

LOUVER MODEL: LE 36
LARGE MISSILE IMPACT RESISTANT RATED

GENERAL NOTES:

FLORIDA BUILDING CODE 2023 (8th edition) HVHZ & NON HVHZ
LARGE MISSILE IMPACT RATED

- 1- CODE: THIS PRODUCT HAS BEEN TESTED UNDER AMCA 550 (WITH LOUVER INSERT), AMCA 540, TAS 203, TAS 202 AND DESIGNED IN ACCORDANCE WITH THE FBC 2023 INCLUDING THE HIGH VELOCITY HURRICANE ZONE (HVHZ).
- 2- DEFINITION: THIS PRODUCT IS AN ALUMINUM IMPACT RESISTANT LOUVER DESIGNED, CONSTRUCTED AND TESTED FOR THE PURPOSE OF PROVIDING PROTECTION FROM HURRICANE FORCE WINDS AND WIND BORNE DEBRIS (LARGE MISSILE) WITHIN THE ALLOWABLE DESIGNED PRESSURES AND LIMITATIONS STATED IN THIS APPROVAL.
- 3- LABELING:
- "AMERICA WARMING AND VENTILATING- BRADNER OHIO
SERIES LE-36 ALUMINUM LOUVERS
LARGE MISSILE IMPACT RATED"
- 4- LOADS: DESIGNED LOAD CALCULATED BASED ON THE ASCE 7-22 AND PROVIDED BY A PROFESSIONAL ARCHITECT OR ENGINEER FOR EACH SPECIFIC PROJECT. THE CALCULATED DESIGNED PRESSURE MUST NOT EXCEED THE ALLOWABLE PRESSURES HERE IN SPECIFIED. THE DESIGN PRESSURES, AS DETERMINED FROM ASCE 7-22, ARE TO BE MULTIPLE BY 0.6
- 5- MATERIAL: ALL ALUMINUM PARTS TO BE 6063-T5 ALLOY OR AS NOTED ON THIS APPROVAL.
- 6- FASTENERS: ASSEMBLY SCREWS AND ANCHORS SHALL BE AS SPECIFIED IN THE CURRENT SET OF DRAWINGS. INSTALLATION AND LOADS AS PER THIS APPROVAL.
- 7- USE: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, ARCHITECT OR ENGINEER OF RECORD TO VERIFY THE FOLLOWING:
- 7.1- THE STABILITY OF THE STRUCTURE WHERE THE PRODUCT IS TO BE ATTACHED ENSURING PROPER ANCHORAGE.
- 7.2- THE SITE SPECIFIC PROJECT CRITERIA, SUCH AS BUT NOT LIMITED TO, LOCAL CODE REQUIREMENTS, DESIGNED PRESSURES ETC.
- 7.3- THAT THIS APPROVAL IS ADEQUATE FOR A SPECIFIC PROJECT.
- 8- DISSIMILAR MATERIALS: WHERE ALUMINUM IS IN CONTACT OR FASTENED TO DISSIMILAR MATERIALS, INCLUDING BUT NOT LIMITED TO STEEL, INSTALLATION SHALL MEET THE REQUIREMENTS OF CHAPTER M.7 OF THE ALUMINUM DESIGN MANUAL 2020.
- 9- BLADES CAN BE INSTALLED UPSIDE DOWN FOR THE PURPOSE OF SIGHT BLOCKING ON DECORATIVE LOUVERS APPLICATION NOT PART OF THE OF THE BUILDING ENVELOPE.
- 10- THIS LOUVER SYSTEM WITH INSERT HAS BEEN TESTED UNDER AMCA 550 (TEST METHOD FOR HIGH WIND VELOCITY WIND DRIVEN RAIN RESISTANT LOUVERS) SEE SHEETS 8 & 10.
- 11- MULLIONS MAY BE USED TO MAKE HORIZONTAL ASSEMBLIES TO AN UNLIMITED WIDTH DIMENSION. SECTION SPLITS MAY BE USED TO MAKE VERTICAL ASSEMBLIES TO AN UNLIMITED HEIGHT DIMENSION. COMBINATIONS OF VERTICAL MULLIONS AND HORIZONTAL SECTION SPLITS MAY OCCUR, PROVIDED A STRUCTURAL SUPPORT (BY OTHERS) IS INSTALLED TO SUPPORT ALL LOADS TRANSFERRED FROM THE LOUVER ASSEMBLY.
- 12- UNITS: ALL UNITS ARE IN INCHES (IN) AND PRESSURES IN POUND PER SQUARE FEET (PSF)

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8	LOUVER COMPONENTS & BILL OF MATERIALS
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Pedro De Figueiredo
PE 52609
10/16/2023

Pedro Figueiredo
Digitally signed by Pedro Figueiredo
Date: 2023.10.18 09:54:36 -04'00'

DIGITALLY SIGNED FOR 9 PAGES

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TYPICAL ELEVATIONS

SINGLE LOUVERS

RECTANGULAR ROUND TOP ARCH TOP CATHEDRAL HOUSE TOP TRAPEZOID FULL TRIANGLE 1/2 ROUND FULL ROUND

MULTIPLE LOUVERS

MULTIPLE LOUVERS WITH EXPOSED MULLIONS MULTIPLE LOUVERS WITH HIDDEN MULLIONS

NOTES:

1. OTHER ELEVATIONS ARE ACCEPTABLE, PROVIDED THEY ARE SIMILAR TO THOSE SHOWN AND HAVE CORNER CONNECTIONS AS SHOWN IN THE APPLICABLE DETAILS.

2. ALL SHAPED PANELS ARE RESTRICTED TO THE SAME PANEL WIDTHS, HEIGHTS AND PRESSURES AS RECTANGULAR PANELS.

3. STANDARD CONSTRUCTION, MECHANICALLY ASSEMBLED BLADES AND FRAMING, SHALL APPLY TO ALL RECTANGULAR PORTIONS OF THE LOUVER PANELS.

4. WELDED CONSTRUCTION, SHALL APPLY TO ALL NON RECTANGULAR PORTIONS OF THE LOUVER PANELS.

5. ANCHORAGE SPACING IS RESTRICTED TO THE MAXIMUM SPACING TESTED AND PRESENTED HERE IN

6- TYPICAL ELEVATION OPTIONS ARE APPLICABLE FOR LOUVERS W/ OR W/O STIFFENERS AND FOR SINGLE OR MULTIPLE PANEL CONFIGURATIONS.

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PRODUCT:
LE-36 LOUVER SYSTEM
CATEGORY: VENTS
SUBCATEGORY: WALL LOUVERS
MATERIAL: ALUMINUM
IMPACT: LARGE & SMALL MISSILE IMPACT

AMERICAN WARMING
AND VENTILATING
7301 INTERNATIONAL DRIVE
HOLLAND, OHIO 43528
TEL: (419) 865-5000

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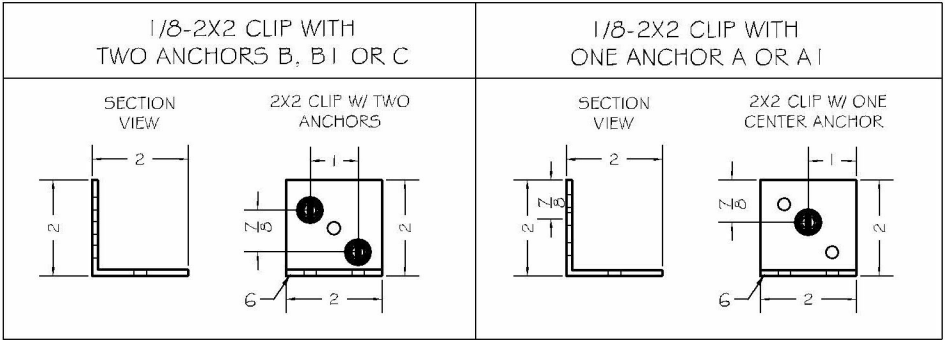
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SINGLE LOUVERS

BLADE SPAN X
DESIGNED PRESSURE

TABLE 1	
B (in)	Pd all
24	130
30	130
36	130
42	130
48	130

TABLE 1A		ANCHOR TYPE AND ALLOWABLE LOAD IN PSF				
B (in)	CLIP SPACING (IN/OC)	A	A1	B	B1	C
24	16	130	101	130	130	130
	12	130	130	130	130	130
30	16	121	81	130	130	130
	12	130	108	130	130	130
	8	130	130	130	130	130
36	16	101	67	130	130	130
	12	130	90	130	130	130
	8	130	130	130	130	130
42	16	86	58	112	130	130
	12	115	77	130	130	130
	8	130	116	130	130	130
	6	130	130	130	130	130
48	16	75	50	98	130	130
	12	101	67	130	130	130
	8	130	101	130	130	130
	6	130	130	130	130	130



