SECTION 05 73 16

CABLE RAILING SYSTEMS

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\*\* NOTE TO SPECIFIER \*\* Keuka Studios, Inc.; cable railing systems.  
This section is based on the products of Keuka Studios, Inc. which is located at:  
1011 Rush Henrietta Town Line Rd.  
Rush, NY 14543  
Toll Free: 855-454-5678  
Phone: 585-487-6148  
Fax: 585-487-6150  
Email: dan@keuka-studios.com .  
Web Site: www.keuka-studios.com  
Keuka Studios is a custom fabricator of cable railings and deck railings. We have several standard designs to choose from, and craft custom designs, as well. All of our railing systems are available in surface mount, or fascia mount, and materials can be customized to fit your design project.  
All of our design and manufacturing is done in the USA, although we can ship worldwide, and have worked with clients in several countries. We also use recycled materials whenever possible. We manufacture both commercial and residential railings, and can build custom stairs also. Send us your architectural drawings, or just a sketch, and we will work with you to create the perfect look and feel for your railings. Using 3D CAD modeling we build detailed drawings and realistic renderings of the finished project, to assure that your railings, top rails, and stairs look perfect.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. Cable railing systems, with architectural metal posts, stainless steel horizontal cable balustrade and fittings.
       1. Matching metal handrails.
       2. Wood handrails:
  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 04 22 00.16 - Surface-Bonded Concrete Unit Masonry.
    3. Section 05 51 00 - Metal Stairs.
    4. Section 06 20 00 - Finish Carpentry.
  1. REFERENCES

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

* + 1. ASTM International (ASTM):
       1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
       2. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
       3. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
       4. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
       5. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
       6. ASTM A513 - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing.
       7. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
       8. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
    2. American Welding Society (AWS):
       1. AWS D1.1/D1.1M - Structural welding Code - Steel.
    3. International Code Council (ICC).
    4. National Ornamental & Miscellaneous Metals Association (NOMMA):
       1. NOMMA Guideline 1 - Joint Finishes.
    5. The Society for Protective Coatings (SSPC):
       1. SSPC - Steel Structures Painting Manual.
       2. SSPC-SP6/NACE No. 3 - Commercial Blast Cleaning.
       3. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
        1. Details of construction, installation and relationships to adjacent Work.
        2. Stamped by a professional engineer licensed in the jurisdiction of the project.
     3. Verification Samples: For each product specified, two samples, representing actual finishes and configurations specified.
  2. QUALITY ASSURANCE
     1. Single Source: Obtain components from single manufacturer.
     2. Joints: Finish joints in accordance with NOMMA Guideline 1.
     3. Qualifications:
        1. Manufacturer: Minimum of 5 years experience in the production of specified products.
        2. Installer: Minimum of 2 years experience in installation of systems similar in complexity to those required for Project.
           1. DELIVERY, STORAGE AND HANDLING

Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards. Protect from damage.

Store products in manufacturer's labeled packaging until ready for installation.

* 1. WARRANTY
     1. Warranty: Manufacturer's standard limited lifetime warranty for defects in materials.

1. -1
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Keuka Studios, Inc., which is located at: 1011 Rush Henrietta Town Line Rd.; Rush, NY 14543; Toll Free Tel: 855-454-5678; Tel: 585-487-6148; Fax: 585-487-6150; Email: [request info (Jason@Keuka-Studios.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=Keuka+Studios,+Inc.&coid=43199&rep=&fax=585-487-6150&message=RE:%20Spec%20Question%20(05720keu):%20%20&mf=); Web: [www.keuka-studios.com](http://www.keuka-studios.com)

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

\*\* NOTE TO SPECIFIER \*\* Use this article carefully; restrict statements to identify system design requirements only. Edit prescriptive descriptions elsewhere in this section accordingly. This article includes loads for ICC code compliance. Edit required loads when other codes govern the Project.

* 1. DESIGN REQUIREMENTS
     1. Design handrail, guardrail, and attachments to resist forces as required by applicable local code of authorities having jurisdiction. Apply loads non-simultaneously to produce maximum stresses.
        1. Guard Top Rail and Handrail Concentrated Load: Applied at any point in any direction.
           1. 200 lbs (0.89 kN).
           2. \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Guard top rail uniform load is not required for one and two family dwellings.

* + - 1. Guard Top Rail Uniform Load:

\*\* NOTE TO SPECIFIER \*\* Delete if not required. Pounds per liner foot (plf)

* + - * 1. 50 plf (0.73 kN/m) applied in any direction

\*\* NOTE TO SPECIFIER \*\* For Use Group I-3 - Institutional, F - Factory, H - Hazardous, and S - Storage occupancies when areas are not accessible to general public. Delete if not required.

* + - * 1. 20 plf (0.29 kN/m) applied in any direction.
        2. \_\_\_\_\_\_.
      1. Intermediate Rails, Panels, and Baluster Concentrated Load:
         1. 50 lbs (0.22 kN) applied to 1 ft2 (300 mm2) area.
         2. \_\_\_\_\_\_ applied to 1 ft2 (300 mm2) area.
  1. CABLE RAILING SYSTEMS
     1. Standards Compliance: ASTM E935.
     2. System Design:

\*\* NOTE TO SPECIFIER \*\* Select one of the style options below. Delete those not required.

* + - 1. Keuka Curved Cable Railing: Post spacing as indicated.
      2. Ithaca Style Cable Railing: Post spacing as indicated.
      3. Chicago Style Cable Railing: Post spacing as indicated.
      4. Prairie Style Cable Railing: Post spacing as indicated.
      5. Tokyo Style Cable Railing: Post spacing as indicated

\*\* NOTE TO SPECIFIER \*\* Select the desired railing height.

* + - * 1. 36 inch (9814 mm) height.
        2. 42 inch (1067 mm) height.
        3. \_\_\_\_\_\_ height.
      1. Provide a custom design as indicated.
  1. CABLE RAILING SYSTEM COMPONENTS
     1. Fabricated Railings Components:
        1. Steel Plate: ASTM A36/A36M or ASTM A572/A572M; Grade 50.
        2. Sheet Steel: ASTM A36/A36M.

\*\* NOTE TO SPECIFIER \*\* Hollow structural sections and pipe are furnished by nominal inside diameter that may not meet dimensional tolerances for ADA compliance. ASTM A513 tubing is furnished by actual outside diameter.

* + - 1. Steel Pipe: ASTM A53/A53M, Grade B; Size (NPS / DN): \_\_\_\_\_\_; Schedule: \_\_\_\_\_\_.
      2. Tubing: Welded and seamless structural carbon steel: Cold formed: ASTM A500 or hot-formed: ASTM A501.
      3. Tubing: Electric-resistance-welded carbon and alloy steel: ASTM A513
    1. Welding Materials: AWS D1.1; type required for materials being welded.
    2. Cables:
       1. Manufacturer: Ultra-tec Cable Railing Systems. Manufactured by The Cable Connection.
       2. Construction: 1 x19 Type 316 stainless steel strand, left-hand lay,
       3. Diameter:

\*\*NOTE TO SPECIFIER \*\* Choose one of the two subparagraphs below.

* + - * 1. 1/8 inch (3 mm) with a breaking strength of 1,780 lbs (756 kg).
        2. 3/16 inch (5 mm) with a breaking strength of 4,000 lbs (2101 kg).
      1. Orientation:
         1. Horizontal.
         2. Slope parallel to stair pitch.
         3. As indicated on drawings.
         4. \_\_\_\_\_\_.
      2. Nominal cable to cable centerline spacing: 3 inches (76 mm).
      3. Post to post spacing, maximum: 42 inch (1068 mm).
      4. Finish:
         1. Mill.
         2. As indicated on drawings.
         3. \_\_\_\_\_\_.
    1. Cable Hardware:
       1. Manufacturer: Ultra-tec Cable Railing Systems. Manufactured by The Cable Connection.
       2. Construction: 316 stainless steel

\*\* NOTE TO SPECIFIER \*\* For custom style specifying, edit the following paragraph.

* + - 1. Hidden Fasteners: Terminal fittings, push-lock fittings and adjusters, pull-lock fittings.

\*\* NOTE TO SPECIFIER \*\* For custom style specifying, edit the following paragraph.

* + - 1. Exposed Fasteners: Carriage bolts, hex bolts, lag screws, countersunk screws; consistent with design of railing.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Top Rail, Wooden: Species: \_\_\_\_\_\_; Cross-sectional dimensions (inch / mm) \_\_\_\_\_\_ by \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Choose edge type desired. Delete if not required.

* + - 1. Edges: Eased.
      2. Edges: Beveled (inch / mm) \_\_\_\_\_\_.
      3. Edges: Rounded (inch / mm) \_\_\_\_\_\_.
      4. Edges: As indicated on drawings.
      5. Edges: \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Top Rail, Aluminum: (inch / mm diameter or size): \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Top Rail, Stainless Steel: (inch / mm diameter or size): \_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Top Rail, \_\_\_\_\_\_: (inch / mm diameter or size): \_\_\_\_\_\_.
  1. FINISHING
     1. Powder Coating: zinc rich epoxy primer, flash cured at 300 F, polyester colored top coat, final cure.
        1. Blast clean complying with SSPC-SP6/NACE No. 3

\*\* NOTE TO SPECIFIER \*\* Select a pre-treat option below. Delete what is not required.

* + - 1. 3 stage pre-treat.
      2. 4 stage pre-treat.
      3. Color:

\*\* NOTE TO SPECIFIER \*\* Select the desired color. Delete what is not required.

* + - * 1. Matte Black.
        2. Silver.
        3. Matte Bronze.
        4. Pewter.
        5. White.

\*\* NOTE TO SPECIFIER \*\* Custom colors are available upon request.

* + - * 1. \_\_\_\_\_\_.
    1. Galvanizing: ASTM A123/A123M: galvanize after fabrication.

\*\* NOTE TO SPECIFIER \*\* ASTM A123/A123M: The minimum zinc coating thickness based on type of material and steel thickness of component. Delete if not required.

* + - 1. Coating: 1.2 oz/ft2 (355 g/m2) thick, minimum.

\*\* NOTE TO SPECIFIER \*\* ASTM A123/A123M: The maximum zinc coating thicknesses based on type of material and steel thickness of component. Delete if not required.

* + - 1. Coating: 2.0 oz/ft2 (600 g/m2) thick, minimum.

\*\* NOTE TO SPECIFIER \*\* ASTM A123/A123M: Other material thicknesses are listed in the standard. Specific coating thicknesses can be specified, if necessary. Delete if not required.

* + - 1. Coating: \_\_\_\_\_\_ oz/ft2 (\_\_\_\_\_\_ g/m2) thick, minimum.
      2. Touch-Up Primer for Galvanized Surfaces:

\*\* NOTE TO SPECIFIER \*\* Select one of the following paragraphs for primer type required. Select primer compatible with finishing material.

* + - * 1. SSPC Paint 20; type I inorganic zinc rich.
        2. SSPC Paint 20; type II organic zinc rich.
        3. \_\_\_\_\_\_.
  1. FABRICATION
     1. Assemble components in largest practical sizeassemblies for delivery to site.
     2. Fabricate components with joints tightly fitted and secured.
     3. For exposed fasteners, provide flush countersunk screws, hex bolts or carriage bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
     4. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
     5. Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of hollow members at locations not encouraging water intrusion.
     6. Exposed Welded Joints: NOMMA Guideline 1.

\*\* NOTE TO SPECIFIER \*\* Choose the required NOMMA Guideline joint finish. Delete if not required.

* + - 1. Joint Finish 1: No evidence of a weld.
      2. Joint Finish 2: Completely sanded joint.
      3. Joint Finish 3: Partially dressed weld with spatter removed.
      4. Joint Finish 4: Good quality undressed weld with minimal spatter.

\*\* NOTE TO SPECIFIER \*\* Delete if railing systems include stairs and landings.

* + 1. Accurately form components to each other and to building structure.

\*\* NOTE TO SPECIFIER \*\* Delete if railing systems does not include stairs and landings.

* + 1. Accurately form components to suit stairs and landings, to each other and to building structure.
    2. Accommodate for expansion and contraction of members and building movement without damage to connections or members.
    3. Coordinate installation of wood handrail with Section 06 40 00 - Architectural Woodwork.

1. EXECUTION
   1. EXAMINATION AND PREPARATION
      1. Examine and prepare substrates using the methods recommended by manufacturer for achieving best result for the substrates under project conditions.
         1. Verify concealed blocking and reinforcement is installed and correctly located to receive wall mounted handrails.
         2. Verify supply items embedded in substrates prior to railing installation are dimensionally in their correct locations and proper orientations.
      2. Do not proceed with installation until substrates and supply items have been prepared using the methods recommended by manufacturer and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.
      3. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
   2. INSTALLATION
      1. Install in accordance with manufacturer's written instructions and recommendations. Adjust for proper tension and appearance.

\*\* NOTE TO SPECIFIER \*\* Confirm dimensions below with the manufacturer. Delete if not required.

* + - 1. Maximum Variation From Plumb: 1/8 inch (3 mm) per story, non-cumulative.
      2. Maximum Offset From Alignment: 1/4 inch (6 mm).
      3. Maximum Out-of-Position: 1/2 inch (13 mm).
  1. PROTECTION
     1. Protect installed products until completion of project.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION