

HURRICANE STORM PANEL MANUFACTURING

HVHZ IMPACT STORM PANEL

INSTALLATION ANCHORAGE DETAILS

GENERAL NOTES:

1. THIS PRODUCT HAS BEEN TESTED AND IS DESIGNED TO COMPLY WITH THE OPENING PROTECTION REQUIREMENTS OF THE CURRENT EDITION OF THE FLORIDA BUILDING CODE - BUILDING AND RESIDENTIAL VOLUMES INCLUDING THE HIGH VELOCITY HURRICANE ZONE (HVHZ - LMI) AND WIND BORNE DEBRIS AREA (WIND ZONE 4, MISSILE LEVEL D).
- 1.1. THE PRODUCT DETAILS CONTAINED HEREIN ARE BASED UPON SIGNED AND SEALED TEST REPORT # ATLNC 0428.01-04 AND ATLNC 0428.03-04 DATED 05/28/04, AND ATLNC 0224.01-09 AND ATLNC 0224.02-09 DATED 02/25/09 AND ASSOCIATED LABORATORY STAMPED DRAWINGS.
2. ADEQUACY OF THE EXISTING STRUCTURAL CONCRETE / MASONRY AND 2X FRAMING AS A MAIN WIND FORCE RESISTING SYSTEM CAPABLE OF WITHSTANDING AND TRANSFERRING APPLIED PRODUCT LOADS TO THE STRUCTURE IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD.
3. PANEL MATERIAL: 0.050 3105-H14 ALUMINUM ALLOY OR 24 GA. (0.023" MIN.) STEEL WITH Fy = 53 KSI AFTER ROLLING, CONFORMING TO ASTM A-446 STRUCTURAL QUALITY STEEL, GRADE C MIN. WITH A G60 MIN. COATING OF GALVANIZED STEEL.
4. ALL BOLTS AND WASHERS SHALL BE GALVANIZED OR STAINLESS STEEL WITH A MINIMUM TENSILE STRENGTH OF 60 K.S.I.
5. AT LEAST ONE WARNING NOTE PER OPENING MAY BE PLACED IN A CONSPICUOUS LOCATION ON THE PANEL SYSTEM BY THE INSTALLATION COMPANY ADVISING THE HOMEOWNER OR TENANT THAT THE PANELS WILL NOT OFFER HURRICANE PROTECTION UNLESS ALL PANELS AND FASTENERS ARE INSTALLED AS SHOWN HEREIN AND WARN INSTALLER IN THE SAME MANNER THAT HANDLING PANEL WITHOUT PROTECTIVE GLOVES COULD CAUSE INJURY.
6. THE IMPACT PROTECTIVE SYSTEM SHALL BE INSTALLED IN A MANNER TO COMPLETELY COVER THE ENTIRE FENESTRATION (WALL OPENING) IN ALL DIRECTIONS.
7. THIS PRODUCT HAS BEEN TESTED TO AN IMPACT PROTECTION LEVEL OF MISSILE LEVEL D, WIND ZONE 4 AND LARGE MISSILE IMPACT CONSISTENT WITH THE REQUIREMENTS OF ASTM E1886/E1996 AND TAS 201/203.

7.1. WHEN INSTALLED AS INDICATED, THE PRODUCT HEREIN IS CONSIDERED A NON-POROUS IMPACT PROTECTIVE SYSTEM.

7.2. SEPARATION BETWEEN GLASS OR OTHER PROTECTED COMPONENT(S) SHALL BE AS SHOWN IN THE PANEL SEPARATION TABLE ON SHEET 6.
8. THE PRODUCT DESCRIBED HEREIN IS DESIGNED FOR USE AS A IMPACT RESISTANT COVERING DURING PERIODS OF HIGH WINDS. THE STORM PANEL IS TEMPORARY AND REMOVABLE AND NOT INTENDED TO BE A PERMANENT PART OF THE STRUCTURE (ALTHOUGH THE INSTALLATION ANCHORS SHALL REMAIN A PERMANENT PART OF THE STRUCTURE).
9. MAXIMUM PANEL SIZE: SEE CHARTS ON SHEET 6.
10. PANELS MAY BE MOUNTED HORIZONTALLY WHERE APPLICABLE.
11. THE DRAWING SECTIONS HEREIN DEPICT TYPICAL CONCRETE / MASONRY AND WOOD INSTALLATION ANCHORAGE CONNECTIONS. THESE DETAILS MAY BE USED INTERCHANGEABLY AS FIELD CONDITIONS DICTATE.
12. A PERMANENT LABEL IN ACCORDANCE WITH CHAPTER 17 OF THE CURRENT EDITION OF THE FBC AND CHAPTER 6 OF THE CURRENT EDITION OF THE FRC SHALL BE PLACED ON THE IMPACT RESISTANT COVERINGS AND SHALL FACE THE EXTERIOR OR OUTSIDE.

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SHEET	REV.	SHEET DESCRIPTION
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5	--	COMPONENTS
6	--	PANEL DP SCHEDULE & SEPARATION SCHEDULE
7	--	ANCHOR SCHEDULE & EGRESS SHUTTER ASSEMBLY

DESIGN PRESSURE RATING (PSF)
SEE CHARTS ON SHEET 6

IMPACT RATING (SEE GENERAL NOTE 7)
HVHZ: LARGE MISSILE IMPACT NON-HVHZ: MISSILE LEVEL D, WIND ZONE 4

INSTALLATION NOTES:

1. SEE ANCHOR SCHEDULE ON SHEET 7 OF 7 FOR ALLOWED FASTENERS, MINIMUM EMBEDMENT, MINIMUM EDGE DISTANCE AND REQUIRED ON CENTER (O.C.) ANCHOR SPACING.
2. INSTALLATION ANCHORS SHALL BE 3 INCHES FROM TRACK EDGE, 12 INCHES OR 8 INCHES MAXIMUM ON CENTER AS REQUIRED BY THE ANCHOR SCHEDULE ON SHEET 7 OF 7.
3. MINIMUM EDGE DISTANCE AND EMBEDMENT EXCLUDE WALL FINISHES (INCLUDING BUT NOT LIMITED TO STUCCO, FOAM, BRICK VENEER AND SIDING).
4. FOR CONCRETE BLOCK APPLICATIONS, DO NOT INSTALL INSTALLATION ANCHORS INTO MORTAR JOINTS.
5. INSTALLATION ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH ANCHOR MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ANCHORS SHALL NOT BE USED IN SUBSTRATES WITH STRENGTHS LESS THAN THE MINIMUM STRENGTH SPECIFIED BY THE ANCHOR MANUFACTURER.
6. INSTALLATION ANCHOR CAPACITIES FOR PRODUCTS HEREIN ARE BASED ON SUBSTRATE MATERIALS WITH THE FOLLOWING PROPERTIES:

6.1. WOOD - MINIMUM SPECIFIC GRAVITY IS 0.42 (0.55 IN HVHZ)

6.2. CONCRETE - MINIMUM COMPRESSIVE STRENGTH SHALL BE AS SHOWN IN ANCHOR SCHEDULE ON SHEET 7.

6.3. MASONRY - STRENGTH CONFORMANCE TO ASTM C-90.
7. STORM SHUTTER END CLOSURE:

7.1. NON-HIGH VELOCITY HURRICANE ZONE (HVHZ) INSTALLATIONS.

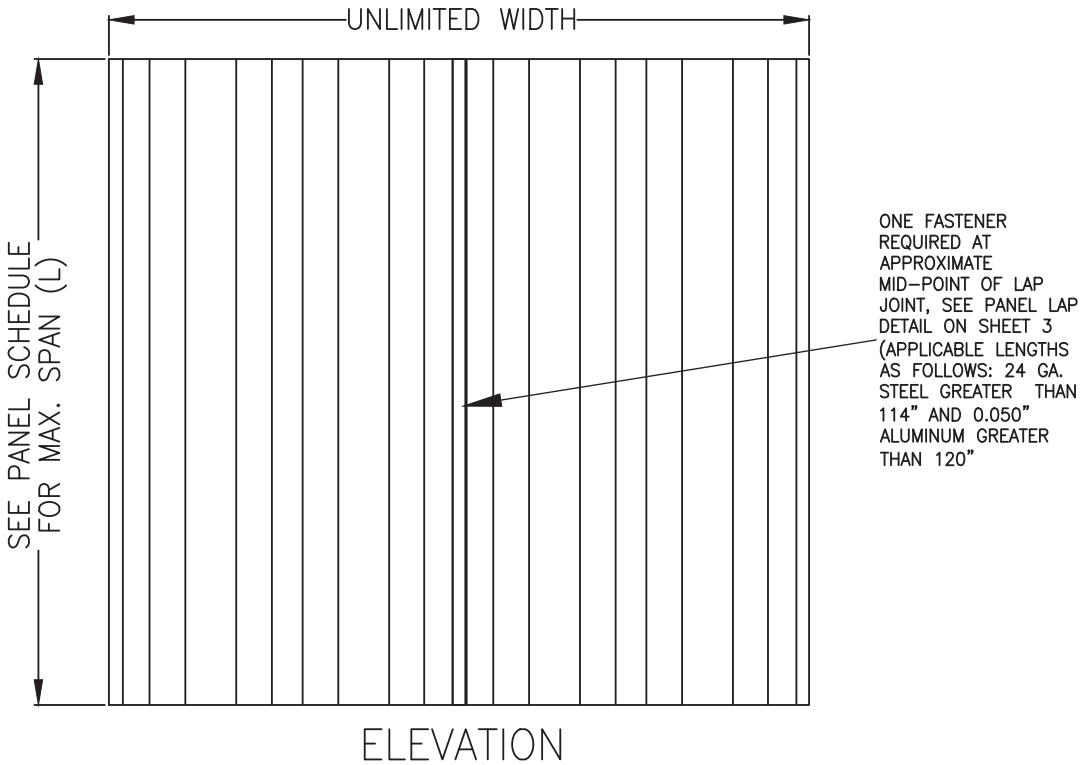
7.1.1. END CLOSURE IS OPTIONAL.

