



SECTION 09 62 83
STRUCTURAL GLASS TREADS & FLOORING
SIGHTLINE COMMERCIAL SOLUTIONS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Structural glass floors.
- B. Structural glass stair treads and landings.
- C. Glass stair risers.

1.2 RELATED SECTION

- A. Section 05 51 00 - Metal Stairs.
- B. Section 05 52 00 - Metal Railings.
- C. Section 05 70 00 - Decorative Metal.
- D. Section 05 73 00 - Decorative Metal Railings.
- E. Section 08 80 00 - Glazing.

1.3 REFERENCES

- A. American National Standards Institute (ANSI)
 - 1. A17.1 Accessible and Usable Buildings and Facilities.
 - 2. A21.1 Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
 - 3. A58.1 Minimum Design Loads in Buildings and Other Structures.
 - 4. A326.3 Dynamic Coefficient of Friction.
 - 5. Z97.1 Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings.
- B. American Society for Testing and Materials (ASTM)
 - 1. B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. B210 – Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.

3. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 4. B247 - Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings.
 5. B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
 6. C1028 – Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces.
 7. C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
 8. C1172 - Standard Specification for Laminated Architectural Flat Glass.
 9. E488 - Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.
 10. E2751 - Standard Practice for Design and Performance of Supported Glass Walkways.
- C. National Association of Architectural Metal Manufacturers (NAAMM):
1. AMP 500-505 – Metal Finishes Manual.
- D. Aluminum Association (AA):
1. ASD-1 Aluminum Standards and Data.
 2. DAF-45 Designation System for Aluminum Finishes.
 3. SAA-46 Standards for Anodized Architectural Aluminum.
 4. ADM-2015 Aluminum Design Manual.
- E. American Welding Society (AWS):
1. ANSI/AWS D1.1/D1.1M Structural Welding Code - Steel.
 2. ANSI/AWS D1.2/D1.2M Structural Welding Code - Aluminum.
- F. Americans with Disabilities Act (ADA).
- G. Americans with Disabilities Act Accessibility Guidelines (ADAAG).
- H. International Code Council (ICC): International Building Code.
- I. National Fire Protection Association (NFPA)
- J. Underwriters Laboratories (UL) 410 – Floor Surface

1.4 PERFORMANCE REQUIREMENTS

- A. General: Glass flooring shall withstand structural loading as determined by allowable design working stresses of materials.
- B. Structural Performance: Provide glass floorings capable of withstanding effects of gravity loads and the following structural loads without exceeding allowable design working stress of materials for flooring, anchors and connections:

1. Glass flooring, treads, and landings:
 - a. Concentrated load of 300 lbf (1.33kN) applied at any point on the walking surface in a 4 in² (2600 mm²) area.
 - b. Uniform load of 100 psf. (4.8kN/m²) applied vertically down.
 - c. Concentrated and uniform loads need not be assumed to act concurrently.
 - d. Maximum allowable deflection: L/360
 - e. Maximum allowable glass stress for permanent loading: 9.4 ksi (65.3 MPa)
2. Structural Members:
 - a. Members sized to support glass flooring loads above.
 - b. Maximum allowable deflection: L/500
3. Thermal Movements: Design glass flooring systems to allow for movements resulting from 120 degree F (49 C) changes in ambient as required for exterior system applications only.
4. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.
5. Wind Load: Not applicable. Glass flooring systems interior applications only.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Submit plan and typical section detail to depict the proper configuration, assembly, installation, and termination of each product specified in this section. Including: Section details, Mounting methods, Typical Elevations, and Key plan layout.
- D. Verification Samples: For each finish product specified, two samples, representing actual product, color, and finish.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of five (5) years' experience.
 1. Sightline Commercial Solutions, 7008 Northland Drive North, Minneapolis, MN 55428; Toll Free Tel: 877-215-7245; Email: info@sightlinecommercial.com.
- B. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 1. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 2. Refinish mock-up area as required to produce acceptable work.
- C. Glass Flooring System:
 1. System components: Pre-engineered by registered Professional Engineer licensed in the State in

which project is located.

2. Attachments to building structure: Pre-engineered by registered Professional Engineer licensed in State in which project is located.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store products indoors in temperature-controlled facility.

1.8 PROJECT CONDITIONS

- A. Field Measurements: Where products are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication.
- B. Where field measurements cannot be made without delaying the products fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed with fabrication of products to not delay fabrication, delivery and installation.
- C. Coordinate fabrication and delivery schedule of products with construction progress and sequence to avoid delay of product installation.
- D. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 WARRANTY

- A. At project closeout, provide to Owner or Owners Representative an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Sightline Commercial Solutions, 7008 Northland Drive North, Minneapolis, MN 55428; Toll Free Tel: 877-215-7245; Email: info@sightlinecommercial.com.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 016000.

2.2 MATERIALS

- A. Aluminum:
 1. Extruded Pipe: Alloy 6061-T6 or similar.
 2. Extruded Bars, Shapes and Moldings: Alloy 6061-T6 or similar.

2.3 Glass Flooring Components:

- A. Application: Interior

B. Glass Panels:

1. Assembly: 3-layer laminated 3/8 in (10mm) glass with interlayers
2. Glass Type: **[Clear] [Low Iron]** Fully Tempered glass
3. Interlayer: 0.06 inch (1.52 mm) SentryGlass (SGP)
4. Slip-Resistant top glass: Anti-slip etched pattern **[Frosted Dot] [Transparent Dot] [Frosted X's] [Frosted Diamond Plate]**
5. Final Makeup: 1.25 inch (33mm) nominal thickness
 - a. 3/8 in (10mm) glass w/ slip-resistant textured walking surface.
 - b. 0.06 inch (1.52 mm) SGP Interlayer
 - c. 3/8 in (10mm) glass
 - d. 0.06 inch (1.52 mm) SGP Interlayer
 - e. 3/8 in (10mm) glass
6. Edges: Polished.
7. Corners: Bump ground.
8. Holes: no holes required for mounting.

C. Structural support members:

1. Mid Supports: As required to meet loading.
2. Perimeter Supports: As required to meet loading.
3. Bolted together using Stainless Steel hardware appropriate to meet loading requirements.
4. Spacing: project specific requirement

D. Glass Attachment.

1. EPDM Glass gasket and acrylic tape between glass and support members.
2. Structural sealant at glass gaps and edges at structural supports.

2.4 Glass Tread & Landing Components:

A. Application: Interior

B. Glass Panels:

1. Assembly: 3-layer laminated 3/8 in (10mm) glass with interlayers
2. Glass Type: **[Clear] [Low Iron]** Fully Tempered glass
3. Interlayer: 0.06 inch (1.52 mm) PVB
4. Slip-Resistant top glass: Anti-slip etched pattern **[Frosted Dot] [Transparent Dot] [Frosted X's] [Frosted Diamond Plate]**
5. Final Makeup: 1.25 inch (33mm) nominal thickness

- a. 3/8 in (10mm) glass w/ slip-resistant textured walking surface.
 - b. 0.06 inch (1.52 mm) PVB Interlayer
 - c. 3/8 in (10mm) glass
 - d. 0.06 inch (1.52 mm) PVB Interlayer
 - e. 3/8 in (10mm) glass
- 6. Edges: Polished.
 - 7. Corners: Bump ground.
 - 8. Holes: no holes required for mounting.
- C. Structural support members:
- 1. Supports provided by stair manufacturer.
 - 2. Spacing: project specific requirement.
- D. Glass Attachment.
- 1. EPDM Glass gasket and acrylic tape between glass and support members.
 - 2. Structural sealant at glass gaps and edges at structural supports.

2.5 Glass Riser Components:

- A. Application: Interior
- B. Glass Panels:
- 1. Assembly: 2-layer laminated 0.25 in (6mm) glass with interlayer
 - 2. Glass Type: **[Clear] [Low Iron]** Fully Tempered glass
 - 3. Interlayer: 0.06 inch (1.52 mm) PVB
 - 4. Slip-Resistant top glass: Anti-slip etched pattern **[Frosted Dot] [Transparent Dot] [Frosted X's] [Frosted Diamond Plate]**
 - 5. Final Makeup: 0.5 inch (12mm) nominal thickness
 - a. 0.25 in (6mm) glass w/ slip-resistant textured surface.
 - b. 0.06 inch (1.52 mm) PVB Interlayer
 - c. 0.25 in (6mm) glass
 - 6. Edges: Polished.
 - 7. Corners: Bump ground.
 - 8. Holes: no holes required for mounting.
- C. Structural support members:
- 1. Supports provided by stair manufacturer.
 - 2. Spacing: project specific requirement.
- D. Glass Attachment.

1. EPDM Glass gasket and acrylic tape between glass and support members.
2. Structural sealant at glass gaps and edges at structural supports.

2.6 FASTENERS

- A. Anchors: Select fasteners of type, grade and class required to produce connections suitable for anchoring system to other types of construction indicated.
- B. Component Hardware: Type best suited to application, stainless steel. Do not use metals that are corrosive or incompatible with materials joined.
 1. Provide concealed fasteners for interconnecting components and for attaching them to other work, unless exposed fasteners are unavoidable or are a standard fastening method for products indicated.

2.7 GROUT AND ANCHORING CEMENT

- A. Non-shrink, Nonmetallic Grout: Premixed, factory-packaged, non-staining, non-corrosive, non-gaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.8 FABRICATION

- A. Assemble materials in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- B. Mechanical Connections: Fabricate systems by connecting members with manufacturer's standard mechanical fasteners and fittings, unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
- C. Provide plates and other anchorage devices to connect members to concrete or other construction. Fabricate anchorage devices capable of withstanding loads imposed by glass flooring. Coordinate anchorage devices with supporting structure.
- D. Fabricate system in accordance with approved Shop Drawings.
- E. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.
- F. Cut, reinforce, drill and tap components as indicated on drawings to receive finish hardware, screws and similar items.
- G. Fabricate glass flooring with joints tightly fitted and secured. Furnish fittings to accommodate site assembly and installation.
- H. Accommodate for expansion and contraction of members and building movement without damage to connections or members.

2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for applying and designating finishes.
 1. Aluminum: AA DAF-45.
- B. Appearance of Finished Work:

1. Variations in appearance of abutting or adjacent units are acceptable if they are within one-half of the range of approved samples. Noticeable variations in the same unit are not acceptable.
 2. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.
- C. Finish: Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with manufacturer's written instructions. All unexposed metals to be mill finish.
1. Anodize: Clear Anodize AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker unless indicated otherwise.
 2. Powder coat:
 - a. Material: AAMA 2603 - Polyester powder coating, 3 mil average film thickness
 - b. [Color _____]
 3. Wet painted on site: by others.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages. These include items such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete and masonry construction.
 1. Coordinate delivery of anchorages to project site.
 2. Coordinate that blocking is in place for all mounting fasteners.
- B. Clean debris and dust from surfaces and embed holes thoroughly prior to installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install glass flooring system in accordance with manufacturer's approved Shop Drawings and instructions.
- B. Install components plumb and level, accurately fitted, free from distortion and defects.
- C. Provide anchors for connecting glass flooring to supporting construction.
- D. Perform cutting, drilling, and fitting required for installation of glass flooring system. Accurately set members in location, alignment, and elevation, measured from established lines and levels.
- E. Fit exposed connections accurately together to form tight joints except as necessary for expansion.

3.4 PROTECTION

- A. After installation, General Contractor or Owner shall be responsible for protection of products during the balance of construction.
- B. Touch-up, repair or replace damaged products before Substantial Completion.
- C. When cleaning aluminum surfaces use plain water containing a mild soap or detergent. No abrasive agents or harsh chemicals shall be used.

END OF SECTION