

- 1.7.5.1.4 review of panel to panel air seals and roof/wall interface.
- 1.7.5.1.5 review of panel fastening.
- 1.7.5.1.6 check of air and vapour seals/barriers for continuity, penetrations and correct orientation.
- 1.7.5.1.7 checks for continuity of insulation plane.
- 1.7.5.1.8 verification of flashing placement, continuity and seal.
- 1.7.5.1.9 confirmation of fastener size, type and material.
- 1.7.5.1.10 review of drainage paths to confirm clear.
- 1.7.5.1.11 verification of glass type and position.

**1.7.6 Field Testing:**

- 1.7.6.1 Independent Consultant will carry out and conduct testing of installed work. Initial testing at any given location shall be paid for by Owner. Re-testing to verify corrected work shall be paid for borne by Contractor.
- 1.7.6.2 Field testing will include but not be limited to tests for air and water infiltration to same performance parameters and pass/fail criteria as laboratory testing.
- 1.7.6.3 Be responsible for alterations, repairs, additions necessary to achieve acceptable performance at the test locations and similar adjustment to completed work.
- 1.7.6.4 Test locations and frequency will be determined by Independent Consultant. Be responsible for providing necessary access and equipment to Independent Consultant and/or his forces to conduct necessary testing.

**1.8 DELIVERY, STORAGE AND HANDLING**

- 1.8.1 Delivery and Acceptance Requirements: Transport materials to site storage in a manner to prevent in-transit damage. These measures include, but are not limited to, crating, polyethylene wrapping system, etc.
- 1.8.2 Storage and Handling Requirements:
  - 1.8.2.1 Store in a dry, protected area on site, in original undamaged containers with manufacturer's labels and seals intact.
  - 1.8.2.2 Comply with unpacking procedures as recommended by framing and glass manufacturers.

**1.9 WARRANTY**

- 1.9.1 Warrant work of this Section for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; leakage in excess of the specified tolerances and limits, glass breakage, failure of insulating glass units and condensation in excess of the specified tolerances and limits (without limit to other defects which may become apparent), anodized finish will be non-fading, nonconvertible and permanently a part of the metal surface.
- 1.9.2 Warrant factory sealed insulating units against defects for a period of 10 years. Warrant factory sealed insulating units free from material obstruction of vision as result of dust or film formation on internal glass surfaces by any cause, under normal conditions anticipated under this Project, other extrinsic glass breakage, but including breakage due to thermal shock and temperature differential due to inherent glass or glazing fault.
- 1.9.3 Provide sealant manufacturer's 20 year materials warranty and limited labour warranty, including statement that sealants used in the Work will not cause porous substrates to become discoloured or change its appearance due to fluid migration.

- 1.9.4 Warrant water based silicone opacifier for a period of 10 years against defects and/or deficiencies in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- 2.1.1 Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

- 2.1.1.1 BV Glazing Systems.
- 2.1.1.2 Primeline Windows Inc.
- 2.1.1.3 State Window Corporation.

### **2.2 MATERIALS**

- 2.2.1 Performance/Design Criteria:

- 2.2.1.1 Drawings and details are diagrammatic and are intended to show design concept, configuration, components and arrangements; they are not intended to identify nor solve problems of thermal, deflection and structural movements, air pressure equalization, air/vapour barriers, assembly framing, fixings and anchorages, moisture disposal, water penetration or ingress and problems at the glass line associated with glazing installation, movements, pressure fracture or thermal shock and weather seal. Final engineering design of window wall is responsibility of this trade. Material types, sizes and/or thicknesses shown on Drawings are diagrammatic and must be engineered to suit intended sizes and profiles.
- 2.2.1.2 Drawings contain details that suggest directions for addressing some major design requirements. Develop such details as deemed best to obtain required design criteria and intent.
- 2.2.1.3 Include cladding, glazing, insulation, air/vapour barriers, system components, metal trims, expansion joints, thermal breaks, closures, flashings, vents, anchorage, fixings, reinforcing and related items of work to provide a complete window wall system to meet design criteria.
- 2.2.1.4 Comply with requirements of authorities having jurisdiction, which shall be minimum, except where more stringent requirements are specified herein.
- 2.2.1.5 Design aluminum work as shown to provide free and noiseless movement of components of assembly due to structural erection or dead loads, without buckling, oil canning of any component and/or transmitting of stresses to any members.
- 2.2.1.6 Design glazing systems and framing to prevent thermal shock and pressure fracture damage to glass.
- 2.2.1.7 Accurately shape members at intersecting joints to obtain hairline joints, just wide enough to permit thermal expansion and contraction.
- 2.2.1.8 Design and assemble window wall and aluminum panels to permit re-glazing without removal of entire section.
- 2.2.1.9 Conceal securement devices unless otherwise specified.
- 2.2.1.10 Design attachments that permit replacement of individual units during construction or in subsequent usage of building without dismantling or disturbance to adjoining components or units. In addition, accomplish such replacement without use of extra fasteners, splices, covers and like that alter or damage original design features
- 2.2.1.11 Provide accessories, closures and trims required and necessary to complete work.

