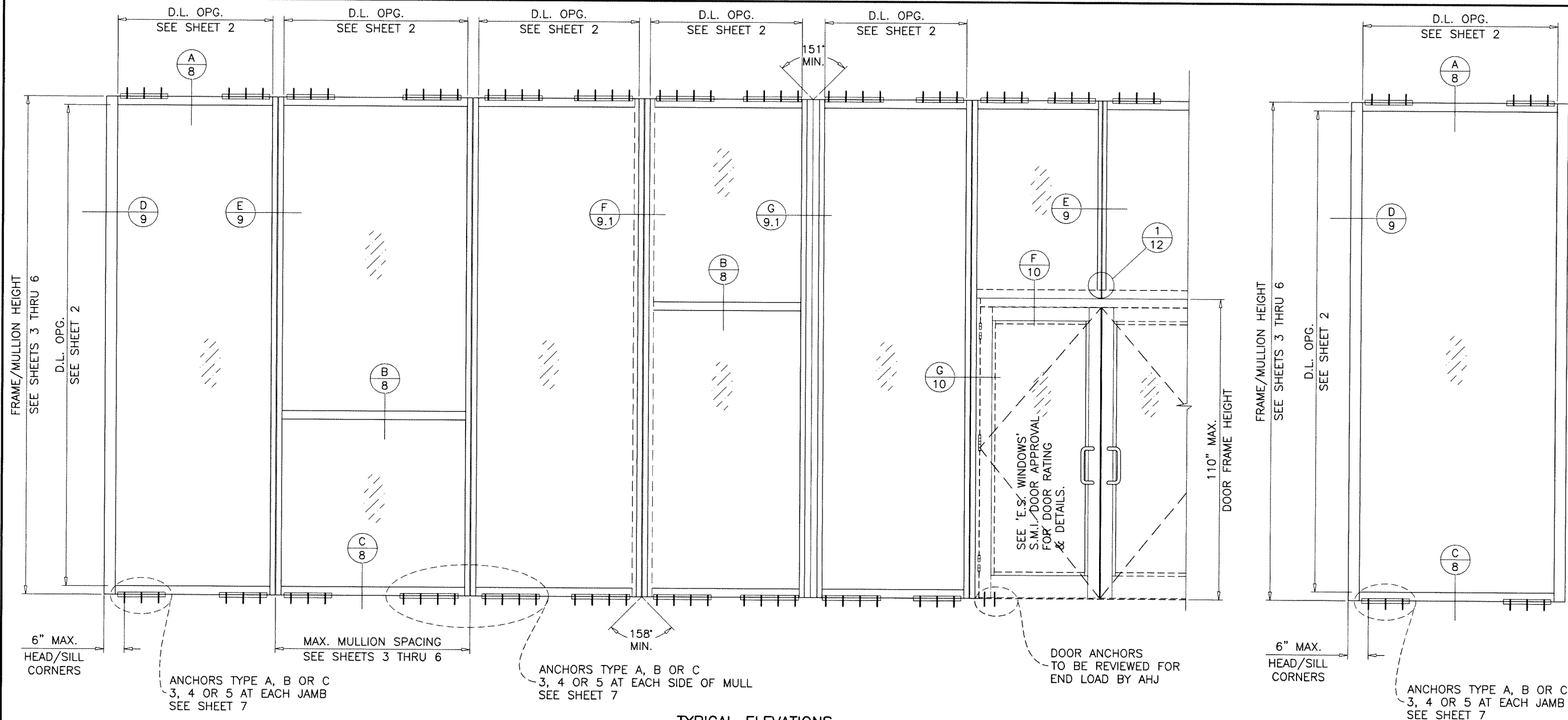




TYPICAL ELEVATIONS

ES-WW1032 ALUMINUM WINDOW WALL SYSTEM

THIS SYSTEM MAY BE USED IN CONJUNCTION WITH F.B.C. APPR'D SMALL MISSILE IMPACT RESISTANT DOORS. LOWER DESIGN PRESSURE FROM WINDOW WALL SYSTEM OR DOOR APPROVAL WILL APPLY TO ENTIRE SYSTEM.

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 2023 (8TH EDITION) FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).

ANCHORS SHALL BE CORROSION RESISTANT, SPACED AS SHOWN ON DETAILS AND INSTALLED PER MANUF'S INSTRUCTIONS. SPECIFIED EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

ALL SHIMS TO BE HIGH IMPACT, NON-METALLIC AND NON-COMPRESSIBLE.

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE 2023 FLORIDA BLDG. CODE & ADOPTED STANDARDS.

THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY OF STRUCTURE RECEIVING THIS PRODUCT AND SEALING AROUND OPENING FOR WATER INFILTRATION RESISTANCE ETC. CONDITIONS NOT SHOWN IN THIS DRAWING ARE TO BE ANALYZED SEPARATELY, AND TO BE REVIEWED BY BUILDING OFFICIAL.

DESIGN LOADS SHOWN ARE BASED ON 'ALLOWABLE STRESS DESIGN (ASD)'.

INSTRUCTIONS:

USE CHARTS AS FOLLOWS.

- STEP 1** DETERMINE DESIGN WIND PRESSURE REQUIREMENTS BASED ON WIND VELOCITY, BLDG. HEIGHT, WIND ZONE USING APPLICABLE ASCE 7 STANDARD.
- STEP 2** SEE CHARTS ON SHEET 2 FOR GLASS DESIGN LOAD CAPACITY.
- STEP 3** CHECK MULLION DESIGN LOAD CAPACITY FOR A GIVEN SPACING AND HEIGHT USING CHARTS ON SHEETS 3 THRU 6 THE CAPACITY SHOULD EXCEED THE DESIGN LOAD.
- STEP 4** USING CHARTS ON SHEET 7 SELECT ANCHOR OPTION WITH DESIGN LOAD CAPACITY MORE THAN DESIGN LOAD SPECIFIED IN STEP 1 ABOVE.
- STEP 5** THE LOWEST VALUE RESULTING FROM STEPS 2, 3 AND 4 THAT EXCEED THE DESIGN WIND PRESSURES DETERMINED THRU STEP 1 SHALL APPLY TO ENTIRE SYSTEM.
- STEP 6** FOR SYSTEMS WITH UNANCHORED JAMBS, USING SHEET 9, DETERMINE THE MIN. & MAX. GAP DIMENSIONS.
- STEP 7** WHEN USING THIS SYSTEM WITH DOORS, THE LOWER VALUE OF THE DESIGN PRESSURE RATING FOR THE SYSTEM AND THE DOOR SHALL APPLY.

THIS SYSTEM IS RATED FOR SMALL MISSILE IMPACT.
F.B.C. APPROVED IMPACT RESISTANT SHUTTERS REQUIRED FOR INSTALLATIONS UP TO 30 FT. OF GRADE.
SHUTTERS NOT REQD. FOR INSTALLATIONS ABOVE 30 FT. OF GRADE.

LAMINATED GLASS
SMALL MISSILE IMPACT

Sealed: 5/2/2025

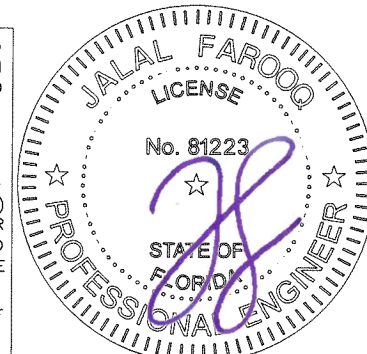
FL #18410

A- 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.

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

C- 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. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.E.D. ENGINEER SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.

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



AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173
TEL. (305) 264-8100 FAX. (305) 262-6978

ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

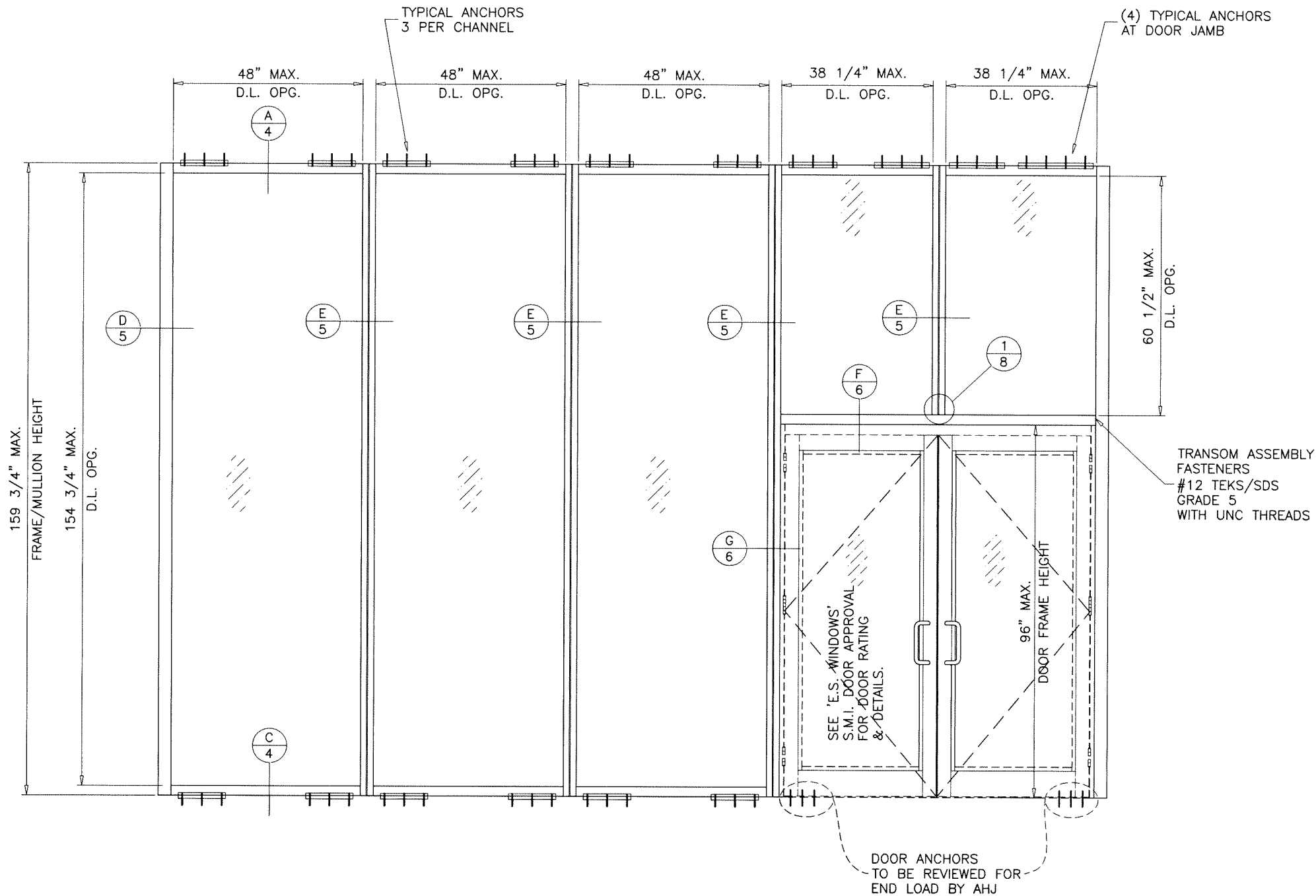
E.S. WINDOWS, LLC
3550 N.W. 49 STREET
MIAMI, FL. 33142
TEL. (305) 638-5151 FAX. (305) 638-5158

revisions:	no.	date	description	by
	A	12.18.20	SLANTED FRAME ADDED	
	B	07.31.23	UPDATED TO 2023 FBC	
	C	08.28.24	NEW TEST ADDED	
	D	04.22.25	GENERAL REVISION	

date:	06-10-20
scale:	3/8" = 1'-0"
dr. by:	TARIO
chk. by:	

drawing no.	20-53F
sheet	1 of 13

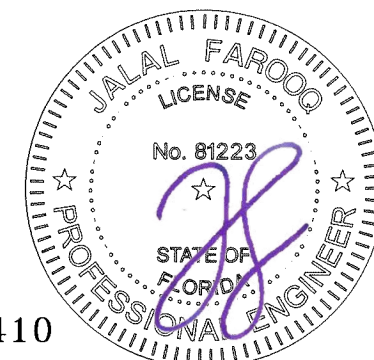
STORE\20-53FES



MAXIMUM DESIGN LOAD RATING = + 100.0 PSF
(FOR ELEVATION SHOWN ABOVE) - 100.0 PSF

Sealed: 5/2/2025

FL #18410



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a f c

STORE 20-53F-ES

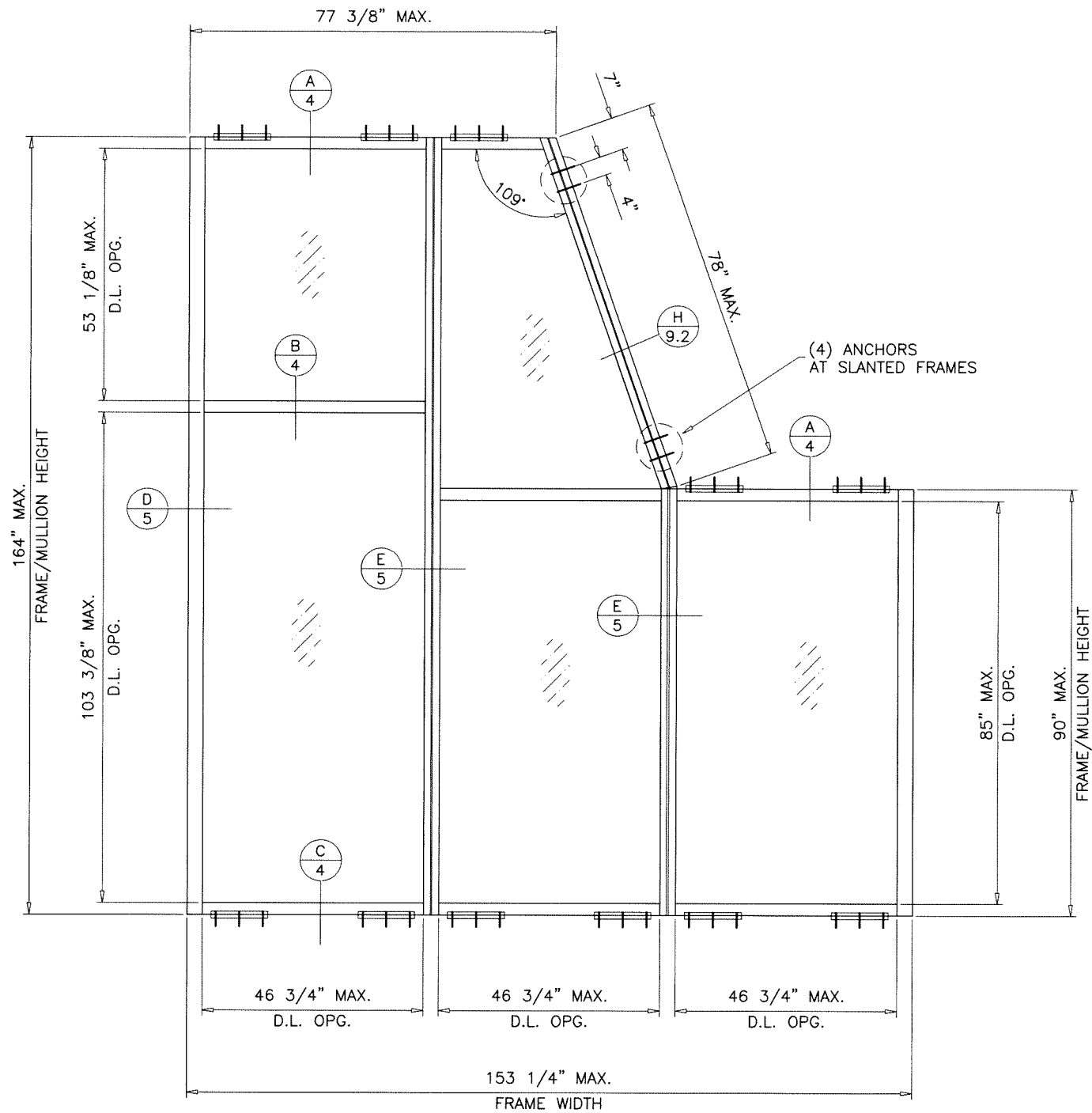
ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

E.S. WINDOWS, LLC
3550 N.W. 49 STREET
MIAMI, FL. 33142
TEL. (305) 638-5151 FAX. (305) 638-5158

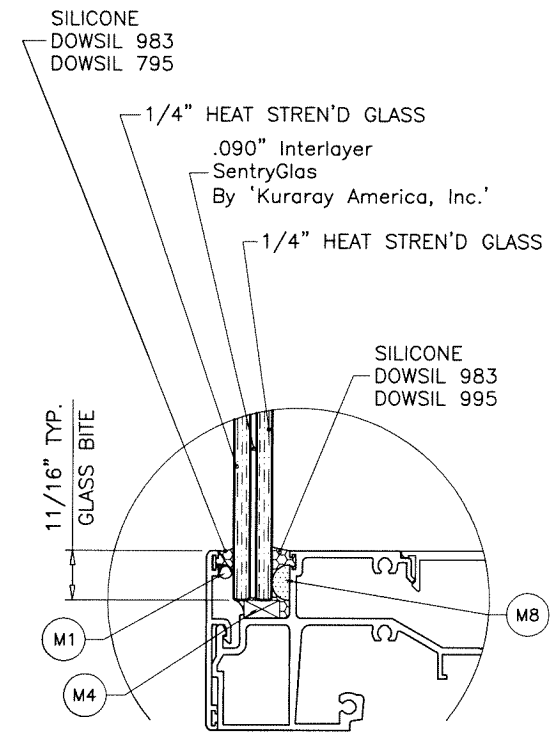
revisions:	
no	date by description

date: 06-10-20	scale: 3/8"=1'-0"	dr. by: TARIQ	chk. by:
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drawing no.	20-53F
sheet 1.1 of 9	



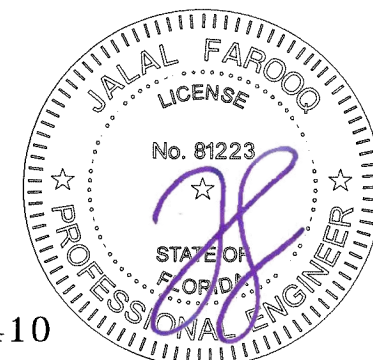
MAXIMUM DESIGN LOAD RATING = + 48.0 PSF
 (FOR ELEVATION SHOWN ABOVE) - 80.0 PSF
 (GLAZING DETAIL SHOWN ON THIS SHEET ONLY)



GLAZING DETAIL
 9/16" LAM. GLASS

Sealed: 5/2/2025

FL #18410



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a f c

STORE 20-53F-ES

ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

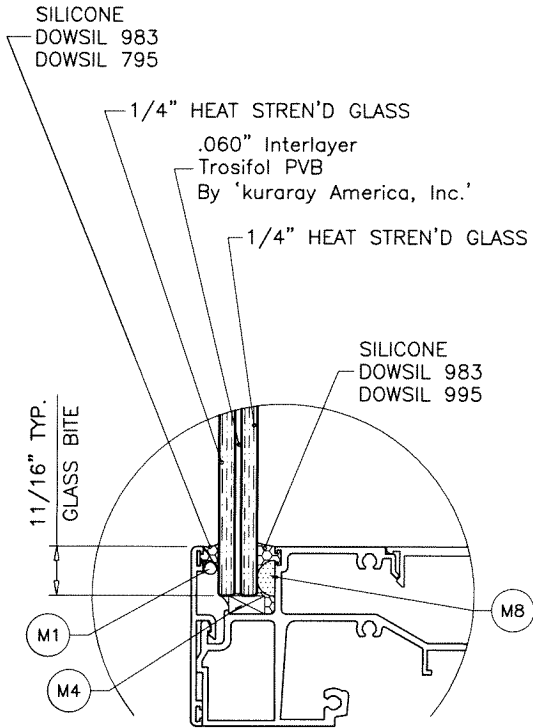
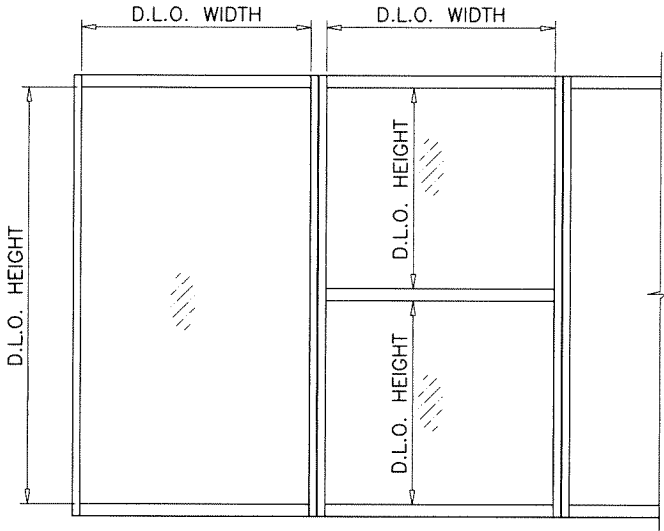
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revisions:	
no	date by description

date: 06-10-20
 scale: 3/8"=1'-0"
 dr. by: TARIQ
 chk. by:

drawing no.
20-53F
 sheet 1.2 of 9

GLASS DESIGN LOAD CAPACITY - PSF		
NOMINAL DIMS.		1/2" LAM. GLASS
D.L.O. WIDTH	D.L.O. HEIGHT	EXT. (+) INT. (-)
32-3/4"	91"	142.0
40"		142.0
44-3/4"		127.9
50-3/4"		113.7
56-3/4"		102.4
62-3/4"		93.1
68-3/4"		85.3
32-3/4"	103"	142.0
40"		142.0
44-3/4"		127.9
50-3/4"		113.7
56-3/4"		102.4
62-3/4"		76.5
68-3/4"		69.8
32-3/4"	115"	142.0
40"		142.0
44-3/4"		127.9
50-3/4"		113.7
56-3/4"		84.6
62-3/4"		76.5
32-3/4"	127"	142.0
40"		142.0
44-3/4"		127.9
50-3/4"		94.6
56-3/4"		84.6
32-3/4"	139"	142.0
40"		142.0
44-3/4"		126.9
48"		100.0
50-3/4"		94.6
32-3/4"	154-3/4"	142.0
40"		142.0
44-3/4"		100.0
48"		100.0
32-3/4"	155"	142.0
40"		142.0



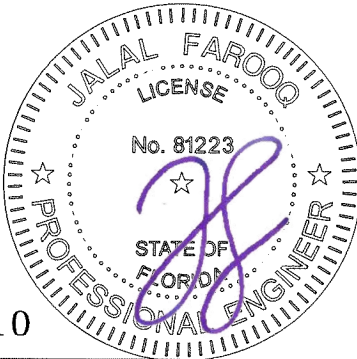
GLAZING DETAIL
1/2" LAM. GLASS

NOTE:
GLASS CAPACITIES ON THIS SHEET ARE
BASED ON ASTM E1300-09 (3 SEC. GUSTS).

GLASS

Sealed: 5/2/2025

FL #18410



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ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

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revisions:

no	date	by	description

date: 06-10-20

scale: 3/8" = 1"

dr. by: TARIQ

chk. by:

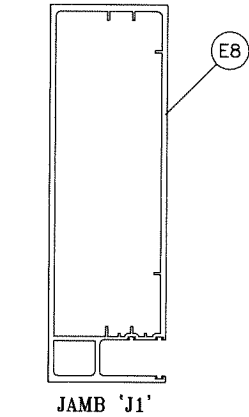
drawing no.
20-53F

sheet 2 of 13

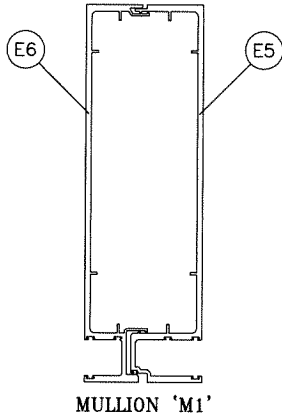
STORE 20-53FES

JAMB/MULLION DESIGN LOAD CAPACITY - PSF WITH OR WITHOUT INTERMEDIATE HORIZONTALS			
NOMINAL DIMS.		JAMB 'J1' MULLION 'M1'	
WIDTH (W)	FRAME HEIGHT	EXT. (+)	INT. (-)
36"	96"	142.0	142.0
43-1/4"		142.0	142.0
48"		142.0	142.0
54"		142.0	142.0
60"		142.0	142.0
66"		142.0	142.0
72"		142.0	142.0
36"	108"	142.0	142.0
43-1/4"		142.0	142.0
48"		142.0	142.0
54"		142.0	142.0
60"		142.0	142.0
66"		100.0	100.0
72"		100.0	100.0
36"	120"	142.0	142.0
43-1/4"		142.0	142.0
48"		142.0	142.0
54"		142.0	142.0
60"		100.0	100.0
66"		100.0	100.0
36"	132"	142.0	142.0
43-1/4"		142.0	142.0
48"		142.0	142.0
51-1/4"		100.0	100.0
54"		100.0	100.0
60"		100.0	100.0
36"	144"	142.0	142.0
43-1/4"		142.0	142.0
48"		142.0	142.0
51-1/4"		100.0	100.0
54"		100.0	100.0
36"	159-3/4"	142.0	142.0
43-1/4"		142.0	142.0
48"		100.0	100.0
51-1/4"		100.0	100.0
36"	160"	142.0	142.0
43-1/4"		142.0	142.0

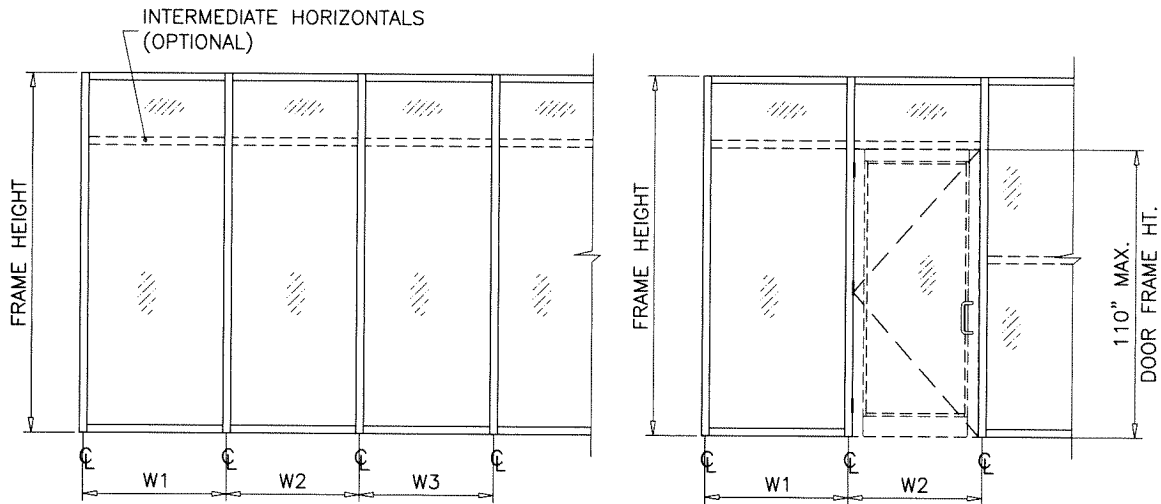
MULLION DESIGN LOAD CAPACITY - PSF WITH OR WITHOUT INTERMEDIATE HORIZONTALS			
NOMINAL DIMS.		JAMB 'J1' MULLION 'M1'	
WIDTH (W)	FRAME HEIGHT	EXT. (+)	INT. (-)
54"	156"	90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
70"		90.0	90.0
72"		90.0	90.0
48"	170"	90.0	90.0
50"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
70"		90.0	90.0
48"	180"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
60"		75.0	80.0
66"		75.0	80.0
68"		75.0	80.0
48"	192"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
60"		75.0	80.0
63"		75.0	80.0
48"	204"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
60"		75.0	75.7
48"	216"	75.0	80.0
50"		75.0	77.4
54"		71.7	71.7
56"		69.1	69.1
48"	228"	67.8	67.8
50"		65.1	65.1
53"		61.4	61.4
50-1/2"	243"	52.5	52.5



Ix	IN^4	Sx	IN^3
64.028		11.707	



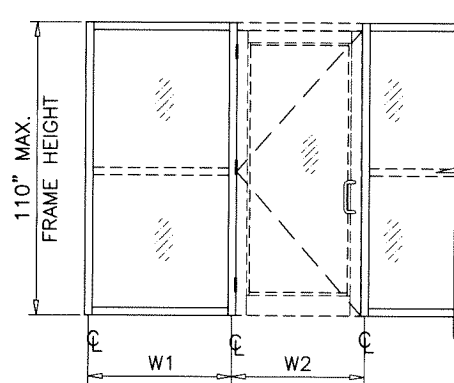
Ix	IN^4	Sx	IN^3
65.589		11.652	



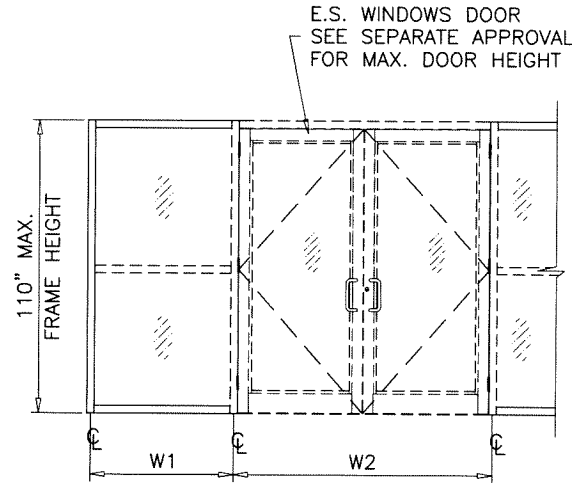
WIDTH (W) = W1
AT JAMB

WIDTH (W) = $\frac{W2 + W3}{2}$
AT MULLION

WIDTH (W) = $\frac{W1 + W2}{2}$
AT MULLION

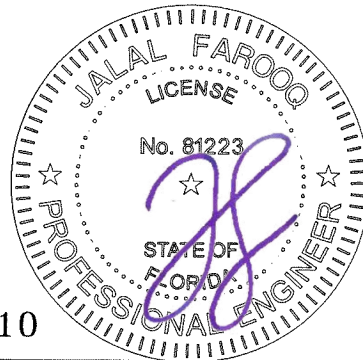


WIDTH (W) = $\frac{W1 + W2}{2}$
AT MULLION



WIDTH (W) = $\frac{W1}{2} + \frac{W2}{4}$
AT MULLION

MULLION



Sealed: 5/2/2025

FL #18410

AL-FAROOQ CORPORATION
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STORE\20-53FES

ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

E.S. WINDOWS, LLC
3550 N.W. 49 STREET
MIAMI, FL. 33142
TEL. (305) 638-5151 FAX. (305) 638-5158

revisions:	no	date	by	description

date: 06-10-20	scale: -	dr. by: TARIQ	chk. by:
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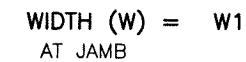
drawing no.
20-53F
sheet 3 of 13

NOMINAL DIMS.		JAMB 'J2' MULLION 'M2'	
WIDTH (W)	FRAME HEIGHT	EXT. (+)	INT. (-)
48"	156"	140.0	140.0
50"		140.0	140.0
54"		140.0	140.0
60"		140.0	140.0
64"		140.0	140.0
65"		140.0	140.0
66"		125.5	125.5
67"		123.6	123.6
68"		121.8	121.8
70"		118.3	118.3
72"		115.0	115.0
48"	168"	140.0	140.0
50"		140.0	140.0
54"		140.0	140.0
60"		140.0	140.0
64"		129.4	129.4
66"		125.5	125.5
67"		123.6	123.6
68"		121.8	121.8
48"	170"	140.0	140.0
50"		140.0	140.0
54"		140.0	140.0
60"		140.0	140.0
64"		129.4	129.4
66"		125.5	125.5
67"		123.6	123.6
48"	180"	140.0	140.0
50"		140.0	140.0
54"		140.0	140.0
56"		140.0	140.0
60"		138.0	138.0
64"		129.4	129.4
48"	192"	140.0	140.0
50"		140.0	140.0
53"		140.0	140.0
54"		138.0	138.0
60"		138.0	138.0
48"	197"	140.0	140.0
50"		140.0	140.0
52"		140.0	140.0



MULLION 'M2

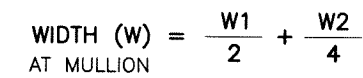
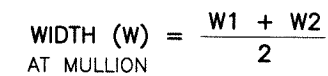
	I_x IN ⁴	S_x IN ³
ALUMINUM	65.589	11.652
STEEL	57.676	12.987
TOTAL $I_x \text{ ALUM} + I_x \text{ STL} \times 2.9$	232.852	



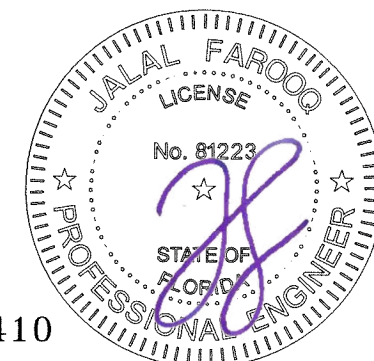
$$\text{WIDTH (W)} = \frac{W2 + W3}{2}$$

$$\text{WIDTH (W)} = \frac{W1 + W2}{2}$$

AT MULLION



MULLION



Sealed: 5/2/2025

FL #18410

AL-FAROOQ CORPORATION
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STORE\20-53FES

[illegible]

date: 06-10-20

scale: -

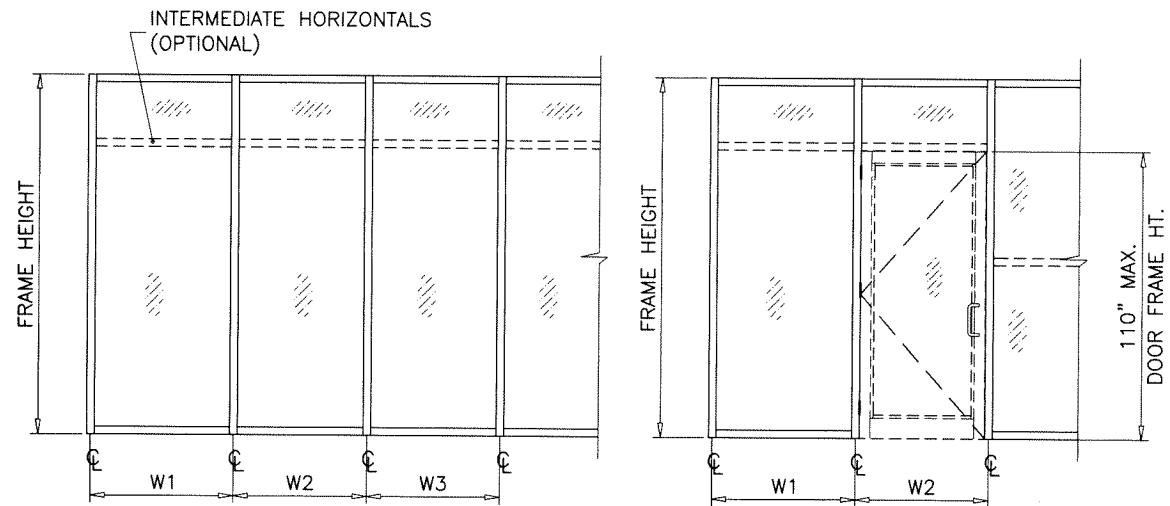
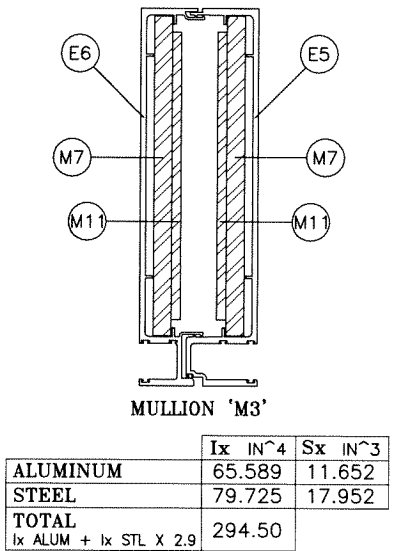
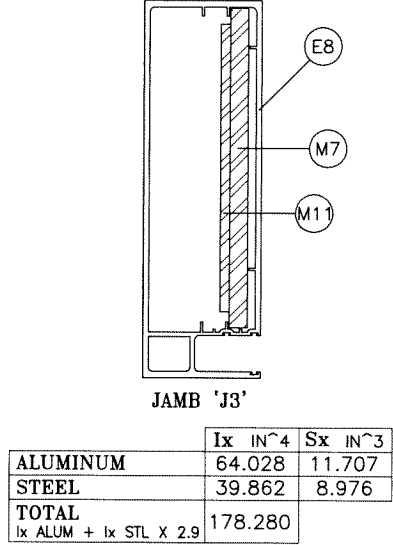
dr. by: TARIQ

chk. by:

drawing no.
20-53F
sheet 3.1 of 13

MULLION DESIGN LOAD CAPACITY – PSF
WITH OR WITHOUT INTERMEDIATE HORIZONTALS

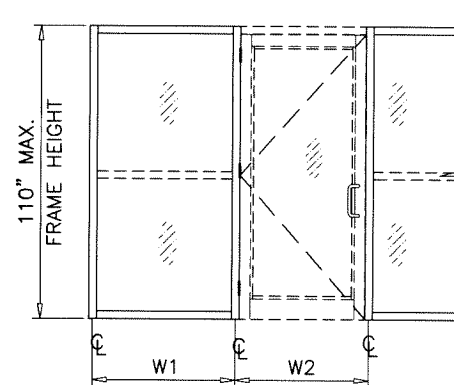
NOMINAL DIMS.		JAMB 'J3'	
WIDTH (W)	FRAME HEIGHT	EXT. (+)	INT. (-)
45-1/4"	170"	142.0	142.0
50"		142.0	142.0
53"		142.0	142.0
54"		142.0	142.0
56"		140.0	140.0
59"		140.0	140.0
60"		140.0	140.0
62"		111.3	111.3
66"		104.5	104.5
70"		98.6	98.6
71"		97.2	97.2
72"		95.8	95.8
45-1/4"	180"	142.0	142.0
50"		140.0	140.0
53"		140.0	140.0
54"		140.0	140.0
56"		140.0	140.0
59"		116.9	116.9
60"		115.0	115.0
62"		111.3	111.3
66"		104.5	104.5
70"		98.6	98.6
71"		97.2	97.2
45-1/4"	192"	142.0	142.0
50"		140.0	140.0
53"		140.0	140.0
54"		127.8	127.8
56"		123.2	123.2
59"		116.9	116.9
60"		115.0	115.0
62"		111.3	111.3
66"		104.5	104.5
45-1/4"	204"	142.0	142.0
50"		138.0	138.0
53"		130.2	130.2
54"		127.8	127.8
56"		123.2	123.2
59"		116.9	116.9
60"		115.0	115.0
62"		111.3	111.3
45-1/4"	205"	142.0	142.0
50"	216"	138.0	138.0
53"		130.2	130.2
54"		127.8	127.8
56"		123.2	123.2
59"	228"	116.9	116.9
50"		138.0	138.0
53"		130.2	130.2
54"		127.8	127.8
56"		123.2	123.2
50"	240"	138.0	138.0
53"		130.2	130.2
50"	252"	138.0	138.0
50"	256"	138.0	138.0



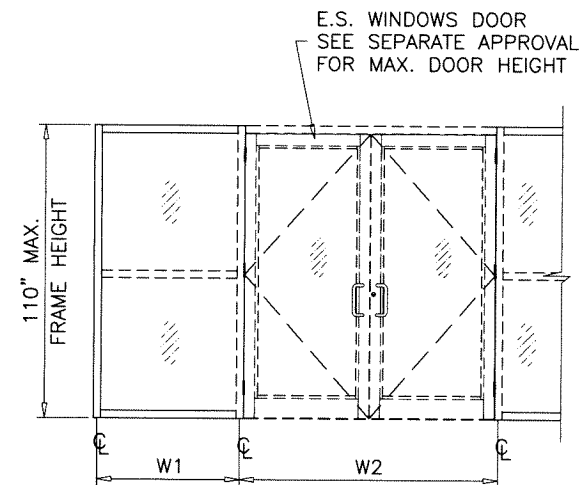
WIDTH (W) = W1
AT JAMB

WIDTH (W) = $\frac{W2 + W3}{2}$
AT MULLION

WIDTH (W) = $\frac{W1 + W2}{2}$
AT MULLION



WIDTH (W) = $\frac{W1 + W2}{2}$
AT MULLION

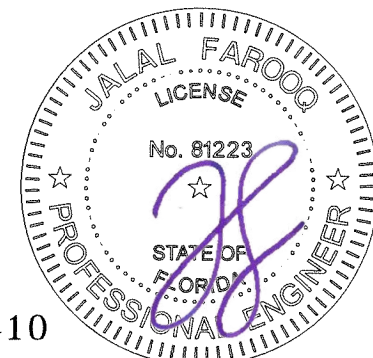


WIDTH (W) = $\frac{W1}{2} + \frac{W2}{4}$
AT MULLION

MULLION

Sealed: 5/2/2025

FL #18410



AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
9360 SUNSET DRIVE, SUITE 220
MIAMI, FLORIDA 33173 (C.A.N. 3538)
TEL. (305) 264-8100 FAX. (305) 262-6978
STORE\20-53FES

ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)
E.S. WINDOWS, LLC
3550 N.W. 49 STREET
MIAMI, FL. 33142
TEL. (305) 638-5151 FAX. (305) 638-5158

revisions:		no date by description	
date:	06-10-20	scale:	-
dr. by:	TARIQ	chk. by:	
drawing no.		20-53F	
sheet		4 of 13	

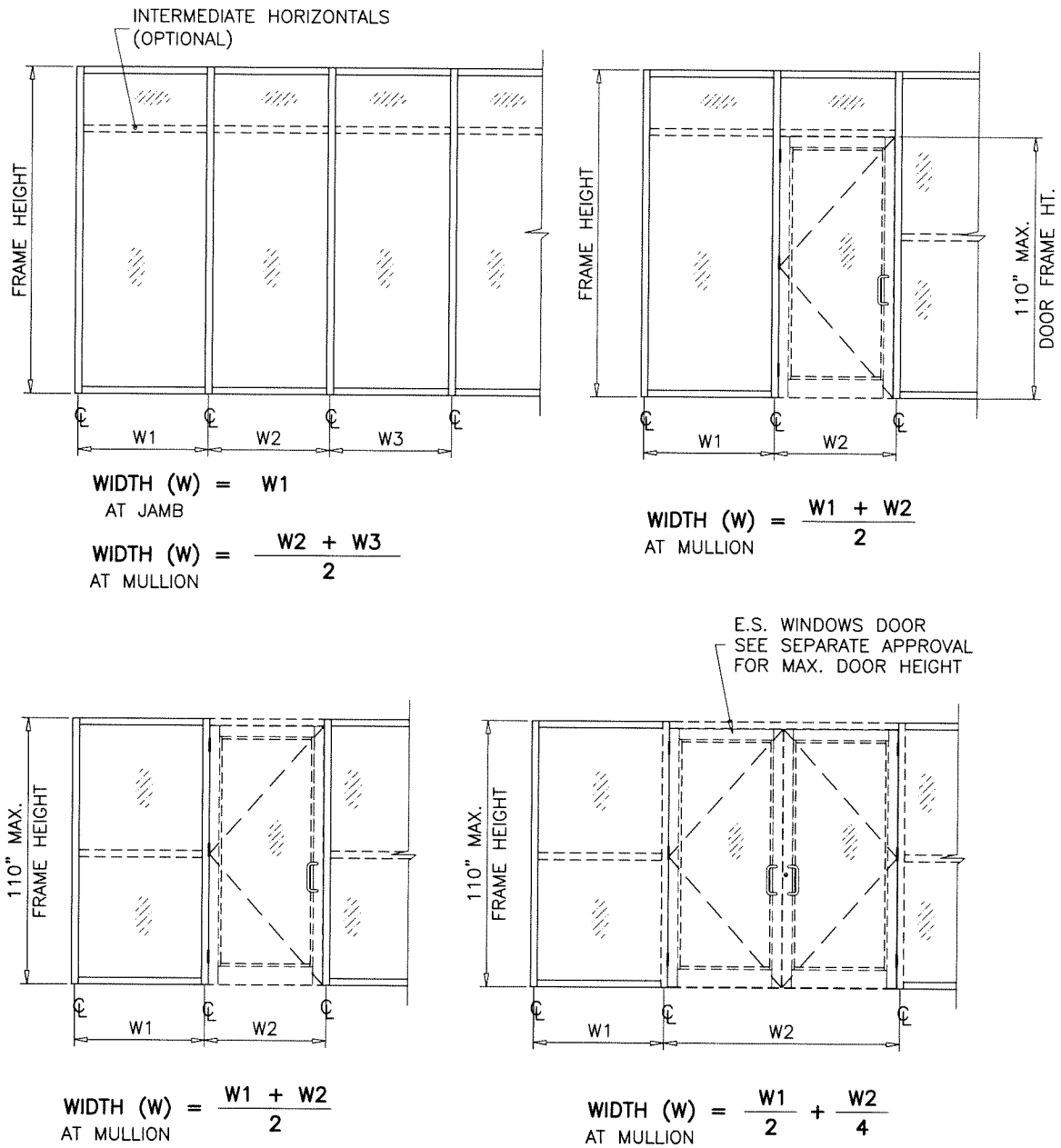
MULLION DESIGN LOAD CAPACITY – PSF WITH OR WITHOUT INTERMEDIATE HORIZONTALS			
NOMINAL DIMS.		JAMB 'J1' MULLION 'M4'	
WIDTH (W)	FRAME HEIGHT	EXT. (+)	INT. (–)
48"	156"	90.0	90.0
50"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
70"		90.0	90.0
72"		90.0	90.0
48"	170"	90.0	90.0
50"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
70"		90.0	90.0
48"	180"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
60"		75.0	80.0
66"		75.0	80.0
68"		75.0	80.0
48"	192"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
60"		75.0	80.0
63"		75.0	80.0
63"		75.0	80.0
48"	204"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
60"		75.0	80.0
60"		75.0	80.0
60"		75.0	80.0
48"	216"	75.0	80.0
50"		75.0	80.0
54"		75.0	80.0
56"		75.0	80.0
56"		75.0	80.0
56"		75.0	80.0
48"	228"	75.0	80.0
50"		75.0	80.0
53"		75.0	80.0
53"		75.0	80.0
53"		75.0	80.0
53"		75.0	80.0
50-1/2"	243"	75.0	80.0

JAMB 'J1'

Ix	IN ⁴	Sx	IN ³
64.028		11.707	

MULLION 'M4'

	Ix	IN ⁴	Sx	IN ³
ALUMINUM	65.589	11.652		
STEEL	29.196	9.861		
TOTAL				
Ix ALUM + Ix STL X 2.9	149.419			



Sealed: 5/2/2025

FL #18410



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ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

E.S. WINDOWS, LLC
3550 N.W. 49 STREET
MIAMI, FL. 33142
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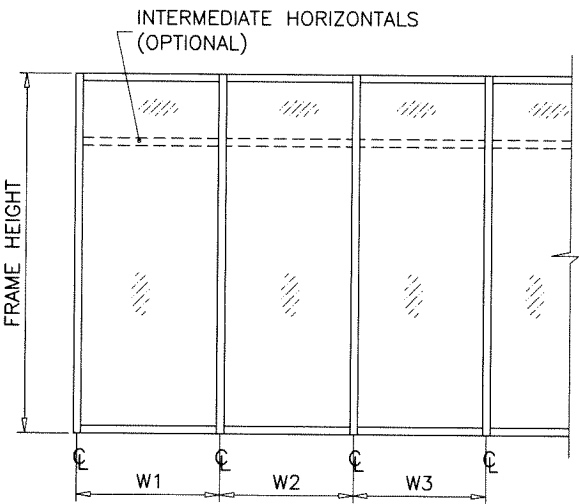
revisions:	no	date	by	description

date:	06-10-20
scale:	-
dr. by:	TARIQ
chk. by:	

drawing no.
20-53F

sheet 5 of 13

JAMB/MULLION DESIGN LOAD CAPACITY - PSF													
NOMINAL DIMS.		JAMB 'J1'		MULLION 'M1'		22° BAY MULL '22 BM1'		30° BAY MULL '30 BM1'		22° BAY MULL '22 BM2'		30° BAY MULL '30 BM2'	
WIDTH (W)	FRAME HEIGHT	EXT. (+)	INT. (-)	EXT. (+)	INT. (-)	EXT. (+)	INT. (-)	EXT. (+)	INT. (-)	EXT. (+)	INT. (-)	EXT. (+)	INT. (-)
44-7/8"	156"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
46-5/8"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
48"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
51"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
54"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
58"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
44-7/8"	170"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
46-5/8"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
48"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
51"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
54"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
58"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
44-7/8"	180"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
46-5/8"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
48"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
51"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
44-7/8"	191"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
46-5/8"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
48"		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
44-7/8"	205"	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0
46-5/8"		100.0	100.0	-	-	100.0	100.0	100.0	100.0	142.0	142.0	142.0	142.0



