

SECTION 08 43 11

ALUMINUM CLAD WOOD FRAMED FOLDING GLASS STOREFRONT

SECTION 08 35 13

ALUMINUM CLAD WOOD FRAMED FOLDING GLASS DOOR SYSTEM

NOTE: Modify footers to align when using this section name and number.

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes furnishing and installing a sliding-folding aluminum-clad wood framed glass panel system that includes:
1. Aluminum-clad wood frame
 2. Threshold
 3. Panels
 4. Sliding-folding and locking hardware
 5. Spines
 6. Weather stripping
 7. Glass and glazing
 8. Insect screen (optional)
 9. 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 27 00, Air Barriers: Building paper and building wrap
 5. Section 07 62 00, Sheet Metal Flashing and Trim: Flashing gutters, and other sheet metal work
 6. Section 07 90 00, Joint Protection
 7. Section 08 42 23, Glass Entrance Swing Doors
 8. Section 08 51 13, Aluminum Clad Wood Framed Windows: NanaWall WA68, tilt-turn, casement window
 9. Section 09 22 16, Non-Structural Metal Framing: Metal framing R.O. and reinforcement
 10. Section 10 22 40, Aluminum Clad Wood Framed Folding Glass Partitions: NanaWall WA67

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 502, Voluntary Specification for Field Testing of Newly Installed Fenestration Products
 - b. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum
 - c. AAMA 1304, Voluntary Specification for Forced Entry Resistance of Side Hinge Door Systems
 - d. AAMA 2604, Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on the Aluminum Extrusions and Panels
 - e. 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 E283, Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
 - d. ASTM E330, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
 - e. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
 - f. ASTM E413, Classification for Rating Sound Insulation
 - g. ASTM E547, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential
 - h. ASTM E1332, Standard Classification for Rating Outdoor-Indoor Sound Attenuation
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
 - f. CSN DIN EN Standards - Construction Materials and Building (European Standards); www.en-standard.eu/din-standards

8. Energy Star, U.S. Environmental Protection Agency (EPA) Program; www.energystar.gov
9. Florida Building Commission - Product Approval; https://floridabuilding.org/pr/pr_app_srch.aspx
10. NFRC. National Fenestration Rating Council; www.nfrc.org
 - a. NFRC 100, Procedure for Determining Fenestration Product U-factors
 - b. NFRC 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
 - c. NFRC 400, Procedure for Determining Fenestration Product Air Leakage
 - d. NFRC 500, Procedure for Determining Fenestration Product Condensation Resistance Rating Values

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate Folding Glass Door 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 Door 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 Door system component sizes, dimensions and framing R.O., configuration, swing panels, direction of swing and stacking, 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. Energy and Atmosphere (EA) Credits:
 - 1). EA Credit 1 (EA1): Optimize Energy Performance:
 - b. 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 Door.

- 4). MR Credit 3: Materials Reuse - 5% (MRc3.1) or 10% (MRc3.2)
- 5). MR Credit 7 (MRc7): Certified Wood
 - 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.
- c. 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 Building Design and Construction (BD&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 Door.

- 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. EAc1, MRc1.1, MRc1.2, MRc2, MRc3, MRc6, MRc7, IEQc2, IEQc8.1, IEQc8.2, IEQc9
2. **LEED v4 (BD&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 Door 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 Door 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. Condition wood components to average prevailing relative humidity before installation. Do not subject wood components to extreme nor rapid changes in heat or humidity.
 - 3. Do not use forced heat to dry out building.
 - 4. Store flat in a well-ventilated area out of direct sunlight 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 Door 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 Insulated Glass 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 WA67** 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), or
 - b. Document 00 63 25, Substitution Request Form (During Construction)

2.02 PERFORMANCE / DESIGN CRITERIA

NOTE: Select one of the six Performance Criteria paragraphs below for different sill and opening types, deleting paragraphs not chosen. Select the High Weather Performance Raised sill, Low Profile Saddle Sill or Standard Flush Sill, and an Inward or Outward Opening.

