1 General

1.1 WORK INCLUDED

.1 All hollow metal (HM) steel frames, and screens as per Door Schedules, and as detailed on Drawings.

.2 Provide steel doors and frames including but not limited to following:

- .1 Hollow metal doors, swing flush type.
- .2 Fire rated.
- .3 Insulated exterior metal doors.
- .4 Hollow metal transom panels.
- .5 Hollow metal door frames.
- .6 Hollow metal frames and mullions for borrowed lights and glazed screens.
- .7 Glazing stops.
- .8 Preparation of hollow metal doors and frames for security system CSA approved wiring and/or conduit for electronic hardware. Include junction boxes and conduit for electronic hardware. Include system consisting of 15 conductors of 22 gauge wire complete with a modular quick connect wiring harness. Refer to Section 08 71 00 - Door Hardware for openings that require electrified hardware.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 07 92 00 - Joint Sealants.
.3 Section 08 14 16 - Flush Wood Doors.
.4 Section 08 71 00 - Door Hardware.
.5 Section 08 80 00 - Glazing.
.6 Section 09 22 16 - Non-Structural Metal Framing.
.7 Section 09 91 00 - Painting.
.8 Division 23 - Mechanical.
.9 Division 26 - Electrical: Wiring for electronic hardware.

1.3 REFERENCES

.1 Canadian Standards Association (CSA).

- .1 CSA A101-M1983, Thermal Insulation, Mineral Fibre, for Buildings.
- .2 CSA W59-M1989, Welded Steel Construction (Metal Arc Welding).
- .3 CSA-A440.S1, Canadian Supplement.
- .4 AAMA/WDMA/CSA 101/I.S.2/A-440.

.2 Canadian General Standards Board (CGSB).

- .1 CAN/CGSB-1.181-92, Ready-Mixed Organic Zinc-Rich Coating.
- .2 CAN/CGSB-82.5-M88, Insulated Steel Doors.
- .3 CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .4 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
- .5 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.
- .6 CAN4-S106-M80, Standard Method for Fire Test of Window and Glass Block Assemblies.
- .7 CAN/ULC-S702-97, Standard for Mineral Fibre Thermal Insulation for Buildings.

.3 American Society for Testing and Materials (ASTM).

- .1 ASTM A 525M-91b, General Requirements for Steel Sheet Zinc-Coated (Galvanized) by the Hot-Dip Process Metric.
- .2 ASTM A 526M-90, Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip

Process, Commercial Quality.

.3 ASTM A 527M-90, Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Lock-Forming Quality.

.1 ASTM B 749-85(1991), Lead and Lead Alloy Strip, Sheet and Plate Products.

.4 ASTM A568M-07, Standard Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled.

.5 ASTM A924M-07, Specification for General Requirements for Steel Sheet, Metallic- Coated by Hot-Dip Process.

.6 ASTM C665-06, Specification for Mineral Fiber Insulation.

.7 ASTM E90-04, Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.8 ASTM E413-04, Classification for Rating Sound Insulation.

.4 Underwriters' Laboratories of Canada (ULC).

.1 CAN4-S104M-M80, Fire Tests of Door Assemblies.

.2 CAN4-S105M-M85, Fire Door Frames.

.3 CAN/ULC-S702-97 - Standard for Mineral Fibre Thermal Insulation for Buildings.

.5 CAN/ULC-S702-97 - Standard for Mineral Fibre Thermal Insulation for Buildings.

.1 CSDMA, Commercial Steel Doors and Frames, 2006.

.2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.

.6 National Fire Protection Association (NFPA).

.1 NFPA 252-08, Standard for Fire Tests of Door Assemblies.

.2 NFPA 257-07, Standard for Fire Tests of Window Assemblies and Glass Block Assemblies.

.3 NFPA 80-1999, Standard for Fire Doors and Fire Windows.

.4 UL List of Equipment and Materials, Volume 2.

.5 WH Certification Listings.

.7 ANSI:

.1 ANSI A115-05, Hardware Preparations for Steel Doors and Frames.

.2 ANSI A115-IG 94, Installation Guide for Doors and Hardware.

.3 ANSI A224.1-94, Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

.4 ANSI A250.4-01, Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.

1.4 DESIGN REQUIREMENTS

.1 Labeled Fire-Rated Doors and Frames:

.1 Fire rated steel doors and frame products shall be provided for those openings as scheduled.

.2 Products shall bear the label of a recognized testing agency having factory inspection service, and shall be constructed as listed or classified for labeling.

.3 Doors provided for openings requiring fire rating only, or fire and temperature rise rating shall be tested in accordance with CAN4-S104.

.4 Frames, transom and sidelight assemblies provided for openings requiring fire rating, shall be tested in accordance with CAN4-S104.

.5 Window frames provided for openings requiring fire rating, shall be tested in accordance with CAN4-S106.

.6 Labeling shall be in accordance with ANSI/NFPA 80, the listing organization's policies and Follow-Up Service Procedures/Manuals.

.7 Fire rated door or frame component , not qualifying for labeling due to design,

hardware or any other reason, shall be noted in the submittal documents, or prior to manufacture of product if hardware, glazing or other options affecting fire-rating are not available at time of submittal shop drawing preparation.

.2 Ensure core materials for exterior doors attains thermal resistance of R 5 when tested in accordance with ASTM C177 or ASTM C518.

.3 Provide acoustic assemblies as indicated on Drawings and noted on Door Schedule tested as a fully operable unit in accordance with requirements of ASTM E90 and ASTM E413.

.4 Product quality shall meet standards set by (CSDMA) Canadian Steel Door and Frame Manufacturers Association.

1.5 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's product specification, construction details, material, finish descriptions and dimensions of individual components.

.2 Submit manufacturer's literature, data sheets for each type of material provided under this Section for project.

.3 Data sheets shall provide all required information.

.4 Submit required copies of detailed instructions for inclusion in maintenance manual.

.5 Submit manufacturer's installation instructions.

.3 Material Safety Data Sheets:

.1 Submit MSDS for inclusion in Operation and Maintenance Manual.

.4 Shop Drawings:

.1 Show each type of frame, door, core, metal thicknesses and finishes, openings (glazed and/or louvred), fire ratings, location of exposed fasteners, cutouts, hardware blanking, reinforcing, tapping and drilling arrangements.

.2 Show large scale frame sections and anchoring details.

.3 Submit door and frame schedule identifying each unit.

.4 Ensure each unit bears legible identifying mark corresponding to that listed in Door and Frame Schedule.

.5 Fabrication shall not proceed without receipt of reviewed submittal drawings and reviewed hardware schedule.

1.6 REQUIREMENTS OF REGULATORY AGENCIES

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M and NFPA 252 for ratings specified or indicated.

.2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled.

.3 Test products in strict conformance with CAN4-S104, ASTM E 152 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Be responsible for supply of products under this Section to site in timely manner, so as not to delay progress of other trades.

.2 Protect doors and frames during shipping and storage.

.3 Inspect all materials thoroughly upon receipt and report all discrepancies, deficiencies and/or damages immediately in writing to the Supplier. Note all damage on carrier's Bill

of Lading.

.4 Make good immediately any damage done. Clean scratches and touch up with rust-inhibitive primer. Replace damaged work which cannot be repaired, restored or cleaned.

.5 Store in a dry, secure location, on planks or dunnage. Doors and frame shall be stored in a vertical position, spaced with blocking. Materials shall be covered to protect them from damage but is such a manner as to permit air circulation. Site storage and protection of materials shall be in accordance with NAAMM-HMMA 840.

1.8 OPENING SIZES

.1 Method of measuring sizes:

.1 Width - Width of openings shall be measured from inside to inside of frame jamb rabbets.

.2 Height - Heights of openings shall be measured from the level finished floor (exclusive of floor coverings to the head rabbet of the frame.

.3 Door sizes - Doors shall be sized so as to fit the above openings and allow 3 mm maximum clearance at jambs and head of frame. A clearance of 6 mm maximum shall be allowed between the bottom of the door and the finished floor (exclusive of floor coverings). These are considered to be nominal clearances, subject to ordinary commercial variations.

1.9 WARRANTY

.1 Warrant work of this Section for period of 1 year 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; buckling, opening of seams, bond failure and extensive colour fading.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times.