**3.6 ATTACHMENTS**

3.6.1 Window Wall Quality Assurance Form.

**END OF SECTION**

**WINDOW WALL QUALITY ASSURANCE CERTIFICATION**  
(to be completed by Independent Consultant)

**3.1 INDEPENDENT CONSULTANT**

3.1.1 Name: \_\_\_\_\_  
3.1.2 Address: \_\_\_\_\_  
3.1.3 Phone Number: \_\_\_\_\_

**3.2 WINDOW WALL MANUFACTURER**

3.2.1 Name: \_\_\_\_\_  
3.2.2 Address: \_\_\_\_\_  
3.2.3 Phone Number: \_\_\_\_\_

**3.3 CONTRACTOR**

3.3.1 Name: \_\_\_\_\_  
3.3.2 Address: \_\_\_\_\_  
3.3.3 Phone Number: \_\_\_\_\_

**3.4 CERTIFICATION**

- 3.4.1 I/we hereby:
- 3.4.1.1 Confirm that we received the Design and Construction Drawings from the Contractor on \_\_\_\_\_ and reviewed the same and provided our comments to the Consultant and Contractor on \_\_\_\_\_ and further confirm that our recommendations were incorporated into the Project.
  - 3.4.1.2 Confirm that the window wall system for the Project has been approved by our office for Construction.
  - 3.4.1.3 Confirm receipt of engineered Shop Drawings, sealed, signed and dated by a Licensed Professional Engineer selected by the manufacturer from the Contractor on \_\_\_\_\_ and reviewed the same provided our comments for incorporation to both the Consultant and Contractor on \_\_\_\_\_.
  - 3.4.1.4 Confirm receipt of test reports for air leakage and water penetration in compliance with CSA A440/440.1 and ASTM E\_\_\_\_\_, signed by a Licensed Professional Engineer selected by the manufacturer and accept the results provided therein.
  - 3.4.1.5 Reviewed and successfully tested a full scale mock-up which included framing members, glazing units, anchorage, slab edge covers, opening units, doors and transitions to adjoining assemblies respecting air and water infiltration and environmental separation performance in accordance with \_\_\_\_\_ which is/are industry recognized standards and approve the results of such testing.
  - 3.4.1.6 Tested the completed window wall system in situ and are satisfied with the results of air and water infiltration.
  - 3.4.1.7 Confirm review of the specified warranty requirements and find them acceptable for the purposes of this Project.

3.4.2 The Window Wall Quality Assurance Certification is provided by:

\_\_\_\_\_  
(Company Name - Printed)

*I have authority to bind the corporation and provide such certification.*

By \_\_\_\_\_ seal  
(Signature)

Name \_\_\_\_\_  
(Printed)

Email \_\_\_\_\_

Title \_\_\_\_\_

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 202\_\_.

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## **PART 1 - GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

#### **1.1.1 Read and conform to:**

- 1.1.1.1 Drawings and Schedules.
- 1.1.1.2 Division 01 requirements and documents referred to therein.

