SECTION 08 81 00

GLAZING
05/19

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

ASCE 7	(2017) Minimum Design Loads for Buildings and Other Structures

ASTM INTERNATIONAL (ASTM)

ASTM E2226	(2015a; R 2019b) Standard Practice for Application of Hose Stream

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 15099	(2003) Thermal Performance of Windows, Doors and Shading Devices - Detailed Calculations
ISO 16932	(2007) Glass in Buildings - Destructive Windstorm-Resistant Security Glazing - Test and Clarification
ISO 16933	(2007) Glass in Building - Explosion-Resistant Security Glazing - Test and Clarification for Arena Air-Blast Loading
ISO 16934	(2007) Glass in Building - Explosion-Resistant Security Glazing - Test and Clarification by Shock-Tube Loading
ISO 28278	(2011) Glass in Building - Glass Products for Structural Sealant Glazing

JAPANESE STANDARDS ASSOCIATION (JSA)

JIS A 1304	(2017) Method of Fire Resistance Test for Elements of Building Construction
JIS A 1418	(2000) Acoustics - Measurement of Floor Impact Sound Insulation of Buildings - Method Using Standard Light Impact Source
JIS A 1419	(2000) Acoustics - Rating of Sound Insulation in Buildings and of Building Elements - Airborne Sound Insulation

JIS A 1439	(2016) Testing Methods of Sealants for Sealing and Glazing in Buildings
JIS A 5756	(2013) Preformed Gaskets Used in Buildings - Classification, Specifications and Test Methods
JIS A 5758	(2022) Sealants for Sealing and Glazing in Buildings
JIS K 6262	(2013) Rubber, Vulcanized or Thermoplastic - Determination of Compression Set at Ambient, Elevated or Low Temperatures
JIS K 6718	(2015) Plastics - Poly (Methyl Methacrylate) Sheets - Types, Dimensions and Characteristics
JIS K 7366	(1999) Plastic-plasticized polyvinyl chloride (PVC-P) Molding and extrusion materials
JIS R 3109	(2018) Glass in Building - Destructive-Windstorm-Resistant Security Glazing - Test Method
JIS R 3202	(2011) Float Glass and Polished Plate Glass
JIS R 3205	(2005) Laminated Glass
JIS R 3206	(2014) Tempered Glass
JIS R 3220	(2011) Glass in Building - Silvered, Flat-Glass Mirror
JIS R 3221	(2002) Solar Reflective Glass
JIS R 3222	(2003) Heat-Strengthened Glass

MINISTRY OF LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM (MLIT)

MLIT-SS Ch 16, Sec 14	(2019) Building Construction Standard Specifications - Chapter 16 Openings Construction, Section 14 Glazing

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 252	(2022) Standard Methods of Fire Tests of Door Assemblies
NFPA 257	(2012; ERTA 2017) Standard on Fire Test for Window and Glass Block Assemblies
NFPA 80	(2022) Standard for Fire Doors and Other Opening Protectives

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

16 CFR 1201	Safety Standard for Architectural Glazing Materials

UNDERWRITERS LABORATORIES (UL)

UL 752	(2005; Reprint Dec 2015) Standard for Bullet-Resisting Equipment
UL MEAPD	(2011) Mechanical Equipment and Associated Products Directory (online version is listed under Certifications at www.ul.com)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.][for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability eNotebook, in conformance with Section 01 33 29 SUSTAINABILITY REPORTING. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Insulating Glass

Sealants

Joint Backer

SD-08 Manufacturer's Instructions

Setting and Sealing Materials

Glass Setting

SD-11 Closeout Submittals

Warranty for Insulated Glass Units

[Warranty for Polycarbonate Sheet

][Warranty for Monolithic Reflective Glass

][Warranty for Monolithic Opacified Spandrel
]

[1.3 SYSTEM DESCRIPTION

Fabricate and install watertight and airtight glazing systems to withstand thermal movement and wind loading without glass breakage, gasket failure, deterioration of glazing accessories, or defects in the work. Glazed panels must comply with the safety standards, in accordance with JIS R 3205 for Laminated Glass or JIS R 3206 for Tempered Glass, comply with indicated wind/snow loading in accordance with ISO 28278, and relative displacement requirements in accordance with ASCE 7, section 13.5.9.1. Provide insulated laminated heat-strengthened exterior glazing with a

minimum interlayer thickness as indicated on the drawings or as required to meet performance requirements.[Sloped glazing must comply with MLIT-SS Ch 16, Sec 14.]

1.3.1 Wind Pressure Requirements

Exterior glazing to withstand an allowable wind-loading design pressure of [_____] kPa in Zone [_____] and [_____] kPa in Zone [_____]. Zones [_____] and [_____] are defined by ASCE 7-10.

1.3.2 Windborne Debris Requirement

Exterior glazing shall be tested and certified for impact resistance with the window or door as applicable under JIS R 3109 to comply with minimum Missile Type [_____] and ICC IBC Section 1609, Wind Loads or tested and certified for impact resistance under ISO 16932 to comply with minimum Missile Type [_____] and Wind Zone [_____].

]1.4 QUALITY CONTROL

Submit two 203 by 254 mm samples of each of the following: tinted glass, patterned glass, heat-absorbing glass, [_____] and insulating glass units.

Submit three samples of each other material. Samples of plastic sheets must be minimum 125 by 175 mm.

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver products to the site in unopened containers, labeled plainly with manufacturers' names and brands. Store glass and setting materials in safe, enclosed dry locations and do not unpack until needed for installation. Handle and install materials in a manner that will protect them from damage.

1.6 ENVIRONMENTAL REQUIREMENTS

Do not start glazing work until the outdoor temperature is above 4 degrees C and rising, unless procedures recommended by the glass manufacturer and approved by the Contracting Officer are made to warm the glass and rabbet surfaces. Provide ventilation to prevent condensation of moisture on glazing work during installation. Do not perform glazing work during damp or rainy weather.

1.7 WARRANTY

1.7.1 Warranty for Insulated Glass Units

Warranty insulating glass units against development of material obstruction to vision (such as dust, fogging, or film formation on the inner glass surfaces) caused by failure of the hermetic seal, other than through glass breakage, for a 10-year period following acceptance of the work. Provide new units for any units failing to comply with terms of this warranty within 45 working days after receipt of notice from the Government.

1.7.2 Warranty for Polycarbonate Sheet

For a 5-year period following acceptance of the work:

a. Warranty Type I, Class A (UV stabilized) sheets against breakage;

b. Warranty Type III (coated, mar-resistant) sheets against breakage and against coating delamination;

c. Warranty Type IV (coated sheet) against breakage and against yellowing;

d. Warranty extruded polycarbonate profile sheet against breakage.

For a 10-year period following acceptance of the work, warranty Type IV against yellowing and loss of light transmission.

[1.7.3 Monolithic Reflective Glass

Manufacturer must warrant the monolithic reflective glass to be free of peeling or deteriorating of coating for a period of 10 years after Date of Substantial Completion. Warranty must be signed by manufacturer.

][1.7.4 Monolithic Opacified Spandrel

Manufacturer must warrant the opacifier film on the spandrel to be free of peeling for a period of five years after Date of Substantial Completion. Warranty must be signed by manufacturer.

]PART 2 PRODUCTS

2.1 PRODUCT SUSTAINABILITY CRITERIA

[2.1.1 Energy Efficient Equipment for Residential Windows

Provide energy efficient residential windows in accordance with Section 01 33 29 SUSTAINABILITY REPORTING paragraph ENERGY EFFICIENT PRODUCTS.

]2.2 GLASS

JIS R 3202, unless specified otherwise. In doors and sidelights, provide safety glazing material conforming to 16 CFR 1201.

2.2.1 Clear Glass

[For interior glazing (i.e., pass and observation windows), 6 mm thick glass should be used.

] Provide for glazing openings not indicated or specified otherwise. Use double-strength sheet glass or 3 mm float glass for openings up to and including 1.39 square meters, 4.5 mm for glazing openings over 1.39 square meters but not over 2.79 square meters, and 6 mm for glazing openings over 2.79 square meters but not over 4.18 square meters.

2.2.2 Annealed Glass

Annealed glass must be Type I transparent flat type, [Class 1 - clear,] Quality q3 - glazing select, [_____] percent light transmittance, [_____] percent shading coefficient, conforming to JIS R 3202.

2.2.3 Heat-Absorbing Glass

[Tinted], [_____] mm thick, [blue][green] in color, [_____] percent light transmittance, [_____] percent shading coefficient, conforming to

JIS R 3202.

2.2.4 Reflective Coating Vision Glass

JIS R 3221.