7.2. HIGH VELOCITY HURRICANE ZONE (HVHZ) INSTALLATIONS.

7.2.1. STORM SHUTTERS MUST COMPLETELY COVER AN OPENING IN ALL DIRECTIONS.

7.2.2. ON ANY SIDE OF AN OPENING, THE MAXIMUM SIDE CLEARANCE BETWEEN THE SHUTTER AND A WALL OR INSET SURFACE SHALL BE 1/4 INCH. ANY DISTANCE IN EXCESS OF 1/4 INCH SHALL REQUIRE END CLOSURE OR SHUTTER OVERLAP, WHERE APPLICABLE.

7.2.3. SHUTTER OVERLAP SHALL BE A MINIMUM OF 1.5 TIMES THE SIDE CLEARANCE BETWEEN THE SHUTTER AND WALL.



PROJECT NO. 423-0304

UPDATE TO 8TH EDITION (2023) FBC

5/30/23

RJA

UPDATE TO 7TH EDITION (2020) FBC

07/16/20

RJA

UPDATE TO 5TH EDITION (2014) FBC

04/30/15

JBH

DESCRIPTION

DATE

BY

REV

HURRICANE STORM PANEL MFG. INC.

1720 MAIN ST. NE. UNIT 1

PALM BAY, FL 32905

HVHZ IMPACT STORM PANEL

GENERAL, INSTALLATION NOTES & ELEVATION

TITLE:

DRAWN BY: RJA

DATE: 06/30/13

SCALE: N.T.S.

DRAWING NO: HSPM0001

REV: D

SHEET: 1 OF 7

PREPARED BY:

Robert J. Amoruso

Florida P.E. No. 49752

Digitally signed by Robert J Amoruso

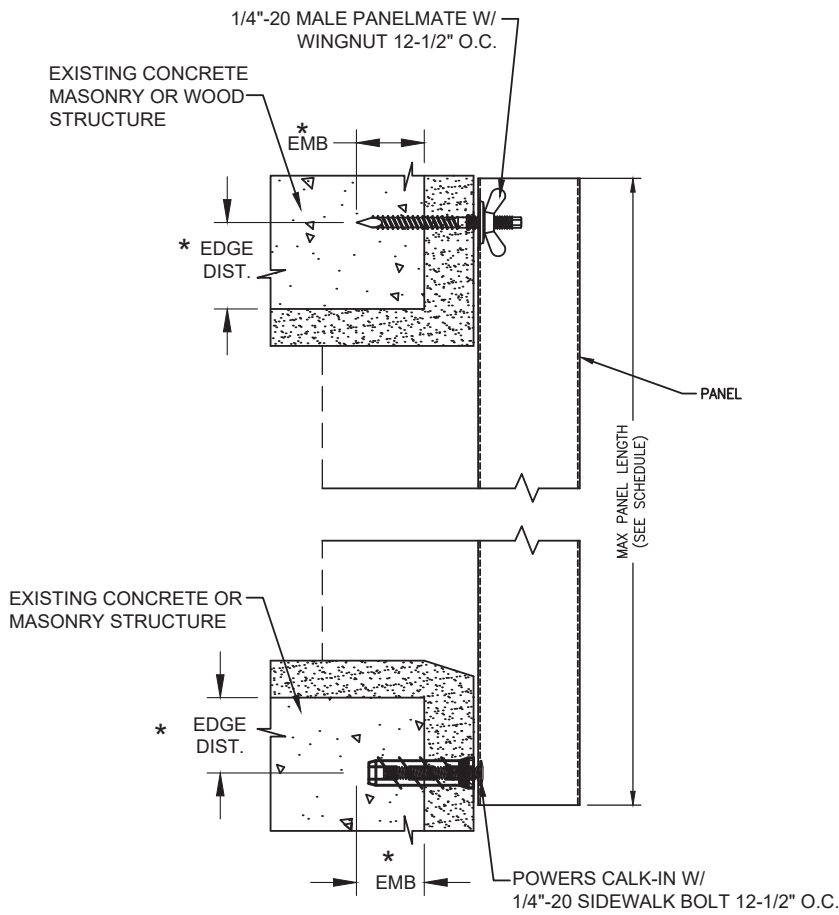
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PTC Product Design Group, LLC

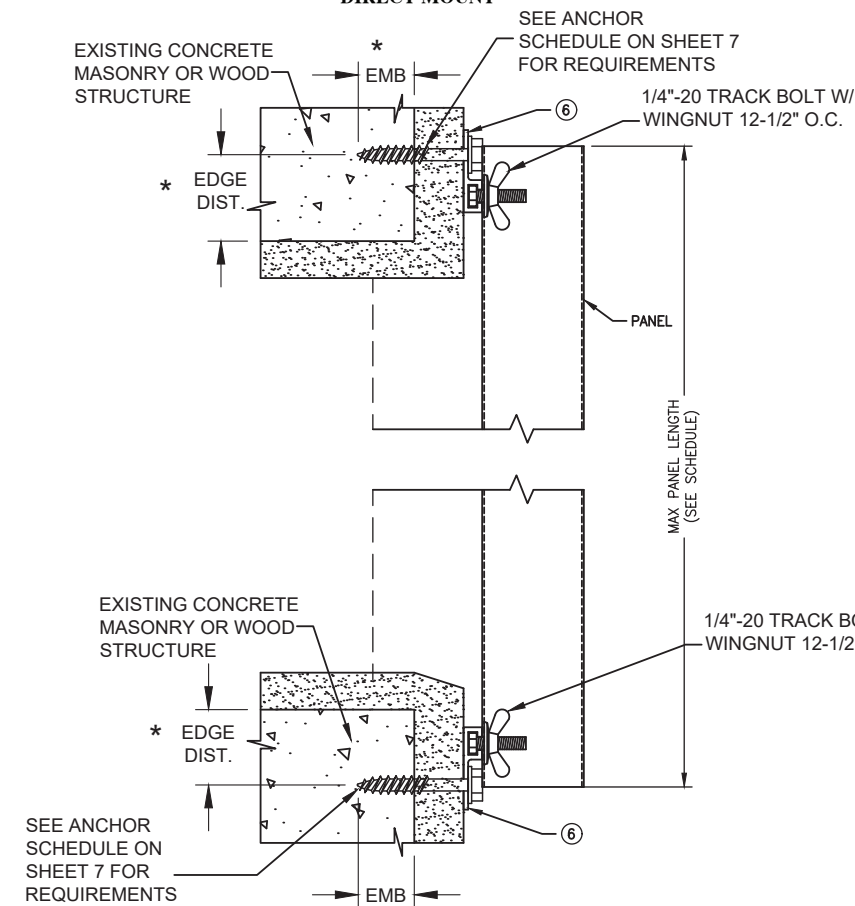
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Longwood, FL 32752-0775

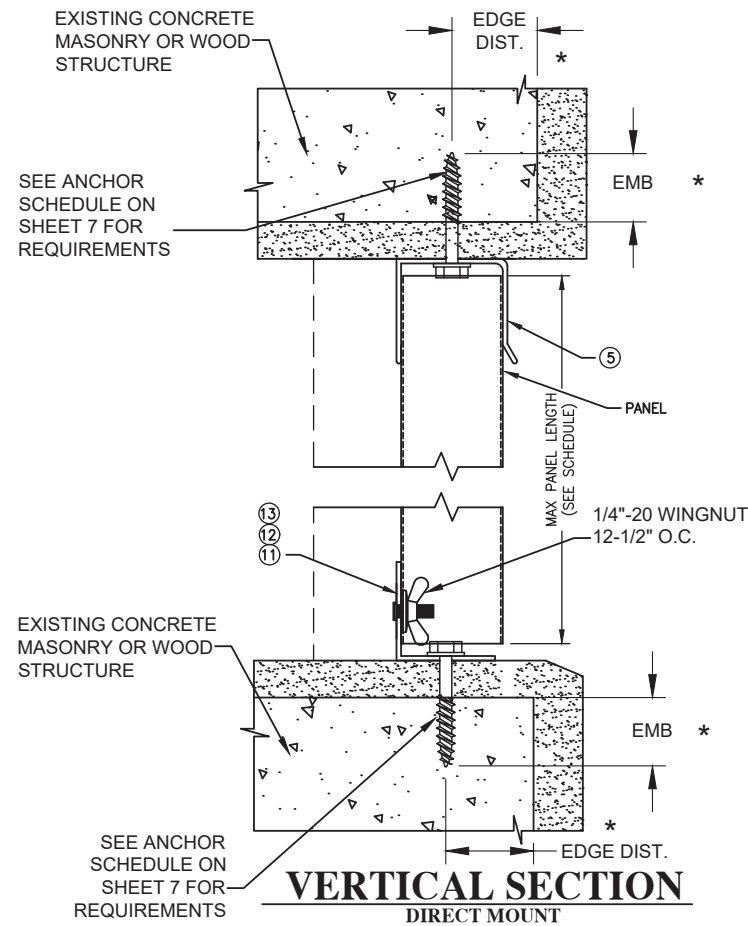
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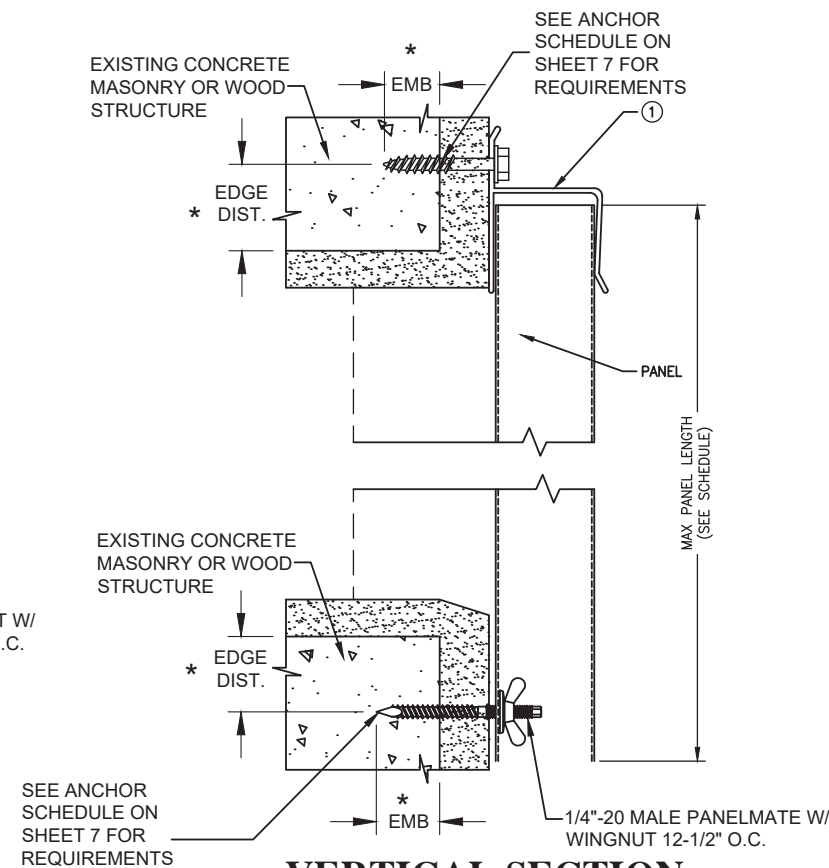
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DIRECT MOUNT



VERTICAL SECTION
DIRECT MOUNT

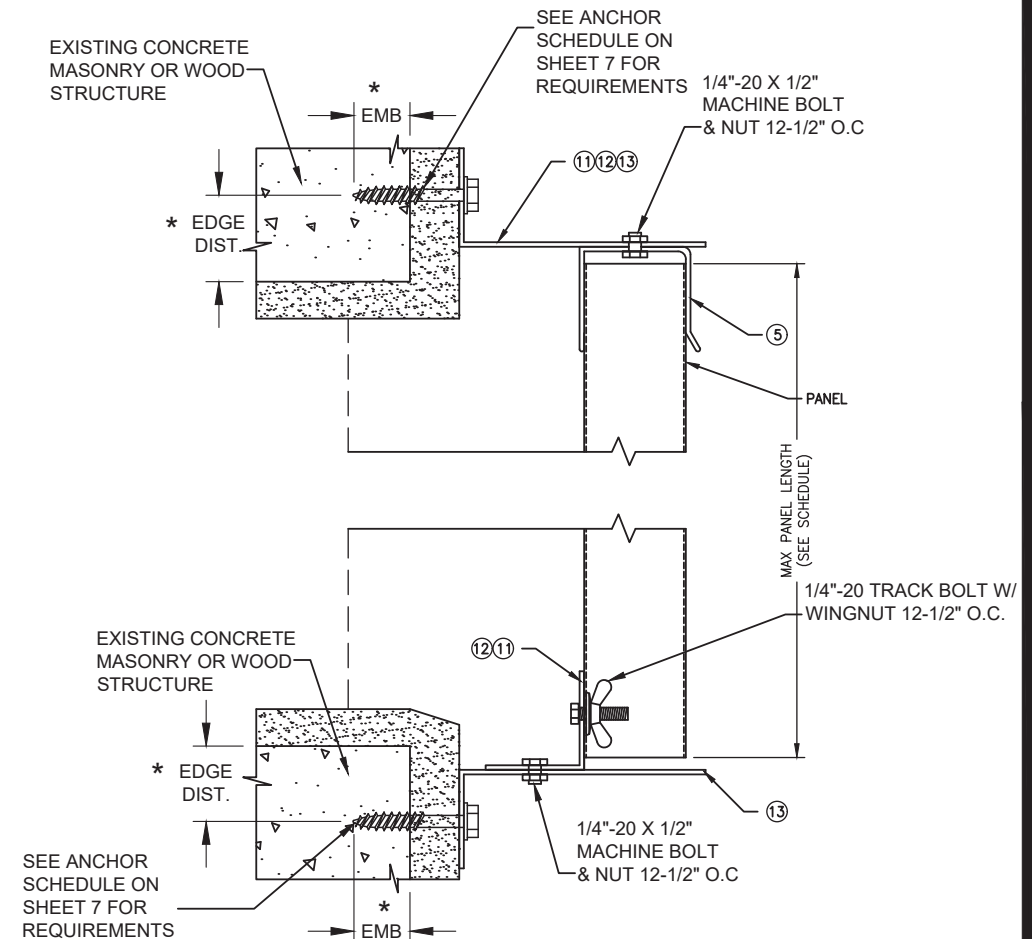


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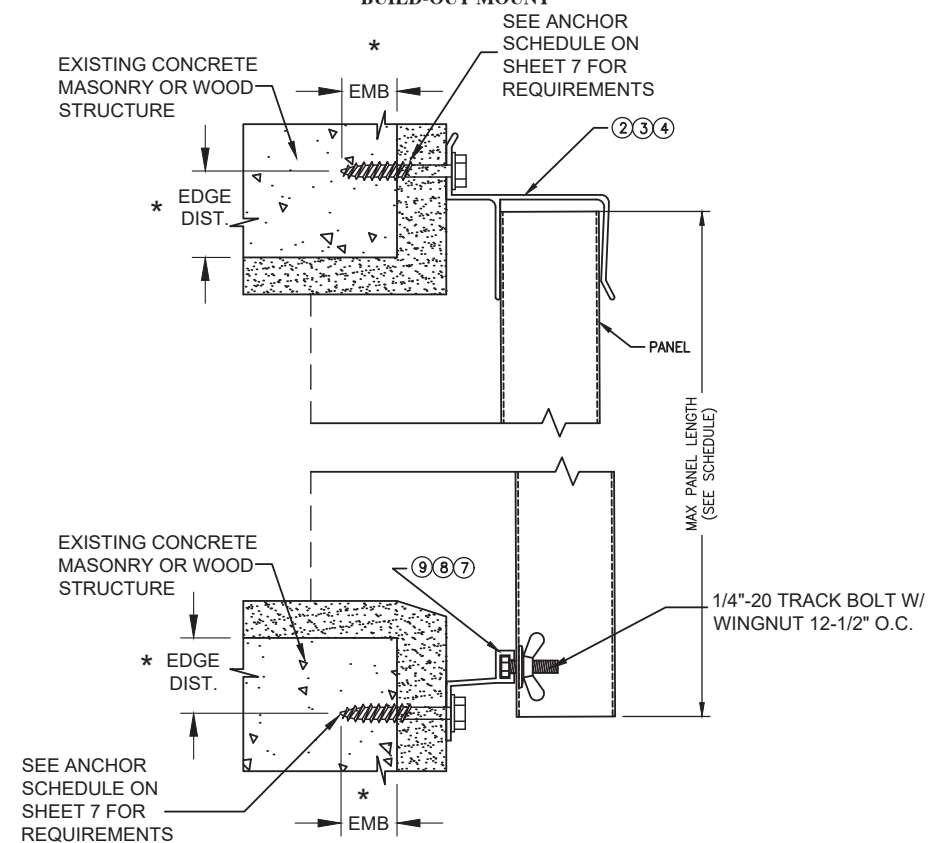


VERTICAL SECTION
DIRECT MOUNT

* SEE ANCHOR SCHEDULE
SHEET 7



VERTICAL SECTION
BUILD-OUT MOUNT

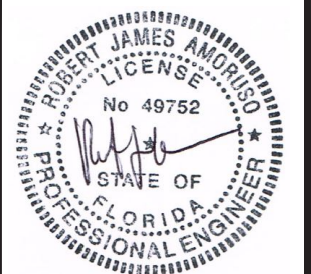


VERTICAL SECTION
BUILD-OUT MOUNT

PROJECT NO. 423-0304		RJA	BY
UPDATE TO 8TH EDITION (2023) FBC	5/30/23	RJA	DATE
UPDATE TO 7TH EDITION (2020) FBC	07/16/20	RJA	
UPDATE TO 5TH EDITION (2014) FBC	04/30/15	JBH	
REV	DESCRIPTION		

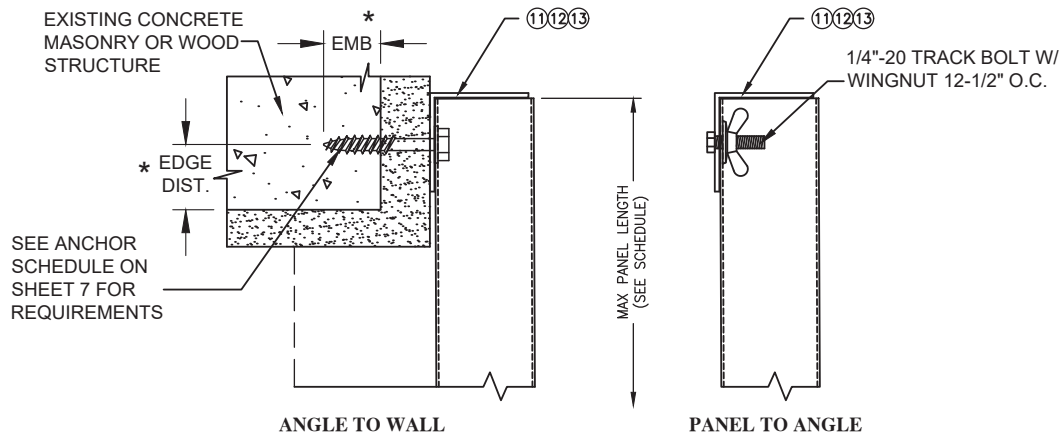
HURRICANE STORM PANEL MFG. INC. 1720 MAIN ST. NE. UNIT 1 PALM BAY, FL 32905		DATE: 05/30/13	
HVHZ IMPACT STORM PANEL VERTICAL SECTIONS		DRAWN BY: RJA	DRAWING NO: HSPM0001
PREPARED BY: PFE		SCALE: N.T.S.	SHEET: 2 OF 7
TITLE:		REV: D	

Robert J. Amoruso
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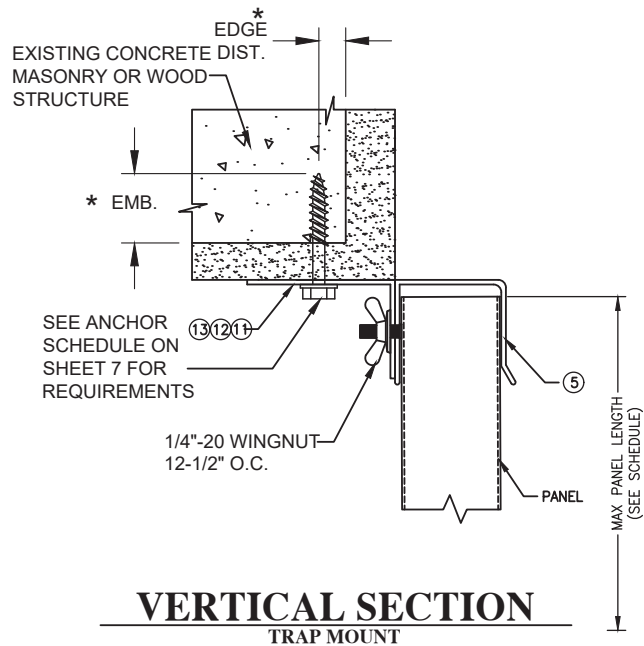


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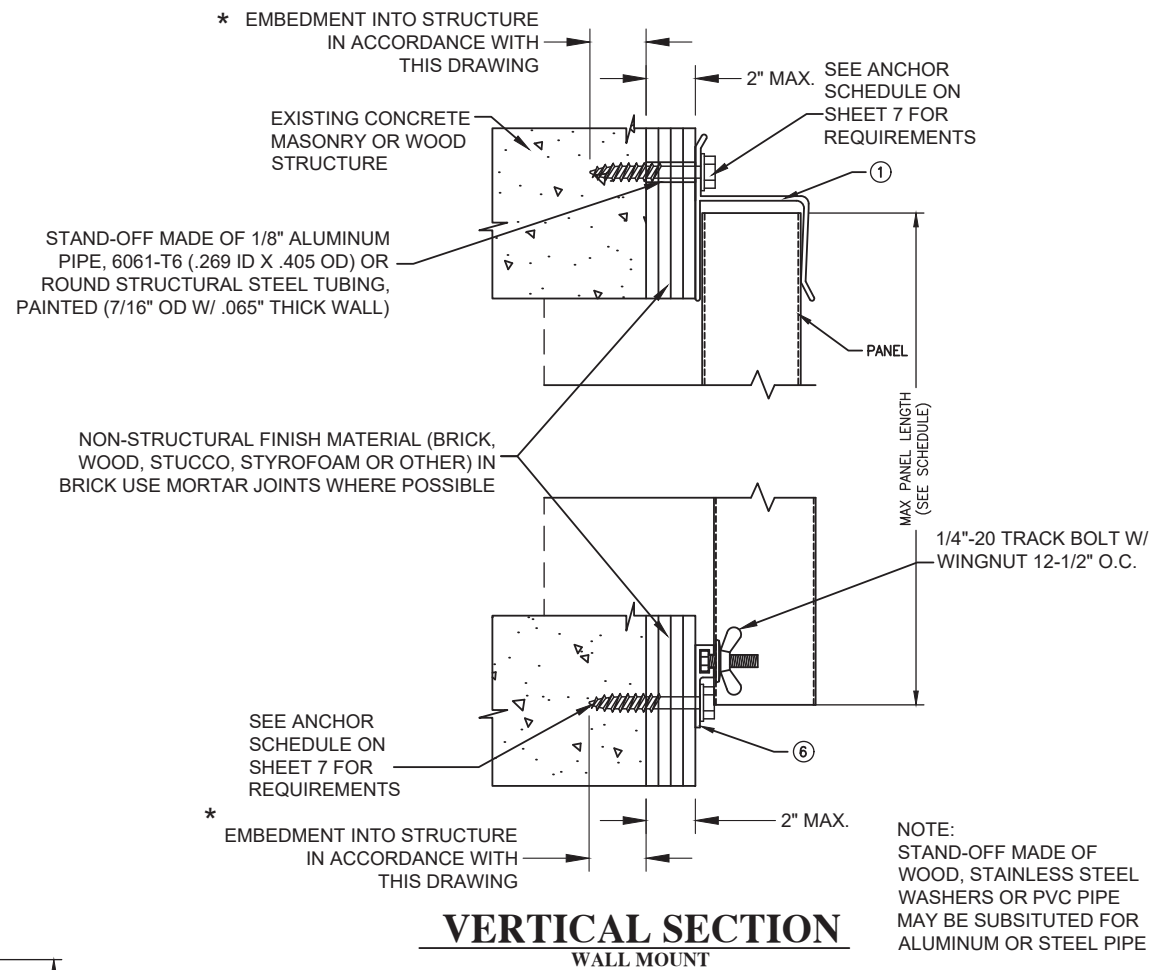
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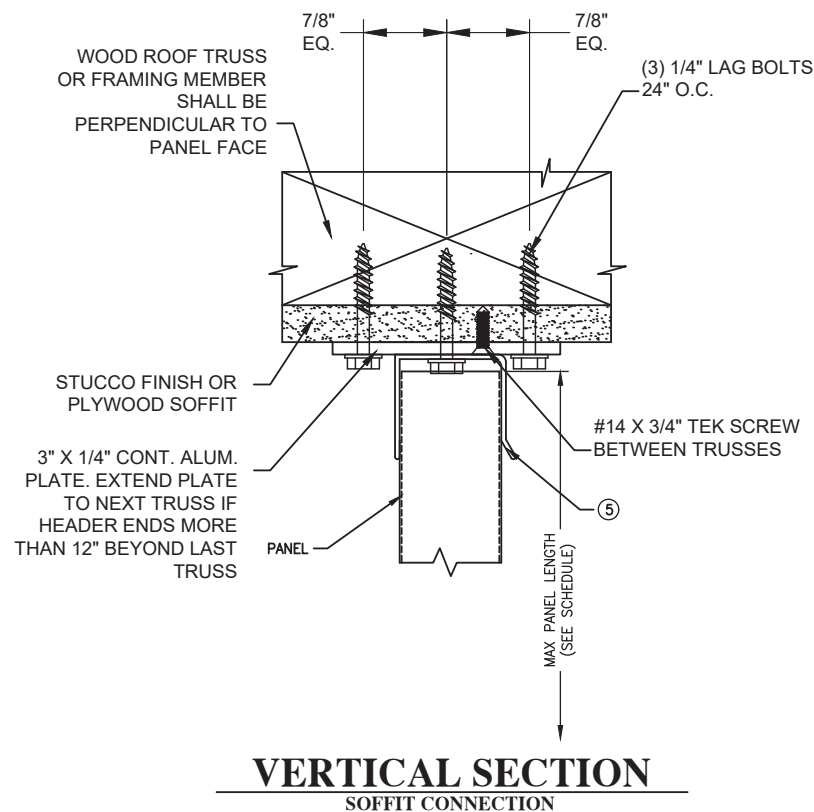
VERTICAL SECTION
WALL MOUNT