### **1.2 SUMMARY**

#### **1.2.1 Section Includes:** Provision of finish hardware for the Project.

#### **1.2.2 Related Sections:** Following description of work is included for reference only and shall not be presumed complete:

- 1.2.2.1 Provision of hardware for cabinetry work: Section 06 40 00, Architectural Woodwork.
- 1.2.2.2 Installation of door hardware: Section 06 90 00, General Installations.
- 1.2.2.3 Supply of hollow metal doors and frames: Section 08 11 13, Hollow Metal Doors and Frames.
- 1.2.2.4 Supply of aluminum doors: Section 08 11 16, Aluminum Doors and Frames.
- 1.2.2.5 Supply of wood doors: Section 08 14 00, Wood Doors.
- 1.2.2.6 Supply of all-glass entrances: Section 08 42 26, All-Glass Entrances.
- 1.2.2.7 Supply of aluminum doors: Section 08 46 00, Aluminum Window Wall Assemblies.

### **1.3 SUBMITTALS**

#### **1.3.1 Shop Drawings:**

- 1.3.1.1 Submit Shop Drawings for hardware installation in accordance with Section 01 33 00.
- 1.3.1.2 Submit Shop Drawings in schedule form, prepared by an AHC, indicating manufacturers' names, Product descriptions, makes, models, materials, finishes, functions, location of each item, complete keying schedule and other pertinent information. Include list of abbreviations and finish symbols and their meaning. Include manufacturer's cut sheets for each hardware item.

#### **1.3.2 Samples:**

- 1.3.2.1 Submit samples in accordance with Section 01 33 00.
- 1.3.2.2 Do not order hardware from manufacturer until samples have been reviewed by Consultant and approved by Owner. Hardware and finishes supplied shall be identical to approved samples.
- 1.3.2.3 Supply one of each item of hardware with specified finishes to Consultant. Label each sample as to manufacturer, type, finishes, size and location for use proposed. Reviewed samples will be retained for comparison and returned upon completion of the Work.

#### **1.3.3 Jigs and Templates:**

- 1.3.3.1 Submit template jigs for each component to be recessed to enable installation trades to prepare doors to preclude misalignment and improper fit.
- 1.3.3.2 Submit three copies of templates, template information, installation instructions and details necessary to enable preparation for, and installation of finish hardware in accordance with Door Hardware Institute recommended procedures. Submit templates arranged and marked coincident with specified hardware designations.

- 1.3.3.3 Submit the foregoing information in 3-ring plastic hard-covered binders suitably identified.
- 1.3.3.4 Arrange for the issue by each hardware manufacturer, the manufacturer's standard book of template drawings, at the option of door and frame manufacturers.

#### **1.4 CLOSEOUT SUBMITTALS**

##### **1.4.1 Operational and Maintenance Data:**

- 1.4.1.1 Instruct Owner's designated representative in proper care and preventative maintenance of hardware to assure longevity of operation.
- 1.4.1.2 Provide one hardcopy and one electronic copy of descriptive information, operating, adjustment and maintenance instructions and "As-Built" record of location of each hardware group and other pertinent information.
- 1.4.1.3 Provide electronic copy of maintenance data, parts list and manufacturer's instructions for each type of door closer, lockset, fire exit hardware and door holder. Provide manufacturer's instructions for proper care of hardware, including lubrication, for incorporation into operation and maintenance instruction manual.

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- 1.5.1 Tools: Prior to date of Substantial Performance, supply a complete set of specialized tools as needed for Owner's continued adjustment, maintenance and removal and replacement of builders hardware.

#### **1.6 QUALITY ASSURANCE**

##### **1.6.1 Qualifications:**

- 1.6.1.1 Suppliers: Provide work of this Section, executed by a recognized architectural door hardware supplier that has a record of successful in-service performance for supplying door hardware similar in quantity, type and quality to that indicated for this Project and employs an experienced AHC who is available to Owner, Consultant and Contractor at reasonable times during course of the work for consultation. Minimum 10 years experience is required for both AHC and supplier.

#### **1.7 DELIVERY, STORAGE AND HANDLING**

- 1.7.1 Delivery and Acceptance Requirements: Supply scheduled hardware to the Place of the Work.

