

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 22 00 – Concrete Unit Masonry.
- .2 Section 07 92 00 – Joint Sealants.
- .3 Section 08 71 00 – Door Hardware.
- .4 Section 08 80 50 – Glazing.
- .5 Section 09 21 16 – Gypsum Board Assemblies.
- .6 Section 09 22 16 – Non-Structural Metal Framing.
- .7 Section 09 91 23 – Interior Painting.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM International)
 - .1 ASTM A653/A653M-15, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CAN/CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
- .3 Canadian Standards Association (CSA International)
 - .1 CSA G40.20/G40.21-13, General requirements for rolled or welded structural quality steel / Structural quality steel.
 - .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
 - .1 CSDMA, Specifications for Commercial Steel Doors and Frames, 2006.
 - .2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 2009.
- .5 National Fire Protection Association (NFPA)
 - .1 NFPA 80-16, Standard for Fire Doors and Fire Windows.
 - .2 NFPA 252-12, Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC S104-15, Standard Method for Fire Tests of Door Assemblies.
 - .2 CAN/ULC S704-11, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
- .7 American National Standard
 - .1 NAAMM/HMMA 863-14, Guide specifications for commercial hollow metal doors and frames.

1.3 DESIGN REQUIREMENTS

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
- .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 SHOP DRAWINGS

- .1 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed and louvred, arrangement of hardware, fire rating and finishes.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire rating and finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.5 MAINTENANCE INSTRUCTIONS

- .1 Provide instructions for proper functioning and maintenance of door hardware and include with operating and maintenance manual, in accordance with Section 01 33 00 – Submittal Procedures.

1.6 REGULATORY REQUIREMENTS

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN/ULC S104 and NFPA 252 for ratings specified or indicated.
- .2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN/ULC S104 and NFPA 252 and listed by nationally recognized agency having factory inspection services.
- .3 Provide manufacturer's certification for indicated or required fire rating for fire rated doors and frames fabricated with thicker steel to comply with security requirements.

Part 2 PRODUCTS

2.1 DESIGN REQUIREMENTS

- .1 Wind loads for doors, metalwork and hardware to comply with industry standards (Door & Access Systems Manufacturer Association).

2.2. GENERAL

- .1 Detention doors and frames must comply with HMMA 863.

2.3 MATERIALS

- .1 Doors:
 - .1 Hot dipped galvanized steel sheet: to ASTM A653/653M, ZF75; minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653/653M ZF75.
- .3 Fire rated doors and frames: build and label fire rated doors as required by regulatory organization. Minimum base galvanized steel thickness used for doors 1.3 mm or 1.6 mm and 1.6 mm frames. Provide manufacturer's certification for indicated or required fire rating for fire rated doors and frames fabricated with thicker steel to comply with security requirements.
- .4 Doors:
 - .1 Interior doors: commercial grade kraft paper honeycomb.
Minimum base steel: 1.6mm.
Door thickness: 45 mm.
Reinforcing for hardware: 2.0 mm thick.

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.
Glazing : refer to drawings.

2.4 DOOR 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 Insulated core:
 - .1 Polyurethane core: rigid, modified polyisocyanurate, closed cell board. Density 32 kg/m³, to CAN/ULC S704.

2.5 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.

2.6 PAINT

- .1 Field paint steel doors and frames in accordance with Sections 09 91 23 - Interior Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.
- .2 Anti-rust touch-up prime CAN/CGSB-1.181.

2.7 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Metallic paste filler: to manufacturer's standard.
- .3 Fire labels: metal rivited.
- .4 Sealant: refer to Section 07 92 10 – Joint Sealants.
- .5 Glazing: refer to Section 08 80 50 – Glazing.
- .6 Make provisions for glazing as indicated and provide necessary glazing stops.
 - .1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws, dry glazing of snap-on type.
 - .2 Design exterior glazing stops to be tamperproof.
- .7 Protective housing (protection for mortar filling): 1.6 mm steel welded to frame, size corresponding to electrical hardware components or other integrated into frames.

2.8 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Frames:
 - .1 Commercial grade steel frame, 1.6 mm thick, welded (continuous weld).
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Protect mortised cutouts with steel guard boxes.
- .6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .7 Manufacturer's nameplates on frames and screens are not permitted.
- .8 Conceal fastenings except where exposed fastenings are indicated.

- .9 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .10 Insulate exterior frame components with polyurethane insulation.
- .11 Assembly in parts to facilitate transportation. Field assemble and weld to conceal all joints and assembly marks.

2.9 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.10 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 and installation.

2.11 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
- .2 Fabricate doors with longitudinal edges welded (continuous weld). Grind welded joints to a flat plane.
- .3 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330.
- .4 Blank, reinforce, drill doors and tap for mortised, templated hardware electronic hardware.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 and 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.
- .9 Manufacturer's nameplates on doors are not permitted.

2.12 THERMALLY BROKEN DOORS AND FRAMES

- .1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

- .2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Apply insulation.

Part 3 EXECUTION

3.1 INSTALLATION GENERAL

- .1 Install labelled 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

- .1 Set frames plumb, square, level and at correct elevation. Verify alignment and verticality of frames prior to installation of doors and hardware components to ensure installation of frames does not interfere with proper functioning of hardware.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1,200 mm wide. Remove temporary spreaders after frames are built-in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier and vapour retarder.

3.3 DOOR INSTALLATION

- .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 Latchside and head: 1.5 mm.
 - .3 Finished floor and top: 13 mm.
 - .4 Ensure door swing does not come in contact with finished floor.
- .3 Temporarily brace frames using wood spacers placed horizontally at third of opening, to maintain uniform width of frame. Brace head of openings wider than 1,200 mm with vertical brace. Remove bracing and supports once frames are completely installed.

3.4 FINISH REPAIRS

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

3.5 GLAZING

- .1 Install glazing for doors frames in accordance with Section 08 80 50 - Glazing.

3.6 CLEANING

- .1 Clean surfaces and adjacent surfaces.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 08 11 00 – Metal Doors and Frames.
- .2 Section 13 34 25 – Prefabricated booth.

1.2 REFERENCES

- .1 Canadian Steel Door and Frame Manufacturers Association (CSDFMA)/Association canadienne des fabricants de portes d'acier (ACFPA).
 - .1 CSDFMA/ACFPA, Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.
- .2 American National Standards Institute (ANSI).
 - .1 ANSI/BHMA A156.1-2013, American National Standard for Butts and Hinges.
 - .2 ANSI/BHMA A156.2-2011, Bored and Preassembled Locks and Latches.
 - .3 ANSI/BHMA A156.3-2014, Exit Devices.
 - .4 ANSI/BHMA A156.4-2013, Door Controls - Closers.
 - .5 ANSI/BHMA A156.5-2014, Auxiliary Locks and Associated Products.
 - .6 ANSI/BHMA A156.6-2010, Architectural Door Trim.
 - .7 ANSI/BHMA A156.8-2010, Door Controls - Overhead Stops and Holders.
 - .8 ANSI/BHMA A156.10-2011, Power Operated Pedestrian Doors.
 - .9 ANSI/BHMA A156.12-2013, Interconnected Locks and Latches.
 - .10 ANSI/BHMA A156.13-2012, Mortise Locks and Latches Series 1000.
 - .11 ANSI/BHMA A156.15-2011, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
 - .12 ANSI/BHMA A156.17-2014, Self-closing Hinges and Pivots.
 - .13 ANSI/BHMA A156.18-2012, Materials and Finishes.
 - .14 ANSI/BHMA A156.19-2013, Power Assist and Low Energy Power - Operated Doors.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Hardware List:
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
 - .3 Electrical diagrams: submit final diagrams to Departmental Representative.

1.4 MAINTENANCE DATA

- .1 Provide maintenance data, list of parts and manufacturer's instructions for each type of door closer, lock, door stop and accessories for emergency exit, etc. and include with manual indicated in Section 01 78 00 – Closeout Submittals.
- .2 Show maintenance staff how to clean hardware and provide written instructions.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
 - .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DEPARTMENTAL REPRESENTATIVE'S SERVICE PROVIDER

- .1 Keys and cylinders indicated in the documents must be provided and installed by the Departmental Representative's service provider.
- .2 Contractor must include in tender the cost of supplying, installing and preparing the shop drawings for these components.
- .3 Contractor is fully responsible for the service provider. Coordinate provider's activities to ensure cylinders and keying elements are integrated into the project in a timely manner according to work timetable.
- .4 Service provider's contact details:
Serrurier Excel inc.
97 Industrielle street
Delson (Québec)
J5B 1V9
Contact : Yves Patenaude

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Packaging, transportation and handling:
 - .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
 - .2 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
- .2 Storage and protection:
 - .1 Store hardware finish items in dry, clean, locked area.

1.8 MAINTENANCE

- .1 Replacement materials:
 - .1 Provide replacement materials in accordance with Section 01 78 00 – Closeout Submittals.
 - .2 Provide two keys to maintain door closers, locks and accessories for emergency doors.

1.9 INSPECTIONS

- .1 Departmental Representative reserves the right to retain the services of an architectural hardware consultant to inspect hardware components and their installation, doors and frames.
- .2 Fees for this inspection will be paid for by the Departmental Representative.
- .3 Criteria to meet with consultant's inspection:
 - .1 Prior to requiring to hardware inspection, conduct verification and confirm in writing.
 - .2 If in the Departmental Representative opinion the work appears properly done the Departmental Representative will conduct an initial verification and if necessary a list of work to be corrected.
 - .3 Once the Departmental Representative has confirmed that the corrections and defects are completed, the Departmental Representative will verify them.

- .4 If the work is not completed and the Departmental Representative must issue a list and make other verifications, the Contractor must pay the expenses until work is certified by the Departmental Representative.
- .5 Assist the Departmental Representative with inspections.

Part 2 PRODUCTS

2.1 MANUFACTURER'S LIST

- .1 Refer to section 08 71 05 – Hardware group.

2.2 GENERAL

- .1 Except in particular cases indicated in hardware schedule, all hardware for this project are institutional and heavy duty. Refer to list for finish.
- .2 Submit list of hardware items in accordance with hardware schedule. Lists must include, for installation coordination purposes, numerical and written descriptions of each item and all notes entered on hardware schedule, as specified in this document.
- .3 The hardware schedule is provided as a guide to establish type, function, quality and minimum weight of required items, but is not a list of quantities. Verify plans and provide additional hardware not on the list, but required to complete installation of doors.
- .4 Assemble hardware items in accordance with current ANSI standards, otherwise must fulfill function and be of common usage.
- .5 All products not listed in this section must be equivalent in design and function and meet or exceed quality of listed items. Qualifying tenderers must receive approval to suggest alternatives not listed and submit manufacturer's name and catalogue information within fifteen (15) business days prior to contractor's tender closing date. The Departmental Representative will issue an addendum after examination of samples, otherwise tenderer will not be required to provide hardware as specified.
- .6 Acceptable equivalents must meet mechanical and functional characteristics that meet the same ANSI/BHMA standard, including warranty equal to or superior to specified product, with no effect on the Departmental Representative inventory or standardization of installations. Requests not meeting criteria will not be accepted.
- .7 Electrical diagrams: submit electrical diagrams for approval, including elevation for each system, location of each component and compatible with security and fire alarm systems.

2.3 VANDALISM PROTECTION

- .1 Provide protection for deadbolts, non-removable pins, etc. even if not specified on hardware schedule or specifically described in this section for all exterior doors.

2.4 MISCELLANEOUS HARDWARE

- .1 Refer to section 08 71 05 – Hardware schedule.

2.5 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 Security fasteners : use concealed fasteners or screws, bolts and nuts anti-intrusion where fasteners are exposed.

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

2.6 KEYING (Departmental Representative's service provider)

- .1 Meet and coordinate with the Departmental Representative needs for keying system.
- .2 Consider the organization of a keying system including the masters keys and sub-master keys. Keying system must be a continuity of existing system.
- .3 Provide three (3) keys for every lock in this Contract.
- .4 Provide five (5) masterkeys for each MK or GMK group.
- .5 Stamp keying code numbers on keys and cylinders.

2.7 CONSTRUCTION KEYING

- .1 Provide constructions cores.
- .2 Coordinate installation of permanent cores with Departmental Representative and Departmental Representative's service provider.

2.8 DIAGRAM OF CONNECTION

- .1 Submit the diagrams of connection necessary for the installation of electrified hardware, for end of approval and coordination.

Part 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- .2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .3 Supply manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

- .1 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .2 Supply manufacturers' instructions for proper installation of each hardware component.
- .3 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames.
- .4 Installers must be experienced in this type of hardware, including the adjustment and operation of various elements during installation and prior to acceptance of work.
- .5 Install hardware level, with screws and bolts provided by manufacturer and following instructions. Install flush with door faces. Adjust moving parts to ensure smooth operation of door. Do not use self-tapping or self-drilling screws.
- .6 Verify and adjust all hardware items two weeks after Owner takes possession and doors are used.

- .7 Employ specialized company to install electric components, with a minimum three (3) years' experience in the installation of electrical hardware and contractor's license, sub-category 4250 and 4252 issued by the R.E.C.Q.
- .8 Adapt finish hardware to specified use and area. Make adjustments to hardware does not meet requirements. Hardware supplier must make the necessary adjustments or changes sufficiently in advance to avoid a delay in the manufacture and delivery of the hardware.
- .9 Provide attachments for wall stops.
- .10 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .11 Install hardware including stops, weatherstripping and sound mufflers, except hinges and pivots, after last coat of paint has fully dried. Prepare doors (holes, mortises, adjustments) prior to painting.
- .12 Install fasteners perpendicularly to face of item. Use only screws provided by manufacturer and install according to best practices of the trade. Replace screws with drips, defects, misaligned or broken.
- .13 Install door closers with all default valve adjustments and make adjustments to valves, brake, course and trigger after ventilation is in operation and balanced, and prior to receipt by Owner.
- .14 Supplier will verify finish hardware during construction to ensure proper installation and inform Contractor.

3.3 ADJUSTING

- .1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.
- .2 Lubricate hardware, operating equipment and other moving parts.
- .3 Adjust door hardware to ensure tight fit at contact points with frames.
- .4 Carry out the adjustments of hardware during the first year of service. The components of hardware which present recurring problems will have to be replaced.

3.4 CLEANING

- .1 Upon completion of installation, clean work site to remove accumulated construction and environmental dirt.
- .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
- .3 Remove protective material from hardware items where present.
- .4 Upon completion of installation, remove surplus materials, waste materials, tools and security barriers.

3.5 DEMONSTRATION

- .1 Brief maintenance staff regarding:
 - .1 Proper care, cleaning, and general maintenance of projects complete hardware.
 - .2 Description, use, handling, and storage of keys.
 - .3 Use, application and storage of wrenches for door closers, locksets, and fire exit hardware.
- .2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 92 00 – Joint Sealants.
- .2 Section 08 11 00 – Metal Doors and Frames.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM C542-05 (2011), Standard Specification for Lock-Strip Gaskets.
 - .2 ASTM D2240-15, Test Method for Rubber Property - Durometer Hardness.
 - .3 ASTM E330-14, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 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-12.5-M86, Mirrors, Silvered.
 - .5 CAN/CGSB 12.11-M90, Wired Safety Glass.
- .3 Insulating Glass Manufacturers Alliance (IGMA).

1.3 DESCRIPTION

- .1 Performance requirements:
 - .1 Comply with following requirements for glazing and glazing materials to ensure continuity of air/vapour systems and building envelope.
 - .1 Interior glazing of multiple sealed glazing units must ensure continuity of air/vapour barrier system.
 - .2 Glazing dimensions must be determined to withstand permanent loads, wind loads and wind pressure and suction acting perpendicularly to glazing surfaces, at nominal pressure of 1.2 kPa, calculated according to ASTM E330.
 - .3 Maximum deflection of glazing must not exceed 1/200 of glazing deflection limit, and must not affect physical properties of glazing materials in any way.

1.4 ACTION AND INFORMATIONAL SUBMITTAL

- .1 Product Data:
 - .1 Submit product data as well as specifications and manufacturer's literature in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit technical data specifying VOC emission levels of glazing caulking and sealing products during installation and curing period.
- .2 Shop Drawings:
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Manufacturer's instructions:
 - .1 Submit manufacturer's instructions.
- .4 Closeout submittals:
 - .1 Submit maintenance data and cleaning instructions for incorporation into manual indicated in Section 01 78 00 - Closeout Submittals.

1.5 QUALITY ASSURANCE

- .1 Test reports: submit test reports certifying that products and materials meet requirements for product characteristics and performance criteria.

- .1 Conduit glazing tests and analyses in accordance with Section 01 45 00 – Quality Control.
- .2 Conduct shop inspections and tests of glazing.

- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Sealed units manufactured by manufacturer in good standing of IGMA, able to provide tests and certification numbers on request demonstrating use of spacers and sealants.

1.6 AMBIENT CONDITIONS

- .1 Ambient Requirements:
 - .1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
 - .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort and recycle waste in accordance with Section 01 74 21 – Construction/Demolition Management and Disposal.
- .2 Remove packaging waste from work site and ship to appropriate recycling centres.

Part 2 PRODUCTS

2.1 Flat Glass:

- .1 Float glass: to CAN/CGSB-12.3, glazing quality, 6 mm thick.
- .2 Sheet glass: to CAN/CGSB-12.2, A quality, 6 mm thick.
- .3 Safety glass (**VT**): to CAN/CGSB-12.1, transparent.
 - .1 Standard thickness: 6 mm thick.
 - .2 Type: 1-laminated, 2-tempered.
 - .3 Class: B-float.
 - .4 Category: 1.
 - .5 Edge treatment.
- .4 Silvered mirror glass: to CAN/CGSB-12.5, 6 mm thick.
 - .1 Type : 1A-float glass for normal use.
- .5 Wired glass (**VA**): to CAN/CGSB-12.11, 6.35 mm thick.
 - .1 Type 1-polished both sides (transparent).
 - .2 Wire mesh style: 3-square.
 - .3 Mesh size: 12 mm x 12 mm, 0.4 mm thick, embedded mid-glass.

2.2 ACCESSORIES

- .1 Setting blocks: EPDM, 80-90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.
- .2 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.
- .3 Glazing clips: manufacturer's standard type.
- .4 Extruded joints with lock-strip gaskets: to ASTM C542.
- .5 Glazing tape:
 - .1 Preformed butyl compound, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; 3 mm x 10 mm size.

- .2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2%, designed for compression of 25%, to effect an air and vapour seal.
- .6 Mirror attachment accessories:
 - .1 Stainless steel clips.
 - .2 Plastic rosettes.
 - .3 Mirror adhesive, chemically compatible with mirror coating and wall substrate.

Part 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 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.

3.3 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.

3.4 INSTALLATION: INTERIOR – DRY METHOD (TAPE)

- .1 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .2 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .3 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- .4 Place glazing tape on free perimeter of glazing in same manner described in 3.6.3.
- .5 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.
- .6 Trim protruding tape edge.

3.5 CLEANING

- .1 Upon completion of installation, clean site to remove accumulated construction and environmental dirt and debris.
- .2 Remove traces of primer, caulking.
- .3 Remove glazing materials from finish surfaces.
- .4 Remove labels.
- .5 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .6 Upon completion remove surplus materials, rubbish, tools and security barriers.

3.6 PROTECTION

- .1 After installation, mark each light with an "X" by using removable plastic tape or paste.

END OF SECTION