SECTION 05 73 00

ORNAMENTAL RAILINGS

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\*\* NOTE TO SPECIFIER \*\* Atlantis Rail; Ornamental Railing products.  
.  
This section is based on the products of Atlantis Rail, which is located at:70 Armstrong Rd.Plymouth, MA 02360Toll Free Tel: 800-541-6829Tel: 508-732-9191Fax: 508-732-9798Email: [request info (info@atlantisrail.com)](https://arcat.com/rfi?action=email&company=Atlantis%252BRail&message=RE%253A%2520Spec%2520Question%2520(05720atr)%253A%2520&coid=43888&spec=05720atr&rep=&fax=508-732-9798)  
Web: <http://www.atlantisrail.com>   
 [ [Click Here](https://arcat.com/company/atlantis-rail-43888) ] for additional information.  
Atlantis Rail is a revolutionary approach to conventional railing systems. The long lasting quality and non-corrosiveness of 316 stainless steel allows us to add value and longevity to your railings. This innovative collection of low maintenance railings offers unobstructed views capable of fitting any commercial or residential indoor or outdoor design situations. Enjoy the streamlined look of our five unique RailEasy models with infill options of cable railing, balusters or glass panels. These models mix traditional wood or vinyl with the clean, modern look of stainless steel.  
For a completely stainless steel railing system, Atlantis Rail offers the SunRail™ line. These modular systems allow for easy installation while achieving a custom look. The SunRail™ systems are also offered with infill options of cable railing, balusters or glass panels. The streamlined look of these systems provides the enjoyment of unobstructed views and ventilation without compromising the structural integrity. With the choice between a highly polished or brushed finish, these railings blend nicely with every decor.  
The cable infill is attached by patented RailEasy™Tensioners, which secure the wire with simple hand tools. Featuring mechanical swaging capabilities, these tensioners allow installers to cut cable on site, removing the hassle of pre-measuring and the cost of miscalculations. With a slotted base and angling up to 45 degrees, they are ideal for stair applications. Finish any railing project off with Micro Star™ LED lighting to illuminate the architectural features. These low voltage lights are small in size to fit almost anywhere and have a life expectancy of 100,000 hours. Brighten up any railing system by placing Micro Stars™ underneath the top railing.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. RailEasy Nautilus 1: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and vinyl components ornamental railing system.
    2. RailEasy Nautilus 2: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.
    3. Nova Nautilus System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and aluminum components ornamental railing system.
    4. RailEasy Cable Railing: Pre-engineered, component-based, horizontal cable infill and natural wood ornamental railing system.
    5. RailEasy Mariner: Pre-engineered, component-based, stainless steel rail and balusters, and vinyl components, ornamental railing system.
    6. SunRail Nautilus 1: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail, posts, and components ornamental railing system.
    7. SunRail Nautilus 2: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, posts, and components ornamental railing system.
    8. SunRail Mariner: Pre-engineered, component-based, stainless steel post and rail, and balusters ornamental railing system.
    9. SunRail Glass: Pre-engineered, component-based, stainless steel posts, handrail and bottom rail, and glass infill ornamental railing systems.
    10. SunRail AccessEasy: Pre-engineered, component-based, stainless steel handrail, posts, and components ADA railing system for Ramps and Stairs.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
    2. Section 05 51 33 - Metal Ladders.
    3. Section 05 73 13 - Glazed Decorative Metal Railings.
    4. Section 05 71 00 - Decorative Metal Stairs.
    5. Section 06 20 00 - Finish Carpentry.
    6. Section 06 43 13 - Wood Stairs.
    7. Section 08 83 13 - Mirrored Glass Glazing.
    8. Section \_\_\_\_\_\_ - \_\_\_\_\_\_\_\_\_\_\_\_: Execution requirements for placement of anchors specified in this section in \_\_\_\_\_\_\_\_ wall construction.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section; add others as required.

* + 1. ANSI Z97.1 - Safety Glazing Material Used in Buildings.
    2. ASTM E 935 - Standard Test Methods for Permanent Metal Railing Systems and Rails for Buildings.
    3. ASTM E 985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings.
    4. ASTM A 276 - Stainless Steel Bars and Shapes.
    5. ASTM A 312 - Seamless and Welded Austenitic Stainless Steel Pipes.
    6. ASTM A 314 - Stainless Steel Billets and Bars for Forging.
    7. ASTM A 492 - Standard Specification for Stainless Steel Rope Wire.
    8. ASTM A 554 - Welded Stainless Steel Mechanical Tubing.
    9. ASTM A 582 - Free-Machining Stainless and Heat-Resisting Steel Bars.
    10. ANSI A 1264.1 - Safety Requirements for Workplace Floor and Wall Openings, Stairs, and Railing Systems.
    11. ANSI/ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
    12. 29 CFR 1910.23 - Guarding floor and wall openings; Occupational Safety and Health Administration.
    13. BOCA National Building Code; Building Officials and Code Administrators International, Inc.
    14. ICBO Uniform Building Code; International Conference of Building Officials.
    15. SBCCI Standard Building Code; Southern Building Code Congress International, Inc.
    16. ICC - International Code Council (2003 International Codes).
  1. DESIGN / PERFORMANCE REQUIREMENTS

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraph carefully as required to suit local building codes or performance requirements.

* + 1. 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:
          1. Concentrated load of 200 lbf (0.89kN) applied at any point and in any direction.
          2. 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.
          3. 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:
          1. Concentrated load of 200 lbf (0.89 kN) applied at any point and in any direction.
          2. Uniform load of 50 lbf-ft (0.07kN-m) applied in any direction
          3. Concentrated and uniform loads above need not be assumed to act concurrently.
       3. Guard Infill Area: Shall withstand the following loads:
          1. 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.
    2. Corrosion Resistance: Separate incompatible materials to prevent galvanic corrosion.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. 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.
     3. 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.
     4. 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.
     5. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
     6. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.
  2. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
     2. Installer Qualifications: Manufacturer's trained installers or an installer acceptable to the manufacturer
  3. DELIVERY, STORAGE, AND HANDLING
     1. Deliver and store materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
     2. Store products in clean, dry area indoors until ready for installation. Store materials in accordance with manufacturer's instructions.
     3. Protect materials and finish from damage during handling and installation.
  4. SEQUENCING
     1. 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.
     2. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  5. PROJECT CONDITIONS
     1. 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.
     2. Verify actual openings by field measurements before fabrication; show recorded measurements on shop drawings.
     3. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.
  6. PRE-INSTALLATION MEETING
     1. 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.
  7. COORDINATION
     1. Coordinate Work with other operations and installation of adjacent materials to avoid damage.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Atlantis Rail, which is located at:70 Armstrong Rd.Plymouth, MA 02360Toll Free Tel: 800-541-6829Tel: 508-732-9191Fax: 508-732-9798Email: [request info (info@atlantisrail.com)](https://arcat.com/rfi?action=email&company=Atlantis%252BRail&message=RE%253A%2520Spec%2520Question%2520(05720atr)%253A%2520&coid=43888&spec=05720atr&rep=&fax=508-732-9798);Web: <http://www.atlantisrail.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. MATERIALS

\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs, delete those not applicable.

* + 1. Stainless Steel Structural Tubing: ASTM A 554, Type 316, minimum tensile strength 70,000 psi; 2 inch (50 mm) diameter.
    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.
    3. Wood Railing Frame Components: As specified in Section 06 20 00 - Finish Carpentry.
    4. 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.
    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.

\*\* NOTE TO SPECIFIER \*\* Select railing system(s) required from the following paragraphs and delete those not required.

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

\*\* NOTE TO SPECIFIER \*\* Specify wood guardrail posts in Section 06 20 00 - Finish Carpentry. Provide 4 by 4 inch (100 by 100 mm) wood posts 5-foot (1524 mm) O.C. maximum.

* + - 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.
         1. 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.

\*\* NOTE TO SPECIFIER \*\* Rail Fitting for 2 inch Stainless Steel Railing. Accommodates Post Widths from 3 inches.

* + - 1. Rail Mounting Hardware:
         1. Stainless Steel Straight Sidemount Oval for 2 inch (50 mm) diameter handrail.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.
      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.
         1. Orientation: Horizontal.
         2. Spacing: 3 inches (76 mm) O.C.
         3. Finish: Passivated.
      3. Tensioner Assemblies: RailEasy stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.
         1. Flat base.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. RailEasy Nautilus 2 System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and vinyl components ornamental railing system.

\*\* NOTE TO SPECIFIER \*\* Specify wood guardrail posts in Section 06 20 00 - Finish Carpentry. Provide 4 by 4 inch (100 by 100 mm) wood posts 5-foot (1524 mm) O.C. maximum.

* + - 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.
         1. 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.

\*\* NOTE TO SPECIFIER \*\* Rail Fitting for 2 inch Stainless Steel Railing. Accommodates Post Widths from 3 inches.

* + - 1. Rail Mounting Hardware:
         1. Stainless Steel Straight Sidemount Oval for 2 inch (50 mm) diameter handrail.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.
      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.
         1. Orientation: Horizontal.
         2. Spacing: 3 inches (76 mm) O.C.
         3. Finish: Passivated.
      3. Tensioner Assemblies: RailEasy stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.
         1. Flat base.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. Nova Nautilus System: Pre-engineered, component-based, horizontal cable infill, stainless steel handrail and bottom rail, and aluminum components ornamental railing system.
       1. Post: Extruded aluminum, 3 inch by 3 inch (76 mm by 76 mm) with 2 inch (50mm) stainless steel top.
          1. Height: 48 inch (1219 mm).

\*\* NOTE TO SPECIFIER \*\* Specify required color from the following paragraphs and delete those not required.

* + - * 1. Color: Black
        2. Color: White
        3. Color: Bronze
      1. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Specify optional bottom rail if required from the following paragraph and delete ife not required.

* + - 1. Bottom Rail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Rail Fitting for 2 inch Stainless Steel Railing. Accommodates Post Widths from 3 inches.

* + - 1. Rail Mounting Hardware:
         1. Stainless Steel Straight Sidemount Oval for 2 inch (50 mm) diameter handrail. Provide with insulated gasket for use with aluminum posts.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.

\*\* NOTE TO SPECIFIER \*\* Cable spaced 2-3/4 inches (70 mm) O.C. acommodates Post spacing up to 6 foot (1829 mm) O.C. maximum.

* + - 1. Cable: ASTM A 492, Type 316 stainless steel wire; 1/8 inch (3.175 mm) diameter.
         1. Orientation: Horizontal.
         2. Spacing: 2-3/4 inches (70 mm) O.C.
         3. Finish: Passivated.
    1. 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.
          1. Orientation: Horizontal.
          2. Spacing: 3 inches (76 mm) O.C.
          3. Finish: Passivated.
          4. Tensioner Assemblies: RailEasy stainless steel tensioners with mechanical swaging capability. Slotted base has capability of making up to 45 degree angles.

Flat base.

* + 1. 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.
          1. 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.

\*\* NOTE TO SPECIFIER \*\* Rail Fitting for 2 inch Stainless Steel Railing. Accommodates Post Widths from 3 inches.

* + - 1. Rail Mounting Hardware:
         1. Stainless Steel Straight Sidemount Oval for 2 inch (50 mm) diameter handrail.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

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

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. 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.
          1. 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.

\*\* NOTE TO SPECIFIER \*\* Rail Fitting for 2 inch Stainless Steel Railing. Accommodates Post Widths from 3 inches.

* + - 1. Rail Mounting Hardware:
         1. Stainless Steel Straight Sidemount Oval for 2 inch (50 mm) diameter handrail.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.
      2. Glass Panel Connector: Manufacturer's standard, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. Glass: As specified in Section 08 83 13 - Mirrored Glass Glazing.
         1. 5/16 inch (8 mm) to 1/2 inch (12 mm) thick clear tempered plate glass.
      2. 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.
    1. 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.

\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs, delete those not applicable.

* + - * 1. Height: 42 inch (1067 mm).
        2. Height: 36 inch (914 mm).
      1. 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.
      2. Handrail: Stainless Steel Structural Tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.
      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.
         1. Orientation: Horizontal.
         2. Spacing: 3 inches (76 mm) O.C.
         3. Finish: Passivated.
      3. 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.
         1. Radius base.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. 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.

\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs, delete those not applicable.

* + - * 1. Height: 42 inch (1067 mm).
        2. Height: 36 inch (914 mm).
      1. 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.
      2. Handrail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
      3. Bottom Rail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.
      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.
         1. Orientation: Horizontal.
         2. Spacing: 3 inches (76 mm) O.C.
         3. Finish: Passivated.
      3. 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.
         1. Radius base.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. 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.

\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs, delete those not applicable.

* + - * 1. Height: 42 inch (1067 mm).
        2. Height: 36 inch (914 mm).
      1. 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.
      2. Handrail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.
      3. Bottom Rail: Stainless steel structural tubing, 2 inch (50 mm) diameter, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

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

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. 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.

\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs, delete those not applicable.

* + - * 1. Height: 42 inch (1067 mm).
        2. Height: 36 inch (914 mm).
      1. 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.
      2. Handrail: Stainless Steel Round tubing, 2-inch (50 mm) diameter, Type 316 stainless steel with concealed rivet nuts for glass panel connector installation.
      3. Bottom Rail: Stainless Steel Round tubing, 2-inch (50 mm) diameter, Type 316 stainless steel with concealed rivet nuts for glass panel connector installation.
      4. Glass Panel Connector: Manufacturer's standard, Type 316 stainless steel.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.

\*\* NOTE TO SPECIFIER \*\* Atlantis Rail Systems does not supply glass, check for availability of other glass types.

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

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
    1. 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.

\*\* NOTE TO SPECIFIER \*\* Select one or more of the following paragraphs, delete those not applicable.

* + - * 1. Height: 42 inch (1067 mm).
        2. Height: 36 inch (914 mm).
      1. 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.
      2. 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.

\*\* NOTE TO SPECIFIER \*\* Specify required finish from the following paragraphs and delete those not required.

* + - 1. Stainless Steel Finish:
         1. Brushed.
         2. Polished.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + - 1. 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.
  1. FABRICATION:
     1. Fabricate systems in accord with approved shop drawings and the manufacturer's instructions.
     2. 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.
     3. Field connections may be done using manufacturer's recommended methods.
     4. Coordinate fabrication of railing system components with related work under sections 06200 and 08800.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. Verify field measurements are acceptable to suit stair assembly tolerances.
      3. 84Verify supports and anchors are correctly positioned.
      4. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Take field measurements after permanent end terminations are in place and prior to preparation of shop drawings and fabrication, to ensure fitting of work.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
      3. Coordinate installation of railing system components with related work under sections 03300, 06200 and 08800.
   3. INSTALLATION
      1. Install railing system in accordance with manufacturer's instructions.
      2. Install railing system plumb, level, square, true to line, and rigid.
      3. Ensure that wire ropes are parallel to each other, free of kinks, sags or other defects, and clean.
      4. 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.
      5. Attach railing system to supports approved by manufacturer.

\*\* NOTE TO SPECIFIER \*\* Include the following paragraph for railing systems with glass infill panels, delete if not applicable.

* + 1. Coordinated installation of glass infill panels specified in Section 08 83 13 - Mirrored Glass Glazing.

\*\* NOTE TO SPECIFIER \*\* Select optional LED lighting in the following paragraph, delete if not applicable.

* + 1. Install LED lighting components in accordance with manufacturer's instructions.
    2. Connect components with one part epoxy adhesive as approved by manufacturer.
    3. Use manufacturer's supplied hardware.
    4. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
    5. Remove and replace defective or damaged components that cannot be successfully repaired as determined by Architect.
  1. CLEANING
     1. Remove temporary coverings and protection of adjacent work areas.
     2. Clean railing system promptly after installation in accordance with manufacturer's instructions.
     3. Do not use harsh cleaning materials or methods that would damage glass or finish.
     4. Do not use abrasive cleaners.
  2. PROTECTION
     1. Protect installed products until completion of project.
     2. Replace defective or damaged components as directed by Architect.
     3. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION