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- ▶ COMMUNITY PLANNING
- ▶ HOUSING & COMMUNITY DEVELOPMENT
- ▶ EMERGENCY MANAGEMENT
- ▶ OFFICE OF THE SECRETARY

FL # Application Type Code Version Application Status Comments Archived	FL8363-R2 Revision 2007 Approved <input type="checkbox"/>												
Product Manufacturer Address/Phone/Email	Armor Screen Corp. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 dougt@armorscreen.com												
Authorized Signature	Douglas Turner dougt@armorscreen.com												
Technical Representative Address/Phone/Email	Dan Reames 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 danr@armorscreen.com												
Quality Assurance Representative Address/Phone/Email	Dan Reames 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 danr@armorscreen.com												
Category Subcategory	Shutters Products Introduced as a Result of New Technology												
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer <input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received												
Florida Engineer or Architect Name who developed the Evaluation Report Florida License Quality Assurance Entity Quality Assurance Contract Expiration Date Validated By	Gary D. Foreman P.E., S.E., A.I.A. PE-57343 National Accreditation and Management Institute 12/31/2011 Warren J. Von Werne, P.E. <input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received												
Certificate of Independence	FL8363_R2_COI_8363 R1 Cert of Independence 11-15-07.pdf												
Referenced Standard and Year (of Standard)	<table border="0"> <thead> <tr> <th style="text-align: left;">Standard</th> <th style="text-align: left;">Year</th> </tr> </thead> <tbody> <tr> <td>ASTM E 1886</td> <td>2005</td> </tr> <tr> <td>ASTM E 1996, Level E</td> <td>2005</td> </tr> <tr> <td>ASTM E 330</td> <td>2002</td> </tr> <tr> <td>TAS 201</td> <td>1994</td> </tr> <tr> <td>TAS 202</td> <td>1994</td> </tr> </tbody> </table>	Standard	Year	ASTM E 1886	2005	ASTM E 1996, Level E	2005	ASTM E 330	2002	TAS 201	1994	TAS 202	1994
Standard	Year												
ASTM E 1886	2005												
ASTM E 1996, Level E	2005												
ASTM E 330	2002												
TAS 201	1994												
TAS 202	1994												

ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION

GENERAL NOTES:

- An offset between the glazing and the screen is recommended but not required outside HVHZ (Miami-Dade and Broward Counties).
- The design loads are calculated in accordance with ASCE-7 per the Florida Building Code and ASCE/SEI 7-05.
- Testing meets 2007 Florida Building Code; TAS 201; TAS 202; TAS 203; ASTM E 330-02; ASTM E 1996-05 Level E; and ASTM E 1886-05 per Sections 1620 and 1626 and fulfills its requirement for opening protection.
Testing performed by Fenestration Testing Laboratory, Inc. Medley, FL:
Test Reports: Date: 01/28/07 File #07-482 Lab #5174 Report #01
Date: 01/28/07 File #07-482 Lab #5180 Report #02
Date: 08/25/07 File #07-482 Lab #5279 Report #03
Date: 12/07/07 File #07-482 Lab #5446 Report #04
Date: 02/08/08 File #08-482 Lab #5533 Report #01
- The pores in Armor Screen are small enough that the surface tension of water causes the barrier screen to become solid in the presence of rain, and prevents damaging voluminous water intrusion, even from torrential rains.
In dry conditions, the pores remain open, and based on testing, allow approximately 3% of the wind to pass through.
- The unbreached envelope criterion is met since the system is considered "non-porous" and remains intact under impact and air pressure loading. This envelope criterion is met when the system encloses the protected opening all around.
- Product Marking: A permanent label shall be fixed to the screen barrier with the following statement: "Armor Screen Corporation, West Palm Beach, FL, Testing Standards, Current FBC Number, Job Name and Screen Opening/Number, Patented and Patents Pending, US Patent No. 6176050".

PRODUCT DATA:

- Geosynthetic hurricane screen: The hurricane screen shall be produced from a polypropylene, woven geotextile fabric with filaments woven such that the filaments retain dimensional stability relative to each other.
The woven geotextile fabric shall have the following minimum average roll values:
- | | | |
|-----------------------------|--------------|------------------|
| Grab Textile Strength | (ASTM D4632) | 425 x 325 LBS |
| Puncture Strength | (ASTM D4833) | 130 LBS |
| Mullen Burst | (ASTM D3786) | 675 PSI |
| Trapezoidal Tear | (ASTM D4533) | 150 x 125 LBS |
| Wide Width Tensile Strength | (ASTM D4595) | 225 x 205 LBS/IN |
| Thickness | (ASTM D5199) | 20 MIL. |
| Wide Width Elongation | (ASTM D4595) | 22 x 21% |
| Apparent Opening Size | | 30 US STD Sieve |
| Percentage of Open Area | | 5% |

LIMITATIONS OF USE:

- | | |
|-------------------------|-------------------------------------------------------|
| Maximum Span | 192 Inches Hemcord
148 Inches Grommet |
| Maximum Non-Span | Unlimited, Utilizing side overlapping details, page 8 |
| Maximum Design Pressure | +110 / -110 PSF |
- The design pressure may be increased 5% for negative loads.
 - Span equals the distance between the primary rows of fasteners or grommets.

INSTALLATION NOTES:

- Screen may be mounted with opposing primary anchored perimeters in vertical, horizontal, or any alignment appropriate to the structure being protected.
- Deflection is the minimum glass separation measured at mid span of the screen and subject to rational analysis and may be achieved by using F-track, Storm Bars, Pneumatic Device, various Angled Style Screens and Center Hem Style Screen.
- Screen unable to return should extend past protected opening by distance equal to or greater than the minimum deflection / offset, which ever is greater.
- All specifications to be equivalent or greater in product.
- Anchor attachments may include standard Wingnut, Hex, Round, and Truss Head Machine Screws, Stainless Steel Sidewalk Bolt, Carriage Bolts or any other appropriate and equal fastener.
- All Aluminum Extrusions to be minimum 6063-T6 or as indicated.
- The thickness of typical facing materials i.e. stucco, siding, stone, brick, pavers, etc. are not to be considered part of the anchor embedment. Longer fasteners may be used to allow for facing materials.
- Anchor embedment shall be in face shell, not mortar joints.
- Drop-In and Calk-In Anchors shall be flush with substrate and shall not extend into finished facing.
- If tapcons are used with Grommet Style Screen, a washer should be utilized.
- 18" and 12" attachment spacing for short spans (less than 76") may experience large screen deflections and incomplete closure at edges between anchors.
- The screens may be installed at any height on the structure as long as the design pressure rating for the screens is not exceeded.
- All fasteners shall be corrosion resistant as specified in the IRC and IBC.
- The minimum engagement of the eyebolt into the anchor is at least $\frac{2}{3}$ of the threaded length of the fastener. For a $\frac{1}{2}$ " diameter drop-in anchor the thread length is $\frac{13}{16}$ " and the fastener length is 2". Therefore, the minimum engagement length for the eyebolt is $\frac{9}{16}$ ". The minimum engagement length for a $\frac{3}{8}$ " eyebolt is $\frac{7}{16}$ " and for a $\frac{1}{4}$ " bolt $\frac{5}{16}$ ".
- In instances where a screen is made up of two pieces of fabric or for repair purposes, a flat felt seam or triple layer hem with a minimum of two rows of double lock stitch thread is acceptable. The anchor attachment, i.e. loops or buckles & strap requires three rows of double stitching and the Grommet - Hemcord System requires two rows. The fabric comes in standard lengths such as 12' wide, therefore for screens that are larger, two pieces are seamed together as noted above.
- Span side anchors are optional.
- Flaps as depicted in the drawings are optional.

All Geosynthetic Hurricane Screen assembly details depicted within these drawings are typical for the installation of this wind / rain abatement and impact system only. All other building components shown herein are depicted as existing or samples and not constructed by the screen company.

Engineering Review By:

Gary D Foreman PE
FL PE 57343

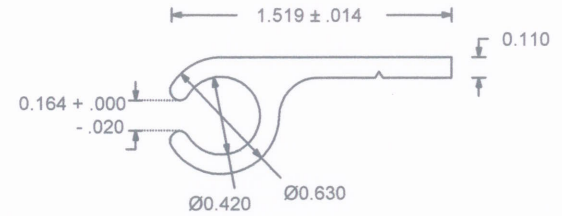
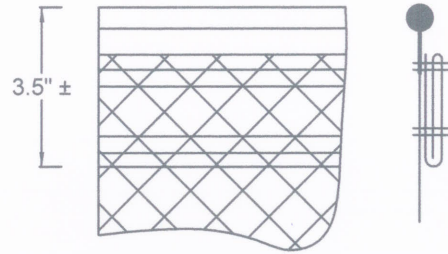
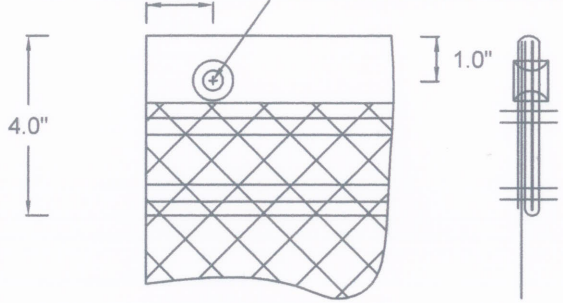
ARMOR SCREEN
GROMMET AND HEMCORD SERIES 2000
HURRICANE PROTECTION

ARMOR SCREEN, Inc.
1881 Old Okeechobee Road
West Palm Beach, FL 33409
(561) 841-8890 www.armorscreen.com

Date: 10/23/07 | Rev. Date: 10/11/10 | Rev. Date:

Scale: Not to Scale | Page: 1 of 20

1.5" - 2 Sided Screen
 1.0" - 3 Sided Screen #2 Nickel Plated Brass Grommet

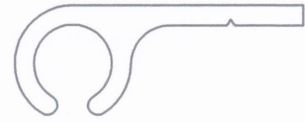


Grommet with Stitching Detail
Stitching Detail

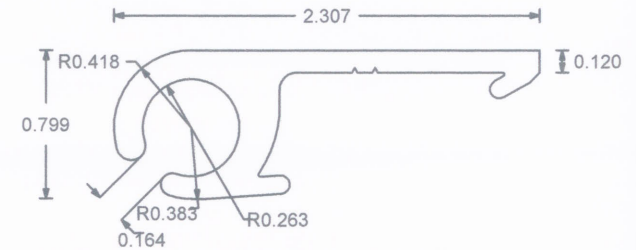
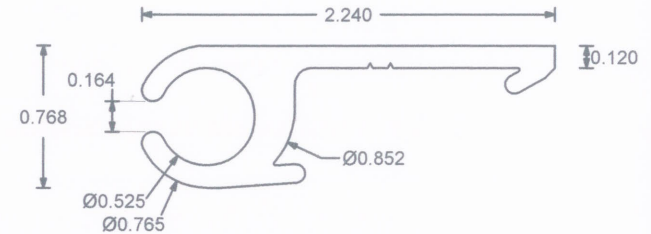
- Support Edge, Trifold Seam around 4" Polypro webbing
- Sewing includes 2 rows, Double Lock Stitch, of Anafil Nylon T135 bonded thread or equal.
- Grommetted through seam.

Welded Hemcord with Stitching Detail
Stitching Detail

- Hemcord Dia.: $\frac{5}{16}$ "
- Sewing includes 2 rows, Double Lock Stitch, of Anafil Nylon T135 Bonded Thread or equal.
- Reinforced welded hemcord includes a 2" trifold Polypro Seam sewn over the weld.



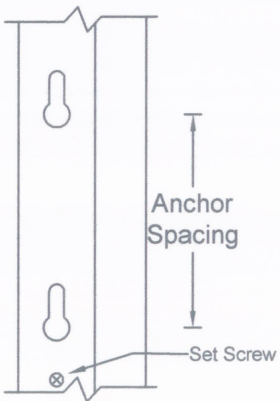
Same as above extrusion



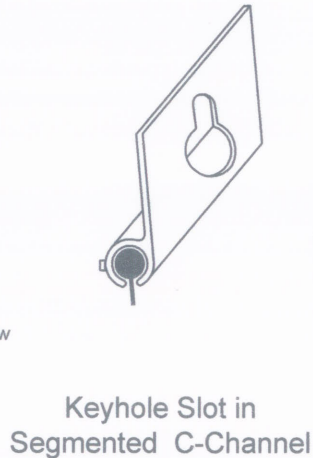
C-Channel

Alloy: 6063-T6 Aluminum

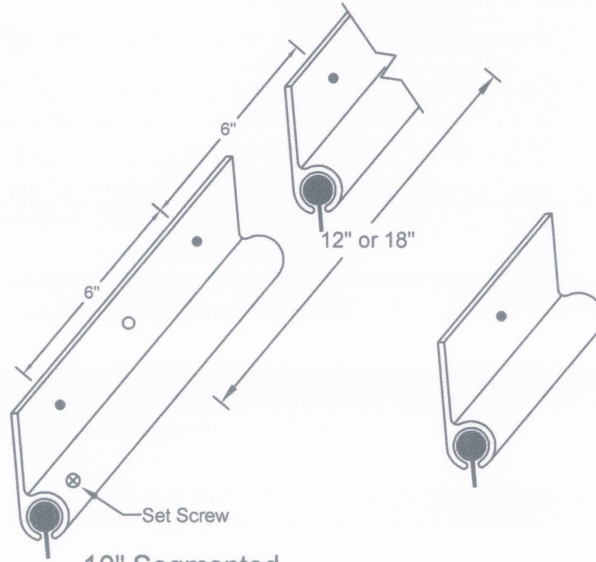
NOTE: Heavier alternate extrusion may be used.