2 Products

2.1 ACCEPTABLE MATERIALS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 Ambico Limited; www.ambico.com

.2 Apex Machine Works Limited; www.apexmw.com

.3 Daybar Industries Limited; www.daybar.com

.4 Fleming Door Products Limited; www.flemingdoor.com

2.2 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 526M or ASTM A 527M coating designation to ASTM A 525M, ZF75, minimum base steel thickness in accordance with CSDFMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CAN/CSA-G40.21, Type 44W, coating designation to ASTM A 525M, ZF75.

.3 Cast or rolled pure sheet lead: to ASTM B 29 or ASTM B 749, weight: 19.5 kg/m2, thickness 1.6 mm

.4 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.3 DOORS: CORE MATERIALS

.1 Honeycomb construction:

.1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m3 minimum sanded to required thickness.

2.4 DOORS: CONSTRUCTION

.1 Form each face sheet for exterior doors from 18 ga sheet steel.

.2 Form each face sheet for interior doors from 18 ga sheet steel.

2.5 DOORS: FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: hollow steel styrene insulated construction. Interior doors: honeycomb construction.

.3 Fabricate doors with longitudinal edges tack welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

.5 Reinforce doors where required, for surface mounted hardware. Provide flush vinyl top caps to exterior doors.

.6 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in strict conformance with CAN4-S104, ASTM E 152 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.7 Manufacturer's nameplates on doors are not permitted.

.8 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.9 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

2.6 ADHESIVES

.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

.3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/ adhesive.

2.7 PRIMERS

.1 Touch-up prime CAN/CGSB-1.181.

2.8 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.3 Metallic paste filler: to manufacturer's standard.

.4 Sealant: Refer to Section 07 92 00 - Joint Sealants.

.5 Door bottom seal: Refer to Section 08 71 00 - Door Hardware.

.6 Glazing: Refer to Section 08 80 00 - Glazing

.7 Fire labels: metal riveted.

.8 Make provisions for glazing as indicated and provide necessary glazing stops.
.1 Provide removable steel glazing beads for use with glazing tapes and compounds and secured with countersunk steel screws.
.2 Design exterior glazing stops to be tamper proof.

2.9 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.
.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
.5 Securely attach floor anchors to inside of each jamb profile.
.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
.7 When required due to site access or due to shipping limitations, frame products for large openings shall be fabricated in sections, with splice joints for field assembly by others.
.8 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only, where lead lined doors required.

2.10 FRAMES: SIDELITES AND SCREENS FABRICATION GENERAL

.1 Fire-Rated Frames: Fabricate fire-rated frames in accordance with underwriter's requirements using material not less than the thickness specified herein unless a greater thickness is stipulated by the labelling authority.
.2 Fabricate frames in accordance with CSDMA specifications.
.3 Fabricate frames to profiles and maximum face sizes and indicated.
.4 Exterior Frames: 1.5 mm wiped zinc finish steel, welded thermally broken type construction.
.5 Interior frames: 1.5 mm welded type construction.
.6 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier.
.7 Protect mortised cut outs with steel guard boxes.
.8 Manufacturer's nameplates on frames and screens are not permitted.
.9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
.10 Insulate exterior frame components with polyurethane insulation.
.11 Cut mitres and joints accurately and weld continuously all joints and seams on the inside of frame profile.
.12 Grind welded corners and joints of flat plane, fill with metallic paste filler and sand to uniform smooth finish.
.13 Stiffen frames over 1200mm unsupported width with minimum 1.2mm formed steel channel, funnel thickness and width of frame, welded into head profile.
.14 Install 2 bumpers on strike jamb for each single door and 2 bumpers at head for pair of doors.
.15 Provide 2 spreader bars per door frame of 1.5mm materials. Welded at base of frame to ensure alignment during shipment.
.16 Borrowed light and screens size as noted on drawings, with removable stop for glazing of frame, on inside room side.

2.11 FRAMES: EXTERIOR THERMALLY BROKEN

.1 Fabricate thermally broken frames separating exterior parts from interior parts with

continuous interlocking thermal break.

.2 Thermal break: rigid polyvinyl chloride extrusion conforming to CGSB 41-GP-19Ma.

2.12 FRAME AND SCREEN ANCHORAGE

.1 Frame Anchors:

.1 Frame anchor Products shall be provided with anchorage appropriate to floor, wall and frame construction.

.2 Floor Anchors:

.1 Where frame Product is installed prior to construction of adjacent wall, each jamb shall be provided with 1.52 mm (16 ga) steel floor anchors.

.2 Each anchor shall be provided with 2 (two) holes for mounting to floor and shall be securely welded to inside of jamb profile.

.3 Wall Anchors:

.1 Each wall anchor shall be located immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.2 Provide 2 anchors for rebate opening heights up to and including 1500 mm and one (1) additional anchor for each additional 760 mm of height or fraction thereof, except as indicated below.

.3 For frames in previously placed concrete, masonry or structural steel provide anchors located not more than 150 mm from top and bottom of each jamb and intermediate anchors at 660 mm on center maximum.

.4 Frame installed in steel stud and drywall partitions shall be provided with 20 gauge steel snap-in or "Z" stud type anchors.

.5 Supply frame anchors to gypsum board installers with directions for installing steel door frames in solid gypsum board partitions.

.6 Frame for installation in new masonry walls shall be provided with steel adjustable wall anchors of the T-strap, stirrup or wire, 16 gauge minimum or 0.156 in. diameter wire.

.7 Straps shall be not less than 50mm x 254mm in size, corrugated and/or perforated.

.8 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4mm diameter, located not more than 150mm from the top and bottom of each jamb.

.9 Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcing and directly opposite on the strike jamb.

.10 Each preparation shall be provided with 16 gauge anchor bolt guides.

.11 On sidelights or windows exceeding 3m in width, installed in stud partitions, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above.

.12 Extensions shall be fabricated from 2.66 mm (12 ga) steel formed channels, mounting angles and adjusting brackets, with mounting angles welded to the inside of frame head.

.13 Formed adjusting brackets and fasteners shall be shipped loose.

.14 Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners, on site, by Subcontractor responsible for installation.

.4 Fire Rated Door and Frame Assemblies:

.1 Conform to CAN4-S104-M, CAN4-S105-M, NFPA 80 and NFPA 252.

2.13 HARDWARE PREPARATION

.1 Doors and frames shall be prepared to receive hardware.

.2 Unless otherwise shown on the drawings, locate hardware in accordance with the Recommended Locations For Architectural Hardware as published by the Door and Hardware Institute.

.3 Prepare doors and frames to receive electrified hardware.

.4 Frame preparation shall include the application of shallow back boxes suitable for EMT termination at all device locations.

.5 Back boxes shall be of sufficient size allowing for wiring, connectors, and the device to be properly installed in the mortise.

.6 Door preparation shall include the installation of conduit or suitable wire raceway within door assemblies during fabrication.

2.14 FABRICATION

.1 Permit access by an approved inspection and testing company for purpose of inspecting at random doors under fabrication.

.2 Welding: CSA W59-M.

.3 Grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler or by continuous brazing or welding. Grind smooth to true sharp arises and profiles and sand down to smooth, true, uniform finish.

.4 Hardware Requirements and Preparations:

.1 Door and frame shall be blanked, reinforced, drilled and tapped at factory for fully templated hardware only in accordance with approved hardware schedule and templates provided by hardware Supplier.

.2 Check hardware list for requirements.

.3 Door and frame shall be blanked and reinforced only for mortised hardware that is not fully templated.

.4 Where surface mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges or non templated hardware apply, frame shall be reinforced only, with drilling and tapping done by others in field.

.5 Templated holes 12.7mm diameter and larger shall be factory prepared except mounting and through bolts holes which shall by Subcontractor responsible for installation on site, at time of application.

.6 Templated holes less than 12.7mm diameter shall be factory prepared only when required for function of device (for knobs,levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.

.7 Hinge reinforcing shall be 3.42 mm (10 ga) steel minimum, high frequency type be provided.

.8 Reinforcing for continuous hinges shall be 2.66 mm (12 ga) minimum.

.9 Cylindrical lock, ASA strike and flush bolt reinforcing shall be 2.66 mm (12 ga) steel minimum.

.10 Mortise lock and surface mounted hardware reinforcing shall be 1.52 mm (16 ga) steel minumum.