VERTICAL SECTION
TRAP MOUNT



VERTICAL SECTION
WALL MOUNT



VERTICAL SECTION
SOFFIT CONNECTION

* SEE ANCHOR SCHEDULE SHEET 7

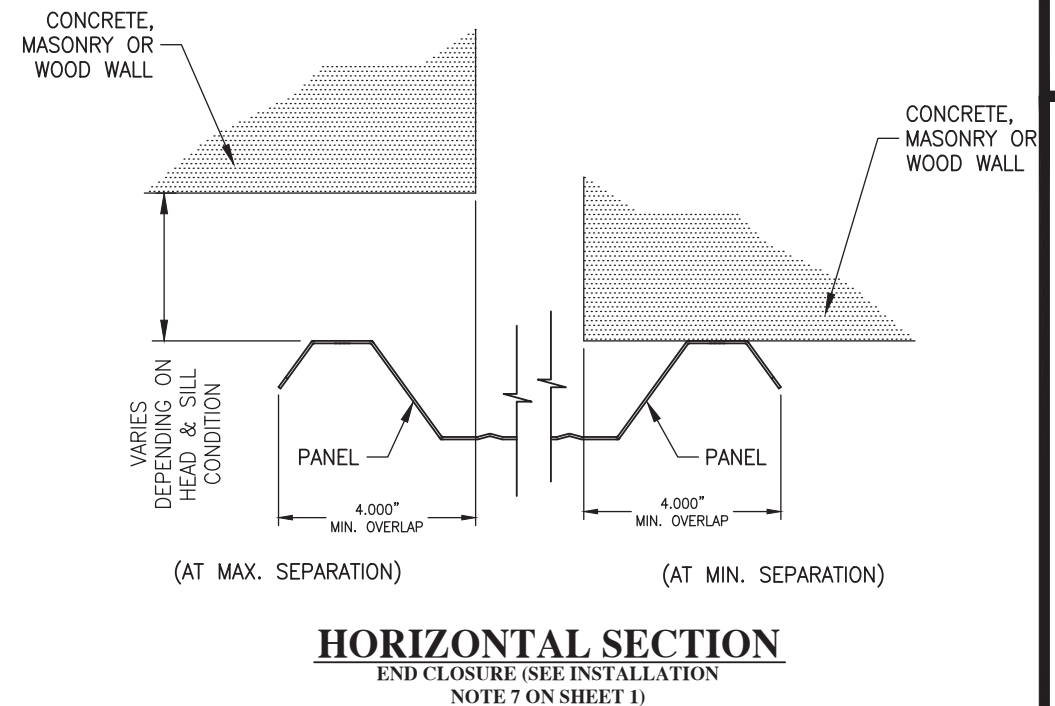
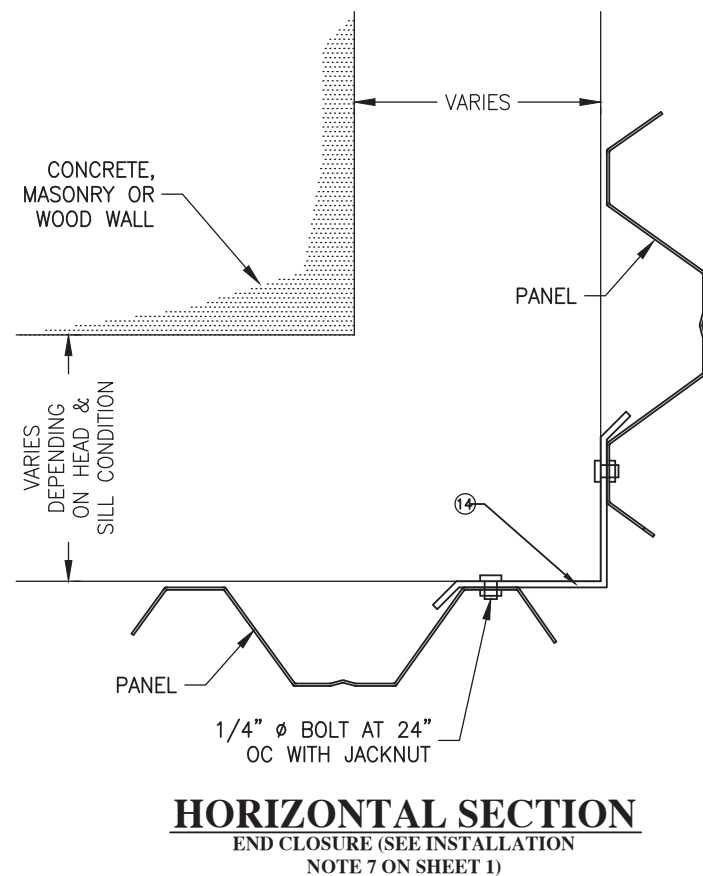
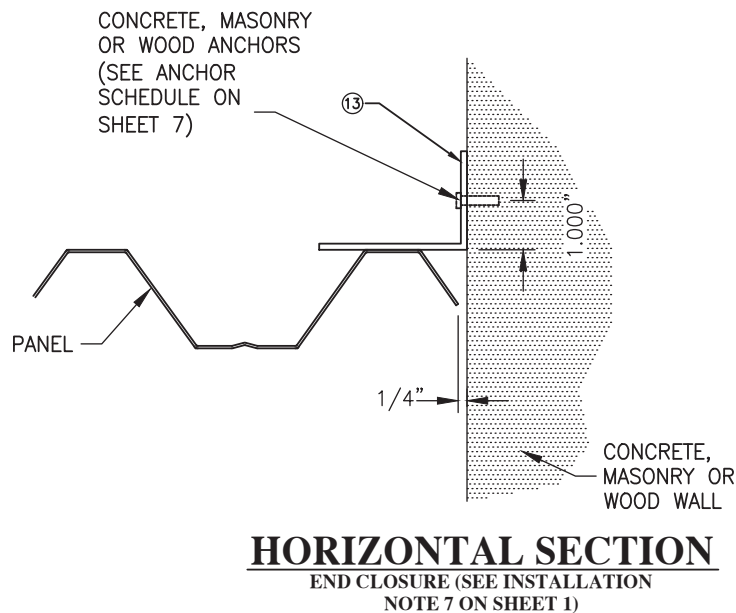
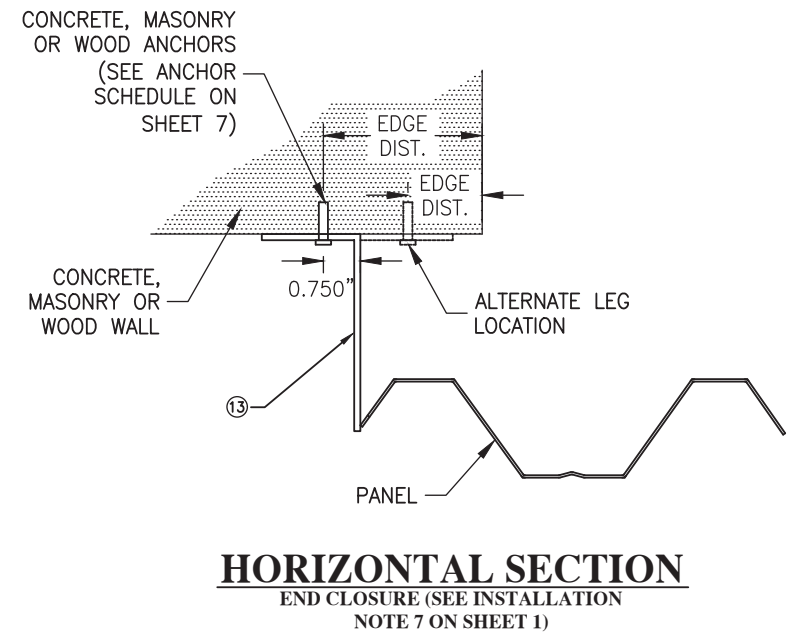
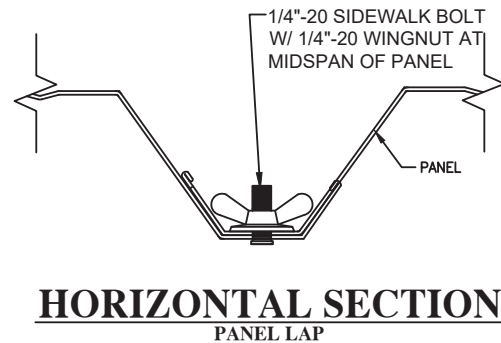
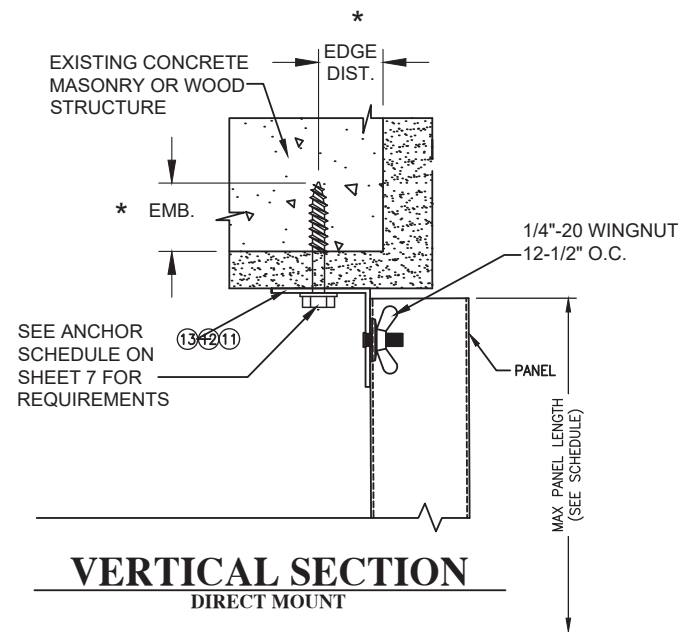
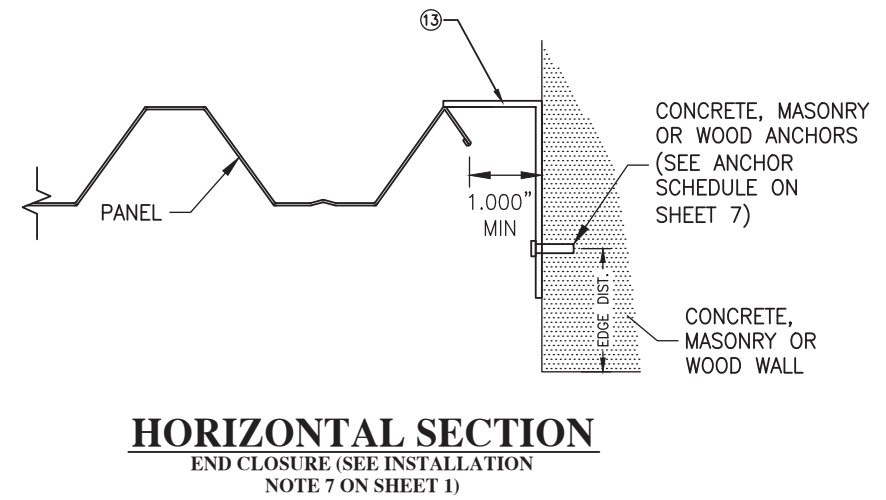
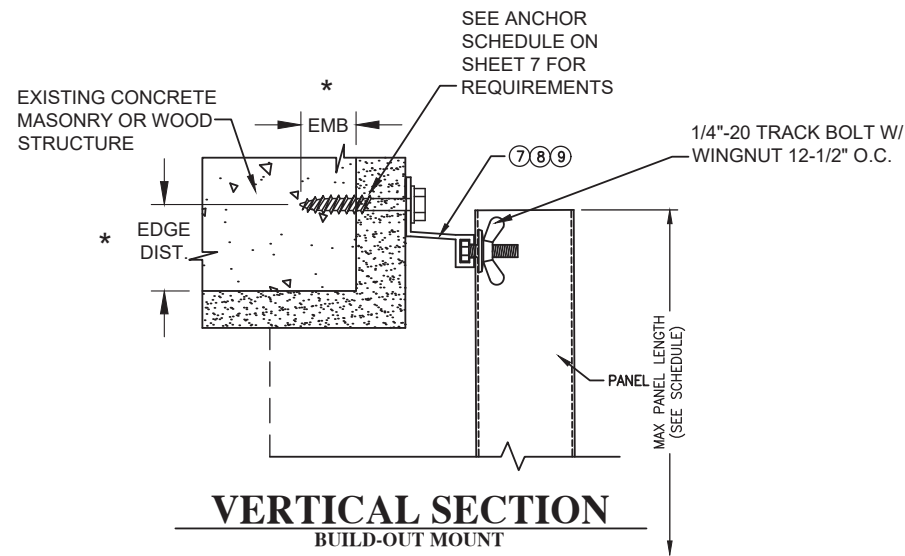
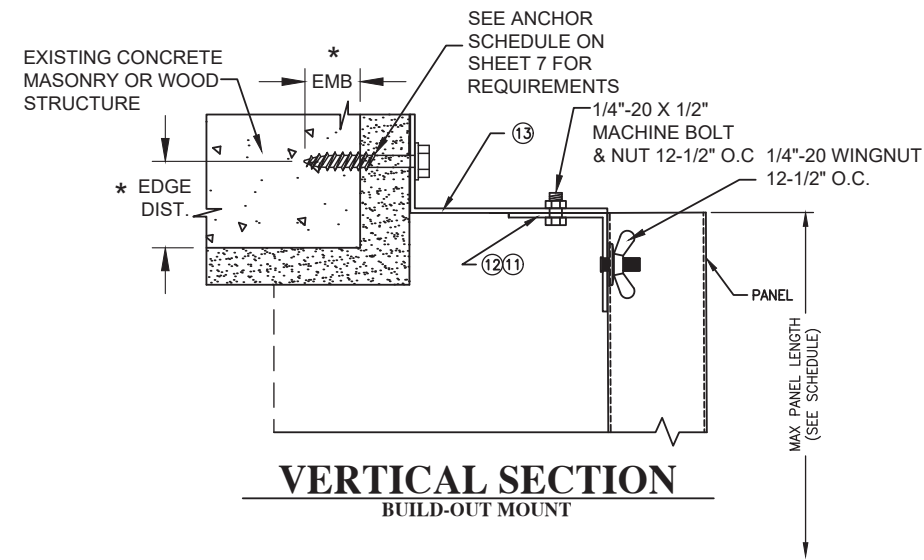
PROJECT NO. 423-0304		RJA		BY	
UPDATE TO 8TH EDITION (2023) FBC		5/30/23		DATE	
UPDATE TO 7TH EDITION (2020) FBC		07/16/20			
UPDATE TO 5TH EDITION (2014) FBC		04/30/15			
REV		DESCRIPTION			

