required to leave the work area in undamaged condition at the time of completion of work.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1    Provide tested and listed firestopping systems supplied from one source manufacturer.
- .2    Provide Manufacturer's Letter of Observation to document acceptability of the Firestopping work, based on Manufacturer's field review and/or Manufacturer's review of Firestopping Contractor's submitted Identification and documentation of each firestopped penetration and joint location as specified in Part 3 of this Section.
- .3    Firestopping means a system of material or combination of materials used to retain integrity of constructed fire-rated separation by maintaining an effective barrier against the spread of flame, smoke, and hot gases through penetrations in, or gaps and construction joints between fire rated wall and floor assemblies constructed as fire separations. Firestopping shall be used in specific locations, but not be limited to, as follows:
  - .1    Penetrations for the passage of duct, cable, cable tray, conduit, piping, electrical bus ways and raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor/ceiling assemblies), and vertical service shaft walls and partitions.
  - .2    Safing slot gaps between edge of floor slabs and curtain walls.
  - .3    Openings between structurally separate sections of wall or floors.
  - .4    Gaps between the top of walls and ceilings or roof assemblies.
  - .5    Expansion joints in walls and floors.
  - .6    Openings and penetrations in fire-rated partitions or walls containing fire doors.
  - .7    Openings around structural members which penetrate floors or walls.
- .4    Fire stopping and smoke seals are required at locations where mechanical and electrical assemblies penetrate fire-rated separations and shall be part of work of this Section.

**1.2            RELATED SECTIONS**

- .1    Section 04 26 13 - Single Wythe Masonry
- .2    Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.
- .3    Mechanical Division– Heating, Ventilating, and Air-Conditioning (HVAC) and plumbing: work requiring firestopping.
- .4    Electrical Division: Electrical work requiring firestopping.

**1.3            REFERENCES**

- .1    ASTM E84-13a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2    ASTM E119-12a - Standard Test Methods for Fire Tests of Building Construction and Materials.
- .3    ASTM E814-13a - Standard Test Method for Fire Tests of Penetration Firestop Systems.
- .4    ASTM E1966-07(2011) - Standard Test Method for Fire-Resistive Joint Systems.
- .5    ASTM E 2174 - Standard Practice for On-site Inspection of Installed Fire Stops.
- .6    ASTM E 2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-story Test Apparatus.

- .7 ASTM E 2393 Standard Practice for On-Site Inspection of Installed Fire Stop Joint Systems.
- .8 CAN/ULC-S101-07 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .9 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .10 CAN/ULC-S102.2-10 - Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.
- .11 CAN/ULC-S115-11 - Standard Method of Fire Tests of Firestop Systems.
- .12 FM (Factory Mutual) - FM 4991-2001, Approval Standard for Approval of Firestop Contractors.
- .13 FCIA (Firestop Contractors International Association) - Manual of Practice.
- .14 International Firestop Council Guidelines for Evaluating Firestop Systems Engineering Judgments.
- .15 NFPA 101 - Life Safety Code.
- .16 NFPA 251 - Standard Methods of Tests of Fire Endurance of Building Construction and Materials, 2006 edition.
- .17 OPL (Omega Point Laboratories).
- .18 Ontario Building Code.
- .19 UL Qualified Firestop Contractor Program.
- .20 UL 263-2011 - Standard for Fire Tests of Building Construction and Materials (14th Edition).
- .21 UL 1479-2003 - Standard for Fire Tests of Through-Penetration Firestops (3rd Edition).
- .22 UL 1709-2011 - Standard for Rapid Rise Fire Tests of Protection Materials for Structural Steel (4th Edition).
- .23 UL 2079-2004 - Standard for Tests for Fire Resistance of Building Joint Systems (4th Edition).
- .24 ULC-FR-14 - Fire Resistance Directory (2014 Edition).
- .25 WHI (Intertek/Warnock Hershey).

#### **1.4 SYSTEM DESCRIPTION**

- .1 Tested and listed firestopping systems and Engineering Judgment (EJ) system and Equivalent Fire Resistance Rated Assembly (EFRRA) consisting of a material or materials, the wall or floor assembly, and penetrating items or gaps, assembled or placed in spaces, gaps, joints and building perimeters, to restore the fire resistance rating and or smoke resistant properties of a fire resistance rated assembly or smoke resistant assembly applied in accordance to Ontario Building Code, rating as listed and defined by type in CAN/ULC-S115 - Standard Method of Fire Tests of Firestop Systems:
  - .1 "F" Rating Fire
  - .2 "FT" Rating Fire & Temperature
  - .3 "FH" Rating Fire & Hose
  - .4 "FTH" Rating Fire Temperature & Hose
  - .5 "L" Rating Leakage Rate



**1.5 PERFORMANCE REQUIREMENTS**

- .1 Materials, accessories and application procedures listed by ULC-FR, WHI, or tested to CAN/ULC-S115 to comply with applicable building code requirements.
- .2 Firestopping Materials: CAN/ULC-S101 ASTM E119 ASTM E814, to achieve a fire rating as noted in Schedule at end of this section and as noted on Drawings .
- .3 Surface Burning Characteristics: CAN/ULC-S102 or CAN/ULC-S102.2, as applicable ASTM E84.
- .4 Smoke Resistance: For areas where smoke resistance is required, provide firestop systems with L-ratings of maximum 25.4l/sec/sq m (5.0 cfm/sq ft) opening area.
- .5 Environmental Resistance: Systems to be resistant to environmental conditions they will be exposed to, as apparent at design stage.

**1.6 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 31 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other work having a direct bearing on work of this section.
- .3 Pre-installation Meetings: Convene one (1) week before starting work of this section.
- .4 Sequencing: Coordinate and sequence firestopping installation with all affected trades.

**1.7 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide manufacturer's written data on product characteristics, performance .
- .3 System Design Listings: Submit system design listings including illustrations from a qualified nationally recognized testing and inspection agency applicable to each firestop configuration.
- .4 Unlisted Firestopping Systems: Obtain an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) from firestop manufacturer where no specific third party tested, listed and classified firestop system is available for a particular firestop configuration. Engineering judgment documents must follow requirements set forth by the International Firestop Council.

**1.8 SUBMITTALS FOR INFORMATION**

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's written special preparation and installation requirements and tested and listed firestop systems designs.
- .3 Contractor's Certificates:
  - .1 Provide FCIA Member in Good Standing letter or certificate for the current year, on FCIA letterhead.
  - .2 Current ULC Qualified Firestop FM 4991 Approved Contractor Certificate and individual Designated Responsible Individual Certificate.
- .4 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

**1.9 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.

**1.10 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience and FCIA Manufacturer Member in good standing.
- .3 Contractor Qualifications: Company specializing in performing the work of this section and as follows:
  - .1 FCIA Member in good standing.
  - .2 Minimum one (1) person employed at the firm who has passed the ULC Firestop Exam.
  - .3 The work is to be installed by a contractor with at least one of the following qualifications:
    - .1 ULC Qualified Firestop Contractor Program.
    - .2 FM approved in accordance with FM standard 4991 - Approval of Firestop Contractors.
    - .3 Fire Stop Specialty Contractor shall be certified by the Manufacturer as having received training in using manufacturer's firestopping systems products and is a Manufacturer's Accredited Fire Stop Specialty Contractor.
  - .4 FCIA Member in good standing.
  - .5 Licensed by the province or local authority where applicable.
  - .6 Completed not less than five (5) comparable scale projects.
- .4 Single Source Responsibility: Obtain firestop systems for each type of penetration and construction situation from a single primary firestop systems manufacturer. Obtain firestop systems for complete project, from a single primary firestop systems manufacturer, to the greatest extent possible.

**1.11 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for fire resistance ratings and surface burning characteristics.
- .2 Provide certificate of compliance from authority having jurisdiction indicating approval of materials, tested and listed systems or engineering judgments used.

**1.12 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Deliver firestopping products in original, unopened containers with labels intact and legible, identifying product and manufacturer.
- .3 Store and handle firestopping materials to manufacturer's instructions.

**1.13 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Do not apply materials when temperature of substrate material and ambient air is below 15 degrees C.
  - .2 Maintain this minimum temperature before, during, and for three (3) days after installation of materials.
  - .3 Provide ventilation to manufacturer's instructions in areas to receive solvent cured materials.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Acceptable Materials Assemblies:
  - .1 A/D Fire Protection Systems Inc.
  - .2 3M Fire Protection Products.
  - .3 HILTI, Inc.
  - .4 Specified Technologies, Inc.
  - .5 Tremco (Canada) Limited.
- .2 Substitutions: Refer to Section 01 60 00.

**2.2 MATERIALS**

- .1 Fire Stopping Systems and Materials: Tested and listed by ULC-FR, WHI, OPL, and conforming to construction type, penetrant type, annular space requirements and fire rating involved in each separate instance.
- .2 Firestopping shall include the following types of construction details:
  - .1 Pre-installed firestop devices for use with non-combustible and combustible pipes (closed and open systems), conduit, and/or cable bundles penetrating concrete floors and/or gypsum walls.
  - .2 Sealants, caulking materials, or foams for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT).
  - .3 Sealants or caulking materials for use with sheet metal ducts.
  - .4 Sealants, caulking or spray materials for use with fire-rated construction joints and other gaps.
  - .5 Pre-formed mineral wool designed to fit flutes of metal profile deck and gap between top of wall and metal profile deck; as a backer for spray material.
  - .6 Intumescent sealants, caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe.
  - .7 Foams, intumescent sealants, or caulking materials for use with flexible cable or cable bundles.
  - .8 Non-curing, re-penetrable intumescent putty or foam materials for use with flexible cable or cable bundles.
  - .9 Wall opening protective materials for use with U.L.C. Listed metallic and specified non-metallic outlet boxes.
  - .10 Firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping systems).
  - .11 Materials used for large openings and complex penetrations made to accommodate cable trays and bundles, multiple steel and copper pipes, electrical bus ways in raceways.
  - .12 Non curing, re-penetrable materials used for large size/complex penetrations made to accommodate cable trays and bundles, multiple steel and copper pipes, electrical bus ways in raceways.
  - .13 Sealants or caulking materials used for openings between structurally separate sections of wall and floors.

- .14 For blank openings made in fire-rated wall or floor assemblies, where future penetration of pipes, conduits, or cables is expected.
- .3 General Criteria:
  - .1 Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.
  - .2 Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.
  - .3 Firestopping Materials are either “cast-in-place” (integral with concrete placement) or “post installed.” Provide cast-in-place firestop devices prior to concrete placement.
  - .4 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. In visible areas latex based, firestopping shall be paintable firestopping material.
  - .5 Service penetration components and assemblies, including back-up materials and supports shall be certified in accordance with CAN4-S115 or CAN/ULC-S101, and be ULC listed by a certified authority recognized by building Code officials in locality in which Building is situated.
  - .6 Site system assembly shall be in accordance with ULC S 115 labelled and listed system design limitations, unless proposed assembly is approved by authorities having jurisdiction and meets University's approval. Combined and/or built-up Site systems shall be designed in accordance with approved restrictions and technical evaluations acceptable to University and authorities having jurisdiction.
  - .7 Sealants and putty for overhead and vertical joints shall be non-sagging; seals for floors, self-levelling. Flexible fire stop sealant shall provide movement capability in fire rated joint applications. Sealants shall be compatible with base materials such as without limitations masonry, concrete, metal gypsum board and other similar items.
  - .8 Products shall have a compressive strength capable of providing self-support at a penetrating item, and shall maintain their integrity as tested in a ULC vertical application.
  - .9 Products shall be compatible with abutting dissimilar architectural coatings and finishes at floors, walls, ceilings, waterproofing membranes and the like. Check with Room Finish Schedule and manufacturer of selected materials being installed.
  - .10 Integral Pipe Sleeves/Firestopping Components: Other Sections within Mechanical Division may specify fire-rated pipe sleeves, 'O' clearance pipe/sleeve assemblies, and integral firestopped penetration devices and accessories listed by authorized testing and certification authorities. These systems may eliminate need for separate firestopping applications at certain designated locations, and it shall be responsibility of this Section to determine any and all locations where such devices will be utilized on Project.
  - .11 Products shall be non-asbestos containing materials.

## **2.3 ACCESSORIES**

- .1 Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- .2 Forming/Packing Material: Permanent type, suitable for application.
- .3 Installation Accessories: Clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping are ready to receive the work of this section.
- .3 Verify tested and listed systems selected are applicable to the conditions encountered.
- .4 Do not proceed with installation until unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- .1 Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.
- .2 Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire stop systems. Coordinate construction and sizing of joints to ensure that fire-resistive joint systems are installed according to specified requirements.
- .3 Coordinate fire stopping with other trades so that obstructions are not placed in the way prior to the installation of the fire stop systems.
- .4 Clean substrate surfaces as recommended in manufacturer's written instructions, of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material and performance of firestop system for fire or smoke resistant situations.
- .5 Remove incompatible materials which may affect bond.
- .6 Install damming and backing materials to arrest liquid material leakage.

**3.3 APPLICATION**

- .1 Apply primer and firestopping materials to manufacturer's written instructions.
- .2 Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping to tested and listed system or engineering judgment.
- .3 Consult with mechanical engineer, project manager, and damper manufacturer prior to installation of ULC firestop systems that might hamper the performance of fire dampers as it pertains to duct work.
- .4 Apply firestopping material in sufficient thickness to achieve rating , to uniform density and texture.
- .5 Compress fibred material to achieve a density of 40% of its uncompressed density.
- .6 Place intumescent coating in sufficient coats to achieve rating required.
- .7 Dam Material: Remove dam material after firestopping material has cured.
- .8 Do not cover up through-penetration fire stop and joint system installations that will become concealed behind other construction until each installation has been examined by the building inspector, per requirements of Building Code of Ontario.

**3.4 FIELD QUALITY CONTROL**

- .1 Examine sealed penetration areas to ensure proper installation before concealing or enclosing areas.

- .2 Keep areas of work accessible until inspection by applicable code authorities.
- .3 Inspection of through-penetration firestopping shall be performed in accordance with ASTM E 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops" or other recognized standard.
- .4 Perform under this section patching and repairing of firestopping caused by cutting or penetrating of existing firestop systems already installed by other trades.
- .5 Manufacturer's Field Services: During Installation, provide periodic destructive testing inspections to assure proper installation/application. After installation is complete, submit findings in writing indicating whether or not the installation of the tested system identified was installed correctly.

### **3.5 IDENTIFICATION & DOCUMENTATION**

- .1 The firestop contractor shall supply documentation for each single application addressed. This documentation shall identify each penetration and joint location on the entire project.
- .2 Provide Manufacturer's Letter of Observation to document acceptability of the Firestopping work, based on Manufacturer's field review and/or Manufacturer's review of Firestopping Contractor's Work indicated on the Documentation Form specified herein.
- .3 The Documentation Form for through penetrations is to include:
  - .1 A Sequential Location Number
  - .2 The Project Name
  - .3 Date of Installation
  - .4 Detailed description of the penetrations location
  - .5 Tested System or Engineered Judgment Number
  - .6 Type of assembly penetrated
  - .7 A detailed description of the size and type of penetrating item
  - .8 Size of opening
  - .9 Number of sides of assemblies addressed
  - .10 Hourly rating to be achieved
  - .11 Installers Name
- .4 The Documentation Form for Construction Joints is to include:
  - .1 A Sequential Location Number
  - .2 The Project Name
  - .3 Date of Installation
  - .4 Detailed description of the Construction Joints location
  - .5 Tested System or Engineered Judgment Number
  - .6 Type of Construction Joint
  - .7 The Width of the Joint
  - .8 The Lineal Footage of the Joint
  - .9 Number of sides addressed
  - .10 Hourly rating to be achieved
  - .11 Installers Name
- .5 Copies of these documents shall be provided to the Firestopping Systems Manufacturer and General Contractor for distribution to the Consultant, at the completion of the project.

**3.6 CLEANING**

- .1 Section 01 74 00: Cleaning installed work.
- .2 Clean adjacent surfaces of firestopping materials.

**3.7 PROTECTION OF FINISHED WORK**

- .1 Section 01 7 00: Protecting installed work.
- .2 Protect adjacent surfaces from damage by material installation.

**3.8 SCHEDULES**

- .1 Shaft fire walls: 1 hour.
- .2 Stair walls: 1 hours.
- .3 Floor to Floor: 2 hours
- .4 Room to room partitions: Partitions between adjacent rooms: 1 hour.
- .5 Walls and Floors to mechanical and Electrical Room: metallic pipe and conduit: 2 hour.
- .6 Smoke resistance: For areas where smoke resistance is required, provide firestop systems with L-Ratings of 25.4l/sec/sq m (5.0 cfm/sq ft).

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1        Preparing substrate surfaces.
- .2        Sealant and joint backing.
- .3        Structural sealant for butt joint glazing assemblies.

**1.2            RELATED SECTIONS**

- .1        Section 06 41 11 - Architectural Cabinetwork
- .2        Section 06 62 00 - Simulated Stone Fabrications
- .3        Section 07 84 00 - Firestopping
- .4        Section 08 11 13 - Standard Metal Doors, Frames and Sidelites
- .5        Section 08 80 50 - Glass and Glazing
- .6        Section 09 30 00 - Tiling
- .7        Section 09 21 16 - Gypsum Board Assemblies
- .8        Section 09 51 13 - Acoustic Panel Ceilings
- .9        Section 09 91 10 - Painting

**1.3            REFERENCES**

- .1        ASTM C834-10 - Standard Specification for Latex Sealants.
- .2        ASTM C919-12 - Standard Practice for Use of Sealants in Acoustical Applications.
- .3        ASTM C920-14 - Standard Specification for Elastomeric Joint Sealants.
- .4        ASTM C1193-13 - Standard Guide for Use of Joint Sealants.
- .5        ASTM C1311-10 - Standard Specification for Solvent Release Sealants.
- .6        ASTM C1330-02(2013) - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- .7        ASTM C1401-09a - Standard Guide for Structural Sealant Glazing.

**1.4            PERFORMANCE REQUIREMENTS**

- .1        Sealant Design: Design structural sealant to withstand specified loads without breakage, loss, and failure of seals, product deterioration, and other defects.

**1.5            ADMINISTRATIVE REQUIREMENTS**

- .1        Section 01 30 00: Project management and coordination procedures.
- .2        Coordination:
  - .1        Coordinate with other work having a direct bearing on work of this section.
  - .2        Coordinate the work with all sections referencing this section.



**1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations and colour availability.
- .3 Structural Sealant Joint Design: Confirmation that design data provided by Consultant have been reviewed and approved by sealant manufacturer.
- .4 Shop Drawings: Indicate sealant joints and dimensions, materials, structural bite, glueline thickness, joint profile, and support framing.

**1.7 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements.
  - .1 Indicate special procedures, surface preparation, perimeter conditions requiring special attention.

**1.8 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

**1.9 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Perform sealant application work to ASTM C1193 .
- .3 Perform structural sealant application work to ASTM C1401.
- .4 Perform acoustical sealant application work to ASTM C919.
- .5 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .6 Applicator Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.

**1.10 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

**1.11 WARRANTY**

- .1 Warranty: Provide a two (2) year workmanship warranty against failure to meet specified requirements including coverage for installed sealants and accessories which fail to achieve water tight seal air tight seal, exhibit loss of adhesion or cohesion, or do not cure.

**Part 2 Products**

**2.1 SEALANTS**

- .1 Siliconized Acrylic Latex (Type A): ASTM C834; Type OP , Grade NF; single component, non-sagging, non-staining, non-bleeding, paintable; colour: white, paintable

- .1 Elongation Capability 12.5%.
- .2 Service Temperature Range -54 to 82 degrees C.
- .3 Shore A Hardness Range 15 to 25.
- .4 Product: Tremflex 834, manufactured by Tremco, Inc..
- .2 Butyl Sealant (Type B): ASTM C1311, single component, solvent release, non-skinning, non-sagging, colour selected by Consultant.
  - .1 Elongation Capability +/- 10%.
  - .2 Service Temperature Range -28 to 82 degrees C.
  - .3 Shore A Hardness Range 10 to 30.
  - .4 Product: Tremco Butyl Sealant, manufactured by Tremco, Inc..
- .3 Acoustic Sealant (Type C): ASTM C1311, Acoustic grade, single component, solvent release, non-skinning, non-sagging, Grey colour.
  - .1 Elongation Capability 7.5%.
  - .2 Service Temperature Range -28 to 82 degrees C.
  - .3 Shore A Hardness Range 10 to 30.
  - .4 Product: Tremco Acoustical/Curtainwall Sealant, manufactured by Tremco, Inc..
- .4 Silicone Sealant (Type D): ASTM C920, Type S, Grade NS, Class 100/50, Use NT, SWRI Validated; single component, neutral curing, non-sagging, non-staining, non-bleeding, low modulus; colour as selected.
  - .1 Elongation Capability +/-150 %.
  - .2 Service Temperature Range -54 to 82 degrees C.
  - .3 Shore A Hardness Range 15 to 45.
  - .4 Product: Dow Corning 790, manufactured by Dow Corning, or CWS by Dow.
  - .5 Product: Spectrem 1, manufactured by Tremco, Inc.
  - .6 Product: Spectrem 3, manufactured by Tremco, Inc.
- .5 Sanitary Silicone Sealant (Type E): ASTM C920, Grade NS, Class 25, Use NT; single component, acetox curing, non-sagging, non-staining, mildew resistant; colour as selected.
  - .1 Elongation Capability 25%.
  - .2 Service Temperature Range -54 to 82 degrees C.
  - .3 Shore A Hardness Range 15 to 35.
  - .4 Product: DC 786, manufactured by Dow Corning.
  - .5 Product: Sanitary 1700, manufactured by GE.
  - .6 Product: Tremsil 200 Sanitary, manufactured by Tremco, Inc..

## **2.2 ACCESSORIES**

- .1 Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- .2 Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- .3 Joint Backing: ASTM C1330, round, closed cell ; polyethylene foam rod, oversized 30% to 50% larger than joint width.
- .4 Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

- .5 Masking tape: Non-staining, non-absorbent type compatible with sealant and adjacent surfaces.
- .6 Setting Blocks and Spacers: Compatible with silicone sealant and recommended by sealant manufacturer.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that substrate surfaces and joint openings are clean, dry, and free of frost and ready to receive work.
- .3 Verify that joint backing and release tapes are compatible with sealant .

#### **3.2 PREPARATION**

- .1 Remove loose materials and foreign matter which might impair adhesion of sealant.
- .2 Clean and prime joints to sealant manufacturer's written instructions.
- .3 Perform preparation to ASTM C1193 for solvent release and latex base sealants .
- .4 Perform preparation to sealant manufacturer's written instructions.
- .5 Protect elements surrounding the work of this section from damage or disfiguration.

#### **3.3 INSTALLATION**

- .1 Perform installation in accordance with ASTM C1193 for solvent release and latex base sealants, ASTM C919 for acoustical sealants .
- .2 Install sealant to sealant manufacturer's written instructions.
- .3 Measure joint dimensions and size materials to achieve required 2:1 width/depth ratios.
- .4 Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.
- .5 Install bond breaker where joint backing is not used.
- .6 Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- .7 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- .8 Tool joints concave channel shaped as detailed.

#### **3.4 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Clean adjacent soiled surfaces.

#### **3.5 PROTECTION OF FINISHED WORK**

- .1 Section 01 7 00: Protecting installed work.
- .2 Remove masking tape and excess sealant.
- .3 Protect sealants until cured , remove temporary glass supports.

**3.6 SCHEDULE**

- .1 Type – A – Interior, Non-fire-rated: door frame/ walls, interior wall to wall joints, interior wall pipe penetrations.
- .2 Type – D – Exterior wall penetrations.
- .3 Type – E - Joint between wall construction and cabinet casework, countertops and washroom countertops.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Fire Rated Hollow Metal Steel Frames.
- .2      Fire Rated Pressed steel doors.
- .3      Non-Fire Rated Hollow Metal Steel Frames.
- .4      Non-Fire Rated Pressed steel doors.
- .5      Pressed steel Sidelite frames
- .6      Pressed steel Clerestory Window frames

**1.2            RELATED SECTIONS**

- .1      Section 08 14 16 - Flush Wood Doors
- .2      Section 08 71 00 - Door Hardware - General: Hardware, silencers .
- .3      Section 08 80 50 - Glazing.
- .4      Section 08 82 00 – Fire Rated Glass
- .5      Section 09 91 10 - Painting: Field painting of doors.

**1.3            REFERENCES**

- .1      ASTM A653/A653M-13 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2      ASTM C553-13 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
- .3      ASTM E90-09 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .4      ASTM E413-10 - Classification for Rating of Sound Insulation.
- .5      CAN/ULC-S104-10 - Standard Method for Fire Tests of Door Assemblies.
- .6      CAN/ULC-S105-09 - Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104.
- .7      CAN/ULC-S702-09 - Standard for Mineral Fibre Thermal Insulation for Buildings (Includes Amendment 1, 2012).
- .8      CSA-G40.20-13/G40.21-13 - General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steel.
- .9      CSA-W59-13 - Welded Steel Construction (Metal Arc Welding).
- .10     CSDMA (Canadian Steel Door Manufacturers Association).
  - .1      Recommended Dimensional Standards for Commercial Steel Doors and Frames, 2000.
  - .2      Recommended Selection and Usage Guide for Commercial Steel Doors and Frame Products, 2009.

- .11 NFPA 80 - Standard for Fire Doors and Other Opening Protectives, 2013 Edition.
- .12 NFPA 252 - Fire Tests of Door Assemblies, 2012 Edition.
- .13 ULC-FR-14 - Fire Resistance Directory (2014 Edition).

#### **1.4 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Coordination:
  - .1 Coordinate with other work having a direct bearing on work of this section.
  - .2 Coordinate the work with frame opening construction, door, and hardware installation.
- .3 Sequencing: Sequence installation to ensure wire connections are achieved in an orderly and expeditious manner.

#### **1.5 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Indicate door and frame configurations and finishes, location of cut-outs for hardware reinforcement.
- .3 Shop Drawings:
  - .1 Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.
  - .2 Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, louvres and finishes.

#### **1.6 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements.
- .3 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

#### **1.7 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.
- .2 Sustainable Design Closeout Documentation: .

#### **1.8 QUALITY ASSURANCE**

- .1 Conform to requirements of CSDMA. Maintain one (1) copy of document on site.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.

#### **1.9 REGULATORY REQUIREMENTS**

- .1 Fire Rated Door and Frame Construction: Labelled and listed to CAN/ULC-S104 NFPA 252.
- .2 Fire Rated Door Construction: Rate of rise of 250 C degrees across door thickness.
- .3 Installed Door and Frame Assembly: Conform to NFPA 80 for fire rated class as scheduled .

**1.10 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Remove doors and frames from wrappings or coverings upon receipt on site and inspect for damage.
- .3 Store in vertical position, spaced with blocking to permit air circulation between components.
- .4 Store materials on planks or dunnage, out of water and covered to protect from damage.
- .5 Clean and touch up scratches or disfigurement caused by shipping or handling with zinc-rich primer.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Acceptable manufacturers:
  - .1 Ali-Porte Inc.;
  - .2 Ambico Ltd.;
  - .3 Artek Door Limited;
  - .4 Daybar Industries Limited;
  - .5 Metal Door Ltd.;
  - .6 Fleming Steel Doors & Frames
- .2 Substitutions: Refer to Section 01 60 00 .

**2.2 MATERIALS**

- .1 Sheet Steel: Galvanized steel to ASTM A653/A653M, commercial grade (CS), Type B.
  - .1 Interior Doors: Coating designation ZF75 .
- .2 Reinforcement Channel: CSA-G40.20/G40.21, Type 44W, ZF75 coating designation to ASTM A653/A653M.

**2.3 DOOR CORE MATERIALS**

- .1 Fibreglass Core: ASTM C553 ASTM C665, loose batt type, density; 24 kg/cu m minimum.
- .2 Temperature Rise Rated (TRR): Core composition to provide fire-protection rating and limit temperature rise on unexposed side of door to 250 degrees C at 30 or 60 minutes, as determined by governing code requirements, core tested as part of a complete door and frame assembly, to CAN/ULC-S104, and listed by a nationally recognized testing agency having a factory inspection service.

**2.4 ADHESIVES**

- .1 Cores and Steel Components: Heat resistant, structural reinforced epoxy, resin based adhesive.
- .2 Lock Seam: Reinforced epoxy resin, high viscosity, thixotropic sealant.

## **2.5 PRIMERS**

- .1 Primer: Rust inhibitive touch-up only.

## **2.6 ACCESSORIES**

- .1 Door Silencers: Single stud rubber/neoprene.
- .2 Removable Glazing Stops Fire Rated and Non-Fire Rated: Formed galvanized steel channel, minimum 16 mm high, accurately fitted, butted at corners and fastened to frame sections with counter-sunk tamper proof sheet metal screws.
- .3 Bituminous Coating: Fibred asphalt emulsion.
- .4 Louvres: Specified in Mechanical Division.
- .5 Non-Fire Rated Glass: As specified in Section 08 80 50.
- .6 Fire Rated Glass: As specified in Section 08 82 00.

## **2.7 FABRICATION - DOORS**

- .1 Interior Doors: Laminated core Welded stiffener construction.
- .2 Longitudinal Edges: Mechanically inter-locked Mechanically inter-locked, adhesive assisted with no visible edge seams.
- .3 Mortised, blanked, reinforced, drilled and tapped for templated hardware, in accordance with templates provided by hardware supplier.
- .4 Reinforce for surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware.
- .5 Top and Bottom Channels: Inverted, recessed, welded steel channels .
- .6 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

## **2.8 LAMINATED CORE CONSTRUCTION**

- .1 Interior Doors: Both face sheets 1.6 mm steel with vertical steel stiffener core and temperature rise rated core where scheduled, laminated under pressure to face sheets.
- .2 Laminate vertical steel stiffeners to each face sheet at 150 mm on center maximum.
- .3 Fill voids between vertical stiffeners with fibreglass batt insulation.

## **2.9 FABRICATION - FRAMES**

- .1 Interior Frames: 1.6 mm thick base metal thickness.
  - .1 Door Frames and Window Assemblies: Welded type construction.
  - .2 Transom Frames: Welded type construction.
  - .3 Sidelight Assemblies: Welded type construction.
- .2 Mortised, blanked, reinforced, drilled and tapped for templated hardware, in accordance with templates provided by hardware supplier.
- .3 Reinforce frames wider than 1 200 mm with roll formed steel channels fitted tightly into frame head, flush with top.



- .4 Terminate door stops 150 mm above finished floor. Cut stop at 90 degree angle and close.
- .5 Prepare frames for silencers. Provide three (3) single silencers for single doors and mullions of double doors on strike side.
- .6 Configure exterior frames with special profile to receive recessed weatherstripping.
- .7 Attach fire rated label to each fire rated door unit.
- .8 Fabricate frames to suit masonry wall coursing with 50 mm head member.

## **2.10 FINISHES**

- .1 Factory Finish: galvanized and prime painted ready for field paint finishing.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that opening sizes and tolerances are acceptable; check floor area within path of door swing for flatness.
- .3 Verify doors and frames are correct size, swing, rating and opening number.
- .4 Remove temporary shipping spreaders.

### **3.2 INSTALLATION**

- .1 Install doors and frames to CSDMA.
- .2 Install fire-rated doors and frames in accordance with NFPA 80, and local authority having jurisdiction.
- .3 Coordinate with masonry, gypsum board, concrete wall construction for anchor placement.
- .4 Coordinate installation of glass and glazing.
- .5 Coordinate installation of doors and frames with installation of hardware specified in Section 08 71 00.
- .6 Set frames plumb, square, level and at correct elevation.
- .7 Secure anchorages and connections to adjacent construction.
- .8 Brace frames rigidly in position while building-in. Install wood spreaders at third points of frame rebate height to maintain frame width. Provide vertical support at centre of head for openings exceeding 1 200 mm in width.
- .9 Remove wood spreaders after frames have been built-in.
- .10 Make allowance for deflection to ensure structural loads are not transmitted to frame product.
- .11 Install doors, and hardware in accordance with hardware templates and manufacturer's instructions.
- .12 Adjust operable parts for correct clearances and function.
- .13 Install louvers, glazing and door silencers.

- .14 Finish paint as specified in Section 09 91 10.
- .15 Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

### **3.3 ERECTION TOLERANCES**

- .1 Maximum Diagonal Distortion: 1.5 mm measured with straight edges, crossed corner to corner.

### **3.4 SCHEDULE**

- .1 This section is associated with:
  - .1 Door Schedule on the Drawings
  - .2 Section 08 71 00 Door Hardware Requirements
  - .3 Section 08 71 01 Door Hardware Schedule
  - .4 Section 08 80 50 - Glass and Glazing
  - .5 Section 08 82 00 – Fire Rated Glass

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Flush wood doors: flush swing and flush glazed configuration; non-rated.

**1.2            RELATED SECTIONS**

- .1      Section 08 11 13 - Standard Metal Doors, Frames and Sidelites
- .2      Section 08 71 00 - Door Hardware - Common Requirements
- .3      Section 08 71 01 - Door Hardware - Schedule
- .4      Section 08 80 50 - Glass and Glazing
- .5      Section 09 91 10 - Painting

**1.3            REFERENCES**

- .1      ANSI A135.4 - Basic Hardboard Standard, Edition 12.
- .2      ASTM E90-09 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .3      ASTM E413-10 - Classification for Rating of Sound Insulation.
- .4      NAAWS North American Architectural Woodwork Standards – Edition 3.1, 2017 as amended.

**1.4            ADMINISTRATIVE REQUIREMENTS**

- .1      Section 01 30 00: Project management and coordination procedures.
- .2      Coordination:
  - .1          Coordinate with other work having a direct bearing on work of this section.
  - .2          Coordinate the work with door opening construction, door frame and door hardware installation.

**1.5            SUBMITTALS FOR REVIEW**

- .1      Section 01 30 00: Submission procedures.
- .2      Product Data: Indicate door core materials and construction; facing type, type and characteristics.
- .3      Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special blocking for hardware, special beveling, factory machining criteria . Identify cut-outs for glazing .
- .4      Samples:
  - .1          Submit two (2) samples of door construction, 150 mm x150 mm in size cut from top corner of door.

**1.6            CLOSEOUT SUBMITTALS**

- .1      Section 01 78 39 and Section 01 92 00: Submission procedures.

- .2 Sustainable Design Closeout Documentation: .

## **1.7 QUALITY ASSURANCE**

- .1 Perform work in accordance with AWMAC standards, Premium Grade . Maintain one (1) copy of document on site.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience .

## **1.8 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Package, deliver and store doors in accordance with NAAWS.
- .3 Accept doors on site in manufacturer's packaging. Inspect for damage.
- .4 Deliver materials only when Project is ready for installation and when area of operation is enclosed, plaster and concrete work dry and area broom clean.
- .5 Protect doors from exposure to natural and artificial light after delivery.
- .6 Maintain indoor temperature and humidity within range recommended by NAAWS.

## **1.9 WARRANTY**

- .1 Provide warranty to include coverage for failure to meet specified requirements, to the following term:
  - .1 Interior Doors: Two (2) years.
- .2 Include coverage for delamination of veneer warping beyond specified installation tolerances defective materials telegraphing core construction.

## **Part 2 Products**

### **2.1 MANUFACTURERS**

- .1 Acceptable manufacturers offering functionally and aesthetically equivalent products.
  - .1 Baillargeon Doors
  - .2 Lambton Door.
  - .3 Marshfield Door Systems.
- .2 Substitutions: Refer to Section 01 60 00 and comply with procedures for substitution requests.

### **2.2 DOOR CONSTRUCTION**

- .1 Flush Wood Doors: Premium quality, standard duty performance .
  - .1 Core (Non-Rated): Solid particleboard core.
  - .2 Thickness: 44 mm.
  - .3 Door Construction: 5-ply .
  - .4 Facing (Interior): ANSI A135.4, Class 2 - Standard 4 - Service , Type S2S hardboard, 3 mm (1/8 inch) thick; for paint finish.

- .5 Exposed Edges: Vertical and top edges, Solid wood .

## **2.3 ADHESIVE**

- .1 Facing Adhesive: Type I - waterproof.

## **2.4 ACCESSORIES**

- .1 Glazing Stops: Wood, of same species as door edges, mitered corners; prepared for countersink style, tamper proof screws.
- .2 Glass: Clear tempered glass as specified in Section 08 80 50.

## **2.5 FABRICATION**

- .1 Fabricate non-rated doors to AWMAC requirements.
- .2 Provide lock blocks at lock edge and full blocking at top, hinge side of door for hardware reinforcement.
- .3 Fit door edge trim to edge of stiles after applying veneer facing.
- .4 Factory machine doors for recessed hardware in accordance with hardware requirements and dimensions. Do not machine for surface hardware. Provide solid blocking for through bolted hardware.
- .5 Factory fit doors for frame opening dimensions identified on Shop Drawings.
- .6 Provide edge clearances in accordance with NFPA 80.

## **2.6 FINISHES**

- .1 Door paint finish system shall be factory finished using Post Catalyzed paint product Matador by Columbia Industrial Supply [www.columbiaindustrialsupplies.com](http://www.columbiaindustrialsupplies.com)
- .2 Seal door top edge with sealer to match door facing.

# **Part 3 Execution**

## **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify mechanical, electrical, plumbing, HVAC and other building components affecting work of this Section are in place and functioning.
- .3 Verify that opening sizes and tolerances are acceptable.
- .4 Verify frames set square, plumb, level, and in plane. Report openings not within tolerance before hanging doors.

## **3.2 INSTALLATION**

- .1 Install doors to manufacturer's requirements.
- .2 Trim non-rated door width by cutting equally on both jamb edges.
- .3 Trim door height by cutting bottom edges to a maximum of 19 mm.

- .4 Machine cut for hardware.
- .5 Coordinate installation of doors with installation of frames specified in Section 08 11 13 and hardware specified in Section 08 71 00 and 08 71 01.
- .6 Coordinate installation of glass and glazing.
- .7 Install door louvres plumb and level.

### **3.3 TOLERANCES**

- .1 Conform to AWMAC requirements for fabrication and installation tolerances.

### **3.4 ADJUSTING**

- .1 Adjust door for smooth and balanced door movement.

### **3.5 SCHEDULES**

- .1 This section is associated with:
  - .1 Door Schedule on the Drawings
  - .2 Section 08 71 00 Door Hardware requirements
  - .3 Section 08 71 01 Door Hardware Schedule
  - .4 Section 08 71 43 - Automatic Door Operators – 4000 Series
  - .5 Section 08 80 50 - Glass and Glazing
  - .6 Section 13 42 73 - Integrated Interior Assemblies

**END OF SECTION**

## DOOR HARDWARE

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### 1 GENERAL

#### 1.1 SECTION INCLUDES:

- 1.1.1 Comply with Division 1 General and Supplementary Conditions, related drawings and general requirements of contract.
- 1.1.2 The work in this section includes but not limited to the supply and installation of all commercial finishing hardware as hereinafter specified or obviously necessary for all openings, except items which are specifically excluded from this section and aluminium/glass door hardware.
- 1.1.3 Check and verify hardware information on door and frame shop drawings, prior to fabrication.
- 1.1.4 Allowance at the place of work to organize hardware storeroom and supply qualified staff to correctly categorize, mark and arrange each item in an efficient way to enable dispensing specified hardware for each door to installation trades.
- 1.1.5 Provide a modular and network-enabled access control system for security management, including engineering, supply, installation and activation

#### 1.2 RELATED REQUIREMENTS

- 1.2.1 Specifications throughout entirety of Divisions for the project are directly applicable to this Section, and this Section is directly applicable to them.

#### 1.3 RELATED SECTIONS

- 1.3.1 Section 06 20 00 – Finish Carpentry
- 1.3.2 Section 08 06 11 – Door Schedule
- 1.3.3 Section 08 11 13 – Steel Doors and Frames
- 1.3.4 Section 08 41 23 – Fire Rated Glass & Framing Systems
- 1.3.5 Section 26 00 00 – Electrical
- 1.3.6 Section 28 00 00 – Electronic Safety and Security

#### 1.4 REFERENCE STANDARDS

- 1.4.1 American National Standards Institute ([ANSI](#))/Builders Hardware Manufacturers Association ([BHMA](#)):
    - 1.4.1.1 ANSI/BHMA A156.1, Butts and Hinges
    - 1.4.1.2 ANSI/BHMA A156.3, Exit Device
    - 1.4.1.3 ANSI/BHMA A156.4, Door Controls / Door Closers
    - 1.4.1.4 ANSI/BHMA A156.5, Auxiliary Locks and Associated Products
    - 1.4.1.5 ANSI/BHMA A156.6, Door Trims
    - 1.4.1.6 ANSI/BHMA A156.8, Door Controls / Overhead Holders
    - 1.4.1.7 ANSI/BHMA A156.13, Mortise Locks & Latches
    - 1.4.1.8 ANSI/BHMA A156.15, Closer / Holder / Release Devices
    - 1.4.1.9 ANSI/BHMA A156.26, Continuous Hinges
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## DOOR HARDWARE

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- 1.4.1.10 ANSI/ICC A117.1-2009, Standard for Accessible and Usable Buildings and Facilities
- 1.4.1.11 ANSI/BHMA A156 Standards Set
- 1.4.1.12 ANSI/BHMA A156.10-2005, Power Operated Pedestrian Doors
- 1.4.1.13 ANSI/BHMA A156.18-2006, Materials and Finishes
- 1.4.1.14 ANSI/BHMA A156.19-2007, Power Assist and Low Energy Power Operated Doors
- 1.4.1.15 Builders Hardware Manufacturers Association ([BHMA](#)):  
Directory of Certified Products
- 1.4.1.16 Door and Hardware Institute ([DHI](#)):  
Sequence and Format for the Hardware Schedule
- 1.4.1.17 ANSI/DHI A115.IG Installation Guide for Doors and Hardware
- 1.4.1.18 UL 437-2000, Key Locks
- 1.4.1.19 Warnock Hersey – Intertek (WH):
- 1.4.1.20 Underwriters Laboratories of Canada ([ULC](#)):
- 1.4.1.21 NFPA 80 – Fire Doors and Windows
- 1.4.1.22 NFPA 101 – Life Safety Code

### 1.5 SUBMITTALS

- 1.5.1 Provide required information in accordance with Division 1, General Requirements, Section 01 00 06 and Section 01 33 00 - Submittals
  - 1.5.2 Action Submittals – Schedule and Product Data: Provide the following submittals before starting any work of this Section:
    - 1.5.2.1 Product Data: Submit electronic(pdf.) product data indicating installation details, material descriptions, dimensions of individual components and profiles, and finishes.
    - 1.5.2.2 Shop Drawings: Submit electronic(pdf.) shop drawings indicating details of electrified door hardware including, but not limited to, the following:
      - 1.5.2.2.1 Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer installed and site installed wiring, and as follows:
        - Riser diagram
        - Elevation of each door
      - 1.5.2.2.2 Theory of operation for electrified hardware groups
    - 1.5.2.3 Templates: Upon receipt of the reviewed Hardware Schedule furnish a complete set of applicable templates, together with the approved hardware schedule, to the contractor. The contractor shall distribute to the related trades.
    - 1.5.2.4 Hardware Schedule: Submit electronic(pdf.) copy of door hardware schedule prepared by or under the supervision of qualified Architectural Hardware Consultant (AHC), detailing fabrication and assembly of door hardware.
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## DOOR HARDWARE

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### 1.6 PROJECT CLOSEOUT SUBMISSIONS

- 1.6.1 Operation and Maintenance Data: Provide two (2) sets of operations and maintenance information documents, in accordance with Section 01 78 23 – Operations and Maintenance Data, 01 00 06 – General Requirements: Operations and Maintenance Data.
- 1.6.1.1 Approved Hardware Schedule, with architect's stamp
  - 1.6.1.2 As-Built Final Hardware Schedule, which includes all approved change orders
  - 1.6.1.3 Catalogue Cut Sheets
  - 1.6.1.4 Hardware Installation and Maintenance Manuals
  - 1.6.1.5 Warranty Letter
  - 1.6.1.6 Elevation Drawings for electronic openings

### 1.7 QUALITY ASSURANCE

- 1.7.1 Regulatory Requirements:
- 1.7.1.1 Building Code Compliance: Conform to ULC and Building Code requirements, as applicable to hardware, for labelled or rated doors and frames, and for exiting, operation and function.
  - 1.7.1.2 Manufacturing Compliance: Use only products listed in the BHMA Directory of Certified Products for hardware on this Project.
- 1.7.2 Qualifications: Provide proof of qualifications when requested by consultant:
- 1.7.2.1 Recognized as an architectural hardware supplier, who has been furnishing architectural hardware for a minimum of (5) years to the construction industry.
  - 1.7.2.2 Have in its employment at least one permanent staff member who is fully certified and is a licensed Architectural Hardware Consultant (AHC).
  - 1.7.2.3 Completed projects with electrified door hardware similar in material, design, and extent to that indicated for this Project, and who has the capability of preparing data for electrified door hardware, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
  - 1.7.2.4 Approved SALTO CERTIFIED supply & installation companies:
    - Knell's G&A Security – [www.knells.ca/ga-lock-and-security](http://www.knells.ca/ga-lock-and-security)
    - Pro-Able Hardware – [www.proable.com](http://www.proable.com)
    - Trillium Group (Trillium Integration) - [www.trillium.group](http://www.trillium.group)
  - 1.7.2.5 Be available during the course of the project to consult with the Contractor, Consultant(s), and/or Owner(s) about door hardware and related section(s) requirements.
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## DOOR HARDWARE

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### 1.8 DELIVERY, STORAGE, AND HANDLING

1.8.1 Delivery and Acceptance Requirements: Deliver hardware items in original factory containers, clearly labelling contents and scheduled use for this project and as follows:

- 1.8.1.1 Inventory door hardware on receipt and contractor to provide a secure lock up for door hardware delivered to Project site.
- 1.8.1.2 Store hardware in a clean, well illuminated securely locked storage room accessible only to authorized personnel.
- 1.8.1.3 Construction keys are to be hand delivered directly to the contractor / authorized personnel on site.

1.8.2 Storage and Handling Requirements: Store hardware items on shelves; not on floors, separated and packaged as a group for each individual door with the door number, and list of items for that door on each package related to the door hardware schedule, and include basic installation instructions with each item or package and as follows:

- 1.8.2.1 Maintain an itemized inventory list of each item, updated on a daily basis, to show items in storage and items installed.

### 1.9 WARRANTY

1.9.1 Provide written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1.9.2 Warranty against failure due to defective materials and/or workmanship for a minimum period of one (1) year, commencing on the date of final completion, turnover. In the event of failure, promptly repair and/or replace the item(s) at no cost to the owner (Product only, does not include any labour).

1.9.3 Warranty Period: From date of Substantial Performance, and as follows:

Hardware Type	Warranty Term
Hinges	1 year
Locks, latches and cylinders	2 years
Panics	2 years
Closers	10 years
Operators	1 year
Electronic Hardware	1 year
Miscellaneous	1 year

DOOR HARDWARE

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## 2 PRODUCTS

### 2.1 PROFORMANCE/DESIGN REQUIREMENTS

- 2.1.1 Comply with codes and requirements of governing authorities, and as specified.
- 2.1.2 Supply and install hardware items with characteristics to meet specified fire ratings, and conform to exit requirements of governing authorities.

### 2.2 MATERIALS

- 2.2.1 Hardware to be supplied per tendered Schedule of Finishing Hardware as prepared by **Total Opening Consultants**.
- 2.2.2 Any substituted product not submitted for review a minimum of seven (7) days prior to tender closing will not be reviewed and will be rejected

### 2.3 KEYING

- 2.3.1 All locks and cylinders are to be furnished as a PATENTED keyway system, factory registered and keyed (Consult with owners' representative for system requirements).
- 2.3.2 Cylinders: finish face to match lockset; in accordance with the following:
  - 2.3.2.1 All cylinders and cut keys will be furnished directly to the owners
  - 2.3.2.2 The contractor and owner will facilitate turn over of construction phase cylinders to permanent.
- 2.3.3 Keys:
  - 2.3.3.1 Keys: Provide keys in accordance with the following:  
Stamping, permanently inscribe each key stating "DO NOT DUPLICATE"
- 2.3.4 Construction Keying:
  - 2.3.4.1 All cylinders to be factory construction keyed.
  - 2.3.4.2 **Quantity:** In addition to the cut keys supplied with each lock, provide the following:
    - 2.3.4.2.1 Cylinder Change Keys: 2
    - 2.3.4.2.2 Grand / Master Keys: 30
    - 2.3.4.2.3 Construction Master Keys: 10
    - 2.3.4.2.4 Construction Cards: 10

## DOOR HARDWARE

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### 2.4 KEY CONTROL CABINETS

- 2.4.1 Wall Mounted Cabinet: Cabinet with hinged-panel door equipped with key holding panels and pin-tumbler cylinder door lock, sufficient for project.
- 2.4.2 Cross Index System: Set up by key control manufacturer, in accordance with the following:
  - 2.4.2.1 Card Index: Provide two sets of index cards for recording key information. Include receipt forms for each key-holding hook for tracking keys and lock and key history. Include instruction manual.

### 2.5 FINISHES

- 2.5.1 The designations used in the schedule and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 or traditional U.S./Canada finishes shown by certain manufactures for their products.
- 2.5.2 Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacture's standards, but in no case less the specified by reference standards for the applicable units of hardware.

630/C32D – Satin Stainless Steel	(base material, stainless steel)
652/C26D – Satin Chrome Plated	(base material, steel)
626/C26D – Satin Chrome Plated	(base material, brass/bronze)
628/C28 – Satin Aluminum	(base material, steel/aluminum)
689/AL – Power Coated Aluminum	(base material, steel or plastic)
689/AL - Anodized Aluminum	(base material, aluminum)

## 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine doors and frames, with installer present, for compliance with requirements for installation tolerances, labelled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
  - 3.1.2 Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
  - 3.1.3 Proceed with installation only after unsatisfactory conditions have been corrected.
  - 3.1.4 Install each door hardware item in accordance with manufacturer's written instructions and any special notes as directed.
  - 3.1.5 Coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way.
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## DOOR HARDWARE

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- 3.1.6 Do not install surface mounted items until finishes have been completed on substrates involved, and as follows:

- 3.1.6.1 Set units level, plumb, and true to line and location.
- 3.1.6.2 Adjust and reinforce attachment substrates as necessary for proper installation and operation.
- 3.1.6.3 Drill and countersink units that are not factory prepared for anchorage fasteners.
- 3.1.6.4 Space fasteners and anchors according to industry standards.

### 3.2 INSTALLATION

- 3.2.1 Mount hardware units a height in the following applicable publications, except as specifically indicated on required to comply with governing regulations.
- 3.2.2 "Recommended Locations for Builders Hardware for Standard Steel Doors & Frames" as published by the Door & Hardware Institute (DHI)
- 3.2.3 Install each hardware item in compliance with the manufacture's instructions and recommendations.
- 3.2.4 Sound and Weather Seals:
  - 3.2.4.1 Install seals to continuously seal entire perimeter of doors.
  - 3.2.4.2 Maintain integrity of seal at head of door fitted with closer. Adapt seals as required to achieve specified performance.
- 3.2.5 At wood doors, use screw attachment to exit devices and closers, except as follows;
  - 3.2.5.1 Use through-bolts attachments for exit devices and closers at mineral core doors.
- 3.2.6 Integration with security management system, including but not limited to access control, alarm monitoring and ID badging system shall be installed in accordance with the manufacturer's installation instructions.

### 3.3 SITE QUALITY CONTROL

- 3.3.1 Verify each door leaf opens closes and latches properly. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation, owner and/or contractor to sign off on verification of operation. Verify electric door release hardware properly activates upon fire alarm, in coordination with Div.26/28
  - 3.3.2 After installation, coordinate with the manufactures representative to perform a hardware installation inspection, by an AHC (or equivalent) who is a member of the Door & Hardware Institute (DHI). Provide to the contractor a written report with a copy sent to the consultant, certifying correctness, functionality, proper operation of the specific scheduled finishing hardware. Provide in the report, detailed opening numbers that are found to have deficiency.
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## DOOR HARDWARE

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### 3.4 ADJUSTING

- 3.4.1 Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and in accordance with referenced accessibility requirements
- 3.4.2 Ensure the doors equipped with closers operate to close doors firmly against anticipated wind and building air pressure, and to enable doors to be readily opened as suitable for function, location, traffic and barrier-free requirements.

### 3.5 CLEANING AND PROTECTION

- 3.5.1 Clean adjacent surfaces soiled by door hardware installation.
- 3.5.2 Clean operating items as necessary to restore proper function and finish.
- 3.5.3 Contractor to provide all hardware, as it is stored on the construction site in a covered and dry place.
- 3.5.4 Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

### 3.6 DOOR HARDWARE SCHEDULE

- 3.6.1 Hardware schedule follows...

END OF SECTION

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# FINISHING HARDWARE SCHEDULE

**JOB NAME:** MATHEMATICS RELOCATION TO 33 URSULA FRANKLIN

**PROJECT:** TOC0008029

**DATE:** Apr-15-2026

# REVISION HISTORY

<b>REVISED:</b>	Dec-04-2025	Issued for Preliminary Review
	Feb-18-2026	Issued for Preliminary Review - R1
	Mar-10-2026	Issued for Preliminary Review - R2
	Mar-25-2026	Issued for Tender (Draft)
	Apr-15-2026	Issued for Tender



**1 SINGLE DOOR L02\_2015 RH****GRADUATE STUDENTS RESOURCE ROOM**

920mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

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1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L02\_2015.1 RHR****GRADUATE STUDENTS RESOURCE ROOM**

920mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L02\_2021 LHR/RHRA SHARED LOUNGE**

2/915mm x 2990mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
2 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
2 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L02\_2021A LHR COATS STORAGE**

815mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L02\_2038 LH MEN'S BF W/C**

860mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

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1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	1500 C 630
1 EACH	RELAY MODULE	ALT-RB1224
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
2 EACH	EMERGENCY STRIP	NEDCO NEXGEN 31.5in "FOR ASSISTANCE PRESS" YELLOW
1 EACH	PUSH BUTTON	CM-400G/1 N/O MOMENTARY
1 EACH	ILLUMINATED PUSH TO OPEN - ROUND	CM-40/457FRE1
1 EACH	ADVANCED LOGIC RELAY	CX-33PS LOGIC RELAY PS AND CABINET
1 EACH	PUSH TO OPEN & PUSH TO LOCK COMBO SWITCH	CM-2520/4854SE1 - ILLUMINATED
1 SET	EMERGENCY ASSIST. KIT	CX-WEC10
1 EACH	KICKPLATE	GSH80A 8in X 32.5in TAPE C32D
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	MAGNETIC CONTACT	CX-MDA
1 EACH	INSTALL ELECTRIC STRIKE	INSTALL ELECTRIC STRIKE
1 EACH	INSTALLATION	INSTALL DOOR OPERATOR & BUTTONS

**1 SINGLE DOOR L02\_2902 LHR**

**UNDERGRADUATE RESOURCE ROOM**

965mm x 2135mm x 45mm

FRAME TYPE: 1

DOOR TYPE: TYPE E / DOOR DETAIL: FULL GLASS W/ MID RAIL

HOLLOW METAL DOOR

HOLLOW METAL FRAME

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3 EACH	HINGES	TA714 5 X 4 C26D
1 EACH	DOOR CONTROLLER	CU42E0GUS V2-ONLINE-SVN
1 EACH	SALTO WALL READER-ANSI-BLACK	WRDB0A4B
1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	1500 C 630
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 EACH	RECTIFIER	CX-5024
1 EACH	ACCESS CONTROL RELAY	CX-12 PLUS
1 EACH	24VAC FUSED TRANSFORMER 40VA	CX-TRX-4024
1 EACH	MOTION SENSOR	XMS (REX)
1 EACH	FLOOR STOP	GSH209 C32D
2 EACH	ROUND PUSH PLATE SWITCH	CM-40/4
1 EACH	DOOR CONTACT	MSS100-4 SPDT BLACK
1 EACH	INSTALLATION	INSTALL DOOR OPERATOR & BUTTONS
1 EACH	POWER SUPPLY	ALT-AL400ULM 12vDC or 24vDC @ 4A

**1 SINGLE DOOR L02\_2902.1 LHR**

**UNDERGRADUATE RESOURCE ROOM**

920mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE E / DOOR DETAIL: FULL GLASS W/ MID RAIL

EXISTING ALUMINUM DOOR

EXISTING PLASTIC FRAME

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1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	NEO MORTISE - ANSI	NBM1132N00CSBN

**1 SINGLE DOOR L02\_2902A RHR COATS STORAGE**

965mm x 2135mm x

FRAME TYPE: 1

DOOR TYPE: TYPE A

WOOD DOOR

HOLLOW METAL FRAME

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1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L02\_2902B LHR/RHRA ELEC. CL.**

2/940mm x 2135mm x

FRAME TYPE: 1

DOOR TYPE: TYPE B

HOLLOW METAL DOOR

HOLLOW METAL FRAME

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2 EACH	MANUAL FLUSH BOLT	GSH401 C26D
1 EACH	DUST PROOF STRIKE	DP2 C26D
1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
2 EACH	DOOR CLOSER	1431 PS EN - SURFACE MOUNTED
2 EACH	KICKPLATE	GSH80A 8in X 34.5in TAPE C32D
1 EACH	ASTRAGAL BY OTHERS	BY DOOR SUPPLIER

**1 SINGLE DOOR L03\_3001 LH****MEETING ROOM 1**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3001.1 LH****MEETING ROOM 1**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3001S RHR****STAIR**

1118mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

3/4 HR Fire Label

1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	NEO MORTISE - ANSI	NBM1132N00CSBN

**1 SINGLE DOOR L03\_3002 LH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

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1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3003 RH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3004 LH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

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3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3005 LH STAFF OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ADAPTER RING	SP220495-18-IM
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3006 LH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3007A RH PRINTER/ PHOTOCOPY ROOM**

864mm x 2135mm x

FRAME TYPE: 1

DOOR TYPE: TYPE A

WOOD DOOR

HOLLOW METAL FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	FLOOR STOP	GSH209 C32D



**1 SINGLE DOOR L03\_3008 LH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3009 LH MAIN RECEPTION**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3013 RH STAFF OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3014 RH****STAFF LOUNGE / KICHENETTE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3015 LH****FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3016 LH****FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3017 RH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3018 RH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3019 RH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3020 RH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3021 RH MEETING ROOM 2**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3021S LHR STAIR**

1041mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

3/4 HR Fire Label

---

1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	NEO MORTISE - ANSI	NBM1132N00CSBN

**1 SINGLE DOOR L03\_3026 RH GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3026A RH JANITOR**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_303 LH FACULTY LOUNGE**

915mm x 2135mm x

FRAME TYPE: 1

DOOR TYPE: TYPE A

WOOD DOOR

HOLLOW METAL FRAME

3 EACH	CONCEALED BEARING HINGE (Check existing hinge size before replacing)	TA714 4.5 X 4 C15
1 EACH	DOOR CONTROLLER	CU42E0GUS V2-ONLINE-SVN
1 EACH	SALTO WALL READER-ANSI-BLACK	WRDB0A4B
1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	1500 C 630
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 EACH	24VAC FUSED TRANSFORMER 40VA	CX-TRX-4024
1 EACH	RECTIFIER	CX-5024
1 EACH	ACCESS CONTROL RELAY	CX-12 PLUS
1 EACH	MOTION SENSOR	XMS (REX)
1 EACH	FLOOR STOP	GSH209 C32D
1 EACH	DOOR CONTACT	MSS100-4 SPDT BLACK
2 EACH	ROUND PUSH PLATE SWITCH	CM-40/4
1 EACH	INSTALLATION	INSTALL DOOR OPERATOR & BUTTONS
1 EACH	POWER SUPPLY	ALT-AL400ULM 12vDC or 24vDC @ 4A

**1 SINGLE DOOR L03\_3030.1 RH SEMINAR ROOM**

813mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3030.2 LH SEMINAR ROOM**

910mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3033 RH GRADUATE OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3033A LHR/RHRA DECOM W/C**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

---

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3034 LH POSTDOC OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3034A LHR/RHRA DECOM W/C**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

---

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3037.1 LH GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

2 EACH	PUSHPLATE	GSH81A 4in X 16in TAPE C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

NOTE:

Show doors with only handset removed, latch locked, and push plates covering old handset and deadbolt holes.



**1 SINGLE DOOR L03\_3037.2 LH GRADUATE OFFICE**

815mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3038 RH POSTDOC OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3038A LHR/RHRA DECOM W/C**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

---

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3039 LH POSTDOC OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3039A LHR/RHRA DECOM W/C**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

---

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_304 LH**

**MEN'S BF W/C**

865mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	1500 C 630
1 EACH	RELAY MODULE	ALT-RB1224
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 EACH	ILLUMINATED PUSH TO OPEN - ROUND	CM-40/457FRE1
1 EACH	ADVANCED LOGIC RELAY	CX-33PS LOGIC RELAY PS AND CABINET
1 EACH	PUSH TO OPEN & PUSH TO LOCK COMBO SWITCH	CM-2520/4854SE1 - ILLUMINATED
2 EACH	EMERGENCY STRIP	NEDCO NEXGEN 31.5in "FOR ASSISTANCE PRESS" YELLOW
1 EACH	PUSH BUTTON	CM-400G/1 N/O MOMENTARY
1 SET	EMERGENCY ASSIST. KIT	CX-WEC10
1 EACH	KICKPLATE	GSH80A 8in X 32.5in TAPE C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	MAGNETIC CONTACT	CX-MDA
1 EACH	INSTALL ELECTRIC STRIKE	INSTALL ELECTRIC STRIKE
1 EACH	INSTALLATION	INSTALL DOOR OPERATOR & BUTTONS

**1 SINGLE DOOR L03\_3041.1 LH**

**GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

2 EACH	PUSHPLATE	GSH81A 4in X 16in TAPE C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

NOTE:

Show doors with only handset removed, latch locked, and push plates covering old handset and deadbolt holes.

**1 SINGLE DOOR L03\_3041.2 RH GRADUATE OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ADAPTER RING	SP220495-18-IM
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3042 RH POSTDOC OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3042A LHR/RHRA DECOM W/C**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

---

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3043.1 RH GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE (Check existing hinge size before replacing)	TA714 4.5 X 4 C15
1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3043.2 LH GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3044 LH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3044A LHR DECOM W/C**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3045 LH GRADUATE OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3046 RH FACULTY OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3046A LHR/RHRA DECOM W/C**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3047 LH GRADUATE OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE D

EXISTING DOOR

EXISTING FRAME

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 FOLDING DOOR L03\_3047A FOLDING DECOM W/C DOOR**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE C

EXISTING DOOR

EXISTING FRAME

1 EACH	HOOKLOCK	MS1850SN-450-628
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

NOTE:

WOOD BLOCK REINFORCEMENT FOR LOCK TO BE PROVIDED

**1 SINGLE DOOR L03\_3048 RH GRADUATE OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3048S LHR STAIR**

1067mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

3/4 HR Fire Label

1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	NEO MORTISE - ANSI	NBM1132N00CSBN

**1 SINGLE DOOR L03\_306 RH POSTDOC OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN



**1 SINGLE DOOR L03\_3066 LH JANITOR**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3066K RHR CORRIDOR**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE F' / DOOR DETAIL: NARROWLITE

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	1006CDB 12/24VDC 630
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
2 EACH	ROUND PUSH PLATE SWITCH	CM-40/4
1 EACH	KEY SWITCH	960-D-MA-Lx28 w/LED

**1 SINGLE DOOR L03\_307 LH POST DOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3071 RH SCANNING ROOM**

865mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3072 RH GRADUATE OFFICE**

865mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3072.1 RH GRADUATE OFFICE**

910mm x 1990mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

2 EACH	PUSHPLATE	GSH81A 4in X 16in TAPE C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

NOTE:

Show doors with only handset removed, latch locked, and push plates covering old handset and deadbolt holes.

**1 SINGLE DOOR L03\_3073 LH GRADUATE OFFICE**

865mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3074 RH STORAGE**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3075 RH TOUCH-DOWN**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3076 LH LAN ROOM**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3077 LH STORAGE**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE (Check existing hinge size before replacing)	TA714 4.5 X 4 C15
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3078 RH GRADUATE OFFICE**

914mm x 2135mm x

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ADAPTER RING	SP220495-18-IM

**1 SINGLE DOOR L03\_308 RH POST DOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3080 LH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3080A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3081 RH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3081A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3082 LH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3082A RHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3083 RH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3083A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3084 LH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3084A RHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3085 RH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN



**1 SINGLE DOOR L03\_3085A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3086 LH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3086A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3087 RH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	HINGES	TA714 5 X 4 C26D
	(Check existing hinge size before replacing)	
1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3087A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3088 LH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3088A LHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3089 RH FACULTY OFFICE**

1110mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

3 EACH	HINGES	TA714 5 X 4 C26D
	(Check existing hinge size before replacing)	
1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3089A RHR FACULTY OFFICE**

760mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_309 LH LAN ROOM**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3090 RH GRADUATE OFFICE**

865mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3090A LH LAN ROOM**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3091 RH POST DOC OFFICE**

864mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3092 RH POST DOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3093 RH POST DOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3094 LH POSTDOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3095 RH POSTDOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3096 LH POSTDOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3105 LH LAN ROOM**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3106 LH GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3106A RH TOUCH DOWN SPACE**

860mm x 2135mm x

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 CARD READER	AM660N00IM38 BLE MIFARE 630
1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED

**1 SINGLE DOOR L03\_3106A.1 LH TOUCH-DOWN SPACE**

965mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MORTISE LOCK BODY	LA1T0570A21IM8
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ADAPTER RING	SP220495-18-IM
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3107 RH MEETING ROOM 3**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3108 RH POSTDOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN



**1 PAIR OF DOORS L03\_3108A LHR/RHRA POSTDOC OFFICE**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3108A.1 LHR/RHRA POSTDOC OFFICE**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3109 LH POSTDOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_310A LHR/RHRA ELEC. CL.**

2/508mm x 2135mm x

FRAME TYPE: 1

DOOR TYPE: TYPE B

HOLLOW METAL DOOR

HOLLOW METAL FRAME

2 EACH	HINGE	MPB 79 4.5 X 4 NRP C26D
4 EACH	SPRING HINGE	MPS60 4.5 X 4 C26D
2 EACH	MANUAL FLUSH BOLT	GSH401 C26D
1 EACH	DUST PROOF STRIKE	DP2 C26D
1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
2 EACH	KICKPLATE	GSH80A 8in X 18in TAPE C32D
1 EACH	ASTRAGAL BY OTHERS	BY DOOR SUPPLIER

**1 SINGLE DOOR L03\_311 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3110 RH POSTDOC OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 PAIR OF DOORS L03\_3110A LHR/RHRA POSTDOC OFFICE**

2/381mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE B

EXISTING DOOR

EXISTING FRAME

2 EACH	SURFACE BOLT	GSH 70T/B 8in C26D
1 EACH	DEADBOLT CABINET LOCK	700LC US26D
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3110A.1 RHR GRADUATE OFFICE**

762mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	CYLINDRICAL STOREROOM LOCKSET	ND80-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_3111 LH GRADUATE OFFICE**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_312 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_313 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_314 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_315 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_316 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_318 RH CORRIDOR**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE (Check existing hinge size before replacing)	TA714 4.5 X 4 C15
1 EACH	CYLINDRICAL CLASSROOM LOCKSET	ND70-P6-RHO-626
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_319 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_320 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_321 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_322 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_323 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_324 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_325 LH****GRADUATE OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
	(Check existing hinge size before replacing)	
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_327 LH****TOUCH-DOWN SPACE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_327.1 RH****TOUCH-DOWN SPACE**

865mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN



**1 SINGLE DOOR L03\_327K LHR CORRIDOR**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE F / DOOR DETAIL: NARROWLITE

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	4500C 12/24VDC 630
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 EACH	FLOOR STOP	GSH209 C32D
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
2 EACH	ROUND PUSH PLATE SWITCH	CM-40/4
1 EACH	KEY SWITCH	960-D-MA-Lx28 w/LED

**1 SINGLE DOOR L03\_327S LHR STAIR**

1118mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

3/4 HR Fire Label

---

1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
1 EACH	NEO MORTISE - ANSI	NBM1132N00CSBN

**1 SINGLE DOOR L03\_328 RH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_329 LH FACULTY OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_330 LH UNISEX W/C**

660mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
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**1 SINGLE DOOR L03\_331 LH GRADUATE OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_333 LH****GRADUATE OFFICE**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE A

EXISTING DOOR

EXISTING FRAME

---

1 EACH	CYLINDRICAL LATCH ALIGNMENT KIT	01848
1 EACH	CYLINDRICAL BODY	LC1KC70IM
1 EACH	XS4 MINI CARD READER	CB260N60CS (Mifare) - SFIC
1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN

**1 SINGLE DOOR L03\_348K LHR****CORRIDOR**

915mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE F / DOOR DETAIL: NARROWLITE

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	4500C 12/24VDC 630
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
2 EACH	ROUND PUSH PLATE SWITCH	CM-40/4
1 EACH	KEY SWITCH	960-D-MA-Lx28 w/LED

**1 SINGLE DOOR L03\_3900K RHR****CORRIDOR**

914mm x 2135mm x

FRAME TYPE: EXIST.

DOOR TYPE: TYPE F' / DOOR DETAIL: NARROWLITE

EXISTING DOOR

EXISTING FRAME

---

1 EACH	MEDECO PERMANENT CORE BY OTHERS	SUPPLIED BY OWNER
1 EACH	ELECTRIC STRIKE	9500 12/24VDC 630 - UL 90 MIN FAIL SECURE
1 EACH	DOOR OPERATOR	4100LE (PUSH) AL
1 LOT	EXISTING HARDWARE BY OTHERS	BALANCE OF EXISTING HARDWARE TO REMAIN
2 EACH	ROUND PUSH PLATE SWITCH	CM-40/4
1 EACH	KEY SWITCH	960-D-MA-Lx28 w/LED

**END OF SCHEDULE**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Glass and glazing for sections referencing this section for Products and installation windows glazed walls doors.

**1.2 RELATED SECTIONS**

- .1 Section 07 92 00 - Joint Sealants
- .2 Section 08 11 13 - Standard Metal Doors, Frames and Sidelites
- .3 Section 08 14 16 - Flush Wood Doors
- .4 Section 08 52 10 - Wood Windows

**1.3 REFERENCES**

- .1 ANSI Z97.1-2009 - Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
- .2 ASTM C542-05(2011) - Standard Specification for Lock-Strip Gaskets.
- .3 ASTM C864-05(2011) - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
- .4 ASTM C920-14 - Standard Specification for Elastomeric Joint Sealants.
- .5 ASTM C1048-12e1 - Standard Specification for Heat-Treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass.
- .6 ASTM C1172-09e1 - Standard Specification for Laminated Architectural Flat Glass.
- .7 ASTM C1193-13 - Standard Guide for Use of Joint Sealants.
- .8 ASTM D412-06a(2013) - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
- .9 ASTM D2240-05(2010) - Standard Test Method for Rubber Property - Durometer Hardness.
- .10 ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .11 CAN/CGSB 12.1-M90 - Tempered or Laminated Safety Glass.
- .12 CAN/CGSB 12.11-M90 - Wired Safety Glass.
- .13 CAN/CGSB 12.20-M89 - Structural Design of Glass for Buildings.
- .14 GANA (Glass Association of North America).
  - .1 GANA Glazing Manual (50th Anniversary Edition).
  - .2 GANA Laminated Glazing Reference Manual (2009).
  - .3 GANA Sealant Manual (2008).

**1.4 PERFORMANCE REQUIREMENTS**

- .1 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with Ontario Building Code .

- .2 Limit glass deflection to flexural limit of glass 1/200 with full recovery of glazing materials, whichever is less.
- .3 Obtain services of professional engineer with experience in type of work of comparable complexity and scope, licensed to practice in Province of Ontario to design, review, and provide professional services for work of this Section related to specially fabricated framing and glazed vision lites such as large horizontal and vertical spans.

#### **1.5 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Preinstallation Meetings: Convene two (2) weeks before starting work of this section.

#### **1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- .3 Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colours.
- .4 Samples:
  - .1 Submit two (2) samples 300 x 300 mm in size, exemplifying glass units and colouration.
  - .2 Submit 300 mm long bead of glazing sealant, colour as selected.
  - .3 Provide samples of Translucent Acrylic overhead lites to show clear white and opaque white range of selection.
- .5 Provide calculations for loadings and stresses of specially fabricated framing and glass vision lites under the Professional Structural Engineer's seal.

#### **1.7 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Manufacturer's Certificate: Certify that sealed insulated glass, meets or exceeds specified requirements.

#### **1.8 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

#### **1.9 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Section 01 78 40 and Section 01 92 00: Maintenance and extra material requirements.

#### **1.10 QUALITY ASSURANCE**

- .1 Perform Work in accordance with IGMA, GANA Glazing Manual and GANA Sealant Manual for glazing installation methods. Maintain one (1) copy of document on site.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

#### **1.11 SITE CONDITIONS**

- .1 Ambient Conditions:

- .1 Do not install glazing when ambient temperature is less than 10 degrees C.
- .2 Maintain minimum ambient temperature before, during and twenty-four (24) hours after installation of glazing compounds.

## **1.12 WARRANTY**

- .1 Provide a two (2) year warranty to include coverage for glass units from seal failure and replacement of same.

## **Part 2 Products**

### **2.1 FLAT GLASS MATERIALS**

- .1 Safety Glass (Type 2) where indicated on drawings: Tempered Glass, minimum thickness 6 mm to ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated), Type 1, Class 1 (transparent). where indicated on Drawings:
  - .1 Glazed door lite units and glazed screens lites where indicated on Drawings.

### **2.2 PLASTIC SHEET MATERIALS**

- .1 Acceptable Materials:
  - .1 iPLEXIGLAS® by Röhm GmbH
  - .2 ACRYLITE® by POLYVANTIS.
- .2 Substitutions: Refer to Section 01 60 00.
- .3 Acrylic Sheet Type PS-B): CAN/CGSB 12.12, Plastic compound, white translucent 10 mm thick.
  - .1 Translucent Acrylic overhead lites as shown on Drawings.
  - .2 Translucent Acrylic overhead lites are installed as drop in panels into ceiling panel T-bar supports and edge anble mouldings.

### **2.3 GLAZING ACCESSORIES**

- .1 Lock Strip Gaskets: ASTM C542, ozone-resistant neoprene compound, with lock-strip (zipper) component that friction-fits into position to retain glass pane/unit, reglet type H-shape, tensile strength of 14 MPa tested to ASTM D412, Durometer hardness of 75 tested to ASTM D2240, sized to accommodate glass thickness.
- .2 Setting Blocks: ASTM C864, Silicone; 80 to 90 Shore A durometer hardness tested to ASTM D2240, length of 25 mm for each sq m of glazing or minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height to suit glazing method and pane weight and area.
- .3 Spacer Shims: ASTM C864, Silicone, 50 to 60 Shore A durometer hardness tested to ASTM D2240, minimum 75 mm long x one half the height of the glazing stop x thickness to suit application self-adhesive on one face.
- .4 Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2%, designed for compression of 25% to effect an air barrier and vapour retarder seal
- .5 Glazing Splines : ASTM C864, , Resilient polyvinyl chloride or silicone extruded shape to suit glazing channel retaining slot; colour selected by Consultant.
- .6 Glazing Clips: Manufacturer's standard type.

- .7 Suspension clips for Translucent Acrylic Overhead Lites:
  - .1 Supply and install light gauge steel or aluminum angle to trim the opening in existing ceiling and adhere to the gypsum board with polyurethane construction adhesive.
  - .2 Supply and install perimeter 3/4" or 7/8" hemmed Angle Molding to carry the tile. Hemmed Angle Molding shall be fastened to adhered angle trim with screws.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that openings for glazing are correctly sized and within tolerance.
- .3 Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

**3.2 PREPARATION**

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.
- .4 Install sealant in accordance with manufacturer's written instructions.

**3.3 INSTALLATION - DRY METHOD (GASKETS)**

- .1 Place gasket against permanent stop and position glass.
- .2 Apply removable stops. Install gaskets in frame channels.
- .3 Combination Method-Tape/Gasket for intermediate and large lights over 600 mm x 600 mm (24" x 24"):
- .4 Cut glazing tape to proper length and install against permanent stop.
- .5 Position glass.
- .6 Apply removable stops and install gaskets in frame channel.

**3.4 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)**

- .1 Cut glazing tape to length and set against permanent stops, projecting 1.5 mm above sight line.
- .2 Place setting blocks at 1/4 points with edge block no more than 150 mm from corners.
- .3 Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- .4 Place glazing tape on free perimeter of glazing in same manner described above.
- .5 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .6 Knife trim protruding tape.

**3.5 FIELD QUALITY CONTROL**

- .1 Section 01 45 23: Field inspection testing.

- .2 Inspection will monitor quality of glazing.

**3.6 MANUFACTURER'S FIELD SERVICES**

- .1 Glass glazing product manufacturers to provide field surveillance of the installation of their Products.
- .2 Monitor and report installation procedures and unacceptable conditions.

**3.7 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Remove glazing materials from finish surfaces.
- .3 Remove labels after Work is complete.
- .4 Clean glass and adjacent surfaces.

**3.8 PROTECTION OF FINISHED WORK**

- .1 Section 01 70 00: Protecting installed work.
- .2 After installation, mark pane with an 'X' by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

**3.9 SCHEDULE**

- .1 For Glass Types see paragraph 2.1 and Drawing Schedules

**END OF SECTION**



**PART 1: GENERAL**

**1.1 SUMMARY**

- .1 This Section includes requirements for supply and installation of exterior sun control films onto existing exterior glazing to reduce solar heat gain, and glare.
- .2 Locations as shown on Drawings

**1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM D882-12, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
  - .2 ASTM D1004-09, Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
  - .3 ASTM D1044-08e1, Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
  - .4 ASTM D2582-09, Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting
  - .5 ASTM E84-12b, Standard Test Method for Surface Burning Characteristics of Building Materials
  - .6 ASTM E308-12, Standard Practice for Computing the Colors of Objects by Using the CIE System
  - .7 ASTM E903-12, Standard Test Method for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
- .2 National Fenestration Rating Council (NRFC):
  - .1 NRFC Certification Program

**1.3 ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination: Coordinate the Work of this Section with the installation of glazing; Sequence work so that installation of glazing films coincides with installation of glass materials without causing delay to the Work.
- .2 Pre-Installation Conference: Conduct on site pre-installation conference in accordance with Section 01 31 19 – Project Meetings 01 30 00 Project Management and Coordination before installing glazing films and in conjunction with installation of mock-up attended by Contractor, Consultant, Owner, glazing film installer and film manufacturer's representative to:
  - .1 Review methods and procedures related to installation, including manufacturer's written instructions;
  - .2 Examine substrate conditions for compliance with manufacturers installation requirements;
  - .3 Review temporary protection measures required during and after installation.

**1.4 SUBMITTALS**

- .1 Provide requested information in accordance with Section 01 33 00 Submittals Procedures 01 30 00 Submittal Procedures.
- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
  - .1 Product Data: Submit manufacturers product data for each type of product specified.

- .2 Samples for Initial Selection: Submit one (1) sample 300mm x 300mm (12" x 12") of each type of glazing films.
  - .3 Samples for Verification: Submit two (2) samples 300mm x 300mm (12" x 12") for verification for each type of glazing films specified in this Section prior to ordering samples from film manufacturer.
  - .4 Manufacturer's Warranty.
- .3 Informational Submittals: Provide the following submittals when requested by the Consultant:
- .1 Testing Reports:
    - .1 Performance Submittals: Provide laboratory data of emissivity and calculated window U-Factors for various outdoor temperatures.
    - .2 Thickness of glass the performance submittals have been tested on.

#### 1.5 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: Submit manufacturer's written instructions for cleaning solutions, materials and procedures, include name of original installer and contact information in accordance with Section 01 78 39 and Section 01 92 00: Submission procedures.
  - .1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.
  - .2 Provide Manufacturer's run numbers and widths of film used.

#### 1.6 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant:
  - .1 Manufacturer / Supplier: Obtain materials from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties.
  - .2 Installers: Execute Work of this Section using qualified personnel skilled in installation of work of this Section, having a minimum of three (3) years proven experience of installations similar in material, design, and extent to that indicated for this Project

#### 1.7 MOCK-UPS

- .1 Sample Installation: Construct a sample installation to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution in accordance with Section 01 45 00 Quality Control 01 40 00 Quality Control. Sample installation consists of three (3) glazing panels.
- .2 Once reviewed by Consultant, acceptable sample installation can form a permanent part of the Work, and will form the basis for acceptance for the remainder of the project.
- .3 Remove and replace materials found not acceptable at no cost to Owner or Consultant.

#### 1.8 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: Deliver and store packaged materials in their original containers with manufacturer's labels and seals intact.
- .2 Store as recommended by manufacturer in a weatherproof enclosure, and protect materials during handling and application to prevent damage.

#### 1.9 SITE CONDITIONS

- .1 Ambient Conditions: Proceed with glazing film installation when ambient and substrate temperature conditions are within limits permitted by manufacturer and when glass substrates are free from dirt or wetness arising from frost, condensation, or other causes detrimental to adhesion.
  - .1 Temperature Range: Between 4 deg C and 38 deg C (39 deg F and 100 deg F).

#### 1.10 WARRANTY

- .1 Provide the following manufacturer's warranties against defects in materials:
  - .1 Exterior Prestige Series: Ten (10) years
- .2 Provide a standard one (1) year labour warranty, commencing from the date of Ready for Take Over.

### PART 2: PRODUCTS

#### 2.1 MATERIALS DISTRIBUTORS

- .1 Materials and accessories specified herein are distributed by:

Window Film Canada  
325 Watline Avenue, Mississauga, Ontario, Canada, L4Z 1P3  
Phone: (888) 267-3206  
Email: [info@windowfilmcanada.ca](mailto:info@windowfilmcanada.ca)

#### 2.2 PERFORMANCE REQUIREMENTS

- .1 Fire Performance:
  - .1 Surface burning characteristics when tested in accordance ASTM E84:
    - .1 Flame Spread: 25, maximum.
    - .2 Smoke Developed: 450, maximum.
- .2 Abrasion Resistance:
  - .1 Film contains a surface coating that is resistant to abrasion such that, less than 5 percent increase of transmitted light haze will result in accordance with ASTM D1044, using 50 cycles, 500 grams weight, and the CS10F Calbrase Wheel.

#### 2.3 MATERIALS

- .1 Prestige Exterior Sun Control Film:
  - .1 Optically clear non-metal polyester film containing micro layers and incorporating acrylic pressure sensitive adhesive on one side and an acrylic abrasion resistant coating on the other side.
  - .2 Film incorporates infrared absorbing carbon and/or metal oxide particles.
  - .3 Uniformity: No noticeable pin holes, streaks, thin spots, scratches, banding or other optical defects.
  - .4 Variation in Total Transmission across the Width: Less than 2 percent over the average at any portion along the length.
  - .5 Thickness: Nominal 2.0 mils (0.1mm) with no evidence of coating voids.
  - .6 3M Exterior Prestige 40 Sun Control Film Performance when applied to 6mm (1/4") thick clear glass:

- .1 Visible Light Transmission (NFRC 100/200, ASTM E308): 42%.
- .2 Visible Reflection - Exterior (NFRC 100/200): 6%.
- .3 Visible Reflection - Interior (NFRC 100/200): 5%.
- .4 Ultraviolet Rejected (NFRC 100/200): 99.9%.
- .5 Infrared Energy Rejected (NFRC 100/200): 97%; as measured between 900-1000 nm.
- .6 Solar Heat Gain Coefficient (Normal Incidence) (NFRC 100/200): 0.39
- .7 Total Solar Energy Rejected (TSER) at 90 Degrees (Normal Incidence) (NFRC 100/200): 61%.
- .8 Total Solar Energy Rejected (TSER) at 61 Degrees (NFRC 100/200): 68%.
- .9 Basis of Design Product:
  - .1 3M Prestige Exterior 40 Sun Control Film, as manufactured by 3M, and distributed by Window Film Canada; Phone: (888) 267-3206; Email: [info@windowfilmcanada.ca](mailto:info@windowfilmcanada.ca)

### **PART 3: EXECUTION**

#### **3.1 INSTALLERS**

- .1 Subject to compliance with warranty requirements, only the following certified installers shall install exterior sun control film systems specified in this section:  
Window Film Canada; Contact: Todd Vogelsberg, (888) 267-3206; Email: [tvogelsberg@windowfilmcanada.ca](mailto:tvogelsberg@windowfilmcanada.ca)

#### **3.2 EXAMINATION**

- .1 Verification of Conditions: Examine glazing and surrounding adjacent surfaces for conditions affecting installation.
- .2 Verify that glass surfaces receiving new film is free from defects and imperfections, which will affect the final appearance.
- .3 Notify Contractor in writing of any conditions that are not acceptable.
- .4 Proceed with installation after verification and correction of surface conditions acceptable to manufacturer.

#### **3.3 PREPARATION**

- .1 Clean exterior glass surfaces of substances that could impair glazing film bond including mildew, oil, grease, dirt and other foreign materials immediately before beginning installation of films.
- .2 Prepare exterior surfaces using methods recommended by the manufacturer for achieving best result for the substrate under the project conditions.
- .3 Protect window frames and surrounding conditions from damage during installation.

#### **3.4 INSTALLATION**

- .1 Install in accordance with the manufacturer's written instructions and the contract documents, plumb, true, and level over clean glazing.

- .2 Install film continuously with no gaps or overlaps and as follows:
  - .1 Cut film edges neatly and square at a uniform distance of 3mm (1/8") to 1.5mm (1/16") of window sealant. Use new blade tips after 3 to 4 cuts.
  - .2 Installed without seams
  - .3 Do not remove release liner from film until just before each piece of film is ready for installation.
  - .4 Spray the slip solution, on window glass and adhesive to facilitate proper positioning of film.
  - .5 Install film on glazing centered within mullions aligned with adjoining windows, and lightly spray film with slip solution.
  - .6 Squeegee from top to bottom of window and remove air bubbles, wrinkles, blisters, and other defects.
- .3 Touch-up, repair or replace damaged products before Substantial Completion.

### 3.5 CLEANING AND PROTECTION

- .1 Progress Cleaning: Leave work area clean at the end of each workday, ensuring safe movement of pedestrians passing.
- .2 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.
- .3 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

END OF SECTION 08 87 16.

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Plastic film Type placed on glass surfaces for Privacy and Decorative purposes.

**1.2 RELATED SECTIONS**

- .1 Section 08 11 13 - Standard Metal Doors, Frames and Sidelites
- .2 Section 08 80 50 - Glass and Glazing.

**1.3 REFERENCES**

- .1 ANSI Z97.1-2009 - Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
- .2 ASTM D882-12 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- .3 ASTM D1004-13 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
- .4 ASTM D1044-13 - Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
- .5 ASTM D2582-09 - Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting.
- .6 ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .7 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .8 IWFA (International Window Film Association).

**1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Samples: Submit two (2) sample samples of film, 300 x 300 mm in size, installed on same glass type as required for project.

**1.5 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Test Reports: Submit test reports from Standards Council of Canada listed testing laboratories, certifying compliance with specified requirements.

**1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.
- .2 Provide film cleaning and maintenance data.

**1.7 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.

- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store rolls of film flat on cross supports. Do not stand rolls on end.
- .4 Remove from storage, only in quantities required for same day use.

## **1.8 WARRANTY**

- .1 Provide a five (5) year warranty to include coverage for failure to meet specified requirements.
- .2 Warranty includes:
  - .1 Maintaining adhesion properties without blistering, bubbling or delaminating from glass surface.
  - .2 Maintaining appearance without discolouration.
  - .3 Removing old material, replace and reapply new materials.
  - .4 For damage caused to glass substrate:
    - .1 Remove film and damaged glass pane.
    - .2 Install new glass with glazing method specified in Section 08 80 50.
    - .3 Apply new film in accordance with this section.
    - .4 At no cost to Owner.

## **Part 2 Products**

### **2.1 MANUFACTURERS**

- .1 3M Security Decorative and Privacy Film as distributed by Convenience Group.
- .2 Substitutions: Refer to Section 01 60 00 .

### **2.2 MATERIALS**

- .1 Type 1 Decorative and Privacy Film:
  - .1 Interior Decorative and Privacy Window Film: 3M™ Fasara™ Frost & Mat Pattern Film equivalent to 'Fine Crystal', a white frosted, sandblast velvet texture with polyester release liner as selected by the Consultant.
  - .2 3 mils thick, self-adhesive, polycarbonate type film having sandblast velvet texture with polyester release liner as selected by the Consultant.
  - .3 Provide glass cleaners, adhesives and equipment as recommended by the graphics glazing film manufacturer to suit the Product and conditions.
  - .4 Fire Performance: Surface burning characteristics when tested in accordance ASTM E 84:
  - .5 Flame Spread: 25, maximum.
  - .6 Smoke Developed: 450, maximum.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Clean glass before beginning installation using neutral cleaning solution.

- .2 Ensure no deleterious material adheres to glass by scraping surface of glass using industrial razors.
- .3 Ensure dust, grease, and chemical residue are removed from surface of glass before installation of film.
- .4 Examine glass under natural daylight and identify cracks, blisters, bubbles, discoloration, edge defects or other anomalies that may cause, film to delaminate, or vision transparency or distortion problems. Report findings to Consultant.
- .5 Before beginning Work, place absorbent material on window sill at sash frame to absorb moisture accumulation caused by film application.

### **3.2 INSTALLATION**

- .1 Install film to manufacturer instructions.
- .2 Remove any window stops and window device in the way of film application.
- .3 Install security film to glass windows ensuring no blisters, bubbles, scratches or distortions.
- .4 Cut film edges straight and square.
- .5 Ensure Security Film is installed behind window stops.
- .6 Privacy and Decorative Film: Install in accordance with manufacturer's instructions. Cut film edges neatly and square at a uniform distance of 1/8 inch (3 mm) to 1/16 inch (1.5 mm) of window sealant. Use new blade tips after 3 to 4 cuts.
- .7 Apply and attach film to glass in accordance with manufacturer's written instructions.
- .8 Splicing:
  - .1 Splice film only when glass is greater in width than film.
  - .2 Decorative Film splices may be factory edge butted.
- .9 Use clean, clear water to remove protective water soluble coating on adhesive side of film.
- .10 Use only water and film slip solution on glass to facilitate positioning of film.
- .11 Ensure removal of excess water between film and glass.
- .12 Remove left over material from work area and return work area to original condition.

### **3.3 INSTALLER'S INSPECTION**

- .1 Return to place of Work after thirty (30) days, no longer than forty (40) days for final cleaning and inspection of installed film.
- .2 Ensure finished surface of film is vision free of blisters, bubbles, tears, scratches, edge defects, and delaminating or vision distortion when viewed under natural daylight from 2.0 m minimum, up to 45 degrees from either side of the glass.
- .3 Remove and replace window unit glass panel film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after thirty (30) day period.
- .4 Remove and replace without glass replacement, film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m minimum after thirty (30) day period.



**3.4 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Wash interior and exterior of each glass panel and film using cleaning solution recommended by film manufacturer.

**3.5 SCHEDULES**

- .1 Inside surface of interior glazed doors, partitions and sidelites provided by Section 08 11 16 – Interior Aluminum Doors, Frames and Sidelites as shown on Drawings, frosted tint.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Existing vinyl composite tile flooring refinishing, restoration and sealing.

**1.2 RELATED SECTIONS**

- .1 Section 09 65 10 - Resilient Flooring: Provide new vinyl composite tiles where shown on Drawings.

**1.3 REFERENCES**

- .1 ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 ASTM F1066-04(2014)e1 - Standard Specification for Vinyl Composition Floor Tile.
- .3 CAN/ULC-S102.2-10 - Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

**1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide data on specified products, describing performance characteristics

**1.5 SUBMITTALS FOR INFORMATION**

- .1 Section 01 33 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements including special procedures.

**1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 10: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

**1.7 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience.

**1.8 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Protect roll materials from damage by storing [on end].

**1.9 SITE CONDITIONS**

- .1 Ambient Conditions:

- .1 Store materials for three (3) days prior to installation in area of installation to achieve temperature stability.
- .2 Maintain ambient temperature required by product manufacturer three (3) days prior to, during, and twenty-four (24) hours after installation of materials.

## **Part 2 Products**

### **2.1 MANUFACTURERS – CLEANING AND SEALING SOLUTIONS**

- .1 Product Manufacturer: Armstrong.
- .2 Substitutions: Refer to Section 01 6 00.

### **2.2 MATERIALS - CLEANING AND SEALING SOLUTIONS**

- .1 Floor Stripper and Cleaner: Armstrong Flooring S-325 New Beginning Floor Stripper and Cleaner
- .2 Sealer and polish: Armstrong Flooring S-385 Satinkeeper Low Gloss Floor Finish

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.

### **3.2 STRIPPING EXISTING SEALER, CLEANING AND REMOVAL OF SCRATCHES ON EXISTING VINYL COMPOSITE FLOORING**

- .1 Stripping, cleaning and to remove scratches from VCT flooring, use the following procedure:
- .2 Apply undiluted Armstrong Flooring S-325 New Beginning FloorStripper and Cleaner stripping solution over entire area. Let it set for the recommended amount of time per the manufacturer and then scrub. Start with a 3M Blue or Green pad or equivalent brush. It is important to scrub the floor until the cleaning solution turns the color of the floor. This will help to smooth out the major scratches.
- .3 Wear rubber gloves and avoid contact with skin including knees.
- .4 Vacuum up dirty solution.
- .5 Rinse thoroughly with clean, warm water and allow to dry.
- .6 Evaluate the appearance of the flooring and if some scratching still remains, continue with the following steps:
- .7 Wet area with water or a neutral detergent and scrub with a Red pad or equivalent brush making multiple passes over the scratched area; this should make the tile surface look almost as smooth as when it came out of the box.
- .8 Rinse thoroughly and allow to dry.

### **3.3 APPLICATION OF SEALER AND POLISH**

- .1 Apply sealer and polish: Armstrong Flooring S-385 Satinkeeper Low Gloss Floor Finish
- .2 Application Instructions:

- .3 Floor Prep: Vacuum thoroughly
- .4 Applying Polish: Initially, apply two thin coats with a clean damp sponge mop or microfiber applicator mop and allow at least 30 minutes drying time between coats.
- .5 Make sure the entire surface is coated.
- .6 Dries in approximately 30 minutes – do not buff.
- .7 In high humidity areas, Satinkeeper may take longer than 30 minutes to dry.

**3.4 PROTECTION OF FINISHED WORK**

- .1 Section 01 70 00: Protecting installed work.

**3.5 SCHEDULES**

- .1 Refer to Drawing for Floor Finishes Plans for areas identified with existing vinyl composition tile that requires cleaning and sealing work.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Gypsum board and joint treatment: Walls, ceilings and bulkheads.
- .2      Light gauge metal stud wall, ceiling and bulkhead framing.
- .3      Structural metal lightweight stud, ceiling, bulkhead framing and bracing.

**1.2            RELATED SECTIONS**

- .1      Section 06 10 53 - Miscellaneous Rough Carpentry
- .2      Section 06 41 11 - Architectural Cabinetwork
- .3      Section 07 84 00 - Firestopping
- .4      Section 07 92 00 - Joint Sealants
- .5      Section 08 11 13 - Standard Metal Doors, Frames and Sidelites
- .6      Section 08 31 13 - Access Doors and Frames
- .7      Section 09 23 10 - Plastering Repairs
- .8      Section 09 30 00 - Tiling
- .9      Section 09 51 13 - Acoustic Panel Ceilings
- .10     Section 09 84 10 - Acoustic Ceiling Treatment
- .11     Section 09 84 33 - Sound-absorbing Wall Panels
- .12     Section 09 91 10 - Painting
- .13     Section 10 11 00 - Visual Display Surfaces
- .14     Section 10 28 14 - Toilet and Bath Accessories
- .15     Section 12 24 00 - Window Roller Shades
- .16     Mechanical Division
- .17     Electrical Division
- .18     Section 27 41 00 – Audio-Video Systems
- .19     Section 27 41 01 – Audio-Video Systems - Owner's Statement of Requirements

**1.3            REFERENCES**

- .1      ASTM C475/C475M-12 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .2      ASTM C645-13 - Standard Specification for Non-structural Steel Framing Members.
- .3      ASTM C665-12 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
- .4      ASTM C754-11 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .5      ASTM C840-13 - Standard Specification for Application and Finishing of Gypsum Board.

- .6 ASTM C1002-07(2013) - 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.
- .7 ASTM C1047-10a - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .8 ASTM C1396/C1396M-13 - Standard Specification for Gypsum Board.
- .9 ASTM E90-09 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .10 CAN/ULC-S101-07 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
- .11 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .12 CAN/ULC-S702-09 - Standard for Mineral Fibre Thermal Insulation for Buildings (Includes Amendment 1, 2012).
- .13 Gypsum Association GA-214-10 - Recommended Levels of Gypsum Board Finish.
- .14 Gypsum Association GA-216-13 - Application and Finishing of Gypsum Panel Products.
- .15 Gypsum Association GA-600-12 - Fire Resistance Design Manual.
- .16 Gypsum Association GA-801-07 - Handling and Storage of Gypsum Panel Products: A Guide for Distributors, Retailers, and Contractors.
- .17 ULC-FR-14 - Fire Resistance Directory (2014 Edition).

#### **1.4 SYSTEM DESCRIPTION**

- .1 Acoustic insulation for Interior Partitions.
- .2 Thermal Insulation Identified for Partitions.

#### **1.5 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data:
  - .1 Provide data on metal framing gypsum board, joint tape, thermal insulation.
- .3 Shop Drawings: Indicate special details associated with acoustic seal for openings, firestopping seal for openings and continuity of building envelope vapour barrier and thermal insulation.
- .4 Shop Drawings: For structural metal lightweight stud, ceiling, bulkhead framing and bracing, provide:
  - .1 Calculations for loadings and stresses of engineered framing in accordance to Ontario Building Code requirements stamped and signed by a licenced Professional Structural Engineer.
  - .2 Indicate component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners and accessories or items required of related work.
  - .3 Indicate stud, ceiling joist, bulkhead framing and bracing layout.
  - .4 Describe method for securing studs to tracks and for bolted and welded framing connections.

**1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.

**1.7 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Obtain services of professional engineer with experience in type of work of comparable complexity and scope, licensed to practice in Province of Ontario to design, review, and provide professional services for work of this Section related to specially fabricated framing such as for bulkhead and ceiling support framing.
- .3 Perform Work for non-structural framing in accordance with ASTM C840, GA-214, GA-216, GA-600. Maintain one (1) copy on site.
- .4 Perform Work for structural framing in accordance with ASTM C955, GA-214, GA-216, GA-600. Maintain one (1) copy on site.
  - .1 Performance Criteria:
    - .1 Calculate structural properties of framing members to CSSBI 51, and for welding steel:
      - .1 CSA-W47.1, CSA-W55.3, CSA-W59 requirements. Maintain one (1) copy on site.
  - .2 Size components to withstand design loads as follows:
    - .1 Vertical Assembly: live and dead loads
    - .2 Horizontal Assembly: live and dead loads.
  - .3 Calculate Maximum Allowable Deflection: of span.
  - .4 Structural Metal Lightweight Stud, Ceiling, Bulkhead Framing and Bracing Assembly:
    - .1 Design to CAN/CSA-S136 and CSSBI 51.
    - .2 Design to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to cyclic temperature ranges.
    - .3 Design assembly to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
    - .4 Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with code applicable at place of the Work.
- .5 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience .
- .6 Handling Gypsum Board: Comply with GA-801.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Other acceptable manufacturers offering functionally and aesthetically equivalent products.
  - .1 CertainTeed.
  - .2 CGC.
  - .3 Westroc.

- .2 Substitutions: Refer to Section 01 60 00 .

## **2.2 FRAMING MATERIALS**

- .1 Non-structural Metal Stud Framing: Studs and Tracks: ASTM C645, GA-216, GA-600; galvanized sheet steel, minimum 0.45 mm (26 gauge).
- .1 Fasteners: ASTM C1002, GA-216.
- .2 Furring, Framing, and Accessories: ASTM C645, GA-216, GA-600.
- .3 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 Studs and Tracks as required by Structural Engineer engaged by this Section: Provide type, and thicknesses as required by Professional Structural Engineer in accordance to the design submitted in Shop Drawings.
- .1 Structural Framing Materials: Materials: Cold-rolled steel conforming to CAN/CSA-S136], with metallic coating to ASTM A653/A653M, minimum Z180 zinc coating thickness.
- .1 Studs: ASTM C955, formed to channel shape, solid or punched web, knurled faces; minimum 1.2 mm (18 ga) thick.
- .2 Track: Formed steel; channel shaped; same width as studs, tight fit; solid web; minimum 1.2 mm (18 ga) thick.
- .3 Joists: Formed to channel shape, solid or punched] web; minimum 1.2 mm (18 ga) thick.
- .4 Bracing, Furring, Bridging: Formed sheet steel; minimum 1.2 mm (18 ga) thick.
- .5 Plates, Gussets, Clips: Formed sheet steel; minimum 1.2 mm (18 ga) thick.
- .6 Welding Materials: CSA-W59.
- .2 Bolts, Nuts and Washers: A325M, hot-dip galvanized to minimum requirements of CSSBI.
- .3 Self-drilling, Self-tapping Screws: Steel, hot dip galvanized to minimum requirements of CSSBI.
- .4 Anchorage Devices: Drilled expansion bolts, Powder actuated concrete fasteners are not permitted; hot-dip galvanized to minimum requirements of CSSBI.
- .3 Touch-Up Primer for Galvanized Surfaces: SPCC-Paint 20, inorganic zinc-rich.

## **2.3 FABRICATION OF FRAMING MEMBERS**

- .1 Fabricate assemblies of formed sections of sizes and profiles required.
- .2 Provide cut-outs centred in webs of members to accommodate services and through-the knockout style bridging.
- .3 Fit, reinforce, and brace framing members to suit design requirements.
- .4 Fit and assemble in largest practical sections for delivery to site, ready for installation.
- .5 Do welding to CAN/CSA-S136] or CSA-W59, as applicable.

## **2.4 GYPSUM BOARD MATERIALS**

- .1 Gypsum Board: ASTM C1396/C1396M, paper-faced; 1220 mm (48 inches) wide, maximum available length in place; tapered edges, ends square cut.
- .1 Regular core, 16 mm (5/8 inch) thick.



- .2 Fire rated core, 16 mm (5/8 inch) thick.
- .3 Water-resistant Gypsum Wallboard: Comply with ASTM C1396 for 15.9 mm(5/8 in.) Type X:
  - .1 CGC Sheetrock® Brand Mold Tough® Panels Firecode® X (UL Type SCX) are 15.9 mm(5/8 in.) Type X panels
- .4 Coated Glass Mat Tile Backer Board (ASTM C1178): DensShield Tile Backer by Georgia-Pacific Gypsum.
  - .1 16 mm thick

## **2.5 ACCESSORIES**

- .1 Thermal and Acoustic Insulation for Interior Steel Stud Partitions: CAN/ULC-S702; preformed Rockwool fibre, friction fit type, Rockwool AFB.
- .2 Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board. As specified in Section 07 92 00 - Joint Sealants.
- .3 Corner Beads: GA-216 ASTM C1047, metal corner bead.
- .4 Edge Trim: ASTM C1047 GA-216; Type U casing bead L bead LK bead LC bead Control joint.
- .5 Aluminum Angle Trims to form a vertical wall closure at insulated wall gap as shown in Drawing detail 1/A700.
- .6 Joint Materials: GA-216 ASTM C475/C475M.
  - .1 Reinforcing tape, adhesive, and water.
  - .2 Joint compound: Asbestos-free.
- .7 Gypsum Board Fasteners: ASTM C1002, Type S Type W.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that site conditions are ready to receive work and opening dimensions are as instructed by the manufacturer indicated on shop drawings.

### **3.2 METAL STUD INSTALLATION**

- .1 Install studs to ASTM C475/C475M GA-216 GA-600 and manufacturer's written instructions.
- .2 Align floor and ceiling tracks; locate to wall partition layout. Secure in place with fasteners or by welding at structural studs at maximum. Coordinate installation of acoustic sealant with ceiling and floor tracks.
- .3 Metal Stud Spacing: 400 mm (16 inches) on centre.
- .4 Extend stud framing to ceiling underside of structure. Attach ceiling runner securely to building structure to manufacturer's written instructions and details indicated.
- .5 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.

- .6 Construct corners using minimum three studs. Double stud wall openings, door jambs, and window jambs.
- .7 Erect load bearing studs one piece full length. Splicing of studs is not permitted.
- .8 Erect load bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.
- .9 Blocking: Nail or screw wood blocking to studs. Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures wall cabinets.
- .10 Coordinate placement of insulation in multiple stud spaces after erection.
- .11 Install intermediate studs above and below openings to align with wall stud spacing.
- .12 Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.
- .13 Attach [cross studs] [furring channels] to studs for attachment of fixtures anchored to walls.
- .14 Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- .15 Touch-up field welds and damaged [galvanized] [primed] surfaces with primer.

### **3.3 CEILING FRAMING INSTALLATION**

- .1 Install to manufacturer's written instructions ASTM C754 and GA-216.
- .2 Coordinate location of hangers with other work.
- .3 Install ceiling framing independent of walls, columns, and above ceiling work.
- .4 Place joists at 300 mm to 400 mm on centre; not more than 50 mm from abutting walls. Connect joists to supports using [fastener] [welding] method.
- .5 Set ceiling joists parallel and level, with lateral bracing and bridging.
- .6 Locate joist end bearing directly over load bearing studs or provide load distributing member to top of stud track.
- .7 Provide web stiffeners at reaction points.
- .8 Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 600 mm past each end of openings.
- .9 Laterally brace entire suspension system.
- .10 Touch-up field welds and damaged [galvanized] [primed] surfaces with primer.

### **3.4 WALL AND CEILING ASSEMBLIES FOR FIRE RATINGS**

- .1 Install wall and ceiling assemblies as required for fire resistance ratings indicated and to GA-600 requirements.

### **3.5 ACOUSTIC AND THERMAL ACCESSORIES INSTALLATION**

- .1 Install resilient channels at maximum 600 mm (24 inches) on centre. Locate joints over framing members.
- .2 Install insulation and vapour barrier in exterior walls and ceiling .

- .3 Place thermal/ 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 spaces without gaps or voids. Do not compress insulation.
- .4 Place vapour retarder on warm side of insulation; lap and seal sheet retarder joints over member face.
- .5 Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- .6 Extend vapour retarder tight to full perimeter of adjacent window and door frames and other items interrupting the plane of membrane. Tape seal in place.
- .7 Install thermal/acoustic sealant within partitions in accordance with manufacturer's written instructions.
- .8 Install acoustic sealant at gypsum board perimeter at:
  - .1 Metal Framing: Two (2) beads.
  - .2 Base Layer.
  - .3 Face Layer.
  - .4 Caulk all penetrations of partitions by conduit, pipe, duct work, rough-in boxes.

### **3.6 GYPSUM BOARD INSTALLATION**

- .1 Install gypsum board to ASTM C840 GA-216 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: Use gypsum backing board for first layer, placed perpendicular parallel to framing or furring members. Use fire rated gypsum backing board for fire rated partitions and ceilings.
- .6 Double Layer Applications: Secure second layer to first with fasteners . Apply adhesive to manufacturer's written instructions.
- .7 Place second layer perpendicular parallel to first layer. Offset joints of second layer from joints of first layer.
- .8 Erect gypsum soffit board perpendicular to supports, with staggered end joints over supports.
- .9 Treat cut edges and holes in moisture resistant gypsum board exterior gypsum soffit board with sealant.
- .10 Place control joints consistent with lines of building spaces as directed.
- .11 Place corner beads at external corners as indicated. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials as indicated.

### **3.7 JOINT TREATMENT**

- .1 Finish to ASTM C840 GA-214, Level 4.
- .2 Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- .3 Feather coats on to adjoining surfaces so that camber is maximum 0.8 mm (1/32 inch).

**3.8 SKIM COAT COMPOUND TREATMENT**

- .1 Finish to ASTM C840 GA-214, Level 4.
- .2 Where wall covering are scheduled to be removed tape, fill, sand exposed joints, edges, and corners and provide a compound skim coat over the complete wall area to produce smooth surface ready to receive finishes. Coordinate the work with Section 09 91 10 – Painting.
- .3 Feather coats on to adjoining surfaces so that camber is maximum 0.8 mm (1/32 inch).

**3.9 TOLERANCES**

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

**3.10 SCHEDULES**

- .1 Finish Level 1: Above finished ceilings concealed from view.
- .2 Finish Level 4: Walls exposed to view.
- .3 Finish Level 4: Ceilings exposed to view.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1    Plaster repairs in Rooms where existing plaster walls and ceiling are scheduled for repairs as shown on Drawings.
- .2    Plaster system, light weight aggregate.
- .3    Metal furring and lath.
- .4    Plaster base for gypsum veneer plaster.
- .5    Plaster for Rooms will remain exposed with Level 4 Standard finish where exposed and will be painted.

**1.2            RELATED SECTIONS**

- .1    Refer to Structural Drawings for metal framing and suspension support details.

**1.3            REFERENCES**

- .1    ASTM C28/C28M-10(2015) - Standard Specification for Gypsum Plasters.
- .2    ASTM C35-01(2009) - Standard Specification for Inorganic Aggregates for Use in Gypsum Plaster.
- .3    ASTM C61/C61M-00 (2015) - Standard Specification for Gypsum Keene's Cement.
- .4    ASTM C206-14 - Standard Specification for Finishing Hydrated Lime.
- .5    ASTM C631-09 - Standard Specification for Bonding Compounds for Interior Gypsum Plastering.
- .6    ASTM C842-05(2015) - Standard Specification for Application of Interior Gypsum Plaster.
- .7    ASTM C844-15 - Standard Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster.
- .8    ASTM C847-14a - Standard Specification for Metal Lath.
- .9    ASTM C1002-07(2013) - 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.
- .10   ASTM C1396/C1396M-13 - Standard Specification for Gypsum Board.
- .11   ASTM E119-15 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- .12   CAN/ULC-S101-07 - Standard Methods of Fire Endurance Tests of Building Construction and Materials.

**1.4            SYSTEM DESCRIPTION**

- .1    Fabricate horizontal elements to limit finish surface to 1:240 deflection under superimposed dead load and wind uplift loads.

**1.5            SUBMITTALS FOR REVIEW**

- .1    Section 01 30 00: Submission procedures.

- .2 Product Data: Provide data on plaster materials, characteristics, and limitations of products specified.

## **1.6 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements.

## **1.7 QUALITY ASSURANCE**

- .1 Perform Work in accordance with GA-600. Maintain one (1) copy on site.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

## **1.8 REGULATORY REQUIREMENTS**

- .1 Conform to ASTM E119 applicable code for fire rated assemblies in conjunction with Section 09 21 16 as follows:
  - .1 Fire Rated Ceilings Interior Soffits and Bulkheads: ULC-FR Listed Assembly Designs.

## **1.9 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Do not apply plaster when substrate or ambient air temperature is less than 10 degrees C nor more than 27 degrees C.
  - .2 Maintain minimum ambient temperature of 10 degrees C during and after installation of plaster.

## **Part 2 Products**

### **2.1 PLASTER BASE MATERIALS**

- .1 Plaster: ASTM C28/C28M; gypsum neat hardwall type, fibrated/ unfibrated.
- .2 Plaster: ASTM C28/C28M; gypsum mill aggregated type.
- .3 Plaster: ASTM C28/C28M; gypsum gauging type.
- .4 Lightweight Aggregate: ASTM C35; sand and vermiculite/ perlite.
- .5 Water: Clean, fresh, potable and free of mineral or organic matter which can affect plaster.
- .6 Bonding Agent: ASTM C631; type recommended for bonding plaster to masonry / concrete surfaces.

### **2.2 FINISHING PLASTER**

- .1 Gypsum/Lime Putty Type: ASTM C28/C28M; mixture of gaging plaster and lime.
- .2 Keene's Cement/Lime Putty Type: ASTM C61/C61M ASTM C206; mixture of Keene's cement and lime.

- .3 Sand Float Type: ASTM C28/C28M ASTM C35; prepared mixture of gypsum plaster and sand.
- .4 Sand Float Type: ASTM C61/C61M ASTM C35; prepared mixture of Keene's cement/lime putty and sand.
- .5 Water: Clean, fresh, potable and free of mineral and organic matter which can affect plaster.

## **2.3 METAL LATH**

- .1 Metal Lath: ASTM C847, flat diamond self-furring mesh , 10 mm high rust inhibitive primer .
  - .1 Weight: Of weight to suit application.

## **2.4 ACCESSORIES**

- .1 Casing Bead: Formed sheet steel , depth governed by plaster thickness, maximum possible lengths, expanded metal flanges, with square edges; rust inhibitive primer.
- .2 Base Screed: Formed sheet steel , depth governed by plaster thickness, maximum possible lengths, expanded metal flanges, with beveled edge; rust inhibitive primer.
- .3 Corner Mesh: Formed sheet steel, minimum 0.5 mm thick, perforated / expanded flanges shaped to permit complete embedding in plaster, minimum 50 mm size; rust inhibitive primer.
- .4 Strip Mesh: Expanded metal lath, minimum 0.5 mm thick, 50 mm wide x 600 mm long; rust inhibitive primer.
- .5 Control Joint / Expansion Joint Accessories: Formed sheet steel , accordion profile, 50 mm, expanded metal flanges each side, rust inhibitive primer.
- .6 Anchorage: Nails, staples, or other approved metal supports, of type and size to suit application, to rigidly secure lath and associated metal accessories in place.
- .7 Fasteners: ASTM C1002, corrosion resistant, self-drilling, self-tapping screws.
- .8 Access Panels, Non-Fire Rated in Plaster on Metal Furring: Formed steel .

## **2.5 PLASTER MIX**

- .1 Mix and proportion plaster to manufacturer's written instructions ASTM C842 .

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Metal Lath and Accessories: Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are in place.
- .3 Mechanical and Electrical: Verify services within ceilings have been tested and approved.

### **3.2 PREPARATION**

- .1 Dampen adjacent existing plaster surfaces to reduce excessive suction.
- .2 Clean adjacent existing plaster surfaces of foreign matter. Thoroughly dampen surfaces before using acid solutions, solvent, or detergents to perform cleaning. Wash surface with clean water.

- .3 Roughen smooth surfaces.
- .4 Apply bonding agent in accordance with manufacturer's written instructions.

### **3.3 INSTALLATION - LATH**

- .1 Apply metal lath taut, with long dimension perpendicular to supports.
- .2 Lap ends minimum 25 mm. Secure end laps with tie wire where they occur between supports.
- .3 Lap sides of diamond mesh lath minimum 38 mm. Nest outside ribs of rib lath together.
- .4 Attach metal lath to metal supports using tie wire at maximum 150 mm on centre.

### **3.4 INSTALLATION - ACCESSORIES**

- .1 Continuously reinforce internal angles with corner mesh, return metal lath 75 mm from corner to form the angle reinforcement; fasten at perimeter edges only.
- .2 Place strip mesh diagonally at corners of lathed openings. Secure rigidly in place.
- .3 Place 100 mm wide strips of metal lath centred over junctions of dissimilar backing materials. Secure rigidly in place.
- .4 Place casing beads at terminations of plaster finish. Butt and align ends. Secure rigidly in place.
- .5 Install metal access panels and rigidly secure in place.
- .6 Position to provide convenient access to concealed work requiring access.

### **3.5 MOVEMENT JOINTS**

- .1 Locate control joints expansion joints at spacing indicated 6 m on centre.
- .2 Use double casing bead spaced 6 mm apart.
- .3 Use preformed device to form control joint / expansion joint.

### **3.6 PLASTERING**

- .1 Apply gypsum plaster in accordance with manufacturer's written instructions and ASTM C842.
- .2 Apply scratch, brown, and finish coats over lath surfaces. Apply scratch and brown coats to a nominal thickness of 9 mm each.
- .3 Apply colour tinted bond coat to prepared surfaces within 4 hours of plaster application. Apply in accordance with manufacturer's written instructions.
- .4 Apply finish coat to minimum 3 mm thickness.
- .5 Work the finish coat flat and smooth, with steel trowel.
- .6 Perform work in panels to nearest natural break or between accessories.

### **3.7 ERECTION TOLERANCES**

- .1 Maximum Variation from True Flatness: 3 mm in 3 m.



**3.8 SCHEDULES**

- .1 Plaster wall and ceiling repairs in Rooms as shown and noted on Drawings: Three-coat lightweight plaster over metal lath, No. 4 Finish

**END OF SECTION**

**Part 1            General**

**1.1            GENERAL REQUIREMENTS**

- .1    Read and conform to:
  - .1       Sections of Division 00 and The General Conditions of the Contract.
  - .2       Schedule 1, Supplementary Conditions.
  - .3       Conform to Sections of Division 01 as applicable.

**1.2            SECTION INCLUDES**

- .1    Glazed Ceramic wall tiling.
- .2    Stainless Steel Transition Strips
- .3    Tile accessories.
- .4    Mortar and Grout.

**1.3            RELATED SECTIONS**

- .1    Section 07 92 00 - Joint Sealants
- .2    Section 09 21 16 - Gypsum Board Assemblies

**1.4            REFERENCES**

- .1    ANSI A108/A118/A136.1-2014 - Specifications for the Installation of Ceramic Tile - Version 2013.1.
  - .1       ANSI A108 Series - Installation Standards.
  - .2       ANSI A118.1 - Specifications for Dry-Set Portland Cement Mortar.
  - .3       ANSI A118.3 - Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive.
  - .4       ANSI A118.4 - Specifications for Latex-Portland Cement Mortar.
  - .5       ANSI A118.5 - Specifications for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation.
  - .6       ANSI A118.6 - Specifications for Standard Cement Grouts for Tile Installation.
  - .7       ANSI A118.9 - Specifications for Test Methods and Specifications for Cementitious Backer Units.
  - .8       ANSI A118.11 - Specifications for EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar.
  - .9       ANSI A118.12 - Specification for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation.
  - .10      ANSI A136.1 - Specifications for Organic Adhesives for Installation of Ceramic Tile..
- .2    ANSI A137.1-2013.1 - American National Standard for Ceramic Tile.
- .3    ASTM C144-11 - Standard Specification for Aggregate for Masonry Mortar.
- .4    ASTM C171-07 - Standard Specification for Sheet Materials for Curing Concrete.
- .5    ASTM C207-06(2011) - Standard Specification for Hydrated Lime for Masonry Purposes.

- .6 ASTM C241/C241M-15e1 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.
- .7 ASTM C373-14a - Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products, Ceramic Tiles, and Glass Tiles.
- .8 ASTM C503/C503M-10 - Standard Specification for Marble Dimension Stone.
- .9 ASTM C568/C568M-10 - Standard Specification for Limestone Dimension Stone.
- .10 ASTM C615/C615M-11 - Standard Specification for Granite Dimension Stone.
- .11 ASTM C629/C629M-10 - Standard Specification for Slate Dimension Stone.
- .12 ASTM C847-14a - Standard Specification for Metal Lath.
- .13 ASTM C1527/C1527M - 11 - Standard Specification for Travertine Dimension Stone.
- .14 CSA-A3000-13 - Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .15 ISO 10545 Series - Ceramic Tiles, Standards for Testing.
- .16 ISO 13006-2013 - Ceramic Tiles, Definitions, Classifications, Characteristics and Marking.
- .17 TCNA Handbook for Ceramic, Glass, and Stone Tile Installation (2015).
- .18 TTMAC - Specification Guide 09 30 00, Tile Installation Manual 2012-2014.

## **1.5 SYSTEM DESCRIPTION**

- .1 Glazed Ceramic tile, installed on walls, and using thinset application method.

## **1.6 PERFORMANCE REQUIREMENTS**

- .1 Tile products manufactured and tested to ISO 10545 Series and ANSI A137.1.
- .2 Frost Resistance: Maximum water absorption rating of 0.5% or less when measured to ISO 10545.
- .3 Surface Flatness Tolerances:
  - .1 Large Format Tile (150 x 450 mm): flatness measured to a minimum of ; equivalent to 3 mm with maximum 2 gaps under 3 m straightedge measurement.
  - .2 Wall Tiles: Wall levelling similar to s tiles having similar sizes listed above.

## **1.7 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Coordination:
  - .1 Coordinate with other work having a direct bearing on work of this section.
  - .2 Coordinate requirements for recesses, accounting for mortar bed, bond coat and tile thickness where finished tile surfaces are installed flush with adjacent finishes.
- .3 Pre-installation Meetings: Convene 2 weeks before starting work of this section.
  - .1 Attendance required by tile installer, Constructor, Consultant, tile supplier mortar and grout representative to discuss subsurface flatness, installation techniques, material compatibility and site conditions.

**1.8 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Submit manufacturer's product data for each type of product specified.
- .3 Shop Drawings: Indicate movement joints, transitions and intersections with dissimilar materials, colour arrangement, tile layout, patterns and edging details.
- .4 Samples for Initial Selection: Submit the following samples for initial selection:
  - .1 Grout: Manufacturer's standard colours using actual sections of grout showing full range of colours available for each type of grout indicated.
- .5 Samples for Verification: Submit the following samples for final verification, including full range of colour and texture variations expected.
  - .1 Tiles: Submit ) two (2) pieces of each tile specified.
  - .2 Trims: Submit full size units of each type of trim and accessory in each colour required for installation; minimum 150 mm lengths.

**1.9 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Manufacturer's Certificate: Certify that Products meet or exceed the requirements of ISO 10545 Series and ANSI A137.1.
- .3 Installation Data:
  - .1 Manufacturer's recommended and special installation requirements.
  - .2 Written instructions for using adhesives and grouts.

**1.10 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.
- .2 Operation and Maintenance Data: Submit two (2) copies of TTMAC Maintenance Guide and additional information as follows.
  - .1 Manufacturer's maintenance data sheets for sealers and other non-tile maintenance materials and accessories.
  - .2 Warning of maintenance practices or materials that may damage or disfigure finished Work.

**1.11 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Stock Materials: Provide 2% of total of each size, colour, and surface finish of tile specified.
  - .1 Store in original containers, clearly marked to identify the following:
    - .1 Manufacturer, and distributor's name.
    - .2 Material series name and stocking number.
    - .3 Material description, including colour and pattern.

**1.12 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Conform to TTMAC Manual .

- .3 Maintain one (1) copy copies of document on site.
- .4 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .5 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and having completed tile installations similar in material, design and extent to this Project and be a member in good standing with TTMAC at time of bidding.

**1.13 MOCK-UP**

- .1 Section 01 30 00: Provide mock-up of tile.
- .2 Construct mock-ups for each form of construction and finish required.
- .3 Locate where directed by Consultant.
- .4 Accepted mock-up will form the standard of acceptance for the remainder of the Work.
- .5 Approved mock-up may remain as part of the Work.

**1.14 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Deliver and store packaged materials in original containers with seals unbroken and labels intact.
- .3 Store materials to prevent damage or contamination to materials by water, freezing, foreign matter, and other causes; store cementitious materials in a dry area, and raised off and ground surfaces.

**1.15 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Apply tile after completion of Work by other sections, to dry, clean, firm, level and plumb surfaces, free from oil or wax or any other material detrimental to tile adhesion.
  - .2 Maintain tile materials and substrate temperature between TTMAC and manufacturer's recommended minimum and maximum temperature range.
  - .3 Maintain temperature range for minimum forty-eight (48) hours before and during installation and until materials are fully set and cured to manufacturer's recommendations.
  - .4 Maintain adequate ventilation where Work generates toxic gases or where there is a risk of raising relative humidity to levels detrimental to building finishes and assemblies.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Glazed Ceramic Wall Tile Type in Washrooms:
  - .1 Stone Tile; Product: Project Ceramica: Ice gloss, 15x45cm, gloss/brilliant.
  - .2 Substitutions: Refer to Section 01 60 00.
- .2 Mortar and Grout:

- .1 Ardex; Product: Ardex X 5 Flexible Tile and Stone Mortar (thin Set).
- .2 Ardex; Product: Ardex FL Rapid Set Flexible, Sanded Grout.
- .3 Substitutions: Refer to Section 01 60 00.

## **2.2 CERAMIC TILE MATERIALS**

- .1 Product: Wall Tile Type : ANSI A137.1 and ISO 13006, described as follows.
  - .1 Moisture Absorption: 0 to 0.5% .
  - .2 Size: 15 x 45 cm
  - .3 Surface Finish: Non-Textured finish.
  - .4 Glazed.
  - .5 Chemical Resistance: Pass Rating to ISO 10545.
  - .6 Frost Resistance: Not Required.
  - .7 Slip Resistance: Not Required.
  - .8 Stain Resistance: ISO 10545 Series, Class 5 .
  - .9 Scratch Resistance: Abrasion Rating for Unglazed Tiles MOH 7 ISO 10545.
  - .1 Product and Colour: Stone Tile; Project Ceramica: Ice gloss/brillant, 15x45cm.

## **2.3 TRIMS AND EDGING**

- .1 Straight Edge and same height Transition / Termination Strips: Roll formed stainless steel edge strips, L shape; height as required to suit tile installation; with integral perforated anchoring leg.
  - .1 Tile Trim: Schluter - JOLLY edge trim 5/16", aluminum classic grey.
  - .2 Tile Trim: Schluter - Schluter - RONDEC edge trim size 8mm, aluminum classic grey.
  - .3 Tile Trim: Schluter - Inner corner, aluminum classic grey.

## **2.4 MORTAR AND GROUT MATERIALS**

- .1 Wall Tile Mortar:
  - .1 Dry-Set Portland Cement (interior thin set): ANSI A118.1, fast-setting, non-sagging water retentive Portland cement mortar.
  - .2 Ardex; Product: Ardex X 5 Flexible Tile and Stone Mortar (thin Set).
- .2 Tile Grout:
  - .1 Portland Cement Grout - Sanded: ANSI A118.6, factory blended dry-set stain resistant latex modified, commercial portland cement and graded silica sand, formulated for joints less than 3 mm wide.
    - .1 Epoxy Tile Grout: by Flextile; Colour:
    - .2 Epoxy Wall Tile Grout: by Flextile; Colour:

## **2.5 ACCESSORIES**

- .1 Joint Sealant: As specified in Section 07 92 00.

## **2.6 CEMENTITIOUS MIXES**

- .1 Premanufactured Mortars and Grouts: Mix to manufacturers' written instructions.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Examine surfaces and verify that surfaces are ready to receive tile installation.
  - .1 Substrates have cured minimum of ninety (90) days to TTMAC requirements.
  - .2 Substrates are dry; clean; free from oil, waxy films, and curing compounds; and within starting flatness tolerances as specified in Section 03 35 10, and are ready for application of levelling materials.
  - .3 Grounds, anchors, recessed frames, electrical and mechanical units of Work in or behind tile have been installed.
  - .4 Joints and cracks in tile substrates are coordinated with tile joint locations.
- .3 Verify tile subject to colour variations has been factory blended and packaged. If not factory blended, blend tiles at site before installing.

**3.2 PREPARATION**

- .1 Protect surrounding work from damage or disfiguration.
- .2 Vacuum clean surfaces and damp clean.
- .3 Seal substrate surface cracks with filler. Level existing substrate surfaces to flatness tolerances specified.
- .4 Install backing board over metal studs to board manufacturer's written instructions. Tape joints and corners.

**3.3 INSTALLATION**

- .1 Install tile to TTMAC Manual and manufacturer's written instructions.
- .2 Request tile pattern. . Do not interrupt tile pattern through openings.
- .3 Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions:
- .4 Cut and fit tile tight to penetrations through tile. Form corners neatly. Align wall and joints.
- .5 Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar or grout. Mortar Joint shall be 1 to 1.5 mm wide.
- .6 Adjust tile layout to minimize tile cutting. Maintain minimum tile width of one-half unit size unless indicated otherwise on Drawings.
- .7 Form internal angles square and external angles square.
- .8 Sound tile after setting. Replace hollow sounding units.
- .9 Keep control joints and expansion joints free of adhesive or grout. Apply sealant to joints.
- .10 Allow tile to set for a minimum of forty-eight (48) hours prior to grouting.
- .11 Install grout to TTMAC Manual and manufacturer's written instructions.
- .12 Apply sealant to junction of tile and dissimilar materials and planes at control joints and at locations indicated on Drawings.

- .13 Install prefabricated edge strips and movement joints at locations indicated or where exposed edge of tile meets different ing materials and exposed substrates.
- .14 Protect exposed edges of tile with properly sized transition strips; at uneven transitions between 6 mm and 13 mm, use sloped reducer strips.

### **3.4 INSTALLATION - ACCESSORIES**

- .1 Movement Joints: Install expansion control joints where indicated on Drawings, to TTMAC Detail 301MJ-2012/2013 ; keep control and expansion joints free of setting and grouting materials.

### **3.5 LIPPAGE TOLERANCES**

- .1 Field Verification of Finished Installation: To TTMAC Manual lippage limits as follows:

TILE TYPE	TILE SIZE	JOINT WIDTH	ALLOWABLE LIPPAGE
Glazed Ceramic Wall Type	150 mm x 450 mm	3 mm	.78 mm

### **3.6 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Clean tile and grout surfaces with manufacturer's recommended cleaning methods.

### **3.7 PROTECTION OF FINISHED WORK**

- .1 Section 01 70040: Protecting installed work.
- .2 Protect finished areas from traffic until setting materials have sufficiently cured to TTMAC requirements.
- .3 Protect finished areas from foot and wheel traffic from s for a minimum of twenty-four (24) hours after completion of grouting.

### **3.8 SCHEDULES**

- .1 Wall Tile Type: TTMAC Detail Tile Installed on Gypsum Board and concrete block – Thin-Set Method 304W-2012-2014.
  - .1 Tile Size: 300 x 600 mm
  - .2 Product and Colour: Stone Tile; Project Ceramica: Ice gloss/brillant, 15x45cm
  - .3 Adhesive and Grout: polymer modified as specified.

**END OF SECTION**



**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Suspended metal grid ceiling system and perimeter trim.
- .2 Lay-in Acoustic tile.
- .3 Acoustic tile glued in place

**1.2 RELATED SECTIONS**

- .1 Section 09 21 16 - Gypsum Board Assemblies: partition system.
- .2 Mechanical Division - Fire Suppression: Sprinkler heads in ceiling system.
- .3 Mechanical Division - Heating, Ventilating, and Air-Conditioning (HVAC): Air diffusion devices in ceiling system.
- .4 Electrical Division – Electrical : Light fixtures in ceiling system.
- .5 Electrical Division – Fire alarm components in ceiling system.

**1.3 REFERENCES**

- .1 ASTM C635/C635M-13a - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- .2 ASTM C636/C636M-13 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- .3 ASTM E1264-08e1 - Standard Classification of Acoustical Ceiling Products.
- .4 ULC-FR-14 - Fire Resistance Directory (2014 Edition).

**1.4 PERFORMANCE REQUIREMENTS**

- .1 Suspension System: Maximum deflection of 1:240 for acoustic ceiling system including integral mechanical and electrical components.

**1.5 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Sequencing:
  - .1 Sequence work to ensure acoustic ceilings are not installed until dust generating activities have terminated, and overhead work is completed, tested, and approved.
  - .2 Install acoustic units after interior wet work is dry.

**1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide data on metal grid system components, acoustic units.
- .3 Shop Drawings: Indicate grid layout and related dimensioning, junctions with other work or ceiling finishes, interrelation of mechanical and electrical items related to system.
- .4 Samples:

- .1 Submit two (2) samples, full size, illustrating material and finish of acoustic units.

## **1.7 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.
- .2 Sustainable Design Closeout Documentation: .

## **1.8 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide 5% of acoustical panels installed, and 2% of ceiling grid systems to Owner.

## **1.9 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Conform to AWCCBC requirements.
- .3 Grid Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.
- .4 Acoustic Unit Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.

## **1.10 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for fire rated assembly combustibility requirements for materials.

## **1.11 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Maintain uniform temperature of minimum 16 degrees C (60 degrees F), and maximum humidity of 40% prior to, during, and after acoustic unit installation.

## **Part 2 Products**

### **2.1 SUSPENSION SYSTEM - MATERIALS**

- .1 Non-fire Rated Grid: ASTM C635/C635M, Suspension System:
  - .1 Ceiling Type C1: Suspension Grid System:
    - .1 15/16" Prelude exposed grid system by: Armstrong, or
  - .2 Ceiling Type C2: Suspension Grid System:
    - .1 15/16" Prelude exposed grid system by: Armstrong, or
  - .3 Ceiling Type C3: Suspension Grid System:
    - .1 Existing suspended gypsum board to remain and where gypsum board is cut and removed, patch and make good gypsum board ceiling ready to receive glued on acoustic tile.
  - .4 Ceiling Type C4: Suspension Grid System:
    - .1 Existing suspended gypsum board to remain and where gypsum board is cut and removed, patch and make good gypsum board ceiling ready to receive glued on acoustic tile.

- .2 weight of lighting fixtures, etc. anchored to O.W.S.J.'s or slab above with expansion shields.
- .3 Main tee: double web design with a rectangular bulb, with 25mm (1") exposed flange with a rolled cap, cross tee holes at 150mm (6") o.c. and integral reversible splice.
- .4 Cross tee: double web design with a rectangular bulb with 25mm (1") exposed flange with a rolled cap; web extending to form a positive interlock between cross tee webs with the lower flange extended and offset.
- .5 Wall mounting: angle shape with a 19mm (3/4") exposed face. Moulding to be crimped at site with a tool to accept 'T' section and intersection.
- .6 Grid Finish: Colour White.
- .7 Accessories: Stabilizer bars clips splices perimeter moldings hold down clips required for suspended grid system.
- .8 Support Channels and Hangers: Galvanized Primed steel; size and type to suit application,

## **2.2 ACOUSTIC UNIT MATERIALS**

- .1 Acoustic Tile: ASTM E1264, conforming to the following:
  - .1 Ceiling Type C1: Acoustic Lay-In Panels:
    - .1 Armstrong Fissured Medium Texture Tile, Square Lay-in Item No. 755, 24' x 48" x 5/8"
    - .2 Lay the 24" x 48" ceiling tile into a suspended grid
  - .2 Ceiling Type C2: Acoustic Lay-In Panels:
    - .1 Armstrong Fissured Medium Texture Tile, Square Lay-in Item No. 756, 24' x 24" x 5/8"
    - .2 Lay the 24" x 24" ceiling tile into a suspended grid
  - .3 Ceiling Type C3: Existing Gypsum board ceiling:
    - .1 Match existing 305 mm x 305 mm x 19 mm (12" x 12" x 3/4") incombustible mineral fibre, fissured texture, adhered to suspended gypsum board ceiling, using Henry 237 AcoustiGum Acoustical Ceiling Tile Adhesive. Acoustic Tile, white factory-painted exposed surface: Armstrong Fine Fissured Tile Concealed, Item No. 746, 12' x 12" x 5/8"
  - .4 Ceiling Type C4: Acoustic Panels Glued to suspended Gypsum board ceiling:
    - .1 To match existing 305 mm x 305 mm x 19 mm (12" x 12" x 3/4") incombustible mineral fibre, fissured texture, adhered to suspended gypsum board ceiling, Provide new white factory-painted exposed surface: Armstrong Fissured Medium Texture Tile, Square Lay-in Item No. 756, 24' x 24" x 5/8"
      - .1 Existing suspended gypsum board to remain and where gypsum board is cut and removed, patch and make good gypsum board ceiling ready to receive glued on acoustic tile.
      - .2 Score the 24' x 24" ceiling tile vertically and horizontally to visually show the tile divided into 4 equal sized 12" x 12" areas that match the existing appearance of the existing 12" x 12" tile.
      - .3 Glue the 24' x 24" ceiling tile onto the suspended gypsum board ceiling using Henry 237 AcoustiGum Acoustical Ceiling Tile Adhesive. Install the tile so that the tile joints line up with the existing tile joints and that the directional fissure also lines up with fissure pattern of the existing tile.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that layout of hangers will not interfere with other work.

**3.2 INSTALLATION - LAY-IN GRID SUSPENSION SYSTEM**

- .1 Install suspension system to ASTM C636/C636M and manufacturer's written instructions, and as supplemented in this section.
- .2 Install system to ASTM E580/E580M.
- .3 Install system capable of supporting imposed loads to a deflection of 1/240 maximum.
- .4 Lay out system to a balanced grid design with edge units no less than 50% of acoustic unit size.
- .5 Locate system on room axis according to reflected plan.
- .6 Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
- .7 Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.
- .8 Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- .9 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers related carrying channels to span the extra distance.
- .10 Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability. Support fixture loads by supplementary hangers located within 150 mm (6 inches) of each corner; or support components independently.
- .11 Do not eccentrically load system, or produce rotation of runners.
- .12 Perimeter Molding:
  - .1 Install edge molding at intersection of ceiling and vertical surfaces with continuous gasket into bed of acoustic sealant.
  - .2 Use longest practical lengths.
  - .3 Mitre corners.
  - .4 Provide molding concealed molding at junctions with other interruptions.
- .13 Form expansion joints as detailed. Form to accommodate plus or minus 25 mm (1 inch) movement. Maintain visual closure.
- .14 Install light fixture boxes constructed of gypsum board acoustic panel above light fixtures to UL ULC-FR assembly requirements and light fixture ventilation requirements.

**3.3 INSTALLATION - ACOUSTIC UNITS**

- .1 Install acoustic units to manufacturer's written instructions.
- .2 Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.
- .3 Lay directional patterned units as indicated on Drawings. Fit border trim neatly against abutting surfaces.

- .4 Install units after above ceiling work is complete.
- .5 Install acoustic units level, in uniform plane, and free from twist, warp, and dents.
- .6 Cutting Acoustic Units:
  - .1 Cut to fit irregular grid and perimeter edge trim.
- .7 Where bullnose concrete block corners round obstructions occur, provide preformed closures to match perimeter molding.
- .8 Lay acoustic insulation for a distance of 1 200 mm (48 inches) either side of acoustic partitions as indicated.
- .9 Install hold-down clips to retain panels tight to grid system within 6 m (20 ft) of an exterior door.

**3.4 ERECTION TOLERANCES**

- .1 Maximum Variation from Flat and Level Surface: 3 mm in 3 m (1/8 inch in 10 ft).
- .2 Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**3.5 SCHEDULE**

- .1 Refer to Room Finish Schedule and as specified in this Section.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Resilient vinyl sheet flooring.
- .2      Resilient vinyl composite tile flooring.
- .3      Resilient vinyl base.
- .4      Resilient vinyl transitions accessories

**1.2            RELATED SECTIONS**

- .1      Section 03 54 00 - Self-leveling Underlayment
- .2      Section 06 41 11 - Architectural Cabinetwork
- .3      Section 08 11 13 - Standard Metal Doors, Frames and Sidelites
- .4      Section 09 21 16 - Gypsum Board Assemblies: Wall materials to receive application of base.
- .5      Section 09 68 13 - Tile Carpeting

**1.3            REFERENCES**

- .1      ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2      ASTM F1066-04(2014) e1 - Standard Specification for Vinyl Composition Floor Tile.
- .3      ASTM F1861-08(2012)e1 - Standard Specification for Resilient Wall Base.
- .4      ASTM F1913-04(2014) - Standard Specification for Vinyl Sheet Floor Covering Without Backing.
- .5      CAN/ULC-S102.2-10 - Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.
- .6      ISO 10581 Homogeneous vinyl floor covering

**1.4            SUBMITTALS FOR REVIEW**

- .1      Section 01 30 00: Submission procedures.
- .2      Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colours available.
- .3      Shop Drawings: Indicate seaming plan, borders and patterns.
- .4      Samples:
  - .1      Submit two (2) samples, 300 x 300 mm in size illustrating colour and pattern for each floor material for each colour specified.
  - .2      Submit two (2) 300 mm long samples of base and transition strip material for each colour specified.

**1.5 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements including special procedures, perimeter conditions requiring special attention .

**1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

**1.7 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Section 01 78 40: Maintenance and extra material requirements.
- .2 Extra Stock Materials to Turn Over to University:
  - .1 Provide half roll (20 m2) flooring sheet
  - .2 6100 Lin mm of base of each base and transition material specified.
  - .3 Leave 1 carton of tile for each 93 m2 (1000 sq ft) or less of each colour of vinyl tile installed, for University's future use. Label cartons as to contents and indicate areas where tiles were used.

**1.8 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

**1.9 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for flame/smoke rating requirements to CAN/ULC-S102.2 .

**1.10 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Protect roll materials from damage by storing .

**1.11 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Store materials for three (3) days prior to installation in area of installation to achieve temperature stability.
  - .2 Maintain ambient temperature required by adhesive manufacturer three (3) days prior to, during, and twenty-four (24) hours after installation of materials.

**1.12 WARRANTY**

- .1 Provide the Vinyl Composite Tile Limited 5-year Warranty, starting on the date of Ready for Takeover.

- .2 Provide the Sheet Vinyl Flooring Limited 20-year Warranty, starting on the date of Ready for Takeover.

## **Part 2 Products**

### **2.1 MANUFACTURERS – VINYL SHEET FLOORING**

- .1 Tarkett; Product: IQ Eminent.
- .2 Substitutions: Refer to Section 01 60 00 .

