

SECTION 32 39 13.11

SHALLOW MOUNT BOLLARDS

(Innovo Passive Bollard)

PART 1 – GENERAL

1.1 SCOPE

This specification defines the requirements for the manufacture and installation of Passive Bollard Systems.

1.2 SYSTEM DESCRIPTION

Supply a total anti-ram passive bollard system of the Innovo “Shallow Mount Bollard” engineered design, including all required components (bollard, reinforcing plate, integrated reinforced steel foundation, and hardware).

1.3 SUBMITTALS

- A. Product data Provide manufacturer’s descriptive literature for standard or customized products used to produce work of this section.
- B. Shop Drawings
 - 1. Show locations and details of passive bollard system including each major element, and details of operation, hardware, and accessories.
 - 2. Indicate materials, dimensions, sizes, weights, and finishes of components.
 - 3. Include plans, elevations, sections, foundation drawings and other required installation and operational clearances, and details of anchorage.
 - 4. Installation procedures and instructions.
- C. Barrier Certification Provide documentation that barrier system is tested, or confirmed by engineering analysis, and certified.
- D. Operation and Maintenance Manuals Submit Operation and Maintenance data in accordance with the following:
 - 1. Operation instructions are to provide the step-by-step procedures required for system startup, operation, and shutdown.
 - 2. Maintenance instructions are to include routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide.
 - 3. Recommended Spare and Replacement Parts List. Provide part number, recommended quantity, brief description, and purchasing source.

1.4 QUALITY ASSURANCE

- A. Verification of Compatible Site and Barrier Dimensions The contractor is to become familiar with all details of the work and verify dimensions in the field as required for coordination.
- B. Nameplates Affix the manufacturer’s name, contact for service, and catalog or serial number permanently to a plate securely attached to the equipment in a suitable location.
- C. Label Label each operator (i.e., motor) indicating that the operator mechanism has been tested for full power of all components.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Elements of the barrier systems are to be prefabricated, prefinished, and equipped with devices and accessories to the greatest extent possible.
- B. Elements of the barrier system are to be packaged, handled, protected, and delivered from the manufacturer’s facility to the installation site.

1.6 WARRANTY

The manufacturer is to provide its standard 1 year from date of delivery limited warranty.

PART 2 – PRODUCT

2.1 BASIS OF DESIGN MANUFACTURER

A. Innovo Security Works
5410 Homberg Dr. STE 16
Knoxville, TN 37919 USA
Phone: (865) 481-2280
Fax: (865) 381-1610
Website: www.innovosecurity.com

B. All elements of the anti-ram passive bollard system, including all associated bollards, reinforcing plates, integrated reinforced steel foundations, and hardware are to be obtained from a single source.

2.2 PASSIVE BOLLARD SYSTEM

A. Configuration

1. The anti-ram passive bollard system is comprised of bollard tubes with a reinforcing plate affixed in an integrated reinforced steel foundation.
2. Arranged to protect items or access. A minimum of three single barriers are arranged in an array as a single anti-ram unit. Each barrier may have a fixed or removable bollard. Each barrier may have one or more cable attachments.

B. Foundation

1. Anchor depth of 12 inches.
2. Anchor Dimensions of 72 inches from front to back and 18 inches from center of outside bollard at either end of the array.

C. Crash Rating

1. Provide certification based on engineering analysis that the fence design meets or exceeds:
 - i. DOS SD-STD-0201, Rev. A: K4, K8, or K12
 - ii. ASTM F2656-15: M30, M40, or M50

D. Clear Opening Width

1. Bollard spacing of 48 inches center to center. Minimum 12 foot clear opening for three bollard array. No maximum.

E. Height

1. All bollard elements are to be less than 38 inches in height.

F. Materials

1. Steel Shapes, Plates, and Bars ASTM A36; except where otherwise indicated.
2. Pipe and Tubular Products ASTM A53 grade B, ASTM A106 grade B or ASTM A500 grade B; except where otherwise indicated.
3. Welding Rods and Bare Electrodes Welding is to be in accordance with AWS D1.1/D1.1M using welding materials recommended by AWS specifications for the metal and alloy being welded in each element of the fabrications.
4. Bolts and Fasteners. All bolts and fasteners are to conform to the following:

- i. Use ASTM A320, AISI Type 300-series stainless steel bolts and nuts. Provide stainless steel washers.
 - ii. Control power wiring requiring compression terminals are to use ring-style terminals. Terminals and compression tools conform to UL 486A-486B.
 - iii. Roundhead screws and lock washers are used to provide vibration-resistant connections.
 - iv. Connections between any printed circuit cards and the chassis shall be made with screw connections or other locking means to prevent shock or vibration separation of the card from its chassis.
 - v. Commercial bolts and fasteners to be used as needed to accomplish design requirements.
 - vi. Where within reach of intruders working from attack-side of facilities, including working from inside sallyports, non-removable bolt/nut units (not removable by use of commonly available hand tools) are to be used.
5. Concrete 4,000 psi (28 MPa) Portland Type 1 concrete with an industry standard cure time of 28 days. Normal maximum aggregate size shall be 1.5 inches (38 mm). Vibrate concrete to fill all voids.
6. Concrete Inserts Furnish anchorage units to be placed in concrete substrates, of hot-dip galvanized cast-iron/malleable-iron body, design/type as indicated; ASTM A153 zinc coating, ASTM A47 casting.
7. Setting/Anchoring Cement Provide non-shrinking, non-staining, expansion-type cementitious compound intended for the installed design, factory pre-packaged for mixing with water at project for a pourable and trowellable mix, recommended by manufacturer for exterior exposure (ASTM C109 or ASTM C33).
8. Aluminum Extrusions ASTM B221, Alloy 6005 Temper T5 or T6; sizes, shapes, and wall thicknesses as indicated or, where not otherwise indicated, as required to achieve performances indicated.
9. Stainless Steel Tubing ASTM A269, AISI Type 304; sizes and wall thicknesses as indicated or, where not otherwise indicated, as required to achieve performances indicated.

G. Finishes

1. Powder Coat
2. (Optional) Galvanized Coating
3. (Optional) Epoxy Coating
4. (Optional) Rust Preventative Coating

H. Optional Accessories

1. Bollard Cables
2. Indicators
 - i. Reflective Tape/Paint

PART 3 - EXECUTION

3.1 EXAMINATION, COORDINATION, PREPARATION

- A. Manufacturer is to provide the service of a manufacturer's representative who is experienced in the installation, adjustment, and operation of the equipment supplied.
- B. Contractor and purchaser will coordinate installation of barrier systems with installation of related work.
- C. Contractor will delivery anchorage inserts, sleeves, and other elements to be cast in concrete work.

3.2 INSTALLATION

Installers are to perform installation in accordance with manufacturer's instructions.

3.3 TESTING AND ADJUSTING

Upon completion of construction, perform a field test of each vehicle barrier. Test operate each active roadway barrier system unit through repeated cycles of operation and demonstrate operation, controls, safety devices, signals, and other features.

3.4 TRAINING

When requested by purchase order, the manufacturer is to provide operator training to include:

1. An overview of the system.
2. Essential controls and displays.
3. Safety precautions.