HURRICANE STORM PANEL MFG. INC.		DATE: 05/30/13		SHEET: 3 OF 7	
1720 MAIN ST. NE. UNIT 1		DRAWN BY: RJA		SCALE: N.T.S.	
PALM BAY, FL 32905		REVISION: D		DRAWING NO: HSPM0001	
HVHZ IMPACT STORM PANEL VERTICAL SECTIONS					
TITLE:					
PREPARED BY:					

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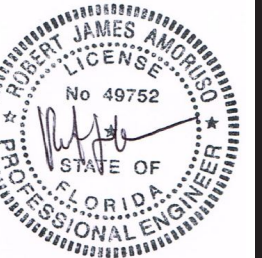


* SEE ANCHOR SCHEDULE
SHEET 7

PROJECT NO. 423-0304		RJA	5/30/23	UPDATE TO 8TH EDITION (2023) FBC	BY
D					DATE
C		RJA	07/16/20	UPDATE TO 7TH EDITION (2020) FBC	
B		JBH	04/30/15	UPDATE TO 5TH EDITION (2014) FBC	
REV	DESCRIPTION				

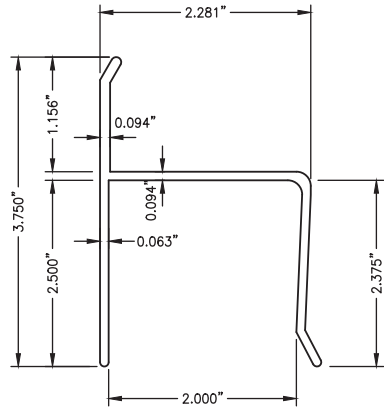
HURRICANE STORM PANEL MFG. INC.		1720 MAIN ST. NE. UNIT 1		DATE: 05/30/13	
PALM BAY, FL 32905		DRAWING NO: HSPM0001		SHEET: 4 OF 7	
HVHZ IMPACT STORM PANEL		VERTICAL & HORIZONTAL SECTIONS		REV: D	
PREPARED BY: RJA		SCALE: N.T.S.		REV: D	
DRAWN BY: RJA		DATE: 05/30/13		SHEET: 4 OF 7	

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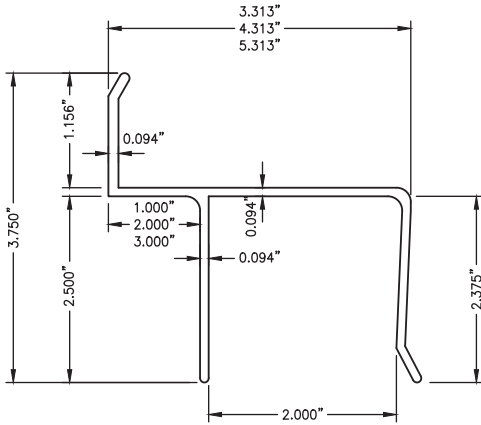


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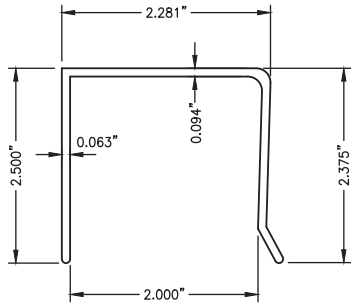
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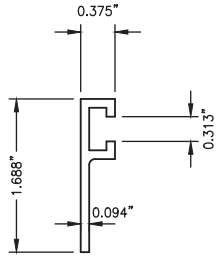
1 "H" HEADER
6063-T6 ALUMINUM



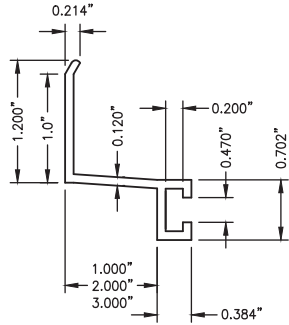
2 1" BUILD-OUT "H" HEADER
6063-T6 ALUMINUM
3 2" BUILD-OUT "H" HEADER
6063-T6 ALUMINUM
4 3" BUILD-OUT "H" HEADER
6063-T6 ALUMINUM



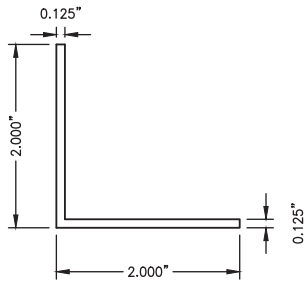
5 "U" HEADER
6063-T6 ALUMINUM



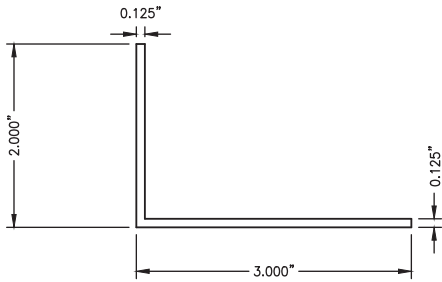
6 "F" TRACK
6063-T6 ALUMINUM



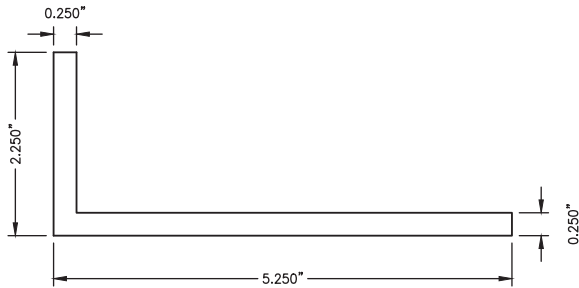
7 1" BUILD-OUT "F" TRACK
6063-T6 ALUMINUM
8 2" BUILD-OUT "F" TRACK
6063-T6 ALUMINUM
9 3" BUILD-OUT "F" TRACK
6063-T6 ALUMINUM



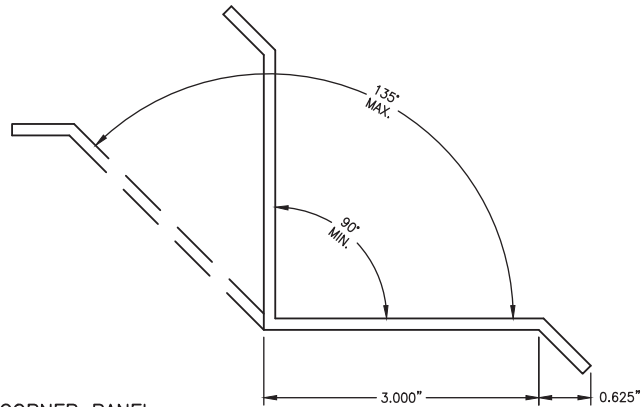
11 ANGLE
6063-T6 ALUMINUM



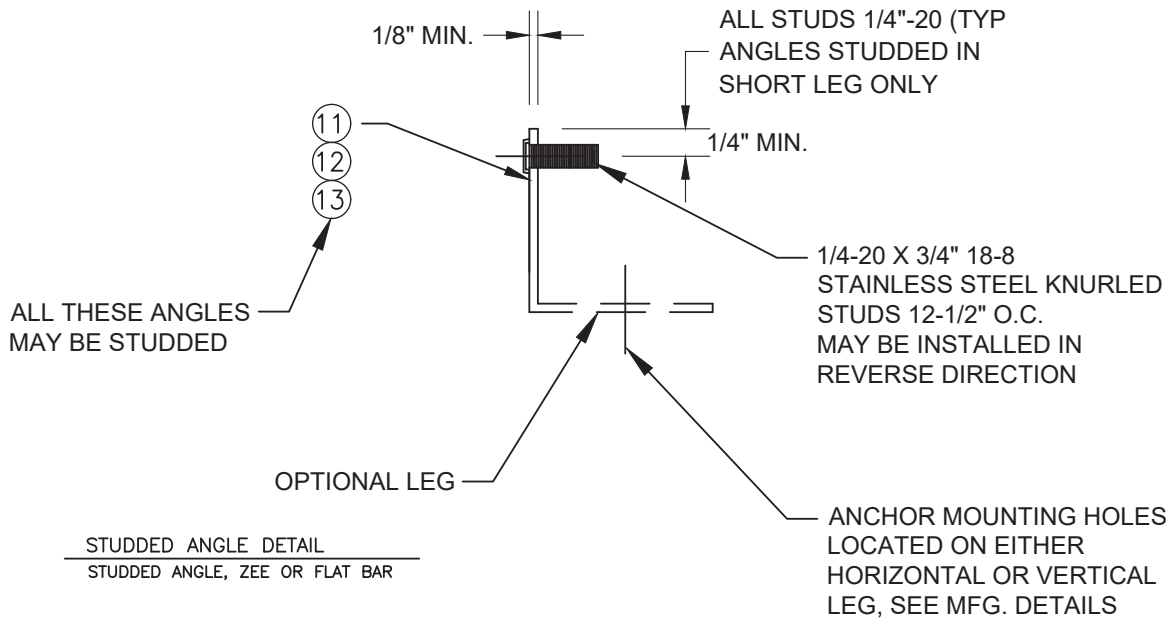
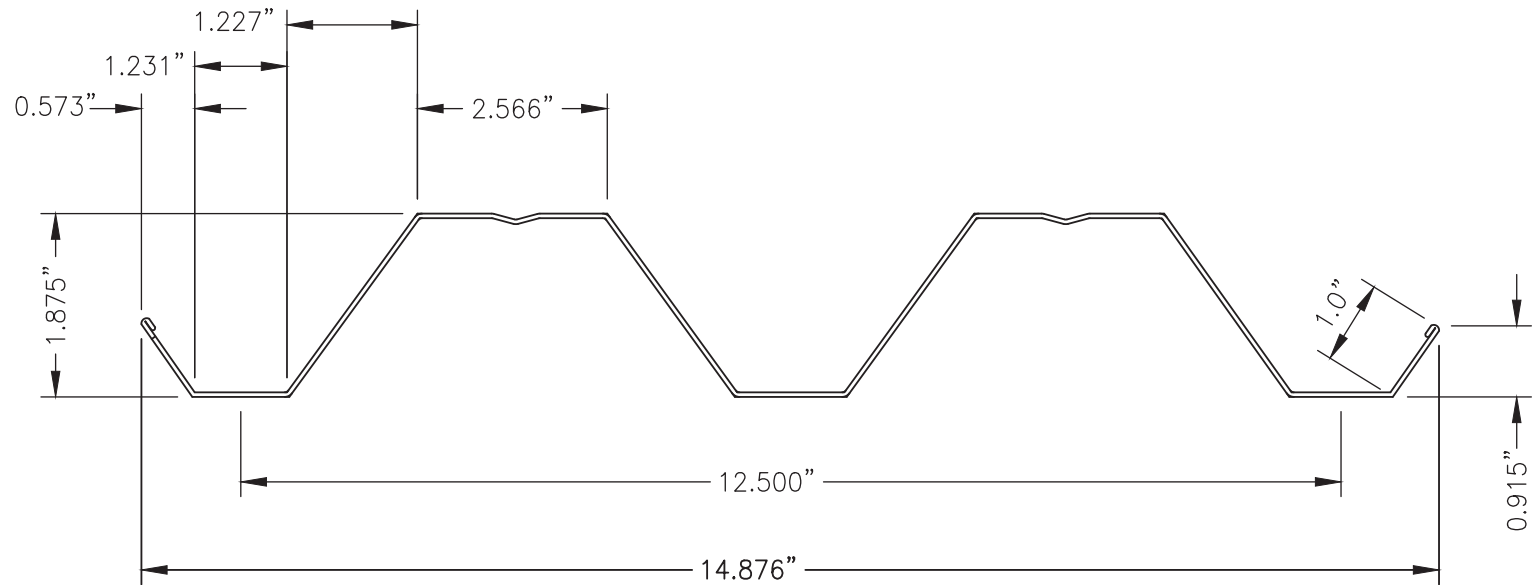
12 ANGLE
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13 ANGLE
6063-T6 ALUMINUM



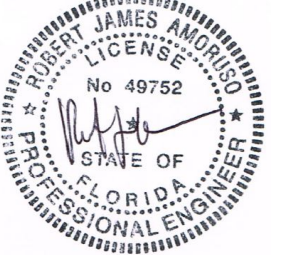
14 CORNER PANEL
SEE GENERAL NOTE 3, SHEET 1



PROJECT NO. 423-0304		RJA		RJA		RJA		JBH		BY	
UPDATE TO 8TH EDITION (2023) FBC		5/30/23		07/16/20		04/30/15		DATE		DATE	
D		C		B		REV		DESCRIPTION		DATE	

HURRICANE STORM PANEL MFG. INC.		DATE:		DRAWING NO:		SHEET:	
1720 MAIN ST. NE. UNIT 1 PALM BAY, FL 32905		RJA		N.T.S.		D	
HVHZ IMPACT STORM PANEL COMPONENTS		05/30/13		HSPM0001		5 OF 7	

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Longwood, FL 32752-0775
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PANEL DP TABLE

PANEL DP TABLE NOTES:

1. ENTER PANEL DP TABLE WITH POSITIVE AND NEGATIVE DESIGN LOAD TO DETERMINE MAX. LENGTH. POSITIVE LOADS LESS THAN NEGATIVE LOADS ARE ACCEPTABLE.
2. FOR DESIGN LOADS BETWEEN TABULATED VALUES, USE NEXT HIGHER LOAD OR LINEAR INTERPOLATION TO DETERMINE ALLOWABLE DESIGN PRESSURE BASED ON INSTALLED PANEL LENGTH.

0.050" Aluminum				
Design Pressure		Max. Panel Length (L) (in)	Panel Length Range (L) (in)	Mid-Point Fastener Required per Elevation
Positive	Negative			
28	28	144	from 138 to 144	yes
31	31	138	from 132 to 138	yes
34	34	132	from 126 to 132	yes
37	37	126	from 120 to 126	yes
40	40	120	from 114 to 120	no
43	43	114	from 108 to 114	no
46	46	108	from 106 to 108	no
47	47	106	from 102 to 106	no
49	49	102	from 96 to 102	no
52	52	96	from 90 to 96	no
55	55	90	from 84 to 90	no
58	58	84	from 78 to 84	no
61	61	78	from 72 to 78	no
64	64	72	from 56 to 72	no
72	72	56	from 43 to 56	no
79	79	43	0 to 43	no

24 Ga. Galvanized Steel				
Design Pressure (psf)		Max. Panel Length (L) (in)	Panel Length Range (L) (in)	Mid-Point Fastener Required per Elevation
Positive	Negative			
25	28	144	from 138 to 144	yes
27	29	138	from 132 to 138	yes
29	31	132	from 126 to 132	yes
31	32	126	from 120 to 126	yes
33	34	120	from 114 to 120	yes
35	35	114	from 108 to 114	no
37	38	108	from 106 to 108	no
38	39	106	from 102 to 106	no
39	41	102	from 96 to 102	no
41	44	96	from 90 to 96	no
43	47	90	from 84 to 90	no
45	50	84	from 78 to 84	no
47	53	78	from 72 to 78	no
49	56	72	from 56 to 72	no
54	64	56	from 43 to 56	no
59	71	43	0 to 43	no

PANEL SEPARATION TABLE

SEPARATION REQUIREMENTS - WIND ZONES 1, 2, 3 AND 4 INCLUDING THE HIGH VELOCITY HURRICANE ZONE (HVHZ)

1. THIS PRODUCT IS A NON-POROUS SHUTTER ASSEMBLY.
2. THIS PRODUCT WAS TESTED FOR WIND ZONES 1 THROUGH 4, MISSILE LEVEL D.
3. SEPARATION REQUIREMENTS

3.1. NON-HVHZ

3.1.1. IN ACCORDANCE WITH ASTM E1996, A ONE INCH MINIMUM CLEAR SEPARATION FROM THE GLASS OR OTHER PROTECTED COMPONENT(S) AT MAXIMUM DEFLECTION SHALL BE MAINTAINED FOR INSTALLATIONS INSTALLED IN ESSENTIAL FACILITIES AS DEFINED BY RISK CATEGORY IN ACCORDANCE WITH THE FLORIDA BUILDING CODE.

3.1.2. FOR NON-ESSENTIAL FACILITIES, NO SEPARATION REQUIREMENTS EXIST. HOWEVER, A MINIMUM OF ONE INCH IS RECOMMENDED.

3.2. HVHZ

3.2.1. IN ACCORDANCE WITH SECTION 2413.2 OF THE FLORIDA BUILDING CODE, A ONE INCH MINIMUM CLEAR SEPARATION FROM THE GLASS OR OTHER PROTECTED COMPONENT(S) AT MAXIMUM DEFLECTION SHALL BE MAINTAINED.
4. SEE THE SEPARATION TABLE BELOW FOR SEPARATION REQUIREMENTS MEETING THE ABOVE PARAMETERS.

0.050" Aluminum	
Max. Panel Length (L) (in)	Minimum Separation Distance (in)
144	5.563
138	5.500
132	5.438
126	5.375
120	5.313
114	5.263
108	5.213
106	5.196
102	5.163
96	5.113
90	5.063
84	5.013
78	4.963
72	4.913
56	4.779
43	4.671

24 Ga. Galvanized Steel	
Max. Panel Length (L) (in)	Minimum Separation Distance (in)
144	5.500
138	5.475
132	5.450
126	5.425
120	5.400
114	5.375
108	5.350
106	5.342
102	5.325
96	5.300
90	5.275
84	5.250
78	5.225
72	5.200
56	5.133
43	5.079

NOTE FOR SEPARATION TABLE:

1. THIS TABLE'S SEPARATION DISTANCE REQUIREMENTS ENVELOPE THAT REQUIRED BY ASTM E1996 AND THE CURRENT EDITION FLORIDA BUILDING CODE, CHAPTER 16 & 24.

PROJECT NO. 423-0304

UPDATE TO 8TH EDITION (2023) FBC

5/30/23

RJA

UPDATE TO 7TH EDITION (2020) FBC

07/16/20

RJA

UPDATE TO 5TH EDITION (2014) FBC

04/30/15

JBH

DESCRIPTION

DATE

BY

HURRICANE STORM PANEL MFG. INC.

1720 MAIN ST. NE. UNIT 1

PALM BAY, FL 32905

TITLE: HVHZ IMPACT STORM PANEL

PANEL DP SCHEDULE AND SEPARATION SCHEDULE

DRAWN BY: RJA

DATE: 05/30/13

SCALE: N.T.S.

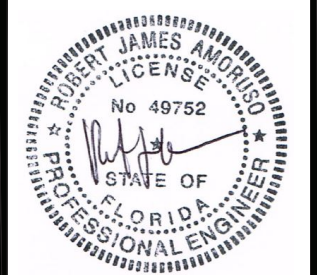
DRAWING NO: HSPM0001

PREPARED BY: FBPE

SHEET: 6 OF 7

Robert J. Amoruso

Florida P.E. No. 49752



Digitally signed by Robert J Amoruso

Date: 2023.06.22 16:48:36 -04'00'

PTC Product Design Group, LLC

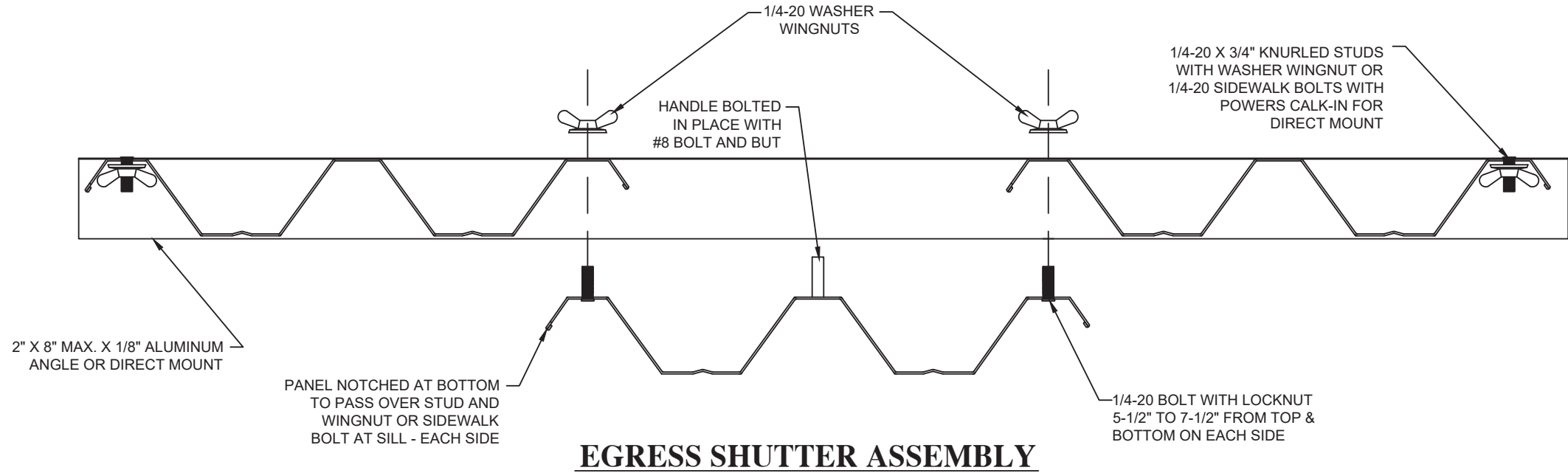
P.O. Box 520775

Longwood, FL 32752-0775

FBPE Cert. of Authorization NO. 25935

1/4" DIA. SUBSTRATE ANCHOR SCHEDULE

FASTENER TYPE	SUBSTRATE		MINIMUM EMBEDMENT (in.)	MINIMUM EDGE DIST. (in.)	MIN. SPACING BETWEEN FASTENERS (in.)	DIAMETER (in.)	ON CENTER (O.C.) SPACING (in.)
	TYPE	STRENGTH					
1/4" DIA. WOOD SCREW							
LAG SCREW	S-P-F	SG = 0.42	1 7/8	1	1 1/4	1/4	12
TAPCON SG	S-P-F	SG = 0.42	1 1/2	3/4	1 1/4	1/4	12
SAMMYS SHUTTER SCREWS	S-P-F	SG = 0.42	1 1/2	3/4	1 1/4	1/4	12
FEMALE ELCO PANELMATE	S-P-F	SG = 0.42	1 7/8	3/4	1 1/4	1/4	12
ELCO PANELMATE PLUS	S-P-F	SG = 0.42	1 7/8	3/4	1	1/4	12
1/4" DIA. CONCRETE SCREW IN CONCRETE / MASONRY							
ELCO CRETE-FLEX SS4	CONCRETE	3350 PSI	1 3/4	1 3/4	2 1/4	1/4	12
ITW TAPCON (CS)	CONCRETE	2000 PSI	1 3/4	3	3	1/4	12
ITW TAPCON (SS) (SCOTS)	CONCRETE	3000 PSI	1 3/4	2 1/2	3	1/4	12
ELCO TAPCON	CONCRETE	2700 PSI	1 3/4	1	4	1/4	12
POWERS TAPPER	CONCRETE	2000 PSI	1 3/4	4	2 1/2	1/4	12
ELCO PANELMATE PLUS	CONCRETE	3350 PSI	1 3/4	2 1/2	Ω	1/4	12
POWERS CALK-IN	CONCRETE	2000 PSI	7/8	2	1 1/4	1/4	12
TAPCON SG	CONCRETE	3295 PSI	1 3/4	1 1/4	3	1/4	12
SAMMYS SHUTTER SCREWS	CONCRETE	3295 PSI	2 1/4	1 1/4	3	1/4	12
1/4" DIA. CONCRETE SCREW IN CMU HOLLOW							
TAPCON SG	CMU HOLLOW	1500	1 1/4	2 1/2	3	1/4	12
SAMMYS SHUTTER SCREWS	CMU HOLLOW	1500	1 1/4	2 1/2	3	1/4	8
POWERS CALK-IN	1500	C90	7/8	3	2 1/2	1/4	8
1/4" DIA. CONCRETE SCREW IN CMU GROUT FILLED							
SAMMYS SHUTTER SCREWS	CMU GROUT FILLED	2000	2 1/2	1 1/4	3	1/4	12
TAPCON SG	CMU GROUT FILLED	2000	1 3/4	1 1/4	3	1/4	12
ANCHOR SCHEDULE ABOVE FOR USE WITH WOOD, CONCRETE OR MASONRY SUBSTRATE ANCHORAGE. ATTACHMENT OF SHUTTERS TO BUILD-OUT COMPONENTS OR DIRECTLY TO SUBSTRATE SHALL BE AS SHOWN ON SHEETS 2, 3 AND 4 AT 12-1/2" ON CENTER.							



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DESCRIPTION

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BY

HURRICANE STORM PANEL MFG. INC.

1720 MAIN ST. NE. UNIT 1

PALM BAY, FL 32905

HVHZ IMPACT STORM PANEL

ANCHOR SCHEDULE AND EGRESS SHUTTER ASSEMBLY

DRAWN BY: RJA

DATE: 05/30/13

SCALE: N.T.S.

DRAWING NO: HSPM0001

PREPARED BY: RJA

DATE: 05/30/13

SCALE: N.T.S.

DRAWING NO: HSPM0001

SHEET: 7 OF 7

REV: D

Robert J. Amoruso

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Date: 2023.06.22 16:48:50 -04'00'

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