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**Product Approval**  
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 **Application Detail**

OFFICE OF THE SECRETARY

FL #	FL8363-R7														
Application Type	Revision														
Code Version	2017														
Application Status	Approved														
Comments															
Archived	<input type="checkbox"/>														
Product Manufacturer	Armor Screen Corp.														
Address/Phone/Email	2744 Hillsboro Road West Palm Beach, FL 33405 (561) 841-8890 doug@armorscreen.com														
Authorized Signature	Douglas Turner doug@armorscreen.com														
Technical Representative	Douglas Turner														
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Quality Assurance Representative	Douglas Turner														
Address/Phone/Email	1881 Old Okeechobee Road West Palm Beach, FL 33409 (561) 841-8890 doug@armorscreen.com														
Category	Impact Protective Systems														
Subcategory	Removable														
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer <input type="checkbox"/> Evaluation Report - Hardcopy Received														
Florida Engineer or Architect Name who developed the Evaluation Report	Theodore Berman, P.E.														
Florida License	PE-09814														
Quality Assurance Entity	National Accreditation and Management Institute														
Quality Assurance Contract Expiration Date	12/31/2023														
Validated By	Simon Segal, P.E. <input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received														
Certificate of Independence	<a href="#">FL8363_R7_COI_Certification_of_Independence.SS.pdf</a>														
Referenced Standard and Year (of Standard)	<table border="0"> <thead> <tr> <th><b>Standard</b></th> <th><b>Year</b></th> </tr> </thead> <tbody> <tr> <td>ASTM E 1886</td> <td>2005</td> </tr> <tr> <td>ASTM E 1996</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> <tr> <td>TAS 203</td> <td>1994</td> </tr> </tbody> </table>	<b>Standard</b>	<b>Year</b>	ASTM E 1886	2005	ASTM E 1996	2005	ASTM E 330	2002	TAS 201	1994	TAS 202	1994	TAS 203	1994
<b>Standard</b>	<b>Year</b>														
ASTM E 1886	2005														
ASTM E 1996	2005														
ASTM E 330	2002														
TAS 201	1994														
TAS 202	1994														
TAS 203	1994														

Equivalence of Product Standards  
Certified By

Sections from the Code

Product Approval Method

Method 1 Option D

Date Submitted

12/18/2017

Date Validated

12/18/2017

Date Pending FBC Approval

12/20/2017

Date Approved

02/13/2018

**Summary of Products**

FL #	Model, Number or Name	Description
8363.1	Armor Screen HVHZ Grommet and Hemcord System, Series 2000	Armor Screen HVHZ Grommet and Hemcord System, Series 2000
<b>Limits of Use</b> <b>Approved for use in HVHZ:</b> Yes <b>Approved for use outside HVHZ:</b> Yes <b>Impact Resistant:</b> Yes <b>Design Pressure:</b> +110/-110 <b>Other:</b> Glass separation is required for installations within Wind Zone 4, High Velocity Hurricane Zone and on Essential Facilities. The un-breached envelope criterion is met since the system is considered 'non-porous' outside of the High Velocity Hurricane Zone and remains intact under impact and air pressure loading. The system is to enclose the protected opening all around.		<b>Installation Instructions</b> <a href="#">FL8363 R7 II FL8363 Installation Instructions-Grommet and Hemcord Series 2000.SS.pdf</a> Verified By: Theodore Berman, P.E. 09814 Created by Independent Third Party: No <b>Evaluation Reports</b> <a href="#">FL8363 R7 AE FL8363 Eval Dec 17.pdf</a> Created by Independent Third Party: Yes

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# ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION

## GENERAL NOTES:

- This Flexible Wind Abatement/ Impact Protection System is for use within and outside the high velocity hurricane zone (HVHZ -Miami-Dade & Broward Counties). Separation from glass is required only when system is installed within wind zone 4, high velocity hurricane zone and on essential facilities.
  - The design loads are calculated in accordance with the Florida Building Code 6th Edition (2014) and ASCE 7-10. Pressures obtained under ASCE 7-10 may be multiplied by 0.6.
  - Testing meets Florida Building Code 6th Edition (2017); 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
- Has been tested for resistance to burning, smoke, ignition, temperature and weathering: ASTM C158, ASTM D 635-C1, ASTM D 638, ASTM D 1929 and ASTM G 155.
  - 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<br>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.

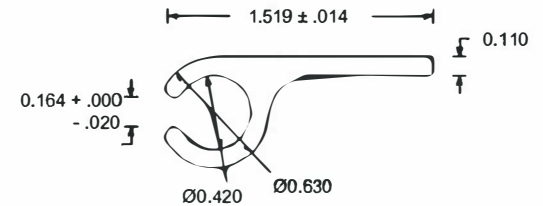
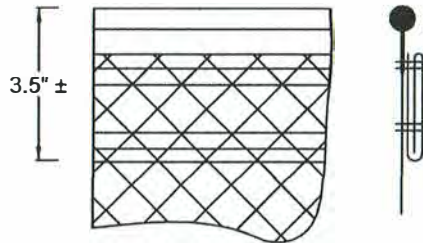
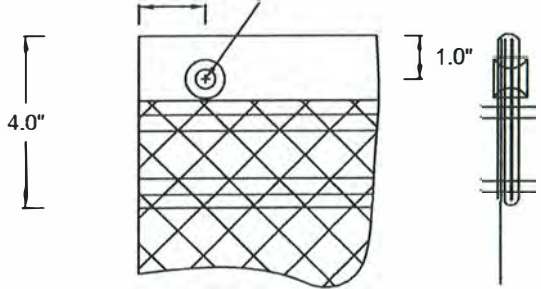
## INSTALLATION NOTES:

- 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 and impact protection system only. All other building components shown herein are depicted as existing or samples and not constructed by the screen company.

 <p style="text-align: center;">No 09814</p>	<p>Engineering Review By:                  Theodore Berman and Associates, LLC                  Certificate of Authorization # 27502                  925 Arthur Godfrey Rd, Suite 104                  Miami Beach, FL 33140                  (305) 868-4707                  www.flproductapproval.com</p>	<p><b>ARMOR SCREEN                  GROMMET AND HEMCORD SERIES 2000                  HURRICANE PROTECTION</b></p> <p>ARMOR SCREEN, Inc.                  2744 Hillsboro Road                  West Palm Beach, FL 33405                  (561) 841-8890 www.armorscreen.com</p> <p>Date: 10/23/07 Rev. Date: 10/11/10 Rev. Date: 12/18/2017</p> <p>Scale: Not to Scale Page: 1 of 19</p>
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1.5" - 2 Sided Screen  
1.0" - 3 Sided Screen #2 Nickel Plated Brass Grommet

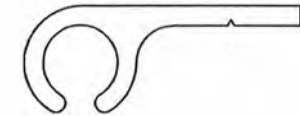


**Grommet with Stitching Detail**  
Stitching Detail

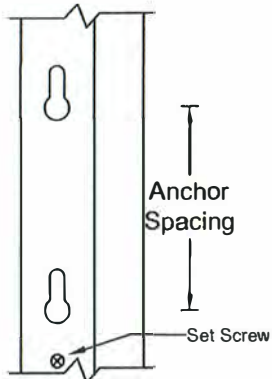
- Support Edge, Trifold Seam around 4" Polypro webbing
- Sewing includes 2 rows, Double Lock Stitch, of Anafil Nylon T135 bonded thread or equal.
- Grommetted through seam.

**Welded Hemcord with Stitching Detail**  
Stitching Detail

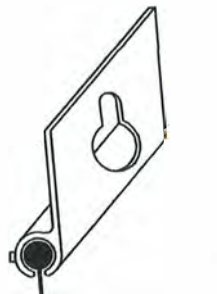
- Hemcord Dia.: 5/16"
- Sewing includes 2 rows, Double Lock Stitch, of Anafil Nylon T135 Bonded Thread or equal.
- Reinforced welded hemcord includes a 2" trifold Polypro Seam sewn over the weld.



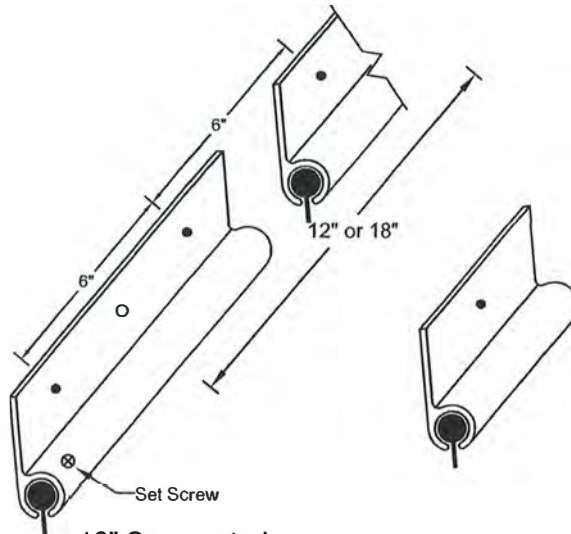
Same as above extrusion



Keyhole Slot in Continuous C-Channel

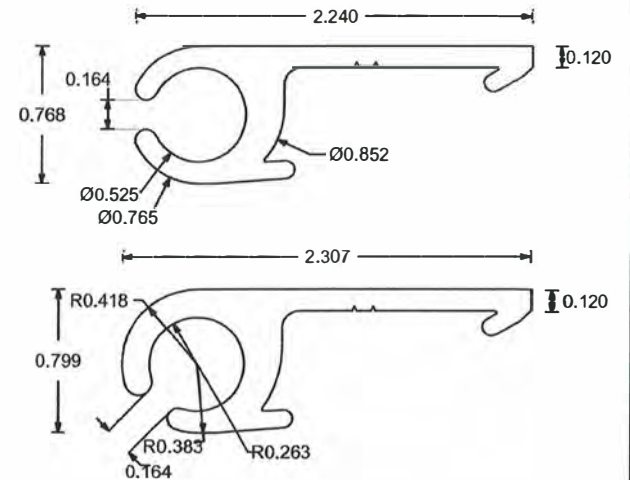


Keyhole Slot in Segmented C-Channel



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

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



**C-Channel**

Alloy: 6063-T6 Aluminum

NOTE: Heavier alternate extrusion may be used.