WIDTH (W) = W1
AT JAMB

WIDTH (W) = $\frac{W2 + W3}{2}$
AT MULLION

JAMB 'J1' MULLION 'M1' 22° BAY MULLION '22 BM1' 30° BAY MULLION '30 BM1' 22° BAY MULLION '22 BM2' 30° BAY MULLION '30 BM2'

Ix IN^4	Sx IN^3	Ix IN^4	Sx IN^3	Ix IN^4	Sx IN^3	Ix IN^4	Sx IN^3	Ix IN^4	Sx IN^3	Ix IN^4	Sx IN^3		
64.028	11.707	65.589	11.652	ALUMINUM	61.401	11.033	STEEL	57.324	12.928	TOTAL	118.725		
				Ix ALUM + Ix STL X 2.9	227.641	ALUMINUM	62.105	11.393	STEEL	57.038	12.883		
						Ix ALUM + Ix STL X 2.9	227.515	ALUMINUM	61.401	11.033	STEEL	57.324	12.928
								TOTAL	118.725	TOTAL	119.143	Ix ALUM + Ix STL X 2.9	227.641
								Ix ALUM + Ix STL X 2.9	227.515	Ix ALUM + Ix STL X 2.9	227.515		

MULLION



Sealed: 5/2/2025

FL #18410

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revisions:	no	date	by	description

date: 06-10-20
scale: -
dr. by: TARIQ
chk. by:

drawing no.
20-53F
sheet 6 of 13

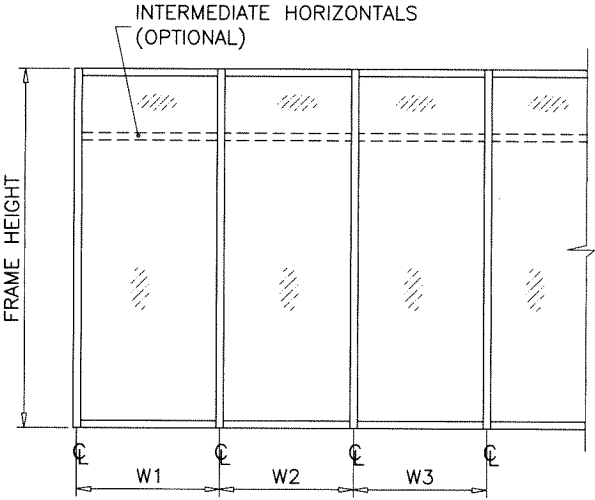
ANCHOR DESIGN LOAD CAPACITY – PSF EXT.(+) & INT.(–)									
NOMINAL DIMS.		ANCHORS TYPE 'A'			ANCHORS 'B'		ANCHORS TYPE 'C'		
WIDTH (W)	FRAME HEIGHT	A3	A4	A5	B3	B4	C3	C4	C5
48"	90"	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
50"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
54"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
60"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
66"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
70"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
72"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
48"	100"	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
50"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
54"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
60"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
66"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
70"		137.1	142.0	142.0	142.0	142.0	142.0	142.0	142.0
72"		133.3	142.0	142.0	142.0	142.0	137.1	142.0	142.0
48"	120"	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
50"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
54"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
60"		133.3	142.0	142.0	142.0	142.0	137.1	142.0	142.0
66"		121.2	142.0	142.0	142.0	142.0	124.6	142.0	142.0
70"		114.3	142.0	142.0	142.0	142.0	117.5	142.0	142.0
72"		111.1	142.0	142.0	142.0	142.0	114.2	142.0	142.0
48"	132"	142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
50"		142.0	142.0	142.0	142.0	142.0	142.0	142.0	142.0
54"		134.7	142.0	142.0	142.0	142.0	138.4	142.0	142.0
60"		121.2	142.0	142.0	142.0	142.0	124.6	142.0	142.0
66"		110.2	142.0	142.0	142.0	142.0	113.3	142.0	142.0
70"		103.9	138.5	142.0	142.0	142.0	106.8	142.0	142.0
72"		101.0	134.7	142.0	142.0	142.0	103.8	138.4	142.0
48"	144"	138.9	142.0	142.0	142.0	142.0	142.0	142.0	142.0
50"		133.3	142.0	142.0	142.0	142.0	137.1	142.0	142.0
54"		123.4	142.0	142.0	142.0	142.0	126.9	142.0	142.0
60"		111.1	142.0	142.0	142.0	142.0	114.2	142.0	142.0
66"		101.0	134.7	142.0	142.0	142.0	103.8	138.4	142.0
70"		95.2	127.0	142.0	142.0	142.0	97.9	130.5	142.0
72"		92.6	123.4	142.0	142.0	142.0	95.2	126.9	142.0
48"	156"	128.2	142.0	142.0	142.0	142.0	131.8	142.0	142.0
50"		123.1	142.0	142.0	142.0	142.0	126.5	142.0	142.0
54"		114.0	142.0	142.0	142.0	142.0	117.1	142.0	142.0
60"		102.6	136.7	142.0	142.0	142.0	105.4	142.0	142.0
66"		93.2	124.3	142.0	142.0	142.0	95.8	127.8	142.0
70"		87.9	117.2	142.0	135.0	142.0	90.4	120.5	142.0
72"		85.5	114.0	142.0	131.2	142.0	87.9	117.1	142.0
48"	168"	119.0	142.0	142.0	142.0	142.0	122.4	142.0	142.0
50"		114.3	142.0	142.0	142.0	142.0	117.5	142.0	142.0
54"		105.8	142.0	142.0	142.0	142.0	108.8	142.0	142.0
60"		95.2	127.0	142.0	142.0	142.0	97.9	130.5	142.0
66"		86.6	115.4	142.0	132.9	142.0	89.0	118.7	142.0
70"		81.6	108.8	136.0	125.3	142.0	83.9	111.9	139.9
72"		79.4	105.8	132.3	121.9	142.0	81.6	108.8	136.0
48"	170"	117.6	142.0	142.0	142.0	142.0	120.9	142.0	142.0
50"		112.9	142.0	142.0	142.0	142.0	116.1	142.0	142.0
54"		104.6	139.4	142.0	142.0	142.0	107.5	142.0	142.0
60"		94.1	125.5	142.0	142.0	142.0	96.7	129.0	142.0
66"		85.6	114.1	142.0	131.4	142.0	88.0	117.3	142.0
70"		80.7	107.6	134.4	123.9	142.0	82.9	110.6	138.2
72"		78.4	104.6	130.7	120.4	142.0	80.6	107.5	134.4

ANCHOR DESIGN LOAD CAPACITY – PSF EXT.(+) & INT.(–)									
NOMINAL DIMS.		ANCHORS TYPE 'A'			ANCHORS 'B'		ANCHORS TYPE 'C'		
WIDTH (W)	FRAME HEIGHT	A3	A4	A5	B3	B4	C3	C4	C5
48"	180"	111.1	142.0	142.0	142.0	142.0	114.2	142.0	142.0
50"		106.7	142.0	142.0	142.0	142.0	109.6	142.0	142.0
54"		98.8	131.7	142.0	142.0	142.0	101.5	135.4	142.0
56"		95.2	127.0	142.0	142.0	142.0	97.9	130.5	142.0
60"		88.9	118.5	142.0	136.5	142.0	91.4	121.8	142.0
66"		80.8	107.7	134.7	124.1	142.0	83.1	110.8	138.4
70"		76.2	101.6	127.0	117.0	142.0	78.3	104.4	130.5
71"		75.1	100.1	125.2	115.3	142.0	77.2	103.0	128.7
48"	192"	104.2	138.9	142.0	142.0	142.0	107.1	142.0	142.0
50"		100.0	133.3	142.0	142.0	142.0	102.8	137.1	142.0
53"		92.6	123.4	142.0	142.0	142.0	95.2	126.9	142.0
54"		92.6	123.4	142.0	142.0	142.0	95.2	126.9	142.0
60"		83.3	111.1	138.9	127.9	142.0	85.7	114.2	142.0
66"		75.8	101.0	126.3	116.3	142.0	77.9	103.8	129.8
48"	197"	101.5	135.4	142.0	142.0	142.0	104.4	139.1	142.0
50"		97.5	129.9	142.0	142.0	142.0	100.2	133.6	142.0
52"		93.7	124.9	142.0	142.0	142.0	96.3	128.4	142.0
48"	204"	98.0	130.7	142.0	142.0	142.0	100.8	134.4	142.0
50"		94.1	125.5	142.0	142.0	142.0	96.7	129.0	142.0
54"		87.1	116.2	142.0	133.8	142.0	89.6	119.4	142.0
60"		78.4	104.6	130.7	120.4	142.0	80.6	107.5	134.4
62"		75.9	101.2	126.5	116.5	142.0	78.0	104.0	130.0
45–1/4"	205"	103.5	138.0	142.0	142.0	142.0	142.0	142.0	142.0
46–5/8"		100.4	133.9	142.0	142.0	142.0	142.4	142.0	142.0
48"	216"	92.6	123.4	140.0	140.0	140.0	95.2	126.9	140.0
50"		88.9	118.5	140.0	136.5	140.0	91.4	121.8	140.0
54"		82.3	109.7	137.2	126.4	140.0	84.6	112.8	140.0
59"		75.3	100.4	125.5	115.7	140.0	77.4	103.2	129.1
48"	228"	87.7	116.9	140.0	134.7	140.0	90.2	120.2	140.0
50"		84.2	112.3	140.0	129.3	140.0	86.6	115.4	140.0
54"		78.0	104.0	129.9	119.7	140.0	80.1	106.9	133.6
56"		75.2	100.2	125.3	115.4	140.0	77.3	103.0	128.8
48"	240"	83.3	111.1	138.9	127.9	140.0	85.7	114.2	140.0
50"		80.0	106.7	133.3	122.8	140.0	82.2	109.6	137.1
53"		75.5	100.6	125.8	115.9	140.0	77.6	103.4	129.3
50–1/2"	243"	78.2	104.3	130.3	120.1	140.0	80.4	107.2	134.0
48"	252"	79.4	105.8	132.3	121.9	140.0	81.6	108.8	136.0
50"		76.2	101.6	127.0	117.0	140.0	78.3	104.4	130.5
48"	256"	78.1	104.2	130.2	119.9	140.0	80.3	107.1	133.8
50"		75.0	100.0	125.0	115.1	140.0	77.1	102.8	128.5

INTERPOLATION BETWEEN WIDTHS OR HEIGHTS ALLOWED.

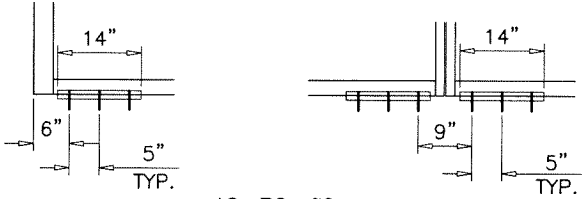
ANCHORS TYPES: SEE SHEET 5 FOR DESCRIPTION

- A3 = (3) ANCHORS TYPE 'A' AT EACH SIDE OF JAMB AND MULLION
A4 = (4) ANCHORS TYPE 'A' AT EACH SIDE OF JAMB AND MULLION
A5 = (5) ANCHORS TYPE 'A' AT EACH SIDE OF JAMB AND MULLION
B3 = (3) ANCHORS TYPE 'B' AT EACH SIDE OF JAMB AND MULLION
B4 = (4) ANCHORS TYPE 'B' AT EACH SIDE OF JAMB AND MULLION
C3 = (3) ANCHORS TYPE 'C' AT EACH SIDE OF JAMB AND MULLION
C4 = (4) ANCHORS TYPE 'C' AT EACH SIDE OF JAMB AND MULLION
C5 = (5) ANCHORS TYPE 'C' AT EACH SIDE OF JAMB AND MULLION

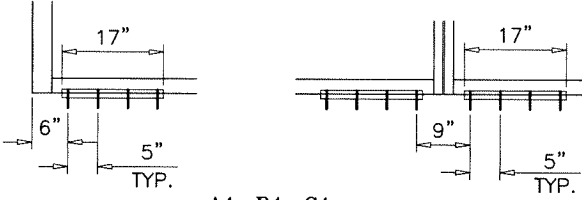


WIDTH (W) = W1
AT JAMB

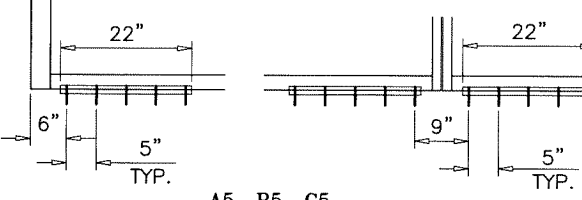
WIDTH (W) = $\frac{W2 + W3}{2}$
AT MULLION



A3, B3, C3



A4, B4, C4

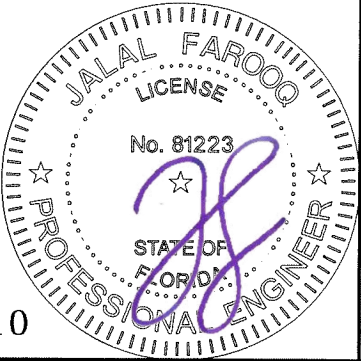


A5, B5, C5

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ANCHOR

FL #18410



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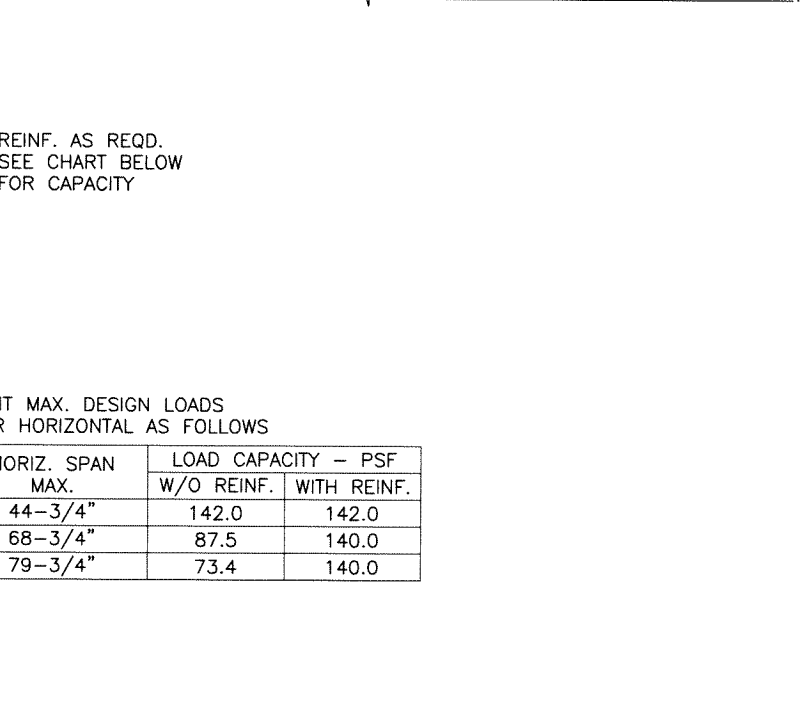
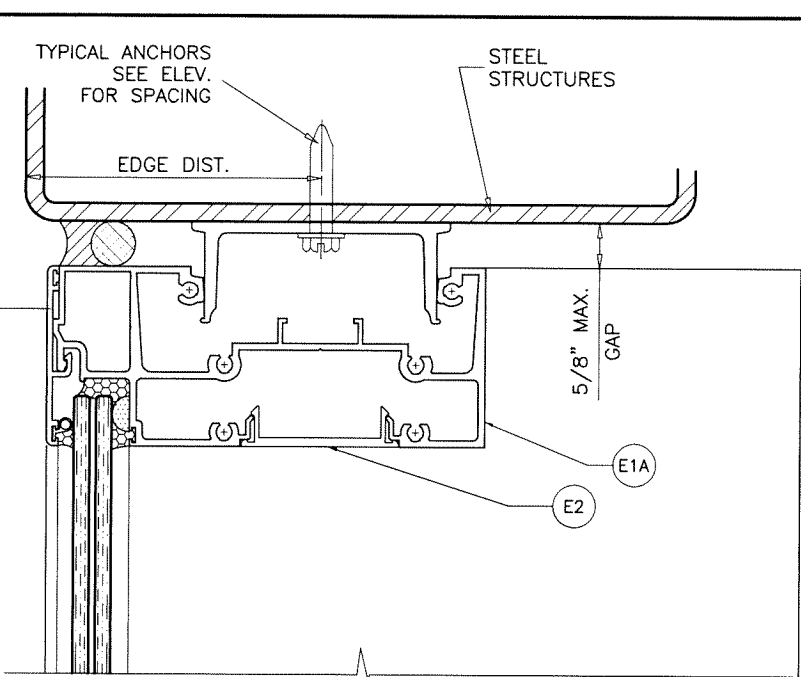
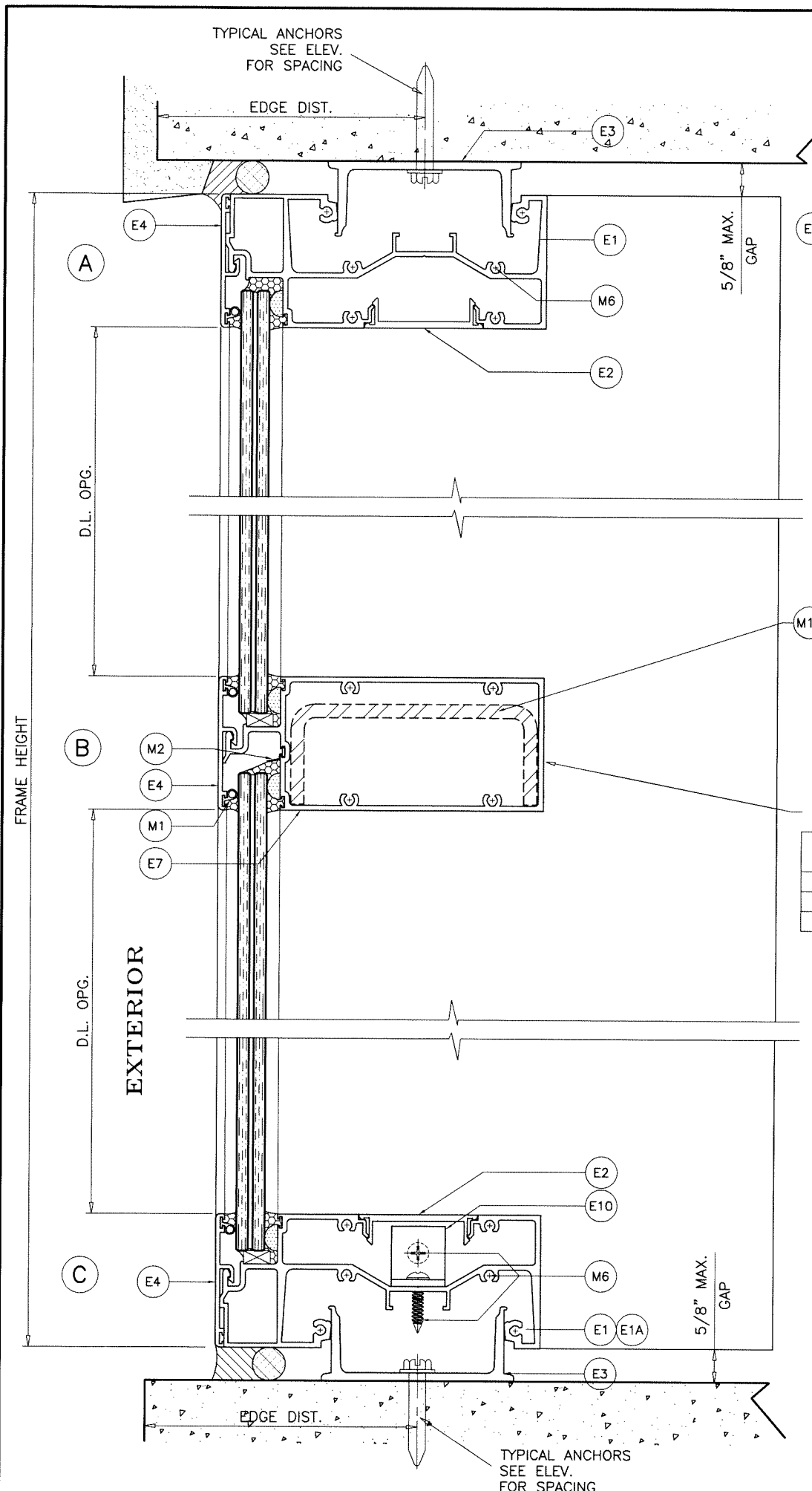
ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

E.S. WINDOWS, LLC
3550 N.W. 49 STREET
MIAMI, FL. 33142
TEL. (305) 638-5151 FAX. (305) 638-5158

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drawing no.
20-53F
sheet 7 of 13



REINF. AS REQD.
SEE CHART BELOW
FOR CAPACITY

LIMIT MAX. DESIGN LOADS
FOR HORIZONTAL AS FOLLOWS

HORIZ. SPAN MAX.	LOAD CAPACITY - PSF	
	W/O REINF.	WITH REINF.
44-3/4"	142.0	142.0
68-3/4"	87.5	140.0
79-3/4"	73.4	140.0

METAL STRUCTURES NOT BY E.S. WDW.
MUST SUPPORT LOADS IMPOSED BY GLAZING SYSTEM AND
TRANSFER THEM TO THE BUILDING STRUCTURE.

TYPICAL ANCHORS: SEE ELEV. FOR SPACING

TYPE 'A'
5/16" DIA ULTRACON BY 'DEWALT' (Fu=177 KSI, Fy=155 KSI)

DIRECTLY INTO CONCRETE (3515 PSI MIN.)
2" MIN. EMBED INTO CONCRETE, 5" O.C. MIN.

ANCHOR EDGE DISTANCES
INTO CONCRETE = 3-1/8" MIN.

TYPE 'B'
3/8" DIA SCREW-BOLT+ BY 'DEWALT'

DIRECTLY INTO CONCRETE (4000 PSI MIN.)
3-1/4" MIN. EMBED INTO CONCRETE, 5" O.C. MIN.

ANCHOR EDGE DISTANCES
INTO CONCRETE = 4-1/2" MIN.

TYPE 'C'
5/16" DIA. DRILL-FLEX SELF DRILLING SCREWS (Fu=120 KSI, Fy=95 KSI)

INTO METAL STRUCTURES, 3" O.C. MIN.
(3) THREADS MIN. TO EXTEND BEYOND METAL THICKNESS
STEEL: 1/4" THK. MIN. (Fy = 36 KSI MIN.)
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

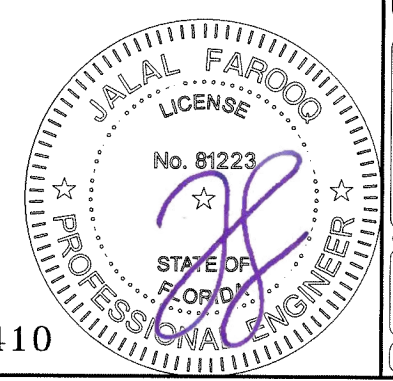
ANCHOR EDGE DISTANCES
INTO METAL STRUCTURE = 1" MIN.

SEALANTS:

ALL FRAME CORNERS, JOINTS, MULLION SEAMS AND PERIMETER OF
GLAZING BEAD TO FRAME SEALED WITH SILICONE SEALANT.

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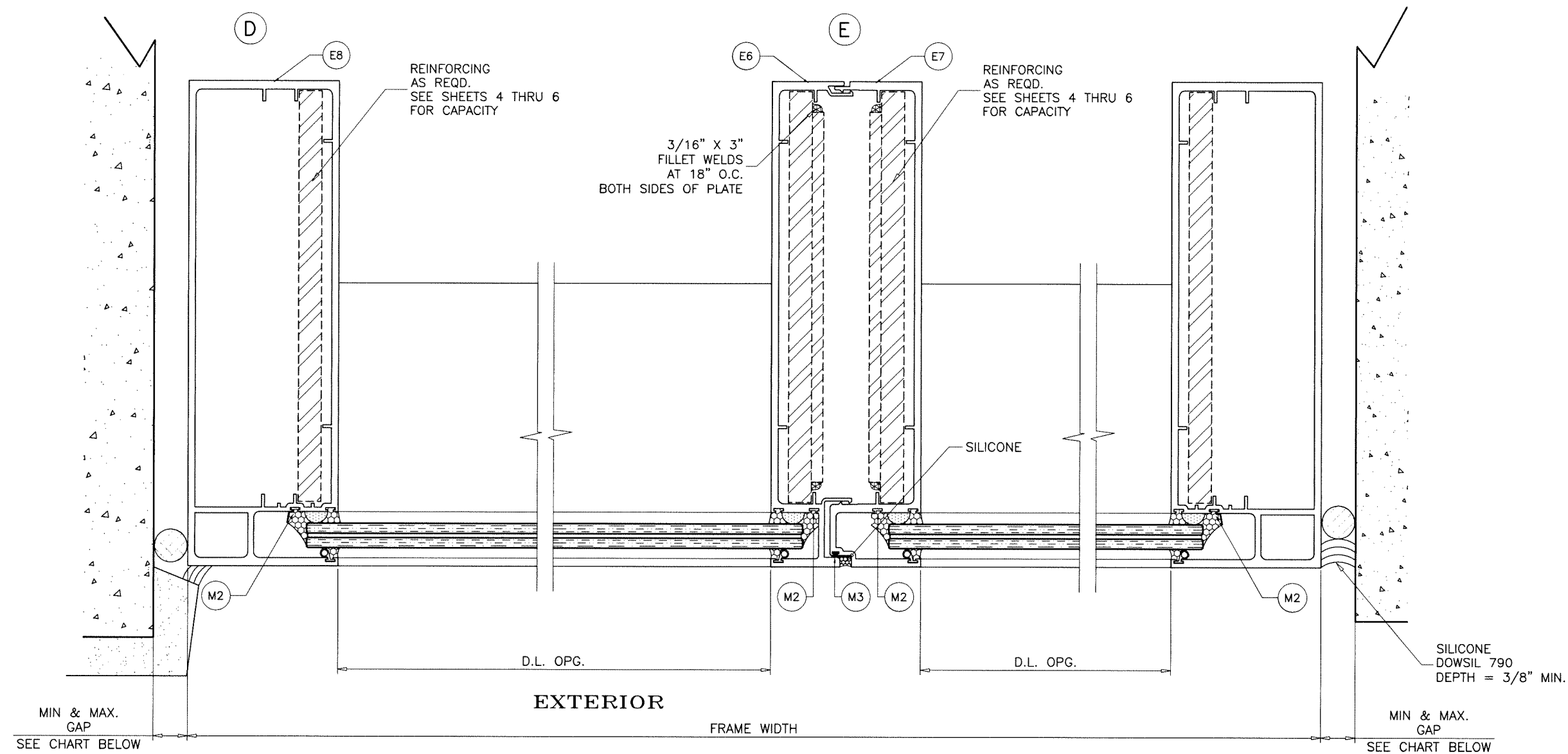
ES-WW1032 ALUM WINDOW WALL SYSTEM (S.M.I.)

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MIAMI, FL. 33142
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MAX. FRAME HEIGHT	MAX. GAPS FOR UNANCHORED JAMBS					
	JAMB 'J1'		JAMB 'J2'		JAMB 'J3'	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
170"	1/4"	3/4"	1/4"	3/4"	1/4"	3/4"
192"	5/8"	1"	1/4"	3/4"	1/4"	3/4"
240"	3/4"	1"	—	—	3/8"	3/4"
243"	3/4"	1"	—	—	3/8"	3/4"
256"	—	—	—	—	1/2"	3/4"

SEE SHEETS 4 THRU 6 FOR JAMB TYPES

NOTE:
MAX. MOVEMENT CONSIDERED=100% STRETCH.
PLEASE REFER TO SEALANT MANUFACTURER'S DATA AND APPLICATION
MANUAL FOR COMPATABILITY OF SEALANT TO SUBSTRATE & WINDOW WALL
MATERIAL/FINISH AND COMPLIANCE FOR WARRANTY.
REFER TO ACI-117-10 FOR CONSTRUCTION TOLERANCES.
ALTERNATE SEALANTS AT JAMB GAPS CAN BE DESIGNED BY
ENGINEER OF RECORD BASED ON MANUFACTURER GUIDE LINES.
GAPS LESS THAN 1/4" MAY BE DESIGNED BY ENGINEER OF RECORD BY
THE USE OF BOND BREAKER TAPE OR 15% OF GAP ALLOWED MOVEMENT.

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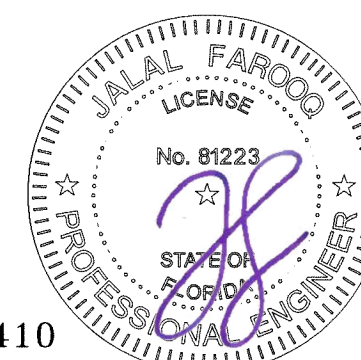
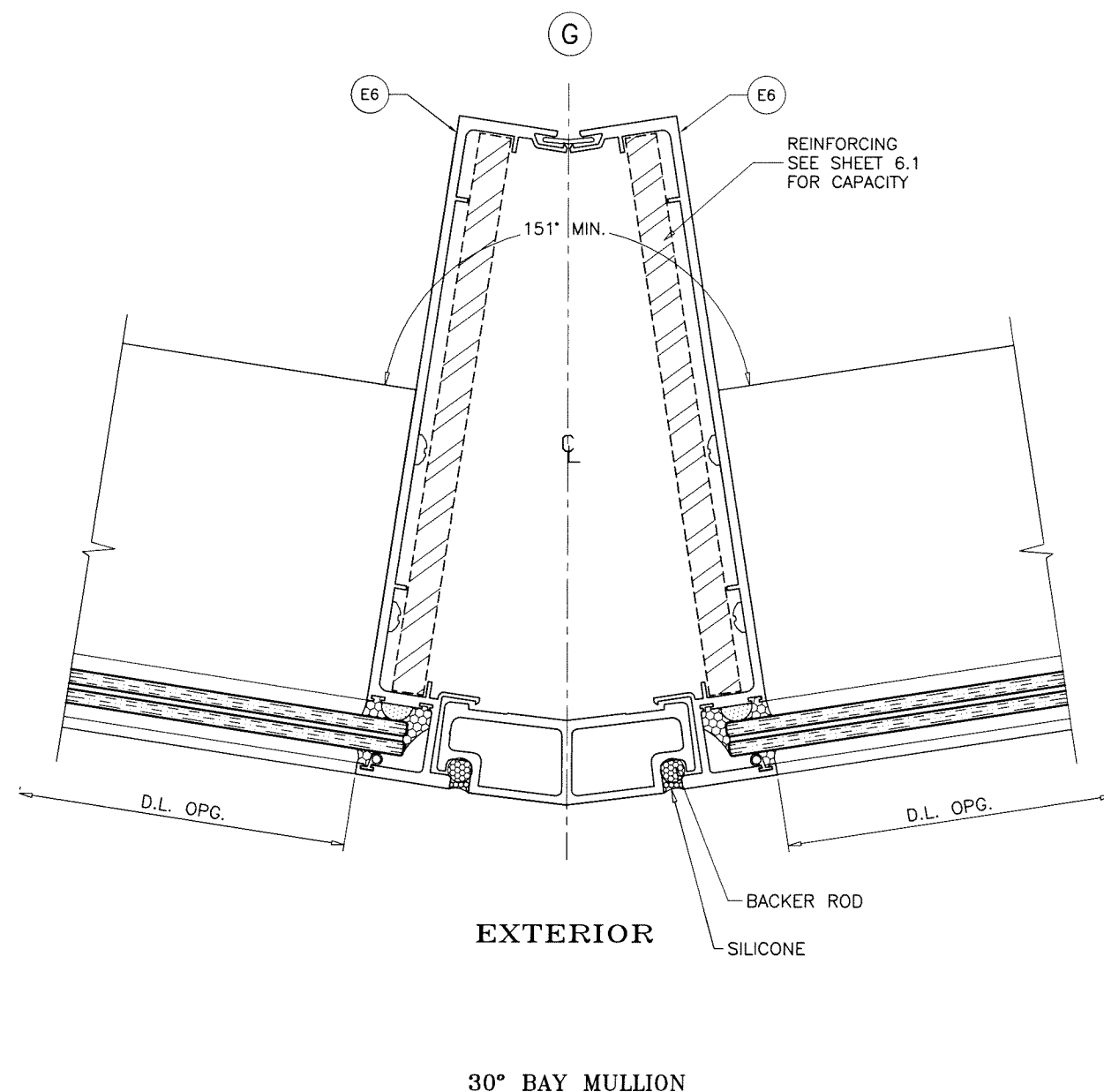
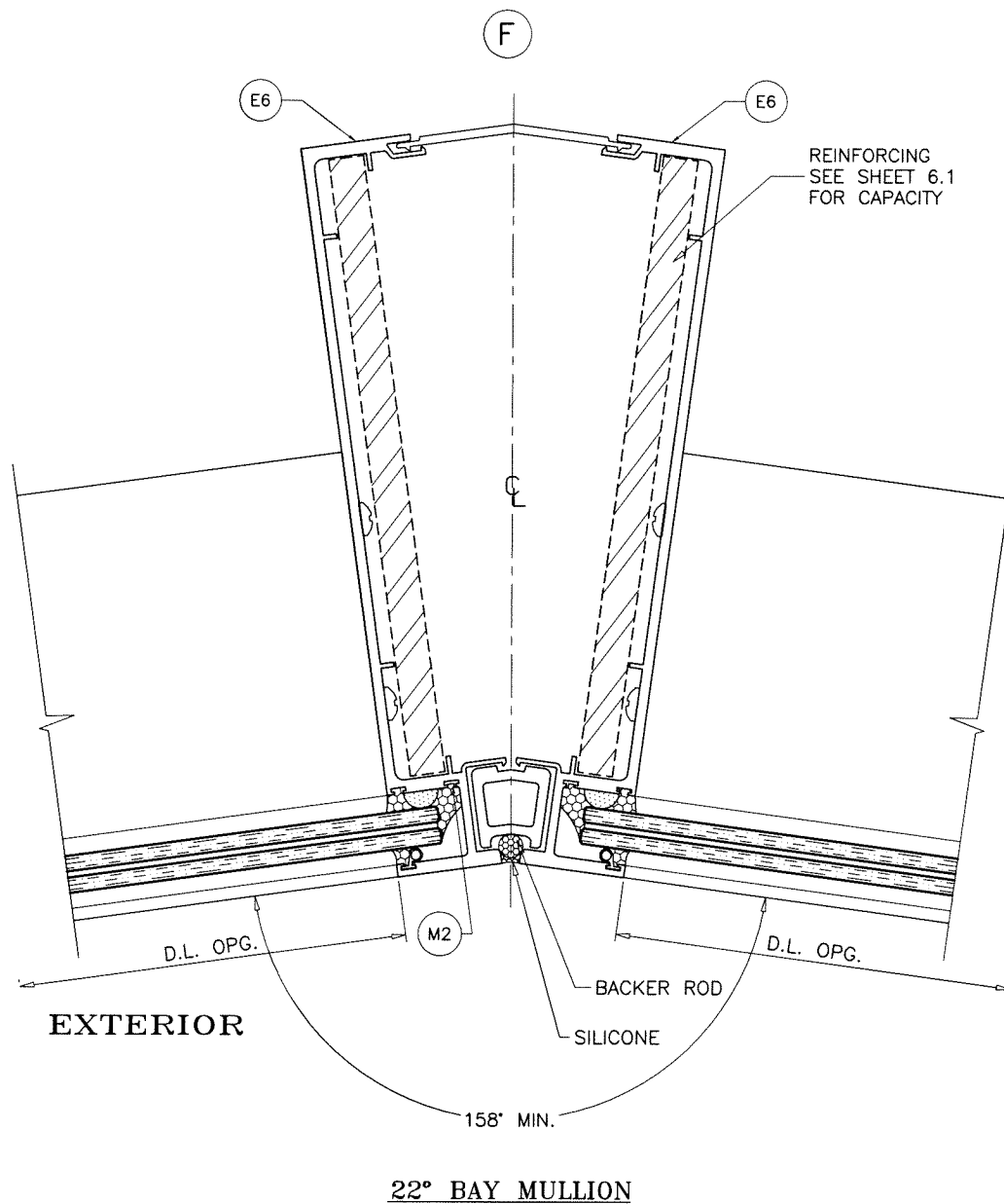
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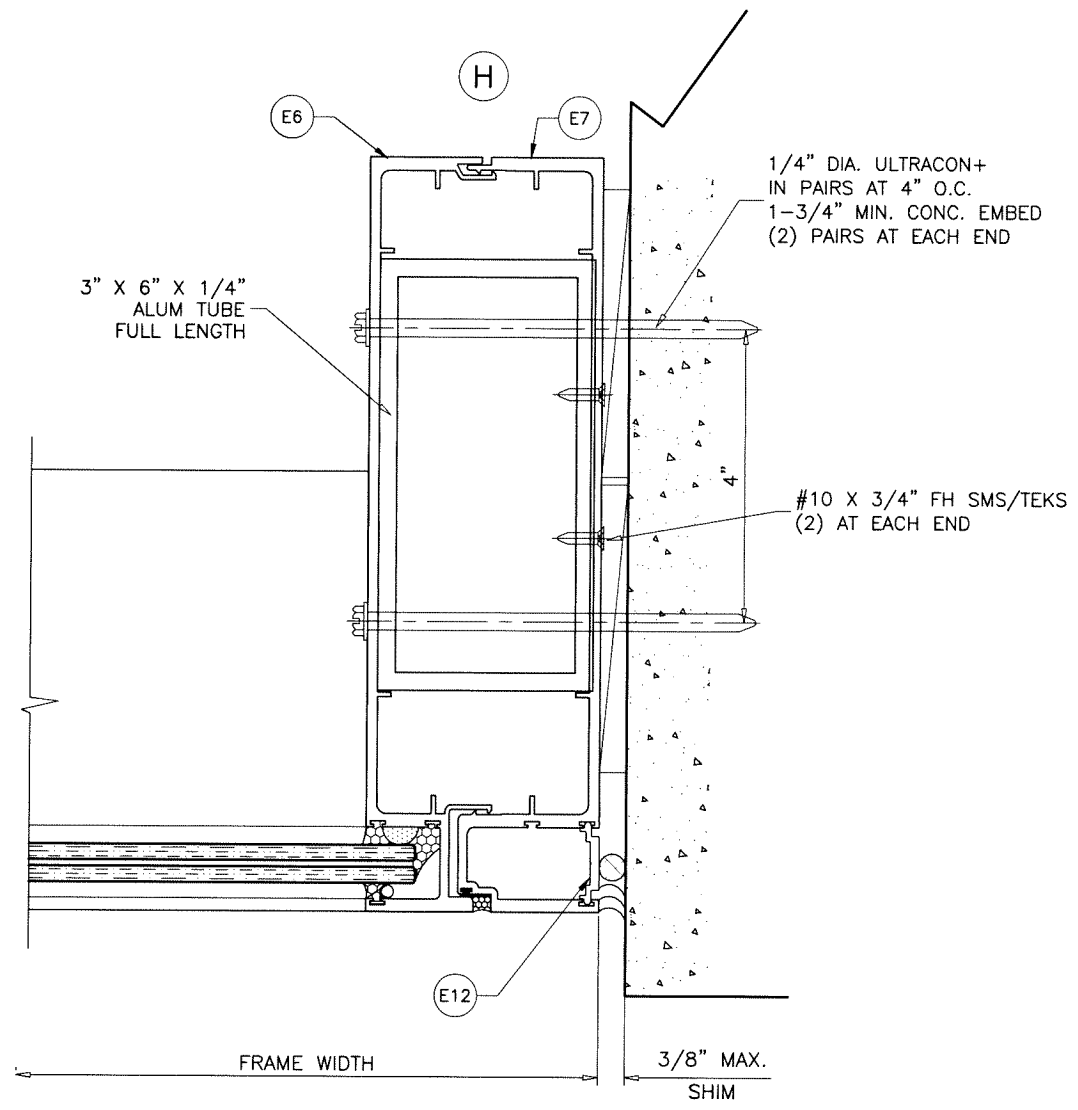
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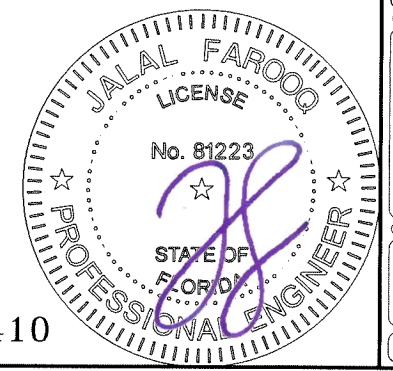
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20-53F

sheet 9.1 of 13



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TEL. (305) 264-8100 FAX. (305) 262-6978
(C.A.N. 3538)

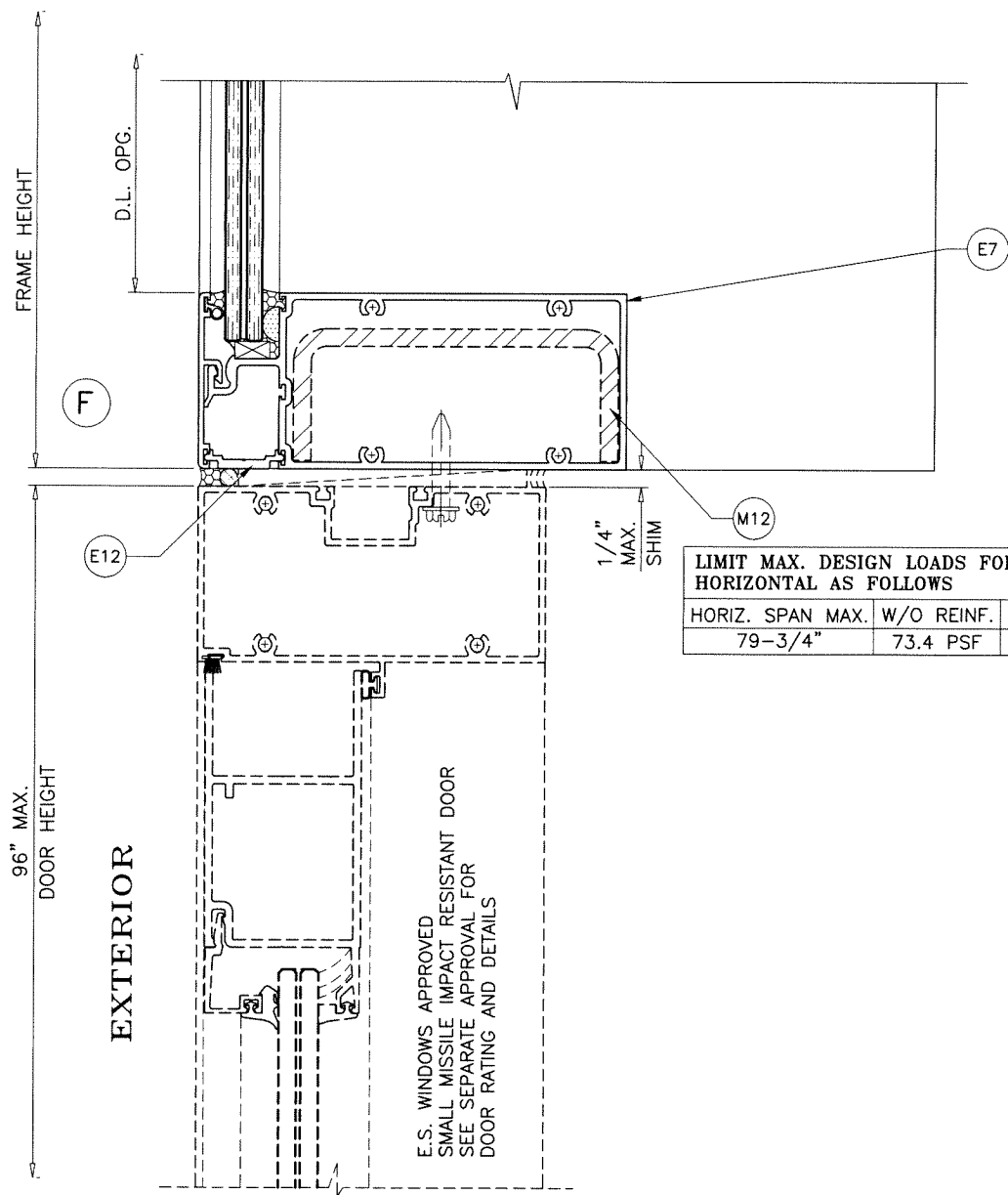
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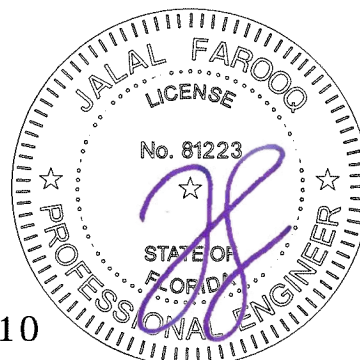
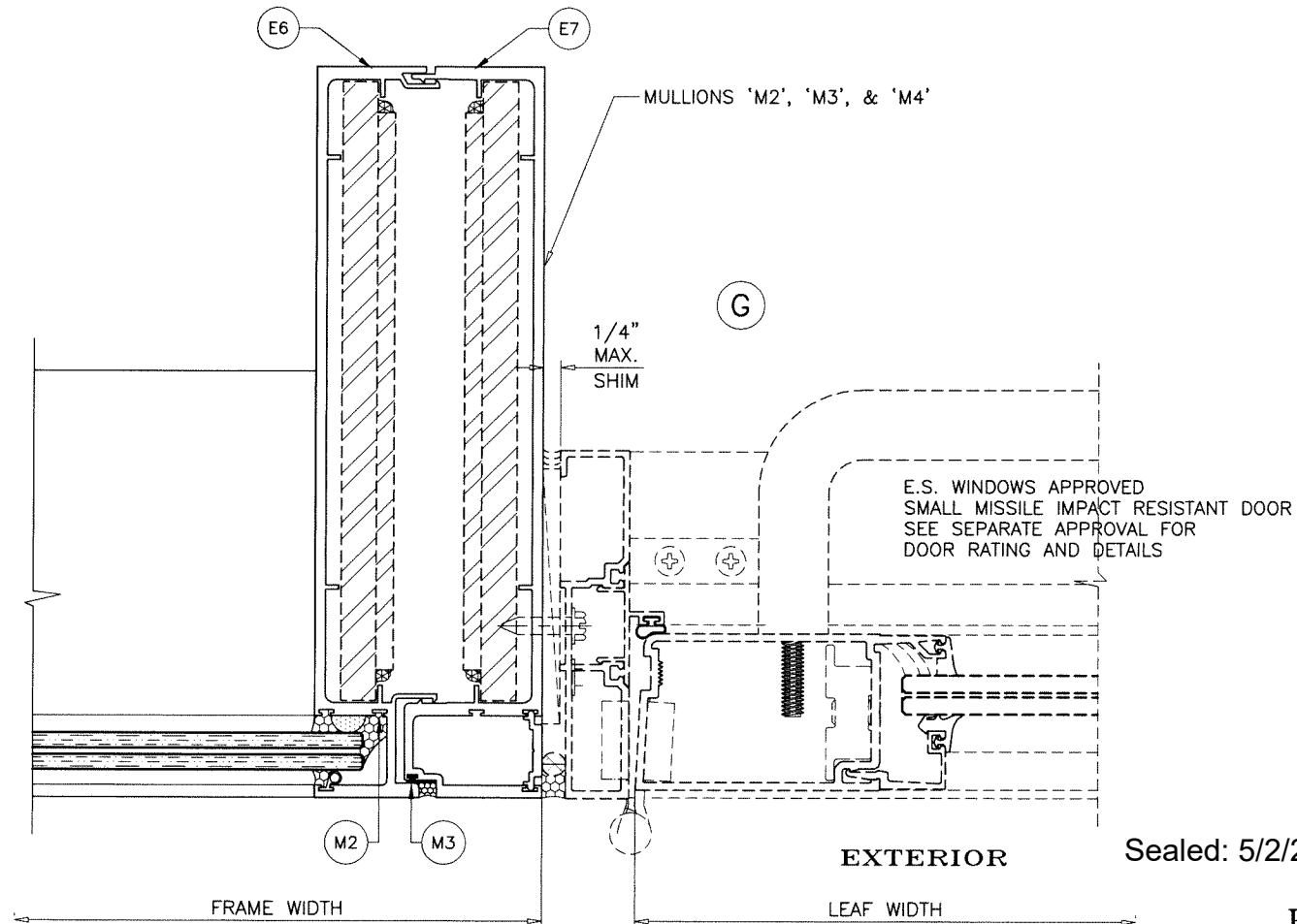
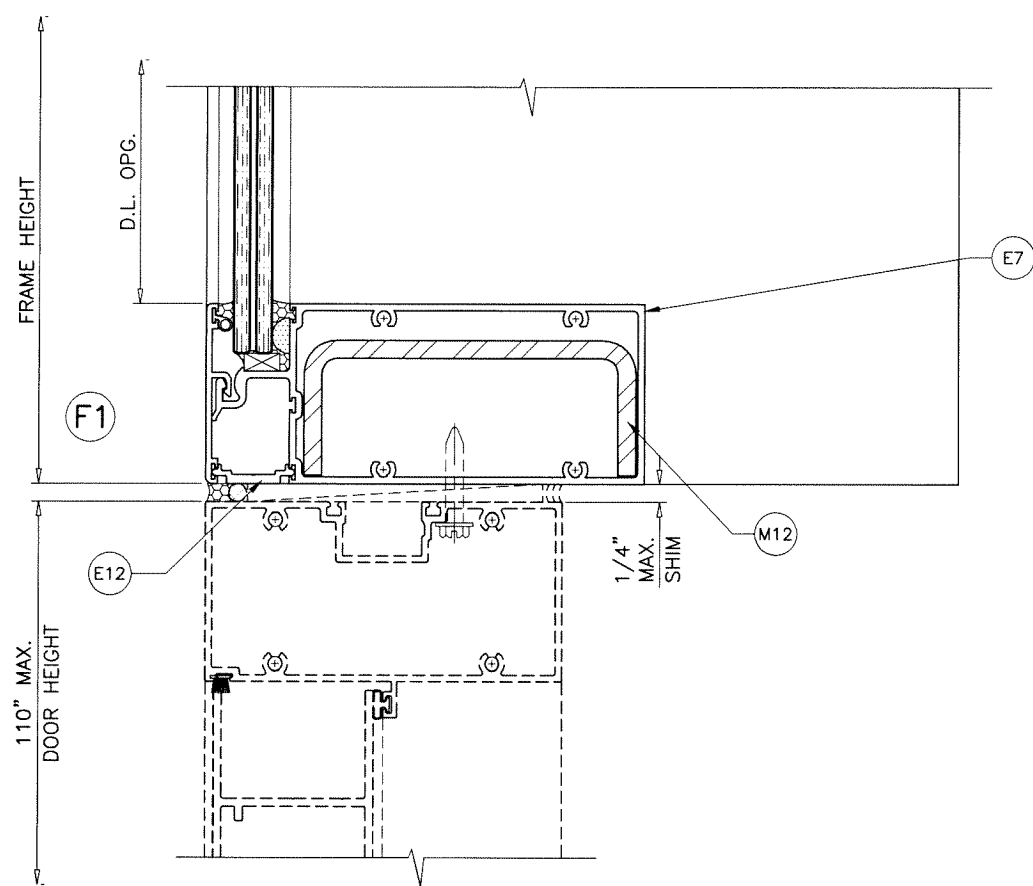
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LIMIT MAX. DESIGN LOADS FOR HORIZONTAL AS FOLLOWS		
HORIZ. SPAN MAX.	W/O REINF.	WITH REINF.
79-3/4"	73.4 PSF	140.0 PSF



