DELTA SCIENTIFIC CORPORATION
PALMDALE, CA.LIFORNIA, 93551
WWW.DELTASCIENTIFIC.COM

PROCUREMENT SPECIFICATION
MODEL TT300S DELTA CRASH RATED LINEAR GATE SYSTEM
WITH TT260 ELECTRO-MECHANICAL RACK AND PINION OPERATOR

1.0 SCOPE

This specification defines the procurement of a DELTA CRASH RATED LINEAR GATE SYSTEM, Model TT300S, consisting of a crash rated linear gate; end support buttresses; ground tracks; receiving end interlock bolt system; rack and pinion TT260 electro-mechanical gate operator and associated controls and safety equipment.

2.0 HIGH SECURITY GATE

2.1 Gate Construction. The gate shall be an above grade assembly consisting of a heavy steel structure with steel wire rope reinforcing network, capable of being opened and closed in a linear motion. When in the closed position it shall present a formidable obstacle to approaching vehicles. Upon impact, forces shall be first absorbed by the steel structure of the gate assembly and then, successively by the steel wire rope network and then transmitted to the end support buttresses and their foundations.

2.2 The design of the gate system shall have been confirmed by the detailed examination of the structure with a finite structural analysis computer program. The design and performance of the Linear Crash Gate shall have been verified and approved by the United States Army Corps of Engineers (reference USCOE, Zero Accidents Section 02835).

2.3 The lower portion of the gate shall constitute a composite structure composed of steel structural members and a steel wire rope network designed to withstand the vehicle impact defined in paragraph 2.8 below. The superstructure of the gate shall provide a solid framework to which bars, panels, grills, or decorative materials can be attached as defined by the architect.

2.3.1 The closed gate shall be locked into the guard position by means of a passive Fixed Bolt at the support buttress and an electro-mechanical actuated Bolt Assembly Mechanism at the receiving buttress. The passive fixed bolt and the electro-mechanical actuated bolt mechanism will connect both the steel structure and the steel wire rope network to the receiving buttress to efficiently transmit excess energy into the buttresses and hence the foundations.

2.4 Ground Track. The ground track shall be suitable for guiding a V-groove type Gate support wheel. Sufficient track shall be provided to allow full run back of the Gate leaf while in the fully open position. The track base (optionally track top) shall be flush with grade.

2.5 End Support Buttresses. The Gate will be supported in the fully closed and open positions by an end support buttress system. These supports will include all necessary guide wheels for the smooth operation of the Gate. The end support buttresses shall absorb the forces received from the Gate leaf during a vehicle collision and transmit them to their

foundations.

2.6 Gate Dimensions. Height of the Gate shall be a minimum of 108 inches (2.74 M) from grade to the top of the Gate frame (alternate heights may be specified). Length shall be suitable to close and protect a 144 inch (3.65 M) clear opening (alternate lengths may be specified).

2.7 Finish. The Gate and end support buttresses of the system shall be mechanically and chemically cleaned and painted with one coat of gray primer paint per manufacturers specification.

2.8 VEHICLE ARREST CAPACITY. The gate system shall be capable of stopping and disabling a vehicle, with a gross vehicle weight of 5,000 lbs (22,240 Newtons) moving at a velocity of 50 MPH (80 KPH) at the time of impact.

3.0 DRIVE SYSTEM

3.1 Linear Gate Operator. The Gate shall be positioned and locked in place by an electro-mechanical rack and pinion Linear Gate Operator, Model TT260. The operator system shall consist of an electro-mechanical operator with output pinion, power rack assembly, gate leaf position limit switches and necessary control and logic module. The drive system shall be designed and constructed in a manner to insure long, trouble free operation and be capable of operating under extreme environmental conditions. Normal servicing and repair work shall be possible with readily available tools and components.

3.1.1 Operator Power. The motor will operate on _____ volts, ____ Phase ____Hz (specify local supply voltage, i.e., 230/3/60). The control and logic circuit shall incorporate a phase/voltage monitor to protect the motor and circuits from local power supply disruptions.

3.1.2 Drive Method. The operator shall provide the torque required to rotate a pinion against a rack mounted on the Gate leaf.

3.1.3 Position Sensors. The operator shall control the position of the moving Gate by means of sensors. These sensors will interface with the system logic and control circuits and will be sealed from the environment.

3.1.4 Operator Access. The operator shall be accessible for servicing and repair by removing a cover. The cover will be secured in place by means of suitable fasteners. (A padlock hasp for securing the cover can be specified as an option.)

