

Special Specification 5033

Bollards



1. DESCRIPTION

Furnish, install, remove and replace bollards as shown on the plans.

2. MATERIALS

Assure that bollards meet retroreflectivity requirements as shown on the plans and specified by the Texas MUTCD and the ATSSA (American Traffic Safety Services Association) Brochure on Retroreflectivity.

- 2.1. **Fixed bollards.** Provide fixed bollards consisting of 6 in. diameter galvanized standard weight steel pipe filled with concrete and with form domed cap. Provide steel such as pipe, plates, and other required parts in accordance with Item 442, "Metal for Structures." Paint or galvanize pipe, plates, and other required steel parts in accordance with the plans and meeting the requirements of Item 441, "Steel Structures" and Item 445, "Galvanizing." Provide foundation concrete meeting the requirements of Item 421, "Hydraulic Cement Concrete." Perform welding in accordance with Item 448, "Structural Field Welding."
- 2.2. **Removable Bollards.** Provide removable bollards consisting of 6 in. diameter galvanized standard weight steel pipe with form domed cap. Provide steel such as pipe, plates, and other required parts in accordance with Item 442, "Metal for Structures." Paint or galvanize pipe, plates, and other required steel parts in accordance with the plans and meeting the requirements of Item 441, "Steel Structures" and Item 445, "Galvanizing." Provide foundation concrete meeting the requirements of Item 421, "Hydraulic Cement Concrete." Perform welding in accordance with Item 448, "Structural Field Welding."
- 2.3. **Treated Timber Bollards.** Provide treated timber bollards consisting of timber in accordance with Item 491, "Timber for Structures" and Item 492, "Timber Preservative and Treatment."

3. CONSTRUCTION

Install bollards to the depth as shown on the plans or as directed. Clean bollard holes free of loose dirt and debris, and thoroughly compact bottom of hole to the correct elevation for placement of the bollards. Place bollards to the correct alignment, elevation, and plumb. Backfill around fixed and timber bollards and thoroughly tamp in 4 in. layers.

Remove and replace existing bollards of the type shown on the plans or as directed. Remove and dispose of existing bollards as shown on the plans or as directed. Install bollard foundation of the size and depth as shown on the plans.

4. MEASUREMENT

This Item will be measured by each bollard installed, removed and replaced, or removed as shown on the plans.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for the various types of "Bollards" specified as follows:

"Fixed Bollards," "Removable Bollards," "Treated Timber Bollards," "Remove and Replacing Bollards," and "Removing Bollards" of the type shown on the plans. This price is full compensation for furnishing, preparing, hauling and installing materials; for excavation and backfill, and for labor, tools, equipment and incidentals.