



SECTION 05 73 00
ORNAMENTAL RAILINGS

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1.GENERAL

1.1. SECTION INCLUDES

- A. RailEasy™ Nautilus 1: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and vinyl components ornamental railing system.
- B. RailEasy™ Nautilus 2: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.
- C. RailEasy™ Cable Railing: Pre-engineered, component-based, horizontal cable infill and natural wood ornamental railing system.
- D. RailEasy™ Mariner: Pre-engineered, component-based, stainless steel rail and balusters, and vinyl components, ornamental railing system.
- E. SunRail™ Nautilus 1: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, posts, and components ornamental railing system.
- F. SunRail™ Nautilus 2: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, posts, and components ornamental railing system.
- G. SunRail™ Mariner: Pre-engineered, component-based, stainless steel post and rail, and balusters ornamental railing system.
- H. SunRail™ Glass: Pre-engineered, component-based, stainless steel posts, handrail and bottom rail, and glass infill ornamental railing systems.
- I. SunRail™ AccessEasy: Pre-engineered, component-based, stainless steel handrail, posts, and components ADA railing system for Ramps and Stairs.

1.2. RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 05 51 00 - Metal Stairs.
- C. Section 05 52 17 - Roof Fall Protection.
- D. Section 05 71 00 - Decorative Metal Stairs.
- E. Section 06 20 00 - Finish Carpentry.

- F. Section 06 43 13 - Wood Stairs.
- G. Section 08 83 13 - Mirrored Glass Glazing.
- H. Section _____ - _____: Execution requirements for placement of anchors specified in this section in _____ wall construction.

1.3. REFERENCES

- A. ANSI Z97.1 - Safety Glazing Material Used in Buildings.
- B. ASTM E 935 - Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings.
- C. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
- D. ASTM A 276 - Stainless Steel Bars and Shapes.
- E. ASTM A 312 - Seamless and Welded Austenitic Stainless Steel Pipes.
- F. ASTM A 314 - Stainless Steel Billets and Bars for Forging.
- G. ASTM A 492 - Standard Specification for Stainless Steel Rope Wire.
- H. ASTM A 554 - Welded Stainless Steel Mechanical Tubing.
- I. ASTM A 582 - Free-Machining Stainless and Heat-Resisting Steel Bars.
- J. ANSI A 1264.1 - Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railing Systems.
- K. ANSI/ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- L. 29 CFR 1910.23 - Guarding floor and wall openings; Occupational Safety and Health Administration.
- M. BOCA National Building Code; Building Officials and Code Administrators International, Inc.
- N. ICBO Uniform Building Code; International Conference of Building Officials.
- O. SBCCI Standard Building Code; Southern Building Code Congress International, Inc.
- P. ICC - International Code Council (2003 International Codes).

1.4. DESIGN / PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide handrails and railings systems, including top rail, bottom rail, end posts, intermediate posts, cables, and cable hardware capable of withstanding the following structural loads without exceeding allowable design working stress of materials for handrails, railings, anchors and connections in conformance with applicable codes:
 - 1. Top Rail of Guards: Shall withstand the following loads:
 - a. Concentrated load of 200 lbf (0.89kN) applied at any point and in any direction.
 - b. Uniform load of 50 lbf-ft (0.07kN-m) applied horizontally and concurrently with uniform load of 100 lbf-ft (0.14kN-m) applied vertically downward.
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
 - 2. Hand rails Not Serving As Top Rails: Shall withstand the following loads:

- a. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.
 - b. Uniform load of 50 lbf-ft (0.07kN-m) applied in any direction
 - c. Concentrated and uniform loads above need not be assumed to act concurrently.
3. Guard Infill Area: Shall withstand the following loads:
- a. Concentrated horizontal load of 200 lbf (0.89 kN) applied to 1 sq ft at any point in system, including panels, intermediate rails, balusters, or other elements composing infill area. Loads need not be assumed to act concurrently with loads on top rails in determining stress on guard.
- B. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.

