1 GENERAL

1.01 RELATED SECTIONS

.1 Submittal Procedures: Section 01 33 00

.2 Closeout Submittals: Section 01 78 00

.3 Common Product Requirements: Section 01 61 00

.4 Duct Accessories: Section 23 33 00

1.02 SHOP DRAWINGS

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

.2 Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

1.03 SAMPLES

.1 Submit samples in accordance with Section 01 33 00.

.2 Submit one (1) sample of each type of hand entry access door.

.3 Submit one 300 x 300 mm corner sample of each type of body entry door.

1.04 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for cleaning and maintenance of stainless steel finishes for incorporation into manual specified in Section 01 78 00.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00.

.2 Apply temporary protective coating to finished surfaces. Remove coating after erection. Do not use coatings that will become hard to remove or leave residue.

.3 Leave protective covering in place until final cleaning of building.

2 PRODUCTS

2.01 ACCESS DOORS

.1 Sizes: Except as indicated otherwise, to be minimum sizes as follows:
- .1 For body entry: 600 x 600 mm. (except 900 x 900mm for special location noted below)
- .2 For hand entry: 300 x 300 mm.
- .3 Access doors to be sized large enough to serve intended purpose.

.2 Construction:
- .1 Galvanized steel. Rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180. Provide fire-rated access doors where penetrating fire-rated construction.

.3 Materials
- .1 Tiled or marble surfaces and other special areas: Stainless steel with brushed satin or polished finish as directed by the Departmental Representative.
- .2 Other areas: galvanized steel.
- .3 Acceptable Manufacturers: Acudor; Buensod; Lettage; Zurn.

2.02 EXCLUSIONS

.1 Lay in tile ceilings: use unobtrusive identification locators.

3 EXECUTION

3.01 INSTALLATION

.1 Installation:
- .1 Where installed in fire separations, maintain fire rating integrity.

3.02 LOCATION

.1 Location: verify equipment is within view and accessible for operating, inspecting, adjusting, servicing without using special tools.

.2 Provide adequately sized galvanized steel access doors for all devices requiring inspection, maintenance or cleaning.

.3 Install access doors or panels wherever valves, water hammer arresters, plumbing cleanouts, trap primers, drain points, automatic and manual air vents, controllers, controlled devices, volume dampers, duct access doors and panels and where any

equipment and system components requiring servicing, inspection or adjusting etc. are not accessible. Where equipment may be required to be removed for repair or servicing, adequate access must be provided.

.4 Special Location: none.

.5 Locate access doors before and after coils, filters, fans, automatic dampers, at fire dampers, fresh air and exhaust air plenums, bottoms of risers, and where required elsewhere.

.6 Remove lay-in tiles to obtain access to space above lay-in tile ceilings.

.7 Doors to open greater than 90 degrees, have concealed hangers, anchor straps and screwdriver cam locks.

.8 Doors in block walls or in tile shall be sized to suit masonry unit module.

.9 In fire rated walls and ceilings, access doors and panels must be fire rated.

.10 Provide stainless steel access doors for tile, marble or terrazzo surfaces.

.11 Access doors to be tight fitting with sealing gaskets and suitable quick fastening locking devices. Insulate access doors where they are installed in insulated ductwork or plenums.

.12 Gasketted panels (patches) minimum size 300mm x 300mm and fabricated from the same material as the duct and fastened with sheet metal screws are permitted if the access is for cleaning only; otherwise access doors shall be provided.

.13 Interrupt duct coverings at all duct access doors to allow for easy opening.

END OF SECTION

1 GENERAL

1.01 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry.

.2 Section 07 84 00 - Fire Stopping.

1.02 REFERENCES

.1 ANSI A117.1 - American National Standard for Accessible and Useable Buildings and Facilities.

.2 ANSI/BHMA A156.1, "Butts and Hinges" (copyrighted by BHMA, ANSI approved).

.3 ANSI/BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches.

.4 ANSI/BHMA A156.4 - American National Standard for Door Controls - Closers.

.5 ANSI/BHMA A156.6, "Architectural Door Trim" (copyrighted by BHMA, ANSI approved).

.6 ANSI/BHMA A156.7, "Template Hinge Dimensions" (copyrighted by BHMA, ANSI approved).

.7 ANSI/BHMA A156.8, "Door Controls - Overhead Holders" (copyrighted by BHMA, ANSI approved).