ANCHOR	DESCRIPTION	EDGE DISTANCE	EMBED.
A	3/16" ITW TAPCON WITH EMBEDMENT INTO 3KSI CONCRETE - 1 SCREW PER CLIP	2.00	1.75
A1	3/16" ITW TAPCON WITH EMBEDMENT INTO CMU HOLLOW BLOCK - 1 SCREW PER CLIP	2.00	1.25
B	3/16" ITW TAPCON WITH EMBEDMENT INTO WOOD (SG>=0.55) - 2 SCREWS PER CLIP	1.00	1.50
B1	#10 HH SMS GR5 SS WITH EMBEDMENT INTO WOOD (SG>=0.55) - 2 SCREWS PER CLIP	1.00	1.50
C	#10-16 HWH SDS GR5 SS INTO 1/8" METAL STRUCTURES - 2 SCREWS PER CLIP	0.5	3 THREADS

ANCHORAGE NOTES:
1- EMBED.- EMBEDMENT IS TO BE TAKEN BEYOND ANY WALL DRESSING
2- ED- EDGE DISTANCE IS TO BE MEASURED BEYOND THE WALL DRESSING
3- METAL STRUCTURE TO BE AT LEAST 6063-T5 ALUMINUM ALLOY OR ASTM A36 STEEL
4- METAL STRUCTURE TO HAVE A MINIMUM 1/8" WALL THICKNESS
5- CONCRETE WITH A MINIMUM $f_c \geq 3000$ PSI, MASONRY TO CONFORM TO ASTM C90, WOOD SUBSTRATE WITH $SG \geq 0.55$
6- ALTERNATE ANCHORS WITH SAME OR GREATER CAPACITY CAN BE USED



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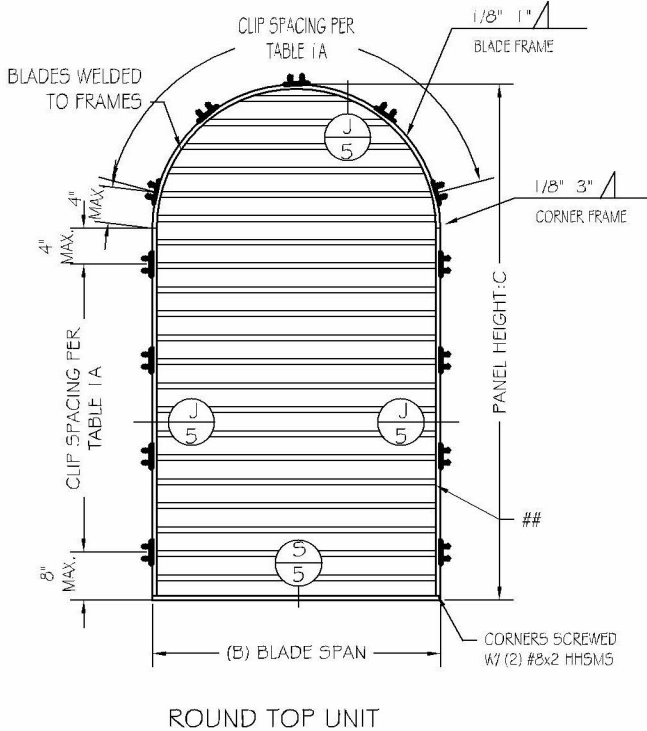
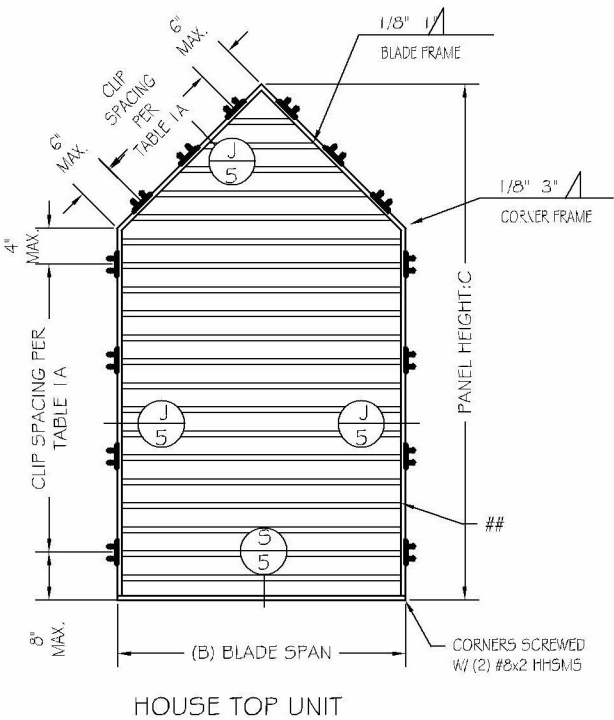
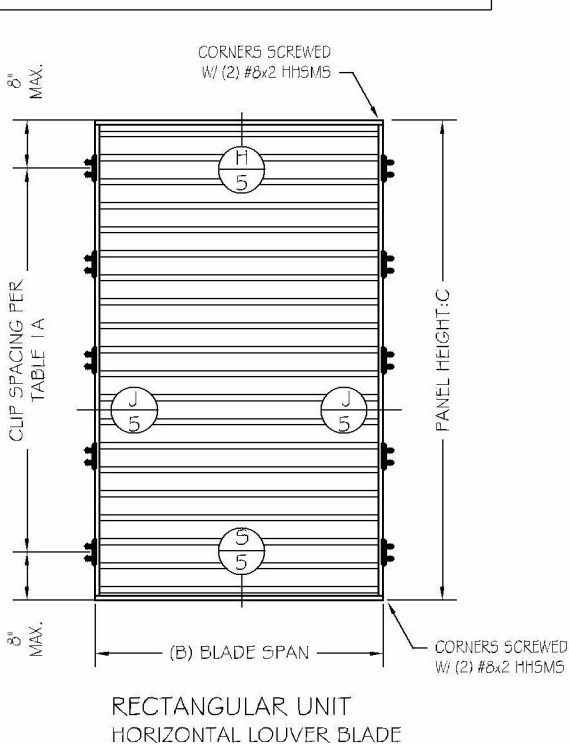
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NOTES TABLE 1:
1- (B) LOUVER BLADE SPAN WIDTH IN INCHES
2- (C) UNLIMITED PANEL HEIGHT
3- Pd all: POSITIVE AND NEGATIVE DESIGNED ALLOWABLE PRESSURE IN PSF
4- BLADES TO BE WELDED TO JAMBS IN ARCH OR SLOPED SECTIONS
5- ANCHORAGE IS REQUIRED AT SHAPED SECTIONS PERIMETER
6- LOUVER ASSEMBLY CORNERS CAN BE SCREWED W/ (2) #8-18x2 HH5MS 410 SS OR WELDED



MULTIPLE LOUVERS WITH EXPOSED MULLIONS

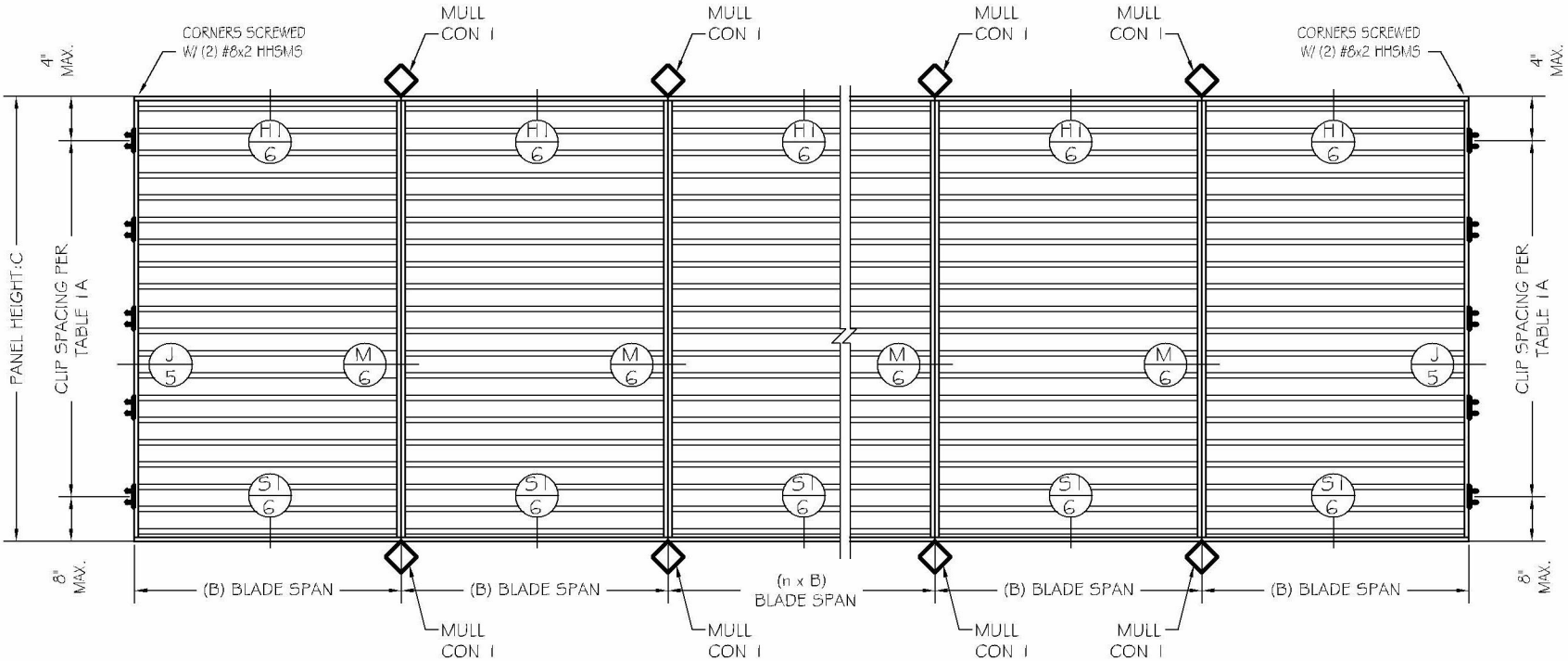
TABLE 2			MULL CLIP MAXIMUM CAPACITY (PSF)				
Module B (in)	Louver C (in)	PD MULL	A	A1	B	B1	C
24	96	130	130	117	130	130	130
	84	130	130	130	130	130	130
	72	130	130	130	130	130	130
	60	130	130	130	130	130	130
30	96	130	130	94	105	130	130
	84	130	130	107	120	130	130
	72	130	130	125	130	130	130
	60	130	130	130	130	130	130
36	96	130	116	78	88	121	130
	84	130	130	89	100	130	130
	72	130	130	104	117	130	130
	60	130	130	125	130	130	130
42	96	119	100	67	75	104	119
	84	130	114	76	86	119	130
	72	130	130	89	100	130	130
	60	130	130	107	120	130	130
48	96	104	87	58	66	91	104
	84	130	100	67	75	104	130
	72	130	116	78	88	121	130
	60	130	130	94	105	130	130

TABLE 2 NOTES:
1- (B) LOUVER BLADE SPAN WIDTH IN INCHES
2- (C) PANEL HEIGHT IN INCHES
3- Pd all: POSITIVE AND NEGATIVE DESIGNED ALLOWABLE PRESSURES IN PSF
4- LOUVER ASSEMBLY CORNERS CAN BE SCREWED W/ (2) #8-18x2 HH5MS 410 55 OR WELDED

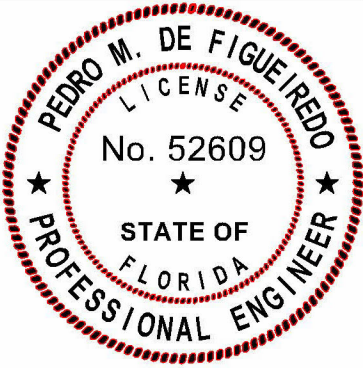
ANCHORS:

TYPE	DESCRIPTION	SUBSTRATE	ED (MIN)	EMBED (MIN)
A	3/16" TAPCONS BY ITW	CONCRETE	2	1 3/4
A1	3/16" TAPCONS BY ITW	MASONRY	2	1 1/4
B	3/16" TAPCONS BY ITW	WOOD	1	1 1/2
B1	#10 HH5MS GR 5	WOOD	1	1 1/2
C	#10-16 GR 5 SDS	METAL	1/2	3 THREADS

ANCHORAGE NOTES:
1- EMBED.- EMBEDMENT IS TO BE TAKEN BEYOND ANY WALL DRESSING
2- ED- EDGE DISTANCE IS TO BE MEASURED BEYOND THE WALL DRESSING
3- METAL STRUCTURE TO BE AT LEAST 6063-T5 ALUMINUM ALLOY OR ASTM A36 STEEL
4- METAL STRUCTURE TO HAVE A MINIMUM 1/8" WALL THICKNESS
5- CONCRETE WITH A MINIMUM $f_c \geq 3000$ PSI
6- MASONRY TO CONFORM TO ASTM C90
7- WOOD SUBSTRATE WITH $SG \geq 0.55$
8- CONCRETE / MASONRY ANCHORS CAN BE REPLACED DIFFERENT MANUFACTURER BRAND WITH SIMILAR CAPACITY ANCHORS. SITE SPECIFIC ENGINEERING WILL BE REQUIRED.



TYPICAL ELEVATION - MULTIPLE LOUVERS WITH EXPOSED MULLIONS



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MULTIPLE LOUVERS WITH CONCEALED MULLIONS

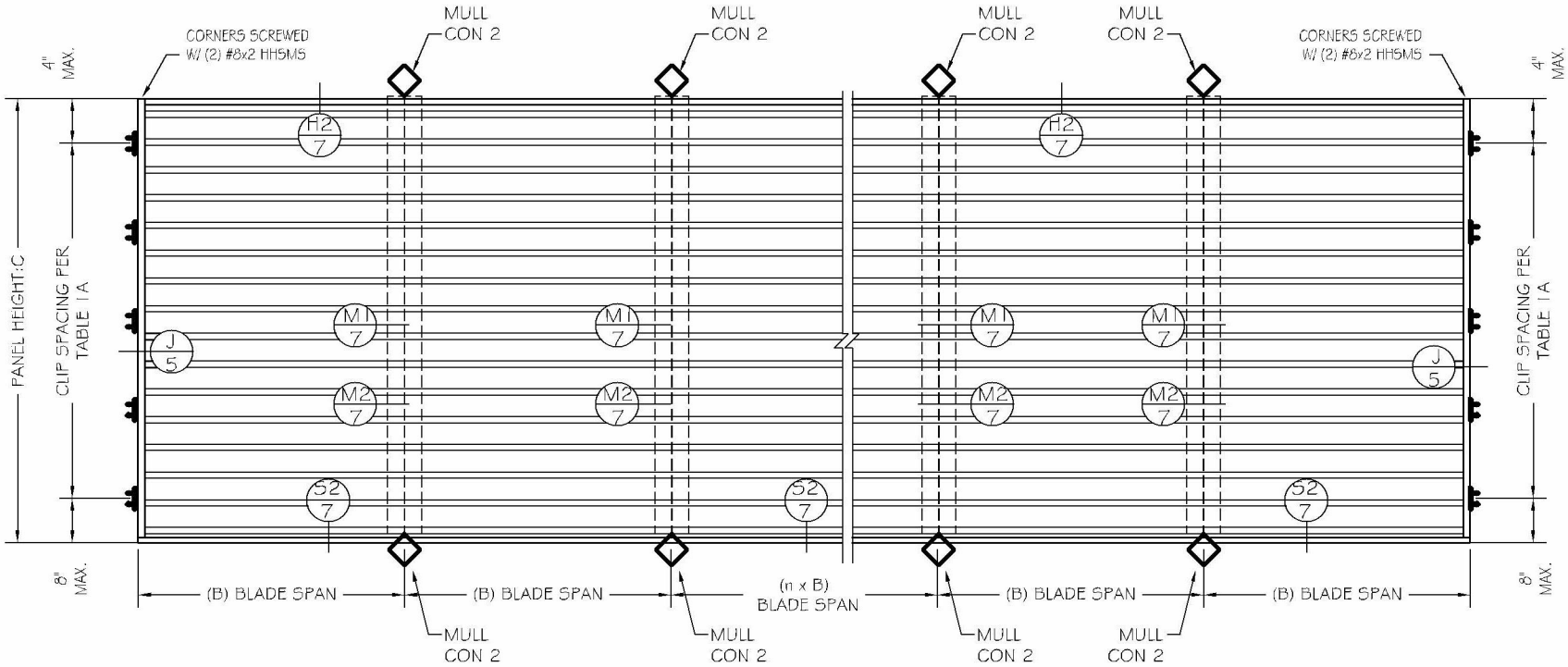
TABLE 3		PD MULL (M1) SECTION	PD MULL (M2) SECTION	(M1) MULL CLIP MAXIMUM CAPACITY (PSF)				
Module B (in)	Louver C (in)			A	A1	B	B1	C
24	96	130	130	130	117	130	130	130
	84	130	130	130	130	130	130	130
	72	130	130	130	130	130	130	130
	60	130	130	130	130	130	130	130
30	96	111	128	128	94	105	128	128
	84	130	130	130	107	120	130	130
	72	130	130	130	125	130	130	130
	60	130	130	130	130	130	130	130
36	96	92	107	107	78	88	107	107
	84	130	130	130	89	100	130	130
	72	130	130	130	104	117	130	130
	60	130	130	130	125	130	130	130
42	96	79	92	92	67	75	92	92
	84	118	130	114	76	86	119	130
	72	130	130	130	89	100	130	130
	60	130	130	130	107	120	130	130
48	96	69	80	80	58	66	80	80
	84	104	120	100	67	75	104	120
	72	130	130	116	78	88	121	130
	60	130	130	130	94	105	130	130

TABLE 3 NOTES:
1- (B) LOUVER BLADE SPAN WIDTH IN INCHES
2- (C) PANEL HEIGHT IN INCHES
3- Pd all: POSITIVE AND NEGATIVE DESIGNED ALLOWABLE PRESSURES IN PSF
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TYPICAL ELEVATION - MULTIPLE LOUVERS WITH EXPOSED MULLIONS



Pedro De Figueiredo
PE 52609
10/16/2023

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SUBCATEGORY: WALL LOUVERS
MATERIAL: ALUMINUM
IMPACT: LARGE & SMALL MISSILE IMPACT

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PEDRO M. DE FIGUEIREDO
 LICENSE
 No. 52609
 STATE OF
 FLORIDA
 PROFESSIONAL ENGINEER

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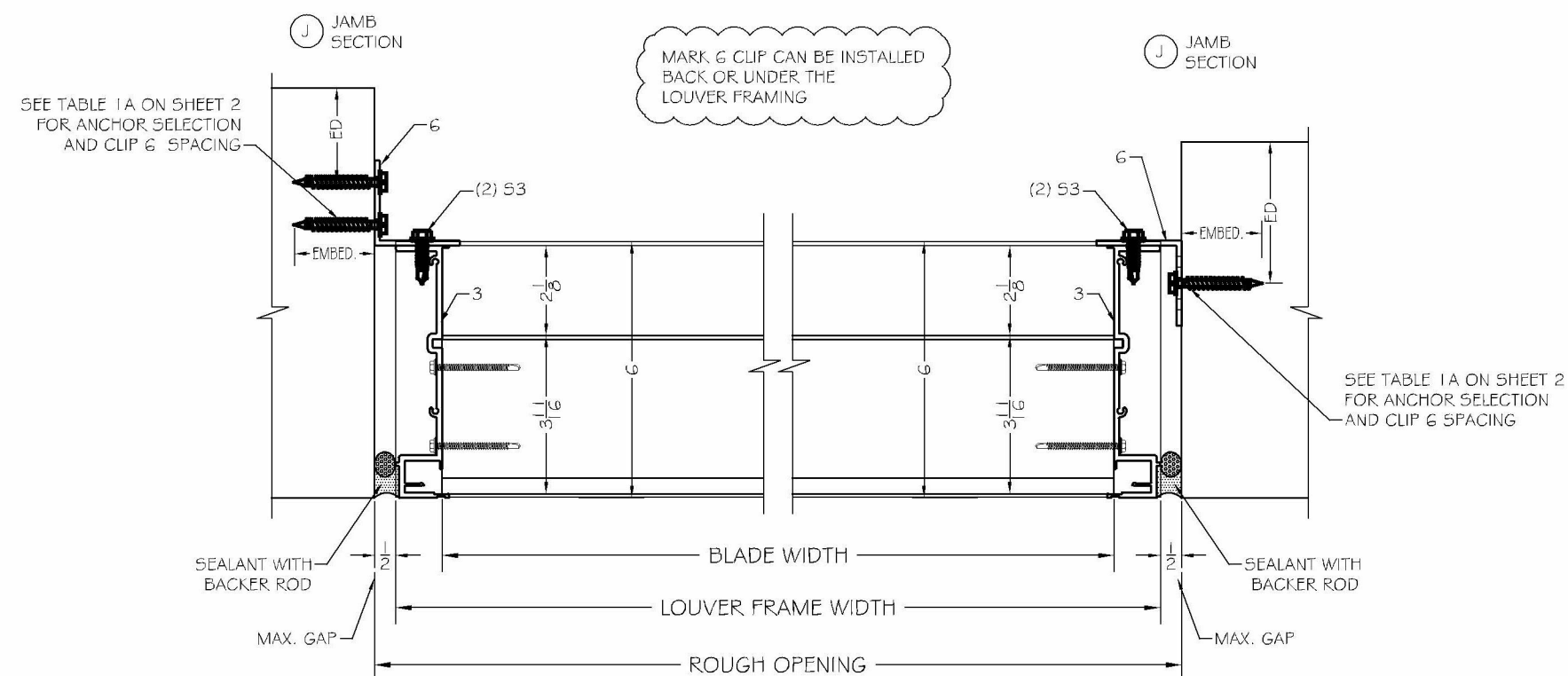
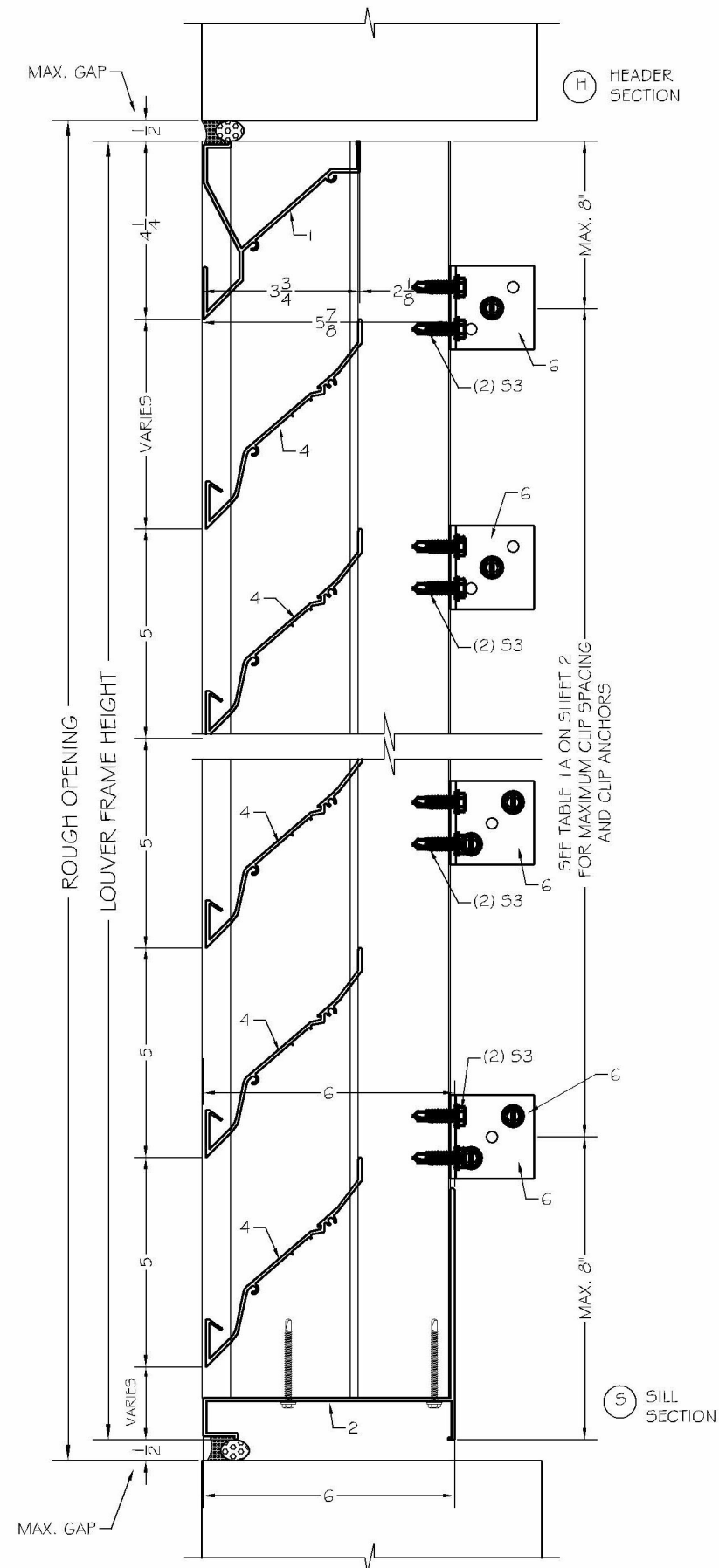
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MAX. GAP

ROUGH OPENING

LOUVER FRAME HEIGHT

VARIES

MAX. 24" OC

55, 57, 58 SPACED AT 24" OC

MARK 7 CLIP CAN BE INSTALLED BACK OR UNDER THE LOUVER FRAMING

ANCHORS TYPE A, A1, B, B1 OR C SEE TABLE 2 ON SHEET 3 FOR ALLOWABLE PRESSURES

(G) 54

EMB.

ED

(H) HEADER SECTION

VARIES

MAX. 24" OC

55, 57, 58 SPACED AT 24" OC

MARK 7 CLIP CAN BE INSTALLED BACK OR UNDER THE LOUVER FRAMING

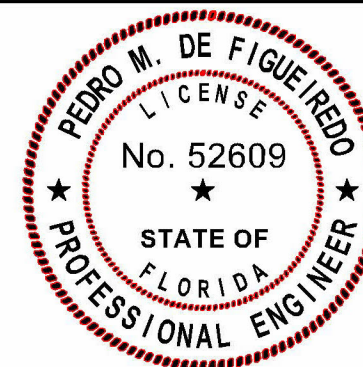
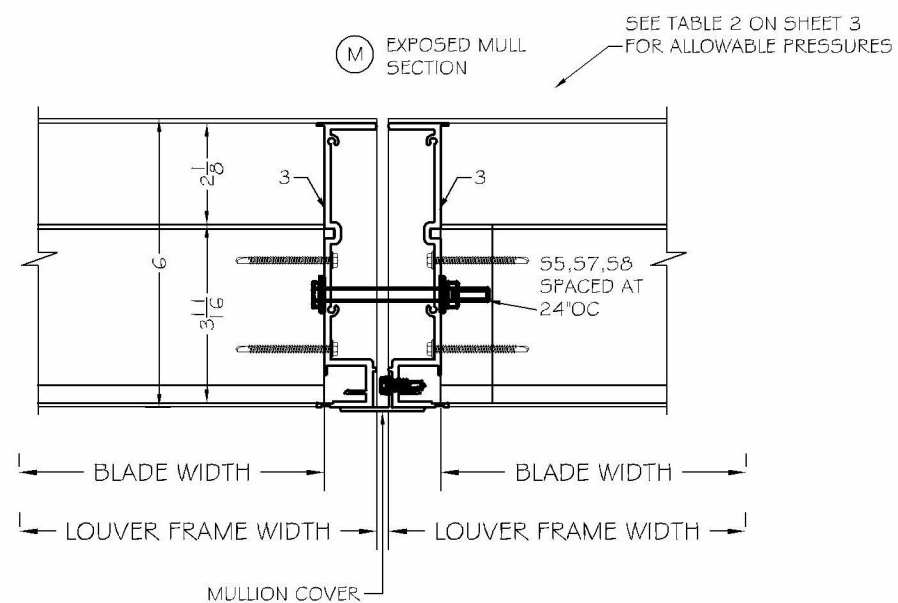
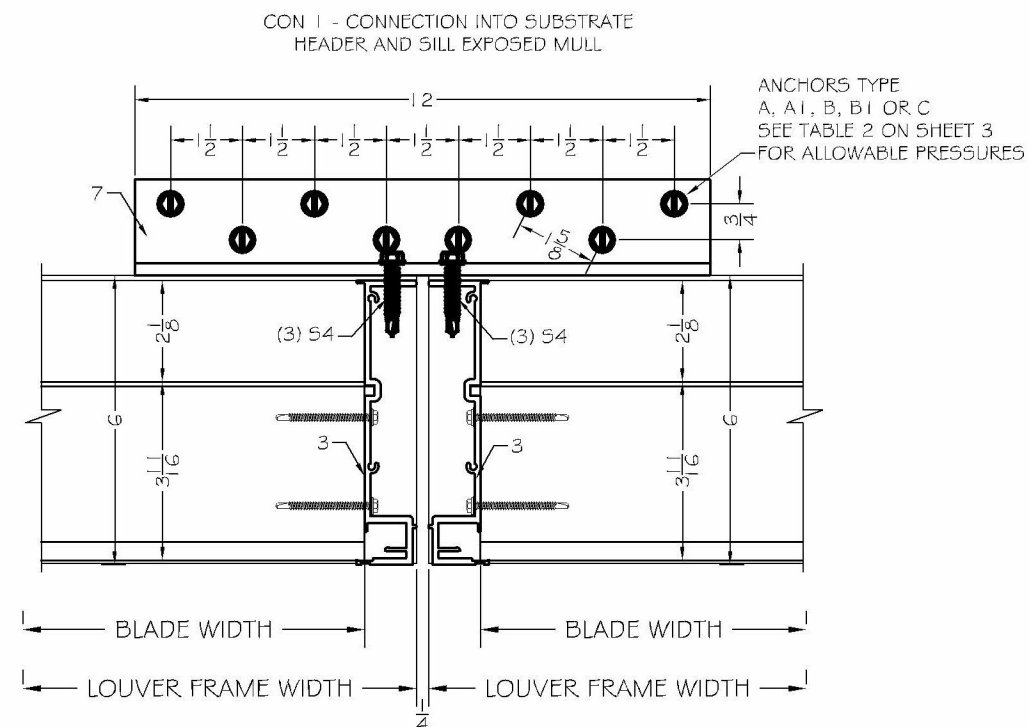
ANCHORS TYPE A, A1, B, B1 OR C SEE TABLE 2 ON SHEET 3 FOR ALLOWABLE PRESSURES

(G) 54

EMB.

ED

(S) SILL SECTION



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SHEET
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A circular professional engineer seal for Pedro M. de Figueiredo. The seal features a red dotted outer border. Inside, the text "PEDRO M. DE FIGUEIREDO" is curved along the top, "LICENSE" is curved along the bottom, and "No. 52609" is centered. Below the license number, "STATE OF FLORIDA" is written, and "PROFESSIONAL ENGINEER" is curved along the bottom. Three stars are positioned around the inner circle.

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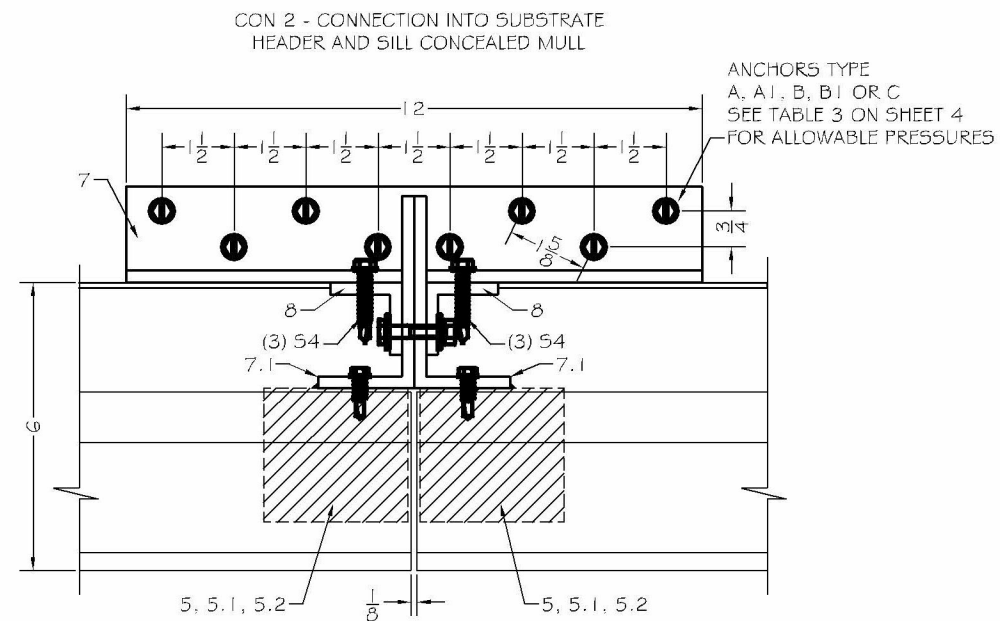
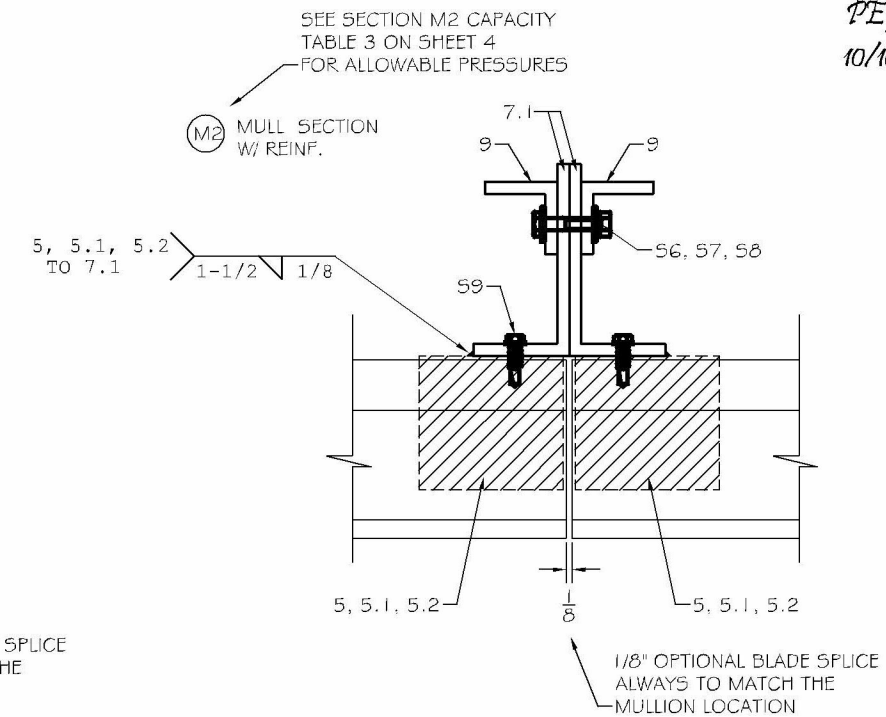
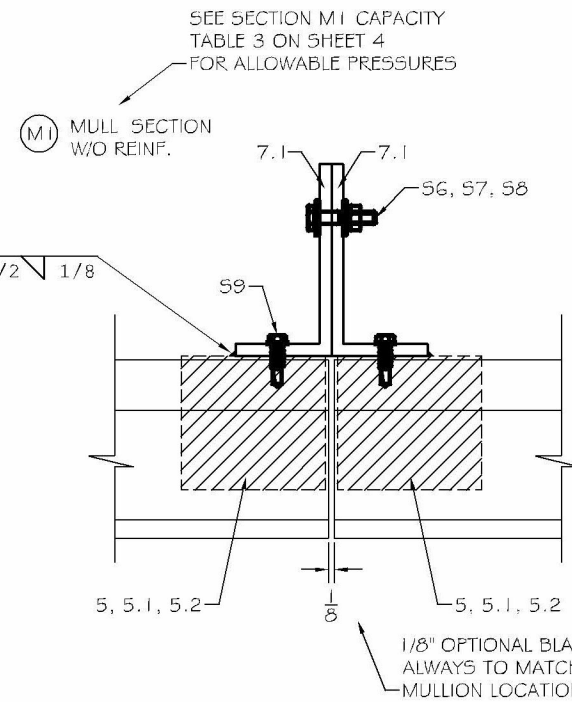
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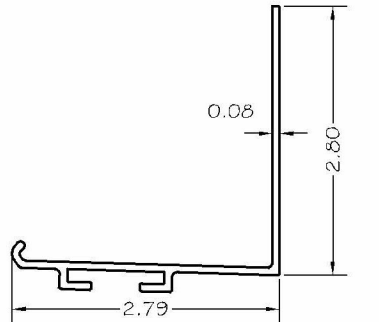
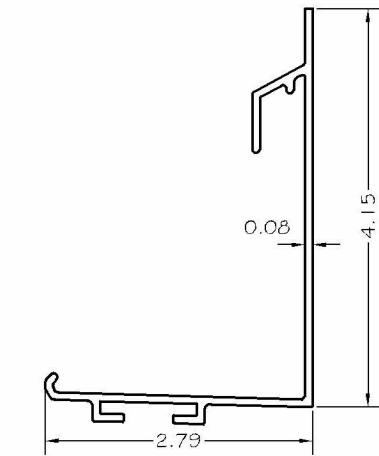
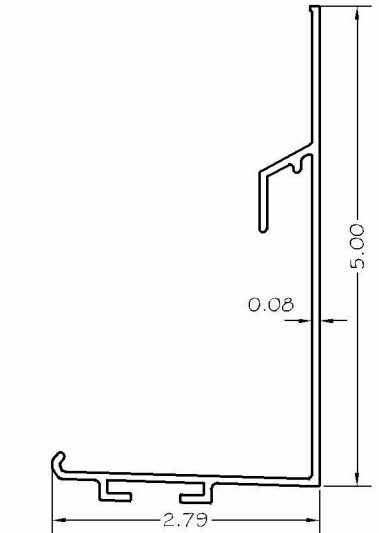
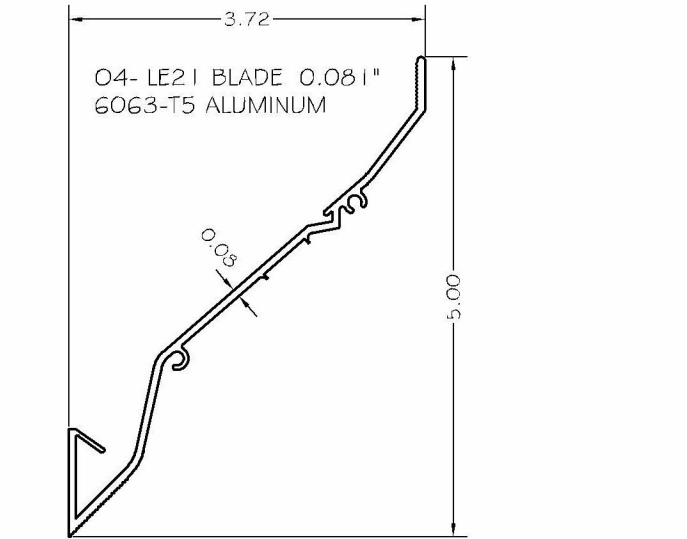
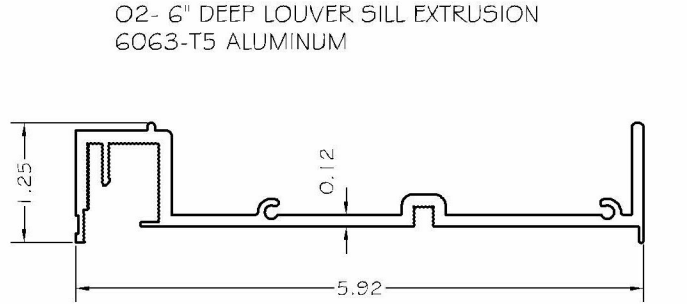
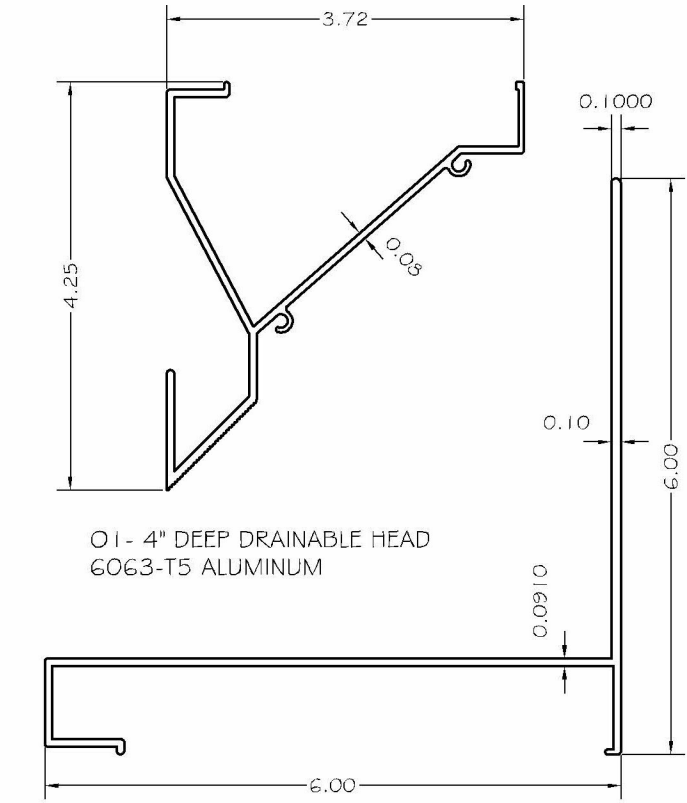
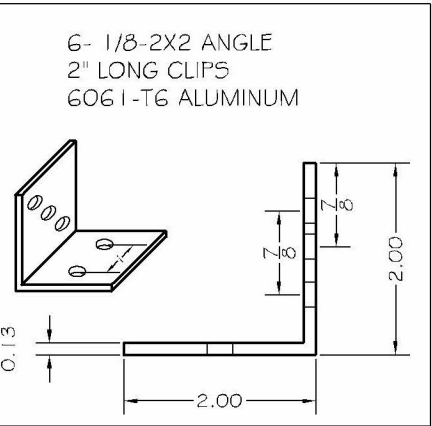
LOUVER COMPONENTS

BILL OF MATERIAL

ITEM	DESCRIPTION	MATERIAL
1	4" DEEP DRAINABLE HEAD	6063-T5
2	6" DEEP LOUVER SILL EXTRUSION	6063-T5
3	1/8" - 6" DEEP DUAL DRAINABLE JAMB	6063-T5
4	LE21 .081 LOUVER BLADE	6063-T5
5	5" BLADE BRACKET	6063-T5
5.1	4" BLADE BRACKET CUT FOR TOP BLADE	6063-T5
5.2	3" BLADE BRACKET CUT FOR HEAD	6063-T5
6	1/8-2X2 JAMB 2" CLIP ANGLE	6061-T6
7	1/4-2X4 12" CLIP ANGLE	6061-T6
7.1	1/4-2X4 MULL ANGLE	6061-T6
8	1/4-1 1/2" X 1 1/2" 5" CLIP ANGLE	6061-T6
9	1/4-2" X 2" MULLION REINFORCEMENT	6061-T6
10	ALUMINUM MULLION COVER	6063-T5

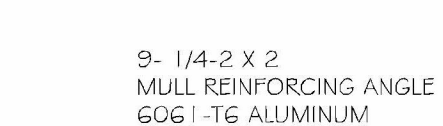
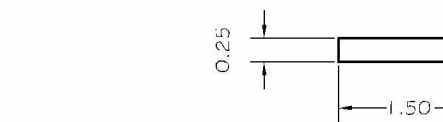
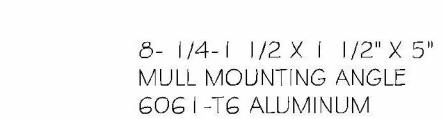
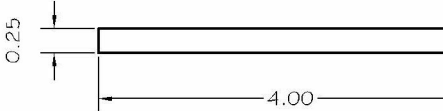
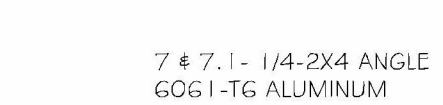
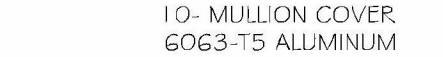
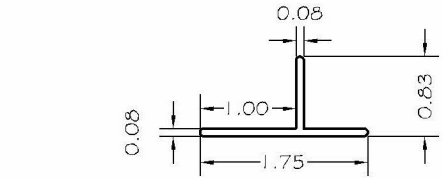
ASSEMBLY SCREWS

ITEM	DESCRIPTION	MATERIAL
S1	#8-18 X 2" HWH SMS AB PT	410 SS
S2	#8, 0174" ID X .375 OD 0.031" FLAT WASHER	18-8 SS
S3	1/4-14X1" HWH TEK SCREWS	410 SS
S4	#14X1 1/4" HWH TEK SCREWS	410 SS
S5	1/4"-20 X 3 1/2" HHMS	18-8 SS
S6	1/4"-20 X 1 1/2" HHMS	18-8 SS
S7	1/4-20 HH NUT	18-8 SS
S8	1/4", 0281" ID X .625 OD FLAT WASHER	18-8 SS
S9	#14X7/8" HWH TEK SCREWS	410 SS
S10	#10-12X2" HH SMS SLOTTED A PT	18-8 SS



Pedro De Figueiredo
PE 52609
10/16/2023

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY
PEDRO DE FIGUEIREDO ON THE DATE INDICATED HERE.



PRODUCT:
LE-36 LOUVER SYSTEM

CATEGORY: VENTS
SUBCATEGORY: WALL LOUVERS
MATERIAL: ALUMINUM
IMPACT: LARGE & SMALL MISSILE IMPACT

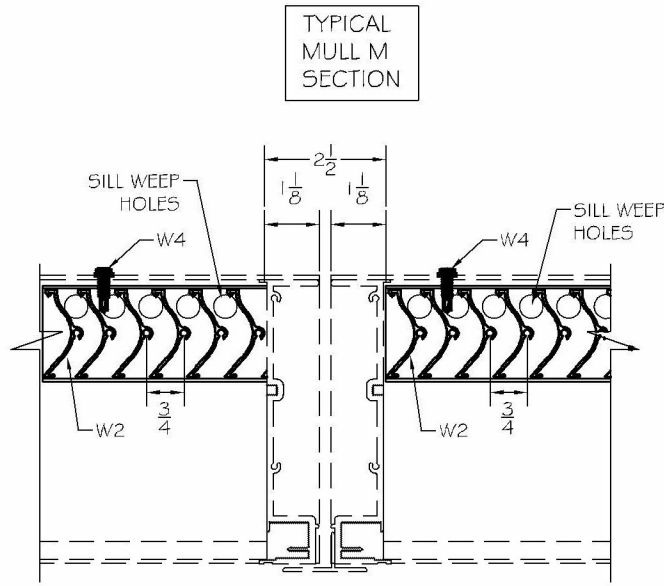
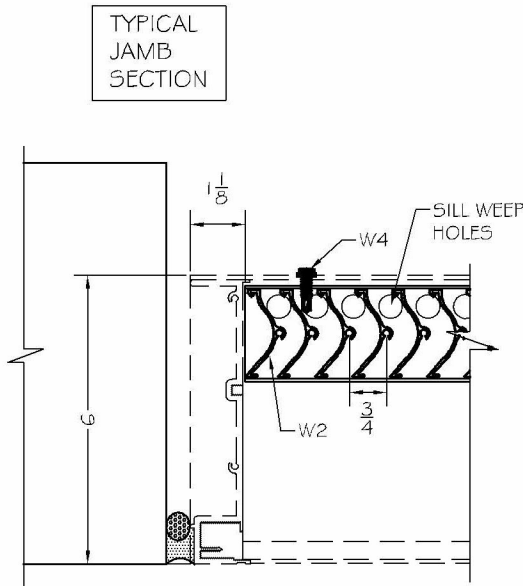
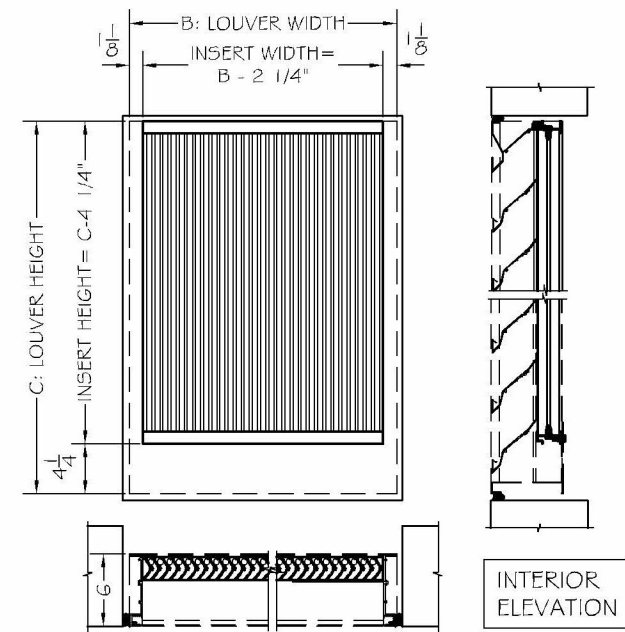
AMERICAN WARMING
AND VENTILATING
7301 INTERNATIONAL DRIVE
HOLLAND, OHIO 43528
TEL: (419) 865-5000

MANUFACTURER:
awv
www.awv.com

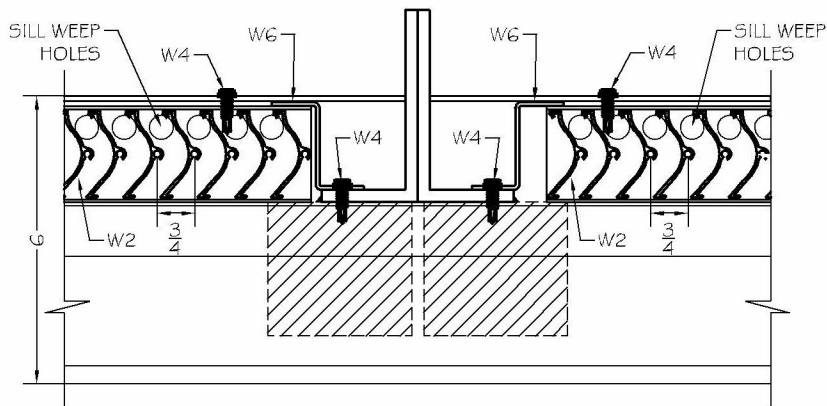
SCALE:
NA
DATE:
10/16/2023
DRAWING #
23-198
SHEET
8 OF 9

PPMF Inc.
ENGINEERING SERVICES - CA 32459
9715 W. BROWARD BLVD.
PLANTATION, FL 33324
PPMF@AOL.COM
ENGINEER SEAL
PEDRO DE FIGUEIREDO
PE 52609

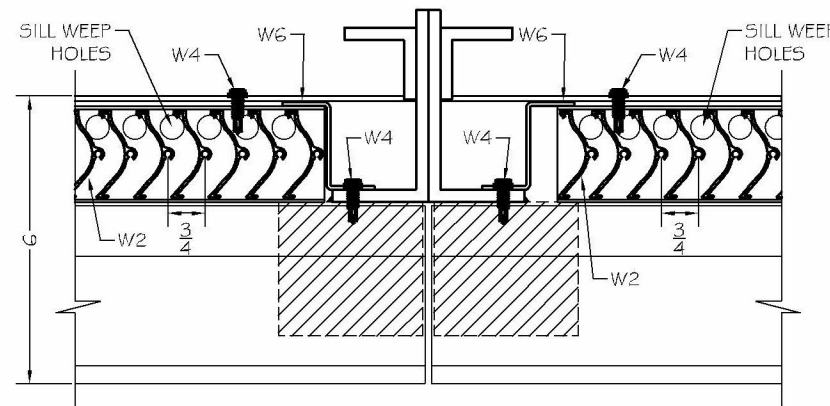
OPTIONAL INTERIOR LOUVER INSERT



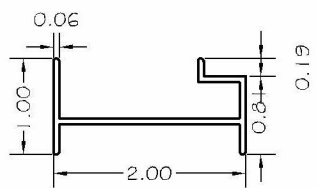
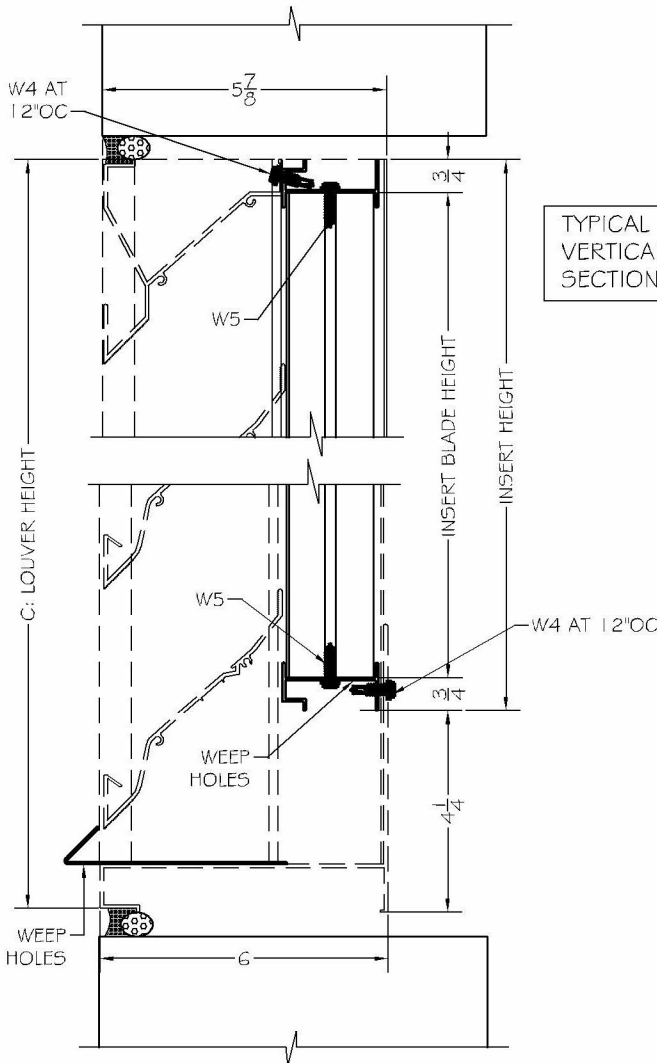
TYPICAL
MULL M1
SECTION



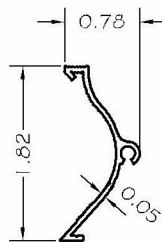
TYPICAL
MULL M2
SECTION



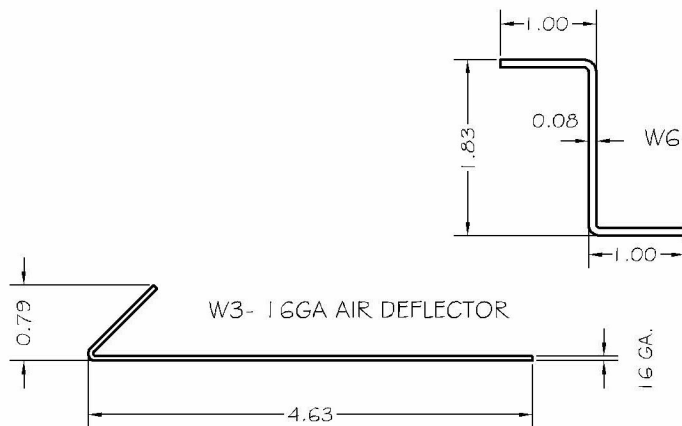
TYPICAL
VERTICAL
SECTION



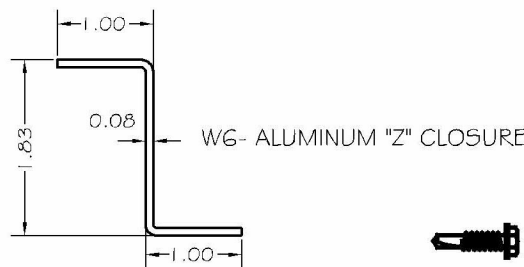
W1 - HEAD AND SILL FRAME



W2 - 2" WDR BLADE



W3 - 16GA AIR DEFLECTOR



W4 - #8-3/4" HWH SDS

W5 - #8-3/4" HWH SMS



W6 - ALUMINUM "Z" CLOSURE

W4 - #8-3/4" HWH SDS

W5 - #8-3/4" HWH SMS



W6 - ALUMINUM "Z" CLOSURE

W4 - #8-3/4" HWH SDS

W5 - #8-3/4" HWH SMS



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