



BLACK SECURITY PRODUCTS

AVBD 1200

PRODUCT DATA · 2026



ENC SECURITY FENCE

ELECTRICALLY NON-CONDUCTIVE FRP PERIMETER SYSTEM

A security fence that carries no current, corrodes in no climate, and lets radar and radio pass straight through it. Every batch is flash-over tested to a minimum of **138,000 volts**. Forced-entry tested to ASTM F2781-15.

FLASH-OVER TESTED, EVERY BATCH

ASTM F2781-15

RF TRANSPARENT

MADE IN THE USA

STEEL IS A CONDUCTOR. THAT'S THE PROBLEM.

Inside a substation fence line, the fence is not a neutral object. It is a large grounded metal structure standing in a field of step-and-touch potential, and it has to be bonded, grounded and inspected accordingly — because under a fault it can carry what the yard carries.

An FRP fence is not part of that circuit. It does not need to be bonded into the ground grid, it does not have to be tested for continuity, and it cannot present a touch potential to a person standing outside it.

And the fence is the one part of a substation the public can reach. Everything else is behind it, above it, or kept away by it. What the boundary is made of is a safety decision as much as a security one.



Substation perimeter — the fence stands inside the energized envelope, not outside it.

TESTED ON EVERY BATCH

Flash-over voltage testing is run by certified laboratories on **every production batch** — not once, on a sample, filed away and cited for a decade. The panel that arrives on your site belongs to a batch with its own result.

138kV

MINIMUM FLASH-OVER
EVERY BATCH

650kV

MAXIMUM
TESTED

0

GROUND-GRID BONDING
REQUIRED

0

HOT WORK OR CRANE
PERMITS

SPECIFIED & DEPLOYED FOR

Transmission substations
Switchyards & converter stations
Electric utility service centers

Telecom & antenna sites
Airport perimeters & radar sites
Data centers & network facilities

Chemical & petroleum facilities
LNG & energy infrastructure
Coastal & marine terminals

FLASH-OVER TESTED

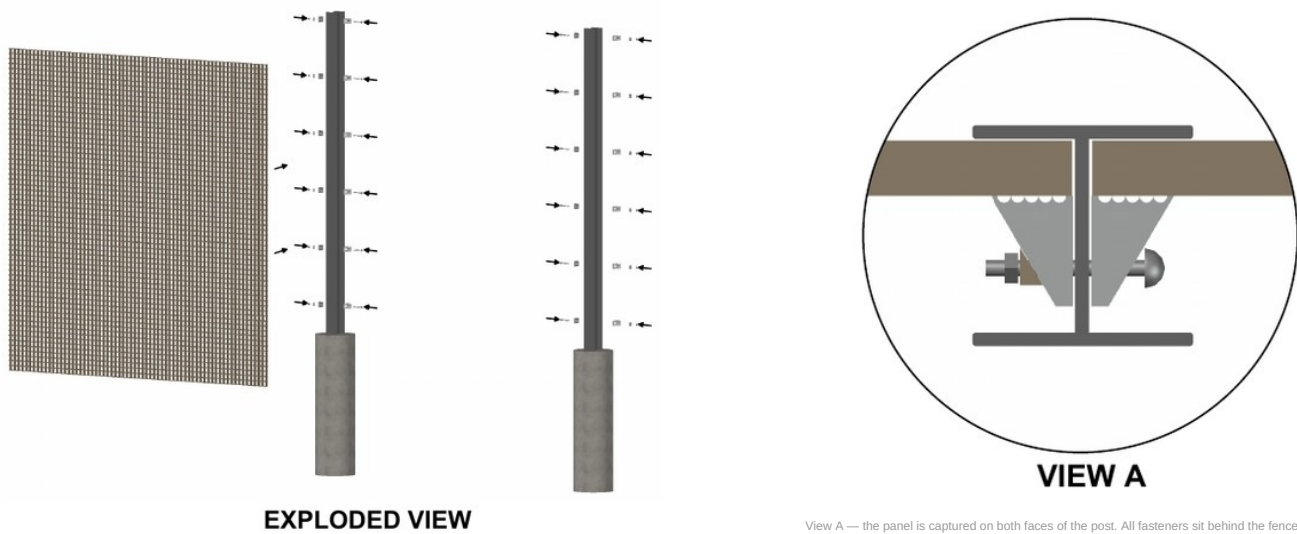
ASTM F2781-15

NO ADDITIONAL GROUNDING

Flash-over voltage testing performed by certified laboratories on each production batch. Forced-entry testing by Southwest Research Institute, report 18.18293.08.101.FR1 — see page 5. Final lug grounding per the project's electrical design is still recommended.

POSTS, PANELS, AND NOTHING THAT RUSTS.

Three things make up a run: an FRP post set in a drilled pier, a molded FRP grating panel, and a clamp block that traps the panel against the post from both sides. No welding, no hot work, no crane — the heaviest piece is carried by two people.



Exploded view — panel, post and through-bolted clamp blocks over a 12" drilled pier.

View A — the panel is captured on both faces of the post. All fasteners sit behind the fence line.

WHAT'S IN THE SYSTEM

1 FRP post

Extruded composite section, color through the material. Set in a 12" drilled pier, 36" below grade.

2 Molded panel

1½" square mesh, 1" thick, dark gray. Standard 4' × 8' and 4' × 12'; 3' and 4' × 20' available.

3 Clamp blocks

Trap the panel against both faces of the post. Threaded fasteners, tightened and sealed — no plastic plugs.

4 316 SS hardware

Stainless throughout, mounted on the secure side. Nothing to reach from outside the line.

Height	96" above grade	Post C/C	97.5" (±1.5)	Pier	12" dia. × 42"
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NO WELDING, ANYWHERE IN THE PROCESS

Nothing in the system is welded — not in manufacturing and not in the field. That removes hot work permits from an energized site, removes the crane from the lay-down plan, and removes the cut-and-weld repair from the maintenance manual. A damaged panel is unbolted and replaced.

TESTED ON EVERY BATCH. NOT ONCE.

Most materials claims rest on a single qualification test run years ago on a sample nobody can trace to the panel on the truck. Non-conductivity is not treated that way here.

Certified laboratories run a **flash-over voltage test on every production batch**, to the minimum shown opposite and well beyond it. The result for the batch you were supplied is a document, and you can ask for it.

Because the material is not a conductor, the fence does not have to be bonded into the station ground grid, and it satisfies IEEE grounding practice without additional grounding cost. Final lug grounding remains subject to the project's electrical design.

THE TEST REGIME

Test	Flash-over voltage
Frequency	Every batch
Performed by	Certified laboratory
Minimum	138,000 V
Maximum tested	650,000 V
Result	No electrical conductivity

WHAT THIS REMOVES FROM THE JOB

No fence bonding to the ground grid. No continuity testing at handover. No periodic ground-resistance checks on the fence itself. No touch-potential mitigation at the fence line.

WHY IT MATTERS AT A SUBSTATION

Fault current has nowhere to go

A grounded steel fence is part of the electrical system whether the design says so or not. FRP is not, so a fault at the yard does not become a hazard at the fence line.

Nothing to bond, nothing to inspect

Bonding jumpers, grounding conductors and the continuity checks that go with them all come off the scope — and off the recurring inspection list.

The submittal can prove it

Batch results are paperwork, so the specification can demand them. Section 2.02 asks for the flash-over result on the batch supplied — evidence for the project, not a claim in a brochure.

FERC AND NERC CONTEXT

Utilities hardening sites under FERC and NERC physical-security obligations are generally adding fence, not replacing a grounding design. A non-conductive perimeter raises the physical standard without opening the station's grounding study — the fence upgrade stays a fence upgrade.

Flash-over voltage figures are manufacturer batch-test results and are available for the batch supplied. IEEE grounding compliance refers to the material's non-conductive property; the project's electrical engineer remains responsible for the station grounding design.

TWO MINUTES AND TWELVE SECONDS OF GAS SAW.

Forced-entry resistance is a time, not an adjective. ASTM F2781-15 puts a test team on the barrier with a defined tool kit and records how long it holds. Forced entry counts when a **four-square-foot opening** exists — nominally two feet by two feet.

The panel was tested at Southwest Research Institute at the **aggressive threat level** — the highest in the standard — with a **14-inch gasoline-powered cut-off saw**. It held **2.2 minutes**, and the opening cut measured 25 by 27 inches. The rating is **A2.2**.

We publish that number rather than the word “anti-cut,” because a specifier can order the report. Most fence products in this class carry no F2781 result at all.

THE TEST RECORD

Standard	ASTM F2781-15
Laboratory	Southwest Research Institute
Report	18.18293.08.101.FR1
Test date	11 May 2020
Threat level	Aggressive
Primary tool	14" gas cut-off saw
Time to opening	2.2 minutes
Rating	A2.2

WHAT THE RATING IS FOR

SwRI states the purpose plainly: the time is meant to reflect how long a barrier resists **while a response force arrives**. It is a number to build a response plan around — not a promise that the fence cannot be cut.

READ THE NUMBER HONESTLY

It is a delay, not a wall

No fence stops a determined attacker with a gas saw. The design question is how long the perimeter holds while the response gets there — and whether you have a number or an adjective.

Against the worst tool allowed

Aggressive is the highest threat level in F2781, and the cut-off saw is the most destructive tool in it. Lower threat levels were not run.

Toppers buy the rest

Delay at the fence face is one layer. Razor wire, spike strip or barbed-wire toppers add the climb-over time that panel testing does not measure — see page 8.

WHAT WE DO NOT CLAIM

BSP does not describe this fence as anti-cut or anti-torch. It is a composite panel with a measured forced-entry delay under a named standard, and the full report is available to any specifier who asks for it.

Forced-entry testing performed by Southwest Research Institute, report 18.18293.08.101.FR1, on a two-section article approximately 8 ft long and 10 ft above grade. Testing was run at the aggressive threat level only. Full report available on request.

INVISIBLE TO RADAR. INERT TO SALT.

A steel fence is a reflector and an anode. It bounces radar, shadows microwave paths and detunes antennas — and on a coast it starts corroding the day the galvanizing is scratched. The composite does neither, which is why it ends up at airports, antenna farms and marine terminals as often as it does at substations.



ENC fence running to a chain-link tie-in — the two systems can share a line.



The composite fence beside a steel storage cage on the same site, in the same weather.

FOUR THINGS IT WILL NOT DO

Block a signal

Transparent to radar, RF and microwave transmission. It does not shadow a link or distort an antenna pattern.

Corrode

No galvanizing to breach and no cut edge to bleed. Color runs through the material, so a scratch is not a failure point.

Carry a magnet

Non-magnetic, and it does not spark when struck by steel — useful near instrumentation and in classified atmospheres.

Feed a fire

Fire-retardant resin system, UV stable, and it does not add a conductive path across a burning site.

WHERE THAT DECIDES THE SPECIFICATION

Airports and radar sites

A perimeter inside the radar horizon cannot be a reflector. The composite passes the beam instead of returning it.

Antenna and telecom sites

Microwave backhaul and antenna patterns survive the fence going in. No ground plane, no detuning, no re-survey.