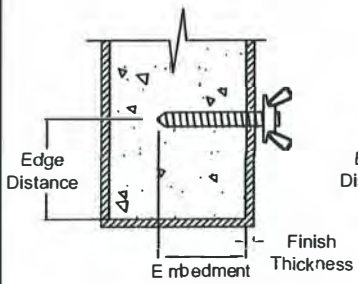
**NOTES:**

- 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 14 - 19.
- A 1/4" TEK Screw may be used to secure the C-Channel end to limit screen movement.

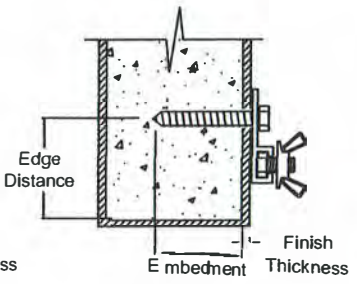
**GROMMET / C-CHANNEL**

	Engineering Review By: Ted Remington and Associates, LLC Certification Authorization #	<b>ARMOR SCREEN</b> <b>GROMMET AND HEMCORD SERIES 2000</b> <b>HURRICANE PROTECTION</b>
	525 Arthur Godfrey Rd. Suite 101 Palm Beach, FL 33140 (561) 841-8890 www.armorscreen.com	ARMOR SCREEN, Inc. 2744 Hillsboro Road West Palm Beach, FL 33405 (561) 841-8890 www.armorscreen.com
Date: 10/23/07 12/18/2017 Scale:	Rev. Date: 10/11/10 Not to Scale	Rev. Date:

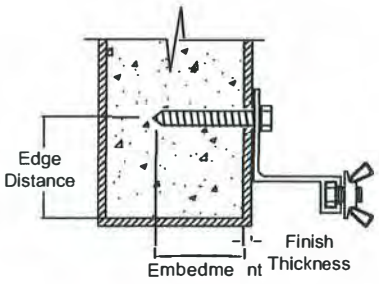
Page: 2 of 19



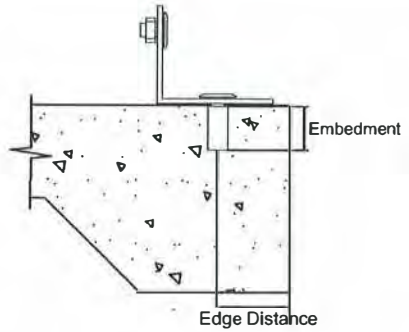
Grommet Direct Mount Anchoring Detail



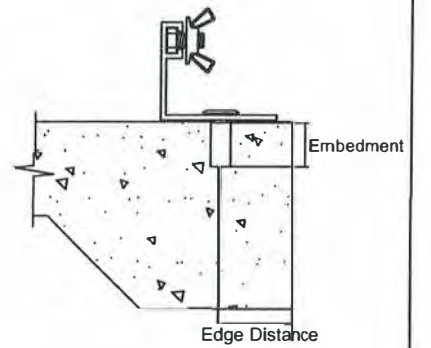
Grommet F-Track 6063-T6 Anchoring Detail



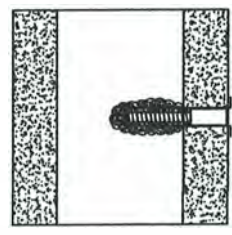
Grommet F-Track 6063-T6 (1", 2", and 3" Build-Out) Anchoring Detail



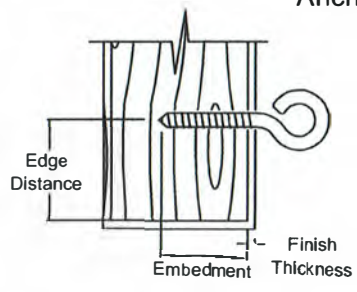
Grommet Angle Aluminum Minimum .125" x 6063-T6 Anchoring Detail



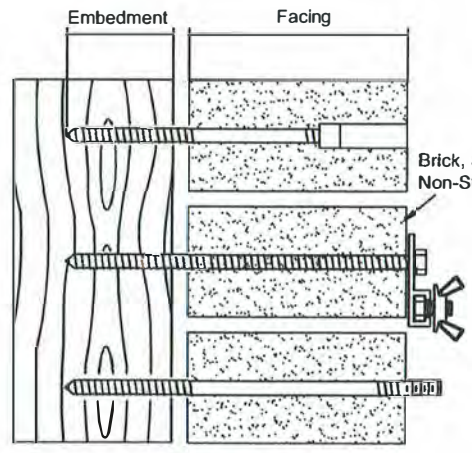
Grommet Studded / Studless Angle F-Track Minimum .125" x 6063-T6 Anchoring Detail



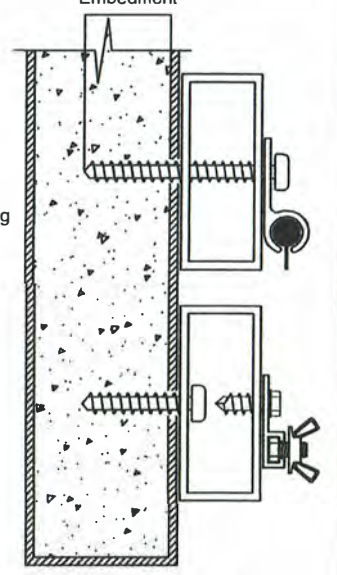
CMU and Terracotta Block Epoxy Anchor see Table 5, page 16 for anchoring details



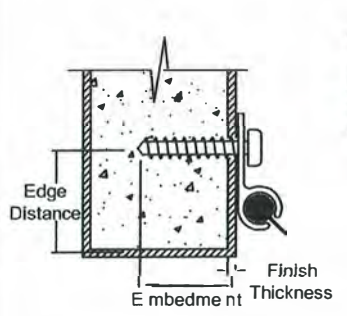
Grommet 3/8" Eye Lag Anchoring Detail



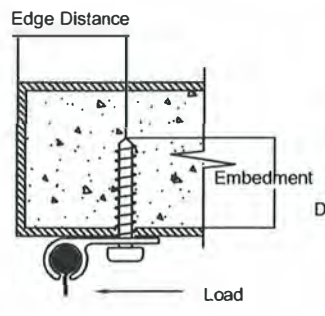
1/4" or 3/8" Hanger Bolt with Coupler, Panelmate or Hex Lag Screw (Non-Structural Facing) (Caulk or Sealant suggested to seal facing) Some damage to the facing may be expected.



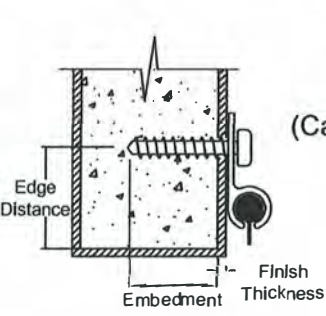
1/8" Aluminum Tube / Angle For Build-Out 6063-T6 Alloy



45° C-Channel



90° C-Channel



180° C-Channel

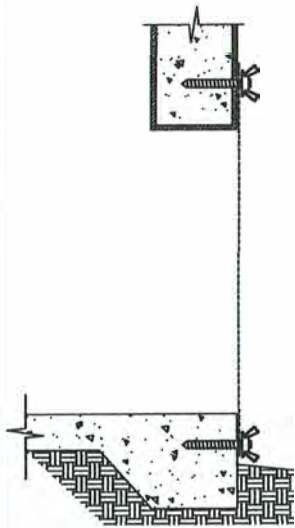
THEODORE BERMAN  
 LICENSED PROFESSIONAL ENGINEER  
 No 09814  
 STATE OF FLORIDA  
 12/18/2017  
 THEODORE BERMAN, P.E.  
 042806

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Direct Mount  
Typical Vertical  
Sectional View

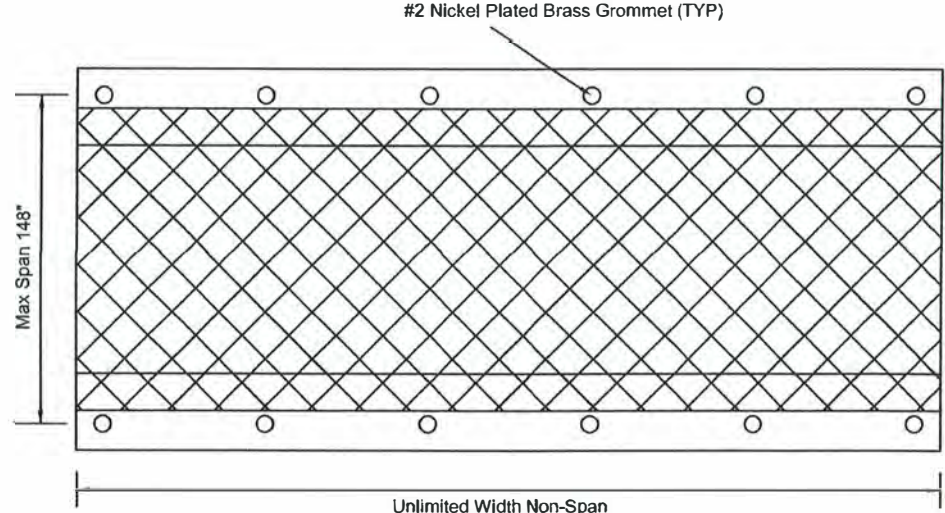


Direct Mount  
Typical Vertical  
Window  
Sectional View



F-Track  
Typical Vertical  
Window  
Sectional View

Span

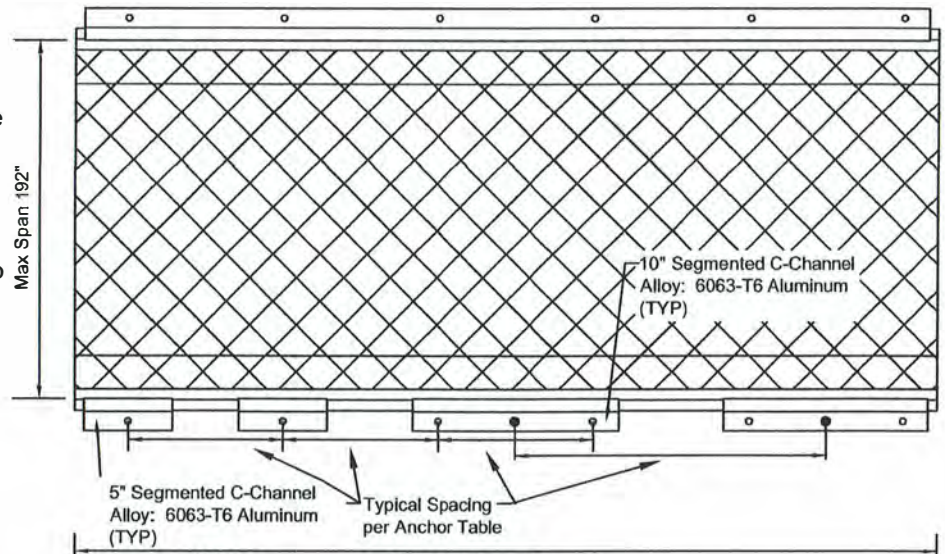


#2 Nickel Plated Brass Grommet (TYP)

Max Span 148"

Unlimited Width Non-Span

**GROMMET VERTICAL INSTALLATION**  
(Span Sides = Welded Seam)



Max Span 192"

10" Segmented C-Channel  
Alloy: 6063-T6 Aluminum  
(TYP)

5" Segmented C-Channel  
Alloy: 6063-T6 Aluminum  
(TYP)

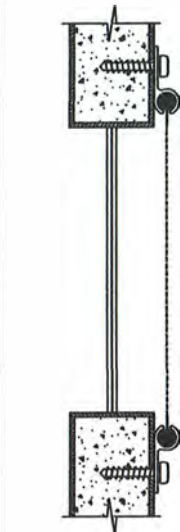
Typical Spacing  
per Anchor Table

Unlimited Width Non-Span

**C-CHANNEL VERTICAL INSTALLATION**  
(Span Sides = Welded Seam)

**NOTES:**

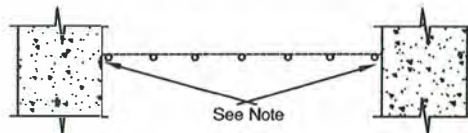
- Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.
- The length of the Segmented C-Channel is governed by the strength of the fabric to C-Channel connection, not the hardware attachment to the C-Channel.



C-Channel  
Typical Vertical  
Window  
Sectional View



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



See Note

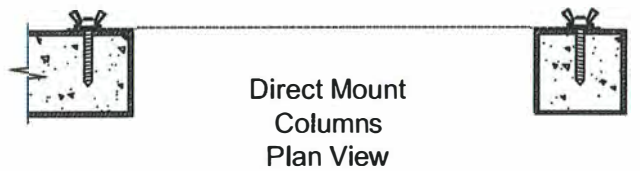
**PLAN VIEW, VERTICAL SCREEN,  
TRAPPED OPENING**

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

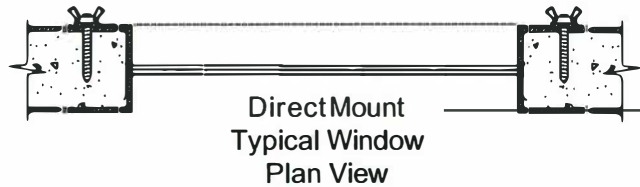


<b>ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION</b>	
ARMOR SCREEN, Inc. 2744 Hillsboro Road West Palm Beach, FL 33405 (561) 841-8890 <a href="http://www.armorscreen.com">www.armorscreen.com</a>	
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Scale: Not to Scale   Page: 4 of 19	

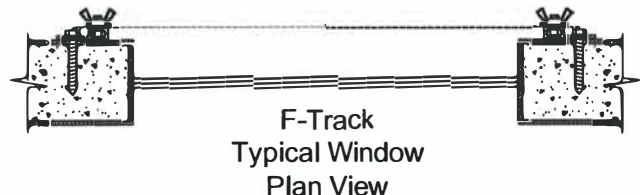
Engineering Review By:  
Ted Gorman and Associates, LLC  
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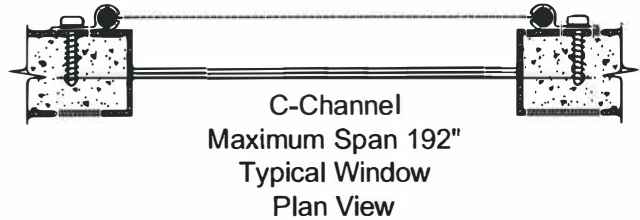
Direct Mount  
Columns  
Plan View



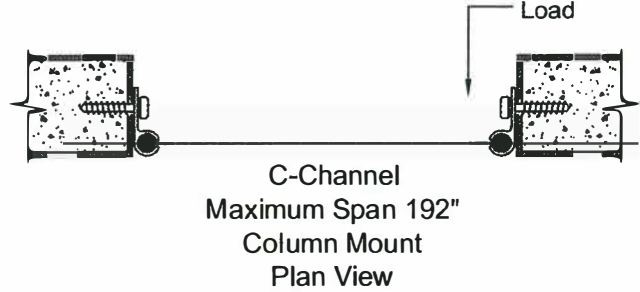
Direct Mount  
Typical Window  
Plan View



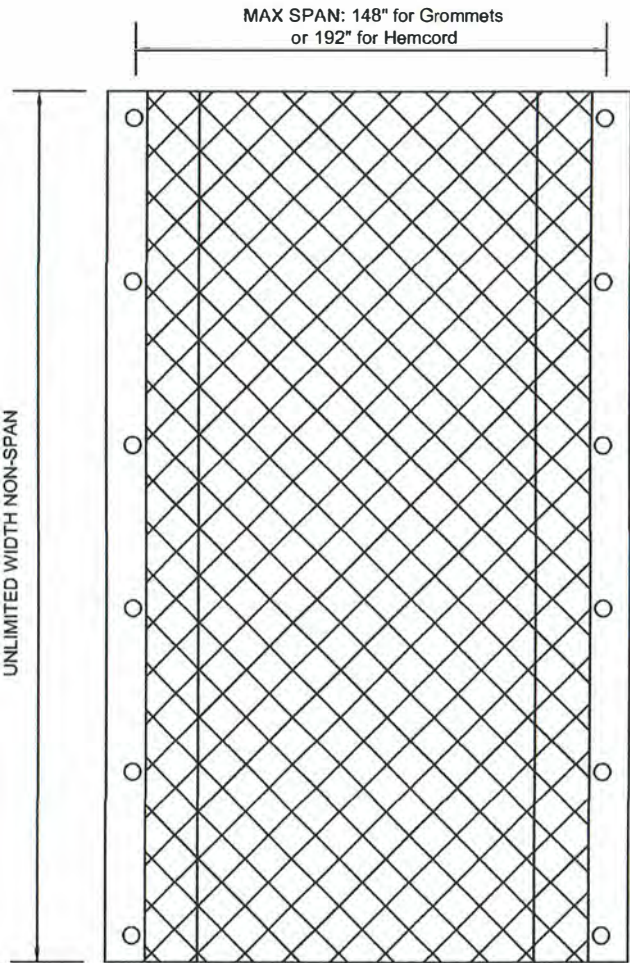
F-Track  
Typical Window  
Plan View



C-Channel  
Maximum Span 192"  
Typical Window  
Plan View



C-Channel  
Maximum Span 192"  
Column Mount  
Plan View



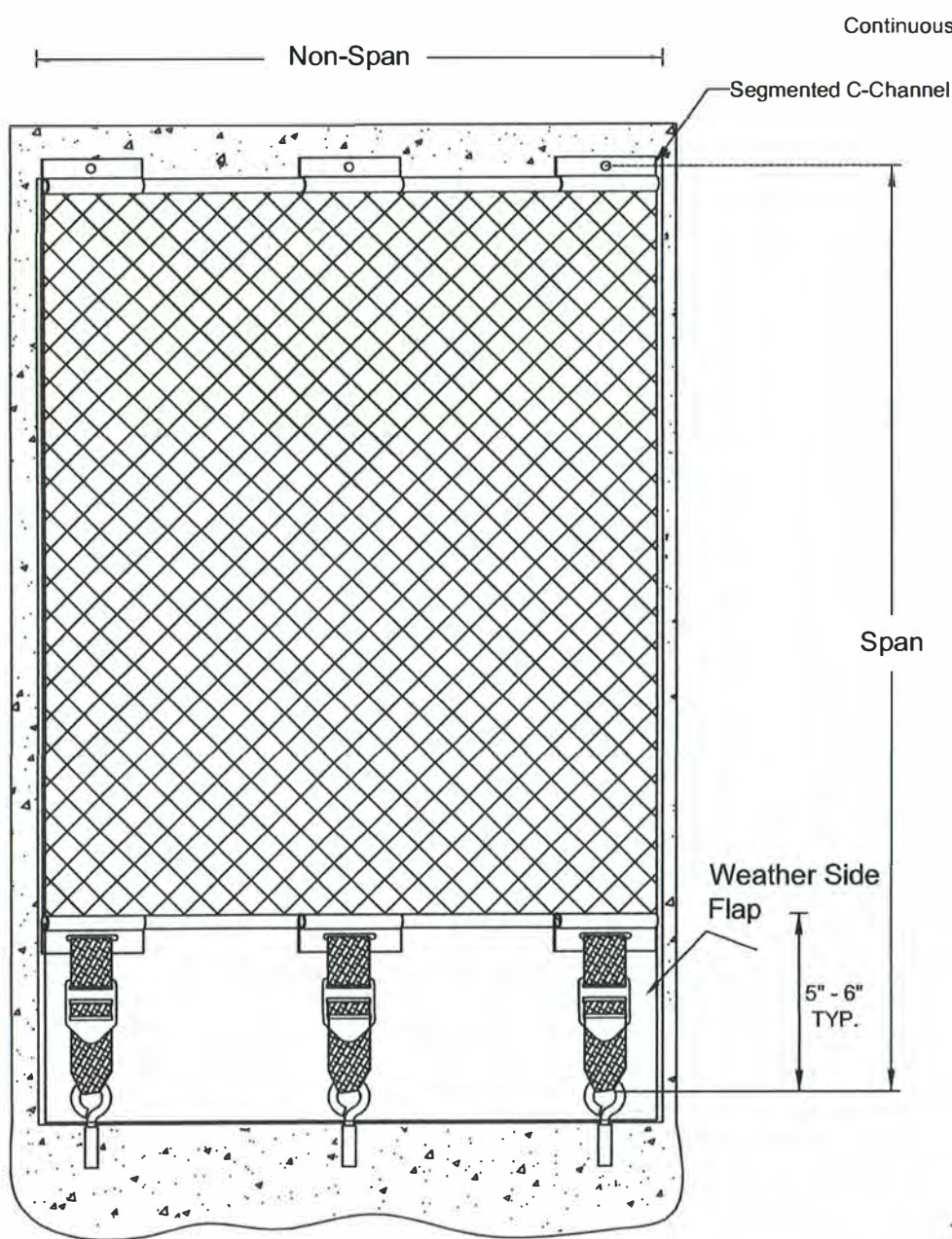
HORIZONTAL INSTALLATION  
(Span Sides = Welded Seam)

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

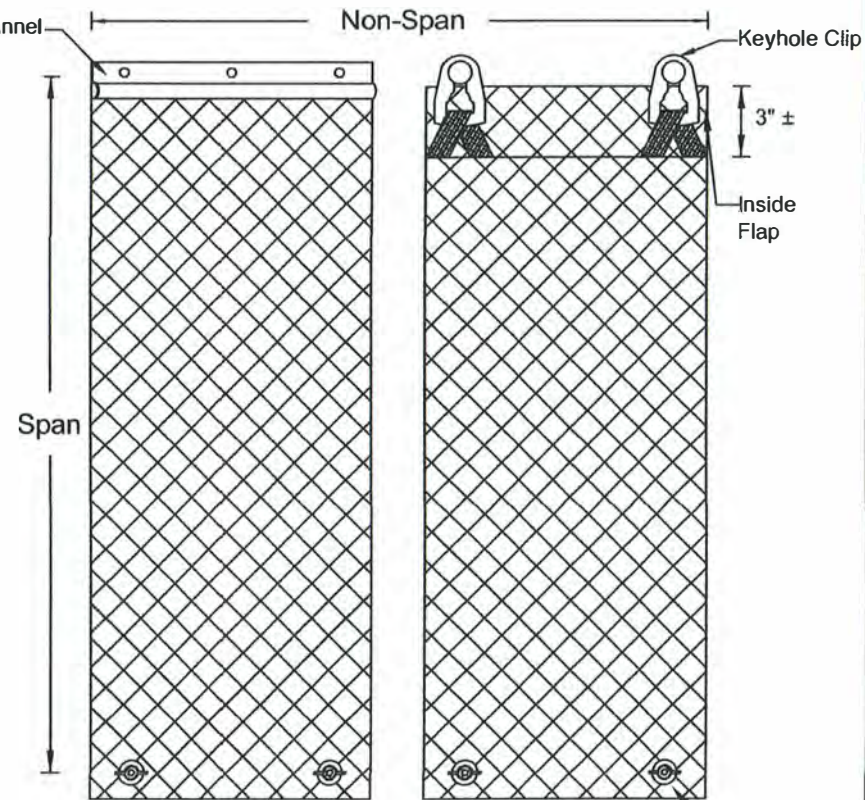


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COMBINATION ATTACHMENT  
W/ EYEBOLT, BUCKLE/STRAP,  
AND SEGMENTED C-CHANNEL  
not to scale



COMBINATION ATTACHMENT  
W/ KEYHOLE CLIPS AND CARRIAGE BOLTS  
OR CONTINUOUS C-CHANNEL  
Grommets

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.



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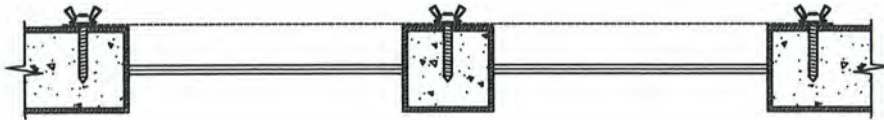
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For buckle/strap details, see page 1

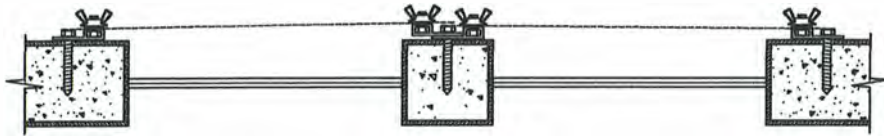




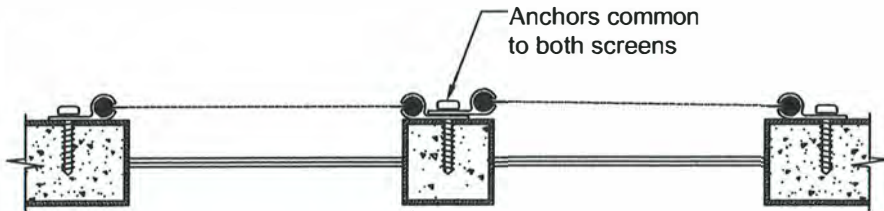
Direct Mount  
Columns  
Plan View



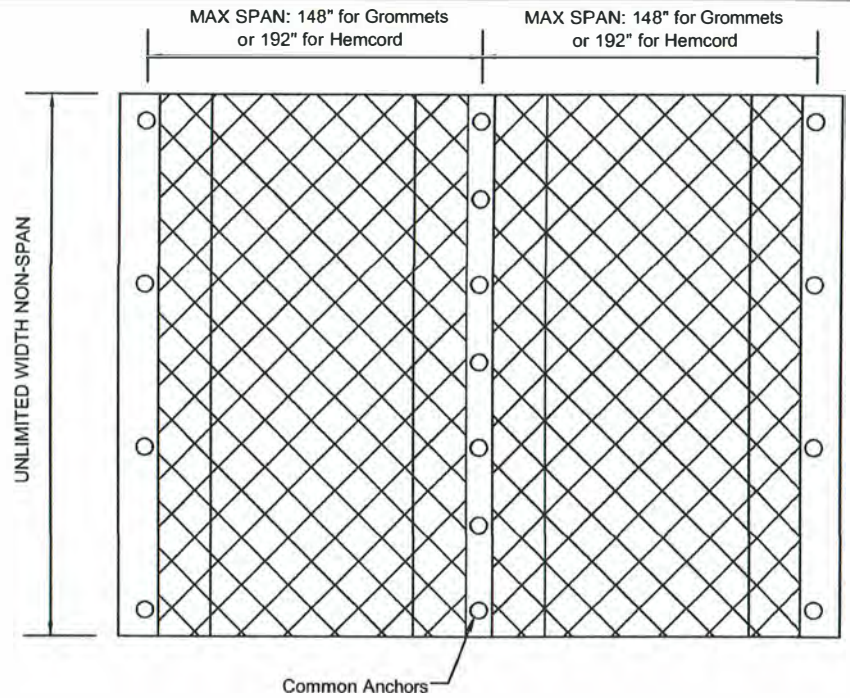
Direct Mount  
Typical Window  
Plan View



F-Track  
Typical Window  
Plan View



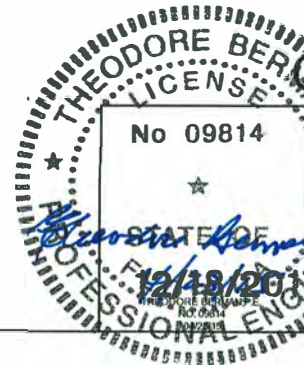
C-Channel Max. Span 192"  
Typical Window  
Plan View



**NOTES:**

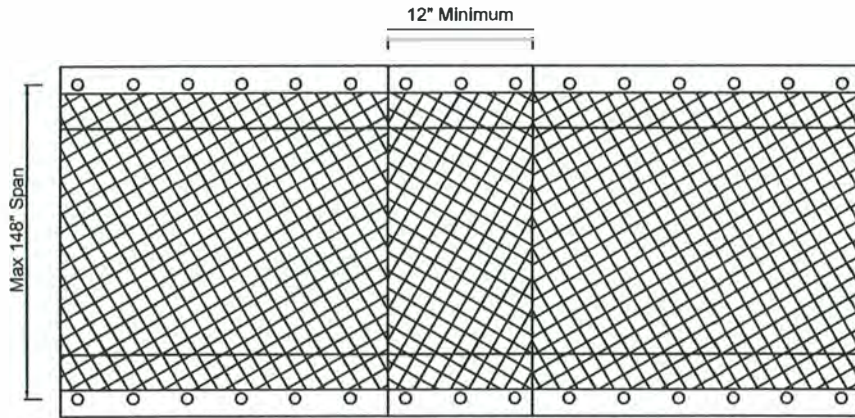
- Two adjacent screens may share common anchors.
- Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.

**COMMON ANCHORS**



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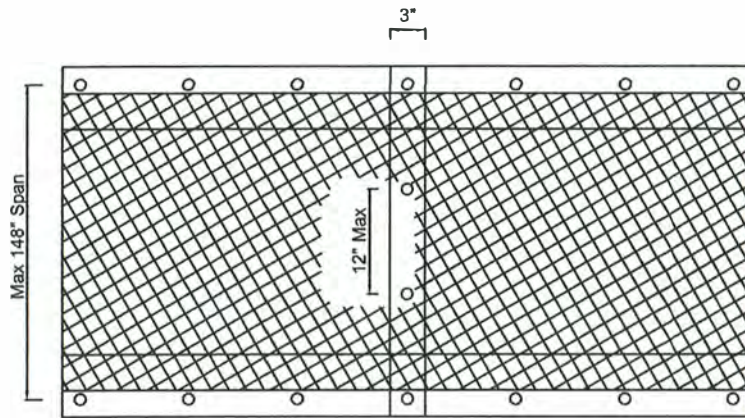
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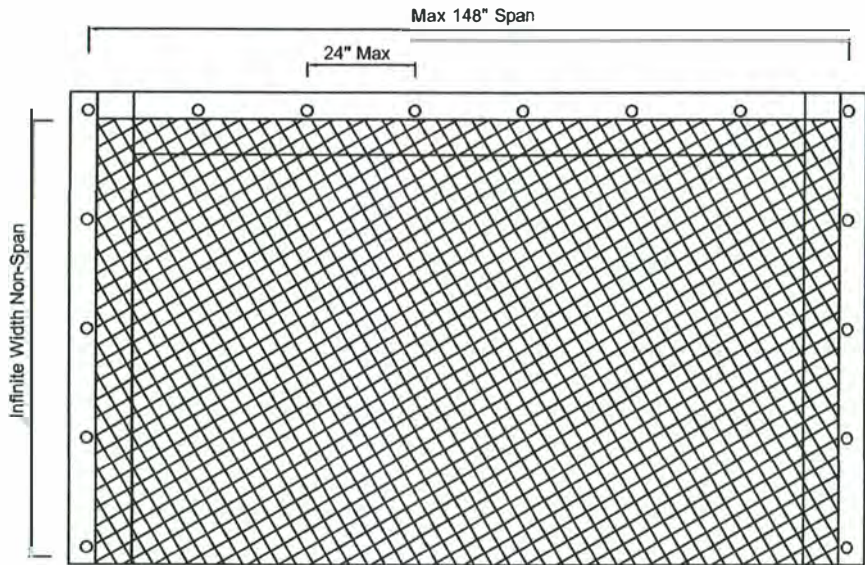
Unlimited Width Non-Span  
**TYPE 1 GROMMET SCREEN OVERLAP**



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



Unlimited Width Non-Span  
**TYPE 2 GROMMET SCREEN OVERLAP**



**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.

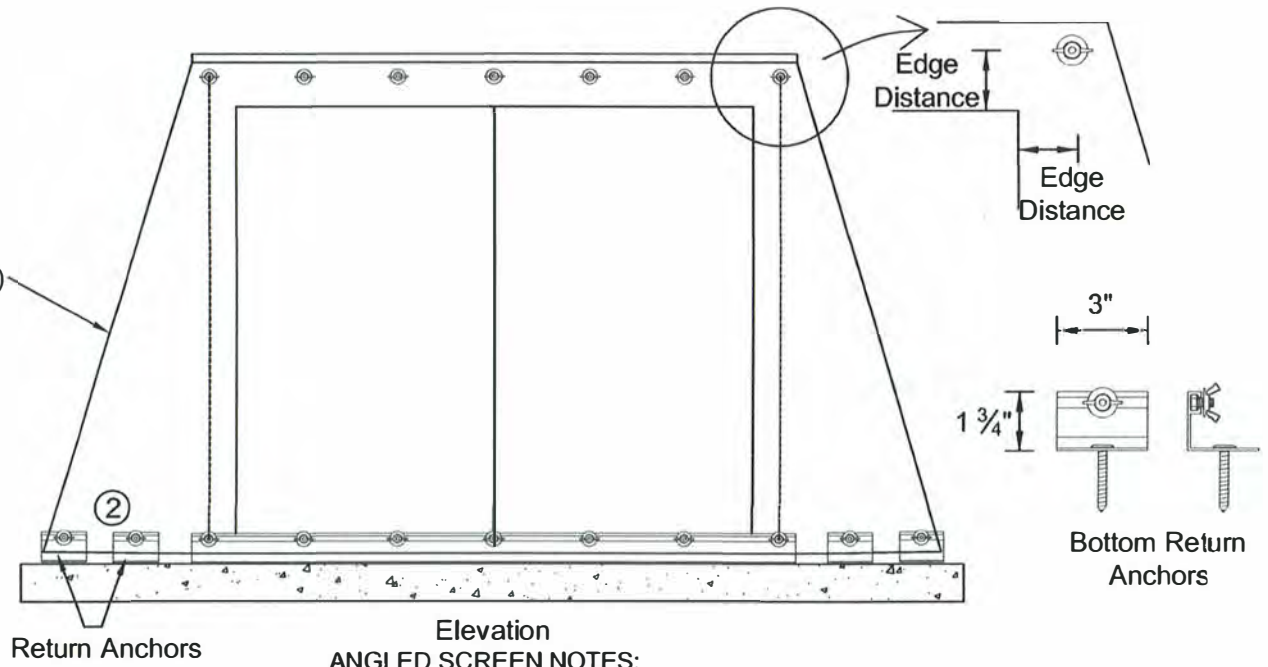
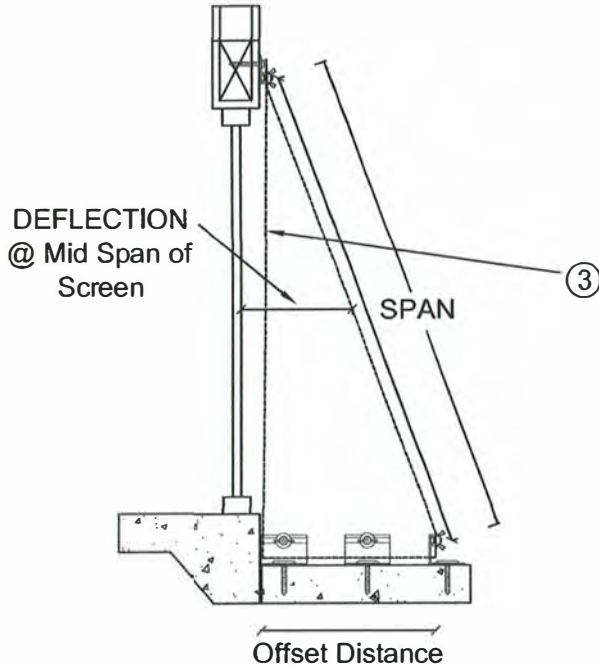
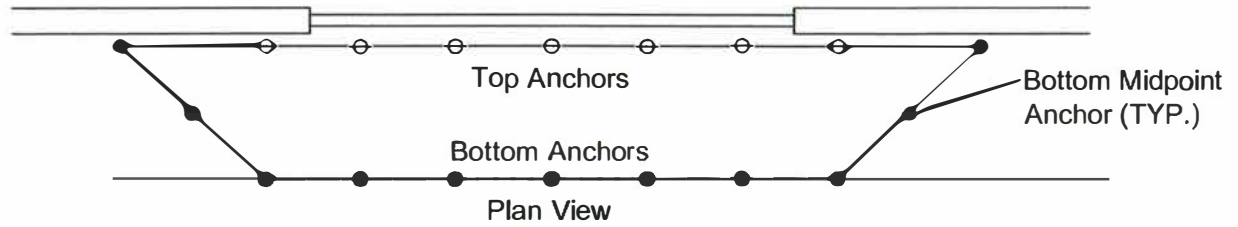
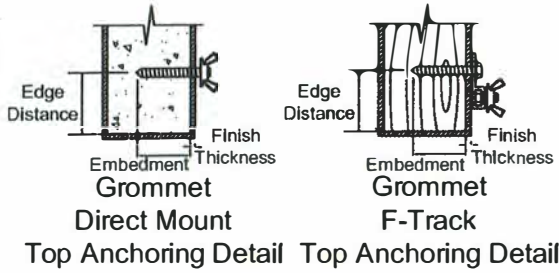
**ARMOR SCREEN - GROMMET / C-CHANNEL**



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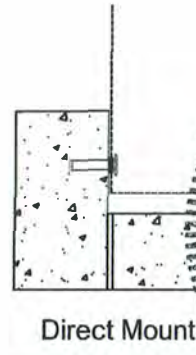
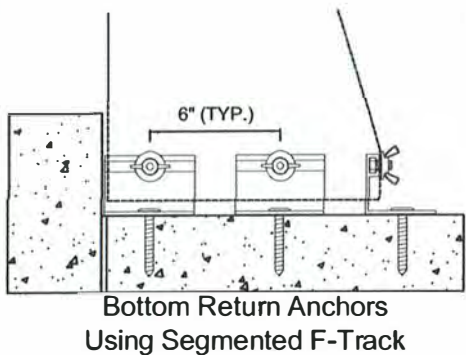
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ANGLED SCREEN NOTES:

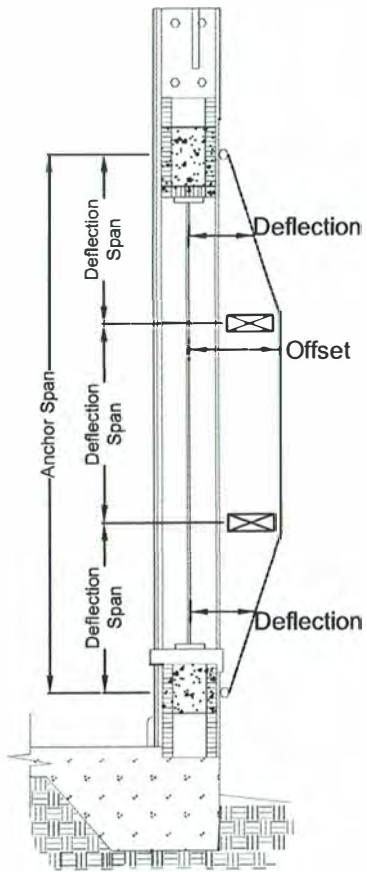
1. Refer to Deflection Table D-1.1 page 13.
2. Bottom Return Requires a midpoint anchor.
3. Side Return (span side) anchors are optional.
4. Typical screen anchor attachment may be grommet, continuous C-Channel, segmented C-Channel or any combination.



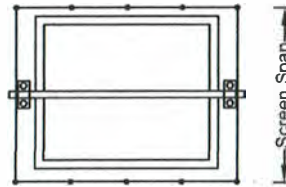
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ANGLED SCREEN

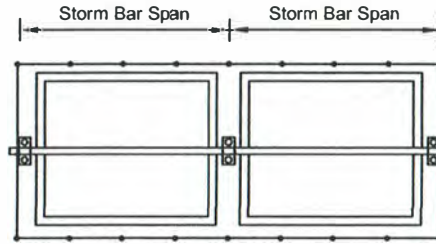
<p>ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION</p>		
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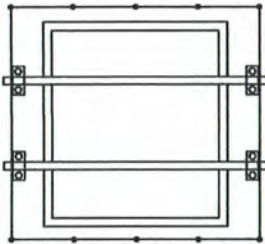
Multiple Storm Bar with Single Opening



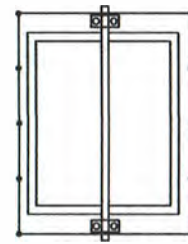
Single Storm Bar Elevation



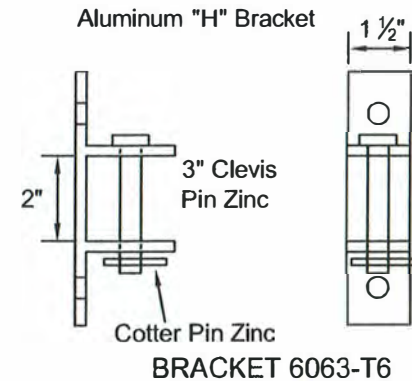
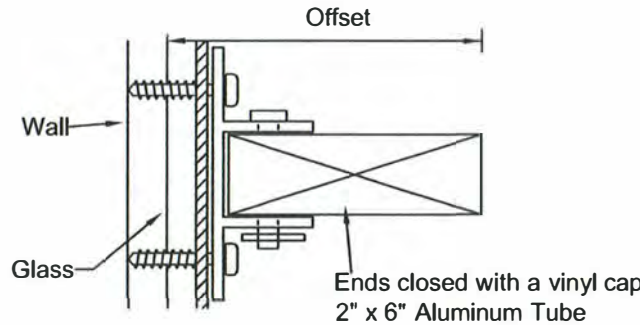
Single Storm Bar with Multiple Openings Elevation



Multiple Storm Bar Elevation

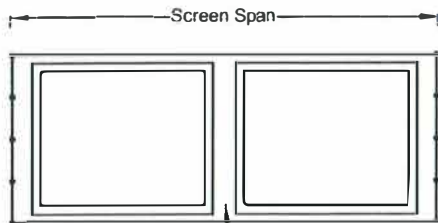


Vertical Storm Bar Elevation



**STORM BAR NOTES:**

1. Refer to Table D-1.2 on page 13.
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 at the support.
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 14 - 19.
5. The storm bar and screen should extend past the protected opening by 1 1/2 times the offset.
6. Use "opening" span and positive wind pressure to determine the minimum separation between screen and glazing.
7. Use "anchor" span and negative wind pressure to determine fastener size and spacing.



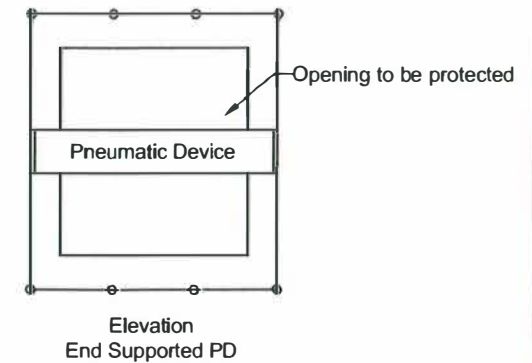
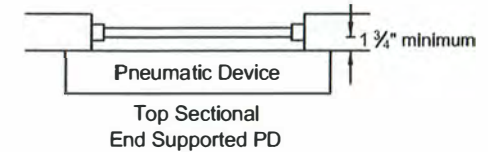
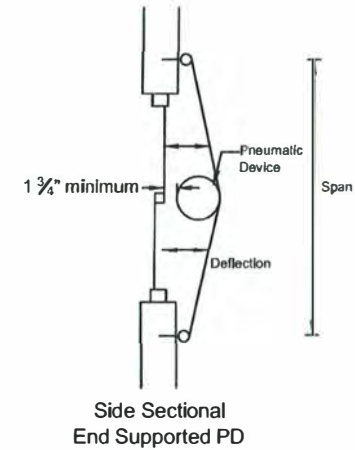
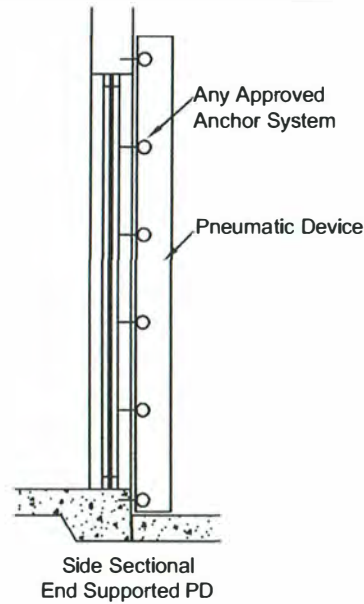
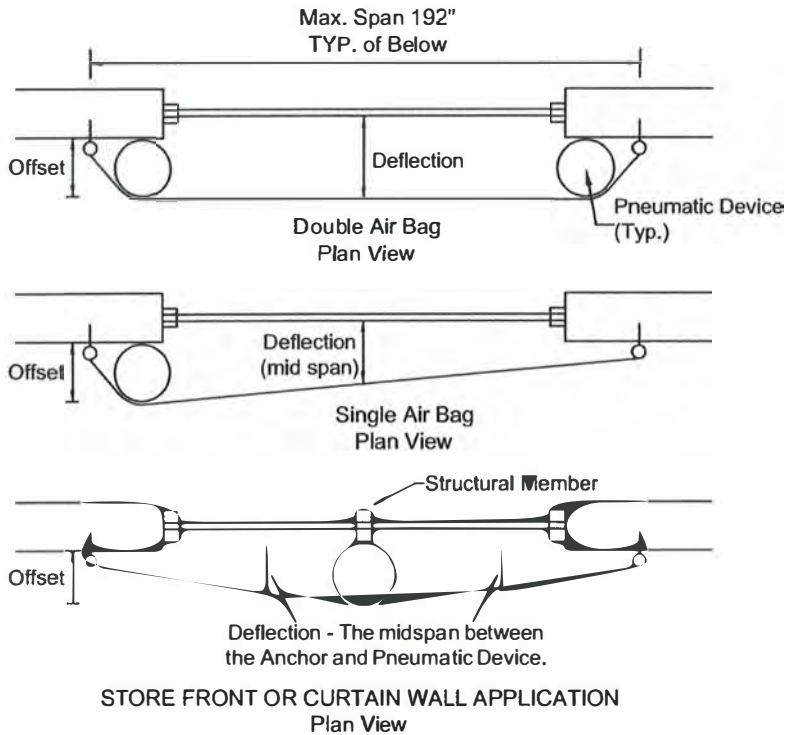
Building Structure between adjacent window / door frames may act as a Storm Bar if proper offset to the glazing is present. This applies to a vertical or horizontal applications.