.11 Provide all hardware mortises on perimeter frame members shall be grouted.

.12 In masonry or concrete partitions with 0.76 mm (22 ga) steel grout guards. Where electrified hardware is specified on approved Hardware Schedule, steel door and frame shall have CSA approved system consisting of CSA approved conduit and junction boxes.

.13 Refer to Section 08 71 00 -Door Hardware for openings that require electrified hardware unless indicated otherwise.

.5 Frames - General:

.1 Fabricate frames for doors, screens and borrowed lights to profiles indicated.

.2 Reinforce frame as required for surface mounted hardware.

.3 For door frames wider than 1500 mm, reinforce door frame head and jamb and

mullions at junction of head.

.4 Prepare each door opening for single stud door silencers: 3 for single door openings placed opposite hinges: 2 for double door openings approximately 150 mm each side of centreline of head stop.

2.15 ACCEPTABLE MATERIALS - GROUT

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 ChemRex Inc.; www.chemrex.com

.2 CPD Construction Products; www.cpd.ca

.3 Euclid Admixture Canada Inc.; www.euclidchemical.com

.4 Sika Canada Inc.; www.sikacanada.com

.5 W.R. Meadows of Canada; www.wrmeadows.com

.2 Spot Grout:

.1 Proportion when used at metal door frames; 1 part hardwall plaster to not more than 2- 1/2 parts Perlite by weight, with enough water added for `hand pack' consistency.

.2 Acceptable Materials:

.1 Gyproc 90 by Georgia-Pacific Canada, Inc.

.2 Durabond 90 by CGC Inc.

.3 Continuous Grout:

.1 Non-shrink, non-metallic, cementitious grout, containing no chlorides, conforming to ASTM C1107 for Grade C type grouts.

.2 Acceptable Materials:

.1 "Sika Grout 212" by Sika Canada Inc.

.2 "CG-86 Construction Grout" by W.R. Meadows of Canada Ltd.

.3 "Set Grout" by ChemRex Inc.

.4 Batt Insulation:

.1 Preformed gall fibre or rockwool batt or roll insulation, conforming to CAN/ULC-S702.

.2 Acceptable Materials:

.1 "QuietZone Acoustical Batts" by Owens Corning Canada Inc.

.2 "Roxul AFB - Acoustical Fire Batts" by Roxul Inc.

.3 "Fibrex Sound Attenuation Batt (SAFB) Insulation" by Fibrex Insulations Inc.

.4 "Thermafibre Sound Attenuation Blankets" by CGC Inc.

.5 Of type, minimum thickness, width to suit metal framing spacing and other miscellaneous spacings as indicated on Drawings.

.5 Threshold Sealant:

.1 As recommended by installer in accordance with Section 07 92 00 - Joint Sealants.

3 Execution

3.1 INSTALLATION GENERAL

.1 Install labeled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.2 FRAME INSTALLATION - GENERAL

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.
.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width.
.4 Provide vertical support at center of head for openings over 1200 mm wide.
.5 Provide vertical support at center of head for openings over 1200 mm wide.
.6 Remove temporary spreaders after frames are built-in.
.7 Caulk perimeter of frames between frame and adjacent material.
.8 Maintain continuity of vapor barrier and air barrier.

3.3 DOOR INSTALLATION - GENERAL

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
  .1 Hinge side: 1.0 mm.
  .2 Latch side and head: 1.5 mm.
  .3 Finished floor, top of carpet: 13 mm.
.3 Adjust operable parts for correct function.
.4 Install louvers.

3.4 GLAZING

.1 Install glazing for doors and in accordance with Section 08 80 00 - Glazing.

3.5 FIRE LABELED DOORS AND FRAMES

.1 Install fire labeled doors and frames in accordance with manufacturer's printed instructions and NFPA 80.
.2 Verify labeled doors and frames are placed in their designated openings.
.3 Review, inspect and certify where required by authorities having jurisdiction.

3.6 HOLLOW METAL DOORS

.1 Install hollow metal doors in accordance with manufacturer's instructions.
.2 Install in accordance with following edge clearances unless otherwise indicated:
  .1 Between doors and frames at head and jambs: 3 mm.
  .2 At door bottom: 19 mm maximum to unfinished floor, 6 mm maximum to finished floor unless indicated to be undercut.
  .3 Between meeting edges of pairs of doors: 3 mm.

3.7 HOLLOW METAL FRAMES

.1 Install hollow metal frames in accordance with manufacturer's instructions.
.2 Set frames plumb, square, level and at correct elevation, maintaining uniform door width and height.
.3 Secure anchorages and connections to adjacent construction.
.4 Brace frames rigidly in position while being built in.
.5 Provide vertical supports and horizontal spreaders to prevent deflection and warping.
.6 Allow for deflection to prevent structural loads from being transmitted to frame.
.7 Provide batt insulation to completely fill pressed steel frames of exterior doors and adjacent cavities.
.8 Door Jamb Extensions:
  .1 Provide solid blocking and securement between all door frame extensions, metal stud and door frames at a minimum four locations per door jamb.

3.8 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation with zinc primer to CGSB 1-GP-181.

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

END OF SECTION

1 General

1.1 WORK INCLUDED

.1 Supply of all wood doors noted in the Door Schedule.
.2 Wood veneer faced particle core doors for paint finish.
.3 Fire rated wood doors and glass lights.
.4 Door grilles.
.5 Glass stops

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 06 47 00 - Plastic Laminate Finishing.
.3 Section 08 11 13 - Hollow Metal Doors and Frames.
.4 Section 08 71 00 - Door Hardware.
.5 Section 08 80 00 - Glazing.
.6 Section 09 91 00 - Painting.
.7 Division 23 - Mechanical Grilles.

1.3 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
  .1 Quality Standards for Architectural Woodwork 1998.
.2 Canadian General Standards Board (CGSB).
  .1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
  .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
.3 Canadian Standards Association (CSA International).
  .1 CSA A440.2-98, Energy Performance of Windows and Other Fenestration Systems.
  .2 CSA-A440.S1, Canadian Supplement.
  .3 AAMA/WDMA/CSA 101/I.S.2/A-440.
  .4 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
  .5 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.
  .6 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.
  .7 CSA Certification Program for Windows and Doors 00.
.4 American National Standards Institute (ANSI):
  .1 A208.1 - Standard for Particleboard.
  .2 (ASTM): ASTM D 1761 - Screw Withdrawal Test Method.
.5 American Society for Testing and Materials (ASTM)
  .1 ASTM D 5456 - Standard Specification for Evaluation of Structural Composite Lumber Products.
  .2 (ASTM): ASTM D 1761 - Screw Withdrawal Test Method.
  .3 ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
  .4 ASTM E413 - Classification for Rating Sound Insulation.
  .5 ASTM E 1332 - Standard Classification for Determination of Outdoor-indoor Transmission Class.
  .6 ASTM E 2235 - Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.
.6 American Society for Testing and Materials.
  .1 ASTM E 152-81a, Methods for Fire Tests of Door Assemblies.
.7 National Fire Protection Association (NFPA).

.1 NFPA 80-1999, Standard for Fire Doors and Fire Windows.
.2 NFPA 252-1999, Standard Method of Fire Tests of Door Assemblies.

.8 Underwriters' Laboratories of Canada (ULC).
.1 CAN-4S104M-80(R1985), Fire Tests of Door Assemblies.
.2 CAN4-S105M-85 (R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.
.3 Underwriters' Laboratories (UL): UL 10B - Standard for Fire Test of Door Assemblies;
.4 Underwriters Laboratories (UL): UL 10C - Standard for Positive Pressure Fire Test of Door Assemblies.
.5 Underwriters Laboratories Canada (ULC): CAN 4-S104 - Fire Test of Door Assemblies.

.9 Uniform Building Code (UBC):
.1 UBC 7-2-1994 UBC Fire Test (Neutral Pressure).
.2 UBC 7-2-1997 UBC Fire Test (Positive Pressure).

.10 ANSI:
.1 ANSI/NEMA LD 3-05, High Pressure Decorative Laminates.
.2 ANSI/NEMA LD 3.1-05, Application, Fabrication and Installation of High Pressure Decorative Laminates.

1.4 SUBMITTALS

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

.2 Manufacturer's data sheets on each type of door, including:
.1 Preparation instructions and recommendations.
.2 Storage and handling requirements and recommendations.
.3 Installation methods.

.3 Material Safety Data Sheets:
.1 Submit MSDS for adhesives for inclusion in Operation and Maintenance Manual.

.4 Shop Drawings:
.1 Include details of the following items on shop drawings:
.2 Door elevations, types, all sizes and fire ratings.
.3 Glass location, opening size, thickness, and glazing trim.
.4 Louver locations and opening size.
.5 Face material and grade.
.6 Edge material and thickness.
.7 Fire ratings and type of door cores being supplied for rated openings.
.8 Undercuts, hardware location and machining requirements.

.5 Samples:
.1 For factory finished doors, submit two sets of 300 x 300 mm selected veneer samples with the standard finish colors representing manufacturer's full range of available colors and finishes.
.2 Samples shall represent the color selected on veneer typical of grain patterns and coloration for the specified species and cut selected.
.3 For decorative laminate, submit two sets of 300 x 300 mm samples of each color, finish and pattern required.
.4 Where Consultant has furnished custom color for matching, include original color sample.
.5 For each finish product specified, submit two complete sets of color chips representing manufacturer's full range of available colors and patterns.
.6 Certificates:

.1 Manufacturer's certification that doors comply with specified performance and physical properties.

1.5 QUALITY ASSURANCE

.1 Wood doors shall conform to the Quality Standards for Architectural Woodwork as published by the Architectural Woodwork Manufacturers Association of Canada (AWMAC) for the grade of door specified herein.

.2 Non-Fire-Rated Doors:

.1 Provide doors that comply with AWI Section 1300 and WDMA 1.S. 1A.

.3 Regulatory Requirements:

.1 Provide doors that comply with NEPA 80, NFPA 252, UL 10B or UL 10C, as applicable and as acceptable to authorities having jurisdiction, and that are listed and labeled by ITS-WH or a qualified testing agency.

.2 Notify Consultant prior to fabrication if fire doors required cannot qualify for labeling due to design size hardware or other requirement.

.4 Oversize Fire Rated Wood Doors:

.1 Manufacturer to provide a certificate stating that the doors conform to all standard construction requirements for tested and labeled fir door assemblies except as to size.

.2 Notify Consultant prior to fabrication if fire doors required cannot qualify for labeling due to design, size, hardware or other requirement.

.5 Single Source Responsibility:

.1 Provide doors from a single source to ensure uniformity in quality of appearance, face veneer, finish and construction.

.6 Hardware Installation Reference Standard:

.1 Standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame manufacturer's Association (CSDFMA).

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:

.1 Store products in manufacturer's unopened packaging until ready for installation. Inspect for damage.

.2 Storage and Protection: Comply with door manufacturer's written recommendations and requirements of AWI Section 1300 G-23 and WDMA standards.

.3 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.

.4 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.

.5 Protect doors from scratches, handling marks and other damage. Wrap doors.

.6 Store doors away from direct sunlight.

.2 Marking and Packaging:

.1 Factory labels shall indicate door opening numbers and correspond with approved door schedule for size and door types.

.3 Maintain environmental conditions including temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Inspect for damage prior to installation.

1.7 WARRANTY

.1 Provide manufacturer's standard warranty against defects in materials and workmanship

for the following duration:

.1 Warranty Period, Interior Doors: For the lifetime of the door.

.2 Defects include, but are not limited to, bubbling, delamination of faces or edges, warp, twist bow exceeding 6mm, and telegraphing of core.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times.

2 Products

2.1 WOOD DOORS

.1 Ultra Heavy Duty, Anti-Warping construction for intensive use.

.2 Styles:

.1 3mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue in compliance with ASTM D5456-93 (LVL) including a 22 mm piece of hardwood, matched with faces, total width 107mm.

.3 Top and Bottom Rails:

.1 3 mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue, as per ASTM D5456-93, for total width of 85mm.

.4 Core:

.1 Solid particleboard. Density of 28-32 lbs per cubic foot. Complies with CSA-0188 and ANSI A208-1 standards (LD-1 / LD-2).

.5 Faces:

.1 Wood veneer, paint grade birch veneer, rotary cut.

.2 Hardboard panel.

.3 Plastic Laminate glued to birch paint veneer.

.6 Lock Block: Integrated

.7 Glue: Type1 PVA Cross-link (UFF).

.8 Styles & rails: Clear finish sealer BC-00-25, factory applied.

.9 Factory finish is required for all 6 sides.

.10 Interior use.

.11 Warranty, Lifetime

.12 Clearances:

.1 3mm top and both jambs, 19mm bottom.

.13 Acceptable Material:

.1 Baillargeon Doors 8500 [OR]

.2 Baillargeon Doors 8520-ME [20 minute fire rating]

.14 Closet Doors Only

.1 Acceptable Material:

.1 Baillargeon 8100

2.2 WOOD DOORS - 45 MINUTE FIRE RESISTANT RATING

.1 Ultra Heavy Duty, Anti-Warping construction for intensive use.

.2 Styles:

.1 Minimum 36.5mm high-density mineral and /or SCL and untreated hardwood compliant with W/H label requirements. Bonded to core.

.3 Top and Bottom Rails:

.1 Minimum 58mm high density mineral or SCL compliant with W/H label requirements.

.4 Core:
.1 Low combustible agri-fibre. Density of 34-38 lbs per cubic square foot.
.5 Faces:
.1 Wood veneer, paint grade birch veneer, rotary cut, 2 ply plywood.
.2 Hardboard panel, glued to composite cross band.
.3 Plastic Laminate glued to composite cross band.
.6 Lock Block: Integrated
.7 Glue: Type1 PVA Cross-link (UFF).
.8 Styles & rails: Clear finish sealer BC-00-25, factory applied.
.9 Factory finish is required for all 6 sides.
.10 Interior use.
.11 Warranty, Lifetime
.12 Clearances:
.1 3mm top and both jambs, 19mm bottom.
.13 Acceptable Material:
.1 Baillargeon Doors 8500 AF45

2.3 WOOD DOORS - 90 MINUTE FIRE RESISTANT RATING

.1 Ultra Heavy Duty, Anti-Warping construction for intensive use.
.2 Styles:
.1 Minimum 19mm high density mineral and untreated hardwood, compliant with W/H label requirements.
.3 Top and Bottom Rails:
.1 Minimum 35mm mineral or untreated hardwood compliant with W/H label requirements. Bonded to core.
.4 Core:
.1 Non-combustible material.
.5 Faces:
.1 Wood veneer, paint grade birch veneer, rotary cut, 2 ply plywood.
.2 Hardboard panel, glued to composite cross band.
.3 Plastic Laminate glued to composite cross band.
.6 Lock Block: Integrated
.7 Glue: Type1 PVA Cross-link (UFF).
.8 Styles & rails: Clear finish sealer BC-00-25, factory applied.
.9 Factory finish is required for all 6 sides.
.10 Interior use.
.11 Warranty, Lifetime
.12 Clearances:
.1 3mm top and both jambs, 13mm bottom.
.13 Acceptable Material:
.1 Baillargeon Doors 5045

2.4 WOOD DOORS - SINGLE LEAD LINED

.1 Single lead lined door.
.2 Styles:
.1 3mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue in compliance with ASTM D5456-93 (LVL) including a 22 mm piece of hardwood, matched with faces, total width 107mm.
.3 Top and Bottom Rails:
.1 3 mm thick veneer, longitudinally laminated by hot pressing with type 1 structural

glue, as per ASTM D5456-93, for total width of 85mm.

.4 Core:
- .1 Solid particleboard. Density of 45 lbs per cubic foot. Complies with CSA-0188 and ANSI A208-1 standards (LD-1 / LD-2).
- .2 One [0.8mm] OR [1.6mm] lead sheet, pressure bonded to centre, covering entire door surface.

.5 Faces:
- .1 Wood veneer, paint grade birch veneer.
- .2 Hardboard panel.
- .3 Plastic Laminate glued to composite crossband.

.6 Lock Block: Integrated

.7 Glue: Type1 PVA Cross-link (UFF).

.8 Top and bottom rails, clear sealer, one (1) coat - factory applied.

.9 Factory finish is required for all finishes.

.10 Interior use.

.11 Warranty, Lifetime

.12 Acceptable Material:
- .1 Baillargeon Doors 8512-ME [0.8mm lead] [OR]
- .2 Baillargeon Doors 8516-ME [1.6mm lead]

2.5 WOOD DOORS - DOUBLE LEAD LINED

.1 Double lead lined door.

.2 Styles:
- .1 3mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue in compliance with ASTM D5456-93 (LVL) including a 22 mm piece of hardwood, matched with faces, total width 107mm.

.3 Top and Bottom Rails:
- .1 3 mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue, as per ASTM D5456-93, for total width of 85mm.

.4 Core:
- .1 Solid particleboard. Density of 28 - 32 lbs per cubic foot. Complies with CSA-0188 and ANSI A208-1 standards (LD-1 / LD-2).
- .2 Two [0.8mm] OR [1.6mm] lead sheets, pressure bonded to centre, covering entire door surface.

.5 Faces:
- .1 Wood veneer, paint grade birch veneer.
- .2 Hardboard panel.
- .3 Plastic Laminate glued to composite crossband.

.6 Lock Block: Integrated

.7 Glue: Type1 PVA Cross-link (UFF).

.8 Top and bottom rails, clear sealer, one (1) coat - factory applied.

.9 Factory finish is required for all finishes.

.10 Interior use.

.11 Warranty, Lifetime

.12 Acceptable Material:
- .1 Baillargeon Doors 8522-ME 0.8mm lead
- .2 Baillargeon Doors 8526-ME 1.6mm lead

2.6 WOOD DOORS - HIGH IMPACT

.1 Ultra Heavy Duty, 3 ply LVL core for high impact use.

.2 Styles:
.1 22mm hardwood styles bonded to core, matched with faces.
.3 Top and Bottom Rails:
.1 Integrated.
.4 Core:
.1 3 ply, with 2 vertical plies composed of 3mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue in compliance with ASTM D5456-93 (LVL), rotary cut poplar veneer with horizontal crossbanding.
.5 Faces:
.1 Wood veneer, paint grade birch veneer.
.2 Hardboard panel.
.3 Plastic Laminate glued to composite crossband.
.6 Lock Block: Integrated
.7 Glue: Type1 PVA Cross-link (UFF).
.8 Top and bottom rails, clear sealer, one (1) coat - factory applied.
.9 Factory finish is required for all finishes.
.10 Interior use.
.11 Clearances:
.1 3mm top and both jambs, 19mm bottom.
.12 Warranty, Lifetime
.13 Acceptable Material:
.1 Baillargeon Doors 7600-ME OR
.2 Baillargeon Doors 7620-ME 20 minute fire rating

2.7 WOOD DOORS - SOUND RETARDANT

.1 Sound retardant doors.
.2 Styles:
.1 3mm thick veneer, longitudinally laminated by hot pressing with type 1 structural glue in compliance with ASTM D5456-93 (LVL) including a 22 mm piece of hardwood, matched with faces, total width 30mm.
.3 Bottom Rails:
.1 LVL or LSL for total width of 85mm.
.4 Top Rails:
.1 LVL or LSL for total width of 30mm.
.5 Core:
.1 Certified sound dampening
.6 Faces:
.1 Wood veneer, paint grade birch veneer.
Hardboard panel.
Plastic Laminate glued to composite crossband.
.7 Lock Block: Lock Material.
.8 Glue: Type1 PVA Cross-link (UFF).
.9 Top and bottom rails, clear sealer, one (1) coat - factory applied.
.10 Factory finish is required for all finishes.
.11 Interior use.
.12 Clearances:
.1 3mm top and both jambs, 19mm bottom.
.13 Warranty, 3 years
.14 Acceptable Material:
.1 Baillargeon Doors SR38 STC 38 [OR]

.2 Baillargeon Doors SR41 STC 41 [OR]
.3 Baillargeon Doors SR43 STC 43

.15 Head Seal #475AA & 119WB
.16 Jamb Seal #475AA & 119WB
.17 Undercut Seal #564A & 119WB OR Drop Seal

2.8 PLASTIC LAMINATE SELECTION

.1 High pressure, paper base decorative laminates.
.2 For bidding purposes, assume a maximum of two (2) solid colors, satin finish, to be selected from manufacturers standard range.
.1 Wilson Art: www.wilsonart.com.

2.9 GLAZING

.1 Interior Glass: tempered safety glass 6mm thick, refer to Section 08 80 00 - Glazing.
.2 Stops:
.1 Stain or prime and finish paint to match door colour, by Section 09 91 00 - Painting.

2.10 FABRICATION

.1 Fabricate doors and panels in accordance with CSA 0132.2 to ULC requirements where fire-rated doors are indicated.
.2 Prepare doors for glass and provide hardwood birch species glazing stops and stickings with mitred corners.
.3 Prepare doors for louvers (door grilles).
.4 Bevel vertical edges of single acting doors 3 mm on lock side..
.5 Radius vertical edges of double acting doors to be 60mm radius.
.6 Shop prepare doors for hardware installation. Templates to be supplied by Finish Hardware Supplier.
.7 Fabricate to AWMAC standards.
.8 Install glazing units with integral blinds as noted in door schedule.

3 Execution

3.1 EXAMINATION

.1 Do not begin installation until adjacent construction has been properly prepared.

3.2 PREPARATION

.1 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.4 INSTALLATION

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.
.2 Install labeled fire rated doors to NFPA 80.
.3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.
.4 Adjust hardware for correct function.
.5 Install glazing in accordance with Section 08 80 00 - Glazing.

.6 Install louvers.
.7 Secure transom and side panels by means of stops.
.8 Install all hardware in accordance with templates and manufacturer's instructions.
.9 Install all push/pull plates on doors with outer edge 75 mm from edge of door, except where glazing does not permit.
.10 Provide proper protection of all hardware items until Owner accepts project as complete.

3.5 WOOD DOORS

.1 Install plastic laminated wood doors in accordance with manufacturer's instructions.
.2 Install lead lined plastic laminated wood doors in accordance with manufacturer's instructions.
.3 Install in accordance with following edge clearances unless otherwise indicated:
  .1 Between doors and frames: at head and jambs: 3 mm.
  .2 At door bottom: 9 mm maximum unless doors are indicated to be undercut.
  .3 Between meeting edges of pairs of doors: 3 mm.
  .4 Cut, drill and prepare doors to template to receive hardware.

3.6 ADJUSTMENT

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.
.2 Adjust hardware for proper door function and latching, and for smooth operation without excessive force for excessive clearance.

3.7 UNDERCUT DOORS

.1 Provide special door undercuts if indicated on door schedule.

3.8 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
.2 Remove traces of primer, caulking; clean doors and frames.
.3 Clean glass and glazing materials with approved non-abrasive cleaner.
.4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1 General

1.1 SUMMARY

.1 Supply and deliver all finish hardware as specified in hardware sets for doors listed on door schedule. Hardware shall include all fasteners and devices necessary for the proper installation of hardware.

1.2 RELATED SECTIONS

.1 Division 01 - General Requirements.

.2 Section 08 11 13 - Holow Metal Doors and Frames.

.1 Section 08 14 16 - Flush Wood Doors.

.2 Electrical wiring.

1.3 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frames Manufacturer's Association.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB 69.17 M86(R1993), Bored and reassembled Locks and Latches.

.2 CAN/CGSB 69.18 M90/ANSI/BHMA A156.1 1981, Butts and Hinges.

.3 CAN/CGSB 69.19 93/ANSI/BHMA A156.3 1984, Exit Devices.

.4 CAN/CGSB 69.20 M90/ANSI/BHMA A156.4 1986, Door Controls (Closers).

.5 CAN/CGSB 69.21 M90/ANSI/BHMA A156.5 1984, Auxiliary Locks and Associated Products.

.6 CAN/CGSB 69.22 M90/ANSI/BHMA A156.6 1986, Architectural Door Trim.

.7 CAN/CGSB 69.24 M90/ANSI/BHMA A156.8 1982, Door Controls Overhead Holders.

.8 CAN/CGSB 69.26 96/ANSI/BHMA A156.10 1991, Power operated Pedestrian Doors.

.9 CAN/CGSB 69.28 M90/ANSI/BHMA A156.12 1986, Interconnected Locks and Latches.

.10 CAN/CGSB 69.29 93/ANSI/BHMA A156.13 1987, Mortise Locks and Latches.

