

SECTION 08800

GLAZING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes glazing for door in South elevation of Guard Shack.
- B. Related Sections:
 - 1. Section 01330 - Submittal Procedures
 - 2. Section 01600 – Product Requirements
 - 3. Section 07900 - Joint Sealers: Sealant and back-up material other than glazing sealants.
 - 4. Section 08110 - Steel Doors and Frames

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI Z97.1 - Safety Glazing Materials Used in Buildings Safety.
- B. ASTM International:
 - 1. ASTM C864 - Standard Specification for Dense Electrometric Compression Seal Gaskets, Setting Blocks, and Spacers.
 - 2. ASTM C920 - Standard Specification for Electrometric Joint Sealants.
 - 3. ASTM C1036 - Standard Specification for Flat Glass.
 - 4. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
 - 5. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
 - 6. ASTM C1193 - Standard Guide for Use of Joint Sealants.
 - 7. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
 - 8. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 9. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
 - 10. ASTM E773 - Standard Test Methods for Seal Durability of Sealed Insulating Glass Units.
 - 11. ASTM E774 - Standard Specification for Sealed Insulating Glass Units.
- C. Consumer Products Safety Commission:
 - 1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing.
- D. Glass Association of North America:
 - 1. GANA - Glazing Manual.
- E. National Fire Protection Association:
 - 1. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.
- F. Underwriters Laboratories Inc.:
 - 1. UL - Building Materials Directory.

1.3 PERFORMANCE REQUIREMENTS FOR ANTI-TERRORISM

- A. The following criterion applies to new construction.
- B. Department of Defense Minimum Antiterrorism Standards for Building (UFC 4-010-01, current edition) window frame requirements including frames, anchorage, and glazing pockets. Contractor shall demonstrate by calculations or tests that the window provided comply with the follow requirements:
1. Frame Member design: Steel member may be designed using ultimate yield stress and aluminum members may be designed based on a 0.2% offset yield strength. Equivalent stress design loads for the window, skylight and door members shall be 7 kilopascals (1 lb per square in) applied to the surface of the glazing and frame. Deformations shall not exceed 1/60 of the unsupported member lengths.
 2. Glazing Frame Bite: The glazing shall have a minimum frame bite of 9.5 mm (3/8 inch) for structurally glazed systems and 25 CM (1 inch) for window systems that are not structurally glazed.
 3. Connection design: Equivalent Static design loads for connections to the window, skylight, or door frame the surrounding walls or roof, hardware and associated connections, and glazing stop connections shall be 75 kilopascals, (10.8 lbs per square inch) for glazing panels with a vision area less than or equal to 1.0 square meters (10.8 square feet) and 30 kilopascals (4.4 lbs per square inch) for glazing panels with a vision area greater than 1.0 square meters (10.8 square feet) but less than or equal to 3.0 square meters (32 Square feet) Loads shall be applied to the surface of the glazing and frame. Connections and hardware may be designed based on ultimate strength for steel and 0.2% offset yield strength for aluminum.
- C. Glazing: Use a minimum of two 6 mm (1/4 inch) nominal laminated glass for all exterior windows, skylights and glazed doors. The 6 mm (1/4 inch) laminated glass consists of two nominal 3-mm 1(1/8 inch) glass panes bonded together with a minimum of a 0.75 mm (0.030 inch polyvinyl-butryal (PVB) interlayer. For insulating glass units, use 6 mm (1/4 inch) laminated glass inner pane as a minimum. For glazing alternatives to the 6 mm (1/4 in) laminated glass that provide equivalent levels of protection, refer to the DOD Security Engineering Design Manual.
- D. Frame Member Design: Steel members may be designed using ultimate yield stresses and aluminum members may be designed based on 0.2% offset yield strength. Equivalent static design loads for the window, skylight, and door members shall be 7 kilopascals (1 lb per square inch) applied to the surface of the glazing and frame. Deformations shall not exceed 1/60 of the unsupported member lengths.
- E. Glazing Frame Bite: The glazing shall have a minim frame bite of 9.5 mm (3/8 in) for structurally glazed system and 25-mm (1-in) for window systems that are not structurally glazed.
- F. Connection Design: Equivalent static design loads for connections of the window, skylight or door fame to the surrounding walls of roof, hardware and associated connections, and glazing stop connections shall be 75 kilopascals (10.8 lbs per square inch) for glazing panels with a vision area less than or equal to 1.0 square meters (10.8 square feet) and 30 kilopascals (4.4 lbs per square inch for glazing panels with a vision area greater than 1.0 square meters (10.8 square feet) but less than or equal to 3.0 square meters (32 square feet). Loads shall be applied to the surface of the glazing and frame. Connections

and hardware may be designed based on ultimate strength of steel and 0.2% offset yield strength for aluminum.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Demonstrate compliance with antiterrorism standards. Provide shop drawings signed and sealed by professional engineer.
 - 1. Indicate sizes, layout, thicknesses, and loading conditions for glass.
- C. Product Data:
 - 1. Glass: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
 - 2. Glazing Sealants, Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors where exposed.
- D. Samples:
 - 1. Glass: Submit two samples 8 x 8 inch in size, illustrating each glass units, coloration and design.
 - 2. Glazing Materials: Submit 6 inch long bead of glazing sealant and gaskets, for each color selected.
- E. Design Data: Submit design calculations for glass resisting wind loads.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual for glazing installation methods.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not install glazing when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 WARRANTY

- A. Furnish ten year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide products by one of the following:
 - 1. AFGD Glass
 - 2. Guardian Industries Corp.
 - 3. Pilkington, Libbey-Owens-Ford
 - 4. PPG Industries, Inc.

5. Viracon, Inc.

2.2 COMPONENTS

- A. Safety Glass (Type SG): Conform to CPSC 16 CFR 1201 Category II Category I, minimum total thickness 1/4 inch
 1. Clear Tempered Glass (Type SG-CT): ASTM C1048, Kind FT Fully tempered, Condition A, uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select; with horizontal tempering.
 2. Clear Laminated Glass (Type SG-CL): ASTM C1172, Kind LA, clear float glass (Type FG-CF) Kind LHS, clear heat strengthened glass (Type FG-CH); with plastic interlayer.
 - a. Plastic Interlayer: Polyvinyl butyral Manufacturer's standard, minimum 0.045 inch thick.
- B. Insulated Glass Units (Type IG): Total unit thickness 1 inch.
 1. Double Pane Insulated Glass Units (Type IG-DP IG-TP): ASTM E774 Class A and E773; with silicone sealant edge seal; purge interpane space with dry hermetic air.
 - a. Outer Pane: 1/ 4 inch
 - b. Inner Pane: 1/ 4 inch
 3. For Grey over low e
 - a. Visible Light Transmittance: .37
 - b. Solar Transmission: .116
 - c. U- Value (Winter): .35
 - d. Shading Coefficient: .47
 - e. Relative Heat Gain: .1

2.3 ACCESSORIES

- A. Electrometric Glazing Sealants: Materials compatible with adjacent materials including glass, insulating glass seals, and glazing channels.
 1. Silicone Glazing Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component; chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25.
 - a. Color: As selected.
 - b. Structural Silicone: Furnish high-modulus structural silicone glazing materials where sealant bonds glass to substrate.
- B. Glazing Putty:
 1. Glazing Putty: Oil and resin base caulking compound, hardening type; knife grade consistency; manufacturer's standard white color.
 2. Glazing Compound: Modified oil type, non-hardening, knife grade consistency; manufacturer's standard gray color.
- C. Pre-Formed Glazing Tape: Size to suit application.
 1. Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
 - a. Butyl Corner Sealant: ASTM C920 single component non-skinning butyl compatible with glazing tape; color to match tape.

- D. Setting Blocks: ASTM C864 Neoprene, 80 to 90 Shore A durometer hardness, length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- E. Spacer Shims: ASTM C864 Neoprene, 50 to 60 Shore A durometer hardness, minimum 3 inch long x one half the height of glazing stop x thickness to suit application, self adhesive on one face.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify openings for glazing are correctly sized and within acceptable tolerance.
- B. Verify surfaces of glazing channels or recesses are clean, free of obstructions impeding moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. Perform installation in accordance with GANA Glazing Manual.
 - 1. Glazing Sealants: Comply with ASTM C1193.
 - 2. Fire Rated Openings: Comply with NFPA 80.
- B. Exterior Wet/Dry Method (Preformed Tape and Sealant) Installation:
 - 1. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with compatible butyl sealant.
 - 2. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapor seal.
 - 3. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
 - 4. Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of pane or glass unit.
 - 5. Install removable stops, with spacer strips inserted between glazing and applied stops, 1/4 inch below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.
 - 6. Fill gap between glazing and stop with elastomeric glazing sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
 - 7. Apply cap bead of elastomeric glazing sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.4 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste. Do not mark heat absorbing or reflective glass units.

END OF SECTION