**SECTION**

**STEEL BOLLARDS**

**The specifier will need to edit this product specification for a specific project to reflect the options and applications being used. This guide section has been written to show items to be determined reflected in italic red. PalmSHIELD does not warrant that these specifications are complete and applicable to all applications. It is the specifier’s responsibility to assure that use of PalmSHIELD is an appropriate fit for the site and conditions.**

1. **GENERAL**
	1. SECTION INCLUDES
		1. Manufactured Traffic & Pedestrian Bollards.
	2. RELATED SECTIONS
		1. Section 051200 - Structural Steel: Metal Framing.
		2. Section 052100 - Steel Joist Framing.
		3. Section 053100 - Steel Decking.
		4. Section 055000 - Metal Fabrications: Frames and supports.
	3. REFERENCE
		1. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
		2. ASTM A 501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
		3. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
		4. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
		5. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
		6. ASTM B 221 – Standard Specification for Aluminum and Aluminum-Ally Extruded Bars, Rods, Wire, Profiles and Tubes.
		7. ASTM D3363 – Standard Test Method for Film Hardness by Pencil Test.
		8. ASTM D2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation.
		9. ASTM B117 – Standard Practice for Operating Salt Spray Apparatus.
		10. ASTM D822 – Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
		11. AWS D1.2 Structural Welding Code – Aluminum.
	4. COORDINATION
		1. Coordinate Work with other operations and installation of support framing to avoid damage to installed materials.
	5. SUBMITTALS
		1. Shop Drawings: Layout and erection drawings showing typical cross sections and dimensioned locations of all bollards as shown on drawings. Include erection drawings, elevations, fastener requirements and details where applicable.
		2. Shop drawings and manufacturer's literature: Provide specifications and construction detail drawings to substantiate quality of materials and provide details of fabrication and installation.
		3. Submittals shall be in accordance with standard construction practices to include complete detailed layout of all bollards. Submittals shall include plan layout, elevations and section views of bollards
		4. Certificate: manufacturer's certification that materials meet specification requirements.
	6. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Manufacturer with a minimum five years documented experience in producing bollards.
		2. Source Limitations for Bollards: Obtain bollards from one source with resources to provide products of consistent quality in appearance and physical properties.
		3. Comply with all laws, ordinances, rules and regulations and orders of any public authority having jurisdiction over this part of the work.
	7. PROJECT CONDITIONS
		1. Field Measurements: Verify substrate dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
		2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with bollards without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.
	8. WARRANTY
		1. Provide manufacturer's written limited warranty stating that the support system installation is to be free of faults and defects.
		2. The above warranties are in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.
2. **PRODUCTS**

2.1. MATERIALS

 A. Support base to be fabricated ASTM 36 Plate as shown on plans.

B. Pipe bollard to be fabricated from ASTM A53 Schedule pipe.

C. Provide bollard materials and design as shown on drawings.

* 1. MANUFACTURERS
		1. PalmSHIELD 12330 Cary Circle La Vista Nebraska 68128 www.palmshieldlouvers.com
		2. Substitutions: Not permitted.
		3. Requests for substitutions will be considered in accordance with provisions of Section [012500, Substitutions Procedures][016000, Product Requirements and Substitutions].
	2. FASTENERS
		1. Fabricating and installing contractor is responsible for anchorage and fastening the bollards to the structure or supporting construction for the sizes and types of supports shown on the Drawings and specified herein as required for each condition and type of installation. This responsibility includes determining the locations, quantities, capacity and design for anchors, fasteners and or welds used in the installation subject to review by the Architect.
		2. Show and describe all such anchors, fasteners and or welds on shop drawings. Furnish all bolts, nuts, screws, clips, washers, welding materials and other fasteners and accessories necessary to secure and assemble the specified fabrications.
	3. FABRICATION
		1. Fabricate components in largest practical sections possible for delivery and field assembly.
		2. All fabrication and welding per AWS D1.2 structural aluminum welding.
		3. Supply components required for anchorage of supports and platform assemblies. Fabricate anchors and related components of same material and finish, except where specifically noted otherwise.
		4. Fabricate bollards as shown on drawings.
1. **EXECUTION**
	1. INSPECTION
		1. Examine all surfaces to receive the supports and accessories. Verify all dimensions of in-place and subsequent construction. Installation of the supports and accessories constitutes acceptance of the related construction.
	2. INSTALLATION
		1. Install supports and platforms in accordance with manufacturer’s printed instructions.
		2. Supports shall be level and plumb to accept equipment being supported.
	3. CLEANING AND PROTECTION
		1. Upon completion of the work remove all unused materials, debris, containers and equipment form the project site. Clean and repair finished surfaces that have been marked or otherwise damaged by work under this Section.
		2. Protect supports and platforms during construction period so that they will be without any indication of deterioration or damage at the time of acceptance by Owner.
		3. Remove and replace any supports and platforms damaged or stained at no additional cost to the Owner.