PROCUREMENT SPECIFICATION
DELTA MODEL IP500(H) TRANSPORTABLE CRASH CERTIFIED
BARRIER SYSTEM

SYNOPSIS

This Procurement Specification defines a CRASH CERTIFIED - TRANSPORTABLE BARRIER SYSTEM - DELTA Model IP500(H). The system is modular in construction and configured for expedited deployment and, as needed, retrieval and relocation.

This Barrier System can be sited on existing concrete or asphalt roadways or verges, level compacted soils or some combination of these. No excavation or sub-surface preparation is required.

A Drop Arm Crash Beam is mounted on multiple Inertial Pods located on either side of the roadway to be protected. The Pods consist of a permanent steel housing filled with locally obtained concrete. After positioning they are interlocked with quick lock - unlock pins. Each Pod has both lifting eyes and fork-lift slots for moving and positioning.

The Drop Arm Crash Beam is raised and lowered into position utilizing either a hydraulic cylinder driven by a DELTA Hydraulic Power Unit or manually, with the weight of the drop arm being balanced by a Hydraulic-pneumatic balance system (U.S. Patent # 5,560,733 dated 10/1/96). The Hydraulic Pumping Unit can be sized to provide pass-through rates suitable for most inspection and identification station requirements.

Operating modes include, full automatic, remote- hard line, remote-radio, card reader, key switch or by local guard push button station...etc. - or by combinations thereof.

SPECIFICATION

1.0 PATENT LICENSE.

The CRASH CERTIFIED DROP ARM BEAM BARRIER SYSTEM shall be fully licensed for manufacture under U.S. Patent Number 4,844,653 dated July 4, 1989, U. S. Patent # 5,560,733 and others pending.

2.0 SYSTEM CONFIGURATION

2.1 Barrier Construction. Barrier shall be an above grade, transportable assembly containing a rigid crash beam hinged at one end, raised and lowered by means of a Hydraulic Power Unit. When in the down locked position the beam shall present a formidable obstacle to approaching vehicles. Upon vehicle impact, the force shall first be absorbed by the beam assembly and then transmitted to the Initial Pods.

2.2 Barrier Height. Height of the Barrier shall nominally be 34 inches (0,86 M) as measured from

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the roadway surface to the center line of the crash beam.

2.3 Barrier Clear Opening. The standard clear opening shall be 144 inches (3,66 M) as measured inside to inside of the Inertial Pods.

(Barrier can be specified with a clear opening from 120 inches [3,05 M] to 180 inches [4,57 M]).*

2.4 Finish. All external surfaces of the Inertial Pods and the Drop Arm support mechanism shall have a rust inhibiting painted surface. The insides of the Inertial Pods shall be asphalt emulsion coated for corrosion protection. The drop arm beam shall be furnished with red reflective tape sufficient to provide alternate 20 inch (0,5 M) bands on the Barrier tube and Barrier Yoke.

2.5 Configuration Drawing. Delta Drawing 90030

3.0 OPERATION

3.1 Hydraulic Operation. The Standard Barrier shall be capable of being raised or lowered in 12 seconds.

(The permissible minimum operating speeds of a Barrier is determined by the specified clear opening (see paragraph 2.3), as follows:

144 in.(3,65 M) to 168 in.(4,27 M) 9 seconds
168 in.(4,27 M) to 180 in.(5,57 M) 12 seconds
192 in.(4,88 M) to 216 in.(5,49 M) 16 seconds

3.1.1 A fixed pressure compensated flow control device shall be installed in each system in the Hydraulic Circuit to prevent operation below allowable minimums.

3.1.2 A field adjustable speed control element within the Hydraulic Circuit shall be provided to increase the operating time to fit local operating needs.

3.1.3 Barrier direction shall be instantly reversible at any point in its cycle from the control station(s).

4.0 PERFORMANCE

4.1 Experience. Barrier and auxiliary equipment shall be of a proven design. Manufacturer shall have 10 years documented experience with similar vehicle Barriers.

4.2 Qualification Tests. Barrier design shall have been successfully tested in full scale

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configuration in accordance with the Department of State Specification SD-STD-02.01 dated April, 1985 - with a certified rating of K4/L2***.

*** Full scale crash test in accordance Department of State Specification SD-STD-02.01, dated April 1985, was conducted on June 11, 1999 at KARCO Engineering, Adelanto, California.

5.0 HYDRAULIC POWER UNIT

5.1 Hydraulic Circuit. Unit shall consist of an electrically driven hydraulic pump which shall be connected to electrically actuated valves installed on a manifold to allow oil to be driven to the up or down side of a double acting hydraulic cylinder to raise or lower the Barrier. The hydraulic circuit shall include all necessary control logic, interconnect lines and valves.

5.2 Main Power. The electric motor driving the hydraulic pump shall be fed from (site voltage, phase and frequency, i.e. 230/3/60).** Motor shall be sufficiently sized for the expected number of Barrier operations.

5.2.1 Frequency of Operation. Barrier shall be capable of 120 complete up/down cycles per hour.

6.0 CONTROL AND LOGIC CIRCUITS - The following control circuits and stations shall be furnished:

6.1. Control Circuit. A control circuit shall be provided to interface between all Barrier control stations and the hydraulic power unit. This circuit shall contain all PLCs, relays, timers and other devices necessary for the Barrier operation.

6.1.1 Voltage. The control circuit shall operate from a (120 volt, 50/60 Hz supply 240 volt, 50/60 Hz or 24 VDC **). An internally mounted transformer shall reduce this to 24 VAC (24 VDC) for all external control stations.

6.1.2 Power Consumption. The control circuit power consumption shall not exceed 250 watts basic load, plus 200 watts for each Barrier in the system.

6.1.3 Construction. The control circuit shall be mounted in a general purpose enclosure. All device interconnect lines shall be run to terminal strips.

6.2 Standard Remote Control Station. A standard remote control station shall be supplied to control the Barrier operation. This panel shall have a key lockable main switch. Buttons to raise or lower the barrier shall be provided.

6.2.1 Construction. The control station shall be mounted in a weather resistant, minimum rating NEMA 4 (IEC IP65), electrical enclosure. All connection points shall be clearly identified and coded to the applicable Delta drawing.

6.2.2 Voltage. The remote control panel shall operate on 24 volts.

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6.2.3 *Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Barrier has been left in the up position for too long a time period. The time interval shall be customer selectable.

6.3 Position Indicating Lights. The Barrier shall be supplied with a limit switch to actuate when the Barrier is securely down. The limit switch shall operate panel lights to indicate the Barrier secure and not secure condition.

7.0 BEAM LOCKING METHOD. The following Barrier Beam locking device(s) shall be furnished:

7.1 Manual Locking Pin. The Barrier shall be provided with a locking pin with padlock locking point to secure the Barrier in the guard position. Padlock to be furnished by others.

7.2 *Maglock. The Barrier shall be provided with an electrically operated maglock to secure the Barrier in the down position. The maglock shall be synchronized by the control circuit to lock and unlock the Barrier at the proper operating points. In the event of a power outage, it shall be possible to manually release the Barrier.

8.0 ENVIRONMENTAL DATA (Please supply the following):
Barricade shall operate satisfactorily under the following environmental conditions:

8.1 Extremes in temperature
Yearly maximum drybulb temp _____f/c
Yearly minimum drybulb temp _____f/c

8.2 Rainfall
Yearly average _____inches
Maximum expected hourly rate_____inches/hour

8.3 Snowfall
Maximum expected hourly rate_____ inches/hour
Roadway will be (mechanically/manually/chemically) cleared _____.

9.0 QUALITY ASSURANCE PROVISIONS

9.1 Testing. Upon completion, the Barrier system will be fully tested in the manufacturer's shop. The following checks shall be made:

9.1.1 Identification. A nameplate with manufacturer's name, model number, serial number and year built shall be located at the hinged end structure.

9.1.2 Workmanship. The Barrier shall have a neat and workmanlike appearance.

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9.1.3 Dimensions. Principle dimensions shall be checked against drawings and ordering information.

9.1.4 Finish. Coatings shall be checked against ordering information and shall be workmanlike in appearance.

10.0 PREPARATION FOR SHIPMENT

10.1 The Barrier system shall be crated or mounted on skids as necessary to prevent damage from handling. The shipping container(s) shall be of sufficient structural integrity to enable the assembly to be lifted and transported by overhead crane or forklift without failure.

11.0 DISCLAIMER

Please note - careful consideration must be devoted to the selection, placement and design of a Drop Arm Barrier System installation. Just as in the case of any Barricade system, perimeter security device or security gate that blocks a roadway or drive, care must be taken to ensure that approaching vehicles as well as pedestrians are fully aware of the Barriers and their operation. Proper illumination, clearly worded warning signs, auxiliary devices such as semaphore gates, stop-go signal lights, audible warning devices, speed bumps, flashing lights, beacons, etc. should be considered. Delta has information available on many such 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 a Barricade system. Delta will offer all possible assistance in designing the operating equipment, controls and the overall system but we are not qualified nor do we purport to offer either traffic or safety engineering information.

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12.0 PROCUREMENT SOURCE

The **Model IP500(H)** Transportable Drop Arm Barrier System shall be purchased from:

DELTA SCIENTIFIC CORPORATION
24901 West Avenue Stanford
Valencia, California, 91355, USA
Phone (661)257-1800
FAX (661)257-1081
Email info@deltascientific.com
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