DATE OF THIS VERSION (new)
May 1, 2013

TITLE OF DOCUMENT (new title if applicable):
Active Vehicle Barriers, 34 75 13.13

DATE OF VERSION BEING SUPERSEDED (old):
December 1, 2011

DESCRIPTION OF DOCUMENT (previous title, number, other identifying data):
Active Vehicle Barriers, 34 75 13.13

SUMMARY OF CHANGES IN THIS VERSION:
1.2.F – Revised Section number
1.2.G – Revised Section number
1.4.F – Added information about required power load test.
1.5.C – Expanded information on source limitations.
1.6.A - included certifications requirements per the “Department of State Diplomatic Security” or latest edition.
1.6.B - Deleted in its entirety.
1.8 – Deleted applicable publications.
2.1.A – Added two more manufacturer’s – electric bollard system and total electric system.
2.2.Q & 2.4.H – Added information about drains to be installed in the pits.
2.6 – Added an entire section on electric bollard system requirements.
3.2.A and B – Removed information about concrete foundations.
3.3.B. – Added that the parking control equipment will be removed and replaced with no cost to the government if installation does not meet requirements.
3.3.C – Added finishes for system shall meet manufacturer’s recommendations.
SECTION 34 75 13.13
ACTIVE VEHICLE BARRIERS

SPEC WRITER NOTES:
1. Delete between // ---- // if not applicable to project.
2. Also delete any other item or paragraph not applicable in section and renumber paragraph.
3. Determine design loads required to meet the specified rating.

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section includes active High-Security Vehicle Barricades of wedge type, recessed and surface mounted plate type, beam type, cable net type and manually, hydraulic of crash resistance rating.

B. // Other System //

1.2 RELATED WORK

SPEC WRITER NOTE: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

A. Section 32 12 16, ASPHALT PAVING, for asphalt driveway and approach paving.

B. Section 32 05 23, CEMENT AND CONCRETE FOR EXTERIOR IMPROVEMENTS, for concrete driveway and approach paving.

C. Section 03 30 00, CAST-IN-PLACE CONCRETE, for concrete islands and curbing.

D. Section 05 50 00, METAL FABRICATIONS, for pipe bollards to protect parking control equipment.

E. Division 26 sections for electrical wiring, connections and grounding of parking control equipment.

SPEC WRITER NOTE: Insert reference to security access control system to appropriate specification section for integrating parking control equipment to form a centrally controlled system.

F. Section 28 13 00, PHYSICAL ACCESS CONTROL SYSTEMS.

G. Section 28 16 00, INTRUSION DETECTION SYSTEM.

H. Section 28 13 16, ACCESS CONTROL SYSTEM AND DATABASE MANAGEMENT.
1.3 SYSTEM DESCRIPTION

SPEC WRITER NOTE: Add paragraphs to this Article to suit Project or delete as required to describe each system.

A. Barricade system mounted in the ground as detailed on the drawings. // Motors //. // Housings //.

B. // Other System //

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Detail equipment assemblies and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.

SPEC WRITER NOTE: Retain subparagraph below if equipment includes wiring.

C. Wiring Diagrams: Power, signal, and control wiring.

SPEC WRITER NOTE: Insert requirement for Samples if custom finishes are required for parking control equipment.

D. Operation and Maintenance Data: For parking control equipment to include in emergency, operation, and maintenance manuals.

E. Certificate test reports confirming compliance’s with specified resistive rating.

F. Power load test (30 days) for circuit and/or panel board to provide power to the barrier system.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

SPEC WRITER NOTE: Revise subparagraph below to suit Project location. Consider replacing time with a maximum distance allowed.

B. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

C. Source Limitations: Obtain parking control equipment through one source from a single manufacturer. If other locations on the site have barrier protection, obtain approval for single source acquisition to minimize maintenance.
D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.6 PERFORMANCE

1.7 COORDINATION
A. Coordinate installation of anchorages for parking control equipment. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
B. Electrical System Roughing-in: Coordinate layout and installation of parking control equipment with connections to power supplies perimeter security system and security access control system. Coordinate with government.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
A. Manufacturers: Subject to compliance with requirements, provide one of the following:
   1. Hydraulic barricade system:
      a. // Wedge //
      b. // Plate//
   2. Hydraulic bollard system:
      a. // Power operated bollard system//
      b. // Manually operated bollard system//
      c. //Fixed bollard system//
   3. Cable drop arm barrier system
   4. Electric bollard system
   5. Total electric system

2.2 HYDRAULIC BARRICADE SYSTEM:
A. Coordinate // dimension feet (dimension mm) to road width per barrier requirements.
B. Barrier Material: High impact steel have the following properties:
   1. Yield Strength: 100KSI
2. Tensile Strength 110/130 KSI
3. Elongation (2in): Long 18 Trans 16
C. This material produced in accordance with US ASTM Specification T-1
   Type B
D. All barriers to be dipped galvanized on every surface of the unite to
   prevent the steel from rusting
E. Barrier Height: In the fully “secure” position, the barrier height
   above the ground is // dimensions // inches.
F. Barrier Dimensions: As shown on drawings
G. Response time: The barrier will erect to the fully “up” position in
   less than 5 seconds under normal operating conditions. The barrier
   shall include additionally an emergency mode to allow for erection time
   in 1 second.
H. Cycling Time: The hydraulic pump is sized to complete six cycles
   (up/down) per minute.
I. Normal Activation: Electrically-driven hydraulic pump operating at a
   pressure of //Pressure // psi and a flow rate of // rate// gpm to
   activate a double acting cylinder
J. Operating Modes:
   1. Raise and lower barrier, normal conditions, operating command, and
      momentary input.
   2. Variable automatic cycling based on time periods set by the
      operation system
   3. Default to manual operation
   4. Raise barrier to up position in emergency condition.
K. System Controller relays and timers synchronized to properly operate a
   barrier. Optional programmable microprocessor controller.
L. Control Panel
   1. Momentary switch to raise or lower barrier
   2. Audible alert to activate whenever an emergency exists
   3. Key reset switch to “unlock” system from secure position in the
      event of emergency operation. The system no longer responds to
      operator input
M. Power Source: Normal // 20 amp//=, // 120 or 220 // vac, 1 phase, // 60
   Hz //=main power.
N. Foundation Pad: Reinforced concrete pad for the //Model number // is
   // Dimensions. The barrier is secured to the blade by reinforced steel
structure. The concrete (4000psi min) is poured around the steel structure, thus securing the barrier into the concrete foundation.

O. Operation Features:
1. Heating and cooling equipment for the hydraulic and or electric systems
2. Traffic lights at the entrance and exit to the barrier.
3. Remote operator stations
4. Indicator lights for barrier status.
5. Vehicle loop detector to indicate presence, velocity or direction
6. E-up operation (1 second)
7. Electric heat in slab
8. //Other Features//

P. Installed Weight: // Approximately Weight //.

Q. Drain: Install drain in each pit to meet Stormwater Management Plan.

2.3 HYDRAULIC POWER UNIT BOLLARD SYSTEM (HPU)

A. Hydraulic Circuit. Unit shall consist of an electrically driven hydraulic pump which shall pressurize a high pressure manifold connected to a hydraulic type accumulator. Electrically actuated valves shall be installed on the manifold to allow oil to be driven to the up and/or down side of a double acting hydraulic cylinder to raise and lower the bollard. The hydraulic circuit shall include all necessary control logic, interconnected lines and valves to override and lock out the normal speed control valve(s) for emergency fast operation of the bollard(s).

B. Main Power. The electric motor driving the hydraulic pump shall be fed from //Describe //. Motor shall be sufficiently sized for the expected number of barricade operations.

C. Power-off Operation. The accumulator shall be sized to allow three full cycle operations of the bollard set in the event of a power outage. The bi-directional control valves shall be manually operable in the event of a power outage.

D. Manual Operation. A hand pump shall be furnished to allow the bollards to be raised manually in the event of a prolonged power interruption.

E. The following control circuits shall be provided at //Location//.
   //Describe features //.

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

G. Power Consumption: The control circuit power consumption shall not exceed // 250 watts basic load, plus 200 watts//, //Describe // for each Bollard in the system.

H. Remote Control Panel: The following remote control panels shall be provided at //Location//. //Describe panel features //.

I. Voltage: The remote control panel shall operate on // 24 VAC (optionally 24 VDC)//, //Describe //.

J. Construction: The Hydraulic power unit accessories shall be mounted and wired on an integral steel skid. The HPU shall fit in an envelope // dimension inches (dimension mm)//. The HPU’s shall be mounted in a weather resistant enclosure. The control circuit shall be mounted within the hydraulic power unit enclosure. All device interconnect lines shall be run to terminal strips. The remote control station shall be housed in a countertop mounted, boxed enclosure with all devices wired to a terminal strip on the back.

K. Accessory Equipment:
   1. Auxiliary Emergency Fast Operate Circuit: For each of the bollard sets, a separate hydraulic consisting of a pressure reserve source, operating control logic and interconnect lines and valves shall be supplied. This circuit shall provide an available source of power to operate the bollards at emergency fast speed, even after power off or manual operation or high frequency operation has depleted the normal reserve capacity.
   2. Electro-Mechanical Signal Gate: At // location //, //describe feature//.
   3. Stop/Go Traffic Lights: Red/Green // dimension inches (dimension mm)// traffic lights shall be supplied to alert vehicle drivers of the bollard position where indicated on the drawings. The green light shall indicate that the bollard is fully down. All other positions shall cause the light to show red. Brackets shall be supplied to allow each light to be located on a // dimension inches (dimension mm)//. OD post. The light operating voltage shall be 120 volts (alternately 240 volts), power consumption 40 watts per light.
2.4 MANUALLY OPERATED BOLLARD SYSTEM:

A. The system shall have a total of //Bollards// //arrayed//; Individual bollards shall be manual, operated independently. Each Bollard shall have its own controls.

B. Construction. Bollard shall be a below grade assembly containing a heavy steel cylindrical weldment capable of being raised to an above grade position. The guard position shall present a formidable obstacle to approaching vehicles. Upon impact, forces shall be first absorbed by the weldment and then transmitted to the foundation of the unit.

C. Manual Operation. A hand pump shall be furnished to allow the Bollards to be raised and lowered manually.

D. Architectural Enhanced Outer Shells shall be cast from a free machining aluminum alloy and be free of cracks, uneven surface texture, and excessive parting line offset or particle inclusions.

E. Bollard Diameter, with Architectural Enhancement in place shall not be greater than //diameter inches (diameter mm)/// in diameter.

F. Bollard Height: shall be //height inches (height mm)/// as measured from the top of the foundation frame to the top of the Bollard assembly.

G. Weather Resistant HPU Enclosure. A lockable weather resistant enclosure shall be provided for the HPU. The design shall provide for easy access to the HPU for maintenance and emergency operation of the hydraulic system.

H. Drains: Install drains to provide positive drainage from bollard system in accordance with the Stormwater Management Plan.

I. Finish.

1. Steel Structure. The foundation and underside of the Bollard shall be asphalt emulsion coated for corrosion protection. The roadway plates shall have a non-skid surface. The above grade portion of the Bollard shall be finished with an industrial enamel primer.

2. Architectural Enhancement. Standard Aluminum Cast Outer Shells shall first be primed with an industrial enamel primer then finished with industrial grade enamel. Highlight colors shall be of equivalent quality.

3. Custom Architectural Enhancement Outer Shells shall be finished in accordance with customer instructions.

2.5 CABLE DROP ARM BARRIER SYSTEM

A. Barrier Construction: Barrier shall be an above grade assembly containing a rigid crash beam hinged at one end, raised and lowered
manually. The crash beam incorporates a high strength wire rope that is firmly attached to both buttresses when the crash beam is in the down position. Upon vehicle impact, the force shall first be absorbed by the beam assembly and then transmitted to the foundation bollards of the unit. In a collision, the energy of the impact is transmitted through the crash beam to the buttress and the foundation.

