

(Specifier Note: The purpose of this guide specification is to assist the Specifier in correctly specifying Thermally Broken Bi-Folding Door Systems, and their installation. Panda Windows and Doors products are custom made with multiple options available. The most common options are addressed within this specification, but are not limited to those listed. The Specifier needs to edit these guide specifications to fit the needs of each specific project. Contact a Panda Windows and Doors representative to assist in appropriate product selections.

Throughout the guide specification, there are Specifier Notes to assist in the editing of the file. Brackets []; “AND/OR”; and “OR” have been used to indicate when a selection is required, in most cases the first option is the standard feature. References have been made within the text of the specification to current MasterFormat Section numbers and titles. The Specifier needs to coordinate these numbers and titles with sections included for the specific project.)

SECTION 08 32 76
SLIDING ALUMINUM-FRAMED GLASS BI-FOLD DOORS
Panda Windows and Doors, Thermally Broken Bi-Folding Door Systems

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Sliding aluminum-framed, thermally broken, glass bi-fold doors.

1.2 REFERENCES

- A. American Architectural Manufacturer Association (AAMA)
 - 1. AAMA 1503; Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections
- B. American National Standards Institute (ANSI)
 - 1. ANSI Z97.1; Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test
- C. ASTM International
 - 1. ASTM E 1423; Standard Practice for Determining Steady State Thermal Transmittance of Fenestration Systems
 - 2. ASTM E 2190; Standard Specification for Insulating Glass Unit Performance and Evaluation
- D. Consumer Product Safety Commission (CPSC)
 - 1. CPSC 16 CFR 1201; Safety Standard for Architectural Glazing Materials

- E. Glass Association of North America (GANA)
 - 1. Glazing Manual
- F. National Fenestration Rating Council (NFRC)
 - 1. NFRC 100; Procedure for Determining Fenestration Product U-Factors
 - 2. NFRC 200; Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence
 - 3. NFRC 500; Procedure for Determining Fenestration Product Condensation Resistance Values
- G. Safety Glazing Certification Council (SGCC)

1.3 ACTION SUBMITTALS

(Specifier Note: DELETE Submittal Procedures paragraph when not required. Coordinate requirements with Section 01 33 00 – Submittal Procedures.)

- A. Refer to Section [01 33 00 Submittal Procedures] [Insert section number and title].
- B. Product Data: Submit sliding aluminum-framed glass bi-fold door manufacturer’s current product literature, including installation instructions.
- C. Shop Drawings: Submit detailed plans, elevations, and sections. Show hardware, accessories, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

(Specifier Note: DELETE samples paragraph below unless custom colors or glass types are project specific.)

- D. Samples: Provide finish samples for each exposed aluminum finish[and glass type].
 - 1. Size: [2 by 4 inches] [Insert size].
- E. Delegated-Design Submittal: For sliding aluminum-framed glass bi-fold doors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 CLOSEOUT SUBMITTALS

(Specifier Note: DELETE Closeout Submittals paragraph when not required. Coordinate requirements with Section 01 78 00 – Closeout Submittals.)

- A. Refer to Section [01 78 00 Closeout Submittals] [Insert section number and title].
- B. Maintenance data.
- C. Warranty documentation.

1.5 QUALITY ASSURANCE

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and with GANA's "Glazing Manual".
- B. Safety Glazing Labeling: Comply with testing requirements in CPSC 16 CFR 1201. Permanently mark glazing with certification label of [the SGCC] [the SGCC or another certification agency acceptable to authorities having jurisdiction] [or] [the manufacturer]. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

1.6 DELIVERY, STORAGE AND HANDLING

(Specifier Note: DELETE Product Requirement paragraph when not required. Coordinate requirements with Section 01 60 00 – Product Requirements.)

- A. Refer to Section [01 60 00 Product Requirements] [Insert section number and title].
- B. Deliver sliding aluminum-framed glass bi-fold door materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Store sliding aluminum-framed glass bi-fold doors as recommended by manufacturer.

1.7 WARRANTY

(Specifier Note: DELETE Warranties paragraph when not required. Coordinate requirements with Section 01 78 36 – Warranties.)

- A. Refer to Section [01 78 36 Warranties] [Insert section number and title].
- B. Manufacturer's Material Warranty: Manufacturer's limited warranty in which manufacturer agrees to provide materials to repair or replace defective parts or components, including finish, of sliding aluminum-framed glass bi-fold doors that fail within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection.
 - c. Water leakage or air infiltration.
 - d. Faulty operation of movable panels and hardware.
 - e. Deterioration of metals and finishes beyond normal weathering.
 - f. Deterioration of insulating glass.
 - 2. Warranty Period: 10 years from date of Substantial Completion.

- C. Manufacturer's Service Warranty: Manufacturer's limited warranty in which manufacturer agrees to provide service to repair or replace defective parts or components of sliding aluminum-framed glass bi-fold doors within specified warranty period.

- 1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

(Specifier Note: Product Information is proprietary to Panda Windows and Doors. If additional products are required for competitive procurement, contact Panda Windows and Doors for assistance.)

- A. Manufacturer: Panda Windows and Doors; 3415 Bellington Rd.; N. Las Vegas, NV 89030; Phone 702.643.5700, fax 702.643.5715; website www.panda-windows.com

- 1. Basis-of-Design: Thermally Broken Bi-Folding Door Systems.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design sliding aluminum-framed glass bi-fold doors, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Thermal Movement: Allow for thermal movement of materials based on [120 deg F] [Insert temperature] ambient and surface temperature of [180 deg F] [Insert temperature].

2.3 SLIDING ALUMINUM-FRAMED GLASS BI-FOLD DOORS <Insert drawing designation>

(Specifier Note: Condensation resistance can be evaluated per AAMA 1503 or NFRC 500. Verify project requirements with authorities having jurisdiction. Typical values range between 45 and 75. SELECT "45" when the outdoor design temperature is below 0 deg F at 25 percent relative humidity. Northern climates with lower winter outdoor design temperatures require higher values. COORDINATE with HVAC design.)

- A. Condensation Resistance: Provide sliding aluminum-framed glass bi-fold doors with a [Condensation Resistance Factor (CRF) when tested according to AAMA 1503] [Condensation Resistance (CR) determined according to NFRC 500] of not less than [45] [Insert value].
- B. Energy Performance: Provide sliding aluminum-framed glass bi-fold doors capable of complying with the following total sliding door ratings:

(Specifier Note: Thermal transmittance can be evaluated per AAMA 1503, ASTM E1423 or NFRC 100. Verify project requirements with authorities having jurisdiction. SELECT appropriate U-Factor for project zone within the United States, or insert value. Use 0.35 for northern zones, 0.40 for north and south-central zones, or 0.65 for southern zones. COORDINATE with SHGC.)

1. Thermal Transmittance (U-Factor): [0.35] [0.40] [0.65] [Insert value] Btu/sq. ft. x h x deg F in accordance with [AAMA 1503] [ASTM E 1423] [NFRC 100].

(Specifier Note: SELECT appropriate SHGC for project zone within the United States, or insert value. Use 0.40 for south-central and southern zones, or 0.55 for north-central zones. COORDINATE with U-Factor.)

2. Solar Heat Gain Coefficient (SHGC): [0.40] [0.55] [Insert value] in accordance with NFRC 200.

(Specifier Note: S.60 sliding aluminum-framed glass bi-fold doors consist of in-swinging or out-swinging operable panels. Most common configurations are listed below. Insert other configurations if needed.)

- C. Configuration: [Straight] [Corner] [in-swing] [out-swing] configuration with [center split] [left stack] [right stack] with [1] [2] [3] [4] [5] [6] [7] [8] panels.

(Specifier Note: Panels can be grouped to extend any opening width, but maximum panel width is limited to 42 inches. Maximum panel height is 120 inches.)

1. Panel Height: [Insert height] feet.
2. Panel Weight: 6 to 8 lbs per sq. ft.

- D. Door Construction: Non-thermal aluminum extrusions, manufactured from 6063-T5, with mitered corners, attached with aluminum corner gussets.

- E. Frame Construction: 1/8 inch thick, aluminum extrusions manufactured from 6063-T5, thermally broken by a 15/16" polyamide bar.

(Specifier Note: SELECT one of three tracks below. Panda Windows and Doors recommends the use of the top hung/bottom guided track for best resistance to weather infiltration; however, it is not ADA compliant. Contact a Panda Windows and Doors representative for track selection assistance when top hung/bottom guided track does not meet project requirements. DELETE tracks not project specific.)

- F. Track

1. Top Hung/Bottom Guided: 2-13/16 inch high aluminum top track and 2-1/2 inch high surface mounted aluminum bottom track.
2. Top Guided/Bottom Running: 2-1/2 inch high aluminum top track and 2-13/16 inch high surface mounted aluminum bottom track.
3. Top Hung/Recessed Bottom Guided: 2-13/16 inch high aluminum top track and 1-3/8 inch high stainless steel, ADA compliant, recessed bottom track with 3/8 inch exposure.

G. Hardware:

1. Hinges: Recessed into stiles, and positioned in special housing not to disrupt the magnetic gaskets.

(Specifier Note: SELECT corrosion resistant treatment option for coastal regions.)

2. Wheel Carriage: Synthetic nylon covered wheels with encased stainless steel ball bearings and double sliding rollers,[with corrosion resistant treatment,] capable of supporting up to 130 lbs.
3. Handles: Manufacturer's standard-shaped handles with ergonomic grip on inside and out, and a lock set with profile cylinder. Operation of lock set is by turn of key from outside and thumbturn from inside, with three point locking hardware operated by 180 deg turn of handle.
 - a. Finish: [Satin, stainless steel, No. 4 finish] [Polished stainless steel, No. 8 finish] [Oil Rubbed Bronze] [Custom Powder Coat]

(Specifier Note: Kick Plates and other accessories are optional custom features. DELETE if not project specific.)

4. Kick Plate: [10-inch high, aluminum] [Insert description].
5. [Insert accessories].

H. Weather stripping: Provide EPDM gasket and dense felt brushes around entire system to create a totally closed, weather tight seal.

(Specifier Note: SELECT stainless steel option in paragraph below for coastal regions or projects where excessive corrosion is a concern.)

- I. Fasteners: Manufacturer's standard, [stainless steel] noncorrosive fasteners, compatible with sliding door members and other components.
 1. Exposed Fasteners: Avoid exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.
- J. Glazing: Glass to comply with safety glazing requirements of ANSI Z97.1 and CPSC 16CFR 1201, and insulating-glass unit requirements of ASTM E 2190.

(Specifier Note: Panda sliding aluminum-framed glass bi-fold doors come standard with low-e-coated, clear insulating glass. Other glass options between 1/4 inch and 1-1/8 inch thick are available upon request. SELECT paragraph below, or insert custom glass description.)

1. Low-e-coated, Clear Insulating Glass Units
 - a. Overall Unit Thickness: 1 inch.
 - b. Thickness of Each Glass Lite: 5.0 mm.
 - c. Outdoor Lite: Fully tempered float glass.
 - d. Interspace Content: Air.

- e. Indoor Lite: Fully tempered float glass.
- f. Low-E Coating: Pyrolytic or sputtered on second surface.
- g. Visible Light Transmittance: 73.6 percent minimum.
- h. Winter Nighttime U-Factor: 0.35 maximum.
- i. Summer Daytime U-Factor: 0.35 maximum.
- j. Solar Heat Gain Coefficient: 0.62 maximum.
- k. Provide safety glazing labeling.

2. [Insert custom glass description]

- K. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.

2.4 FABRICATION

- A. Fabricate aluminum components before finishing.
- B. Fabricate sliding aluminum-framed glass bi-fold doors for openings indicated.
- C. Glaze sliding aluminum-framed glass bi-fold door panels in the factory.
- D. Complete assembly, finishing, and hardware application to greatest extent possible.

2.5 ALUMINUM FINISHES

(Specifier Note: Sliding aluminum-framed glass bi-fold doors manufactured by Panda Windows and Doors are custom products available in a variety of finishes. DELETE finish paragraphs below that are not project specific. Baked-enamel finish is standard. Others may require longer lead times.)

- A. Clear Anodic Finish: Manufacturer's standard, Class II, 0.010 mm or thicker.
- B. Color Anodic Finish: Manufacturer's standard, Class II, 0.010 mm or thicker.
 - 1. Color: [Light bronze] [Medium bronze] [Dark bronze] [Black] [Insert color].
- C. Baked-Enamel Finish: Manufacturer's standard thermoset polyurethane enamel primer/topcoat system.
 - 1. Color and Gloss: [Match Architect's sample] [Insert color].
- D. High-Performance Organic Finish (Two-Coat Fluoropolymer): Manufacturer's standard thermocured system consisting of inhibitive primer and fluoropolymer color topcoat.
 - 1. Color and Gloss: [Match Architect's sample] [Insert color].

- E. High-Performance Organic Finish ([Three] [Four]-Coat Fluoropolymer): Manufacturer's standard thermocured system consisting of inhibitive primer, fluoropolymer color coat, and clear fluoropolymer topcoat(s).

- 1. Color and Gloss: [Match Architect's sample] [Insert color].

2.6 CONSTRUCTION ACCESSORIES

(Specifier Note: Construction accessories compatible with sliding aluminum-framed glass bi-fold doors and required for installation may be specified in this section or in related sections. COORDINATE with related sections. Do not duplicate information.)

- A. Flashing: Refer to Section [04 20 00 Unit Masonry] [07 60 00 Flashing and Sheet Metal] [Insert section number and title].
- B. Sealants: Refer to Section [07 92 00 Joint Sealants] [Insert section number and title].
- C. Shims: Provide manufacturer recommended plastic precision shims.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install sliding aluminum-framed glass bi-fold doors in accordance with manufacturer's installation guidelines and recommendations.
- B. Install sliding aluminum-framed glass bi-fold doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.
- C. Install sliding aluminum-framed glass bi-fold doors and components to drain condensation, water penetrating joints, and moisture migrating within doors to the exterior.
- D. Protect aluminum against corrosion or electrolytic action where in contact with dissimilar metals or other materials.

3.2 EXAMINATION

- A. Inspect sliding aluminum-framed glass bi-fold doors prior to installation.
- B. Inspect rough opening for compliance with sliding aluminum-framed glass bi-fold door manufacturer recommendations.
 - 1. Verify rough opening conditions are within recommended tolerances.
 - 2. Verify exterior opening is properly flashed and waterproofed.

3.3 INSTALLATION

- A. Install bottom track: Verify required track placement[and depth].

(Specifier Note: Sliding aluminum-framed glass bi-fold door tracks can be surface mounted or recessed with the finish floor built up to the sill. SELECT one of two track installations below. DELETE installation that is not project specific.)

1. Install bottom track recessed on subfloor.
 - a. Verify required track placement and depth provided by manufacturer.
 - b. Pre-drill anchoring holes into slab depression.
 - c. Insert drop-in anchors.
 - d. Place bottom track onto recommended fasteners.
 - e. Adjust fasteners to level and secure track at correct height.
 - f. Remove excess thread on fasteners.

OR

2. Install bottom track surface mounted on subfloor.
 - a. Verify required track placement provided by manufacturer.
 - b. Snap chalk line from inside of side frames for guide.
 - c. Align bottom track in opening so it is parallel to chalk line.
 - d. Insert shims under track to level.
 - e. Verify levelness at multiple points.
 - f. Pre-drill holes into subfloor.
 - g. Set track members in bed of sealant or with gaskets, as indicated, to provide weather tight construction.
 - h. Secure bottom track to subfloor with manufacturer recommended fasteners.

- B. Install side frames.

1. Insert shims to level.
2. Secure side frame into framing with screws.

- C. Install header track.

1. Place header track on top of side frames, and align with bottom track.
2. Insert shims to level. Maintain equal distance between tracks.
3. Secure header to rough framing with screws through predrilled holes.

- D. Insert sliding doors into track opening.

1. Install sliding door end panels and secure hinge to frame.
2. Install remaining panels in correct order. Secure each panel to previous panel as it is installed.

3. Inspect sliding door for square, level and plumb.
4. Lubricate hardware and moving parts.
5. Adjust sliding door for smooth operation and proper latching.

3.4 CLEANING

- A. Clean sliding aluminum-framed glass bi-fold doors after installation in accordance with manufacturer's recommendations.
 1. Remove adhesive film within 72 hours of installation.

3.5 PROTECTION

- A. Protect installed sliding aluminum-framed glass bi-fold doors from damage.
- B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- C. Refinish or replace sliding aluminum-framed glass bi-fold doors with damaged finishes.

END OF SECTION