

SECTION 00801 SPECIAL SPECIFICATION

N-800 SPL – DROP ARM BEAM BARRIER M30

PART I – GENERAL

1.01. INCLUDED IN THIS SECTION

- A. Pre-wired, drop arm vehicle barrier, complete with all pumps, valves, cylinders and electrical devices to move barrier arm and limit its travel in both directions.

1.02. RELATED WORK SPECIFIED ELSEWHERE

- A. Fencing: See NCTCOG 801.
- B. Cast in place concrete: See NCTCOG 702.
- C. Electrical service and connections: See NCTCOG 805.

1.03. SUBMITTALS

- A. Shop drawings: Submit shop drawings under the provisions of Section 00500 and NCTCOG specifications. Submit drawings showing connections to adjacent construction, range of travel, and all electrical and mechanical connections to the barrier. Drawings shall also show the size and location of the concrete footings. Underground electrical runs including vehicle detection loops shall be shown on shop drawings.
- B. Installation instructions: Submit two copies of manufacturer's installation instructions for this specific project.
- C. Test reports:
 - 1) Submit affidavits from the manufacturer demonstrating that the barrier mechanism has been tested to 200,000 cycles without breakdown.
 - 2) Each operator shall bear a label indicating that the operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.

1.04. QUALITY ASSURANCE

- A. Manufacturer: A company specializing in the manufacture of hydraulic barriers or gate operators of the type specified, with a minimum of ten (10) years experience.
- B. Installer: Must have installed at least 10 pieces of similar active vehicle barriers, provide proof of attending a relevant technical training within previous three (3) years, or obtain other significant manufacturer endorsement of technical aptitude during the submittal process.

1.05. CODES AND REGULATORY REQUIREMENTS

- A. Electrical Panels shall be built to UL508A standards and so marked. Complete all electrical work according to local codes and National Electrical Code. All fieldwork shall be performed in a neat and professional manner, completed to journeyman standards.
- B. Vehicle barriers should never be used by pedestrians. Separate pedestrian entrances must always be provided when foot traffic is present.

1.06. PRODUCT DELIVERY AND STORAGE

- A. Comply with Section 00500 and NCTCOG specifications.
- B. Store products upright on the original shipping skids or containers, covered, ventilated and protected from all weather conditions.

1.07. WARRANTY

- A. Provide a five-year limited warranty against all defects in materials or workmanship. Defective materials shall be replaced with comparable materials furnished by the manufacturer, at no cost to the owner. Freight, labor and other incidental costs are not covered under the factory warranty, but may be covered by a separate service agreement between installing company and the owner.
- 1) To ensure validation of warranty, return completed warranty registration form (included in Installation and Reference manual) to manufacturer.

PART II – PRODUCTS

2.01. VEHICLE BARRIERS

- A. HySecurity Vehicle Barriers Model StrongArm M30 with Smart Touch Controller, or other comparable barrier, as approved by the Owner. Substitute barriers that are approved will be published in an addendum, not less than 5 days prior to bid opening. Requests for substitution will include the amount of savings to be passed on to the owner.

2.02. OPERATION

- A. Operation shall be by means of dual acting hydraulic cylinder acting directly on the drop arm to move the arm through ninety degrees. Operation to the fully open and fully closed position shall be continuously monitored by an absolute position sensing device that accurately reads the position of the cylinder and arm. The system shall function normally without need for springs or weights to counterbalance the arm. Gears, sprockets, belts or pulleys shall not be incorporated in the operator. Arresting of vehicles shall be accomplished by polymeric straps suspended in the arm. **The finish of the chassis and body of the operator shall be White (RAL9010) wet paint.** Model shall include a variable speed motor drive and two brake valves to gradually stop and hold the arm without applying a shock load to the arm or barrier assembly. Barrier shall hydraulically lock in the closed position. Manual operation, in case of power failure, shall be accomplished by the use of a "pull to release" bypass valve which unlocks the operator and allows the arm to be operated by a hand pump.
- B. **The vehicle barrier shall be certified by a third party licensed engineer to be capable of withstanding a direct impact from a vehicle to the M30 level specified in ASTM F2656 for 12' lengths.** The vehicle barrier shall have successfully passed testing at an accredited test facility to ASTM F2656 as validation of the engineering certification.
- C. Safety Features shall include as a minimum:
- 1) Lower barrier arm at a height of 18" (457mm) from grade to prevent smaller vehicles from penetrating under the main barrier arm.
 - 2) The barrier arm shall contain LED warning lights to enhance night visibility.
 - 3) The barrier shall include a red – amber stoplight to display status to vehicles.
 - 4) A photoelectric eye capable of detecting a person or vehicle in the path of the barrier to prevent closure of the barrier arm when an obstruction is present. This feature shall not be active during Emergency Fast Close.
 - 5) Shield to prevent entrapment of bystanders between arm and catch post.
- D. Schedule of speed capacities:
- 1) Arm travel time not to exceed six seconds from fully closed to fully open position. Maximum clear opening shall be 14' (4.3m).
 - 2) All units shall contain, as standard equipment, a provision for Emergency Fast Close operation that shall move the barrier from fully open to the fully closed position in 1.5 seconds less than the normal travel time to open.

E. Standard components shall include as a minimum:

- 1) Chassis: shall be 3/8" (9.5mm) steel plate, welded, and edges ground smooth.
- 2) Cover: shall be 14 gauge galvanized sheet steel, with a security lock to limit access.
- 3) Main shaft: shall be 3" (76mm) diameter, high strength steel alloy.
- 4) Heavy duty sealed 1-15/16" (49mm) bearings, with cast iron pillow blocks.
- 5) Resilient physical stop limiting open and close travel and to cushion stop at each end of travel.
- 6) Hydraulic valves: Shall be individually replaceable cartridge type, in an integrated hydraulic manifold.
- 7) Hydraulic fluid: High performance type with a viscosity index greater than 375 and temperature range -40F to 158F (-40 to 70C) degrees. (optional biodegradable fluid requires a heater)
- 8) A zero to 2000 PSI (13.79 MPa) pressure gauge, mounted on the manifold for diagnostics, shall be a standard component.
- 9) The hydraulic fluid reservoir shall be formed from a single piece of metal, non-welded, and shall be powder painted on the inside and the outside, to prevent fluid contamination.
- 10) Arm: Aluminum oval shape for optimal strength, wind resistance and corrosion protection
- 11) Arm striping: shall be reflective red and white vertical stripes 16" (406mm) in width.
- 12) Finish: Standard: White (RAL9010) polyurethane enamel applied over hot dipped galvanized coating per ASTM A123 G85.
- 13) Red LED lights shall be integrated into the barrier arm.

F. Minimum standard electrical components:

- 1) Pump motor: 2 HP minimum. 56C, TEFC, continuous duty, three phase, with a service factor of 1.15, or greater. (Note, the VFD converts single phase input power to drive a three phase motor)
- 2) Motor: shall have internal overload protection.
- 3) Variable frequency drive to enable variable displacement pump operation.
- 4) Controls: Smart Touch Controller Board with 256K memory containing:
 - a) built in warning buzzer for Emergency Fast Close and in the event of Alerts, Faults, or Errors;
 - b) built in timer to close;
 - c) liquid crystal display for reporting of functions;
 - d) 24 programmable output relay options;
 - e) anti-tailgate reporting mode;
 - f) built-in power surge/lightning strike protection;
 - g) menu configuration, event logging and system diagnostics easily accessible with a PC and manufacturer's free software;
 - h) RS232 port for connection to laptop or other computer peripheral;
 - i) RS485 port for connection of interlocking gate systems or interfacing to external control systems.
- 5) Control circuit shall be 24 VDC.
- 6) Control transformer shall be 75 VA minimum, with multiple primary taps.
- 7) Sockets for up to four compatible plug-in vehicle detectors.
- 8) Open and close limits shall be via encoder, providing continuous position sensing of arm position and the stop positions shall be adjustable from the controller with an LCD display.

G. Optional control devices: card reader, key switch, radio control, pushbuttons, vehicle detectors, or keypads.

H. Other options:

- 1) Heater with thermostat for cold or damp climates or for use with biodegradable hydraulic oil.
- 2) Compatible plug in vehicle detectors.
- 3) Limited, custom color finishes.
- 4) Main and remote operator panels.
- 5) Magnetic Lock
- 6) Biodegradable, non-toxic hydraulic fluid.
- 7) Voltages available: 208-240 VAC 60/50 Hz single phase or three phase or 380-480V 60/50 Hz three phase. 115 VAC single phase is not available.

2.03. FACTORY TESTING

- A. Fully assemble and test, at the factory, each barrier to assure smooth operation, sequencing and electrical connection integrity. Apply physical loads to the operator to simulate field conditions. Tests shall simulate physical and electrical loads equal to the fully rated capacity of the operator components.
- B. Check all mechanical connections for tightness and alignment. Check all welds for completeness and continuity. Check welded corners and edges to assure they are square and straight.
- C. Inspect painted finish for completeness and gloss (custom colors). Touch up imperfections prior to shipment.
- D. Check all hydraulic hoses and electrical wires to assure that chafing cannot occur during shipping or operation.

PART III – EXECUTION

3.01. SITE EXAMINATION

- A. Locate concrete footing forms in accordance with approved shop drawings.

3.02. INSTALLATION

- A. Install barrier in accordance with the manufacturer's printed instructions, current at the time of installation. Coordinate locations of barriers with contract drawings, other trades and shop drawings.
- B. Installer shall insure that the electric service to the barrier is at least 20 AMPS. Operator input power is 3000 W.

- 3.03. BARRIER SITING AND SAFETY PRECAUTIONS:** Careful consideration must be given to the selection, placement, and design of a Drop Arm Vehicle Barrier installation. As is the case with any active vehicle barrier system, perimeter security device, or security gate that blocks a roadway, it is essential to ensure that approaching vehicles as well as pedestrians are fully aware of the presence of the barrier and its operation. Installer will work with End User Customer to provide proper illumination and clearly worded signage (with appropriate graphics) warning of the barrier's presence and its hazards. End User Customer agrees that it will be responsible for selecting the location of the barrier and the configuration of approaches and warnings. Manufacturer shall offer reasonable assistance in integrating the barrier with external and existing systems..

3.04. FIELD QUALITY CONTROL

- A. Test barrier through ten full cycles and adjust for operation without binding, scraping or uneven motion.

- B. Test limit position adjustment for proper deceleration and smooth stop of arm prior to full travel position.
- C. All anchor bolts shall be fully tightened in the finished installation.

3.05. CONTINUED SERVICE AND DOCUMENTATION

- A. Train owner's personnel on how to safely shut off electrical power, release and manually operate barrier arm. Additionally, demonstrate the general maintenance of the barrier and accessories and provide one copy of "Installation and Reference" manual for the owner's use (a second manual is available upon request). Manuals will identify parts of the equipment for future procurement. Direct maintenance personnel to manufacturer's website, specifically the technical support sections.

SECTION 00802 DROP ARM BEAM BARRIER M50

PART I – GENERAL

1.01. INCLUDED IN THIS SECTION

- A. Pre-wired, drop arm vehicle barrier, complete with all pumps, valves, cylinders and electrical devices to move barrier arm and limit its travel in both directions.

1.02. RELATED WORK SPECIFIED ELSEWHERE

- A. Fencing: See NCTCOG 801.
- B. Cast in place concrete: See NCTCOG 702.
- C. Electrical service and connections: See NCTCOG 805.

1.03. SUBMITTALS

- A. Shop drawings: Submit shop drawings under the provisions of Section 00500 and NCTCOG specifications. Submit drawings showing connections to adjacent construction, range of travel, and all electrical and mechanical connections to the barrier. Drawings shall also show the size and location of the concrete footings. Underground electrical runs including vehicle detection loops shall be shown on shop drawings.
- B. Installation instructions: Submit two copies of manufacturer's installation instructions for this specific project.
- C. Test reports:
 - 1) Submit affidavits from the manufacturer demonstrating that the barrier mechanism has been tested to 200,000 cycles without breakdown.
 - 2) Each operator shall bear a label indicating that the operator mechanism has been tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.

1.04. QUALITY ASSURANCE

- A. Manufacturer: A company specializing in the manufacture of hydraulic barriers or gate operators of the type specified, with a minimum of ten (10) years experience.
- B. Installer: Must have installed at least 10 pieces of similar active vehicle barriers, provide proof of attending a relevant technical training within previous three (3) years, or obtain other significant manufacturer endorsement of technical aptitude during the submittal process.

1.05. CODES AND REGULATORY REQUIREMENTS

- A. Electrical Panels shall be built to UL508A standards and so marked. Complete all electrical work according to local codes and National Electrical Code. All fieldwork shall be performed in a neat and professional manner, completed to journeyman standards.
- B. Vehicle barriers should never be used by pedestrians. Separate pedestrian entrances must always be provided when foot traffic is present.

1.06. PRODUCT DELIVERY AND STORAGE

- A. Comply with Section 00500 and NCTCOG specifications.
- B. Store products upright on the original shipping skids or containers, covered, ventilated and protected from all weather conditions.

1.07. WARRANTY

- A. Provide a five-year limited warranty against all defects in materials or workmanship. Defective materials shall be replaced with comparable materials furnished by the manufacturer, at no cost to the owner. Freight, labor and other incidental costs are not covered under the factory warranty, but may be covered by a separate service agreement between installing company and the owner.
- 1) To ensure validation of warranty, return completed warranty registration form (included in Installation and Reference manual) to manufacturer.

PART II – PRODUCTS

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2.02. OPERATION

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- B. **The vehicle barrier shall be certified by a third party licensed engineer to be capable of withstanding a direct impact from a vehicle to the M50 level specified in ASTM F2656 for 12' lengths.** The vehicle barrier shall have successfully passed testing at an accredited test facility to ASTM F2656 as validation of the engineering certification.
- C. Safety Features shall include as a minimum:
- 1) Lower barrier arm at a height of 18" (457mm) from grade to prevent smaller vehicles from penetrating under the main barrier arm.
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 - 5) Shield to prevent entrapment of bystanders between arm and catch post.
- D. Schedule of speed capacities:
- 1) Arm travel time not to exceed seven seconds from fully closed to fully open position. Maximum clear opening shall be 14' (4.3m).
 - 2) All units shall contain, as standard equipment, a provision for Emergency Fast Close operation that shall move the barrier from fully open to the fully closed position in 1.5 seconds less than the normal travel time to open.

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