

## SECTION 08 32 13

### SLIDING ALUMINUM-FRAMED GLASS DOORS

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Section includes furnishing and installing a floor track supported, minimal aluminum-framed, glass door panel / wall system that includes:
1. Minimal profile aluminum panel framing
  2. Integrated aluminum head guide rail tracks
  3. Integrated aluminum running floor rail sill tracks with stainless steel rail runner inserts
  4. Manual sliding hardware
    - a. Carrier rollers, ball bearings and wheels
    - b. Locking hardware with handle
    - c. Gasket seals and brushes
  5. Glass and glazing
  6. Insect Screen (optional)
  7. Accessories as required for a complete working installation.
  8. Purenit floor track extension profile with adjustable base

**NOTE:** Switched or remotely activated "Electrical Drive Assembly" operation is available by others as an option.

9. [Electrical drive assembly]
- 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 03 30 00, Cast-In-Place Concrete: Inset floor track
  3. Section 06 10 00, Rough Carpentry: Wood framing R.O. and blocking.
  4. Section 07 90 00, Joint Protection
  5. 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](http://www.aamanet.org)
    - a. AAMA 501, Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure
    - b. AAMA 502, Voluntary Specification for Field Testing of Newly Installed Fenestration Products
    - c. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum
    - d. AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels

- e. AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS-2011, North American Fenestration Standard - Specification for Windows, Doors and Skylights
- 2. ANSI. American National Standards Institute; [www.ansi.org](http://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](http://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 E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
  - 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
- 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](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](http://ec.europa.eu/growth/single-market/ce-marking/index_en.htm)
- 5. CPSC. Consumer Product Safety Commission; [www.cpsc.gov](http://www.cpsc.gov)
  - a. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.
  - b. CSA Group (Canadian Standards Association); [www.csagroup.org/global/en/home](http://www.csagroup.org/global/en/home)
  - c. CSA A440S1 - The Canadian supplement to North American (NAFS) standards
- 6. DIN. "Deutsches Institut für Normung" (German Institute for Standardization); [www.en-standard.eu/din-standards](http://www.en-standard.eu/din-standards); EN. "European Standards"; [www.en-standard.eu](http://www.en-standard.eu); and ISO. "International Organization for Standardization"; [www.iso.org/iso/home/store/catalogue\\_ics.htm](http://www.iso.org/iso/home/store/catalogue_ics.htm)
  - a. DIN EN 1191, Windows and doors - Resistance to repeated opening and closing - Test method; German version EN 1191:2000
  - b. DIN EN 1627, Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Requirements and classification
  - c. DIN EN 1628, Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under static loading
  - d. DIN EN 1629, Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under dynamic loading
  - e. DIN EN 1630, Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance to manual burglary attempts
  - f. DIN 18040-1, Construction of accessible buildings - Design principles - Part 1: Publicly accessible buildings
- 7. Energy Star, U.S. Environmental Protection Agency (EPA) Program; [www.energystar.gov](http://www.energystar.gov)
- 8. NFRC. National Fenestration Rating Council; [www.nfrc.org](http://www.nfrc.org)
  - a. ANSI/NFRC 100, Procedure for Determining Fenestration Product U-factors
  - b. ANSI/NFRC 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

- c. ANSI/NFRC 400, Procedure for Determining Fenestration Product Air Leakage
- d. ANSI/NFRC 500, Procedure for Determining Fenestration Product Condensation Resistance Rating Values

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination by Contractor:
  - 1. Coordinate inset bottom track with structural drawings. See Section 03 30 00.
  - 2. Coordinate Sliding Glass Wall system and framing R.O.
- B. Pre-installation 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 Sliding Glass Wall 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 Sliding Glass Wall system component sizes, dimensions and framing R.O., configuration, sliding panels, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, and field measurements.
- D. Certificates: Submit CE Mark certificate.
- E. Manufacturers' Instructions: Submit manufacturer's installation instructions.
- F. 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.

- G. 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 Sliding Glass Walls.

- 4). MR Credit 3: Materials Reuse - 5% (MRc3.1) or 10% (MRc3.2)
  - 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
  - 2. **LEED v4 for Interior Design and Construction (ID&C) Credits.** Complete online LEED forms and submit other required materials as follows:
    - a. Materials and Resources (MR) Credits:

**NOTE:** MR Credit 1 below can apply to reusing salvaged Sliding Glass Walls.

- 1). MR Credit 1 (MRc1): Building Life-Cycle Impact Reduction; Option 3 - Building and Material Reuse
- b. Indoor Environmental Quality (EQ) Credits:
  - 1). EQ Credit 7 (EQc7): Daylight
  - 2). EQ Credit 8 (EQc8): Quality Views
- H. 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, IEQc2, IEQc8.1, IEQc8.2
  - 2. **LEED v4 (ID&C).** Submit information and documentation to complete LEED™ Worksheet Templates for the following credits:
    - a. MRc1, EQc7, EQc8
- 1.05 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years' experience in the manufacture of folding-sliding door systems for large opening glass walls for 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.
  - B. 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.
  - C. Single Source Responsibility: Furnish Sliding Glass Wall 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, Contractor to inspect the shipment to ensure it is complete, in good condition and meets project requirements.
    - 2. Contractor to 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.) Mark field measurements on product drawing submittal.
- 1.08 WARRANTY
- A. Manufacturer Warranty: Provide All Glass Sliding Glass Wall 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, and only when installed by manufacturer's certified trained installer.
    - 1. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of

## Substantial Completion:

- a. Rollers: Ten (10) years
- b. Glass Seal Failure: Five (5) years
- c. All Other Components Except Screens: Ten (10) years
  - 1). Exception: Five (5) years if NOT installed by manufacturer's certified trained installer.

**PART 2 - PRODUCTS**

## 2.01 MANUFACTURERS

- A. Basis-of-Design Product by Manufacturer: **cero® by NanaWall by NANA WALL SYSTEMS, INC.** ([www.nanawall.com](http://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](mailto: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:** 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, 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 503.

- A. Performance Criteria (Lab Tested):
1. Air Infiltration/Exfiltration (ASTM E283, CSA A440-11 and NAFS-2011) @ 1.57 psf:
    - a. cero® III Triple-Glazed with Higher Weather Performance Sill:  
0.05 cfm/ft<sup>2</sup> / 0.04 cfm/ft<sup>2</sup>/A3
    - b. cero® II Double-Glazed with Higher Weather Performance Sill:  
0.09 cfm/ft<sup>2</sup> / 0.08 cfm/ft<sup>2</sup>/A3

- c. cero® II Double-Glazed with Flush / Low Profile Saddle / Hybrid Sill:  
0.16 cfm/ft<sup>2</sup> / 0.13 cfm/ft<sup>2</sup>/A3
2. Barrier-Free Accessibility (DIN 18040): Pass
3. Static Water Penetration (ASTM E547 and E331):
- a. cero® III Triple-Glazed with Higher Weather Performance Sill: 12 psf (600 Pa)
- b. cero® II Double-Glazed with Higher Weather Performance Sill: 12 psf (600 Pa)
- c. cero® II Double-Glazed with Flush / Low Profile Saddle / Hybrid Sill: 6 psf (300 Pa)
4. Dynamic Water Penetration (AAMA 501):
- a. cero® III Triple-Glazed with Higher Weather Performance Sill: 12 psf (600 Pa)
- b. cero® II Double-Glazed with Higher Weather Performance Sill: 12 psf (600 Pa)
5. System - Life Cycle Performance (DIN EN 1191/12400):
- a. cero® III Triple-Glazed with Higher Weather Performance Sill: 40,000 cycles
- b. cero® II Double-Glazed with Higher Weather Performance Sill: 40,000 cycles
- c. cero® II Double-Glazed with Flush / Low Profile Saddle / Hybrid Sill: 40,000 cycles
6. Structural Loading (ASTM E330) cero® III Triple-Glazed Standard Unit with Higher Weather Performance Sill:
- 1). Windload Resistance: Pass L/175
- 2). Design Pressure Positive: 40 psf (1920 Pa)
- 3). Design Pressure Negative: 40 psf (1920 Pa)
- b. cero® III Triple-Glazed Reinforced Unit with Higher Weather Performance Sill:
- 1). Windload Resistance: Pass L/175
- 2). Design Pressure Positive: 80 psf (3840 Pa)
- 3). Design Pressure Negative: 73 psf (3500 Pa)
- c. cero® II Double-Glazed Standard Unit with Higher Weather Performance Sill:
- 1). Windload Resistance: Pass L/175
- 2). Design Pressure Positive: 35 psf (1680 Pa)
- 3). Design Pressure Negative: 35 psf (1680 Pa)
- d. cero® II Double-Glazed Reinforced Unit with Higher Weather Performance Sill:
- 1). Windload Resistance: Pass L/175
- 2). Design Pressure Positive: 65 psf (3120 Pa)
- 3). Design Pressure Negative: 60 psf (2880 Pa)
- e. cero® II Double-Glazed Standard Unit with Flush / Low Profile Saddle / Hybrid Sill:
- 1). Windload Resistance: Pass L/175
- 2). Design Pressure Positive: 35 psf (1680 Pa)
- 3). Design Pressure Negative: 35 psf (1680 Pa)
7. Forced Entry (ASTM F842):
- a. cero® III Triple-Glazed with Higher Weather Performance Sill: Pass
- b. cero® II Double-Glazed with Higher Weather Performance Sill: Pass
- c. cero® II Double-Glazed with Flush / Low Profile Saddle / Hybrid Sill: Pass

8. Burglary Protection (EN 1628, 1629, 1630 / EN 1627):

**NOTE:** Besides a certified burglary resistant frame option, cero® can also be fitted with an electronic security option by others.

- a. cero® III Triple-Glazed with Higher Weather Performance Sill: Class RC2 (WK2) and Class RC3 (WK3)
- b. cero® II Double-Glazed with Higher Weather Performance Sill: Class RC2 (WK2)

**NOTE:** For the highest levels of insulation and energy efficiency, cero’s profiles are thermally broken with glass fiber reinforced polyamide with thermal breaks aligned in the same plane.  
Thermal performance values vary depending on the glass, system, and configuration used in each individual application. U-Values as low as 0.26 and SHGC values as low as 0.16 are available to meet energy code requirements.  
Condensation may occur when system is installed in cold climates or in a facility with high indoor humidity. If condensation could be an issue for your application, NanaWall recommends taking appropriate measures during the design and construction phase to reduce or eliminate the possibility of condensation. There are many third party sources discussing the nature of condensation and ways to reduce or eliminate condensation, including publications by AAMA, WDMA and Efficient Windows Collaborative. Contact NanaWall for more information.

9. Acoustical Performance (ASTM E-90 and E-1332)

- a. cero® III Triple-Glazed with Higher Weather Performance Sill:  
With 50 Db glass, unit STC (Rw) of 44 and OITC 35
- b. cero® II Double-Glazed with Higher Weather Performance Sill:  
With 47 Db glass, unit STC (Rw) of 43 and OITC 34
- c. cero® II Double-Glazed with Flush / Low Profile Saddle / Hybrid Sill:  
With 50 Db glass, unit STC (Rw) of 43 and OITC 34  
With 38 Db glass, unit STC (Rw) of 33 and OITC 29

10. Thermal Performance (U-factor): NFRC 100 (Rated, Certified and Labeled)

11. Solar Heat Gain Coefficient (SHGC) + Visible Light Transmission (VT): NFRC 200 (Rated, Certified and Labeled)

12. Air Leakage: NFRC 400 (Rated, Certified and Labeled)

13. Condensation Resistance Factor (CRF): NFRC 500 (Rated, Certified and Labeled)

**NOTE:** With specific glazing, NFRC 100, 200, 400 and 500 ratings of the cero® system can 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 NanaWall 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.

14. EPA Energy Star:

Meets requirements

**NOTE:** (For guidance only as manufacturer is not a participant of the Energy Star Program.)  
**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:  $\leq 0.30$  U-factor 0.40 SHGC

South-Central & Southern Region:  $\leq 0.30$  U-factor 0.25 SHG

**Energy Star** values for WINDOWS can be achieved through the use of specific glass units meeting the following requirements (U-factor in accordance with NFRC 100 and SHGC in accordance with NFRC 200):

Northern Region (as of 1/1/2016):  $\leq 0.27$  U-factor Any SHGC

Northern Region\*:  $\leq 0.28$  U-factor  $\geq 0.32$  SHGC

Northern Region\*:  $\leq 0.29$  U-factor  $\geq 0.37$  SHGC

Northern Region\*:  $\leq 0.30$  U-factor  $\geq 0.42$  SHGC

North-Central Region:  $\leq 0.30$  U-factor 0.40 SHGC

South-Central Region:  $\leq 0.30$  U-factor 0.25 SHGC

Southern Region:  $\leq 0.40$  U-factor 0.25 SHGC

\* For Windows with NFRC certified U-factor and SHGC ratings that meet or exceed the listed equivalent energy performance criteria as of 1/1/2016.

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

Window, Sliding Door, or Skylight:  $\leq 0.3$  cfm/ft<sup>2</sup> (1.54 L/s/m<sup>2</sup>)

B. LEED Characteristics:

1. LEED 2009 (v3)

- a. MRc1.1: *NanaWall* exterior glass wall systems, not demolished in a renovation project, are reused in the same location.
- b. MRc1.2: *NanaWall* interior glass wall systems, not demolished in a renovation project, are reused in the same location.
- c. MRc2: *NanaWall* cardboard shipping crates are made of 60% recycled material and are 100% recyclable.
- d. MRc3: *NanaWall*'s components easily disassemble and reassemble to "Use as salvaged... or reused materials."
- e. IEQc2: *NanaWall* systems provide natural ventilation in the open position, assisting in the 90% required natural ventilation of occupied spaces of ASHRAE 62.1.

**NOTE:** 98% of the cero® system allows daylight through glass with only 2% opaque metal frame.

- f. EQc8.1: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.
- g. EQc8.2: *NanaWall* glass wall assemblies provide direct outdoor lines of sight.

2. LEED v4 for Interior Design and Construction (ID&C)

- a. MRc1: *NanaWall* can be easily disassembled for salvage and reuse.

**NOTE:** 98% of the cero® system allows daylight through glass with only 2% opaque metal frame.

- b. EQc7: *NanaWall* glass wall assembly borrowed light brings daylight deeper into the floor plate.
- c. EQc8: *NanaWall* 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, and location of tracks.

**NOTE:** With cero's optional automation accessory by others, the large panels can be operated and securely locked with a simple touch of a button or through the use of a cell phone app. The automation feature provides effortless and quiet operation. Keypads can be located on the interior and/or exterior for convenience and peace of mind. Please contact NanaWall for details.

To meet various design intents, matching fixed glass panels are available to complement the cero® system.

2. Unit Operation: Sliding hardware with recessed head, floor tracks and side jamb; [ **fixed and** ] [ **manual** ] [ **motorized** ] operation.

**NOTE:** cero® is available in numerous configurations with combinations of sliding and fixed panels. Systems are available with up to 4 tracks and 8 panels with pocketed and open corner configurations possible. Contact NanaWall if additional tracks are needed. Please see [www.nanawall.com/products/cero/options](http://www.nanawall.com/products/cero/options) for configuration option animations.

3. Panel Configuration:

- a. [ Straight ]
- b. [ 90° angle corner ]
- c. [ Fixed all-glass 90° angle corner ]
- d. Stack Storage Configuration: Side stack in track as indicated.
- e. Mounting Type: Floor track supported.

**NOTE:** For interior or protected exterior applications, non-thermally broken flush, low profile saddle or flush saddle hybrid sill are available as an option for cero II only.

4. Sill Type: [ Higher weather performance sill (thermally broken sill) ] [ Flush sill ] [ Low profile saddle sill ] [ Flush saddle hybrid sill ].

## 2.03 MATERIALS

**NOTE:** A system interlock design with 4 layers of soft gaskets allows for a soft opening and closing with no metal-to-metal contact. The transparent bumpers on the top and bottom vertical stile facilitates a soft opening process.

This sophisticated design also allows for panel deflection. cero's panel and interlock design is engineered to accommodate panel and glass deflection with a built-in tolerance of up to 1/4 inch (7 mm). It also minimizes the concern of vertical metal stiles touching adjacent sliding panel glass during the opening and closing process.

- A. Sliding Glass Wall Description: Sliding and fixed, large-area glass panels in an extruded thermally broken aluminum frame. Panels slide on multiple stainless steel carrier rollers with double-row deep groove ball-bearings and rolls on single or tandem stainless steel rail runner inserts in floor track. Flat 2-point locking handle, gasket seals and brushes, a hidden integrated drainage offset duct system, and glazing rebate ventilation for controlled back-ventilation of the panel edge. Frame is thermally isolated with glass-fiber reinforced polyamide cross-pieces.

1. Linear panel system load transfer to structure at floor.

**NOTE:** cero® II Double-Glazed: Maximum panel Widths up to 7' - 4-1/2" (2250 mm) and Heights up to 13' - 1" (4000 mm).

cero® III Triple-Glazed: Maximum panel Widths up to 9' - 10" (3000 mm) and Heights up to 13' - 1" (4000 mm).

Contact NanaWall for possible larger sizes.

2. Panel Size: <insert dimension> x <insert dimension> inches (<insert dimension> mm x <insert dimension> mm)

**NOTE:** Retain 2-1/16 inches (52 mm) for cero® II Double-Glazed or 2-13/16 inches (72 mm) for cero® III Triple-Glazed in subparagraph below.

3. Top & Bottom Rail Depth: [2-1/16 inches (52 mm) ] [ 2-13/16 inches (72 mm) ]  
 4. Top & Bottom Rail and Vertical Stile Exposed Face Width: 1-5/16 inch (34 mm)

**NOTE:** For installations requiring increased drainage due to exposure, a matching integrated drainage duct system by others is available.

5. Floor Track:
- a. Thermally Broken Higher Weather Performance Sill
    - 1). System to be capable of 1/8 inch (3 mm) plus height adjustments without removing panels from tracks.
    - 2). Systems without adjustment capability not acceptable.
    - 3). Factory fabricated hidden integrated drainage offset duct system with drainage [ **down** ] [ **out to the exterior face** ].
    - 4). [ 1-3/4 inch (45 mm) Purenit extension profile with adjustable base ].

**NOTE:** Retain optional "ADA higher weather performance sill inserts" below or use a non-thermally broken sill to meet ADA requirements.

- 5). Aluminum ADA higher weather performance sill inserts.

**NOTE:** Finishing flooring or cosmetic inserts for the Non-Thermally Broken ADA Sill installed by others.

- b. Non-Thermally Broken ADA Sill (for cero® II Double-Glazed Only)
  - 1). [ Flush sill ]
  - 2). [ Low profile saddle sill ]
  - 3). [ Flush saddle hybrid sill ]

**NOTE:** Retain 2-15/16 inches (75 mm) for cero® II Double-Glazed or 3-1/8 inches (79 mm) for cero® III Triple-Glazed in subparagraph below. cero® narrow stiles and rails have a symmetrical picture frame effect.

Connection between side jamb to frame are fixed with concealed connector to prevent twisting of frame, jamb, and track.

6. [ Fully Recessed ] [ Semi-recessed ] Surround Frame Depth: 1-runner [ 2-15/16 inches (75 mm) ] [ 3-1/8 inches (79 mm) ]

**NOTE:** Surrounding frame exposure may be 0 to 3-1/8 inches ( 79 mm), either fully-recessed, semi-recessed, or fully exposed.

7. Aluminum Extrusions: AIMgSi0.5 alloy, 6063-T5 (EN AW-6060 T66 - F-22)
- a. Thickness: 0.059 to 0.157 inch (1.5 mm to 4 mm)
  - b. Thermal Break: Glass fiber reinforced polyamide cross pieces aligned in the same plane through the frame and panels. Offset thermal breaks not acceptable.

**NOTE:** Retain 5/8 inch (16 mm) at frame for cero® II Double-Glazed or 1-3/8 inch (44 mm) at frame for cero® III Triple-Glazed in "Thermal Break" subparagraphs below.

- 1). Thickness for cero® II: 5/8 inch (16 mm) at frame; 15/16 inch

(24 mm) at panel.

- 2). Thickness for CERO® III: 1-3/8 inch (34 mm) at frame; 1-1/32 inch (26 mm) at panel.

8. Exposed Aluminum Frame and Track Finish:

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

CERO® frames are available in 50 standard colors with over 200 colors available in powder coat and anodized finishes. Custom matched colors and simulated wood effects are also available.

Check with NanaWall regarding powder coated and other available finishes.

Anodized "metallic," full "RAL selection" and "custom finishes" may require an upcharge.

a. Finish - Anodized (AAMA 611):

- 1). [ Clear ]
- 2). [ Dark bronze ]
- 3). [ Metallic as chosen from manufacturer's eloxal tone DB finish chart. ]

b. Finish - 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. ]
  - c).
    - i. [ High Gloss ]
    - ii. [ Matte ]
  - d). [ custom finish. ]

B. Glass and Glazing:

1. Safety Glazing: In compliance with ASTM C1036 or ASTM C1048, and ANSI Z97.1 and CPSC 16CFR 1201.

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

CERO® panel design has the extremely high flexural strength of 17,405 psi (120 N/mm<sup>2</sup>) allowing it to accommodate large sheets of glass.

Large panel installation depth may require the use of available anti-fall glazing.

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

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

a. Glass Lite Thicknesses in IGU:

- 1). [ 1/4 inch (6 mm) ]
- 2). [ 5/16 inch (8 mm) ]
- 3). [ 3/8 inch (10 mm) ]

**NOTE:** Select an overall thickness between 1-3/16 and 1-7/16 inch (30 and 36 mm) for CERO® II Double-Glazed Units or between 1-7/8 and 2-1/8 inches (48 and 54 mm) for CERO® III Triple-Glazed Units.

Glass lite thickness is determined by the glass supplier according to the size of the glass pane.

- a. Glass Lite Thicknesses in IGU: <insert thickness> inches (<insert thickness> mm)
- b. Glazing rebate ventilation for controlled back ventilation of the panel edge.

**NOTE:** Glazing options include argon/krypton filled double or triple insulated low-E, impact glass, laminated glass with sound enhanced interlayer, low iron and other specialty glass. Standard "Reduced iron" glass has a VLT of 90% or higher, while "Low iron" has a VLT of 91% or higher.

Contact NanaWall for availability of other commercial glass types.

- c. Glass Lite Type: **<insert glass type>**
  - 1). [ Reduced iron ]
  - 2). [ Low iron ]
  - 3). [ Solar bronze ]
  - 4). [ Solar gray ]
  - 5). [ Bird safe ]

**NOTE:** "Alarmed Glazing" by others Subparagraph below is an option.

3. Alarmed Glazing: Connection wiring to alarm system, position monitoring, locking detection and notification systems such as glass-breakage sensors by others.

**NOTE:** Retain "single" option below with CERO® II double-glazed or "tandem" with CERO® III triple-glazed.

- C. Sliding Hardware: [ 2 ] [ 4 ] stainless steel carriers on dual ball-bearings rolling and gothic arch shaped wheels per panel on [ **single** ] [ **tandem** ] stainless steel rail runners inserted in floor track.
  1. Minimum two (2) carrier rollers attached to each sliding panel. Stainless steel roller with 'gothic arch design' concealed in the sliding panel aluminum frame profile not bridging the thermal break. Integrated, replaceable brushes on both ends and in front of panel lower rail to ensure clean, smooth wheel/roller operation.
    - a. Roller ball bearings of encapsulated self-lubricating steel balls.
    - b. Replaceable rollers (without removing the panels.)
    - c. Rollers located in the sill profile are not acceptable.
    - d. Gothic arch wheel bearing design with 2-point contact to stainless steel bottom track.
    - e. Rollers run above floor plane and can operate smoothly over debris obstructions.

**NOTE:** Switched or remotely activated "Electrical Drive Assembly" operation is available by others as an option.

- f. [ Electrical drive assembly ].

**NOTE:** Retain "CERO® II Double-Glazed IGU Carrying Capacity" or "CERO® III Triple-Glazed IGU Carrying Capacity" below.

2. Maximum Double IGU Carrying Capacity on Single Carrier rails per Panel: 1,300 lb. (600 kg).
3. Maximum Triple IGU Carrying Capacity on Tandem Carrier Rails per Panel: 2,200 lb. (1 000 kg).

- D. Locking Systems: Concealed two-point locking mechanism as standard, with 1 inch (25 mm) throw in top and bottom adjustable receivers.

**NOTE:** Retain one of two "Flat 2-Point Locking Handle" subparagraphs below.

1. Flat 2-Point Locking Handle - Minimalistic: Brushed satin stainless steel.
2. Flat 2-Point Locking Handle - Contemporary: [ Brushed satin stainless steel ] [ Black titanium stainless steel ].
3. Latch Throw: 1 inch (25 mm) locking latch in adjustable locking receivers.
  - a. Locking points adjustable by +/- 3/16 inch (+/- 5 mm).
  - b. Pin locks not acceptable.

**NOTE:** For projects requiring outside locking and connecting to electronic security systems, an electromagnetic lock or maglock option by others.

**NOTE:** For those with higher security concerns, cero® is able to meet the optional European security standards of either RC2 or RC3. European standards are more stringent than that of US forced entry testing.

The burglary resistance quality of a window/sliding door unit is largely determined by the interaction of frame profiles, glazing, and hardware. With the 15 minute forced entry test for RC2, a locked cero® passed security breach attempts using basic tools such as screwdrivers, pliers, vise grips, and wedges on the system. RC3 is a 20 minutes test in which a crowbar is added to the basic tools in the attempt to open the closed and locked cero® system.

Retain Class RC2 for cero® II Double-Glazed and Class RC2 or RC3 available for cero® III Triple-Glazed below.

4. Forced Entry: [ **Standard** ] [ **Class RC2** ] [ **Class RC3** ].

- E. Other Components:

1. Vertical Panel Interlock:

**NOTE:** Retain first subparagraph below for cero® III Triple-Glazed.

- a. Interlock Depth: Determined by structural requirements.
- b. Provide quadruple polyethylene-reinforced Q-Lon seals for vertical panel interlock with no metal-to-metal contact.
- c. Maximum Panel Deflection at Interlock: 1/4 inch (7 mm).
2. Edge Seals: Provide gasket seals all around the frame, inside and outside, and reinforced brushes, both sides and to the front.
3. Dark bronze anodized, fiberglass reinforced, inserts within head track, sill and side jambs.

#### 2.04 FABRICATION

- A. Extruded aluminum frame and rail profiles, sliding hardware, locking hardware and handles, and glass to construct sliding glass wall assembly.

1. Flush joints.
2. Each unit factory pre-assembled and shipped KD with all components and installation instructions.
3. Exposed work to be carefully matched to produce continuity of line and design with all joints.
4. No raw edges visible at joints.

## 2.05 ACCESSORIES

- A. Provide sidelights and corner posts, as indicated.

**NOTE:** Screen ONE XL is 'non-pleated' while Screen Classic is 'pleated.' Maximum dimensions 36' (10970 mm) wide by 10' (3048 mm) tall.

Select 'ONE XL' or 'Classic,' deleting option not chosen.

- B. Insect Screen Panels: 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: **Screen ONE XL** or an Architect acceptable equivalent subject to project requirements.
2. Finish - Aluminum Top Track, Side Jambs and Vertical Struts:
  - a. White powder coated
  - b. [ Black powder coated ]

**NOTE:** Above options are standard.

- C. Insect Screen Panels: A series of top-hung collapsible pleated UV resistant fiberglass mesh screen panels riding on a single narrow ADA compliant 1/4 inch (7 mm) floor track. Each 4 inches (100 mm) wide vertical cassette can expand to 3'-3" (1000 mm) wide.

1. Basis of Design Product by Manufacturer: **Screen Classic** or an Architect acceptable equivalent subject to project requirements.
2. Finish - Aluminum Top Track, Side Jambs and Vertical Struts:
  - a. White powder coated
  - b. [ Clear anodized ]
  - c. [ Dark bronze anodized ]

**NOTE:** Above options are standard.

- d. [ Powder coated with color as selected by architect. ]

3. Screen Track Stacking: [ Within opening ] [ Extended beyond opening ]

**PART 3 EXECUTION BY CONTRACTOR**

## 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. Verify that field measurements, substrates, tolerances, levelness, plumbness, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
  - b. Verify block-out dimensions and structural support for flush recessed surrounding frame.
  - c. Verify the 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 on all four sides for lateral loads, and both wind load and eccentric load when the panels are stacked open.

**NOTE:** Structural support for lateral loads such as forced entry, etc. to be provided.

It's recommended that all building dead loads be applied to the header prior to installing the unit.

If so, and if a reasonable amount of time has been allowed for the effect of this dead load on the header, only then can the building live load be used to meet the above requirements of  $L/720$  of the span or 1/4 inch (6 mm), whichever is less.

If not, 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 Sliding Glass Wall system in accordance with the Drawings, approved submittals, manufacturers' recommendations and installation instructions, and as follows:
  1. Properly seal around opening perimeter.
  2. Securely attach anchorage devices to rigidly fit surrounding frame in place, level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work. Integrate frames into walls, ceilings and floors flush or as otherwise as indicated.
  3. Lower track designed to drain; provide connections to allow for drainage [ **downward** ] [ **to the exterior face** ].
  4. Install glass panels, handles, lockset and other accessories in accordance with manufacturer's recommendations and instructions.
  5. Provide connections to alarm system, position monitoring and sensor notification systems.

### 3.03 FIELD QUALITY CONTROL

- A. Field Tests and Inspections per Section 01 40 00 of the following:
  1. Verify the Sliding Glass Wall 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 Sliding Glass Wall 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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