### **2.2 MATERIALS - VINYL SHEET FLOORING**

- .1 Vinyl Sheet without Backing:
  - .1 Meets performance standards of ASTM F1913, Standard Specification for Vinyl Sheet Floor Covering without Backing
  - .2 ISO 10581 Homogeneous vinyl floor covering.
  - .3 Binder content ISO 10581 Type I
  - .4 Commercial classification ISO 10874 34 Very Heavy
    - .1 Tarkett; Product:
      - .1 Option 1:Tarkett IQ Eminent 816 Grey CG,.
      - .2 Option 1: IQ Eminent 819 Dark Grey CG
      - .3 Colour and pattern through total thickness.

### **2.3 MATERIALS – VINYL COMPOSITE TILE WITH VINYL BASE**

- .1 VCT1 Vinyl Composite Tile: Meets the performance requirements of ASTM F 1066, Standard Specification for Vinyl composition Tile, Class 2 (Through pattern) and Class 1 (Solid Colour).
  - .1 Tarkett; Product: Tarkett VCT II: 557 Shooting Star
  - .2 Total Thickness: 3 mm.
- .2 VCT2 Vinyl Composite Tile: : Meets the performance requirements of ASTM F 1066, Standard Specification for Vinyl composition Tile, Class 2 (Through pattern) and Class 1 (Solid Colour).
  - .1 Tarkett; Product: Tarkett VCT II, colour as selected by Consultant.
  - .2 Total Thickness: 3 mm.
- .3 VCT3 Vinyl Composite Tile: : Meets the performance requirements of ASTM F 1066, Standard Specification for Vinyl composition Tile, Class 2 (Through pattern) and Class 1 (Solid Colour).
  - .1 Tarkett; Product: Tarkett VCT II, colour as selected by Consultant.
  - .2 Total Thickness: 3 mm.
- .4 VCT4 Vinyl Composite Tile: : Meets the performance requirements of ASTM F 1066, Standard Specification for Vinyl composition Tile, Class 2 (Through pattern) and Class 1 (Solid Colour).
  - .1 Tarkett; Product: Tarkett VCT II, colour as selected by Consultant.
  - .2 Total Thickness: 3 mm.
- .5 VCT5 Vinyl Composite Tile: : Meets the performance requirements of ASTM F 1066, Standard Specification for Vinyl composition Tile, Class 2 (Through pattern) and Class 1 (Solid Colour).



- .1 Tarkett; Product: Tarkett VCT II, colour as selected by Consultant.
- .2 Total Thickness: 3 mm.

## **2.4 MATERIALS – VINYL BASE**

- .1 Manufacturers:
  - .1 Johnsonite; Product: Johnsonite Traditional Cove Wall Base TV:
    - .1 Height: 4" (102 mm)
    - .2 Thickness: 1/8" (3.175 mm)
    - .3 Colour: 63 Burnt Umber B
  - .2 Substitutions: Refer to Section 01 60 00.

## **2.5 ACCESSORIES**

- .1 Subfloor Filler: type recommended by adhesive material manufacturer.
- .2 Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
  - .1 Manufacturer's Adhesives for Vinyl Composite Tile:
    - .1 Tarkett 100 Clear Thin Spread Adhesive Porous & Non-porous Substrate: 250-300 sq. ft./gal.
    - .2 Tarkett 975 Two-Part Polyurethane Adhesive Porous & Non-porous Substrate: 225-250 sq. ft. per gallon
    - .3 Tarkett 996 Two-Part Epoxy Adhesive Porous & Non-porous Substrate: 225-250 sq. ft. per gallon
    - .4 Tarkett 901 SpraySmart Adhesive Coverage: Porous & Non-porous Substrate: 200 sq. ft. per container (1,200 sq. ft. per carton)
  - .2 Manufacturer's Adhesives for Sheet Vinyl Flooring:
    - .1 Tarkett 925 Adhesive Coverage: Porous Substrate: 250-300 sq. ft./gal. Non-porous Substrate: 250-300 sq. ft. per gallon
    - .2 Tarkett 975 Two-Part Urethane Adhesive Coverage: Porous & Non-porous Substrate: 225-250 sq. ft. per gallon
    - .3 Tarkett 996 Two-Part Epoxy Adhesive Coverage: Porous & Non-porous Substrate: 225-250 sq. ft. per gallon
    - .4 Tarkett RollSmart Adhesive Coverage: Porous & Non-porous Substrate: 350 - 400 sq. ft. per gallon (3/8" Nap Paint Roller used with a paint tray)
    - .5 Tarkett Cold Weld Liquid Coverage: 175 – 200 lf. per. 4.5oz. tube
- .3 Edge Strips: Flooring material, colour as selected by Consultant:
  - .1 At floor finish transition strip between vinyl sheet flooring and carpet tile:
    - .1 Product: Johnsonite, CTA-XX-H.
  - .2 At floor finish transition strip between existing vinyl composite tile flooring and carpet tile:
    - .1 Product: Johnsonite, CTA-XX-H.
  - .3 At floor finish transition strip between vinyl composite tile flooring and vinyl composite tile flooring:
    - .1 Product: Johnsonite, CTA-XX-N.

- .4 Sealer and Wax: Types recommended by flooring manufacturer.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify concrete floors are dry to a maximum moisture content of 7%, and exhibit negative alkalinity, carbonization, or dusting.
- .3 Verify floor and lower wall surfaces are free of substances that may impair adhesion of new adhesive and finish materials.

#### **3.2 PREPARATION**

- .1 Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
- .2 Prohibit traffic until filler is cured.
- .3 Vacuum clean substrate.
- .4 Apply primer to floor and base surfaces.

#### **3.3 INSTALLATION - SHEET FLOORING**

- .1 Install sheet flooring to manufacturer's written instructions.
- .2 Spread only enough adhesive to permit installation of materials before initial set.
- .3 Set flooring in place, press with heavy roller to attain full adhesion.
- .4 Lay flooring with joints and seams in accordance with seaming plan and to produce minimum number of seams.
- .5 Install sheet flooring parallel to length of room. Provide minimum of one third (1/3) full roll width. Double cut sheet; provide continuously heat welded seal.
- .6 Terminate flooring at centreline of door openings where adjacent floor finish is dissimilar.
- .7 Install edge strips at unprotected or exposed edges, and where flooring terminates.
  - .1 Secure resilient strips by adhesive.
- .8 Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- .9 Install flooring in pan type floor access covers. Maintain floor pattern.
- .10 At movable partitions install flooring under partitions without interrupting floor pattern.
- .11 Install edge strips where indicated. Fit joints tightly.

#### **3.4 INSTALLATION – VINYL COMPOSITE TILE FLOORING**

- .1 Install tile flooring to manufacturer's written instructions.
- .2 Spread only enough adhesive to permit installation of materials before initial set.

- .3 Set flooring in place, press with heavy roller to attain full adhesion.
- .4 Lay flooring with joints and seams in accordance with seaming plan to produce minimum number of seams.
- .5 Install tile flooring parallel to length width of room. Provide minimum of one third (1/3) full roll width. Double cut sheet; provide continuously heat welded seal joint.
- .6 Terminate flooring at centreline of door openings where adjacent floor finish is dissimilar.
- .7 Install edge strips at unprotected or exposed edges, and where flooring terminates.
  - .1 Secure resilient strips by adhesive.
- .8 Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- .9 Install feature strips and base where indicated. Fit joints tightly.

### **3.5 INSTALLATION - BASE**

- .1 Fit joints tight and vertical. Maintain minimum measurement of 450 mm between joints.
- .2 Mitre internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premoulded units.
- .3 Install base on solid backing. Bond tight to wall and floor surfaces.
- .4 Scribe and fit to door frames and other interruptions.

### **3.6 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Remove access adhesive from floor, base, and wall surfaces without damage.
- .3 Clean, seal, and wax floor and base surfaces in accordance with manufacturer's written instructions.

### **3.7 PROTECTION OF FINISHED WORK**

- .1 Section 01 70 00: Protecting installed work.
- .2 Prohibit traffic on floor finish for forty-eight (48) hours after installation.

### **3.8 SCHEDULES**

- .1 Refer to Drawings for Room Finish Schedule, Flooring Finish Plan and Details.
- .2 Refer to Room Finish Schedule and Drawings for rooms to receive wall base types: resilient base.

END OF SECTION

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Repair of fluid applied epoxy flooring.

**1.2 RELATED SECTIONS**

- .1 Division 22 – Plumbing: plumbing fixtures.
- .2 Division 26 - Electrical: Recessed electrical access covers.

**1.3 REFERENCES**

- .1 [ASTM C722-04(2012) - Standard Specification for Chemical-Resistant Monolithic Floor Surfacing.]
- .2 [ASTM D570-98(2010)e1 - Standard Test Method for Water Absorption of Plastics.]
- .3 [ASTM D638-14 - Standard Test Method for Tensile Properties of Plastics.]
- .4 [ASTM D695-15 - Standard Test Method for Compressive Properties of Rigid Plastics.]
- .5 [ASTM D905-08(2013) - Standard Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading.]
- .6 [ASTM D1044-13 - Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.]
- .7 [ASTM D1360-98(2011) - Standard Test Method for Fire Retardancy of Paints (Cabinet Method).]
- .8 [ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.]
- .9 [ASTM E96/E96M-15 - Standard Test Methods for Water Vapor Transmission of Materials.]
- .10 [CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.]

**1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide data on specified products, describing physical, performance characteristics; sizes, patterns and colours available.
- .3 Samples: Submit two (2) samples, 150 mm in size illustrating colour and pattern for each floor material for each colour specified.

**1.5 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements indicating special procedures, perimeter conditions requiring special attention.

**1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and section 01 92 00: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

**1.7 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Section 01 78 40: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide 8 L (2 gal) of flooring material, of each colour selected, for building maintenance purposes.

**1.8 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience [and approved by the manufacturer].
- .4 Supervisor Qualifications: Trained by product manufacturer.

**1.9 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for flame/smoke rating requirements in accordance with CAN/ULC-S102.

**1.10 MOCK-UP**

- .1 Section 01 43 00: Requirements for mock-up.
- .2 Provide mock-up including flooring.
- .3 Locate where directed by Consultant.
- .4 Approved mock-up may remain as part of the Work.

**1.11 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Store resin materials in a dry, secure area.
- .3 Maintain minimum temperature of 13 degrees C.
- .4 Store materials for three days prior to installation in area of installation to achieve temperature stability.

**1.12 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Maintain ambient temperature required by manufacturer three (3) days prior to, during, and twenty-four (24) hours after installation of materials.

**1.13 WARRANTY**

- .1 Provide a three (3) year warranty from the date of Ready for Takeover, to include coverage for failure to meet specified requirements.
- .2 Include coverage against flooring delamination from substrate and degradation of surface finish.

**Part 2 Products**

**2.1 MANUFACTURERS**

- .1 Sherwin Williams; Product:
  - .1 Prime with Resuflor MPE
  - .2 Bodycoat with Resuflor
  - .3 Topcoat with Resuflor HTS
- .2 Other acceptable manufacturers offering functionally [and aesthetically] equivalent products.
  - .1 Sika Equivalent Product
- .3 Substitutions: Refer to Section 01 62 00.

**2.2 MATERIALS**

- .1 Flooring System: ASTM C722.
- .2 Matrix: Epoxy thermosetting with coloured mineral filler.
- .3 Prime floor with Resuflor MPE @ 6 mil DFT ( 250 sqft / gallon)
- .4 Bodycoat with Resuflor MPE @ 12-14 mils DFT ( 135 – 115 sqft/ gallon)
- .5 Topcoat with Resuflor HTS 100 @ 3 mils DFT ( 500 sqft / gallon)
- .6 Non-slip Surfacing: Mineral, colour as selected.
- .7 Flooring: Conform to the following Performance characteristics:
  - .1 Abrasion Resistance ASTM D4060, CS-17 wheel, 1000gm load, 1000 cycles: 83.1 mg loss
  - .2 Adhesion to Concrete ASTM D4541 >1,435 psi (9.9 MPa), concrete failure
  - .3 Adhesion to Concrete ASTM D7234 >480 psi (3.3 MPa) (max psi machine can register)
  - .4 Coefficient of Friction ASTM D2047 0.42
  - .5 Compressive Strength ASTM D695 13,500 psi (93.079 MPa)
  - .6 Percent Elongation ASTM D2370 5
  - .7 Shore D Hardness ASTM D2240 80-85 @ 0 sec ; 75-80 @ 15 sec
  - .8 Tensile Strength ASTM D2370 8,000 psi (55,158 MPa)
  - .9 Fire Resistance: [ASTM D1360], weight loss not to exceed limit for non-combustibility.
  - .10 Impact Resistance-Gardner Impact Tester-160 in/lb; no cracking, chipping or delamination.

**2.3 ACCESSORIES**

- .1 Epoxy Scratchcoat Mastic: Subfloor filler and subfloor patching compound:
  - .1 Resuflor 3513 by Sherwin Williams

**2.4 COLOURS**

- .1 Matrix: Colour as selected.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that surfaces are smooth and flat with maximum variation of 6 mm in 3 m, and are ready to receive work.
- .3 Verify concrete floors [have cured a minimum [twenty-eight (28)] days] are dry to a maximum moisture content of [7%], and exhibit negative alkalinity, carbonization, or dusting.
- .4 Verify floor and lower wall surfaces are free of substances that may impair adhesion of new adhesive and finish materials.

**3.2 PREPARATION**

- .1 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with sub-floor filler.
- .2 Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.
- .3 Remove any wax or other contaminants from the floor. Abrade the floor to a texture similar to ICRI CSP 3.
- .4 Vacuum clean substrate.
- .5 Apply primer to surfaces.

**3.3 INSTALLATION - FLOORING**

- .1 Install flooring to manufacturer instructions.
- .2 Apply to a minimum thickness of 3 mm.
- .3 Finish to smooth level surface.
- .4 Install flooring in pan type floor access covers.
- .5 At movable partitions install flooring under partitions without interrupting floor pattern.
- .6 Cove at vertical surfaces.

**3.4 PROTECTION OF FINISHED WORK**

- .1 Section 01 78 40: Protecting installed work.
- .2 Prohibit traffic on floor finish for forty-eight (48) hours after installation.
- .3 Barricade area to protect flooring until cured.

**3.5 SCHEDULES**

- .1 See Room Finish Schedule on Drawings

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Carpet tile.
- .2      Accessories.

**1.2            RELATED SECTIONS**

- .1      Section 03 54 00 - Self-leveling Underlayment: Floor substrate surface.
- .2      Section 09 21 16 - Gypsum Board Assemblies: Wall materials to receive application of base.
- .3      Section 09 65 10 - Resilient Flooring: Base finish.

**1.3            REFERENCES**

- .1      ASTM D2859-06(2011) - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
- .2      ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .3      ASTM E648-15e1 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- .4      CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .5      CAN/ULC-S102.2-10 - Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.
- .6      CRI Carpet Installation Standard - 2011
- .7      NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, 2011 Edition.

**1.4            SUBMITTALS FOR REVIEW**

- .1      Section 01 30 00: Submission procedures.
- .2      Product Data: Provide data on specified products, describing performance, physical characteristics; sizes, patterns, colours available, method of installation.
- .3      Shop Drawings: Indicate layout of joint direction of carpet weave.
- .4      Samples: Submit two (2) carpet tiles illustrating colour pattern design for each carpet colour selected.

**1.5            SUBMITTALS FOR INFORMATION**

- .1      Section 01 30 00: Submission procedures.
- .2      Installation Data: Manufacturer's special installation requirements indicating special procedures, perimeter conditions requiring special attention.
- .3      Sustainable Design:
  - .1      Provide required documentation for Product recycled content, regional materials low-emitting materials.



- .2 Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

## **1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- .3 Sustainable Design Closeout Documentation: .

## **1.7 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Extra Stock Materials: Provide carpet tiles of each colour and pattern selected for a quantity of 5% of the area of carpet tile included in the work.

## **1.8 QUALITY ASSURANCE**

- .1 Products of This Section: Manufactured to ISO 9000 and ISO 14000 certification requirements.
- .2 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .3 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and approved by the manufacturer.

## **1.9 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for carpet flammability requirements in accordance with CAN/ULC-S102 .
- .2 Conform to ASTM E648 Class I for flooring radiant panel test.
- .3 Conform to ASTM D2859 for surface flammability ignition test.

## **1.10 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Store materials for three (3) days prior to installation in area of installation, to achieve temperature stability.
  - .2 Maintain minimum 21 degrees C ambient temperature three (3) days prior to, during and twenty-four (24) hours after installation materials.

## **1.11 WARRANTY**

- .1 Provide the carpet manufacturer's lifetime limited warranty against excessive surface wear, static, delamination, edge ravel, zippering and backing resiliency loss, starting on the date of Ready for Takeover.

## **Part 2 Products**

### **2.1 MANUFACTURERS - CARPET TILE TYPE 1**

- .1 Product Manufacturer: Tarkett
- .2 Substitutions: Refer to Section 01 60 00.

**2.2 CARPET TILE TYPE 1**

- .1 Carpet Tile: Tarkett ethos® carpet tile with Omnicoat Technology®
  - .1 Style: 10887 Geonit
  - .2 Colour: 42710 Shadow Gris.
  - .3 Total Minimum Recycled Content: 58.8%
  - .4 Pre-Consumer: 27.5%
  - .5 Post-Consumer: 31.4%
  - .6 Product Size: 24" x 24" Tile
  - .7 Secondary Backing: 50% Recycled Content
  - .8 Intermediate Layer: Fiberglass Reinforced Sealant
  - .9 Product Construction: No Delamination per ASTM D-3936
  - .10 Secondary Backing Density: 65.0 lbs/cu ft 1041 kg/cu m
  - .11 Secondary Backing Thickness: 0.050 inch 1.3 mm
  - .12 Total Weight: 101.1 oz/sq yd +/-5% (3427 g/sq m)

**2.3 ACCESSORIES**

- .1 Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.
- .2 Primers and Adhesives: Compatible with carpet material and Recommended by carpet manufacturer. Releasable type.
  - .1 Wet Spread Adhesive and Primer:
    - .1 Primer: Tarkett C-56
    - .2 Adhesive: Tarkett C-EX
- .3 Base and Transition Strips: As specified in Section 09 65 10.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that surfaces are smooth and flat with maximum variation of 6 mm in 3 m, and are ready to receive work.
- .3 Verify concrete floors are dry to a maximum moisture content of 7%; and exhibit negative alkalinity, carbonization, or dusting.

**3.2 PREPARATION**

- .1 Prepare floor to CRI Carpet Installation Standard.
- .2 Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.
- .3 Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- .4 Vacuum clean substrate.

**3.3 INSTALLATION**

- .1 Install carpet tile, accessories, primer and adhesive to manufacturer's written instructions in compliance to CRI Carpet Installation Standard.
- .2 Install carpet tile accessories and adhesive in accordance with manufacturer's written instructions.
- .3 Integrate and blend carpet from different cartons to ensure minimal variation in colour match.
- .4 Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- .5 Lay main field colour carpet tile to the following pattern:
  - .1 Vertical Ashlar pattern, set parallel to building lines.
- .6 Locate change of floor finish type, colour or pattern between rooms under door centerline.
- .7 Fully adhere carpet tile to substrate.
- .8 Bind cut edges where not concealed by edge strips.
- .9 Refer to Room Finish Schedule and Drawing details for base finish up vertical surfaces to form base where scheduled.

**3.4 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Remove excess adhesive without damage, from floor, base, and wall surfaces.
- .3 Clean and vacuum carpet surfaces.

**3.5 PROTECTION OF FINISHED WORK**

- .1 Section 01 70 00: Protecting installed work.
- .2 Do not permit traffic over unprotected floor surface.

**3.6 SCHEDULES**

- .1 Refer to Drawings for Room Finish Schedule, Flooring Finish Plan and Details.
- .2 Refer to Room Finish Schedule and Drawings for rooms to receive wall base types: resilient base.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Acoustic Panels Cloud Type and ceiling hung.
- .2 Aircraft cable and manufacturer's mounting hardware to support Acoustic Cloud Panels, complete with stainless steel hanger rods.
- .3 Installation and fasteners

**1.2 RELATED SECTIONS**

- .1 Existing suspended gypsum bard ceilings and existing suspended acoustic tile in T-bar support grid.
- .2 Section 09 51 13 - Acoustic Panel Ceilings

**1.3 REFERENCES**

- .1 ASTM C423-09a - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- .2 ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .3 CAN/ULC-S102-10 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.4 SYSTEM DESCRIPTION**

- .1 Assembly of components includes shop fabricated acoustic panels and ceiling hung suspension components.
- .2 Flame spread and smoke developed ratings as required by code

**1.5 PERFORMANCE REQUIREMENTS**

- .1 Acoustic Performance:
  - .1 Ceiling Panels shall have noise reduction coefficient values of the following when tested in accordance with ASTM - C423: Noise Reduction Coefficient): NRC 0.85
- .2 Manufactured from flame-retardant fiber as new material to ensure ASTM E84 class A and Can/ULC-S102 Class A fire rating certification.
- .3 Moisture Resistance: High moisture resistance properties.
- .4 Impact Resistance: High impact resistant properties.

**1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data Manufacturer's descriptive literature for panel system, including component items data, physical sizes, and clearances required.
- .3 Shop Drawings:

- .1 Indicate general room layout showing acoustic panel locations and orientation, reflective and absorptive, required construction and anchorage details, rough openings affected, size and tolerances of openings.

- .4 Samples: Submit two (2) samples, minimum 150 x 150 mm, showing absorptive panel.

## **1.7 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Manufacturer's Certificate: Certify that products meet or exceed specified performance requirements.
  - .1 Certify system acoustical and fire resistance performance.
- .3 Test Reports:
  - .1 Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.
  - .2 Submit tests reports from a testing laboratory indicating that the components have passed all noted fire resistance requirements and acoustical requirements.

## **1.8 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

## **1.9 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience .

## **1.10 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for fire rated panel construction and combustibility requirements for materials.

## **1.11 SITE CONDITIONS**

- .1 Installation of acoustical treatment shall not begin until all wet work is completely dry. These materials are designed for installation under standard occupancy conditions from 15°C (60°F) to 30°C (85°F) at not more than 80% relative humidity in an enclosed building.
- .2 The acoustical contractor shall be responsible for the examination and acceptance of all surfaces and conditions affecting the proper installation of their material, and shall not proceed until all unsatisfactory conditions have been corrected by others.

## **1.12 WARRANTY**

- .1 Provide the Manufacturers Limited 2-year Warranty, starting on the date of Ready for Takeover.

**Part 2 Products**

**2.1 MANUFACTURERS: ACOUSTIC CEILING PANELS**

- .1 Product: Hush Acoustical Clouds – Triangle, custom size 48” as indicated on Drawings.
- .2 For substitutions by other acceptable manufacturers offering functionally and aesthetically equivalent products, refer to Section 01 60 00.

**2.2 COMPONENTS**

- .1 Acoustic Ceiling Panel AC1:
  - .1 Product Name and Number: Hush Acoustical Clouds – Triangle, custom size 48” as indicated on Drawings.
- .2 Absorptive Acoustic Ceiling Panel Construction:
  - .1 The unit sizes shall be as follows:
    - .1 Unit Dimensions: Triangle, custom size 48” as indicated on Drawings
    - .2 Material: 100% PET (Polyethylene Terephthalate) fibers, 60 +/- recycled content
    - .3 Color: Vanilla
  - .2 Acoustic panels shall have a Noise Reduction Coefficient (NRC) as specified in 1.5 PERFORMANCE REQUIREMENTS.
  - .3 Panel is installed using direct suspension method with the following-brackets and stainless steel aircraft suspension cable:
  - .4 Acoustic Ceiling Panels Accessories:
    - .1 Suspension Cable:
      - .1 Aluminum aircraft cable supplied by Acoustic Ceiling Panel Manufacturer
      - .2 Use grippers for adjustable height or swaged cable ends/terminals for secure fastening cable ends to cloud mounting hardware supplied by Acoustic Ceiling Panel Manufacturer.
    - .2 Hardware mount to the ceiling clouds with Shoulder Suspension Mount:
      - .1 Use the ceiling cloud manufacturer's mounting hardware provided:
      - .2 Ceiling Cloud with support ribbing
      - .3 Shoulder-brackets with bolts attached to the ribbing
      - .4 Attach suspension cables to the Shoulder-brackets
      - .5 Align the shoulder-brackets with the small pre-cut out holes on the ribbing of the ceiling cloud and fasten. Provide other support locations to adjust for custom spacing of support cables
    - .3 Hardware mount to suspended gypsum board ceiling panels:
      - .1 Use the ceiling cloud manufacturer's mounting hardware provided:
      - .2 Single Anchor with toggle bolt, bolt and nut components supplied by ceiling cloud manufacturer.
      - .3 Hardware mount to T-bar suspension grid of suspended acoustic tile
      - .4 Use the ceiling cloud manufacturer's mounting hardware provided:

.5 U-Anchor bracket and screws

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that adjacent materials and surfaces are dry, in a dust free environment, free of obstructions, and ready to receive system installation.
- .3 Verify ceiling construction, painting, finish woodwork is complete prior to installation.
- .4 Verify ceiling and wall penetrations have been acoustically sealed.

**3.2 INSTALLATION**

- .1 Install panels to manufacturer's instructions.
- .2 Install and orient panels as identified on approved shop drawings.
- .3 Align and secure intermediate and perimeter retainers, level and plumb.
- .4 Use expansion bolt fasteners to ceiling to support acoustic ceiling panels
- .5 Install acoustic panels to pattern determined by shop drawings. Orient surface facings of panels to optimize absorption characteristics.
- .6 Place and position panels plumb and level.

**3.3 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Clean finish surfaces and accessories.
- .3 Spot clean, if required, according to manufacturer's instructions using a mild solvent, upholstery shampoo, or foam from a mild detergent.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Acoustic panels, wall mounted.
- .2 Installation and adhesive

**1.2 RELATED SECTIONS**

- .1 Section 09 21 16 - Gypsum Board Assemblies: Wall support construction for acoustic panel assemblies.

**1.3 REFERENCES**

- .1 ASTM C423-09a - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
- .2 ASTM E84-15a - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .3 CAN/ULC-S102-18 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.4 SYSTEM DESCRIPTION**

- .1 Assembly of components includes shop fabricated acoustic wall mounted fabric panels/tiles.
- .2 Fabric: Flame spread and smoke developed ratings as required by code

**1.5 PERFORMANCE REQUIREMENTS**

- .1 Acoustic Performance:
  - .1 Ceiling Panels shall have noise reduction coefficient values of the following when tested in accordance with ASTM - C423: Noise Reduction Coefficient): NRC 0.65
- .2 Manufactured from flame-retardant fiber as new material to ensure ASTM E84 class A and Can/ULC-S102 Class A fire rating certification.
- .3 Moisture Resistance: High moisture resistance properties.
- .4 Impact Resistance: High impact resistant properties.

**1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data Manufacturer's descriptive literature for panel system, including component item data, physical sizes, and clearances required.
- .3 Shop Drawings: Indicate general room layout showing acoustic panel locations and orientation, reflective and absorptive, required construction and anchorage details, rough openings affected, size and tolerances of openings.
- .4 Samples: Submit two (2) tile samples, for each colour specified.



**1.7 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Manufacturer's Certificate: Certify that products meet or exceed specified performance requirements.
  - .1 Certify system acoustical and fire resistance performance.
  - .2 Certify that installers have been trained and are qualified to install the components.
- .3 Test Reports:
  - .1 Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and other supportive data.
  - .2 Submit tests reports from a testing laboratory indicating that the components have passed all noted fire resistance requirements and acoustical requirements.

**1.8 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

**1.9 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience .

**1.10 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for fire rated panel construction and combustibility requirements for materials.

**1.11 SITE CONDITIONS**

- .1 Installation of acoustical treatment shall not begin until all wet work is completely dry. These materials are designed for installation under standard occupancy conditions from 15°C (60°F) to 30°C (85°F) at not more than 80% relative humidity in an enclosed building.
- .2 The acoustical contractor shall be responsible for the examination and acceptance of all surfaces and conditions affecting the proper installation of their material, and shall not proceed until all unsatisfactory conditions have been corrected by others.

**1.12 WARRANTY**

- .1 Provide the Manufacturers Limited 2-year Warranty, starting on the date of Ready for Takeover.

**Part 2 Products**

**2.1 MANUFACTURER: ACOUSTIC WALL TILE**

- .1 Hush Acoustics.; Product: HUSH Etched Wall Tiles.
- .2 For substitutions by other acceptable manufacturers offering functionally and aesthetically equivalent products, refer to Section 01 60 00.

## **2.2 COMPONENTS**

- .1 Absorptive Acoustic Wall Panel Construction:
  - .1 Hush Acoustics - Etched #9 - Full Stripe
  - .2 Panel Size: 300 mm x 300 mm
  - .3 Thickness: 12mm
  - .4 Colour Options tagged as shown on the Drawings:
    - .1 Element colours:
      - .1 Forest in 2nd Floor
      - .2 Vanilla in 3rd Floor
  - .5 Product Placement:
    - .1 Walls
    - .2 Install grouped wall tiles with stripe oriented vertically, so that stripe is uniformly oriented vertical between top and bottom of the wall area shown on Drawings
  - .6 Composition: 100% PET (Polyethylene Terephthalate); 60% recycled material
- .2 Adhesive: Construction adhesive as recommended by Acoustic Wall Tile Manufacturer

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that adjacent materials and surfaces are dry, in a dust free environment, free of obstructions, and ready to receive system installation.
- .3 Verify wall construction, painting, is complete prior to installation.

### **3.2 INSTALLATION**

- .1 Install and orient panels as identified on approved shop drawings.
- .2 Install acoustic panels to pattern determined by shop drawings. Orient surface facings of panels to optimize absorption characteristics.
- .3 Razor trim edges on flat work table. Do not razor cut on gypsum board panel surfaces.
- .4 Place and position panels plumb and level. Install panels to manufacturer's instructions:
  - .1 Locate the back of the Wall Tile. (Note: The back of the tile will have no etched patterns or beveled edges).
  - .2 On the back of the Wall Tile, starting at the top corner, apply a bead of adhesive that is approximately 1/4" wide.
  - .3 Continue the bead of adhesive across the width of the Wall Tile.
  - .4 Working quickly, complete the Wall Tile in a back-and-forth pattern.
  - .5 Your Wall Tile is now ready to be installed on the wall in the desired location. (Please note that the Wall Tile should be mounted on the wall within 60 seconds of applying adhesive).

- .6 With the Wall Tile located on the wall, apply firm pressure evenly over the entire surface of the Wall Tile and hold it in place for a few seconds. The Wall Tile is now installed. Repeat steps 1-6 for all remaining tiles.

### **3.3 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Clean finish surfaces and accessories.
- .3 Spot clean, if required, according to manufacturer's instructions using a mild solvent, upholstery shampoo, or foam from a mild detergent.

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Surface preparation.
- .2 Painting.
- .3 Supply and install paint as indicated on the Drawings, Room Finish Schedule and specified herein. Provide painting including but not limited to following:
- .4 Exposed means visible in completed Work. In case of closets, cabinets and drawers, it includes their interiors.
- .5 Provide paint to exposed building surfaces as indicated on the Drawings, Room Finish Schedule and specified herein.
- .6 Paint Products which are installed throughout the Work that are required to be painted or finished and that are left unfinished or unpainted by other sections of the Work.
- .7 Painting and finishing shall include all new surfaces and all existing base building surfaces and as noted on Drawings.

**1.2 RELATED SECTIONS**

- .1 Section 01 11 00 – Miscellaneous General Work: cutting and patching and making good at mechanical and electrical service penetrations and exposed mechanical and electrical service lines
- .2 Mechanical Division - Heating, Ventilating, and Air-Conditioning (HVAC) and Mechanical Identification.
- .3 Electrical Division – Electrical Identification.

**1.3 REFERENCES**

- .1 ASTM D523-89 - Test Method for Specular Gloss
- .2 OPCA - Ontario Painting Contractors Association
- .3 SSPC - Steel Structures Painting Council, "Steel Structures Painting Manual, Vol. 2"
- .4 ULC - Underwriters' Laboratories of Canada
- .5 CAN/ULC-S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

**1.4 ADMINISTRATIVE REQUIREMENTS**

- .1 Section 01 30 00: Project management and coordination procedures.
- .2 Coordination: Coordinate with other Work having a direct bearing on Work of this section.
- .3 Scheduling:
  - .1 Schedule painting operations to prevent disruption of and by other trades.
  - .2 Schedule painting operations to prevent disruption of occupants in and about building.

## **1.5 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data:
  - .1 Submit Product data on all specified finishing products.
  - .2 Submit copies of WHMIS MSDS - Material Safety Data Sheets.
- .3 Samples:
  - .1 Submit two (2) samples, 100 x 150 mm (4 x 6 inch) in size illustrating selected colours and textures for each colour selected.
- .4 Installation Data: Manufacturer's special installation requirements including special surface preparation procedures and substrate conditions requiring special attention.
- .5 Schedule:
  - .1 If requested, submit Work schedule for various stages of Work when painting occupied areas for Consultant's review and Owner's approval.
  - .2 Submit schedule minimum of forty-eight (48) hours in advance of proposed operations.
  - .3 Obtain written authorization from Consultant for changes in Work schedule.

## **1.6 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.
- .2 Record Documentation: Upon completion, provide itemized list of products used including the following:
  - .1 Manufacturer's name.
  - .2 Product name, type and use.
  - .3 Colour coding number.
  - .4 Manufacturer's Material Safety Data Sheets (MSDS).

## **1.7 MAINTENANCE MATERIAL SUBMITTALS**

- .1 Section 01 78 39: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide properly packaged maintenance material as follows.
  - .1 4 (1 gal) of each coating type and colour to Owner.
  - .2 Label each container with colour, type, texture and room locations in addition to manufacturer's label.

## **1.8 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Installer Qualifications: Qualified journeypersons or apprentices, provided they work under direct supervision of qualified journeyperson in accordance with trade regulations Company specializing in performing the work of this section with minimum three (3) years documented experience.
- .3 Conform to OPCA Painting Manual requirements for materials, preparation and workmanship.
- .4 Paint Products: Paint manufacturers and paint Products listed under the Approved Product List section of the OPCA manual and in this Section.

**1.9 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for flame and smoke rating requirements for finishes, storage, mixing, application and disposal of paint and related waste materials.

**1.10 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 60 00: Transport, handle, store, and protect products.
- .2 Deliver products to site in sealed and labeled containers showing manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, colour designation, and written instructions for mixing and reducing.
- .3 Store paint materials at minimum ambient temperature of 7 degrees C (45 degrees F) and a maximum of 32 degrees C (90 degrees F), in dry, ventilated area and as required by manufacturer's written instructions.
- .4 Provide adequate fireproof storage lockers and warnings as required by authorities having jurisdiction for storing toxic and volatile/explosive/flammable materials.

**1.11 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Do not perform painting or decorating Work when ambient air and substrate temperatures are below 10 degrees C (50 degrees F) for both interior and exterior work, or as required by paint product manufacturer.
  - .2 Do not perform painting or decorating Work when relative humidity is above 85% or when dew point is less than 3 degrees C (5 degrees F) variance between the air/surface temperature required by paint Product manufacturer.
  - .3 Provide suitable weatherproof covering and sufficient heating facilities to maintain minimum ambient air and substrate temperatures for twenty-four (24) hours before, during and after paint application.
  - .4 Do not perform painting and decorating Work when maximum moisture content of substrate exceeds:
    - .1 Wood: 15%.
    - .2 Plaster and Gypsum Wallboard: 12 %.
    - .3 Masonry, Concrete, and Concrete Unit Masonry: 12%.
    - .4 Concrete Floors: 8%.
  - .5 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple cover patch test.
  - .6 Test concrete, masonry and plaster surfaces for alkalinity as required.
  - .7 Provide minimum lighting level of 323 lux (30 ft candles) is provided on surfaces to be painted or decorated.

**1.12 WASTE MANAGEMENT AND DISPOSAL**

- .1 Dispose of waste materials in accordance with Provincial Local authorities having jurisdiction.
- .2 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .3 Place non-reusable materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

- .4 To reduce contaminants entering waterways, sanitary/storm drain systems or into the ground, adhere to the following procedures:
  - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
  - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
  - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
  - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
  - .5 Dry out empty paint cans prior to disposal or recycling.
  - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .5 Set aside and protect surplus and uncontaminated finish materials and deliver or arrange collection for verifiable re-use or re-manufacturing.

#### **1.13 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; material shrinkage, cracking, splitting and defective workmanship including but are not limited to failure in bubbling, blistering and delamination.

### **Part 2 Products**

#### **2.1 MATERIALS**

- .1 "Top Line" products only are acceptable. Supply top line quality, manufactured by Benjamin Moore & Co. Ltd., or Dulux line by I.C.I. (Canada) Paints Inc., or Sico Paints, or Pratt & Lambert Paints Inc., or Sherwin-Williams Company, or other manufacturer acceptable to the University.
- .2 University reserves right to refuse any paint or finishing material if in his/her opinion it is not suitable or adequate for the use for which it is proposed.
- .3 Paint and finishing materials for each procedure listed in Finish Schedule shall be products of single manufacturer, and while based on products manufactured by Sherwin Williams other equivalent named paints by specified Top Line Products are acceptable. Paint and finishing materials shall be highest grade available by the manufacturer for the specific application. Products submitted as "or equal" options must be within 5g/l of the VOC content and meet the same performance specifications of the products listed herein.
- .4 Finish Schedule are based on products manufactured by:
  - .1 Benjamin Moore and Co. Ltd.
  - .2 General Paints
  - .3 ICI Paints (Canada) Inc. – Dulux line
  - .4 Niagara
  - .5 PPG Canada Inc. (Coatings and Resins Division)
  - .6 Para Paints Canada Inc.

- .7 Sherwin-Williams Company
- .8 Sico Coatings
- .5 Paint shall have excellent flowing and brushing properties. Paint shall cure free of sags, runs, wrinkles to yield desired finish specified
- .6 All paints must meet the VOC guidelines in accordance with the VOC Legislation announced by the Government of Canada, Canada Gazette, and in effect as of September 9th, 2010. All materials used shall be lead and mercury free and shall have the lowest VOC content possible while maintaining the performance characteristics required for the project.
- .7 Where required, paints and coatings shall meet flame spread and smoke developed ratings designated by local Code requirements and/or authorities having jurisdiction.
- .8 PAINT SUPPLIERS: Sherwin-Williams or equal as noted in acceptable list of suppliers. Note: equal products must be within 5 grams of the VOC limits associated with the SW product and meet or exceed the performance characteristics of the SW product listed for the specific application.
- .9 Other manufacturer's products bearing EcoLogo shall be deemed acceptable provided they meet other requirements specified herein.
- .10 Intumescent, Fire Retardant Paints: To meet or exceed CAN/ULC-S102-M, bear ULC label, and have following surface burning characteristics:
  - .1 Flame-Spread Rating 25 or less
  - .2 Smoke-Developed Classification 50 or less
  - .3 S 607 Water borne coating for interior use and S605 for external use Nullfire Intumescent Fire
  - .4 FireProofing Systems manufactured by Carboline Division of StonCor or approved manufacture.

## **2.2 MIXING AND TINTING**

- .1 Coatings: 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 colour and gloss uniformity.
- .2 Paste, Powder or Catalyzed Paint: Mixed in accordance with manufacturer's written instructions.
- .3 Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
  - .1 Do not exceed paint manufacturer's recommendations for addition of thinner. Do not use kerosene or any such organic solvents to thin water-based paints.
  - .2 Thin paint for spraying in accordance with paint manufacturer's instructions.

## **2.3 FINISH AND COLOUR**

- .1 Finish: To Custom, Premium Grade finish requirements.
- .2 Colours and Finishes: to be provided after award of Contract.
  - .1 Exterior Colours: Based on three (3) base colours and two (2) accent colours with a maximum of one (1) deep or bright colour. No more than six (6) colours will be selected for entire project.



- .2 Exterior colours of new metal surfaces shall be coordinated to match the prefinished parapet metal siding, and the prefinished aluminum windows and storefronts. Exposed siding support steel posts and brackets shall coordinate and colour match the siding
- .3 Interior Colours: Based on five (5) base colours and three (3) accent colours with a maximum of one (1) deep or bright colour. No more than eight (8) colours will be selected for entire project and no more than three (3) colours will be selected in each area.

## **2.4 GLOSS/SHEEN RATINGS**

- .1 Paint gloss is defined as the sheen rating of applied paint with the following values:

Gloss Level	Description	Gloss @ 60 degrees	Sheen @ 85 degrees
G1	Matte Finish (flat)	0 to 5	10 max.
G2	Velvet-Like Finish	0 to 10	10 to 35
G3	Eggshell Finish	10 to 25	10 to 35
G4	Satin-Like Finish	20 to 35	35 min.
G5	Traditional Semi-Gloss Finish	35 to 70	
G6	Traditional Gloss	70 to 85	
G7	High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces as specified:
  - .1 All walls Satin or Semi-gloss
  - .2 All floors Semi-gloss or High-gloss
  - .3 All trim and doors Semi-gloss or High-gloss
  - .4 All signage Flat

## **2.5 INTERIOR PAINT SYSTEMS**

- .1 Ferrous Metal - Unexposed
  - .1 No further finishing required except for touch-up of damaged surfaces with Procryl Universal Primer, B66-310 Series(2-4 mils dft)
- .2 Ferrous Metal - Exposed
  - .1 1st Coat: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series (2-4 mils dft)
  - .2 2nd Coat: Pro Industrial 100 (2.2-3.5 mils dft)
  - .3 3rd Coat: Pro Industrial 100 (2.2-3.5 mils dft)
- .3 Hot Ferrous Metal under 122 deg C - (250 deg F) (Heating Radiators if exposed)
  - .1 1st coat SW Zero VOC Acrylic Paint B66-660 (1-1.5mils dft)
  - .2 2nd coat SW Zero VOC Acrylic Paint B66-660 (1-1.5mils dft)
- .4 Hot Ferrous Metal under 185 deg C - (400 deg F), (Valve bodies, strainers and other items on high temperature lines if exposed)
  - .1 2 coats heat resistant enamel containing not less than 40% solids by volume aluminum flakes.
  - .2 1st coat SW Silverbrite Aluminum Paint B59S11 (1-1.5mils dft)
  - .3 2nd coat SW Silverbrite Aluminum Paint B59S11 (1-1.5mils dft)
- .5 Insulated Pipes, Ducts, Conduit, Valves, Fittings and Equipment and Ancillary Items where "Exposed" in Completed Work

- .1 1st Coat: ProGreen 200 Interior Latex Primer, B28W600 (1.5 mils dft)
- .2 2nd Coat Pro Mar 200 0 VOC
- .3 3rd Coat: Pro Mar 200 0 VOC
- .6 Non-insulated Pipes, Ducts, Conduit, Valves, Fittings and Equipment and Ancillary Items where "Exposed" in Completed Work
  - .1 1st Coat: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series (2-4 mils dft)
  - .2 2nd Coat Pro Industrial Acrylic B66 Series
  - .3 3rd Coat: Pro Industrial Acrylic B66 Series
- .7 Galvanized Steel/Aluminum
  - .1 1st Coat: Pro Industrial Pro-Cryl Universal Primer, B66-310 Series (2-4 mils dft)
  - .2 2nd Coat: Pro Mar 200 0 VOC
  - .3 3rd Coat: Pro Mar 200 0 VOC
- .8 Woodwork - Vertical Surfaces for Painting
  - .1 1st Coat: Wall & Wood Primer, B28W8111 (1.8 mils dft)
  - .2 2nd Coat: : Pro Industrial Acrylic B66 Series
  - .3 2nd Coat: : Pro Industrial Acrylic B66 Series
  - .4 Finish: (Semi-gloss) (High-gloss)
- .9 Woodwork - For Clear Finishes and Staining
  - .1 Follow manufacturer's instructions for number of coats and method of applying interior stain and clear finishes.
- .10 Woodwork - Interior of Drawers
  - .1 1 coat water based Minwax Polyurethane
  - .2 Finish: (Semi-gloss) (High-gloss)
- .11 Woodwork - Natural or Stained Close Grain Wood (Fire Retardant) as per Flame Control chosen specific to project
  - .1 1 coat non bleeding alkyd stain
  - .2 1 coat sealer
  - .3 2 coats fire retardant intumescent varnish
  - .4 1 coat fire resistant varnish
  - .5 Finish: Semi-gloss
- .12 Woodwork - Natural or Stained Open Grain Wood (Fire Retardant) as per Flame Control chosen specific to project
  - .1 1 coat stained filler
  - .2 1 coat sealer
  - .3 2 coats fire retardant intumescent varnish, flat
  - .4 1 coat fire resistant varnish
  - .5 Finish: Semi-gloss
- .13 Cast-In-Place Concrete - Vertical Surfaces
  - .1 1 coat Loxon Masonry Primer A24W3 (3.2 mils dft)
  - .2 2nd Coat: Pro Mar 200 0 VOC

- .3 3rd Coat: Pro Mar 200 0 VOC
- .4 Finish: (Satin) (Semi-gloss)
- .14 Cast-In-Place Concrete Floors
  - .1 2 coats SW Waterbased Catalyzed Epoxy B70 Series(2.5-3mils dft)
  - .2 Finish: (Semi-gloss) (High-gloss)
- .15 Underside of Precast Concrete Floor Slabs
  - .1 coat Loxon Masonry Primer A24W3 (3.2mils dft)
  - .2 2nd Coat: Pro Mar 200 0 VOC
  - .3 3rd Coat: Pro Mar 200 0 VOC
  - .4 Finish: Flat
- .16 Concrete Block Masonry
  - .1 1 coat latex Preprite Block Filler B25W25 (8 mils dft)
  - .2 2nd Coat: Pro Mar 200 0 VOC
  - .3 3rd Coat: Pro Mar 200 0 VOC
  - .4 Finish: (Satin) (Semi-gloss)
- .17 Gypsum Board and Plaster - Vertical Surfaces
  - .1 1 coat latex Pro Mar 200 0 VOC Latex Sealer
  - .2 2nd Coat: Pro Mar 200 0 VOC (1.8 mils dft)
  - .3 3rd Coat: Pro Mar 200 0 VOC (1.8 mils dft)
  - .4 Finish: (Satin) (Semi-gloss)
- .18 Gypsum Board, Plaster and Concrete Block Masonry- Vertical Surfaces Where Existing Wallcoverings are Scheduled to be Removed
  - .1 DSD-03 and DSD-04 Surface repair:
    - .1 Primer Paint "Extreme Block®, Stain Blocking Primer-Sealer, B49W00600 (US) B49WQ0600 (Canada) from Sherwin-Williams" for preparing the walls for drywall compound skimming by Section 09 21 16 - Gypsum Board.
  - .2 Interior Paint System after drywall compound skimming by Section 09 21 16 is complete:
    - .1 1 coat latex Pro Mar 200 0 VOC Latex Sealer
    - .2 2nd Coat: Pro Mar 200 0 VOC (1.8 mils dft)
    - .3 3rd Coat: Pro Mar 200 0 VOC (1.8 mils dft)
    - .4 Finish: (Satin) (Semi-gloss)
- .19 Gypsum Board and Plaster – Ceilings
  - .1 1 coat SW Waterborne Dryfall Lo VOC B42 Series
  - .2 Finish: Flat
  - Or
  - .1 1 coat latex Pro Mar 200 0 VOC Latex Sealer
  - .2 2nd Coat: Pro Mar 200 0 VOC (1.8 mils dft)
  - .3 3rd Coat: Pro Mar 200 0 VOC (1.8 mils dft)
  - .4 Finish: Flat

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Coordinate the work of removal of existing wall coverings with Section 09 91 10 – Painting. Determine if the removal of existing wall covering is being done by Section 02 41 19 - Selective Demolition or by Section 09 91 10 – Painting and agree to follow the guidelines of MPI Maintenance Repainting Manual for the removal of wallcoverings and the level of surface defects to be repaired and included under this scope of work.
- .3 Verify that substrate conditions surfaces are ready to receive work as instructed by the product manufacturer.
- .4 Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- .5 Test shop applied primer for compatibility with subsequent cover materials.
  - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
  - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
  - .3 Apply paint when previous coat of paint is dry or adequately cured.

**3.2 PREPARATION**

- .1 Prepare surfaces in accordance with the MPI Maintenance Repainting Manual requirements.
- .2 Condition of Surfaces:
  - .1 Prior to commencement of repainting work, thoroughly examine (and test as required) all interior conditions and surfaces scheduled to be repainted and report in writing to the Consultant, Owner and General Contractor, where applicable, any conditions or surfaces that will adversely affect work of this section.
  - .2 The degree of surface deterioration (DSD) shall be assessed using the assessment criteria indicated in the MPI Maintenance Repainting Manual. In general, the MPI DSD ratings and descriptions are as follows:

Condition	Description
<b>DSD-0</b>	Sound Surface (may include visual (aesthetic) defects that do not affect film's protective properties).
<b>DSD-1</b>	Slightly Deteriorated Surface (may show fading; gloss reduction, slight surface contamination, minor pin holes scratches, etc.)/Minor cosmetic defects (runs, sags, etc.).
<b>DSD-2</b>	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, staining, etc.).
<b>DSD-3</b>	Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges).
<b>DSD-4</b>	Substrate Damage (repair or replacement of surface required by others).

- .3 Other than the repair of DSD-1 to DSD-3 defects included under this scope of work, structural and DSD-4 substrate defects discovered prior to and after surface preparation or after first coat of paint shall be made good and sanded by others ready for painting, unless otherwise agreed to by the Owner and painter to be included in this Work.

- .4 No repainting work shall commence until all such DSD-4 adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Painting Subcontractor. The Painting Subcontractor shall not be responsible for the condition of the substrate or for correcting defects and deficiencies in the substrate, which may adversely affect the painting work except for minimal work normally performed by the Painting Subcontractor and as, indicated herein. It shall always, however, be the responsibility of the Painting Subcontractor to see that surfaces are properly prepared before any paint or coating is applied. It shall also be the Painting Subcontractor's responsibility to paint the surface as specified providing that the owner accepts responsibility for uncorrected DSD-4 substrate conditions.
- .3 Remove and store or mask miscellaneous hardware and surface fittings such as electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to painting. Clean and replace upon completion of painting Work in each area. Remove doors before painting to paint bottom and top edges and re-hung.
- .4 Protect adjacent surfaces and areas, including rating and instruction labels on doors, frames, equipment, piping, from painting operations with drop cloths, shields, masking, templates, or other suitable protective means.
- .5 Correct defects and clean surfaces which affect work of this section. Start of finish painting of defective surfaces indicates acceptance of substrate and making good defects will be at no cost to Owner.
- .6 Confirm preparation and primer used with fabricator of steel items.
- .7 Seal with shellac and seal marks which may bleed through surface finishes.
- .8 Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- .9 Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.
- .10 Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply compatible latex based sealer or primer.
- .11 Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
- .12 Concrete Floors: Remove contamination; acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- .13 Copper Surfaces Scheduled for a Paint Finish: Remove contamination by steam, high pressure water, or solvent washing. Apply vinyl etch primer immediately following cleaning.
- .14 Copper Surfaces Scheduled for a Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.
- .15 Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- .16 Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- .17 Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by

- weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.
- .18 Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- .19 Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.
- .20 Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.
- .21 Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- .22 Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.
- .23 Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.
- .24 Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.
- .25 Glue-Laminated Beams: Prior to finishing, wash surfaces with solvent, remove grease and dirt.
- .26 Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

### **3.3**

#### **APPLICATION**

- .1 Apply paint or stain in accordance with OPCA Painting Manual Custom and Premium Grade finish requirements.
- .2 Apply products to adequately prepared surfaces, within moisture limits and acceptable environmental conditions.
- .3 Apply paint finish in areas where dust is no longer being generated or when wind or ventilation conditions will not affect quality of finished surface.
- .4 Apply each coat to uniform finish.
- .5 Tint each coat of paint progressively lighter to enable confirmation of number of coats.
- .6 Unless otherwise approved, apply a minimum of four (4) coats of paint where deep or bright colours are used to achieve satisfactory results.
- .7 Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1000 mm (39 inch).
- .8 Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
- .9 Allow applied coat to dry before next coat is applied.
- .10 Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

- .11 Continue paint finish behind wall-mounted items such as chalk and tack boards.
- .12 Prime concealed surfaces of interior exterior woodwork with primer paint.
- .13 Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25% with mineral spirits.

### **3.4 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT**

- .1 Refer to Mechanical Division and Electrical Division for schedule of colour coding and identification banding of equipment, duct work, piping, and conduit.
- .2 Unless otherwise specified, paint all unfinished conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and texture to match adjacent surfaces in the following areas:
  - .1 Exposed-to-view exterior and interior areas.
  - .2 High humidity interior areas.
  - .3 Boiler room, mechanical and electrical rooms.
- .3 In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish; touch up scratches and marks.
- .4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .5 Do not paint over nameplates.
- .6 Paint inside of ductwork and convector and baseboard heating cabinets where visible behind louvers, grilles and diffusers for a minimum of 460 mm (18 inch) or beyond sight line, whichever is greater, with primer and one (1) coat of matt black (non-reflecting) paint.
- .7 Paint the inside of light valances gloss white.
- .8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .9 Paint red or band all fire protection piping and sprinkler lines in accordance with mechanical specification requirements. Keep sprinkler heads free of paint.
- .10 Paint yellow or band all natural gas piping in accordance with mechanical specification requirements.
- .11 Backprime and paint face and edges of plywood service panels for telephone and electrical equipment before installation gray, semi-gloss to match adjacent wall surface. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- .12 Paint exterior steel electrical light standards. Do not paint outdoor transformers and substation equipment.
- .13 Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings that were removed prior to finishing.

### **3.5 FIELD QUALITY CONTROL**

- .1 Acceptable Surfaces:
  - .1 No visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39 inch).
  - .2 No visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39 inch).

- .3 No visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
- .4 Uniformity of colour, sheen, texture, and hiding across full surface area.

**3.6 CLEANING**

- .1 Section 01 70 00: Cleaning installed work.
- .2 Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

**END OF SECTION**



## **PART 1 GENERAL**

### **1.01 SECTION INCLUDES**

- A. Porcelain enamel chalkboards.
- B. Prefinished chalkboard frames.
- C. Prefinished chalk tray.
- D. Prefinished mounting hardware.

### **1.02 RELATED REQUIREMENTS**

- A. Section 06 10 53 - Miscellaneous Rough Carpentry: Wood blocking and nailers.
- B. Section 09 21 16 - Gypsum Board Assemblies: Concealed supports in metal stud walls.

### **1.03 REFERENCE STANDARDS**

- A. ANSI A208.1 - American National Standard for Particleboard; 2022.
- B. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2018.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
- E. CAN/ULC S102, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
- F. NPA A208.1-2009 – Particleboard
- G. Porcelain Enamel Institute (PEI):
  - 1. PEI 901, Special Finish for Porcelain Enamel
  - 2. PEI 1001, Specifications for Architectural Porcelain Enamel
  - 3. PEI 1002, Manual and Performance Specifications for Porcelain Enamel Writing Surfaces

### **1.04 SUBMITTALS**

- A. See Section **01 30 00 - Administrative Requirements** for submittal procedures.
- B. Product Data: Manufacturer's published data on porcelain enamel steel chalkboard, trim, and accessories.
- C. Shop Drawings: Indicate wall elevations, dimensions, joint locations, **special anchor details**.
- D. Samples: Color charts for selection of color and texture of chalkboard surface covering, and trim.
- E. Samples: Two, 2 by 2 inches (50 by 50 mm) in size illustrating materials and finish, color, and texture of porcelain enamel chalkboard surface covering, trim, and mounting hardware.
- F. Test Reports: Show compliance with specified surface burning characteristics requirements.
- G. Manufacturer's printed installation instructions.
- H. Manufacturer's qualification statement. Maintenance Data: Include data on regular cleaning, and stain removal.

### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five (5) years **documented** experience.

### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Schedule delivery of visual display units for spaces which are sufficiently complete so that visual display units can be installed upon delivery.

- B. Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged to materials on the receiving ticket and immediately report to the shipping company and the material manufacturer.
  - 1. Remove damaged materials from the site immediately.
- C. Storage:
  - 1. Store products as recommended by manufacturer, within unopened packaging until ready for installation.
  - 2. Store materials off the ground and cover with a weather-proof flame-resistant sheeting or tarpaulin, protecting the products from exposure to harmful weather conditions and at temperatures and humidity conditions recommended by manufacturer.
  - 3. Handle products in accordance with sound material handling practices and in accordance with manufacturer's written instructions.

## **1.07 WARRANTY**

- A. Manufacturer's Standard Limited Lifetime Warranty: On porcelain writing surface, for life of building, under normal usage and maintenance, and when installed in accordance with manufacturer's instructions and recommendations. Warranty covers replacement of defective material but does not include cost of removal or reinstallation.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. ASI Visual Display Products, located at 2210 Dunwin Drive, Mississauga, Ontario L5L 1C7. Tel: 833-632-0878. Web: [www.asi-visualdisplayproducts.com](http://www.asi-visualdisplayproducts.com).
- B. Substitutions: Refer to Section 01 60 00

### **2.02 PORCELAIN ENAMEL CHALKBOARDS**

- A. Porcelain Enameled Steel Sheet: ASTM A424/A424M, Type I, Commercial Steel, manufactured in accordance with Porcelain Enamel Institute's PEI-1002 specification consisting of sandwich-type construction of face panel with fired-on vitreous finish, core, and balancing rear sheet.
- B. Face Sheet Writing Surface:
  - 1. Polyvision e3 CeramicSteel, ultra-smooth writing surface; scratch, stain, bacteria, and fire resistant. Continuous coil-coating process, consisting of steel core of light gauge covered on both sides with thin enamel coatings for a thickness of 0.014 inch (0.356 mm).
  - 2. Color: Black Matte.
- C. Core Material:
  - 1. Particleboard: ANSI A208.1; wood set with waterproof resin binder, sanded faces.
  - 2. Thickness: 7/16-inch (11 mm) particleboard, laminated under heat and pressure to face panel and rear sheet, utilizing adhesives that ensure rupturing of component materials before failure of joint contact surfaces.
- D. Writing Surface Backing:
  - 1. Mylar moisture barrier backer (no adhesive required or recommended).
- E. Panel Size:
  - 1. Overall Thickness: 1/2 inch (13 mm).
  - 2. Height: As indicated on drawings.
  - 3. Width: As indicated on drawings.
- F. Trim: As indicated below under Trim and Accessories.
- G. Accessories: As indicated below under Trim and Accessories.

### **2.03 TRIM AND ACCESSORIES**

- A. Trim Series Black Ultra Matte 9800 Pre-Framed Units:
  - 1. Material: ASTM B221, extruded from aluminum alloy 6063-T5, 0.062-inch (1.57 mm) black powder coat finish, free from extruding draw marks and surface scratches.
  - 2. Exposed Frame Width: 3/4 inch (19 mm).
    - a. Corner Style: Square.
  - 3. Exposed Frame Width: 3/4 inch (19 mm).
    - a. Corner Style: Square.
- B. Accessories:
  - 1. Chalk Tray: ASI 544212, angle box style tray complete with end caps, black powder coat finish
  - 2. Length of chalk tray as shown on drawings.
- C. Installation Method: Easi-Install L-clips, black finish.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions and field dimensions meet manufacturer's requirements before starting work.
- B. Verify field measurements are as indicated on shop drawings
- C. Verify internal wall blocking is ready to receive work and positioning dimensions are as [indicated on shop drawings and instructed by manufacturer.

#### **3.02 PREPARATION**

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.

#### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's written instructions.
- B. Generally, Install with top of chalk tray at 30 inches (760 mm) above finished floor, unless noted on drawings otherwise.
- C. Secure units level and plumb.

#### **3.04 CLEANING**

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean board surfaces in accordance with manufacturer's instructions.

#### **3.05 PROTECTION**

- A. Cover with protective cover, taped to frame.
- B. Protect finishes until completion of project.
- C. Remove temporary protective cover at Date of Substantial Completion
- D. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1      Toilet, washroom accessories.
- .2      Attachment hardware.

**1.2            RELATED SECTIONS**

- .1      Section 05 50 00 - Metal Fabrications and Section 06 10 53 – Miscellaneous Rough Carpentry: In wall framing, plates, blocking for support of accessories.
- .2      Section 09 21 16 - Gypsum Board Assemblies
- .3      Section 09 30 00 – Tiling
- .4      Mechanical Division
- .5      Electrical Division

**1.3            REFERENCES**

- .1      ASTM A123/A123M-13 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .2      ASTM A167-99(2009) - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .3      ASTM A269-13 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .4      ASTM A1008/A1008M-13 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
- .5      ASTM B456-11e1 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
- .6      CSA-B651-12 - Accessible Design for the Built Environment.

**1.4            ADMINISTRATIVE REQUIREMENTS**

- .1      Section 01 30 00: Project management and coordination procedures.
- .2      Coordination:
  - .1          Coordinate with other work having a direct bearing on work of this section.
  - .2          Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

**1.5            SUBMITTALS FOR REVIEW**

- .1      Section 01 30 00: Submission procedures.
- .2      Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.

**1.6 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.
- .2 Installation Data: Manufacturer's special installation requirements including special procedures

**1.7 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.

**1.8 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code CSA-B651 for accessibility requirements for the handicapped.

**Part 2 Products**

**2.1 PRODUCTS**

- .1 Refer to subsection 3.4 WASHROOM ACCESSORIES SCHEDULE REQUIRED FOR EACH WASHROOM for the list and quantities of Washroom Accessories required for all washrooms.
- .2 The acceptable products are specified as follows:
  - .1 BR - Back Rest:
    - .1 Specified in Mechanical Division
  - .2 CH - Coat Hook: collapsible Coat Hooks:
    - .1 Manufacturer/Model:
      - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
  - .3 GB1- - Horizontal Grab Bar:
    - .1 Grab bar shall be Type-304 stainless steel with a satin-finish, slip-resistant peened surface. Grab bar shall have 18-gauge (1.2mm) wall thickness and 1-1/4" (32mm) outside diameter. Clearance between the grab bar and wall shall be 1-1/2" (38mm). Concealed mounting flanges shall be 11-gauge (3.2 mm) thick stainless steel plate, 2" x 3-1/8" (50 x 80mm), and equipped with at least two screw holes for attachment to wall. Flange covers shall be 22-gauge (0.8mm) stainless steel, 3-1/4" (85mm) diameter, and shall snap over mounting flanges to conceal mounting screws and/or WingIt fasteners. Ends of grab bar shall pass through concealed mounting flanges and be heliarc welded to form one structural unit. Grab bar shall comply with accessible design, including Ontario Building Code for structural strength:
      - .1 Manufacturer/Model:
        - .1 ASI Straight Grab Bar, 24" - Peened - 3701-24P
        - .2 Bobrick B-5806.99x24, Length 24" (610mm)
        - .3 Frost 1001-SP24" – 24"L x 3"D x 3.25"H (61.0cm L x 7.6cm D x 8.3cm H), stainless steel grab bar with a brushed and peened finish.
  - .4 GB2 - 90 Degree Grab Bar:
    - .1 Grab bar shall be type-304 stainless steel with a satin-finish, slip-resistant peened surface. Grab bar shall have 18-gauge (1.2mm) wall thickness and 1-1/4" (32mm) outside diameter. Clearance between the grab bar and wall shall be 1-1/2" (38mm). Concealed mounting flanges shall be 1/8" (3mm) thick

stainless-steel plate, 2" x 3-1/8" (50 x 80mm), and equipped with two screw holes for attachment to wall. Flange covers shall be 22-gauge (0.8mm) stainless steel, 3-1/4" (85mm) diameter, and shall snap over mounting flanges to conceal mounting screws and/or WingIt fasteners. Ends of grab bar shall pass through concealed mounting flanges and be heliarc welded to form one structural unit. Grab bar shall comply with accessible design, including Ontario Building Code for structural strength:

- .1 Manufacturer/Model:
  - .1 ASI 90° Grab Bar, 30" x 30" - Peened - 3707-4P. Select right-hand or left-hand mounted bar as required to suit washroom layout.
  - .2 Bobrick B-5898.99, Dimensions 30" x 30" (762 x 762mm). Select right-hand or left-hand mounted bar as required to suit washroom layout.
  - .3 Frost 1003-SP30x30 stainless steel grab bar with a brushed and peened finish. Select right-hand or left-hand mounted bar as required to suit washroom layout.
- .5 HS – Sanitizer Dispenser:
  - .1 Manufacturer/Model:
    - .1 Wall Mounted Hand Sanitizer Dispenser: Purell White ES8 Hand Sanitizer Dispenser.
- .6 MR – Mirror: Acceptable framed mirror products by ASI, Bobrick or Frost:
  - .1 ASI
    - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
    - .2 ASI 0605-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror with shelf
  - .2 Bobrick
    - .1 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
      - .1 Frame — Type-430 stainless steel, 1/2" x 1/2" x 3/8" (13 x 13 x 9.5mm) channel with 1/4" (6mm) return at rear for Snap Locking Design; 1/2" x 1/2" x 1/2" (13 x 13 x 13mm) channel for Lock Tab Design, with bright polished finish. One piece frame with 90 degree mitered corners. Galvanized steel back has integral horizontal hanging brackets near the top for hanging the mirror and near the bottom to prevent the bottom of the mirror from pulling away from the wall.
      - .2 Mirror — No. 1 quality, 1/4" (6mm) select float glass: selected for silvering, electrolytically copper-plated by the galvanic process, and guaranteed for 15 years against silver spoilage. Back is protected by full-size, shock-absorbing, water-resistant, nonabrasive, polyethylene padding.
      - .3 Concealed Wall Hanger — For snap locking design: Heavy gauge steel construction. Incorporates upper and lower members, which engage backplate louvers to keep mirror against the wall. For "2S"-Tab design: Incorporates upper bracket engaging in upper louver and double sided tape below the bottom louver securing mirror to concealed wall hanger.
    - .2 Bobrick B-166 1830: 18" W X 30" H (46 x 76cm) with shelf

- .1 Frame — Type 430 stainless steel, 1/2" x 1/2" x 3/8" (13 x 13 x 9.5mm) channel 1/4" (6mm) return at rear. For Snap Locking Design; 1/2" x 1/2" x 1/2" (13 x 13 x 13mm) channel for "2S" Design Tab, with bright polished finish. One-piece frame with 90 degree mitered corners. Galvanized steel back has integral horizontal hanging brackets near the top for hanging the mirror and near the bottom to prevent the bottom of the mirror from pulling away from the wall. Locking devices secure mirror to concealed wall hanger.
- .2 Shelf — 18-8, type 304, 18-gauge (1.2mm) stainless steel with satin finish. Return edge on front, hemmed for additional strength and safety. Once mounted properly, mirror shelf meets accessible design by protruding 4" (102mm) from the wall.
- .3 Mirror — No. 1 quality, 1/4" (6mm) select float glass: selected for silvering, electrolytically copper-plated by the galvanic process, and guaranteed for 15 years against silver spoilage. Back is protected by full-size, shock-absorbing, water-resistant, nonabrasive, polyethylene padding.
- .4 Concealed Wall Hanger — Heavy gauge steel construction. Incorporates upper and lower support members, which engage backplate louvers to keep mirror against wall for Snap-locking design. Double-sided tape secures mirror to concealed wall hanger for "2S" Design Tab design.
- .7 MR - Acceptable Frameless Mirrors, where shown on Architectural Drawings: Frameless Silvered Glass Mirror complete with vinyl back reinforcing and mounting hardware, as follows:
  - .1 ASI 8287 Frameless Glass Mirror
    - .1 Frameless Mirror shall be Model № 8287 as manufactured by American Specialties. Mirror shall be supplied as two pieces per locations, dimensions as shown on Architectural Drawings. Each mirror panel shall be 1,487 mm wide x 756 mm high and sight measured to fit.
    - .2 Frameless Mirror shall be fabricated of 1/4" (6.4 mm) polished plate glass and shall comply with ASTM C 1503-01 and government specification № DD-M-411-C and shall be warranted against silver spoilage for fifteen (15) years. Mirror shall have platings and sealer coatings.
    - .3 Glass: Standard glazing is #1 quality, 1/4" (6.4 mm) thick plate/float, silver coated and hermetically sealed with a uniform coating of electrolytic copper plating, warranted against silver spoilage for 15 years. Mirrors meet Federal Spec. DD-M411C, ASTM C-1503, and ASTM C-1036-91.
    - .4 Surface mount units to wall using top and bottom Stainless Steel J-Mould fastened to plywood blocking with Stainless Steel Screws supplied by mirror installer. Stainless Steel J-Mould shall type 304, 18-gauge (1.2mm) stainless steel with satin finish. Return edge on front, hemmed for additional strength and safety and be pre-drilled for concealed screw fasteners. Installer shall provide silicone setting blocks in J Mould for the mirror installation.
- .8 PTD/WR – Paper Towel Dispenser/Waste Receptacle:

- .1 Re-use existing paper towel dispenser and waste receptacle unit.
- .9 SD – Foam Soap Dispenser:
  - .10 Manufacturer/Model:
    - .1 In Washrooms: Purell White ES8.
    - .2 In other locations (Kitchens) Purell graphite ES8:
  - .11 SND – Sanitary Napkin Disposal:
    - .1 Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle, all welded construction.
      - .1 Manufacturer/Model:
      - .2 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
        - .1 Sanitary Napkin Disposal Unit: Stainless steel, self-closing door, locking bottom panel with full-length heavy-duty stainless steel multi-staked piano hinge, removable receptacle.
        - .2 Mounting: As indicated in product listing.
        - .3 Cabinet and Door: Fully welded, 22 gauge, 0.03 inch (0.8 mm) thick sheet.
      - .3 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
        - .1 MATERIALS:
        - .2 Container — 18-8, type-304, 22-gauge (0.8mm) stainless steel. All-welded construction. Exposed surfaces have satin finish. Integral finger depression for opening cover. Front of container has same degree of arc as front of cover and other Bobrick ConturaSeries washroom accessories. Radius on side edges of container match corners and edges of cover and other ConturaSeries accessories.
        - .3 Cover — 18-8, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn, one-piece, seamless construction. Front of cover has same degree of arc as front of container and other Bobrick Contura Series washroom accessories. Radius on corners and edges of cover match side edges of container and other Contura Series accessories. Secured to container with a full-length stainless steel piano-hinge.
      - .4 Frost 622 Surface Mounted Feminine Product Disposal
        - .1 French/English napkin disposal label is embossed on lid
        - .2 Pivoting self-closing lid / door utilizes full length piano hinge
        - .3 Capacity: 6 litres (1.6 US gal., 1.3 Imp gal.)
        - .4 Materials: All welded stainless steel construction (22 gauge), Brushed stainless steel finish
        - .5 Product Dimensions: 20.1cm W x 32.8cm H x 11.4cm D (7.9" W x 12.9" H x 4.5" D)
        - .6 Product Weight: 1.7kg (3.75 lbs)
  - .12 TD - Tampon/Napkin Dispenser:
    - .1 No Charge Feminine Napkin/Tampon Dispenser - Manufacturer/Model:
      - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser



- .1 Materials:
  - .1 All welded steel construction of 22-gauge type 430 stainless steel
  - .2 Brushed finish
  - .3 Push Button: ABS plastic
  - .4 Product Dimensions: 40.6cm W x 64.3cm H 13.9cm D (16" W x 25.3" H x 5.5" D)
  - .5 Dimensions of the inner product chutes are as follows;
  - .6 Tampon slot: 5.5"W x 14.5"H x 0.9"D, Napkin Slot: 4.75"W x 15"H x 3.25"D
  - .7 Product Weight: 8.8kg (19.5 lbs)
- .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
  - .1 Capacity, Dispenses: (14) Size #4 Box Sanitary Napkins and (22)Vended Tampons, 1 Each
  - .2 ADA-compliant push-button dispense
  - .3 Front loading for restocking
  - .4 At a glance, empty indicator lights. Requires one 9 volt battery, included.
  - .5 Free Scensibles® Disposal Bag Dispenser and (1) refill pack now comes standard in specially marked cartons.
  - .6 Scensibles® Dispenser and Refill Pack mounts easily on the side of the dispenser.
  - .7 Vendor cartons including the Scensibles® Dispenser and Refill Pack are specially marked with a QR code that links to an installation video
- .13 TPD – Toilet Paper Dispenser
  - .1 Toilet Tissue Dispensers made of stainless steel door and cabinet, surface mounted, dual jumbo roll toilet tissue dispenser - Acceptable Manufacturer/Model:
    - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
    - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
    - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169:
      - .1 For Toilet Tissue Dispensers by ASI, Bobrick and Frost, as listed below, jumbo-roll toilet tissue dispenser door and cabinet shall be type-304 stainless steel with satin-finish: door shall be 18 gauge (1.2mm); cabinet shall be 20 gauge (1.0mm) and may have a high density ABS back. Cabinet shall be equipped with a tumbler lock keyed like other Bobrick washroom accessories. Door shall have a wide viewing slot to reveal toilet tissue supply inside cabinet. Dispensing mechanism shall be constructed of high-impact ABS shall accommodate two toilet tissue rolls up to 10" (254mm) diameter with 3" (76mm) diameter core; and be equipped with a sliding access panel that exposes one roll at a time. Spindles shall be convertible in the field to dispense 2-1/4"

(57mm) diameter core rolls by removing outer spindles furnished in-place.

- .2 Toilet Tissue Dispensers made of high impact resistant translucent plastic door and cabinet, surface mounted, dual jumbo roll toilet tissue dispenser - Acceptable Manufacturer/Model:
  - .1 Palmer Fixture RD0027-02F Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser with core adaptor, black translucent plastic material:
    - .1 For Toilet Tissue Dispensers by Palmer Fixture, as listed below, jumbo-roll toilet tissue dispenser door and cabinet shall be high impact resistant ABS plastic and may have a high density ABS back. Cabinet shall be equipped with a tumbler lock keyed like other Bobrick washroom accessories. Door shall have a wide viewing slot to reveal toilet tissue supply inside cabinet. Dispensing mechanism shall be constructed of high-impact ABS shall accommodate two toilet tissue rolls up to 10" (254mm) diameter with 3" (76mm) diameter core; and be equipped with a sliding access panel that exposes one roll at a time. Spindles shall be convertible in the field to dispense 2-1/4" (57mm) diameter core rolls by removing outer spindles furnished in-place.

## **2.2 MATERIALS**

- .1 Sheet Steel: ASTM A1008/A1008M.
- .2 Stainless Steel Sheet: ASTM A167, Type 304.
- .3 Tubing: ASTM A269, stainless steel.
- .4 Adhesive: Two-component epoxy type Contact type, waterproof.
- .5 Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof .
- .6 Expansion Shields: Fibre, lead, or rubber as recommended by accessory manufacturer for component and substrate.

## **2.3 FABRICATION**

- .1 Weld and grind joints of fabricated components, smooth.
- .2 Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion. Maintain surfaces without scratches or dents.
- .3 Fabricate grab bars of tubing, free of visible joints, return to wall with end attachment flanges. Form bar clear of wall surface. Knurl grip surfaces.
- .4 Shop assemble components and package complete with anchors and fittings.
- .5 Provide steel anchor plates, adapters, and anchor components for installation.

## **2.4 KEYING**

- .1 Supply 4 keys for each accessory to Owner.
- .2 Master key all accessories.

**2.5 FINISHES**

- .1 Galvanizing: Hot-dip galvanized to ASTM A123/A123M, appropriate grade for type and size of steel material indicated . Galvanize ferrous metal and fastening devices.
- .2 Shop Primed Ferrous Metals: Pre-treat and clean, spray apply one coat primer and bake.
- .3 Enamel: Pre-treat to clean condition, apply one (1) coat primer and minimum two (2) coats epoxy baked enamel.
- .4 Chrome/Nickel Plating: ASTM B456, Type SC 2, satin finish.
- .5 Stainless Steel: No. 4 Satin finish.
- .6 Back paint components where contact is made with building finishes to prevent electrolysis.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify that field measurements are as instructed by the manufacturer indicated on product data indicated.
- .3 Verify that site conditions are ready to receive work and dimensions are as indicated on Shop Drawings instructed by the manufacturer.
- .4 Verify exact location of accessories for installation.

**3.2 PREPARATION**

- .1 Deliver inserts and rough-in frames to site for timely installation.
- .2 Provide templates and rough-in measurements as required.

**3.3 INSTALLATION**

- .1 Install accessories to manufacturer's written instructions .
- .2 Install plumb and level, securely and rigidly anchored to substrate.

**3.4 SCHEDULE: WASHROOM MEN'S WC 2002 & WOMEN'S WC 2003**

- .1 CH - For each Washroom - two (2) collapsible Coat Hooks:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .2 HS - For each Washroom one (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .3 MR - For each Washroom - Two (2) Mirrors, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .4 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .5 SD - For each Washroom - Two (2) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .6 SND - For each Women's Washroom - two (2) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .7 TD - For each Women's Washroom - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .8 TPD - For each Washroom - Two (2) Toilet Tissue Dispensers: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent

**3.5 SCHEDULE: WASHROOM MEN'S WC 3022 & WOMEN'S WC 3023**

- .1 CH - For each Washroom - two (2) collapsible Coat Hooks:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .2 HS - For each Washroom one (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .3 MR - For each Washroom - Two (2) Mirrors, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .4 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .5 SD - For each Washroom - Two (2) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .6 SND - For each Women's Washroom - two (2) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .7 TD - For each Women's Washroom - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .8 TPD - For each Washroom - Two (2) Toilet Tissue Dispensers: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent
    - .1 Adaptor, Black Translucent

**3.6 SCHEDULE: WASHROOM– MEN’S WC 2038**

- .1 BR - One (1) Back Rest: Specified and provided by Mechanical Division
- .2 CH - For each Washroom – one (1) collapsible Coat Hook:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .3 GB1- -Horizontal Grab Bar
- .4 GB2- -90 Degree Grab Bar
- .5 HS - For each Washroom one (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .6 MR - For each Washroom - One (1) Mirror, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0605-1830 – 18” wide x 30” high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror with shelf
  - .2 Bobrick B-166 1830: 18” W X 30” H (46 x 76cm) with shelf
- .7 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .8 SD - For each Washroom – One (1) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .9 TPD - For each Washroom - One (1) Toilet Tissue Dispensers: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9” Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent
    - .1 Adaptor, Black Translucent

**3.7 SCHEDULE: WASHROOM– WOMEN’S WC 2040**

- .1 BR - One (1) Back Rest: Specified and provided by Mechanical Division
- .2 CH - For each Washroom – two (2) collapsible Coat Hook:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .3 GB2- - One (1) 90 Degree Grab Bar
- .4 HS - For each Washroom one (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .5 MR - For each Washroom - Two (2) Mirrors, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0605-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror with shelf
  - .2 Bobrick B-166 1830: 18" W X 30" H (46 x 76cm) with shelf
- .6 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .7 SD - For each Washroom – Two (2) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .8 SND - For each Women’s Washroom - two (2) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .9 TD - For each Women’s Washroom - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .10 TPD - For each Washroom - Two (2) Toilet Tissue Dispensers: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent

.1      Adaptor, Black Translucent



**SCHEDULE: WASHROOM WOMEN'S WC 3049**

- .1 CH - For each Washroom – Three (3) collapsible Coat Hook:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .2 HS - For each Washroom one (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .3 MR - For each Washroom - Two (2), from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .4 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .5 SD - For each Washroom – Two (2), Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .6 SND - For each Women's Washroom - Three (3) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .7 TD - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .8 TPD - For each Washroom - Three (3) Toilet Tissue Dispensers: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent
    - .1 Adaptor, Black Translucent

**SCHEDULE: WASHROOM MEN'S WC 3068 & WOMEN'S WC 3067**

- .1 CH - For each Washroom - Ome (1) collapsible Coat Hooks:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .2 HS - For each Washroom one (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .3 MR - For each Washroom - Ome (1) Mirror, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .4 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .5 SD - For each Washroom - Ome (1) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .6 SND - For Women's Washroom - Ome (1) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .7 TD - For Women's Washroom - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .8 TPD - For each Washroom - Ome (1) Toilet Tissue Dispenser: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent

**SCHEDULE: WASHROOM MEN'S WC 3011 & WOMEN'S WC 3012**

- .1 CH – For each washroom One (1) collapsible Coat Hooks:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .2 HS - For each washroom One (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .3 MR - For each washroom One (1) Mirror, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .4 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .5 SD - For each washroom One (1) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .6 SND - For Women's washroom One (1) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .7 TD - For Women's washroom One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .8 TPD – For each washroom One (1) Toilet Tissue Dispenser: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent

**SCHEDULE: ALL-GENDER WASHROOM 330**

- .1 CH - One (1) collapsible Coat Hooks:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .2 HS - One (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .3 MR - One (1) Mirror, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .4 PTD/WR - For each Washroom – Re-use existing paper towel dispenser and waste receptacle unit.
- .5 SD - One (1) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .6 SND - One (1) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .7 TD - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .8 TPD - One (1) Toilet Tissue Dispenser: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent

**SCHEDULE: ALL-GENDER BARRIER FREE WASHROOM 304**

- .1 BR - One (1) Back Rest: Specified and provided by Mechanical Division
- .2 CH – One (1) collapsible Coat Hook:
  - .1 Manufacturer/Model:
    - .1 Frost Stainless Steel Safety Coat Hook 1150-SS or equal:
- .3 GB2- - One (1) 90 Degree Grab Bar
- .4 HS - One (1) Wall Mounted Hand Sanitizer Dispenser:
  - .1 Purell White ES8 Hand Sanitizer Dispenser.
- .5 MR - One (1) Mirror, from one of the following products, where shown on Architectural Drawings:
  - .1 ASI 0600-1830 – 18" wide x 30" high (457 x 762 mm) Series Stainless Steel Inter-Lok Angle Frame Mirror without shelf
  - .2 Bobrick B-165 1830: 18" W X 30" H (46 x 76cm) without shelf
  - .3 Frost 941-1830 – 45.7cm W x 76.2cm H x 1.3cm D without shelf
- .6 PTD/WR - Re-use existing paper towel dispenser and waste receptacle unit.
- .7 SD - One (1) Foam Soap Dispenser, Wall mounted: Install quantities and locations shown on the drawings and details.
  - .1 Manufacturer/Model:
    - .1 Purell White ES8 supplied and installed by Contractor.
- .8 SND - One (1) Sanitary Napkin Disposal: Surface mounted. Provide construction of type 304, 22 gauge stainless steel and flap door with concealed full-length piano hinge. Provide deodorant block holder. Furnish unit with removable leak-proof rigid stainless steel waste receptacle {All welded construction, from one of the following products.
  - .1 Manufacturer/Model:
    - .1 ASI® Roval™ Surface Mounted Sanitary Waste Receptacle 20852
    - .2 Bobrick B270 Surface-Mounted Sanitary Napkin Disposal
    - .3 Frost 622 Surface Mounted Feminine Product Disposal
- .9 TD - One (1) No Charge Feminine Napkin/Tampon Dispenser, from one of the following products:
  - .1 Manufacturer/Model:
    - .1 Frost 618-3-Free-Push Button Free Feminine Product Dispenser
    - .2 Hospeco® Evogen® Menstrual Care Dual Free Product Dispenser, 1/ea - Stainless Steel
- .10 TPD - One (1) Toilet Tissue Dispenser: Surface mounted dual jumbo roll toilet tissue dispenser, from one of the following products:
  - .1 ASI 0040 Twin 9" Jumbo Roll Toilet Tissue Dispenser – Surface Mounted
  - .2 Bobrick B-2892 Surface-Mounted Twin Jumbo Roll Toilet Tissue Dispenser
  - .3 Frost Universal Jumbo Double Toilet Tissue Dispenser 169
  - .4 Palmer Fixture RD0027-02F Twin Jumbo Tissue Dispenser with Core Adaptor, Black Translucent

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Solarfective Teleshade (TS) Series Manual Shading System as basis of design.

**1.2 RELATED SECTIONS**

- .1 Section 09 91 10 - Painting

**1.3 SYSTEM DESCRIPTION**

- .1 Provide for infinite positioning of window shade.
- .2 Noise reduction seals for sound isolation and absorption of mechanism noise.
- .3 Shade Orientation: Shade cloth to roll at window side of roller.
- .4 Solar control shade: fabric:
  - .1 Degree of Openness: 3%.
- .5 Black out shade: fabric:
  - .1 Opaque.
- .6 Provide for smooth and quiet operation.

**1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide manufacturer's data sheets describing components, accessories, dimensions, tolerances for window openings required, colours and textures.
- .3 Window Treatment Schedule: For all roller shades. Use same room designations as indicated on Drawings, field verified window dimensions, quantities, type of shades, controls, shade band material, color, and include opening sizes and key to typical mounting details.
- .4 Shop Drawings: Indicate dimensions in relation to window jambs, operator details, top rail, anchorage details, hardware and accessory details, conditions between adjacent blinds, required clearances.
- .5 Samples: Submit two (2) sets of 300 mm long samples of shade band material options and aluminum finish color samples representing manufacturer's full range of available colors and patterns. Mark face of material to indicate interior faces
- .6 Verification Samples: For each finish product specified, two complete sets of shade components demonstrating compliance with specified requirements. Shade band material sample and aluminum finish sample as selected, representing actual product, color, and patterns. Mark face of material to indicate interior faces.

**1.5 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in design and manufacturing of manual with a minimum of 25 years documented experience.
- .2 Installer Qualifications: Company certified by the manufacturer and specializing in installation of shade systems products with minimum 3 years documented experience.

- .3 System Components: Demonstrate that individual components have undergone quality control and testing prior to shipping.
- .4 NFPA Flame-Test: Passes NFPA 701. Materials tested to match products proposed for use.
- .5 Mock-Up: One of each type of roller shade assembly specified for evaluation of mounting, appearance, and accessories.
- .6 Locate mock-up in windows designated by Architect.
- .7 Do not proceed with remaining work until mock-up is accepted by Architect.
- .8 Approved mock-ups may become part of the completed Work if undisturbed at time of Substantial Completion.

**1.6 PRE-INSTALLATION MEETINGS**

- .1 Convene a minimum two weeks prior to commencing Work of this section. Meeting to be attended by Contractor, Architect, system installer, factory authorized manufacturer's representative, and representative of all trades related to the system installation.
- .2 Review installation procedures and coordination required with related Work.
- .3 Inspect and make notes of job conditions prior to installation

**1.7 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver products in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.
- .2 Store fabric, tube, and motor units flat on a flat horizontal surface to prevent sagging and deformation/twisting of contents, until ready for installation.
- .3 Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

**1.8 SEQUENCING**

- .1 Ensure locating templates and information required for installation of products re furnished to affected trades in time to prevent interruption of construction progress.
- .2 Ensure products are supplied to affected trades in time to prevent interruption of construction progress.

**1.9 PROJECT CONDITIONS**

- .1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- .2 Do not install shade units until interior painting, wet work, ceilings, window pockets, and mechanical/electrical work above window site is complete before installation.

**1.10 CLOSEOUT SUBMITTALS**

- .1 Section 01 78 39 and Section 01 92 00: Submission procedures.
- .2 Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.



**1.11 WARRANTY**

- .1 For all hardware including shade brackets, metal extrusions, and manual clutches: twenty-five (25) years.
- .2 Fabrics Used as Part of Shade System; for interior use only, regardless of whether fabrics are rated for outdoor/exterior use:
- .3 Phifer Fabrics: 10 years.

**1.12 EXTRA MATERIALS**

- .1 See Section 01 60 00 - Product Requirements.
- .2 Extra maintenance materials of 1 complete window shade system that match products installed, packaged with protective covering for storage, and identified with labels describing contents.

**Part 2 Products**

**2.1 MANUFACTURERS**

Acceptable Manufacturer: Solarfective as distributed by Elite Pro Shading Systems™

- .1 Contact:  
Elite Pro Shading Systems™  
1 Applewood Crescent, Unit 1, Concord,  
Ontario, Canada L4K 4K1  
Phone: 1-800-387-3566 | (+1) 905-660-0049  
jcarione@eliteproshading.com  
<https://www.eliteproshading.com/solarfective>  
Contact:  
Joe Carione, Sales Director  
437-522-6180  
jcarione@eliteproshading.com
- .2 Substitutions: Refer to Section 01 60 00.
- .3 Products specified in this section to be provided by a single manufacturer.

**2.2 COMPONENTS**

- .1 MANUAL TS SERIES SHADE SYSTEM:
  - .1 Elite Pro Solarfective Teleshade TS Series Shading System: System shall be a smooth operating chain and sprocket roller shade system sunscreen type contained in a factory assembled shade cassette unit. Provide the following shade system configuration types in the locations indicated on the Drawings:
    - .1 Roller Shade Type: Manual Teleshade 4 single Cassette. Cassette size 3 1/16 inches D by 3 15/16 inches H.
  - .2 Single Shade: roller shade band consisting of a Sunscreen material inside the shade cassette unit. Each roller shade shall be independently controlled by pull chain as specified. Shadeband materials as specified.

- .2 **MANUAL TS SERIES SHADE SYSTEM:**
  - .1 Elite Pro Solarfective Teleshade TS Series Shading System: System shall be a smooth operating chain and sprocket roller shade system sunscreen type contained in a factory assembled shade cassette unit. Provide the following shade system configuration types in the locations indicated on the Drawings:
    - .1 Roller Shade Type: SF-T9A: Manual Teleshade 4 Dual Cassette. Cassette size 5 5/16 inches D by 6 3/16 inches H.
    - .2 Dual Teleshade: roller shade band consisting of a Sunscreen material and Blackout inside the shade cassette unit. Each roller shade shall be independently controlled by pull chain as specified. Shadeband materials as specified.
  - .2 Chain Operation:
    - .1 Clutchless, Easy-Lift Action, chain operated with infinite positioning, the shade could be closed at any point across its length of travel. Left hand, right hand or both sides operation available as standard and factory installed into the shade cassette unit.
    - .2 Manual Teleshade shall include a “manual override” requirement that allows the shade to be pulled down by the hem bar without using the chain or damaging the shade system.
    - .3 For each shade, provide Solarfective Chain Guard, in compliance to the latest Corded Window Covering Regulations under the Canada Consumer Product Safety Act (SOR/2019-97).
  - .3 Assembly:
    - .1 Fully factory assembled and pre-tested shade cassette unit consisting of two end brackets, chain installed as required, shade tube, extruded aluminum fascia, hembra, fabric shade material, regular or reverse roll of shade material, and cassette mounting attachment brackets for on-site installation. Brackets for the shade cassette unit shall be adjustable to level the unit for building irregularities and to minimize light gap above the shade cassette unit. Provide shade cassette unit ready for installation using attachment brackets fabricated from aluminum, included with each unit.
    - .2 Attachment Brackets: T5 6005 Aluminum Brackets shall be designed and fabricated to allow for simple direct installation of the shade cassette unit to the building structure, as follows shall be standard and offered by the manufacturer:
      - .1 Mounting Type 1: Outside Face of Mullions, back mounted or optional ceiling mounted
    - .3 Removal of shade cassette unit shall not require disassembly of the shade unit or roller shade tube
    - .4 End Bracket within Cassette Unit: 3 inches by 3-3/4 inches (77 by 96 mm), zinc plated steel, end bracket shall be two-piece molded ABS construction with 2-1/2 inches (64 mm) diameter nylon drive sprocket pop-riveted onto the bracket. Brackets color shall co-ordinate with the fascia color.
  - .4 Shade Tube: Extruded T5 6005 aluminum shade tube shall be 1/16 inch (1.52mm) thick, complete with continuous screw fins 3/16 inch (4.82 mm) high; for strength and drive capabilities when attached to the nylon sprocket. Fins shall be spaced equidistant on tube and placed according to the weight and sizing characteristics necessary for the intended shade to be supported. Manufacturer

- to select tube with sufficient diameter size so deflection caused by weight of shade material and shade size is not visible and good performance is assured.
- .5 Fascia and End Caps: Extruded T6 6063 or 6360 aluminum fascia with front towards room interior, shall be 1/16 inch (1.7 mm) thick, complete with two continuous screw flutes, anodized, powder coated or custom painted. Attachment of fascia is to be two-part process: first, a friction fit of fascia into cassette shade unit, then step two is mechanical by a hidden/concealed screw lock-down of fascia to cassette shade unit. Fascia shall be secured by eight #6, 3/4-inch screws to the shade cassette unit. Fascia shall be suitable for regular or reverse roll. Reverse fascia with back towards window, is also available as an option. Fascia end caps shall be T6 6063 or 6360 aluminum and fabricated via a press fit and a secure mechanical fastener.
- .1 Fascia and End Cap Colours: Extruded aluminum with plastic end finials.
- .1 Finish: Clear anodized aluminum.
- .6 Shade Drive Assembly:
- .1 Factory set for size and travel of shades; chain installed.
- .2 Unit can be field adjusted from the exterior of the cassette shade unit without having to disassemble the hardware. No field servicing or lubrication of the bi-directional drive assembly is required. Operation and pulling of chain shall be free and without binding inside the assembly and permitting shade to stop at any point that chain is stopped and no longer being pulled.
- .3 Provided with a built-in shock absorber to prevent chain breakage, under normal usage conditions.
- .4 Factory installed upper bead stop to prevent shade from rolling beyond preset upper limit. The lower bead stop is to be installed in field after consultation with project Architect. Bead stops can be removed in the field and adjusted as required without disassembly of cassette shade unit. The purpose of bead stops is to prevent shade from being raised or lowered too far thereby preventing damage to shade and/or mechanism.
- .5 Compliant child-safety active-spring-loaded tensioning chain retainer supplied with all cassette shade units with one retainer per chain drive. Design is to be as specified by Window Covering Materials Association (WCMA).
- .6 Manufacturer shall include and fabricate with roller shade, a Lift Assist Mechanism (LAM), sized according to shade weight and consisting of a spring device installed in the roller shade tube. The Manufacturer shall install a LAM spring on all very large or heavy shades.
- .7 Drive Chain: shall be No. 10 Stainless Steel bead chain formed in a continuous loop. Chain with 90-pound tensile strength. Plastic type or Nickel-plate chain is not acceptable.
- .7 Exterior Hembar: Extruded T6 6360 aluminum with plastic end finials, attached in factory to shade band fabric material. Exposed hembra with both ends of hembra sealed.
- .8 Shade band Material Attachment: Attach shade band material to roller shade tube in factory. Manufacturer shall have capability for attachment via double sided tape for insuring shade band material lays flat, or by hidden spline with lightweight small profile plastic extrusion attached to shade band material and inserted into a groove machined into roller tube. Selection of attachment method can be determined by Specifier preference or depending on project requirements

and size of finished shade cassette unit. All finished shades must be fabricated with one complete wrap of material minimum, to cover the attachment of the shade and material to the shade tube. This wrap length will vary due to size of shade and size of tube and factory assembly conditions.

.9 Light Gap:

- .1 All Light Filtering Cassette Shade Units must maintain equivalent and symmetrical light gaps on both sides. Gap width to be 3/4 inch (19.5 mm).

.10 Shade band Assembly Details:

- .1 Shade Cassette Unit manufacturer to assemble roller shade with specified shade band material to fill window opening from sill to head and from jamb to jamb unless project Architect has specified differently.
- .2 Manufacturer shall assemble roller shade with the indicated front side of shade band fabric material facing the interior of the room when roller shade is in down position. Project Architect can specify shade band material reversed, or turned so face is now visible from window, as project needs require.
- .3 All shade band material to hang flat without buckling, puckering, or distortion.
- .4 Manufacturer to provide T6 6061 aluminum battens in standard roller shades as necessary to insure proper rolling of roller shades and for proper tracking. The installing contractor and manufacturer shall fabricate roller shades with a width-to-height ratio that shall not exceed manufacturer's published guidelines. The batten shall be selected at manufacturers discretion based on size of shade and shade band material selected. All locations of seams to be approved by project Architect.
- .5 Manufacturer shall provide Railroaded type shade bands with seams as required to meet size requirements and to match other seams. All locations of seams to be approved by project Architect. Manufacturer shall utilize battens in accordance with their published guidelines to minimize tracking distortion and for proper rolling of the shade band material on the tube.

.11 SHADE FABRIC

.1 Light Filtering Fabric:

- .1 Sheerweave Infinity 2 by Phifer
- .2 Openness Factor: 3%
- .3 Colour: PG2 Almond
- .4 Composition: 37% Fiberglass, 63% Vinyl on Fiberglass
- .5 Mesh Weight: 16.2 oz/yd<sup>2</sup>, (549 g/m<sup>2</sup>)
- .6 Acoustical Value: NRC .55 / SAA .54
- .7 Fire Classification: CAN/ULC-S 109 (large and small scale)

.2 BlackOut Fabric:

- .1 Elite Pro Vinyl
- .2 Openness Factor: BO
- .3 Colour: Clay
- .4 Composition: Vinyl
- .5 Fire Classification: CAN/ULC-S 109 (large and small scale)

**2.3 FABRICATION**

- .1 Provide manual shade chain drive window shade, of:
  - .1 Tension activated lifting mechanism with multi-layer concentric constant tension.
  - .2 Lifting mechanism with a memory tension lock.
  - .3 Shade to not require re-tensioning after removal for cleaning.
  - .4 Internally free-floating mechanism along grooved non-corrosive shaft, and reversible for future alterations and maintenance.
- .2 Factory assemble in a one-piece container, closed on all four sides, with top, back, sides and bottom return of plastic injected-molded end caps.
- .3 Lifting mechanism to accommodate tension modules for maximum shade performance. Provide memory lock for tension modules to retain torque.
- .4 Mounting detail as specified for Shade Type 1 and Shade Type 2.

**Part 3 Execution**

**3.1 EXAMINATION**

- .1 Verify existing conditions before starting work.
- .2 Examine substrate and conditions for installation.
- .3 Beginning of installation means acceptance of substrate and project conditions.

**3.2 INSTALLATION**

- .1 Install units and their accessories to manufacturer's instructions.
- .2 Install roller shades level, plumb, square, and true. Allow proper clearances for window operation hardware.
- .3 Install the following items to conceal roller and operating mechanism. Do not use exposed fasteners:
  - .1 Fascia.
  - .2 Closure panels.
  - .3 Endcaps.
- .4 Install headbox, side channels, secured according to manufacturer's instructions.
- .5 Position shades level, plumb, and at proper height relative to adjacent construction. Secure with fasteners recommended by manufacturer.
- .6 Securely screw end plugs to conceal exposed cut aluminum of exterior hem bar.
- .7 Securely anchor units plumb and level, using hardware and accessories to provide smooth operation without binding.

**3.3 INSTALLATION TOLERANCES**

- .1 Maximum variation of gap at window opening perimeter: 6 mm per 2.4 m
- .2 Maximum offset from level: 3 mm.
- .3 Use manufacturer's edge clearance requirements for shades where the width-to-height ratio exceeds 1:3.

**3.4 ADJUSTING**

- .1 Adjust units for smooth operation.
- .2 Adjust shade and shade cloth to hang flat without waves, folds, or distortion.
- .3 Replace any units or components which do not hang properly or operate smoothly.

**3.5 CLEANING**

- .1 Section 01 74 00: Cleaning installed work.
- .2 Touch up damaged finishes and repair minor damage in a manner to eliminate evidence of repair. Remove and replace work that cannot be satisfactorily repaired.
- .3 Clean exposed surfaces and edges/ends, including metal and shade cloth, using non-abrasive materials and methods recommended by manufacturer. Remove and replace work which cannot be satisfactorily cleaned.

**3.6 CLOSEOUT ACTIVITIES**

- .1 Demonstration: Demonstrate operation method and instruct Owner's personnel in the proper operation and maintenance of the window shade assembly.

**END OF SECTION**

**Part 1            General**

**1.1            SECTION INCLUDES**

- .1    AV Equipment Room Systems
- .2    Audio Components
- .3    Video Components
- .4    Cables + Power Accessories:
- .5    AV Racks
- .6    User Control Components
- .7    AV Trades Infrastructure Components
- .8    Digital Signage Components
- .9    Room Scheduling Panel Components

**1.2            RELATED SECTIONS**

- .1    Section 06 10 53 - Miscellaneous Rough Carpentry
- .2    Section 09 21 16 - Gypsum Board Assemblies
- .3    Electrical Division

**1.3            DEFINITIONS**

- .1    Audio Visual (AV) Subcontractor:
  - .1    The consortium of the Subcontractor, their Delegated Design Professional, Product Suppliers, Installers and AV Vendor shall be referred to as the Audio Visual (AV) Subcontractor. The Audio Visual (AV) Subcontractor shall be responsible for providing the design by their Delegated Design Professional, supply, installation and commissioning of the Audio Visual System for each identified Room in accordance with the Owner's Statement of Requirements specified in Section 27 41 00.
- .2    Delegated Design: The AV System is Subcontractor designed, supplied, installed and commissioned.
  - .1    Design Audio Visual System, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
  - .2    Design must meet the Owner's Statement of Requirements for Performance and Design Criteria specified in Section 27 41 00.
  - .3    Design must be prepared and sealed by a licensed Registered Ontario Professional Engineer in good standing, retained by the AV Subcontractor.
- .3    Delegated Design Professional: The design professional contracted to the Audio Visual Subcontractor to design the Audio Visual System as a whole with the specific audio visual components outlined in Section 27 41 00 and produce Delegated Design Submittals and Shop Drawings to meet the requirements of the Project.

- .1 Delegated Design Professional is a licensed Registered Ontario Professional Engineer retained by the AV Subcontractor.
- .2 Delegated Design Professional shall be covered by Professional Liability Insurance.

#### **1.4 GENERAL REQUIREMENTS**

- .1 Conform to the drawings and specifications for electrical, communications, mechanical and architectural sections.
- .2 All work shall be coordinated with the General Contractor to conform to the General Labour Conditions requirements for the use of union labour by the Contractor and Subcontractors as referenced in the General Conditions of Contract in Divisions 01 and 02.
- .3 Work to be done under this Section shall include providing Design of the system, coordination with the General Contractor to locate where equipment will be installed and provide any necessary construction work for required framing and supports brackets for monitor, projector mounts and equipment racks and storage rooms.
- .4 Work to be done under this Section shall include preparation of shop drawings, coordinating the location and placement of the AV systems components, labour, materials, and equipment required for installation, testing and putting into proper operation complete Electrical systems required for the AV Systems which are designed to meet the Owner's Statement of Requirements, as specified and as otherwise required.
- .5 The Audio Video Systems shall provide a fully integrated system for reproduction of audio and video sources for the locations shown on the drawings and specified herein and should be programmed for the various rooms configurations.
- .6 Audiovisual systems shall be provided in accordance to Owner's Statement of Requirements:
- .7 The contractor shall coordinate the features of the materials and equipment so that they form an integrated system with components and interconnections matched for optimum performance of specified functions.
- .8 The Shop Drawings shall indicate the mounting height(s), orientation and type of each speaker. Minor adjustments shall be accommodated within the Contract Price.
- .9 All equipment, installation material and labour required to fulfill the functional and performance criteria of the Audio/Video System, as described in this Specification, shall be furnished whether or not enumerated herein or on the Drawings.
- .10 The systems and components shall be of modular design, completely solid state and be high quality professional audio and video products.
- .11 Should the Audio Visual Subcontractor wish to propose an alternative to a specified item as indicated above:
  - .1 The alternative equipment shall be listed separately and be clearly identified, with specific reference to the pertinent section of the Specification.
  - .2 Include full technical and mechanical specifications of the proposed substitution, including the manufacturer's maintenance manuals where possible.
  - .3 Clearly show the dollar increase or decrease in the bid resulting from use of the substitution.
  - .4 Alternative proposals will not be considered unless submitted with complete documentation at time of Tender close.



- .12 All equipment, wiring and wiring devices supplied shall meet the requirements of the authority having jurisdiction and shall be CSA approved. The total work specified herein shall comply strictly to the requirements of the latest edition of the National Building Code or the Canadian Electrical Code, as appropriate. This code and any additional requirements of the Authority having jurisdiction constitute an integral part of this Specification, and in case of conflict, the Code shall take precedence over this Specification.
- .13 Partial EMT conduit, raceways, floor boxes and associated J-boxes are provided by Electrical Division contractors. Audio video contractor shall inspect provided supporting AV infrastructure and provide all additional components required for installation of AV systems.
- .14 The power to the devices, duplex 20A, 120V receptacles is provided by division 26. Any additional power circuits required for AV system operation shall be responsibility of Section 27 41 00.
- .15 Section 27 41 00 shall provide cabinets with 19" rails required for installation of AV equipment.

## **1.5 REFERENCES**

- .1 The publications listed below form a part of this specification:
  - .1 National Fire Protection Association (NAPA) publication 70-96, National Electrical Code.
  - .2 Underwriters Laboratories Inc. (UL) publications:
    - .3 Conduit, Electrical, Rigid Metal.
    - .4 Cabinets and Boxes, Electrical.
    - .5 Electrical Metallic Tubing.
  - .6 Electronic Industries Association (EPA):
    - .7 EIA-160, Sound Systems.
    - .8 EIA-310-E, Racks, Panels, and Associated Equipment.
    - .9 EIA-101-A, Amplifiers for Sound Equipment.
  - .10 SE-103, Speakers for Sound Equipment.
  - .11 SE-104, Engineering Specifications for Amplifiers for Sound Equipment.
  - .12 BICSI's Telecommunications Distribution Methods Manual.

## **1.6 SUBMITTALS FOR REVIEW**

- .1 Section 01 30 00: Submission procedures.
- .2 Before any components of the Audio Visual System are purchased and before any work on site is started, the AV Subcontractor shall submit their complete Delegated Design documents prepared, signed and sealed by their Delegated Design Professional, for review and approval by the Owner.
- .3 Product Data: Provide showing electrical characteristics and connection requirements for each component.
- .4 Shop Drawings:
  - .1 Provide Shop Drawings [and calculations stamped and signed by the delegated design professional.
  - .2 Indicate electrical characteristics and connection requirements, including system wiring diagram.

- .3 Block diagrams showing the proposed interconnection of all equipment.
  - .4 Riser diagram(s) showing all system devices and their appropriate cable requirements, AC requirements, equipment rack locations, conduit sizes, loudspeaker types and locations, and sensing device locations etc.
  - .5 Equipment rack drawings showing the Equipment layout, AC wiring and audio grounding methods.
  - .6 Equipment catalogue sheets with the pertinent specified parameters highlighted.
  - .7 Circuit diagrams, descriptive information and operating instructions for all custom equipment to be furnished, i.e. control and switching equipment, special panels etc.
  - .8 Fastening and mounting arrangements for all devices including loudspeakers.
  - .9 A general description of the system, its operation procedures and contractor' system test procedures.
  - .10 Recommended spare parts list shall be provided in the event the Owner proceeds without an extended warranty purchase.
- 
- .5 The Owner's review or approval of shop drawings does not relieve the Contractor from responsibility for providing a complete and operating system.
  - .6 Notes or changes to the shop drawings by the Owner are not intended to alter the value of the work. The Owner shall be advised, in writing of any notation or change which will affect the Contract Price. Do not proceed with the subject work until officially notified.
  - .7 The specification drawings, "typical" manufacture shop drawings, or catalogue pages will not be accepted as submittals for this requirement. Drawings shall illustrate how each item of hardware functions, fits into, and interfaces with the system.
  - .8 Include an overall system schematic indicating the relationship of each system component on one diagram. Drawings shall be a minimum of "B" size (11 x 17 in.), unless specified elsewhere.
  - .9 Drawings shall include wiring diagrams and installation details of hardware and cables indicating proposed locations, cable dress, conduit, sleeve assignments, layout and arrangements, and other items that must be shown to ensure a coordinated and compliant installation.
  - .10 Samples of materials with three product cut-sheets, or just three products cut sheets when appropriate, of materials and equipment intended for use in this installation shall be submitted to the Owner for approval after award.
  - .11 Each first page of product cut-sheet shall be numbered in sequence in the top right-hand corner of each cut-sheet set and each cut-sheet listed on a submittals control sheet.
  - .12 Re-submittals shall have a new number and reference the old number which they replace.
  - .13 Product cut-sheets shall contain all the requirements specifically called out in the specifications and drawings, and the ordering lead time required for the product.
  - .14 Product cut-sheets not meeting or containing the requirements stated in the specifications will be disapproved. Copies of catalogues shall not be acceptable as product cut-sheets unless the catalogue pages show the same level of technical detail required of a product cut-sheet.
  - .15 Samples and or product cut-sheets shall be accompanied by a letter of transmittal listing the samples.
  - .16 Product cut-sheets shall be marked to show materials and options selected. Markers or colours that will not show up when photocopied shall not be used. The products to be used and the options to be supplied shall be circled on the product cut-sheet.

- .17 A letter of approval or rejection will be returned. Samples will not be returned.
  - .18 Rejected submittals shall not be justification for delays or claims.
  - .19 The Contractor shall schedule submittals in such a way as to be able to respond to a certain level of rejected submittals. The Contractor shall pay particular attention to gaining early approval for long lead-time items or items that may require special permits or custom requirements.
  - .20 If the Contractor wants to request a substitution for a specified item, the Specification, contractor shall submit the product cut-sheets for both the item the contractor continued wants to use and the item specified in the specification or on the drawing. These submittals shall be kept separate from other submittals. These submittals shall state why the Contractor is requesting a substitution for the item specified. All other things being equal, price and/or delivery may be an acceptable reason.
  - .21 Within 10 working days after final system acceptance, the Contractor shall provide two sets of "as-built" drawings, showing all "as-built" and "as-found" conditions pertaining to this work. This manual can be produced with word processor software and PC. One set shall be provided to the owner; one set shall be provided to the designated Consultant.
  - .22 Closeout submittals in accordance to section 01 92 00: bound sets of operating and maintenance instructions shall be furnished for each item of equipment. Each set shall include a system-specific manual on the operation of all the components as a system. One additional set shall be provided to the designated Consultant.
- 
- .1 If the Contractor wants to request a substitution for a specified item, the Specification, contractor shall submit the product cut-sheets for both the item the contractor continued wants to use and the item specified in the specification or on the drawing. These submittals shall be kept separate from other submittals. These submittals shall state why the contractor is requesting a substitution for the item specified. All other things being equal, price and/or delivery may be an acceptable reason.
  - .2 Within 10 working days after final system acceptance, the contractor shall provide two sets of "as-built" drawings, showing all "as-built" and "as-found" conditions pertaining to this work. This manual can be produced with word processor software and PC. One set shall be provided to the owner; one set shall be provided to the designated Consultant.
  - .3 If the Contractor wants to request a substitution for a specified item, the Specification, contractor shall submit the product cut-sheets for both the item the contractor continued wants to use and the item specified in the specification or on the drawing. These submittals shall be kept separate from other submittals. These submittals shall state why the contractor is requesting a substitution for the item specified. All other things being equal, price and/or delivery may be an acceptable reason.
  - .4 Within 10 working days after final system acceptance, the contractor shall provide two sets of "as-built" drawings, showing all "as-built" and "as-found" conditions pertaining to this work. This manual can be produced with word processor software and PC. One set shall be provided to the owner; one set shall be provided to the designated Consultant.
  - .5 In accordance to section 01 92 00, bound sets of operating and maintenance instructions shall be furnished for each item of equipment. Each set shall include a system-specific manual on the operation of all the components as a system. One additional set shall be provided to the designated Consultant.

## **1.7 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Submission procedures.

- .2 Submit supporting documentation for the Delegated Design Professional, as follows:
  - .1 A copy of the Certificate of Authorization with the association of Professional Engineers of Ontario (PEO)
  - .2 A copy of the Insurance Coverage Certificate . The amount of the Delegated Design Professional's professional liability insurance shall be one million dollars (\$1,000,000.00) per claim.
- .3 Delegated Design Submittals:
  - .1 Submit documentation indicating compliance to performance/design criteria, signed and sealed by the delegated design professional responsible for their preparation.

**1.8 OWNER'S STATEMENT OF REQUIREMENTS FOR PERFORMANCE AND DESIGN CRITERIA**

- .1 For the Owner's Statement of Requirements refer to appended this Section with the title:
  - .1 Faculty of Arts & Science - Information & Instructional Technology – Audiovisual Requirements Summary / April 2026
- .2 Delegated Design: Design Audio Visual Systems for each identified Room, including electrical and cabling connections, mounting details, anchors and racking details required, by a licensed design professional.
- .3 System Design: Design and size components and having the performance conforming to the design criteria as indicated in Section 27 41 00.

**1.9 WARRANTY**

- .1 The total system shall be warrantied and maintained for a period of one (1) year on parts and labor from the date of Take-Over.
- .2 Provide Alternative Price for each of the following:
  - .1 Two (2) Year Extended material warranties, offered by any of the equipment suppliers, shall be provided to the Owner and indication of any such extension shall be noted in the maintenance service manuals to be provided. Prepare to offer the Owner a maintenance and service contract (for a two (2) year period) subsequent to the guarantee period..
  - .2 Three (3) Year Extended material warranties, offered by any of the equipment suppliers, shall be provided to the Owner and indication of any such extension shall be noted in the maintenance service manuals to be provided. Prepare to offer the Owner a maintenance and service contract (for a three (3) year period) subsequent to the guarantee period..
- .3 If any materials or workmanship prove to be faulty during their guarantee period(s) without cost to the Owner between 8:00 and 16:30 hours, undertake the following:
  - .1 Respond physically to the service call within 24 hours, unless the Owner waves this requirement.
  - .2 Repair any defective workmanship or replace the defective material within 1 day.
- .4 Obtain the Owners authority to effect guarantee repairs between 16:31 and 7:59 hours. These off hour repairs may be invoiced at the labor and travel rates established in the Tender Documents.
  - .1 Provide within the Bid Price, 8 on-site hours for the purpose of instruction of personnel.

- .2 The instruction manual shall be prepared with detail description for operation and troubleshooting
- .3 Maintain a satisfactory inventory of material necessary to carry out the guarantee obligations of this document and provide the Owners with satisfactory evidence that a service organization trained in this type of work is maintained.
- .4 Provide, within the guarantee period, a minimum of two (2) site visits for the purpose of checking and adjustment of the system.

#### **1.10 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.
- .2 Supplier: Authorized Franchised distributor of specified manufacturer with minimum three (3) years documented experience.
- .3 Installer Qualifications: Authorized installer of specified manufacturer.
- .4 Delegated Design Professional Qualifications: Professional Engineer experienced in design of this Work and licensed in the Province of Ontario.

#### **1.11 REGULATORY REQUIREMENTS**

- .1 Products Requiring Electrical Connection: Listed and classified by CSA and UL testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

### **Part 2 Products AV Equipment Room Systems**

#### **2.1 AUDIO COMPONENTS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

#### **2.2 VIDEO COMPONENTS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

#### **2.3 CABLES + POWER ACCESSORIES**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

#### **2.4 AV RACKS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

#### **2.5 USER CONTROL COMPONENTS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

**2.6 AV TRADES INFRASTRUCTURE COMPONENTS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

**2.7 DIGITAL SIGNAGE COMPONENTS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

**2.8 ROOM SCHEDULING PANEL COMPONENTS**

- .1 Refer to Appendix for AV Equipment Room Systems for each Room Type attached at the end of Section 27 41 00

**2.9 EQUIPMENT RACKS/CABINETS**

- .1 Equipment Racks/Cabinets
- .2 Provide wall-mounted equipment rack/cabinet with required amount of spaces. Information as shown on the Drawings is for reference. Colour and equipment location to be as directed by the Architect. Equipment panels shall be painted and screened if necessary, to be of one (1) colour. Provide blank panels as required.
- .3 The equipment rack/cabinet assembly shall be modular in design. They shall consist of assembled basic rack, side panels, rear locking doors, front vented locking doors, mounting rails and an adequate quantity of ventilation panels. The racks shall be for standard 483 mm equipment mounting. The cooling fans shall be an integral component of the supplied at top front of each rack section. The flush mounted exhaust fan, complete with grille, of sufficient cfm size shall be provided.
- .4 Show the quantity of rack spaces units.
- .5 All system cables entering the rack shall be flexible cables.
- .6 Provide in rack a distribution power bar as required. A power outlets shall be provided as required. Provide power distribution unit that will be mounted on first top shelf. Unit shall be equipped with two lights that can be extended. Connect A/C to a 20 amp receptacle.
- .7 Provide UPS in rack as required to power all AV head end equipment. A power outlets shall be provided as required. Unit shall be equipped with LAN card.
- .8 Provide 120V, 1500VA UPS system for AV equipment cabinet.
- .9 Standard of reference is APC or Middle Atlantic

**2.10 ACCESSORIES**

- .1 Wall bracket for each wall mounted component.

**Part 3 Execution**

**3.1 INSTALLATION**

- .1 All work shall be done in a workmanlike manner by tradesmen skilled in the class and kind of work and shall be neat and clean when completed.
- .2 All equipment shall be firmly held in place. Full range cabinets and components shall be fastened in an approved manner and shall be firmly supported. All devices shall be fixed with fastenings and supports as specified.

- .3 Mount all equipment, boxes, exposed wiring or other devices plumb and square. Moderate relocation of equipment, as is necessary to preserve a favorable appearance, shall be made without claim.
- .4 Wiring shall be installed in EMT raceway provided by Electrical Division contractor. If conduits are not provided, this contractor shall provide plenum rated cables and install cables using J hooks or other cable supports.
- .5 If short cable runs must be run exposed, approval of routing and materials must be obtained from the Owner before commencing the work.
- .6 Conduits shall be routed and audio equipment shall be located to circumvent all interferences.
- .7 All operating controls, switches, jacks, plugs and accessories shall be permanently marked in a clear logical manner utilizing embossed letters or lamicoid plates.
- .8 All wiring shall be properly identified in function boxes, at terminal blocks and where accessible.
- .9 Include all costs associated with using lifts or another equipment for installing wiring.
- .10 No allowance will be made for extra cost as a result of site conditions and hardship claims will not be entertained.
- .11 Electrical Interference

### **3.2 ELECTRICAL INTERFERENCE**

- .1 Adequate precautions shall be taken to prevent electromagnetic and electrostatic interference and hum.
- .2 Equipment rack wiring and other electronic equipment wiring shall be placed and terminated in screw-type terminals or approved plugs. Permanent rack wiring shall be made with resin-core solder.
- .3 Standard engineering practices for separation of power, loudspeaker, line level, DC control and microphone level circuits shall be adhered to in equipment rack assemblies.

### **3.3 GROUNDING**

- .1 The assembled and installed equipment racks shall bear an Ontario Hydro special inspection label which will indicate that all electrical equipment and devices have been installed and grounded in a manner that will not present any hazards to operating or maintenance personnel.
- .2 Utilizing standard broadcasting professional grounding practices - effectively ground each rack and the associated rack equipment to the building grounding system.
- .3 The electrical continuity of the shield of a line shall be maintained throughout the length of the line. The shield shall be insulated from all metal parts, except at the point of termination at the audio ground bus of the unit involved. The floating ends of shields shall be terminated by wedge-on collars or with plastic tape.

### **3.4 PERFORMANCE CRITERIA AND ADJUSTMENT**

- .1 Optimize the system performance within the limits of the specified equipment and device capabilities. Adjust the signal processing equipment, amplifiers, phasing and orientation to achieve performance satisfactory to the Owner.

### **3.5 PERFORMANCE TESTS AND REPORTS**

- .1 After the system is complete and final adjustments have been made, provide the Owner with properly documented test data regarding the performance of the system, as detailed below. Include a listing, by manufacturer and model number of all measurement instrumentation, as well as block diagrams and descriptions outlining the measurement procedures.
- .2 All acoustic measurements shall be done with commercially available equipment meeting the appropriate ANSI or IEC Standards for precision sound level meters and filter sets.
- .3 Measurements shall be made in octave or 1/3 octave bands centered on the standard frequencies, as required.
- .4 Submit with the test report(s) written certification that the system is complete and meets these Specifications and is ready for final inspection.

### **3.6 TESTS**

- .1 For the complete system - perform tests as follows:
  - .1 Verify that the complete system is free from R.F. pickup, parametric oscillations, hum, buzzes, rattles or distortion by:
  - .2 Listening to high quality program material which produces peaks at full power.
  - .3 Observing the amplifier outputs, on a oscilloscope having at least a 5 MHZ bandwidth, with all input cables connected, all inputs open, input gain controls set to normal program level, and with no signal sources connected; and with the system driven to full output with a 400 Hz signal.
  - .4 Slowly sweep a sine wave input producing -6 dB re full power output, from 40 to 5,000 Hz and listening for rattles or distortion. Correct any system defects. Promptly notify the Engineer of any defect in other than the public address and signal system (i.e. vibrating panels, ducts, ceiling tiles, structure or other).

### **3.7 ACCEPTANCE TESTS**

- .1 Upon approval of the test reports demonstrate, to the Owner and the Delegated Design Professional via on site random testing, a sample portion of any or all test and verifications - required under Performance Tests and Reports.
- .2 Provide all test equipment necessary for the acceptance tests,
- .3 If need for adjustment becomes evident during the acceptance testing, work shall be continued until the system installation operates as specified, without extra cost to the Contract.
- .4 Final payment will be approved upon acceptance of the completed installation by the Owner or the Engineer.

### **3.8 DEMONSTRATION AND TRAINING**

- .1 Demonstrate the system's operation, maintenance and service procedures to the Owner's designated personnel, as follows:
  - .1 Operation procedures prior to final approval of the completed system,
    - .1 Maintenance procedures prior to final approval of the completed system and at end of guarantee period.
    - .2 Service procedures - prior to the end of guarantee period.



- .2 Provide for a minimum eight (8) hours to effect the above demonstrations and arrange dates and times for the demonstrations with the Owner or the Engineer.
- .3 Provide USB FLASH DRIVE with recording of the training session.

### **3.9**

#### **DOCUMENTATION**

- .1 Upon completion of the work and prior to system acceptance and final payment supply five (5) copies of the "System Technical Manual" to the Owner for approval and eventual use by the Owner. The technical manual shall contain:
  - .1 Final system block diagrams
  - .2 Complete system operating instructions including schematic diagrams and parts lists as above for all custom manufactured items.
  - .3 As-built wiring diagrams showing the connections between equipment, cable color coding and terminal connections of all equipment assemblies and junction boxes
  - .4 Tap connections on all speaker transformers, impedance of all speaker circuits and details of impedance matching networks.
  - .5 Final position and orientation of all transducers
  - .6 Designations and settings of all signal processing equipment, zone, gain and other controls
  - .7 Connections to all amplifiers and the output voltage of all amplifiers during normal operation
  - .8 The as built drawings shall show every piece of equipment in "as left" condition.
  - .9 Performance data on the completed system as specified under Performance Testing
  - .10 USB FLASH DRIVE rom with recorded instructions how to use system and with recorded training sessions. All areas of training on audio/video system shall be recorded. USB FLASH DRIVE shall be produced from all topics recorded at time of training. USB FLASH DRIVE shall be chaptered to access each of the topics discussed. Each topic shall have pictures used in conjunction with presenter's video.

### **3.10**

#### **SCHEDULES**

- .1 Refer to Section 27 41 01 – Audio-Video Systems - Owner's Statement of Requirements for User Requirements, Functional Requirements Room Types, Equipment Lists, Project Deliverables, AV IIT Design Standards and Preferred Equipment Manufacturers & Required Protocols & Features :
  - .1 Faculty of Arts & Science - Information & Instructional Technology – Audiovisual Requirements Summary

**END OF SECTION**

Faculty of Arts & Science - Information & Instructional Technology – Audiovisual Requirements Summary / April 2026

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### USER REQUIREMENTS (what the user needs)

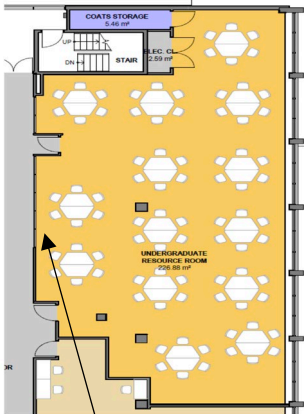
- Ability to host or participate in web-based hybrid conferences using ZOOM and MS Teams
- Ability to use room cameras, microphones, speakers with a Linux / WINDOWS 11 / MAC OS laptop and a dedicated In Room ~~UTOR~~ PC running latest support Windows Operating System (WINDOWS 11)
- Ability to setup control room AV Technology without complexity, no Crestron IP control
- Flexible modular furniture for all spaces without AV integration
- Reliable professional functional AV Technology for long-term use, scalable and maintainable
- Room scheduling panels (shared spaces) to provide real-time booking, instant visibility of room availability; Implement EMS booking system provided by UofT – Supply Crestron touch-panels only
- Single cable USB-C connectivity for devices to connect to audio, video and conferencing devices. Active USB-C to USB-C cables are required to avoid the need for multi-port adapters. USB-C connectivity to support the Power Delivery 3.1 standard.

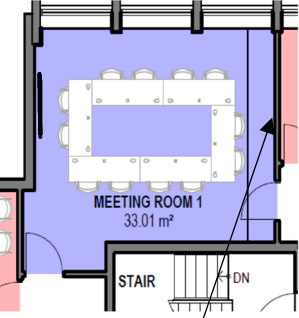
### FUNCTIONAL REQUIREMENTS (what the user wants the solution/system to do)

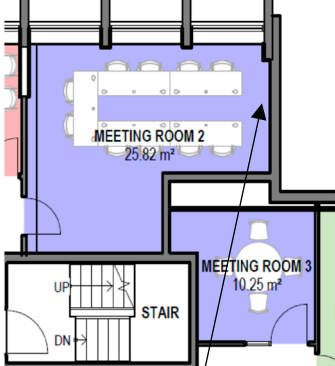
- Ability to connect from a dedicated room PC or a Linux, WIN 11 or MAC OS Laptop using HDMI USB-C DP ALT Mode connections with the AV room Technology: TV 4K Displays, Laser 4K Projector, Audio Speakers, Microphones and 4K Cameras
- Run web conferencing scenarios with Zoom / MS Teams either as host or connect in as a remote participant using the integrated AV room technology
- A high-resolution auto tracking camera for digital content capture of blackboard annotation for instructional teaching

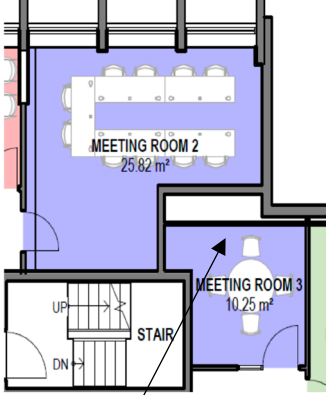
## CONCEPTUAL ROOM TYPES

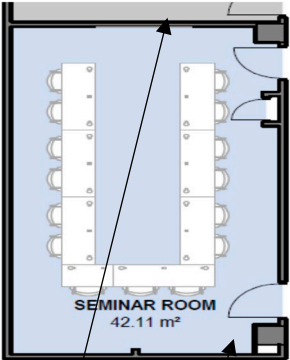
All manufactured AV equipment is to be commercial grade new condition. Please refer to the room equipment list below for specification on the make and model type. Equipment alternatives or substitutions may be submitted but the University reserves the right to approve all alternates suggested by the AV Vendor

ROOM / TYPE	AV TECHNOLOGY	USE-CASE REQUIREMENTS
<p>2<sup>nd</sup> FLOOR  UNDERGRADUATE RESOURCE  ROOM – MATH AID CENTRE <b>RM 2902</b></p>  <p>Ceiling mounted Projection Screen  + Control Switch  Laptop USB-C + HDMI Wall Plate  81' x 36'</p>	<p><b>Video:</b>  1 x NEC LASER PROJECTOR 4K P627UL w/  internal audio speaker</p> <p>1 x DA LITE TENSION ADVANTAGE 13.25'  16:9 w/ serial control board  PROJECTION SCREEN with low voltage  wall switch up / down screen control</p> <p>1 x EXTRON DTP3 212D Tx Rx DTP3 R201  HDMI + USB-C</p> <p><b>Cables + Power Accessories:</b>  1 x STARTECH 20' HDMI  1 x EXTRON 20' USB-C Optical 4K/30 Video  Pro</p> <p><b>User Control:</b>  CEC Control  EXTRON HD CTL 100</p> <p><b>AV Trades Infrastructure:</b>  1 x CHIEF CEILING PROJECTOR  MOUNTING KIT</p>	<p>Student study space,  Drop-in Tutoring area,  Educational workshops,  live events, presentations</p>

ROOM / TYPE	AV TECHNOLOGY	USE-CASE REQUIREMENTS
<p>3<sup>rd</sup> FLOOR LARGE MEETING ROOM 1 RM 3001</p>  <p>MEETING ROOM 1 33.01 m²</p> <p>75" TV WALL MOUNTED + ARTICULATING ARM + AV DEVICES INSTALLED ON SLIDE-OUT RACK MOUNT: 20'-2" x 17'</p>	<p><b>Audio:</b> 1 x SHURE MXA902 MIC SPEAKER + ANIUSB</p> <p>1 x NETGEAR M4250</p> <p><b>Video:</b> 1 x 75" Wall 4K SHARP NEC TV 1 x HUDDLY L1 Camera audience 1 x PEERLESS Articulating bracket 1 x EXTRON UCS SW313 SWITCHER + AV Cable pass-through wall plate box</p> <p><b>Cables + Power Accessories:</b> 1 x STARTECH 20' HDMI cable 1 x EXTRON 30' USB-C Optical 4K/30 Video Pro to a Laptop Table 1 x STARTECH USB-C USB4 to USB-A cable 2 x 6 outlet Surge Protector Bar</p> <p><b>AV Rack:</b> 1 x On Wall AV Slide Out Storage device mount rack behind TV</p> <p><b>User Control:</b> No Crestron</p> <p><b>Digital Signage:</b> N/A</p> <p><b>Room Scheduling Panel:</b> 1 x exterior 10" Crestron touchscreen for EMS</p>	<p>Administrative meetings, conferencing, shared space, webinars, presentations</p>

ROOM / TYPE	AV TECHNOLOGY	USE-CASE REQUIREMENTS
<p>3<sup>rd</sup> FLOOR MEDIUM MEETING ROOM 2 RM 3021</p>  <p>75" TV WALL MOUNTED + ARTICULATING ARM + AV DEVICES INSTALLED ON SLIDE-OUT RACK MOUNT 20' x 17'</p>	<p><b>Audio:</b> 1 x SHURE MXA902 MIC SPEAKER + ANIUSB</p> <p>1 x NETGEAR M4250</p> <p><b>Video:</b> 1 x 75" Wall 4K SHARP NEC TV 1 x HUDDLY L1 Camera 1 x PEERLESS Articulating bracket 1 x EXTRON UCS SW313 SWITCHER + AV Cable pass-through wall plate box</p> <p><b>Cables + Power Accessories:</b> 1 x STARTECH 20' HDMI cable 1 x EXTRON 30' USB-C Optical 4K/30 Video Pro to a Laptop Table 1 x STARTECH USB-C USB4 to USB-A cable 2 x 6 outlet Surge Protector Bar</p> <p><b>AV Rack:</b> 1 x On Wall AV Slide Out Storage device mount rack behind TV</p> <p><b>User Control:</b> No Crestron</p> <p><b>Digital Signage:</b> N/A</p> <p><b>Room Scheduling Panel:</b>  1 x exterior 10" Crestron touchscreen for EMS</p>	<p>Administrative meetings, conferencing, shared space, webinars, presentations</p>

ROOM / TYPE	AV TECHNOLOGY	USE-CASE REQUIREMENTS
<p>3<sup>rd</sup> FLOOR SMALL 4 SEAT MEETING ROOM 3 RM 3017</p>  <p>55" TV WALL MOUNTED + ARTICULATING ARM + AV DEVICES INSTALLED SURFACE MOUNTED 10'-4" x 12'</p>	<p><b>Audio Microphone Camera</b> 1 x Jabra 50 Panacast Unit w/ floating TV Soundbar bracket model MD5425</p> <p><b>Video:</b> 1 x 55" Wall 4K SHARP NEC TV 1 x PEERLESS Articulating bracket 1 x EXTRON UCS-601 10G DOCK + AV Cable pass-through wall plate box</p> <p><b>Cables + Power Accessories:</b> 1 x STARTECH 15' HDMI cable 1 x EXTRON 20' USB-C Optical 4K/30 Video Pro to a Laptop Table</p> <p><b>User Control:</b> No Crestron</p> <p><b>Digital Signage:</b> N/A</p> <p><b>Room Scheduling Panel:</b> 1 x exterior 10" Crestron touchscreen for EMS</p>	<p>Administrative meetings, conferencing, shared space, webinars, presentations, interviews</p>

ROOM / TYPE	AV TECHNOLOGY	USE-CASE REQUIREMENTS
<p>3<sup>rd</sup> FLOOR SEMINAR ROOM RM 3030</p>  <p>AV Rack</p> <p>CEILING MOUNTED PROJECTOR SCREEN + FIXED CHALKBOARD LAPTOP USB-C HDMI 15'-10" x 23'</p>	<p><b>Audio:</b> 2 x SHURE MXA902 MIC SPEAKER + P300</p> <p>1 x NETGEAR M4250</p> <p><b>Video:</b> 1 x NEC LASER PROJECTOR 4K NP-PE506UL</p> <p>1 x DA LITE TENSION ADVANTAGE 12' 16:9 w/ serial control board PROJECTION SCREEN with low voltage wall switch up / down screen control</p> <p>1 x HUDDLY L1 Camera audience 1 x HUDDLY S1 Chalkboard Camera + ceiling mounted arm ARKON CMPHD006 model 1 x EXTRON UCS SW313 SWITCHER + AV Cable pass-through wall plate box 1 x EXTRON DTP Tx Rx 4K 230 video transport</p> <p><b>Cables + Power Accessories:</b> 1 x STARTECH 20' HDMI cable 1 x EXTRON 30' USB-C Optical 4K/30 Video Pro to a Laptop Table 1 x STARTECH 15' USB-C USB4 to USB-A CABLE 2 x 6 outlet Surge Protector Bar</p> <p><b>AV Rack:</b> 1 x 12RU Secure Mini AV Rack Installed inside Seminar Room Colour: White</p> <p><b>User Control:</b> No Crestron</p> <p><b>Digital Signage:</b> N/A</p> <p><b>Room Scheduling Panel:</b> 1 x exterior 10" Crestron touchscreen for EMS</p>	<p>Intended for grad classes, seminars and hybrid events, administrative meetings, conferences, presentations,</p> <p>Flexible furniture</p>

## **PROJECT DELIVERABLES**

- Supply new commercial grade equipment and install a complete functional and working AV system for each room as specified in this Document. Complete each AV room system as specified, fully configured and test commissioned to ensure that all AV for the intended spaces is designed and constructed to the standards set by Information & Instructional Technology (IIT)
- The AV vendor is to provide the University with the following documentation as per defined project schedule:
  1. Preconceptual AV CAD schematic drawings for approval sign-off
  2. IT AV device table w/ product specifications make, model and serial numbers
  3. As-built CAD drawings
  4. Elevation CAD drawings and
  5. any documents pertaining to the project completion
- 6. All AV system documentation and hardware is to be handed over for U of T ownership upon project close-out  
Technical AV drawings may be provided for reference to other University trades contractors
- 7. Provide, pull, supply and terminate all-new AV system low-voltage wiring and cable boxes and conduits to and from devices within ceiling space and wall
- 8. Specific AV cable types, location and termination will adhere to the University Union Trades policy involving subcontractors (AV Vendor) to supply specific AV cable spools / type for infrastructure pulls as per the University Electrical Trades union mandate
- 9. Provide AV cut-out sheets for equipment where appropriate for unionized trades work; TV display wall mounts, ceiling projector mounts, hardware articulating mounts, extension brackets and ceiling tile brackets
- 10. Connect all low-voltage audio, video, and control cables where as necessary
- 11. Patch and terminate all interconnected hardware as per defined AV schematics design
- 12. Provide terminate specific device interconnected AV wiring and termination between system devices located at the ceiling, front wall, side walls, tables etc.
- 13. Provide manufacturer how to documentation, equipment manuals, end user and IT training as part of the project close out phase.
- 14. Add optional 1, 2 and 3-year maintenance plans and support coverage plans which includes ability to schedule service calls with response times and services defined.
- 15. Service agreement to cover the functionality and workmanship of the AV installation, and includes regular maintenance of all equipment
- 16. Department of Mathematics is responsible to procure dedicated room Desktops, monitors, keyboard peripherals, docking stations, USB-C adapters
- 17. The University uses EMS ACCRUENT Room Booking Software; to be implemented through central EASI-ITS and A&S IIT INFRA units, exterior room physical touch-panels to be procured through the AV project budget with POE ethernet in the electrical scope
- 18. All equipment vendor supplied devices wireless microphones, cables, accessories to be handed over to Department of Mathematics after system commissioning completed without punch-list AV deficiencies. No wireless equipment, loose devices or system AV accessories or materials is to be left open in the project site while construction phase is ongoing, all AV equipment is to have temporary secure storage coordinated with Project Manager, A&S Infrastructure Planning, Department of Mathematics and A&S IIT.
- 19. ASDO IIT to provide internal AV system commissioning reports including outstanding equipment deliverables, functional deficiencies and design problems to the central project team prior to formal project sign-off with the AV Vendor.
- 20. All Audio-Visual IP system equipment is to be standard professional commercial grade type with specifications, make, models and components is to be approved by ASDO IIT and Department of Mathematics prior to 100% Design Development phase.



## **AV IIT DESIGN STANDARDS**

- IIT and the awarded AV Vendor will be responsible for consulting on the Audio-Visual room systems including technical solution, concepts, design and implementation
- Equipment alternatives or substitutions will not be accepted unless the University reserves the right to approve all alternates suggested by the AV Vendor:
  - Where an alternate or substitute is being proposed, the
  - respondent must submit the following with their Quotation Response Form:
    1. Item for which the Alternate or Substitute is being proposed
    2. Product Make and Model number
    3. Supplier/Manufacturer's information: Name, Address, Telephone Number, Contact Person
    4. Lead Time for Alternate or Substitute product
    5. Product Warranty Information
    6. Product Brochure and specifications.
- The awarded AV vendor is to supply all new hardware components, including delivery and installation work to review the scope and responsibilities.
- Coordination affecting the building and room infrastructure involving University trades contractors is to be managed by the University Infrastructure Planning department.
- All power receptacles, front wall conduits, wall reinforcement, ceiling conduits will be installed by the University general contractor and electricians.
- Specific AV system cable pulls either by the unionized trades contactor, or the AV vendor is to be coordinated together
- All USB cable protocol must use USB4 or greater standard for all cables in the USB chain
- Avoidance of multiple USB tiers which affect peripheral device detection issues when using BYOD devices for conferencing and presentation. This is especially important for MAC Users.
- AV Network based IP cables are to be CAT6A Ethernet shielded minimum requirement
- All procured equipment should be Energy Star rated where possible - <https://www.nrcan.gc.ca/energy-efficiency/energy-star-canada/18953>
- Audio Visual Separate Conduits Grouping w/ consultation Electrical / GC contractors:
  1. Antenna Wireless RF Microphone Conduit Grouping
  2. Video Signal Wire + AV Control + Dante IP Ceiling Audio Mics Speakers (If future Crestron IP control is added or digital video upgrades to a room system)
  3. Audio Ceiling Speaker Wire Conduit
- Ventilation all AV equipment generates heat in a space. Regardless of the location, there must be adequate ventilation (air flow between the interconnected devices) to prevent unacceptable temperature increase
- Design and Assembly: For system floor racks and on wall slide out racks all to be fully enclosed secure with lockable components to prevent unwanted access; devices to be installed with professional cable management and accessible for future service
- Mounting all device mounting will adhere to serviceability, electrical interference, cable, and thermal management requirements as part of the design decisions documented prior to the rack assembly; Fixing or fastening of AV equipment to one another is not acceptable unless specified by the manufacturer. Fully tighten all fixings / fasteners. The use of fastening methods relying on adhesives is not acceptable
- Cable Management to be neat organized: Device cable labeling as per IP Device table and service type required
- Wall elevation for all TV displays and electronic motorized projection screens standard measurement is 42" minimum; lower-screen bezel height above the finish floor
- (AV) AODA policy compliance: ensure optimal seating to allow for viewing sightlines to screen elevations, height adjustable table chair, wheelchair access pathways, accessible doors, digital closed captions and listening aids (future add-on)

**Preferred Equipment Manufacturers & Required Protocols & Features:**

<b>Equipment Type</b>	<b>Manufacturer</b>	<b>Required Protocols, Features (where applicable)</b>
Touch Panels (Scheduling / Control)	Crestron	
AV Bridges, Hubs, Switchers	Extron, Crestron	
Projectors	Epson	Laser Type only
All-in-one Conference Bars	Jabra, Logitech, Bose	
Microphones (wired/wireless)	Shure	AEC, Dante
Conference Cameras	AVER, QSC, Huddly,	Auto-Tracking, IP Based
Content Capture Cameras	Huddly, Logitech	Digital Capture
USB Cables	Extron, Chenlenic (Amazon), TrippLite	USB4
HDMI Cables	Startech, TrippLite	v. 2.2
Power Bars/Surge Protectors	Mid Atlantic	
Projection Screens	DaLite, Draper	
Mounts	Chief/LeGrand, Peerless	
Displays	Sharp/NEC, LG	4K, CEC
Digital Signage Displays	LG	SOC, WebOS
AV Networking Switches	NetGear	M-Series Managed AV Line
Table Cubbies for AV	Extron, Crestron	
AV Racks	Mid Atlantic	
Cable Management, Slide-Out Storage	Chief/LeGrand	
Wall-Plate Input Plates	Neutrik, Crestron, Extron	
Digital Signal Processors	Shure, Biamp, QSC	AEC, Dante
Audio Video Transport	Crestron, Extron	
USB Switchers, Extenders	Crestron, Extron, Inogeni	