.11 CAN/CGSB 69.30 93/ANSI/BHMA A156.14 1991, Sliding and Folding Door Hardware.

.12 CAN/CGSB 69.31 M89/ANSI/BHMA A156.15 1981, Closer/Holder Release Device.

.13 CAN/CGSB 69.32 M90/ANSI/BHMA A156.16 1981, Auxiliary Hardware.

.14 CAN/CGSB 69.33 M90/ANSI/BHMA A156.17 1987, Self closing Hinges and Pivots.

.15 CAN/CGSB 69.34 93/ANSI/BHMA A156.18 1987, Materials and Finishes.

.16 CAN/CGSB 69.35 M89/ANSI/BHMA A156.19 1984, Power Assist and Low Energy Power Operated Doors.

.17 CAN/CGSB 69.36 M90/ANSI/BHMA A156.20 1984, Strap and Tee Hinges and Hasps.

.3 All hardware shall comply with requirements of the National Building Code (2010).

1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 Use ULC listed and labeled hardware for doors in fire separations and where noted on Door Schedule (located at the end of this document in the Schedules section).

1.5 SUBMITTALS

.1 Product Data:
  .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
.2 Hardware List:
  .1 Submit Finish Hardware Schedule electronically for approval.
  .2 Schedule shall be written in accordance with DHI Sequence and Format for vertical hardware schedule publication.
  .3 Schedule shall reference item and door number to hardware set specified.
  .4 Door index to be included referencing the door number to scheduled item number.
  .5 Submit electronic copies of keying schedules for approval.
  .6 Schedule shall be written in accordance with DHI Handbook Keying Schedule Systems and Nomenclature. Coordinate all keying in writing.
.3 Manufacturer's Instructions:
  .1 Submit manufacturer's installation instructions.
  .2 Provide template drawings as requested.
.4 Closeout Submittals
  .1 Provide operation and maintenance data for door closers, lockets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6 QUALITY ASSURANCE

.1 Hardware supplier must have on staff an Architectural Hardware Consultant or person of equivalent qualification and experience. Hardware supplier must have been in hardware supply for a minimum of two (2) years, have supplied similar type projects, and have adequate facilities to service project.

1.7 DELIVERY, STORAGE, AND HANDLING

.1 Trade Contractor to provide clean, dry locked room for storage of hardware on shelving.
.2 Each hardware item shall be delivered to site in manufacturers original packaging. Each item shall be labeled with door and item number to correspond with hardware schedule.
.3 All hardware will be delivered to one receiving are on site.

1.8 WARRANTY

.1 Furnish a one-year written warranty for all products with exceptions of door closers, Mortise locksets and latchsets which shall be warranted for ten (10) years, and exit devices and trim, overhead holders and stops which shall be warranted for five (5) years.

1.9 WASTE DISPOSAL AND MANAGEMENT

.1 Collect and separate for disposal waste material generated by this Section.
.2 Place in appropriate on-site bins in accordance with Waste Management Plan.
.3 A clean worksite is mandatory at all times.

2 Products

2.1 MANUFACTURERS

.1 Acceptable Material: Specified in Hardware Sets.
  .1 Hinges:
    .1 McKinney TA714/ TA314.
  .2 Locksets:
    .1 Sargent 8200 Series.

.2 Trim Sargent LNJ.

.3 Exit Devices:

.1 Sargent 80 Series x 32D ETJ Trim.

.4 Door Closers:

.1 Sargent 1430 / 31.

.2 Sargent 351 Series , arms as specified in hardware groups.

.5 Push, Pull, Kickplates, Stops & Flushbolts:

.1 Standard Metal Hager.

.6 Overhead Stops:

.1 Sargent 598 / 698 Series x 26D 630.

.7 Electro Magnetic Holders:

.1 Sargent 1560 Series.

.8 Electric Strikes 9500 / 9600, 1006 HES.

.9 Magnetic Locks Securiton.

2.2 FINISH

.1 Finish for this project in general shall be 626 (Satin Chrome). Exceptions are as noted in hardware packages.

2.3 KEYING

.1 All cylinders construction, master keyed.

.2 Provide three (3) master keys for each MK or GMK group.

.3 Stamp keying code numbers on keys and cores.

2.4 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with material through which they pass.

2.5 SLIDING DOOR HARDWARE

.1 Based on K.N. Crowder.

.1 Type C, pocket door kit.

.2 Max 150lb door load.

.3 Provide all components for a complete installation.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Recommend mounting heights shall be in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturer's Association.

.4 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.3 Install key control cabinet.

.4 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.5 Remove construction cores when directed by Consultant; install permanent cores and check operation of locks.

3.3 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety, weather tight closure and to provide tight fit at contact points with frames.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.

.3 Remove protective material from hardware items where present.

3.5 PROTECTION

.1 Provide proper protection of all hardware items until Owner accepts project as complete.

END OF SECTION

1 General

1.1 DESCRIPTION OF WORK

.1 The work of this Section comprises the provision of all equipment, labour and materials necessary for the supply and installation of all interior and exterior glass and glazing as follows:

- .1 Glazing for interior hollow metal doors.
- .2 Glazing for interior flush wood doors.
- .3 Glazing for interior hollow metal windows (borrowed lights).
- .4 Aluminum frames and glass at sliding glass inserts in interior hollow metal window frames (borrowed lights).
- .5 Glazing for exterior windows, exterior aluminum doors, sidelights and storefronts.
- .6 Glazing for interior aluminum doors and windows.
- .7 Glazing at architectural woodwork.
- .8 Borrowed lights and screens with fire rated glass.
- .9 Glazing for plastic laminate wood doors
- .10 One-way glass
- .11 Etched glass.
- .12 Spandrel glass for interior screens.
- .13 Window film.
- .14 Sealed unit with integral blinds.
- .15 Re-glazing for existing thermally broken insulated courtyard window units.
- .16 Polycarbonate smoke baffles and glazing channel.
- .17 Miscellaneous specialty glass, gaskets, tapes and glazing materials.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 45 00 - Quality Control.
.3 Section 01 77 00 - Closeout Procedures.
.4 Section 06 41 00 - Architectural Wood Casework.
.5 Section 08 11 13 - Hollow Metal Doors and Frames
.6 Section 08 14 16 - Flush Wood Doors

1.3 REFERENCES

.1 American National Standards Institute (ANSI).

- .1 ANSI/ASTM E330-02, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 American Society for Testing and Materials International, (ASTM).

- .1 ASTM C542-94(1999), Specification for Lock-Strip Gaskets.
- .2 ASTM D1003-00, Test Method for Haze and Luminous Transmittance of Plastics.
- .3 ASTM D2240-02b, Test Method for Rubber Property - Durometer Hardness.
- .4 ASTM E84-01, Test Method for Surface Burning Characteristics of Building Materials.
- .5 ASTM F1233-98, Test Method for Security Glazing Materials and Systems.
- .6 ASTM C509-06, Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
- .7 ASTM C510-05a, Standard Test Method for Staining and Colour Change of Single or Multicomponents Joint Sealants.
- .8 ASTM C794-06, Standard Test Method for Adhesion in Peel of Elastomeric Joint

Sealants.

.9 ASTM C864-05, Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

.10 ASTM C920-05, Standard Specification for Elastomeric Joint Sealants.

.11 ASTM C1036-06, Standard Specification for Flat Glass.

.12 ASTM C1048-04, Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.

.13 ASTM C1115-06, Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.

.14 ASTM C1349-04, Specification for Architectural Float Glass Clad Polycarbonate.

.15 ASTM C1376-03, Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.

.16 ASTM C1503-01, Standard Specification for Silvered Flat Glass - Mirror.

.17 ASTM E1300-07e1, Practice of Determining Load Resistance of Glass in Buildings.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.

.2 CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass.

.3 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.

.4 CAN/CGSB-12.4-M91, Heat Absorbing Glass.

.5 CAN/CGSB-12.5-M86, Mirrors, Silvered.

.6 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.

.7 /CGSB-12.8-97, Insulating Glass Units.

.8 CAN/CGSB-12.9-M91, Spandrel Glass.

.9 CAN/CGSB-12.10-M76, Glass, Light and Heat Reflecting.

.10 CAN/CGSB-12.11-M90, Wired Safety Glass.

.11 CAN/CGSB-12.12-M90, Plastic Safety Glazing.