2.2.5 Wired Glass

Provide UL listed glass for fire-rated windows rated for [45] [20] minutes when tested in accordance with ASTM E2226. Wired glass must be Type II flat type, Class [1 - translucent] [2 - tinted, heat-absorbing] [3 - tinted, light-reducing], Quality [q7 - decorative] [q8 - glazing], Form [1 - wired and polished both sides] [2 - patterned and wired], [_____] percent light transmittance, [_____] percent shading coefficient, conforming to JIS R 3202. Wire mesh must be polished stainless steel Mesh [1 - diamond] [2 - square] [3 - parallel]. Wired glass for fire-rated windows must bear an identifying UL label or the label of a nationally recognized testing agency, and be rated for [20] [45] minutes when tested in accordance with NFPA 257. Wired glass for fire-rated doors must be tested as part of a door assembly in accordance with NFPA 252.

2.2.6 Patterned Glass

[Translucent], [patterned], [decorative], [patterned one side], [patterned two sides], [linear], [geometric], [random], [special], [[_____] percent light transmittance, [_____] percent shading coefficient.] [3] [6] mm thick.[Provide [_____].]

2.2.7 Laminated Glass

[JIS R 3205, Laminated glass fabricated from two nominal [3] [_____] mm pieces of flat annealed [ultraclear]; [clear] [_____] glass conforming to JIS R 3202.] [JIS R 3205, Laminated glass fabricated from two nominal [3] [_____] mm pieces of [HS] [FT], flat [heat strengthened] [fully tempered] [clear] [_____] glass conforming to JIS R 3222.] Flat glass to be laminated together with a minimum of 0.75 mm [_____] mm thick, clear [polyvinyl butyral] [ionoplast] [cast-in-place liquid resin] laminate, conforming to requirements of JIS R 3205. The total thickness of nominally 6 [_____] mm. Color to be [clear] [gray] [bronze] [_____]. The total thickness of nominally [_____] mm.

[Design window glazing using a dynamic analysis[testing from airblast loading in accordance with ISO 16933, or ISO 16934 by an independent testing agency regularly engaged in blast testing] to prove the glazing will provide performance equivalent to or better than a [low] [very low] [_____] hazard rating in accordance with ISO 16933 for the peak positive pressure of [_____] kilopascals (kPa) and peak positive phase impulse of [_____] kilopascal-millisecond (kPa-msec).

]2.2.8 Bullet-Resisting Glass

Fabricated from Type I, Class 1, Quality q3 glass with polyvinyl butyral plastic interlayers between the layers of glass and listed by UL MEAPD as bullet resisting, with a rating Level of [Level 1] [Level 2] [Level 3] [Level 4] [Level 5] [_____] in accordance with UL 752. Provide [_____] [where indicated].

[2.2.9 Mirrors

2.2.9.1 Glass Mirrors

Glass for mirrors must be transparent flat type, clear, 6 mm thick conforming to JIS R 3220. Glass must be coated on one surface with silver coating, copper protective coating, and mirror backing paint. Silver coating must be highly adhesive pure silver coating of a thickness which must provide reflectivity of 83 percent or more of incident light when viewed through 6 mm thick glass, and must be free of pinholes or other defects. Copper protective coating must be pure bright reflective copper, homogeneous without sludge, pinholes or other defects, and must be of proper thickness to prevent "adhesion pull" by mirror backing paint. Mirror backing paint must consist of two coats of special scratch and abrasion-resistant paint , and must be baked in uniform thickness to provide a protection for silver and copper coatings which will permit normal cutting and edge fabrication.

]2.2.10 One-Way Vision Glass (Transparent Mirrors)

6 mm thick, coated on one face with a hard, adherent film of chromium or other approved coating of equal durability. Glass must transmit not less than 5 percent or more than 11 percent of total incident visible light and must reflect from the front surface of the coating not less than 45 percent of the total incident visible light.[Provide [_____].]

2.2.11 Tempered Glass

Per fully tempered, uncoated, transparent per JIS R 3222 [2 tinted heat absorbing], [_____] mm thick, [_____] percent light transmittance, [_____] percent shading coefficient conforming to JIS R 3206 or MLIT-SS Ch 16, Sec 14. Color must be [[clear] [bronze] [gray] [_____]]. [Provide [_____]] [and wherever safety glazing material is indicated or specified].

2.2.12 Heat-Strengthened Glass

HS (heat strengthened), uncoated, [clear JIS R 3222] [tinted heat absorbing], [_____] mm thick. [Provide [_____].]

2.2.13 Spandrel Glass

2.2.13.1 Ceramic-Opacified Spandrel Glass

Ceramic-opacified spandrel glass must be Kind HS heat-strengthened transparent flat type, coated with a colored ceramic material on No. 2 surface, [_____] mm thick, conforming to JIS R 3222. Glass performance must be K-Value/Winter Nighttime [_____], shading coefficient [_____]. Color must be [_____].

2.2.13.2 Film-Opacified Spandrel Glass

Film-opacified spandrel glass must be Kind HS heat-strengthened transparent flat type glass with a polyester or polyethylene film 0.025 mm to 0.127 mm thick attached to No. 2 surface of a sputtered solar-reflective film, conforming to JIS R 3222. Film opacification must be compatible to and specifically developed for application to solar reflective films. Glass performance must be K-Value/Winter Nighttime [_____], shading coefficient [_____]. Color must be [_____].

2.2.13.3 Spandrel Glass With Adhered Backing

Kind HS or FT, ceramic coated, JIS R 3222, [_____] mm thick and must pass the fallout resistance test specified in JIS R 3222. [Provide [_____].]

[2.2.14 Fire/Safety Rated Glass

[2.2.14.1 Fire Protection Rated Glass

Clear tempered and meet 16 CFR 1201 Category I (under 0.836 sqm) or II (over 0.836 sqm) impact safety standard. Glass to make [20] [45] minute rating when tested in accordance with NFPA 257 and NFPA 252. Glass to be permanently labeled with appropriate markings.

][2.2.14.2 Fire Resistive Rated Glazing

Fire resistive glass must be laminated, with intumescent interlayer, Type I transparent flat type, Class 1-clear and meet 16 CFR 1201 Category I (under 0.836 sqm) or II (over 0.836 sqm). Glass must have a [60] [90] [120] minute rating when tested in accordance with JIS A 1304. Glass must be permanently labeled with appropriate markings.

]]2.3 INSULATING GLASS UNITS

[Two][Three] panes of glass separated by a dehydrated airspace[, filled with argon gas][, filled with krypton gas,][, filled with aerogel] and hermetically sealed, conforming to ISO 28278. Submit performance and compliance documentation for each type of insulating glass.

[Insulated glass units must have a Solar Heat Gain Coefficient (SHGC) maximum of [_____] determined according to ISO 15099 and a U-factor maximum of [_____] W per square m by K in accordance with ISO 15099.

] [See section[s][_____] for energy performance requirements for glazed systems (glazing and frames).] [Glazed panels must be rated for not less than [26] [30] [35] [_____] Sound Transmission Class (STC) or equivalent Weighted Sound Reduction Index (Rw) when tested for laboratory sound transmission loss according to JIS A 1418 and determined by JIS A 1419.]

Spacer must be black, roll-formed, [thin-gauge, C-section steel] [steel-reinforced butyl rubber] [thermally broken aluminum] [polyurethane and silicon foams], with bent or tightly welded or keyed and sealed joints to completely seal the spacer periphery and eliminate moisture and hydrocarbon vapor transmission into airspace through the corners. Primary seal must be compressed polyisobutylene and the secondary seal must be a specially formulated silicone.

The inner light must be clear annealed flat glass JIS R 3205, JIS R 3202 [_____] mm thick, fully tempered, uncoated, transparent, JIS R 3222 [_____] mm thick. The intermediate light must be clear annealed flat glass, JIS R 3202, fully tempered, uncoated, transparent, JIS R 3222 [_____] mm thick. The outer light must be transparent, JIS R 3202, [2 (tinted heat absorbing)], [2 (solar-reflective)], [_____] mm thick, fully tempered, uncoated, clear JIS R 3202 [2 (tinted heat absorbing)][solar-reflective], [_____] mm thick.

2.3.1 Low Emissivity Coatings

Interior and exterior glass panes for Low-E insulating units must be annealed flat glass, Class [1-clear] [2-tinted] with anti-reflective low-emissivity coating or heat-strengthened or fully tempered glass complying with JIS R 3222, Condition C on [No. 2 surface (inside surface of exterior pane) JIS R 3222][No. 3 surface (inside surface of interior pane)], conforming to JIS R 3202. Glass performance must be U value maximum of [_____] [W/m2-K], Solar Heat Gain Coefficient (SHGC) maximum of [_____]. Color must be [green] [gray] [bronze] [blue] [_____] .

2.4 PLASTIC GLAZING

Plastic glazing must have a U-factor maximum of [_____] W per square m by K. [Plastic glazing must include a [16][32][_____] mm layer of aerogel between panels.]

