

TECHNICAL SPECIFICATIONS for Model: HD-8050
SECTION 34 71 13
ACTIVE VEHICLE BARRIERS

PART 1 – GENERAL**1.1 SUMMARY**

- A. Section Includes:
1. Drop arm vehicle barriers
 2. [_____]

1.2 RELATED SECTIONS

- A. Section 03 30 00 – Cast-in-Place Concrete
- B. Section 26 05 13 – Electrical Service and Connections
- C. Section 32 31 13 – Fencing

1.3 CODES AND REGULATORY REQUIREMENTS

- A. Electrical Panels shall be built and labeled to UL508A standards. 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. Vehicular barriers should never be used by pedestrians. A separate pedestrian entrance must always be provided when foot traffic is present.

1.4 SUBMITTALS

- A. Product Data:
1. Comply with Section [01 33 00 – Submittal Procedures.] [_____].
 2. Shop Drawing: Submit drawings showing connections to adjacent construction, range of travel, and all electrical and mechanical connections to the barrier. All underground runs of electrical lines and inductive vehicle obstruction loop locations shall be indicated on drawings. Drawings shall also show the size and location of the concrete footings.
 3. Installation instructions: Submit two copies of manufacturer's installation instructions for this specific project.
 4. Project list: Submit list of product installations comparable to the subject job. Include date of product installation, installer, and owner's name and location of the project.
 5. Test reports:
 - a. Submit affidavits from the manufacturer demonstrating that the barrier mechanism has been tested to 200,000 cycles without breakdown.
 - b. Each operator shall bear a label indicating that the operator mechanism has been tested. Operator is tested for full power and pressure of all hydraulic components, full stress tests of all mechanical components and electrical tests of all overload devices.
 6. Warranty Documentation: Submit sample of manufacturer's warranty.

1.5 QUALITY ASSURANCE

- A. COMPLY WITH SECTION [01 43 00 – QUALITY ASSURANCE.] [_____].
- B. Manufacturer: A company specializing in the manufacture of Anti-Ram barriers of the type specified, with a minimum of five years' experience manufacturing operators of this type and design.
- C. Installer Qualifications:
 - 1. Must have a minimum of five years' experience installing similar equipment, provide proof of attending a Technical Training within the previous three years, or obtain other significant manufacturer endorsement of technical aptitude, if required, during the submittal process.
 - 2. Installer is an authorized representative of the vehicle barrier manufacturer for both installation and maintenance of the type of units required for this Project.
- D. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Comply with Section [01 66 00 – Product Storage and Handling Requirements.] [_____].
- B. While Sloan Security Group does not assume responsibility for injury to persons or property during loading, unloading, transporting or installation, verbal guidance and additional written instructions are available upon request.
- C. Sloan Security Group does not assume responsibility for insuring that the rigging and lifting gear is properly sized and attached when lifting heavy components. Equipment used shall be capable of handling product in an overhang position.
- D. Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism, and theft.

1.7 WARRANTY

- A. Provide a warranty against all defects in materials or workmanship for five years or 500,000 gate cycles (whichever occurs first) after the date of installation when installed by a Sloan authorized installer. Defective materials shall be replaced at manufacturer's discretion with new or reconditioned 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, complete warranty registration form included in the printed materials shipped with the operator.

PART 2 – PRODUCTS**2.1 MANUFACTURERS**

- A. Acceptable Manufacturer: Sloan Security Group, Phone: (888) 382-8370, Website: www.sloansg.com, Email: info@sloansg.com
- B. Substitutions: Not Permitted.

2.2 VEHICLE BARRIERS

- A. Basis of Design: Sloan Hydraulic Drop Arm Barrier M50/P2 System, Model: HD-8050, as manufactured by Sloan Security Group.
- B. Operation shall be by means of dual acting hydraulic cylinder acting directly on the drop arm to move the arm through 90°. The arm travel time varies depending upon version ordered, see schedule below. 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. All models 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.
- C. 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 ft (3,657 mm) and 24 ft (7,315 mm) lengths. The vehicle barrier shall have successfully passed testing at an accredited test facility to ASTM F2656 as validation of the engineering certification.
- D. Safety Features shall include as a minimum:
1. Lower barrier arm at a height of 18" (457 mm) 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.
- E. Schedule of length and speed capacities:
1. HD-8050 12-14 ft (3,657-4,267 mm) clear opening: Travel time not to exceed six seconds from fully closed to fully open position. Maximum clear opening shall be 14 ft (4,267 mm).
 2. HD-8050 16-18 ft (4,867-5,486 mm) clear opening: Travel time not to exceed seven seconds from fully closed to fully open position. Maximum clear opening shall be 18 ft (5,486 mm).
 3. HD-8050 20-24 ft (6,096-7,315 mm) clear opening: Travel time not to exceed eight seconds from fully closed to fully open position. Maximum clear opening shall be 24 ft (7,315 mm).
 4. 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.
- F. Minimum standard mechanical components:
1. Chassis: shall be 3/8" (9 mm) steel plate, welded, and edges ground smooth.
 2. Cover: shall be 14 gauge (2 mm) galvanized sheet steel, with a security lock to limit access.
 3. Main shaft: shall be 3" (76 mm) diameter, high strength steel alloy.
 4. Heavy duty sealed 1-15/16" (49 mm) 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 hose: Shall be 3/8" (9 mm) wire braid reinforced, rated to 3,050 psi (21.0 MPa).

7. Hydraulic valves: Shall be individually replaceable cartridge type, in an integrated hydraulic manifold.
 8. Hydraulic fluid: High performance type with a viscosity index greater than 375 and temperature range -40° F to 158° F (-40° C to 70° C). (optional biodegradable fluid requires a heater at temperatures below -10° F (-24° C))
 9. A zero to 2,000 psi (13.7 MPa) pressure gauge, mounted on the manifold for diagnostics, shall be a standard component.
 10. 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.
 11. Manual operation: in the event of a power outage the use of a “pull to release” bypass valve shall unlock the operator and allow the arm to be operated by a hand pump.
 12. Arm: Aluminum oval shape for optimal strength, wind resistance and corrosion protection
 13. Arm striping: shall be highly reflective alternating red and white vertical stripes, 16” (406 mm) intervals measured horizontally per MUTCD standards.
 14. Finish: hot dipped galvanize coating per ASTM A123 G85.
 15. Red LED lights shall be integrated into the barrier arm.
- G. Minimum standard electrical components:
1. Pump motor: 2 hp, 3450 RPM, 56C, TEFC, three phase. (Note, the VFD converts single phase input power to drive a three-phase motor)
 2. All components shall have overload protection.
 3. Variable frequency drive to enable variable displacement pump operation.
 4. Controls: Smart Touch Controller Board 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. 32 character OLED display for reporting of functions and codes;
 - d. Multiple programmable output relay options;
 - e. Anti-tailgate mode;
 - f. Built-in power surge/lightning strike protection;
 - g. Menu configuration, event logging and system diagnostics easily accessible with a PC and Sloan’s free Smart Touch Analyze and Retrieve Tool;
 - h. RS-232 port for connection to laptop or other computer peripheral and RS-485 connection for network interface.
 - i. Dual gate communication connection for bi-parting, sally port, or sequenced gates.
 - j. Electromechanical and solid state relays.
 - k. Radio option outputs.
 - l. 21 inputs for site specific configurations.
 5. Control circuit: 24 VDC.
 6. Transformer: 75 VA, non-jumpered taps, for all common voltages.
 7. Sockets for up to four 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.
- H. Optional control devices (choose one or more of the following): card reader, key switch, radio control, pushbuttons, free egress vehicle detectors, vehicle obstruction loop detectors, reset loop, keypads, seven-day timers or various emergency vehicle open devices as dictated by local code.
- I. Optional alert devices: Flashing lights or rotating beacon. Configurable audible beacon included as standard.

- J. Other options (*choose from the following list*):
1. Heater with thermostat control for cold or damp climates or for use with biodegradable hydraulic oil.
 2. Plug in type vehicle detectors.
 3. Provides eight additional programmable user relay outputs.
 4. Communications package delivering Internet Protocol (RJ-45 copper or SFP fiber), managed switch and web based interface to operator.
 5. 5" (127 mm) x 7" (177 mm) single piece aluminum arm with integrated LED lights on both sides from 12 ft (3,657 mm) to 24 ft (7,315 mm) in 2 ft (609 mm) increments.
 6. Custom arm length available in 1" (25 mm) increments: _____ ft
 7. Optional Signal Yellow (RAL1003) or custom color TGIC polyester powder coating over zinc plating per ASTM B633 Type 3 SC-2.
 8. ExtremeCycle: hydraulic side cover with cooling fan and thermostat, allows HD-8050 to get up to 150-200 cycles/hr depending on arm length.
 9. Main and remote operator panels.
 10. Magnetic Lock
 11. Biodegradable, non-toxic hydraulic fluid.
 12. 208/230 VAC single phase and 208/230/460 VAC three phase available. 115 VAC single phase is not available. (50 Hz is available, specify voltage)
 13. UPS AC battery backup for systems up to 1 hp or VFD equipped. 208/230 VAC single phase only. 115 VAC single phase not available.

2.3 FACTORY TESTING

- A. Fully assemble and test, at the factory, each barrier to assure smooth operation, sequencing and electrical connection integrity.
- B. Inspect and test all hydraulics are leak free.
- C. Maintain records of material and process traceability for all critical structural elements.
- D. Check all mechanical connections for tightness and alignment. Check all welds for completeness and continuity.
- E. Inspect finishes for completeness. Touch up imperfections prior to shipment.
- F. Check all hydraulic hoses and electrical wires to assure that chafing cannot occur during shipping or operation.

PART 3 – EXECUTION

3.1 SITE EXAMINATION

- A. The purchaser shall indicate the location of all products with suitable means.
- B. The purchaser shall indicate all underground utility locations, USC&G benchmarks, property monuments, and other underground structures that interfere with installation.
- C. Locate concrete footings forms in accordance with approved shop drawings and in compliance with local building codes.
- D. Before installing the Sloan Hydraulic Drop Arm M50/P2 Barrier System, all necessary site clearing and grading shall be performed by the purchaser. An adequate clearance on both sides of the vehicle barrier line is required.

3.2 PREPARATION

- A. Examine and verify foundation suitability for product installation.
- B. Clean surfaces thoroughly prior to installation
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best results for substrate under the project conditions.

3.3 INSTALLATION

- A. The active vehicle barrier shall be installed per Sloan's System Drawing. Construct concrete foundations to the dimensions specified by the plans. Excavate a properly sized area for barrier foundations and install reinforcing steel in accordance with the plans. Place the concrete, install the barrier, and plumb. Refer to contract or submittal plans for more installation details.
- B. Install barrier in accordance with the safety regulations and the manufacturer's product literature and installation instructions, current at the time of installation. Coordinate locations of operators with contract drawings; other trades and shop drawings.
- C. Installer shall ensure that the electrical service to the barrier is at least 20A. Electrical wiring to conform to NEC and manufacturer's installation instructions. HD-8050 is 3000W.
- D. Sloan Hydraulic Drop Arm M50/P2 Barrier System is warranted against defects in material and workmanship on structural components for five years from ship date, when installed by a Sloan authorized installer.
- E. Engage an experienced installer who has minimum five years documented experience with projects of similar scope and complexity.
- F. Suggested Installer: Sloan Security Group Phone: (888) 382-8370, Website: www.sloansg.com, Email: info@sloansg.com

3.4 BARRIER SITING AND SAFETY PRECAUTIONS:

- A. Careful consideration must be given to the selection, placement, and design of a 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. Sloan strongly recommends that an architect and/or traffic and/or safety engineer be consulted before installing any active vehicle barrier and that an installation configuration be employed that physically limits approach speeds to no more than 20 MPH. End User Customer agrees that it will be responsible for selecting the location of the barrier and the configuration of approaches and warnings. Sloan will offer reasonable assistance in integrating the barrier with external and existing systems, but it does not provide traffic or safety engineering services.

3.5 FIELD QUALITY CONTROL

- A. Test operator through ten full open and close cycles and adjust for operation without binding, scraping or uneven motion. Test limit switches for proper open and close limit positions.
- B. All anchor bolts shall be fully tightened in the finished installation.

- C. Owner, or owner's representative, shall complete "punch list" with installing contractor prior to final acceptance of the installation and submit completed warranty documentation to manufacturer.

3.6 CONTINUED SERVICE AND DOCUMENTATION

- A. Train owner's personnel on how to safely shut off electrical power, release and manually operate the barrier. Additionally, demonstrate the general maintenance of the gate operator and accessories and provide one copy of "Programming and Operations Manual" for the owner's use. Manuals will identify parts of the equipment for future procurement.
- B. General maintenance of the Sloan Hydraulic Drop Arm M50/P2 Barrier System shall consist of removing foreign materials and debris that may cause damage to the barrier and may cause safety concerns. Refer to the owner's manual for more details on the system maintenance.
- C. Sloan will supply an operator manual that contains recommended maintenance intervals, procedures, and replacement parts lists.
- D. Maintenance instructions shall include routine maintenance procedures, possible breakdowns, and repairs, and troubleshooting guide. The instructions shall include equipment layout and simplified wiring, and control diagrams of the systems as installed.
- E. Suggested Maintenance Contractor: Sloan Security Group, Phone: (888) 382-8370, Website: www.sloangsg.com, email: info@sloangsg.com

NOTE: Sloan Security Group reserves the right to change these specifications at any time. Call (888) 382-8370 to ensure that you have the latest edition.

CAUTION: Barriers manufactured by Sloan Security Group are intended for use in controlling vehicular traffic and are not intended to be used by pedestrians or to control pedestrian traffic. **Always install a separate pedestrian entry.** Barrier arm type gate operators present a specific hazard to motorcyclists. Please direct motor traffic to another access point.