B. Operation: The drop arm will be capable of being manually raised with a force of only // force // ft/lbs. The Barrier shall be provided with a manual locking pin with padlock locking point to secure the Barrier in the guard position. Padlock to be furnished by others.

C. Barrier Height: Height of the Barrier shall nominally be // dimension inches (dimension mm) // as measured from the roadway surface to the center line of the crash beam. Height can be varied during installation to suit local security requirements.

D. Barrier Clear Opening: The standard clear opening shall be as indicated on the drawings, measured inside face to inside face of the foundation bollard supports. The Barrier can be specified with a clear opening from // dimension feet (dimension mm) to dimension feet (dimension mm) //.

E. Finish: The foundation base of the Barrier shall be asphalt emulsion coated for corrosion protection. Barrier top surface shall have a rust inhibiting painted surface. The drop arm beam shall be furnished with red reflective tape sufficient to provide alternate // dimension feet (dimension mm) // bands on the Barrier tube and Barrier Yoke.

2.6 ELECTRIC BOLLARD SYSTEM

A. Electric Retractable Bollards: High density concrete made of ASTM C 150 Portland cement, crushed stone, silica sand, and polymers reinforced with glass fiber and structural reinforcing as required; asbestos free.

B. Color: To be selected by the Contracting Officer from RAL standard colors.

C. Type of Material: Bollards to be manufactured in one piece carbon steel alloy E470, 1-1/4 inch (32 mm) thick. Bollard casing manufactured from 1/4 inch (6.3 mm) cold rolled steel. All material to be treated with anti-corrosion treatment before coating.

D. Surface Texture: Bollards shall be powder-coated.

E. Overall Height: 31.5 inches (800 mm) tall.

F. Bollard Plan Shape: Round.
G. Dimensions:
   1. Bollard: 14 (350 mm) inches diameter by 31.5 (800 mm) inches tall
   2. Casing: 16-3/4 inch (425 mm) by 50 inches (1270 mm). Casing will be connected to outlet drain as shown on the plans.
   3. Excavation Depth: 60 inches (1525 mm).

H. Internal light: Lighted (LEDS) at the top of the Bollard (24 V).

I. Waterproof: The Bollard shall be IP67 rated. The unit will be able to operate submerged in water for up to 1 hour.

J. Actuation: Dry contact input from Johnson Card Reader system and/or Guard Station Push Button.

K. Operating Speed: Normal time is 5 seconds.

L. Operational Frequency: 180 operations per hour.

M. Timing Monitor: Monitors timing for reaching a preset position and sends an alarm if position is not reached during the programmed delay.

N. Vehicle Detector: Must have capability to detect vehicle detector system.

O. Power Failure Feature: Bollards to retract in case of a power failure.

P. Enclosure: To be outside cabinet mounted as shown on the drawings.

Q. Power: Main Power to be 208 volts, single phase, with low voltage transformer. Operation power to be 24 volt.

R. Controls: Switch for manual operation. Program for automatic operation.

S. Remote Connection: Capable of being able to be driven from a modem.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, critical dimensions, and other conditions affecting performance.

B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance.

C. Examine roughing-in for electrical systems to verify actual locations of connections before parking control equipment installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install Gate as outlined in manufactures installation instructions. Provide full installation to power and related security systems.

B. Install manually operated bollards as outlined in manufacturer’s installation instructions.
3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Remove and replace parking control equipment, with no cost to the government, where test results indicate that it does not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.4 ADJUSTING AND CLEANING

A. Adjust parking control equipment to operate smoothly, easily, and properly. Confirm that locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

C. After completing installation of exposed, factory-finished parking control equipment, inspect exposed finishes and repair damaged finishes as per manufacturer’s recommendations. Finishes to match manufacturer’s finishes.

D. Remove barrier-gate arms during the construction period to prevent damage, and install them immediately before Substantial Completion.

3.5 DEMONSTRATION

Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain parking control equipment.