.8 ANSI/BHMA A156.13 - American National Standard for Mortise Locks and Latches Series 1000.

.9 ANSI/BHMA A156.15 - Life Safety Closer/Holder/Release Devices.

.10 ANSI/BHMA A156.16 - Auxiliary Hardware.

.11 ANSI/BHMA A156.18 - Materials and Finishes.

.12 ANSI A156.28 - American National Standard for Keying Systems

.13 NFPA 80 - Standard for Fire Doors, Fire Windows.

.14 NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

.15 Underwriters Laboratories (UL). - Fire Resistance Directory.

.16 ANSI/UL 10C - Standard for Safety for Positive Pressure Fire Tests of Door Assemblies.

.17 NBC - National Building Codes or Canada

1.03 PERFORMANCE REQUIREMENTS

.1 Fire Rated Openings: Provide door hardware listed by UL or Intertek Testing Services (Warnock Hersey Listed), or other testing laboratory approved by applicable authorities.
1. Comply with NFPA 80 for fire ratings indicated, based on testing according to NFPA 252.
2. Comply with UL10C, Positive Pressure Fire Tests of Door Assemblies.

.2 Accessibility Requirements: Comply with requirements of Local building code, and Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities.

1.04 ACTION AND INFORMATION SUBMITTALS

.1 Submit under provisions of Section 01 33 00 SUBMITTAL PROCEDURES.

.2 Product Data: Manufacturer's catalog cuts on each product to be used.

.3 Shop Drawings: Indicate locations and mounting heights of each type of hardware, schedules, electrical characteristics and connection requirements.

.4 Schedule:
1. Submit schedule indicating each type of hardware for each door.
2. List manufacturer's name with each manufacturer's hardware number together with finishes in US standards.
3. Show door number/location, handing, door and frame material, manufacture and catalog numbers, all finishes and keying information. Explain fully all abbreviations.

.5 Shop Drawings:
1. Indicate locations and mounting heights of each type of hardware.
2. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cut-outs for hardware.
3. Detail any conditions requiring custom extended lip strikes, or any other special or custom conditions.
4. Wiring diagrams including point to point and riser diagrams, function statements and system descriptions for all electrical hardware

.6 Verification Samples: For each finish product specified.
1. If required by the Departmental Representative, submit one sample of each type of typical hardware required illustrating style, color, and finish.
2. Approved samples may be incorporated into Work.

.7 Closeout Submittals:
1. Project Record Documents: Schedule showing actual locations of installed cylinders and their master key code.
2. Parts lists and maintenance instructions including data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
3. Keys: Deliver with identifying tags to Departmental Representative by security shipment direct from hardware supplier.

1.05 QUALITY ASSURANCE

.1 Hardware Supplier Personnel: Employ Architectural Hardware Departmental Representative (AHC) or equally qualified person to supervise and prepare all schedules, details, and services required for the project.

.2 Hardware Supplier: to provide 3 job site visits for inspection of the hardware. One is before the hardware is installed, the second one is during the install and the last one is on completion of the install. Each inspection is to have a certified AHC complete the inspection and report any issues at the time of inspection.

1.06 DELIVERY, STORAGE, AND HANDLING

.1 Package hardware items individually with necessary fasteners and installation templates when necessary; label and identify each package with door opening code to match hardware schedule.

.2 Store products in manufacturer's unopened packaging until ready for installation.

.3 Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.

.4 Store materials in a dry, warm, ventilated weathertight location.

1.07 PROJECT CONDITIONS

.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 WARRANTY

.1 Provide factory warranty against defects in material and workmanship as follows:
1. Overhead Surface Closers, Grade 1, 25 Year Warranty.
2. Mortise locks, Grade 1, 10 Year Warranty.

1.09 MAINTENANCE MATERIALS

.1 Provide special wrenches and tools applicable to each different or special hardware component.

1.10 COORDINATION

.1 Coordinate work with other directly affected components involving manufacture or fabrication of internal reinforcement for door hardware and recessed items.

.2 Coordinate work with other directly affected components involving electrical wiring and components.

2 PRODUCTS

2.01 HINGES AND PIVOTS

.1 Hinges: ANSI A156.1, full mortise template type complying with following general requirements unless otherwise scheduled.
1. Widths: Sufficient to clear trim projection when door swings 180 degrees.
2. Number: Furnish minimum three hinges to 90 inches (2286 mm) high, four hinges to 120 inches (3048 mm) high for each door leaf.
   a. Fire Rated Doors to 86 inches (2184 mm) high: Minimum three ball bearing hinges.
   b. Residential Wood Doors: Furnish minimum two hinges.
3. Size and Weight: 4-1/2 inch (114 mm) heavy weight typical for 1-3/4 inch (44 mm) doors.
   a. Doors over 40 inches (1 016 mm) wide: Extra heavy weight ball or oilite bearing hinges.
   b. Doors 1-3/8 inch (35 mm) Thick: 3-1/2 inch (89 mm) size.
   c. Doors 2 inch (50 mm) Thick: 5 inch (125 mm) extra heavy weight ball or oilite bearing.
   d. Doors over 48 inches (1 220 mm) wide: 5 inch (125 mm) extra heavy weight ball or oilite bearing.
4. Pins: Furnish nonferrous hinges with non-removable pins (NRP) at exterior and locked outswinging doors, non-rising pins at interior doors.

2.02 MORTISE LOCKSETS AND DEADBOLTS

.1 Lockset:
1. Standards:
   a. ANSI Conformance - ANSI A156.13, Operational Grade 1, Security Grade 1.
   b. U.L. and C.U.L. listed for use on 3-hour fire-rated doors and for all positive pressure applications.
   c. U.L. and C.U.L. listed for UL 10B/10C.
   d. Lever trim meets A117.1 and ADA requirements.
2. Features:
   a. Stainless steel latch.
   b. Stainless steel dead bolt.
   c. Hardened steel rollers in dead bolt.
   d. Security spacer between inside and outside lever.
   e. Steel lock case and internal components.
   f. Full length face plate.

g. All trim through-bolted through the lock case.
h. Accepts interchangeable core cylinders.

3. Function:
   a. As noted on the hardware schedule attached to this section.

2.03 KEYING

.1 Keying:
1. Keying: Provide master keyed BEST Series tied into existing keying system as directed by Departmental Representative.
2. Construction keyed

.2 Keys:
1. Nickel silver. Stamp keys with "DO NOT DUPLICATE".
2. Supply keys in the following quantities:
   a. 15 construction keys.
   b. 2 keys for every cylinder.
   c. 6 master and sub-master keys

2.04 SURFACE DOOR CLOSERS

.1 Closers used in conjunction with overhead stops and holders shall be templated and coordinated to function properly. Properly detail closers to meet application requirements by providing drop plates, brackets, etc. to meet application and installation requirements as indicated.

.2 Series: ANSI A156.4, Grade 1, heavy duty surface door closer.
1. Heavy duty series for interior and exterior applications features adjustable spring sizes from 1 to 6 and meets ANSI A117.1 and ADA for barrier-free accessibility.
2. Compliant with UL10C for positive pressure.
3. Certified to 10 million cycles by a recognized test lab.
4. Non-handed.
5. Featuring full range spring power adjustment and backcheck, with a narrow projection full cover and flatform style arm.
6. Door control also features a backcheck positioning adjustment for parallel arm applications, to maintain an ANSI backcheck range similar to regular and top jamb applications.
7. Independent sweep and latch non-critical closing speed adjustment.

2.05 MISCELLANEOUS TRIM

.1 Push/Pulls: ANSI A156.6; push plates minimum 0.050 inch (1.27 mm) thick.
1. Type:
   a. Provide as indicated on the Schedule.
2. Size: Push plates shall be ANSI J302, size 4 inches (102 mm) by 16 inches (406 mm), thickness .050 inch.
3. Size: Pull plates shall be ANSI J405, size 4 inches (102 mm) by 16 inches (406 mm), thickness .050 inch.
4. Cut plates for cylinder or thumb piece when used with deadlock.
5. Provide with through bolts to secure from opposite door face.
6. Finish: As specified in the Door Hardware Schedule.

.2 Flush Bolts: ANSI A156.16 Grade 1 top and bottom flush bolts, with dust-proof floor strike.
1. Provide as indicated on the Schedule.
2. Finish: As specified in the Door Hardware Schedule.

.3 Kickplates, Mop Plate, Armor Plates: ANSI A156.6, metal; height indicated in Schedule by 1 inch (25 mm) less than door width:
1. Provide as indicated on the Schedule.

.4 Stops: Provide for all doors to control the desired limit of opening helping to prevent damage to adjacent walls, columns, equipment, the door or its hardware
1. Provide floor or wall stops when overhead stops have not been listed except in areas where their location would impede traffic. Stops of correct height shall be used on exterior and interior doors.
2. Doors with surface closers may be provided with S-DS or S-IS dead stop arms
3. Use roller type stops in areas where the interfering swing of one door may cause damage through contact with another door.
4. Wall Stops: ANSI A156.1, Grade 1, with no visible screws:
   a. Provide as indicated on the Schedule.
   b. Finish: As specified in the Door Hardware Schedule.
5. Floor Stops: ANSI A156.1 Grade 1:
   a. Provide as indicated on the Schedule.
   b. Finish: As specified in the Door Hardware Schedule.

3 EXECUTION

3.01 EXAMINATION

.1 Do not begin installation until substrates have been properly prepared.

.2 Verify doors and frames are ready to receive door hardware and dimensions are as indicated on shop drawings.

.3 Verify electric power is available to power operated devices and is of correct characteristics.

.4 If substrate preparation is the responsibility of another installer, notify Departmental Representative of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

.1 Install in accordance with manufacturer's instructions.

.2 Coordinate mounting heights with door and frame manufacturers. Use templates provided by hardware item manufacturer.

.3 Install with fasteners provided by hardware item manufacturer.

.4 Adjust hardware for smooth operation.

3.03 PROTECTION

.1 Protect installed products until completion of project.

.2 Touch-up, repair or replace damaged products before Substantial Completion.

3.04 DOOR HARDWARE SCHEDULE

Hardware Group 1, (E100)
1-Continous Hinge ABH A110HD C
1-Lockset GX1L80IC 26D (c/w 2-1/4in door extension kit)
1-SFIC Core, Best 26D (type to suite)
1-Door Closer 1900 AL
1-Threshold DS5000A x DS176AT (sized to suit)
1-Weather Seal DSDS130CR (sized to suit)
1-Door Sweep DS149CNB (sized to suit)

Hardware Group 2, (E100A)

1-Continous Hinge ABH A110HD C
1-Lockset GX1L80IC 26D (c/w 2-1/4in door extension kit)
1-SFIC Core, Best 26D (type to suite)
1-Door Closer 1900 AL
1-Threshold DS5000A x DS176AT (sized to suit)
1-Weather Seal DSDS130CR (sized to suit)
1-Door Sweep DS149CNB (sized to suit)

END OF SECTION

1 GENERAL

1.01 REFERENCES

.1 ASTM International
- .1 ASTM C542 05 (2011), Specification for Lock Strip Gaskets.
- .2 ASTM D790 10, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- .3 ASTM D1003 11, Test Method for Haze and Luminous Transmittance of Plastics.
- .4 ASTM D1929 11, Test Method for Determining Ignition Temperature of Plastics.
- .5 ASTM D2240 05(2010), Standard Test Method for Rubber Property Durometer Hardness.
- .6 ASTM E84 11a, Test Method for Surface Burning Characteristics of Building Materials.
- .7 ASTM E330 02(2010), Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .8 ASTM C1503-08, Standard Specification for Silvered Flat Glass Mirror.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB 12.1 M90, Tempered or Laminated Safety Glass.
- .2 CAN/CGSB 12.3 M91, Flat, Clear Float Glass.
- .3 CAN/CGSB 12.8 97 AMEND, Insulating Glass Units.

.3 Canadian Standards Association (CSA International)
- .1 CSA A440-11, NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights, Includes Update No. 1 (2014).
- .2 CSA A440.2-14/A440.3-14, Fenestration energy performance/User guide to CSA A440.2-14.
- .3 CAN/CSA A440.4-07 (R2012) - Window, Door, and Skylight Installation
- .4 CSA Certification Program for Windows and Doors 2000

.4 Environmental Choice Program (ECP)
- .1 CCD-045-95(R2005), Sealants and Caulking Compounds.

.5 Glass Association of North American (GANA)
- .1 GANA Glazing Manual (50th Anniversary Edition).

.2 GANA Laminated Glazing Reference Manual (2009 edition).
.3 GANA Guide to Architectural Glass (2010).

1.02 ACTION AND INFORMATION SUBMITTALS

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

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for glass, sealants, and glazing accessories, and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
.1 Submit for review and acceptance of each unit.
.2 Samples will be returned for inclusion into work.
.3 Submit duplicate 300 mm x 300 mm size samples of glass products and insulating glass units.

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

.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
.1 Submit testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.
.2 Submit shop inspection and testing for glass.

1.03 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.

1.04 QUALITY ASSURANCE

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

.2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
.1 Provide testing and analysis of glass under provisions of Section 01 45 00 – Quality Control.
.2 Provide shop inspection and testing for glass if requested by Departmental Representative.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect glazing and frames from damage.
.3 Protect prefinished aluminum surfaces with wrapping or strippable coating.
.4 Replace defective or damaged materials with new.

1.06 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.

1.07 WARRANTY

.1 Provide manufacturers guarantee for the following types of glass listed, against defects in materials and workmanship for the period indicated, commencing from the date of Substantial Performance of Work.
.1 Sealed Glass Units: Replace units that exhibit failure of hermetic seal under normal use evidenced by partial or complete obstruction of vision by dust, moisture, or film on interior surface of glass: 2-Years from date of Contract Completion

2 PRODUCTS

2.01 MATERIALS

.1 Required Edge Treatments:
- .1 Concealed edges: flat belt ground and seamed.
- .2 Structural Silicone Glazed (SSG) edges: flat belt ground and seamed.
- .3 Butt joined edges with silicone seal: flat ground with arris.
- .4 Exposed edges: flat polish with arris.

.2 Design Criteria:
- .1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follows:
  - .1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
- .2 Size glass to withstand wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330.
- .3 Limit glass deflection to 1/200 with full recovery of glazing materials.

.3 Flat Glass:
- .1 Type 'LT': laminated tempered glass. to CAN/CGSB 12.1, transparent, glazing quality, 6 mm minimum thickness overall; 3 mm each pane.
  - .1 Type: 2 tempered laminated.
  - .2 Class: B float.
  - .3 Category: II – 540 J impact resistance.
  - .4 Edge treatment: Polished.
- .2 Type 'T': tempered glass to CAN/CGSB 12.1, transparent, glazing quality, 6 mm minimum thickness.
  - .1 Type: 2 tempered laminated.
  - .2 Class: B float.
  - .3 Category: II – 540 J impact resistance.
  - .4 Edge treatment: Polished
- .3 Type 'LE': Low-emissivity (LOW-E) coating; Design Concept: Low-E coating on 2nd surface, argon gas filled insulating glass units having the following minimum performance values based on clear + clear glass, each pane 6 mm thick, overall thickness 25 mm:
  - .1 Canadian ENERGY STAR® certified.
  - .2 Cradle-to-Cradle Certified℠.
  - .3 Ultraviolet Transmittance: ≤19%.

.4 Visible light transmittance: ≥70%.
.5 Solar heat gain coefficient (SHGC): ≤0.38.
.6 U-Factor:
.1 Winter nighttime u-value: ≤0.29.
.2 Summer daytime u-value: ≤0.27.
.7 Shading coefficient: ≥0.44.
.8 Light to Solar Gain (LSG): ≥1.85.

2.02 SEALED INSULATING GLASS

.1 Type 'INS': Double Pane Insulating Glass Units: meet or exceed requirements of CAN/CGSB 12.8. Units shall be certified by the Insulated Glass Manufacturers Alliance (IGMA) – submit certification numbers for each unit supplied to Departmental Representative. Overall unit thickness shall be 25 mm using 6 mm glass thickness for individual panes. Use two-stage seal method of manufacture, as follows:
.1 Primary Seal: polyisobutylene sealing compound between glass and metal spacer/separator, super spacer bar or TDSE Intercept.
.2 Secondary Seal: polyurethane, silicone or polysulphide base sealant, filling gap between the two panes of glass at the edge up to the spacer/separator and primary seal.
.3 Outboard pane: Type 'T' clear tempered glass, 6 mm thick, with Type LE1(Low-e) coating on 2nd surface.
.4 Inter cavity space: 13 mm space with low-conductivity spacers.
.5 Inert gas fill: ≥95% argon filled.
.6 Inboard pane: Type 'T' clear tempered glass, 6 mm thick.

2.03 ACCESSORIES

.1 Sealants: in accordance with Section 07 92 00 – Joint Sealants.

.2 Glazing sealant: Type as recommended by glazing manufacturer as required to meet or exceed performance requirements. Verify compatibility with insulating glass unit secondary sealant.

.3 Sealant for glazing between edges of glass units: one-component silicone base, non-acidic, non-corrosive qualifying to ASTM C920, and commercially manufactured and designed for structural silicone glazing (SSG)

.4 Setting blocks: Neoprene, 80 90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.

.5 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.

.6 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; black colour.
- .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.

.7 Glazing compound for fire rated glazing materials:
- .1 Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2%, designed for compression of 25% to effect an air and vapour seal.
- .2 Silicone Sealant: One-part neutral curing silicone, medium modulus sealant, Type S; Grade NS; Class 25 with additional movement capability of 50% in both extension and compression (total 100%); Use (Exposure) NT; Uses (Substrates) G, A, and O as applicable.
- .3 Setting Blocks: Hardwood, glass width by 100 mm x 5 mm thick.
- .4 Spacers: Neoprene or other resilient blocks of 40 to 50 Shore A durometer hardness, adhesive-backed on one face only, tested for compatibility with specified glazing compound.
- .5 Cleaners, Primers, and Sealers: Type recommended by manufacturer of glass and gaskets.

.8 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, black colour.

.9 Glazing clips: manufacturer's standard type.

.10 Lock-strip gaskets: to ASTM C542.

.11 Other Glazing Accessories: to CAN/CSA A440.

.12 Screws, bolts and fasteners: ASTM F738M; Type 304 stainless steel.

.13 Glass presence markers: easily removable, non-residue depositing.

.14 Mirror attachment accessories:
.1 Stainless steel edge clips, with fastening concealed behind mirror.

2.04 FABRICATION

.1 Verify glazing dimensions on Site.

.2 Clearly label each glass light with maker's name, weight, quality, type and certification number. Do not remove labels until after work has been reviewed by Departmental Representative.

.3 Accurately size glass to fit openings allowing the clearances shown on the following table:

Glass Thickness	**Minimum Edge Clearance**	**Minimum Face Clearance**
2 mm	3 mm*	1.5 mm
3 mm	3 mm*	3 mm
4 mm	3 mm*	3 mm
5 mm	6 mm*	3 mm
6 mm	6 mm	3 mm
over 6 mm	6 mm or 75% of the glass thickness, whichever is greater	

* = where any dimension of glass exceeds 760 mm increase minimum edge clearance by 1.5 mm.

.4 Bite of glass edge in stop:
.1 Up to 1270 mm united size: 10 mm minimum.
.2 Over 1270 mm united size: 13 mm minimum.

3 EXECUTION

3.01 COMPLIANCE

.1 Install work in accordance with the Quality Management provisions specified in this section and manufacturer’s written instructions.

.2 Size glass to Building Code requirements and verify glass for openings are correctly sized and are within allowable tolerances. Install glass with full contact and adhesion at perimeter. Maintain edge clearance recommended by glass manufacturer.

.3 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

3.02 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
  .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 Visually inspect substrate in presence of Departmental Representative.
  .4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  .5 Proceed with installation only after unacceptable conditions have been remedied.
  .6 Commencement of work means acceptance of conditions.

3.03 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.

3.04 INSTALLATION: EXTERIOR - DRY METHOD (PREFORMED GLAZING)

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

.2 Perform work in accordance with GANA Glazing Manual an GANA Laminated Glazing Reference Manual for glazing installation methods.

.3 Cut glazing tape to length; install on glazing light. Seal corners by butting tape and sealing junctions with sealant.

.4 Place setting blocks at 1/3 points, with edge block maximum 150 mm from corners.

.5 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

.6 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.

.7 Trim protruding tape edge.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.
  - .1 Remove traces of primer, caulking.
  - .2 Remove glazing materials from finish surfaces.
  - .3 Remove labels.
  - .4 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.06 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 After installation, mark each light with an "X" by using removable plastic tape or paste.
- .1 Do not mark heat absorbing or reflective glass units.

.3 Repair damage to adjacent materials caused by glazing installation.

3.07 SCHEDULE

.1 Exterior doors and windows: Type ‘INS’ insulating glass units.

END OF SECTION