



**DEPARTMENT OF DEFENSE
US ARMY CORPS OF ENGINEERS
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DoD ANTI-RAM VEHICLE BARRIER LIST

List Date: October 2016

The Department of Defense's physical security concept is to create a layered or "tiered" defensive system which consists of both active and passive perimeter barriers to delay intruders. The Department employs an ASTM International performance standard and testing procedure for both active entrance barriers and passive perimeter barriers designated as "vehicle-impact rated barriers," or "anti-ram barriers." The current standard is ASTM F2656-07, Standard Test Method for Vehicle Crash Testing of Perimeter Barriers.

The ASTM F2656-07 test standard rates barriers in twelve impact categories, with three predetermined impact velocities for each category and four potential penetration ratings for each impact rating. These penetration ratings are: P1 - < 3.3 ft; P2 - 3.31 to 23.0 ft; P3 - 23.1 to 98.4 ft; and P4 - > 98 ft. Of the four penetration ratings, barriers with a penetration rating of P4 will not be included in the DoD Anti-Ram Vehicle Barriers list.

The following list of barriers includes active barriers for use at entrances, and passive or fixed barriers for other perimeter applications. This list will be updated quarterly in January, April, July and October. A request must be received one month prior to the list being published to be included on the next quarterly list.

Note: This list supersedes all previous copies. Please refer to the date above to ensure you have the most up to date list. This list does not represent an overall endorsement of any product or design or address its operational suitability or maintainability. The list merely verifies that particular vehicle barriers have been certified in accordance with the performance standards in ASTM F2656-07, or previously tested to the U.S. Department of State SD-STD-02.01 standard, and that the appropriate test reports have been submitted to, and validated by, the Protective Design Center. Each vehicle barrier system has its own distinct characteristics that must be considered and weighed against the needs and conditions of the individual installation. Some barrier characteristics are associated with vulnerabilities. These vulnerabilities may not be readily apparent to the end users. Careful consideration should be given to clearances and geometric characteristics when utilizing barrier systems of varying widths. The PDC is available to discuss barrier characteristics, and any other barrier issues or questions. A few characteristics to consider are listed below:

- **Impact speed at barrier (low speed impact):** The use of some vehicle barriers presented in this list exhibit vulnerabilities when impacted at speeds other than those associated with the ASTM and DOS test impact velocities.
- **Design Basis Threat (DBT) vehicle, other vehicle weights and speeds:** The barriers presented in this list have been subjected to impacts under the specific conditions prescribed by the test designation. If the Installation's DBT includes vehicles significantly different than the test vehicle, performance of the system may differ from what may be expected.
- **Deployment mechanisms:** The mechanisms used to deploy vehicle barriers vary (pneumatic, hydraulic, electro-mechanical, manual). The various mechanisms should be investigated and the choice should be based on the best fit for the Installation.
- **Environmental condition at barrier:** Environmental conditions can vary greatly from location to location. Conditions such as rain, snow, ice, sand, gravel, hot, and cold need to be considered when selecting a barrier for a specific location.
- **Operations and Maintenance (O&M) requirements:** Each barrier comes with its own operational and maintenance requirements. The O&M requirements vary in the amount and intensity from barrier to barrier. O&M needs to be figured into the overall life cycle cost of the barrier.
- **After impact barrier gaps:** Post impact gaps may be an inherent characteristic of the barrier system. The barrier system's post-impact condition should be carefully evaluated for its capabilities in relation to defeat of the Installation's Design Basis Threat (DBT).

Questions regarding the certification standard, barrier characteristics or this list can be sent to the Protective Design Center or email at: pdcmail@usace.army.mil.

Barrier Type: Active Bollard

<i>Barrier Rating</i>	<i>Penetration Rating</i>	<i>Barrier Model/Description</i>	<i>Manufacturer/Designer/Distributor</i>	<i>Remarks</i>
M30	P1	J355 HA-M30 (KH) Bollard	FAAC International, Inc. http://www.faacusa.com/	Single bollard
M30	P1	Elkosta M30 (K4)	Perimeter Protection Germany GmbH http://www.perimeterprotection.net/	Single bollard
K4	L2	SP Defender	ATG Access, Inc. http://www.atgaccessinc.com/	3-bollard array
K4	L2	DSC 800 Bollard Type Barricade	Delta Scientific Corporation http://deltascientific.com/	3-bollard array
K8	L3	XT-1208-RB, Xact Series Retractable Bollards - (fka-Eagle Series Bollards, K8)	Ross Security Systems LLC http://www.rosssecuritysolutions.com/	3-bollard array, hydraulic bollards
K8	L1	ARMR B-30 Bollard Assembly	B&B ARMOR http://www.bb-armr.com/	3-bollard array, hydraulic bollards
M50	P1	SP1000 Rising Bollard	ATG Access, Inc. http://www.atgaccessin0.com/	single hydraulic bollard
M50	P1	DSC720 1M	Delta Scientific Corporation http://www.deltascientific.com	3-bollard array, pneumatic bollards
M50	P1	HT1 Raptor	Heald Ltd http://www.heald.uk.com/	Single bollard
K12	L3	SP Titan	ATG Access, Inc. http://www.atgaccessinc.com/	3-bollard array
M50	P2	TITAN MKII Hydraulic Bollard	ATG Access, Inc. http://www.atgaccessinc.com/	3-bollard array, hydraulic bollards
M50	P2	BLG-05 Foundations Protection System	EL-GO TEAM Parking and Security Systems http://www.elgoteam.com/	Single Pneumatic/ Hydraulic/ Electric Bollard
M50	P2	Retractable Bollard M50	Gunnebo Competence Centre Outdoor Perimeter Security http://www.perimeterprotection.net/	Single Hydraulic Bollard

M50	P2	RSS4003	RSSI http://www.rssi.com/	3-bollard array
K12	L2	Gunnebo Bollard	Gunnebo Competence Centre Outdoor Perimeter Security http://www.perimeterprotection.net/	single hydraulic bollard
K12	L2	NBI Hydraulic Bollard Barrier	Nasatka Barrier, Inc. http://www.nasatka.com/	3-bollard array
K12	L2	XT-1200-RB, Xact Series Retractable Bollards - (fka-Eagle Series Bollards, K12)	Ross Security Systems LLC http://www.rosssecuritysolutions.com/	3-bollard array, hydraulic bollards
M50	P3	SW1700 (EM)	FutureNet Security Solutions (fka Smith & Wesson Security Solutions) https://www.futurenetsecurity.com/	3-bollard array, electromechanical
M50	P3	PASS PM 275/M50-1200A	Pilomat Srl http://www.pilomat.com	Single hydraulic bollard
K12	L1	B40 Retractable Bollard	B&B ARMR http://www.bb-armr.com/	3-bollard array, hydraulic bollards

Barrier Type: Active Drop-Arm Beam

Barrier Rating	Penetration Rating	Barrier Model/Description	Manufacturer/Designer/Distributor	Remarks
M30	P1	M530 12-foot Drop Arm Assembly	Apex Fabrication & Design, Inc. http://www.apexfab.com/	12 foot clear opening
M30	P1	M-30 VP-SF	Autogate, Inc http://www.autogate.com/	15 foot clear opening
M30	P1	StrongArm M30	HySecurity Gate, Inc. http://www.hysecurity.com/	12 foot clear opening
M30	P1	Sono Tube Barrier Arm	Logical Decisions, Inc. http://ldi.com/ldi-crash-gate.html	20 foot clear opening
M30	P1	RSS-3000 Drop Beam System	RSSI Barriers http://www.rssi.com/	11.5 foot clear opening
M30	P1	Drop Arm Barrier	Tymetal Corporation http://www.tymetal.com/	14 foot clear opening

DoD Anti-Ram Vehicle Barriers

October 2016

K4	L3	CRB-240 Drop Gate	American Anti Ram http://www.americanpsg.com/	11.5 foot clear opening
K4	L3	Bosik Bar VBS Shallow Foundation Barrier (SP VBB) K4	ATG Access, Inc. http://www.atgaccessinc.com/	14 foot clear opening
K4	L3	ARMR Model 730 Crash Gate	B&B ARMR http://www.bb-armr.com/	
M30	P2	Barrier Arm Crash Gate	Logical Decisions http://ldi.com/ldi-crash-gate.html	Approx 12.5 foot clear opening
K4	L2	IP500 Transportable Beam for Quick Deployment	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening, surface mounted
K4	L2	TT212EC Drop Arm Beam Barrier System	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening
K8	L3	VPL-CB-24	Autogate, Inc http://www.autogate.com/	14.5 foot clear opening
M50	P1	CRB-K12-2 Drop Arm Gate Barrier	American Physical Security Group, Inc. http://www.americanpsg.com/	12.9 foot clear opening
K12	L3	Bosik Bar VBS Deep Foundation Barrier (SP VBB) K12	ATG Access, Inc. http://www.atgaccessinc.com/	14.25 foot clear opening
K12	L3	VPL-CB-24	Autogate, Inc http://www.autogate.com/	14.5 foot clear opening
K12	L3	DSC 7000 Barrier	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening
K12	L3	NMSB XII Crash Beam Barrier - 12 ft	Nasatka Barrier, Inc. http://www.nasatka.com/	12 foot clear opening
K12	L3	NMSB XII Crash Beam Barrier - 18 ft	Nasatka Barrier, Inc. http://www.nasatka.com/	18 foot clear opening
M50	P2	24-ft Patriot Rising Beam Barrier	Ameristar Perimeter Security Systems http://ameristarsecurity.com/	24 foot clear opening
M50	P2	Active Horizontal Crash Beam or Horizontal Cable Barrier (HCB)	Barrier1 Systems, Inc. http://www.barrier1.us/	15'-10" span - interpolation with 40'-10" span barrier is acceptable
M50	P2	Active Horizontal Crash Beam or Horizontal Cable Barrier (HCB)	Barrier1 Systems, Inc. http://www.barrier1.us/	40'-10" foot net width - interpolation with 15'-10" barrier is acceptable

M50	P2	StrongArm M50	HySecurity Gate, Inc. http://www.hysecurity.com/	12 foot clear opening
M50	P3	Drop Arm Vehicle Barrier - KBVB	Barrier1 Systems, Inc. http://www.barrier1.us/	
M50	P3	Active Drop Arm Swing Gate, Surface Set Mobile Crash Beam Barrier	Barrier1 Systems, Inc. http://www.barrier1.us/	14 foot clear opening, interoperable with 34 foot barrier is acceptable
M50	P3	Active Drop Arm Swing Gate, Surface Set Mobile Crash Beam Barrier	Barrier1 Systems, Inc. http://www.barrier1.us/	34 foot clear opening, interoperable with 14 foot barrier is acceptable

Barrier Type: Active Gate

<i>Barrier Rating</i>	<i>Penetration Rating</i>	<i>Barrier Model/Description</i>	<i>Manufacturer/Designer/Distributor</i>	<i>Remarks</i>
M30	P1	K4 Shield Crash Gate	AutoGate http://www.autogate.com	15'-8" clear opening
M30	P1	AR-266 - 12 ft	Heavy Duty Gate, Inc. (fka Morrison Equipment) http://heavydutygates.com/	12 foot clear opening
M30	P1	TCG4 Sliding Gate Barrier	Tymetal Corporation http://www.tymetal.com/	14 foot clear opening
K4	L2	ARMR Model 400 Sliding Gate	B&B ARMOR http://www.bb-armr.com/	12 foot clear opening
M50	P1	Terrablock Crash Gate	Betafence http://www.betafenceusa.com/	16.4 foot clear opening, must be installed with Terrablock M50 passive barriers in configuration
M50	P1	DSC 288	Delta Scientific Corporation http://deltascientific.com/	20 foot clear opening
M50	P1	LSST 1000	Gunnebo Competence Centre Outdoor Perimeter Security http://www.perimeterprotection.net/	7.2 meter clear opening
M50	P1	SR 466 Anti-Ram Vehicle Barrier	Heavy Duty Gates, Inc. (fka Morrison Equipment) http://www.heavydutygates.com/	12.75 foot clear opening
M50	P1	AR 466 Anti-Ram Vehicle Barrier - 16.5 ft	Heavy Duty Gates, Inc. (fka Morrison Equipment) http://www.heavydutygates.com/	16.5 foot clear opening

DoD Anti-Ram Vehicle Barriers

October 2016

M50	P1	K12 Cable Restraint Barrier - 24 ft	NEU Security Systems http://www.neusecurity.com/	24 foot clear opening
K12	L3	CG12 Gate	American Anti Ram http://www.americanpsg.com/	12 foot clear opening
K12	L3	DSC 7500 Barrier	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening
K12	L3	K12 Cable Crash Gate	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	24 foot clear opening
K12	L3	AR 446 Anti-Ram Vehicle Barrier - 40 ft	Heavy Duty Gates, Inc. (fka Morrison Equipment) http://www.heavydutygates.com/	40 foot clear opening
K12	L3	Modified Interlocking Finger Gate	Logical Decisions http://ldi.com/ldi-crash-gate.html	V shape, 13 foot clear opening
M50	P2	G-5550 Anti-Ram Sliding Gate	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	28 foot clear opening
M50	P2	K12 Cable Restraint Barrier - 50 ft	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	50 foot clear opening
M50	P2	K12 Cable Restraint Barrier - 50 ft	NEU Security Systems http://www.neusecurity.com/	50 foot clear opening
M50	P2	TCGR-12 Box Frame Cantilever Slide Gate with Crash Beam	Tymetal Corporation http://www.tymetal.com/	16 foot clear opening
K12	L1	ARMR Model 450 Anti-Climb High Security Vehicle Access Control Cantilever Gate System	B&B ARMR http://www.bb-armr.com/	12 foot clear opening

Barrier Type: **Active Net**

Barrier Rating	Penetration Rating	Barrier Model/Description	Manufacturer/Designer/Distributor	Remarks
M40	P1	GRAB-400 - 12 ft	FutureNet Security Solutions (fka Smith & Wesson Security Solutions, fka Universal Safety Response) https://www.futurenetsecurity.com/	12 foot clear opening - interpolation with 60 foot barrier is acceptable with a P2 penetration
M40	P2	GRAB-400 - 60 ft	FutureNet Security Solutions (fka Smith & Wesson Security Solutions, fka Universal Safety Response) https://www.futurenetsecurity.com/	60 foot clear opening - interpolation with 12 foot barrier is acceptable

M50	P2	30' Retractable Net Vehicle Barrier System	Barrier1 Systems, Inc. http://www.barrier1.us/	30 foot clear between stanchions - interpolation with 90 foot barrier is acceptable with P3 rating
M50	P2	80' Retractable Cable Net Vehicle Barrier System	Barrier1 Systems, Inc. http://www.barrier1.us/	80' clear opening between stanchions - interpolation between 19' 9.5" and 80' is acceptable
M50	P2	Retractable Cable Net Vehicle Barrier System - 20 ft	Barrier1 Systems, Inc. http://www.barrier1.us/	19' 9.5" clear opening between stanchions - interpolation between 19' 9.5" and 80' is acceptable
M50	P2	Retractable Cable Net Vehicle Barrier System - 52.5 ft	Barrier1 Systems, Inc. http://www.barrier1.us/	52' 5" clear opening between stanchions - interpolation between 19' 9.5" and 80' is acceptable
M50	P2	Vehicle Arrestor 2.0 Net Based Active Vehicle Barrier – 80'	Barrier1 Systems, Inc. http://www.barrier1.us/	80' clear opening between stanchions - interpolation between 23' 3" and 80' is acceptable
M50	P2	Vehicle Arrestor 2.0 Net Based Active Vehicle Barrier – 29' 3"	Barrier1 Systems, Inc. http://www.barrier1.us/	80' clear opening between stanchions - interpolation between 23' 3" and 80' is acceptable
M50	P2	GRAB-300 - 14 ft	FutureNet Security Solutions (fka Smith & Wesson Security Solutions, fka Universal Safety Response) https://www.futurenetsecurity.com/	14 foot net width - interpolation with 62 foot barrier is acceptable
M50	P2	GRAB-300 - 62 ft	FutureNet Security Solutions (fka Smith & Wesson Security Solutions, fka Universal Safety Response) https://www.futurenetsecurity.com/	62 foot net width - interpolation with 14 foot barrier is acceptable
M50	P3	90' Retractable Net Vehicle Barrier System	Barrier1 Systems, Inc. http://www.barrier1.us/	90 foot clear between stanchions - interpolation with 30 foot barrier is acceptable
M50	P3	Modified Vehicle Arresting System (VAS)	Engineered Arresting Systems Corporation http://www.esco.zodiacaerospace.com/	24 foot tested width

Barrier Type: Active Post and Beam

<i>Barrier Rating</i>	<i>Penetration Rating</i>	<i>Barrier Model/Description</i>	<i>Manufacturer/Designer/Distributor</i>	<i>Remarks</i>
K4	L3	BLS 0.1 Barrier Lift System	Gunnebo Competence Centre Outdoor Perimeter Security (fka Elkosta Security Systems) http://www.perimeterprotection.net/	9 m (29.5 foot) clear opening
M50	P1	XT-4200-HB Post & Beam Gate	Ross Technology Co. http://www.rosstechnology.com/	24 foot clear opening
K12	L2	Barrier Lift System - K12	Gunnebo Competence Centre Outdoor Perimeter Security http://www.perimeterprotection.net/	10 m width
K12	L3	SP Patriot	ATG Access, Inc. http://www.atgaccessinc.com/	12 foot clear opening
K12	L3	Barrier Lift System	Gunnebo Wego GmbH (fka Elkosta Security Systems) http://www.perimeterprotection.net/	6 m clear opening

Barrier Type: Active Wedge

<i>Barrier Rating</i>	<i>Penetration Rating</i>	<i>Barrier Model/Description</i>	<i>Manufacturer/Designer/Distributor</i>	<i>Remarks</i>
PU40	P3	DSC 1000 Barrier	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening, portable wedge
M30	P3	MNSB XV Mobile Barrier	Nasatka Barrier, Inc. http://www.nasatka.com/	12 foot clear opening, mobile wedge
K4	L3	DSC 1200 Barrier	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening
K4	L2	DSC 1100 Quick Beam Deployment Barrier System	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening, surface mounted
K4	L2	XS-2000-PW, Xpress Series Portable Wedge Barrier - (fka-Osprey Series Portable Wedge)	Ross Security Systems LLC http://www.rosssecuritysolutions.com/	12 foot clear opening, portable wedge
K4	L1	ARMR Model 850 Portable/Towable Barrier	B&B ARMOR http://www.bb-armr.com/	Portable wedge

DoD Anti-Ram Vehicle Barriers

October 2016

K4	L1	MP5000 Mobile Barrier	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening, portable wedge
M40	P3	MP5000 Mobile Barrier - 20 feet	Delta Scientific Corporation http://deltascientific.com/	20 foot clear opening, mobile wedge
M40	P3	MNSB XVI Mobile Barrier	Nasatka Barrier, Inc. http://www.nasatka.com/	16 foot clear opening, mobile wedge
M40	P3	NMSB XVX 20 ft Clear Opening Barrier	Nasatka Barrier, Inc. http://www.nasatka.com/	20 foot clear opening, mobile wedge
K8	L1	DSC 1100 Quick Beam Deployment Barrier System	Delta Scientific Corporation http://deltascientific.com/	12 foot clear opening, surface mounted
M50	P1	Electric Wedge Barrier	Barrier1 Systems, Inc. http://www.barrier1.us/	10 foot tested width
M50	P1	DSC 207S	Delta Scientific Corporation http://deltascientific.com/	9 foot wide plate
M50	P1	HD2055	Delta Scientific Corporation http://deltascientific.com/	12 foot tested width
M50	P1	HD 300	Delta Scientific Corporation http://deltascientific.com/	9' 1" tested width
M50	P1	A-120-C/A-260 Optimus	EL-GO TEAM Parking and Security Systems http://www.elgoteam.com/	8.1 foot tested width
M50	P1	9 ft Wedge Barrier	FutureNet Security Solutions (fka Smith & Wesson Security Solutions) https://www.futurenetsecurity.com/	9 foot tested width; interpolation with 16 foot width acceptable
M50	P1	16-ft Wedge System	FutureNet Security Solutions (fka Smith & Wesson Security Solutions) https://www.futurenetsecurity.com/	16 foot tested width; interpolation with 9 foot width acceptable
M50	P1	M50-P1 8ft. Wedge Barrier	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	8 foot clear opening; interpolation with 14.5 foot width acceptable
M50	P1	M50-P1 14'6" Wedge Barrier	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	14.5 foot clear opening; interpolation with 8 foot width acceptable
M50	P1	Road Blocker Model GBRH50 Wedge Barrier	Guardian Industries Co. http://www.guardianind.com/	10' 1" tested width

M50	P1	Viper RBSM 1000	Heald Ltd. http://www.heald.uk.com/	9.83' plate
M50	P1	HydraWedge SM50	HySecurity http://www.hysecurity.com/	6.5 foot tested width
M50	P1	NSMB-IIID-E - 8 ft	Nasatka Barrier, Inc. http://www.nasatka.com/	8 foot plate
M50	P1	Model III D-E 10' Barrier System	Nasatka Barrier, Inc. http://www.nasatka.com/	10 foot tested width
M50	P1	Model III D-E 11' Barrier System	Nasatka Barrier, Inc. http://www.nasatka.com/	11 foot tested width
M50	P1	Model 3 D-E 12' Barrier System	Nasatka Barrier, Inc. http://www.nasatka.com/	12 foot tested width
M50	P1	Model III D-E 14' Barrier System	Nasatka Barrier, Inc. http://www.nasatka.com/	14 foot tested width
M50	P1	elkosta Wedge II	Perimeter Protection Germany www.perimeterprotection.net	6.5 foot tested width
M50	P1	RSS-2000VI	RSSI http://www.rssi.com/	6 post configuration - interpolation with 4 post configuration is acceptable, 5 post configuration acceptable
M50	P1	SHF3614S	SecureUSA, Inc. http://secureusa.net/	14 foot wide plate
K12	L3	Shallow Mount Wedge Model SW12	American Anti Ram http://www.americanpsg.com/	8 foot plate
K12	L3	SP Sentinel	ATG Access, Inc. http://www.atgaccessinc.com/	8 foot plate
K12	L3	ARMR Shallow Mount Plate Barrier Model 820	B&B ARMR http://www.bb-armr.com/	9 foot tested width
K12	L3	DSC 2000 Barrier	Delta Scientific Corporation http://deltascientific.com/	3 - 2 foot wedges with 18 inch spacing
K12	L3	Model DSC501 - Phalanx Type Barricade	Delta Scientific Corporation http://deltascientific.com/	9 foot wide plate

K12	L3	DSP K12	Gunnebo Competence Centre Outdoor Perimeter Security http://www.perimeterprotection.net/	4.6 meter tested width
K12	L3	MSB II Barrier	Nasatka Barrier, Inc. http://www.nasatka.com/	12 foot clear opening
K12	L3	XT-1000-W, Xact Series Wedge Barrier - (fka-Eagle Series Wedge Barrier)	Ross Security Systems LLC http://www.rosssecuritysolutions.com/	9 foot wide plate
K12	L3	RSS-2000	RSSI http://www.rssi.com/	4 post configuration - interpolation with 6 post configuration is acceptable, 5 post configuration acceptable

Barrier Type: Active Cable

Barrier Rating	Penetration Rating	Barrier Model/Description	Manufacturer/Designer/Distributor	Remarks
M40	P2	RSSI Cable Trap System	RSSI http://www.rssi.com/	4 - 1" diameter cables, 100' tested total length

Barrier Type: Passive Bollard

Barrier Rating	Penetration Rating	Barrier Model/Description	Manufacturer/Designer/Distributor	Remarks
PU50	P2	DSC 650 Shallow Foundation Bollard Array	Delta Scientific Corporation http://deltascientific.com/	2-bollard array
M30	P1	M30 Shallow Foundation Modular Bollard System	Barrier1 Systems, Inc. http://www.barrier1.us/	3-bollard array
M30	P1	Set and Pour Bollard	Barrier1 Systems, Inc. http://www.barrier1.us/	Single bollard
M30	P1	Shallow Foundation Modular Bollard System	Barrier1 Systems, Inc. http://www.barrier1.us/	Single modular bollard
K4	L3	RB80 Bollard	American Anti-Ram Corporation http://www.americanpsg.com/	48" OC, 3-bollard array
K4	L3	SP1000 Static Shallow Mount Barrier	ATG Access, Inc. http://www.atgaccessinc.com/	3-bollard array

K4	L3	Shallow Bollard System	SecureUSA, Inc. http://secureusa.net/	5-bollard array
M30	P2	8" SM Removable K4 Shallow Mount Bollard	Calpipe Security Bollards http://www.calpipebollards.com/	3-bollard array
M40	P1	M40 Shallow Foundation Modular Bollard System	Barrier1 Systems, Inc. http://www.barrier1.us/	3-bollard array
M50	P1	M50 Shallow Foundation Bollard	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	3-bollard array
M50	P1	Fixed Bollard M50	Perimeter Protection Germany GmbH http://www.perimeterprotection.net/	3-bollard array
K12	L3	DSC 600 Shallow Frame Bollard Array	Delta Scientific Corporation http://deltascientific.com/	2-bollard array
K12	L3	Model 6 Bollards - 4-bank	Nasatka Barrier, Inc. http://www.nasatka.com/	4-bollard array, shallow mount
K12	L3	Shallow Mount Bollards	Sandia National Laboratories http://www.sandia.gov/	3-bollard array, shallow mount
M50	P2	Single Bollard Vehicle Barrier System	Barrier1 Systems, Inc. http://www.barrier1.us/	single bollard
M50	P2	K12 Shallow Mount Bollard	Calpipe Security Bollards http://www.calpipebollards.com/	3-bollard array
M50	P3	FB-K12 Fixed Bollard System	American Physical Security Group, Inc. http://www.americanpsg.com/	
M50	P3	M50 Shallow Foundation Bollard - 40	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	3-bollard array

Barrier Type: Passive Cable

<i>Barrier Rating</i>	<i>Penetration Rating</i>	<i>Barrier Model/Description</i>	<i>Manufacturer/Designer/Distributor</i>	<i>Remarks</i>
M30	P1	M30 High Performance Post, Rail, and Structural Stand System - 73 ft (1" cable)	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	3 - 1" diameter cables, 72' tested length (post to post)
M40	P2	M40/P2 High Performance Post, Rail, and Structural Stand System - 73 ft (1.25" cable)	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	3 - 1.25" diameter cables, 72' tested length (post to post)

M40	P2	Cable Trap System	RSSI http://www.rssi.com/	4 - 1" diameter cables, 96' tested length (end post to end post)
M50	P1	Ameristar High Performance Post, Rail, and Structural Strand System (1.5" cables)	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	40 foot tested length end post to end post; 3 - 1.5" cables
M50	P1	M50/P1 Cable Barrier System	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	3 - 1.5" diameter cables, 40' tested length (post to post)
M50	P1	M50 Wire Rope, Post, and Channel Rail Anti-Ram Fence	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	16' post spacing, 2 cables
M50	P1	M50 P1 28ft. Cable Crash Fence	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	3 strand cable barrier
M50	P2	High Performance Post, Rail, and Structural Stand System (1.5" cable)	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	3 - 1.5" diameter cables, 56' tested length (post to post)
M50	P2	M50 Post and Cable System – 50 ft	FutureNet Security Solutions (fka Smith & Wesson Security Solutions, fka Universal Safety Response) https://www.futurenetsecurity.com/	tested length - 50 foot, center of end post to center of end post, interpolation with 200ft barrier is acceptable
M50	P2	M50 Post and Cable System – 200 ft	FutureNet Security Solutions (fka Smith & Wesson Security Solutions) https://www.futurenetsecurity.com/	tested length - 200 foot, center of end post to center of end post, interpolation with 50ft barrier is acceptable
M50	P2	M50 P2 Cable Crash Fence	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	tested length - 600 foot, end post to end post
M50	P2	M50 P2 Cable Crash Fence	NEU Security Systems http://www.neusecurity.com/	3 strand cable barrier, 600' between terminal posts, 200' between line posts
M50	P3	High Performance Post, Rail, and Structural Stand System - 41 ft (1.25" cable)	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	3 - 1.25" diameter cables, 40' tested length (post to post)

Barrier Type: Passive Fence

Barrier Rating	Penetration Rating	Barrier Model/Description	Manufacturer/Designer/Distributor	Remarks
K8	L1	Perimeter Security Fence with One-Inch Cable and Diagonal	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	
K8	L2	Impasse Perimeter Security Fence	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	2 - 1" diameter cables, 162 foot tested length

K8	L2	Perimeter Security Fence with 1 in Cable and Bollard Anchorage	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	2 - 1" diameter cables; 32.67' between posts
K8	L2	Perimeter Security Fence with One-Inch Cable and Bollard Anchorage	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	2 - 1" diameter cables, 162 foot tested length
M50	P1	RSS-F501D Tube Beam Fence	Ross Security Systems LLC http://www.rosssecuritysolutions.com/	Tube beam sections, 30 ft post spacing
M50	P2	M50 P2 Gibraltar Cable Crash Fence	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	200 foot span main post to main post
K12	L3	Impasse Security Fencing	Ameristar Perimeter Security Systems http://www.ameristarfence.com/	2 – 1" diameter cables; 32.67 ft between posts
K12	L3	Gibraltar Cable Crash Fence	Gibraltar Cable Barrier Systems, L.P. http://www.gibraltarmaterials.com/	test length - 60 foot span, main post to main post

Barrier Type: Passive Inertial

<i>Barrier Rating</i>	<i>Penetration Rating</i>	<i>Barrier Model/Description</i>	<i>Manufacturer/Designer/Distributor</i>	<i>Remarks</i>
M50	P1	Terrablock M50	Betafence http://www.betafenceusa.com/	Sand filled barrier with fence
K12	L3	Expeditionary Earth Filled Barrier	DefenCell http://www.defencell.com/	Earth filled barrier
K12	L3	RDFW Mk. 4	Geocell Systems Inc. http://www.geocellsystems.com/	Earth filled barrier
K12	L3	HESCO SL 3636 (fka-C-3315 Flood Barrier)	HESCO Bastion Ltd. http://www.hesco.com/	Earth filled barrier