

Bullet Resistant Barrier Systems Overview

ARMI can design, fabricate, and install a complete barrier system to fit your individual needs. Common applications include all types of financial institutions, payment centers, government offices, convenience stores, gas stations, pharmacies, cash handling facilities, court houses, and police stations.

Transparent barrier systems provide a major deterrence to would-be robbers as well as peace of mind that you have provided the safest environment for your employees and customers.

Whether the facility is under construction or needs to be retro-fit, your specific requirements can be met.

Several types of systems are available and a description of each is on the following pages.

- 1) Arched Window System
- 2) Art Deco System
- 3) Baffle System
- 4) Hole & Backer System
- 5) Horizontal Sliding System
- 6) Steel and Glass System
- 7) Winged Backer (Straight Line) System

Regardless of your special needs, a system can be fabricated that will accommodate any requirements you might have. ARMI's goal is your complete satisfaction.

Bullet Resistant Barrier Styles



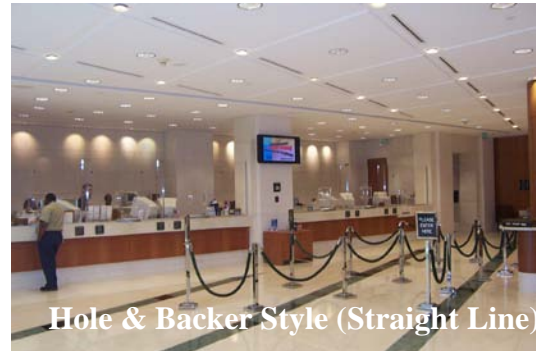
Arched Window System



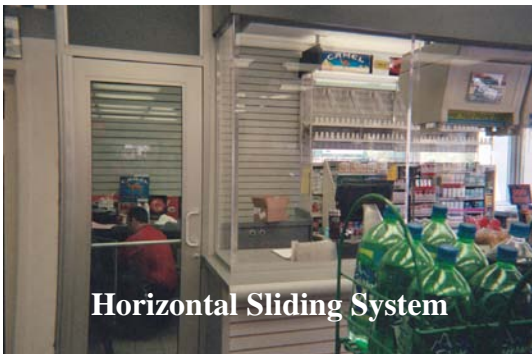
Art Deco - Patented Design



Baffle System



Hole & Backer Style (Straight Line)



Horizontal Sliding System



Steel & Glass System



Winged Backer Style

Arched Window System



Design:

Primarily a 'straight line' system in which larger panels butt up to each other in sealing off the protected area, with structural support provided by 'buttress' sections placed on a 'T' at the joints. Voice transmission is provided through overlapping panels, but the buttresses are too far away to redirect sound waves and the overlap area is reduced because the gap must be less to prevent reaching around. The 'window' section between the teller and customer has a semicircular arch at the top, giving the system its name.

Advantages:

With the arched backers, curved cutouts, and large main panels in a straight line, this system has a clean modern look and is largely free of fasteners, panel edges, and joints.

Disadvantages:

Not quite as sturdy as the baffle system, but can still be used as a free standing system. Not nearly as forgiving when installing as a retrofit and may result in some unavoidably large or uneven gaps at joints. ALSO: The reduced overlap area and lack of a sound bouncing surface results in only fair voice transmission characteristics. Risk factors that could result in an unhappy customer include stone or tile floor and wall surfaces on the customer side that result in higher background noise levels, an elderly clientele that cannot hear as well, a larger expected amount of product sales from the tellers that require more talking (preferably in a natural tone of voice), and so forth.

Art Deco System

Patented Design



Design:

Composed of both overlapping panels and panels meeting at angled joints. Both structural strength and voice bounce are provided by the angled sections to either side of the 'window' sections directly between the teller and customer.

Advantages:

Excellent voice transmission characteristics, very close to as good as if no barrier were present. Structurally very strong. Can be installed as a free standing system. A new and different look not seen elsewhere. Allows cameras to get excellent pictures of the customers at the preferred angle, shooting directly through the angled sections to either side of the teller to minimize glare and distortion and still getting a profile view of the customer.

Disadvantages:

Lots of different panels also means a lot of fasteners, joints, and edges that can be perceived as a cluttered look. Not as forgiving when installing as a retrofit, may result in some unavoidably larger than desired or uneven gaps at the joints.

Baffle System



Design:

Composed of both overlapping and opposing panels. Both structural strength and voice bounce provided by the "baffle" pieces placed on a "T" shape to either side of the "window" sections directly between the teller and customer.

Advantages:

Excellent voice transmission characteristics. Close to as good as if no barrier were present. Structurally strong. Can be installed as a free standing system. Very forgiving when installed on existing millwork that may not be perfectly regular, plumb, and level.

