

# TEXAS DEPARTMENT OF INSURANCE

Engineering Services Program / MC 103-3A 333 Guadalupe Street P.O. Box 149104 Austin, Texas 78714-9104  
Phone No. (512) 322-2212 Fax No. (512) 463-6693

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## PRODUCT EVALUATION SHU-204

Effective May 1, 2012

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**. This product shall be subject to reevaluation **March 2016**.*

*This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.*

*This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code and the Texas Engineering Practice Act.*

**Astro Guard Wind Abatement System**, manufactured by

**Hurricane Fabric.com LLC**  
**P.O. Box 50153**  
**Clayton, MO 63105**  
**(561) 742-3756**

will be accepted for use in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with this product evaluation and with design drawings that are referenced in this evaluation report.

## PRODUCT DESCRIPTION

The Astro Guard Wind Abatement System is a flexible wind abatement and impact protection system. The system may be installed on new or existing construction. The fabric storm panel system consists of the following components:

**Fabric:** The fabric is a proprietary resin coated geotextile fabric with minimum average roll values as shown on sheet 1 of 2 of the approved drawings. The only sewing of the fabric required is stitching shown on sheet 1 of 2 if a splice is required. No sewing is required at the edges.

**Mounting/Retention Clip:** A patented mounting / retention clip is installed on the edges as shown on sheet 2 of 2 on the approved drawings.

**Product Identification:** Each fabric panel shall have a label that identifies the manufacturer, the name of the product, allowable design pressure, compliance with ASTM E330, ASTM E 1886, ASTM E 1996, and the opening number.

## LIMITATIONS

**Design Drawings:** The fabric storm panels shall be installed in accordance with Astro Guard Wind Abatement System 11-0915 pages 1-2 of 2, dated September 15, 2011, revision 1, dated February 22, 2012. Each sheet is signed and sealed by John H. Kampmann Jr., P.E. on February 22, 2012. The stated drawings will be referred to as "approved drawings" in this evaluation report. A copy of the approved drawings shall be available at the job site.

**Wall Framing Construction:** The fabric storm panel may be mounted to several types of wall framing construction (refer to the approved design drawings). The types of wall framing construction allowed included concrete, filled concrete block, hollow concrete block and wood dimension lumber (minimum Southern Pine).

**Anchors:** Refer to sheet 1 of the approved drawings for the type of anchors that may be used. Page 1 of the approved drawings indicates the minimum embedment depths for the fasteners and the minimum edge distances (minimum distance fastener must be from the edge of the substrate material) for the fasteners.

**Maximum Design Pressure Rating:** ±60 psf

**Maximum Allowable Supported Span:** The maximum allowable supported span is the distance between mounting / retention clips with fastener spacing as specified in the approved drawings for the performance of the product. The maximum supported span is 18'-0" (216 inches). Refer to the approved drawings.

**Maximum Allowable Unsupported Span:** The maximum allowable unsupported span is the distance between the non-reinforced fabric edges. There is no limit to this dimension. Additional fabric may be spliced together using the stitching detail shown on sheet 1. The fabric storm panel may be installed horizontally or vertically. Therefore, the panel span may be either a vertical dimension or a horizontal dimension. Refer to sheet 2 of the approved drawings for the maximum fabric panel span and the overall fabric panel span.

**Mounting/Retention Clip:** The fabric is placed within the clip so as to engage the #8-32 x ½" stainless steel screws and to extend to the edge as shown on sheet 2 option 1 or at a minimum up to the removable fastener as shown on sheet 2 option 2.

**Impact Resistance:** This assembly satisfies the Texas Department of Insurance's criteria for protection from windborne debris in both the **Inland I zone** and the **Seaward zone**. The wind abatement system passed Missile Level D specified in ASTM E 1886-05 and 1996-05. The wind abatement system assemblies may be installed at any height on the structure as long as the design pressure rating for the assemblies is not exceeded.

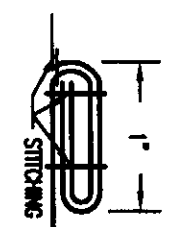
## INSTALLATION INSTRUCTIONS

**Installation Requirements:** The wind abatement system shall be installed in accordance with manufacturer's installation instructions, the approved drawings, and this product evaluation report.

**Note:** The manufacturer's installation instructions and the approved drawings shall be available on the job site during installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.

STRUCTURAL NOTES:

- THIS SYSTEM HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE 2007 INTERNATIONAL BUILDING CODE TEST STANDARDS USED - ASTM E330, ASTM E1886 AND ASTM E1996. THE AGENCY FOR IMPACT, DETECTION AND FATIGUE RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH THE ABOVE REFERENCED CODE AND AS PER THE FLORIDA BUILDING CODE 2007, DS 201, 202 AND 203 AT FERTILIZATION TESTING LABORATORY, INC. FOR THEIR REPORT(S) LISTED HEREIN.
- DESIGN PRESSURE REQUIREMENTS OF A SPECIFIC SITE SHALL BE DETERMINED BY OTHERS IN COMPLIANCE TO THE 2007 INTERNATIONAL BUILDING CODE AS REQUIRED BY THE JURISDICTION WHERE THE SYSTEM WILL BE INSTALLED. WHEN CALCULATING PRESSURES PER ASCE 7, USE OF DIRECTIONALITY FACTOR K<sub>d</sub>=0.85 IS ALLOWED.
- NO 3/4" INCREASE IN ALLOWABLE STRESS INCREASE HAS BEEN USED IN THE DESIGN OF THIS PRODUCT.
- THIS PRODUCT EVALUATION DOCUMENT (PED) DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. IF SITE CONDITIONS DEVIATE FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE THIS SPECIFIC DOCUMENT TO BE USED IN CONJUNCTION WITH THIS DOCUMENT.
- THE CONTRACTOR AND/OR PERMIT HOLDER IS TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS SYSTEM, INCLUDING VERIFYING THE AGENCY OF THE EXISTING STRUCTURE TO WITHSTAND THE NEW SUPERIMPOSED LOADS SHOWN BELOW AND THE SOUNDNESS OF THE STRUCTURE WHERE THE SYSTEM IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE.
- SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA LICENSED ENGINEER OR ARCHITECT WHO WILL BECOME THE ENGINEER OF RECORD (EOR) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE PED ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE PED ENGINEER SHALL SUBMIT TO THIS ENGINEER THE SITE SPECIFIC DRAWINGS FOR REVIEW.
- THIS PED SHALL BEAR THE DATE AND ORIGINAL SEAL OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.
- THIS SYSTEM MAY ALSO BE INSTALLED HORIZONTALLY FOLLOWING INSTALLATION DETAILS SHOWN HEREIN.
- THIS WIND ABATEMENT SYSTEM IS INTENDED FOR USE ONLY DURING HURRICANE OR OTHER TROPICAL STORM WEATHERS. SEASONAL OR PERMANENT INSTALLATION OR STORAGE OF THIS WIND ABATEMENT SYSTEM IN AREAS OF PROLONGED EXPOSURE TO DIRECT SUNLIGHT OR OTHER WEATHERING CONDITIONS MAY CAUSE MATERIAL DEGRADATION OR OTHERWISE IMPAIR THEIR AGENCY AS AN IMPACT RESISTANT SYSTEM.
- LIMITATIONS OF USE  
THIS WIND ABATEMENT SYSTEM HAS NO MINIMUM SEPARATION FROM GLAZING REQUIREMENT. BREAKING OF GLAZING PROPERLY PROTECTED BY THIS PRODUCT DOES NOT COMPROMISE THE BUILDING ENVELOPE. THE MAXIMUM SIZE SHALL BE 60 PSF MAX. PRESSURE @ 176 INCHES MAXIMUM SPAN. SEE TABLE ON SHEET 1/2.
- RESERVED.
- ALL SCREENS TO BE STAINLESS STEEL 304 OR 316 SERIES OR CORROSION RESISTANT COATED CARBON STEEL WITH A 50 KSI YIELD STRENGTH AND A 90 KSI TENSILE STRENGTH.
- ALL BOLTS TO BE ASTM A307, GALVANIZED OR 304 SERIES STAINLESS STEEL WITH A MINIMUM 36 KSI YIELD STRENGTH.
- ANCHORS TO STRUCTURE (WALL / FLOOR / CEILING / SYSTEM) SHALL BE INSTALLED PER MANUFACTURERS' RECOMMENDATIONS AND AS FOLLOWS:
  - CONCRETE BLOCK MASONRY (ASTM C-90)  
TYPICAL ANCHORS (TYP. BUILDER) OR PANELMATE WALE & FEMALE FASTENERS (ELOC TYPICUM) - 1/4" N. DIA.  
I. MINIMUM EMBEDMENT INTO HOLLOW CONCRETE BLOCK MASONRY FOR TYPICAL ANCHORS AND ELOC PANELMATES IS 1 3/4".  
NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED.  
II. PANELS, BRICKS OR OTHER PRE-CAST PRODUCTS LOCATED ON THE EXISTING STRUCTURE WALL OR FLOOR SHALL HAVE ANCHORS OF SUFFICIENT LENGTH TO PROPERLY ATTACH TO THE PRIMARY STRUCTURE BEHIND IT.  
III. MINIMUM EDGE DISTANCE = 3.0"
  - POURED CONCRETE (f'<sub>c</sub> = 3000 PSI MIN.)  
TYPICAL ANCHORS (TYP. BUILDER) OR PANELMATE WALE & FEMALE FASTENERS (ELOC TYPICUM) - 1/4" N. DIA.  
I. MINIMUM EMBEDMENT INTO POURED CONCRETE FOR TYPICAL ANCHORS AND ELOC PANELMATES IS 1 3/4".  
NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED. SCREENS TO BE 1/4"-20 X 1 3/4" FOR STUCCO, 1 1/8" WITH NO STUCCO.  
II. PANELS, BRICKS OR OTHER PRE-CAST PRODUCTS LOCATED ON THE EXISTING STRUCTURE WALL OR FLOOR SHALL HAVE ANCHORS OF SUFFICIENT LENGTH TO PROPERLY ATTACH TO THE PRIMARY STRUCTURE BEHIND IT.  
III. MINIMUM EDGE DISTANCE = 3.0"
  - WOOD (Nominal 2x4(min) Southern Pine, Sp-0.55 OR GREATER)  
TYPICAL ANCHORS (TYP. BUILDER) OR PANELMATE WALE & FEMALE FASTENERS (ELOC TYPICUM) - 1/4" N. DIA.  
I. MINIMUM EDGE DISTANCE = CENTER OF 2" NOMINAL LUMBER (APPROX. 3/4"). MINIMUM EMBEDMENT = 1-1/2"
- MAXIMUM DESIGN PRESSURE VERSUS PANEL SPAN SHOWN ON SHEET 2/2
- SCREEN PANEL'S MANUFACTURER LABEL SHALL BE PLACED ON A READILY AND VISIBLE LOCATION ON THE PANEL. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABEL SHALL READ AS FOLLOWS:  
HURRICANE FABRIC.COM LLC  
PO BOX 50153, CLAYTON, MO 63105  
MADE-IN-USA COUNTY PRODUCT CONTROL APPROVED.

- RETENTION CLIP END CONNECTOR:  
ROOM ENGINEERING PLASTICS - POLYUMIDE 66  
FIBER SPECIFICATION:  
FIBER CONTENT: TEXTILE FIBRIC  
CONSTRUCTION: 25 X 25 WOVEN  
FINISH: RESIN COATED  
WEIGHT (ASTM D-3776): 10.8 -02/SQUARE YARD  
TENSILE STRENGTH (9988 METHOD, ASTM D -4832): WWP - 879 lbs., WET - 879 lbs.  
BURST STRENGTH (ASTM D - 3786): 1,000 PS  
AIRBORN RESISTANCE (ASTM D -4886) 85% STRENGTH REMAINED
- SEWING:  
ONLY SEWING IS AT SPLICE  
EDGES:  
NO SEWING AT EDGES
- 
- SPLICE DETAIL

FASTENER SPACING OF A SINGLE UNIT SCREEN FOR ANY LENGTH ATTACHED WITH 3/8" DROP-IN ANCHOR WITH SIDEWALK BOLT (INCHES)

SCREEN SPAN	FILLED CMU (1900 PSI)			CONCRETE (4000 PSI)			HOLLOW CMU			TIMBER		
	60	50	40	60	50	40	60	50	40	60	50	40
4'-0"	18	18	18	18	18	18	18	18	18	18	18	18
6'-0"	18	18	18	18	18	18	18	18	18	18	18	18
8'-0"	14	16	18	18	18	18	18	18	18	18	18	18
10'-0"	12	14	16	18	18	18	18	18	18	18	18	18
12'-0"	10	12	14	17	17	17	18	18	18	18	18	18
14'-0"	9	10	12	14	14	14	15	15	15	15	15	15
16'-0"	8	9	10	13	13	13	14	14	14	14	14	14
18'-0"	7	8	9	11	11	11	12	12	12	12	12	12

FASTENER SPACING OF A SINGLE UNIT SCREEN FOR ANY LENGTH ATTACHED WITH 1/4" ELOC PANELMATE PRO. WALE & FEMALE (INCHES)

SCREEN SPAN	FILLED CMU (1900 PSI)			CONCRETE (4000 PSI)			HOLLOW CMU			TIMBER		
	60	50	40	60	50	40	60	50	40	60	50	40
4'-0"	15	18	18	17	18	18	18	18	18	18	18	18
6'-0"	11	12	15	18	18	18	18	18	18	18	18	18
8'-0"	7	8	10	12	12	12	13	13	13	13	13	13
10'-0"	6	7	8	10	10	10	11	11	11	11	11	11
12'-0"	5	6	7	9	9	9	10	10	10	10	10	10
14'-0"	4	5	6	8	8	8	9	9	9	9	9	9
16'-0"	-	5	6	7	7	7	8	8	8	8	8	8
18'-0"	-	5	6	7	7	7	8	8	8	8	8	8

John H. Thompson Jr., PE  
TX License # 106180  
DATE: 2/22/12

TEXAS DEPARTMENT OF INSURANCE

TX REG. # F-13337  
WWW.MEAENGINEERS.COM

**MEA ENGINEERS, INC.**  
8886 Laska Dr  
Springdale, Florida 34253  
(941) 822-3884 CA-0072

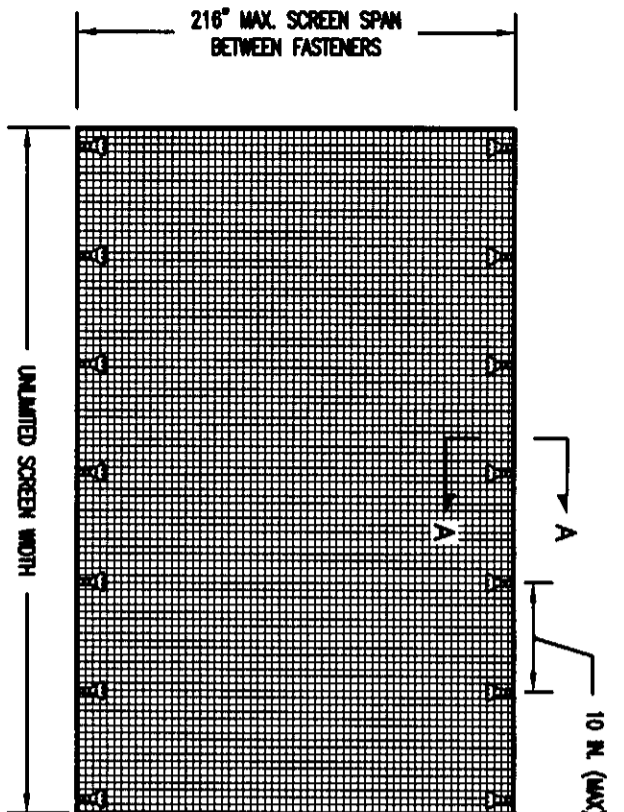
REV.	DESCRIPTION
1	02/22/12-Clarify Note 9

Project Name: **HURRICANE FABRIC.COM LLC**  
PO BOX 50153  
CLAYTON, MO 63105  
PHONE: (238)888-0088  
WWW.HURRICANEFABRIC.COM

Description: **ASTRO GUARD Wind Abatement System**

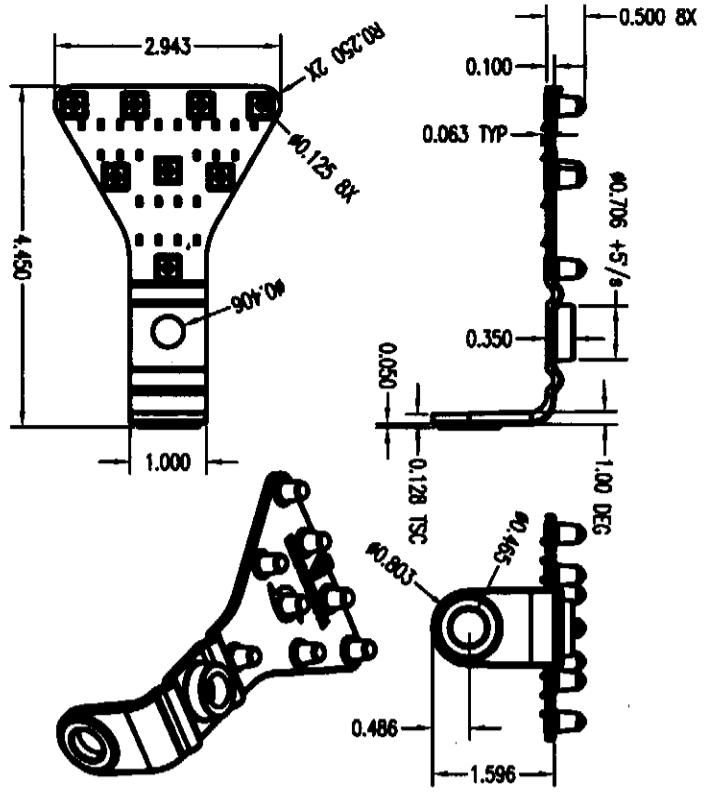
Project: JK  
Contract: NTS  
Date: 09/15/11

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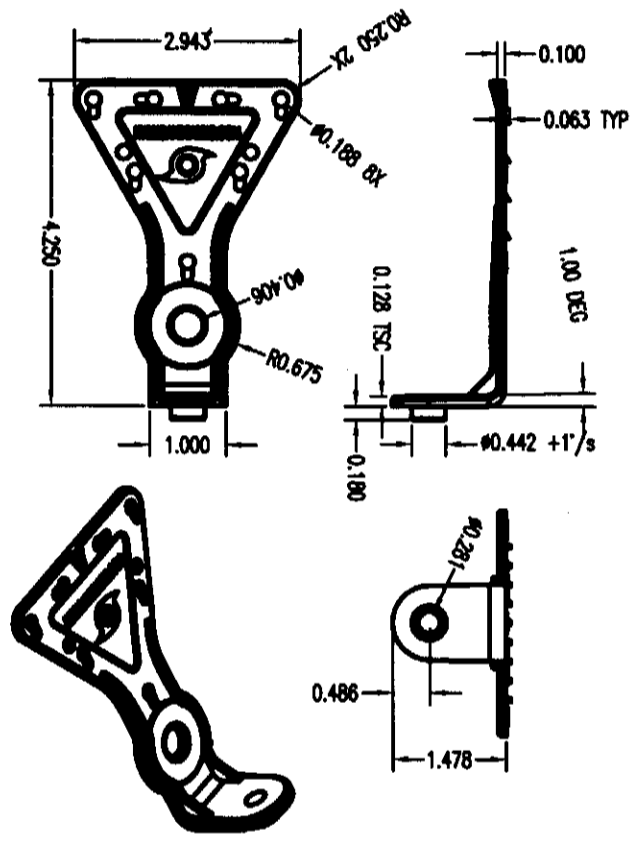


**TYPICAL TWO-SIDED INSTALLATION**  
VERTICAL OR HORIZONTAL INSTALLATION - N.T.S.

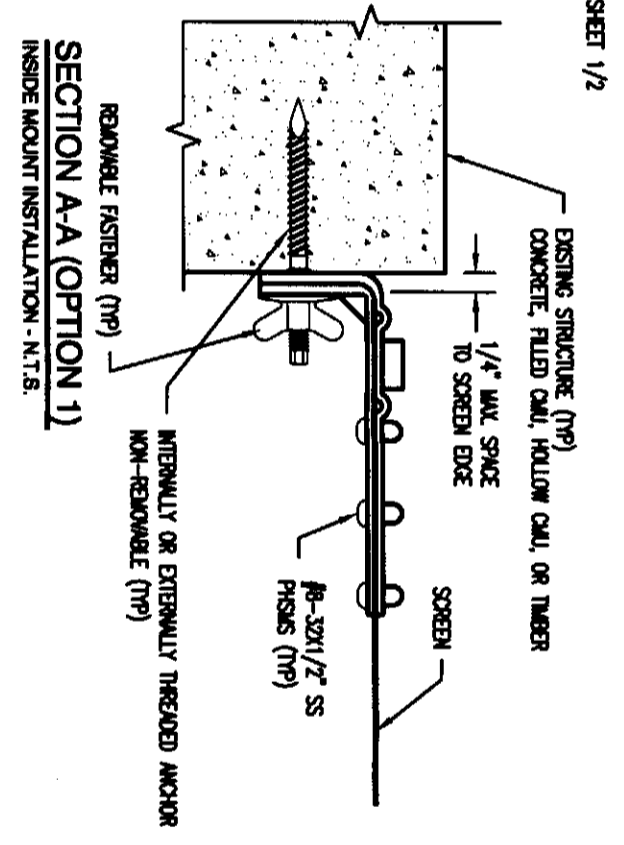
NOTE:  
PANELS CAN BE ATTACHED ON THREE OR FOUR SIDES.  
FOR FOUR SIDE ATTACHMENT THE SPAN IS IN THE SHORT  
DIMENSION BETWEEN FASTENERS



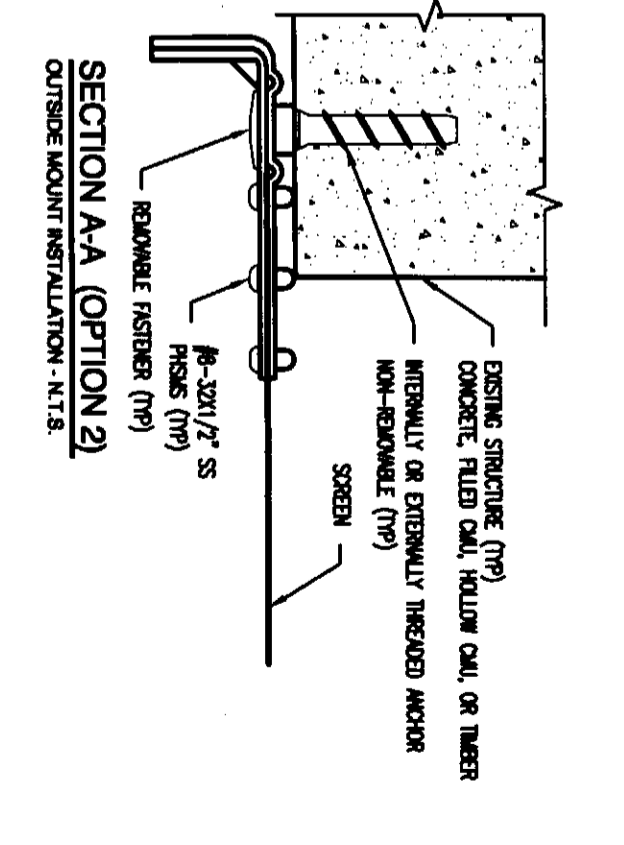
**BOTTOM MOUNTING CLIP DETAILS**  
INSIDE OR OUTSIDE MOUNT INSTALLATION - N.T.S.  
AVERAGE THICKNESS = 0.100 IN.  
MATERIAL SPECIFICATION = POLYAMIDE 66



**TOP MOUNTING CLIP DETAILS**  
INSIDE OR OUTSIDE MOUNT INSTALLATION - N.T.S.  
AVERAGE THICKNESS = 0.100 IN.  
MATERIAL SPECIFICATION = POLYAMIDE 66



**SECTION A-A (OPTION 1)**  
INSIDE MOUNT INSTALLATION - N.T.S.



**SECTION A-A (OPTION 2)**  
OUTSIDE MOUNT INSTALLATION - N.T.S.

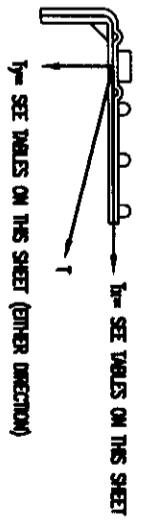
**LOADS ON EXISTING STRUCTURE FROM SCREEN SYSTEM**  
TX = PARALLEL LOADS (PLF)

SPAN (INCHES)	PRESSURE (PSF)					
	60	55	50	45	40	35
216	1134	1070	1004	936	866	792
192	1020	962	903	842	778	712
168	905	854	801	747	690	631
144	744	702	659	614	568	519
120	651	615	577	538	497	455
96	553	521	489	456	422	386
72	353	333	312	291	269	246
48	254	240	225	210	194	178

**LOADS ON EXISTING STRUCTURE FROM SCREEN SYSTEM**  
TY = PERPENDICULAR LOADS (PLF)

SPAN (INCHES)	PRESSURE (PSF)					
	60	55	50	45	40	35
216	540	495	450	405	360	315
192	480	440	400	360	320	280
168	420	385	350	315	280	245
144	360	330	300	270	240	210
120	300	275	250	225	200	175
96	240	220	200	180	160	140
72	180	165	150	135	120	105
48	120	110	100	90	80	70

EVALUATION BASED ON:  
PENETRATION TESTING LABORATORY, INC  
LAB NO.: 6418 DATED 12/7/2010  
ASTM E186 - UNIFORM STATIC LOADS  
ASTM E186 & ASTM E186 - LARGE MASSIVE IMPACT RESISTANCE &  
CYCLE LOADING PERFORMANCE



**LIST OF REPORTS**

*[Signature]*  
TX REG. # F-13337  
DATE: 08/22/12

TEXAS DEPARTMENT OF INSURANCE

TX REG. # F-13337  
WWW.MEAGNENGINEERS.COM

Description: **ASTRO GUARD**  
Wind Abatement System

Project Name: **HURRICANE FABRIC.COM LLC**  
PO BOX 80153  
CLAYTON, MO 63105  
PHONE: (238)888-0088  
WWW.HURRICANEFABRIC.COM

Project No: JK  
Revision: NTS  
Date: 09/15/11

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REV. DESCRIPTION

1 XX/XX/XX-RESERVED

**MEAGN ENGINEERS, INC.**  
5888 Lorton Drive  
Gainesville, Florida 34233  
(941) 922-3864 CA-8072