

**ITEM 04615.8801 M - BOLLARD, FIXED (PAINTED)**  
**ITEM 04615.8802 M - BOLLARD, FIXED (GALVANIZED)**  
**ITEM 04615.8803 M - BOLLARD, MOVABLE (PAINTED)**  
**ITEM 04615.8804 M - BOLLARD, MOVABLE (GALVANIZED)**

**DESCRIPTION:** Under this work the Contractor shall provide and install fixed and/or movable bollards in the locations as indicated in the Contract Documents and where directed by the Engineer.

**MATERIALS:**

1.Fixed Bollard. The post shall be hot-formed welded and seamless carbon steel structural tubing or cold-formed welded and seamless structural tubing. The tubing shall conform to ASTM A500M Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes, Grade A or B or ASTM A501M Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

No mill transverse welds will be permitted on the post sections except in top fabrication. Longitudinal welds shall be made by the resistance, gas shield arc, submerged arc or plasma arc welded process; shall be sound, free from defects, and shall not be repaired. The welded joint, in cold-formed and hot-formed welded posts, shall have a minimum tensile strength specified for the material, when tested according to the tensile strap test of ASTM Method E8M. Fabrication welding shall comply with the requirements set forth under Welding in the N.Y.S. Steel Construction Manual. Materials for this work shall meet the requirements of the New York State Steel Construction Manual and Section 555, Structural Concrete, Section 203, Excavation and Embankment; Section 645, Guide Signs, Traffic Signs and Special Devices; and the following Section 700, Materials:

|                                |                  |
|--------------------------------|------------------|
| Class A Concrete               | 701-01           |
| Box Beam Guide Railing         | 710-21           |
| Aluminum Sign Panels           | 730-01           |
| Reflective Sheeting (Class B)  | 730-05.02        |
| Rivets (Aluminum or Stainless) | 715-04 or 715-16 |

For Painted Bollard.

|                    |        |
|--------------------|--------|
| Dull Orange Primer | 708-03 |
| Paints - General   | 708    |

For Galvanized Bollard.

|                    |        |
|--------------------|--------|
| Galvanized Coating | 719-01 |
|--------------------|--------|

2. Movable Bollards. The post shall be the same as for the fixed bollard, with the addition of a base and a base-socket and additional fittings as shown in the Contract Documents. The base and base-socket shall be constructed from ASTM A36M steel plate, with the dimensions as shown in the Contract Documents. The fittings on the post and base socket shall be as shown in the Contract Documents. The movable bollard surface shall have the same finish as the fixed bollard. Each movable bollard shall be supplied with a waterproof lock and triplicate keys as specified in the Contract Documents and approved by the Engineer. The chain shall conform to ASTM A413-80M, Class Grade 28M, General Purpose Carbon Steel Chain.

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Materials for this work shall meet the requirements of the New York State Steel Construction Manual and the following Section 555, Structural Concrete; Section 203, Excavation and Embankment; Section 645, Guide Signs, Traffic Signs and Special Devices and the following Section 700, Materials:

|                                   |                  |
|-----------------------------------|------------------|
| Box Beam Guide Railing            | 710-21           |
| Bar Reinforcement                 | 709-01           |
| Anchor Bolts                      | 723-60           |
| Aluminum Sign Panels              | 730-01           |
| Reflective Sheeting (Class B)     | 730-05.02        |
| Class A Concrete                  | 701-01           |
| Carbon Steel Chain ASTM           | A413-80M         |
| Structural Steel                  | 715-01           |
| Rivets (Aluminum or Stainless)    | 715-04 or 715-16 |
| <br><u>For Painted Bollard.</u>   |                  |
| Dull Orange Primer                | 708-03           |
| Paints - General                  | 708              |
| <br><u>For Galvanized Bollard</u> |                  |
| Galvanized Coatings               | 719-01           |

**CONSTRUCTION DETAILS:**

Fixed and Movable Bollards. All surfaces of the bollard shall be galvanized or painted as shown in the Contract Documents. Reflectorized object markers shall be placed on the bollard as indicated in the Contract Documents. The Contractor shall set the bollards as soon as the Engineer directs them to be placed. Thereafter the Contractor shall be responsible for their maintenance until the final acceptance of the contract, keeping them in their proper location and condition at all times.

1. Painted. All outside surfaces of the post, top and fittings shall be shop painted with one coat dull orange primer 708-03 on outside faces, and shall be field painted two coats with the color indicated in the Contract Documents, following the method prescribed in Section 740-01, Painting Metal Structures. The Contractor shall paint all outside surfaces of the bollard. The base socket on all bollards shall not be painted but galvanized (see below for galvanizing).

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2. Galvanized. All outside surfaces of the post, top, fittings and base socket shall be galvanized, as indicated in the Contract Documents, according to the provisions of Section 719-01, Galvanized Coatings and Repair Methods, Type III.

3. Fixed Bollard (Painted and Galvanized). The Contractor shall cast-in-place or place a precast foundation/bollard combination as shown in the Contract Documents. The bollard shall be set plumb.

4. Movable Bollard (Painted and Galvanized). The Contractor shall cast-in-place or place a precast base-socket foundation as shown in the Contract Documents. Anchor bolts shall be placed in the foundation as shown in the Contract Documents. The base-socket with the bollard installed shall be set plumb by adjusting nuts on the anchor bolts. The chain shall be welded to the bollard and to the base-socket as shown in the Contract Documents.

**METHOD OF MEASUREMENT:** The number of bollards to be paid for under this work will be the number furnished and erected in accordance with the specifications, the Contract Documents or as directed by the Engineer.

**BASIS OF PAYMENT:** The unit price bid per each shall include the cost of furnishing all labor, materials, excavation, hardware, anchor bolts, form work, embankment and equipment necessary to satisfactorily complete the work.

DISAPPROVED BY EIT 19001