Coastal and chemical

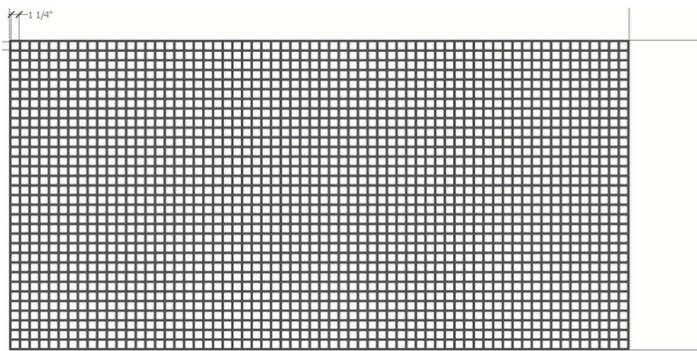
Salt air, spray and process chemistry take galvanized steel apart. The composite is specified for the environment, not against it.

LIGHT ENOUGH TO CARRY

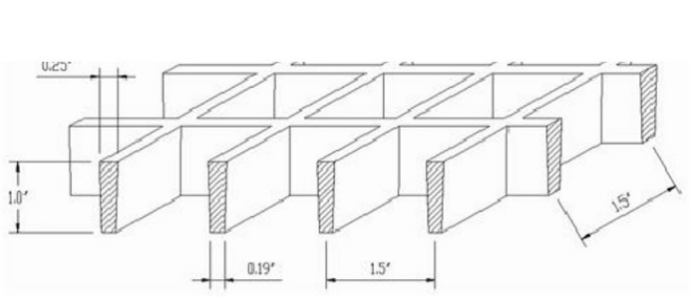
The composite is roughly two-thirds lighter than the equivalent steel section. The same crew puts up more of it in a day, and nothing on the site waits on a crane.

ONE POST SYSTEM. THE MESH IS THE CHOICE.

The standard panel is molded FRP grating: a 1½-inch square mesh, one inch thick, dark gray through the material. It is deliberately small — small enough to refuse a boot toe and a gloved hand, and open enough that the guard force can still see through the line.



Standard 4' x 8' molded panel — 1½" square mesh with a 1¼" edge margin.



Bar section — 1" deep, tapering 0.25" to 0.19", on a 1.5" pitch.

STANDARD PANEL	
Type	Molded FRP grating
Mesh	1½" x 1½" square
Thickness	1"
Bar	0.25" top, 0.19" base, 1" deep
Pitch	1.5" on center
Edge margin	1¼"
Color	Dark gray, through-material

PANEL SIZES	
Standard	4' x 8'
Standard	4' x 12'
Long run	3' x 20'
Long run	4' x 20'
Other mesh	Diamond and alternate apertures
Solid options	Planking and louver for screening
Custom	Sizes and thicknesses to the project

Mesh where you need to see

The open mesh keeps the yard under observation from outside and keeps the approach under observation from inside. Screening is a choice, not a side effect.

Solid where you don't

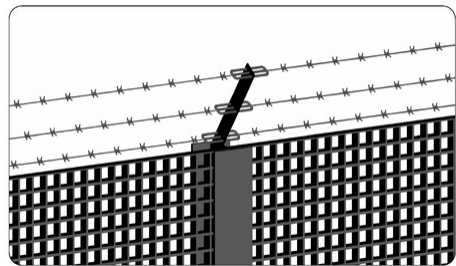
Planking and louver panels take visual observation down to low or none, on the same posts and the same foundation, for the stretches that need it.

Isolation panels

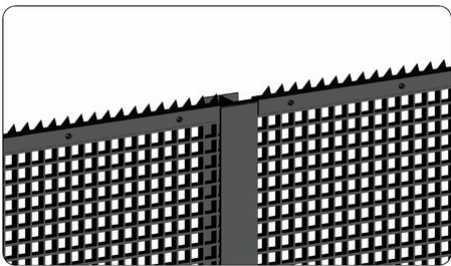
Short non-conductive sections can be dropped into an existing metal fence line to break continuity where it has to be broken.

THREE TOPPERS. REPLACE ONE PIECE.

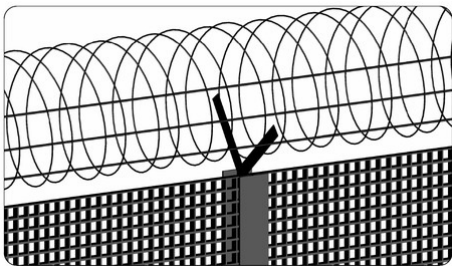
Panel testing measures how long the fence face holds. Toppers measure the rest — the time it takes to get over the top. All three styles mount to the support members on **break-away nuts and anti-pry bolts**, so the fixing cannot be backed off from a ladder.



Barbed wire — three-strand on an outward-angled arm.



Spike strip — continuous serrated profile along the top rail.



Razor wire — concertina carried on an angled arm.

WHY THE FIXING MATTERS AS MUCH AS THE WIRE

Break-away nuts

The nut shears at torque and cannot be turned back off. Undoing the topper from the attack side stops being a spanner job.

Anti-pry bolts

No purchase for a bar and no driver engagement on the exposed face. The fixing has to be destroyed rather than removed.

Piece-by-piece repair

A damaged topper is replaced on its own. There is no need to take out the section it sits on, which is what usually turns vandalism into a shutdown.



MOUNTING & CONFIGURATION

Styles	Barbed wire · spike strip · razor wire
Fixing	Break-away nuts and anti-pry bolts
Mounts to	Support members, not the mesh
Orientation	Angled outward, inward, or vertical
Repair	Individual pieces, section left in place
Combination	Styles may be mixed along a single run

THE PROFILE IS PART OF THE DETERRENT

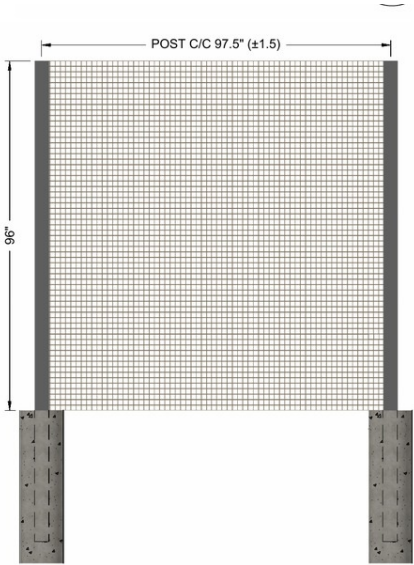
An outward-angled arm changes what the fence looks like from the approach before it changes what happens to anyone who tries it. Most of the value is collected at that distance.

ENGINEERED TO THE SITE, NOT TO A CATALOG.

The standard run is a 96-inch fence on posts at 97.5-inch centers, set in a 12-inch drilled pier 36 inches below grade. That is where a project starts, not where it ends.

Height, post section, panel type and spacing are engineered together against the site's wind load to ASCE 7 and the exposure category the site actually sits in. BSP runs those calculations per project — a single published wind number cannot be true across every height and mesh in the range.

Runs ship pre-assembled as far as the configuration allows, so most of the build happens in the shop rather than inside the fence line. On an energized site, hours not spent working next to live equipment are worth more than the labor they save.



Standard elevation — 96" above grade on 97.5" centers, 36" embedment in a 12" drilled pier.

STANDARD GEOMETRY	
Fence height	96" above grade
Post spacing	97.5" on center (±1.5")
Post section	4" FRP, color through
Embedment	36" below grade
Pier	12" diameter × 42" deep
Taller runs	Engineered per project
Wind	To site load per ASCE 7

GATES & FINISH	
Personnel	Single leaf, non-conductive
Vehicle	Single and double swing
Frames	FRP, braced to the opening
Hardware	316 stainless throughout
Color	Standard RAL range, through-material
Isolation panels	Non-conductive sections in a metal line
Delivery	Pre-assembled to the extent the run allows



Double swing vehicle gate on a switchyard entry, braced and non-conductive through the leaf.

WHAT GETS ENGINEERED PER PROJECT

Post section and spacing · pier diameter and depth · panel type and thickness · topper selection · gate leaf size and bracing · wind and exposure category.

ONE NUMBER CANNOT COVER THE RANGE

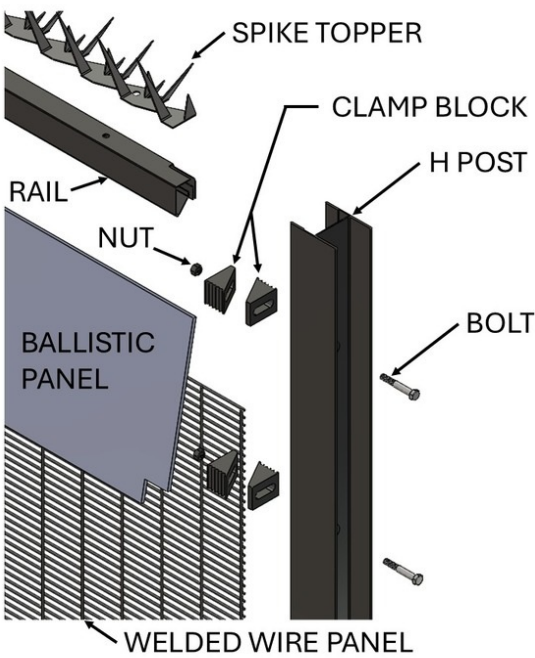
Wind load on a fence is a function of height, mesh open area and post spacing — change any one and the answer moves. BSP engineering sizes the system to the site's design wind speed and exposure rather than printing a figure that only holds for one configuration.

WHEN THE THREAT IS A ROUND, NOT A HAND.

Some sites are not defending against a climb. Where the assessed threat includes gunfire — substation control houses, transformer banks, guard positions — BSP builds the same perimeter with a bullet-resistant panel behind the mesh.

That is the **AVBD 1300 Ballistic Rated Fence**: a welded wire panel and an ArmorCore® ballistic panel carried together on an H post, clamped and railed, with a spike topper. It is a separate product line with its own submittal package.

BALLISTIC PANEL — ARMORCORE®	
Standard	UL 752, Levels 1 through 8
Also tested to	NIJ 0108.01
Construction	Woven roving ballistic fiberglass, thermoset resin
Mechanism	Controlled internal delamination captures the round
Level 5 threat	7.62mm rifle FMJ, 150 gr, min. 2,750 fps
Level 5 thickness	1-7/16" nominal, 15 lb/ft²
Fire	One-hour rating per ASTM E119
Forced entry	Class IV per ASTM F1233
Warranty	Ten years, materials and workmanship

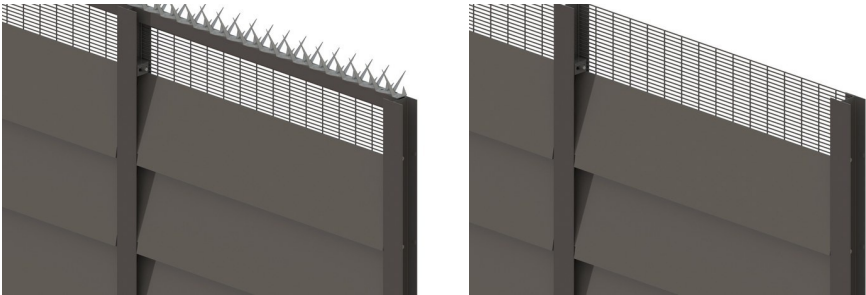


ASSEMBLY

H post · welded wire panel · ballistic panel · rail · clamp block · anti-pry bolt and nut · spike topper.

SPECIFY THE LEVEL, NOT THE PRODUCT

UL 752 levels run from a handgun threat at Level 1 to a rifle threat at Level 8. The level is a threat-assessment decision; BSP builds the fence to the level the assessment returns.



