

SECTION 08810

GLASS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flat glass materials.
- B. Insulating glass units.
- C. Glazing accessories.

1.2 RELATED SECTIONS

- A. Section 06200 - Finish Carpentry.
- B. Section 07900 - Joint Sealers.
- C. Section 08110 - Steel Doors and Frames.
- D. Section 08211 - Flush Wood Doors.
- E. Section 08410 - Metal-Framed Storefronts.
- F. Section 08630 - Metal-Framed Skylights.
- G. Section 08910 - Metal-Framed Curtain Wall.
- H. Section 08960 - Sloped Glazing Assemblies.
- I. Section 08970 - Structural Glass Curtain Walls.
- J. Section 10616 - Demountable Gypsum Board Partitions.

1.3 REFERENCES

- A. ANSI Z97.1 - American National Standard for Glazing Materials Used in Buildings -- Safety Performance Specifications and Methods of Test.
- B. ASTM C 162 - Standard Terminology of Glass and Glass Products.
- C. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
- D. ASTM C 1036 - Standard Specification for Flat Glass.

- E. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass -- Kind HS, Kind FT Coated and Uncoated Glass.
- F. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.
- G. ASTM C 1193 - Standard Guide for Use of Joint Sealants.
- H. ASTM E 283 - Standard Test Method For Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- I. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- J. ASTM E 773 - Standard Test Method for Seal Durability of Sealed Insulating Glass Units.
- K. ASTM E 774 - Standard Specification for Sealed Insulating Glass Units.
- L. ASTM E 1300 - Standard Practice for Determining the Minimum Thickness and Type of Glass Required to Resist a Specified Load.
- M. GANA (GM) - FGMA Glazing Manual; Glass Association of North America.
- N. GANA (SM) - FGMA Sealant Manual; Glass Association of North America.
- O. GANA (LGDG) - Laminated Glass Design Guide; Glass Association of North America.

1.4 DEFINITIONS

- A. Sealed Insulating Glass Unit Surfaces:
 - Side 1 - Exterior surface of outer pane.
 - Side 2 - Interior surface of outer pane.
 - Side 3 - Interior surface of inner pane.
 - Side 4 - Exterior surface of inner pane.

1.5 SYSTEM DESCRIPTION

- A. Design requirements:

1. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass in accordance with _____ code.
2. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass to a design pressure of _____ pound per square foot in accordance with ASTM E 1300.
3. Limit glass deflection to 3/4 inch or flexure limit of glass with full recovery of glazing materials, whichever is less.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Flat glass materials manufacturer's descriptive literature indicating conformance to specified performance requirements for specified flat glass materials.
- C. Verification Samples:
 1. Flat Glass Materials: Two 4 inch by 4 inch samples of each glass type specified.
 2. Sealed Insulating Glass Units: Two 12 inch by 12 inch samples representative of unit construction.
 3. Opacifier for Spandrel Glass: Indicated match to Architect's color selection.
- D. Quality Assurance/Control Submittals:
 1. Design Data: Glass size calculations, prepared in accordance with specified method.
 2. Certificates:
 - a. Contractor's certification that:
 - (1) Products of this section, as provided, meet or exceed specified requirements.
 - (2) Fabricator of sealed insulating glass units meets specified qualifications.
 - (3) Installer of products of this section meets specified qualifications.

1.7 QUALITY ASSURANCE

- A. Qualifications:
 1. Manufacturer, Flat Glass Materials: Minimum five (5) years documented experience producing glass products specified this section.

2. Fabricator, Sealed Insulating Glass Units: Minimum five (5) years documented experience producing sealed insulating glass units specified this section.
3. Installer: Minimum five (5) years documented experience installing products specified in this section, and approved by fabricator.

1.8 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Installation of glass products at ambient air temperature below 50 degrees F (10 degrees C) is prohibited.
- B. Field Measurements: When construction schedule permits, verify field measurements with drawing dimensions prior to fabrication of glass products.

1.9 WARRANTY

- A. Provide ten (10) year warranty to include replacement of sealed glass units exhibiting seal failure, interpane dusting or misting.
- B. Provide ten (10) year warranty to include replacement for laminated glass exhibiting delamination.