##### **1.7.2 Storage and Handling Requirements:**

- 1.7.2.1 Pack hardware in suitable wrappings and containers to protect from damage during shipping and storage. Enclose accessories, fastening devices and other loose items with each item. Pack screws, bolts and fastenings necessary for proper installation in same package. Mark packages for easy identification legibly indicating manufacturer's numbers, types, sizes. Markings must include floor, item number and door number.
- 1.7.2.2 Provide assistance in counting hardware on major shipments to confirm hardware is shown as shipped. Provide inventory list with Door Hardware Schedule. Obtain assistance from hardware supplier to confirm hardware has been delivered to site correctly for all major shipments. Be responsible to unload hardware, to check hardware shipments and to set up shelving and organize hardware room.
- 1.7.2.3 Provide templates, template information, installation instructions and details necessary for preparation and installation of hardware.
- 1.7.2.4 Provide three copies of installation instructions for hardware supplied.

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## **PART 1 - GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

#### **1.1.1 Read and conform to:**

- 1.1.1.1 Drawings and Schedules.
- 1.1.1.2 Division 01 requirements and documents referred to therein.

### **1.2 SUMMARY**

#### **1.2.1 Section Includes: Provide glass and glazing including but not limited to following:**

- 1.2.1.1 glazing hollow metal doors.
- 1.2.1.2 glazing borrowed lights and screens.
- 1.2.1.3 insulated glass units.
- 1.2.1.4 back painted glass.
- 1.2.1.5 mirrors.
- 1.2.1.6 window film.
- 1.2.1.7 miscellaneous specialty glass, gaskets, tapes and glazing materials.

#### **1.2.2 Related Sections: Following description of work is included for reference only and shall not be presumed complete:**

- 1.2.2.1 Supply of hollow steel doors and frames: Section 08 11 13, Hollow Metal Doors and Frames.
- 1.2.2.2 Supply of wood doors and frames: Section 08 14 00, Wood Doors.
- 1.2.2.3 Provision of glass and glazing in curtain walls: Section 08 44 14, Glazed Aluminum Curtain Wall.
- 1.2.2.4 Provision of glass and glazing in window walls: Section 08 46 00, Aluminum Window Wall.
- 1.2.2.5 Glazed hose cabinets and valve directory: Division 21, Fire Suppression.

### **1.3 REFERENCES**

#### **1.3.1 Definitions:**

- 1.3.1.1 Glass Terminology: Conform to ASTM C162 for glossary of terms and definitions of glazing terminology.
- 1.3.1.2 Pattern Glass: One type of rolled glass having a pattern impressed on 1 or both sides for light control, bath enclosures and decorative glazing. Sometimes called "rolled", "figured", or "obscure" glass.
- 1.3.1.3 Sandblasted Finish: Surface treatment for flat glass obtained by spraying glass with hard particles to roughen 1 or both surfaces of glass. Effect is to increase obscurity and diffusion.
- 1.3.1.4 United Inches: Total of 1 width and 1 height of a lite of glass in inches.

#### **1.3.2 Reference Standards:**

- |         |                  |  |
|---------|------------------|--|
| 1.3.2.1 | ANSI Z97.1-09    | Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test |
| 1.3.2.2 | ASTM C162-05(15) | Standard Terminology of Glass and Glass Products   |



1.3.2.3	ASTM C509-06(21)	Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
1.3.2.4	ASTM C864-16(21)	Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
1.3.2.5	ASTM C920-18	Standard Specification for Elastomeric Joint Sealants
1.3.2.6	ASTM C1036-21	Standard Specification for Flat Glass
1.3.2.7	ASTM C1048-18	Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
1.3.2.8	ASTM C1115-17	Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
1.3.2.9	ASTM C1172-19	Standard Specification for Laminated Architectural Flat Glass
1.3.2.10	ASTM C1503-18	Standard Specification for Silvered Flat Glass Mirror
1.3.2.11	ASTM E1300-16	Standard Practice for Determining Load Resistance of Glass in Buildings
1.3.2.12	CAN/CGSB-12.20-M89	Structural Design of Glass for Buildings
1.3.2.13	CAN/ULC-S104-15	Standard Method for Fire Tests of Door Assemblies
1.3.2.14	CAN4-S106-M80(85)	Standard Method for Fire Tests of Window and Glass Block Assemblies
1.3.2.15	GAN 01-0300	Glass Information Bulletin – Proper Procedures for Cleaning Architectural Glass Products
1.3.2.16	NFPA 80-16	Standard for Fire Doors and Other Opening Protectives

#### **1.4 ADMINISTRATIVE REQUIREMENTS**

##### **1.4.1 Preinstallation Meetings:**

- 1.4.1.1 Arrange pre-installation meeting one week prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Consultant. Presided over by Contractor, include Consultant who may attend, Subcontractor performing work of this trade, testing company's representative and consultants of applicable discipline. Review Contract Documents for work included under this trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of work of this Section.
- 1.4.1.2 Review installation methods, procedures, time schedule and conditions under which work shall proceed including manufacturer's written instructions and coordination required with related work.
- 1.4.1.3 Review and finalize construction schedule, verify availability of materials, experienced installer, equipment and facilities needed to make progress and avoid delays.

#### **1.5 SUBMITTALS**

##### **1.5.1 Samples:**

- 1.5.1.1 Submit samples of materials in accordance with Section 01 33 00 identifying quality and type of glass if required by Consultant before commencing work. Ensure samples are clearly labelled with manufacturer's name and type.

- 1.5.1.2 Submit following samples:
  - 1.5.1.2.1 back painted glass.
  - 1.5.1.2.2 insulated glass units.
  - 1.5.1.2.3 monolithic glass units.
  - 1.5.1.2.4 window film.

## **1.6 CLOSEOUT SUBMITTALS**

- 1.6.1 Operational and Maintenance Data: Provide maintenance data in accordance with Section 01 70 00 indicating cleaning instructions for inclusion into Maintenance Manual.

## **1.7 QUALITY ASSURANCE**

- 1.7.1 Qualifications:
  - 1.7.1.1 Installers: Provide experienced installer who is trained and experienced in glass and glazing requirements of this Section including familiarization with standards specified herein and capable to instruct installation requirements of this Section.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- 1.8.1 Delivery and Acceptance Requirements: Deliver glass and associated materials to site in original crates and containers with manufacturer's name and brand distinctly marked thereon and with glass labelled as to types. Do not remove labels on glass until after work is accepted by Consultant.
- 1.8.2 Storage and Handling Requirements: Store materials within the building, in a clean, dry location, acceptable or as designated by Consultant. Fully protect materials from damage of any kind until ready for use.

## **1.9 SITE CONDITIONS**

- 1.9.1 Ambient Conditions: Do not perform glazing when temperature is less than 7 deg C (44 deg F) or sash or frames are wet, damp or frosted.

## **1.10 WARRANTY**

- 1.10.1 Manufacturer Warranty: Warrant mirrors for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; deterioration of silvering on mirrors.
- 1.10.2 Warrant factory sealed insulating units against defects for a period of 10 years. Warrant factory sealed insulating units free from material obstruction of vision as result of dust or film formation on internal glass surfaces by any cause, under normal conditions anticipated under this Project, other extrinsic glass breakage, but including breakage due to thermal shock and temperature differential due to inherent glass or glazing fault.
- 1.10.3 Provide sealant manufacturer's 20 year materials warranty and limited labour warranty, including statement that sealants used in the Work will not cause porous substrates to become discoloured or change its appearance due to fluid migration.
- 1.10.4 Warrant water based silicone opacifier for a period of 10 years against defects and/or deficiencies in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.

1.3.2.3	ASTM C509-06(21)	Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
1.3.2.4	ASTM C864-16(21)	Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
1.3.2.5	ASTM C920-18	Standard Specification for Elastomeric Joint Sealants
1.3.2.6	ASTM C1036-21	Standard Specification for Flat Glass
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1.3.2.8	ASTM C1115-17	Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories
1.3.2.9	ASTM C1172-19	Standard Specification for Laminated Architectural Flat Glass
1.3.2.10	ASTM C1503-18	Standard Specification for Silvered Flat Glass Mirror
1.3.2.11	ASTM E1300-16	Standard Practice for Determining Load Resistance of Glass in Buildings
1.3.2.12	CAN/CGSB-12.20-M89	Structural Design of Glass for Buildings
1.3.2.13	CAN/ULC-S104-15	Standard Method for Fire Tests of Door Assemblies
1.3.2.14	CAN4-S106-M80(85)	Standard Method for Fire Tests of Window and Glass Block Assemblies
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- 1.4.1.1 Arrange pre-installation meeting one week prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Consultant. Presided over by Contractor, include Consultant who may attend, Subcontractor performing work of this trade, testing company's representative and consultants of applicable discipline. Review Contract Documents for work included under this trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of work of this Section.
- 1.4.1.2 Review installation methods, procedures, time schedule and conditions under which work shall proceed including manufacturer's written instructions and coordination required with related work.
- 1.4.1.3 Review and finalize construction schedule, verify availability of materials, experienced installer, equipment and facilities needed to make progress and avoid delays.

#### **1.5 SUBMITTALS**

##### **1.5.1 Samples:**

- 1.5.1.1 Submit samples of materials in accordance with Section 01 33 00 identifying quality and type of glass if required by Consultant before commencing work. Ensure samples are clearly labelled with manufacturer's name and type.

- 1.5.1.2 Submit following samples:
  - 1.5.1.2.1 back painted glass.
  - 1.5.1.2.2 insulated glass units.
  - 1.5.1.2.3 monolithic glass units.
  - 1.5.1.2.4 window film.

## **1.6 CLOSEOUT SUBMITTALS**

- 1.6.1 Operational and Maintenance Data: Provide maintenance data in accordance with Section 01 70 00 indicating cleaning instructions for inclusion into Maintenance Manual.

## **1.7 QUALITY ASSURANCE**

- 1.7.1 Qualifications:
  - 1.7.1.1 Installers: Provide experienced installer who is trained and experienced in glass and glazing requirements of this Section including familiarization with standards specified herein and capable to instruct installation requirements of this Section.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- 1.8.1 Delivery and Acceptance Requirements: Deliver glass and associated materials to site in original crates and containers with manufacturer's name and brand distinctly marked thereon and with glass labelled as to types. Do not remove labels on glass until after work is accepted by Consultant.
- 1.8.2 Storage and Handling Requirements: Store materials within the building, in a clean, dry location, acceptable or as designated by Consultant. Fully protect materials from damage of any kind until ready for use.

## **1.9 SITE CONDITIONS**

- 1.9.1 Ambient Conditions: Do not perform glazing when temperature is less than 7 deg C (44 deg F) or sash or frames are wet, damp or frosted.

## **1.10 WARRANTY**

- 1.10.1 Manufacturer Warranty: Warrant mirrors for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; deterioration of silvering on mirrors.
- 1.10.2 Warrant factory sealed insulating units against defects for a period of 10 years. Warrant factory sealed insulating units free from material obstruction of vision as result of dust or film formation on internal glass surfaces by any cause, under normal conditions anticipated under this Project, other extrinsic glass breakage, but including breakage due to thermal shock and temperature differential due to inherent glass or glazing fault.
- 1.10.3 Provide sealant manufacturer's 20 year materials warranty and limited labour warranty, including statement that sealants used in the Work will not cause porous substrates to become discoloured or change its appearance due to fluid migration.
- 1.10.4 Warrant water based silicone opacifier for a period of 10 years against defects and/or deficiencies in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.

1.3.1.6	ASTM C1325-14	Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units
1.3.1.7	ASTM D3273-12	Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
1.3.1.8	ASTM E84-14	Standard Test Method for Surface Burning Characteristics of Building Materials
1.3.1.9	ASTM E136-12	Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
1.3.1.10	ASTM E283-04(12)	Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Doors, Skylights and Curtain Walls Under Specified Pressure Differences Across the Specimen
1.3.1.11	ASTM E330/E330M-14	Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
1.3.1.12	CAN/CGSB-1.81-M90	Air Drying and Baking Alkyd Primer for Vehicles and Equipment
1.3.1.13	CAN/CGSB-1.181-99	Ready-Mixed Organic Zinc-Rich Coating
1.3.1.14	CAN/CGSB-7.1-98	Lightweight Steel Wall Framing Components
1.3.1.15	CGSB 37-GP-56M	Membrane, Modified Bituminous, Prefabricated and Reinforced for Roofing
1.3.1.16	CSA S136-12	North American Specification for the Design of Cold-Formed Steel Structural Members
1.3.1.17	CSA S304.1-04(10)	Design of Masonry Structures
1.3.1.18	CSA W47.1-09	Certification of Companies for Fusion Welding of Steel Structures
1.3.1.19	CSA W59-13	Welded Steel Construction (Metal Arc Welding)
1.3.1.20	CAN/ULC-S101-07	Standard Method of Fire Endurance Tests of Building Construction and Materials
1.3.1.21	CAN/ULC-S102-07	Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
1.3.1.22	CAN/ULC-S114-05	Standard Method of Test for Determination of Non-Combustibility in Building Materials

#### **1.4 SUBMITTALS**

- 1.4.1 Product Data: Submit Product data for mechanical fasteners indicating sizes, load capacities and type of corrosion protection.
- 1.4.2 Shop Drawings:
  - 1.4.2.1 Submit Shop Drawings of work of this Section in accordance with Section 01 33 00.
  - 1.4.2.2 Submit Shop Drawings showing, in as large a scale as possible, details and erection diagrams, indicate member sizes, locations, thicknesses exclusive of coating, coating materials, provision for expansion and contraction, details of other pertinent components of work and adjacent constructions to which this work shall be attached. Include connection details for attaching framing to itself and for attachments to structure. Show splice details

where details permitted. Indicate profiles, dimensions, openings, requirements of related work and critical installation procedures. Show temporary bracing required for erection purposes.

- 1.4.2.2 Ensure a licensed engineer specified herein is responsible for:
  - 1.4.2.3.1 production and review of Shop Drawings.
  - 1.4.2.3.2 sealing and signing each Shop Drawing and any associated calculations performed.
- 1.4.3 Submit 1 representative piece of each framing component, including mechanical fasteners to be used. Length of pieces submitted shall be 300 mm (12") long.
- 1.4.4 If requested by Consultant, submit calculations certified by a licensed professional engineer to design structures and registered in Province of Ontario, substantiating sizes for members and connections based on the design loads before fabrication and erection. Indicate design loads on Shop Drawings.
- 1.4.5 Samples: Submit samples in accordance with Section 01 33 00. Submit following samples in sizes indicated:
  - 1.4.5.1 One of each structural metal stud, track and bracing minimum 300 mm (12") long.
  - 1.4.5.2 One 300 mm x 300 mm (12" x 12") sample of exterior sheathing

## **1.5 QUALITY ASSURANCE**

- 1.5.1 Qualifications:
  - 1.5.1.1 Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.
  - 1.5.1.2 Licensed Professionals: Employ a licensed professional engineer carrying minimum \$2,000,000.00 professional liability insurance who is registered to practice in the jurisdiction of the Place of the Work.
- 1.5.2 Certifications: Ensure maximum deflections under specified loads conform to L/360. Limit deflection so integrity of air/vapour barrier will be maintained at design loading. Permanent deformation of members due to applied loads is not permitted. Notwithstanding limits specified herein, structural steel framing system shall not deflect under design loads sufficient to cause noise, breaking of sealants, or to break integrity of insulation thermal blanket or air/vapour barrier seal.

## **1.6 DELIVERY, STORAGE AND HANDLING**

- 1.6.1 Delivery and Acceptance Requirements:
  - 1.6.1.1 Deliver materials in original, unopened containers or bundles stored in a place providing protection from damage and exposure to exterior elements.
  - 1.6.1.2 Transport materials in a manner to prevent damage.
  - 1.6.1.3 Take delivery of veneer anchors from Section 04 20 00 for installation under this Section.
- 1.6.2 Storage and Handling Requirements: Store and handle materials in a manner to prevent damage. Store units off ground and protected from mud and rain splashes.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- 2.1.1 Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications: