

Cascade Coil Defense Systems

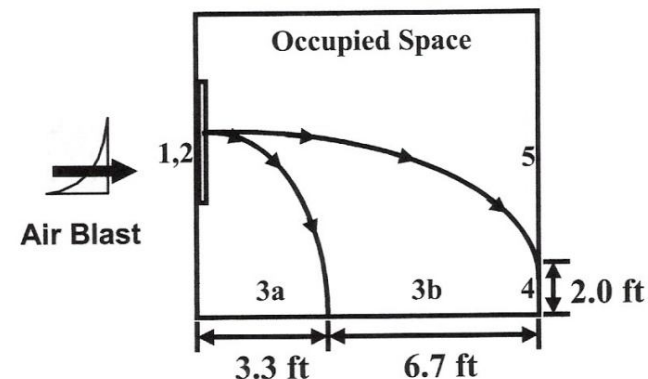
GuardianCoil® Explosive Glass Hazard test by **ARA***

Test Conducted: December 3, 2009

Blast Test Summary: Tests were conducted by **Applied Research Associates, Inc.** located in Vicksburg, MS on Cascade Coil Guardian Coil Systems (ARA Project No. #000482) on 12/3/2009.

- Weather condition: wet, overcast, snow and cold (24f).
- Explosive charge: 600 lbs. Ammonium Nitrate and Fuel Oil
- Standoff from cells: 164 ft.
- Peak pressure on glass: 4.54 PSI.
- Avg. exterior impulse: 30.84
- Test site altitude: 6,200 ft. ASL

ASTM Hazard Ratings and GSA Performance Conditions for 1/4 in. annealed Glass Windows		
ASTM Hazard Rating	GSA Performance Conditions	GSA Description
Very Low Hazard	3B	Glazing cracks. Fragments enter space and load on floor no further than 10-feet from window.



Product Specs										Debris Impact Conditions ⁷				
Test Cell	Mesh/Weave	Mtl Type	Prot Level ²	Msh Wt	Sq Ft	O ³ /Hang	S ⁴ /Hang	PSI ⁵	PSI-MS ⁶	3a	3b	4	5	Comments
										Glass Residue		# of Strikes		
3	3/16 - 19g	304 SS ¹	4 Med.	54	65	18.5"	3"	4.54	30.84	Majority		8	0	No holes or indentations in drape
4	1/4 - 16g	AS ¹	3b	100	58	8.5"	3"	4.54	30.84	Maj of debris w/in 3a & 4 into 3b		0	0	No holes or indentations in drape
5-2	1/4 - 18g	S ¹	3b	67	65	18.5"	3"	4.54	30.84	Maj of debris w/in 3a & 4 into 3b		0	0	No holes or indentations in drape
5-4	1/4 - 18g	304 SS ¹	3b	187	181	18.5"	3"	4.54	30.84	Maj of debris w/in 3a & 4 into 3b		0	0	No holes or indentations in drape

¹SS= Stainless Steel; AS= Aluminized Steel; S=Steel

²Prot Level: Protection Level as determined by GSA Model

³O/Hang: the Distance from the widow to the floor

⁴S/Hank: the Distance the curtain Extends beyond the side of the window

⁵PSI: Pounds per Square Inch

⁶PSI-MS: Average Exterior Impulse – Pounds per square inch is the unit for measuring pressure (force per unit area)

⁷Impact Conditions: The Amount of glass residue on the floor and # of Strikes in the Witness Panel