

## **SECTION 26 50 00– [LUMENRAIL LED LIGHTED RAILING] [WAGNERAIL RAILING SYSTEM]**

### **PART 1 -- GENERAL**

#### **Section 1.01 SCOPE OF WORK**

- A. Fabricate and install metal [stair assemblies] [railings] in accordance with the requirements set forth in this section.

#### **Section 1.02 ADDITIONAL WORK INCLUDED IN THIS SECTION**

- A. Reinforcing for wall rail brackets at dry wall partitions.  
B. Field measuring for weld plates, sleeves and insert locations.  
C. Field measuring.  
D. Anchors or inserts for terrazzo or precast concrete.  
E. Prime painting of galvanized materials

*The following items are not to be included in the metal rail contractor's work:*

- *Temporary shoring or bracing*
- *Demolition and removal of existing work*
- *Clean up of existing construction prior to installation of stairs*
- *Cleaning out of stair wells*
- *Cutting; preparation of pockets; setting of plates, inserts, carpenter hardware or any other built ins*
- *Temporary lights and electricity*
- *Temporary safety rails after erection*
- *Field painting*
- *Final cleaning and protection of aluminum, stainless steel, bronze and glass*

#### **Section 1.03 RELATED WORK SPECIFIED IN OTHER SECTIONS**

- A. Section 02 90 00: Landscaping: Installation Location and Coordination  
B. Section 03 30 00: Cast-in-Place Concrete  
C. Section 03 40 00: Precast Concrete  
D. Section 03 62 00: Non-Shrink Grouting  
E. Section 03 63 00: Epoxy Grouting  
F. Section 04 20 00: Unit Masonry  
G. Section 04 40 00: Stone Assemblies  
H. Section 05 52 00: Metal Railings  
I. Section 05 12 00: Structural Steel Framing  
J. Section 06 43 00: Wood Stairs and Railings  
K. Section 09 20 00: Plaster and Gypsum Board Assemblies  
L. Section 09 30 00: Tiling  
M. Section 09 65 00: Resilient Flooring  
N. Section 09 68 00: Carpeting  
O. Section 09 90 00: Painting and Coating  
P. Section 26 50 00: Lighting

#### **Section 1.04 STRUCTURAL REQUIREMENTS**

*The structural adequacy of the metal stair design is the responsibility of the designer or professional of record.*

- A. Railing assembly shall withstand a minimum concentrated load of [200] [ ] pounds applied vertically downward or horizontally in any direction, but not simultaneously, at any point on the top rail.

*Codes may vary in method of application and magnitude of load. Governing code should be checked for specific requirements. Most codes require a 200 pound minimum concentrated load applied in any direction at any point on the top rail.*

- OR -

- A. Railing assembly shall withstand a minimum uniform load of [50] [ ] pounds per foot applied horizontally or vertically downward, but not simultaneously, on the top rail.

*Some codes have requirements for uniform loading on the top rails. Most codes require a 50 lb/ft minimum uniform load. Uniform loads are not to be applied concurrently with concentrated loads.*

- B. Guard intermediate rails, balusters, panel fillers, or posts shall be designed for a uniform load of not less than [50] [\_\_\_\_\_] pounds per square foot applied horizontally over the gross area of the guard of which they are part. Reactions due to this loading need not be added to the loading specified for the main supporting members of the guard.

### **Section 1.05 QUALITY ASSURANCE**

- A. Electrician Qualifications: State as required in 1.05.A or state specific qualifications required
- B. Fabricator Qualifications: Furnish references listing projects of similar size and scope  
*If special or unusual capabilities are required they should be set forth here.*
- C. Installer Qualifications  
*State as required in 1.05.A or state specific qualifications required.*
- D. Regulatory Requirements
1. Components and installation are to be in accordance with state and local code authorities
  2. Components and installation are to follow current ADA and ICC/ANSI A117.1 guidelines.  
*Determine code regulations that govern this work. Specify requirements and drawings that are necessary to meet governing codes.*
- E. Certifications
1. Furnish certification that all components and fittings are furnished by the same manufacturer or approved by the primary component manufacturer.
  2. Furnish certification that components were installed in accordance to the manufacturer's engineering data to meet the specified design loads.
- F. Pre-Installation Meeting
1. Prior to the beginning of work, conduct a pre-job conference at the job site.
  2. Provide seven calendar days advance written notice ensuring the attendance by competent authorized representatives of the fabricator, building owner's representative, architect and subcontractors whose work interfaces with the work of this section.
  3. Review the specifications to determine any potential problems, changes, scheduling, unique job site conditions, installation requirements and procedures and any other information pertinent to the installation.
  4. Record the results of the conference and furnish copies to all participants.

