

**Part 1            General****1.1                RELATED REQUIREMENTS**

- .1        Section 07 92 00 - Joint Sealing.
- .2        Section 08 44 13 – Glazed aluminum curtain walls.
- .3        Section 08 71 00 – Hardware Groups.

**1.2                REFERENCES**

- .1        ASTM International
  - .1        ASTM C542-05(2011), Standard Specification for Lock-Strip Gaskets.
  - .2        ASTM D2240-15, Standard Test Method for Rubber Property - Durometer Hardness.
  - .3        ASTM E330/E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
  - .4        ASTM F1233-08(2013), Standard Test Method for Security Glazing Materials and Systems.
  - .5        ASTM F1592-12, Standard Test Methods for Detention Hollow Metal Vision Systems.
  - .6        ASTM F1915-05(2012), Standard Test Methods for Glazing for Detention Facilities.
- .2        Canadian General Standards Board (CGSB)
  - .1        CAN/CGSB-12.1-90, Tempered or Laminated Safety Glass.
  - .2        CAN/CGSB-12.2-91, Flat, Clear Sheet Glass.
  - .3        CAN/CGSB-12.3-91, Flat, Clear Float Glass.
  - .4        CAN/CGSB-12.8-97, Insulating Glass Units.
  - .5        CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.
  - .6        CAN/CGSB-12.9-91, Spandrel Glass.
  - .7        CAN/CGSB-12.10-76, Glass, Light and Heat Reflecting.
  - .8        CAN/CGSB-12.11-90, Wired Safety Glass.
- .3        Environmental Choice Program (ECP)
  - .1        DCC-045-95 (R2005), Sealants and Caulking Compounds.
- .4        Glass Association of North American (GANA)
  - .1        GANA Glazing Manual - 2008.
  - .2        GANA Laminated Glazing Reference Manual - 2009.
- .5        South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
  - .1        SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

**1.3 ACTION AND INFORMATIONAL 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 to the contractor for inclusion into work.
  - .3 Submit two (2) samples of 100 mm long of sealant material.
  - .4 Submit two (2) samples of 300 X 300 mm of each glazing type.
- .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 analysis of glass under provisions of Section 01 45 00 - Quality Control.
  - .2 Submit shop inspection testing for glass.

**1.4 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.

**1.5 QUALITY ASSURANCE**

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

**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements 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 off ground 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 nicks, scratches, and blemishes.
  - .3 Protect prefinished aluminum surfaces with wrapping strippable coating.
  - .4 Replace defective or damaged materials with new.

**1.7 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.

## **1.8 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.9 WARRANTY**

- .1 For work in this Section 08 80 50 - Glazing, the 12-month warranty period set out in the General Conditions is extended to 120 months.
- .2 Provide a written document jointly prepared and signed by the manufacturer and the installer and issued in the name of Canada, ensuring the work against defects in materials, workmanship and installation for the period specified above.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Design Criteria:
  - .1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow.
    - .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 to ASTM E330/E330M, acting normal to plane of glass.
  - .3 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.
- .2 Flat Glass:
  - .1 Type 1: Clear, select quality glass, tempered, 6 mm thick.
    - .1 Sintered ceramic coating (glazed coloured enamel) on side 2: white dot pattern, 30% opacity
  - .2 Type 2: Clear, select quality glass, tempered, 6 mm thick.
    - .1 Soft metal coating, Low E, obtained by vacuum metallization on side 3 (up to coefficient  $U_g=1,0 \text{ W}/(\text{m}^2.\text{K})$ )
  - .3 Type 3: Clear, select quality glass, tempered, 6 mm thick.
  - .4 Type 4: Clear, select quality glass, tempered, 6 mm thick.
    - .1 Film applied by cathode sputtering on side 4, light grey colour.
- .3 Insulating Glass Units:
  - .1 Construction:
    - .1 Double-sealed, with two (2) panes, 25 mm thick over all.

- .2 Air space thickness: polycarbonate spacer, black colour, steel-reinforced with conductivity de  $0.19\text{W/m}^2\text{K}$ , 13.5 mm thick.
- .3 Inert gas space: argon.
- .2 Type **VT1**: Thermos glass for curtain wall, sintered with white dots.
  - .1 Exterior glazing: Type 1.
  - .2 Interior glazing: Type 2.
  - .3 U-value in centre: not more than  $1.363\text{W/m}^2\text{*}^0\text{C}$ .
  - .4 Visible light :
    - .1 Transmission : 55.5%
    - .2 Interior reflexion : 16.8%
    - .3 Exterior reflexion : 17%
  - .5 SC Coefficient : 0.46
- .3 Type **VT2**: Thermos glass for door.
  - .1 Exterior glazing: Type 3.
  - .2 Interior glazing: Type 2.
  - .3 U-value in centre: not more than  $1.363\text{W/m}^2\text{*}^0\text{C}$ .
  - .4 Visible light :
    - .1 Transmission: 55.5%
    - .2 Interior reflection: 16.8%
    - .3 Exterior reflection: 17%
  - .5 SC Coefficient : 0.46
- .4 Type **T1**: Thermos glass for spandrel panel.
  - .1 Exterior glazing : Type 1.
  - .2 Interior glazing : Type 4.
  - .3 U-value in centre: not more than  $1.306\text{W/m}^2\text{*}^0\text{C}$ .
- .4 Sealant: in accordance with Section 07 92 00 – Joint Sealants.
  - .1 Maximum VOC level: according to guideline DCC-045.
  - .2 Ensure that sealants comply with limitations and restrictions in guideline DCC-045 regarding chemical composition.

## 2.2 ACCESSORIES

- .1 Setting blocks: neoprene, 80-90 Shore A durometer hardness to ASTM D2240, length of 25 mm for each square meter of glazing.
- .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. Self adhesive on one face.
- .3 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.
- .4 Glazing beads: resilient, polyvinyl chloride, extruded form, colour suiting rabbet.
- .5 Extruding joints with locking tabs: to ASTM C542.

### **Part 3 Execution**

#### **3.1 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 and after receipt of written approval to proceed from Departmental Representative.

#### **3.2 PREPARATION**

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

#### **3.3 EXTERIOR GLAZING - 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 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  $\frac{1}{4}$  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.

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

- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- .3 Place setting blocks at  $\frac{1}{4}$  points, with edge block maximum 150 mm from corners.
- .4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .5 Place glazing tape on free perimeter of glazing in same manner described.
- .6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .7 Knife trim protruding tape.

**3.5 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 and mirrors 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.

**3.6 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.

**END OF SECTION**