PART 1 - GENERAL

1.1 SUMMARY

A. The General Conditions and Division - 1 Specification sections apply to the work of this section.

B. The following documents form part of the Specifications to the extent stated. Where differences exist between Codes, Standards, and the Documents, the one affording the greatest protection shall apply.

C. Sustainable Design Requirements: Provide the Work and submit documentation necessary for compliance with specified sustainable requirements.

D. This Section includes the following:
   1. Fixed Bollards.
   2. Removable Bollards

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For units with factory-applied color finishes.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
   1. Size: Not less than 6-inch- long linear components and 4-inch- square sheet components.

D. Product Schedule: For site furnishings. Use same designations indicated on Drawings.

E. Maintenance Data: For site furnishings to include in maintenance manuals.

F. Sustainable Design Submittals
   1. General: Submit additional LEED submittals required by other Specification Sections.
   2. Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
   3. Credit MR 5: Product Certificates for products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.

1.3 PROJECT CONDITIONS

A. Site and Drawing Examination:
   1. Any contractor submitting a proposal for this work shall first examine the site of the proposed work and all conditions at the site that he may fully understand any facilities, difficulties, and restrictions attending the execution of the contract. No subsequent allowances shall be made because of omission, error, or negligence, in connection with this provision.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain site furnishing(s) through one source from a single manufacturer.

B. Contractor's Quality Control Responsibilities: Contractor is solely responsible for quality control of the Work.

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, State and Municipal authorities having jurisdiction. Obtain necessary approvals from all such authorities.

1.5 WARRANTY

A. Special Warranty:
1. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fixed Carbon Steel: Free of surface blemishes and complying with the following:
1. Plates, Shapes, and Bars: ASTM A 36/A 36M.
2. Steel Pipe: Standard-weight steel pipe complying with ASTM A 53, or electric-resistance-welded pipe complying with ASTM A 135.
3. Tubing: Cold-formed steel tubing complying with ASTM A 500.

B. Stainless Steel: Free of surface blemishes and complying with the following:
1. Pipe: Schedule 40 steel pipe complying with ASTM A 312/A 312M.
2. Tubing: ASTM A 554.

2.2 BOLLARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide CalPipe 5 Inch Fixed, 5 Inch Removable
1. CalPipe Induistries, 800-225-7473

2.3 BOLLARD SCHEDULE

A. Bollard Type BO-01, BO-02 – CalPipe Fixed & Removable Bollard
1. Carbon Steel 5 inches in diameter
2. Finish: Powder Coated
3. Style: Flat Top
4. Overall Height: 36" above finished grade
5. Footing Width: As Indicated in Drawings
6. Footing Depth: As Indicated in Drawings
7. Installation Method: Cast in Concrete

2.4 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.

C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

E. Factory Assembly: Assemble components in the factory to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.5 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 STEEL AND GALVANIZED STEEL FINISHES

A. Baked-Enamel, Powder-Coat Finish: Manufacturer's standard, baked, polyester, powder-coat finish complying with finish manufacturer's written instructions for surface preparation, including pretreatment, application, baking, and minimum dry film thickness.

B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated.

B. Contractor shall be responsible for providing all necessary connections, supports, brackets, hardware, and anchors, whether shown or not shown on the drawings, as required for a full and complete installation and execution of the Bollard scope of work.

C. Install bollards level, plumb, true, and at position locations indicated on Drawings.

D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

3.3 CLEANING AND PROTECTION

A. Provide cardboard protection over and around bollards until substantial completion. Utilize Sonotube or equivalent.

B. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

END OF SECTION