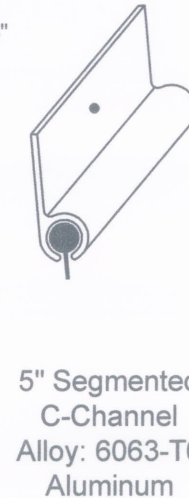
Keyhole Slot in Continuous C-Channel



Keyhole Slot in Segmented C-Channel



10" Segmented C-Channel
 Alloy: 6063-T6 Aluminum

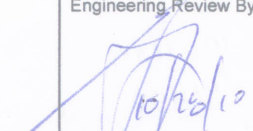


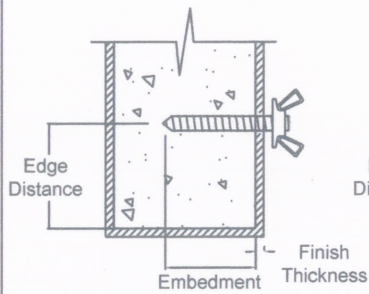
5" Segmented C-Channel
 Alloy: 6063-T6 Aluminum

NOTES:

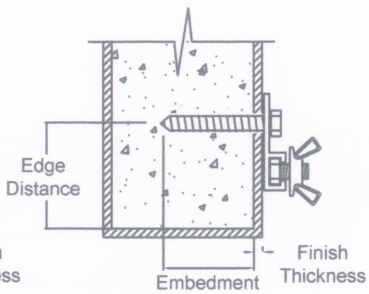
- The length of the segmented C-Channel is governed by the strength of the fabric to C-Channel connection, not the hardware attachment to the C-Channel.
- When a Keyhole Slot or washer is used on continuous C-Channel, a set screw through the channel and into the substrate is required to lock in place.
- For Anchor Spacing, see Anchor Tables on pages 15 - 20.
- A $\frac{1}{4}$ " TEK Screw may be used to secure the C-Channel end to limit screen movement.

HEMCORD / C-CHANNEL

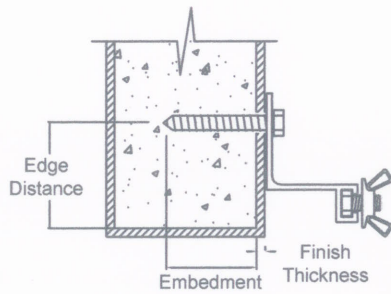
Engineering Review By:  Gary D Foreman PE FL PE 57343	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
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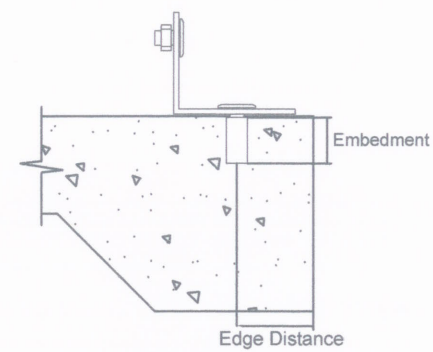
Grommet
Direct Mount
Anchoring Detail



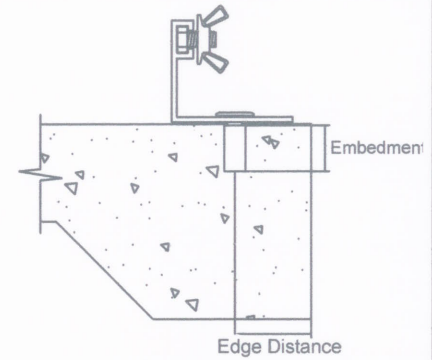
Grommet
F-Track 6063-T6
Anchoring Detail



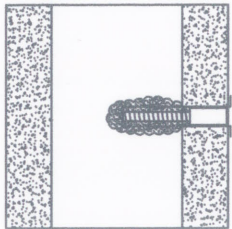
Grommet
F-Track 6063-T6
(1", 2", and 3"
Build-Out)
Anchoring Detail



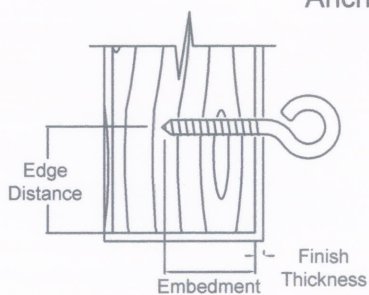
Grommet
Angle Aluminum
Minimum .125" x 6063-T6
Anchoring Detail



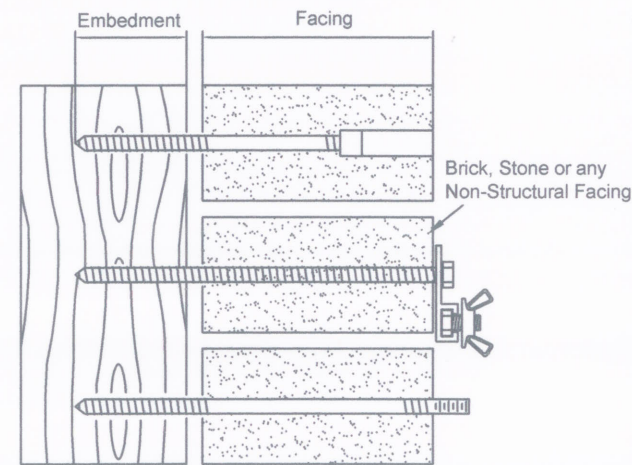
Grommet
Studded / Studless Angle F-Track
6063-T6
Anchoring Detail



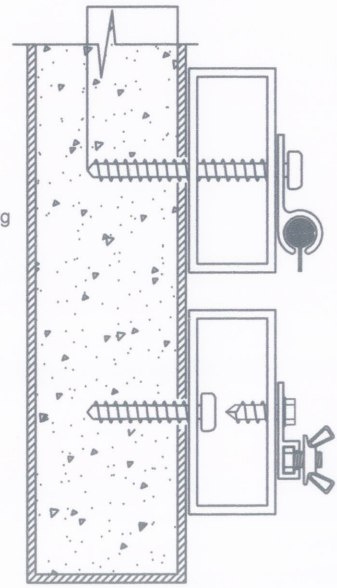
CMU and Terracotta
Block Epoxy Anchor
see Table 5, page 18
for anchoring details



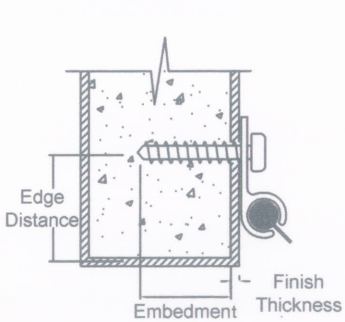
Grommet
3/8" Eye Lag
Anchoring Detail



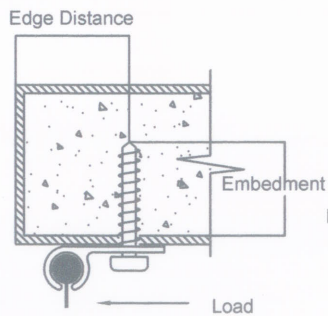
1/4" or 3/8" Hanger Bolt with Coupler,
Panelmate or Hex Lag Screw
(Non-Structural Facing)
(Caulk or Sealant suggested to seal facing)
Some damage to the facing maybe
expected.



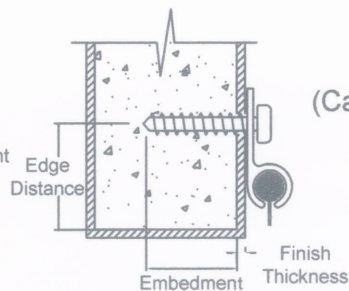
1/8" Aluminum Tube / Angle
For Build-Out
6063-T6 Alloy



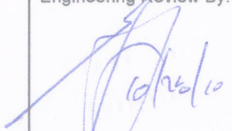
45° C-Channel

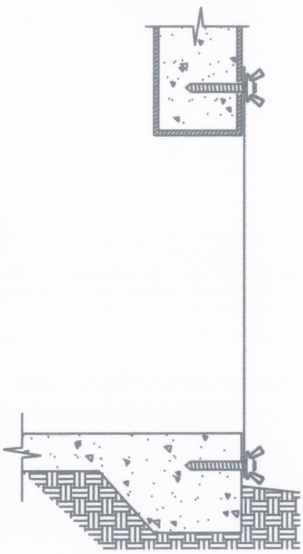


90° C-Channel

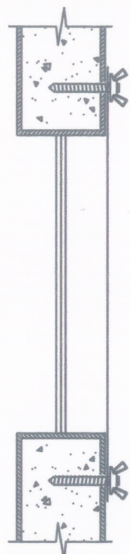


180° C-Channel

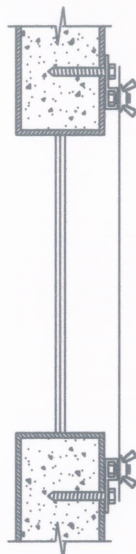
Engineering Review By: 	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
Gary D Foreman PE FL PE 57343	Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 3 of 20			



Direct Mount
Typical Vertical
Sectional View

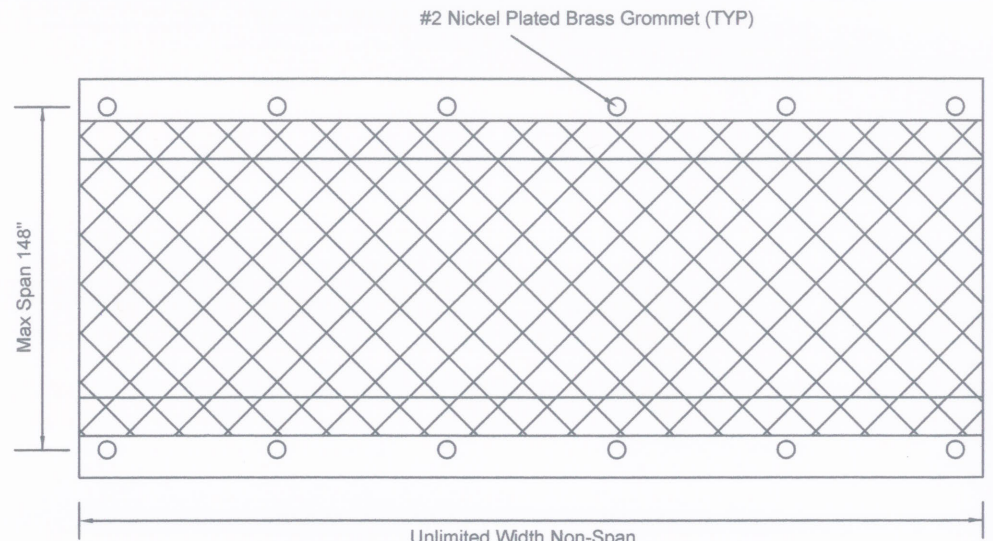


Direct Mount
Typical Vertical
Window
Sectional View

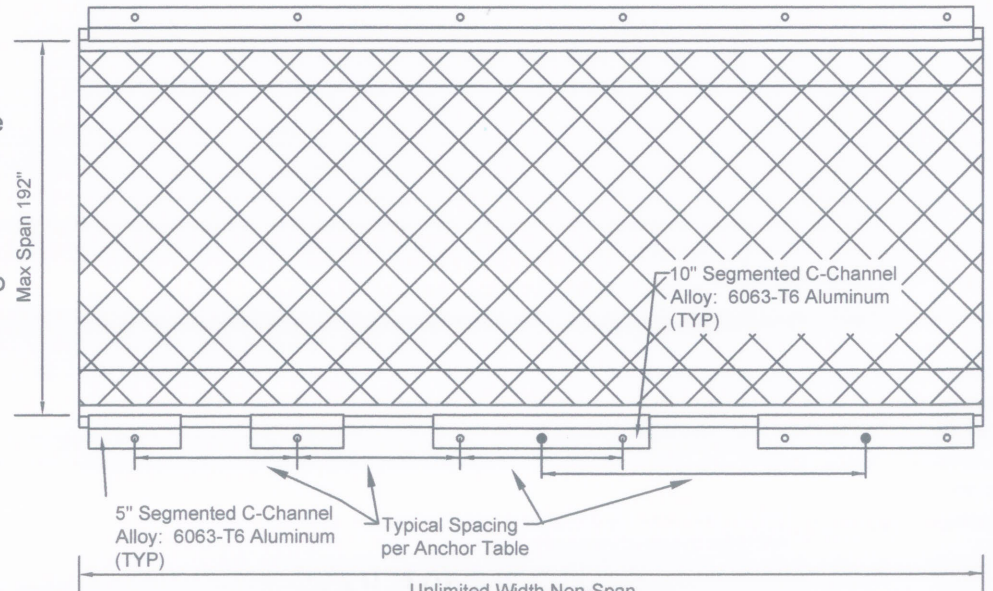


F-Track
Typical Vertical
Window
Sectional View

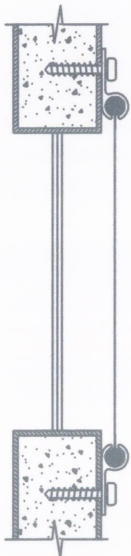
Span



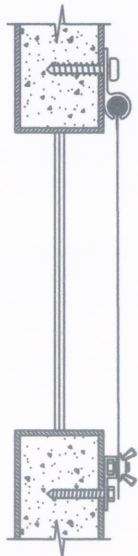
Unlimited Width Non-Span
GROMMET VERTICAL INSTALLATION
(Span Sides = Welded Seam)



Unlimited Width Non-Span
C-CHANNEL VERTICAL INSTALLATION
(Span Sides = Welded Seam)



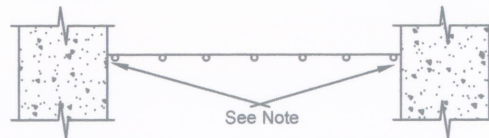
C-Channel
Typical Vertical
Window
Sectional View



C-Channel (top)
F-Track (bottom)
Typical Vertical
Window
Sectional View

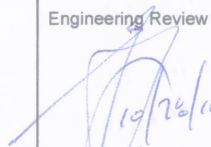
NOTES:

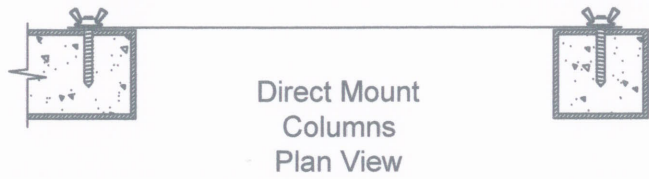
- Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.
- The length of the Segmented C-Channel is governed by the strength of the fabric to C-Channel connection, not the hardware attachment to the C-Channel.



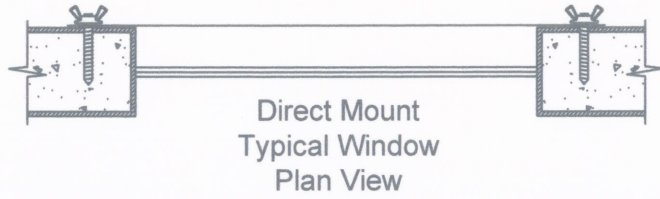
**PLAN VIEW, VERTICAL SCREEN,
TRAPPED OPENING**

NOTE: For a trapped opening, side anchors are optional for the span side of the screen. Screen should butt the walls.

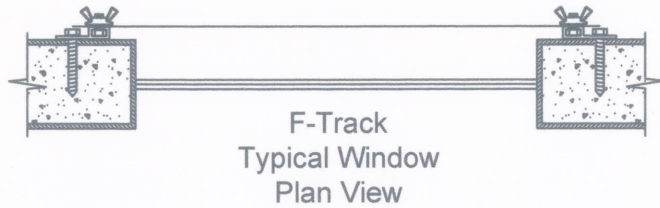
Engineering Review By:  Gary D Foreman PE FL PE 57343	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
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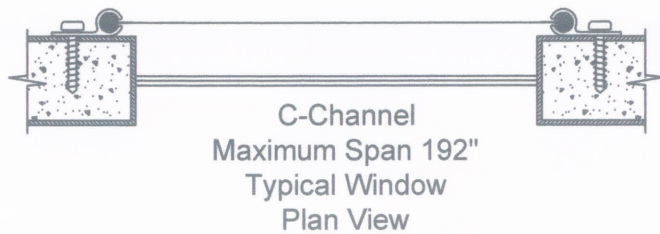
Direct Mount
Columns
Plan View



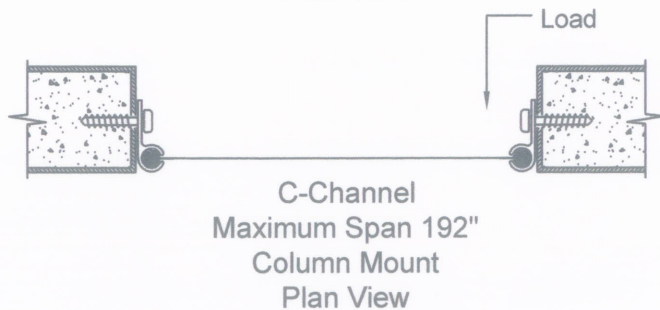
Direct Mount
Typical Window
Plan View



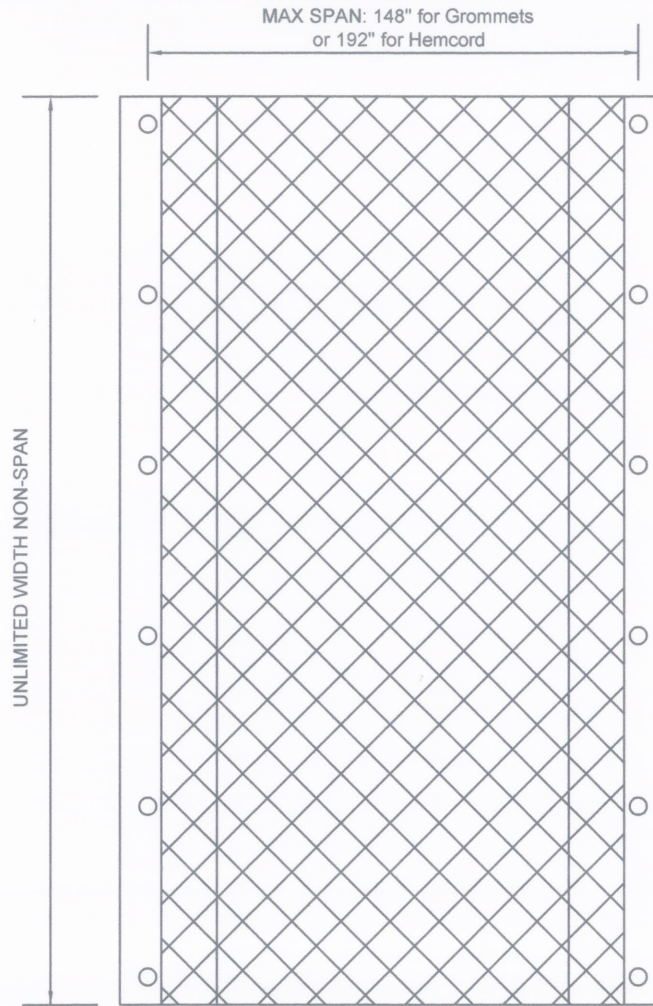
F-Track
Typical Window
Plan View



C-Channel
Maximum Span 192"
Typical Window
Plan View



C-Channel
Maximum Span 192"
Column Mount
Plan View

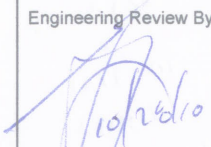


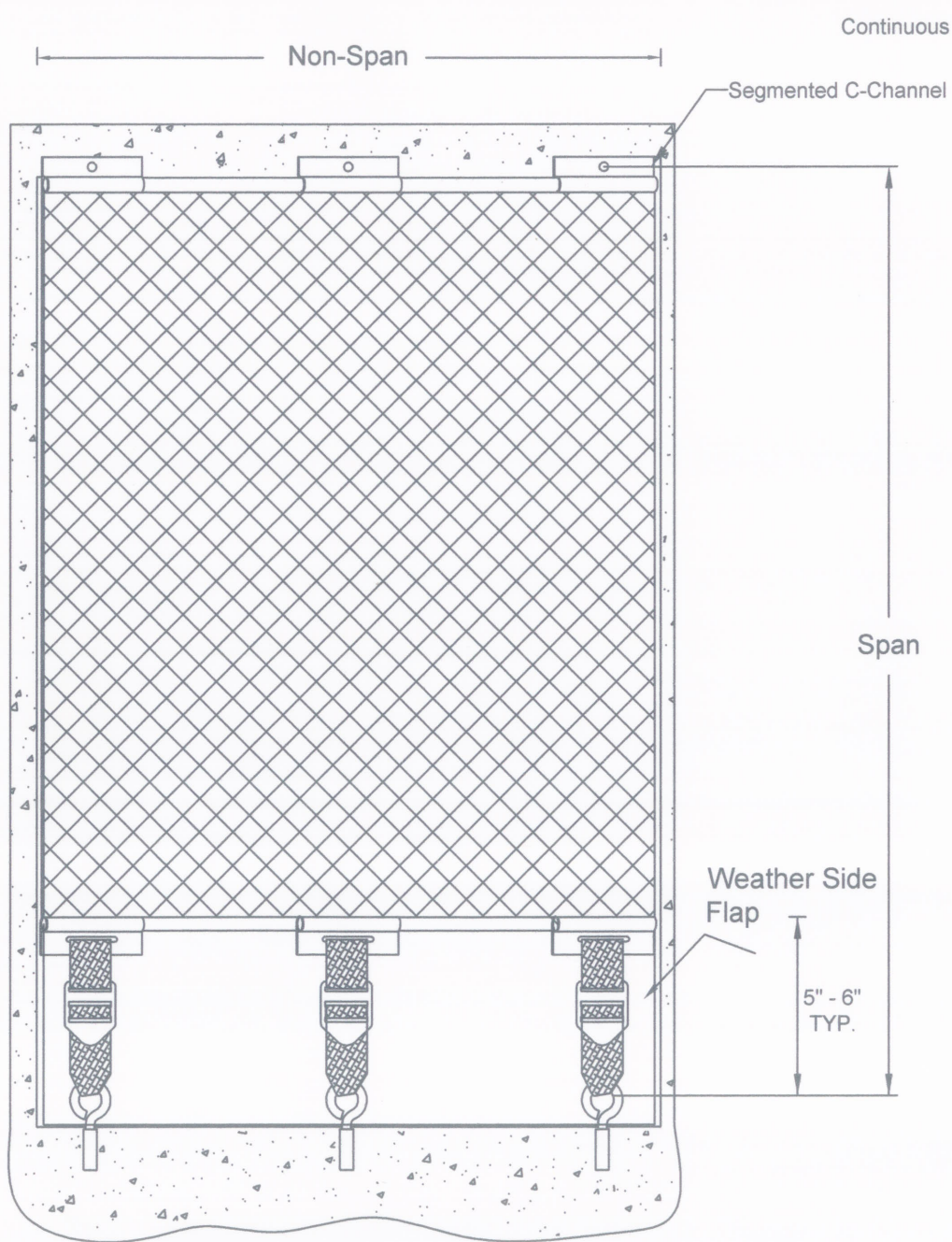
HORIZONTAL INSTALLATION

(Span Sides = Welded Seam)

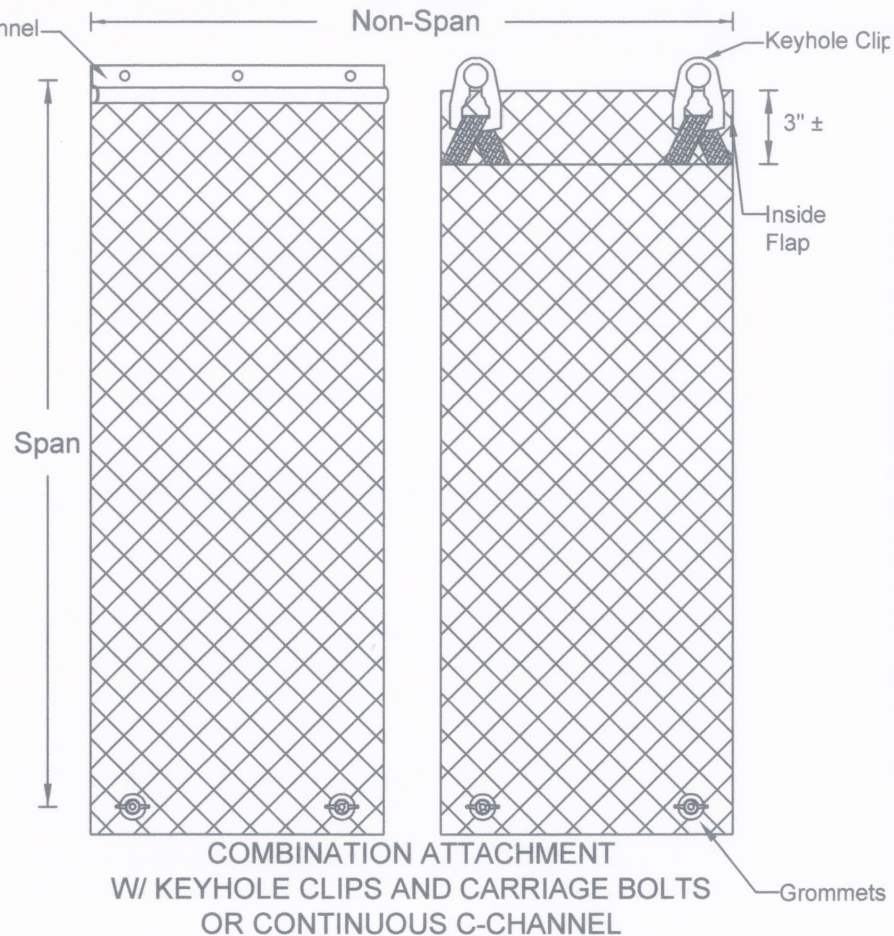
NOTE:

Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.

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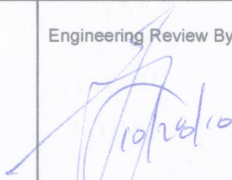


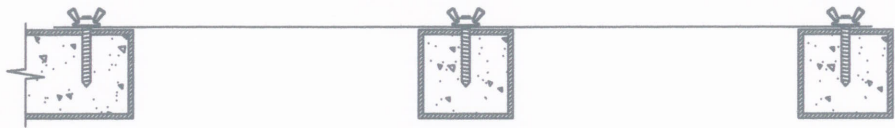
COMBINATION ATTACHMENT
W/ EYEBOLT, BUCKLE/STRAP,
AND SEGMENTED C-CHANNEL
not to scale



NOTES:

- Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.
- For Combination Grommet / Hemcord System, use the grommet span.
- Strap material equal to DirecTex 2" High Tenacity Polypro black or white.
- Buckle with raised "Armor Screen" imprint is proprietary to Armor Screen Corp.

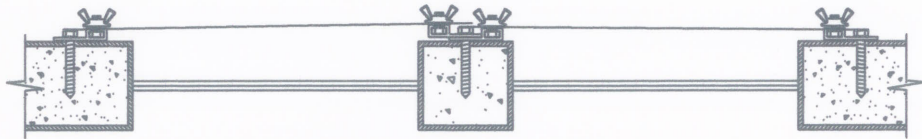
Engineering Review By:  10/24/10	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
Gary D Foreman PE FL PE 57343	Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 6 of 20			



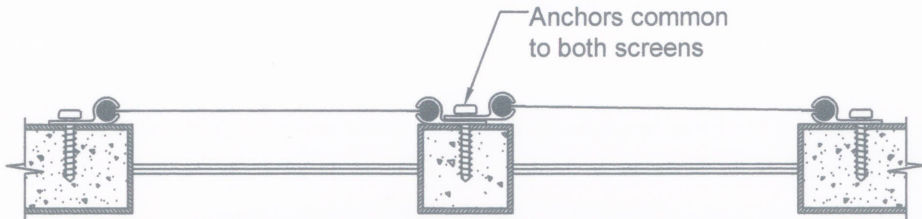
Direct Mount
Columns
Plan View



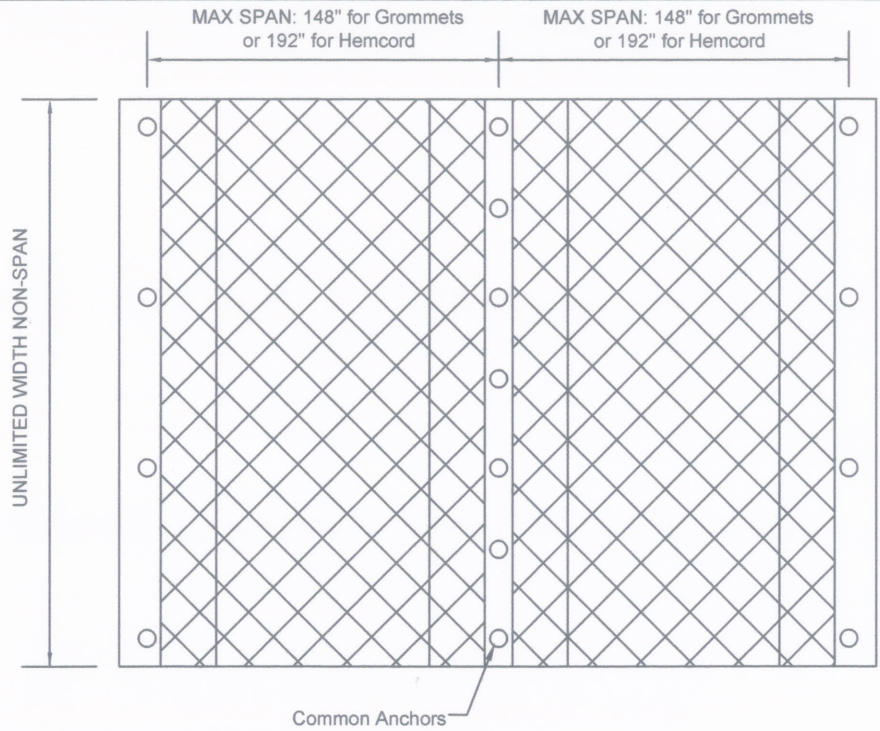
Direct Mount
Typical Window
Plan View



F-Track
Typical Window
Plan View



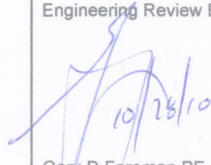
C-Channel Max. Span 192"
Typical Window
Plan View

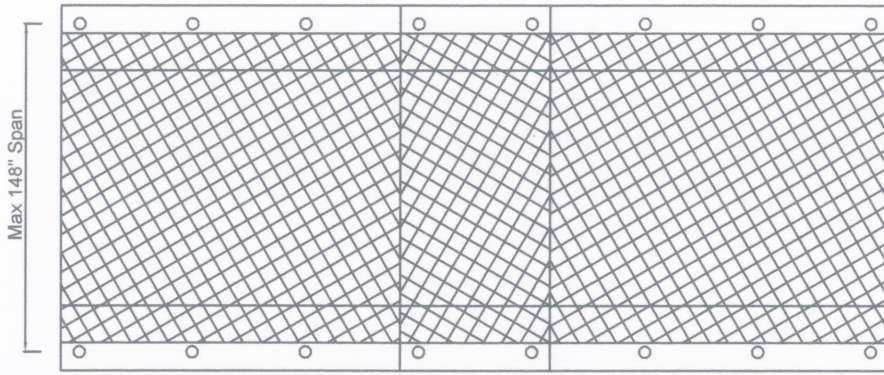


NOTES:

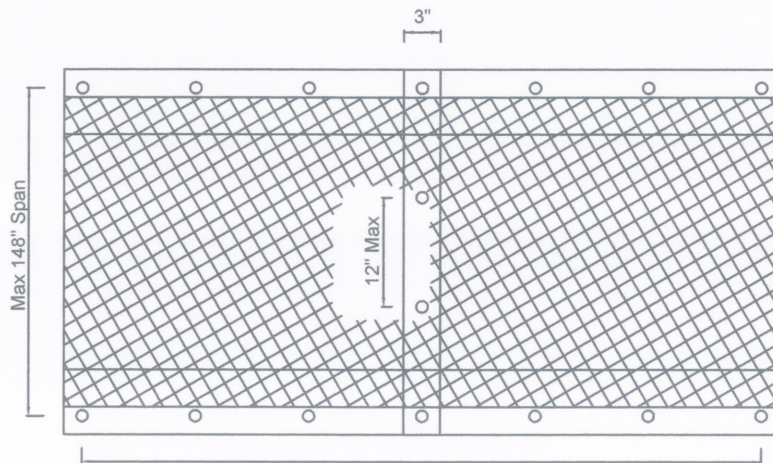
- Two adjacent screens may share common anchors.
- Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.

COMMON ANCHORS

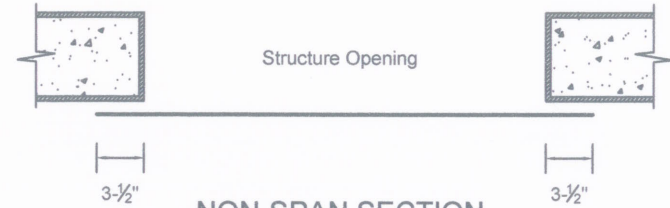
Engineering Review By:  Date: 10/23/07	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
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Scale: Not to Scale Page: 7 of 20			



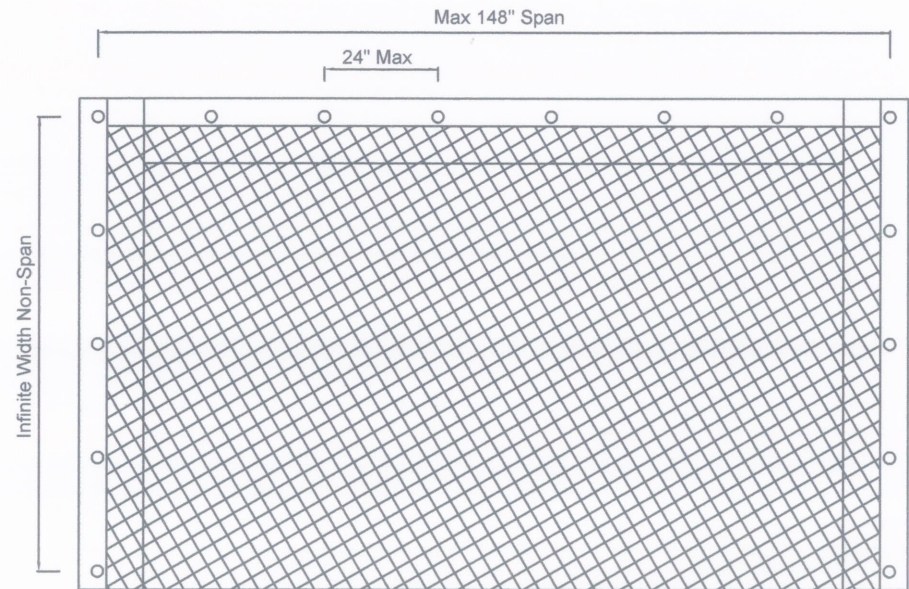
Unlimited Width Non-Span
TYPE 1 GROMMET SCREEN OVERLAP



Unlimited Width Non-Span
TYPE 2 GROMMET SCREEN OVERLAP



**NON-SPAN SECTION
 MINIMUM EDGE OVERLAP
 (Vertical and Horizontal)**



THREE SIDED SCREEN -GROMMET / C-CHANNEL

NOTES:

- Span Side Anchors are optional.
- If adjacent screens are overlapped 3" and connected through the grommets with minimum deflection, a 1/4" nylon bolt / nut assembly should be used 12" on center maximum.
- Adjacent screens may also be connected with approved buckle/strap.

Engineering Review By:

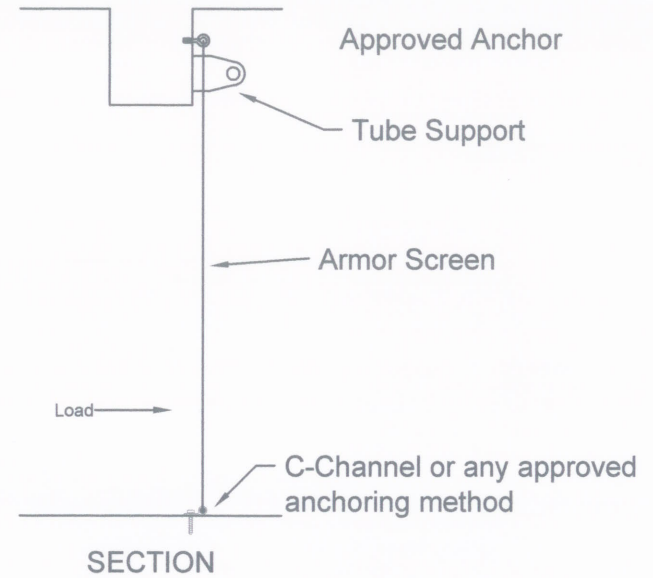
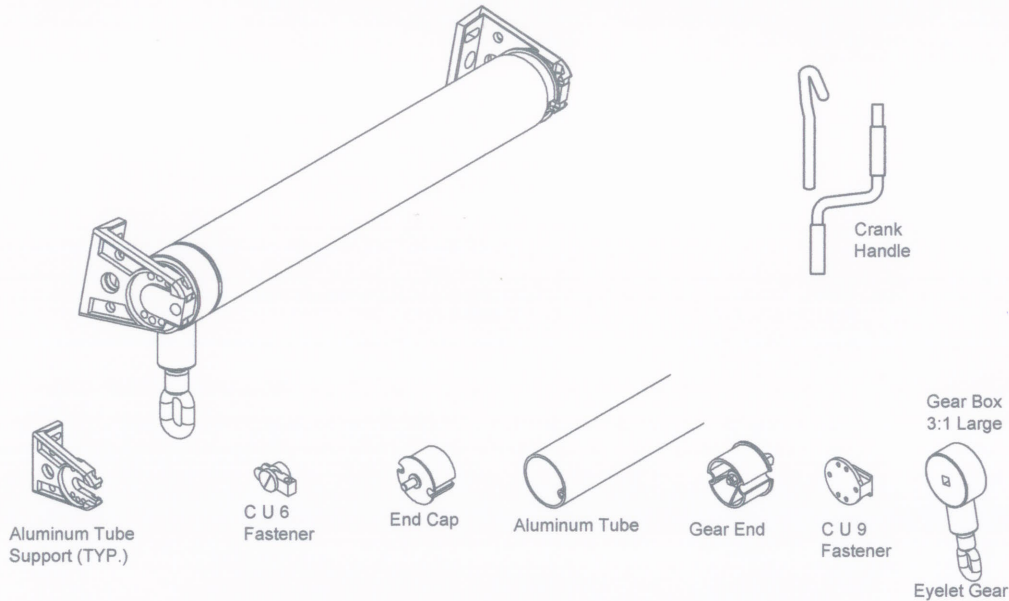
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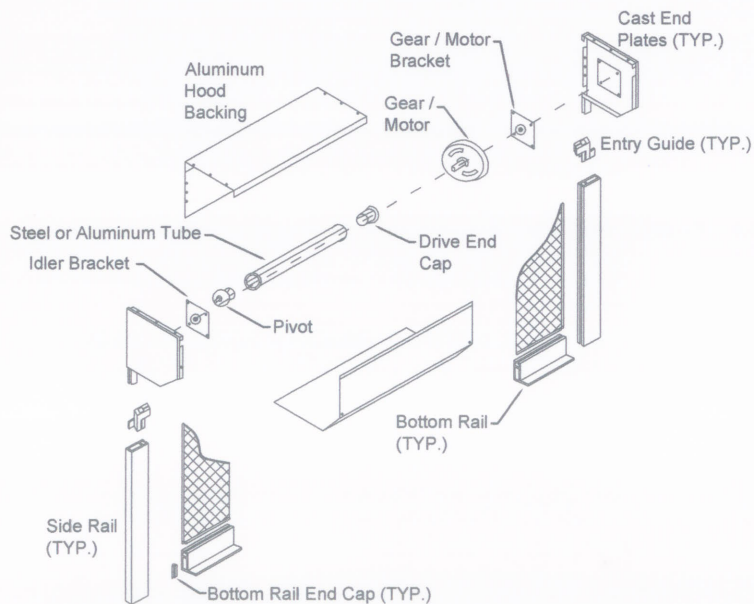
Date: 10/23/07 | Rev. Date: 10/11/10 | Rev. Date:

Scale: Not to Scale | Page: 8 of 20



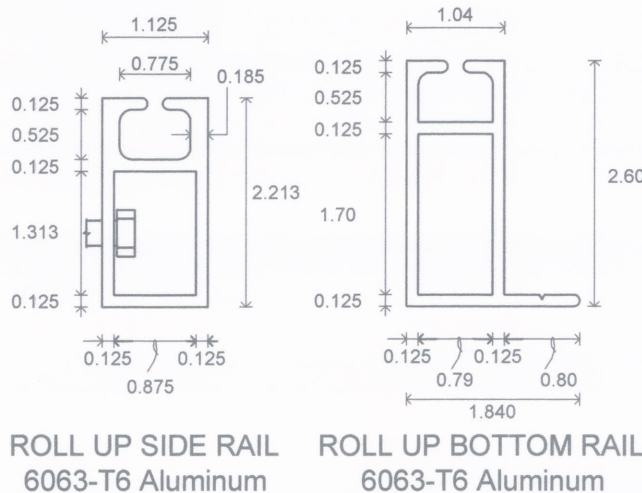
MANUAL AWNING STYLE ROLLUP ASSEMBLY

NOTE: This System is a storage device only, as there is no load on the roller tube. Typically, top anchors always remain attached. A storage hood is not required. It is recommended that the tube assembly should be protected by the screen when under load.

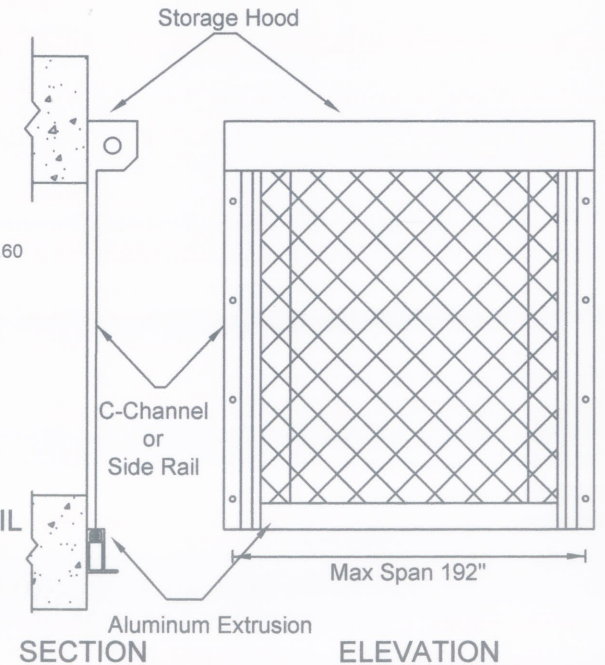


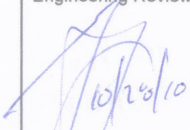
ELECTRIC / MANUAL C-CHANNEL ROLLUP STORAGE ASSEMBLY

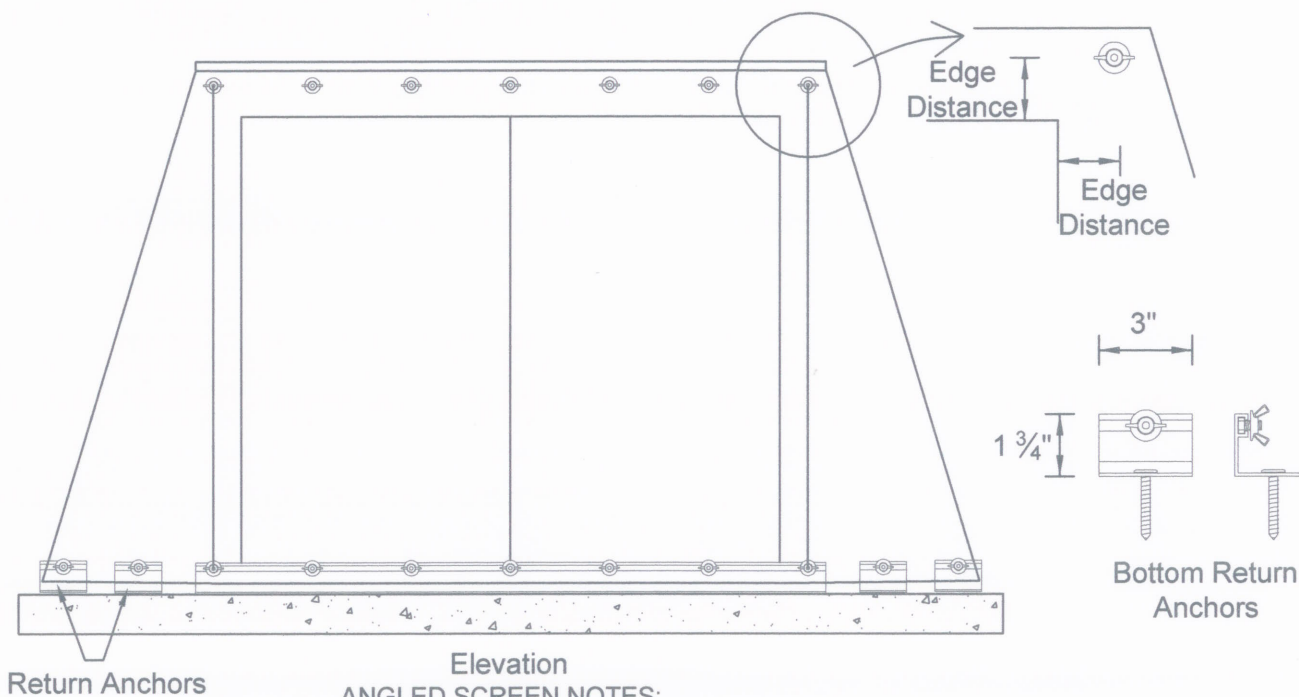
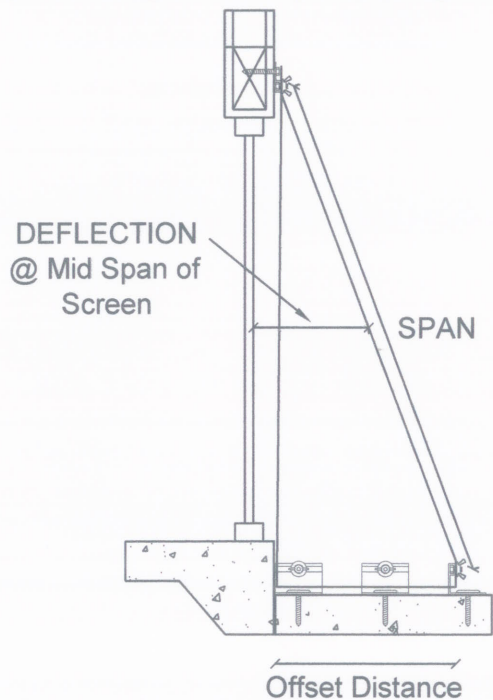
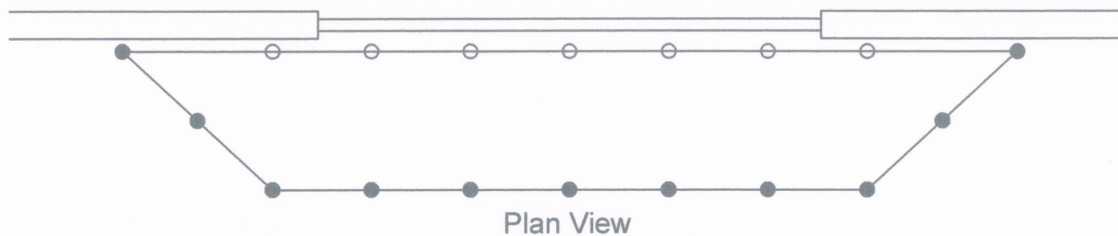
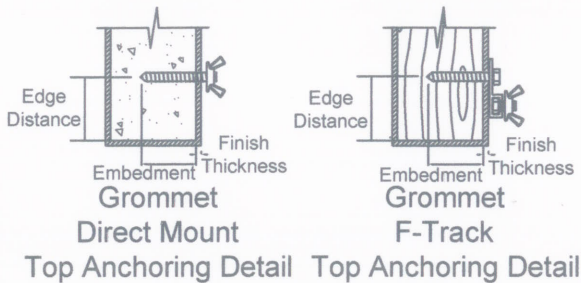
- NOTES:**
- For C-Channel and Hemcord details, see page 2.
 - For trapped openings, site specific engineering is required.



- NOTES:**
- Heavier alternate extrusion may be used.
 - Anchor Spacing per tables.

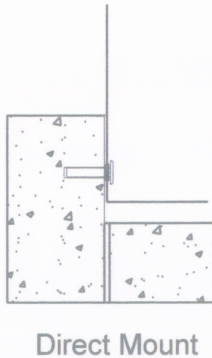
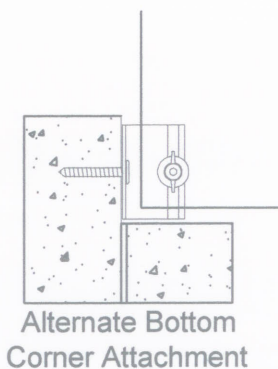
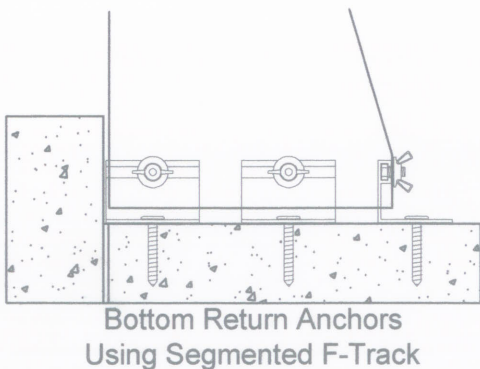


Engineering Review By:  10/23/10	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
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ANGLED SCREEN NOTES:

1. Refer to Deflection Table D-1.1 page 14.
2. Bottom Return Requires a midpoint anchor.
3. Side Return (span side) anchors are optional.
4. Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.



ANGLED SCREEN

Engineering Review By:

[Signature]
10/26/10

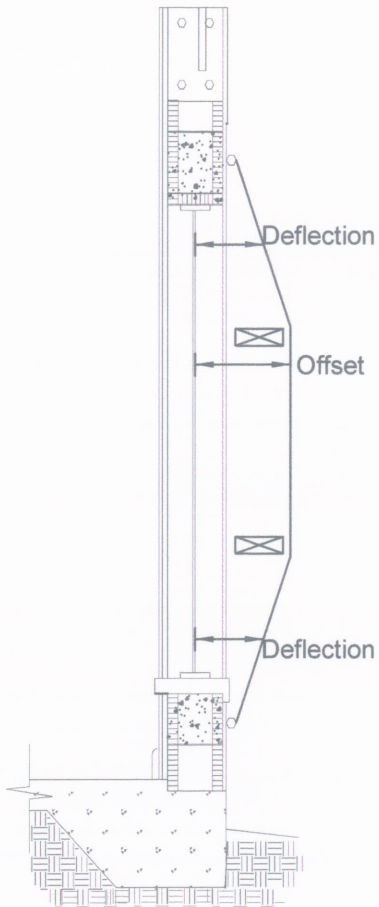
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HURRICANE PROTECTION

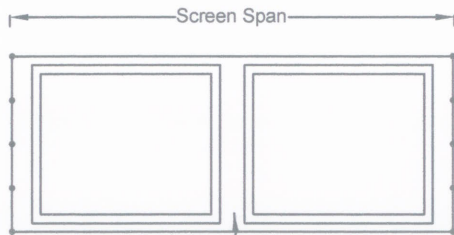
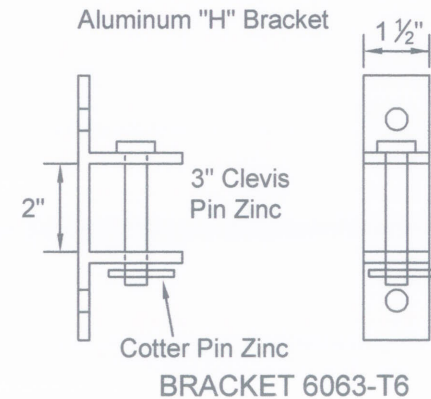
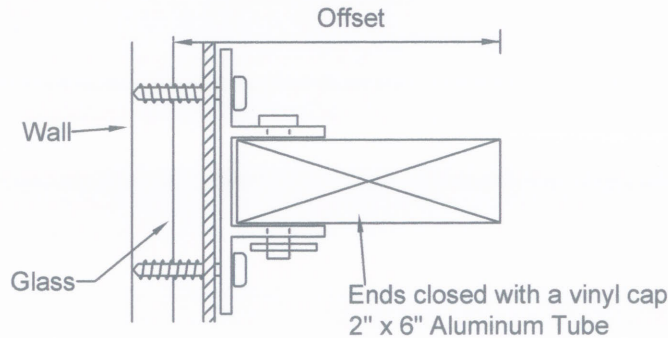
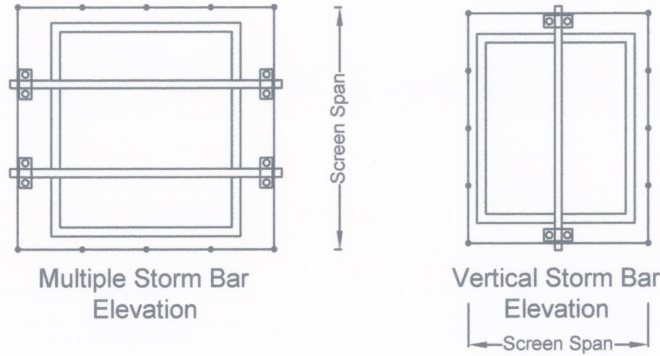
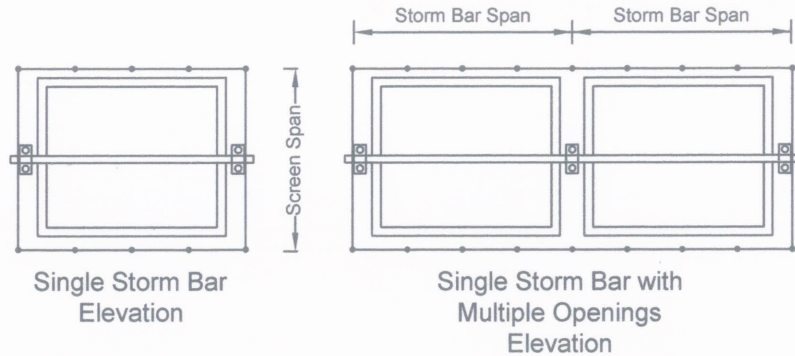
ARMOR SCREEN, Inc.
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West Palm Beach, FL 33409
(561) 841-8890 www.armorscreen.com

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Multiple Storm Bar with Single Opening




Building Structure between adjacent window / door frames may act as a Storm Bar if proper offset to the glazing is present. This applies to a vertical or horizontal applications.

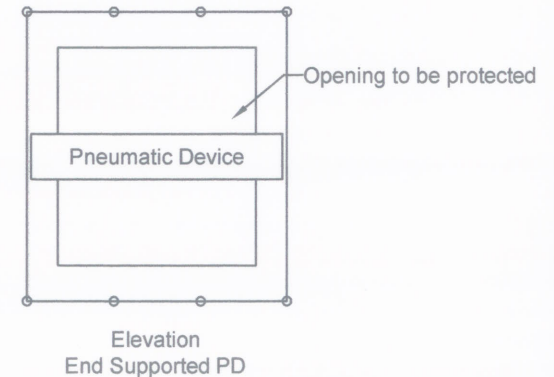
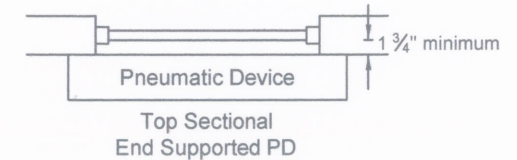
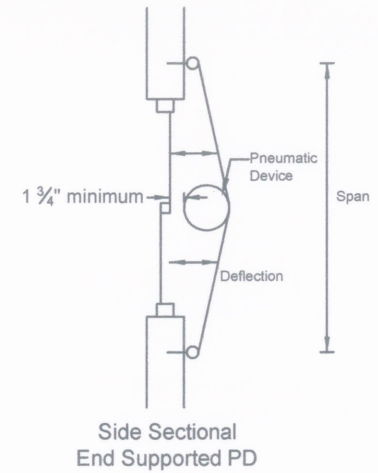
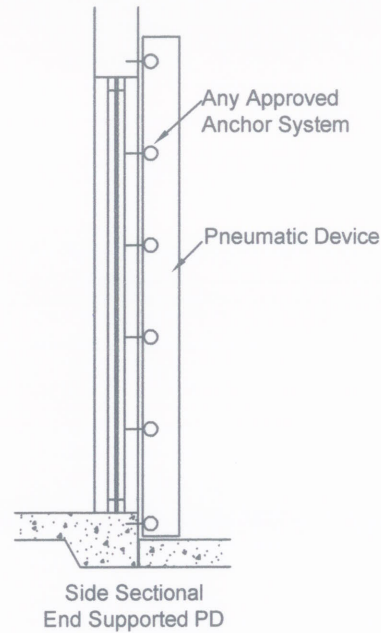
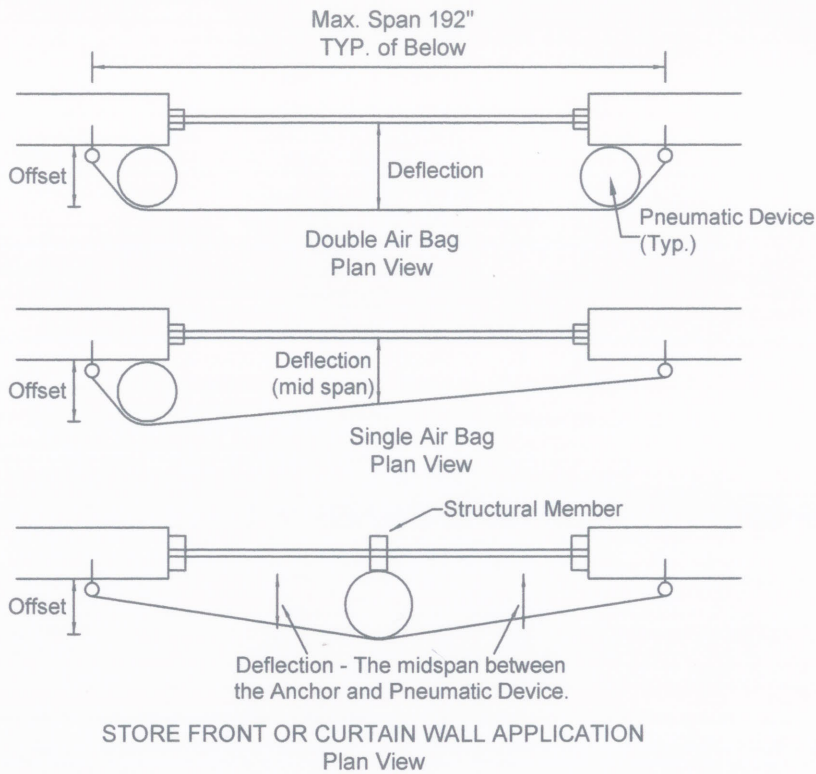
STORM BAR NOTES:

1. Refer to Table D-1.2 on page 14.
2. The storm bar system is designed to achieve deflection and may utilize one or more storm bars. The offset may be increased with blocking.
3. Storm bars may be positioned horizontal, vertical or as required.
4. The storm bar bracket may be permanent or removable and attached to the structure using two (2) approved 1/4 inch anchors. Refer to pages 15 - 20.
5. The storm bar and screen should extend past the protected opening by the distance equal to or greater than the required deflection / offset, which ever is greater.

STORM BAR & BRACKET

STORM BAR SYSTEM

Engineering Review By:  Gary D Foreman PE FL PE 57343	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
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Scale: Not to Scale Page: 11 of 20			



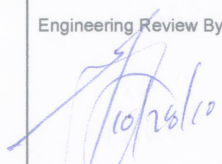
PNEUMATIC DEVICE (PD) SPECIFICATIONS:

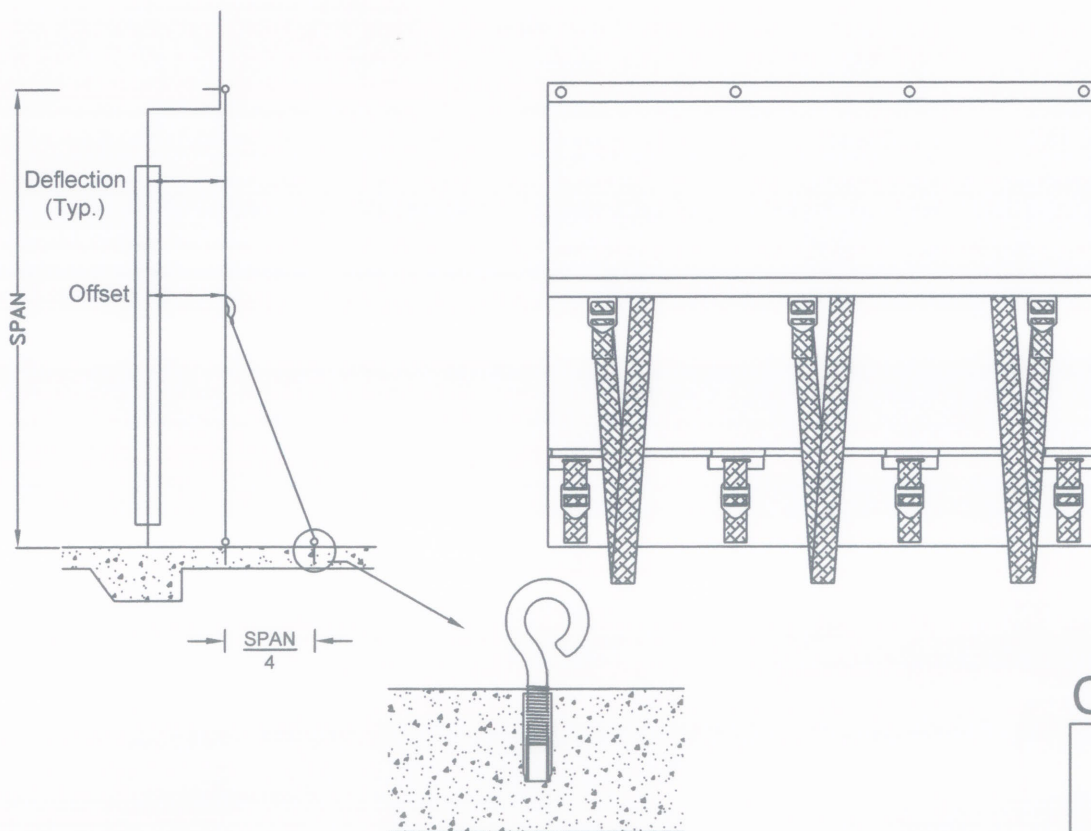
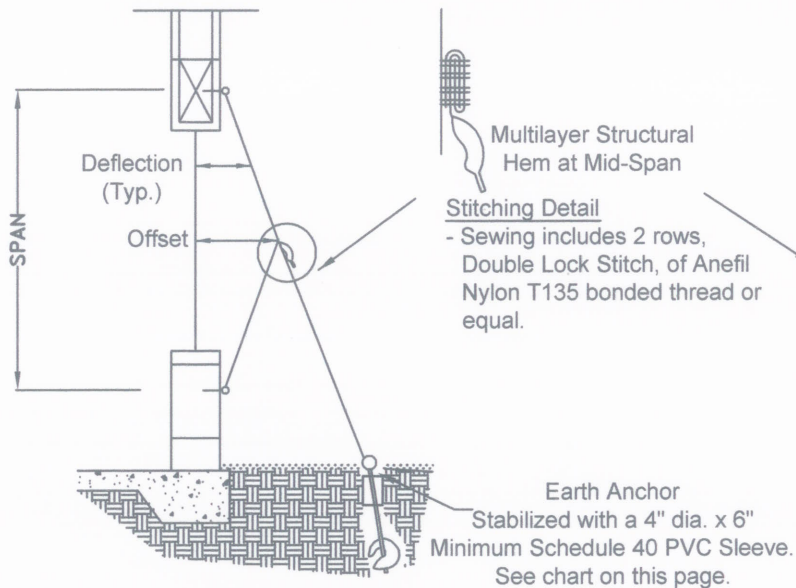
1. Pneumatic Device consists of two parts, a refillable polymer air bladder capable of holding air without perceptible leakage, and a tough fabric cover for structural integrity and durability.
2. May be inflated by any residential or commercial vacuum cleaner, or air pump intended for air mattresses or equivalent devices.
3. Upon removal, the Pneumatic Device should be deflated and stored with screen barrier.

PNEUMATIC DEVICE (PD) DEFLECTION SYSTEM NOTES:

1. Refer to the Deflection Table D-1.1 on page 14.
2. Pneumatic device must not rest on glazing.
3. The pneumatic device may be attached to barrier and may rest on but not attached to the structure. The device may be end supported if spanning the protected opening.
4. Inflation of the device requires a minimum pressure of 2.0 psi.
5. One or more devices may be used to achieve separation.
6. This system may be positioned horizontally, vertically, or as required.
7. The pneumatic device may be permanently attached to the screen or made removable.
8. The sleeve should not be attached to the building structure unless designed as a site specific installation by a structural engineer.
9. The pneumatic device should be positioned to provide adequate deflection between the screen / barrier and surface being protected.

PNEUMATIC DEFLECTION SYSTEM

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	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
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CENTER HEM DEFLECTION SYSTEM NOTES:

1. Refer to Deflection Table D-1.1 on page 14.
2. This system is designed to achieve deflection by pulling and supporting the center of the screen towards the windward direction.
3. One or more structural hems with buckles and straps may be used to achieve deflection.
4. The support hem system may be positioned horizontal, vertical or as required.
5. Screen unable to return should extend past protected opening by distance equal to or greater than the minimum deflection / offset, which ever is greater.
6. Strap material equal to DirecTex 2" High Tenacity Polypro black or white.
7. Buckle with raised "Armor Screen" imprint is proprietary to Armor Screen Corp.

CENTER HEM SUPPORT ANCHORS

	ANCHOR	MIN. EMBED.	MIN. E.D.	SPAN	
				up to 100"	up to 192"
				ANCHOR SPACING	
3000 PSI CONCRETE	3/8" DROP-IN ANCHOR	1 1/2"	4"	18"	12"
	1/2" DROP-IN ANCHOR	2"	5"	24"	18"
SOIL CLASS 5 MED DENSE COURSE SAND	EARTH ANCHOR 1/2" x 30" SHAFT x 4" HELIX WITH WELDED EYE. 3150 LBS WORKING LOAD	28"	N/A	24"	24"
	PAVER ANCHOR 1/2" x 30" SHAFT x 4" HELIX WITH SS COUPLER AND SS EYEBOLT	28"	N	24"	18"

CENTER HEM DEFLECTION SYSTEM

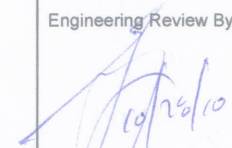
Engineering Review By:  10/26/10	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
Gary D Foreman PE FL/PE 57343	Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 13 of 20			

TABLE D-1.1

Grommet - Hemcords Series 2000 Deflection Table								
Span in feet	Span in inches	Deflection in inches						
		30 psf	40 psf	50 psf	60 psf	70 psf	90 psf	110 psf
2 ft.	24	2.0	2.1	2.3	2.5	2.8	3.0	3.4
3 ft.	36	3.0	3.2	3.5	3.8	4.2	4.6	5.1
4 ft.	48	3.9	4.3	4.7	5.0	5.6	6.1	6.8
5 ft.	60	4.9	5.3	5.8	6.3	7.0	7.6	8.5
6 ft. 4 in.	76	6.2	6.8	7.4	8.0	8.8	9.7	10.8
7 ft. 4 in.	88	7.2	7.8	8.5	9.2	10.2	11.2	12.5
8 ft. 4 in.	100	8.2	8.9	9.7	10.5	11.6	12.7	14.2
9 ft. 4 in.	112	9.2	10.0	10.9	11.8	13.0	14.2	15.9
10 ft. 4 in.	124	10.2	11.0	12.0	13.0	14.4	15.7	17.6
11 ft. 4 in.	136	11.2	12.1	13.2	14.3	15.8	17.3	19.3
12 ft. 4 in.	148	12.1	13.2	14.4	15.5	17.2	18.8	21.0
Hemcords Series 2000 Deflection Table								
13 ft.	156	12.8	13.9	15.2	16.4	18.1	19.8	22.2
14 ft.	168	13.8	15.0	16.3	17.6	19.5	21.3	23.9
15 ft.	180	14.8	16.0	17.5	18.9	20.9	22.9	25.6
16 ft.	192	15.7	17.1	18.7	20.2	22.3	24.4	27.3

TABLE D-1.2

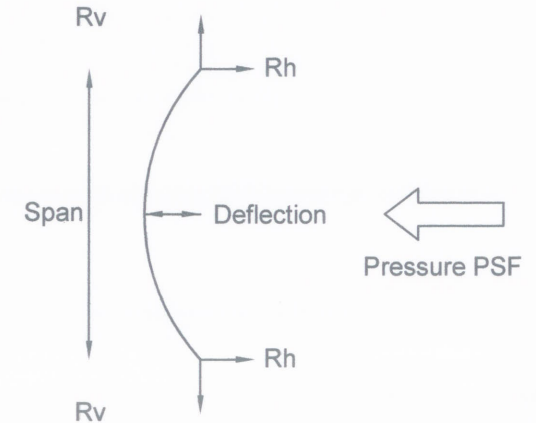
Grommet / Hemcords Storm Bar						
Storm Bar Span / Length	4'	5'	6'	8'	10'	12'
Max. PSF	PER TABLE D1.1					
Deflection	PER TABLE D1.1					
SYP 2" X 6"	X	X	X			
Alum. Tube 2" X 6" X 1/8" 6063-T6	X	X	X	X		
Alum. Tube 2" X 6" X 1/4" 6061-T6	X	X	X	X	X	X

NOTE: Deflection is the minimum glass separation measured at mid span of the screen and subject to rational analysis.

