Product Specifications
Avenger M50 Electric Surface Set Drop Arm
(Model DACB-ELE-1200)

PART 1 GENERAL

1.0 REFERENCES

a. The publications listed below form a part of this specification to the extent applicable. The publications are referred to within the text by the basic designation only.

b. AMERICAN SOCIETY OF TESTING (ASTM) F-2656, Standard Test Method for Vehicle Crash Testing of Perimeter Barriers

c. UNIFIED FACILITIES CRITERIA (DoD), Selection and Application of Vehicle Barriers

d. DoD ANTI-RAM VEHICLE BARRIER LIST, prepared by the Protective Design Center (PDC) located on Omaha, NE, including correspondence, emails, memos, and notices regarding the approved barriers listed.

2.0 SYSTEM DESCRIPTION

a. Active Drop Arm Crash Beam must be listed on the current Department of Defense (DoD) approved Anti- Ram Vehicle Barrier List as an Active Arm with ASTM M50 rating, where it is certified to stop a 15,000 lbs. vehicle at 50 mph impact. The actual Arm's clear span length required for the project shall be between the shorter arm length tested and the longer arm length tested. For example, Model DACB-ELE-1200 has been crash-tested and ASTM certified at arm length of 14-foot and arm length of 34-foot arm, so that all arm span lengths between 14 feet long and 34 feet are ASTM M50 certified. The DACB- ELE-1200 Active Drop Arm manufactured by Barrier1 Systems at www.barrier1.us is approved or a pre- approved equal providing same capabilities.

b. The design and structural materials of the vehicle barrier furnished shall be the same as those used in the crash tested barrier. Crash test must have been performed and data compiled by an approved independent, third-party testing agency in accordance with ASTM F2656, where testing Agency is DoD approved and approved by ASTM. Engineering of Record for this product shall have discretion to make minor modifications required by site specific conditions or needs.

c. The drop arms must achieve an ASTM M50 rating, with ability to stop vehicle in both the inbound and outbound traffic directions (bi-directional stopping capability).

d. All electric operations where crash beam is raised or lowered in about 5 seconds. Ability to slow down or speed up raise and lower speeds.

e. The barrier is surface set on 4" deep concrete pads. There are no excavations for footings, rebar, and foundations. Barrier1 is delivered prefabricated and pre-assembled.

f. Additional surface set blocks connected in series or adjacent to the existing blocks to increase resistance force and reduce vehicle penetration upon impact.

The adjacent blocks are prefabricated with stainless steel plates, anchors, and cables for easy install. Significant R&D and Engineering has been completed to determine the penetration of the vehicle based on the number of adjacent blocks connected in series on each side of travel lane.

g. Barrier can be relocated by picking up and moving, without destroying systems. Barrier arm to provide a visual deterrent and include safety yellow painted arm, flashing LED beacon lights, retro-reflective striping, and diamond grade stop signs.

h. Custom control panels shall meet the customer's requirements. Control panels to include LED lights, EFO buttons, raise and lower buttons, timers to close arms, and may be tied into secondary control panels or operations onsite.

i. Safety features to include safety loops cut into roadway plus 2 light beams (upper and lower) that prevent arm from coming down on vehicle below. Arm to immediately reverse itself if safety features are active. Traffic signal shall be provide to que vehicles.

j. Trigger loops and timers to be provided to automatically raise and lower the arm and meet site specific traffic controls.

k. A robust electric actuator with an IP67 rating shall be provided, featuring a waterproof accordion-style cover to protect the actuator rod. The actuator and all other water-sensitive electrical components shall be mounted a minimum of 6 inches above grade to protect against flooding.

l. NEMA 4 Electronics Panel, actuator, electronics, and PLC shall be pre-assembled prior to delivery and ready for AC power supply connection. AC power supply required is one (1) 208/220/230V 1 phase 30A and one 110V, 20A. Optional UPS backup power is available.

m. Barrier arm and components shall all be comprised of non-rusting stainless steel, aluminum, and hot dip galvanized. This includes the structural frames, bearings, arm, plated, covers, bolts, attachments, and other parts.

n. Aesthetic covers over top, or end supports shall be non-rusting aluminum with industrial paint coat or stainless steel. Covers shall have locking access doors that allow easy access to the electric actuator, electrical panels, parts, and components. Access panels shall allow for easy maintenance.

o. Spring-assisted operation shall support the raising and lowering of the barrier arm. The arm shall incorporate a "soft stop" at both the fully raised and fully lowered positions to prevent abrupt motion.

p. In the event of downtime, the barrier shall be manually operable and equipped with a lockable arm to maintain security.

q. Electric drop arm shall accommodate differences in grade elevations between "left side" and "right side" of road without operational concerns or voiding crash test certification.

r. Modular lead brick counterweights shall be provided and designed for easy removal or addition to optimize the balance and operation of the barrier arm during raising and lowering.

s. Pre-assembled drop arm barriers shall be installable and operational within one (1) day, including testing, to minimize traffic disruption and the need for extensive traffic control. The system shall be simple to operate with minimal training and require little to no maintenance.

3.0 SUBMITTALS

a. Initial submittals shall include detailed drawings and specifications for approval. These shall cover all barrier system components, equipment, control panels, site layout, power requirements, subpanels, safety devices, and system integration. Submittals shall also include wiring diagrams, operational sequencing of devices, and control panel layouts. Sign dimensions, alarms, signals, and lights shall be illustrated within the drawings. A complete bill of materials and installation/setup requirements shall be provided. Conduit routing, sizes, and system connection details shall be clearly shown.

b. O&M Manuals: Prior to turnover, Operations & Maintenance (O&M) manuals shall be submitted. The O&M manual shall cover operation of the vehicle barrier and periodic maintenance required. Maintenance manuals shall include routine maintenance procedures, checklists, and a troubleshooting guide. Cut sheets on products and system components shall be provided.

c. Prior to system turnover, full testing and commissioning shall be completed. Field testing shall verify the proper operation of each control panel function, traffic light, safety loop, warning light, and all integrated features. Formal commissioning shall be conducted on-site with the customer present, during which the complete barrier system and its operations shall be reviewed and signed off as “APPROVED” prior to final acceptance.

d. Warranty: A standard 1-year warranty including Parts and Labor is provided and starts at acceptance in turnover date. The barrier manufacturer shall be the direct contact for warranty issues and questions and have immediate access to replacement parts. Manufacturer shall provide contact names, emails, and cell phone numbers to be contacted at nights, and weekends to address warranty concerns.

e. Spare Parts: Prior to turnover, a list of optional spare parts and supplies shall be provided with unit prices.

PART 2 PRODUCTS

1.0 DROP ARM CRASH BEAM

a. The barrier system consists of two steel prefabricated end supports with enclosures and one barrier arm that is raised and lowered vertically across roadway. All operations are electric and there are no hydraulic components. The drop arm is crash test certified to stop a 15,000 lb. vehicle traveling at 50 mph. (ASTM M50) and is approved on the Department of Defense (DoD) Anti-Ram Vehicle Barrier List. The barrier will stop both inbound and outbound vehicle impacts. All barrier arm clear span distances from 14' to 34' are ASTM M50 certified. The DACB-ELE-1200 Active Drop Arm manufactured by Barrier1 Systems at barrier1.com is approved or a pre-approved equal providing same capabilities.

Barrier Functions

b. Barrier arm raises or lowers in approximately 4 seconds and supports high-cycle operation for arms 22 feet and under. The system is surface-set, requiring no roadway modifications and presenting no drainage concerns. Its modular design allows the barrier arm to be removed and replaced in the event of a significant vehicle impact. If a safety loop or safety light beam is interrupted by a vehicle, the barrier arm will automatically reverse direction and raise. The system operates entirely on electric power with no hydraulics and includes custom control panels and alarms. The barrier arm serves as a strong visual deterrent with integrated flashing lights, retroreflective tape, and diamond-grade stop signs. Each unit is pre-assembled, surface-set, and factory tested before delivery.

2.0 SYSTEM FEATURES

a. Portable: The barrier can be relocated without destroying system or components.

b. Bi-Directional Vehicle Arresting: The barrier will arrest vehicle impacts from either traffic direction with ASTM M50 certification. It is "bi-directional".

c. Barrier Composition: The barrier shall be constructed from non-rusting materials, including stainless steel, hot-dip galvanized steel, and aluminum. All components shall be finished with a durable industrial-grade paint coating for enhanced protection and longevity.

d. Uninterrupted Backup Power Source: Power supply backup systems available to provide at least 10 uninterrupted cycles. Traffic signals, safety loops, PLC, and other components are also backed up during a power outage.

e. EFO Operation: The barrier system may include emergency fast operation button to lock down all arms while deactivating safety features.

f. Signs, Signals, Safety Loops: Signage, traffic signals, warning lights, audible alarms, safety loops and other devices shall be incorporated into the active vehicle barrier system to conform to site specific requirements.

g. Heating and Drainage: Barrier system shall operate in all weather conditions. System shall be equipped with thermostatically controlled heating inside power side enclosure to ensure normal operation in cold weather.

h. Counter: Barrier shall have electronic counter in PLC that tracks number or arm cycles.

3.0 ADDITIONAL OPTIONAL EQUIPMENT

a. Touch Screen Control Panels: Available at request of customer. Touch screen control panels can be provided inside NEMA 4 box at barrier location, and at control panel in guard house.

b. Wireless Remote Controllers: Can be provided to raise and lower arm using a smart phone or using a separate remote controller. Customer can activate and deactivate wireless controllers

c. Flashing Warning Lights: Signals arm is being lowered.

d. Audible Warning: Provides a warning annunciator(s) built into the barrier end support that produces an audible sound when the arm is being lowered.

e. Additional Blocks Connected Adjacent to Existing End Support Blocks: Connected in series or adjacent to the existing blocks to increase resistance force and reduce vehicle penetration upon impact. The adjacent blocks are prefabricated with stainless steel plates, anchors, and cables for easy installation.

f. In Ground Lights: Active when the arm is being lowered.

g. Maintenance Controllers Inside Barrier End Support: Controls for raising and lowering the barrier arm shall be provided inside the barrier end support enclosure to allow for on-site maintenance and operation.

h. Heaters and Cold Weather Package: Enclosure heaters with thermostat controls provided inside power side enclosure. Power side enclosure may be insulated. All doors shall have weather seals.

i. Signage: Barrier warning signs in retroreflective diamond grade are available on a site-specific basis.

j. Continuous Over speed Detection System: Provide early warning to guards that vehicle(s) are approaching access control point (ACP) at high speed. Guards preset an alarm activation speed, where an alarm will activate if approaching vehicle(s) exceed the preset alarm speed. The over speed detection system will announce an audible and/or visual alarm.

Overspeed Detection System shall:

i. Use digital wave radar technology that continuously reads all vehicles within radar detection zone.

ii. Continuously monitor speed of multiple vehicles in radar detection zone. Allow for easy changing the preset alarm activation speed desired.

iii. Set alarm activation at desired vehicle speed, with ability to change alarm activation speed in field using software.

iv. Customize radar detection zone distance (detection distance from 100 to 600 feet).

v. Set radar detection for directionality, where it picks up inbound vehicles only.

vi. Integrate audio and/or visual alarms.

vii. Allows for multiple over speed detection zones within radar zone.

viii. Allow filtering of interferences that can cause false positives, using software capabilities built into system.

ix. Allow all weather use.

x. Approved for use and installed at minimum of 10 facilities, where the radar's operational frequency has been determined not to interfere with DoD operations on bases.

k. Wrong Way Detection: Provides early warning to guard(s) that vehicle(s) are traveling in the wrong direction using audible and/or visual alarms.

Wrong Way Detection shall provide:

i. Detection at desired location(s) using magnetic detection loops installed in roadway. Vehicles traveling in the wrong direction will trigger magnetic loops and send an alarm signal.

ii. Multiple wrong-way detection locations with different ring tones and visual alarms for each zone.

iii. High reliability of detection.

iv. Integrated audio and visual alarms.

v. All weather use.