

STRUCTURAL NOTES:

- THIS SYSTEM HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING/RESIDENTIAL CODE. THIS SYSTEM SHALL NOT BE INSTALLED IN ESSENTIAL FACILITIES. TEST STANDARDS USED – ASTM E330, ASTM E1886 AND ASTM E1996. THE ADEQUACY FOR IMPACT, DEFLECTION AND FATIGUE RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH THE ABOVE REFERENCED CODE, AND AS PER THE 2018 INTERNATIONAL BUILDING/RESIDENTIAL CODE; TAS 201, 202 AND 203 AT FENESTRATION TESTING LABORATORY, INC. PER THEIR REPORT(S) LISTED HEREIN.
- DESIGN PRESSURE REQUIREMENTS OF A SPECIFIC SITE SHALL BE DETERMINED BY OTHERS IN CONFORMANCE TO THE 2018 INTERNATIONAL BUILDING/RESIDENTIAL CODE AS REQUIRED BY THE JURISDICTION WHERE THE SYSTEM WILL BE INSTALLED. WHEN CALCULATING PRESSURES PER ASCE 7-16, USE OF DIRECTIONALITY FACTOR $K_d=0.85$ IS ALLOWED.
- NO 33-1/3% 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 SITE SPECIFIC DOCUMENTS 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 ADEQUACY 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 TEXAS 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 WARNINGS. 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 DETERIORATION OR OTHERWISE INHIBIT THEIR ADEQUACY AS AN IMPACT RESISTANT SYSTEM.
- LIMITATIONS OF USE
THIS NON POROUS SYSTEM HAS NO MINIMUM SEPARATION FROM GLAZING REQUIREMENT.
THE MAXIMUM SIZE SHALL BE 60 PSF MAX. PRESSURE @ 216 INCHES MAXIMUM SPAN. SEE TABLE ON SHEET 1/2.
- RESERVED.
- ALL SCREWS 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)
TAPCON ANCHORS (ITW BUILDEX) OR PANELMATE MALE & FEMALE FASTENERS (ELCO TEXTRON) – 1/4 IN. DIA.
I. MINIMUM EMBEDMENT INTO HOLLOW CONCRETE BLOCK MASONRY FOR TAPCON ANCHORS AND ELCO PANELMATES IS 1 1/4 IN., FILLED MASONRY EMBEDMENT IS 1 3/4". NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED.
II. PAVERS, 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 ($f'_c=3000$ PSI MIN.)
TAPCON ANCHORS (ITW BUILDEX) OR PANELMATE MALE & FEMALE FASTENERS (ELCO TEXTRON) – 1/4 IN. DIA.
I. MINIMUM EMBEDMENT INTO POURED CONCRETE FOR TAPCON ANCHORS AND ELCO PANELMATES IS 1 3/4 IN. NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED. SCREWS TO BE 1/4"-20 X 1 3/4" FOR STUCCO, 1 1/4" WITH NO STUCCO.
II. PAVERS, 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" SG=0.55 OR GREATER)
TAPCON ANCHORS (ITW BUILDEX) DIA. OR PANELMATE MALE & FEMALE FASTENERS (ELCO TEXTRON) – 1/4 IN.
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 1/2
- 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
TEXAS DEPARTMENT OF INSURANCE NUMBER: SHU-XXX. OPENING NO.: XX
- THIS DOCUMENT IN ITS ENTIRETY WILL BE CONSIDERED INVALID IF IT IS ALTERED BY ANY MEANS.

RETENTION CLIP END CONNECTOR:

RHODIA ENGINEERING PLASTICS – POLYAMIDE 66

FABRIC SPECIFICATION:

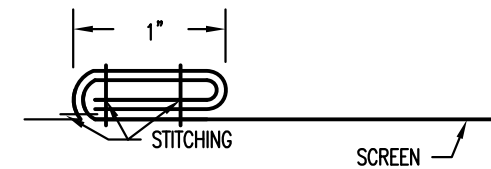
FIBER CONTENT: TEXTILE FABRIC
CONSTRUCTION: 20 X 20 WEAVE
FINISH: RESIN COATED
WEIGHT (ASTM D-3776): 9.0 –OZ/SQUARE YARD
TENSILE STRENGTH (GRAB METHOD, ASTM D -4632): WARP – 570 lbs., WEFT – 570 lbs.
BURST STRENGTH (ASTM D – 3786): 1,000 PSI
ABRASION RESISTANCE (ASTM D -4886) 95% STRENGTH RETAINED

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 1/4" ELCO PANELMATE PRO, MALE & FEMALE (INCHES)

SCREEN SPAN	FILLED CMU (1900 PSI)				CONCRETE (4000 PSI)				HOLLOW CMU				TIMBER			
	PRESSURE (PSF)				PRESSURE (PSF)				PRESSURE (PSF)				PRESSURE (PSF)			
	60	50	40	30	60	50	40	30	60	50	40	30	60	50	40	30
4'-0"	15	18	18	18	17	18	18	18	11	13	15	18	10	11	13	16
6'-0"	11	12	15	18	12	14	16	18	8	9	10	13	7	8	9	12
8'-0"	7	8	10	12	8	9	11	13	5	6	7	9	5	5	6	8
10'-0"	6	7	8	10	7	8	9	11	4	5	6	7	-	4	5	6
12'-0"	5	6	7	9	6	7	8	9	-	4	5	6	-	-	4	6
14'-0"	4	5	6	7	5	5	6	8	-	-	4	5	-	-	-	5
16'-0"	-	5	5	6	4	5	6	7	-	-	-	5	-	-	-	4
18'-0"	-	-	5	6	-	4	5	6	-	-	-	4	-	-	-	-

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			
	PRESSURE (PSF)				PRESSURE (PSF)				PRESSURE (PSF)				PRESSURE (PSF)			
	60	50	40	30	60	50	40	30	60	50	40	30	60	50	40	30
4'-0"	18	18	18	18	18	18	18	18	18	18	18	18	13	15	18	18
6'-0"	18	18	18	18	18	18	18	18	18	18	18	18	9	11	13	16
8'-0"	14	16	18	18	16	18	18	18	12	14	17	18	6	7	8	10
10'-0"	12	14	16	18	13	15	18	18	10	12	14	17	5	6	7	9
12'-0"	10	12	14	17	12	13	15	18	9	10	12	15	5	5	6	8
14'-0"	9	10	12	14	10	11	13	16	8	9	10	12	-	4	5	6
16'-0"	8	9	10	13	8	10	11	14	7	8	9	11	-	-	4	6
18'-0"	7	8	9	11	8	9	10	12	6	7	8	10	-	-	4	5

EVALUATION BASED ON:
FENESTRATION TESTING LABORATORY, INC

LAB NO.: 6418 DATED 12/7/2010

ASTM E330-02 – UNIFORM STATIC LOADS
ASTM E1886-05 & ASTM E1996-05 – LARGE MISSILE TYPE
"D" IMPACT RESISTANCE & CYCLIC LOADING PERFORMANCE

LAB NO.: 5804 DATED 01/13/2009

TAS 202 – UNIFORM STATIC LOADS
TAS 201, TAS 202 – LARGE MISSILE IMPACT RESISTANCE & CYCLIC LOADING PERFORMANCE

LIST OF REPORTS

John H. Kampmann Jr., PE
TX License #: 108168
DATE:

TEXAS DEPARTMENT OF INSURANCE

ASTRO GUARD
Wind Abatement System

HURRICANE FABRIC.COM LLC
1 FIRST MISSOURI CENTER
ST. LOUIS, MO 63141
PHONE: (561) 742-3756
WWW.HURRICANEFABRIC.COM

DESCRIPTION
XX/XX/XX-RESERVED

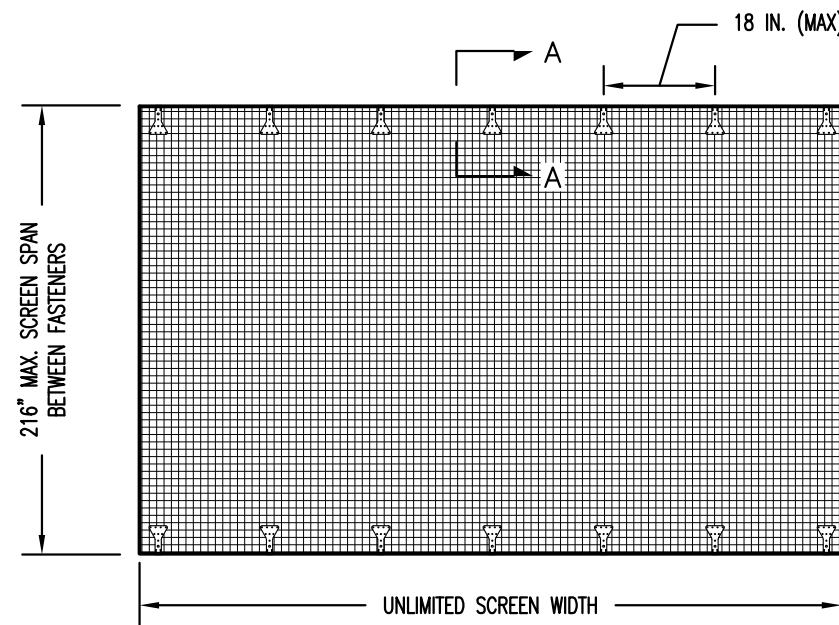
REV
1

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

MEAE
ENGINEERS, INC.
5656 Lawton Drive
Sarasota, Florida 34233
(941) 922-3854 CA-6072

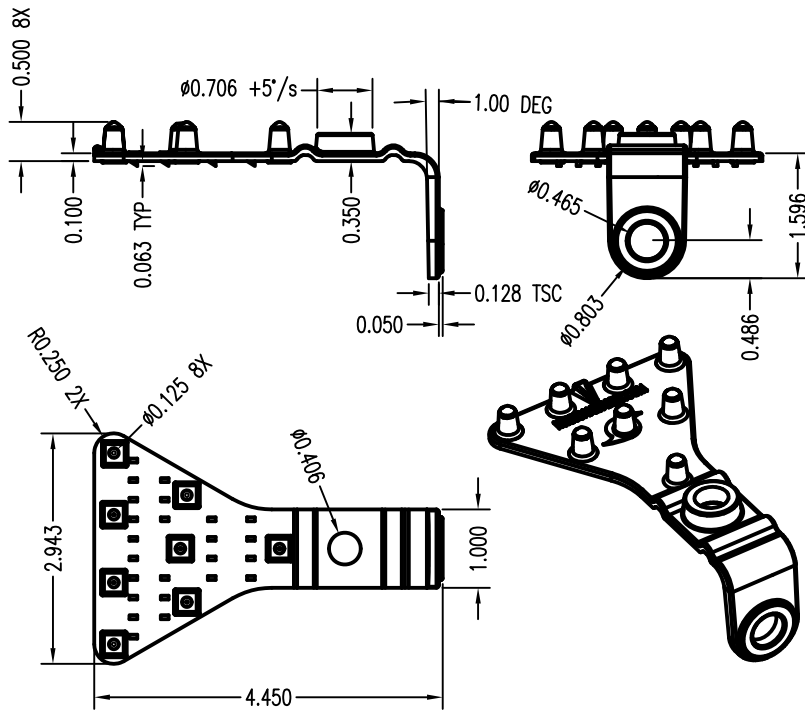
Drawn: JK
Project #: 21-0915
Scale: NTS
Date: 2/22/21
Sheet No.:

1/2



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

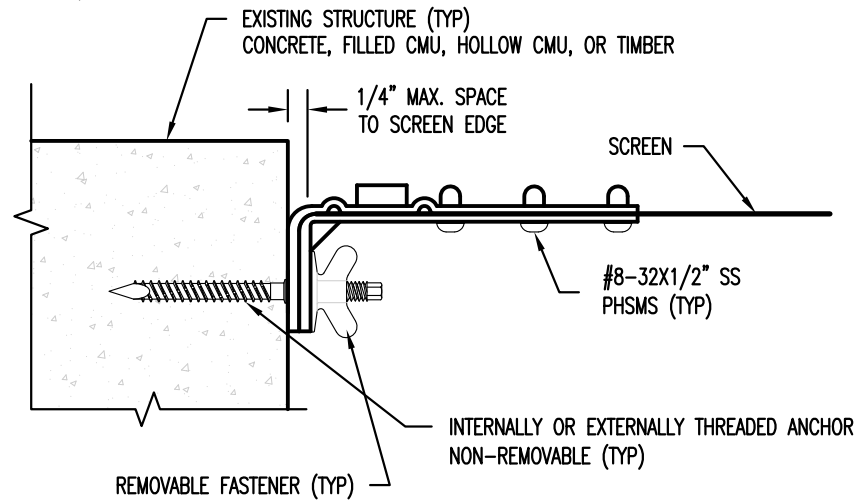
NOTE:
PANELS CAN BE ATTACHED ON THREE OR FOUR SIDES.
FOR FOUR SIDE ATTACHMENT THE SPAN IS IN THE SHORT
DIMENSION BETWEEN FASTENERS



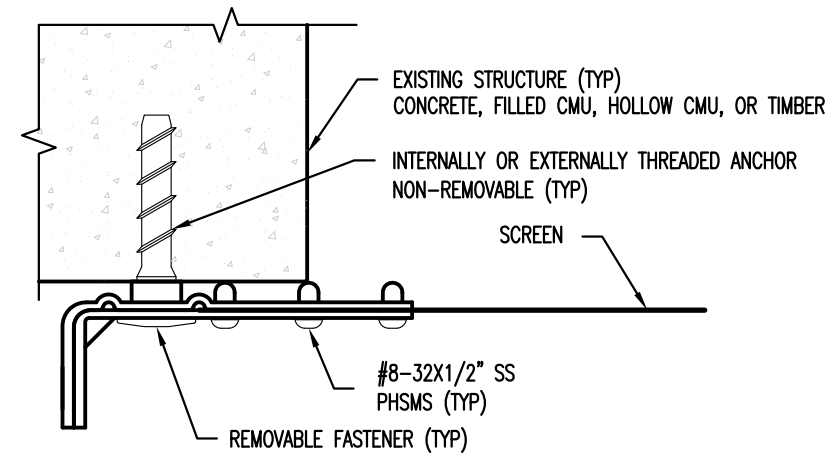
BOTTOM MOUNTING CLIP DETAILS

INSIDE OR OUTSIDE MOUNT INSTALLATION - N.T.S.

AVERAGE THICKNESS = 0.100 IN.
MATERIAL SPECIFICATION = POLYAMIDE 66



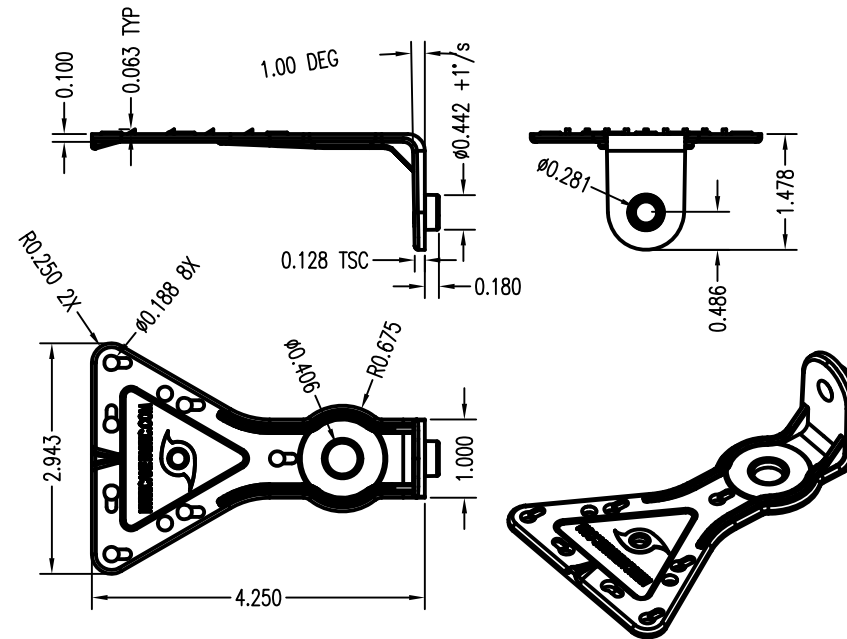
SECTION A-A (OPTION 1)
INSIDE MOUNT INSTALLATION - N.T.S.



