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## SECTION 06 63 00

### PVC RAILINGS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes: Polyvinyl Chloride (PVC) guardrail components.

##### 1.2 DEFINITIONS

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas and for pedestrian guidance and support, visual separation, or wall protection.

##### 1.3 REFERENCES

- A. ASTM D 7032-15 Standard Specification for Establishing Performance Ratings Wood-Plastic Composite Deck Boards and Guardrail Systems.
- B. ICC-ES Acceptance Criteria AC-174 Acceptance Criteria for Deck Board Span Rating and Guardrail Systems.

##### 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

##### 1.5 DELEGATED DESIGN REQUIREMENTS

- A. Delegated Engineering Responsibility: Require PVC railings installer to employ a professional engineer, licensed in the state where the project is located, to provide an engineering design for connections of the railings to adjacent building construction required to meet concept expressed in the Contract Documents that includes the following:
  - 1. Comprehensive engineering analysis indicating location, type, magnitude, and direction of loads imposed on building construction.
  - 2. Preparation of engineering calculations, shop drawings, and other submittals with professional seal affixed according to respective jurisdictional licensing regulation.

## 1.6 PERFORMANCE REQUIREMENTS

### A. Structural Requirements:

1. Endurance Original Rail systems performance meets or exceeds design loading specified in Chapter 16 of the IBC, Section R301 of IRC, and UBC Chapter 16 when tested in accordance with ICC-ES AC174.

### B. Structural Performance: Comply with performance requirements specified, as determined by testing of manufacturer's PVC railings representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction

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

#### 1. Handrails and Top Rails of Guards:

- a. Uniform Load: 50 lbf/lin ft applied in any direction.
- b. Concentrated Load: 200 lbf applied in any direction.

#### 2. Concentrated Load at Infill of Guards: 50 lbf applied horizontally on an area not to exceed 1 sq ft.

#### 3. Load Assumption: Loads need not be assumed to act concurrently.

## 1.7 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

### B. Shop Drawings: Include plans, elevations, sections, and attachment details.

### C. Samples for Initial Selection: For products involving selection of color, texture, or design, including mechanical finishes.

### D. Samples for Verification: For each type of exposed finish required.

1. 8" samples of top and bottom rails.
2. 4" samples of infill/balusters.

## 1.8 QUALITY ASSURANCE

### A. Installer Qualifications: All products listed in this section should be installed by a single installer with a minimum of five years demonstrated experience in installing products of the same type and scope as specified.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Acceptable Manufacturer: Endurance® Original Rail™ manufactured by RDI; Address: 545 Tilton Road, Egg Harbor City, New Jersey 08215. Phone: (877) 420-7245. Fax: 866-277-5160. Web: www.rdirail.com.

### 2.2 MATERIALS

- A. Polyvinyl Chloride Components: Manufacturer's extrusion and fittings of polyvinyl chloride compound complying with the following:

1. Physical properties of plastic extrusions: As follows, when tested per standards referenced:

a.	Tensile modulus per ASTM D638	425,000 psi
b.	Heat deflection per ASTM D648	67°c
c.	Tensile strength per ASTM D 638	6,203 psi
d.	Thermal expansion	$3 \times 10^{-5}$ in/in °F

2. PVC: Rigid PVC homopolymer compound modified for cold weather impact retention. High level of Titanium Dioxide pigment for long-term ultraviolet light resistance.

- B. Physical dimensions of polyvinyl chloride railing components:

1. Height: [36"][42"].
2. Length: [48"][72"][96"][120"][As indicated on the Drawings].
3. Top Rail: T-shaped 3 1/4" wide x 1 3/4" high extruded PVC. Top of guardrail will be extruded with a 1 1/2" flat center sloping on both sides 1". Top horizontal member is strengthened with an aluminum T channel measuring 3 1/4" x 1 1/2", conforming to the shape of the vinyl extrusion. T channel in top horizontal member runs continuous through length of member.
4. Bottom Rail: 1 3/4" x 3 1/2" extruded PVC. Bottom horizontal member is strengthened with an aluminum P channel measuring 3 1/8" x 1 7/16". P channel in bottom horizontal member runs continuous through length of member
5. Vertical Balusters:
  - a. Square: Constructed of 1 1/4" x 1 1/4" square extruded PVC.
  - b. Turned: Constructed of injection molded PVC compound with rectangular top and bottom portions measuring 1 1/4" x 1 1/4", and a middle portion having concentric molded turnings.
  - c. Round aluminum: Constructed of 6063-T5 3/4" round, powder-coated aluminum.
6. Posts: Vertical sleeve component constructed of 4"x 4" extruded PVC. Vertical structural post inserts constructed of 2" galvanized steel tube with a 3 1/4" x 3 1/4" x 3/8" thick steel plate welded to steel post. Steel plate to have (4) 1/2" diameter holes for passage of fasteners to attach to mounting surface. Steel pipe and plate to have hot dip galvanized finished. Structural post to be stabilized inside a 4" x 4" PVC post sleeve with spacers located at the top and bottom of the galvanized steel post flange assembly. Includes bottom sandwich plate made of galvanized steel for blocking purposes.

- C. Fasteners: Systems include stainless steel fasteners, all to be concealed upon installation.

## 2.3 FINISHES

### A. 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.

### B. Colors: [White][Earth][Sahara].

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- #### A.
- Install guardrail in locations shown in compliance with manufacturer's written instructions. During installation, PVC components shall be carefully handled and stored to avoid contact with abrasive surfaces. Install components in sequence as recommended by railing manufacturer.

### 3.2 CLEANING

- #### A.
- Remove all traces of dirt and soiled areas
- #### B.
- Clean by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.

### 3.3 PROTECTION

- #### A.
- Protect railings from damage during construction period with temporary protective coverings. Remove protective coverings at time of Substantial Completion.
- #### B.
- Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field.

END OF SECTION