

SECTION 10 22 39
FOLDING GLASS PARTITIONS
SECTION 10 22 43
SLIDING GLASS PARTITIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes furnishing and installing a sliding-folding structurally glazed thermally broken aluminum-framed glass door-wall system that includes:
1. Aluminum frame
 2. Threshold
 3. Panels
 4. Sliding-folding and locking hardware
 5. Sound gasketing
 6. Glass and glazing
 7. Accessories as required for a complete working installation
- B. Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to, the following:
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, Specification Sections, apply to this Section
 2. Section 06 10 00, Rough Carpentry: Wood framing R.O. and blocking
 3. Section 06 20 00, Finish Carpentry
 4. Section 07 90 00, Joint Protection
 5. Section 08 42 23, Glass Entrance Swing Doors
 6. Section 08 43 33, Folding Glass Storefronts: NanaWall SL82
 7. Section 09 22 16, Non-Structural Metal Framing: Metal framing R.O. and reinforcement

1.02 REFERENCES

- A. Reference Standards in accordance with Division 01 and current editions from the following:
1. AAMA. American Architectural Manufacturers Association; www.aamanet.org
 - a. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum
 - b. AAMA 1304, Voluntary Specifications for Forced Entry Resistance of Side-Hinged Door Systems
 - c. AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
 - d. AAMA/WDMA/CSA 101/I.S.2/A440, NAFS, North American Fenestration Standard - Specification for Windows, Doors and Skylights
 2. ANSI. American National Standards Institute; www.ansi.org

- a. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings
3. ASTM. ASTM International; www.astm.org
 - a. ASTM C1036, Standard Specification for Flat Glass
 - b. ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
 - c. ASTM E413, Classification for Rating Sound Insulation
 - d. ASTM E1332, Standard Classification for Rating Outdoor-Indoor Sound Attenuation
 - e. ASTM F842, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact
4. Construction Products Directive (CPD), a legal mandate of the European Commission; http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/construction-products/index_en.htm
 - a. CE Mark; http://ec.europa.eu/growth/single-market/ce-marking/index_en.htm
5. CPSC. Consumer Product Safety Commission; www.cpsc.gov
 - a. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials
6. CSA Group (Canadian Standards Association); www.csagroup.org/global/en/home
 - a. CSA A440S1 - The Canadian supplement to North American (NAFS) standards
7. DIN. "Deutsches Institut für Normung" (German institute for standardization); www.en-standard.eu/din-standards
 - a. DIN EN 1191, Windows and doors - Resistance to repeated opening and closing - Test method; German version EN 1191:2000
 - b. DIN EN ISO 9001: 2015 quality management system registration
 - c. DIN EN ISO 10077, Thermal Performance of Windows, Doors and Shutters
 - d. DIN EN ISO 12400: Windows and pedestrian doors - Mechanical durability - Requirements and classification
 - e. DIN EN ISO 14001, 2015 environmental management system registration
8. CSN EN Standards - Construction Materials and Building (European Standards); www.en-standard.eu/din-standards
 - a. CSN EN 1191/12400, Windows and Pedestrian Doors - Mechanical Durability

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate Folding Glass Partition system and framing R.O.
- B. Preinstallation Meetings: See Section 01 30 00.

1.04 SUBMITTALS

- A. For Contractor submittal procedures see Section 01 30 00.
- B. Product Data: Submit manufacturer's printed product literature for each Folding Glass Partition system to be incorporated into the Work. Show performance test results and details of construction relative to materials, dimensions of individual components, profiles and colors.
- C. Product Drawings: Indicate Folding Glass Partition system component sizes, dimensions and framing R.O., configuration, swing panels, direction of swing, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, handle height and field measurements.
- D. Certificates: Submit CE Mark Certificate.
- E. Installation, Operation, and Maintenance Data: Submit Owner's Manual from manufacturer. Identify with project name, location, and completion date, and type and size of unit installed.

NOTE: Delete the following Article if LEED is not applicable; edit to meet project LEED requirements.

- F. Sustainable Design Submittals (USGBC [LEED®](#)): Refer to Section 01 81 15, LEED Design Requirements.
1. **LEED 2009** (v3) Credits. Complete online LEED forms and submit other required materials as follows:
 - a. Materials and Resources (MR) Credits:
 - 1). MR Credit 1.1 (MRc1.1): Building Reuse - Maintain Existing Exterior Walls, Floors and Roof
 - 2). MR Credit 1.2 (MRc1.2): Building Reuse - Maintain Existing Interior Nonstructural Elements
 - 3). MR Credit 2 (MRc2): Construction Waste Management

NOTE: MR Credit 3 below can apply to reusing salvaged Folding Glass Partition.

