

FLORIDA DEPARTMENT OF
Business & Professional Regulation



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Product Approval
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► OFFICE OF THE
SECRETARY

FL #	FL42159								
Application Type	New								
Code Version	2023								
Application Status	Approved								
Comments									
Archived	☐								
Product Manufacturer	E.S. Windows, Inc.								
Address/Phone/Email	10653 NE Quaybridge Ct. Miami, FL 33138 (305) 638-5151 ssabagh@energiasolarsa.com								
Authorized Signature	Yiping Wang mcyengineering@outlook.com								
Technical Representative	Samir Sabagh								
Address/Phone/Email	3550 NW 49th St. Miami, FL 33142 (305) 638-5151 ssabagh@energiasolarsa.com								
Quality Assurance Representative									
Address/Phone/Email									
Category	Windows								
Subcategory	Single Hung								
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer ☐ Evaluation Report - Hardcopy Received								
Florida Engineer or Architect Name who developed the Evaluation Report	Yiping Wang								
Florida License	PE-55983								
Quality Assurance Entity	Keystone Certifications, Inc.								
Quality Assurance Contract Expiration Date	03/20/2035								
Validated By	Xiaojun Gu ☒ Validation Checklist - Hardcopy Received								
Certificate of Independence	FL42159_R0_COI_Certificate of Independence-ss.pdf								
Referenced Standard and Year (of Standard)	<table> <thead> <tr> <th>Standard</th> <th>Year</th> </tr> </thead> <tbody> <tr> <td>TAS 201</td> <td>1994</td> </tr> <tr> <td>TAS 202</td> <td>1994</td> </tr> <tr> <td>TAS 203</td> <td>1994</td> </tr> </tbody> </table>	Standard	Year	TAS 201	1994	TAS 202	1994	TAS 203	1994
Standard	Year								
TAS 201	1994								
TAS 202	1994								
TAS 203	1994								
Equivalence of Product Standards Certified By									
Sections from the Code									

Product Approval Method

Method 1 Option D

Date Submitted

06/26/2023

Date Validated

07/12/2023

Date Pending FBC Approval

07/19/2023

Date Approved

10/18/2023

Summary of Products

FL #	Model, Number or Name	Description
42159.1	ES-V100 Vinyl Single Hung Windows-L.M.I and S.M.I.	ES-V100 Vinyl Single Hung Windows-L.M.I and S.M.I.
Limits of Use Approved for use in HVHZ: Yes Approved for use outside HVHZ: Yes Impact Resistant: Yes Design Pressure: +60/-60 Other:		Installation Instructions FL42159_R0_II_ES-V100 Vinyl Single Hung Windows -L.M.I. FL42159 AD23-14-SS.pdf Verified By: Yiping Wang PE #55983 Created by Independent Third Party: Yes Evaluation Reports FL42159_R0_AE_EVR SH-SS.pdf Created by Independent Third Party: Yes

[Back](#)[Next](#)

[Contact Us](#) :: [2601 Blair Stone Road, Tallahassee FL 32399](#) Phone: 850-487-1824

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Product Approval Accepts:

ES-V 100 VINYL SINGLE HUNG WINDOWS -L.M.I. & S.M.I.

GENERAL NOTES:

- THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 8TH EDITION FLORIDA BUILDING CODE (2023) INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).
- WINDOWS RATED FOR LARGE MISSILE IMPACT. IMPACT SHUTTERS ARE NOT REQUIRED.
- THESE WINDOWS ARE APPROVED FOR AIR AND WATER INFILTRATION.
- 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) SECTION AS APPLICABLE.
- WOOD BUCKS AND METAL STRUCTURES NOT BY E.S. WINDOWS TO BE DESIGNED TO SUPPORT THE LOADS IMPOSED BY THIS GLAZING 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.
- ALL JOINT AND FRAME CONNECTION SEALED WITH SILICONE SEALANT.

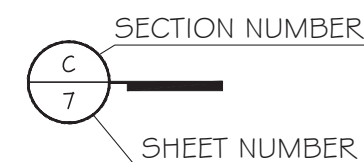
INSTRUCTIONS:

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: SEE SHEET E1 & E2 FOR APPROVED TYPICAL ELEVATION.
- STEP 3: SEE CHARTS ON SHEET G1 FOR DESIGN LOAD CAPACITY OF DESIRED GLASS SIZE BASED ON APPLICABLE WIND DURATION.
- STEP 4: ANCHOR OPTION SEE SHEET D3 & D4. ANCHOR LAYOUT SEE ELEVATION.
- STEP 5: THE LOWEST VALUE RESULTING FROM STEPS 2, 3 AND 4 SHALL APPLY TO ENTIRE SYSTEM.

ABBREVIATIONS AND SYMBOLS

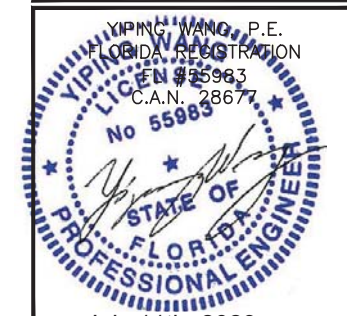
G.B. - GLASS BITE
D.L.O. - DAYLITE OPENING
F.H. - FRAME HEIGHT
F.W. - FRAME WIDTH
W/ - WITH
W/O - WITHOUT
O.C. - ON CENTER



LIMITATIONS OF USE

- A- 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.
- B- CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS PRODUCT BASED ON THIS PRODUCT EVALUATION PROVIDED THE ENGINEER 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.

FL 42159



~~July 11th, 2023~~

ES-V100 Vinyl Single Hung Windows-L.M.I.& S.M.I..

ES WINDOWS, INC.

50 N.W. 49 STREET
Miami, FL 33142
EMAIL: sschab@cs.cmu.edu

TEL. (305) 638-5151 EMAIL: ssabagh@energiasolar.com

MCY ENGINEERING, INC.
GLAZING CONSULTANTS

12781 MIRAMAR PARKWAY #301
MIRAMAR, FL 33027 P: 305.271.0117

www.MCYEngineering.com mcy@mcysengineering.com

[illegible]

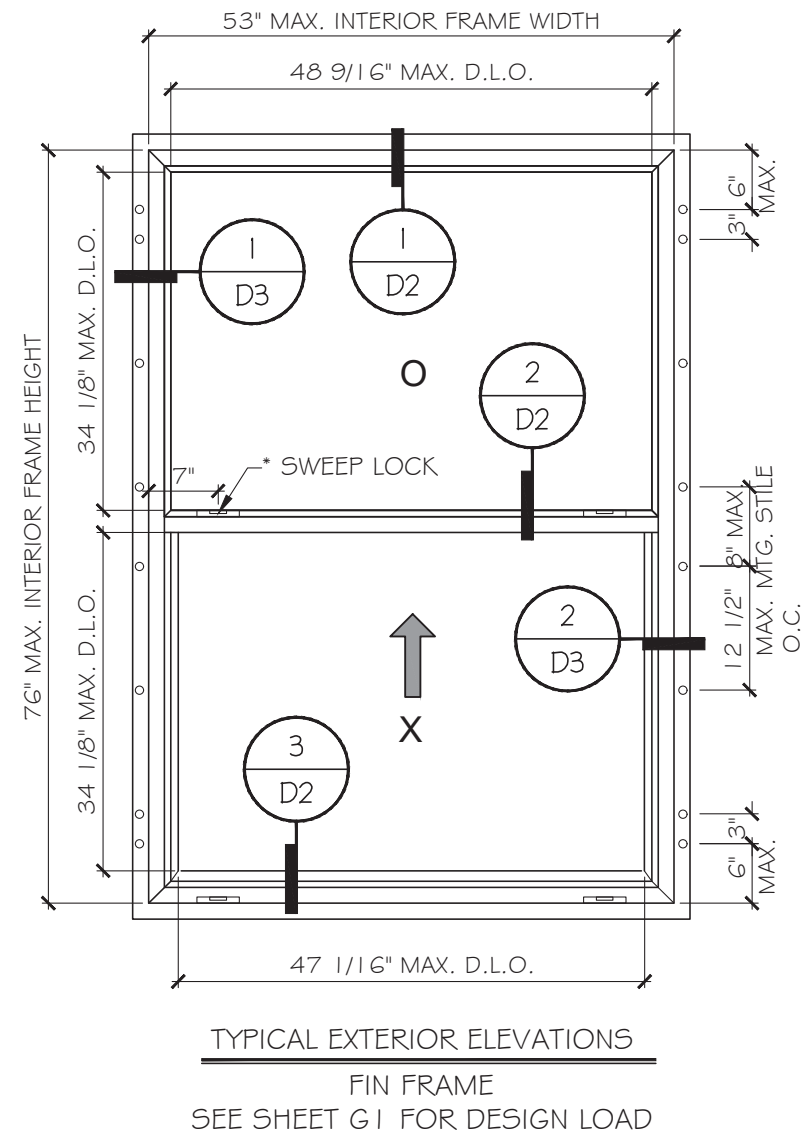
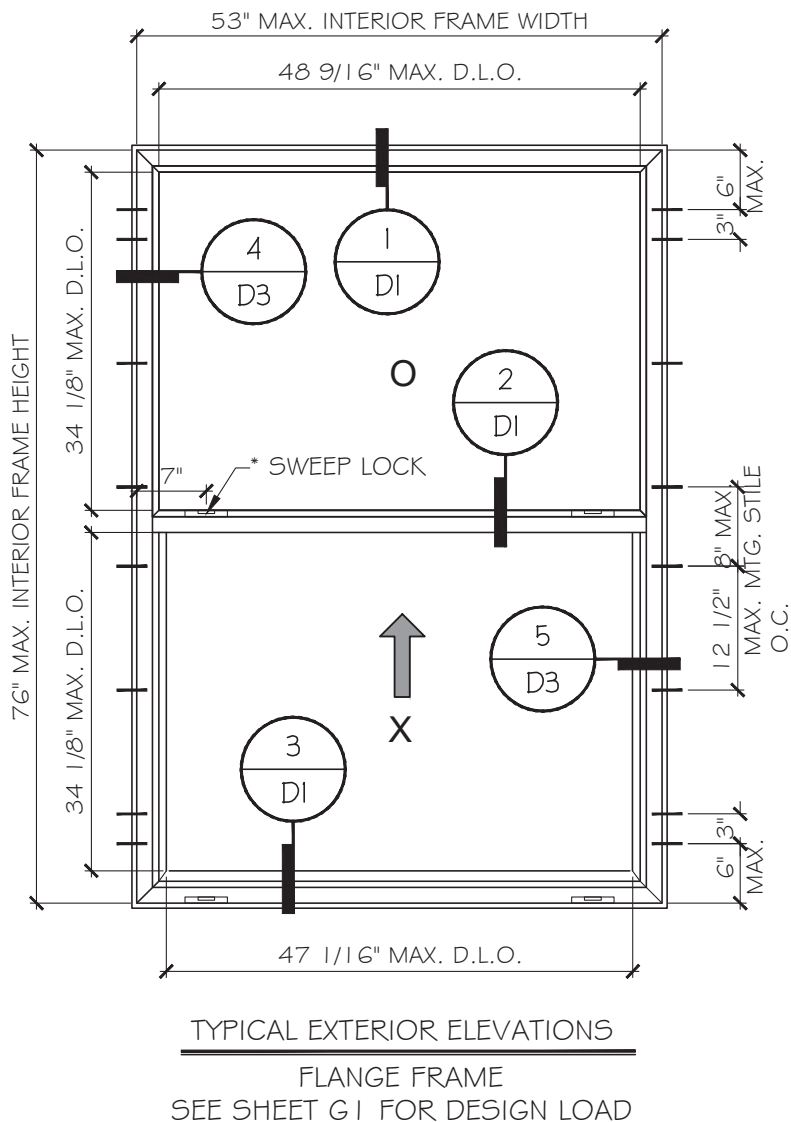
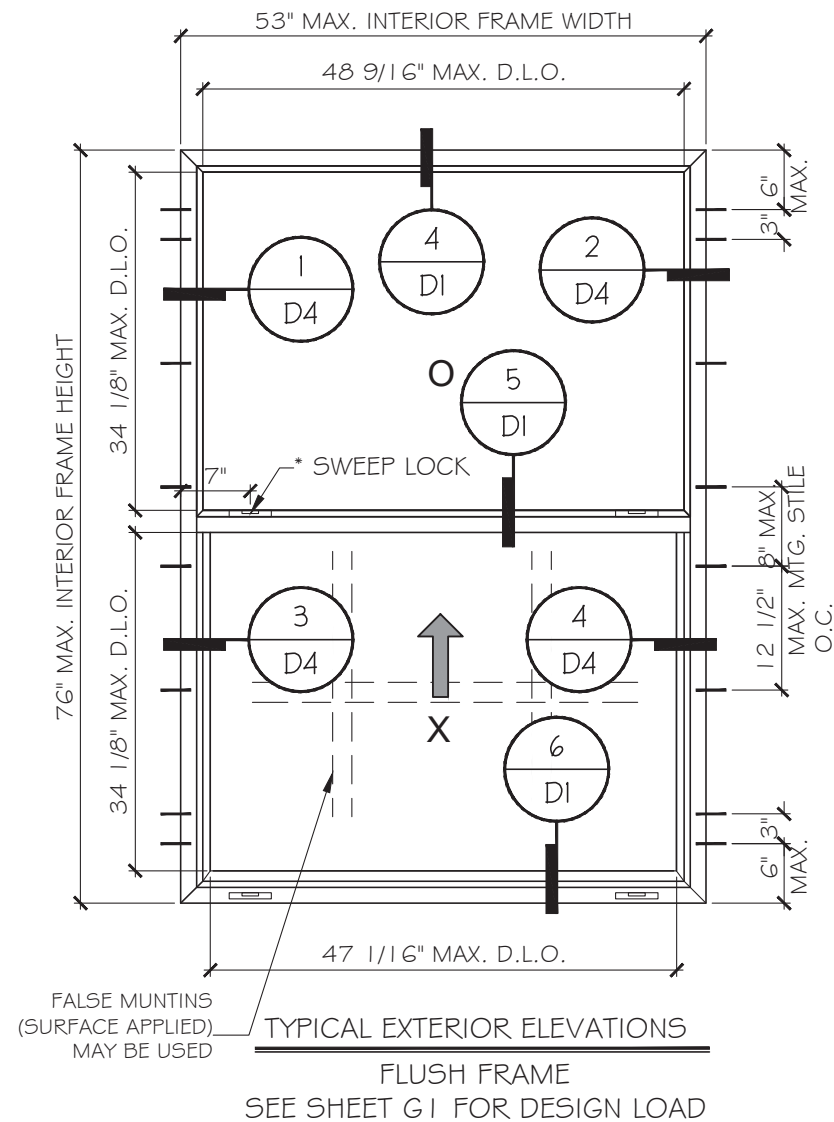
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	DRAWING NO.
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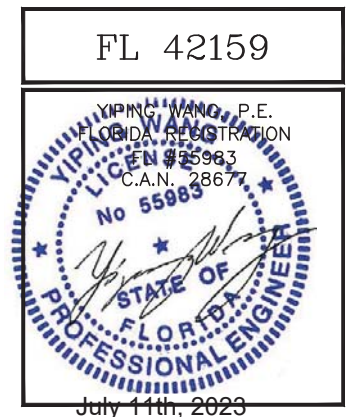
AD23-14

COVER

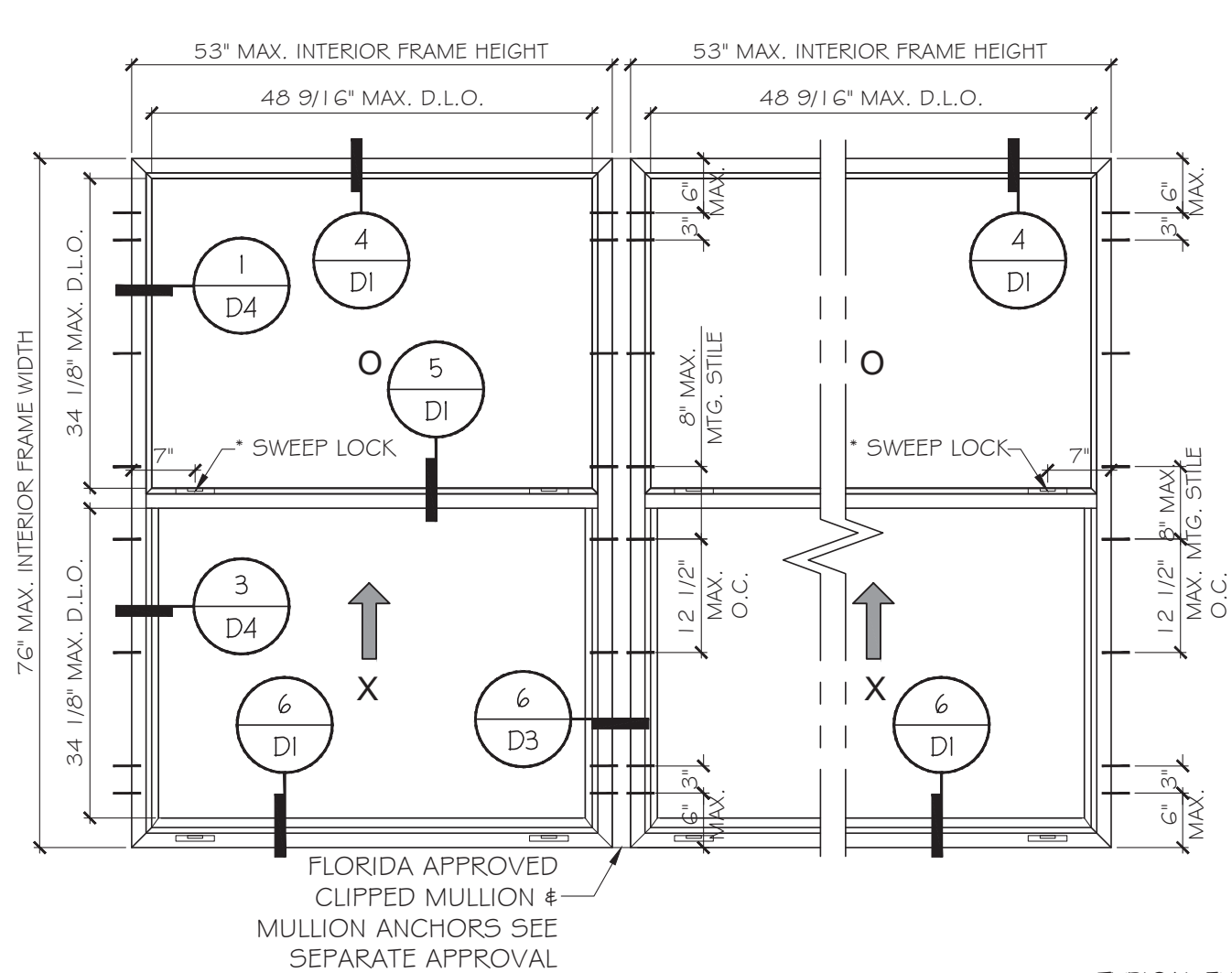
Sheet No.
01 OF 12



* SWEEP LOCK
(1) PER VENT FOR WDW. HT UPTO 25" AT MID HEIGHT
(2) PER VENT FOR WDW. HT ABOVE 25" AT 7"
FROM EACH END.

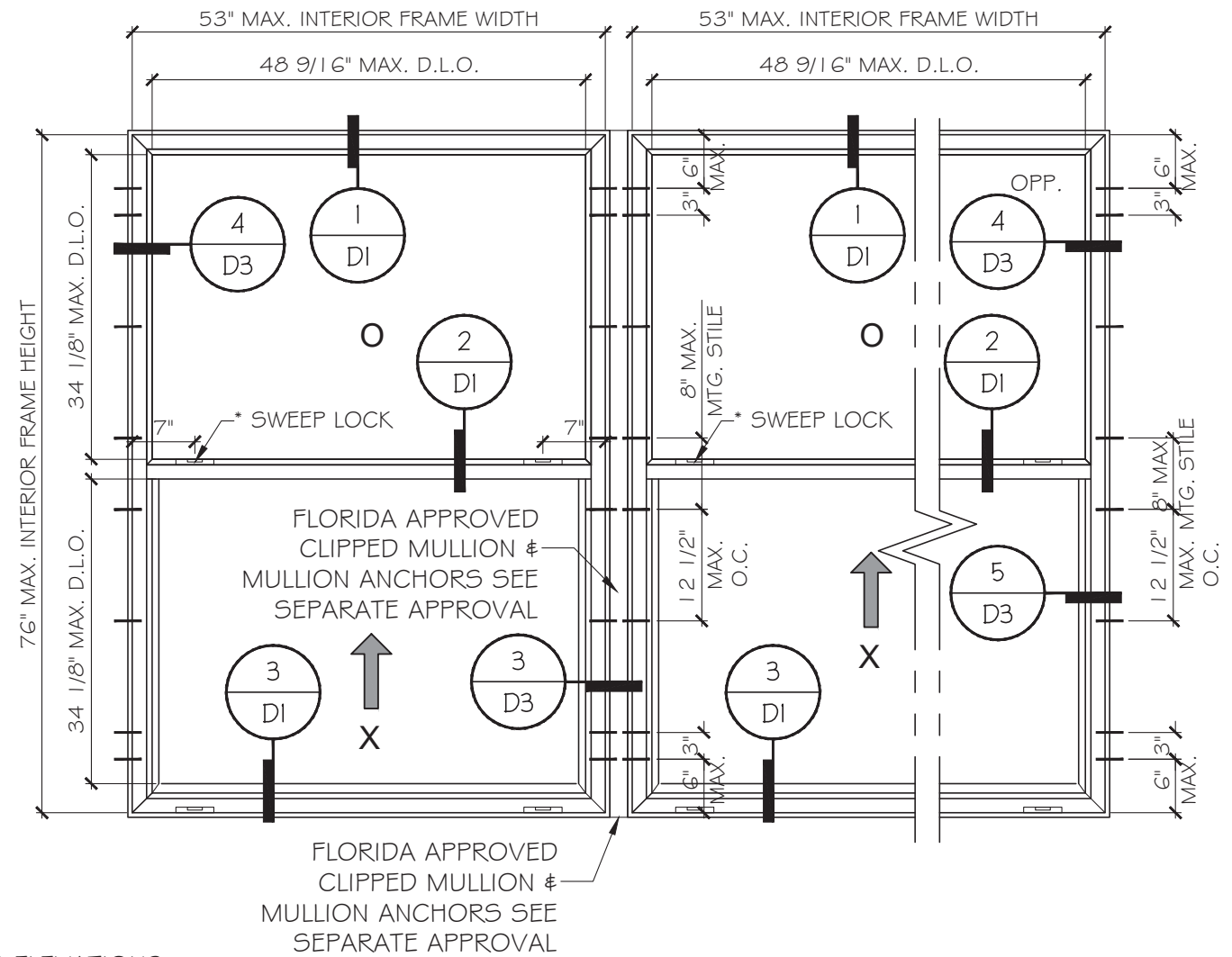


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TYPICAL EXTERIOR ELEVATIONS
SEE SHEET G I FOR DESIGN LOAD

* SWEEP LOCK
(1) PER VENT FOR WDW. HT UPTO 25" AT MID HEIGHT
(2) PER VENT FOR WDW. HT ABOVE 25" AT 7" FROM EACH END.



FL 42159

YIPING WANG, P.E.
FLORIDA REGISTRATION
No. 55983
C.A.N. 28677

July 11th, 2023

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A diagram of a window frame. The top horizontal dimension is labeled "INTERIOR FRAME WIDTH". The left vertical dimension is labeled "INTERIOR FRAME HEIGHT". The frame is divided into two horizontal sections. The top section contains a small circle labeled "O". The bottom section contains a small upward-pointing arrow labeled "X".

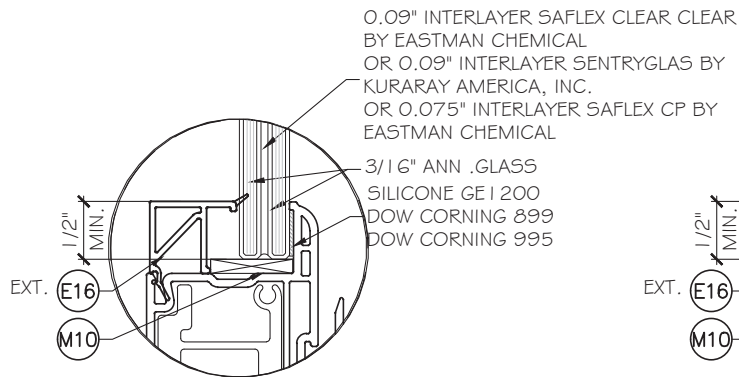
DAYLITE OPENINGS:
DLO WIDTH = INTERIOR FRAME WIDTH - 4.4375 (FIX. LITE)
= INTERIOR FRAME WIDTH - 6 (VENT)

$$\text{DLO HEIGHT (EQUAL LITES)} = \frac{\text{WINDOW HEIGHT} - 7.750}{2}$$

Diagram illustrating the dimensions and components of a window frame:

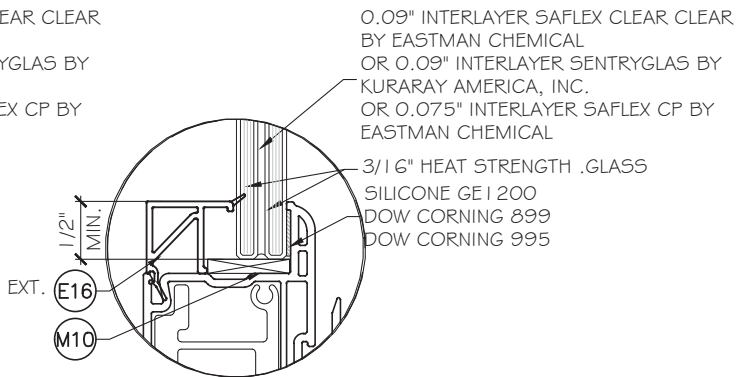
- INTERIOR FRAME WIDTH**: The width of the main window frame.
- INTERIOR FRAME HEIGHT**: The total height of the window frame.
- VENT HEIGHT**: The height of the lower vent section.
- 19 1/8" MIN.**: The minimum height of the vent section.
- O**: A small circle indicating the location of the main window opening.
- X**: A small 'X' mark indicating the location of the vent opening.
- ↑**: An upward-pointing arrow indicating the direction of vent operation.

UNEQUAL LITES

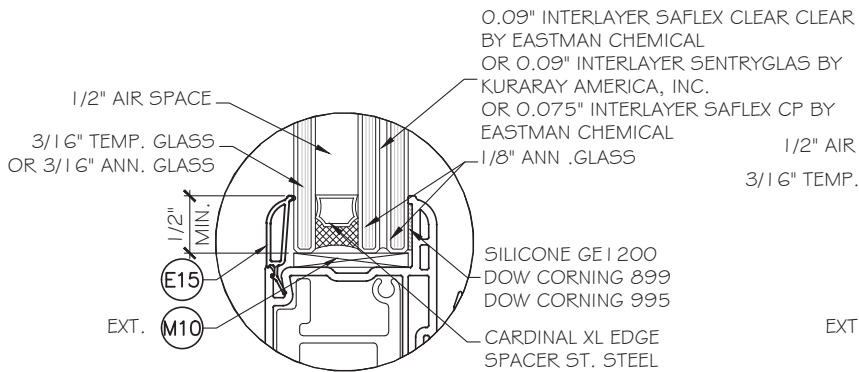


GLASS TYPE 'A'
7/16" NOMINAL OVERALL

(L.M.I. & S.M.I.)



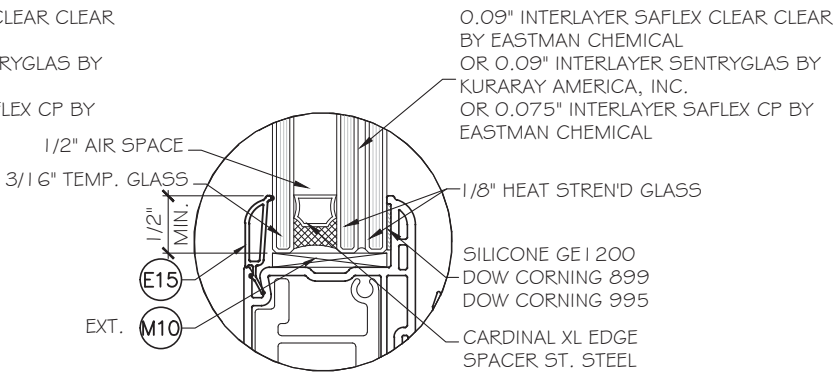
GLASS TYPE 'B'
7/16" NOMINAL OVERALL



GLASS TYPE 'A1'
1" NOMINAL OVERALL

(L.M.I. ONLY)

(S.M.I.)
IN ORDER TO QUALIFY FOR SMALL MISSILE IMPACT RATING,
EXTERIOR PLY OF GLASS TYPES 'A I' & 'B I' MUST BE TEMPRED.



GLASS TYPE 'B I'

1" NOMINAL OVERALL

1" NOMINAL OVERALL

NOTE:
GLASS COMPLIES WITH ASTM E 1300-09
(3 SEC. GUSTS).



FL 42159

YIPING WANG, P.E.
FLORIDA REGISTRATION
FL #55983
C.A.N. 28677

~~July 11th, 2023~~

ES-V100 Vinyl Single Hung Windows-L.M.I. & S.M.I..

MCY ENGINEERING, INC.

GLAZING CONSULTANTS

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MIRAMAR, FL 33027 P: 305.271.0117

www.MCSEngineering.com mcy@mcvengineering.com

ES WINDOWS, INC.

3550 N.W. 49 STREET
Miami, FL 33142

Miami, FL 33142
TEL. (305) 638-5151 EMAIL: ssabagh@energiasolar.com

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Drawn Dat

Scale

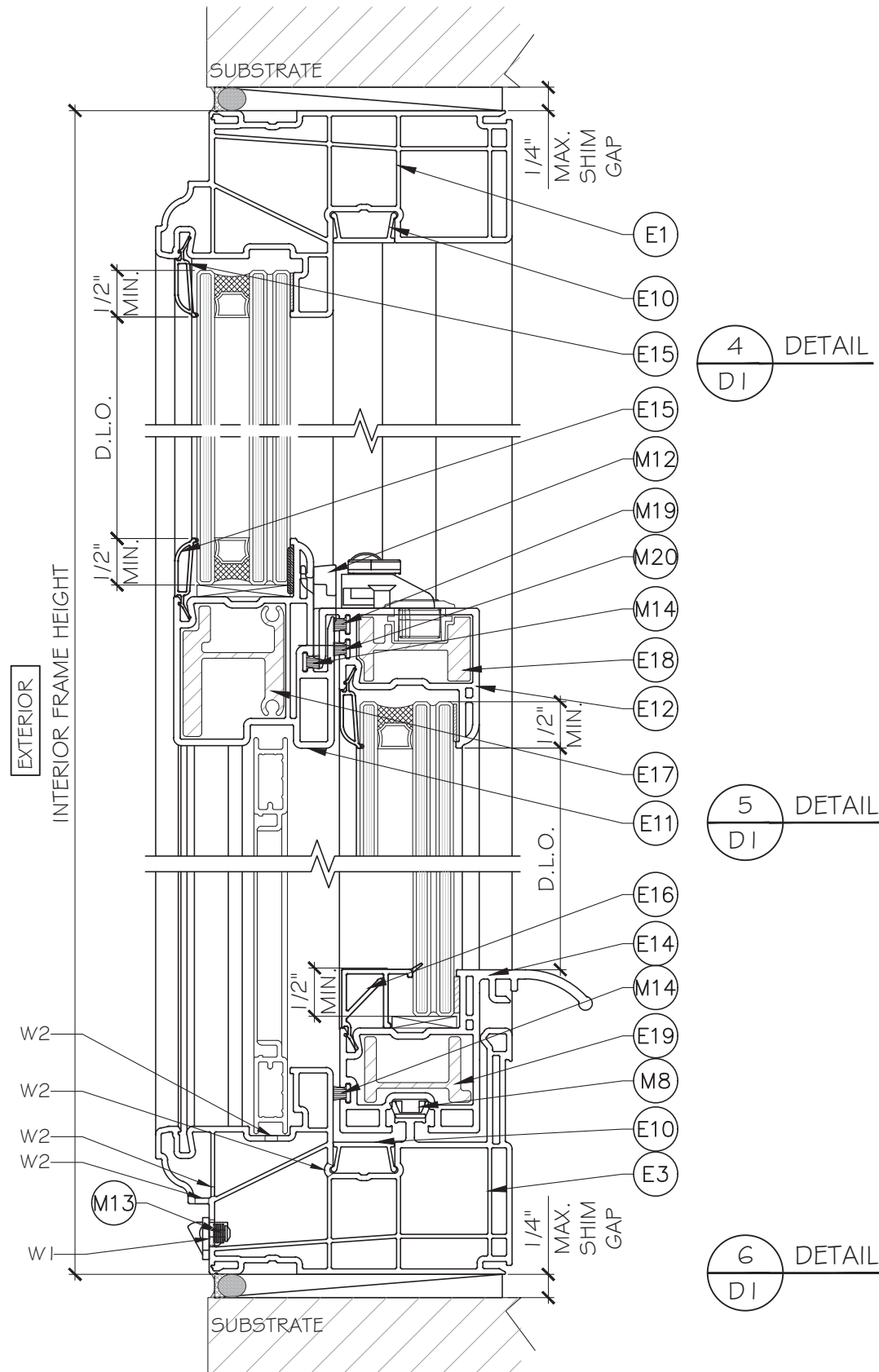
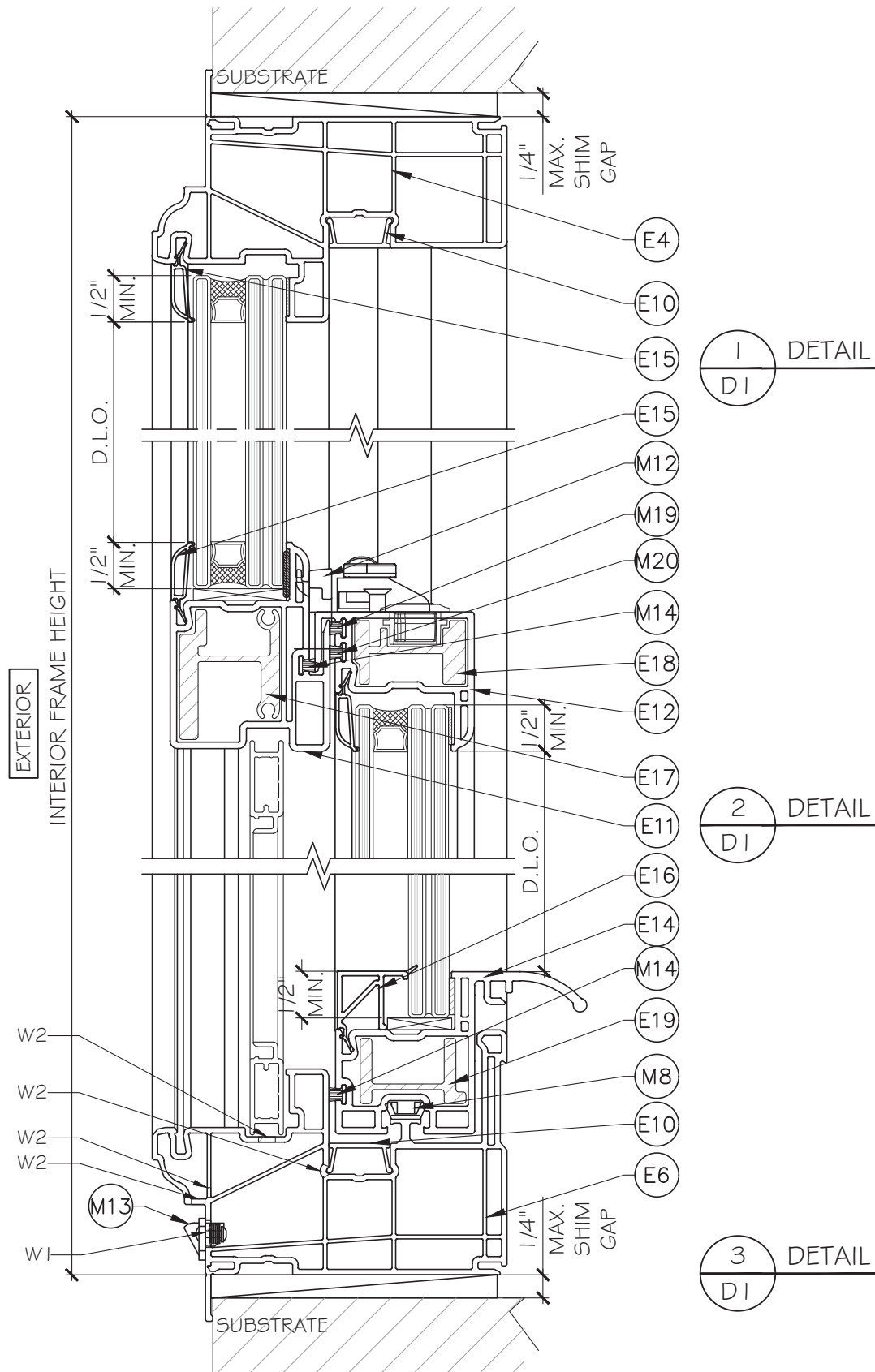
DRAWING NO.

AD23-14

G1

Sheet No.

03 OF 12



WEEPHOLES:
W1 = 1/4" X 1-1/2" WEEP SLPT AT 4-1/8" FROM EACH END WITH PLASTIC COVER
W2 = 1/8" X 1/2" WEEP SLOT AT 3-1/4" FROM EACH END.

FL 42159

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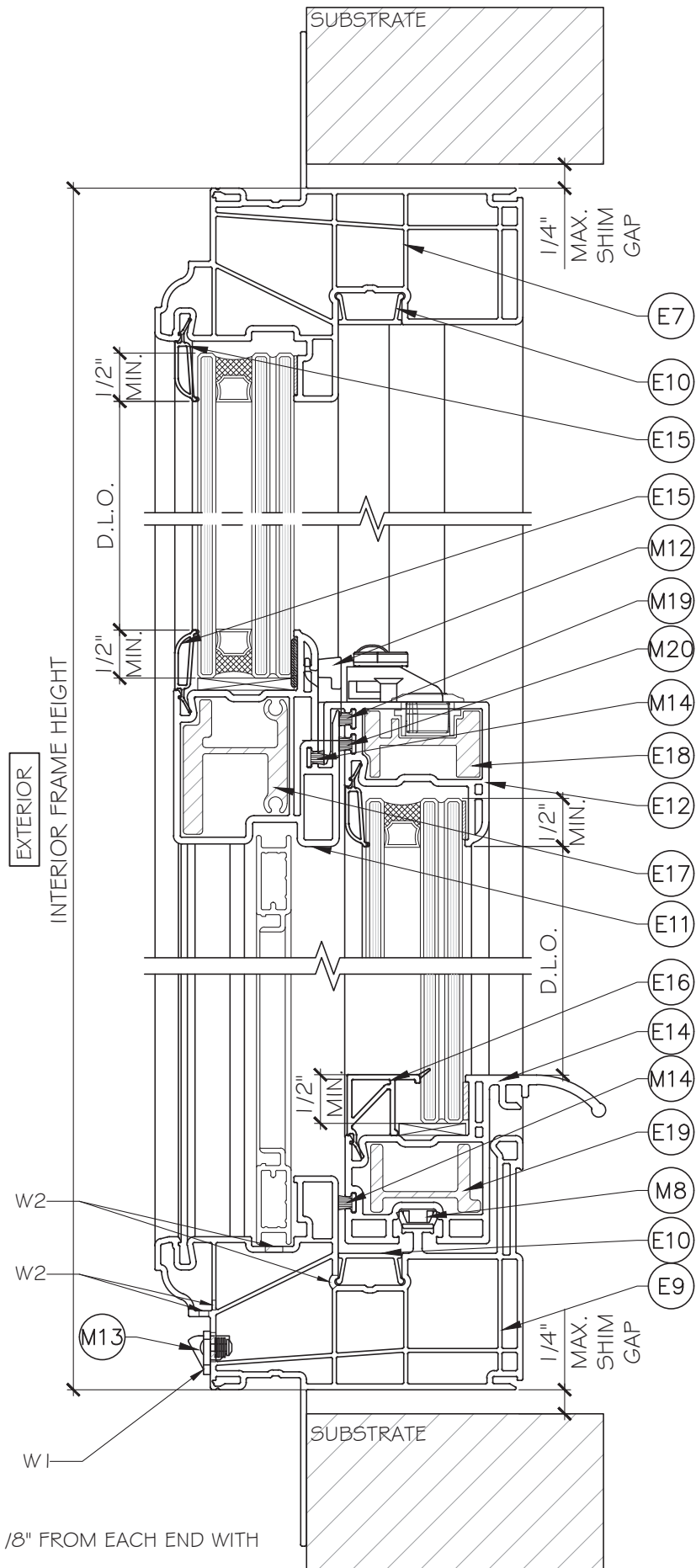
DRAWING NO.

AD23-14

D1

Sheet No.

04 OF 12



WEEPHOLES:
W1 = 1/4" X 1-1/2" WEEP SLPT AT 4-1/8" FROM EACH END WITH PLASTIC COVER
W2 = 1/8" X 1/2" WEEP SLOT AT 3-1/4" FROM EACH END.

1
D2
DETAIL

2
D2
DETAIL

3
D2
DETAIL

FL 42159

YIPING WANG, P.E.

FLORIDA REGISTRATION

FL #55983

C.A.N. 28677

YIPING WANG

STATE OF FLORIDA

PROFESSIONAL ENGINEER

July 11th, 2023

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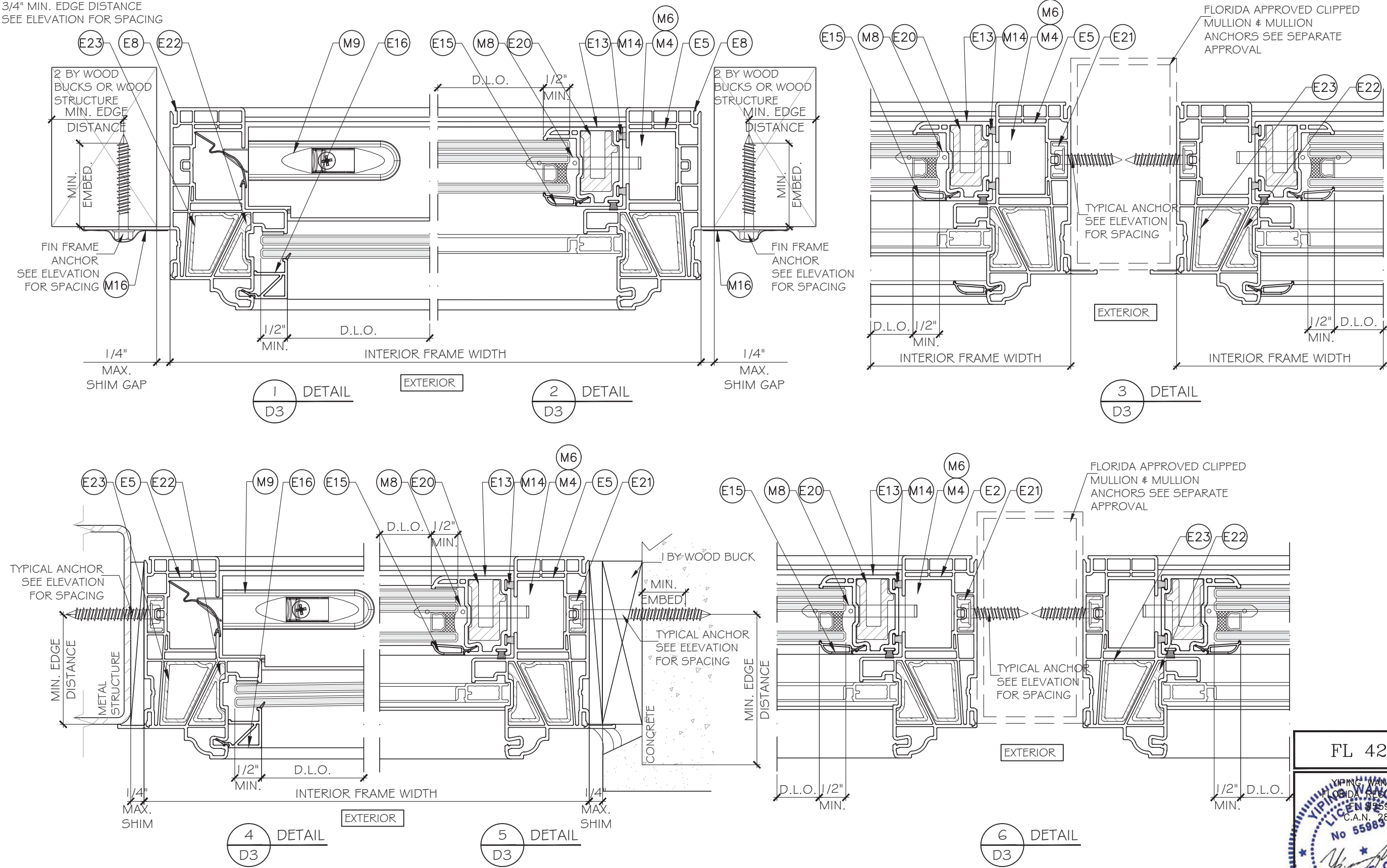
AD23-14

Sheet No.

05 OF 12

D2

FIN FRAME ANCHOR
#8 SMS/ WOOD SCREW (GRADE 2 CRS)
INTO 2 BY WOOD BUCKS
OR WOOD STRUCTURES
1 - 1/4" MIN. PENETRATION INTO WOOD (G=0.55 MIN.)
3/4" MIN. EDGE DISTANCE
SEE ELEVATION FOR SPACING



FLANGE AND FLUSH FRAMES CAN BE
USED AT ALL ANCHORAGE CONDITIONS

FLORIDA APPROVED CLIPPED
MULLION & MULLION
ANCHORS SEE SEPARATE
APPROVAL

TYPICAL ANCHOR
SEE ELEVATION
FOR SPACING

EXTERIOR

FLORIDA APPROVED CLIPPED
MULLION & MULLION
ANCHORS SEE SEPARATE
APPROVAL

EXTERIOR

FL 42159

YIPING WANG, P.E.
FLORIDA REGISTRATION
#455983
C.A.N. 28677

Professional Engineer
STATE OF FLORIDA

July 11th, 2023

MCY ENGINEERING, INC.
GLAZING CONSULTANTS

M

C

Y

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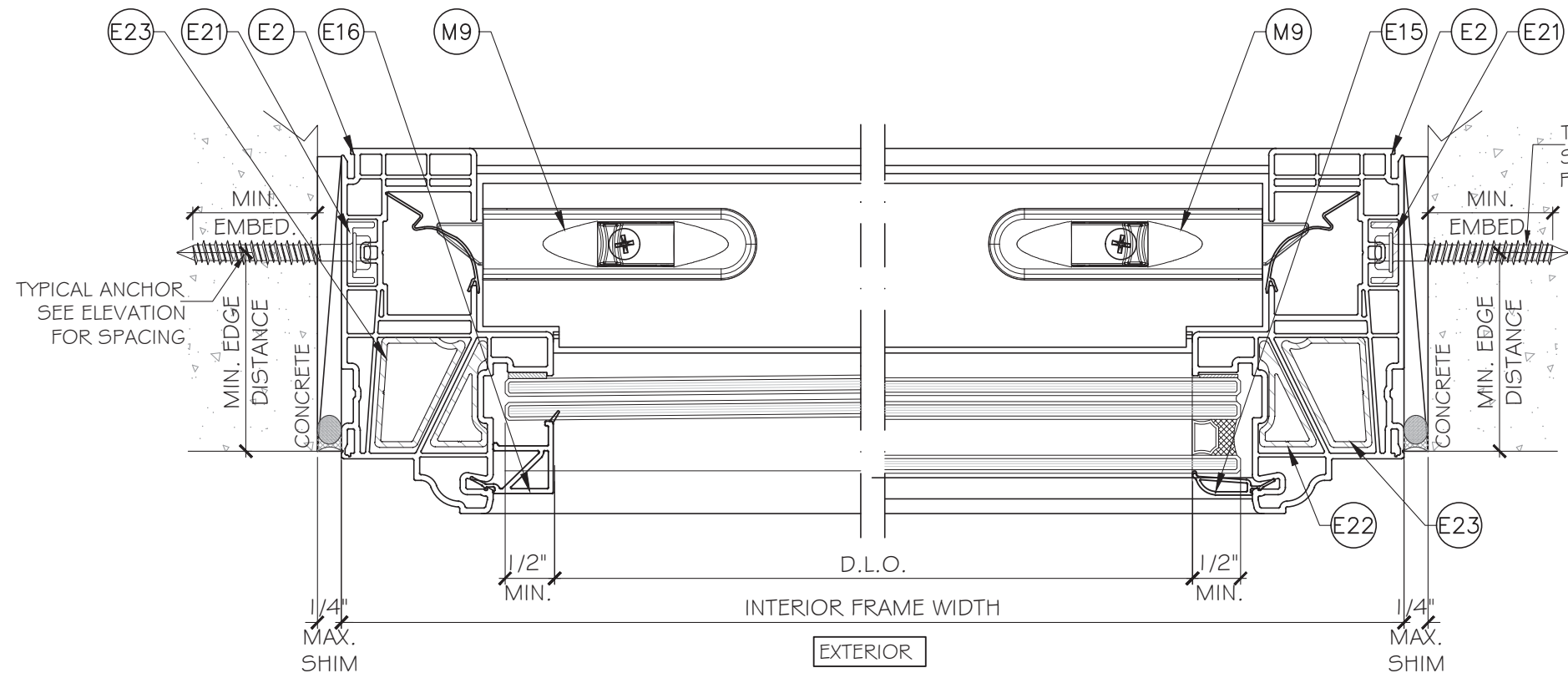
Drawn Date
06.23.2023

