

EVALUATION REPORT

Code: Florida Building Code, 2017 – 6th Edition
Product Category: Shutters
Product Sub-Category: Fabric Storm Panels
Product Name: Super Max
Manufacturer: Custom Hurricane Products, Inc.
2024 58th Avenue Circle East
Bradenton, FL 34203
Fire Classification: N/A
Maximum Allowable Design Pressures: 75.0 psf and -75.0 psf
Florida Product Approval: FL#16380.1

1. Executive Summary

The following is a Product Control Evaluation Report issued by David G. Karins, P.E. to Custom Hurricane Products, Inc. for the proposed Roll Down Mesh Impact Screen, product name “Super Max”. The intent of this report is to provide the necessary Code certification from a Florida Registered Professional Engineer for private residential and commercial use of the hurricane screen shutters.

It is the professional opinion of David G. Karins that this hurricane shutter system is in compliance with the Florida Building Code 2017 – 6th Edition (the Code) and that the products are, for the purpose intended, at least equivalent to that required by the Code by evidence of comparative and rational analysis.

Re-evaluation of this Product Evaluation Report is necessary following any code changes to maintain its validity.

Applicable Florida Building Code Sections

Sections: 1609.1.2
1609.1.2.4
1709.9

Evaluation Report Prepared By:

No. 0052677
AUG 16 2017
David G. Karins, P.E.
President
FL Registration No. 52677
August 9, 2017

3. Evaluation Analysis

Custom Hurricane Products, Inc. supplied KEG with drawings and certification letters of independent testing performed on the proposed shutter system. KEG researched and analyzed the specifications of the code tested system for the evaluation, as well as, calculated deflections by means of interpolation. All testing required by the Code and ASTM standards for these products were performed by independent testing laboratories certified by FBC and not affiliated with Custom Hurricane Products, Inc.

ASTM E1886-05	Standard Test method for Performance of Storm Shutters Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
ASTM E1996-05	Standard Specification for Performance of Storm Shutters Impacted by Wind Borne Debris in Hurricanes.
ASTM E330-02	Test Method for Structural Performance of Storm Shutters by Uniform Static Air Pressure Difference

This product shall have porosity of less than 10% outside of the High Velocity Hurricane Zone (HVHZ)

Based on the test configurations, the height is the non-span direction and maybe increased without affecting the performance (impact or pressure) of the screen.

4. Substantiating Data

4.1 Test Reports

- a. The following tests were conducted and documented by FBC Approved Testing Laboratories:
 - See Fenestration Testing Laboratory, Inc. (FTL) Performance Test Report, Project No. 13-4442, Revision 0: Dated 04-30-2013
 - Standard Tests Conducted
 - ASTM E1886 – 2005
 - ASTM E1996 – 2005
 - ASTM E330 - 2002

2. Product Description & Information

High Velocity Hurricane Zone: Not Approved

Outside High Velocity Hurricane Zone: Approved

Maximum Allowable Design Pressures: 75.0 psf. and -75.0 psf

Allowable wind loads shall be in accordance with current edition of Chapter 16 of the Florida Building Code and ASCE 7, and for a basic wind speed as required by the jurisdiction where the screen will be installed and multiplied by 0.6 per 1609.1.2.4 and 1609.1.3

Product Description:

Fabric Type: 27 Mil - Mesh 50% Aramid and Polyester in a weave basket construction.

Screen Construction: Double layer polyester webbing 1" by 5/16" was webbed at each side of the screen to facilitate securement to the inside of the aluminum side rails.

Side Rail Construction: The side rails are constructed of 6063-T6 aluminum. Option 1: Side rails are fastened to a 3"x3"x1/8" aluminum tube, which is fastened to concrete beam or grout filled masonry using a single row of 5/16" diameter x 2-1/2" long hex head Tapcon concrete fasteners located 6" on center. The side rail is fastened to the aluminum tube with a single row of 1/4" diameter Elco EZG160 or 1/4" diameter - 20 Elco Biflex at 6" on center. Option 2: The side rail can be fastened directly to a concrete column or grout filled masonry using a single row of 2-1/2" long Red Head Sammy Screws with 1/4 -20 by 1/2" stainless steel side walk bolts or 1/4" diameter tapcon with spacer and washer located 6" on center.

Cover Box Construction: The cover box is fastened to the header box using the same cover box assembly screws and a single row of No. 10 by 3/4" hex head self-drilling screws located 13" on centers.

Limitations: The product evaluation document and installation instructions are generic and do not provide information for site specific projects (Anything deviating from these documents and installation instructions). All site specific projects shall require a Florida Registered Professional Engineer Seal whom shall take all responsibilities of the product.

Glass separation is required for Wind Zone 4 and all wind zones for essential facilities.

The height of the screen shall be limited to 3 times the test height (Total of 24'-0" tall)

(Refer to Attached Drawings for additional information)

GENERAL NOTES:

- CUSTOM HURRICANE PRODUCTS, INC. ROLL DOWN MESH IMPACT SCREEN, PRODUCT NAME "SUPERMAX", HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH 2017 FLORIDA BUILDING CODE - 6th EDITION CHAPTER 16 FOR LARGE MISSILE IMPACT NOT INCLUDING WITHIN THE HIGH VELOCITY HURRICANE ZONE, AND MEETS THE NON-POROUS REQUIREMENTS FOR ASTM E1996 FOR OUTSIDE OF HIGH VELOCITY HURRICANE ZONES. ALLOWABLE WIND LOADS SHALL BE IN ACCORDANCE WITH ASCE 7-10, AND FOR A BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE THE ROLL DOWN MESH IMPACT SCREEN WILL BE INSTALLED.
- TESTED PER ASTM E1886-05, ASTM E1996-05, AND ASTM E330-02 WITH MISSILE IMPACTS CORRESPONDING TO MISSILE LEVEL E AND WIND ZONE 1, 2, 3, AND 4 TO MEET IMPACT, DEFLECTION, AND FATIGUE RESISTANCE PER FBC1609.1.2
- UNIT WIDTH OR THE DISTANCE BETWEEN SUPPORTED SIDES SHOWN IS MAXIMUM ALLOWABLE WITHOUT SITE-SPECIFIC ENGINEERING. SCREEN HEIGHT IS LIMITED TO 24'-0".
- NO ALLOWABLE STRESS INCREASE HAS BEEN USED IN THE DESIGN OF THE ROLL DOWN MESH IMPACT SCREEN.
- ANCHORING OF SIDE RAILS SHALL BE WITH 5/16" TAPCON XL BY ITWREDHEAD @ 6" O.C. WITH MIN. 2-1/4" EMBED FOR 3"x3" TUBE.
- ANCHORING OF SIDE RAILS SHALL BE WITH 1/4" SAMMY SSC BY ITWREDHEAD @ 6" O.C. WITH MIN. 2-1/2" EMBED. 1/4" TAPCON PER DETAIL 4 ON S3.0 SHALL BE SUBSTITUTED FOR THE 1/4" SAMMY SSC AT THE SAME SPACING AND EMBED LENGTH.
- INSTALLATION OF FASTENERS INTO SUBSTRATE SHALL BE INTO CONCRETE OR GROUT SOLID CMU. ADEQUACY OF EXISTING STRUCTURE SHALL BE DETERMINED BY OTHERS.
- THE PRODUCT EVALUATION DOCUMENT AND INSTALLATION INSTRUCTIONS ARE GENERIC AND DOES NOT PROVIDE INFORMATION FOR SITE SPECIFIC PROJECTS (ANYTHING DEVIATING FROM THESE DOCUMENTS AND INSTALLATION INSTRUCTIONS). ALL SITE SPECIFIC PROJECTS SHALL REQUIRE A FLORIDA REGISTERED PROFESSIONAL ENGINEER SEAL WHOM SHALL TAKE ALL RESPONSIBILITIES OF THE PRODUCT.
- FINAL SCREEN FABRIC SHALL BE MIN. 27-MIL
- FINAL SCREEN FABRIC SHALL HAVE POROSITY <= 10%.
- SEE SHEET 2 FOR FABRIC SPECIFICATIONS.
- MAX. ALLOWABLE DESIGN PRESSURES SHALL NOT EXCEED +/- 75 psf.
- THE PRODUCT SHALL BE LABELED IN ACCORDANCE WITH FBC - 1709.9

PRODUCT LABEL:

CUSTOM HURRICANE PRODUCTS
 2024 58th Ave Circle East
 Bradenton, FL 34203
 THIS PRODUCT SHALL BE INSTALLED AND USED ONLY AS INTENDED PER THE INSTALLATION INSTRUCTIONS. THIS PRODUCT DOES NOT MEET ASTM E1829, ASTM E84, ASTM D2843, ASTM D635, AAMA 1800, OR ASTM G15, ASTM D2523, ASTM D256
 FLORIDA BUILDING COMMISSION APPROVAL: FL# 638C
 TEST STANDARDS: ASTM E1886-05, ASTM E1996-05, ASTM E330-02
 OPENING # _____
 DO NOT REMOVE LABEL

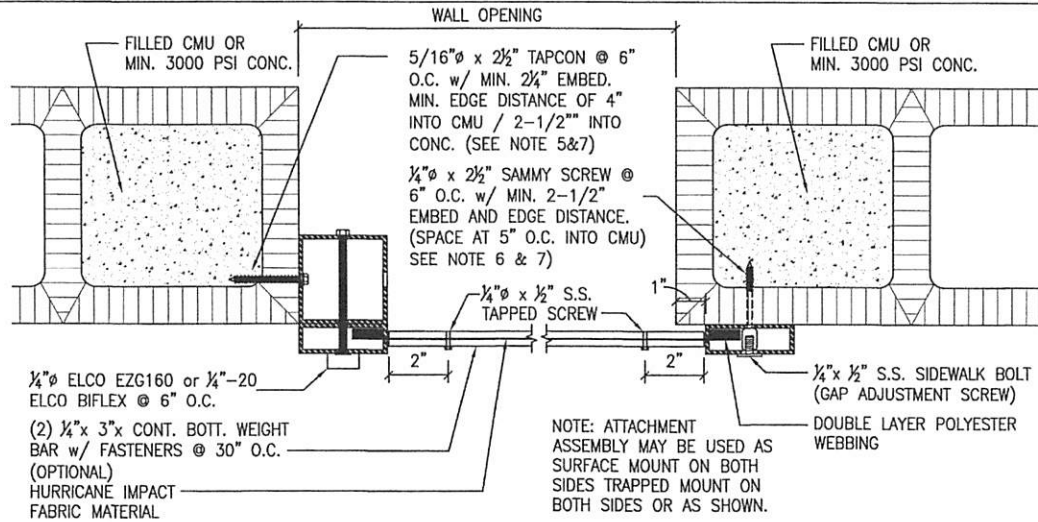
GLASS SEPARATION + SCREEN DEFLECTION TABLE

W (CLEAR SPAN)	207"	180"	169"	121"	108"	84" or LESS
SEPARATION DISTANCES BETWEEN PROTECTED GLAZING AND SCREEN AT ZONE 4 AND ESSENTIAL BUILDINGS	20"	16"	14"	12"	10"	8"

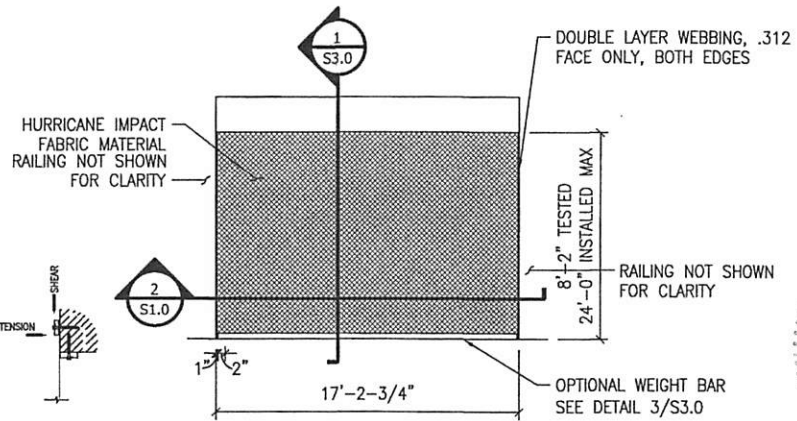
LOADS ON STRUCTURE		
75 PSF		
W	TENSION	SHEAR
17'-2"	650 #/FT	1890 #/FT
15'-0"	565 #/FT	1635 #/FT
13'-0"	488 #/FT	1415 #/FT
11'-0"	415 #/FT	1200 #/FT
9'-0"	340 #/FT	980 #/FT
7'-0"	265 #/FT	765 #/FT
OR <		

NOTE: FOR LOADS ON STRUCTURES FOR WIND PRESSURES LESS THAN 75 PSF, VALUES IN THE TABLE MAYBE OBTAINED BY THE FOLLOWING FORMULA:

VALUE FROM TABLE X PRESSURE DESIRED / 75 PSF



2 SECTION - SIDE RAILS TO CMU
N.T.S.



1 TYPICAL - SINGLE UNIT ELEVATION
N.T.S.

CUSTOM HURRICANE PRODUCTS
 "SUPER MAX" SCREEN

Project Name

Drawn: GAT
 Check: TB
 Date: 06CS-0397
 See SHEET
 Date: 2017-08-02



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 David G. Karins PE
 FL # 12569
 52677



TO THE BEST OF MY KNOWLEDGE AND ABILITY, THE COMPLETED STRUCTURE DEPICTED ON THESE PLANS COMPLES WITH APPLICABLE MINIMUM BUILDING CODES.

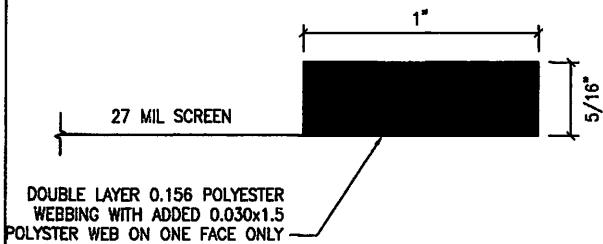
Sheet No.

S1.0

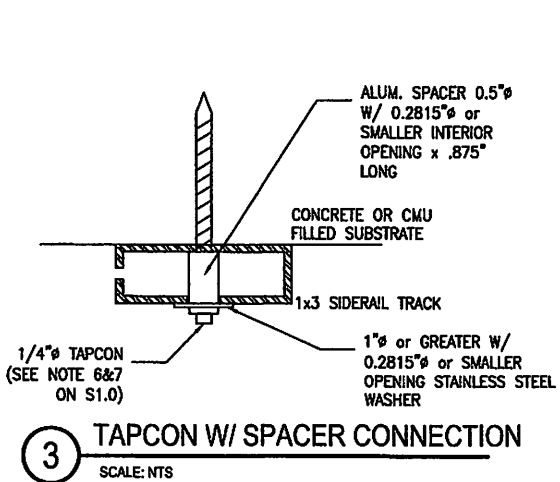
FABRIC PROPERTIES				
PROPERTY	TEST METHOD	WARP	FILL	TYPICAL
CONSTRUCTION	ASTM D-3375	22.0+/-5	13.5+/-5	
WEIGHT, OZ/YD ²	ASTM D-3376			19.524
TENSILE STRENGTH (GRAB) LBF	ASTM D-5034	711.3	748.9	
TENSILE STRENGTH (STRIP) LBF	ASTM D-5035	416.7	251.4	
TEAR STRENGTH, (TRAPEZOIDAL), LBF	ASTM D-1117	181.6	285.0	
ELONGATION, %	ASTM D-5035	42.8	12.3	
ABRASION RESISTANCE	ASTM D-3884	NO EXPOSURE TO CORE YARN		
WEATHERABILITY, 1200 HRS	ASTM G-53	TRACE DISCOLORATION		
BALL BURST, LBF	ASTM D-3787			460+
BURSTING STRENGTH, PSI	ASTM D-3786			1250+
PUNCTURE RESISTANCE, LBF	ASTM D-4833			364

POROSITY CALCULATION - 9% OPEN

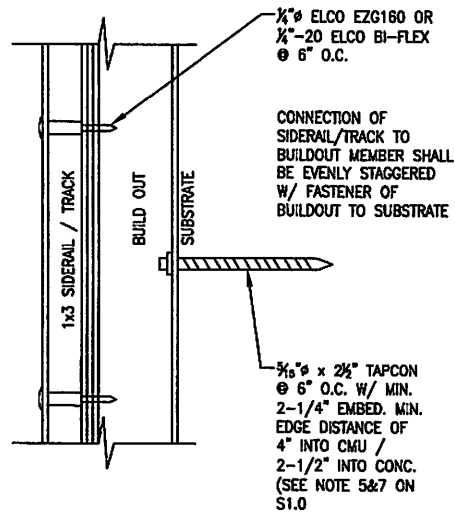
THE ABOVE MATERIAL PROPERTIES ARE FOR A 0.027" DIAMETER VINYL COATED 1500 DENIER POLYESTER CORE YARNS IN WARP AND 0.030" DIAMETER VINYL COATED 2000 DENIER TWARON CORE YARNS IN FILL. BLACK OR TAN COLORED FABRIC PRODUCED BY TWITCHELL CORPORATION.



2 SIDE RAIL CONNECTIONS
SCALE: NTS

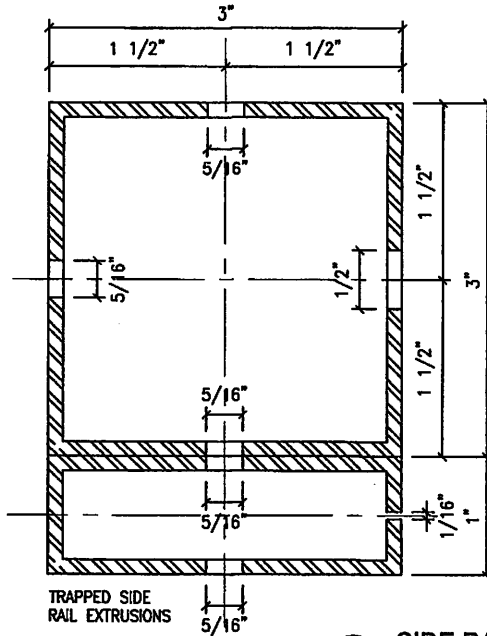


3 TAPCON W/ SPACER CONNECTION
SCALE: NTS

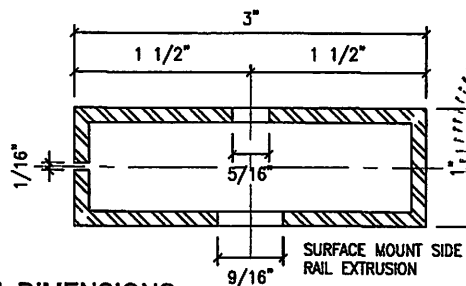


4 FASTENING OF SIDE RAIL / TRACK AND BUILDOUT COMBINATIONS
SCALE: NTS

ALL ALUMINUM EXTRUSIONS TO BE 1/8" THICKNESS AND 6063



1 SIDE RAIL DIMENSIONS
SCALE: NTS



CUSTOM HURRICANE PRODUCTS
"SUPER MAX" SCREEN

Project Name:

GAT
TB
06CS-0397
SEE SHEET
2017-08-02

Karins Engineering Group, Inc.

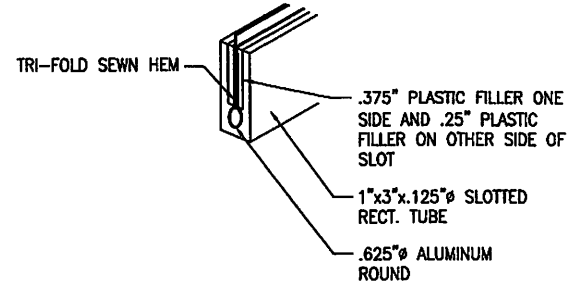
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2017 Florida License
Professional Seal
No. 00015717

FLORIDA
AUG 16 2017

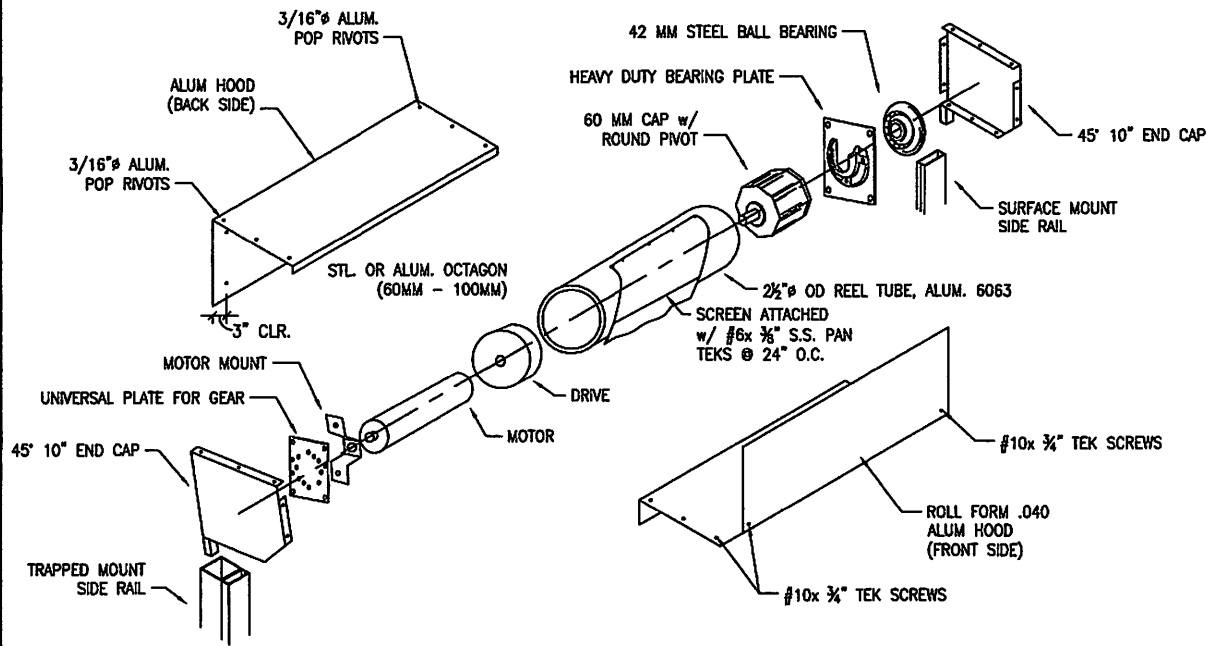
TO THE BEST OF MY KNOWLEDGE AND ABILITY, THE COMPLETED EXERCISES REPORTED ON THESE PLANS COMPLY WITH APPLICABLE MINIMUM BUILDING CODES.

Sheet No.:

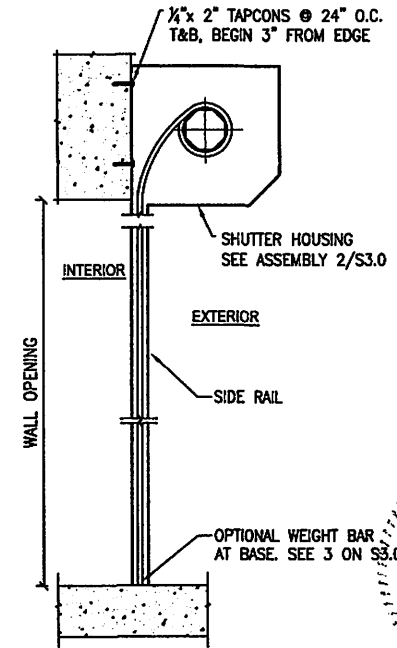
S2.0



3 **OPTIONAL WEIGHT BAR**
SCALE: NTS



2 **COMPONENTS & ASSEMBLY**
SCALE: NTS



1 **OPTIONAL SHUTTER HOUSING**
SCALE: NTS

CUSTOM HURRICANE PRODUCTS
"SUPER MAX" SCREEN

Project Name:

Client: GAT
 Check: TB
 Date: 06CS-0397
 Title: SEE SHEET
 Date: 2017-08-02

Karius Engineering Group, Inc.

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 (941) 927-4331 Fax (941) 927-8075
 Email: E. Karius@KEG.com
 FL. Registration # 12677

AUG 16 2017

STATE OF FLORIDA
 I HEREBY CERTIFY THAT THE ABOVE
 AND ALL THE INFORMATION
 HEREON IS TRUE AND CORRECT
 AND ACCORDS WITH ALL APPLICABLE
 REGULATIONS AND CODES.

Sheet No.

S3.0

4. Certification of Independence

This Florida Professional Engineer does not have, nor does intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products evaluated.

This Florida Professional Engineer is not owned, operated or controlled by any company manufacturing or distributing products it evaluates.

This Florida Professional Engineer performing an evaluation does not have nor will acquire, a financial interest in any company manufacturing or distributing products for which the reports are being issued.

This Florida Professional Engineer performing an evaluation does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

DAVID G. KARINS
LICENSE
52677
STATE OF FLORIDA
AUG 16 2017
David G. Karins, P.E.
President
FL Registration No: 52677
August 9, 2017