SECTION 34 75 13.13

ACTIVE VEHICLE BARRIER

(Innovo Horizontal Beam Barrier)

PART 1 – GENERAL

1.1 SCOPE

This specification defines the requirements for the manufacture and installation of Horizontal Beam Vehicle Barrier Systems.

1.2 SYSTEM DESCRIPTION

Supply a total active vehicle barrier system of the Innovo “Horizontal Beam Barrier” engineered design, including all required components (crash beam, beam well, end wells, operator, controls, 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 active vehicle barrier 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) 425-1249
Website: www.innovosecurity.com

B. All elements of the active vehicle barrier system, including all associated crash beam, beam well, end wells, operator, controls, and hardware are to be obtained from a single source.

2.2 HORIZONTAL BEAM BARRIER
A. Configuration
1. Single barriers are to be individually operated, or in sets as a single blocking unit, across one or more lanes.

2. Each barrier is designed for operation manually or by electric operator.

B. Foundation
1. Anchor Depth of 60 inches.

2. Anchor Dimensions at each end post of 48 in x 60 in (Rectangle).

C. Crash Rating
1. Provide certification based on engineering analysis that the barrier design meets or exceeds:
i. DOS SD-STD-0201, Rev. A: K4, K8, or K12
ii. ASTM F2656-15: M30/P1, M40/P1, or M50/P1

D. Clear Opening Width
1. For an operator gate between 12 feet and 34 feet.

E. Height
1. All crash beam elements are to be less than 36 inches when in the closed positions.

F. Operation
1. Duty Cycle and Reliability
i. The barrier system is to be capable of operating a minimum of 300 complete open/close cycles per hour, for at least two hours per day.
ii. Perform without failure of any component necessary for operation of 100,000 cycles.
iii. Capable of 50% duty cycle or continuous open/close cycles without failure due to overheating.
iv. The barrier system is to be compatible with the available power sources identified to the manufacturer.
v. Barrier design is to minimize the level of effort required to maintain the barrier.

2. Normal Operating Speed
i. Capable of being opened within 3 seconds and closed within 3 seconds during normal operation.

3. Electric Operator

i. The operator/motor drive has demonstrated successful operation in the field to move the arresting element of the barrier.
ii. A disconnect system for the barrier drive shall be provided to allow manual or back-up power operation of the barrier in the event of a power outage.
iii. Electric motor is totally enclosed fan cooled. All couplings, motor shafts, gears, and other moving parts are fully guarded in accordance with 19 CFR 1910 Subpart O.

4. Back-up and Manual Operation
The barrier system will respond in event of a power failure and emergency operations.
i. The system will remain in the last commanded position in the event of electrical or mechanical failure. Manual override option is provided.
ii. The barrier is capable of being returned to the secure position, in manual mode, in no more than 5 minutes.
iii. Backup or Uninterrupted Power Supply (UPS) for the master and slave control panels is available in the event of a power failure.
iv. Locks. The release mechanism of the operator is not accessible from the threat side of the gate.

G. Environment
1. Heating and cooling system is to be provided to meet site conditions.

2. Operating Temperature Range: -10° to 150° F (-23° to 65° C)

H. Safety Features
1. Barrier to include “warn before operate” systems for both the motorist and the barrier operator.
i. Visual indication when the barrier is in the chosen position.
ii. Visual indication when the barrier is in the open position.
iii. Audio annunciation when the barrier is about to move.
2. Gate panels and gate operators conform to UL325.
3. Safety Lights Red/green traffic lights for operated gates are to be supplied for each entrance and exit to alert motorists of the barrier position.
4. Safety Annunciator Provide a warning horn for operated gates built into the barrier that produces an audible sound when the barrier is moving.
5. Signage and Markings that conforms to MUTCD signage guidance.
6. Obstruction Detectors A safety feature supplied to prevent an operated barrier from being accidentally closed on an authorized vehicle.

I. Controls
1. Control Panel
Control systems are push button or touch screen capable of a ‘soft start’ and ‘soft stop’. For gates with an emergency fast operations mode, a gate system that disarms all safety components of gate systems when in emergency mode is provided.

2. Master Control Panel
When a master and slave controller is provided, the master control panel is to be capable of overriding slave panels.

3. Slave Control Panel
When master and slave controllers are provided, the slave control system is to be operative in vehicle control booths or equivalent facilities. Slave control systems are to be capable of being overridden by the designated security control center. Slave control panels do not require keys for operation.

4. Monitor Screens and Displays
Display screens are available that indicate system configuration and reports of control status.

5. Control System Fabrication

i. Enclosures to be rated to the appropriate NEMA rating for environment, providing protection from intrusion of foreign objects.
ii. Control circuit to contain all relays, timers, and other devices or an industrial programmable controller programmed as necessary for barrier operation.
iii. Run all device interconnect lines to terminal strips.
iv. Disconnect switch to be in a secure location.
v. Provide limit switches for UP/DOWN limits.

J. Materials

1. Steel Shapes, Plates, and Bars ASTM A36; except where otherwise indicated.

2. Pipe and Tubular Products ASTM A53 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. Wiring All wiring is to comply with the National Electrical Code and TIA/EIA standards for signal wiring. All control wiring is to be color coded and standardized across the equipment's product line, all cabling, conduits, and hoses are to be clearly labeled at both ends, and at intermediate pull points.

6. 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.

7. 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.

8. 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).

9. 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.

10. 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.

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

L. Optional Accessories
1. Traffic Sensors
i. Photoelectric Sensors
ii. Loop Detectors
iii. Speed Detectors
iv. Closed Position Sensor

2. Indicators
i. Traffic Lights
ii. LED Lights
iii. Voice Alarm
iv. Warning Horn & Flashing Light
v. Reflective Tape/Paint

3. Heaters & Coolers
i. Foundation Heaters
ii. Cooling Fans

4. Access Controls
i. Digital Keypad
ii. Card Reader
iii. Key Switch
iv. Local Guard Operator Console
v. Handheld Remotes
vi. Solar Power Supply
vii. Intercom
viii. Remote Hard-Wired Control
ix. Remote Radio

PART 3 - EXECUTION

3.1 EXAMINATION, COORDINATION, PREPARATION

A. Manufacturers 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 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.