1.10 MAINTENANCE

- A. Extra Materials: Supply two of each size and type of insulating glass units.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer, Flat Glass Materials: Sun Management Glass System, supplied by Libbey Owens Ford Co. Building Products; P.O. Box 799, 811 Madison Ave., Toledo, OH 43697-0799; Telephone 419-247-4721, FAX 419-247-4517.
- B. Substitutions: Not permitted.
- C. Substitutions will be considered in accordance with Section 1600 - Material and Equipment.

2.2 MATERIALS

- A. Clear Uncoated Float Glass:
 1. Acceptable Product: LOF Clear Float Glass.

2. Description: Annealed clear float glass meeting requirements of ASTM C 1036, Type 1, Class 1, Quality q3.
 3. Nominal Glass Thickness: ____ inch (__ mm).
 4. Performance Characteristics:
 - a. Visible Light Transmittance: ____ percent.
 - b. Visible Light Reflectance: ____ percent.
 - c. Total Solar Energy Transmittance: ____ percent.
 - d. Total Solar Energy Reflectance: ____ percent.
 - e. UV Transmittance: ____ percent.
 - f. Summer U-Value: ____.
 - g. Winter U-Value: ____.
 - h. Solar Heat Gain Coefficient: ____.
 - i. Shading Coefficient: ____.
- B. Tinted Uncoated Float Glass:
1. Acceptable Product: LOF ____ Tinted Float Glass.
 2. Description: Annealed tinted float glass meeting requirements of ASTM C 1036, Type 1, Class 2, Quality q3.
 3. Nominal Glass Thickness: ____ inch (__ mm).
 4. Performance Characteristics:
 - a. Visible Light Transmittance: ____ percent.
 - b. Visible Light Reflectance: ____ percent.
 - c. Total Solar Energy Transmittance: ____ percent.
 - d. Total Solar Energy Reflectance: ____ percent.
 - e. UV Transmittance: ____ percent.
 - f. Summer U-Value: ____.
 - g. Winter U-Value: ____.
 - h. Solar Heat Gain Coefficient: ____.
 - i. Shading Coefficient: ____.
- C. Silver Reflective Coated Float Glass:
1. Acceptable Product: Clear LOF ECLIPSE Silver Reflective Glass.
 2. Description: Annealed clear coated float glass meeting requirements of ASTM C 1036, Type 1, Class 1, Quality q3; with pyrolitic coating.
 3. Nominal Glass Thickness: 1/4 inch (6 mm).
 4. Performance Characteristics; coating on Surface __:
 - a. Visible Light Transmittance: ____ percent.
 - b. Visible Light Reflectance: ____ percent.
 - c. Total Solar Energy Transmittance: ____ percent.
 - d. Total Solar Energy Reflectance: ____ percent.
 - e. UV Transmittance: ____ percent.
 - f. Summer U-Value: ____.
 - g. Winter U-Value: ____.

- h. Solar Heat Gain Coefficient: ____.
 - i. Shading Coefficient: ____.

- D. Tinted Reflective Coated Float Glass:
 - 1. Acceptable Product: LOF ECLIPSE ____ Reflective Glass.
 - 2. Description: Annealed tinted coated float glass meeting requirements of ASTM C 1036, Type 1, Class 2, Quality q3; with pyrolitic coating.
 - 3. Performance Characteristics; coating on Surface __:
 - a. Visible Light Transmittance: ____ percent.
 - b. Visible Light Reflectance: ____ percent.
 - c. Total Solar Energy Transmittance: ____ percent.
 - d. Total Solar Energy Reflectance: ____ percent.
 - e. UV Transmittance: ____ percent.
 - f. Summer U-Value: ____.
 - g. Winter U-Value: ____.
 - h. Solar Heat Gain Coefficient: ____.
 - i. Shading Coefficient: ____.

- E. Low-Emissivity Coated Float Glass:
 - 1. Acceptable Product: LOF Energy Advantage Low-E Glass.
 - 2. Description: Annealed clear coated float glass meeting requirements of ASTM C 1036, Type 1, Class 1, Quality q3; with pyrolitic coating.
 - 3. Nominal Glass Thickness: ____ inch (____ mm).
 - 4. Performance Characteristics; coating on Surface 2:
 - a. Visible Light Transmittance: ____ percent.
 - b. Visible Light Reflectance: ____ percent.
 - c. Total Solar Energy Transmittance: ____ percent.
 - d. Total Solar Energy Reflectance: ____ percent.
 - e. UV Transmittance: ____ percent.
 - f. Summer U-Value: ____.
 - g. Winter U-Value: ____.
 - h. Solar Heat Gain Coefficient: ____.
 - i. Shading Coefficient: ____.

- F. Transparent Mirror:
 - 1. Acceptable Product: LOF Mirropane E.P. Transparent Mirror.
 - 2. Description: ASTM C 1036, Type 1, Class 3, Quality q3; with pyrolitic coating.
 - 3. Nominal Glass Thickness: 1/4 inch (6 mm).
 - 4. Performance Characteristics; coated surface to subject side:
 - a. Visible Light Transmittance: 12 percent.
 - b. Visible Light Reflectance: 60 percent.

- G. Heat-Retardant Glass:
 - 1. Acceptable Product: LOF PYROSTOP Fire-Rated Safety Transparent Wall Panel.
 - 2. Description: Clear glass layers, meeting requirements of ASTM C 1036, Type 1, Class 1, Quality q3, interleaved with layers of transparent intumescent material, laminated into monolithic heat-retardant panel.
 - 3. Fire Rating: Listed 2 hour fire rating in accordance with Warnock Hersey International.
 - 4. Safety Rating: Listed safety rating in accordance with Warnock Hersey International.
 - 5. Nominal Thickness: As required for specified fire rating.

- H. Setting Blocks: ASTM C 864, neoprene, 80 to 90 Shore A durometer hardness; length 4 inches (100 mm), width of glazing rabbet space less 1/16 inch (1.5 mm), height required for glazing method, pane weight, and pane area.

- I. Spacer Shims: ASTM C 864, neoprene, 50 to 60 Shore A durometer hardness; length 3 inches (75 mm), one half height of glazing stop, thickness required for application, one face self-adhesive.

- J. Glazing Tape: Butyl compound tape with integral resilient tube spacer, 10 to 15 Shore A durometer hardness, black color, coiled on release paper; widths required for specified installation.

- K. Glazing Tape: Closed cell polyvinyl chloride foam, maximum water absorption by volume 2 percent, designed for 25 percent compression percent for air barrier and vapor retarder seal, black color, coiled on release paper over adhesive on two sides; widths required for specified installation.

- L. Glazing Splines: ASTM C 864, resilient polyvinyl chloride, extruded shape to fit glazing channel retaining slot; black color.

- M. Glazing Gaskets: ASTM C 864, resilient polyvinyl chloride, extruded shape to fit glazing channel retaining slot; black color.

- N. Glazing Clips: Manufacturer's standard type.

- O. Sealants: Specified in Section 07900.

- P. Silicone Polyester Enamel: Type recommended by flat glass materials manufacturer; color selected by Architect.
- Q. Smoke Removal Unit Targets: Adhesive targets for application to glass, identifying glass units designed for removal for smoke control.

2.3 FABRICATION

A. Acceptable Fabricators:

1. _____.
2. _____.
3. _____.

B. Heat-Strengthened Glass:

1. Cut float glass materials to indicated sizes and provide cut-outs and holes, if indicated, before heat strengthening.
2. Heat strengthen float glass materials in accordance with ASTM C 1048, Kind HS.

C. Tempered Glass:

1. Cut float glass materials to indicated sizes and provide cut-outs and holes, if indicated, before heat strengthening.
2. Fully temper float glass materials in accordance with ASTM C 1048, Kind FT.

D. Laminated Glass:

1. Cut float glass materials to indicated sizes and provide cut-outs and holes, if indicated, before heat strengthening.
2. Heat strengthen float glass materials in accordance with ASTM C 1048, Kind HS.
3. Laminate plastic interlayer between glass panes in accordance with ASTM C 1172.
4. Laminated glass to conform to GANA (LGDG) and requirements of ANSI Z97.1.

E. Sealed Insulating Glass Units:

1. Fabricate units in accordance with ASTM E 774, Class CBA, with components and performance characteristics specified in SCHEDULES Article of this section.
2. Fabricate units in accordance with ASTM E 774, Class CBA:
3. Components:
 - a. Outer Pane:
 - (1) Glass Type: _____.

- (2) Glass Color: _____.
 - (3) Glass Thickness: _____ inch (___ mm).
 - (4) Heat Treating: Heat strengthened.
 - (5) Heat Treating: Fully tempered.
 - (6) Coating: Surface __.
 - b. Air Space: _____ inch wide, hermetically sealed, dehydrated air space.
 - c. Air Space: _____ inch wide, hermetically sealed, argon gas filled, dehydrated air space.
 - d. Inner Pane:
 - (1) Glass Type: _____.
 - (2) Glass Color: _____.
 - (3) Glass Thickness: _____ inch (___ mm).
 - (4) Heat Treating: Heat strengthened.
 - (5) Heat Treating: Fully tempered.
 - (6) Coating: Surface __.
 - 4. Performance Characteristics:
 - a. Visible Light Transmittance: _____ percent.
 - b. Visible Light Reflectance: _____ percent.
 - c. Total Solar Energy Transmittance: _____ percent.
 - d. Total Solar Energy Reflectance: _____ percent.
 - e. UV Transmittance: _____ percent.
 - f. Summer U-Value: _____.
 - g. Winter U-Value: _____.
 - h. Solar Heat Gain Coefficient: _____.
 - i. Shading Coefficient: _____.
 - 5. Provide unit edge seals meeting requirements of ASTM E 773, with aluminum spacers having mitered and corners, and silicone sealant for glass-to-spacer seals.
- F. Monolithic Spandrel Glass Units:
- 1. Heat strengthen float glass materials in accordance with ASTM C 1048, Kind HS.
 - 2. Temper float glass materials in accordance with ASTM C 1048, Kind FT.
 - 3. Apply ceramic fused frit to indicated glass surface.
 - 4. Apply silicone polyester enamel opacifier coating to indicated glass surface.
- G. Sealed Insulating Spandrel Glass Units:
- 1. Heat strengthen float glass materials in accordance with ASTM C 1048, Kind HS.
 - 2. Temper float glass materials in accordance with ASTM C 1048, Kind FT.
 - 3. Fabricate units in accordance with specified requirements for sealed insulating glass units.
 - 4. Apply ceramic fused frit to indicated glass surface.

5. Apply silicone polyester enamel opacifier coating to indicated glass surface.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

- A. _____.
- B. _____.
- C. _____.

3.2 EXAMINATION

- A. Verify that openings for glazing are correct size and within tolerance.
- B. Verify that glazing channels and recesses are clean and free of obstructions, that weeps are clear, and that channels and recesses are ready for glazing.

3.3 PREPARATION

- A. Clean contact surfaces to receive sealant with solvent; wipe dry.
- B. Seal porous glazing channels and recesses with primer or sealer compatible with substrate.
- C. Prime surfaces to receive sealant in accordance with sealant manufacturer's instructions.

3.4 INSTALLATION

- A. Install coated monolithic glass with coated surface to exterior (Surface 1).
- B. Install coated monolithic glass with coated surface to interior (Surface 2).
- C. Install sealants in accordance with Section 07900.
- D. Install sealants in accordance with ASTM C 804 for solvent release sealants.
- E. Install sealants in accordance with sealant manufacturers' instructions.
- F. Exterior Dry Method (Tape and Gasket Spline):

1. Apply glazing tape or spline to glass; butt-joint tape edges; seal joints with butyl sealant.
 2. Place setting blocks with edge blocks maximum 6 inches from glass edges and intermediate blocks at 1/4 points of glass panel length.
 3. Set glass unit on setting blocks; apply pressure against fixed stop for full contact.
 4. Install removable stops without displacing glazing tape or spline; apply pressure for full continuous contact.
 5. Trim sight-exposed tape flush with stop.
- G. Exterior Wet/dry Method (Formed Tape and Sealant):
1. Apply glazing tape to glass; butt-joint tape edges; seal joints with butyl sealant.
 2. Apply glazing tape to permanent stops, 1/4 inch below sight line; butt-joint tape edges; seal joints with butyl sealant.
 3. Apply heel bead of butyl sealant along intersection of permanent stop with frame; ensure full perimeter seal between glass and frame for continuity of air and vapor seal.
 4. Place setting blocks with edge blocks maximum 6 inches from glass edges and intermediate blocks at 1/4 points of glass panel length.
 5. Set glass unit on setting blocks; apply pressure against fixed stop for full contact.
 6. Install removable stops without displacing glazing tape; insert spacer strips between glazing and applied stops; terminate spacer strips 1/4 inch below sight line; apply pressure for full continuous contact.
 7. Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing and to 3/8 inch below sight line.
 8. Apply cap bead of sealant along void between stop and glazing to uniform line flush with sight line; tool sealant surface smooth.
- H. Exterior Wet Method (Sealant and Sealant):
1. Place setting blocks at 1/4 points; install glazing unit.
 2. Install removable stops; center glass unit in space by inserting spacer shims both sides at intervals of 24 inches; set spacer shims 1/4 inch below sight line.
 3. Fill gaps between glazing and stops with sealant to depth equal to bite of frame on glazing and to 3/8

inch below sight line; ensure full contact with glazing for continuity of air and vapor seal.

4. Apply sealant to uniform line flush with sight line. Tool sealant surface smooth.

I. Exterior Butt Glazed Method (Sealant Only):

1. Brace glass in position for duration of glazing process; mask edges of glass at adjoining glass edges and between glass edges and framing members.
2. Secure small diameter non-adhering foamed rod on back side of joint.
3. Apply sealant to open side of joint in continuous operation; completely fill joint without displacing foam rod; tool sealant surface smooth to concave profile.
4. Allow sealant to cure, then remove foam backer rod.
5. Apply sealant to opposite side; tool sealant smooth to concave profile.
6. Remove masking tape.

J. Interior Dry Method (Tape and Tape):

1. Apply glazing tape to permanent stops, allowing tape edge to project 1/16 inch above stop; butt-joint tape edges; seal joints with butyl sealant.
2. Place setting blocks with edge blocks maximum 6 inches from glass edges and intermediate blocks at 1/4 points of glass panel length.
3. Set glass unit on setting blocks; apply pressure against fixed stop for full contact.
4. Apply glazing tape on free perimeter of glazing as described above.
5. Install removable stops without displacing glazing tape; apply pressure for full continuous contact.
6. Trim sight-exposed tape flush with stop.

K. Interior Wet/Dry Method (Tape and Sealant):

1. Apply glazing tape to glass; butt-joint tape edges; seal joints with butyl sealant.
2. Place setting blocks with edge blocks maximum 6 inches from glass edges and intermediate blocks at 1/4 points of glass panel length.
3. Set glass unit on setting blocks; apply pressure against fixed stop for full contact.
4. Install removable stops without displacing glazing tape; insert spacer strips between glazing and applied stops; terminate spacer strips 1/4 inch below sight line; apply pressure for full continuous contact.

5. Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing and to uniform line flush with sight line; tool sealant surface smooth.
 6. Trim sight-exposed tape flush with stop.
- L. Interior Wet Method (Compound and Compound):
1. Place setting blocks at 1/4 points; install glazing unit.
 2. Install applied stops; center glass unit in space by inserting spacer shims both sides at intervals of 24 inches; set spacer shims 1/4 inch below sight line.
 3. Locate and secure glazing pane using glazers' clips.
 4. Fill gaps between glazing and stops with glazing compound to flush with sight line; tool surface to straight line.
- M. Installation of glazing in wood borrowed-lite partitions is specified in Section 06200.
- N. Installation of glazing in steel doors and borrowed-lite partitions is specified in Section 08110.
- O. Installation of glazing in flush wood doors is specified in Section 08211.
- P. Installation of glazing in aluminum entrances and storefronts is specified in Section 08410.
- Q. Installation of glazing in metal-framed skylights is specified in Section 08630.
- R. Installation of glazing in aluminum curtain wall system is specified in Section 08910.
- S. Installation of glazing in sloped glazing assembly is specified in Section 08960.
- T. Installation of glazing in structural glass curtain walls is specified in Section 08970.
- U. Installation of glazing in demountable gypsum board partitions is specified in Section 10616.

3.5 CLEANING

- A. Remove glazing materials from finish surfaces.

B. Remove labels after glass installation is complete.

C. Clean glass surfaces and adjacent surfaces.

3.6 SCHEDULES

A. Monolithic Glass:

1. Monolithic Glass Type __:

a. Glass Material:

- (1) Glass Type: _____.
- (2) Glass Color: _____.
- (3) Glass Thickness: _____ inch (___ mm).
- (4) Heat Treating: Heat strengthened.
- (5) Heat Treating: Fully tempered.
- (6) Coating: Surface __.

b. Performance Characteristics:

- (1) Visible Light Transmittance: _____ percent.
- (2) Visible Light Reflectance: _____ percent.
- (3) Total Solar Energy Transmittance: _____ percent.
- (4) Total Solar Energy Reflectance: _____ percent.
- (5) UV Transmittance: _____ percent.
- (6) Summer U-Value: _____.
- (7) Winter U-Value: _____.
- (8) Solar Heat Gain Coefficient: _____.
- (9) Shading Coefficient: _____.

2. Monolithic Glass Type __: Fire-retardant glass panel, 1-1/2 hour fire rating.

B. Sealed Insulating Glass Units:

1. Sealed Insulating Glass Unit Type __:

a. Outer Pane:

- (1) Glass Type: _____.
- (2) Glass Color: _____.
- (3) Glass Thickness: _____ inch (___ mm).
- (4) Heat Treating: Heat strengthened.
- (5) Heat Treating: Fully tempered.

b. Air Space: 1/2 inch wide, hermetically sealed, dehydrated air space.

c. Inner Pane:

- (1) Glass Type: Clear uncoated float glass.
- (2) Glass Thickness: _____ inch (___ mm).
- (3) Heat Treating: Heat strengthened.
- (4) Heat Treating: Fully tempered.

d. Performance Characteristics:

- (1) Visible Light Transmittance: _____ percent.
- (2) Visible Light Reflectance: _____ percent.

- (3) Total Solar Energy Transmittance: _____ percent.
 - (4) Total Solar Energy Reflectance: _____ percent.
 - (5) UV Transmittance: _____ percent.
 - (6) Summer U-Value: _____.
 - (7) Winter U-Value: _____.
 - (8) Solar Heat Gain Coefficient: _____.
 - (9) Shading Coefficient: _____.
2. Sealed Insulating Glass Unit Type __:
- a. Outer Pane:
 - (1) Glass Type: _____.
 - (2) Glass Color: _____.
 - (3) Glass Thickness: 1/4 inch (6 mm).
 - (4) Heat Treating: Heat strengthened.
 - (5) Heat Treating: Fully tempered.
 - (6) Coating: Surface 2.
 - b. Air Space: _____ inch wide, hermetically sealed, dehydrated air space.
 - c. Inner Pane:
 - (1) Glass Type: Clear Uncoated Float Glass.
 - (2) Glass Thickness: 1/4 inch (6 mm).
 - (3) Heat Treating: Heat strengthened.
 - (4) Heat Treating: Fully tempered.
 - d. Performance Characteristics:
 - (1) Visible Light Transmittance: _____ percent.
 - (2) Visible Light Reflectance: _____ percent.
 - (3) Total Solar Energy Transmittance: _____ percent.
 - (4) Total Solar Energy Reflectance: _____ percent.
 - (5) UV Transmittance: _____ percent.
 - (6) Summer U-Value: _____.
 - (7) Winter U-Value: _____.
 - (8) Solar Heat Gain Coefficient: _____.
 - (9) Shading Coefficient: _____.
3. Sealed Insulating Glass Unit Type __:
- a. Outer Pane:
 - (1) Glass Type: _____.
 - (2) Glass Color: _____.
 - (3) Glass Thickness: _____ inch (___ mm).
 - (4) Heat Treating: Heat strengthened.
 - (5) Heat Treating: Fully tempered.
 - b. Air Space: 1/2 inch wide, hermetically sealed, dehydrated air space.
 - c. Air Space: 1/2 inch wide, hermetically sealed, argon gas filled, dehydrated air space.

- d. Inner Pane:
 - (1) Glass Type: Clear low-emissivity coated float glass.
 - (2) Glass Thickness: _____ inch (___ mm).
 - (3) Heat Treating: Heat strengthened.
 - (4) Heat Treating: Fully tempered.
 - (5) Coating: Surface 3.
 - e. Performance Characteristics:
 - (1) Visible Light Transmittance: _____ percent.
 - (2) Visible Light Reflectance: _____ percent.
 - (3) Total Solar Energy Transmittance: _____ percent.
 - (4) Total Solar Energy Reflectance: _____ percent.
 - (5) UV Transmittance: _____ percent.
 - (6) Summer U-Value: _____.
 - (7) Winter U-Value: _____.
 - (8) Solar Heat Gain Coefficient: _____.
 - (9) Shading Coefficient: _____.
4. Sealed Insulating Glass Unit Type ___:
- a. Outer Pane:
 - (1) Glass Type: _____.
 - (2) Glass Color: _____.
 - (3) Glass Thickness: 1/4 inch (6 mm).
 - (4) Heat Treating: Heat strengthened.
 - (5) Heat Treating: Fully tempered.
 - (6) Coating: Surface ___.
 - b. Air Space: ___ inch wide, hermetically sealed, dehydrated air space.
 - c. Air Space: ___ inch wide, hermetically sealed, argon gas filled, dehydrated air space.
 - d. Inner Pane:
 - (1) Glass Type: Clear low-emissivity coated float glass.
 - (2) Glass Thickness: _____ inch (___ mm).
 - (3) Heat Treating: Heat strengthened.
 - (4) Heat Treating: Fully tempered.
 - (5) Coating: Surface 3.
 - e. Performance Characteristics:
 - (1) Visible Light Transmittance: _____ percent.
 - (2) Visible Light Reflectance: _____ percent.
 - (3) Total Solar Energy Transmittance: _____ percent.
 - (4) Total Solar Energy Reflectance: _____ percent.
 - (5) UV Transmittance: _____ percent.
 - (6) Summer U-Value: _____.

- (7) Winter U-Value: _____.
- (8) Solar Heat Gain Coefficient: _____.
- (9) Shading Coefficient: _____.

5. Sealed Insulating Glass Unit Type __:

a. Outer Pane:

- (1) Glass Type: Clear low-emissivity coated float glass.
- (2) Glass Thickness: _____ inch (___ mm).
- (3) Heat Treating: Heat strengthened.
- (4) Heat Treating: Fully tempered.
- (5) Coating: Surface 2.

b. Air Space: 1/2 inch wide, hermetically sealed, dehydrated air space.

c. Air Space: 1/2 inch wide, hermetically sealed, argon gas filled, dehydrated air space.

d. Inner Pane:

- (1) Glass Type: Clear uncoated float glass.
- (2) Glass Thickness: _____ inch (___ mm).
- (3) Heat Treating: Heat strengthened.
- (4) Heat Treating: Fully tempered.

e. Performance Characteristics:

- (1) Visible Light Transmittance: _____ percent.
- (2) Visible Light Reflectance: _____ percent.
- (3) Total Solar Energy Transmittance: _____ percent.
- (4) Total Solar Energy Reflectance: _____ percent.
- (5) UV Transmittance: _____ percent.
- (6) Summer U-Value: _____.
- (7) Winter U-Value: _____.
- (8) Solar Heat Gain Coefficient: _____.
- (9) Shading Coefficient: _____.

C. Installation Methods:

- 1. Interior Metal Borrowed-Lite Partitions: Interior Dry Method.
- 2. Exterior Aluminum Framed Fixed Windows: Exterior Wet/Dry Method.

END OF SECTION