.12 CAN/CGSB-12.13-M91, Patterned Glass.

.13 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings.

.14 CAN/CGSB-12.9-M91, Spandrel Glass.

.15 CAN/CGSB-19.13-M87, Sealing Compound, One-Component, Elastomeric, Chemical Curing.

.16 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.

.17 CAN4-S104-M80, Fire Test of Door Assemblies.

.18 CAN4-S106-M80, Fire Test of Windows and Glass Assembles.

.4 Canadian Standards Association (CSA International).

.1 CSA A440.4, Energy Performance Evaluation of Windows and Sliding Glass Doors.

.2 CSA Certification Program for Windows and Doors 2000.

.5 Flat Glass Manufacturers Association (FGMA).

.1 FGMA Glazing Manual - 1997.

.6 Laminators Safety Glass Association (LSGA).

.1 LSGA Laminated Glass Design Guide 2000.

.7 NFPA

.1 NFPA 80-99, Standard for Fire Doors and Fire Windows.

.2 ULC, Underwriters Laboratories of Canada Building Materials and Systems Directory, Fire Resistance Directory, Current Edition including Supplements to date.

1.4 DEFINITIONS

.1 Pattern Glass: One type of glass having pattern impressed on 1 or both sides for decorative purpose. Sometimes called “rolled”, “figured”, or “Obscure” glass.

.2 Etched: Surface treatment for flat glass obtained by spraying glass with hard particles or treating with acid wash to roughen 1 or both surfaces of glass. Effect is to increase obscurity and diffusion.

.3 United Inches: Total of 1 width and 1 height of glass panels in inches.

1.5 SYSTEM DESCRIPTION

.1 Design Requirements:

.1 Design glass and glazing to CAN/CGSB-12.20-M complying to OBC design and fire rating requirements and regulations of authorities having jurisdiction, which shall be minimum, except where more stringent requirements are specified herein. In case of conflict of requirements comply with most stringent requirements.

.2 Provide accessories, closures and trims required and necessary to complete work.

.2 Performance Requirements:

.1 Ensure solvents and/or other volatile elements in glazing system do not affect properties and performance of materials used for edge seal and sealant glass bond.

.2 Ensure materials used for edge seals are compatible with other materials they come in contact within glazing system. If required, perform compatibility tests to ASTM C510, ASTM C794 and ASTM C1087, or others as applicable.

.3 Use sealants and other materials in glazing system which are unaffected by long term UV light exposure.

1.6 SUBMITTALS

.1 Submit Product Data, Samples, Manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheets.

.3 Samples:

.1 Submit duplicate 300 mm size samples of each sealed glazing unit.

.2 Submit duplicate 100 x 100 mm size samples of colored glass unit specified.

.4 Material Safety Data Sheets:

.1 Submit MSDS for inclusion in Operation and Maintenance Manual.

.5 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.6 Closeout Submittals:

.1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.7 QUALITY ASSURANCE

.1 Test Reports: provide certified test reports showing compliance with specified performance characteristics and physical properties.

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

.3 Pre-installation Meetings: attend pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

.4 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

.5 Perform work in accordance with FGMA Glazing Manual, IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver glass and associated materials to site in original crates and containers with manufacturer's name and brand distinctly marked thereon and with glass labelled as to types. Do not remove labels on glass until after work is accepted by Consultant.

.2 Store materials within the building, in a clean, dry location, acceptable or as designated by Consultant. Fully protect materials from damage of any kind until ready for use.

1.9 PROJECT CONDITIONS

.1 Environmental Requirements: No glazing done when temperature is less than 7 deg C or sash or frames are wet, damp or frosted.

.2 Protect work of other trades from damage resulting from work of this Section.

.3 Identify glazed openings immediately following glass installation. Use coloured tapes or flags suspended near, but not in contact with glass. Attach to frames or surround with suitable non-staining strippable adhesives or tapes.

1.10 WARRANTY

.1 Warrant factory sealed insulating units for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract.

.2 Warrant that factory sealed insulating units be free from material obstruction of vision as result of dust or film formation on internal glass surfaces by any cause, under normal conditions anticipated under this Project, other extrinsic glass breakage, but including breakage due to thermal shock and temperature differential due to inherent glass or glazing fault.

1.11 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate for disposal waste material generated by this Section.

.2 Place in appropriate on-site bins in accordance with Waste Management Plan.

.3 A clean worksite is mandatory at all times.

2 Products

2.1 ACCEPTABLE MATERIALS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 AGC Flat Glass North America, Ltd.; www.na.agc-flatglass.com.

.2 Ace Security Laminates; www.acesecuritylaminates.com.

.3 Barber Glass Industries; www.barberglass.com.

.4 GE Silicones; www.gesilicones.com.

.5 Guardian Industries Corp.; www.guardian.com.

.6 PPG Canada Inc.; www.ppgglass.com.

.7 Pilkington Special Glass Limited; www.pilkington.com.

.8 Prelco Inc.; www.prelco.com.

.9 Schott North America Inc.; www.us.schott.com.

.10 Viracon Inc.; www.viracon.com.

.11 Tremco Canada; www.tremcosealants.com.

.12 Trulite Industries Limited; www.trulite.com.

2.2 MATERIALS: FLAT GLASS

.1 Glass: Free from bubbles, waves, discolouration and other defects and of following types

for locations indicated on Drawings or noted on Door Schedule. Ensure glass bears manufacturer's label indicating quality. Leave labels in place until final cleaning.

.2 Single Glazed Glass Types:

.1 Float Glass (CGL): Conforming to CAN/CGSB-12.3-M, clear transparent float glass, minimum 6 mm.

.2 Tempered Glass (TGL):

.1 Minimum 6 mm.

.2 Conforming to ASTM C1048, CAN/CGSB-12.1-M, Type 2 tempered, Class B float glass, Category II.

.3 Perform heat strengthening using horizontal tong free method; surface compression not less than 7500 psi.

.3 Window Film:

.1 Translucent opacity, transparent synthetic liner, clear pressure sensitive adhesive.

.2 Film shall have cutouts to suit design and be located as indicated on Drawings.

.3 Provide "3M Scotchcal ElectroCut Special Effects Film" by 3M; www.3m.com in colour "7725-314 Dusted Crystal".

2.3 MATERIALS: SEALED INSULATING GLASS

.1 Insulating glass units: At all exterior doors, exterior sidelights and exterior windows.

.2 Double glazed units: to CAN2-12.8M76(R1979) with outer pane of minimum 6mm thick, high performance glass, reflective with coating on surface 2,12mm air space and inner pane of minimum 6mm thick, high performance, glass with 0.10 low emissivity coating on surface 3, argon gas filled interspace and insulating silicone-foam edge spacer. Metal edge spacers not acceptable.

.1 Acceptable Material:

.1 PPG "Solarcool Azuria Glass".

.2 Pilkington - Evergreen Eclipse LOF.

.3 Tempered glass to be provided at all interior and exterior aluminum doors and side lights. Tempered glass at both inner and outer pane.

.4 Tempered glass to be provided at all interior and exterior glazed units where the glass is within 1500mm of floor level.

.5 Spandrel glass, 6mm tempered Solarcool Azuria c/w Polyester Scrim Spandrel, color to match glass.

2.4 MATERIALS: SEALED INSULATING GLASS

.1 Double glazed units: to CAN2-12.8M 76(R1979) with outer pane of minimum 6mm thick, high performance glass, reflective with coating on surface 2,12mm airspace and inner pane of minimum 6mm thick, high performance, glass with 0.10 low emissivity coating on surface 3, argon gas filled interspace and insulating silicone-foam edge spacer. Metal edge spacers not acceptable.

.2 Acceptable Material:

.1 PPG "Solarcool Azuria Glass".

.2 Pilkington - Evergreen Eclipse LOF.

.3 Non-safety glass may be provided at all interior and exterior glazed units where the glass is more than 1500mm above floor level.

2.5 ACCESSORIES

.1 Qualified products: only compounds listed on the CGSB Qualified Products list are acceptable for use on this project.

.2 Glazing compound: oil base, to CAN/CGSB-19.6, Type 1, color to match adjacent metal.

.3 Sealant compound: one component acrylic base, to CGSB 19-GP-5M, gun grade, color

to match adjacent material.