1.5. SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions and methods.
 - 4. Description of materials, components, fabrication, and finishes.
 - 5. Structural test reports provided by the manufacturer evidencing compliance with the specifications.
- C. Shop Drawings: Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating materials, components, sizes, dimensions, tolerances, hardware, finishes, options, accessories, and installation. Show details of attaching railing system to supports.
- D. Verification Samples: For each finish product specified, two samples, adequate in size, representing actual product, workmanship, and finishes.
 - 1. Railing frame components.
 - 2. Cables.
 - 3. Cable hardware.
- E. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- F. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

1.6. QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Manufacturer's trained installers or an installer acceptable to the manufacturer

1.7. DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in clean, dry area indoors until ready for installation. Store materials in accordance with manufacturer's instructions.
- C. Protect materials and finish from damage during handling and installation.

1.8. SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of

this section are furnished to affected trades in time to prevent interruption of construction progress.

- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9. 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 actual openings by field measurements before fabrication; show recorded measurements on shop drawings.
- C. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.10. PRE-INSTALLATION MEETING

- A. Convene a pre-installation meeting approximately two weeks before start of fabrication of railing frame components and construction of railing frame component mounting surfaces. Require attendance of parties directly affecting work of this section, including Contractor, Architect and Installer. Review the following:
 1. Specific method of installation of components into mounting surfaces.
 2. Installation, adjusting, cleaning, and protection of railing system.
 3. Coordination with other work.

1.11. COORDINATION

- A. Coordinate Work with other operations and installation of adjacent materials to avoid damage.

2.PRODUCTS

2.1. MANUFACTURERS

- A. Acceptable Manufacturer: Atlantis Rail, which is located at: 70 Armstrong Rd.; Plymouth, MA 02360; Toll Free Tel: 800-541-6829; Tel: 508-732-9191; Fax: 508-732-9798; Email: info@atlantisrail.com; Web:www.atlantisrail.com

- B. Substitutions: Not permitted.

- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2. MATERIALS

- A. Stainless Steel Structural Tubing: ASTM A 554, Type 316, minimum tensile strength 70,000 psi; 2 inch (50 mm) diameter.
- B. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32 inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
- C. Wood Railing Frame Components: As specified in Section 06 20 00 - Finish Carpentry.
- D. Tempered Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated), Type 1 (transparent flat glass), Quality-Q3; Class 1 (clear); tested for surface and edge compression

according to ASTM C 1048 and for impact strength according to 16 CFR 1201 for Category II materials.

- E. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

2.3. ORNAMENTAL RAILING SYSTEM

- A. RailEasy™ Nautilus 1 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, and vinyl components ornamental railing system.

1. Post Sleeves: Vinyl, fits over 4 by 4 wood guardrail posts, white color. Wood guardrail posts specified in Section 06 20 00 - Finish Carpentry.
 - a. Height: 48 inch (1219 mm).
2. Stair Rail Post: Vinyl, 36 inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
3. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
4. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
5. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32 inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal.
 - b. Spacing: 3 inches (76 mm) O.C.
 - c. Finish: Passivated.
6. Tensioner Assemblies: RailEasy™ stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.
 - a. Flat base.

7. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

- B. RailEasy™ Nautilus 2 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.

1. Post Sleeves: Vinyl, fits over 4 by 4 wood guardrail posts, white color. Wood guardrail posts specified in Section 06 20 00 - Finish Carpentry.
 - a. Height: 48 inch (1219 mm).
2. Stair Rail Post: Vinyl, 36 inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
3. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
4. Bottom Rail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
5. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
6. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32 inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal.
 - b. Spacing: 3 inches (76 mm) O.C.
 - c. Finish: Passivated.
7. Tensioner Assemblies: RailEasy™ stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.
 - a. Flat base.

8. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.
- C. RailEasy™ Cable Railing System: Pre-engineered, component-based, horizontal cable infill and natural wood ornamental railing system.
1. Wood Railing Frame Components: As specified in Section 06 20 00 - Finish Carpentry.
 2. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32 inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal.
 - b. Spacing: 3 inches (76 mm) O.C.
 - c. Finish: Passivated.
 - d. Tensioner Assemblies: RailEasy™ stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.
 1. Flat base.
- D. RailEasy™ Mariner System: Pre-engineered, component-based, vertical baluster infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.
1. Wood Guardrail Posts: Wood posts 5 foot (1524 mm) O.C. maximum as specified in Section 06 20 00 - Finish Carpentry and as indicated on the Drawings.
 2. Post Sleeves: Vinyl, fits over 4 by 4 wood guardrail post, white color.
 - a. Height: 48 inch (1219 mm).
 3. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
 4. Bottom Rail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

5. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
6. Baluster: Stainless Steel Structural Tubing, 1/2 inch (13 mm) diameter, Type 316 stainless steel.
 - a. Orientation: Vertical.
 - b. Spacing: 4 inches (102 mm) OC.

7. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

8. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.
- E. RailEasy™ Glass System: Pre-engineered, component-based, glass infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.
1. Wood Guardrail Posts: Wood posts 5-foot (1524 mm) O.C. maximum as specified in Section 06 20 00 - Finish Carpentry and as indicated on the Drawings.
 2. Post Sleeves: Vinyl, fits over 4 by 4 wood guardrail post, white color.
 - a. Height: 48 inch (1219 mm).
 3. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
 4. Bottom Rail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

5. Stainless Steel Finish:
 - a. Brushed.

- b. Polished.
- 6. Glass Panel Connector: Manufacturer's standard, Type 316 stainless steel.

- 7. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

- 8. Glass: As specified in Section 08 83 13 - Mirrored Glass Glazing.
 - a. 5/16 inch (8 mm) to 1/2 inch (12 mm) thick clear tempered plate glass.
- 9. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

F. SunRail™ Nautilus 1 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, posts, and components ornamental railing system.

- 1. Guardrail Post: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel, 5 foot (1524 mm) O.C. maximum.

- a. Height: 42 inch (1067 mm).
- b. Height: 36 inch (914 mm).
- 2. Stair Rail Post: Stainless Steel Round Tube, 2 inch (50 mm) diameter, Type 316 stainless steel, 36 inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
- 3. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

- 4. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
- 5. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32 inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal.
 - b. Spacing: 3 inches (76 mm) O.C.
 - c. Finish: Passivated.
- 6. Tensioner Assemblies: RailEasy™ Tensioners, stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles. Radius base fits two 2 inch (50 mm) diameter posts.
 - a. Radius base.

- 7. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

G. SunRail™ Nautilus 2 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, bottom rail, and posts ornamental railing system.

- 1. Guardrail Post: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel, 5 foot (1524 mm) O.C. maximum.

- a. Height: 42 inch (1067 mm).
- b. Height: 36 inch (914 mm).
- 2. Stair Rail Post: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel, 36-inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
- 3. Handrail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
- 4. Bottom Rail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

- 5. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

6. Wire Rope: ASTM A 492, Type 316 stainless steel wire; 5/32-inch (4 mm) diameter, 1x19 configuration, conforming to dimensional properties specified in MIL-W-87161.
 - a. Orientation: Horizontal.
 - b. Spacing: 3 inches (76 mm) O.C.
 - c. Finish: Passivated.
7. Tensioner Assemblies: RailEasy™ Tensioners, stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles. Radius base fits two 2 inch (50 mm) diameter posts.
 - a. Radius base.

8. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

H. SunRail™ Mariner System: Pre-engineered, component-based, vertical baluster infill, stainless steel handrail and bottom rail, posts, and components ornamental railing system.

1. Guardrail Post: Stainless steel structural tubing, 2-inch (50 mm) diameter, Type 316 stainless steel, 5 foot (1524 mm) O.C. maximum.

- a. Height: 42 inch (1067 mm).
- b. Height: 36 inch (914 mm).
2. Stair Rail Post: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel, 36 inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
3. Handrail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
4. Bottom Rail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

5. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.
6. Baluster: Stainless Steel Structural Tubing, 1/2 inch (13 mm) diameter, Type 316 stainless steel.
 - a. Orientation: Vertical.
 - b. Spacing: 4 inches (102 mm) OC.

7. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

8. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

I. SunRail™ Glass System: Pre-engineered, component-based, glass infill, stainless steel handrail, bottom rail, and posts ornamental railing system.

1. Posts: Stainless steel structural Tube, 2-inch (50 mm) diameter, Type 316 stainless steel, 4 foot (1219 mm) O.C. maximum.

- a. Height: 42 inch (1067 mm).
- b. Height: 36 inch (914 mm).
2. Stair Rail Post: Stainless Steel Round tubing, 2-inch (50 mm) diameter, Type 316 stainless steel, 36-inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
3. Handrail: Stainless Steel Round tubing, 2-inch (50 mm) diameter, Type 316 stainless steel with concealed rivet nuts for glass panel connector installation.
4. Bottom Rail: Stainless Steel Round tubing, 2-inch (50 mm) diameter, Type 316 stainless steel with concealed rivet nuts for glass panel connector installation.
5. Glass Panel Connector: Manufacturer's standard, Type 316 stainless steel.

6. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

7. Glass: As specified in Section 08 83 13 - Mirrored Glass Glazing.
 - a. 5/16 to 1/2 inch (8 to 13 mm) thick clear tempered plate glass.

8. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4 inch (6 mm) diameter by 7/8 inch (22 mm) long installed in railings.

J. SunRail™ AccessEasy System: Pre-engineered, component-based, stainless steel handrail, bottom rail, and posts ornamental railing system.

1. Guardrail Post: Stainless steel structural tubing, 2-inch (50 mm) diameter, Type 316 stainless steel, 4-foot (1219 mm) O.C. maximum.

- a. Height: 42 inch (1067 mm).
- b. Height: 36 inch (914 mm).

2. Stair Rail Post: Stainless Steel Round tubing, 2-inch (50 mm) diameter, Type 316 stainless steel, 36-inch (914 mm) rail height, 4 foot (1219 mm) O.C. maximum.
3. Handrail: Stainless steel structural tubing, 1-1/2 inch (38 mm) diameter, Type 316 stainless steel. Attached to 2 inch (50 mm) posts with specified connectors and appropriate spacing to comply with ADA Standards.

4. Stainless Steel Finish:
 - a. Brushed.
 - b. Polished.

5. Electrical Components: Micro Star LED Lighting; LEDs encased in Type 316 stainless steel housings; 1/4-inch (6 mm) diameter by 7/8-inch (22 mm) long installed in railings.

2.4. FABRICATION:

- A. Fabricate systems in accord with approved shop drawings and the manufacturer's instructions.
- B. Preassemble items in shop to greatest extent practicable to minimize assembly at project site. Disassemble units only to extent necessary for shipping and handling limitations. Mark units for reassembly.
- C. Field connections may be done using manufacturer's recommended methods.
- D. Coordinate fabrication of railing system components with related work under sections 06200 and 08800.

3.EXECUTION

3.1. EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Verify field measurements are acceptable to suit stair assembly tolerances.
- C. Verify supports and anchors are correctly positioned.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2. PREPARATION

- A. Take field measurements after permanent end terminations are in place and prior to preparation of shop drawings and fabrication, to ensure fitting of work.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Coordinate installation of railing system components with related work under sections 03300, 06200 and 08800.

3.3. INSTALLATION

- A. Install railing system in accordance with manufacturer's instructions.
- B. Install railing system plumb, level, square, true to line, and rigid.
- C. Ensure that wire ropes are parallel to each other, free of kinks, sags or other defects, and clean.
- D. Attach railing system securely in place using fasteners supplied or approved by manufacturer. Embedded anchor plates and supporting steel shall be provided by another trade and coordinated with the railing supplier.
- E. Attach railing system to supports approved by manufacturer.

- F. Coordinated installation of glass infill panels specified in Section 08 83 13 - Mirrored Glass Glazing.

- G. Install LED lighting components in accordance with manufacturer's instructions.
- H. Connect components with one part epoxy adhesive as approved by manufacturer.
- I. Use manufacturer's supplied hardware.
- J. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- K. Remove and replace defective or damaged components that cannot be successfully repaired as determined by Architect.

3.4. CLEANING

- A. Remove temporary coverings and protection of adjacent work areas.
- B. Clean railing system promptly after installation in accordance with manufacturer's instructions.
- C. Do not use harsh cleaning materials or methods that would damage glass or finish.
- D. Do not use abrasive cleaners.

3.5. PROTECTION

- A. Protect installed products until completion of project.
- B. Replace defective or damaged components as directed by Architect.

C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION