Endurance Original Rail™ Guide Specification

This section is based on the products of RDI Railing, an Oldcastle® APG brand, Atlanta, GA 30346; (877) 265-2220; www.rdirail.com.

ENDURANCE ORIGINAL RAIL is our fully kitted vinyl railing system– with everything you need to build out your railing in one box. Simple form and dependable function unite this railing design to maintain safety without sacrificing the elegant presentation of your home or commercial space. Infill options are available in your choice of balusters: square, turned, round aluminum, or glass.

Oldcastle® APG, a CRH Company, is North America's leading provider of innovative outdoor living solutions that enable customers to Live Well Outside. The manufacturer's portfolio of premier building products inspires endless possibilities while providing enduring outdoor spaces where people can connect, reflect and recharge.

SECTION 066300 - PLASTIC RAILINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Aluminum reinforced vinyl railing system.

1.2 REFERENCES

Specifier: If retaining this optional article, edit list below to correspond to those references retained in edited specification section.

A. References, General: Versions of the following standards current as of the date of issue of the project or required by applicable code apply to the Work of this Section.

B. American National Standards Institute (ANSI):

1. ANSI Z97.1 - Safety Glazing Material Used in Building.

C. ASTM International (ASTM):

1. ASTM A123/A123M - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A307 - Carbon Steel Bolts, Studs, and Threaded Rods 60,000 psi Tensile Strength.

3. ASTM A500/A500M - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
4. ASTM B221M - Aluminum-Alloy Extruded Bar, Rod, Wire, Profiles, and Tube (Metric).

1.3 SUBMITTALS

A. Product Data: Manufacturer's technical literature for each product specified.

1. Include preparation instructions and recommendations.
2. Include storage and handling requirements and recommendations.
3. Include manufacturer's installation instructions.
4. Include load calculation documentation stamped by a Professional Engineer licensed in the jurisdiction in which Project is located.

B. Shop Drawings:

1. Include plans, elevations, sections, and details.
2. Include points of attachment and their corresponding static and dynamic loads imposed on deck and post foundations.

Specifier: Retain "Delegated Design Submittal" Paragraph and related paragraphs under "Quality Assurance" and "Performance Requirements" articles when required due to railing size or other exceptional Project requirements.

C. Delegated Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

Specifier: Retain both "Samples for Initial Selection" and "Samples for Verification" paragraphs below for two-stage Samples.

D. Samples for Initial Selection: For each finish product and finish specified, sets of color chips representing manufacturer's full range of available colors.

E. Samples for Verification: For each material and for each color, in manufacturer's standard size.

1.4 QUALITY ASSURANCE

A. Qualification Data:

1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with minimum five years documented experience.
2. Installer Qualifications: Railing manufacturer, or experienced Installer with a record of successful installations of similar type and size to that specified.

Specifier: Retain below for delegated design requirement.

B. Professional Engineer Qualifications: Documented experience with providing delegated-design engineering services of the kind required by this Section, including documentation that engineer is licensed in the jurisdiction in which Project is located.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Transport, handle, store and protect railing components so they are in undamaged condition when installed.

B. Store railing components in manufacturer's unopened packaging.

C. Store railing components off the ground in a dry, protected, covered and secure area.

1.6 WARRANTY

A. Special Warranty: On manufacturer's standard form in which manufacturer agrees to repair or replace components which fail in materials or workmanship within specified warranty period.

Specifier: RDI offers a limited lifetime warranty for this product for single-family residential installations and a 20-year warranty for other building types.

1. Warranty Period: [Lifetime] [20 years from date of Substantial Completion].

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Requirements: Engineer railings to withstand live and dead loads according to authorities having jurisdiction and information indicated within limits and under conditions indicated, without material failure or permanent deformation of structural members.

Specifier: Retain paragraph below if retaining requirement for delegated design by Contractor. Custom engineering is available via authorized Transform railing dealers.

B. Delegated Design: Design railing to withstand design and operational loads.

2.2 MANUFACTURER

A. Basis of Design: Endurance® Original Rail™ manufactured by RDI Railing; Atlanta, Georgia 30346; (877) 265-2220; www.rdirail.com.

Specifier: Retain one of the following two paragraphs.

1. Substitutions: Not permitted.
2. Substitutions: Submit request for substitution according to Instructions to Bidders and Division 01 General Requirements.

2.3 RAILING SYSTEM

A. Use manufacturer's standard components.

B. System Description:

1. Height: [36 inches] [42 inches].
2. Length: [48 inches] [72 inches] [96 inches] [120 inches] [As indicated on the Drawings].
3. Color: [White] [Clay].

C. Top Rail: Reinforce with manufacturer's standard aluminum H channel conforming to shape of vinyl extrusion and running continuously through length of member

1. T-shaped with flat center and sloping on both sides. 3-1/2 by 1-3/4 inch extruded PVC, 0.090-inch thickness.

D. Bottom Rail: 1-3/4 by 3-1/2 inches, extruded PVC, 0.10-inch thickness. Reinforce with manufacturer's standard aluminum channel conforming to shape of vinyl extrusion and running continuously through length of member.

E. Balusters:

1. Square: 1-1/4 by 1-1/4 inch extruded PVC, 0.08-inch thickness.
2. Turned: Injection-molded PVC compound with rectangular top and bottom portions measuring 1-1/4 by 1-1/4 inch, 0.13 thickness and with a middle portion having concentric molded turnings.
3. Round ASTM B221, Alloy 6063-T5 3/4-inch round, powder-coated aluminum, black.
4. Glass Slats: ANSI Z97.1 safety glass, 3-3/4 by 0.31 inch thick.

F. Posts:

1. Sleeves: 4 by 4 inch extruded PVC.
2. Structural Posts:

a. Residential: 2 by 2 inch by 0.08 inch thickness galvanized steel tube.
b. Commercial: 2 by 2 inch by 0.12 inch thickness galvanized steel tube.

3. Base Plates: Pre-mounted galvanized steel plate welded to post. Include galvanized steel bottom sandwich plate for blocking purposes.

G. Fasteners:

1. Stainless steel fasteners to be concealed upon installation.
2. Attachment to Wood Decking: 3/8-inch diameter A307 bolts for through bolt attachment.
3. Attachment to Concrete: Comply with manufacturer’s instructions.

H. Accessories: Include brackets, snap-in bracket covers, trim rings, and all accessories required for a complete installation.

2.4 MATERIALS

A. Plastic Material: Manufacturer's proprietary, weather-resistant, resin based composite material with no wood or organic fibers and acrylic exterior.

B. Polyvinyl Chloride Components: Rigid PVC homopolymer compound modified for cold weather impact retention with high levels of Titanium Dioxide pigment for long-term ultraviolet light resistance.:

1. Tensile Modulus: ASTM D638, 425,000 psi.
2. Heat Deflection Temperature: ASTM D648, 67° c.
3. Tensile Strength: ASTM D638, 6,203 psi.
4. Thermal Expansion: $3x10^{-5}$in/in °F.

C. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of alloy and temper designated.

1. Extruded Bar and Tube: ASTM B221 (ASTM B221M), alloy 6063-T5/T52
2. Plate and Sheet: ASTM B209 (ASTM B209M), alloy 6061-T6.

D. Steel Components: ASTM A500/A500M, Grade A cold-rolled steel tubing with G-60 zinc coating on both inside and outside surfaces in accordance with ASTM A123/A123 hot-dipped electroplating process.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine railing system substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of railing system.

1. Inspect substrate that will support railing system to determine if support components are installed as indicated on approved shop drawings and are within tolerances acceptable to railing system manufacturer.

B. Proceed with railing installation once out-of-tolerance work and other deficient conditions are corrected.

3.2 RAILING INSTALLATION

A. General: Install railing system in accordance with approved shop drawings and manufacturer's written instructions.

B. Support Installation: Install blocking and other supports at locations, spacings, and with fasteners recommended by manufacturer.

C. During installation, carefully handle and store PVC components to avoid contact with abrasive surfaces. Install components in sequence as recommended by manufacturer.

3.3 CLEANING AND PROTECTION

A. Clean finished surfaces as recommended by railing system manufacturer.

B. Replace damaged or discolored components that cannot be restored by field repair.

END OF SECTION