.4 Sealant compound: two-component polysulphide base, to CAN2-19.24, gun grade, color to match adjacent metal.

.5 Glazing splines: E.P.D.M. or neoprene. Manufacturer's standard dry glazing splines to suit aluminum extrusions, black color.

.6 Glazing points and wire spring clips: corrosion resistant, manufacturer's standard.

.7 Cap bead: one component silicone, neutral cure, CGSB 19-GP-23, gun grade, color white.

.1 Standard of Acceptance:

.1 Tremco "Spectrum 2" .

.2 Sonneborn "Omniseal".

.8 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, length of 25 mm for each square meter of glazing.

.9 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.10 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; size as required; black/ bronze color.

.11 Glazing clips: manufacturer's standard type.

.12 Glazing points and wire spring clips: corrosion resistant, manufacturer's standard.

.13 Lock-strip gaskets: to ASTM C542.

.14 Cap bead: one component silicone, neutral cure, to CGSB 19-GP-23, gun grade, color white.

Standard of Acceptance:

.1 Trecmo "Spectrum 2"

.2 Sonneborn "Omniseal"

.15 Primer-sealers and cleaners: to glass manufacturer's standard.

3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 FABRICATION

.1 Label each light of glass and/or plastic glazing with registered name of Product and weight and quality of glass and/or plastic glazing.

.2 Check dimensions on job site before cutting materials.

.3 Grind and chamfer edges of unframed glass and mirrors. Grind and chamfer edges of glass shelves and sliding doors.

.4 Ensure minimum bite or lap of glass and/or plastic glazing on stops and rabbets as recommended by glass and/or plastic glazing manufacturer.

.5 Provide "CLO Clearshield Coating" by CLO Glass Limited to all surfaces having been etched.

3.3 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.4 PREPARATION

.1 Thoroughly clean glass rebates and glass of dust, dirt, mortar and other foreign materials prior to glazing. Remove oils and grease with non-staining solvents such as Xycol or Methyl Ethyl Ketone solutions.

3.5 WORKMANSHIP

.1 Remove protective coatings and clean contact surfaces with solvent and wipe dry.
.2 Apply primer-sealer to contact surfaces.
.3 Place setting blocks as per manufacturer's instructions
.4 Install glass, rest on setting blocks, ensure full contact and adhesion at perimeter.
.5 Install removable stops, without displacing tape or sealant.
.6 Provide edge clearance of 3 mm minimum.
.7 Insert spacer shims to center glass in space. Place shims at 600 mm oc and keep 6 mm below sight line.
.8 Apply cap bead of sealant at full perimeter of exterior, at all aluminum window glazing.
.9 Apply sealant to uniform and level line, flush with sight line and tooled or wiped with, solvent to smooth appearance.
.10 Do not cut or abrade tempered, heat treated, or coated glass.

3.6 INSTALLATION: INTERIOR GLAZING

.1 If required, thoroughly mix glazing compound as recommended by manufacturer. Thinning of glazing compound will not be permitted.
.2 Carefully remove glazing stops and replace after glazing. Take care to prevent damage to stops.
.3 Doors, Screens, Sidelites and Interior Windows:
  .1 Place setting blocks on sill at 1/4 points from each corner unless otherwise directed by glazing manufacturer.
  .2 Place continuous glazing gaskets on edges of glass.
  .3 Centre and space each piece of glass with spacers located and installed according to manufacturer's directions.
  .4 Place glass so no voids occur between glass and glazing material, and glazing stops.
  .5 Secure glass in place with stops, secured in place with screws.
.4 Glazing Sealant:
  .1 Apply glazing sealant to clean, dry, grease and oil free surfaces. Provide exposed glazing sealant smooth, free from ridges, wrinkles, air pockets and embedded foreign materials.
  .2 Prime surfaces if required by glazing sealant manufacturer.
  .3 Trim glazing sealant flush with tops of stops and glazing channels.
  .4 Remove excess glazing sealant or droppings which would set up or become difficult to remove from finished surfaces. Remove excessive sealant immediately. Do not use chemicals, scrapers, or other tools which would affect finished surfaces.
.5 Interior Glazing:
  .1 Fire Rated Hollow Metal Doors and Screens:
    .1 Set glass in fire rated metals doors and screens on continuous setting block with 3 mm gap between glazing stop glass and embed in glazing compound in accordance with NFPA 80 and OBC requirements. Strike and point exposed joints between metal and glass or Install glass in accordance to ULC tested proprietary methods of installation.
  .2 Combination Method-Tape/Sealant:

.1 Cut glazing tape to proper length and Install against permanent stop projecting 1.5 mm above sightline.

.2 Fill gap between glass and applied stop with sealant to depth equal to bite of frame on glass to uniform and level line.

.3 Trim off excess tape to sightline.

.3 Two Sided Butt - Joint Glazing:

.1 2 side glazing at head and sill use wet, dry, or wet/dry glazing systems.

.2 Position glazing so that vertical edges are spaced slightly apart and seal with silicone sealant.

.3 Grind vertical joint with slight kerf and polish for aesthetics.

.6 Window Film:

.1 Install window film in accordance with manufacturer's printed instructions by experienced film applicators as recommended by glass film manufacturer.

.2 Ensure glass surfaces are clean and ambient temperature is between 16 deg C and 38 deg C.

.3 Whenever 2 or more pieces of same colour translucent film are seamed together as a continuous band of colour, they shall be matched to assure uniform reflected daytime colour and transmitted night appearance.

.7 Sealed Units with Integral Blinds:

.1 Ensure sealed units at ICU doors are provided at locations indicated. Cooperate and coordinate with respective Sections providing blinds. Blinds shall be sealed within a double-glazed thermal unit, tilt only system by magnetic slider.

3.7 ALUMINUM DOORS, TRANSOMS LIGHTS AND SIDELIGHTS

.1 All doors and transoms lights to be glazed with 25mm insulating units, in accordance with the requirements of this Section, to door manufacturer's standard glazing installation practice unless noted otherwise on drawings.

3.8 SLIDING GLASS WINDOWS IN ALUMINUM FRAMES

.1 Grind and polish top and ends of each glass panel and provide finger recesses.

.2 Install glass in frames, assemble and install unit in accordance with manufacturer's instructions.

.3 Adjust for smooth operation and proper function of locking device.

3.9 ALUMINUM WINDOWS

.1 All windows to be glazed with 25mm thickness insulating units in accordance with the requirements in this Section, to window manufacturer's standard glazing installation practice.

.1 Provide cap bead of sealant at all four (4) sides, at exterior of each unit.

.2 All doors transoms and side lights to be glazed with 25 mm insulating units, in accordance with the requirements of this Section, to door manufacturer's standard glazing installation practice unless noted other wise on drawings.

.3 All partitions and borrowed lights, to be glazed with 6 mm thickness clear wired safety glass, in accordance with the requirements of this Section.

.4 All partitions and borrowed lights, to be glazed with 6 mm thickness clear, laminated safety glass, in accordance with the requirements of this Section.

.5 Where indicated on drawings, frames to be glazed with wired safety glass in accordance with the requirements of this Section.

.6 All fire-rated hollow metal doors to be glazed with 6 mm thickness clear, wired safety glass, in accordance with the requirements of this Section.

.7 Use insulated glass units for all exterior doors in heated spaces.

.8 All non-fire rated hollow metal doors to be glazed with 6 mm thickness clear laminated or

tempered safety glass in accordance with the requirements of this Section.

.9 Where indicated on drawings, Doors to be glazed with wired safety glass in accordance with the requirements of this Section.

.10 Use insulated glass doors for all exterior doors.

3.10 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacture's instructions.

.6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.11 PROTECTION OF FINISHED WORK

.1 Provide and maintain necessary protection of completed work against damage.

.2 Do not mark or attach anything directly to exposed glass and framing surfaces.

.3 If welding is to take place above or near completed glazing work, protect glass with plywood or other suitable means to reduce likelihood of weld spatter damaging glass surfaces.

.4 Protect glass from other trades, workers, tools and other similar materials.

.5 Replace cracked, broken, or defective glass at no additional cost to the Owner and to Consultant's satisfaction.

.6 Identification of Glazing: Mark glass lites with temporary, easily removable, large safety markings, immediately after glass installation. Maintain safety markings until final clean-up.

END OF SECTION