Disadvantages:

As the first true functional design, it is in very wide use. It may not be perceived as a new, different, architecturally appealing design. Lots of different panels also means lots of fasteners and edges that call attention to the barrier as a barrier

Hole & Backer System



Design:

A straight line system, with structural support provided by the 'buttress' section placed on a 'T' at the joints between the large main panels that butt up to each other. Voice transmission is provided by the narrow overlap that is at the perimeter of the hole covered by the backer, which is typically circular or rectangular

Advantages:

A very clean look with very few visible fasteners, panel edges, and joints. Uses less material than other designs and therefore is typically slightly less expensive. Slightly better voice transmission than the Winged Backer System since the overlap spans more linear inches and will be centered at about head height instead of at the slightly lower riser height.

Disadvantages:

Not quite as sturdy as the Baffle System. Can be used free standing, but is best installed with some kind of reinforcing top attachment. Not as forgiving when installed as a retrofit, may result in larger or uneven gaps at the joints. POOR sound transmission characteristics, albeit slightly better than the Winged Backer System. The hole and backer edges, along with the fasteners at that location, make it distracting to look through since it interrupts the view between teller and customer.

Horizontal Sliding System



Design:

Composed of only overlapping panels, with support provided to the outside of the customer transaction area and sliding panels in the transaction area that can be easily rolled out of the way during low risk hours of operation.

Advantages:

More customer friendly when in the open position. A fairly clean streamlined look with minimal fasteners, supports, and edges in the transaction area.

Disadvantages:

Moving parts and the structural support required to hold the weight will increase cost slightly. In most cases, the ability to slide horizontally requires a non-ballistic seam at the countertop. Without surfaces to bounce sound off and narrower overlap gaps, sound transmission is Average.

Steel & Glass System



Design:

This design uses channels in mullion panels or posts to either side of glass window panels to accomplish voice transmission. Structural strength is provided by ceiling attachment and sturdy counter leg attachments. Typically, this design is only seen in new construction applications where architectural flexibility and appeal are secondary to bullet resistance, cost, and durability.

Advantages:

Allows the use of glass while maintaining fair voice transmission characteristics. The glass is easier to maintain in near new condition and more resistant to abuse by the customers. Steel has higher bullet resistance value relative to its cost than other materials, and a painted finish is significantly less expensive than plastic laminates, natural woods, and other such finishes.

Disadvantages:

There is not a great deal of design flexibility when using glass and steel. The design does not adapt well to many retrofit situations. The finishes are less attractive and the architectural detail allowed is limited.

Winged Backer System



Design:

Also commonly known as the 'butt' system, 'horned backer' system or 'straight line' system, although other designs are technically straight line systems as well. Structural support is provided by the 'buttress' sections placed on a 'T' at the joints between the large main panels that butt up to each other. Voice transmission is provided by a single narrow overlap between the bottom of the main panels where they span the opening between the risers (wickets, hoods) to either side of the teller. A small 'horned backer' is offset to the teller side of the main panel, over the center of the cash tray below.

Advantages:

A very clean look with very few visible fasteners, panel edges, and joints. Uses less material than other designs and therefore is typically slightly less expensive. The favorite barrier for Mimes and Lip Readers.

Disadvantages:

Not quite as sturdy as the baffle system. Can be used free standing, but is best installed with some kind of reinforcing top attachment. Not as forgiving when installing as a retrofit, may result in larger or uneven gaps at the joints. POOR sound transmission characteristics, frequently will require modifications to assist voice transmission after installation despite warnings to the customer about the lack of voice transmission.

Glazing Selection Chart

Acrylic	UL1	UL2	UL3	AF	AR	SR	Light%	Weight
1 1/4" Acrylic	x			x			90%	8 lbs
3/4" PCA	x			x	x		90%	5 lbs
1 1/4" AR Acrylic	x			x	x		90%	8 lbs
1 3/8" AR Acrylic		x		x	x		90%	8.5 lbs
1 1/4" PCA			x	x	x		82%	8 lbs
1 1/4" Polycarbonate			x	x	x		77%	8 lbs
Glass								
3/4" GCP	x					x	84%	8 lbs
1 1/16" GCP		x				x	76%	11 lbs
1 1/4" GCP			x			x	75%	14 lbs
1 1/16" Glass	x					x	73%	15 lbs
1 5/8" Glass			x			x	68%	20 lbs

Chart Definitions:

- AF: Architectural Flexibility
(Can be cut, drilled, notched, or trimmed in field with ease.)
- AR: Abrasion Resistant Coated
- SR: Scratch Resistant (glass exterior faces)
- GCP: Glass Clad Polycarbonate
- PCA: Polycarbonate Clad Acrylic
- Light %: Percentage of light that gets through
- UL1, 2, 3: Level of tested Bullet Resistance
- Weight: Weight per sq. ft.

