

**SECTION 07 2500
WEATHER BARRIERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A Water-Resistive Barrier: Under exterior wall cladding, over sheathing or other substrate; not air tight or vapor retardant.

1.02 RELATED REQUIREMENTS

- A Section 07 2100 - Thermal Insulation: Vapor retarder installed in conjunction with batt insulation.
- B Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- C Section 07 9200 - Joint Sealants: Sealing building expansion joints.

1.03 DEFINITIONS

- A Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B Water-Resistive Barrier: Water-shedding barrier made of material that is moisture resistant, to the degree specified, intended to be installed to shed water without sealed seams.

1.04 REFERENCE STANDARDS

- A ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.

1.05 SUBMITTALS

- A See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B Product Data: Provide data on material characteristics.
- C Shop Drawings: Provide drawings of special joint conditions.
- D ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- E Manufacturer's Installation Instructions: Indicate preparation.
- F ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- G ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification; keep copies of each contractor accreditation and installer certification on site during and after installation, and present on-site documentation upon request.

1.06 QUALITY ASSURANCE

- A Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/#sle:
 1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
 2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture, and use secondary materials approved in writing by primary material manufacturer.

PART 2 PRODUCTS

~~WEATHER BARRIER ASSEMBLIES~~

~~2.01 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER OR VAPOR RETARDER)~~

2.02 ACCESSORIES

- A **Flexible Thru-Wall** Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
1. Non-vapor permeable self-adhered through-wall flashing consisting of an SBS rubberized asphalt compound integrally laminated to a yellow engineered thermoplastic film surface; having the following typical physical properties:
 - a. Basis of design: Henry® Blueskin® TWF Self-Adhered Thru-Wall Flashing
 - b. Thickness: 40 mils (1.0 mm)
 - c. Water Vapor Permeance (ASTM E96): 0.03 perms
 - d. High Temperature Stability - Flow Resistance (ASTM D5147): Pass
 - e. Low Application Temperature: 20 degrees F (-7 degrees C)
 2. Adhesives/Primers:
 - a. Aerosol spray adhesive
 - 1) Quick drying spray adhesive used to prepare construction surfaces for the application of flashings; having the following typical physical properties:
 - (a) Basis of design: Henry® Blueskin® Spray Prep Adhesive
 - (b) Color: Clear amber
 - (c) Solids by weight: 35%
 - (d) Drying time (initial set): 3 minutes
 - (e) Low Application Temperature: -10 degrees F (-23 degrees C)
 - 2) Quick setting primers:
 - 1) Synthetic rubber based quick setting adhesive with low VOC content; having the following typical physical properties:
 - (a) Basis of design: Henry® Blueskin® LVC Spray Primer
 - (b) Color: Blue
 - (c) Maximum VOC: 250 g/L
 - (d) Dry time: 1-3 minutes
 - (e) Low Application Temperature: 40 degrees F (4.4 degrees C)
 - 2) Polymer emulsion water based quick setting adhesive with low VOC content; having the following typical physical properties:
 - (a) Basis of design: Henry® Aquatac™ Primer
 - (b) Color: Aqua
 - (c) Maximum VOC: 50 g/L
 - (d) Drying time (initial set): 30 minutes
 - (e) Low Application Temperature: 25 degrees F (-4 degrees C)

PART 3 EXECUTION

3.01 EXAMINATION

- A Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.03 INSTALLATION

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- A Install materials in accordance with manufacturer's instructions.
- B ~~Water Resistive Barriers:—Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.~~
- C ~~Mechanically Fastened Sheets—On Exterior:~~
 - 1. ~~Install sheets shingle fashion to shed water, with seams generally horizontal.~~
 - 2. ~~Overlap seams as recommended by manufacturer but at least 6 inches.~~
 - 3. ~~Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.~~
 - 4. ~~Install water resistive barrier over jamb flashings.~~
 - 5. ~~Install head flashings under weather barrier.~~
 - 6. ~~At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing.~~
- D Self-Adhered Sheets:
 - 1. Prepare substrate in manner recommended by sheet manufacturer; fill and tape joints in substrate and between dissimilar materials.
 - 2. Lap sheets shingle-fashion to shed water and seal laps air tight.
 - 3. Once sheets are in place, press firmly into substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
 - 4. Use same material, or other material approved by sheet manufacturer for the purpose, to seal to adjacent construction and as flashing.
 - 5. At wide joints, provide extra flexible membrane allowing joint movement.
- E Openings and Penetrations in Exterior Weather Barriers:
 - 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
 - 2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
 - 3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches wide, covering entire depth of framing.
 - 4. At head of openings, install flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
 - 5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
 - 6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 FIELD QUALITY CONTROL

- A See Section 01 4000 - Quality Requirements, for additional requirements.
~~Coordination of ABAA Tests and Inspections:~~
 - 1. ~~Provide testing and inspection required by ABAA QAP.~~
 - 2. ~~Notify ABAA in writing of schedule for air barrier work, and allow adequate time for testing and inspection.~~
 - 3. ~~Cooperate with ABAA testing agency.~~
 - 4. ~~Allow access to air barrier work areas and staging.~~
 - 5. ~~Do not cover air barrier work until tested, inspected, and accepted.~~

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B Do not cover installed weather barriers until required inspections have been completed.

3.05 PROTECTION

A Do not leave materials exposed to weather longer than recommended by manufacturer.

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END OF SECTION

**SECTION 08 8000
GLAZING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A Insulating glass units.
- B Glazing sealants and accessories.
- C Glazing compounds.

1.02 RELATED REQUIREMENTS

- A Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.

1.03 REFERENCE STANDARDS

- A 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
- B ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
- C ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).
- D ASTM C1036 - Standard Specification for Flat Glass; 2021.
- E ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.
- F ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- G ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.
- H ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- I GANA (GM) - GANA Glazing Manual; 2008.
- J GANA (SM) - GANA Sealant Manual; 2008.
- K GANA (LGRM) - Laminated Glazing Reference Manual; 2009.
- L IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).
- M NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2017.
- N NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014, with Errata (2017).
- O NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

- A Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

- A See Section 01 3000 - Administrative Requirements for submittal procedures.
- B Product Data on each type of glass. Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
- D Samples: Submit two samples 12 by 12 inch in size of glass units.
- E Samples: Submit manufacturer's range of colors for glazing sealant,
- F Certificate: Certify that products of this section meet or exceed specified requirements.

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- G Manufacturer's qualification statement.
- H Installer's qualification statement.
- I Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- J Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Insulating Glass Units: One of each glass size and each glass type.

1.06 QUALITY ASSURANCE

- A Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.
- B Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
 - 1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
 - a. Insulating Glass Certification Council (IGCC).
 - b. Safety Glazing Certification Council (SGCC).
- C Installer Qualifications: Company specializing in performing work of the type specified and with at least ten years documented experience.
 - 1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
 - a. North American Contractor Certification (NACC) for glazing contractors.
 - b. Equivalent independent third-party ANSI accredited certification.

1.07 FIELD CONDITIONS

- A Do not install glazing when ambient temperature is less than 40 degrees F.
- B Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

- A See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer recommendations. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 - 1. Warranty Period: 10 years from date of Substantial Completion.
- C Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer recommendations. Defects include peeling, cracking, and other indications of deterioration in coating.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A Glass Fabricators:
 - 1. Pilkington North America
 - 2. PPG Industries, Inc.
 - 3. Vitro Architectural Glass
 - 4. Viracon, Inc

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
 - 1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 - 2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 - 3. Glass thicknesses listed are minimum.
- B Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
- C Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
 - 1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 - 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 - 3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

- A Laminated Glass: Float glass laminated in accordance with ASTM C1172.
 - 1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class A or 16 CFR 1201 - Category I impact test requirements.
 - 2. Polyvinyl Butyral (PVB) Interlayer: Provide thickness not less than that indicated and as needed to comply with requirements.

2.04 INSULATING GLASS UNITS

- A Insulating Glass Units:
 - 1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 - 2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
 - 3. Spacer Color: Black.
 - 4. Edge Seal:
 - a. Color: Black.
 - 5. Purge interpane space with dry air, hermetically sealed.
- B Type A - Insulating Glass Units: Vision glass, double glazed.
 - 1. Basis of Design: Viracon 1-5/16" insulating laminated ~~VE1-2M-FT/HS/HS~~VE3-2M.
 - 2. Applications: Exterior glazing unless otherwise indicated.
 - 3. Space between lites filled with argon.

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4. Basis of Design Makeup:
 - a. 1 5/16" (1.27 avg.) VE3-2M Insulating Laminated Glass
 - b. 1/4" Gray VE-2M #2
 - c. 1/2" Airspace - Argon - Metal edge spacer with black silicone
 - d. 1/4" Clear
 - e. .060" clear PVB
 - f. 1/4" clear RoomSide Low-E #6
~~Outboard Lite: FT Heat Soak w/ VE-2M #2, 1/4 inch thick, minimum.~~
 - g. ~~Tint: ClearGray~~
 - h. ~~Coating: Low-E (passive type), on #2 surface.~~
5. ~~Metal edge spacer. 1/2" VTS Argon Spacer~~
 - a. ~~Silicone: Black~~
~~Inboard Lite Ply 1: Heat-strengthened, 1/4 inch thick, minimum.~~
 - b. ~~Tint: Clear~~
6. ~~Interlayer: .060" Clear PVB~~
7. ~~Inboard Lite Ply 2: Heat-strengthened, 1/4 inch thick, minimum.~~
 - a. ~~Tint: Clear~~
 - b. ~~Coating: RoomSide Low-e, on #6 surface.~~
8. Thermal Transmittance (U-Value), _____, nominal.
 - a. Summer U-value: 0.17
 - b. Winter U-value: 0.20
9. Visible Light Transmittance (VLT): ~~58~~33 percent, nominal.
10. Shading Coefficient: ~~0.38~~0.25, nominal.
11. Solar Heat Gain Coefficient (SHGC): ~~0.33~~0.22, nominal.
12. Visible Light Reflectance, Outside: ~~15~~6 percent, nominal.
13. Light to Solar Gain Ratio: 1.~~76~~50
14. Glazing Method: Dry glazing method, gasket glazing.

2.05 GLAZING COMPOUNDS

- A Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
- C Color of Exposed Glazing Sealants: Standard color selected by Architect from manufacturer's full range.

2.06 ACCESSORIES

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

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- C Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
 - 1. Width: As required for application.
 - 2. Thickness: As required for application.
 - 3. Spacer Rod Diameter: As required for application.
- D Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.
- E Glazing Clips: Manufacturer's standard type.

2.07 SOURCE QUALITY CONTROL

- A See Section 01 4000 - Quality Requirements for additional requirements.
- B Provide shop inspection and testing for glass.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B Verify that the minimum required face and edge clearances are being provided.
- C Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- D Verify that sealing between joints of glass framing members has been completed effectively.
- E Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

- A Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

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- B Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 FIELD QUALITY CONTROL

- A See Section 01 4000 - Quality Requirements for additional requirements.
- B Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- C Monitor and report installation procedures and unacceptable conditions.

3.06 CLEANING

- A See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- C Remove nonpermanent labels immediately after glazing installation is complete.
- D Clean glass and adjacent surfaces after sealants are fully cured.
- E Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.07 PROTECTION

- A After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

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