

Procurement Specification

Portable Bollard

MODEL TB 150

CRASH TESTED – CRASH CERTIFIED



TB 150 Bollard Array

SYNOPSIS

- The TB 150 is designed to function as stand-alone bollard(s) or as part of an extended array. Adjacent units are linked with steel cables forming a fence line.
- No foundation is required only a stable surface upon to set the bollard(s).
- The TB 150 has been crash rated under the performance standards of the United States ASTM F2656-15 as an array of ten bollards linked with chains covering a 40 foot, (12 M) span.
- The rating was assigned following full scale testing by an independent test laboratory. The TB 150 was hit by a 15,000 pound (GVW) (6,800 kg) truck traveling 50 mph (80.4 kph). The actual penetration was 56.4 feet (17.20 M). ASTM M50, P3 designation.
- Further tests were conducted with individual bollards with a passenger car at 20 mph and a 10,000 pound 2.5 ton flatbed truck at 20 mph all effectively stopping the vehicles.
- A five bollard array shall be demonstrated to be ASTM M30, P3 certified.
- Low speed tests in the 1.5 to 3 mph speed ranged were conducted with a passenger car and 2.5 flatbed truck to confirm that the TB 150 would stop and inactivate the vehicle defeating attempts to nudge the bollard(s) out of the way.



TB 150 Recommended Color and Stripe Pattern

- 1.0 CONFIGURATION. The TB 150 is a zero foundation fixed Bollard. Consisting of a unitary structural steel weldment incorporating Delta's patented geometry.
- 1.1 Bollards shall be 30 inches, (762 mm) in height
- 1.2 Bollard Top Plate shall be 30 inch (762 mm) square.
- 1.3 Spacing: Clear opening between Bollards shall be 21 inches (534 mm)
- 1.4 Finish: Exposed barrier surfaces shall be painted with a zinc rich epoxy primer. And a gloss white, two-part epoxy high weather resistant paint with red reflective tape. Alternate colors and finishes are available.

2.0 FOUNDATION

2.1 None. Shall be set on stable surface

3.0 Other features:

3.1.1 Weight: skid mounted the TB 150 shall weigh approximately 800 pounds, (363 Kg). Bollard weight 725 pounds.

3.1.2 Drilled and tapped holes shall be provided for a lifting eye bolt and cable attachments.

4.0 ARRAYS.

4.1 A typical TB 150 array will be a set of ten bollards set on 51 inch (1249.5 mm) centers and span a 40 foot, (12 M) opening . Ten bollard arrays may be linked together for continuous coverage of a large perimeter. As the bollards are uni-directional, ie can be attacked from any direction, it facilitates the placement of bollard arrays around curves.

4.2 INCLINED ARRAYS. Modules shall be configured so that they can be arrayed to follow the elevation of sidewalks, roadways or landscaping.

4.3 CIRCLES OR CURVES.

4.2.1 CONCAVE CURVE. (Assets and Modules located inside a circle or curve).

4.2.2 TB 150 shall be capable of being arrayed around concave or convex curves.

4.4 CORNERS

4.3.1 OUTSIDE CORNER-90 Degree. (Assets and Modules placed outside of a box).

4.3.2 INSIDE CORNERS - 90 degree. TB 150 shall be capable this pattern, consult with Delta Scientific Engineering.

4.5 DECORATIVE COVERS

4.4.1 Decorative covers shall be provided to enhance the appearance and acceptability of Bollard array. They can be selected as an option. The covers have been found not to influence the crash worthiness of the bollards. The covers shall be of material suitable to enhance the appearance of the bollard array, and may be painted, custom vinyl wrapped or brushed stainless steel, per architect's desires.

4.6 Manufacturer shall have available a rolling lift to facilitate moving bollards by one person. The wheel shall have solid wheels, with swivel casters. Manual hydraulic lift function.

Ground Handling for Set UP:

5.0 PERFORMANCE.

5.1 Qualification Tests. The module shall have been tested in full scale configuration in accordance with ASTM F2656-15 Standard Test Method.

5.2 Crash Rating. The ten bollard array shall have crash rating of M50, P3. A 15,000 pound (6,800 Kg) truck at 50 MPH, (80.4 KM/H). The bollard array shall stop and destroy the test vehicle at approximately 65 feet, (20 M) or less. Also known as a K12 rating.

5.3 A five bollard array shall be demonstrated to be ASTM M30, P3 certified.

5.4 The TB 150 as individual bollard shall have been successfully full scale tested to the following: 10,000 pound (4535 Kg) 2.5 Ton Truck at 20 MPH (32KM/H). Penetration equal to or less than 52 feet, (15.7 M).

5.5 The TB 150 as an individual bollard shall have been successfully full scale tested with a passenger vehicle weighing 3,400 pounds, (1550 Kg). Penetration equal to or less than 36 feet, (10.9 M).

5.6 Attack Direction: The TB 150 bollard shall be uni-directional, being equally effective from any vehicle attack direction.

6.0 QUALITY ASSURANCE PROVISIONS.

- 6.1 Inspection. Upon completion, the Bollard(s) will be fully inspected in the manufacturer's shop.
- 6.2 Workmanship. The Bollard(s) have a neat and workmanlike appearance.
- 6.3 Dimensions. Principle dimensions shall be checked against drawings and ordering information.
- 6.4 Finish. Coatings shall be checked against ordering information and shall be workmanlike in appearance.
- 7.0 PREPARATION FOR SHIPMENT
- 7.1 The Bollard(s) shall be mounted on skids as necessary to prevent damage from handling. The skids shall be of sufficient structural integrity to enable the assembly to be lifted and transported by overhead crane or forklift without failure.
- 8.0 DISCLAIMER.
- 8.1 Please note - careful consideration must be devoted to the selection, placement and design of a Bollard Array. Just as in the case of a vehicle directing or perimeter security device or gates that block or define a roadway or drive, care must be taken to ensure that approaching vehicle as well as pedestrians are fully aware of the Array. Proper illumination and clearly worded warning signs should be considered. Delta has information available on auxiliary safety equipment not specifically listed herein. It is strongly recommended that an architect and or a traffic and or safety engineer be consulted prior to installation of Bollard Array. Delta will offer all possible assistance in specifying the, equipment, signs and lighting devices but we are not qualified nor do we purport to offer either traffic or safety engineering information. Further this bollard or bollard array moves on impact and sufficient standoff distance is required to protect people and property.
- 9.0 PROCUREMENT SOURCE. The Model TB 150 shall be purchased from:

DELTA SCIENTIFIC CORPORATION
40355 Delta Lane
Palmdale, California, 93551, USA
Phone (661) 575-1100
Email info@Deltascientific.com
www.deltascientific.com