Certificates stating that the plastic glazing meets the specified requirements. Labels or manufacturers marking affixed to the glass will be accepted in lieu of certificates.

2.4.1 Acrylic Sheet

JIS K 6718, [regular] [heat resistant,] [clear and smooth on both sides] [translucent, textured on both sides,] [gray tint,] [bronze tint,] ultraviolet stabilized, [scratch resistant,] [_____] [6] [_____] mm thick.

2.4.2 Polycarbonate Sheet

[Clear and smooth both sides] [Translucent, textured both sides] [Gray tint] [Bronze tint] [mar-resistant] [high abrasion resistant], ultraviolet stabilized, [_____] mm thick and listed in UL MEAPD as burglar resisting.

2.4.3 Extruded Polycarbonate Profiled Sheet

Provide [double] [triple] walled, surface treated for improved UV resistance, offering thermal efficiency and impact strength.

2.4.4 Bullet-Resistant Plastic Sheet

Cast acrylic sheet or mar-resistant polycarbonate sheet laminated with a special interlayer, and listed in UL 752 as bullet resisting, Class [I] [II] [III], [clear] [_____] in color.[Provide [_____].]

2.5 SETTING AND SEALING MATERIALS

Provide as specified in the MLIT-SS Ch 16, Sec 14, and manufacturer's recommendations, unless specified otherwise herein. Do not use metal sash putty, nonskinning compounds, nonresilient preformed sealers, or impregnated preformed gaskets. Materials exposed to view and unpainted must be gray or neutral color. Sealant testing must be performed by a qualified testing agency.

Submit glass manufacturer's recommendations for setting and sealing materials and for installation of each type of glazing material specified.[Include cleaning instructions for plastic sheets.]

2.5.1 Putty and Glazing Compound

Provide glazing compound as recommended by manufacturer for face-glazing metal sash. Putty must be linseed oil type. Do not use putty and glazing compounds with insulating glass or laminated glass.

2.5.2 Glazing Compound

Use for face glazing metal sash. Do not use with insulating glass units or laminated glass.

2.5.3 Sealants

Provide elastomeric [and structural] sealants.

2.5.3.1 Elastomeric Sealant

JIS A 5758. Use for channel or stop glazing [wood] [and] [metal] sash. Sealants must be chemically compatible with setting blocks, edge blocks, and sealing tapes[, with sealants used in manufacture of insulating glass units] [, and with plastic sheet]. Color of sealant must be white.

2.5.3.2 Structural Sealant

JIS A 5758.

2.5.4 Joint Backer

Joint backer must have a diameter size at least 25 percent larger than joint width; type and material as recommended in writing by glass and sealant manufacturer.

2.5.5 Glazing Tapes

2.5.5.1 Back-Bedding Mastic Glazing Tapes

Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with JIS A 5758.

2.5.5.2 Expanded Cellular Glazing Tapes

Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with JIS A 5758 as recommended by tape and glass manufacturers.

2.5.6 Sealing Tapes

Preformed, semisolid, PVC-based material of proper size and compressibility for the particular condition, complying with JIS K 7366. Use only where glazing rabbet is designed for tape and tape is recommended by the glass or sealant manufacturer. Provide spacer shims for use with compressible tapes. Tapes must be chemically compatible with the product being set.

2.5.7 Setting Blocks and Edge Blocks

Closed-cell neoprene setting blocks must be dense extruded type conforming

to JIS A 5756 and JIS K 6262. Edge blocking as recommended by glazing manufacturer. Provide silicone setting blocks when blocks are in contact with silicone sealant. Profiles, lengths and locations must be as required and recommended in writing by glass manufacturer. Block color must be [black][_____].

2.5.8 Glazing Gaskets

Glazing gaskets must be extruded with continuous integral locking projection designed to engage into metal glass holding members to provide a watertight seal during dynamic loading, building movements and thermal movements. Glazing gaskets for a single glazed opening must be continuous one-piece units with factory-fabricated injection-molded corners free of flashing and burrs. Glazing gaskets must be in lengths or units recommended by manufacturer to ensure against pull-back at corners. Provide glazing gasket profiles as recommended by the manufacturer for the intended application.

2.5.8.1 Fixed Glazing Gaskets

Fixed glazing gaskets must be closed-cell (sponge) smooth extruded compression gaskets of cured elastomeric virgin neoprene compounds conforming to JIS A 5756.

2.5.8.2 Wedge Glazing Gaskets

Wedge glazing gaskets must be high-quality extrusions of cured elastomeric virgin neoprene compounds, ozone resistant, conforming to JIS A 5756.

