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(Issued March 12, 2018 Subject to Renew January 1, 2019)
(OR NEXT CODE CYCLE CHANGE)

EVALUATION SUBJECT: **PHANTOM MOTORIZED RETRACTABLE SCREEN SYSTEM**

TER-17-4080

REPORT HOLDER:

PHANTOM MFG. (Int'l) LTD.
P.O. BOX 1907
SUMAS, WA 98295-1907
(888) 742-6866 | PHANTOMSCREENS.COM



SCOPE OF EVALUATION (compliance with the following codes):

THIS IS A STRUCTURAL (WIND) PERFORMANCE EVALUATION ONLY. NO ENERGY/ UV / FIRE RATINGS OR CERTIFICATIONS ARE OFFERED OR IMPLIED HEREIN.

This Product Evaluation Report is being issued in accordance with the requirements of the **Florida Building Code Sixth Edition (2017)** per FBC Section 104.11, FBC Ch. 16, section 1622.2.1, ASCE-7-10, FRB 2014 section AH103.1, R301.2.1.1.1. The product noted on this report has been tested and/or evaluated as summarized herein.

IN ACCORDANCE WITH THESE CODES EACH OF THESE REPORTS MUST BEAR THE ORIGINAL SIGNATURE & RAISED SEAL OF THE EVALUATING ENGINEER.

SUBSTANTIATING DATA:

• **Product Evaluation Documents**

Substantiating documentation has been submitted to support this TER and is summarized in the sections that follow.

• **Structural Engineering Calculations**

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

- Maximum allowable system wind pressure integrity

Calculation summary for this TER is provided in the forces summary table. No 33% increase in allowable stress has been used in the design of this product. Microsoft Excel was used to carry out the calculations present in this report.

INSTALLATION:

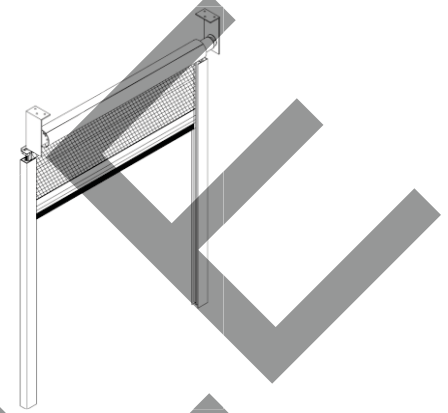
The product(s) listed in this report shall be installed in strict compliance with this TER & manufacturer-provided model specifications. The product components shall be of the material specified in the manufacturer-provided product specifications. All anchors must be installed in accordance with the applicable provisions & anchor manufacturer's published installation instructions.

LIMITATIONS & CONDITIONS OF USE:

Use of this product shall be in strict accordance with this TER as noted herein. The host structure shall be designed to resist all superimposed loads as determined by others on a site-specific basis as may be required by the Authority Having Jurisdiction. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed on a site-specific basis by a registered professional engineer. No evaluation is offered for the supporting structure by use of this document; Adjustment factors noted herein and the applicable codes must be considered, where applicable. This evaluation does not offer any evaluation to meet large/small missile impact debris requirements or named storm resistance rating.

OPTIONS:

This evaluation is valid for recessed model of Phantom Motorized Retractable Screen using 4" roller with fabric shown in the schedule table. (20ft W x 11ft H max).



NOTE: GRAPHICAL DEPICTIONS IN THIS REPORT ARE FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL UNITS MAY DIFFER SLIGHTLY IN APPEARANCE.

FINISH:

Powder coated, optional wet coat.

SYSTEM MATERIALS:

U-channel made of aluminum 6063-T6, Side Track aluminum 6063-T5, Side Track Clip aluminum 6063-T5, 4" Roller aluminum 6063-T5, #6x 1/2" TEK screw (Robertson/ square drive) 1018 Steel and js500 coating between side track and clip.

STRUCTURAL PERFORMANCE:

Models referenced herein are subject to the following design limitations (see schedule table for sizes and allowable pressures):

Rated Wind Pressure:

5 to 50 psf (ASD)

Pressures calculated for use with these units shall be determined by others on a job-specific basis in accordance with the governing code. Site-specific load requirements for wind load shall be determined in accordance with ASCE 7-10 and the Florida Building Code Fifth Edition (2014) by a separate engineering certification and shall be less or equal to the design pressure capacity values listed herein for any assembly as shown.

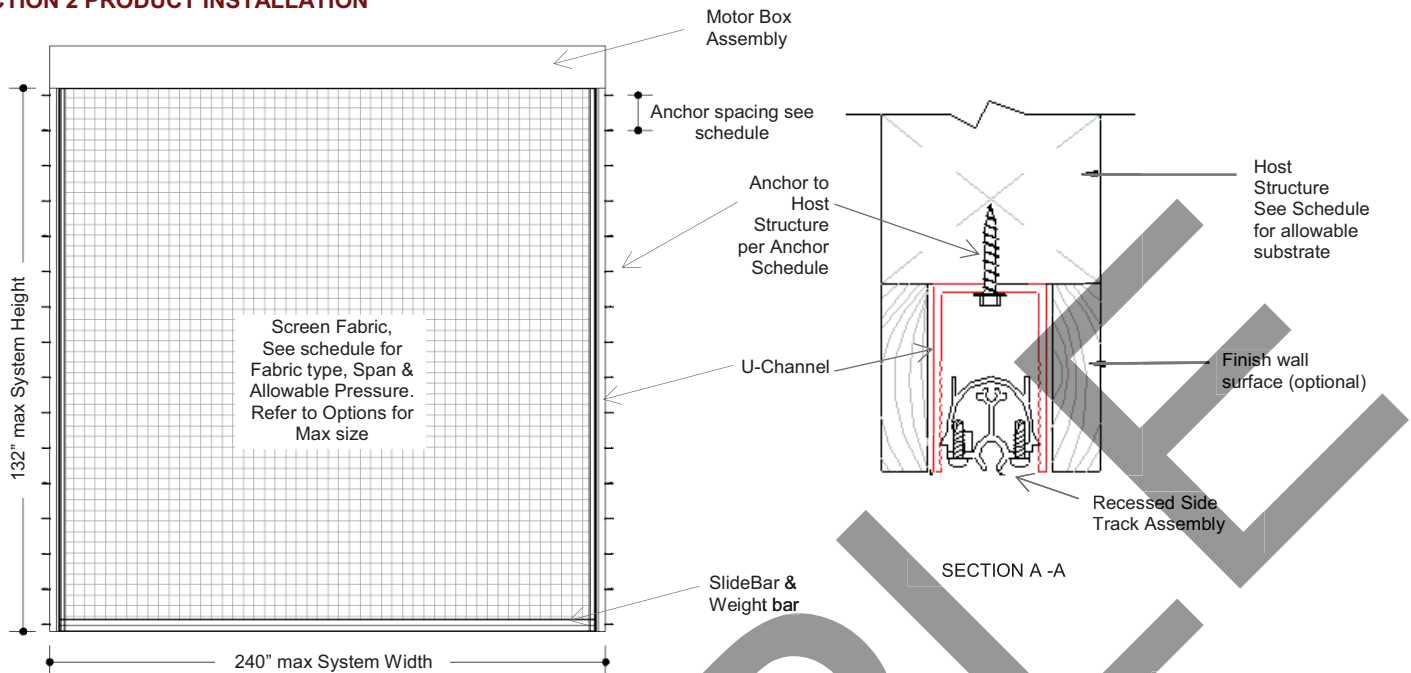
**ORIGINAL SIGNATURE AND RAISED SEAL
OR DIGITAL SEAL REQUIRED TO BE VALID PER CODE:**

January 1, 2018

Frank L. Bennardo, P.E., SECB Signed by If Checked:
ENGINEERING EXPRESS® Gordon DiBattisto, PE
FL PE #0046549 FLCA #9885 FL PE #82328

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SECTION 2 PRODUCT INSTALLATION



ALLOWABLE PRESSURE SCHEDULE:

Fabric: Mermet E-screen 7505 (porosity 5%)

System Width (in)	Design Pressures (Psf)	Deflection (in)	Reaction Per Clip		U-Channel Anchors					
			Tension (lbs)	Shear (lbs)	Concrete (3,000 psi)	Spacing (in)	Wood (SP = 0.55)	Spacing (in)	Grout Filled Cells	Spacing (in)
240	4.77	8.77	326.53	34.70	A, C	15.0"	A, D	12.0"	B	12.0"
120	9.54	4.38	326.54	34.68	A, C	15.0"	A, D	12.0"	B	12.0"
96	11.92	3.51	326.53	34.69	A, C	15.0"	A, D	12.0"	B	12.0"
60	19.08	2.19	326.53	34.69	A, C	15.0"	A, D	12.0"	B	12.0"

ALLOWABLE PRESSURE SCHEDULE (Reinforced clip):

Fabric: Mermet E-screen 7505 (porosity 5%)

System Width (in)	Design Pressures (Psf)	Deflection (in)	Reaction Per Clip		U-Channel Anchors					
			Tension (lbs)	Shear (lbs)	Concrete (3,000 psi)	Spacing (in)	Wood (SP = 0.55)	Spacing (in)	Grout Filled Cells	Spacing (in)
240	8.72	10.74	487.26	63.43	A, C	11.0"	A, D	8.0"	B	8.0"
120	17.49	5.38	487.21	63.60	A, C	11.0"	A, D	8.0"	B	8.0"
96	21.82	4.30	487.24	63.49	A, C	11.0"	A, D	8.0"	B	8.0"
60	34.82	2.68	487.28	63.49	A, C	11.0"	A, D	8.0"	B	8.0"

NOTE: Screens shall be in retracted position when sustained winds reach 40mph. Values shown are total forces on the product before consideration of the porosity of the fabric.

System notes:

- 2.1. Design pressures are STATIC UNIFORM LOAD only. Cyclical forces have not been considered in this evaluation
- 3.2. In no case has the product been tested or approved for any missile level (B,C,D, or E) per ASTM 1886/1996
- 4.3. The product(s) listed in this report shall be installed in strict compliance with this TER & manufacturer-provided model specifications.
- 5.4. Pressure tables were designed using clips spaced 16.5" maximum. (7 clips at 132" height system).
- 6.5. Use reinforced clip with additional manufacturer specified screw to increase capacity as an option, if required. Equivalent anchors are permitted as long as they have proven capacity.
- 7.6. Fabric seam and zipper welds are outside the scope of this engineering.

U-Channel Anchor Types to Host Structure:

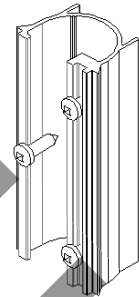
- A. - 1/4" ITW Buildex Tapcon embedded 2 1/4" into SG= 0.55 wood. 2" from edge minimum. See schedule for maximum spacing.
- B. - 1/4" Power Wedge Bolt OT embedded 2" into Grout filled masonry (f'm= 1500 psi) minimum. With edge distance of 3.75" minimum. See schedule for maximum spacing.
- C. - 1/4" ITW Buildex Tapcon embedded 1 3/4" into 3,000 psi. 2 1/2" from edges minimum. See schedule for maximum spacing.
- D. - #16 Wood screw Gr 2. Min, penetration into main member (SG= 0.55) 2.4" min, edge distance 1.5" min, See schedule for maximum spacing.

IN ALL CONDITIONS IT IS THE RESPONSIBILITY OF THE PERMIT HOLDER TO ENSURE THE HOST STRUCTURE IS CAPABLE OF WITHSTANDING THE RATED GRAVITY, LATERAL, AND UPLIFT FORCES BY SITE-SPECIFIC DESIGN. NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, IS OFFERED BY ENGINEERING EXPRESS AS TO THE INTEGRITY OF THE HOST STRUCTURE TO CARRY DESIGN FORCE LOADS INCURRED BY THIS SYSTEM.

ALLOWABLE PRESSURE SCHEDULE:

Fabric 18x14 (Mesh Fiberglass Insect Screen type II, Class 2 Vinyl Coated, porosity 55%)

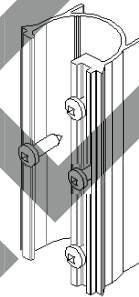
System Width (in)	Design Pressures (Psf)	Deflection (in)	Reaction Per Clip		U-Channel Anchors					
			Tension (lbs)	Shear (lbs)	Concrete (3,000 psi)	Spacing (in)	Wood (SG = 0.55)	Spacing (in)	Grout Filled Cells	Spacing (in)
240	11.29	20.68	327.58	82.12	A, C	15.0"	A, D	12.0"	B	12.0"
120	22.59	10.34	327.58	82.12	A, C	15.0"	A, D	12.0"	B	12.0"
96	28.23	8.27	327.58	82.12	A, C	15.0"	A, D	12.0"	B	12.0"
60	45.16	5.17	327.59	82.12	A, C	15.0"	A, D	12.0"	B	12.0"



ALLOWABLE PRESSURE SCHEDULE (Reinforced clip):

Fabric 18x14 (Mesh Fiberglass Insect Screen type II, Class 2 Vinyl Coated, porosity 55%)

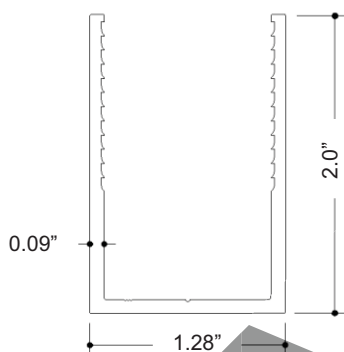
System Width (in)	Design Pressures (Psf)	Deflection (in)	Reaction Per Clip		U-Channel Anchors					
			Tension (lbs)	Shear (lbs)	Concrete (3,000 psi)	Spacing (in)	Wood (SG = 0.55)	Spacing (in)	Grout Filled Cells	Spacing (in)
240	18.80	24.75	457.60	137.28	A, C	11.0"	A, D	8.0"	B	8.0"
120	37.00	12.38	457.57	137.33	A, C	11.0"	A, D	8.0"	B	8.0"
96	47.10	9.90	457.60	137.28	A, C	11.0"	A, D	8.0"	B	8.0"
60	50.00	6.19	457.57	137.33	A, C	11.0"	A, D	8.0"	B	8.0"



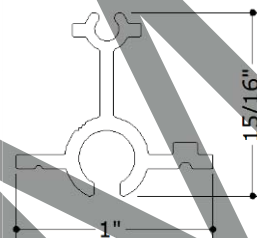
NOTE: Screens shall be in retracted position when sustained winds reach 40mph. Values shown are total forces before consideration of the porosity of the fabric.

SECTION 3 DETAILS

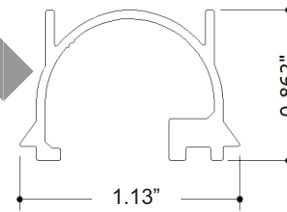
MAIN STRUCTURAL COMPONENTS:



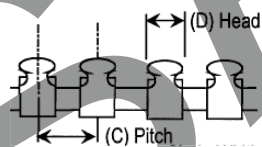
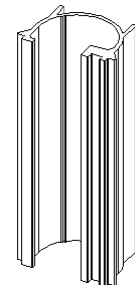
U-Channel



Side Track



3" Long Side Track Clip



8VFUV 5/8 F-SC UV Chain

Dimensions	
D	0.104"
C	0.164"

HURRICANE WARNING REQUIREMENT:

SCREEN SYSTEM IS NOT DESIGNED TO WITHSTAND NAMED STORM WIND EVENTS. THEREFORE, SCREEN SHALL BE RETRACTED DURING ANY NAMED STORM TO PRESERVE SYSTEM INTEGRITY.

SECTION 4 ADDITIONAL INFORMATION

- 7505 Fabric breaking strength per Hunter Douglas Test Lab, Test #17566, dated on 03/01/2013.
- Zipper tape to have film of minimum of 9.53 mm in width, shall be hot air pvc fabric welded.
- Zipper shall have an average scoop pull-off capacity of 23 lb (per ASTM D-2061)
- 18x14 Fabric breaking strength per Phifer Incorporated Textile Lab, file 18x14F45cs, dated on 05/31/2017.