

Section 05 72 00

FAIRWAY ARCHITECTURAL RAILING SOLUTIONS ALUMINUM RAILING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section 05 Fairway Architectural Railing Solutions A200 Aluminum Railing
- B. Section 05 Fairway Architectural Railing Solutions A300 Aluminum Railing

1.2 RELATED SECTIONS - Section 05510 – Metal Stairs, Section 05520 – Metal Handrails and Railing

1.3 REFERENCES

- A. ASTM E 935 – Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings
- B. ASTM E 985 – Standard Specification for Permanent Metal Railing Systems and Rails for Buildings
- C. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- D. ASTM B 247 – Standard Specification for Aluminum and Aluminum-Alloy Die Forgings, Hand Forgings, and Rolled Ring Forgings
- E. ASTM B 429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube
- F. ANSI A1234.1 – Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railing Systems.
- G. AAMA 2604 – Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
- H. ADA – American with Disabilities Act Accessibility Guidelines

1.4 DESIGN / PERFORMANCE REQUIREMENTS

Structural Performance: Engineer, fabricate, and install handrails, guardrails, and railing systems to withstand, when tested per ASTM E 935, loadings required by applicable building and safety codes but not less than the following:

- A. In-Fill Load Test: Capable of withstanding a load consisting of 200 lbf over a 1 sq ft. span as defined in ASTM E 985, Section 7.1 for all end-use categories.
- B. Uniform Load Test: Capable of withstanding 60 plf applied at the top in any direction as defined in ASTM E 985 Section 7.1
- C. Concentrated Load Test: Capable of withstanding 365 pounds applied at the top in any direction as defined in ASTM 985 Section 7.1

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1. Posts: (1 7/8" and 3 1/2" surface and side/fascia post mounts were part of the uniform and concentrated load tests.
2. Concentrated load need not be assumed to act concurrently with uniform loads.

1.5 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of Contract.
- B. Product Data: Submit manufacturer's product data for each product required, including installation requirements, preparation instructions and recommendations.
- C. Shop Drawings: Provide complete details of entire railing system showing layout, components, fasteners and anchors, plans, elevations and details.
- D. Verification Samples: For each finished product specified, two samples, minimum size 6" long, representing actual product, color, finish, and patterns.
- E. Test Reports: Submit manufacturer's test reports of railings from independent testing agency to support load test requirements.
 1. Submit test results from ASTM E 935 conducted on the manufacturer's supplied system indicating compliance with required structural loading.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section.
- B. Installer Qualifications: Company specializing in installing products of the type specified in this section.
- C. Regulatory Requirements: Comply with requirements of building authorities having jurisdiction in project location and the following:
 1. Handrail Standard: ANSI A1264.1
- D. Codes and Regulations:
 1. Occupations Safety and Health Administration – 29 CFR 1910.23 – Guarding floor and wall openings.
 2. ASTM E 935 Public Assembly – Open Areas Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
 3. ASTM E 985 Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings.
 4. A210 railing was approved for the design load requirement for 2018 IBC (International Building Code) requirements.
- E. Obtain guardrail accessories, fittings, and fasteners from a Fairway Architectural Railing Solutions dealer to ensure consistent quality standards are maintained throughout the project.
- F. Mock Up: Provide mock-up using acceptable products and manufacturer approved installation methods. Verify owner and architect's acceptance of product and workmanship.
 1. Install one railing section of each type required.

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- 2. Maintenance: Maintain mock-up during construction for workmanship comparison.
- 3. Removal: Remove and legally dispose of mock-up when no longer needed.
- 4. Incorporation: Incorporate mock-up into final construction.

E. Pre-Installation Conference: Conduct pre-installation conference.

- 1. Prior to commencing installation, meet at project site to review material selections, installation procedures, and coordination with other trades.
- 2. Mock-ups shall be reviewed during the pre-installation conference.
- 3. Pre-installation conference shall include the contractor, installer, Fairway Architectural Railing Solutions Representative, Architect and any other relevant parties.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Inspect materials to ensure that specified products have been received.
- C. Storage and Handling: Store materials in clean, dry area away from other construction activities. Maintain material in original packaging until installation.

1.8 WARRANTY

- A. Project Warranty: Refer to conditions of the Contract for project warranty provisions used with their permission. The manufacturer is responsible for technical accuracy.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty documents executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
- C. Warranty: A210 and A310 15 Year Limited Warranty against defective workmanship and materials, when subject to normal and proper use and correct installation.

Warranty: Metal and Glass Balusters- Limited Warranty for a period of 10 years beginning from date of purchase under normal conditions of use and exposure.

1.9 PROJECT CONDITIONS

- A. Field Measurements: Take measurements of actual dimensions where necessary for fit Without gaps. Indicate measurements on shop drawings.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract Documents are based on products by: Fairway Architectural Railing Solutions

53 Eby Chiques Road, Mount Joy, PA 17552.

1914 South Grant Ave., York, NE 68467

2075 East State Street, Trenton, NJ 08619

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B. Substitutions: Not permitted

2.2 MATERIALS

A. Aluminum Guardrail System: Components fabricated of extruded aluminum in accordance with ASTM B 221.

B.A310 Aluminum Guardrail System (36" or 42" Heights) Level and Stair

1. Top Rail: 2" high by 2 3/4" wide by 0.08" wall contoured (bread loaf) aluminum extrusion 6063-T6 Aluminum Alloy
2. Bottom Rail: 1" high by 1 1/2" wide by 0.08" wall aluminum extrusion with rounded corners 6063-T6 Aluminum Alloy
3. Balustrade:
 - A. 3/4" Square by 0.045" wall aluminum extrusion Baluster 6063-T5 Aluminum Alloy
 - B. 3/4" Round by 0.050" wall aluminum extrusion Baluster 6063-T5
 - C. 4" Tempered Glass Baluster - ANSI Z97.1
 - D. 1/8" Horizontal 316 Stainless Steel Cable Infill
 - E. Aluminum alloy 1350 woven mesh panel spaced 3" on-center (32 1/8" and 38 1/8" height)
 - F. 5/8" diameter hollow aluminum horizontal balusters (36" rail height & 42" rail height, 6' and 8' lengths)
4. Aluminum Surface Mount Rail Support - installed at mid-span of each bottom rail
5. Cast Aluminum Mounting Brackets:
 - A. Top Rail – top rail mounting brackets are available in Post to Post and Over the Post mounting applications for level, level angle, and stair applications.
 - B. Bottom Rail – bottom rail mounting brackets are available for level, level angle, and stair applications
 1. Cast Aluminum Mounting Brackets are secured to post and rails with #710 Stainless Steel Self Tapping Screws.
6. Baluster Connectors:
 - A. Aluminum Baluster Connector for 3/4" Round/Square Aluminum Baluster
 - B. Glass Baluster Shoe for 4" Tempered Glass Baluster
 - C. 316 Stainless Steel tensioning/non-tensioning fittings for Cable Infill
 - D. 1 3/4" long X 3/4" wide X .140" thick aluminum collar threaded. Collar attaches to 1/2" threaded aluminum button fastened to the post.
7. Posts: Square 6005 T5 Alloy aluminum posts, wall thickness .0750"
 - A. 1 7/8" square post – 39", 48", 54" Aluminum post to be used in conjunction

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with surface mount or side/fascia mount structural post mount

B. 3 ½" square post – 39", 44", 54" Aluminum post to be used in conjunction with structural surface mount

C. 4" square post – 39", 44" 108" aluminum post to be used in conjunction with structural post mount or nominal 4" X 4" lumber

8. Post Mounts:

A. 1 7/8" Surface Post Mount: 24 ¼" steel post welded to a 4" steel flange with 1/2" holes for surface mounting. 4" plastic blocks at top and bottom with 1 ½" outside dimension.

B. 1 7/8" Side/Fascia Mount Post: 31" steel post with 1/2" holes spaced at 1 ¾" at the bottom and a 4" plastic block at top 1 ½" outside dimension.

C. 3 ½" Surface Post Mount: 24 ¼" steel post welded to a 4" steel flange with 1/2" holes for surface mounting. 4" plastic blocks at top and bottom with 3 ½" outside dimension.

D. 3 ½" Flanged Post: 3 ½" 6063 T5 Alloy aluminum posts with 0.075" wall welded to 5 7/16" square X 0.03 thick 6005-T5 aluminum plate with 0.42" X .055" holes for surface mounting. 39", 44" and 54" lengths

9. Fabrication:

A. All posts shall be surface, or side/fascia mounted with stainless steel mounting hardware consistent with industry standards and consideration for substrata in use and prevailing code requirements

B. Rails shall be inserted into cast aluminum mounting brackets without splices

C. Cuts shall be clean and free of nicks and burrs before assembly.

10. Color – White, Bronze, Black

C. **A210 Aluminum Guardrail System** (36" or 42" Heights) Level and Stair

1. Top Sub Rail/ Bottom Rail: 1 ¼" high X 1 5/16" wide by 0.07" wall "U" Shaped aluminum extrusion 6063-T6

2. Top Cap Rail: 2" high X 2 7/16" wide by 0.07" wall contoured (bread loaf) aluminum extrusion 6063-T6

3. Balustrade:

A. 3/4" square by 0.045" wall aluminum 6063-T6 extrusion with 0.02" high by 0.19" wide internal longitudinal ribs running the length of the baluster on each face and notched ends for securing to top and bottom rails

1. Aluminum balusters are inserted into routed holes in top and bottom rails

B. 4" Tempered Glass Baluster – ANSI Z97.1

C. 1/8" Horizontal 316 Stainless Steel Cable Infill

D. Aluminum alloy 1350 woven mesh panel spaced 3" on-center (32 1/8" and 38 1/8" height)

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E. 5/8" diameter hollow aluminum horizontal balusters (36" rail height & 42" rail height, 6' and 8' lengths)

4. Bottom Rail Support: 1" wide X 1 5/16" deep X appropriate length T-Shaped (cast zinc Z3) at mid-span bottom rail

5. Zinc Cast Collar Mounting Brackets:

A. Top rail mounting brackets are available in Post to Post and Over the Post mounting applications for level, level angle, and stair applications.

B. Bottom rail mounting brackets are available for level, level angle, and stair applications.

1. Zinc Cast Collar Mounting brackets are secured to posts with stainless steel screws.

6. Baluster Connectors:

A. Glass Baluster Shoe for 4" Tempered Glass Baluster

B. 316 Stainless Steel tensioning/non-tensioning fittings for cable infill

C. 1 3/4" long X 3/4" wide X .140" thick aluminum collar threaded. Collar attaches to 1/2" threaded aluminum button fastened to the post.

7. Posts: Square 6063-T5 Alloy Aluminum posts, wall thickness 0.090"

A. 1 7/8" square post – 34 1/4", 39 3/8", 54" aluminum post to be used in conjunction with surface mount or side/fascia mount structural post mount.

B. 4" square post – 39" and 44" aluminum post to be used in conjunction with structural post mount or nominal 4" X 4" lumber

8. Post Mounts:

A. 1 7/8" Surface Post Mount: 24 1/4" steel post welded to a 4" steel flange with 1/2" holes for surface mounting. 4" plastic blocks at top and bottom with 1 1/2" outside dimension.

B. 1 7/8" Side/Fascia Mount Post: 31" steel post with 1/2" holes spaced at 1 3/4" at the bottom and a 4" plastic block at top 1 1/2" outside dimension.

C. 3" Flanged Post: 3" Square X 0.090" wall aluminum 6063-T5 extrusion welded to a 5" X 5 5/16" X 3/8" thick aluminum 6063-T5 base plate with 4 – 7/16" holes

9. Fabrication:

A. All posts shall be surface, or side/fascia mounted with stainless steel mounting hardware consistent with industry standards and consideration for substrata in use and prevailing code requirements

B. Rails shall be inserted into cast aluminum mounting brackets without splices

C. Cuts shall be clean and free of nicks and burrs before assembly.

10. Color: Matte White, Textured Bronze, Textured Black

2.3 FINISHES:

A210, A310 Aluminum

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A. A210 and A310 Powder coated finish to comply with AAMA-2604 specification.
(American Architectural Manufacturers Association)

2.4 ACCESSORIES

- A. 1 7/8" and 3 1/2", 4" Post Base Trim – 1 piece
- B. 1 7/8", 3", 3 1/2" and 4" Post Base Trim – 2 piece
- C. 4" Post Base Trim – 1 piece
- D. 1 1/2" ADA Handrail
 - 1. 1 1/2" X 8' handrail
 - 2. 1 1/2" End Cap
 - 3. 1 1/2" P-loop Return
 - 4. 3" Mounting Bracket
 - 5. Straight rail aluminum connector
 - 6. Adjustable Angle aluminum connector
 - 7. 5, 32 and 38-degree radius
 - 8. Quick Return Brackets
 - 9. Inside/Outside corner brackets
- E. 12V LED Lighting: A210 railing only
 - 1. 4" 12V LED Post Caps
 - 2. 12V LED Post Sconce
 - 3. 12V LED Light Strip
 - 4. 12V LED In Deck Light
 - 5. LED Extension Cables
 - 6. 120-Watt Transformer

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are properly prepared to receive installation of guardrails.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin until unsatisfactory conditions are corrected.

3.2 INSTALLATION

- A. Install handrail and accessories according to applicable manufacturer's instructions.

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- B. Install components plumb and level, accurately fitted, free from distortion or defects.
- C. Install railings using manufacturer's supplied mounts, fasteners, and hardware.
- D. Structural post mounts shall be attached to concrete surfaces or wood structure using hardware recommended by local building codes, engineers, or architects.
- E. Install caps with appropriate Construction Adhesive.

3.2 CLEANING

- A. Clean railing promptly after installation in accordance with manufacturer's instructions.
- B. Remove labels and temporary protective coverings.
- C. Do not use harsh cleaning material or methods that could damage finish.
- D. Remove construction debris from project site and legally dispose of debris.

END OF SECTION