



SECTION 05720

DECORATIVE METAL RAILINGS

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**\*\* NOTE TO SPECIFIER \*\*** The Cable Connection; Ultra-Tec Cable Railing System.

This section is based on the products of The Cable Connection, which is located at:

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Carson City, NV 89706.  
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[\[Click Here\]](#) for additional information.

The Ultra-Tec Cable Railing System was created to meet the need for more suitable mounting and tensioning hardware for use in pedestrian cable railings than was available from conventional sources. Heretofore, the only fittings available for cable railings were those designed and manufactured for other purposes. Often the only choices were turnbuckles and mounting devices with exposed threads, nuts, cotter pins, dust collecting crevices and other unattractive features. In addition to providing attractive, especially designed hardware and fittings, The Cable Connection will assist the architect, contractor or fabrication shop in every aspect of providing a custom styled railing system using cable as the in-fill. Our services include design, layout, estimating, fabrication, finishing, and installation assistance. Invisiware®, Adjust-A-Jaw®, Adjust-A-Body®, Pull-Lock™ and Push-Lock™ are copyrighted by and/or registered trademarks of The Cable Connection, Inc.

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

**\*\* NOTE TO SPECIFIER \*\*** Delete sections not included in this specification.

- A. Vertical stainless steel cable railing system.
- B. Horizontal stainless steel cable railing system.

**1.2 RELATED SECTIONS**

**\*\* NOTE TO SPECIFIER \*\*** Delete any sections below not related to work in this section.

- A. Section 05510 - Metal Stairs and Ladders.
- B. Section 05520 - Handrails and Railings.
- C. Section 05710 - Ornamental Stairs.
- D. Section 06430 - Wood Stairs and Railings.

### 1.3 REFERENCES

**\*\* NOTE TO SPECIFIER \*\*** Delete reference standards not specifically referenced in this specification.

- A. ASTM A36 - Carbon Structural Steel.
- B. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- C. ASTM A108 - Steel Bars, Carbon, Cold Finished, Standard Quality.
- D. ASTM A276 - Stainless Steel Bars and Shapes.
- E. ASTM A312 - Seamless and Welded Austenitic Stainless Steel Pipes.
- F. ASTM A314 - Stainless Steel Billets and Bars for Forging.
- G. ASTM A320 - Alloy Steel Bolting Materials for Low-Temperature Service.
- H. ASTM A479 - Stainless and Heat-Resisting Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
- I. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- J. ASTM A554 - Welded Stainless Steel Mechanical Tubing.
- K. ASTM A582 - Free-Machining Stainless and Heat-Resisting Steel Bars.
- L. ASTM B211 - Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
- M. ASTM B221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- N. SAE/AMS QQ-S-763 - Steel Bars, Wire Shapes, and Forgings; Corrosion-Resistant.

### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Include for each product to be used:
  - 1. Manufacturer's data sheets on each product to be used.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods.
  - 5. Available colors, styles, patterns and textures.
- C. Shop Drawings:
  - 1. Fabricator's shop drawings showing sizes, dimensions, details, and installation of railing frame components, intermediate cable braces, cables, cable hardware, and grommets.
  - 2. Show details of anchoring cable railing system to mounting surface.
- D. Material Samples:

**\*\*NOTE TO SPECIFIER\*\*** Delete any of the following paragraphs that to not apply.

- 1. Railing frame components by fabricator.
- 2. Intermediate cable braces by fabricator.
- 3. Cables by manufacturer or fabricator.

4. Cable hardware by manufacturer or fabricator.
5. Grommets by manufacturer or fabricator.

E. Sustainable Design Submittals:

1. Regional Materials: State distance from point of manufacture (fabrication) to Project site.
2. Recycled Materials: State percentage of recycled content and whether content is post-consumer or pre-consumer.

## 1.5 QUALITY ASSURANCE

- A. Fabricator's Quality Assurance: Company specializing in manufacturing products specified in this section with a minimum five years documented experience. Fabricator shall certify that all materials comply with the requirements of this section and are suitable for the intended application.
- B. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.

**\*\* NOTE TO SPECIFIER \*\*** Retain the next paragraph only if a mockup is required. Insert size requirements below.

C. Mockup:

1. Size: Minimum \_\_\_\_\_ ft (\_\_\_\_\_ m) long x full height.
2. Show: Guard railing components, accessories, attachments, and finishes.
3. Locate as instructed by the Architect.

- D. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

## 1.6 PRE-INSTALLATION CONFERENCE

- A. Pre-Installation Conference: Convene approximately two weeks before start of construction of railing frame component mounting surfaces. Require attendance of parties directly affecting work of this section, including Contractor, Architect, Fabricator, and Installer. Review the following:
1. Specific method of installation of railing frame components into mounting surfaces.
  2. Installation, adjusting, cleaning, and protection of cable railing system.
  3. Coordination with other work.
  4. Schedule, critical path items, and approval.

**\*\* NOTE TO SPECIFIER \*\*** Include the following for projects requiring LEED certification of recycled content; verify current levels of recycled content with Ultra-Tec.

- B. Carbon Steel: Minimum \_\_\_\_\_ percent recycled content; post-consumer plus one-half pre-consumer.
- C. Stainless Steel: Minimum \_\_\_\_\_ percent recycled content; post-consumer plus one-half pre-consumer.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site with labels or other markings clearly identifying the products and contractor or fabricator.

- B. Store materials in a clean, dry area, away from exposure to the weather until they are ready for installation.
- C. Protect materials while handling to avoid damage during installation.

## 1.8 WARRANTY

- A. Provide manufacturer's standard warranty for each product indicated.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: The Cable Connection, Ultra-Tec Cable Railing Systems, 52 Heppner Dr.; Carson City, NV 89706; ASD Tel: (800)851-2961; Tel: (775) 885-1443; Fax: (775)885-2734; Email: info@ultra-tec.com; Web: [www.ultra-tec.com](http://www.ultra-tec.com).

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs.**

- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

### 2.2 PERFORMANCE AND DESIGN REQUIREMENTS

**\*\* NOTE TO SPECIFIER \*\* Delete sections not applicable for specific project. Specify loads based on local building codes or performance requirements.**

- A. Cable railing system, including top rail, bottom rail, end posts, intermediate posts, intermediate cable braces, cables, and cable hardware shall be designed to conform to building codes and loading requirements.

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs. Insert specified requirements.**

1. Withstand a concentrated load of \_\_\_\_\_ lbs (\_\_\_\_\_ kgs) applied from any direction, at any point on the railing.
  2. Withstand a uniform load of \_\_\_\_\_ lbs per sq ft (\_\_\_\_\_ kgs per sq cm), applied vertically down and horizontally, but not simultaneously, on top rail.
- B. Intermediate Posts and Cables: Designed for uniform load of \_\_\_\_\_ lbs per sq ft (\_\_\_\_\_ kgs per sq cm) over gross area of cable railing system of which they are part. Reactions due to this loading need not be added to loading specified for main supporting members of cable railing system.
  - C. Railing Frame Components and Cable Hardware: Withstand loads encountered without excessive deflection or distortion when cables are tensioned to required amounts to conform to building codes.

### 2.3 RAILING FRAME COMPONENTS

**\*\* NOTE TO SPECIFIER \*\* Include one of the following two paragraphs based on style of guard railing frame components desired. Rectangular tubing may be used on horizontal cable systems only. Delete one of the next two paragraphs.**

- A. Framing: Round Pipe.

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs.**

1. Material: Carbon Steel, ASTM A53, Grade A. Minimum tensile strength of 48,000 psi (3375 kg per sq cm).
2. Material: Stainless Steel, ASTM A312, Type 304L or 316L. Minimum tensile strength of 70,000 psi (4921 kg per sq cm).

B. Framing: Structural Tubing.

**\*\* NOTE TO SPECIFIER \*\* Select tubing style. Delete one of the next two paragraphs.**

1. Style: Square.
2. Style: Round.

**\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs.**

3. Material: Carbon Steel, ASTM A500, Grade A. Minimum tensile strength of 45,000 psi (3164 kg per sq cm).
4. Material: Stainless Steel, ASTM A554, Type 304 or 316. Minimum tensile strength of 70,000 psi (4921 kg per sq cm).

C. Post Mounting:

**\*\* NOTE TO SPECIFIER \*\* Delete post mounting options not required.**

1. Floor Plate.
2. Fascia Plate.
3. 6 inch (152 mm) extension into concrete.
4. As noted on the Contract Drawings.

D. Intermediate Rail Braces for railings with vertically oriented cables:

1. Materials:

**\*\* NOTE TO SPECIFIER \*\* Delete tubing option not required.**

- a. Tubing: 4130 Chrome/moly. 0.625 inch (16 mm) diameter x 0.120 (4 mm) wall thickness.
- b. Tubing: Seamless stainless steel. 0.625 inch (16 mm) diameter x 0.120 (4 mm) wall thickness.

**\*\* NOTE TO SPECIFIER \*\* Delete spacing options not required.**

2. Spacing: Maximum 26 inches (660 mm) on center between end and/or intermediate posts.
3. Spacing: As noted on the Contract Drawings.

**\*\*NOTE TO SPECIFIER\*\* Delete Intermediate Cable Braces paragraph if not specified.**

E. Intermediate Cable Braces:

1. Type: Single piece.
2. Size: 1/4 x 1 inch (6.4 x 25.4 mm).

**\*\* NOTE TO SPECIFIER \*\* Delete spacing option not required.**

3. Spacing: Maximum 42 inches (1067 mm) on center between end and/or intermediate posts.
4. Spacing: As noted on the Contract Drawings.

**\*\* NOTE TO SPECIFIER \*\* Delete material option not required.**

5. Material: Cold formed steel.
6. Material: Stainless steel.

**\*\*NOTE TO SPECIFIER\*\* Delete cable grommets paragraph if not required.**

F. Cable Grommets: For prevention of abrasion of intermediate posts, end posts, and cable braces bored for cables.

1. Material: Black, UV-resistant Delrin or approved equal.

## 2.4 CABLES AND CABLE HARDWARE

### A. Cables.

1. Material: 1 x 19 Type 316 stainless steel strand, left-hand lay, per dimensional properties contained in MIL-DTL-87161.

**\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.**

2. Finish: Mill.
3. Finish: PVC coated.

**\*\* NOTE TO SPECIFIER \*\* Delete color option not required.**

- a. Color: \_\_\_\_\_.
- b. Color: As specified on the drawings.

**\*\* NOTE TO SPECIFIER \*\* Delete the four diameter options not required.**

4. Diameter: 1/8 inch (3.2 mm) diameter cable with a minimum breaking strength of 1780 pounds (807.39 kilograms).
5. Diameter: 3/16 inch (4.8 mm) diameter cable with a minimum breaking strength of 4000 pounds (1814.37 kilograms).
6. Diameter: 1/4 inch (6.4 mm) diameter cable with a minimum breaking strength of 6900 pounds (3129.79 kilograms).
7. Diameter: 5/16 inch (8 mm) diameter cable with a minimum breaking strength of 10600 pounds (4808.08 kilograms).
8. Diameter: 3/8 inch (9.6 mm) diameter cable with a minimum breaking strength of 14800 pounds (6713.17 kilograms).

**\*\* NOTE TO SPECIFIER \*\* Delete orientation options not required.**

9. Orientation: Horizontal.
10. Orientation: Slope parallel to stair pitch.
11. Orientation: Vertical
12. Orientation: As indicated on the Contract Drawings.

**\*\* NOTE TO SPECIFIER \*\* Delete spacing option not required.**

13. Spacing: \_\_\_\_\_ inches (\_\_\_\_\_ mm) on center.
14. Spacing: As indicated on the Contract Drawings.

### B. Cable Hardware Components.

1. Material: Stainless steel, ASTM A276 and A479, SAE/AMS QQ-S-763, Type 316.

**\*\* NOTE TO SPECIFIER \*\* Delete Type options not required. Use paragraphs for tensioned fittings and non-tensioned fittings if specifying individual hardware items.**

2. Type: Swageless hardware wherever practical.
3. Type: Hardware substantially concealed inside end posts where practical.
4. Type: As indicated on the contract drawings.
5. Type: Most economical combinations of fittings that are practical.
6. Type: Tensioned Fittings:

**\*\* NOTE TO SPECIFIER \*\* Delete fitting options not required.**

- a. Fitting: Invisiware Receiver.
  - b. Fitting: Adjust-A-Jaw Tensioner.
  - c. Fitting: Adjust-A-Body with Clevis Tensioner.
  - d. Fitting: Adjust-A-Body with Threaded Bolt Tensioner.
  - e. Fitting: Adjust-A-Body with Hanger Bolt Tensioner.
  - f. Fitting: Adjust-A-Body with Concrete Bolt Tensioner.
  - g. Fitting: Receiver with Push-Lock Stud Swageless Tensioner.
7. Type: Non-Tensioned Fittings:

**\*\* NOTE TO SPECIFIER \*\* Delete fitting options not required.**

- a. Fitting: Invisiware Radius Ferrule.
- b. Fitting: Ultra-Tec Fixed Jaw.
- c. Fitting: Push-Lock Swageless Fitting.
- d. Fitting: Push-Lock with Threaded Eye Swageless Fitting.
- e. Fitting: Pull-Lock Swageless Fitting.

## 2.5 FINISHES

### A. Steel Finishes:

**\*\* NOTE TO SPECIFIER \*\* Delete finish options not required.**

- 1. Finish: Mill.
- 2. Finish: Primed.
- 3. Finish: Primed and painted.
- 4. Finish: Powder coated.

**\*\* NOTE TO SPECIFIER \*\* Delete color option not required. Delete both if mill finish is specified.**

- 5. Color: \_\_\_\_\_.
- 6. Color: As selected by Architect from Manufacturer's standard color offerings.
- 7. Apply final finish before installation of cable hardware and cables.

### B. Stainless Steel Finishes:

**\*\* NOTE TO SPECIFIER \*\* Delete finish option not required.**

- 1. Finish: No. 4 Satin.
- 2. Finish: No. 8 Polished.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive new cable railing system. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

### 3.2 INSTALLATION

- A. Install cable railing system in accordance with manufacturer's instructions at locations indicated on the drawings.
- B. Install cable railing system plumb, level, square, and rigid.
- C. Anchor cable railing system to mounting surface as indicated on the drawings.

**\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph unless frame components are wood instead of metal. Consult The Cable Connection for more information on installation in conjunction with wood railing frames.**

- D. Install wood frame railing components in accordance with Section 06430, Wood Stairs and Railings.
- E. Use manufacturer's supplied cable hardware.
- F. Terminate and tension cables in accordance with manufacturer's instructions.
- G. Tension cables to a minimum of 400 pounds (181.44 kilograms) each in sequence in accordance with manufacturer's instructions.
- H. Ensure cables are clean, parallel to each other, and without kinks or sags.

- I. Replace defective or damaged components as directed by Architect.
- J. Repair damaged factory-applied finish as directed by Architect.

### 3.3 ADJUSTING AND TENSIONING

- A. Adjust cables and cable hardware as required to provide properly installed cable railing system as directed by Architect.

### 3.4 CLEANING

- A. Clean surfaces with soap and water or commercially available stainless steel cleaners.
- B. Do not use abrasive cleaners.

### 3.5 PROTECTION

- A. Protect cable railing system and finish from damage during construction.

END OF SECTION