NOTE: Edit for weeps. Weeps, when provided, are to be drilled in the field by the installer to manufacturer's requirements.

Air infiltration and water penetration testing results are only applicable if the unit matches the tested panel and unit size, direction of opening and type of sill.

Structural load testing results are only applicable for the test unit size and type of locking and rods.

Comparative analysis charts published by manufacturer shows which panel sizes, if any, meets the structural loading design pressures specifically required for the project. Check for limitations on the use of these charts in the jurisdiction of the project.

Forced entry testing results are only applicable for the test unit type of locking.

Check for requirements in the jurisdiction of the project.

See manufacturer's latest published data regarding performance.

It is expected that the installed system's performance would be not more than 2/3rds of the following certified laboratory test data in accordance with AAMA 502.

- | | | | |
|----|--|---|------|
| A. | Performance Criteria (Lab Tested): | Higher Weather Performance Raised Sill - Inward Opening | |
| | 1. Air Infiltration (ASTM E283): | | +A3 |
| | a. 0.08 cfm/ft ² (0.41 L/s/m ²) at a static air pressure difference of 1.57 psf (75 Pa) | | |
| | b. 0.27 cfm/ft ² (1.38 L/s/m ²) at 6.24 psf (300 Pa) | | |
| | 2. Water Penetration (ASTM E547 and ASTM E331): | | +B4 |
| | a. No uncontrolled water leakage at a static test pressure of 7.5 psf (360 Pa) | | |
| | 3. Structural Load Deflection (ASTM E330): | | Pass |
| | a. Design Pressure - Positive: | 45 psf (2150 Pa) | |
| | b. Design Pressure - Negative: | 70 psf (3330 Pa) | |
| | c. Windload Resistance: | C2; +/- 20.9 psf (+/- 1000 Pa) | |
| B. | Performance Criteria (Lab Tested): | Higher Weather Performance Raised Sill - Outward Opening | |
| | 1. Air Infiltration (ASTM E283): | | +A3 |
| | a. 0.19 cfm/ft ² (0.97 L/s/m ²) at a static air pressure difference of 1.57 psf (75 Pa) | | |
| | b. 0.31 cfm/ft ² (1.59 L/s/m ²) at 6.24 psf (300 Pa) | | |
| | 2. Water Penetration (ASTM E547 and ASTM E331): | | +B4 |
| | a. No uncontrolled water leakage at a static test pressure of 7.5 psf (360 Pa) | | |
| | 3. Structural Load Deflection (ASTM E330): | | Pass |
| | a. Design Pressure - Positive: | 70 psf (3330 Pa) | |
| | b. Design Pressure - Negative: | 45 psf (2150 Pa) | |
| | c. Windload Resistance: | C2; +/- 20.9 psf (+/- 1000 Pa) | |
| C. | Performance Criteria (Lab Tested): | Low Profile Saddle Sill - Inward Opening | |
| | 1. Air Infiltration (ASTM E283): | | +A3 |
| | a. 0.10 cfm/ft ² (0.51 L/s/m ²) at a static air pressure difference of 1.57 psf (75 Pa) | | |
| | b. 0.38 cfm/ft ² (1.95 L/s/m ²) at 6.24 psf (300 Pa) for units with 3/8 inch (9.5 mm) dia. weep holes | | |
| | 2. Water Penetration for Units with 3/8-inch dia. Weep Holes (ASTM E547 and ASTM E331): | | |

- a. No uncontrolled water leakage at a static test pressure of 5.43 psf (260 Pa)
- 3. Structural Load Deflection (ASTM E330): Pass
 - a. Design Pressure - Positive: 35 psf (1880 Pa)
 - b. Design Pressure - Negative: 45 psf (2160 Pa)
 - c. Windload Resistance: C1; +/- 20.9 psf (+/- 1000 Pa)
- D. Performance Criteria (Lab Tested): **Low Profile Saddle Sill - Outward Opening**
 - 1. Air Infiltration (ASTM E283): +A3
 - a. 0.07 cfm/ft² (0.36 L/s/m²) at a static air pressure difference of 1.57 psf (75 Pa)
 - b. 0.28 cfm/ft² (1.43 L/s/m²) at 6.24 psf (300 Pa)
 - 2. Water Penetration for Units with 3/8-inch dia. Weep Holes (ASTM E547 and ASTM E331):
 - a. No uncontrolled water leakage at a static test pressure of 5.43 psf (260 Pa)
 - 3. Structural Load Deflection (ASTM E330): Pass
 - a. Design Pressure - Positive: 45 psf (2160 Pa)
 - b. Design Pressure - Negative: 35 psf (1680 Pa)
 - c. Windload Resistance: C1; +/- 20.9 psf (+/- 1000 Pa)
- E. Performance Criteria (Lab Tested): **Standard Flush Sill - Inward Opening**
 - 1. Air Infiltration (ASTM E283): +A3
 - a. 0.10 cfm/ft² (0.51 L/s/m²) at a static air pressure difference of 1.57 psf (75 Pa)
 - b. 0.38 cfm/ft² (1.95 L/s/m²) at 6.24 psf (300 Pa)
 - 2. Water Penetration for Units with 3/8-inch dia. Weep Holes (ASTM E547 and ASTM E331):
 - a. No uncontrolled water leakage at a static test pressure of 2.92 psf (140 Pa)
 - 3. Structural Load Deflection (ASTM E330): Pass
 - a. Design Pressure - Positive: 35 psf (1880 Pa)
 - b. Design Pressure - Negative: 45 psf (2160 Pa)
 - c. Windload Resistance: C1; +/- 20.9 psf (+/- 1000 Pa)
- F. Performance Criteria (Lab Tested): **Standard Flush Sill - Outward Opening**
 - 1. Air Infiltration (ASTM E283): +A3
 - 2. 0.07 cfm/ft² (0.36 L/s/m²) at a static air pressure difference of 1.57 psf (75 Pa)
 - a. 0.28 cfm/ft² (1.43 L/s/m²) at 6.24 psf (300 Pa)
 - 3. Water Penetration for Units with 3/8 inch dia. Weep Holes (ASTM E547 and ASTM E331):
 - a. No uncontrolled water leakage at a static test pressure of 2.92 psf (140 Pa)
 - 4. Structural Load Deflection (ASTM E330): Pass
 - a. Design Pressure - Positive: 45 psf (2160 Pa)
 - b. Design Pressure - Negative: 35 psf (1680 Pa)
 - c. Windload Resistance: C1; +/- 20.9 psf (+/- 1000 Pa)
- G. Items below are common to all sill types.
 - 1. System - Life Cycle Performance (DIN EN 1191/12400): Pass; 20,000 cycles
 - 2. Folding Glass Door Units tested to AAMA/WDMA/CSA 101/I.S.2/A440.

NOTE: For door units requiring acoustic performance keep the following. Edit to suit project conditions.

- 3. Glass Acoustical Performance (DIN 52210-3,4): Rw (STC)

NOTE: Acoustical system STC ratings below is an engineer-calculated conversion of an European test for the full panel system per ASTM E413 and ASTM E1332.

- a. [System STC (Rw) 37 (37); IGU, air filled, 6 mm laminated glass + 4 mm tempered glass]

NOTE: Retain Florida Product Approval subparagraph below when needed to meet wind loading requirements.

4. Florida Product Approval - Wind Loading (Reinforced Units with panel sizes up to 3'-7" inch (1.10 m) wide x 10'-0" inch (3.05 m) high) subject to manufacturer size chart: FL 26458

NOTE: FL 26458 web-link:
https://www.floridabuilding.org/pr/pr_app_dtl.aspx?param=wGEVXQwtDquOAT9TZVWgsQQQy95xO0zhiGJcsEoY4DUJd5aGAHDPw%3d%3d

5. Forced Entry (AAMA 1304): Meets 300 lb. (1330 N) point load requirement.

NOTE: Retain Burglary Resistance subparagraph below when desired; this additional security option is available for an upcharge.

6. Unit Burglary Resistance: EN 1627-30, Class RC2/ RC2N (Resistance Class 2) certified
7. Thermal Performance (U-factor): NFRC 100 rated, certified, and labeled.
8. Solar Heat Gain Coefficient (SHGC) + Visible Light Transmission (VT): NFRC 200 rated, certified, and labeled.
9. Air Leakage: NFRC 400 rated, certified, and labeled.
10. Condensation Resistance Factor (CRF): NFRC 500 rated, certified, and labeled.

NOTE: The NFRC 100, 200, 400 and 500 ratings of the WA67 Folding Glass Door System meet **Prescriptive Method** requirements for U-factor, SHGC, Air Leakage and CRF of *California Title 24, Chapter 3, Building Envelope Requirements*.

For the listing of Nana Wall product NFRC testing reports go to the following website <http://search.nfrc.org/search/searchdefault.aspx>; click on **Door** (Find Ratings for Door Products); click on the **Search by Manufacturer** button; click **Manufacturers**, scroll down to and click on **Nana Wall Systems, Inc.**, and click on the **Find Products** button.

11. EPA Energy Star: Meets requirements

NOTE: **Energy Star** values for DOORS with > 50% glass can be achieved through the use of specific glass units meeting the following requirements:

Northern & North-Central Region: ≤ 0.30 U-factor 0.40 SHGC

South-Central & Southern Region: ≤ 0.30 U-factor 0.25 SHGC

Energy Star Air Leakage Rating Requirements (ASTM E283 in accordance with NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440-11):

Swinging Door: ≤ 0.5 cfm/ft² (2.56 L/s/m²)

For guidance only as Nana Wall Systems is not a participant of the Energy Star Program

H. LEED Characteristics:

1. LEED 2009 (v3)

- a. EAc1: *NanaWall* systems using low U-Value designed double or triple IGU and thermally broken frames can provide significant energy performance.
- b. MRc1.1: *NanaWall* exterior glass wall systems not demolished and are reused in the same location in a renovation project.
- c. MRc1.2: *NanaWall* interior glass wall systems not demolished and are reused in the same location in a renovation project.

- d. MRc2: *NanaWall* cardboard shipping crates are made of 60% recycled material and are 100% recyclable.
 - e. MRc3: *NanaWall's* components easily disassemble and reassemble to "*Use as salvaged... or reused materials.*"
 - f. MRc7: *NanaWall* system wood doors and doorframes can be FSC-certified.
 - g. IEQc2: *NanaWall* systems provide natural ventilation in the open position, assisting in the 90% required natural ventilation of occupied spaces of ASHRAE 62.1.
 - h. EQc8.1: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.
 - i. EQc8.2: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.
2. **LEED v4 for Building Design and Construction (BD&C)**
- a. EAc2: *NanaWall* systems using low U-Value designed double or triple IGU and thermally broken frames can provide significant energy performance.
 - b. MRc1: *NanaWall* can be easily disassembled for salvage and reuse.
 - c. EQc7: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.
 - d. EQc8: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.
- I. Design Criteria:
- 1. Sizes and Configurations: As indicated by the Drawings for selected number, size of panels and location of swing panels.
 - 2. Unit Operation: Adjustable sliding and folding hardware with top and bottom tracks.
 - 3. Mounting Type: Top-hung
 - 4. Panel Configuration:
 - a. [Straight]
 - b. [90° angle turn/ open corner]
 - c. [Window/ door combination]
 - 5. Stack Storage Configuration:
 - a. [Inswing type]
 - b. [Outswing type]
 - 6. Paired 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/wa67/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. Aluminum-Clad Wood Framed Folding Glass Door Description: 2-5/8 inch (66 mm) thick frame profiles, top-hung system designed for straight runs and open corners. Manufacturer's standard exterior aluminum clad solid triple laminated wood frame and panel profiles, with head and floor track, side jambs and panels with dimensions as shown on Drawings.
 - 1. Panels and Frame:

a. Panels

1). Single lite.

NOTE: Single lite above is standard; other options below may require an upcharge.

2). [Horizontal mullion(s) at height(s) indicated from the bottom of the panel.]

3). [Simulated divided lites in pattern as indicated.]

4). Panel Size (W x H): As indicated.

NOTE: Maximum panel width is 3'-3" (1.0 m) with a maximum panel height of 7'-8" (2.35 m).
Maximum panel height is 9'-10" (3.0 m) with a maximum panel width of 2'-3" (0.7 m). Refer to NanaWall size chart.

E.g. 3'-3" x 7'-8" (1.0 x 2.35 m) or 2'-3" x 9'-10" (0.7 x 3.0 m).

Glass panels higher than 8'-4" (2.55 m) need to be stiffened with a horizontal mullion.

5). Rail Depth: 2-5/8 inch (66 mm)

6). Top Rail and Stile Width: 3-1/16 inch (78 mm)

7). Bottom Rail Width:

a). [3-1/16 inch (78 mm)]

b). [Manufacturer's standard kickplate with height indicated.]

NOTE: When selecting kickplate option for the bottom rail, select and indicate a height of between 5 and 12 inches (127 and 305 mm); this option may require an upcharge.

b. Frame:

1). Matching top track and side jambs

a). Top Track Width: 4-5/16 inch (110 mm)

b). Side Jambs Width: 3-1/8 inch (80 mm)

c). Top Track Depth: 3-1/2 inch (89 mm)

d). Side Jambs Depth 2-5/8 inch (66 mm)

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

2). Sill Type:

a). [Higher weather performance raised sill (thermally broken)]

b). [Low profile saddle sill (thermally broken)]

c). [Standard flush sill (thermally broken)]

d). [Alternate flush sill (not thermally broken)]

3). Sill Finish: Aluminum with a

a). [clear anodized]

b). [dark bronze anodized]

c). [finished to match panel only with higher weather performance sill]

4). For ADA Compliance: Provide gasket to cover the channel in the sill at swing doors.

2. Wood: Cross-grained, triple laminated solid wood with mortise and tenon, and glued and pinned corners. Veneered wood not acceptable.

NOTE: FSC certified wood Sapeli Mahogany is LEED credit qualified. Others available upon request.

PEFC certified wood Douglas fir does NOT qualify for LEED credit but does meet US Lacey Act requirements.

- a. Species:
- 1). [FSC Sapeli Mahogany]
 - 2). [European Pine]
 - 3). [Spruce]
 - 4). [Western Hemlock]
 - 5). [Meranti]
 - 6). [European Oak]
 - 7). [PEFC Douglas fir]

NOTE: Beech, Maple or Cherry are for interior applications only.

- 8). [Beech]
- 9). [Maple]
- 10). [Cherry]

- b. Wood Finish: Provide factory water-based, open pore [**clear sanding sealer for stain**] [**base coat applied for paint**] with one additional clear coat; See Section 09 90 00 for field finish.

NOTE: Before installation, field finish wood with a minimum two coats for final protective finish.

3. Aluminum Extrusion: Attached to interior wood with thermal isolating polyamide connectors using the back-ventilated rainscreen principle.
- a. Alloy: AlMgSi0.5; 6063-T5 (F-22 - European standard)
 - b. Thickness: 0.078-inch (2.0 mm) nominal
 - c. Thermal Break for sills: 7/8 inch (22 mm) wide polyamide plastic reinforced with glass fibers.
4. Panel and Frame Aluminum Finish:

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

- a. Anodized (AAMA 611):
 - 1). [Clear]
 - 2). [Dark Bronze]
- b. 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.

NOTE: Unlike wet glazing, NanaWall's standard dry glazing method helps reduce instances of seal failure.

2. Manufacturer's [**tempered**] [**and**] [**laminated**] glass lites in [**double**] [**triple**] insulated glazing units, dry glazed with glass stops on the inside.

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

NOTE: Custom layouts with horizontal mullions, simulated divided lites, inserts, and high bottom rails are possible.
Contact NanaWall for availability of other commercial glass types.

- a. Glass Lite / Insulated Glass Unit (IGU):
 - 1). Double IGU: [1 inch (26 mm) thick.]
 - 2). Triple IGU: [1-1/8 inch (28 mm) thick.]

NOTE: Subparagraphs below are options for Double and Triple IGU items above.

- b. IGU Fill:
 - 1). [Air filled]
 - 2). [Argon filled]
 - 3). [Krypton filled]
- c. Glass Lite Type:
 - 1). Standard

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
 - 2). [Low-E coating on # 2 surface of double IGU]
 - 3). [Low-E coating on # 2 and # 4 surface of double IGU]
 - 4). [Low-E coating on # 2 and # 5 surface of triple IGU]

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 [**Pair of**] Panel(s) for Models WITH a [**Pair of**] Swing Panel(s): Provide manufacturer's [**Standard lever handles**] or [**Lever handles with return**] handles on the inside and outside and a lockset with a lockable latch, and 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 matching dummy lever handles on both sides and concealed flush bolts that operate the rods at the top and the bottom for the secondary swing panel.]

NOTE: Secondary swing panel paragraph above is standard with pairs; hardware for Secondary Panel below is an option.

- e. [Secondary Swing Panel: Provide two-point locking with flat handles on inside only for the secondary swing panel.]
- f. Lever Handle - Finish:
 - 1). Brushed satin stainless steel
 - 2). [Titanium black stainless steel]

NOTE: Handles above are standard; optional handle types below may require an upcharge. Lever handle with return only available in "Brushed satin stainless steel". Other compatible lever handle styles and finishes are available from other suppliers.

- 3). [Copper-nickel stainless steel antiviral and antimicrobial]
- 4). [Oil rubbed bronze solid brass]
- 5). [Satin nickel solid brass]
- 6). [White solid brass]
- g. Locking:
 - 1). Standard profile cylinder
 - 2). [Adapter for Small Format Interchangeable Core (SFIC)]
- 2. Main Entry Panel(s) for Models WITH a [**Pair of**] Swing Panel(s): lever handles on the inside and outside with single action, emergency egress, interconnected lock.
- 3. Main Entry [**Pair of**] Panel(s) for Models WITH Swing Panel: Provide manufacturer's push-pull handles with separate lockset and dead bolt.

NOTE: 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.**]

NOTE: Option above is recommended with a door closer but, in order to slide the swing panel, it needs to be attached to a side jamb or disengaged.

- 4. Main Entry [**Pair of**] Panel(s) for Models WITH [**Single**] [**Paired**] Swing Panel(s): No hardware or locking provided by manufacturer; Field installed panic device(s) [**on both panels**] by Section 08 71 00.
- 5. Main Entry Pair of Panels on Inswing Models WITHOUT a Swing Panel: Provide manufacturer's standard L-shaped handle on the inside, flat handle on the outside and lock set with profile cylinder. Operation of lock set is by turn of key from the outside and with a thumb-turn from the inside with two-point locking hardware operated by 180° turn of the handle.
 - a. L-Shaped Handles - Finish:
 - 1). Brushed satin stainless steel
 - 2). [Titanium black stainless steel]

NOTE: Handles above are standard; optional handle types below may require an upcharge.

- 3). [Copper-nickel stainless steel antiviral and antimicrobial]
- 4). [Brown nylon]
- 5). [Gray nylon]
- 6. Main Entry Pair of Panels on Outswing Models WITHOUT a Swing Panel: Provide manufacturer's standard flat handle on the inside and outside and a lockset with profile cylinder. Operation of lock set is by turn of key from the outside and from inside with two-point locking hardware operated by 180° turn of the handle.

NOTE: Above keying operation from inside may not meet egress requirements.

7. 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 option above, main entry panel is operable from inside only and there is no latch.

8. Secondary Panels and Pairs of Folding/Paired Panels: Provide manufacturer's [**Flat**] [**Removable custodial**] handles and concealed one or two-point locking hardware operated by 180° turn of handle between each pair.

NOTE: Flat handles above is standard with removable custodial handles an option.

- a. Face applied flush bolt locking not acceptable (except for units with paired panels).
9. Flat Handle - Finish:
 - a. Brushed satin stainless steel
 - b. [Titanium black stainless steel]

NOTE: Handles above are standard; optional handle types below may require an upcharge.

- c. [Copper-nickel stainless steel antiviral and antimicrobial]
- d. [Dark brown powder coated]
- e. [Silver gray powder coated]
10. Handle Height: 41-3/8 inch (105 cm) centered from bottom of panel or as otherwise indicated.
11. Aluminum locking rods with fiberglass reinforced polyamide end caps at the top and bottom. Rods to have a stroke of 15/16 inch (24 mm).
12. 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.
 1. For Each Pair of Folding/Paired Panels in a Top-Hung System (WA67/o): Provide independent cardanic suspension for four (4) wheeled rollers coated with fiberglass reinforced polyamide upper running carriage and lower guide carriage.
 2. Panel Hinges and Spine: [**Clear**] [**Dark bronze**] anodized aluminum with hinges connected to spine and NOT directly into wood. Stainless steel security hinge pins with set screws.
 3. Adjustment: Provide hinge adjustments of 5/32 inch (4 mm) both in width and in height - up and down, without removing panels from tracks and without needing to remove panels from tracks.
- E. Weather stripping: Manufacturer's double layer EPDM between panels, EPDM gasket and Q-Ion gasket, or double layer EPDM, 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 weather stripping is determined at the factory by the direction of swing, the panel configuration, the type of locking and the type of sill.
Double layer EPDM is standard.

1. UniverSILL: For outswing low profile saddle sill, UniverSILL gasket add on available for additional air and water protection.

2.04 FABRICATION

- A. Folding Glass Wall: Use solid, three-layer, cross grained frame and panel profiles connected to exterior aluminum extrusions, hinges and spines, sliding and folding hardware, locking hardware and handles, threshold and track, glass and glazing and weather stripping.
 - 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.
 - 4. Wood frame and panel components to be sealed with a clear sand sealer or primer plus one additional coat.

2.05 ACCESSORIES

- A. **Insect Screen:** Fully retractable non-pleated screen made of ultra-strong, UV resistant fiberglass mesh housed in a single cartridge riding on a single track.
 - 1. Basis-of-Design Product by Manufacturer: **The Horizon** by **Wizard Industries, Inc.**

WIZARD INDUSTRIES, INC.

4263 Phillips Ave, Burnaby, BC, Canada V5A 2X4

Toll Free: (888) 949-3667

Telephone: (604) 299-8878

Fax: (604) 299-4496

Email: sales@wizardindustries.com

<https://www.wizardscreens.com/>

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 Door system in accordance with the Drawings, approved submittals, manufacturer's recommendations and installation instructions, and as follows:
 - 1. Properly flash, waterproof and 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. When lower track is designed to drain, provide connections to allow for drainage.

4. Wood Finishing: Field finish wood under Section 09 90 00, Painting and Coating; seal and finish promptly after installation and prior to exposure to weather.
5. Install panels, handles, lockset, screens 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 Door 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 Door 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 requirements of a specific construction project.

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