

SPECIFICATION FOR MODEL 730 DROP ARM BARRIERS

PART I - GENERAL

1.1 WORK INCLUDED IN THIS SECTION

Furnish labor, materials, inspections, supervision, etc., necessary for the complete installation and operation of vehicle barrier(s) as shown on the plans and specified herein. Work includes furnishing all items and accessories required or necessary for the correct operation of the vehicle barrier(s) as shown on plans and/or specified herein.

1.2 QUALITY ASSURANCE

The Company shall specialize in manufacturing of the type barriers specified, with a minimum five (5) years experience.

The installer shall have a minimum three (3) years installation experience of similar equipment.

1.3 SUBMITTALS

Submittals shall contain sufficient plans, elevations, sections, and schematics to clearly describe the apparatus. All conduit runs, controls and similar drawings shall be included.

Submittals shall include (but not necessarily limited to) the following:

All high and low voltage conduit runs.

Mounting dimensions and locations.

Details of electronic equipment, electrical equipment or any other apparatus deemed necessary by the Owner or Owner's representative.

Installer shall provide two (2) copies of submittal packages.

1.4 INSPECTIONS

Procure all the necessary and usual inspections and certificates for all work to be installed. Deliver same to the Owner/ Owner's representative before final acceptance.

PART II – PRODUCTS

2.1 ELECTROMECHANICAL DROP ARM BARRIER

A. Application

1. Barrier shall contain 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 an obstacle to approaching vehicles. Upon vehicle impact, the force shall first be absorbed by the beam assembly and then transmitted to the concrete foundations of the unit.

B. Features

1. Height of the barrier shall be 41 inches (1,041.4 mm) as measured from the roadway surface to the center line of the barrier arm.
2. The standard clear opening shall be 144 inches (3.66m) as measured inside to inside of the buttress supports. (*The Barrier can be specified with a clear opening from 120 inches (3.0m) to 216 inches (5.49m)*).
3. The hinge side assembly will be constructed of structural steel posts with internal serviceable bearings on a single stainless steel axle allowing the steel I beam free movement to a fully raised position. The hinge post assembly shall be designed to accept manual or hydraulic operation of the arm.
4. The receiver stanchion will be constructed of two steel weldments, which are designed to direct the landing of the arm and securely contain the arm during impact.
5. The receiver and hinge shall be cast in a subterranean pour. No above grade concrete shall be acceptable.
6. The barrier buttress supports and arm shall be coated with Sherman Williams Macropoxy 646 for superior corrosion protection.
7. Barrier arm shall be constructed of a steel I-beam and shall be furnished with red and white architectural grade reflective striping.

C. Functional Specifications

1. Unit shall consist of an electrically driven hydraulic pump which shall pressurize a manifold. Electrically actuated valves shall be installed on the manifold to allow oil to be driven to the up side of a single acting hydraulic cylinder to raise the barrier. The barrier shall be lowered by gravity and contain control valves to adjust speed.
 - a. The bi-directional control valves shall be manually operable in the event of a power outage.
 - b. The hydraulic power unit and accessories shall be mounted and wired in a self-contained cylindrical weather resistant enclosure.
2. The standard hydraulic barrier shall be capable of being raised or lowered in 12 seconds. The operating speeds of the barrier will be determined by the specified clear opening:

144 in. (3.66 M) to 216 in. (5.49 M) 10 – 16 seconds

 - a. Field adjustable flow control valves within the hydraulic cylinder shall be provided to adjust the operating time to fit site operating requirements.
3. Power System
 - a. The electric motor shall be capable of producing a minimum 2 horsepower.
 - b. The unit shall be made available as 208/230 single-phase or 208/230/460 three-phase AC voltage.

The motor shall be of the high starting torque, continuous duty, and industrial type, protected against overload by either a thermal or current sensing overload device.

4. Control Circuitry

- a. A built-in PLC controller shall interface between the gate control stations and the hydraulic power unit. The PLC shall include all necessary inputs, outputs, timers and logic necessary for barrier operation. Relays or proprietary control boards shall not be acceptable.
- b. The control circuit inputs shall operate from a 24 volts DC. An internal transformer and rectifier shall provide 24 volts DC for the control panel and customer dry contacts.
- c. There shall be 120 volts AC power available in the control cabinet for accessories requiring 120 volts.
- d. The control circuit shall be mounted in an enclosure with the hydraulic pumping unit. The enclosure shall be of sufficient size and rating to accommodate accessory devices. All accessory device wiring shall connect to the included terminal strips.
- e. The PLC is designed to accept dry contact inputs from various types of devices.

2.2 CONTROL PANELS

(Any or all of the following control panels may be specified)

A. Remote Control Panel

1. A remote control panel shall be supplied to control the barrier operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Buttons to raise or lower each barrier shall be provided. "Up" and "down" indicator lights shall be included for each barrier.
 - a. The remote control panel shall operate on 24 volts.
 - b. The remote control station shall be a standard 19 inch electronics rack type surface mount panel or desktop console type with all devices wired to a terminal strip on the back

B. Remote Control Master Panel

1. A remote control master panel shall be supplied to control barrier operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Buttons to raise and lower each barrier shall be provided. "Up" and "down" indicator lights shall be included for each barrier. The remote control master panel shall have a key lockable switch to arm or disarm the remote slave panel. An indicator light shall show if the slave panel is armed.
 - a. The remote control panel shall operate on 24 volts.
 - b. The remote control station shall be a standard 19 inch electronics rack type surface mount panel or desktop console type with all devices wired to a terminal strip on the back.

C. Remote Control Slave Panel

1. A remote control slave panel shall also be supplied to control barrier operation. This panel shall have a "panel on" light that is lit when enabled by a switch on the remote control master panel. Buttons to raise or lower each barrier shall be provided. "Up" and "down" indicator lights shall be included for each barrier.

- a. The remote control panel shall operate on 24 volts.
- b. The remote control station shall be a standard 19 inch electronics rack type surface mount panel or desktop console type with all devices wired to a terminal strip on the back.

2.3 ACCESSORY DEVICES

(Any or all of the following may be specified)

A. Traffic Signals

1. 8 inch traffic lights shall be supplied to alert vehicles of the barrier position. The *(specify color)* light shall indicate that the barrier is fully down. All other positions shall cause the light to show *(specify color)*. Brackets shall be supplied to allow light(s) to be located on a 3.5 inch OD post. The operating voltage shall be 120 volts

B. Vehicle Detection Loop

1. A vehicle loop detector shall be supplied to prevent the barrier from being lowered on an authorized vehicle. The detector shall utilize digital logic have fully automatic tuning for stable and accurate long term reliability. The detector shall prevent any barrier close signal when a vehicle is over the loop.

C. Weather Resistant HPU Enclosure

1. A lockable weather resistant enclosure shall be provided for the hydraulic pumping unit. The design shall provide for easy access to the HPU for maintenance and emergency operation of the hydraulic system. Enclosure shall have a powder coat finish.

2.4 PERFORMANCE

A. Testing

1. Barrier design shall have successfully passed actual full scale crash tests conducted by a qualified independent agency. Any test data other than a full scale crash test (engineered data, computer models) are not acceptable and shall not be recognized.

B. Evaluation

1. The barrier shall have been designed to meet or exceed US Department of State K4 Specifications STD 02-01.

C. Stopping Capacity

1. The barrier system shall be designed to impede a vehicle approaching from either direction.
 - a. The barrier shall be capable of stopping a vehicle weighing 15,000 pounds traveling at 30 mph.

2.5 QUALITY ASSURANCE

A. Factory Testing

1. Upon completion, the barrier gate will be fully tested for proper operation by manufacturer prior to shipment. A nameplate with manufacturer's name, model number, and serial number shall be located within unit.
2. All critical dimensions shall be checked for accuracy against customer approved shop drawings.

2.6 PROCUREMENT SOURCE

The manual drop arm barrier system shall be model 730 as manufactured by **B&B ARMOR (800-367-0387), 5900 South Lake Forest Drive, Suite 230, McKinney, TX 75070.**

PART III - EXECUTION

3.1 INSTALLATION

- A. Installation shall be performed according to the manufacturer's instructions. Verify all component locations with contract drawings and shop drawings.
- B. Any disagreement between the Plans, Specifications, and Ordinances, must be called to same before signing of the shop drawings. After the shop drawings have been signed, the Contractor is responsible for having all work meet requirements of the governing ordinances.