

**SECTION 34 71 13  
VEHICLE BARRIERS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section includes passive fixed bollards of crash resistance rating.

**1.2 RELATED WORK**

- A. Section 32 12 16, ASPHALT PAVING, for asphalt driveway and approach paving.
- B. Section 32 05 23, CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS, for concrete driveway and approach paving.
- C. Section 03 30 00, CAST-IN-PLACE CONCRETE, for concrete islands and curbing.
- D. Section 05 50 00, METAL FABRICATIONS, for pipe bollards to protect parking control equipment.

**1.3 SYSTEM DESCRIPTION**

- A. Barricade system mounted in the ground as detailed on the drawings.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Indicate dimensions, required clearances, method of field assembly, and location and size of each field connection.
- C. Certificate test reports confirming compliance's with specified resistive rating.

**1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain parking control equipment through one source from a single manufacturer.

**1.6 PERFORMANCE**

- A. Performance Evaluation. All passive vehicle barriers shall be certified for their resistance to ramming according to "Test Method of Vehicle

Crash Testing of Perimeter Barriers and Gates" SD-STD-02.01 Revision A March 2003.

- B. The system shall have been certified by the United States Department of State to have a performance evaluation per Department of State D.O.S. Specification SDSDT- 0201.

1. STOPPING CAPACITY.

2. Normal Operation. Vehicle barrier(s) shall provide excellent security and positive control of normal traffic in both directions by providing an almost insurmountable obstacle to non-armored or non-tracked vehicles.
3. The Vehicle barrier(s) system shall be designed to stop a vehicle attacking from either direction.
4. High Energy Attack. Vehicle barrier(s) shall have been shown by certified dynamic non-linear analysis to be capable of stopping and immobilizing non-armored or non-tracked vehicles with weight and velocity characteristics as defined in paragraph 4.3.2.1. The Bollard system shall be designed to destroy the front suspension system, steering linkage, engine crankcase and portions of the drive train.
5. The Vehicle barrier(s) shall be capable of stopping and destroying a vehicle(s) weighing: 15,000 pounds (6,800 Kg):
  - a. K4 = 30 mph (48 kph)
  - b. K8 = 40 mph (65 kph)
  - c. K12 = 50 mph (80 kph)

## 1.7 COORDINATION

Coordinate installation of anchorages for parking control equipment. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

## 1.8 APPLICABLE PUBLICATIONS:

Department of State D.O.S. Specification SDSDT- 0201.

## PART ~~32~~-EXECUTION

### ~~32~~.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, critical dimensions, and other conditions affecting performance.

- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

## **2.2 INSTALLATION**

Install pipe bollards in concrete foundation as outlined in manufactures installation instructions.

## **2.3 FIELD QUALITY CONTROL**

Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

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