

ES-8860i
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 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)/2026 (9TH 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 LOAD-BEARING, (HIGH DENSITY PLASTIC/COMPOSITE, METAL
OR OTHER RIGID MATERIALS).

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT
COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE
REQUIREMENTS OF THE 2023/2026 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 3 FOR GLASS DESIGN LOAD
CAPACITY.
- STEP 3** CHECK MULLION DESIGN LOAD CAPACITY FOR A GIVEN
SPACING AND HEIGHT USING CHARTS ON SHEET 4
THE CAPACITY SHOULD EXCEED THE DESIGN LOAD.
- STEP 4** THE LOWEST VALUE RESULTING FROM STEPS 2 AND 3
THAT EXCEED THE DESIGN WIND PRESSURES DETERMINED
THRU STEP 1 SHALL APPLY TO ENTIRE SYSTEM.
- STEP 5** FOR UNANCHORED JAMBS, USING SHEET 6, DETERMINE
THE MIN. & MAX. GAP DIMENSIONS.
- STEP 6** WHEN USING THIS SYSTEM WITH DOORS, THE LOWER
VALUE OF THE DESIGN PRESSURE RATING FOR THE
SYSTEM AND THE DOOR SHALL APPLY.

NOTE:
GLASS CAPACITIES ARE BASED ON
ASTM E1300-16 (3 SEC. GUSTS).

FASTENERS AND CONNECTORS (AS APPLICABLE) SHOWN IN THIS APPROVAL MAY NOT MEET
CORROSION RESISTANCE REQUIREMENTS FOR COASTAL OR SALT WATER EXPOSURE ZONES.
COMPLIANCE WITH THESE CONDITIONS TO BE CHECKED PER FBC 1711.

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.

PRODUCT COMPLIES WITH REQUIREMENTS OF ANSI Z97.1.

INSUL. LAM. GLASS
SMALL MISSILE IMPACT

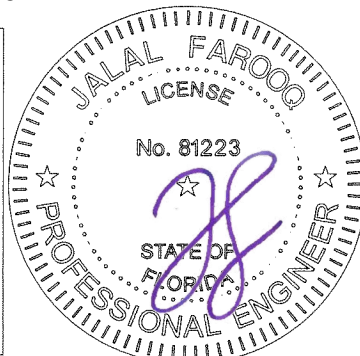
Sealed: 7/15/2026 FL #29877

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.

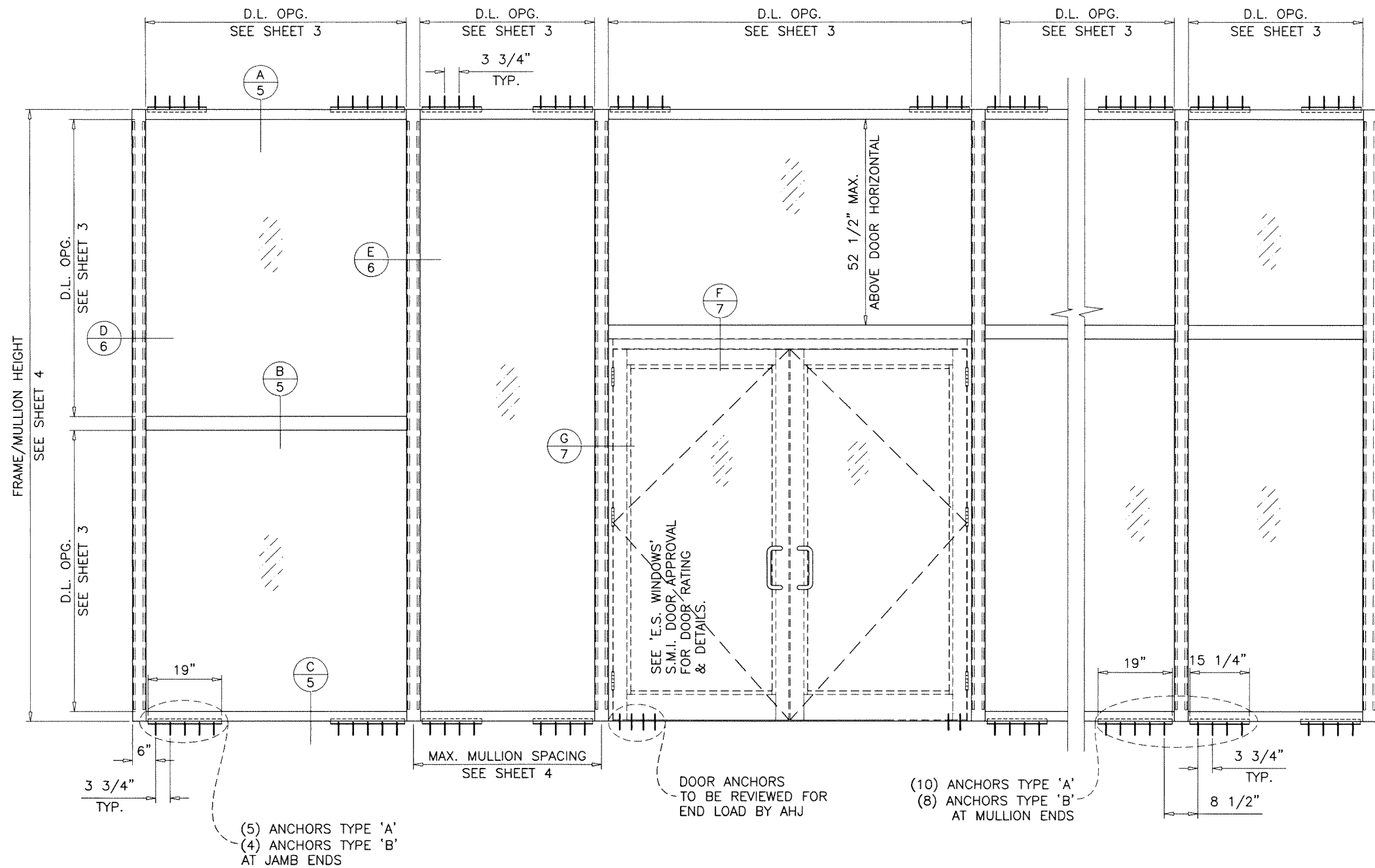
B- THIS PRODUCT EVALUATION DOCUMENT WILL BE CONSIDERED INVALID IF
ALTERED BY ANY MEANS.

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.

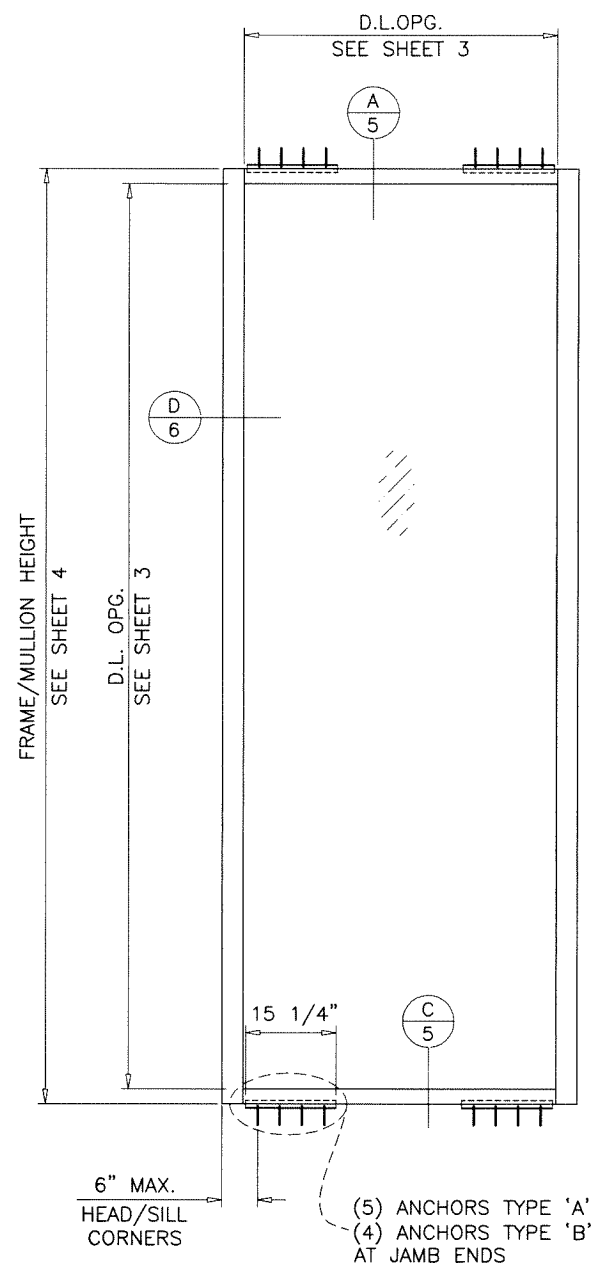
D- THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF
THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.



af c	
AL-FAROOQ CORPORATION ENGINEERS & PRODUCT DEVELOPMENT 9360 SUNSET DRIVE, SUITE 220 MIAMI, FLORIDA 33173 TEL. (305) 264-8100 FAX. (305) 262-6978	
STORE\19-52F-ES	
ES-8860i ALUMINUM 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
A	10.09.20
B	07.31.23
C	07.14.26
description	
updated to 2020 FBC	
updated to 2023 FBC	
updated to 2026 FBC	
date:	06-17-19
scale:	3/8"=1'-0"
dr. by:	TARIQ
chk. by:	
drawing no.	19-52F
sheet	1 of 9



TYPICAL ELEVATIONS



SINGLE 'O' PANEL:
 FRAME WIDTH = D.L.O. WIDTH + 7.00"
 FRAME HEIGHT = D.L.O. HEIGHT + 5.00"

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 ENGINEERS & PRODUCT DEVELOPMENT
 9360 SUNSET DRIVE, SUITE 220
 MIAMI, FLORIDA 33173 (C.A.N. 3538)
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STORE 19-52F-ES

ES-88601 ALUMINUM 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

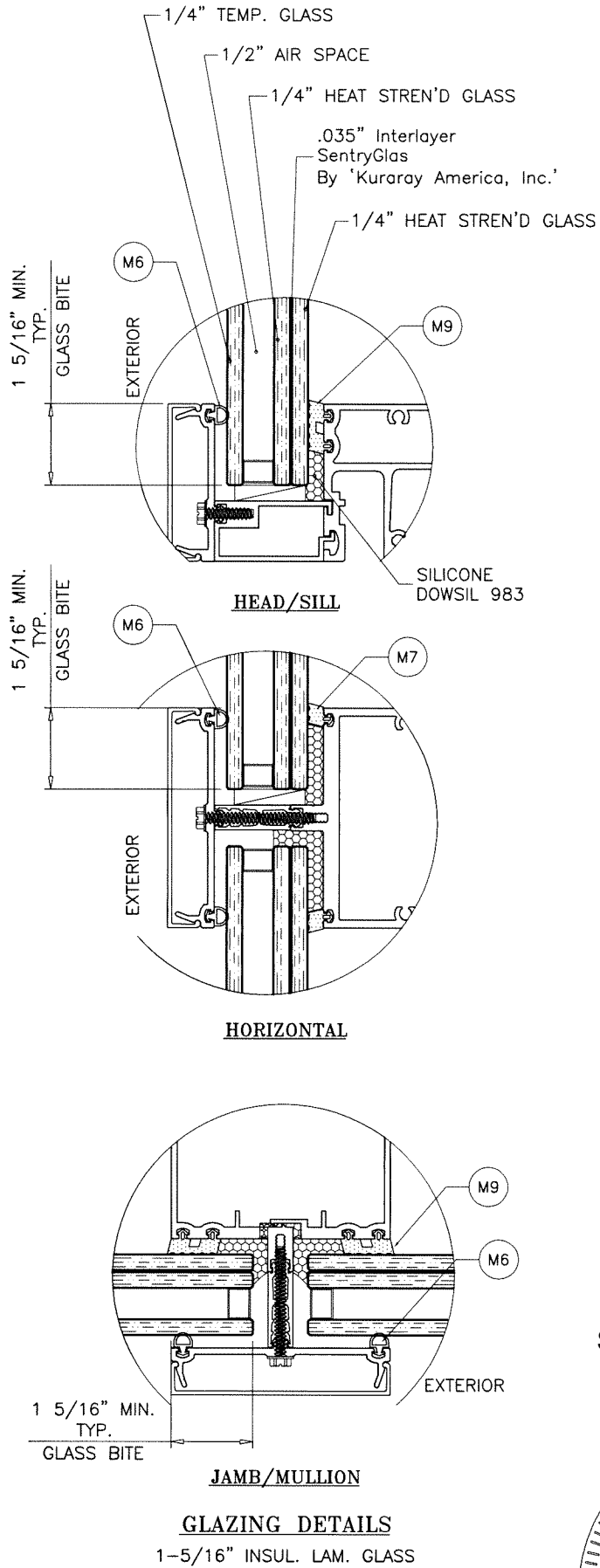
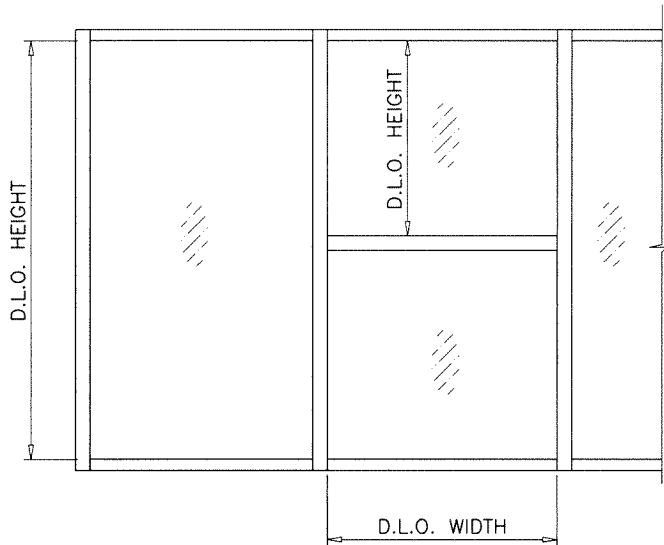
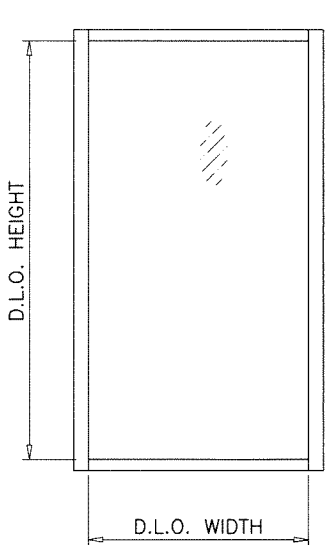
revisions:	
no	by description

date: 06-17-19
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 dr. by: TARIQ
 chk. by:

drawing no.
19-52F
 sheet 2 of 9

DESIGN LOAD CAPACITY - PSF			
NOMINAL DIMS.		1-5/16" INSUL. LAM. GLASS	
D.L.O. WIDTH	D.L.O. HEIGHT	EXT.(+)	INT.(-)
23"	115"	90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		90.0	90.0
59"		81.8	81.8
65"	121"	75.0	75.0
71"		69.2	69.2
23"		90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		90.0	90.0
59"		81.8	81.8
65"	127"	75.0	75.0
23"		90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		90.0	90.0
59"		81.8	81.8
23"	133"	90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		90.0	90.0
59"		81.8	81.8
23"	139"	90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		89.7	89.7
23"	145"	90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		87.3	87.3
23"	151"	90.0	90.0
29"		90.0	90.0
35"		90.0	90.0
41"		90.0	90.0
47"		90.0	90.0
53"		84.3	84.3

INTERPOLATION BETWEEN WIDTHS OR HEIGHTS ALLOWED.



GLASS

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af c

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ES-8860: ALUMINUM WINDOW WALL SYSTEM (S.M.I.)

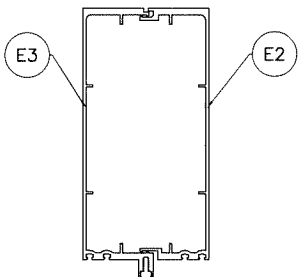
E.S. WINDOWS, LLC
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MIAMI, FL. 33142
TEL. (305) 638-5151 FAX. (305) 638-5158

revisions:
no date by description

date: 06-17-19
scale: -
dr. by: TARIQ
chk. by:

drawing no.
19-52F
sheet **3** of **9**

MULLION DESIGN LOAD CAPACITY – PSF			
WITH OR WITHOUT INTERMEDIATE HORIZONTALS			
NOMINAL DIMS.		JAMB 'J1' MULLION 'M1'	
WIDTH (W)	FRAME HEIGHT	EXT.(+)	INT.(–)
30"	120"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		55.0	55.0
66"		55.0	55.0
72"		55.0	55.0
30"	126"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		55.0	55.0
66"		55.0	55.0
30"	132"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		55.0	55.0
66"		55.0	55.0
30"	138"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		55.0	55.0
30"	144"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		55.0	55.0
30"	150"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		55.0	55.0
30"	156"	55.0	55.0
36"		55.0	55.0
42"		55.0	55.0
48"		55.0	55.0
54"		55.0	55.0
56"		55.0	55.0
60"		54.1	54.1

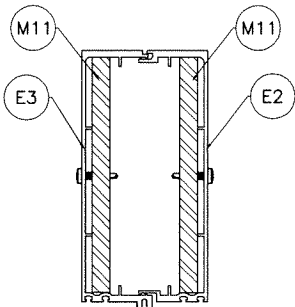


JAMB 'J1'
MULLION 'M1'

Ix IN ⁴	Sx IN ³
21.88	5.85

INTERPOLATION BETWEEN WIDTHS OR HEIGHTS ALLOWED.

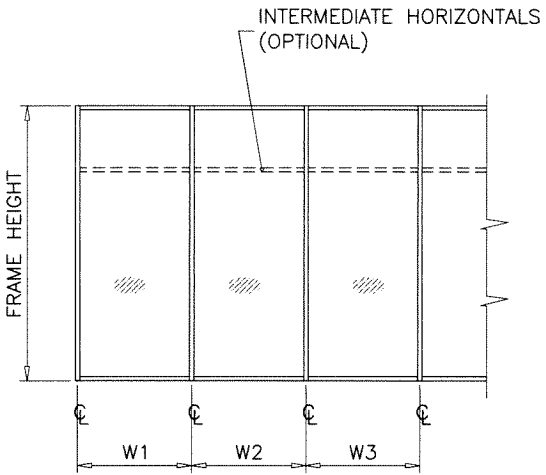
MULLION DESIGN LOAD CAPACITY – PSF			
WITH OR WITHOUT INTERMEDIATE HORIZONTALS			
NOMINAL DIMS.		JAMB 'J2' MULLION 'M2'	
WIDTH (W)	FRAME HEIGHT	EXT.(+)	INT.(–)
30"	120"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
72"		90.0	90.0
78"		90.0	90.0
30"	126"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
72"		90.0	90.0
30"	132"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
30"	138"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
30"	144"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
30"	150"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0
30"	156"	90.0	90.0
36"		90.0	90.0
42"		90.0	90.0
48"		90.0	90.0
54"		90.0	90.0
60"		90.0	90.0
66"		90.0	90.0



JAMB 'J2'
MULLION 'M2'

	Ix IN ⁴	Sx IN ³
ALUMINUM	21.88	5.85
STEEL	23.44	7.14
TOTAL	68.76	
Ix ALUM + Ix STL X 2.9		

INTERPOLATION BETWEEN WIDTHS OR HEIGHTS ALLOWED.



WIDTH (W) = W1
AT JAMB

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

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MULLION

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STORE 19-52F-ES

ES-88601 ALUMINUM WINDOW WALL SYSTEM (S.M.I.)

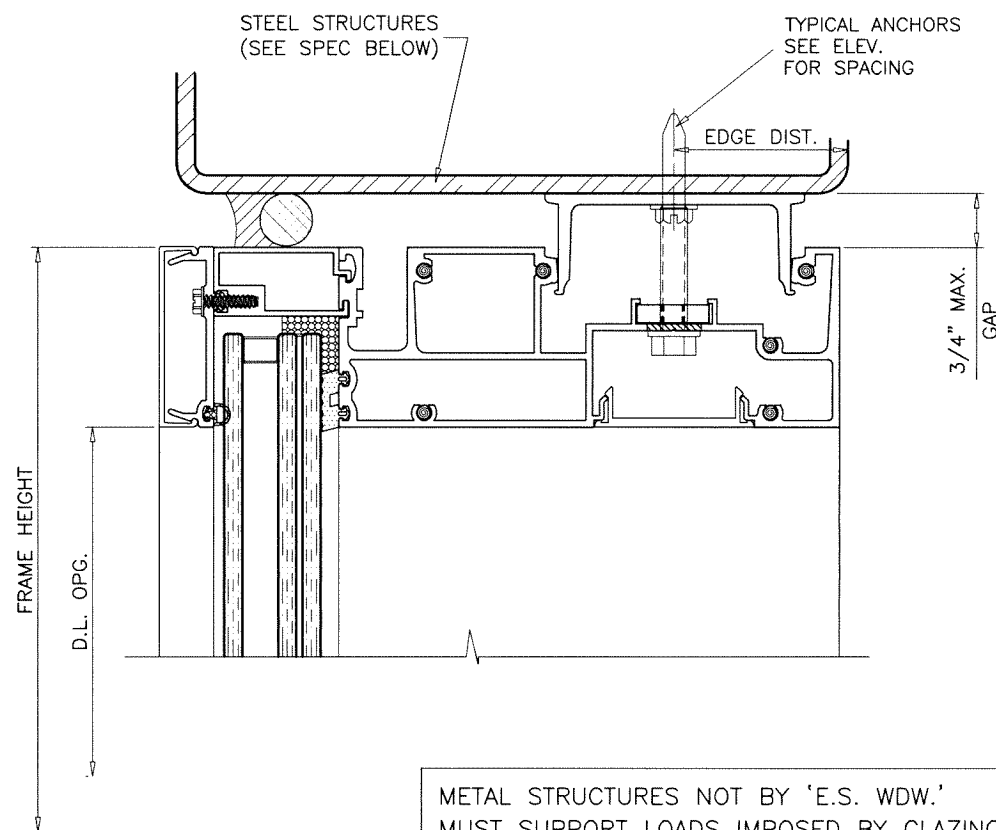
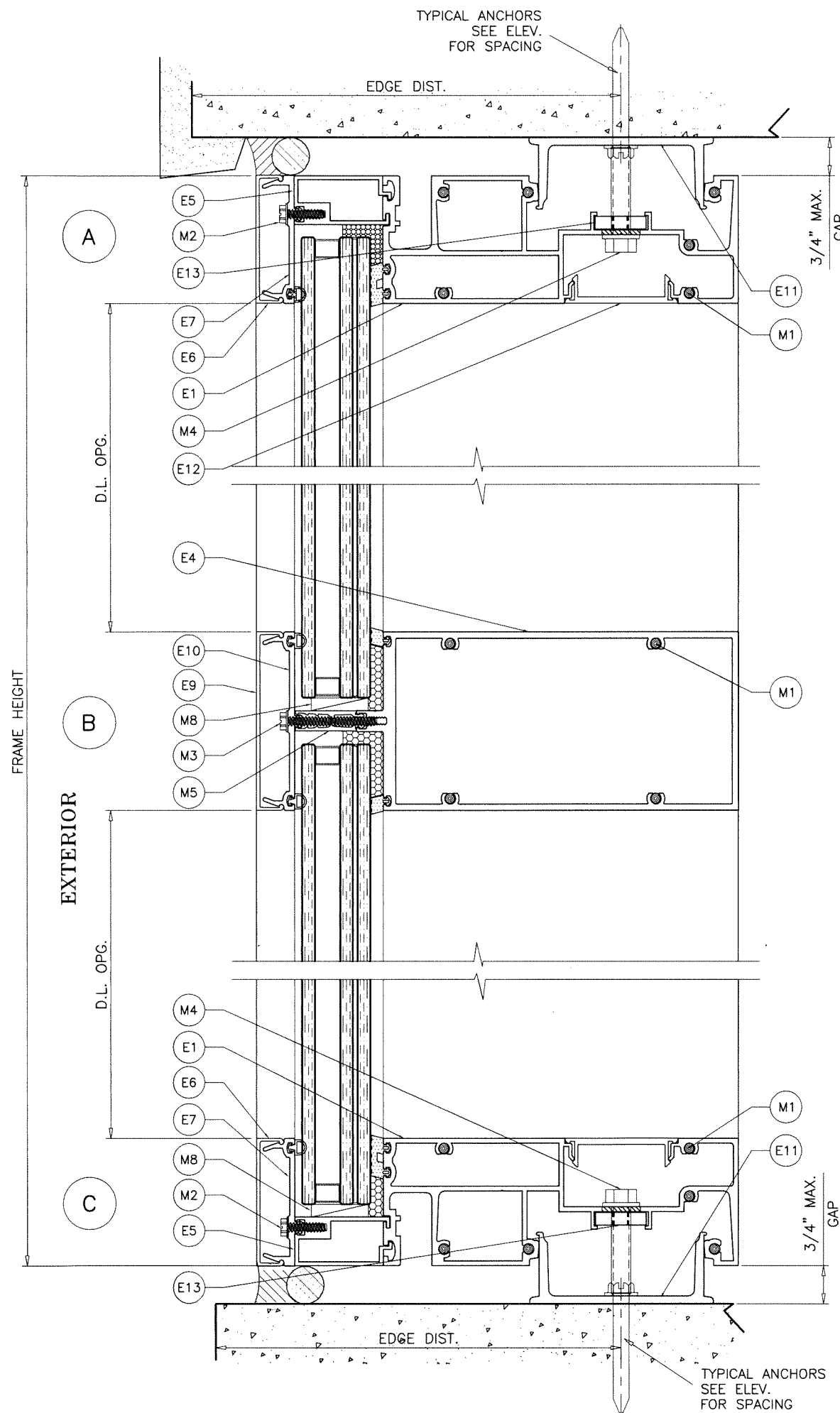
E.S. WINDOWS, LLC
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MIAMI, FL. 33142
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revisions:		no		date		by		description	
date:	06-17-19	scale:	–	dr.	by:	TARIQ	chk.	by:	

drawing no.

19-52F

sheet 4 of 9



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 (3000 PSI MIN.)
WITH 1-3/4" MIN. EMBED INTO CONCRETE

ANCHOR EDGE DISTANCES

INTO CONCRETE = 2-1/2" MIN.

TYPE 'B'

5/16" DIA. DRIL-FLEX SELF DRILLING SCREWS BY 'DEWALT' (GRADE 5 CRS)

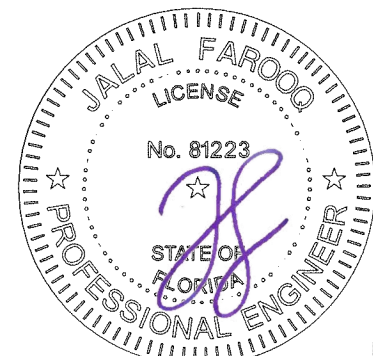
INTO METAL STRUCTURES
(3) THREADS MIN. PENETRATION BEYOND SUBSTRATE
STEEL: 3/16" THK. MIN. (Fy = 36 KSI MIN.)
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED).

ANCHOR EDGE DISTANCES

INTO METAL STRUCTURE = 1" MIN.

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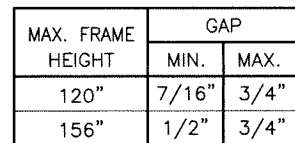
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revisions:		no	date	by	description

date: 06-17-19
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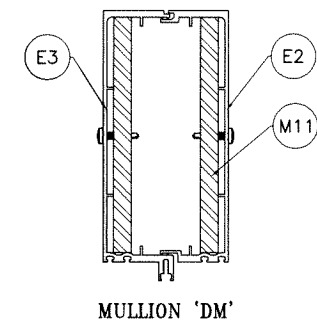
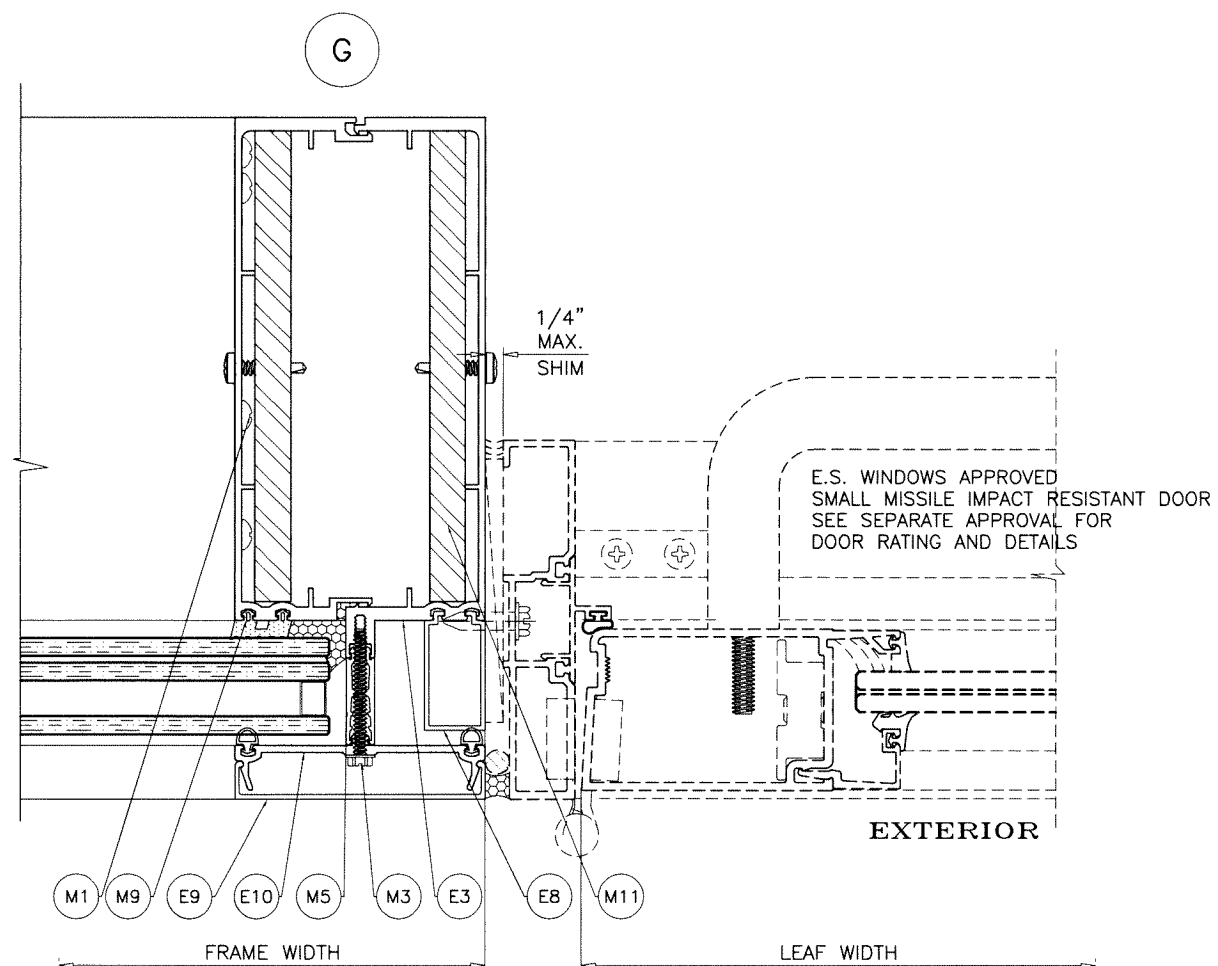
drawing no.
19-52F
sheet 5 of 9



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.

A circular professional engineer seal for the State of Florida. The outer ring contains the text "JALAL FAROOQ" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars. Inside this ring, the word "LICENSE" is at the top and "STATE OF FLORIDA" is at the bottom, also separated by two stars. In the center, the license number "No. 81223" is printed above a large, stylized purple signature. The seal has a dotted inner circle and a solid outer circle with tick marks.

date: 06-17-19		scale: $3/8" = 1"$		dr. by: TARIQ		chk. by:	
drawing no. 19-52F		sheet 6 of 9					



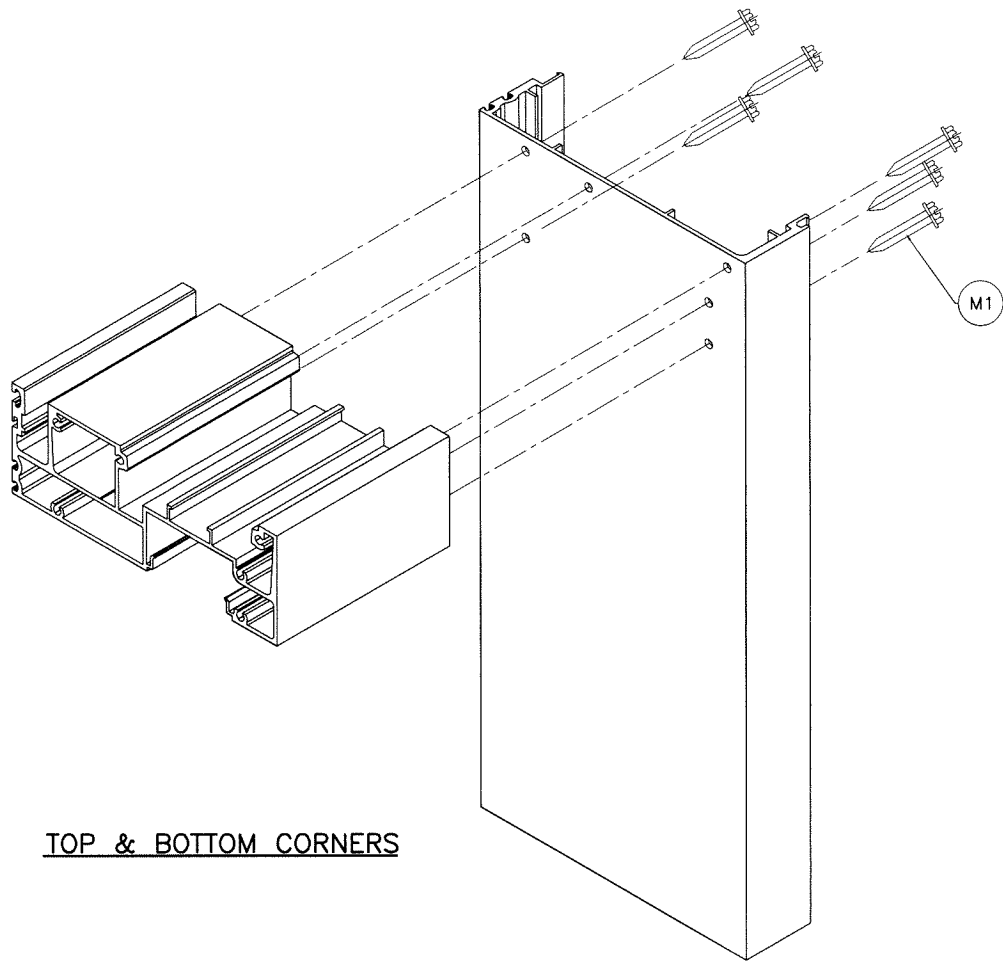
	$\sum x$	$\sum x^2$
ALUMINUM	20.3192	5.532
STEEL	11.4427	3.52
TOTAL	53.503	

A circular professional engineer seal for Jalal Farooq. The outer ring contains the text "JALAL FAROOQ" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two stars. Inside this ring, the word "LICENSE" is at the top and "STATE OF FLORIDA" is at the bottom, also separated by two stars. In the center, the license number "No. 81223" is printed. A large, stylized purple signature is written over the center of the seal, overlapping the license number and the state text. The seal has a dotted inner circle and a solid outer circle with tick marks.

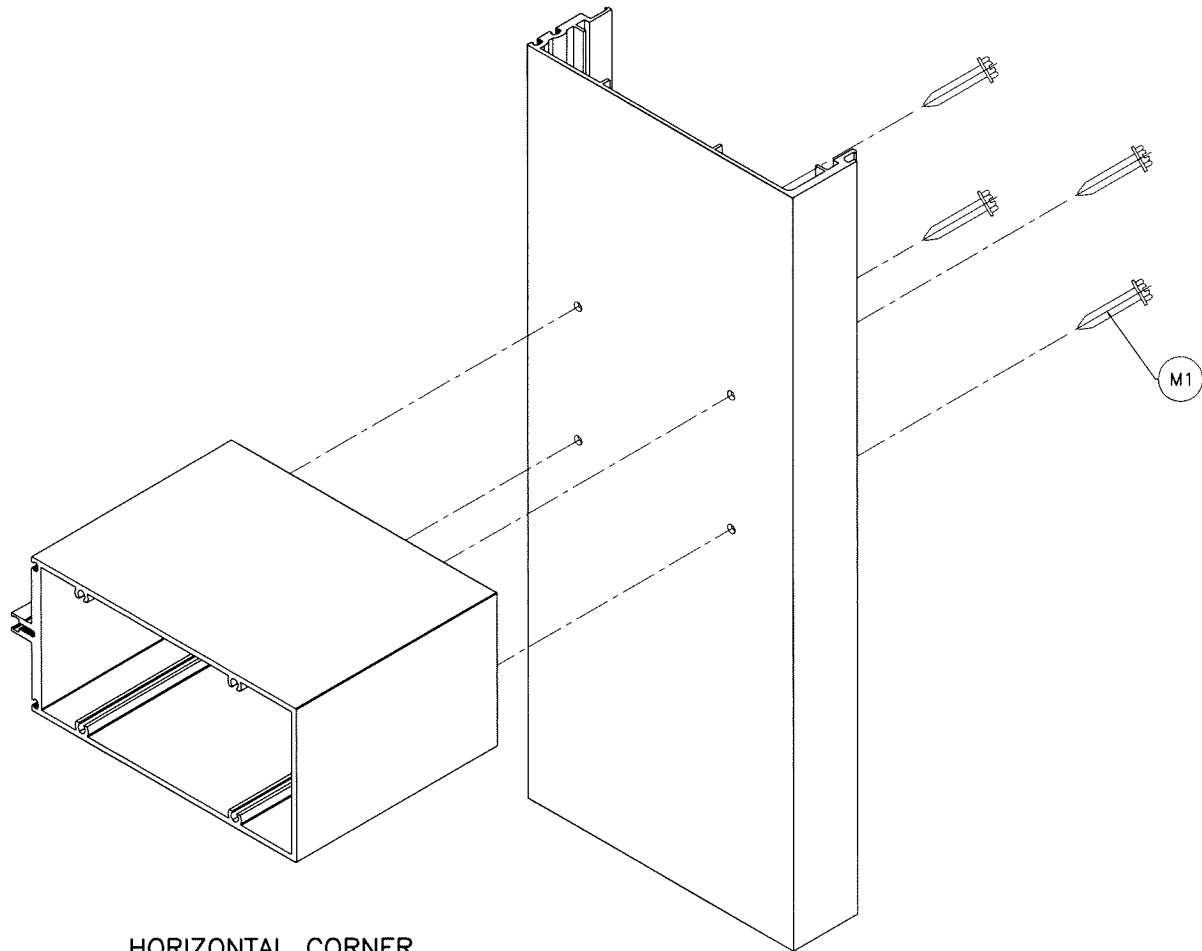
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scale: 3/8" = 1"		no date by description	
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chk. by:		_____	

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sheet 7 of 9



TOP & BOTTOM CORNERS



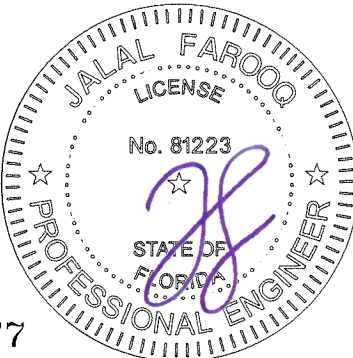
HORIZONTAL CORNER

ITEM NO.	PART NUMBER	QUANTITY	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
E1	ES-8860-007A	AS REQD.	FRAME HEAD AND SILL	6063-T6	-
E2	ES-8860-009	AS REQD.	MALE MULLION	6005-T5	-
E3	ES-8860-010	AS REQD.	FEMALE MULLION	6005-T5	-
E4	ES-8860-022	AS REQD.	FRAME HORIZONTAL	6063-T6	-
E5	ES-8860-045	AS REQD.	PRESSURE PLATE ADAPTER (HEAD/SILL)	6063-T6	-
E6	ES-8860-043	AS REQD.	PRESSURE PLATE COVER (HEAD/SILL)	6063-T6	-
E7	ES-8860-044	AS REQD.	PRESSURE PLATE	6063-T6	-
E8	ES-8860-047	AS REQD.	POCKET FILLER	6063-T5	-
E9	ES-8860-029	AS REQD.	PRESSURE PLATE COVER	6063-T6	-
E10	ES-8860-030	AS REQD.	PRESSURE PLATE	6063-T6	-
E11	ES-7004	AS REQD.	ANCHOR BASE	6005-T5	-
E12	ES-7003A	AS REQD.	SNAP COVER	6063-T5	-
E13	ALU-P-020	AS REQD.	SILL LEVELER	6063-T6	-
E14	TG-T-215	AS REQD.	FILLER TUBE	6063-T6	-
E15	ALU-A-044	AS REQD.	FIXING ANGLE	6063-T6	-
M1	#12 X 1-1/2"	AS REQD.	FRAME ASSEMBLY FASTENERS	ST/ST	PH SMS
M2	#10 X 5/8"	AS REQD.	HORIZONTAL PRESSURE PLATE FASTENERS	ST/ST	HWH SMS
M3	#10 X 1-3/4"	AS REQD.	VERTICAL PRESSURE PLATE FASTENERS	ST/ST	HWH SMS
M4	3/8-16 X 2"	AS REQD.	LEVELING SCREW	ST/ST	HWH TAP BOLT
M5	W5250-302	AS REQD.	SPACER	POLYAMIDE	-
M6	WW7000-NE003	AS REQD.	SPACER GASKET	SILICONE	DUROMETER 70±5 SHORE A
M7	WW5250-NS02	AS REQD.	INTERIOR GASKET	SILICONE	DUROMETER 60±5 SHORE A
M8	ES-7530-B02A	2/ LITE	SETTING BLOCKS AT 1/4 POINTS	SILICONE	DUROMETER 85±5 SHORE A
M9	ES-8860-G02	AS REQD.	INTERIOR GASKET	SILICONE	DUROMETER 70±5 SHORE A
M11	-	AS REQD.	MULLION REINF. BAR (1/2" X 6-1/2")	STEEL	A36, Fu MIN. 58 KSI
M14	-	AS REQD.	1/8" X 1/2" T-BOND	-	-

SEALANTS:

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

Sealed: 7/15/2026



FL #29877



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

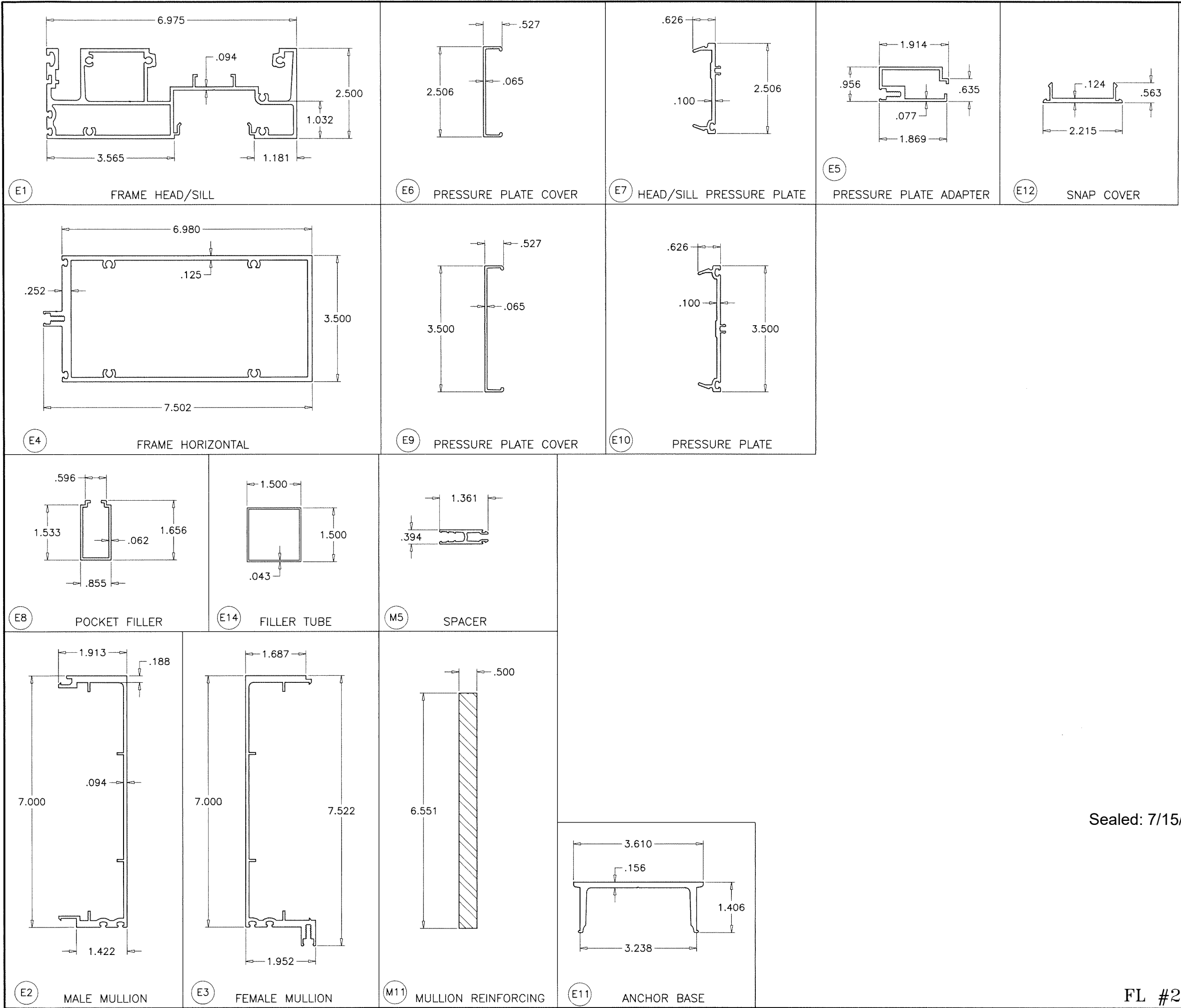
ES-8860: ALUMINUM WINDOW WALL SYSTEM (S.M.I.)

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:	06-17-19
scale:	3/8" = 1"
dr. by:	TARIQ
chk. by:	

drawing no.	19-52F
sheet	8 of 9



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ES-88601 ALUMINUM WINDOW WALL SYSTEM (S.M.I.)

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