

ES-METALS - DUAL BLADE LOUVER ESM-5LSHV
LARGE & SMALL MISSILE IMPACT (LMI & SMI)

GENERAL NOTES:

- THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 8TH EDITION FLORIDA BUILDING CODE (2023)/9TH EDITION FLORIDA BUILDING CODE (2026) INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).
- THE PRODUCT HAS BEEN TESTED IN ACCORDANCE WITH & QUALIFIED TO FLORIDA BUILDING CODE TESTING PROTOCOLS TAS-201 FOR LARGE MISSILE IMPACT (LEVEL D), TAS-202 UNIFORM STATIC AIR PRESSURE, & TAS-203 CYCLIC WIND PRESSURE LOADING.
 - ANCHORS SHALL BE AS LISTED, SPACED AS SHOWN ON DETAILS. ANCHORS EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.
 - ANCHORING OR LOADING CONDITIONS NOT SHOWN IN THESE DETAILS ARE NOT PART OF THIS APPROVAL.
 - MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE 8TH EDITION FLORIDA BUILDING CODE (2023)/9TH EDITION FLORIDA BUILDING CODE (2026) SECTION AS APPLICABLE.
 - WOOD BUCKS AND METAL STRUCTURES BY OTHERS TO BE DESIGNED TO SUPPORT THE LOADS IMPOSED BY THIS LOUVER SYSTEM AND TO TRANSFER SUCH LOADS TO THE BUILDING MAIN STRUCTURE.
 - ULTIMATE LOAD OBTAINED FROM ASCE 7-22, MULTIPLY BY 0.6 SHALL BE LESS THAN OR EQUAL TO MAX. DESIGN LOAD IN THIS DOCUMENT. THE DESIGN LOADS SHOWN IN THIS DOCUMENT ARE ALLOWABLE DESIGN LOADS.
 - LOUVER SYSTEM SHALL ONLY BE INSTALLED IN A LOCATION WHERE THE ROOM BEHIND THE LOUVER IS DESIGNED TO DRAIN WATER PENETRATING INTO THE ROOM, AND THE ROOM WILL HOUSE WATER RESISTANT WATER PROOF EQUIPMENT, COMPONENTS OR SUPPLIES.
 - MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE LABELING TO COMPLY WITH SECTION 1709.9.2.
 - INSTALLATION ANCHORS AND ASSOCIATED HARDWARE MUST BE MADE OF CORROSION RESISTANT MATERIAL OR HAVE A CORROSION RESISTANT COATING. COMPLIANCE WITH THESE CONDITIONS TO BE CHECKED PER FBC 1711.
 - FASTENERS USED WITHIN 3,000 FEET OF A SALTWATER COASTLINE AND INSTALLED IN ENCLOSED SPACES SHALL BE GALVANIZED IN ACCORDANCE WITH SECTION 1711.1.1 (E.G., ASTM A153 CLASS D, ASTM A641 CLASS 3S, OR EQUIVALENT CORROSION RESISTANCE).
 - CONNECTORS AND METAL PLATES USED WITHIN 3,000 FEET OF A SALTWATER COASTLINE SHALL BE STANDARD GALVANIZED IN ACCORDANCE WITH SECTION 1711.1.2 (E.G., ASTM A653 G90, ASTM A123, OR PROTECTIVE COATING PER TPI 1).

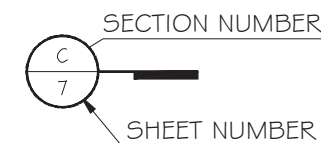
INSTRUCTIONS:

USE CHARTS AS FOLLOWS.

- STEP 1: DETERMINE DESIGN WIND LOAD REQUIREMENTS BASED ON WIND VELOCITY, BLDG. HEIGHT, WIND ZONE USING APPLICABLE ASCE 7-22 STANDARD.
- STEP 2: CHECK PROJECT UNIT WIDTH AND DESIGN LOADS SHOULD BE EQUAL OR LESS THAN THE ONES SHOWN ON SHEET E1 & E2.
- STEP 3: USING CHART ON SHEETS A1 THROUGH A2 SELECT ANCHOR OPTION WITH DESIGN RATING MORE THAN DESIGN LOAD SPECIFIED IN STEP 1 ABOVE.
- STEP 4: THE LOWEST VALUE RESULTING FROM STEPS 2 AND 3 SHALL APPLY TO ENTIRE SYSTEM.

ABBREVIATIONS AND SYMBOLS

F.H. - FRAME HEIGHT
F.W. - FRAME WIDTH
W/ - WITH
W/O - WITHOUT
O.C. - ON CENTER



LIMITATIONS OF USE

THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; i.e. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.E.D.

CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS PRODUCT BASED ON THIS PRODUCT EVALUATION PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT.

C- THIS PRODUCT EVALUATION DOCUMENT
WILL BE CONSIDERED INVALID IF ALTERED
BY ANY MEANS.

D- SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D.

E- THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

FLORIDA APPROVAL:

FL48282.1



ES-METALS-DUAL BLADE LOUVER ESM-5LSHV

E.S. WINDOWS, LLC
3550 NW 49th Street

TEL. (305) 638-5151 FAX. (305) 638-5158

MCY ENGINEERING, INC.
GLAZING CONSULTANTS

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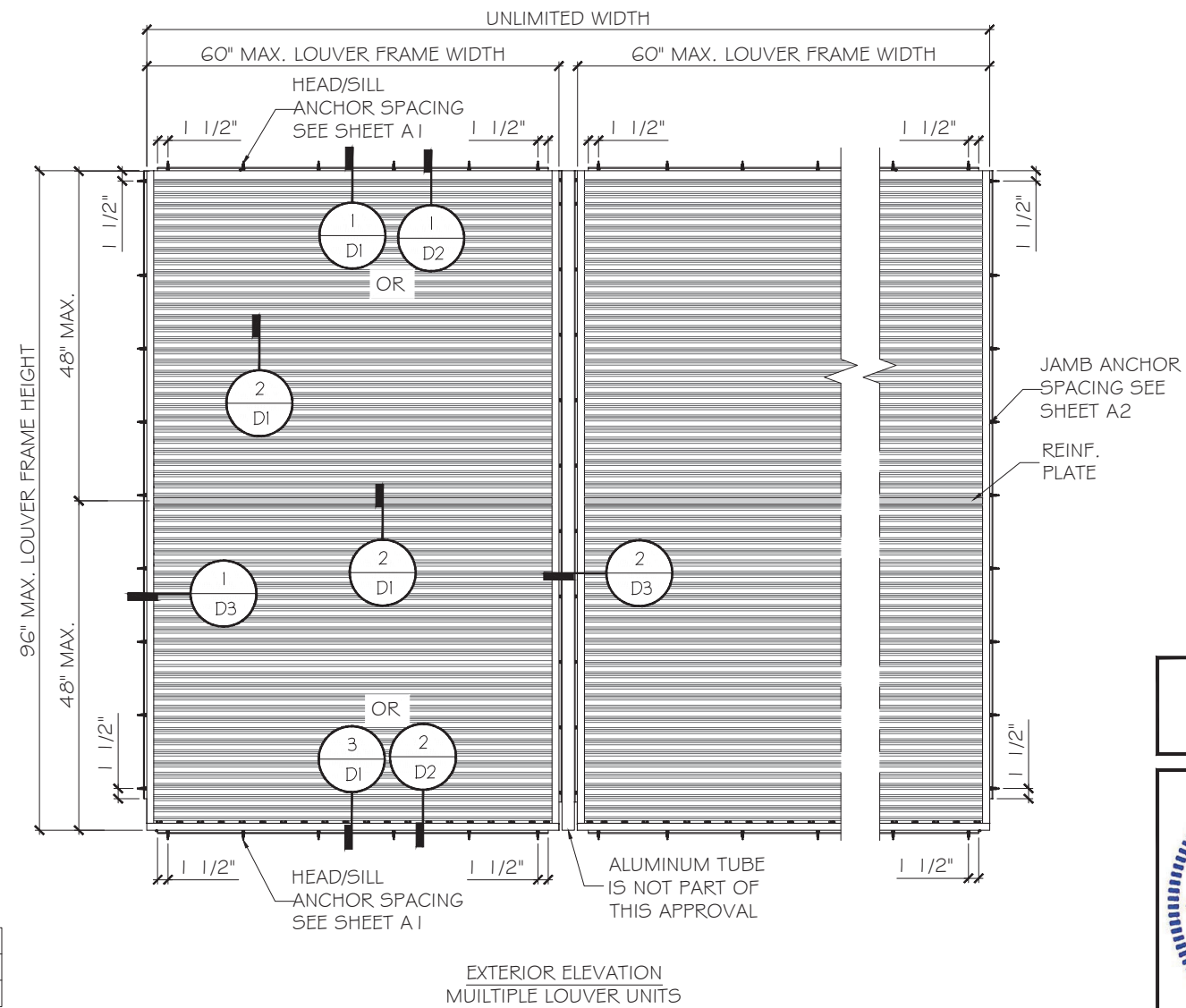
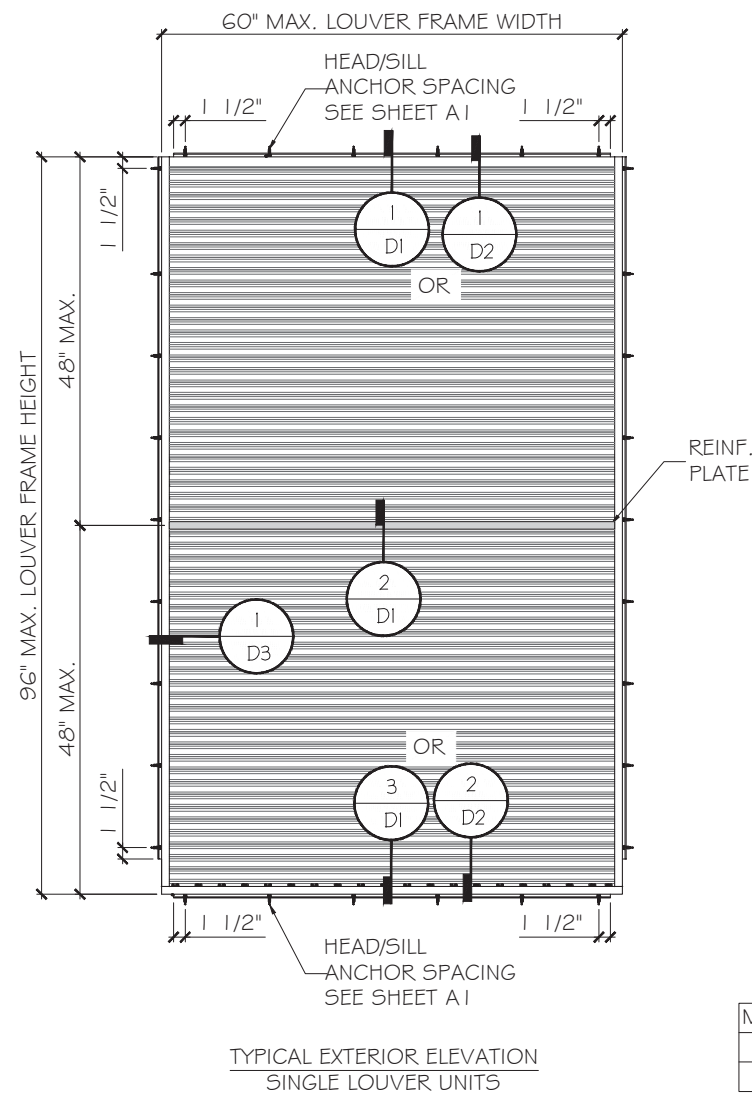
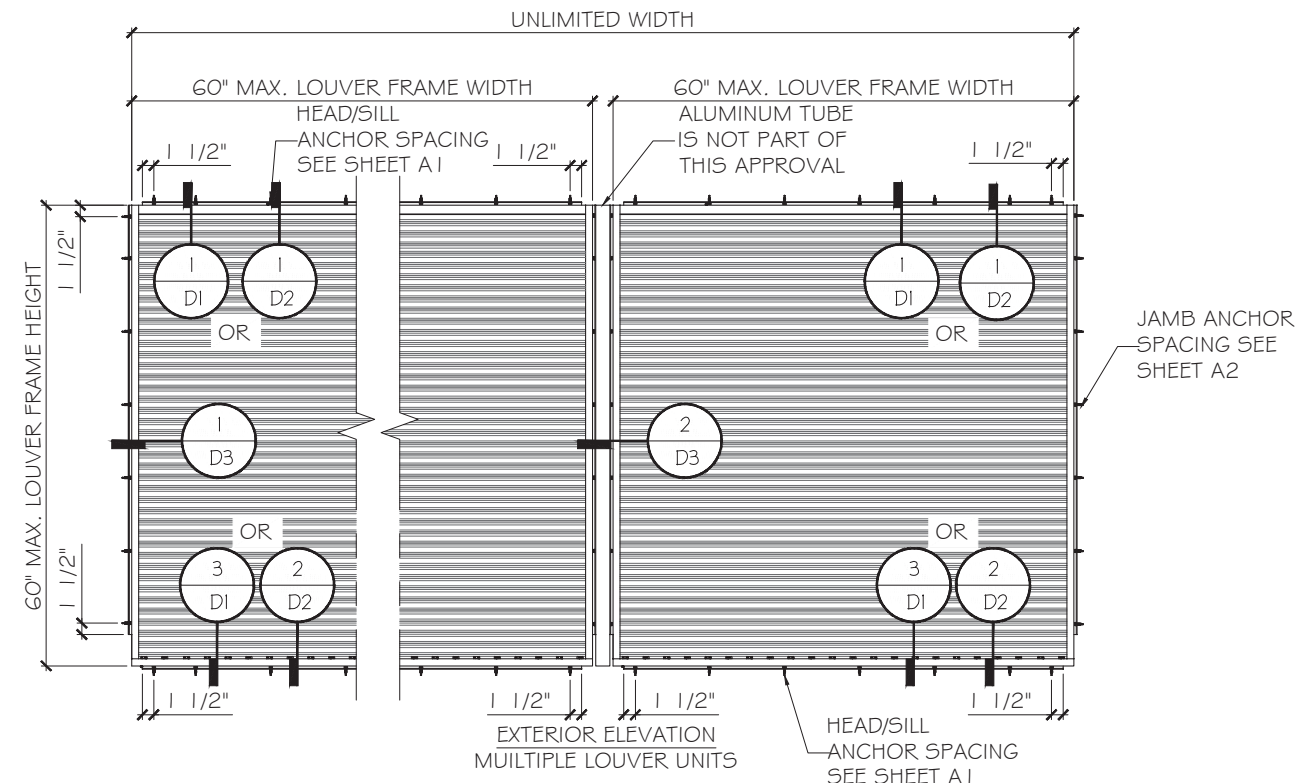
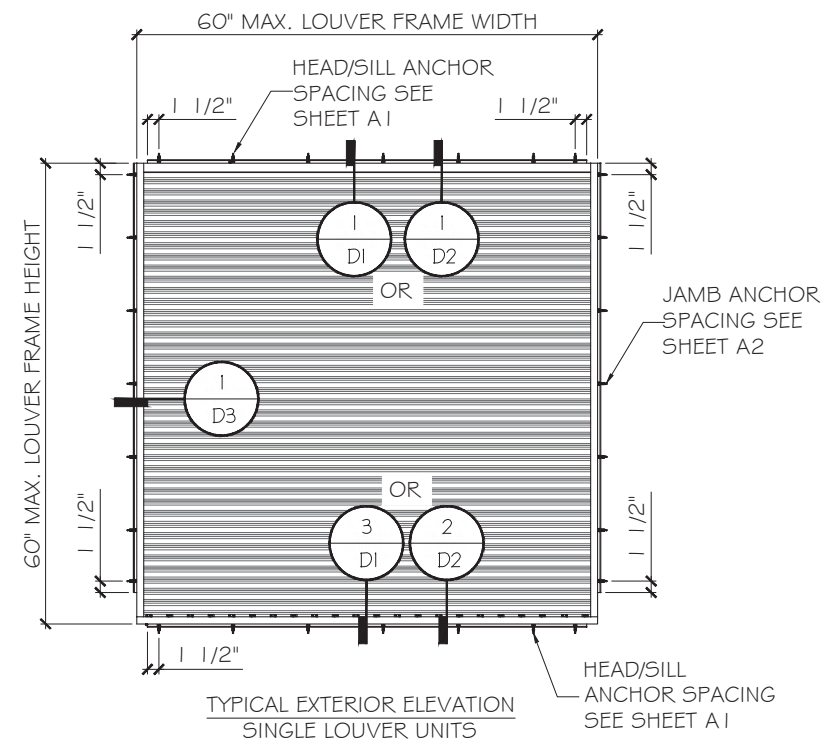
R0	08.28.2026	James	NEW APPLICATION
Rev. No.	Date	Drawn By	Description

Drawn Date 08.28.2026	Drawn By
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DRAWING NO.
AD26-37

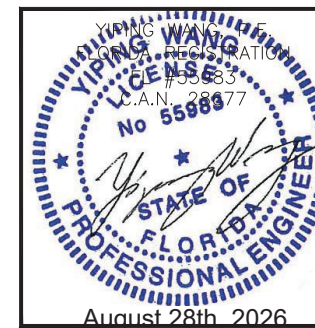
COVER

Sheet No. 1 OF 10



MAX. DESIGN LOAD
+ 100 PSF
- 100 PSF

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R0	08.28.2026	James	NEW APPLICATION
DRAWING NO. AD26-37			
E1			
Sheet No. 2 OF 10			

HEAD/SILL ANCHOR TYPES:

TYPE 'A' 1/4" DIA. ULTRACON+ BY 'DEWALT' (Fu= 164 KSI, Fy= 148KSI)
INTO WOOD STRUCTURE OR WOOD BUCK.
WITH 1-1/2" MIN. PENETRATION

TYPE 'B' 1/4" DIA. ULTRACON+ BY 'DEWALT' (Fu= 164 KSI, Fy= 148KSI)
DIRECTLY INTO CONCRETE
WITH 1 3/4" MIN. EMBED.

TYPE 'C' 5/16" DIA. ULTRACON (Fu= 177 KSI, Fy= 155 KSI)
DIRECTLY INTO CONCRETE
WITH 1-3/4" MIN. EMBED.

TYPE 'D' 1/4" DRIL-FLEX SELF-DRILLING (GRADE 5)
INTO APPROVED MULLIONS
OR INTO METAL STRUCTURE.
(3) THREADS MIN. PENETRATION BEYOND METAL SUBSTRATE

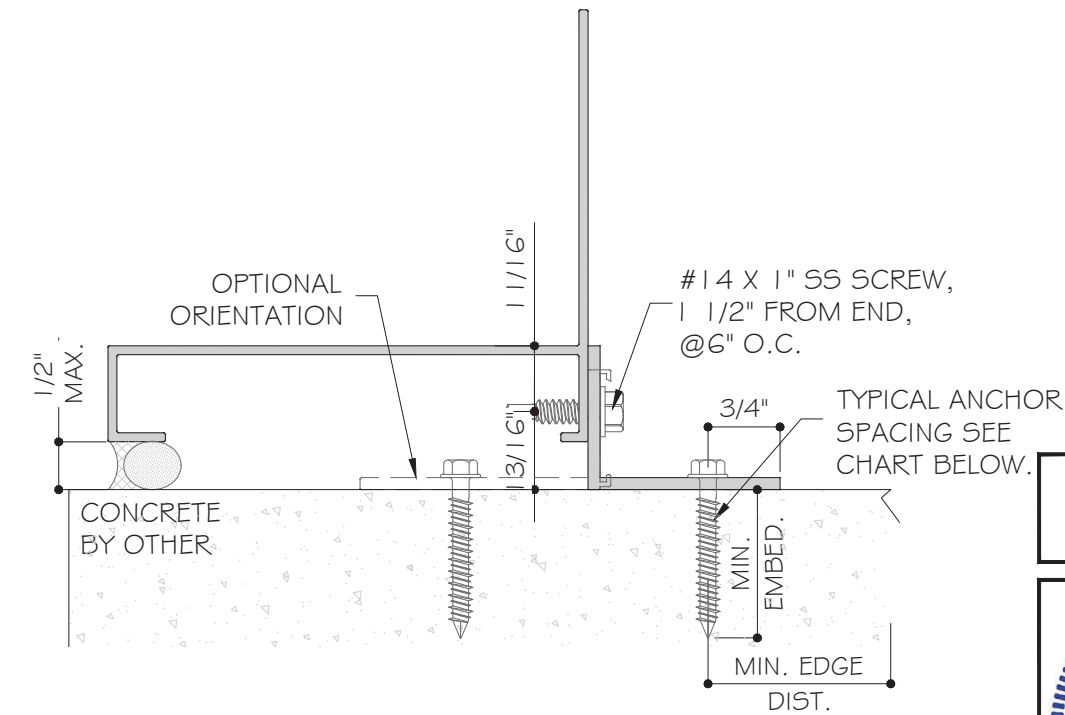
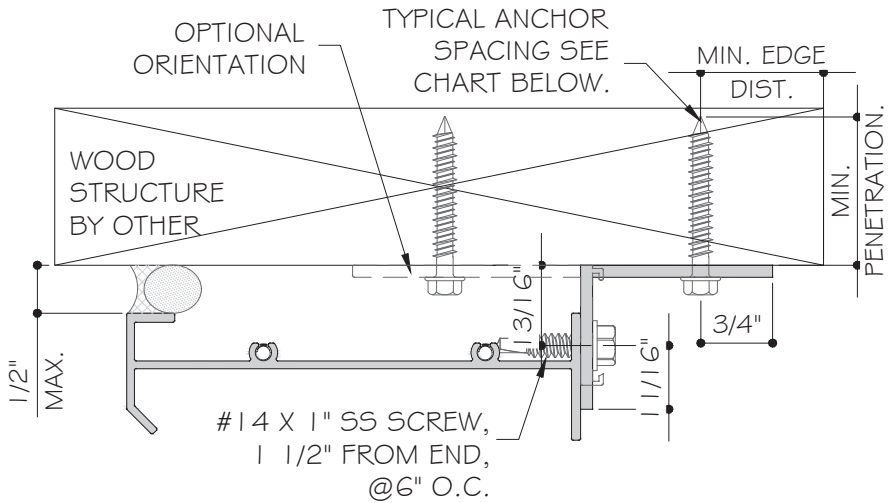
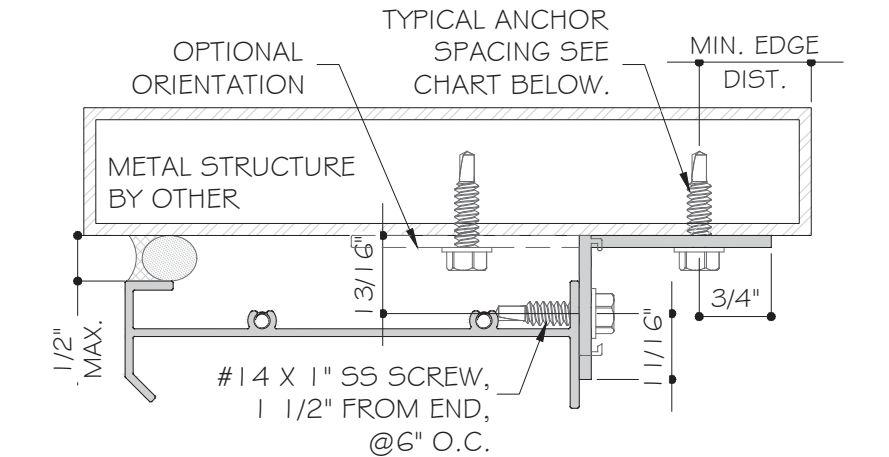
STEEL : 12 GA. MIN. (Fy = 36 KSI MIN.)
ALUMINUM : 1/8" THK. MIN. (6063-T6 MIN.) OR 3/16" THK. 6063-T5
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

TYPICAL EDGE DISTANCE

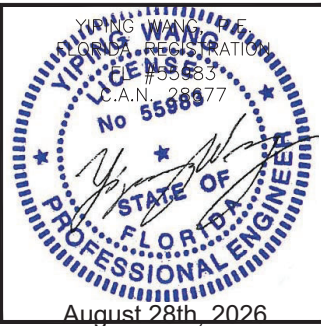
INTO CONCRETE = 2-1/2" MIN.
INTO WOOD STRUCTURE = 1" MIN.
INTO METAL STRUCTURE = 3/4" MIN.

WOOD SG = 0.55 MIN.
CONCRETE f'c = 3000 PSI MIN.

MAX ANCHOR SPACING AT HEAD & SILL					
ALLOWABLE DESIGN LOAD	UNIT HEIGHT	ANCHOR TYPE			
		"A"	"B"	"C"	"D"
+/- PSF	INCH	INCH	INCH	INCH	INCH
≤ 75	60	11.0	12.0	12.0	12.0
	72	9.0	12.0	12.0	12.0
	84	8.0	12.0	12.0	12.0
	96	7.0	11.0	12.0	12.0
≤ 80	60	10.0	12.0	12.0	12.0
	72	9.0	12.0	12.0	12.0
	84	7.0	11.0	12.0	12.0
	96	6.0	10.0	12.0	11.0
≤ 90	60	9.0	12.0	12.0	12.0
	72	8.0	12.0	12.0	12.0
	84	6.0	10.0	12.0	11.0
	96	6.0	9.0	10.0	10.0
≤ 100	60	8.0	12.0	12.0	12.0
	72	7.0	11.0	12.0	12.0
	84	6.0	9.0	11.0	10.0
	96	5.0	8.0	9.0	9.0



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Drawn Date	08.28.2026	Drawn By	James	NEW APPLICATION	Description
Rev. No.	RO	Date	08.28.2026	James	Drawn By
DRAWING NO.					
AD26-37					
A1					
Sheet No.					
4 OF 10					

TYPE 'A' 1/4" DIA. ULTRACON+ BY 'DEWALT' (F_u=164 KSI, F_y=148KSI)
 INTO WOOD STRUCTURE OR WOOD BUCK.
 WITH 1-1/2" MIN. PENETRATION

TYPE 'B' 1/4" DIA. ULTRACON+ BY 'DEWALT' (F_U=164 KSI, F_y=148KSI)
DIRECTLY INTO CONCRETE
WITH 1 3/4" MIN. EMBED.

TYPE 'B' 1 1/4" DIA. ULTRACON+ BY 'DEWALT' (F_u = 164 KSI, F_y = 148 KSI)
DIRECTLY INTO GROUT FILLED BLOCK
WITH 2 1/4" MIN. EMBED.

TYPE 'C' 5/16" DIA. ULTRACON ($F_u = 177$ KSI, $F_y = 155$ KSI)
DIRECTLY INTO CONCRETE
WITH 1-3/4" MIN. EMBED.