2.5.8.3 Aluminum Framing Glazing Gaskets

Glazing gaskets for aluminum framing must be permanent, elastic, non-shrinking, non-migrating, watertight and weathertight.

2.5.9 Accessories

Provide as required for a complete installation, including glazing points, clips, shims, angles, beads, and spacer strips. Provide noncorroding metal accessories. Provide primer-sealers and cleaners as recommended by the glass and sealant manufacturers. Use JIS A 1439 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to surface.

[2.6 MIRROR ACCESSORIES

2.6.1 Mastic

Mastic for setting mirrors must be a [polymer] [_____] type mirror mastic resistant to water, shock, cracking, vibration and thermal expansion. Provide mastic compatible with mirror backing paint, and as approved by mirror manufacturer.

2.6.2 Mirror Frames

Provide mirrors with mirror frames (J-mold channels) fabricated of one-piece roll-formed Type 304 stainless steel with No. 4 brushed satin finish and concealed fasteners which will keep mirrors snug to wall. Frames must be 32 by 6 by 6 mm continuous at top and bottom of mirrors. Concealed fasteners of type to suit wall construction material must be

provided with mirror frames.

2.6.3 Mirror Clips

Provide clips with concealed fasteners of type to suit wall construction material.

]PART 3 EXECUTION

Any materials that show visual evidence of biological growth due to the presence of moisture must not be installed on the building project.

3.1 PREPARATION

Preparation, unless otherwise specified or approved, must conform to applicable recommendations in MLIT-SS Ch 16, Sec 14 and manufacturer's recommendations. Determine the sizes to provide the required edge clearances by measuring the actual opening to receive the glass. Grind smooth in the shop glass edges that will be exposed in finish work. Leave labels in place until the installation is approved, except remove applied labels on heat-absorbing glass and on insulating glass units as soon as glass is installed. Securely fix movable items or keep in a closed and locked position until glazing compound has thoroughly set.

3.2 GLASS SETTING

Shop glaze or field glaze items to be glazed using glass of the quality and thickness specified or indicated. Glazing, unless otherwise specified or approved, must conform to applicable recommendations in MLIT-SS Ch 16, Sec 14 and manufacturer's recommendations. Aluminum windows, wood doors, and wood windows may be glazed in conformance with one of the glazing methods described in the standards under which they are produced, except that face puttying with no bedding will not be permitted. Handle and install glazing materials in accordance with manufacturer's instructions. Use beads or stops which are furnished with items to be glazed to secure the glass in place. Verify products are properly installed, connected, and adjusted.

3.2.1 Sheet Glass

Cut and set with the visible lines or waves horizontal.

3.2.2 Patterned Glass

Set glass with one patterned surface with smooth surface on the weather side. When used for interior partitions, place the patterned surface in same direction in all openings.

3.2.3 Insulating Glass Units

Do not grind, nip, or cut edges or corners of units after the units have left the factory. Springing, forcing, or twisting of units during setting will not be permitted. Handle units so as not to strike frames or other objects. Installation must conform to applicable recommendations of MLIT-SS Ch 16, Sec 14.

3.2.4 Installation of Wire Glass

Install glass for fire doors in accordance with installation requirements

of NFPA 80.

3.2.5 Installation of Heat-Absorbing Glass

Provide glass with clean-cut, factory-fabricated edges. Field cutting will not be permitted.

3.2.6 Installation of Laminated Glass

Sashes which are to receive laminated glass must be weeped to the outside to allow water drainage into the channel.

3.2.7 Plastic Sheet

Conform to manufacturer's recommendations for edge clearance, type of sealant and tape, and method of installation.

3.3 CLEANING

Clean glass surfaces and remove labels, paint spots, putty, and other defacement as required to prevent staining. Glass must be clean at the time the work is accepted.[Clean plastic sheet in accordance with manufacturer's instructions.]

3.4 PROTECTION

Protect glass work immediately after installation. Identify glazed openings with suitable warning tapes, cloth or paper flags, attached with non-staining adhesives. Protect reflective glass with a protective material to eliminate any contamination of the reflective coating. Place protective material far enough away from the coated glass to allow air to circulate to reduce heat buildup and moisture accumulation on the glass. Upon removal, separate protective materials for reuse or recycling. Remove and replace glass units which are broken, chipped, cracked, abraded, or otherwise damaged during construction activities with new units.

-- End of Section --