3.l.5 Operator Finish. The foundation base and all frame members of the operator shall be galvanized, electroplated or otherwise treated for corrosion resistance. The operator cover shall have a painted surface.

3.1.6 Power Off Operation. In the event of a power off condition the operator can be

disengaged from the Gate by releasing the belts connecting the motor mechanism to the pinion shaft. The Gate shall be capable of being pushed open or closed without damage to the drive components.

3.1.7 Gate and Operator Handing. The Gate operator shall be _____ handed. (Specify either right or left hand).

(Note: The handing is defined by the opening direction of the Gate. If, as you face the Gate from the outside, the Gate moves to the right when opening it, then it is a right handed Gate. If it moves to the left upon opening, then it is a left handed Gate.)

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

3.2.1 Control Circuit. A control circuit shall be provided to interface between all Gate control stations and the operator. This circuit shall contain all relays, timers and other devices necessary for the Gate operation.

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

3.2.1.2 Power Consumption. The control circuit power consumption shall not exceed 250 watts basic load.

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

(The following control station(s) can be specified)

3.2.2 Remote Control Panel. A remote control panel shall be supplied to control the Gate operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Buttons to open, close and stop the Gate shall be provided. Gate open, fully closed and cycling indicator lights shall be included. The emergency override close (EOC) feature (if specified) shall be operated from a push button larger than the normal controls (optionally a covered toggle switch). The EOC shall also be furnished with EOC active light and reset button.

3.2.2.1 Voltage. The remote control panel shall operate on 24 VDC.

3.2.2.2 Construction. The remote control station shall be a standard 19 inch electronics rack type surface mount panel with all devices wired to a terminal strip on the back.

3.2.2.3 (Option) Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Gate has been left in the open position for too long a time period. The time interval shall be customer selectable.

(Select Control Panel 3.2.3 instead of 3.2.2 if Slave Panel 3.2.4 is desired.)

3.2.3 Remote Control Master Panel. A remote control master panel shall be supplied to control Gate function. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Buttons to open, close and stop the Gate shall be provided. Gate open, fully closed and cycling indicator lights shall be included. The emergency override close (EOC) feature (if specified) shall be operated from a push button larger than the normal controls (optionally a covered toggle switch). The EOC shall also be furnished with EOC active light and reset button. The remote control master panel shall have a key lockable switch to arm or disarm the remote slave panel(s). An indicator light shall show if the slave panel is armed.

3.2.3.1 Voltage. The remote control panel shall operate on 24 VDC.

3.2.3.2 Construction. The remote control station shall be a standard 19 inch electronics rack type surface mount panel with all devices wired to a terminal strip on the back.

3.2.3.3 (Option) Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Gate has been left in the open position for too long a time period. The time interval shall be customer selectable.

3.2.4 Remote Control Slave Panel. A remote control slave panel shall also be supplied to control the Gate operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights, the "main power on" light is lit when enabled by the slave switch on the remote control master panel. Buttons to open, close and stop the Gate shall be provided. Gate open, fully closed and cycling indicator lights shall be included. The emergency override close (EOC) feature (if specified) shall be operated from a push button larger than the normal controls (optionally a covered toggle switch). When the slave panel EOC is pushed, an EOC "active" lamp will light and operation of the Gate will not be possible until reset at the master panel.

3.2.4.1 Voltage. The remote control panel shall operate on 24 VDC.

3.2.4.2 Construction. The remote control station shall be a standard 19 inch electronics rack type surface mount panel with all devices wired to a terminal strip on the back.

3.2.4.3 (Option) Panel shall be equipped with a timer circuit to notify the operator via an annunciator "squealer" that the Gate has been left in the open position for too long a time period. The time interval shall be customer selectable.

3.3 ACCESSORY EQUIPMENT (Any or all of the following may be optionally selected):

3.3.1 Synchronization Signal. The system control and logic circuit shall have a separate output contact for operating or interfacing the Gate with other security devices. This output will signal either a open or a fully closed Gate.

3.3.2 Timed Close Signal. The system control logic circuit shall incorporate a programmable delay to automatically close the Gate after a preset time, or provide a delayed output signal.

3.3.3 Stop/Go Signal Lights. Red/green signal lights shall be mounted in the right hand (left hand) end support buttress to alert approaching vehicle drivers of the Gate status. The green light shall indicate that the Gate is fully open. All other positions or Gate movement shall cause the light to show red. The light operating voltage shall be 12-24 VDC (or 120-240 VAC), power consumption 40 watts per light or less.

3.3.4 Flashing Warning Lights. Amber lights will be installed in the body of the gate buttresses. While the Gate is closing, lights will flash in unison. The light operating voltage will be 12-24 V (nominal consumption, 25 watts per light).

3.3.5 Vehicle & Pedestrian Detector Systems (any or all of the following may be selected:)

3.3.5.1 Safety Interlock Detector. A vehicle safety loop detector shall be supplied to prevent the Gate from being accidentally closed while a vehicle is in the Gate's path. The detector shall utilize digital logic and have fully automatic tuning for accurate long term reliability. The output of the detector shall negate the Gate close signal.

3.3.5.2 Infra-red Beam Sensor System. An infrared system shall be furnished to detect the presence of a object interrupting the path of the beam. The system shall have a minimum range of 36 feet (11.0 M). The output of the sensor can be used to either instantly reverse the Gate when closing, or negate a close signal if stationary.

3.3.5.3 Safety Edge Sensor System. A safety edge sensor system shall be furnished on the leading edge of the Gate. Any pressure applied to the Safety Edge should cause the Gate to instantly stop (reverse).

3.3.5.4 Emergency Override Close (EOC) System. The emergency override close system shall provide a separate oversize control button (or toggle switch) on the remote control panel(s) which when pressed will signal the control and logic circuit to close the Gate and ignore any intervening signals from detectors or sensors.

3.3.5.5 EOC System Lockout. The EOC system shall have, in addition to the ability of overriding the detectors and sensors for a close signal, the ability to deactivate all controls until reset from either the master panel or other specified locations.

4.0 EXPERIENCE AND CERTIFICATIONS, HIGH SECURITY GATE

4.1 Experience. The High Security Gate and auxiliary equipment shall be of a proven design. Manufacturer shall have a minimum of 15 years documented field experience for all major components and design features.

4.2 Certifications. The manufacturer shall certify that a detailed finite element structural analysis has been conducted on the Gate configuration and that the results of that analysis support the specified loads to be imposed on the Gate structure.

5.0 PERFORMANCE, GATE OPERATOR

5.1 Gate Operating Speed. The operator system shall be capable of driving the Gate at _____FPM (specify from 27 FPM [8,2 M/Min] to 48 FPM [14.6 M/Min]).

5.2 Capacity. For a Gate operating on a level track and with the wheels, bearings, and guides in good operating condition and no obstructions, the operator shall handle the Gate without overheating the drive motor when the Gate is continuously operated.

6.0 ENVIRONMENTAL DATA Gate shall operate satisfactorily under the following environmental conditions (please supply the following):

6.1 Extremes in temperature

Yearly maximum drybulb temp _____f/c
Yearly minimum drybulb temp _____f/c

6.2 Rainfall

Yearly average _____inches
Maximum expected hourly rate_____inches/hour

6.3 Snowfall

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

7.0 QUALITY ASSURANCE PROVISIONS

Testing. Upon completion, the Gate system will be fully tested in the manufacturer's shop. In addition to complete cycle testing to verify function and operating speeds, the following checks shall be made:

7.1 Identification. A nameplate with manufacturer's name, model number, serial number and year built shall be located within the operator service cover.

7.2 Workmanship. The Gate, Operator and subsystems shall have a neat and workmanlike appearance.

7.3 Dimensions. Principal dimensions shall be checked against drawings and ordering information.

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

8.0 PREPARATION FOR SHIPMENT

The Gate and Operator 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.

9.0 MANUFACTURER'S DATA

Drawings and installation data. The Gate and Operator system drawings and installation, maintenance and operating manuals shall be sent to purchaser within 4 weeks of order. ___ copies shall be supplied (1 copy supplied at no cost).

10.0 DISCLAIMER

Please note - careful consideration must be devoted to the selection, placement and design of a High Security Gate 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 vehicle as well as pedestrians are fully aware of the Gate and its 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 High Security Gate 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.

11.0 PROCUREMENT SOURCE

The **Model TT300S Crash Rated Linear Gate with TT260 Electro-Mechanical Rack and Pinion Operator System** shall be purchased from:

DELTA SCIENTIFIC CORPORATION
40355 Delta Lane
Palmdale, California, 93551, USA
Phone (661)575-1100
FAX (661)575-1109
email info@deltascientific.com
www.deltascientific.com