- 4). MR Credit 3: Materials Reuse - 5% (MRc3.1) or 10% (MRc3.2)
 - a). Submit percentage of products made from plant materials with a less than 10-year harvest cycle against the total value of building materials on the project.
- b. Indoor Environmental Quality (EQ) Credits:
 - 1). IEQ Credit 2 (IEQc2): Increased Ventilation - Case 2 - Naturally Ventilated Spaces
 - 2). IEQ Credit 8.1 (IEQc8.1): Daylight & Views - Daylight 75% of Spaces
 - 3). IEQ Credit 8.2 (IEQc8.2): Daylight & Views - Views for 90% of Spaces
 - 4). IEQ Credit 9 (LEED for Schools - IEQc9): Enhanced Acoustical Performance
2. **LEED v4 for Interior Design and Construction** (ID&C) Credits. Complete online LEED forms and submit other required materials as follows:
 - a. Energy and Atmosphere (EA) Credits:
 - 1). EA Credit 2 (EAc2): Optimize Energy Performance
 - b. Materials and Resources (MR) Credits:

NOTE: MR Credit 1 below can apply to reusing salvaged Folding Glass Partition.

- 1). MR Credit 1 (MRc1): Building Life-Cycle Impact Reduction; Option 3 - Building and Material Reuse
 - c. Indoor Environmental Quality (EQ) Credits:
 - 1). EQ Credit 7 (EQc7): Daylight
 - 2). EQ Credit 8 (EQc8): Quality Views
 - 3). EQ Credit 9 (EQc9): Acoustic Performance
 - a). Submit calculations or measurements for occupant spaces to meet sound transmission class ratings between adjacent spaces and reverberation time requirements within a room.
- G. LEED Closeout Documentation:

NOTE: Edit below to meet project LEED requirements.

1. **LEED 2009** (v3). Submit completed LEED™ submittal Worksheet Templates for the following credits:
 - a. MRc1.1, MRc1.2, MRc2, MRc3, MRc6, IEQc2, IEQc8.1, IEQc8.2, IEQc9
2. **LEED v4** (ID&C). Submit information and documentation to complete LEED™ Worksheet Templates for the following credits:
 - a. EAc2, MRc1, EQc7, EQc8, EQc9

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Folding Glass Partition to be CE Mark certified.

NOTE: The CE mark serves as verification that the product conforms with the essential requirements of the Construction Products Directive (CPD), a legal mandate of the European Commission. CE certified windows and doors provide building professionals with a uniform set of technical standards to evaluate and specify product performance with added assurance that NanaWall products are safe and fit for purpose.

- B. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years' experience in the sale of folding-sliding door systems for large openings in the North American market.
1. Manufacturer to have ISO 9001: 2015 quality management system registration.
 2. Manufacturer to have ISO 14001: 2015 environmental management system registration.
- C. Installer Qualifications: Installer experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.
1. Installer to be trained and certified by manufacturer.
- D. Single Source Responsibility: Furnish Folding Glass Partition system materials from one manufacturer for entire Project.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's instructions and recommendations, Section 01 60 00 requirements, and as follows:
1. Deliver materials to job site in sealed, unopened cartons or crates.
 - a. Upon receipt, inspect the shipment to ensure it is complete, in good condition and meets project requirements.
 2. Store material under cover in a clean and dry location, protecting units against weather and defacement or damage from construction activities, especially to the edges of panels.

1.07 FIELD CONDITIONS

- A. Field Measurements: Contractor to field verify dimensions of rough openings (R.O.) and threshold depressions to receive sill. Mark field measurements on product drawing submittal.

1.08 WARRANTY

- A. Manufacturer Warranty: Provide Folding Glass Partition system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase, subject to change, against defects in materials and workmanship.
1. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of Substantial Completion:
 - a. Rollers and Glass Insulated Seal Failure: Ten (10) years
 - b. All Other Components Except Screens: Ten (10) years
 - 1). Exception: Five (5) years if NOT installed by manufacturer's specific system approved or certified trained installer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product by Manufacturer: **NanaWall SL82** by **NANA WALL SYSTEMS, INC.** (www.nanawall.com)

NANA WALL SYSTEMS, INC.

100 Meadow Creek Drive, Corte Madera, CA 94925

Toll Free (800) 873-5673

Telephone: (415) 383-3148

Fax: (415) 383-0312

Email: info@nanawall.com

1. Substitution Procedures: See Section 01 20 00; Submit completed and signed:
 - a. Document 00 43 25, Substitution Request Form (During Procurement)
 - b. Document 00 63 25, Substitution Request Form (During Construction)

2.02 PERFORMANCE / DESIGN CRITERIA

NOTE: Choose Flush Sill for Inward Opening Units only.

Forced entry testing results are only applicable for the test unit type of locking. See manufacturer's latest published data regarding performance. Items below are common to all sill types, except as noted.

- | | | |
|----|--|-----------------------|
| A. | Performance Criteria (Lab Tested): | Inward Opening |
| | 1. Forced Entry Resistance (ASTM F842, AMMA 1304, CAWM 300): | Meets Grade 40; +F2 |
| | 2. System - Life Cycle Performance (DIN EN 1191/12400): | 10,000 cycles |
| B. | LEED Characteristics: | |
| | 1. LEED 2009 (v3) | |
| | a. MRc1.2: <i>NanaWall</i> interior glass wall systems, not demolished in a renovation project, are reused in the same location. | |
| | b. MRc2: <i>NanaWall</i> cardboard shipping crates are made of 60% recycled material and are 100% recyclable. | |
| | c. MRc3: <i>NanaWall's</i> components easily disassemble and reassemble to " <i>Use as salvaged... or reused materials.</i> " | |
| | d. IEQc2: <i>NanaWall</i> systems provide natural ventilation in the open position, assisting in the 90% required natural ventilation of occupied spaces of ASHRAE 62.1. | |
| | e. EQc8.1: <i>NanaWall</i> glass wall assembly borrowed light brings daylight deeper into the floor plate. | |
| | f. EQc8.2: <i>NanaWall</i> glass wall assemblies provide direct outdoor lines of sight. | |
| | 2. LEED v4 for Interior Design and Construction (ID&C) | |
| | a. EAc2: <i>NanaWall</i> systems using designed double IGU and thermally/ acoustically broken frames can provide significant energy performance. | |
| | b. MRc1: <i>NanaWall</i> can be easily disassembled for salvage and reuse. | |
| | c. EQc7: <i>NanaWall</i> glass wall assembly borrowed light brings daylight deeper into the floor plate. | |
| | d. EQc8: <i>NanaWall</i> glass wall assemblies provide direct outdoor lines of sight. | |
| C. | Design Criteria: | |
| | 1. Sizes and Configurations: As indicated by the Drawings for selected number and size of panels, location of swing panels, and direction of stacking. | |
| | 2. Unit Operation: Inswing type; adjustable sliding and folding hardware with top and bottom tracks. | |
| | 3. Panel Configuration: | Straight |
| | 4. Stack Storage Configuration: | Inward stacking |

5. Mounting Type: Floor track supported with upper guide track.
6. Panel Type: Hinged
- a. Primary swing panel of paired swing panels, looking from inside, to be on the [**left**] [**right**].
- b. [Entry/Egress panel hinged to side jamb.]
7. Panel Pairing Configuration: See drawings.

NOTE: Sizes and Configurations: <http://www.nanawall.com/products/sl82/options>
 See manufacturer drawings for selected custom dimensions within maximum frame sizes possible as indicated in manufacturer's literature.
 See drawings for selected number of panels and configuration.

2.03 MATERIALS

- A. Thermally Broken Aluminum Framed Folding Glass Partition Description: 3-1/8 inch (80 mm) thick interior frame with a structurally glazed frameless exterior, floor track supported roller system with head guide rails, and designed for inswing opening straight glass walls. Manufacturer's standard thermally broken frame and panel profiles, with floor and head tracks, side jambs and panels with dimensions as shown on Drawings.

1. Panels and Frames:

a. Panels:

- 1). Single lite.
- 2). Panel Size (W x H): As indicated.

NOTE: Maximum panel sizes are 8'-2" high and 3'-3" wide and with a 2'-7" minimum width.

- 3). Rail Depth: 3-1/4 inch (83 mm)
- 4). Head Rail Width: 2-3/4 inch (70 mm)
- 5). Bottom Rail Width: 2-3/4 inch (70 mm)

b. Frame:

- 1). Matching top track and side jambs:
- a). Top Track Width 3-13/16 inch (97 mm)
- b). Side Jambs Width: 3-13/16 inch (97 mm)
- c). Top Track and Side Jambs Depth: 3-7/16 inch (87 mm)

NOTE: Select from the following Sill types, edit to suit and delete those not meeting project requirements.

2. Sill Type:

- a. [Low profile saddle sill]
- b. [Flush sill]
- c. Finish: Aluminum with
- 1). [a clear anodized finish.]
- 2). [a dark bronze anodized finish.]
- d. For ADA Compliance: Provide gasket to cover the channel in the sill at swing doors.

3. Aluminum Extrusion: AlMgSi0.5 alloy, 6063-T5 (F-22 – European standard)

- a. Thickness: 0.078 inch (2.0 mm) nominal
- b. Acoustic Break: 3/4 to 15/16 inch (20 to 24 mm) wide polyamide plastic reinforced with glass fibers. Thinner or poured and de-bridged type acoustic breaks not acceptable.

4. Panel and Frame Aluminum Finish:

- a. Inside and Outside: Same (one-color)

NOTE: Select finish type below, edit to requirements and delete items not used.

- b. Anodized (AAMA 611):
 - 1). [Clear]
 - 2). [Dark Bronze]
- c. Powder Coat (AAMA 2604):
 - 1). Color as chosen from manufacturer's powder coating finish chart from
 - a). [Manufacturer's standard selection of 50 colors - matte.]
 - b). [Manufacturer's full RAL selection.]
 - i. [High Gloss]
 - ii. [Matte]
 - c). [Custom finish.]

B. Glass and Glazing:

- 1. Safety Glazing: In compliance with ASTM C1036, ASTM C1048, ANSI Z97.1 and CPSC 16CFR 1201.
 - a. Glass Acoustical Performance (ASTM E413 and ASTM E1332): STC
- 2. Manufacturer's [**tempered**] [**and**] [**laminated**] glass lites in double insulated glazing units, dry glazed with glass stops on the inside.

NOTE: Select and edit glass type(s) to meet building code, wind-load design, acoustic, bullet resistant and/or security, and other project requirements with other glass available from manufacturer.
Contact NanaWall for availability of other commercial glass types.

- a. Insulated Glass Unit (IGU) Lites:
 - 1). Double IGU: 1-3/16 inch (30 mm) thick.
- b. IGU Fill:
 - 1). Air filled
- c. Glass Lite Type:
 - 1). Reduced iron

NOTE: Items below are options and may require an upcharge.

- 2). [Low iron]
- 3). [Solar bronze]
- 4). [Solar gray]
- d. Glass Spacers: Manufacturer's standard
 - 1). [gray finish with capillary tubes]
 - 2). [dark bronze finish with capillary tubes]
 - 3). [gray finish without capillary tubes]
 - 4). [dark bronze finish without capillary tubes]
- e. IGU Surface:
 - 1). Clear

C. Locking Hardware and Handles:

NOTE: Select one of the below Main Entry Panel paragraphs WITH or WITHOUT Swing Panels, deleting all others. Edit to suit project requirements.

1. Main Entry Panel(s) for Models WITH a [**Pair of**] Swing Panels: Provide manufacturer's [**Standard lever handles**] or [**Lever handles with return**] on the inside and outside, a lockset with lockable latch, multi-point locking with a dead bolt and rods at the top and bottom on primary panel [**only**].
 - a. Rods to be concealed and not edge mounted.
 - b. After turn of key or thumb-turn, depression of handles withdraws latch.
 - c. Lifting of handles engages rods and turn of key or thumb turn engages deadbolt and operates lock.
 - d. [Secondary Swing Panel: Provide two-point locking with flat handles on inside only for the secondary swing panel.]
 - e. Lever Handle - Finish:
 - 1). Brushed satin stainless steel
 - 2). [Titanium black stainless steel]

NOTE: Handles above are standard; other options below may require an upcharge.
Lever handle with return only available in "Brushed satin stainless steel."

- 3). [Copper-nickel stainless steel antiviral and antimicrobial]
- 4). [Oil rubbed bronze solid brass.]
- 5). [Satin nickel solid brass.]
- 6). [White solid brass.]
- f. Locking:
 - 1). Standard profile cylinder
 - 2). [Adapter for Small Format Interchangeable Core (SFIC) by others]
2. Main Entry Panel: Provide manufacturer's standard flat handle on inside only with concealed two-point locking hardware operated by 180° turn of handle.

NOTE: With the option above, the main entry panel is operable from inside only and that there is no latch.
Other compatible lever, L-shaped and push-pull handle styles and finishes are available from other suppliers.
Copper-nickel finish handle may require an upcharge.