$R_h = W \cdot L / 2$
 $R_v = W \cdot (L^2) / (\text{DEFLECTION})$
 $\text{TENSION} = (R_h^2 + R_v^2)^{0.5}$

SCREEN REACTIONS FOR PRESSURE AND SPAN

Load (psf)		Span														
		2 ft.	3 ft.	4 ft.	5 ft.	6 ft. 4 in.	7 ft. 4 in.	8 ft. 4 in.	9 ft. 4 in.	10 ft. 4 in.	11 ft. 4 in.	12 ft. 4 in.	13 ft.	14 ft.	15 ft.	16 ft.
		24"	36"	48"	60"	76"	88"	100"	112"	124"	136"	148"	156"	168"	180"	192"
30	Rh	30.0	45.0	60.0	75.0	95.0	110.0	125.0	140.0	155.0	170.0	185.0	195.0	210.0	225.0	240.0
	Rv	90.0	135.0	184.6	229.6	291.1	336.1	381.1	426.1	471.1	516.1	565.7	594.1	639.1	684.1	733.8
40	Rh	40.0	60.0	80.0	100.0	126.7	146.7	166.7	186.7	206.7	226.7	246.7	260.0	280.0	300.0	320.0
	Rv	114.3	168.8	223.3	283.0	353.9	413.6	468.1	522.6	582.4	636.9	691.4	729.5	784.0	843.8	898.3
50	Rh	50.0	75.0	100.0	125.0	158.3	183.3	208.3	233.3	258.3	283.3	308.3	325.0	350.0	375.0	400.0
	Rv	130.4	192.9	255.3	323.3	406.5	474.5	536.9	599.4	667.3	729.8	792.2	833.9	901.8	964.3	1026.7
60	Rh	60.0	90.0	120.0	150.0	190.0	220.0	250.0	280.0	310.0	340.0	370.0	390.0	420.0	450.0	480.0
	Rv	144.0	213.2	288.0	357.1	451.2	526.0	595.2	664.3	739.2	808.3	883.2	927.5	1002.3	1071.4	1140.6
70	Rh	70.0	105.0	140.0	175.0	221.7	256.7	291.7	326.7	361.7	396.7	431.7	455.0	490.0	525.0	560.0
	Rv	150.0	225.0	300.0	375.0	478.6	553.5	628.5	703.5	774.1	848.6	928.6	980.4	1055.4	1130.4	1205.4
90	Rh	90.0	135.0	180.0	225.0	285.0	330.0	375.0	420.0	465.0	510.0	555.0	585.0	630.0	675.0	720.0
	Rv	180.0	264.1	354.1	444.1	558.2	648.2	738.2	828.2	918.2	1002.3	1092.3	1152.3	1242.3	1326.4	1416.4
110	Rh	110.0	165.0	220.0	275.0	384.3	403.3	458.3	513.3	568.3	623.3	678.3	715.0	770.0	825.0	880.0
	Rv	194.1	291.2	388.2	485.3	612.8	709.9	806.9	904.0	1001.1	1098.1	1195.2	1256.1	1353.1	1450.2	1547.3



DEFLECTION TABLES

NOTES:

1. Deflections are delivered from test results.
2. Reaction Rh can be positive (towards structure) or negative (away from structure).
3. Rv is always tension as shown.

Engineering Review By:

[Signature]
10/26/10

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FL PE 57343

ARMOR SCREEN
GROMMET AND HEMCORD SERIES 2000
HURRICANE PROTECTION

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CONCRETE, 3000 PSI - 1/4" AND 5/16" ANCHORS

TABLE 2 ANCHOR SPACING

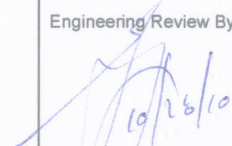
Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/4" DIA. SS DROP-IN ANCHORS	1"	3 1/2"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	12"	6"	6"	---	---
			110 (psf)	12"	6"	6"	---	---
1/4" DIA. TAPCON SG	1 3/4"	2 1/2"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	12"	12"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	12"	6"	6"	6"
1/4" DIA. X 1 3/4" SS TAPCON	1 3/4"	2 1/2"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	6"	6"	6"	---
			110 (psf)	12"	6"	6"	6"	---
1/4" DIA. X 2 1/4" PANELMATE (INSTALL PER PANELMATE INSTRUCTIONS)	1 3/4"	2 1/2"	30 (psf)	12"	12"	12"	12"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	6"	6"	6"	---
			110 (psf)	12"	6"	6"	---	---
1/4" DIA. SAMMYS SSC (INSTALL PER MIAMI-DADE NOA NO. 06-0222.07)	2 1/4"	2 1/2"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	12"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	12"	6"	6"	6"
1/4" ELCO CRETE FLEX 410 SS	2"	2 1/2"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	12"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	12"	6"	6"	6"
1/4" POWERS POWER STUD SS	2"	3"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	6"	6"	6"	6"
			110 (psf)	12"	6"	6"	---	---
1/4" DIA POWERS WEDGE BOLT 410 SS	1 3/4"	3"	30 (psf)	18"	18"	18"	18"	12"
			40 (psf)	18"	18"	18"	12"	12"
			60 (psf)	12"	12"	12"	12"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	12"	6"	6"	6"

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/4" DIA. ALL POINTS SOLID SET ANCHORS (VALUES AND INSTALLATION PER MIAMI-DADE NOA 05-1116.04 EXP. 12-2011)	7/8"	3"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	6"	6"	6"	---
1/4"-20 CALK-IN ANCHORS (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4"	3 1/2"	30 (psf)	12"	12"	12"	12"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	6"	6"	6"	---
			110 (psf)	12"	6"	6"	---	---
1/4" Dia. Powers SS Mushroom Spike Anchor (Install per manufacturer's instructions)	1 1/4"	3 1/2"	30 (psf)	12"	12"	6"	6"	6"
			40 (psf)	12"	6"	6"	6"	---
			60 (psf)	12"	6"	6"	---	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	---	---	---	---
1/4" DIA. HOLLOW SET DROP-IN ANCHORS (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	7/8"	3 1/2"	30 (psf)	12"	6"	6"	6"	---
			40 (psf)	12"	6"	6"	---	---
			60 (psf)	6"	6"	---	---	---
			90 (psf)	6"	---	---	---	---
			110 (psf)	6"	---	---	---	---
1/4" CONFAST HURRICANE SHUTTER INSERT ANCHOR W/ 1/4" DIA. INTERNAL THREAD	1"	1 1/2"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	6"
			60 (psf)	12"	12"	12"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	6"	6"	6"	---
5/16" ITW BUILDEX XL SERIES TAPCON	1 3/4"	2 1/4"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	6"
			60 (psf)	12"	12"	12"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	6"	6"	6"	---

3000 PSI CONCRETE - 1/4" AND 5/16" ANCHORS

CONCRETE NOTES:

- Provide longer fasteners, if required, to allow for thickness of finishes such as stucco, plaster, siding, etc.

Engineering Review By:  Gary D Foreman PE FL PE 57343	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
Date: 10/23/07		Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 15 of 20			

CONCRETE, 3000 PSI - 3/8" AND 1/2" ANCHORS

TABLE 3 ANCHOR SPACING

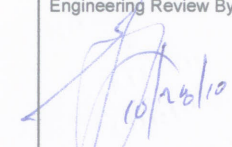
Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span												
				to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"						
				3000 PSI CONCRETE - 3/8" ANCHORS							3 3/8"	4"	30 (psf)	18"	18"	18"
40 (psf)	18"	18"	18"										18"	18"	18"	
60 (psf)	18"	18"	18"										18"	18"	18"	
90 (psf)	18"	18"	18"										18"	18"	12"	
110 (psf)	18"	18"	18"										18"	18"	12"	
3/8" DIA. 410 SS POWERS WEDGE BOLT (LDT)	2 1/2"	3 1/2"	30 (psf)								18"	18"	18"	18"	18"	18"
			40 (psf)								18"	18"	18"	18"	18"	12"
			60 (psf)								18"	18"	18"	18"	12"	12"
			90 (psf)								18"	18"	18"	12"	12"	6"
			110 (psf)								18"	18"	12"	12"	6"	6"
3/8" DIA. SS DROP-IN ANCHORS	1 1/2"	4"	30 (psf)								18"	18"	18"	18"	12"	12"
			40 (psf)								18"	18"	18"	12"	12"	12"
			60 (psf)								18"	18"	12"	12"	12"	6"
			90 (psf)								18"	12"	12"	6"	6"	6"
			110 (psf)								18"	12"	6"	6"	6"	---
3/8"-16 CAULK-IN BOLT (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4"	4"	30 (psf)								12"	12"	12"	12"	12"	6"
			40 (psf)								12"	12"	12"	12"	6"	6"
			60 (psf)								12"	12"	12"	6"	6"	6"
			90 (psf)								12"	12"	6"	6"	6"	---
			110 (psf)								12"	6"	6"	6"	---	---

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span													
				to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"							
				3000 PSI CONCRETE - 3/8" ANCHORS							1 3/4"	4"	30 (psf)	12"	12"	12"	12"
40 (psf)	12"	12"	12"										6"	6"	6"	6"	
60 (psf)	12"	12"	6"										6"	6"	6"	6"	
90 (psf)	12"	6"	6"										6"	6"	---	---	
110 (psf)	12"	6"	6"										6"	---	---	---	
3/8" DIA. POWERS SS MUSHROOM SPIKE ANCHOR (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4"	3 1/2"	30 (psf)								18"	18"	18"	18"	18"	18"	
			40 (psf)								18"	18"	18"	18"	18"	18"	12"
			60 (psf)								18"	18"	18"	18"	12"	12"	12"
			90 (psf)								18"	18"	18"	12"	12"	6"	6"
			110 (psf)								18"	18"	12"	12"	6"	6"	6"
3/8" DIA. POWERS HOLLOW SET DROP-IN ANCHORS (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4"	4"	30 (psf)								18"	18"	18"	18"	12"	12"	
			40 (psf)								18"	18"	18"	12"	12"	12"	6"
			60 (psf)								18"	18"	12"	12"	12"	6"	6"
			90 (psf)								18"	12"	12"	6"	6"	6"	6"
			110 (psf)								18"	12"	6"	6"	6"	6"	---
3/8" POWERS POWER STUD SS	1 5/8"		30 (psf)								12"	12"	12"	12"	12"	12"	12"
			40 (psf)								12"	12"	12"	12"	12"	12"	12"
			60 (psf)								12"	12"	12"	12"	12"	12"	12"
			90 (psf)								12"	12"	12"	12"	12"	12"	6"
			110 (psf)								12"	12"	12"	12"	12"	12"	6"

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span													
				to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"							
				3000 PSI - CONCRETE							2"	5"	30 (psf)	24"	24"	24"	24"
40 (psf)	24"	24"	24"										24"	18"	18"	18"	
60 (psf)	24"	24"	24"										18"	18"	12"	12"	
90 (psf)	24"	24"	18"										12"	12"	12"	6"	
110 (psf)	24"	24"	18"										12"	12"	6"	6"	
1/2" DIA. SS POWERS WEDGE BOLT (LDT)	3 1/2"	5"	30 (psf)								24"	24"	24"	24"	24"	24"	
			40 (psf)								24"	24"	24"	24"	24"	24"	24"
			60 (psf)								24"	24"	24"	24"	24"	18"	18"
			90 (psf)								24"	24"	24"	24"	18"	18"	12"
			110 (psf)								24"	24"	24"	18"	18"	12"	12"

CONCRETE NOTES:

- Provide longer fasteners, if required, to allow for thickness of finishes such as stucco, plaster, siding, etc.
- 1/2" Hardware Anchor Spacing only valid with C-Channel mounting.

Engineering Review By:  Gary D Foreman PE FL PE 57343	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
	ARMOR SCREEN, Inc. 1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 www.armorscreen.com		
Date: 10/23/07		Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 16 of 20			

CONCRETE BLOCK (CMU) - 1/4"

TABLE 4 ANCHOR SPACING

CONCRETE BLOCK (CMU) - 3/8"

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/4" DIA. TAPCON SG (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4" shall be in face shell, not mortar joints	2 1/2"	30 (psf)	12"	12"	12"	12"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	12"	6"	6"	---	---
1/2" DIA. ALL POINTS SOLID SET ANCHORS (VALUES AND INSTALLATION PER MIAMI-DADE NOA 05-1116.04 EXP. 12-2011)	7/8" shall be in face shell, not mortar joints	3"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	12"	6"	6"	---	---
1/4"-20 CALK-IN ANCHORS	7/8" shall be in face shell, not mortar joints	3"	30 (psf)	12"	6"	6"	---	---
			40 (psf)	6"	6"	---	---	---
			60 (psf)	6"	---	---	---	---
			90 (psf)	6"	---	---	---	---
1/2" DIA. X 1 3/4" 410 SS TAPCON (INSTALL PER MIAMI-DADE NOA NO. 03-0114.03)	1 3/4" shall be in face shell, not mortar joints	2 1/2"	30 (psf)	12"	6"	6"	---	---
			40 (psf)	6"	6"	---	---	---
			60 (psf)	6"	---	---	---	---
			90 (psf)	6"	---	---	---	---
1/2" DIA. X 2 1/4" PANELMATE (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4" shall be in face shell, not mortar joints	3"	30 (psf)	12"	6"	6"	6"	6"
			40 (psf)	12"	6"	6"	---	---
			60 (psf)	6"	6"	---	---	---
			90 (psf)	6"	---	---	---	---
1/2" DIA. X 2 1/4" PANELMATE (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4" shall be in face shell, not mortar joints	2"	30 (psf)	12"	6"	6"	---	---
			40 (psf)	12"	6"	6"	---	---
			60 (psf)	6"	6"	---	---	---
			90 (psf)	6"	---	---	---	---
CONFAST HURRICANE SHUTTER INSERT ANCHOR W/ 1/4" DIA. INTERNAL THREAD	1 5/8" shall be in face shell, not mortar joints	4"	30 (psf)	12"	12"	6"	6"	6"
			40 (psf)	12"	6"	6"	6"	---
			60 (psf)	12"	6"	6"	---	---
			90 (psf)	6"	6"	---	---	---
110 (psf)	6"	---	---	---	---			

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span								
				to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"		
3/8"-16 CALK-IN ANCHORS	1 3/4" shall be in face shell, not mortar joints	4"	30 (psf)	12"	12"	12"	6"	6"	6"	6"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"	---	---	---	
			60 (psf)	12"	6"	6"	6"	---	---	---	---	
			90 (psf)	12"	6"	6"	---	---	---	---	---	
3/8" DIA. HOLLOW SET DROP-IN ANCHORS	1" shall be in face shell, not mortar joints	4"	30 (psf)	12"	6"	6"	6"	6"	---	---	---	---
			40 (psf)	12"	6"	6"	---	---	---	---	---	
			60 (psf)	6"	6"	---	---	---	---	---	---	
			90 (psf)	6"	---	---	---	---	---	---	---	
3/8" POWERS TAPPER	1 3/4" shall be in face shell, not mortar joints	4"	30 (psf)	12"	12"	6"	6"	6"	6"	---	---	---
			40 (psf)	12"	6"	6"	6"	---	---	---	---	
			60 (psf)	12"	6"	6"	---	---	---	---	---	
			90 (psf)	6"	6"	---	---	---	---	---	---	
110 (psf)	6"	6"	---	---	---	---	---	---				

CMU AND TERRA COTTA BLOCK WITH STUCCO - 1/4" AND 3/8"

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
ELCO 1/4" X 2 1/4" CRETEFLEX MASONRY FASTENERS (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4"	2 1/2"	30 (psf)	12"	12"	6"	6"	6"
			40 (psf)	12"	6"	6"	---	
			60 (psf)	12"	6"	6"	---	
			90 (psf)	6"	6"	---	---	
CUSTOM COUPLER IN EPOXY	3 1/4"	4"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	6"
			60 (psf)	12"	12"	12"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
110 (psf)	12"	12"	6"	6"	6"			

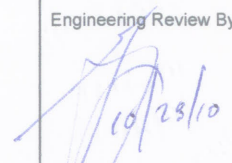
Notes: 1. Custom fastener = 3/8" x 2 1/2" threaded rod (30455) w/ 1/2" x 1 1/4" coupler (31656) fully inserted in 1/2" dia. 3 1/4" screen tube fully filled w/ Sikardur Anchorfix-4 Injection Gel.
 2. 3/8" x 1" carriage bolt, eye bolt, or machine screw

TABLE 5 ANCHOR SPACING

- Allowable values for Terra Cotta Block with Stucco per HTL Test report #0365-0416-06 dated 05-31-06.

CONCRETE BLOCK (CMU) NOTES:

- Provide longer fasteners, if required, to allow for thickness of finishes such as stucco, plaster, siding, etc.

Engineering Review By:  10/23/07	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
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Gary D Foreman PE FL PE 57343	Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 17 of 20			

SOLID GROUTED (CMU) - 1/4" AND 3/8"

TABLE 6 ANCHOR SPACING

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/2" DIA. TAPCON SG (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4" shall be in face shell, not mortar joints	2 1/2"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	12"	12"	6"
			90 (psf)	12"	12"	12"	6"	6"
			110 (psf)	12"	12"	6"	6"	6"
1/2" DIA. X 1 3/4" 410 SS TAPCON (INSTALL PER MIAMI-DADE NOA 03-0114.03)	2 1/4" shall be in face, not mortar joints	2 1/2"	30 (psf)	12"	12"	12"	12"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	6"	6"	---	---
			110 (psf)	12"	6"	6"	---	---
1/2" DIA. 410 SS POWERS WEDGE BOLT (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4" shall be in face, not mortar joints	3 3/4"	30 (psf)	12"	12"	6"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	---	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	6"	---	---	---
CONFAST HURRICANE SHUTTER INSERT ANCHOR W/ 1/4" DIA. INTERNAL THREAD (spacing per test #01 dated 2-8-08)	1 5/8" shall be in face, not mortar joints	4"	30 (psf)	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"
			90 (psf)	12"	12"	12"	12"	12"
			110 (psf)	12"	6"	6"	6"	6"
1/4" DIA. -20 CALK-IN ANCHOR (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	7/8" shall be in face, not mortar joints	3 1/2"	30 (psf)	12"	12"	12"	12"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	6"	6"	---	---
			110 (psf)	12"	6"	6"	---	---
1/4" ELCO CRETE-FLEX 410 SS	2" shall be in face, not mortar joints	2 1/2"	30 (psf)	12"	12"	6"	6"	6"
			40 (psf)	12"	6"	6"	6"	---
			60 (psf)	12"	6"	6"	---	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	6"	---	---	---

SOLID GROUTED (CMU)

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span								
				to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"		
3/8" ASTM 304-316 SS THREADED ROD IN EPOXY W/ SS COUPLER AND EYEBOLT (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	3 1/2" shall be in face shell, not mortar joints	12"	30 (psf)	12"	12"	12"	12"	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"	12"	12"	12"	
			60 (psf)	12"	12"	12"	12"	12"	12"	12"	12"	
			90 (psf)	12"	12"	12"	12"	12"	6"	6"		
			110 (psf)	12"	12"	12"	12"	6"	6"	6"		
3/8" DIA. POWERS WEDGE BOLT (LDT) 410 SS (spacing per test #04 dated 12-7-07)	2 1/2" shall be in face shell, not mortar joints	4"	30 (psf)	24"	24"	24"	24"	24"	24"	24"	24"	24"
			40 (psf)	24"	24"	24"	24"	24"	24"	24"	24"	
			60 (psf)	18"	18"	18"	18"	18"	18"	18"		
			90 (psf)	12"	12"	12"	12"	12"	6"	6"		
			110 (psf)	12"	12"	12"	12"	6"	6"	6"		
3/8" DIA POWERS HOLLOW SET DROP-IN ANCHOR (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4" shall be in face shell, not mortar joints	5 1/4"	30 (psf)	12"	12"	12"	12"	12"	12"	12"	12"	
			40 (psf)	12"	12"	12"	6"	6"	6"	6"		
			60 (psf)	12"	12"	6"	6"	6"	6"	6"		
			90 (psf)	12"	6"	6"	6"	---	---	---		
			110 (psf)	12"	6"	6"	---	---	---	---		
3/8" DIA. CALK-IN ANCHOR 410 SS (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4" shall be in face shell, not mortar joints	5 1/4"	30 (psf)	12"	12"	12"	12"	6"	6"	6"		
			40 (psf)	12"	12"	12"	6"	6"	6"	6"		
			60 (psf)	12"	12"	6"	6"	6"	6"	---		
			90 (psf)	12"	6"	6"	6"	---	---	---		
			110 (psf)	12"	6"	6"	---	---	---	---		
3/8" POWERS MUSHROOM SPIKE (SPACING PER TEST #04 DATED 12-7-07)	1 3/4" shall be in face shell, not mortar joints	4"	30 (psf)	24"	24"	24"	24"	24"	24"	24"	24"	
			40 (psf)	24"	24"	24"	24"	24"	24"	24"		
			60 (psf)	18"	18"	18"	18"	18"	18"	18"		
			90 (psf)	12"	12"	12"	12"	12"	6"	6"		
			110 (psf)	12"	12"	12"	12"	6"	6"	6"		

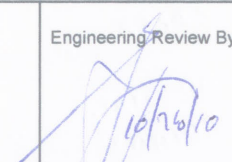
SOLID GROUTED (CMU)

SOLID GROUTED CMU NOTES:

- Spacing for fasteners used in testing are shown at spacing used in tests
- Spacing for all other fasteners calculated with SF=3 min.

SOLID GROUTED CMU NOTES:

- Provide longer fasteners, if required, to allow for thickness of finishes such as stucco plaster, siding, etc.

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Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:	
Scale: Not to Scale Page: 18 of 20			

WOOD SYP #2 - 1/4" 5/16" 3/8" 1/2"


TABLE 7 ANCHOR SPACING

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/2" DIA. X 2 1/4" PANELMATE (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4"	2"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	6"	---	---	---
1/4" DIA. PANELMATE (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (VALUES PER NDS FOR WOOD CONSTRUCTION)	1 3/4"	3/4"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	6"	---	---	---
1/2" DIA. X 1 1/4" SS TAPCON (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (VALUES PER NDS FOR WOOD CONSTRUCTION)	1 3/4"	3/4"	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	6"	---	---	---
1/4" DIA. SS LAG SCREWS OR EYE LAG OR HANGER BOLT	2"	1" into stud or lintel	30 (psf)	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	6"	6"	6"
			60 (psf)	12"	12"	6"	6"	---
			90 (psf)	6"	6"	---	---	---
			110 (psf)	6"	6"	---	---	---
5/16" DIA. SS LAG SCREWS OR EYE LAG OR HANGER BOLT	2"	1 1/4" into stud or lintel	30 (psf)	12"	12"	12"	12"	6"
			40 (psf)	12"	12"	12"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	6"	6"	6"	---	---
			110 (psf)	6"	6"	---	---	---

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span							
				to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"	
WOOD SYP #2 3/8" DIA. SS LAG SCREWS OR EYE LAG, OR HANGER BOLT	2"	1 1/2" into stud or lintel	30 (psf)	12"	12"	12"	12"	6"	6"	6"	6"
			40 (psf)	12"	12"	12"	6"	6"	6"	6"	
			60 (psf)	12"	12"	6"	6"	6"	---	---	
			90 (psf)	12"	6"	6"	---	---	---	---	
			110 (psf)	6"	6"	---	---	---	---	---	
WOOD SYP #2 3/8" DIA. SS LAG SCREW OR LAG ANCHOR OR HANGER BOLT	*3"	1 1/2" into stud or lintel	30 (psf)	12"	12"	12"	12"	12"	6"	6"	
			40 (psf)	12"	12"	12"	12"	6"	6"	6"	
			60 (psf)	12"	12"	6"	6"	6"	6"	---	
			90 (psf)	12"	6"	6"	---	---	---	---	
			110 (psf)	12"	6"	6"	---	---	---	---	
WOOD SYP #2 1/2" DIA. SS LAG SCREW OR LAG ANCHOR OR HANGER BOLT	*3"	2" into side grain	30 (psf)	12"	12"	12"	12"	12"	12"	12"	
			40 (psf)	12"	12"	12"	12"	12"	12"	6"	
			60 (psf)	12"	12"	12"	6"	6"	6"	6"	
			90 (psf)	12"	12"	6"	6"	6"	6"	6"	
			110 (psf)	12"	6"	6"	6"	6"	6"	---	

WOOD SYP #2 NOTES:

- Provide longer fasteners, if required, to allow for thickness of finishes such as stucco, plaster, siding, etc.
- Design as per NDS 2005.
- *Lag Anchor to be fully embedded.
- Douglas Fir - Larch alternate acceptable wood type

Engineering Review By:  10/26/10	ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
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Gary D Foreman PE FL PE 57343	Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 19 of 20			

METAL - 1/4"-3/8"

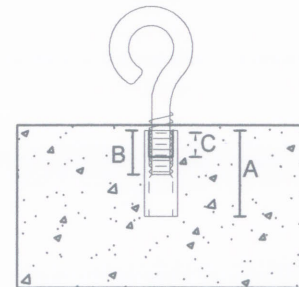
TABLE 8 ANCHOR SPACING

	Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span						
					to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"
20 GAGE METAL STUDS	1/4"-14 TEKS SELF-TAPPING SCREWS			30 (psf)	6"	3"	3"	3"	---	---	---
				40 (psf)	6"	3"	3"	---	---	---	
				60 (psf)	---	---	---	---	---	---	
				90 (psf)	---	---	---	---	---	---	
				110 (psf)	---	---	---	---	---	---	
18 GAGE METAL STUDS	1/4"-14 TEKS SELF-TAPPING SCREWS <small>(spacing per test #01 dated 2-8-08)</small>			30 (psf)	6"	6"	6"	6"	6"	6"	6"
				40 (psf)	6"	6"	6"	6"	6"	6"	6"
				60 (psf)	6"	6"	6"	6"	6"	6"	6"
				90 (psf)	6"	6"	6"	6"	6"	6"	6"
				110 (psf)	6"	6"	6"	6"	6"	6"	6"
3/8" STEEL	1/4"-14 TEKS SELF-TAPPING SCREWS			30 (psf)	12"	12"	12"	12"	12"	12"	12"
				40 (psf)	12"	12"	12"	12"	12"	12"	12"
				60 (psf)	12"	12"	12"	12"	12"	12"	12"
				90 (psf)	12"	12"	12"	12"	12"	6"	6"
				110 (psf)	12"	12"	12"	12"	6"	6"	6"
1/8" (12 GA) STEEL	1/4"-14 TEKS SELF-TAPPING SCREWS			30 (psf)	12"	12"	12"	12"	12"	12"	6"
				40 (psf)	12"	12"	12"	12"	12"	6"	6"
				60 (psf)	12"	12"	12"	6"	6"	6"	6"
				90 (psf)	12"	12"	6"	6"	6"	6"	3"
				110 (psf)	12"	12"	6"	6"	6"	3"	3"
1/2" AND 3/4" STEEL	3/8"-RIVET-NUTS INTERNALLY THREADED		1"	30 (psf)	12"	12"	12"	12"	12"	12"	12"
				40 (psf)	12"	12"	12"	12"	12"	12"	12"
				60 (psf)	12"	12"	12"	12"	12"	12"	6"
				90 (psf)	12"	12"	12"	12"	6"	6"	6"
				110 (psf)	12"	12"	12"	12"	6"	6"	6"
1/2" ALUMINUM 6063-T6	1/4"-14 TEKS SS SELF-TAPPING SCREWS			30 (psf)	12"	6"	6"	6"	3"	3"	3"
				40 (psf)	12"	6"	6"	3"	3"	3"	3"
				60 (psf)	6"	6"	3"	3"	3"	---	---
				90 (psf)	6"	3"	3"	3"	---	---	---
				110 (psf)	6"	3"	3"	---	---	---	---
1/2" ALUMINUM	3/8"-RIVET-NUTS INTERNALLY THREADED		1"	30 (psf)	12"	12"	12"	12"	12"	6"	6"
				40 (psf)	12"	12"	12"	12"	6"	6"	6"
				60 (psf)	12"	12"	6"	6"	6"	6"	6"
				90 (psf)	12"	12"	6"	6"	6"	3"	3"
				110 (psf)	12"	6"	6"	6"	3"	3"	3"

METAL NOTES:

- Minimum 3 pitch shall extend past metal substrate.
- Install as per manufacturer's instructions.
- 3" Spacing only valid with C-Channel & F-Track mounting. Grommet spacing to be 6" on center.
- Rivet-nuts shall be installed as per manufacturer's instructions with the appropriate tool.
- Self drilling screws into 18 gage metal studs shall be through C-Channel with threads into metal studs.

DROP-IN ANCHOR			
	Embedment		
		1/4"	3/8"
A	1"	1 9/16"	2"
B	1/2"	1 1/16"	1 3/16"
C	5/16"	7/16"	9/16"



A - Drop-In Length
 B - Drop-In Internal Thread
 C - Minimum Thread Engagement

MINIMUM BOLT ENGAGEMENT IN COUPLER

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Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date:
Scale: Not to Scale Page: 20 of 20		