



## ORNAMENTAL ALUMINUM HANDRAIL SPECIFICATIONS

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### SECTION 05520

#### HANDRAILS AND RAILINGS SPECIFICATIONS

1.

#### GENERAL

1.

SECTION INCLUDES  
Classic Vertical Picket Railings

2.

A.

#### RELATED SECTIONS

**\*\* NOTE TO SPECIFIER \*\* Delete any sections below that are irrelevant to this project; add others as required.**

A.

Section 05510 - Metal Stairs: Metal handrails other than those specified in this section.

B.

Section 05521 - Aluminum Handrails and Railings.

C.

Section 05522 - Glass Railings.

D.

Section 05710 - Decorative Metal Stairs.

E.

Section 05720 - Ornamental Handrails and Railings.

3.

#### REFERENCES

**\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not required by the text of the edited section.**

A.

Aluminum Association (AA): AA DAF-45 Designation System for Aluminum Finishes.

B.

ASTM B 26/B 26M - Standard Specification for Aluminum-Alloy Sand Castings; 2005.

C.

ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate;

2004.

- D. ASTM B 210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2004.
- E. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2005.
- F. ASTM B 247 - Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings; 2000.
- G. ASTM B 429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2002.
- H. ASTM C 1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink); 2002.
- I. ASTM E 488 - Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements; 1996.
- J. American Welding Society (AWS):
  - 1. ANSI/AWS D1.1/D1.1M Structural Welding Code - Steel.
- K. Americans with Disabilities Act (ADA).
- L. International Code Council (ICC): International Building Code.
- 4. PERFORMANCE REQUIREMENTS
  - A. General: Handrails and railings shall withstand structural loading as determined by allowable design working stresses of materials.
  - B. Structural Performance: Provide handrails and railings capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors, and connections:
    - 1. Top Rail of Guards: Shall withstand the following loads:
      - a. A concentrated load of 200 lbs (0.89kN) was applied at any point and in any direction.
      - b. Uniform load of 50 lbs-ft. (0.07kN-m) applied horizontally and concurrently with a uniform load of 100 lbs-ft. (0.14kN-m) applied vertically downward.
      - c. Concentrated and uniform loads above need not be assumed to act concurrently.
    - 2. Handrails Not Serving As Top Rails: Shall withstand the following loads:
      - a. Concentrated load of 200 lbs (0.89kN) applied at any point and in any direction
      - b. Uniform load of 50 lb-ft. (0.07kN-m) applied in any direction
      - c. Concentrated and uniform loads above need not be assumed to act concurrently.
    - 3. Guards Infill Area: Shall withstand the following loads:
      - a. Concentrated horizontal load of 200 lbf (0.89 kN) applied to a 1 sq. ft. at any point in the system, including panels, intermediate rails, balusters, or other elements composing the infill area. Loads need not be assumed to act concurrently, with loads on top rails in determining the stress on the guard.
  - C. Thermal Movements: Design handrails and railings to allow movements resulting from 120-degree F (49 °C) changes in ambient and 180-degree F (82 °C) surface temperatures. Base engineering calculations on materials' surface temperatures due to solar heat gain and nighttime sky heat loss.
- D. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.
- 5. SUBMITTALS
  - A. Submit under the provisions of Section 01300.
  - B. Product Data: Manufacturer's data sheets on each product to be used, including
    - 1. Preparation of instructions and recommendations.
    - 2. Storage and handling requirements and recommendations.
    - 3. Installation methods.
  - C. Shop Drawings: Submit plan, section, elevation, and perspective drawings as necessary to depict the proper configuration, assembly, installation, and termination of each product specified in this section.
- D. Verification Samples: Two samples of each finished product specified represent the actual product, color, and finish.
- 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 of experience.

- B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years of demonstrated experience installing products of the same type and scope as specified.

**\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.**

C.

Mock-Up: Provide a mock-up to evaluate surface preparation techniques and application workmanship.

1. Finish areas designated by the Architect.
2. Do not proceed with the remaining work until workmanship, color, and sheen are approved by the Architect.
3. Refinish the mock-up area as required to produce acceptable work.
7. DELIVERY, STORAGE, AND HANDLING
  - A. Store products in the 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 a temperature-controlled facility.
8. PROJECT CONDITIONS
  - A. For optimum results, maintain environmental conditions (temperature, humidity, and ventilation) within the limits recommended by the manufacturer. Do not install products under environmental conditions outside the manufacturer's absolute limits.
9. WARRANTY
  - A. At project closeout, provide the Owner or Owner's Representative with an executed copy of the manufacturer's standard limited warranty against manufacturing defects, outlining its terms, conditions, and exclusions from coverage.
2. PRODUCTS
  1. MANUFACTURERS
    - A. Acceptable Manufacturer: Swedge Lock Aluminum Fence and Railing, which is located at 25 Old Mill Rd, Suite C, Tel: 864-469-0137
    - B. [customerservice@swedgelock.com](mailto:customerservice@swedgelock.com); Web [www.swedgelock.com](http://www.swedgelock.com)
    - C. Requests for substitutions will be considered in accordance with the provisions of Section 01600.
  2. FASTENERS
    - A. Handrail Anchors: Select fasteners of type, grade, and class required to produce connections suitable for anchoring handrails and railings to other types of construction indicated and capable of withstanding design loads.
    - B. Handrail and Railing Component Anchors: Use fasteners fabricated from the same basic metal unless otherwise indicated. Do not use metals that are corrosive or incompatible with the materials joined.
      1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work unless exposed fasteners are unavoidable or are a standard fastening method for handrail and railing, as indicated.
  3. 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 the manufacturer for interior and exterior applications.
    - B. Interior Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at the project site to create pourable anchoring, patching, and grouting compound. Use for interior application only.

4. FABRICATION

- A. Assemble handrails and railings in the shop to the 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 the structural value of joined pieces.
- B. Form changes in the direction of the railing members as shown in the Contract Drawings.
- C. Mechanical Connections: Fabricate handrails and railings by connecting members with the railing manufacturer's standard concealed mechanical fasteners and fittings unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid hairline joints.
- D. Brackets, Flanges, Fittings, and Anchors: Provide manufacturer's standard wall brackets, flanges, miscellaneous fittings, and anchors to connect handrail and railing members to other construction.
- E. Provide inserts and other anchorage devices to connect handrails and railings to concrete or masonry. Fabricate anchorage devices capable of withstanding loads imposed by handrails and railings. Coordinate anchorage devices with the supporting structure.
- F. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.
- G. Cut, reinforce, drill, and tap components as indicated on drawings to receive finish hardware, screws, and similar items.
- H. Close exposed ends of railing members with prefabricated end fittings.
- I. Provide mounted handrails, wall returns at wall ends unless otherwise indicated. Close ends of returns unless clearance between the end of the railing and the wall is 1/4 inch (6mm) or less.

5. FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for applying and designating finishes.
- B. Appearance of Finished Work:
  - 1. Variations in the 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 the appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

**\*\* NOTE TO SPECIFIER \*\* Retain the following paragraph only if powder coated finishes are specified.**

C. \_\_\_\_\_

Finish Coating: Prepare, pre-treat, and apply a coating to exposed metal surfaces to comply with the manufacturer's written instructions.

- 1. Material: AAMA 2603 - Polyester powder coating, 3 mils average film thickness.

**\*\* NOTE TO SPECIFIER \*\* Insert Finish Color where known. If more than one color is specified on the project, insert all required colors and note color locations on the contact drawings.**

2. \_\_\_\_\_

Color: \_\_\_\_\_.

3. EXECUTION

1. EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.

- B. If substrate preparation is the responsibility of another installer, notify the Architect of unsatisfactory preparation before proceeding.
- 2. PREPARATION
  - A. Clean surfaces thoroughly prior to installation.
  - B. Prepare surfaces using the methods recommended by the manufacturer to achieve the best result for the substrate under the project conditions.
- 3. INSTALLATION
  - A. Install in accordance with the manufacturer's instructions.
- 4. PROTECTION
  - A. Protect installed products until completion of the project.
  - B. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