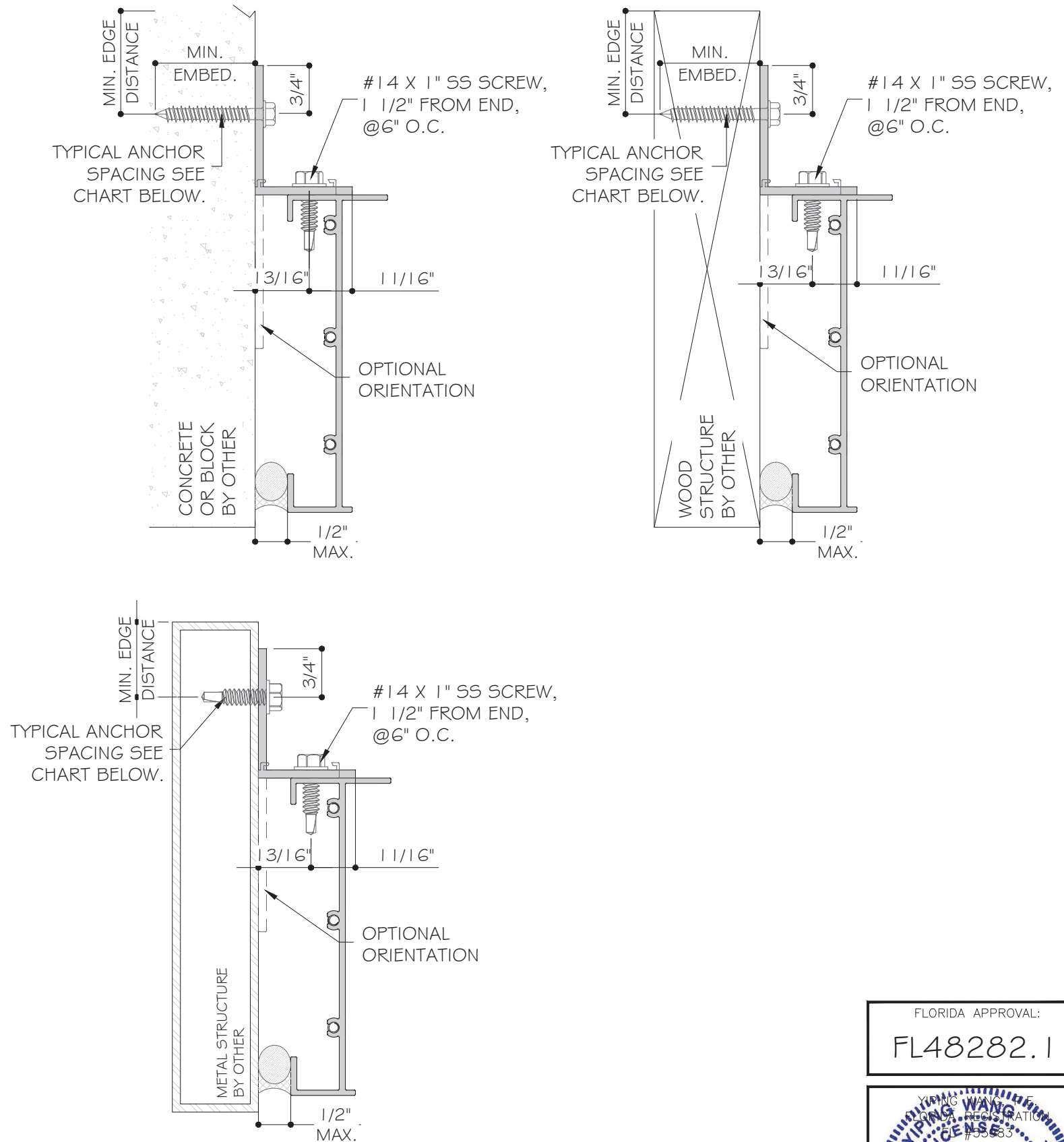
TYPE 'D' 1/4" DRIL-FLEX SELF-DRILLING SCREW (GRADE 5)
 INTO APPROVED MULLIONS
 OR INTO METAL STRUCTURE.
 (3) THREADS MIN. PENETRATION BEYOND METAL SUBSTRATE

STEEL : 1/2 GA. MIN. (Fy = 36 KSI MIN.)
ALUMINUM : 1/8" THK. MIN. (6063-T6 MIN.) OR 3/16" THK. 6063-T5
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

INTO CONCRETE OR GROUT FILLED BLOCK = 2-1/2" MIN.
INTO WOOD STRUCTURE = 1" MIN.
INTO METAL STRUCTURE = 3/4" MIN.

WOOD SG = 0.55 MIN.
CONCRETE f'_c = 3000 PSI MIN.
GROUT FILLED BLOCK f'_m =2000 PSI MIN.

MAX ANCHOR SPACING AT JAMB						
ALLOWABLE DESIGN LOAD	UNIT HEIGHT	ANCHOR TYPE				
		"A"	"B"	"B1"	"C"	"D"
+/- P5F	INCH	INCH	INCH	INCH	INCH	INCH
≤ 75	42	12.0	12.0	12.0	12.0	12.0
	48	12.0	12.0	12.0	12.0	12.0
	54	12.0	12.0	12.0	12.0	12.0
	60	11.0	12.0	12.0	12.0	12.0
≤80	42	12.0	12.0	12.0	12.0	12.0
	48	12.0	12.0	12.0	12.0	12.0
	54	12.0	12.0	12.0	12.0	12.0
	60	10.0	12.0	12.0	12.0	12.0
≤ 90	42	12.0	12.0	12.0	12.0	12.0
	48	12.0	12.0	12.0	12.0	12.0
	54	10.0	12.0	12.0	12.0	12.0
	60	9.0	12.0	11.0	12.0	12.0
≤ 100	42	12.0	12.0	12.0	12.0	12.0
	48	10.0	12.0	12.0	12.0	12.0
	54	9.0	12.0	11.0	12.0	12.0
	60	8.0	12.0	10.0	12.0	12.0



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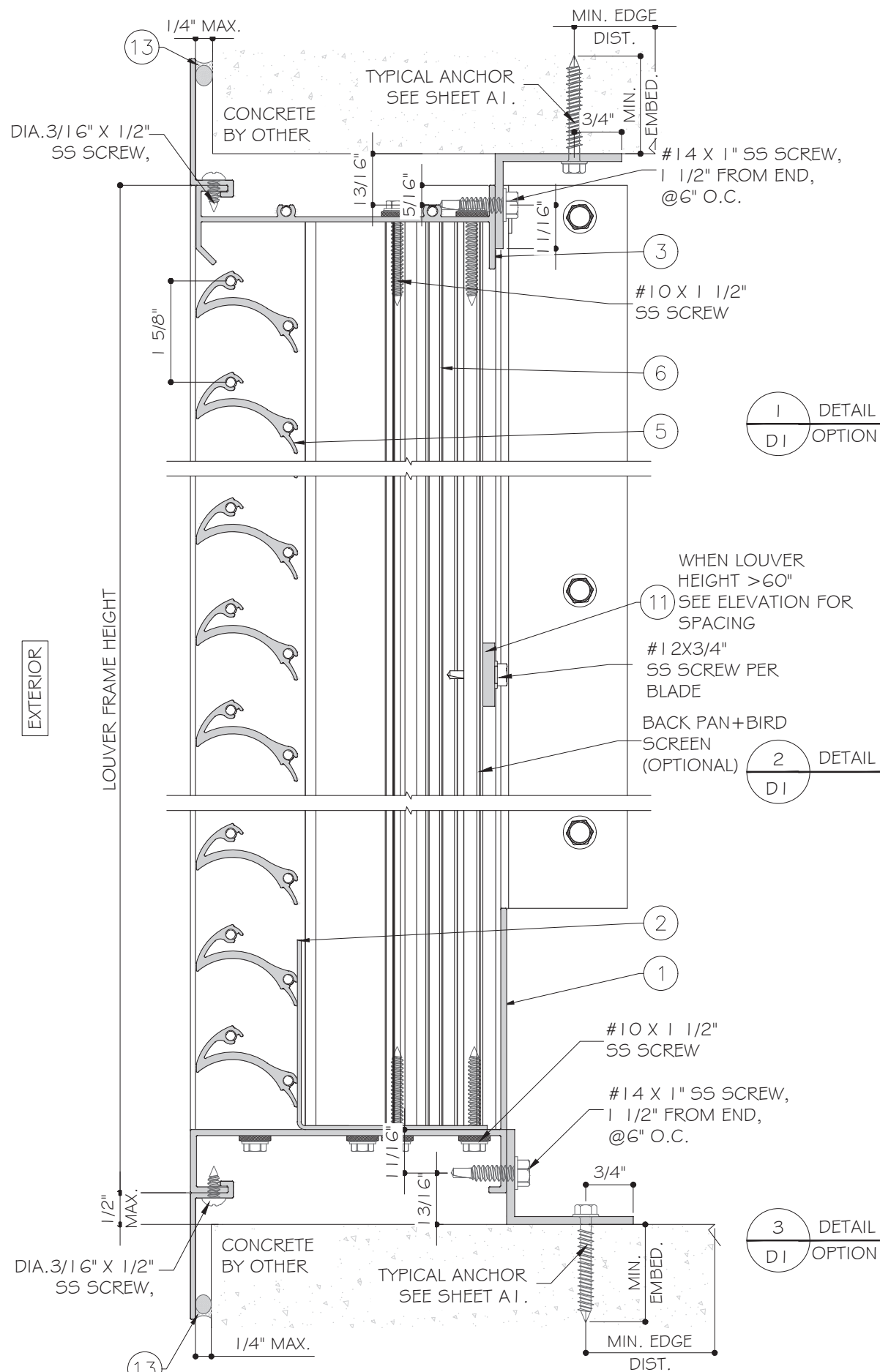
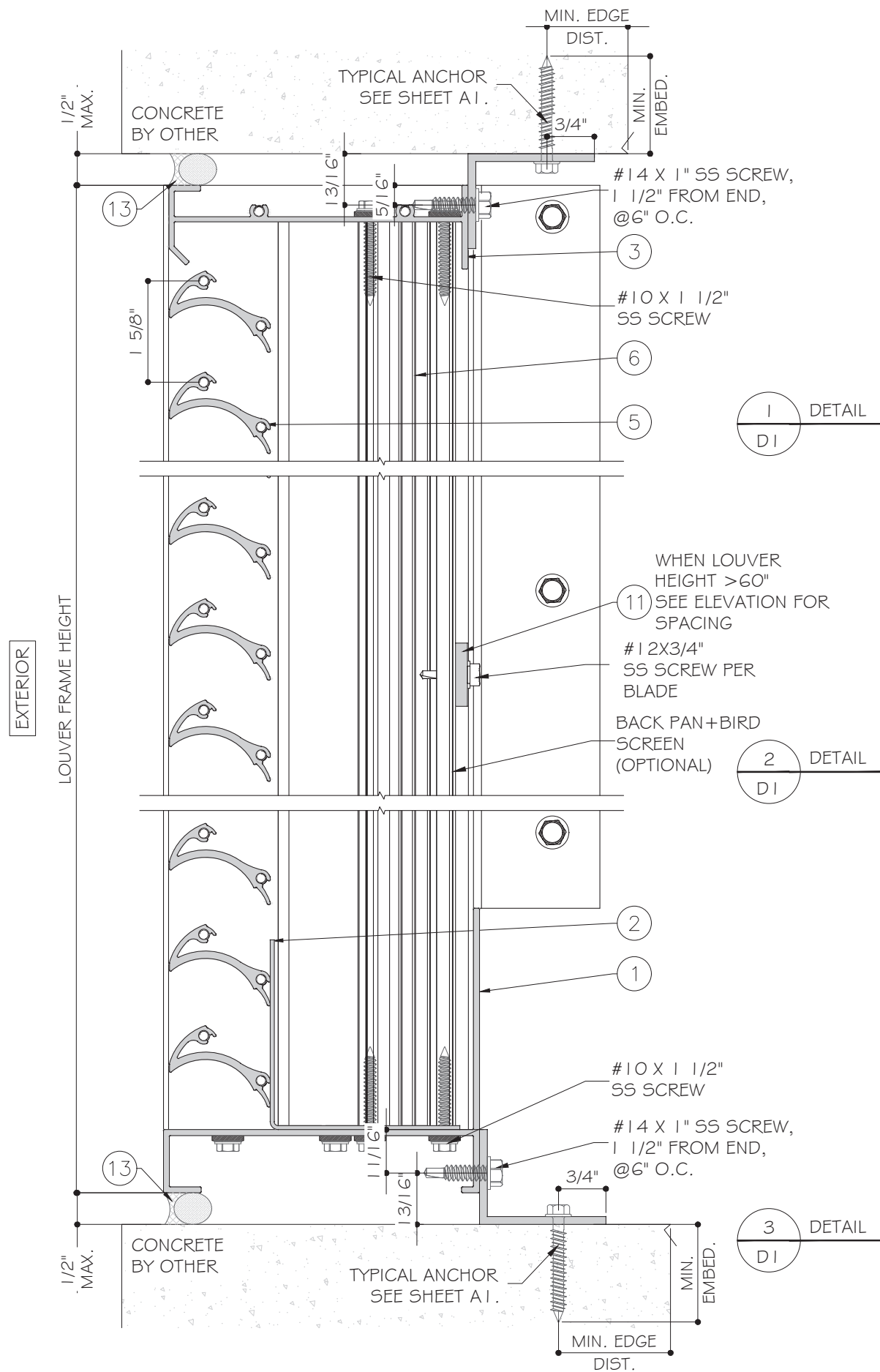
YOUNG WANG & ASSOCIATES, P.A.
145383
C.A.N. 28677

No 55989

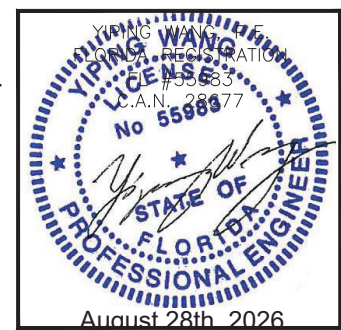
STATE OF FLORIDA
PROFESSIONAL ENGINEER

August 28th 2026

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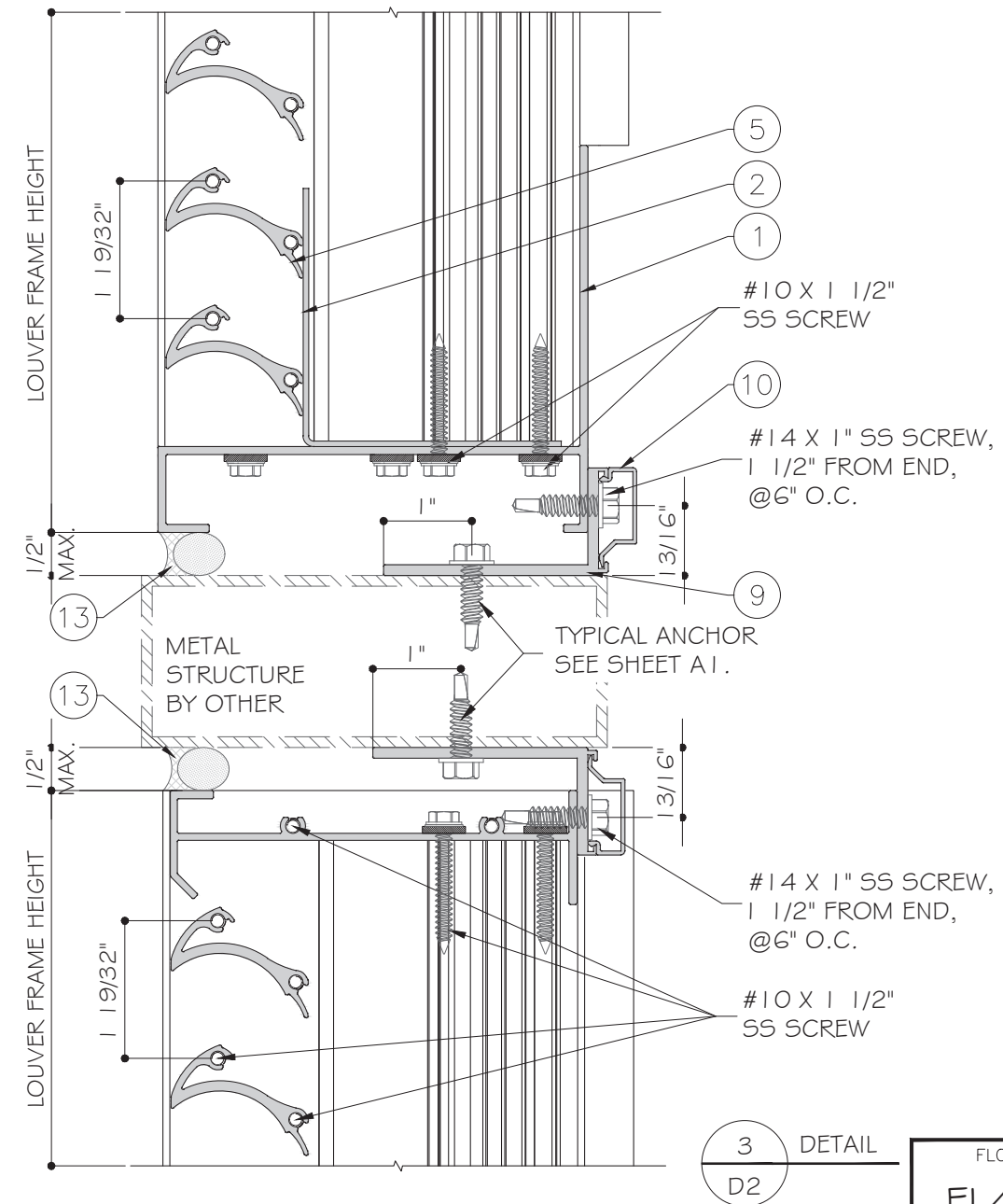
Drawn Date 08.28.2026

Drawn By

DRAWING NO. AD26-37

D1

Sheet No. 6 OF 10



YIP WING WANG
 CIVIL ENGINEER
 LICENSE # 55589
 E.A.N. 28677
 No 55589
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER
 August 28th, 2026

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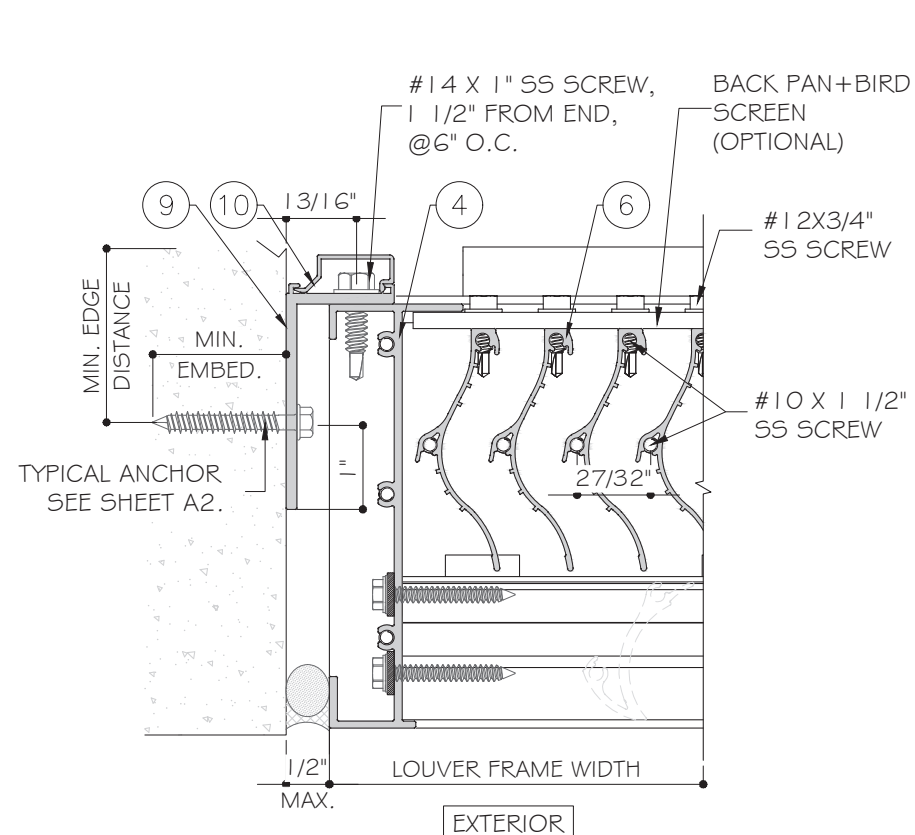
MCY ENGINEERING, INC.
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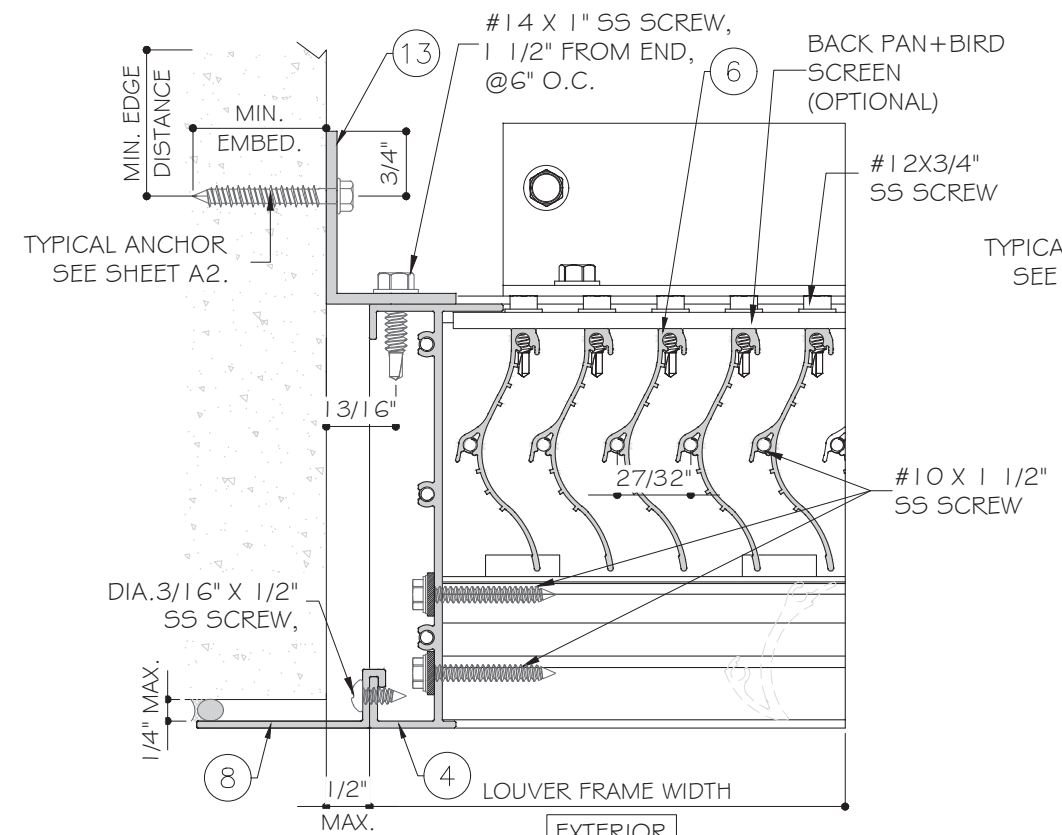
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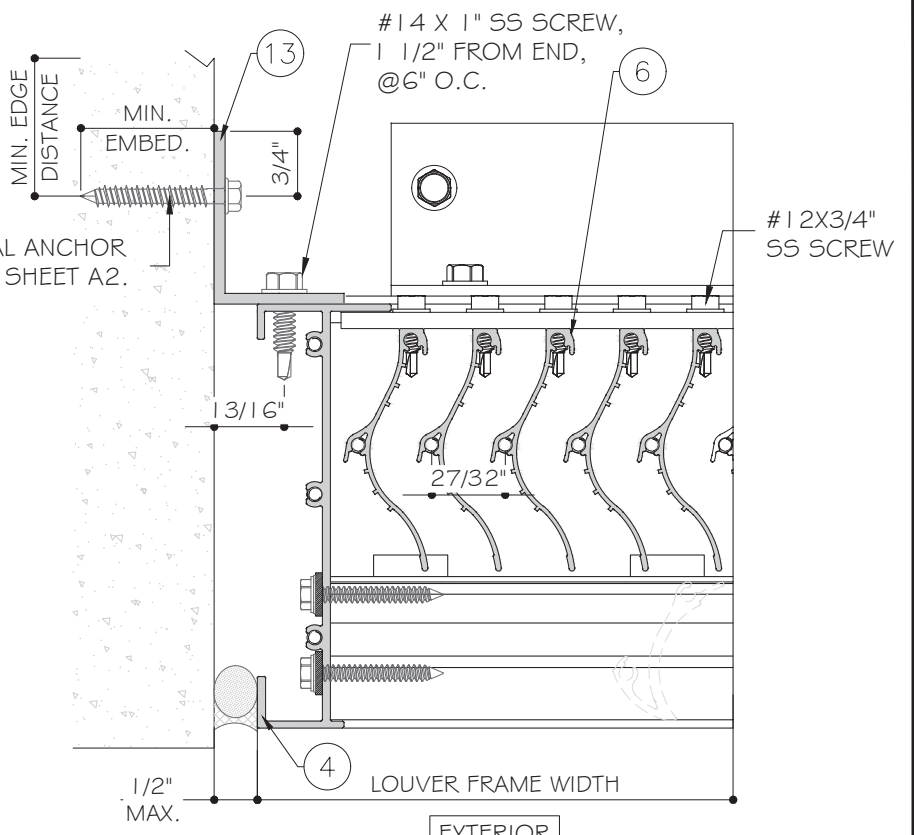
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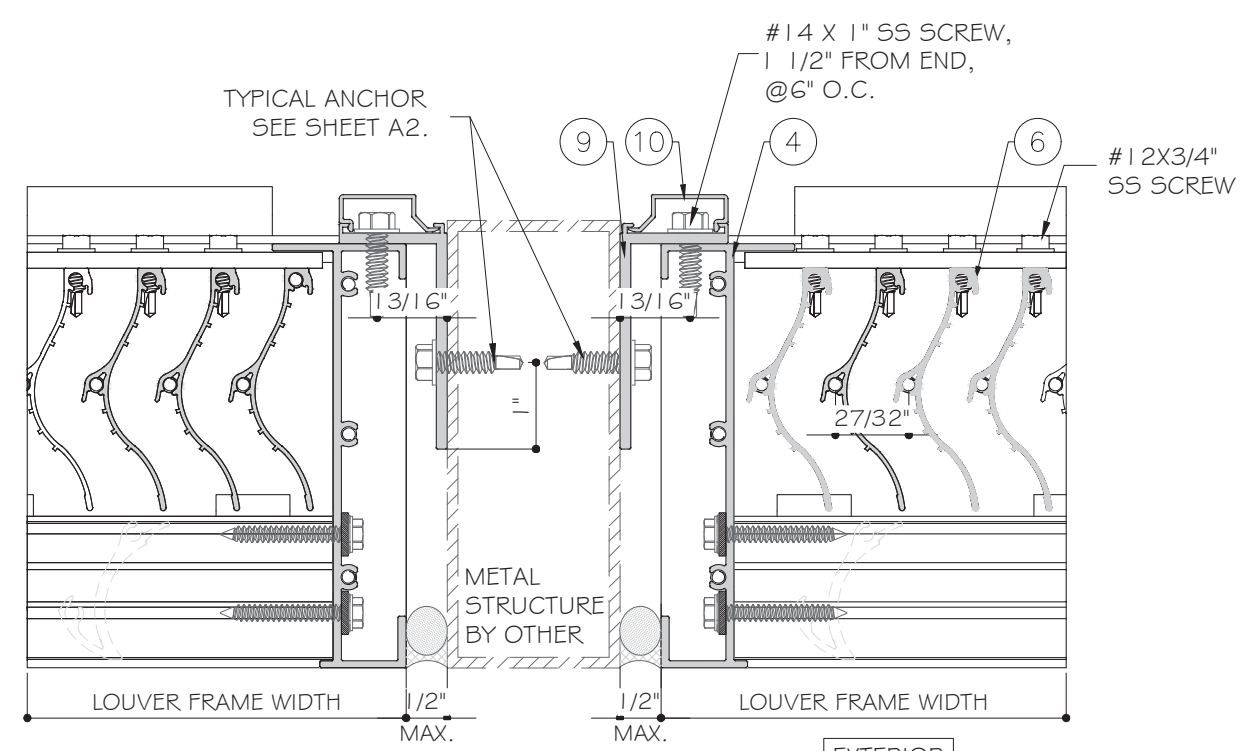
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D3
DETAIL



1
D3
DETAIL
OPTION



1
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DETAIL
OPTION

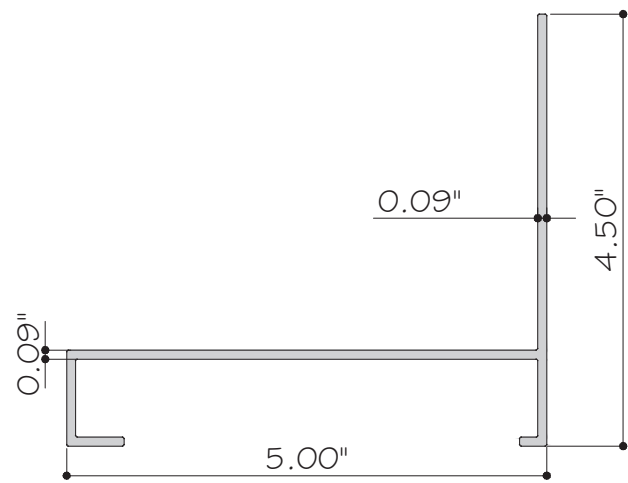


2
D3
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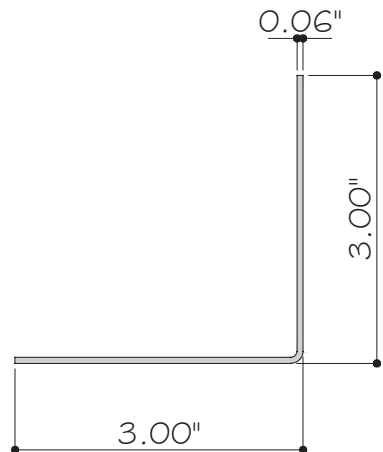
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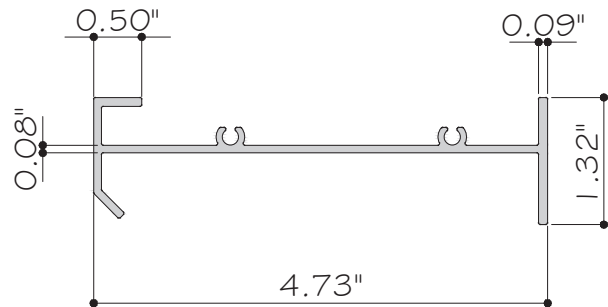
Rev. No.	Date	Drawn By	Description
R0	08/28/2026	James	NEW APPLICATION
Drawing No. AD26-37			
Sheet No. 8 OF 10			



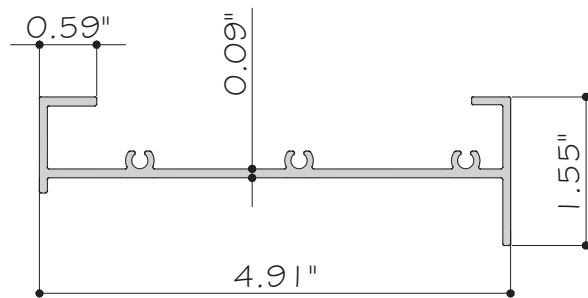
1 SILL (ESM-507)
ALUMINUM 6063-T6



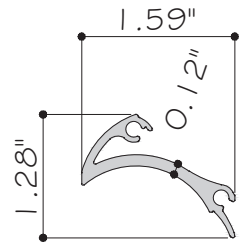
2 BRAKE METAL
ALUMINUM 5052 H32



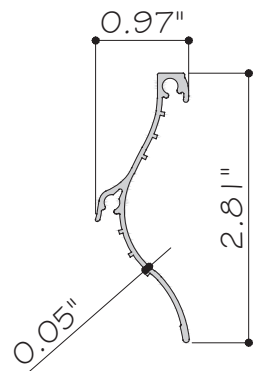
3 HEAD (ESM-508)
ALUMINUM 6063-T6



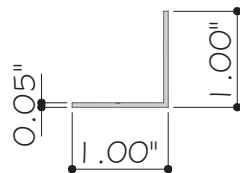
4 JAMB (ESM-509)
ALUMINUM 6005-T5



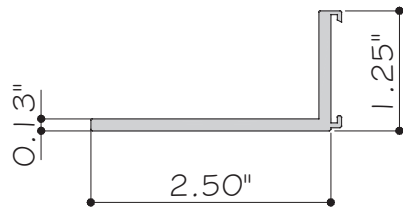
5 BLADE (ESM-510)
ALUMINUM 6005-T5



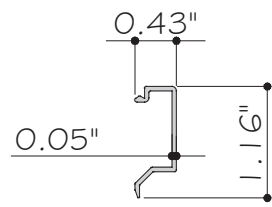
6 BLADE (ESM-468)
ALUMINUM 6063-T6



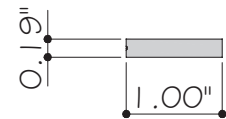
7 BLADE EX (ALU-A-009)
ALUMINUM 6063-T6



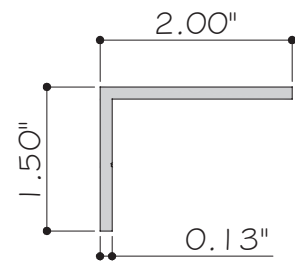
9 INSTALL ANGLE (ESM-149)
ALUMINUM 6063-T6



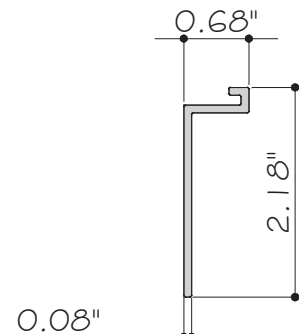
10 COVER (ESM-150)
ALUMINUM 6063-T6



11 PLATE SUPPORT (ALU-P-019)
ALUMINUM 6063-T6



12 ANGLE (ESM-147)
ALUMINUM 6063-T6



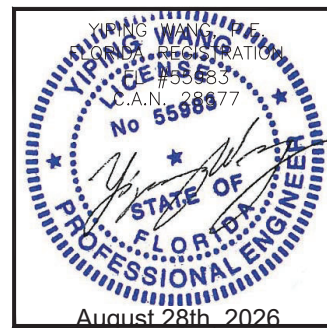
8 FLANGE (ESM-148)
ALUMINUM 6063-T6

BILL OF MATERIALS

ITEM	PART	DESCRIPTION	MATERIAL
1	ESM-507	SILL	ALUM. 6063-T6
2	--	BRAKE METAL	ALUM. 5052 H32
3	ESM-508	HEAD	ALUM. 6063-T6
4	ESM-509	JAMB	ALUM. 6005-T5
5	ESM-510	HORIZONTAL BLADE	ALUM. 6005-T5
6	ESM-468	VERTICAL BLADE	ALUM. 6063-T6
7	ALU-A-009	BLADE EX	ALUM. 6063-T6
8	ESM-148	FLANGE	ALUM. 6063-T6
9	ESM-149	INSTALL ANGLE	ALUM. 6063-T6
10	ESM-150	COVER INSTALL ANGLE	ALUM. 6063-T6
11	ALU-P-019	PLATE SUPPORT	ALUM. 6063-T6
12	ESM-147	ANGLE	ALUM. 6063-T6
13	DOWSIL 791	SILICONE	DOWSIL

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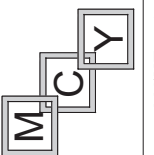
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Drawn Date 08/28/2026

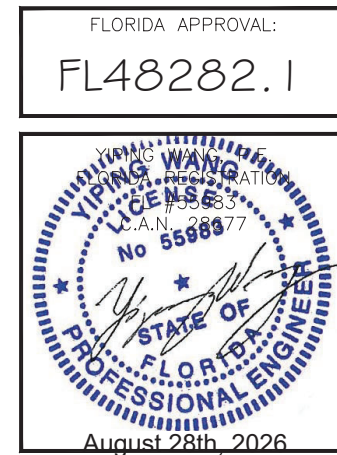
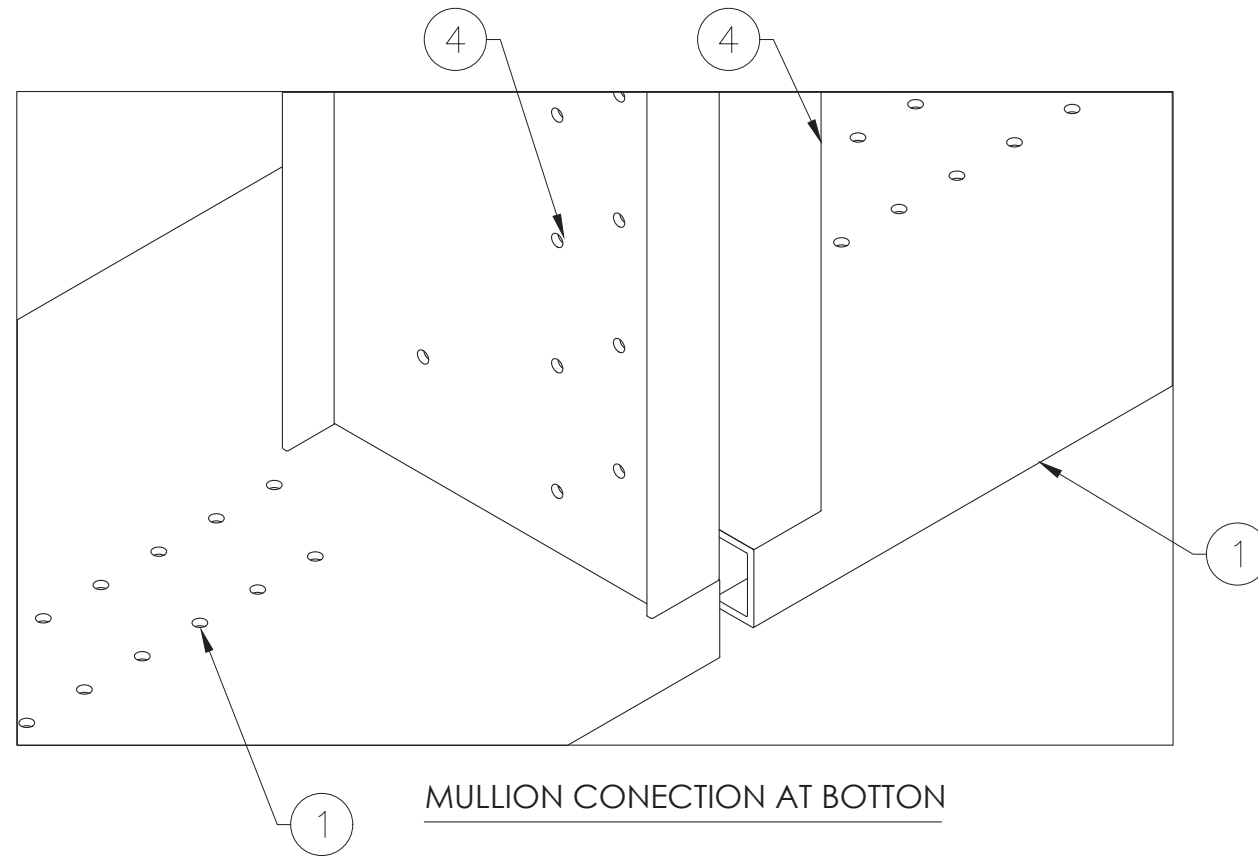
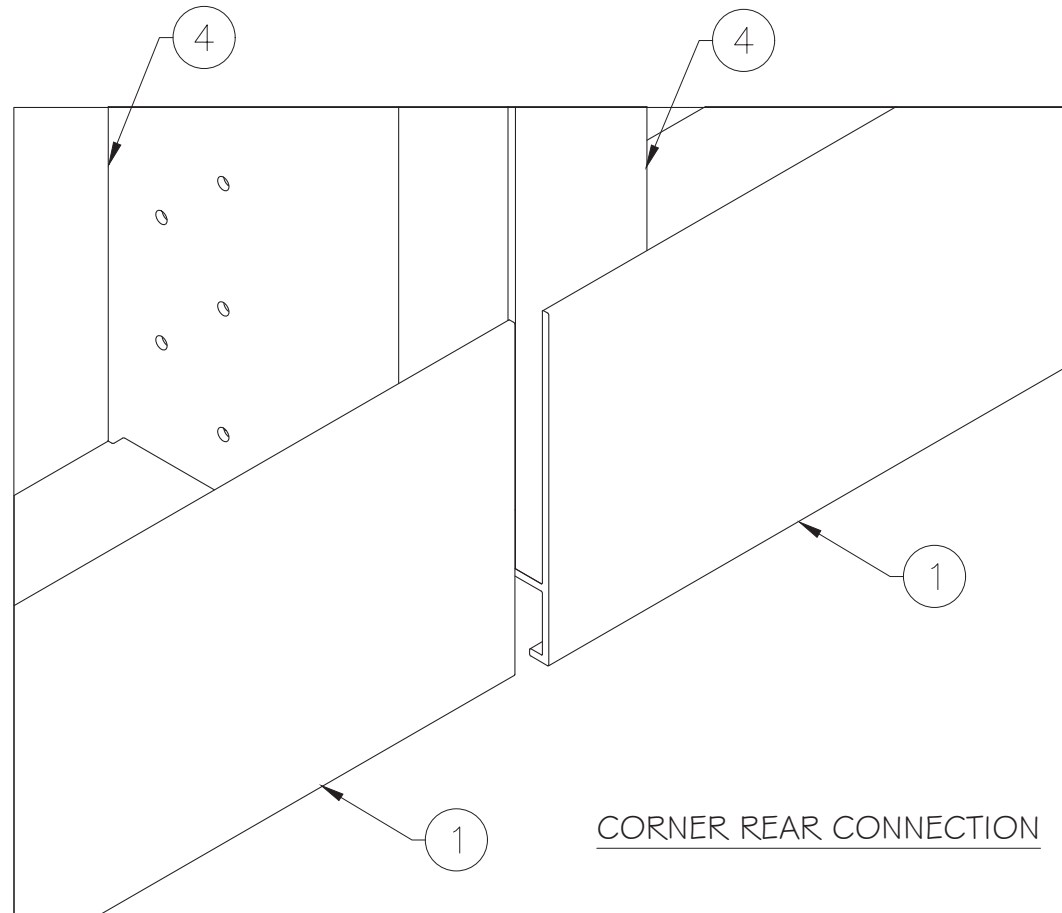
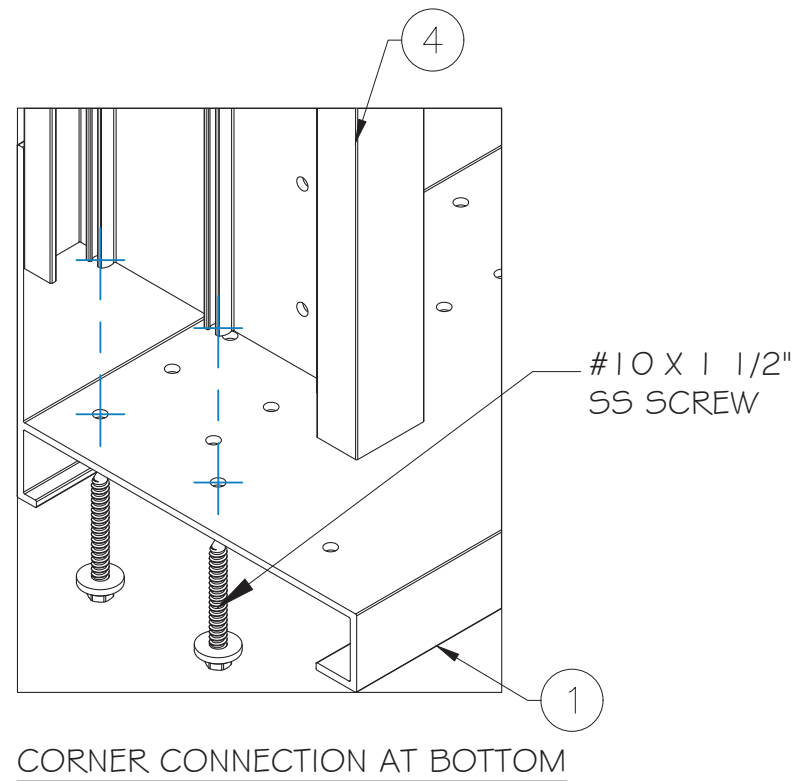
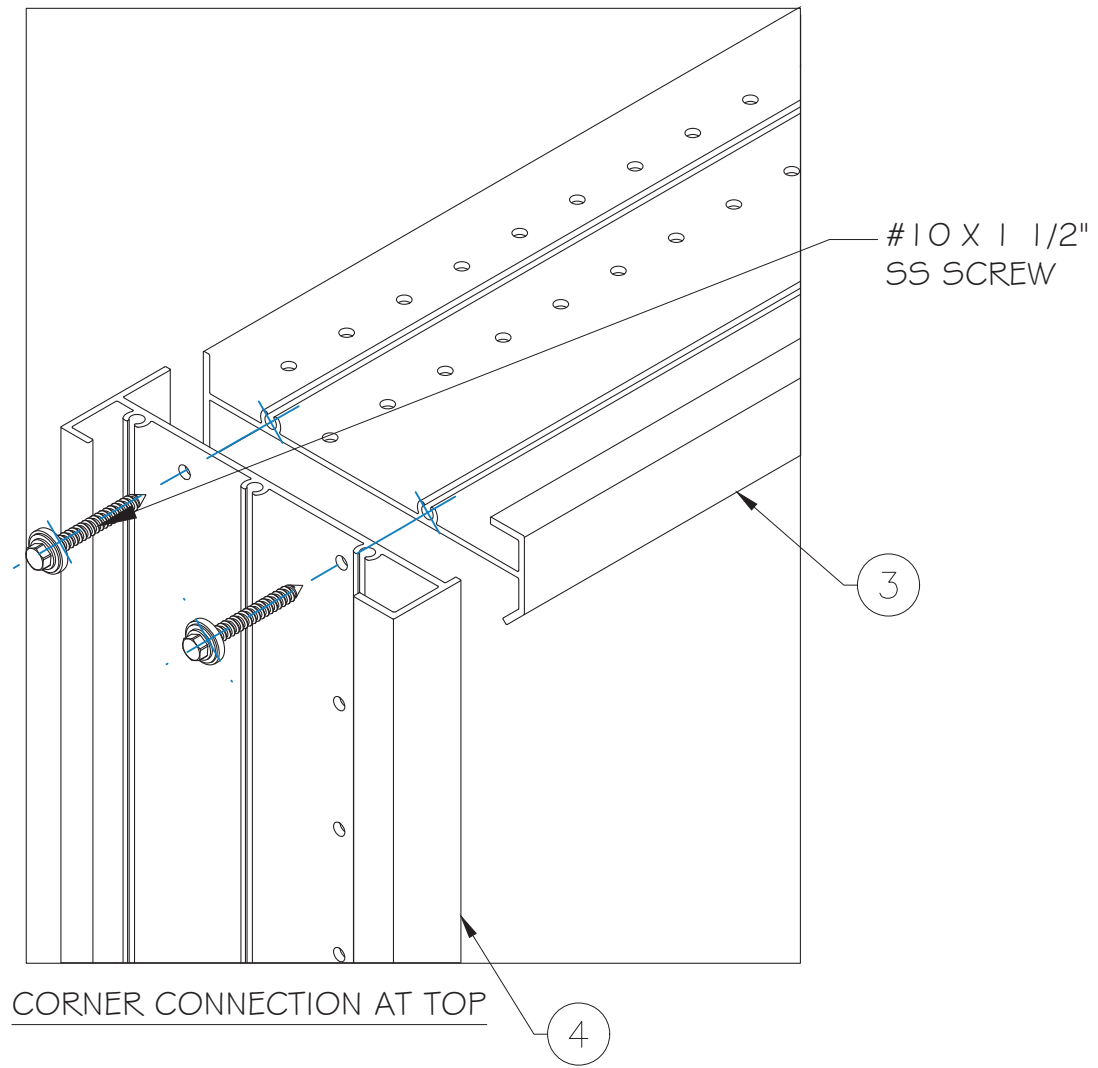
Drawn By

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AD26-37

PART

Sheet No.
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ES-METALS-DUAL BLADE LOUVER ESM-5LSHV				MCY ENGINEERING, INC. GLAZING CONSULTANTS 12781 MIRAMAR PARKWAY #301 MIRAMAR, FL. 33027 P: 305-588-5224 www.MCYEngineering.com mcy@mcyengineering.com			
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Rev. No.	Date	Drawn By	Description				
RO	08.28.2026	James	NEW APPLICATION				
Drawn Date 08.28.2026				Drawn By			
DRAFTING NO.				AD26-37			
ASSEMBLY							
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