- a. Push-pull handles in a brushed stainless-steel finish and stainless-steel flat handles in a [**brushed satin finish.**] [**titanium black finish.**] [**copper-nickel finish.**]
3. Secondary Panels and Pairs of Folding Panels: Provide manufacturer's [**Flat handles**] [**Removable custodial handles**] and concealed two-point locking hardware operated by 180° turn of handle between each pair. Face applied flush bolt locking NOT acceptable.

NOTE: Flat handles are typical; removable custodial handles are an option that may require an upcharge.

- a. Flat Handle - Finish:
 - 1). Brushed satin stainless steel.
 - 2). [Titanium black stainless steel]

NOTE: Option below may require an upcharge.

- 3). [Copper-nickel stainless steel antiviral and antimicrobial]

4. Handle Height: 41-3/8 inch (105 cm) centered from bottom of panel or as otherwise indicated.
 5. Locking rods with end caps at the top and bottom. Rods to have a stroke of 15/16 inch (24 mm).
 6. Additional profile cylinders to be [**keyed alike.**] [**keyed differently.**]
- D. Sliding-Folding Hardware: Provide manufacturer's standard combination sliding and folding hardware with top and bottom tracks and threshold. All running carriages to be with sealed, self-lubricating, ball bearing multi-rollers. Surface mounted hinges and running carriages NOT acceptable.

NOTE: Weight of panels borne by the bottom of the guide channel in the sill is NOT acceptable.

1. Lower Running Carriage Carrying Capacity: 220 lbs. (100 kgs)
 2. Upper guide carriage and lower running carriage provided with two vertical stainless-steel wheels and two horizontal polyamide wheels.
 3. Vertical wheels to ride on top of stainless-steel guide track covers over the full length of the sill track.
 4. Wheels riding on aluminum surfaces NOT acceptable.
 5. Hinges: [**Clear**] [**Dark bronze**] anodized aluminum with stainless steel security hinge pins and set-screws.
 6. Adjustment: Provide folding/sliding hardware capable of compensation and adjustments without needing to remove panels from tracks, in width, 1/16 inch (1.5 mm) per hinge and in height, 5/64 inch (2 mm) up and down.
- E. Sound Gasketing: Manufacturer's double layer EPDM between panels and EPDM gasket, Q-Ion gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame.

NOTE: The manufacturer's sound gasketing is determined at the factory by the direction of swing, the panel configuration, the type of locking and the type of sill.

- F. Fasteners: Tapered pins or stainless-steel screws for connecting frame components.

2.04 FABRICATION

- A. Folding Glass Wall: Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and sound gasketing.
1. Each unit factory pre-assembled and shipped with complete system components and installation instructions.
 2. Exposed work to be carefully matched to produce continuity of line and design with all joints.
 3. No raw edges visible at joints.

2.05 ACCESSORIES

- A. Provide sidelights, transoms, corner posts, or single or double doors as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examination and Acceptance of Conditions per Section 01 70 00 and as follows:
1. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.
 - a. Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square with no unevenness, bowing, or bumps on the floor; and other conditions as required by the manufacturer for readiness to receive Work.

- b. Verify structural integrity of the header for deflection with live and dead loads limited to the lesser of $L/720$ of the span or 1/4 inch (6 mm). Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open.

NOTE: Prior to installing NanaWall, it is recommended that all building dead loads be applied to the header. Allow a reasonable amount of time for the dead load's effect on the header; only then can the building's live load be used to meet the above requirements of $L/720$ or 1/4 inch (6 mm). If this is not done, both dead and live loads need to be considered.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Install Folding Glass Partition system in accordance with the Drawings, approved submittals, manufacturer's recommendations and installation instructions, and as follows:
 1. Properly seal around opening perimeter.
 2. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work.
 3. Install panels, handles, lockset, gasketing and other accessories in accordance with manufacturer's recommendations and instructions.

3.03 FIELD QUALITY CONTROL

- A. Field Tests and Inspections per Section 01 40 00 of the following:
 1. Verify the Folding Glass Partition system operates and functions properly. Adjust hardware for proper operation.
- B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect; see General and Supplementary Conditions, and Division 01, General Requirements.

3.04 CLEANING AND PROTECTION

- A. Keep units closed and protect Folding Glass Partition installation against damage from construction activities.
- B. Remove protective coatings and use manufacturer recommended methods to clean exposed surfaces.

END OF SECTION

DISCLAIMER:

Nana Wall Systems, Inc. takes no responsibility for product selection or application, including, but not limited to, compliance with building codes, safety codes, laws, or fitness for a particular purpose. This guide specification is not intended to be verbatim as a project specification without appropriate modifications for the specific use intended and the particular requirements of a specific construction project.

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