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	30
216	1134	1070	1004	936	866	792	714
192	1020	962	903	842	778	712	642
168	905	854	801	747	690	631	570
144	744	702	659	614	568	519	469
120	651	615	577	538	497	455	410
96	553	521	489	456	422	386	348
72	353	333	312	291	269	246	222
48	254	240	225	210	194	178	160

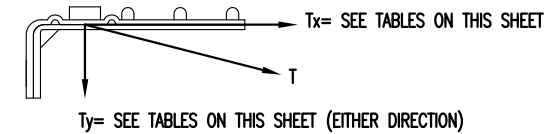
LOADS ON EXISTING STRUCTURE FROM SCREEN SYSTEM							
TY = PERPENDICULAR LOADS (PLF)							
SPAN (INCHES)	PRESSURE (PSF)						
	60	55	50	45	40	35	30
216	540	495	450	405	360	315	270
192	480	440	400	360	320	280	240
168	420	385	350	315	280	245	210
144	360	330	300	270	240	210	180
120	300	275	250	225	200	175	150
96	240	220	200	180	160	140	120
72	180	165	150	135	120	105	90
48	120	110	100	90	80	70	60



TOP MOUNTING CLIP DETAILS

INSIDE OR OUTSIDE MOUNT INSTALLATION - N.T.S.

AVERAGE THICKNESS = 0.100 IN.
MATERIAL SPECIFICATION = POLYAMIDE 66



TEXAS DEPARTMENT OF INSURANCE

ASTRO GUARD
Wind Abatement System

Drawn: JK
Project #: 21-0915
Scale: NTS
Date: 2/22/21
Sheet No.:

John H. Kampmann Jr., PE
TX License #: 108168
DATE:

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

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(941) 922-3854 CA-6072

DESCRIPTION
XX/XX/XX - RESERVED

HURRICANE FABRIC.COM LLC
1 FIRST MISSOURI CENTER
ST. LOUIS, MO 63141
PHONE: (561) 742-3756
WWW.HURRICANEFABRIC.COM

Product Evaluation

SHU204 | 0721

Engineering Services Program

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 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.

For more information, contact TDI Engineering Services Program at (800) 248-6032.

Evaluation ID: SHU-204

Effective Date: July 1, 2021

Re-evaluation Date: June 2025

Product Name: Astro Guard Wind Abatement System

Manufacturer: Hurricane Fabric.com LLC
1 First Missouri Center
St. Louis, MO 63141
(561) 742-3756

General 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.

Limitations:**Design Drawings:**

The fabric storm panels must be installed in accordance with Astro Guard Wind Abatement System drawing 21-0915; pages 1-2 of 2; dated February 22, 2021; Each sheet is signed and sealed by John H. Kampmann Jr., P.E. on June 10, 2021. The stated drawings will be referred to as "approved drawings" in this evaluation report. A copy of the approved drawings must be available at the job site.

Wall Construction: The fabric storm panels may be mounted to the following types of wall framing:

- Concrete, cast-in-place concrete
- Hollow or Grout-filled block concrete masonry units (CMU)
- Wood (minimum Southern Yellow Pine dimension lumber; G=0.55)

Mounting Conditions: The fabric storm may be inside mounted, outside mounted, or a combination of each. Refer to the approved drawings for specific mounting conditions.

Allowable Design Pressure: The maximum allowable design pressure rating is +60 psf, -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"). 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 No. 8-32 x 1/2" stainless steel screws and to extend to the edge as shown on sheet 2, option 1 of the approved drawings or at a minimum up to the removable fastener, as shown on sheet 2, option 2 of the approved drawings.

Minimum Separation from Glass: The shutter system is a non-porous impact protective system. There is no minimum separation of glazing. The shutters may not be installed on essential facilities as defined in the IBC.

Product Identification: Each fabric panel must have a permanent label that identifies the manufacturer (Hurricane Fabric.com); the name of the product (Astroguard Wind Abatement System); the drawing number (21-0915); and compliance with ASTM E330-02, ASTM E 1886-05, ASTM E 1996-05; Missile Level D.

Compliance: The shutter assembly passed test criteria equivalent to ASTM E330-14, ASTM E 1886-13a, and ASTM E 1996-14a.

Impact Resistance: This shutter assembly satisfies the Texas Department of Insurance's criteria for protection from windborne debris. The assembly passed a missile level equivalent to Missile Level D specified in ASTM E 1996-14a. The assembly may be installed at any height on the structure as long as the design pressure rating for the assembly is not exceeded. The shutters may not be installed on essential facilities as defined in the IBC.

Installation:

General Installation Requirements: The shutters must be installed in accordance with the manufacturer's installation instructions, the approved drawings, and this product evaluation report. Copies of the approved drawings must be available on the jobsite during inspection of the shutter assembly.

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.

Note: Keep the manufacturer's installation instructions and the approved drawings available on the job site during the installation. Use corrosion resistant fasteners as specified in the IRC and the IBC.