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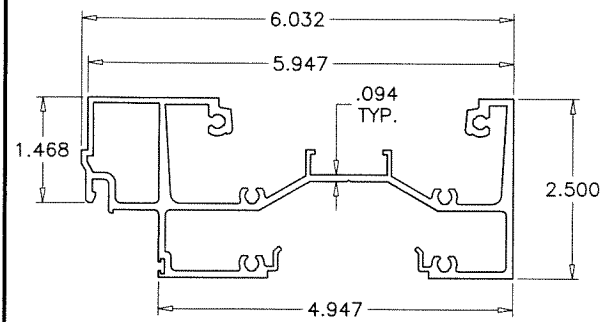
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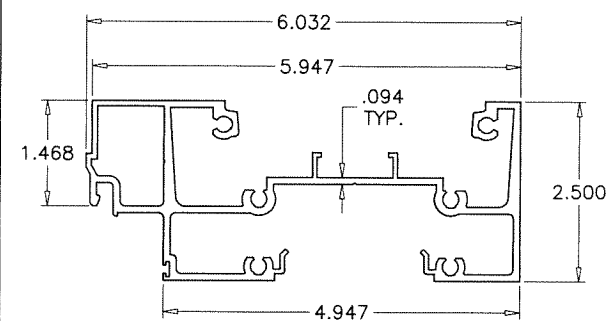
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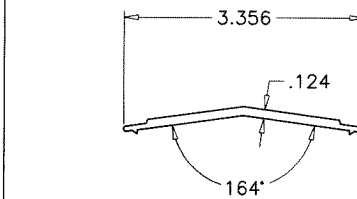
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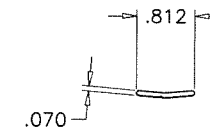
E1 FRAME HEAD/SILL



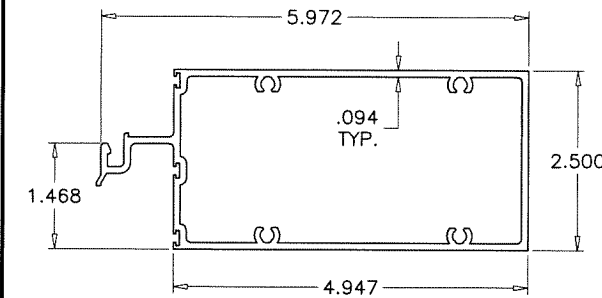
E1A ALT. FRAME HEAD/SILL



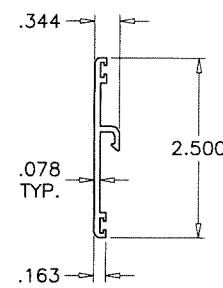
E13 22° BAY MULL INTERIOR ADAPTER



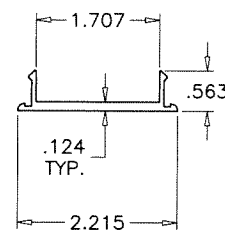
E15 30° BAY MULL INTERIOR ADAPTER



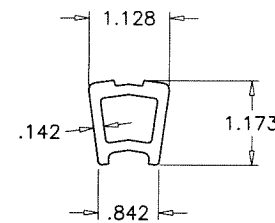
E7 INTERMEDIATE HORIZONTAL



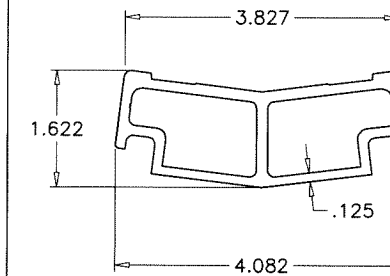
E4 GLAZING STOP



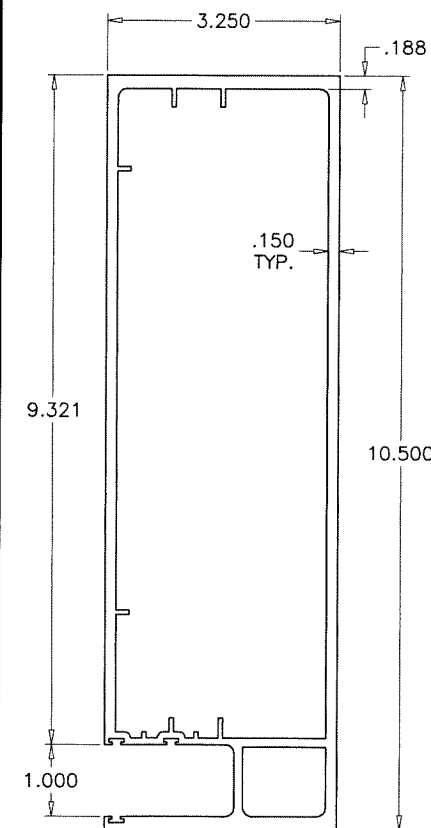
E2 SNAP COVER



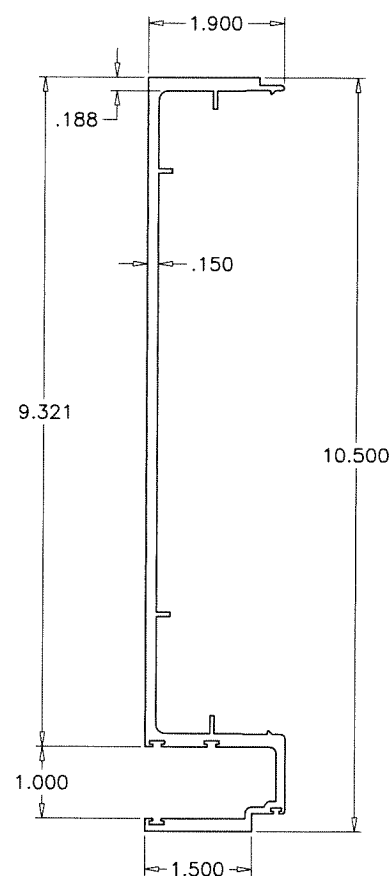
E14 22° BAY MULL EXTERIOR ADAPTER



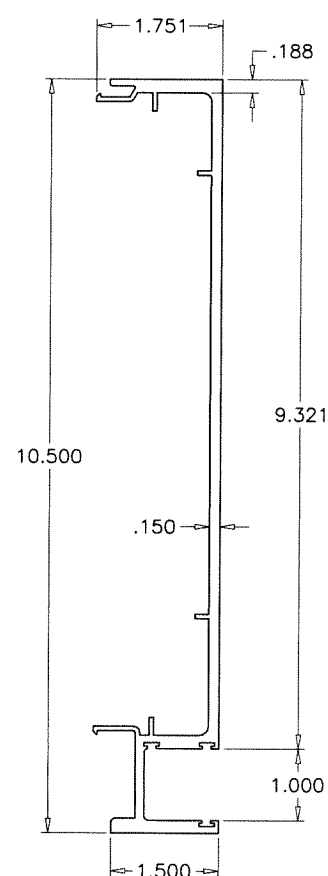
E16 30° BAY MULL EXTERIOR ADAPTER



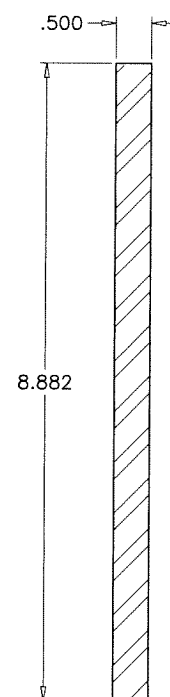
E8 FRAME JAMB



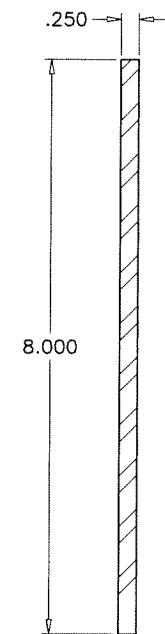
E5 MALE MULLION



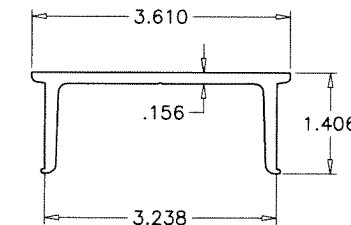
E6 FEMALE MULLION



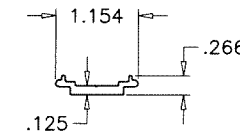
M7 REINF. BAR



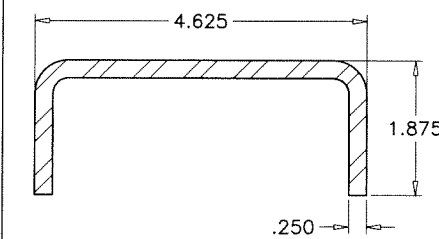
M11 REINF. BAR



E3 ANCHOR BASE



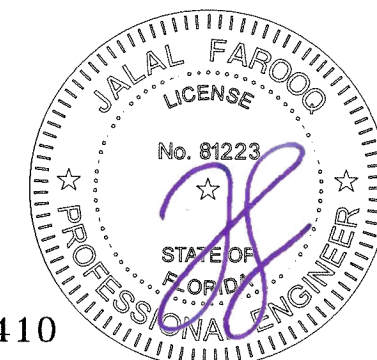
E12 COVER



M12 REINF. CHANNEL

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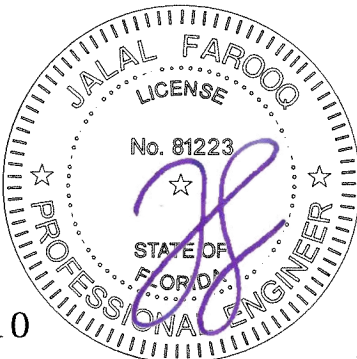
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ITEM NO.	PART NUMBER	QUANTITY	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
E1	ES7001A	AS REQD.	FRAME HEAD/SILL	6005-T5	-
E1A	ES-WW1032-001	AS REQD.	ALT. FRAME HEAD/SILL	6005-T5	-
E2	ES7003A	AS REQD.	SNAP COVER	6063-T5	-
E3	ES7004	AS REQD.	ANCHOR BASE (SEE SHEET 4 THRU 6 FOR LENGTHS)	6005-T5	-
E4	ES7006	AS REQD.	GLAZING STOP	6063-T6	-
E5	ES-WW1032-003	AS REQD.	MALE MULLION	6005-T5	-
E6	ES-WW1032-002	AS REQD.	FEMALE MULLION	6005-T5	-
E7	ES7005	AS REQD.	INTERMEDIATE HORIZONTAL	6005-T5	-
E8	ES-WW1032-004	AS REQD.	FRAME JAMB	6005-T5	-
E9	ALU-P-020	AS REQD.	SILL LEVELER (1" X 1")	ALUMINUM	-
E10	-	AS REQD.	ALUMINUM ANGLE (1" X 1" X 1/8")	6063-T6	-
E12	ES-7032	AS REQD.	COVER	6063-T6	-
E13	ES-WW1032-403	AS REQD.	22' BAY MULLION INTERIOR ADAPTER	6005-T5	-
E14	ES-WW1032-402	AS REQD.	22' BAY MULLION EXTERIOR ADAPTER	6005-T5	-
E15	ES-7000-403	AS REQD.	30' BAY MULLION INTERIOR ADAPTER	6005-T5	-
E16	ES-WW1032-401	AS REQD.	30' BAY MULLION EXTERIOR ADAPTER	6005-T5	-
M1	ES7000-G01	AS REQD.	EXTERIOR GLASS SEAL	SANTOPRENE	DUROMETER 60±5 SHORE A
M2	ES7000-G02	AS REQD.	SILICONE DAM	SANTOPRENE	DUROMETER 60±5 SHORE A
M3	ES7000-G03	AS REQD.	SILICONE SEPARATOR	SANTOPRENE	DUROMETER 60±5 SHORE A
M4	80-378	2/ LITE	SETTING BLOCK	EPDM	DUROMETER 85±5 SHORE A
M5	3/8" BOLT	AS REQD.	LEVELING SCREW	ST/ST	-
M6	#12 X 1"	AS REQD.	FRAME ASSEMBLY SCREWS	ST/ST	PH SMS
M7	-	AS REQD.	REINFORCING BAR (FRAME LENGTH - 6")	STEEL	A36, F _u MIN. = 58 KSI
M8	ES8011	AS REQD.	BUMPON	EPDM	DUROMETER 80±5 SHORE A
M11	-	AS REQD.	REINFORCING BAR (FRAME LENGTH - 6")	STEEL	A36, F _u MIN. = 58 KSI
M12	-	AS REQD.	REINFORCING CHANNEL (FULL LENGTH)	STEEL	A36, F _u MIN. = 58 KSI

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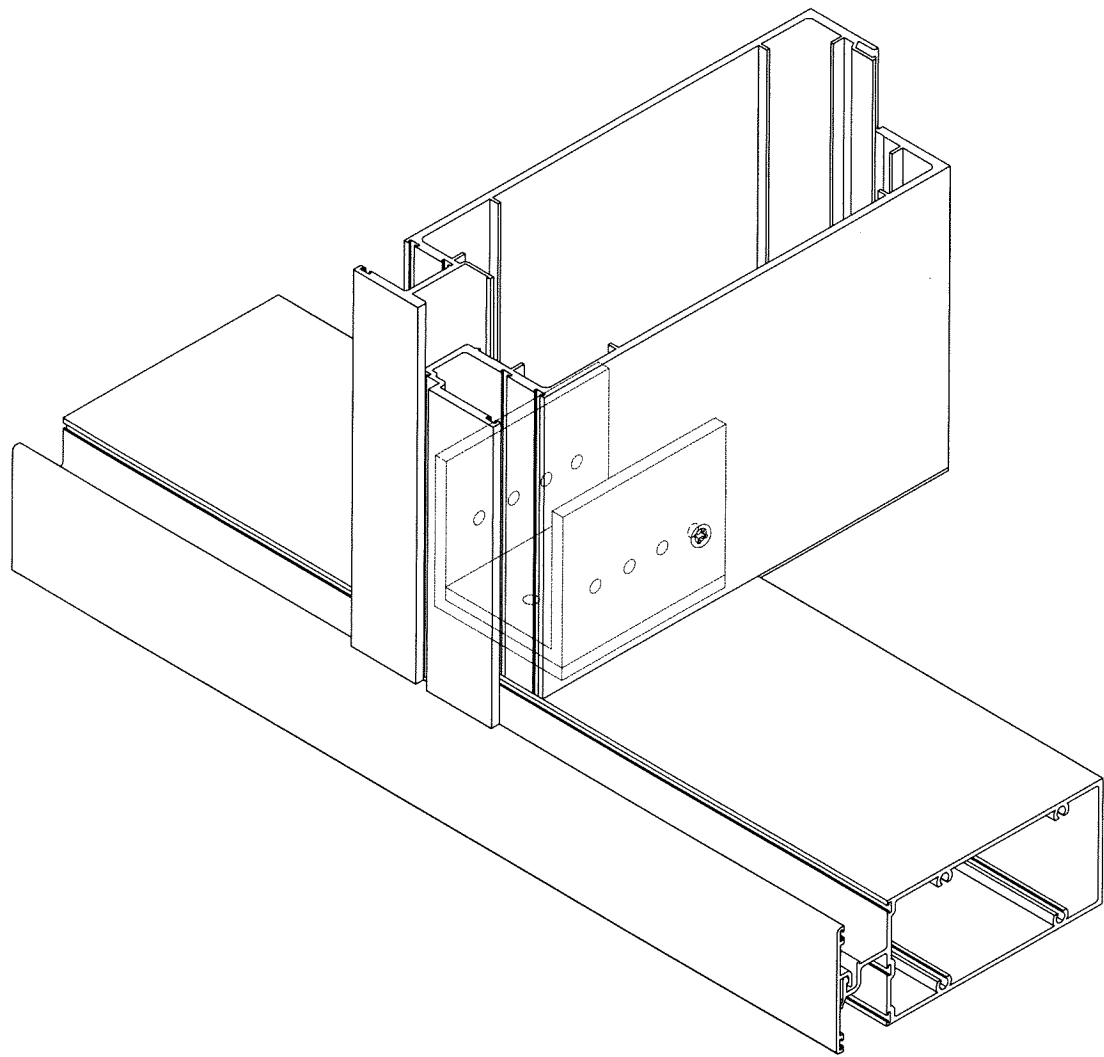
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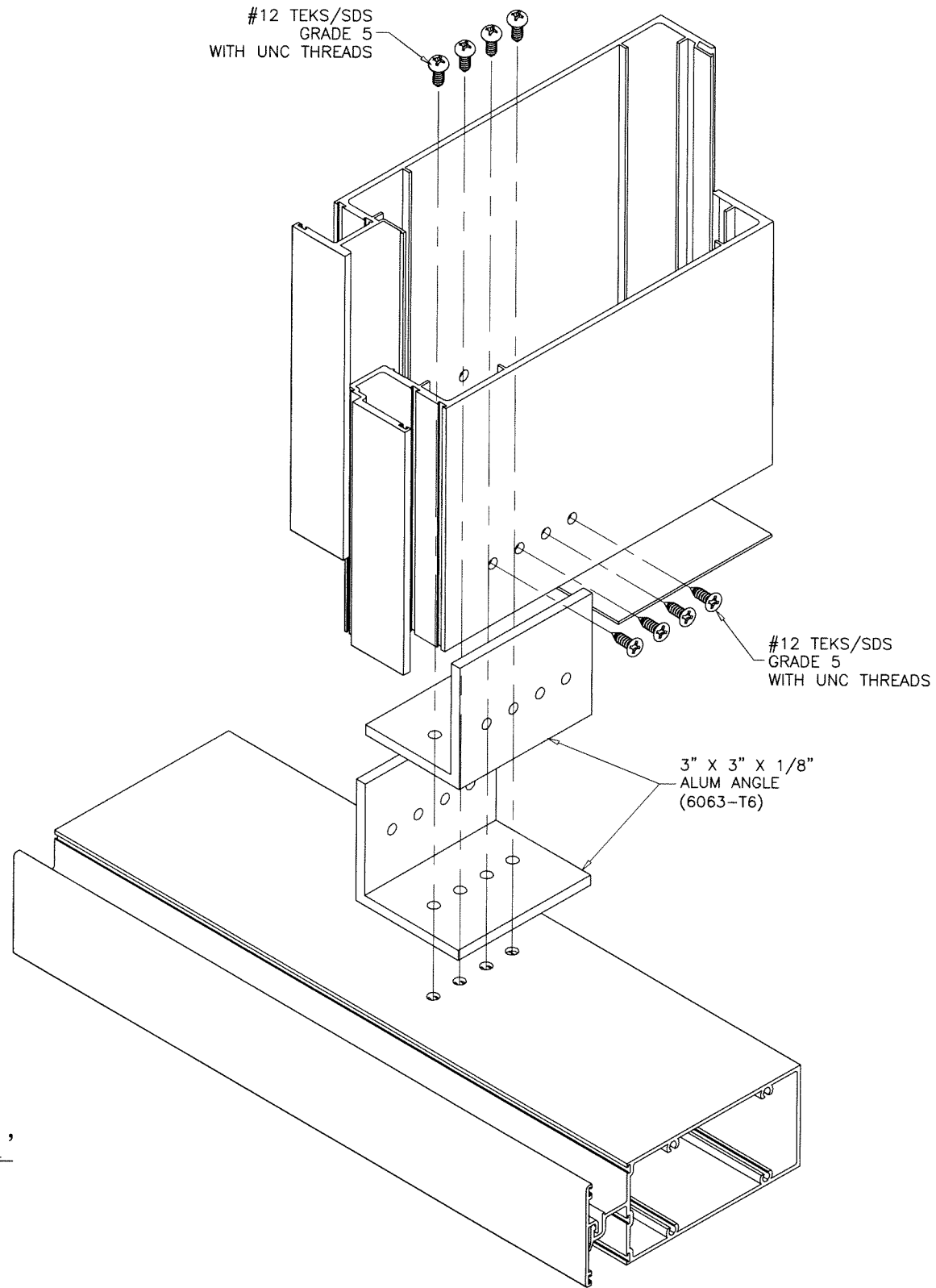
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20-53F
sheet 11.1 of 13

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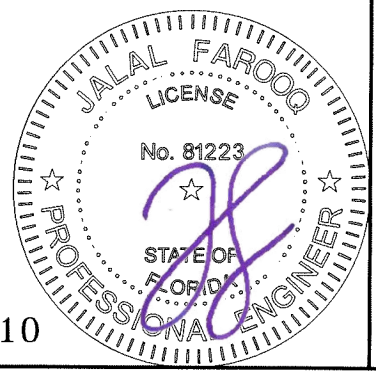


DETAIL '1'



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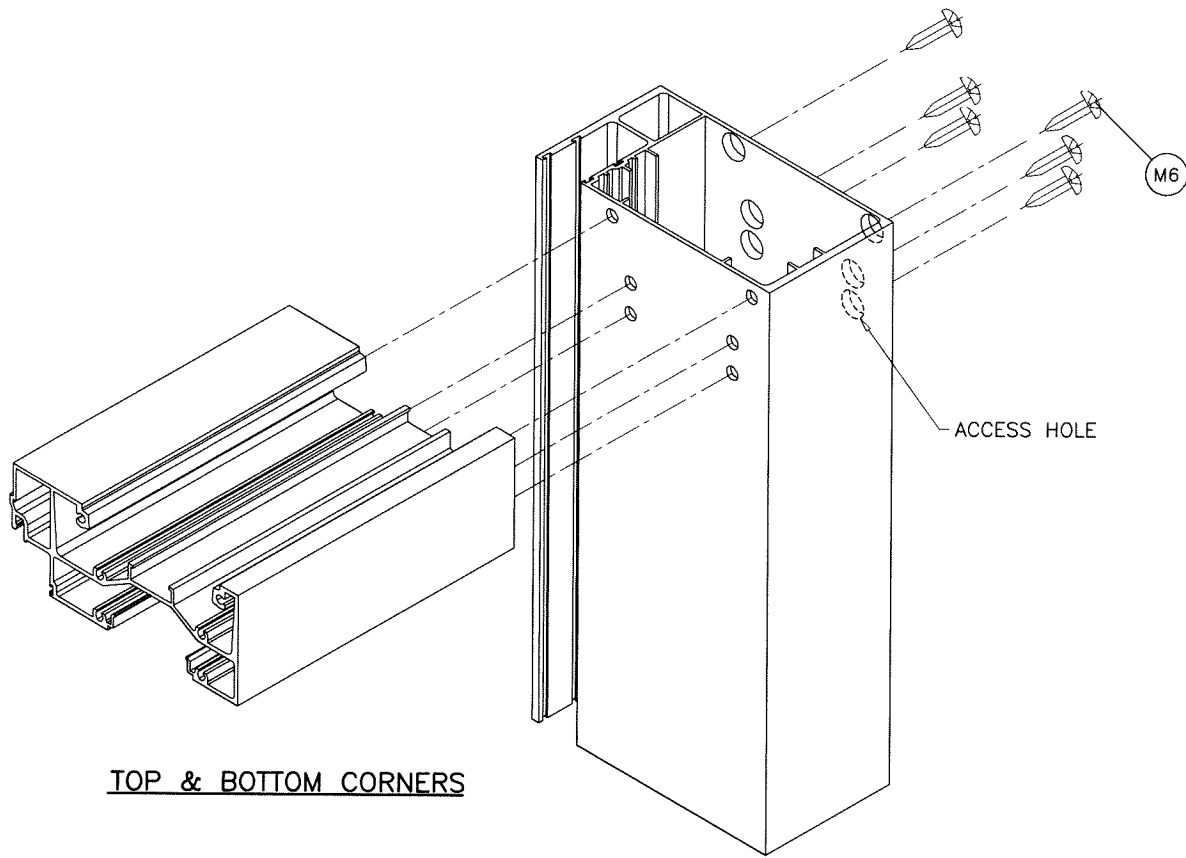
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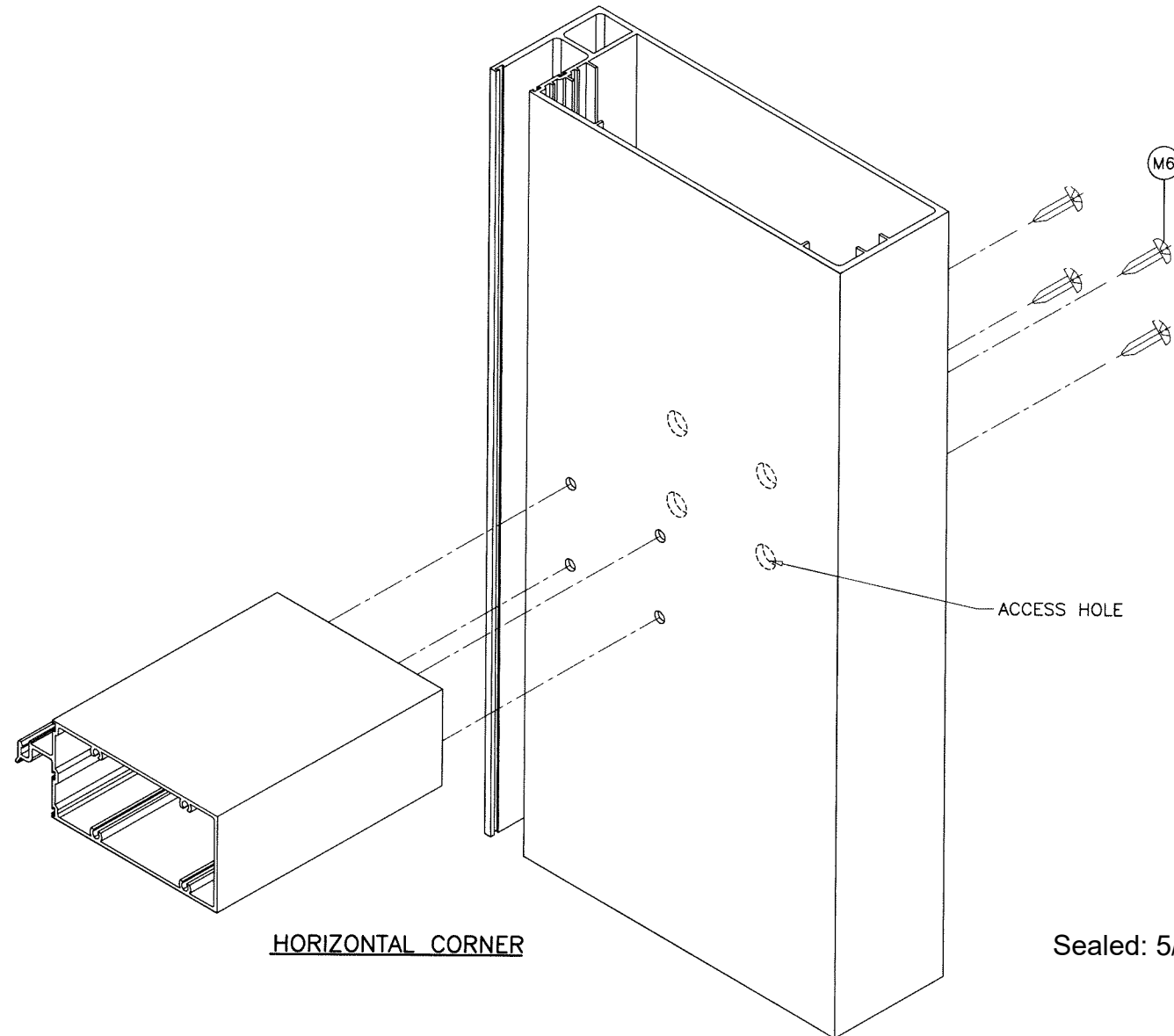
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sheet	12 of 13

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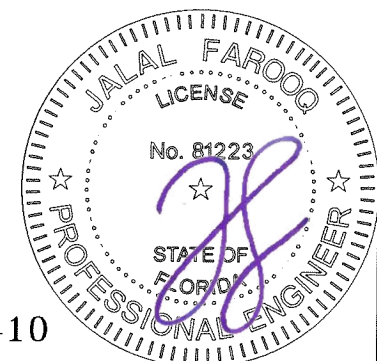
TOP & BOTTOM CORNERS



HORIZONTAL CORNER

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