AVBD 1300 Ballistic Rated Fence — renderings. Full data sheet and UL 752 level selection available on request.

ArmorCore® is a registered trademark of Waco Composites, LLC. Ballistic performance figures are the panel manufacturer's published test data. AVBD 1300 is a separate BSP product line — request the ballistic data sheet for full level-by-level specifications.

SPECIFICATIONS & STANDARDS.

SYSTEM	
Product	ENC Security Fence, AVBD 1200
Material	Fiberglass reinforced polymer
Conductivity	Electrically non-conductive
Flash-over test	Every batch, 138,000 V minimum
Maximum tested	650,000 V
Forced entry	ASTM F2781-15, rating A2.2
Test report	SwRI 18.18293.08.101.FR1
Fence height	96" above grade, standard
Post spacing	97.5" on center (±1.5")
Post section	4" FRP
Embedment	36" below grade
Pier	12" diameter × 42" deep
Panel	Molded FRP grating, 1½" sq. mesh, 1" thick
Panel sizes	4'×8', 4'×12', 3'×20', 4'×20'
Hardware	316 stainless, secure side
Toppers	Barbed wire, spike strip, razor wire
Topper fixing	Break-away nuts, anti-pry bolts
Gates	Personnel, single and double swing
Finish	Standard RAL range, through-material
Fire	Fire-retardant resin system
Magnetics	Non-magnetic; non-sparking
Wind	Engineered to site load per ASCE 7
Origin	Manufactured in the United States

REFERENCE STANDARDS

ASTM F2781	Forced-entry testing of perimeter barriers
ASCE 7	Minimum design loads — wind
IEEE	Grounding practice — non-conductive material
Buy American	Compliant

SECTION 32 31 00
FENCES AND GATES — NON-CONDUCTIVE

PART 2 — PRODUCTS

2.01 MANUFACTURER

The non-conductive security fence shall be the ENC Security Fence, AVBD 1200, manufactured by Black Security Products, LLC, Houston, Texas. Fence height [] in.

2.02 MATERIAL

- A. Posts and panels shall be fiberglass reinforced polymer, electrically non-conductive, non-magnetic and fire retardant, with color integral to the material.
- B. Each production batch shall be flash-over voltage tested by a certified laboratory to a minimum of 138,000 volts. Batch results shall be submitted.
- C. Metallic fasteners shall be 316 stainless steel and shall be located on the secure side of the fence line.

2.03 PERFORMANCE

- A. The panel shall be forced-entry tested to ASTM F2781 at the aggressive threat level by an independent laboratory, and the test report shall be submitted.
- B. The system shall be engineered to the site design wind speed and exposure category per ASCE 7. Calculations shall be sealed by a licensed engineer.
- C. No welding shall be required in fabrication or installation.

2.04 TOPPERS

- A. Toppers shall attach to support members using break-away nuts and anti-pry bolts, and shall permit replacement of individual pieces without removal of the fence section.

PROCUREMENT

CAGE	7MT82
DUNS	83-888-8670
NAICS	339999
CSI section	32 31 00
Product code	AVBD 1200
Ballistic option	AVBD 1300
Origin	Made in the USA

ENGINEERING SUPPORT

Submittal drawings, CAD, batch flash-over results, the SwRI forced-entry report and sealed wind calculations on request. BSP engineering reviews height, exposure and mesh before the post schedule is issued.



BLACK SECURITY PRODUCTS



CONDUCTS NOTHING. CORRODES NEVER.

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

PERIMETER SECURITY PRODUCT FAMILY

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

ACTIVE VEHICLE BARRIERS

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
Bi-Folding Speed Gate — AVBD 210
Anti-Ram Crash Gates — AVBD 230/250

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

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PROCUREMENT

CAGE 7MT82
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NAICS 339999
Made in the USA

REQUEST A FREE SITE ASSESSMENT

Talk to a BSP perimeter specialist about your project.

blacksp.com/contact