



100 Series-Graspable Handrail

PART 1 General

1.1 SECTION INCLUDES

- A. Graspable Hand Rail

1.2 RELATED SECTIONS

- A. Section 05510-Metal Stairs: Metal Handrails other than those specified in this section.
- B. Section 05520-Metal Handrails and Railings: Metal posts and handrails.
- C. Section 05710-Decorative Metal Stairs
- D. Section 06200- Finish Carpentry: Wood Handrail
- E. Section 06430-Wood Stairs and Railings

1.3 REFERENCES

- A. ASTM B 209-Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2004
- B. ASTM B 210-Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2004
- C. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2005
- D. ASTM B 247 – Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings; 2000
- E. ASTM B 429 – Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube; 2002
- F. ASTM E 488 – Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements; 1996
- G. AA 30 – “Specifications for Aluminum Structures”

1.4 PERFORMANCE REQUIREMENTS

- A. General: Handrails and railings shall withstand structural loading as determined by allowable design working stresses of materials based on the standards as noted in the following:

1. Aluminum: AA 30

- B. Structural Performance: Provide handrails and railing capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors and connections:

1. Top Rail and Supports:

a. Capable of withstanding a concentrated load of 200 pounds (90.6 kg) applied to top rail at any point and in any direction

b. Capable of withstanding a uniform load of 50 pounds per linear foot (74.3 kg), applied to top rail horizontally with a simultaneous load of 100 pounds per linear foot (148.6 kg/m) applied vertically downward.

c. The railing design is not intended for both concentrated and uniform loads to be applied concurrently.

2. Handrails Not Serving as Top Rails:

a. Concentrated load of 200 pounds per foot (0.89kN) applied at any point and in any direction

b. Uniform load of 50-lbf-ft. (0.07kN) applied in any direction

c. Concentrated and uniform loads need not be assumed to act concurrently

3. Structural Performance of Guardrail Infill:

a. Capable of withstanding a horizontal concentrated load of 200 pounds (90.6 kg), applied to a 1-foot (305 mm) square area at any point on infill.

b. The following components constitute infill: the panels, the intermediate rails, the balusters, and other miscellaneous elements

c. Concentrated and uniform loads need not be assumed to act concurrently

4. Thermal Movements

a. Handrail and railing is designed to accommodate fluctuations from 120 degree F (49 C) in ambient temperatures to 180 degree F (82 C) surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

5. Corrosion Resistance

a. Incompatible materials are separated to prevent galvanic corrosion.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, includes the following:

1. Instructions and recommendations for preparation
2. Storage and handling requirements and recommendations
3. Methods and instructions for installation
4. Description of materials, components, fabrication, and finishes
5. Structural test reports outlining specification compliance

1.6 QUALITY ASSURANCE

A. Manufacturer's Qualifications – All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.

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

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer until ready for installation.

B. Protect materials and finish from damage during handling and installation.

1.8 PROJECT CONDITIONS

A. 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.

B. Verify field measurements before fabrication.

C. Coordinate field measurements and fabrication schedule with construction progress to avoid delays.

1.9 WARRANTY

A. At project completion, the Owner or Owners Representative, shall be supplied with a certificate outlining the terms and conditions and limitations of the Lifetime Limited Warranty.

1. Material Warranty: Twenty (20) Years

2. Finish Warranty: 10 years for baked enamel or 20 years for Kynar™.

PART 2 PRODUCTS

2.1 Acceptable Manufacturer:

Atlantic Aluminum Products Incorporated, which is located at 12144 Sussex Highway; Greenwood, DE 19950; Toll Free: 801-601-1870, Telephone: (302) 349-9091, Fax: (302) 349-0138, Email: aap@atlanticaluminumproducts.com, Web: aaprailing.com.

2.2 Materials

A. Extrusion Alloy: Aluminum 6063-T5, 6063-T6, 6061-T6, or 6005A-T61.

B. Screws and anchors: Corrosion resistant made of 304 Stainless Steel.

1.1 GRABRAIL ADA HANDRAIL SYSTEMS

- A. Grabrail Posts and Rails:
1. Material: Aluminum 6063-T52 meeting or exceeding the requirements of ASTM B 429.
 - a. Tensile Strength (Minimum): 30000 psi.
 - b. Yield Strength (Minimum): 25000 psi.
 - c. Allowable Yield Strength: 18000 psi.
 - d. Modulus of Elasticity: 10100 ksi.
 2. Rail Size: 1 1/2 inch:
 - a. O.D.: 1.500 inches (38.1 mm).
 - b. I.D.: 1.250 inches (31.75 mm).
 - c. Wall: 0.125 inches (3.175mm).

B. Mounting Options

1. Surface Mount
2. Grout and Anchoring Cement or Core Drill
3. Face Mounted

C. Guardrail Height

1. 42 inches (1067 mm) above finished surface

2.4 Colors and Finishes

A. Colors:

White: Duracron White UC -107616
Duranar White: UC-96818
Black: Duracron S600 L/G Black UC- 61204
Bronze: Duranar XL Bronze UC-96808
Duracron Bronze: UC-66721
Clay: UC 100603

B. Finishes:

1. Electrostatic Paint: Acrylic coating which conforms to specification outlined in AAMA 2603.
2. Kynar: Three part coat system (primer, paint, XL). Conforms to specification outlined in AAMA 2605 to achieve the highest possible corrosion defense and protects color pigments from chalking and fading.

2.5 Infill

A. Vertical

1. Picket spacing is custom per rail dimension ensuring all picket spacing to be uniform throughout rail section.

2. Spacing is to disallow the passage of 4 inch (101.6 mm) sphere through the railing at any point.

B. Horizontal

1. Picket spacing is custom per rail dimension ensuring all picket spacing to be uniform throughout rail section.

2. Spacing is to disallow the passage of 4 inch (101.6 mm) sphere through the railing at any point.

2.6 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 same basic metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

1. Provide concealed fasteners for interconnecting railing components and for attaching them to together work, unless exposed fasteners are unavoidable or are standard fastening method for handrail and railing indicated.

2.7 Fabrication

A. Assemble handrails and railings in shop to greatest extent possible to minimize filed 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. Form changes in direction of railing members as shown in the Contract Drawings.

C. Mechanical Connections: Fabricate handrails and railings by connecting members with 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 the manufacturer's standard wall brackets, flanges, miscellaneous fittings to connect the handrail and railing members to other construction.

E. Shear and punch metals cleanly and accurately. Remove burrs from exposed cut edges.

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 walls returns at wall ends unless otherwise indicated. Close ends of returns, unless clearance between end railing and wall is ¼ inch (6mm) or less.

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. 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 in accordance with the manufacturer's instructions
- B. Clean surfaces thoroughly with soap and water after installation is completed

3.4 PROTECTION

- A. Protect installed products until completion of project
- B. Touch-up, repair or replace damaged products before Substantial Completion

END OF SECTION