### **Section 1.06 REFERENCES**

*Include only reference standards that are to be indicated within the text of this section. Edit the following, adding and deleting as required for project and product selection.*

- A. Aluminum Association (AA)
1. ABH-21 Aluminum Brazing Handbook
  2. ASD-1 Aluminum Standards and Data
  3. DAF-45 Designation System for Aluminum Finishes
  4. SAA-46 Standards for Anodized Architectural Aluminum
- B. American Architectural Manufacturers Association (AAMA)
1. AAMA 605.1 Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
  2. AAMA 606.1 Voluntary Guide Specifications and Inspection Methods of Integral Color Anodic Finishes for Architectural Aluminum.
  3. AAMA 607.1 Voluntary Guide Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
  4. AAMA 608.1 Voluntary Guide Specifications and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.
- C. American Concrete Institute (ACI)
1. ACI 347 Recommended Practice for Concrete Formwork
- D. American Institute of Steel Construction (AISC)
1. Manual of Steel Construction
- E. American Iron and Steel Institute (AISI)
1. Steel Products Manual; Stainless and Heat Resisting Steel.
  2. Code of Standard Practice
- F. American National Standards Institute (ANSI)
1. ANSI A21.1 Safety Requirements for Floor and Wall Openings, Railings and Toe Boards.
  2. ANSI A58.1 Minimum Design Loads in Buildings and Other Structures.
  3. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities.

4. ANSI A97.1 Safety Performance Specifications and Methods of Test for Safety Glazing Material used in Buildings.
  5. ANSI/NAAMM MBG 531 Metal Bar Grating Manual.
- G. American Society for Testing and Materials (ASTM)
1. A 29 Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for.
  2. A 36 Carbon Structural Steel.
  3. A 47 Specification for Ferritic Malleable Iron Castings.
  4. A 48 Specification for Gray Iron Castings.
  5. A 53 Pipe, Steel, Black and Hot Dipped, Zinc Coated Welded and Seamless.
  6. A 108 Steel Bars, Carbon, Cold Finished, Standard Quality.
  7. A 123 Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
  8. A 167 Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  9. A 269 Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  10. A 276 Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
  11. A 312 Specification for Seamless and Welded Austenitic Stainless Steel Pipe.
  12. A 500 Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  13. A 512 Specification for Cold-Drawn Buttweld Carbon Steel Mechanical Tubing.
  14. A 513 Specification for Electric-Resistance-Welded Carbon and Alloy Steel Tubing.
  15. A 554 Welded Stainless Steel Mechanical Tubing
  16. A 570 Specification for Steel, Sheet and Strip, Carbon, Hot Rolled, Structural Quality.
  17. A 575 Specification for Steel Bars, Carbon, Merchant Quality, M Grades.
  18. A 582 Free Machining Stainless and Heat Resisting Steel Bars.
  19. A 743 Specification for Corrosion-Resistant Iron Chromium, Iron Chromium-Nickel, and Nickel Base Alloy Castings for General Application.
  20. A1264-1 Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems
  21. B 43 Specification for Standard Sizes of Seamless Red Brass Pipe.
  22. B 62 Specification for Composition Bronze or Ounce Metal Castings.
  23. B 209 Specification for Aluminum and Aluminum Alloy Sheet and Plate.
  24. B 210 Specification for Aluminum and Aluminum Alloy Drawn Seamless Tubes.
  25. B 211 Aluminum and Aluminum Alloy Bar, Rod and Wire
  26. B 221 Specification for Aluminum-Alloy Bars, Rods, Wires, Shapes and Tubes
  27. B 241 Specification for Aluminum and Aluminum Alloy Seamless Pipe and Seamless Extruded Tube.
  28. B 429 Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
  29. B 455 Specification for Copper-Zinc-Lead Alloy (Leaded Brass) Extruded Shapes.
  30. B 483 Specification for Aluminum and Aluminum-Alloy Drawn Tubes for General Purpose Applications.
  31. B 584 Specification for Copper Alloy Sand Castings for General Applications.
  32. C 595 Specification for Blended Hydraulic Cements.
  33. D 1730 Recommended Practices for Preparation of Aluminum and Aluminum Alloy Surfaces for Painting.
  34. E 84 Test Method for Surface Burning Characteristics of Building Materials.
  35. E 894 Standard Test Methods for Anchorage of Permanent Metal Railing Systems and Rails for Buildings.
  36. E 935 Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.
  37. E 985 Specification for Permanent Metal Railing Systems and Rails for Buildings.
- H. American Welding Society (AWS)
1. Specifications for Welding Rods and Bare Electrodes.
- I. Americans With Disabilities Act Accessibility Guidelines (ADAAG)
- J. Copper Development Association (CDA)
1. Standards Handbook, Wrought Copper and Copper Alloy Mill Products, Part 2 - Alloy Data.
  2. Standards Handbook, Cast Copper and Copper Alloy Products, Part 7 - Alloy Data.
  3. Copper, Brass and Bronze Design Handbook for Architectural Applications.
- K. General Service Administration (GSA) Federal Specifications (FS)
1. DD-G-1403 Glass, Plate (Float), Sheet, Figured, and Spandrel (Heat Strengthened and Fully Tempered).
  2. QQ-C-390 Copper Alloy Castings.
  3. QQ-S-766 Stainless Steel, Class 302 or 304.
  4. FS-TT-P-641 Primer Coating, Zinc Dust/Zinc Oxide (for Galvanized Surfaces).
  5. FS-TT-P-645 Primer, Paint, Zinc Chromate, Alkyd Type.
  6. FS-TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.
- L. Green Globes System
- M. International Code Council (ICC)
1. International Building Code (IBC)

- 2. International Residential Code (IRC)
- N. Iron and Steel Society (ISS)
  - 1. Steel Products Manual
    - a. Sheet Steel
    - b. Stainless and Heat Resisting Steels
- L. Military Specifications (MIL)
  - 1. MIL-A-46104 Aluminum Alloy Extruded Rod, Bar, and Shapes, 7001.
  - 2. MIL-P-1144 Pipe, Corrosion Resistant, Stainless Steel, Seamless or Welded.
  - 3. MIL-P-25995 Pipe, Aluminum Alloy, Drawn or Extruded.
  - 4. MIL-R-36516 Rail, Restraint.
- M. National Association of Architectural Metal Manufacturers (NAAMM) and National Ornamental and Miscellaneous Metals Association (NOMMA)
  - 1. Metal Finishes Manual
- N. National Association of Architectural Metal Manufacturers (NAAMM)
  - 1. Metal Stair Manual
- O. National Association of Home Builders (NAHB)
  - 1. Model Green Home Building Guidelines.
- P. National Association of Home Builders' Research Center (NAHBRC)
  - 1. Review of Fall Safety of Children Between the Ages of 18 Months and 4 Years in Relations to Guards and Climbing in the Built Environment.
- Q. National Fire Protection Association (NFPA)
  - 1. 101 Life Safety Code
- R. Institute of Building Sciences
  - 1. Metric Guide for Federal Construction
- S. U.S. Green Building Council
  - 1. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™

#### Section 1.07 SUBMITTALS

- A. Submit shop drawings and product data under provisions of Section [01 30 00] [01 34 00].
    - 1. Show sections and plans of stairs, dimensions and assembly of components.
      - a. Railings
      - b. Handrail
      - c. Brackets
      - d. Reinforcements
      - e. Anchors
      - f. Welded and bolted connections
    - 2. Show all field connections
    - 3. Provide setting diagrams for installation of anchors, location of pockets, weld plates for attachment of rails to structure, and blocking for attachment of wall rail.
    - 4. Specify adequate back up support for anchoring handrail bracket.
    - 5. Indicate all required field measurements.
    - 6. Submit [one] [ ] set[s] of CAD files for approval.
  - B. Indicate component details, materials, finishes, connection and joining methods, and the relationship to adjoining work.
  - C. Submit manufacturer's installation instructions under provisions of Section [01 30 00] [01 34 00].
  - D. Samples:
    - 1. Submit duplicate samples of railing showing style and finish. One approved sample will be returned to contractor.  
*This is only specified if appearance sample is required. Applies to pipe, tubing and extrusions but normally does not apply to carbon steel.*
    - 2. Submit sample(s) of \_\_\_\_\_
    - 3. Certificates:
      - a. Furnish manufacturer's certification that materials meet specification requirements.
- OR –
- a. Furnish [certification] [and] [or] [calculations] by an engineer registered in the state where the project is located showing that safety requirements are met.  
*This requirement should be included only if called for by contract documents.*
- E. Substitutions:

1. Any changes in specified material must meet requirements of the General Conditions "or equal" clause. (See # \_\_\_\_\_)  
*Indicate Section and Paragraph of the General Conditions that sets out "or equal" requirements.*
2. Changes in architectural details to fabricator's standard procedures will be allowed when appearance and strength are not affected.  
*State any alternatives that affect the work and/or bid price of this section, such as a change in material or a change to contractor's standard details.*

#### **Section 1.08 DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials to the job site in good condition and properly protected against damage to finished surfaces.
- B. Storage on site:
  1. Store material in a location and in a manner to avoid damage. Stacking shall be done in a way, which will prevent bending.
  2. Store material in a clean, dry location away from uncured concrete and masonry. Cover with waterproof paper, tarpaulin, or polyethylene sheeting in a manner that will permit circulation of air inside the covering.
  3. Keep handling on site to a minimum. Exercise particular care to avoid damage to finishes of material.  
*For carbon steel delivery and erection reference should be made to the "AISC Code of Standard Practice", Sections 6 and 7.*

### **PART 2 -- PRODUCTS**

#### **Section 2.01 ACCEPTABLE MANUFACTURER**

- A. Railing [pipe] [tube] and components shall be as manufactured or supplied by The Wagner Companies; P.O. Box 423; Butler, WI 53007. Phone: 888-243-6914. Fax: 414-214-0550. Web site: [www.wagnercompanies.com](http://www.wagnercompanies.com). E-mail: [info@mailwagner.com](mailto:info@mailwagner.com).

#### **Section 2.02 MATERIALS AND FINISHES**

- A. Aluminum:
  1. Extruded Pipe: Alloy [6061-T6] [6063-T52] [6063-T6] meeting ASTM B 221
  2. Extruded Bars, Shapes and Mouldings: Alloy [6063-T52] [6063-T6] meeting ASTM B 221
  3. Castings: Almag 35 meeting ASTM B 26
  4. Finish (*refer to NAAMM/NOMMA Metal Finishes Manual*):
    - a. Anodized finish shall be [AA-M10-C22-A31 (204R1)] [provided in accordance with AA-M\_\_\_-C\_\_\_-A\_\_\_] and shall meet requirements of AAMA (606.1) (607.1) (608.1).
    - b. Painted finish shall be \_\_\_\_\_ type and \_\_\_\_\_ color and shall meet the requirements of AAMA 605.1 specification for high performance organic coatings.
- B. Stainless Steel: Type [302] [304] [316] [316L] [304L]
  1. Bar: ASTM A 167
  2. Pipe and Tubing: ASTM [A 269] [A 312]
  3. Cable: MIL-W-87161, Type II, Composition B
  4. Cable Hardware: ASTM A 276 and A 479, SAE/AMS QQ-S-766, Type 316
  5. Finish: [Ornamental Grade, AISI No. 4] [AISI No. \_\_\_].
- C. Copper Alloys:
  1. Drawn Pipe: C23000 (Red Brass), ASTM B 43
  2. Drawn Tube: C27000
  3. Extruded Tube: C38500 (Architectural Bronze)
  4. Sheet: C28000 (Muntz Metal)
  5. Castings: [C83600] [C86500] meeting ASTM B 584 for sand castings]
  6. Extrusions: [C38500 (Architectural Bronze) meeting ASTM B 455] [C33000]
  7. Finish (*refer to NAAMM/NOMMA Metal Finishes Manual*):
    - Mechanical: [M32-Medium Satin] [M\_\_\_-\_\_\_\_\_]
    - Chemical: C \_\_\_\_\_ - \_\_\_\_\_
    - Coating:
      - a) [Clear Organic: O \_\_\_\_\_ - \_\_\_\_\_]
      - b) Laminated: L \_\_\_\_\_ - \_\_\_\_\_ ]
      - c) [Wax: \_\_\_\_\_]
      - d) [Oil: \_\_\_\_\_]
- D. Steel:

1. Pipe: ASTM A 53
2. [Round] [Square] [Rectangular] Tubing: meeting ASTM [A 500] [A 501] [A 512]
3. Bars and Shapes: meeting ASTM A 36.
4. Castings: [Malleable] [Ductile] [Grey] Iron meeting ASTM [A 47] [A 48]
5. Finish (*refer to NAAMM/NOMMA Metal Finishes Manual*):
  - a. Surface Preparation: Remove loose scale, rust, grease, oil, moisture or other foreign materials to properly prepare the surface for subsequent coating application.
    1. Remove mill scale, rust and dirt following SSPC SP2 for hand cleaning and SSPC SP3 for power tool cleaning.
  - b. Galvanizing:
    1. Products fabricated from shapes, plates, bars and strips shall be galvanized in accordance with ASTM A 123.
    2. Sheet products shall be galvanized in accordance with ASTM A 525 and ASTM A 526.
    3. Minimum coating weight \_\_\_ oz/sq. ft.
  - c. Paint:
    1. Minimum one coat of rust-inhibitive primer \_\_\_\_\_, [FS-TT-P-641 Zinc Dust-Zinc Oxide Primer Coating (for Galvanized Surfaces)] [FS-TT-P-645 Alkyd Type, Zinc Chromate, Paint Primer]
    2. Painted finish shall be \_\_\_\_\_ type and \_\_\_\_\_ color.
  - d. Touch up for Galvanized Surfaces: Use paint primer meeting FS-TT-P-645.

## Section 2.02 RAILING SYSTEM

- A. Material shall conform to 2.02 and be finished in accordance with 2.02
- B. Rails: Fabricate rails from [aluminum] [bronze] [brass] [stainless steel] [Wagner No. \_\_\_\_\_]
- C. Posts:
  1. Fabricate posts from [aluminum] [bronze] [brass] [stainless steel] [pipe] [tube] [square tube] [Wagner No. \_\_\_\_\_]
  2. Mounting: [Floor plate.] [Fascia plate.] [Over stubs preset into concrete] [(6") (\_\_\_) extension into concrete.] [As indicated on drawings.]
  3. Attachment: Attach post to underside of railing by [welding] [use of top post bracket, Wagner No. \_\_\_\_\_]
- D. Lumenrail LED Lighted Railing:
  1. Insert LED light stick into Wagner No. \_\_\_\_\_ slotted tube.
    - a. Source: Selected high brightness LED
    - b. Life (L70/ 70% brightness): 50,000 hours
    - c. Light Output: [Lumenrail Standard Output, [3000K] [3500K] [4000K] [5000K]] [Lumenrail High Output, [3000K] [3500K] [4000K] [5000K]] [Lumenrail SHO, [3000K] [3500K] [4000K] [5000K]] Beam Angle: 60°
    - d. Housing: Extruded Aluminum
    - e. Mounting: Clip System
    - f. Listings: ETL Listed for wet or dry locations.
    - g. Length: [6"] [12"] [18"] [24"] [30"] [36"] [42"] [48"] [54"] [60"]
    - h. Power Requirement: 24V
    - i. Power Consumption: [Lumenrail [2 W/ft] [4 W/ft] [6 W/ft]] LED pod 1.5 W/fixture; 2 W / fixture
    - j. Power Supply: 24V/100W
    - k. Input Voltage to Power Supply: [120-277] [347]
    - l. Temperature Range: -40° C through +60° C
    - m. Product Rating: Interior and Exterior Applications, ETL, Class 2 circuit.
  2. LED pod LED Lighted Railing: Insert LED pod into Wagner-provided [pipe] [tube] rails.
    - a. Source: Selected high brightness LED
    - b. Life (L70/ 70% brightness): 50,000 hours
    - c. Light Output: [Standard Output, [3000K] [4000K] [5000K]]; Low Output, [3000K] [4000K] [5000K]]
    - d. Beam Angle: [Symmetric] [Asymmetric]
    - e. Housing: Extruded Aluminum/Investment Cast Stainless Steel
    - f. Mounting: Clip System
    - g. Listings: ETL Listed for wet or dry locations to UL 1598, UL 8750, and CSA22.2
    - h. Length: As required by handrail layout
    - i. Power Requirement: 24V
    - j. Power Consumption: [1.5 W/unit] [2 W/unit]
    - k. Power Supply: 24V/100W
    - l. Input Voltage to Power Supply: [120-277] [347]
    - m. Temperature Range: -40° C through +60° C
    - n. Product Rating: Interior and Exterior Applications, ETL Class 2 circuit.
- B. Infill Options:

1. Woven Wire: Framed [stainless steel] [aluminum] [Wagner No. \_\_\_\_ [with weld tabs] [set between top and bottom rail]
2. Glass: [ $1/4$ " [ $3/8$ " [ $1/2$ " tempered [laminated] glass [mounted to posts with panel clips, Wagner No. \_\_\_\_] [set between top and bottom rail]
3. Pickets: .750" diameter, 0.050" wall stainless steel tubing.
4. Cables:
  - a. Material: 1 x 19, Type 316 stainless steel strand, left-hand lay, per dimensional properties contained in MIL-DTL-87161.
  - b. Finish: [Mill.] [PVC coated, \_\_\_\_] color [to be selected from manufacturer's standards.]]
  - c. Diameter: [ $1/8$ ", minimum breaking strength of 1,780 pounds.] [ $3/16$ ", minimum breaking strength of 4000 pounds.] [ $1/4$ ", minimum breaking strength of 6,900 pounds.] [ $5/16$ ", minimum breaking strength of 10,600 pounds.] [ $3/8$ ", minimum breaking strength of 14,800 pounds.]
  - d. Orientation: [Horizontal.] [Slope parallel to stair pitch.] [Vertical.] [As indicated on Drawings.]
  - e. Spacing: [Maximum \_\_\_\_] inches on center.] [As indicated on Drawings.]

#### **Section 2.04 FASTENERS**

- A. All mechanical fasteners used in the assembly of stainless steel or aluminum railings shall be manufactured from stainless steel.
- B. Exposed mechanical fasteners for use with bronze materials shall be manufactured from yellow brass.
- C. Cement: Hydraulic, ASTM C 595, factory prepared with accelerator.

#### **Section 2.05 HANDRAIL BRACKETS**

- A. [Aluminum] [Bronze] [Stainless steel]; [cast] [extruded] [stamped] [machined]: Wagner No. \_\_\_\_\_  
*Check governing codes for dimensional and structural requirements.*

#### **Section 2.06 FABRICATION**

- A. Form [rail-to-end post connections and] all changes in rail direction by [miter] [radius] elbows.
- B. Cut material square and remove burrs from all exposed edges, with no chamfer.
- C. Make exposed joints butt tight and flush.
- D. Close exposed ends of [pipe] [tube] [handrail] by use of appropriate end cap.
- E. For posts set in concrete, furnish matching sleeves or inserts not less than 5 inches long.
- F. Locate intermediate rails [midway] [equally spaced] between top rail and finished floor or center line of tread.
- G. Verify dimensions on site prior to shop fabrication.

### **PART 3 --EXECUTION**

#### **Section 3.01 PREPARATION**

- A. Supply items to be [cast in concrete] [embedded in masonry] [placed in partitions].
- B. Examine areas to receive cable railing system. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

#### **Section 3.02 METAL INTERACTION**

- A. When aluminum components come into contact with dissimilar metals, surfaces shall be kept from direct contact by painting the dissimilar metal with [a heavy coat of a proper primer] [asphalt paint].
- B. When aluminum components come into contact with cement or lime mortar, exposed aluminum surfaces shall be painted with [heavy bodied bituminous paint] [water-white methacrylate lacquer] [zinc chromate].

#### **Section 3.03 INSTALLATION**

- A. Install in accordance with shop drawings [and manufacturer's instructions] at locations indicated on the drawings.
- B. Erect work [square and level,] [horizontal or parallel to rake of steps or ramp,] rigid, [and] free from distortion or defects detrimental to appearance or performance.

#### **Section 3.04 PROTECTION**

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

#### **Section 3.05 CLEANING**

- A. As installation is completed, wash thoroughly using clean water and soap; rinse with clean water.
- B. Do not use acid solution, steel wool or other harsh abrasives.
- C. If stain remains after washing, remove finish and restore in accordance with *NAAMM/NOMMA Metal Finishes Manual*.

- D. Finish must not be removed from anodized aluminum. Reanodizing can only be done by removing railing and returning it to the anodizer.

**Section 3.06 REPAIR OF DEFECTIVE WORK**

- A. Remove stained or otherwise defective work and replace with material that meets specification requirements.
- B. Repair damaged finish as directed by Architect
- C. Replace defective or damaged components as directed by Architect.