



BLACK SECURITY PRODUCTS

AVBD 230 · 231 · 250 · 251
PRODUCT DATA · 2026



ANTI-RAM CRASH GATES

SLIDE AND SWING · TWELVE TO THIRTY FEET

Crash-rated gates built around the connection, not the panel. Slide gates crash tested to **ASTM F2656-23** at **M50 P1** and **M30 P1**; swing gates built to a licensed crash-tested design. A **three inch steel pin** does the work at both ends.

ASTM F2656-23 · M50 P1

12' - 30' CLEAR

10-YEAR WARRANTY

MADE IN THE USA

THE GATE IS THE ACCESS IN YOUR FENCE.

You can specify a crash-rated perimeter all the way around a site and still hand an attacker a clean run at the one place vehicles are supposed to go. Every fence line ends at a gate. The gate is where the barrier has to open, and opening is the hard part.

A gate that stops a 15,000 lb truck has to do things a fence never has to. It has to carry the impact into two foundations instead of a continuous line. It has to release and re-engage that load path hundreds of times a month at a busy entrance. And it has to do both while looking like the rest of your fence.

A BSP crash gate is designed at the connection. A three inch 4140 steel pin passes through stacked plates at each end. The panel is what the driver sees. The pin is what stops him.



Crash-rated slide gate with chain link infill and a barbed top, on a commercial drive.

WHY GATES FAIL

A gate fails where the load has to leave the panel and enter the ground — the hinge and the latch. The frame bends, the connection lets go, and the vehicle carries the gate through the opening with it.

Two tested slide gates

The M50 P1 and M30 P1 slide gates were both crash tested on BSP articles to ASTM F2656-23, the current edition, at a third-party laboratory.

Twelve to thirty feet

All four gates are offered from a 12 ft to a 30 ft clear opening. Page 7 shows what was tested and what is engineered from it.

Any infill, you decide

Chain link, ornamental picket, palisade or welded mesh on the same crash-rated frame. You name the face, BSP supplies it, and the gate matches the fence.

1,405

FT-KIPS DELIVERED
M50 P1 SLIDE GATE

0.65

FEET OF PENETRATION
AGAINST A 3.30 FT LIMIT

10

YEAR WARRANTY
ON THE GATE ITSELF

2 ft/s

HIGH-SPEED
GATE TRAVEL

Where this brochure gets its numbers. Every test result printed for the slide gates traces to a third-party crash test report on a Black Security Products article. The swing gates are manufactured under license to a crash-tested design. Test reports and certifications travel with the submittal package.

FOUR GATES. THE SAME IDEA.

Slide or swing, M30 or M50, the gates share a single idea: the impact load is carried by a steel pin through stacked plates at each end, into a reinforced foundation. What changes between the four is how the panel gets out of the way, and how much energy the connection has to absorb.

MODEL	RATING	STANDARD	CLEAR OPENING	BASIS
AVBD 250 M50 Slide Gate	M50 · P1	ASTM F2656-23	12' – 30'	Crash tested on a BSP article, August 2025. Tested at a 20'-8" clear opening.
AVBD 230 M30 Slide Gate	M30 · P1	ASTM F2656-23	12' – 30'	Crash tested on a BSP article, March 2024. Tested at a 24' clear opening.
AVBD 251 M50 Swing Gate	M50 · P2	ASTM F2656	12' – 30'	Manufactured under license to a crash-tested design.
AVBD 231 M30 Swing Gate	M30 · P1	ASTM F2656	12' – 30'	Manufactured under license to a crash-tested design.

CHOOSING THE RIGHT GATE

1 Slide, when the throat is tight

A slide gate needs a run of clear ground beside the opening, longer than the opening itself because the panel overlaps both posts, but nothing in front of it. Use it where a swing arc would reach into the approach lane or the inspection area.

2 Swing, when the flank is built up

A swing gate needs no side run, so it fits between a guard booth and a fence corner. It needs the arc, and it needs the approach kept clear.

3 M50, when the threat is a loaded truck

M50 is the 15,000 lb vehicle at 50 mph. M30 is the same vehicle at 30. The difference is not twenty miles an hour, it is roughly triple the energy. Page 5 shows the arithmetic.

4 Retrofit, when the opening exists

An existing non-rated opening can often be re-used. The posts and foundations are replaced and the track line is cut into the drive surface; the fence line either side usually stays where it is.



Galvanized crash gate at a utility substation. The trussed frame carries chain link infill.

ONE DETAIL, BOTH SLIDE GATES

The M50 and M30 slide gates share the same pin, plate stack and post section, so a site running both stocks one set of spares. Swing gate details are issued with the submittal.

THE TEST

FIFTY-TWO MILES AN HOUR. EIGHT INCHES OF GIVE.

On **28 August 2025** at Applus IDIADA in Adelanto, California, a 2005 Sterling Acterra standard test truck was run into the middle of a BSP M50P1 Slide Gate at **52.75 mph**. The truck weighed **15,101.4 lb** with instrumentation and ballast.

The test report records the M50 target kinetic energy as 1,250 ft-kips. This impact delivered **1,405 ft-kips** — about twelve percent more energy than the M50 designation calls for.

The center span was chosen deliberately. The test director ruled out an impact on either post because a post presents a larger, sturdier mass. Hitting mid-panel puts the full load into the square tubing and stresses both connections at once.

Maximum dynamic penetration was **0.65 ft** against a 3.30 ft limit. The truck came to rest 2.40 ft *behind* the barrier reference point. It was disabled, and the pathway remained blocked.

AS TESTED	
Report	TR-P45159-01-NC
Laboratory	Applus IDIADA, Adelanto CA
Test date	28 August 2025
Standard	ASTM F2656-23, M50
Vehicle	Standard test truck (M)
Test mass	15,101.4 lb
Impact speed	52.75 mph
Impact energy	1,405 ft-kips
Impact point	Center of span
Dynamic penetration	0.65 ft
Static penetration	–2.40 ft
Rating	M50 · P1
Clear opening	20'-8" as tested

THE M30 SLIDE GATE, FOR COMPARISON

The M30 P1 Slide Gate was tested by the same laboratory, Applus IDIADA KARCO, on **28 March 2024** to the same edition of the standard. A 14,722.47 lb truck at 33.67 mph delivered **558 ft-kips** against an M30 target of 451 — twenty-four percent above the level the designation calls for. Recorded dynamic penetration was 3.24 ft against the 3.28 ft limit stated in that report, and the vehicle was disabled. That 3.28 ft is the 1.00 m P1 limit converted; the M50 report states the same limit as 3.30 ft.

WHAT THE M50 REPORT RECORDS

“The vehicle was disabled, and the pathway remained blocked.” The gate panel released from the latch post and stayed tethered to the hinge post. The roadway never opened.

+12%

MORE ENERGY THAN
M50 REQUIRES

5×

INSIDE THE P1 LIMIT
M50 SLIDE GATE

+24%

MORE ENERGY THAN
M30 REQUIRES

2

SLIDE GATES TESTED
TO ASTM F2656-23

On the certification letter. The certification letter issued with the M50 test records a dynamic penetration of 0.36 ft. The full test report records the higher figure printed here. Where the two disagree, this brochure prints the report, which governs.

WHAT M30 AND M50 ACTUALLY MEAN.

ASTM F2656 is a test method, not a rating scale you can calculate your way onto. A barrier earns a designation by being hit, once, at full speed, and then measured.

The letter and number describe the vehicle and the speed. **M** is the 15,000 lb standard test truck. **30**, **40** and **50** are the nominal impact speeds in miles per hour.

The **P** number describes what happened afterward — how far the leading lower edge of the cargo bed traveled past the barrier. P1 is under 3.3 ft. P2 is 3.31 to 23 ft. P3 is 23.1 to 98.4 ft.

The speeds are not the story. The energy is. Kinetic energy rises with the square of speed, so going from M30 to M50 is not sixty-seven percent more work for the barrier. It is nearly three times as much.

PENETRATION RATINGS

P1	Less than 3.3 ft
P2	3.31 ft – 23.0 ft
P3	23.1 ft – 98.4 ft

MEASURED TWO WAYS

Dynamic penetration is read off high-speed video at the moment of greatest travel. Static penetration is measured from where the vehicle finally stops. The rating is assigned on the dynamic figure, because that is the worst instant.

A NEGATIVE NUMBER IS A GOOD NUMBER

The M50 slide gate's static penetration is –2.40 ft. The minus sign means the truck ended up behind the line it was trying to cross.

IMPACT ENERGY AT EACH TEST LEVEL

DESIGNATION	VEHICLE	SPEED	IMPACT FT-KIPS	RELATIVE TO M30
M30	15,000 lb	30 mph	451	
M40	15,000 lb	40 mph	802	
M50	15,000 lb	50 mph	1,250	
BSP M30 slide gate, as tested	14,722 lb	33.67 mph	558	
BSP M50 slide gate, as tested	15,101 lb	52.75 mph	1,405	

How the ft-kips are figured. The three target rows are the published test-level energies for the 15,000 lb standard test truck. The two BSP rows are calculated from the actual test mass and actual impact speed recorded in each report — kinetic energy = $\frac{1}{2} \times \text{mass} \times \text{velocity}^2$, converted to foot-kips — which is why both sit above their target.

THE PANEL IS NOT WHAT STOPS THE TRUCK.

At each end of the gate, a **three inch diameter 4140 steel pin, seventeen inches long**, drops through a stack of three plates welded to the panel's main member — a half inch top plate, a three quarter inch reinforcing plate and a half inch bottom plate, each bored to 3.06 in. The pin lands in the post. That connection is the critical link in the load path.



The pin

One at the hinge end, one at the latch end, so the load splits between two foundations.



The stack

Three A36 plates welded to the main member, which runs nearly the full length of the panel.



The post

Two 12 × 12 × 3/8 in A500 tubes, 6 in apart, welded to a 48 × 48 × 1/2 in base plate.



The guide

Guide rollers hold the panel to line while it travels. They carry no impact load.

WHAT THE PANEL IS MADE OF

The gate panel is a welded rectangular frame, **330 in long by 90.62 in tall by 12 in wide** as tested, built from ASTM A500 and A36 square and rectangular tubing with reinforcing plates. A single 12 × 6 × 3/8 in rectangular tube runs 327 in across the frame and carries both the hinge and the latch connections.

All welds conform to AWS D1.1 using ER70S-6 electrodes.

LOAD PATH, IN ORDER

1	Impact face	Gate panel infill and frame
2	Main member	12 × 6 × 3/8 in rectangular tube
3	Plate stack	1/2 in / 3/4 in / 1/2 in A36, bored 3.06 in
4	Pin	4140 steel, 3.00 in × 17.00 in
5	Post	Twin 12 × 12 × 3/8 in A500 tubes
6	Base plate	48 × 48 × 1/2 in A36
7	Foundation	Reinforced concrete, engineered per project

Dimensions shown are the as-tested article. Panel length and post height change with the clear opening and the infill specified. Structural sections and the pin do not.

WHY BOTH ENDS

Pinning at the hinge end as well as the latch end means a center-span hit is resisted by two foundations, not one. A single-ended latch puts the whole impact into one post and one block of concrete.

TWELVE FEET TO THIRTY. ALL FOUR GATES.

Every gate in the family is offered from a **12 ft** to a **30 ft** clear opening. Below is what each was tested at, so you can see where the tested configuration sits inside the range.

Openings other than the tested width are engineered from the tested design. The connection — pin, plate stack and post section — does not change with the opening. Panel length and foundation size do.

Tell us the opening and the approach. A slide gate panel overlaps both posts, so the side run it needs is roughly the opening plus seven feet. A swing gate needs the arc instead. Either way the approach matters — a straight run that lets a truck build speed changes what you should be specifying.

TESTED CONFIGURATIONS

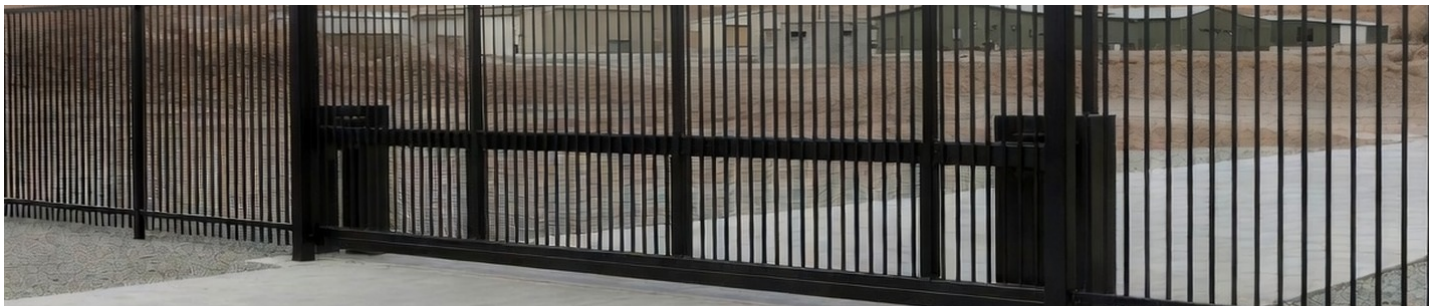
AVBD 250 · M50 slide	20'-8"
AVBD 230 · M30 slide	24'-0"
Range offered, all models	12'-0" – 30'-0"

WHAT A RATING COVERS

ASTM F2656 rates the article that was hit. Configurations built from it are engineered, and BSP states plainly which is which. Anything outside the tested width is offered as an engineered configuration, not as a second test result.

SITE ROOM REQUIRED

CLEAR OPENING	SLIDE — SIDE RUN NEEDED	SWING — ARC NEEDED	TYPICAL USE
12 ft	≈ 19 ft beside the opening	12 ft radius, single leaf	Service and exit-only gates
20 ft	≈ 27 ft beside the opening	20 ft radius, or 10 ft double	Two-lane commercial entrance
24 ft	≈ 31 ft beside the opening	24 ft radius, or 12 ft double	Truck and delivery entrance
30 ft	≈ 37 ft beside the opening	30 ft radius, or 15 ft double	Main gate with inspection lane



Slide gate with ornamental picket infill on a concrete apron. The apron carries the track and the receiving run.

Side run includes the overlap. The gate panel is longer than the opening it closes, because it laps onto both posts — 330 in of panel across a 248 in opening on the as-tested M50. Keep the side run free of poles, cabinets and landscaping for the full height of the panel. Gate travel times are on page 9.

THE FACE

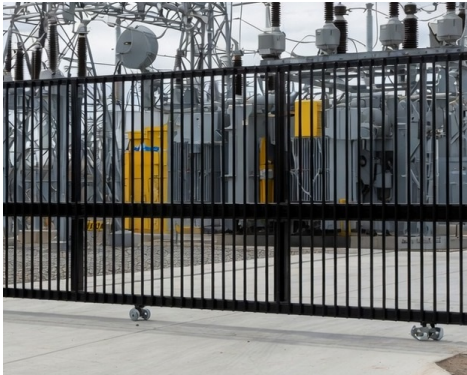
ONE FRAME. ANY FACE YOU LIKE.

The crash rating lives in the frame, the pin and the foundation. The infill is what the public sees, and **you pick it** — chain link at a utility yard, ornamental picket at a corporate campus, palisade at a tank farm, welded mesh where the fence line is already SecureMesh™. Specify the gate to match the fence, not the other way around.



Chain link

The default at utility, industrial and military perimeters. Takes barbed wire, razor wire or razor mesh at the top without changing the frame.



Ornamental picket

Where the entrance is the front door. Reads as architectural fence, carries the same rated frame behind it.



Palisade

SecurePale™ pales carried on the gate frame, so the opening matches a palisade fence line pale for pale.

WELDED MESH

The SecureMesh™ 358 anti-climb panel mounts to the same frame. Use it where a chain link gate would announce the opening as the soft point in an otherwise hardened line.

FINISH

Hot-dip galvanized to ASTM A123 as standard. Polyester powder coat over galvanizing where color is specified. Both finishes are shown throughout this brochure.

INFILL OPTIONS	
Chain link	9 ga or 6 ga, barbed or razor top
Ornamental picket	Architectural, flat or spear top
Palisade	SecurePale™ pale profiles
Welded mesh	SecureMesh™ 358 anti-climb
Solid screening	Where sightlines must be blocked
Finish	HDG to ASTM A123, or powder coat over

Match the fence, then the gate. BSP builds the fence lines too, so a single supplier carries the palisade, the mesh and the crash-rated opening in between.

THE FRAME IS WHAT WAS TESTED

Every option above mounts to the same frame, pin and post detail that was crash tested. Infill is selected per project and recorded on the submittal with the rating basis. Weight changes with the choice, so the operator is sized to the leaf.

OPERATION

ELECTRIC. ONE FOOT PER SECOND. OR TWO.

All four gates are driven by an **electric operator**. Standard travel is **1 ft per second**. Where throughput matters — a busy main entrance, a checkpoint that backs up at shift change — the **high-speed operator doubles that to 2 ft per second**.

On a 24 ft opening that is the difference between about twenty-eight seconds of travel and fourteen. Over a shift it is the difference between a queue and a flow.

Speed is not free. A faster leaf carries more momentum into the end of travel, so the high-speed option changes the operator sizing and the deceleration profile. Specify it up front rather than adding it later.

The gate is secured by the pin, not by the operator. Loss of power does not unlock a closed gate.

The operator is supplied by others and carries its own manufacturer’s warranty. The gate itself carries a **ten year warranty**, the longest BSP puts on an active vehicle barrier.

OPERATION	
Drive	Electric operator
Standard travel	1 ft per second
High speed travel	2 ft per second
12 ft opening	≈ 16 s / 8 s
20 ft opening	≈ 24 s / 12 s
24 ft opening	≈ 28 s / 14 s
30 ft opening	≈ 34 s / 17 s
Securing	Steel pin at both ends
Manual release	Available for maintenance
Operator supply	By others

WHY THE TIMES RUN LONG

A slide gate travels its own stroke, not the clear width — the panel laps both posts, so it has to run past the opening to clear it. Times above allow for that and are confirmed with the configuration. Leaf weight also drives operator selection: a 30 ft palisade leaf and a 12 ft chain link leaf are not the same machine.



Electrically operated crash gate on a secured facility entrance, carried on a ground track across the opening.

Access control is yours

Card readers, loops, intercom and barrier arms are integrated to the controls package you already run. BSP does not lock you into a head end.

Safety devices

Photo eyes, edge sensors and warning devices per UL 325 and ASTM F2200 for the gate class specified.

Maintenance access

The pin, plate stack and guide rollers are all reachable without breaking the foundation or removing the panel.

THE RATING ENDS AT THE CONCRETE.

A gate cannot resist more than its foundation will hold. Every impact the pin takes ends up in two reinforced concrete masses on either side of the opening, and in the soil behind them.

In the M50 P1 test, each post sat in a rectangular reinforced foundation with a tied rebar cage, cast against compacted structural fill placed to the test standard. Concrete was specified at a **4,000 psi minimum**; the batch tested at an average of 4,623 psi.

Foundation size is engineered per project. Soil bearing, frost depth, water table, utility conflicts and the clear opening all change it, which is why BSP issues a stamped detail for the site rather than a standard one.

What does not change is the principle: the cage is tied and set before the pour, the concrete is vibrated to eliminate voids, and the fill behind the foundation is compacted and verified.

AS-TESTED FOUNDATION

Post foundations	Two, one per post
Reinforcement	Tied cage, #6 bar
Concrete specified	4,000 psi minimum
Concrete tested	4,623 psi average
Rebar grade	ASTM A615 Grade 60
Backfill	AASHTO M147-65 Grade B
Compaction	90% required, 91–96% achieved
Track foundation	Continuous, across the opening

FILL MATTERS AS MUCH AS CONCRETE

ASTM F2656 requires structural fill behind the foundation, placed and compacted to a stated gradation. A correct foundation in poor fill is still a soft foundation, which is why compaction is tested on site before the posts go in.

What we need from you

A geotechnical report, the clear opening and the approach layout. With those three the foundation comes back stamped, not assumed.

What sits in the opening

Slide gates need a shallow continuous foundation carrying the track across the opening. Swing gates do not, which can matter where utilities cross.

Start with a site review

Before anything is demolished, a review establishes whether the existing opening, approach grade and utility runs will take a rated gate.

Why no foundation dimensions are printed here. The as-tested foundation was designed for the soil at the proving ground and the opening that was tested. Publishing it as a standard detail would put a number in a specification that has not been checked against the site it is going to be built on. BSP issues a stamped foundation detail per project.

FOR THE SPECIFIER

SPECIFICATIONS.

RATINGS AND STANDARDS		OPERATION	
AVBD 250 · M50 slide	M50 P1, ASTM F2656-23	Drive	Electric operator
AVBD 230 · M30 slide	M30 P1, ASTM F2656-23	Standard speed	1 ft per second
AVBD 251 · M50 swing	M50 P2, ASTM F2656	High speed option	2 ft per second
AVBD 231 · M30 swing	M30 P1, ASTM F2656	Securing	Steel pin, both ends
Test laboratory, slides	Applus IDIADA / KARCO, Adelanto CA	Safety	Per UL 325 and ASTM F2200
Report, M50 slide	TR-P45159-01-NC	Access control	Integrated to owner's system
Report, M30 slide	TR-P44098-01		
Swing gates	Licensed crash-tested design		
GEOMETRY		INFILL	
Clear opening offered	12 ft to 30 ft, all models	Chain link	9 ga or 6 ga, barbed or razor top
Tested opening, M50 slide	20 ft 8 in	Ornamental picket	Architectural, flat or spear top
Tested opening, M30 slide	24 ft 0 in	Palisade	SecurePale™ profiles
Panel height	Per fence line, typically 6 ft to 10 ft	Welded mesh	SecureMesh™ 358 anti-climb
Panel depth as tested	12 in	Solid screening	Optional
MATERIALS		FOUNDATION AND INSTALLATION	
Post tubes	12 × 12 × ⅝ in, ASTM A500	Foundation	Reinforced concrete, engineered per project
Post base plate	48 × 48 × ½ in, ASTM A36	Concrete	4,000 psi minimum
Panel main member	12 × 6 × ⅝ in rectangular tube	Reinforcement	ASTM A615 Grade 60
Plate stack	½ / ¾ / 1½ in ASTM A36, bored 3.06 in	Backfill	Compacted structural fill, verified
Locking pin	4140 steel, 3.00 in dia × 17.00 in	Stamped details	Issued per project
Welding	AWS D1.1, ER70S-6 electrode		
Finish	HDG to ASTM A123; powder coat optional		
		COMMERCIAL	
		Warranty, gate	10 years
		Warranty, operator	Excluded — operator by others
		Manufacture	Houston, Texas
		Lead time	Quoted per project

CSI 34 71 13 — Vehicle Barriers. Anti-ram crash gate shall be a slide or swing gate crash tested in accordance with ASTM F2656 to the designation and penetration rating scheduled. Gate shall secure by a 3.00 in diameter 4140 steel pin engaging a plate stack at both the hinge and latch ends. Clear opening as scheduled, 12 ft to 30 ft. Infill as scheduled. Electric operation at 1 ft/s standard or 2 ft/s high speed. Foundations engineered and stamped per project. Gate warranted ten years; gate operator excluded and supplied by others. Basis of design: Anti-Ram Crash Gates, AVBD 200 Series, by Black Security Products, LLC, Houston, TX.



BLACK SECURITY PRODUCTS



THE FENCE IS THE LINE. THE GATE IS THE TEST.

Black Security Products designs and manufactures high-security perimeter protection systems for military installations, government facilities, data centers, utilities and critical infrastructure worldwide — with an emphasis on anti-terrorism and force protection.

PERIMETER SECURITY PRODUCT FAMILY

ACTIVE VEHICLE BARRIERS

Anti-Ram Crash Gates — AVBD 230/231/250/251
Bi-Folding Speed Gate — AVBD 210
Shallow Wedge M50 P1 — AVBD 452
Wedge Barrier M50 P1 — AVBD 451
M50 Drop Arm — AVBD 551/552
M30 P1 Drop Arm — AVBD 531
Defender Net Barrier — AVBD 651

PASSIVE VEHICLE BARRIERS

Drill-and-Set Bollard — AVBD 331
Crash-Rated Bollards — AVBD 300
Cable Barrier M30 — AVBD 131/132
Cable Barrier M50 — AVBD 151/152
Rapid Deployment MPPD — AVBD 700

SECURITY FENCING

SecurePale™ Palisade — AVBD 1101
SecureMesh™ — AVBD 1001
SecureMesh™ Integrated PVB — AVBD 1002
SecureMesh™ Delay — AVBD 1003
ENC Non-Conductive — AVBD 1200
Ballistic Rated Fence — AVBD 1300

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