
Partie 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 08 03 14 – Historic works- Period wood door repairs
- .2 Section 08 11 00 – Metal doors and frames
- .3 Section 08 11 16 – Aluminium doors and frames
- .4 Section 08 14 16 – Flush wood doors.
- .5 Section 08 34 83 – Hinged safety glass doors
- .6 Section 08 44 13 – Glazed aluminium curtain walls
- .7 Section 08 50 00 – New wood windows
- .8 Section 08 52 05 – Historic works- Existing wood windows
- .9 Section 08 71 00 – Door hardware.
- .10 Section 08 87 53 – Security films
- .11 Section 09 21 16 – Gypsum board assemblies
- .12 Section 09 22 16 – Non structural metal framing
- .13 Section 09 91 13 – Exterior painting
- .14 Section 09 91 23 – Interior painting.

1.2 REFERENCES

- .1 ASTM International
 - .1 ASTM C542-05, Standard Specification for Lock-Strip Gaskets.
 - .2 ASTM D790-07e1, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - .3 ASTM D1003-07e1, Standard Test Method for Haze and Luminous Transmittance of Plastics.
 - .4 ASTM D1929-96(R2001)e1, Standard Test Method for Determining Ignition Temperature of Plastics.
 - .5 ASTM D2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
 - .6 ASTM E84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .7 ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
 - .8 ASTM F1233-08, Standard Test Method for Security Glazing Materials and Systems.

- .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-12.4-M91, Heat Absorbing Glass.
 - .5 CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.
 - .6 CAN/CGSB-12.8-97, Insulating Glass Units.
 - .7 CAN/CGSB-12.8-97 (Amendment), 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.
- .3 Programme Choix environnemental (PCE)
 - .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 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting 1 week prior to beginning on-site installation, with Contractor's Representative and Departmental Representative in accordance with Section 01 31 19 - Project Meetings to.
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's written installation instructions and warranty requirements.
 - .2 Arrange for site visit with Departmental Representative prior to start of Work to examine existing site conditions adjacent to demolition Work.
 - .3 Hold project meetings every week in accordance with Section 01 31 19 – Project Meetings.

1.4 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 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Quebec, Canada.
- .4 Samples:
 - .1 Soumettre des échantillons de chaque type d'élément de vitrage, des produits d'étanchéité et accessoires aux fins d'examen et d'acceptation.
 - .2 Submit duplicate 200 mm x 200 mm size samples.
- .5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .6 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.

1.5 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.

1.6 QUALITY ASSURANCE

- .1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .2 Construct mock-up to include glass, plastic, glazing, and perimeter air barrier and vapour retarder seal.
 - .3 Allow 24 hours for inspection of mock-up before proceeding with work.
 - .4 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work. Remove mock-up and dispose of materials when no longer required and when directed by Department Representative.

1.7 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 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 and strippable coating.
 - .4 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.8 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.

1.9 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products

Partie 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.
 - .3 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.
- .2 Flat Glass:
 - .1 Float glass: to CAN/CGSB-12.3, glazing quality, 6 mm thick.
 - .2 Safety glass: to CAN/CGSB-12.1, transparent and translucent, 6 mm, 10 mm, 12 mm and 15 mm thick, as indicated.
 - .1 Type: 2-tempered.
 - .2 Class: B-float.
 - .3 Category: 1.

- .3 Safety glass: to CAN/CGSB-12.11, 6 mm thick.
 - .1 Type: 1, transparent.
 - .2 Wire mesh: 3, square.
 - .4 Spandrel glass: to CAN/CGSB-12.9, colour Span tech 2202200620 - Charcoal, 6 mm thick.
 - .1 Type: 2, thermal resistant glass
 - .2 Class: A, float.
 - .3 Style: 1, ceramic.
 - .4 Form: I, insulating.
 - .5 Low emissivity (LOW E), 6 mm thick.
 - .1 Metallic coating: soft, sputtered.
 - .2 Appearance: grey, neutral.
 - .3 Refer to insulating glass for performance requirements of low emissivity glass.
 - .6 Silvered mirror glass: to CAN/CGSB-12.5, 6 mm thick.
 - .1 Type: 1A, float glass for normal use.
 - .7 Verre dépoli: tempered safety glass, acid-etched on surface 2.
 - .8 Patterned glass: tempered safety glass, figured on surface 2.
- .3 Insulating glass units:
- .1 Insulating glass: to CAN/CGSB-12.8, à deux (2) vitres, de 25 mm d'épaisseur hors tout.
 - .1 Glass: to CAN/CGSB-12.1 and CAN/CGSB-12.3.
 - .2 Glass thickness: 6 mm each light.
 - .3 Inter-cavity space thickness : with low conductivity spacers, 13.39 mm between inner light and outer light.
 - .4 Glass coating: low E application to surface no. 2.
 - .5 Inert gas fill: argon.
 - .2 Performances of insulating glass:
 - .1 Transmission:

.1 Visible light (%):	62
.2 Ultra-violet (%):	39
.3 Solar infrared (%):	23
 - .2 Reflectivity:

.1 Visible light to exterior (%):	11
.2 Visible light to interior (%):	12
 - .3 U-value-Btu/h-sq.ft.⁰F: 0.235
 - .4 R-value h-sq.ft.⁰F: 4.26
 - .5 Relative heat gain: 63
 - .6 Shading coefficient: 0.30

- .7 Solar heat gain: 0.26
- .4 Structural and weatherproofing sealant for structural joint sealant: one-component, non-sag, black. To:
- .1 Structural joint sealant (or structural adhesive) must comply with ASTM C1184.
 - .2 Structural and weatherproofing sealant when cured must:
 - .1 Accommodate minimum more or less 50% when tested to ASTM C719.
 - .2 Peel resistance minimum 34.5 kPa when tested to ASTM C794.
 - .3 Tensile adhesion strength, at 25% elongation, minimum 0.28 MPa and minimum 0.38 MPa 50% elongation, when tested to ASTM C 1135.
 - .4 Ultraviolet resistance minimum 2000 to 4000 microwatts/21 days.
 - .5 Glazing sealing joints for exterior doors: one component silicon base according to Section 07 92 00 – Joint Sealants.

2.2 ACCESSORIES

- .1 Setting blocks (except for structural compound work): neoprene or EPDM, Shore A durometer hardness 80 to 90 to ASTM D2240, adapted to glazing assembly including window weight and dimensions.
- .2 Setting blocks (structural compound work): neoprene or EPDM, Shore A durometer hardness 80 to 90 to ASTM D2240, adapted to glazing assembly including window weight and dimensions.
- .3 Spacer shims (except for structural compound work): neoprene, Shore A durometer hardness 50 to 60 to ASTM D2240, self-adhesive on one face, 75 mm long x one half height x thickness to suit application.
- .4 Peripheral blocks (structural compound work): silicon, A durometer hardness 50 to 60 to ASTM D2240, self-adhesive on one face, 75 mm long x one half height x thickness to suit application.
- .5 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; appropriate size; black colour.
 - .2 closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, minimum 6.35 mm thick depending on installation with following physical properties:
 - .1 Colour: black.
 - .2 Weight (to ASTM D1667): minimum 490 kg/m³.
 - .3 Hardness (Shore A, to ASTM D2240): 35.
 - .4 Tensile strength (to ASTM D412): 124 MPa.
 - .5 Compression set 10% (to ASTM D1667): 0.21 MPa.
 - .6 Compatible with silicon based structural sealants.

- .6 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, colour as selected.
- .7 Sealing accessories:
 - .1 Conventional curtain wall glazing, aluminum doors and panels: dry mounting accessories, according to standards of curtain wall manufacturer and to performance requirements indicated in Section 08 44 13 – Glazed Aluminum Curtain Walls.
- .8 Guardrail fasteners: refer to Section 05 50 00 – Metal Fabrications and as indicated on drawings.
- .9 Fasteners for glass mirrors:
 - .1 Stainless steel fasteners.
 - .2 Adhesive for mirror, chemically compatible with mirror coating and wall support.
 - .3 Mirror frames: as indicated on drawings.
- .10 Adhesive film to add to certain existing windows:
 - .1 Adhesive film to add to certain existing windows, refer to table for existing windows, such as manufactured by 3M or equivalent:
 - .1 Frosted film, as indicated on drawings, approved by Departmental Representative.

Partie 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 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.
- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Cut glazing tape to length; install on glazing light. Seal corners by butting tape and sealing junctions with sealant.
- .3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .4 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- .5 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.
- .6 Trim protruding tape edge.

3.4 INSTALLATION: EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

- .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, 6 mm below sight line. Seal corners by butting tape and dabbing with sealant.
- .3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.
- .4 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.
- .5 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.
- .6 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line.
- .7 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 INSTALLATION: EXTERIOR - WET METHOD (SEALANT AND SEALANT)

- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Place setting blocks at 1/4 points and install glazing light or unit.
- .3 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line, peripheral blocks each side of light, at 600 mm intervals.

- .4 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line, to ensure full contact with glazing and continue air and vapour seal.
- .5 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.6 INSTALLATION: INTERIOR - 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 1/4points, 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.

3.7 INSTALLATION: INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

- .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 1/4points, 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 Install removable stops, with spacer shims inserted between glazing and applied stops at 600 mm intervals, 6 mm below sight line.
- .6 Fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.
- .7 Knife trim protruding tape.

3.8 INSTALLATION: INTERIOR - WET METHOD COMPOUND AND COMPOUND

- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Install glazing resting on setting blocks. Install applied stop and centre light by use of spacer shims at 600 mm centres, 6 mm below sight line.
- .3 Locate and secure glazing light using glazers' clips.

- .4 Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.9 GLAZING – ALUMINUM DOORS

- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Place setting blocks at 1/4points, with edge block maximum 150 mm from corners.
- .3 Insert preformed trim, install glazing resting on setting blocks and centre with peripheral blocks.
- .4 Insert sealant in stops and apply against glazing.

3.10 EXTERIOR GLAZING – STEEL DOORS

- .1 Perform work in accordance with GANA Laminated Glazing Reference Manual for glazing installation methods.
- .2 Place setting blocks at 1/4points, with edge block maximum 150 mm from corners.
- .3 Install glazing resting on setting blocks. Install applied stop and centre light by use of spacer shims at 200 mm centres, 6 mm below sight line.
- .4 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 9 mm below sight line, to ensure full contact with glazing and continue air and vapour seal.
- .5 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.11 SAFETY DOORS AND PANELS

- .1 Refer to Section 08 34 83 – Hinged Safety Glass Doors.

3.12 SAFETY GLASS GUARDRAIL

- .1 Refer to indications on drawings, Section 05 50 00 – Metal Fabrications and Section 08 34 83 – Hinged Safety Glass Doors.

3.13 INSTALLATION: MIRRORS

- .1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.
- .2 Set mirrors with clips. Anchor rigidly to wall construction.
- .3 Set in frame.
- .4 Place plumb and level.

3.14 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.
- .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.

3.15 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