**STORM BAR & BRACKET**

**STORM BAR SYSTEM**



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#### PNEUMATIC DEVICE (PD) SPECIFICATIONS:

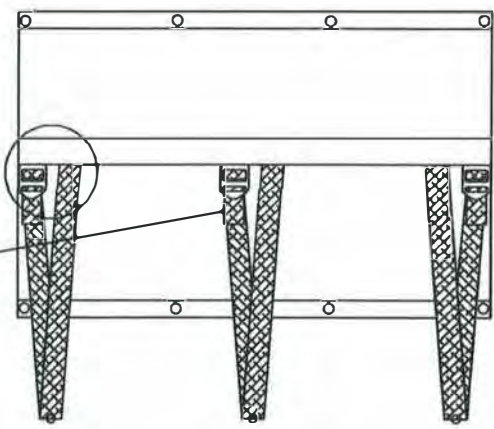
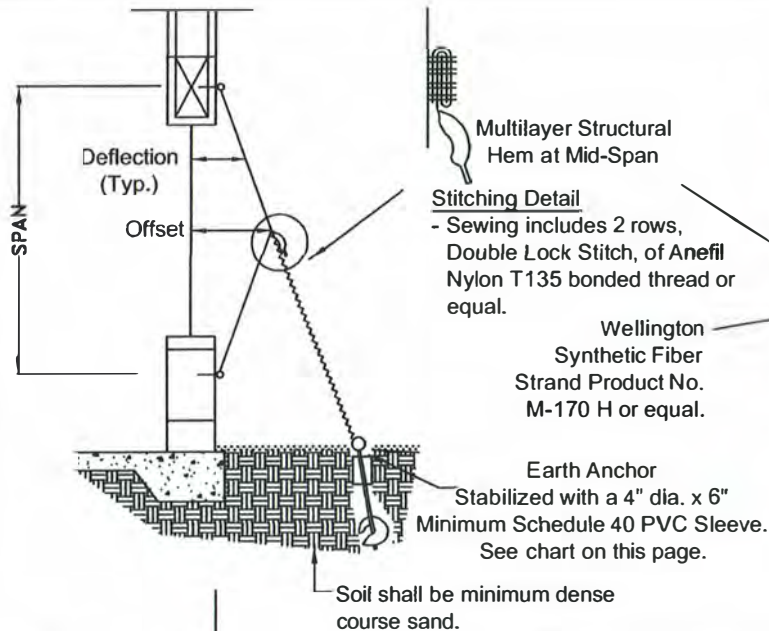
1. Pneumatic Device consists of two parts, a refillable polymer air bladder capable of holding air without perceptible leakage, and a tough fabric cover for structural integrity and durability.
2. May be inflated by any residential or commercial vacuum cleaner, or air pump intended for air mattresses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

#### PNEUMATIC DEVICE (PD) DEFLECTION SYSTEM NOTES:

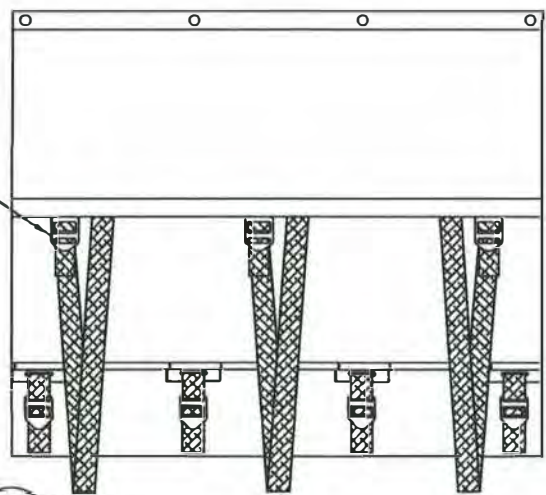
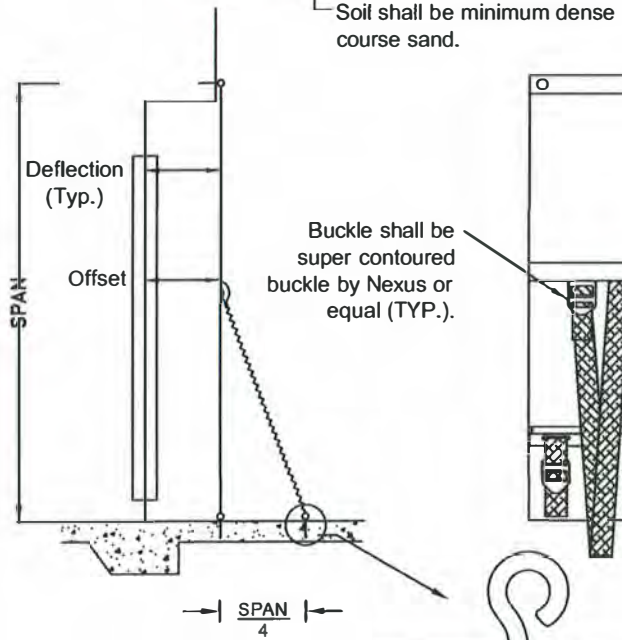
1. Refer to the Deflection Table D-1.1 on page 13.
2. Pneumatic device must not rest on glazing.
3. The pneumatic device may be attached to barrier and may rest on but not attached to the structure. The device may be end supported if spanning the protected opening.
4. Inflation of the device requires 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

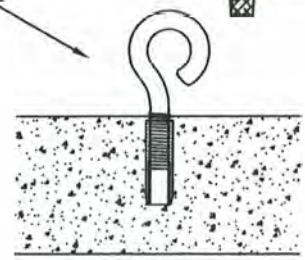
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	Engineering Review By: Tom Berman and Associates, LLC Certificate of Authorization # 27502 525 Arthur Godfrey Rd. Suite 104 Miami Beach, FL 33140 (305) 868-4707 <a href="http://www.flproductapproval.com">www.flproductapproval.com</a>	ARMOR SCREEN, Inc. 2744 Hillsboro Road West Palm Beach, FL 33405 (561) 841-8890 <a href="http://www.armorscreen.com">www.armorscreen.com</a>
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- CENTER HEM DEFLECTION SYSTEM NOTES :**
1. Refer to Deflection Table D-1.1 on page 13.
  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"



Drop-In Anchor  
See chart on this page.

## CENTER HEM DEFLECTION SYSTEM



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TABLE D-1.1

Grommet - Hemcord 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	2.6	3.0	3.4
3 ft.	36	3.0	3.2	3.4	3.8	4.0	4.6	5.1
4 ft.	48	3.9	4.3	4.5	5.0	5.3	6.1	6.8
5 ft.	60	4.9	5.3	5.7	6.3	6.6	7.6	8.5
6 ft. 4 in.	76	6.2	6.8	7.1	8.0	8.4	9.7	10.8
7 ft. 4 in.	88	7.2	7.8	8.3	9.2	9.7	11.2	12.5
8 ft. 4 in.	100	8.2	8.9	9.4	10.5	11.0	12.7	14.2
9 ft. 4 in.	112	9.2	10.0	10.5	11.8	12.3	14.2	15.9
10 ft. 4 in.	124	10.2	11.0	11.7	13.0	13.7	15.7	17.6
11 ft. 4 in.	136	11.2	12.1	12.8	14.3	15.0	17.3	19.3
12 ft. 4 in.	148	12.1	13.2	13.7	15.5	16.3	18.8	21.0

Hemcord Series 2000 Deflection Table								
13 ft.	156	12.8	13.9	14.7	16.4	17.2	19.8	22.2
14 ft.	168	13.8	15.0	15.8	17.6	18.5	21.3	23.9
15 ft.	180	14.8	16.0	16.9	18.9	19.8	22.9	25.6
16 ft.	192	15.7	17.1	18.0	20.2	21.2	24.4	27.3

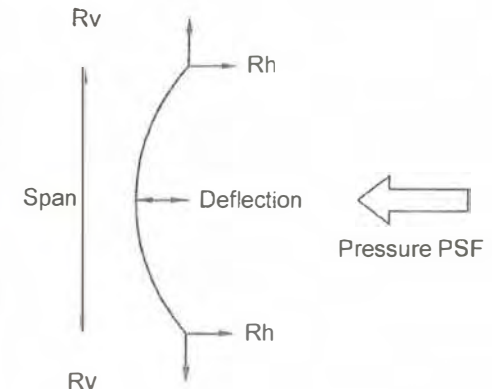
NOTE: Deflection is the minimum glass separation measured at mid span of the screen and subject to rational analysis.

TABLE D-1.2

Grommet / Hemcord 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

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

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	595.1	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
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	714.1	778.6	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



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.

## DEFLECTION TABLES

	<p><b>ARMOR SCREEN</b>  <b>GROMMET AND HEMCORD SERIES 2000</b>  <b>HURRICANE PROTECTION</b></p>
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**CONCRETE, 3000 PSI - 1/4" AND 5/16" ANCHORS**

**TABLE 2 ANCHOR SPACING**

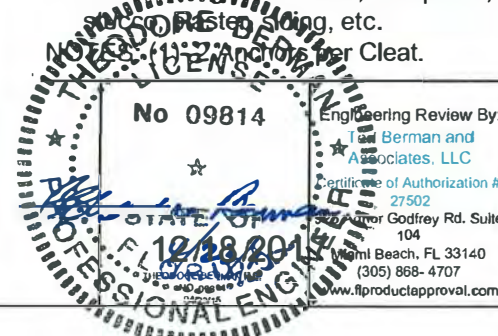
Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/4" DIA. SS DROP-IN ANCHORS (1)	1"	3 1/2"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	12"	12"	6"
			90 (psf)	12"	12"	6"	6"	6"
			110 (psf)	12"	12"	6"	6"	6"
1/4" DIA. TAPCON SG (INSTALL PER MIAMI-DADE NOA NO. 11-0616.04)	1 3/4"	2 1/2"	30 (psf)	12"	12"	12"	12"	12"
			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" DIA. X 1 3/4" SS TAPCON (1)	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 2 1/4" PANELMATE (INSTALL PER PANELMATE INSTRUCTIONS) (1)	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. SAMMYS SSC (INSTALL PER MIAMI-DADE NOA NO. 11-0616.04)	2 1/4"	2 1/2"	30 (psf)	12"	12"	6"	6"	6"
			40 (psf)	12"	6"	6"	6"	6"
			60 (psf)	12"	6"	6"	6"	---
			90 (psf)	12"	6"	6"	---	---
			110 (psf)	12"	6"	6"	---	---
1/4" ELCO CRETE FLEX 410 SS (INSTALL PER MIAMI-DADE NOA NO. 12-0126.09)	2"	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"	---	---
1/4" POWERS POWER STUD SS (1)	2"	3"	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 POWERS WEDGE BOLT 410 SS (1)	1 3/4"	3"	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"

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 11-0816.06)	7/8"	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"	---	---
			110 (psf)	6"	6"	---	---	---
1/4"-20 CALK-IN ANCHORS (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (1)	1 1/4"	3 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. Powers SS Mushroom Spike Anchor (Install per manufacturer's instructions) (1)	1 1/4"	3 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. HOLLOW SET DROP-IN ANCHORS (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (1)	7/8"	3 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" CONFAST HURRICANE SHUTTER INSERT ANCHOR W/ 1/4" DIA. INTERNAL THREAD	1 5/8"	4"	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"
5/16" ITW BUILDEX XL SERIES TAPCON	2 1/4"	2 3/16"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	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 5/8" concrete, 1/2" plaster, 1/2" stucco, etc.
- Max. (1) 2" Anchor per Cleat.



**ARMOR SCREEN  
GROMMET AND HEMCORD SERIES 2000  
HURRICANE PROTECTION**

ARMOR SCREEN, Inc.  
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Date: 10/23/07 | Rev. Date: 10/11/10 | Rev. Date: 04/23/15  
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# 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"
3/8" ASTM 304-316 SS THREADED ROD IN EPOXY W/ SS COUPLER AND EYEBOLT (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	3 3/8"	4"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	18"	12"
			110 (psf)	18"	18"	18"	18"	18"	12"	12"
3/8" DIA. 410 SS POWERS WEDGE BOLT (LDT)	2 1/2"	3 1/2"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"
3/8" DIA. SS DROP-IN ANCHORS	1 1/2"	4"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"
3/8"-16 CAULK-IN BOLT (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/4"	4"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"

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" DIA. POWERS SS MUSHROOM SPIKE ANCHOR (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 3/4"	4"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"
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"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"
3/8" DIA. POWERS HOLLOW SET DROP-IN ANCHORS (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	1 1/2"	4"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"
3/8" POWERS POWER STUD SS	1 5/8"	4"	30 (psf)	18"	18"	18"	18"	18"	18"	18"
			40 (psf)	18"	18"	18"	18"	18"	18"	18"
			60 (psf)	18"	18"	18"	18"	18"	18"	18"
			90 (psf)	18"	18"	18"	18"	18"	12"	12"
			110 (psf)	18"	18"	18"	18"	12"	12"	12"

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

### 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.



ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION		
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Date: 10/23/07	Rev. Date: 10/11/10	Rev. Date: 04/23/15
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**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"
1/2" DIA. TAPCON SG (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (1)	1 1/4" 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"	6"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
K" DIA. ALL POINTS SOLID SET ANCHORS (VALUES AND INSTALLATION PER MIAMI-DADE NOA 05-1116.04 EXP. 12-2011)	3/8" 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)	6"	6"	6"	6"	---
			90 (psf)	---	---	---	---	---
1/2"-20 CALK-IN ANCHORS	3/8" 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)	6"	6"	6"	6"	---
			90 (psf)	---	---	---	---	---
1/2" DIA. X 1 3/4" 410 SS TAPCON (INSTALL PER MIAMI-DADE NOA NO. 03-0114.03) (1)	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"	6"	6"	6"
1/2" DIA. X 2 1/4" PANELMATE (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (1)	1 1/4" shall be in face shell, not mortar joints	3"	30 (psf)	12"	12"	12"	12"	12"
			40 (psf)	12"	12"	12"	12"	12"
			60 (psf)	12"	12"	6"	6"	6"
			90 (psf)	12"	12"	6"	6"	6"
1/2" DIA. X 2 1/4" PANELMATE (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (1)	1 3/4" shall be in face shell, not mortar joints	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"
CONFAST HURRICANE SHUTTER INSERT ANCHOR W/ 1/2" DIA. INTERNAL THREAD (1)	1 5/8" shall be in face shell, not mortar joints	4"	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"	6"	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"
3/8"-16 Calk-In Anchors (1)	1 3/4" shall be in face shell, not mortar joints	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"	12"	6"	6"	6"	---	---
3/8" DIA. HOLLOW SET DROP-IN ANCHORS (1)	1" shall be in face shell, not mortar joints	4"	30 (psf)	12"	12"	12"	12"	12"	6"	6"
			40 (psf)	12"	12"	12"	12"	6"	6"	---
			60 (psf)	12"	12"	12"	6"	6"	6"	---
			90 (psf)	12"	12"	6"	6"	6"	---	---
3/8" POWERS TAPPER (1)	1 3/4" shall be in face shell, not mortar joints	4"	30 (psf)	12"	12"	12"	12"	12"	6"	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"	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 1/2" x 2 1/2" 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"

**TABLE 5 ANCHOR SPACING**

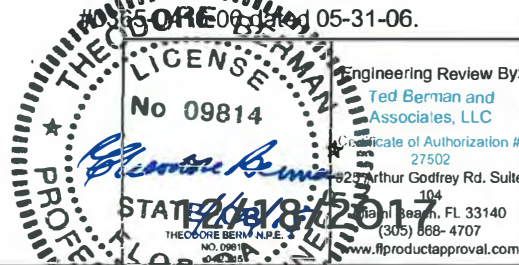
- Allow values for Terra Cotta Block with Stucco per HTL Test report #0850RE-08-13-05-31-06.

**CONCRETE BLOCK (CMU) NOTES:**

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

**NOTES:**

- (1)- 2 Anchors per Cleat.



Engineering Review By: Ted Berman and Associates, LLC		
Certificate of Authorization # 27502		
223 Arthur Godfrey Rd. Suite 104 Palm Beach, FL 33140 (305) 668-4707 www.flproductapproval.com		
<b>ARMOR SCREEN</b>		
<b>GROMMET AND HEMCORD SERIES 2000</b>		
<b>HURRICANE PROTECTION</b>		
ARMOR SCREEN, Inc. 2744 Hillsboro Road West Palm Beach, FL 33405 (561) 841-8890 www.armorscreen.com		
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## 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"
SOLID GROUTED (CMU)	1/4" DIA. TAPCON SG (INSTALL PER MANUFACTURER'S INSTRUCTIONS) (INSTALL PER MIAMI-DADE NOA NO. 11-0616.04)	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"	6"	6"
				60 (psf)	12"	12"	6"	6"	6"
				90 (psf)	12"	6"	6"	---	---
				110 (psf)	12"	6"	6"	---	---
	1/4" DIA. X 1 3/4" 410 SS TAPCON (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	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"	---	---
	1/4" 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"	---	---	---	
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)	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"	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"	---	---	---	

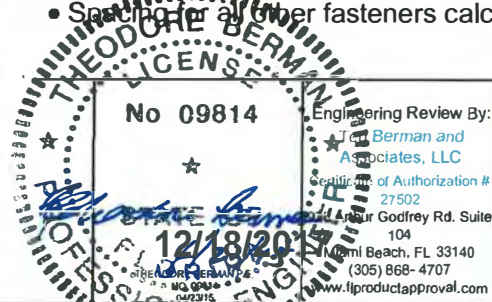
	Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span							
					to 48"	to 76"	to 100"	to 124"	to 148"	to 168"	to 192"	
SOLID GROUTED (CMU)	3/8" ASTM 304-316 SS THREADED ROD IN EPOXY W/ SS COUPLER AND EYEBOLT (INSTALL PER MANUFACTURER'S INSTRUCTIONS)	3 1/2" shall be in face shell, not mortar joints	12"	30 (psf)	12"	12"	12"	12"	12"	12"	12"	12"
				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"	
	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"
				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"	
	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"	
				40 (psf)	12"	12"	12"	6"	6"	6"	6"	
				60 (psf)	12"	12"	6"	6"	6"	6"	6"	
90 (psf)				12"	6"	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"	---	---	---		
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"		
			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 NOTES:

- Spacing for fasteners used in testing are shown at spacing used in tests
- Spacing for 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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### ARMOR SCREEN GROMMET AND HEMCORD SERIES 2000 HURRICANE PROTECTION

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Date: 10/23/07 Rev. Date: 10/11/10 Rev. Date: 04/23/15  
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**WOOD SYP #2 - 1/4" 5/16" 3/8" 1/2"**

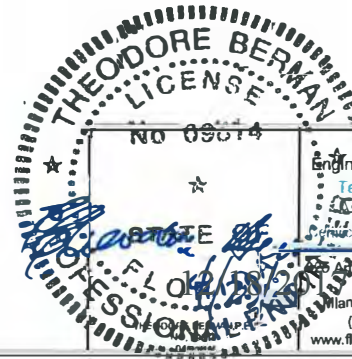
**TABLE 7 ANCHOR SPACING**

Anchor	Min. Embed.	Min. E.D.	Pressure (psf)	Span				
				to 48"	to 76"	to 100"	to 124"	to 148"
1/4" 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"	---	---	---
7/8" DIA. X 1 3/4" 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"	6"	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"
			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"	
			40 (psf)	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 2015.
- \*Lag Anchor to be fully embedded.
- Douglas Fir - Larch alternate acceptable wood type



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METAL - 1/4"-3/8"

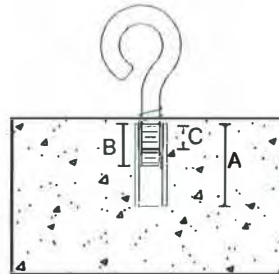
TABLE 8 ANCHOR SPACING

	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 <small>(spacing per test #01 dated 2-8-08)</small>	1/4"-14 TEKS SELF-TAPPING SCREWS			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"
1/2" (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 3/8" 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"	---
				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.

	Embedment		
	1/4"	3/8"	1/2"
A	1"	1 3/16"	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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