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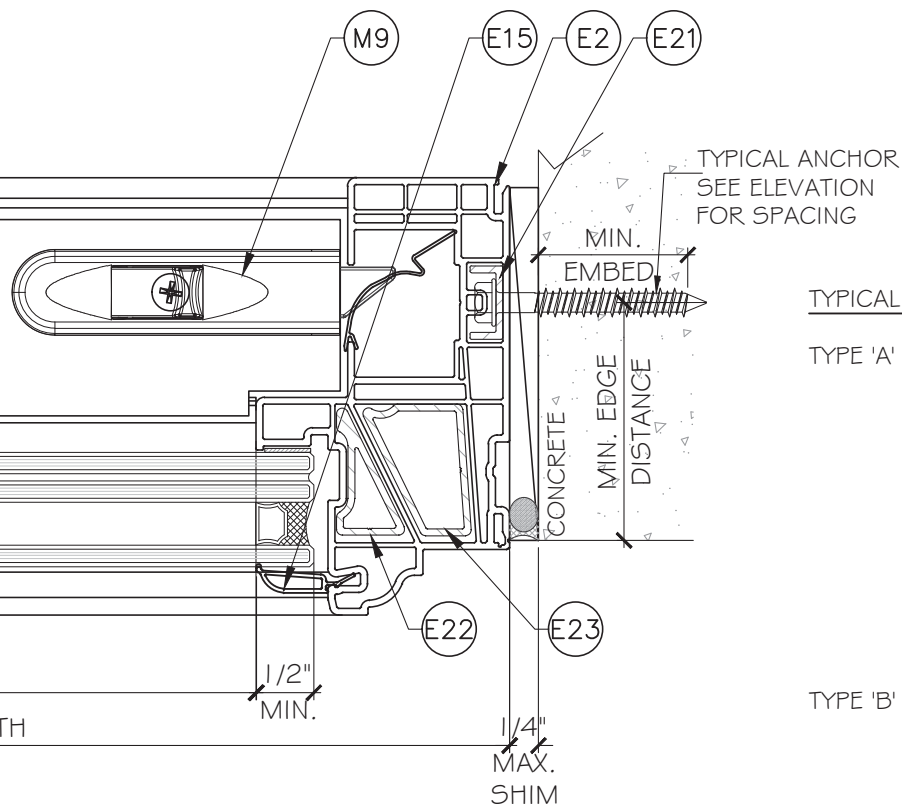
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D3

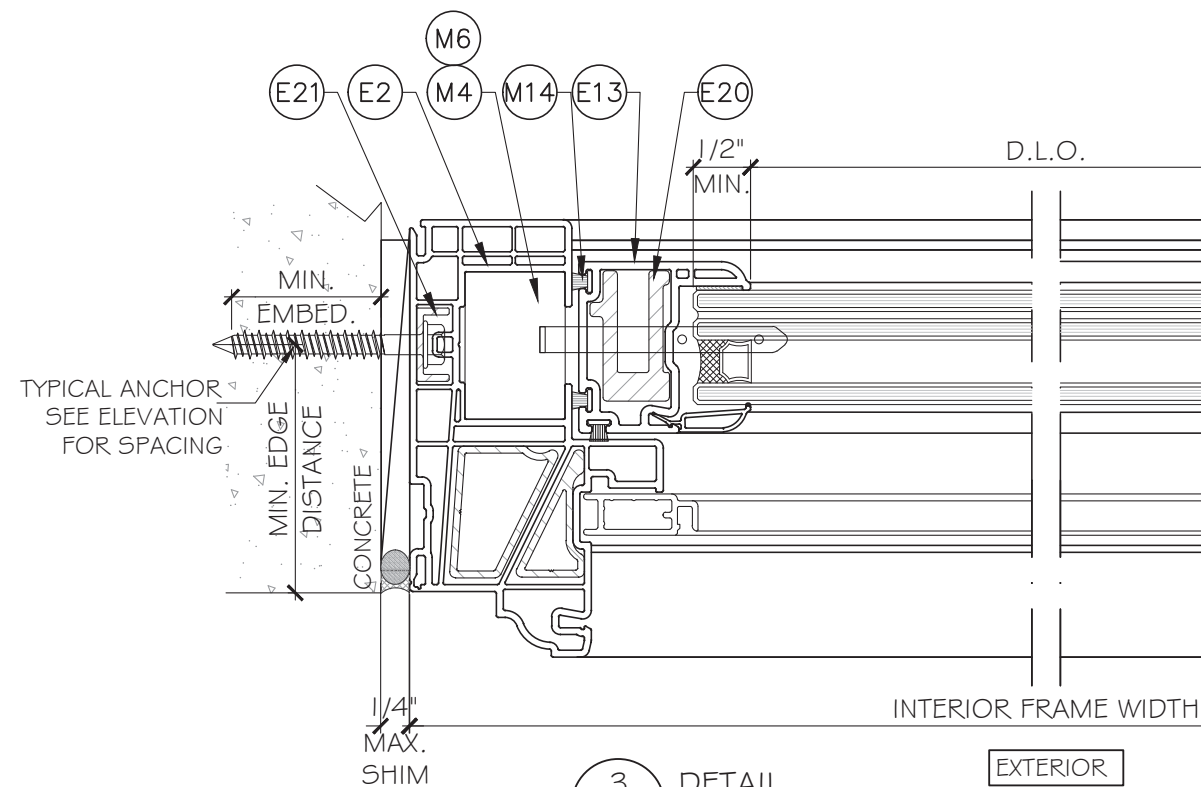
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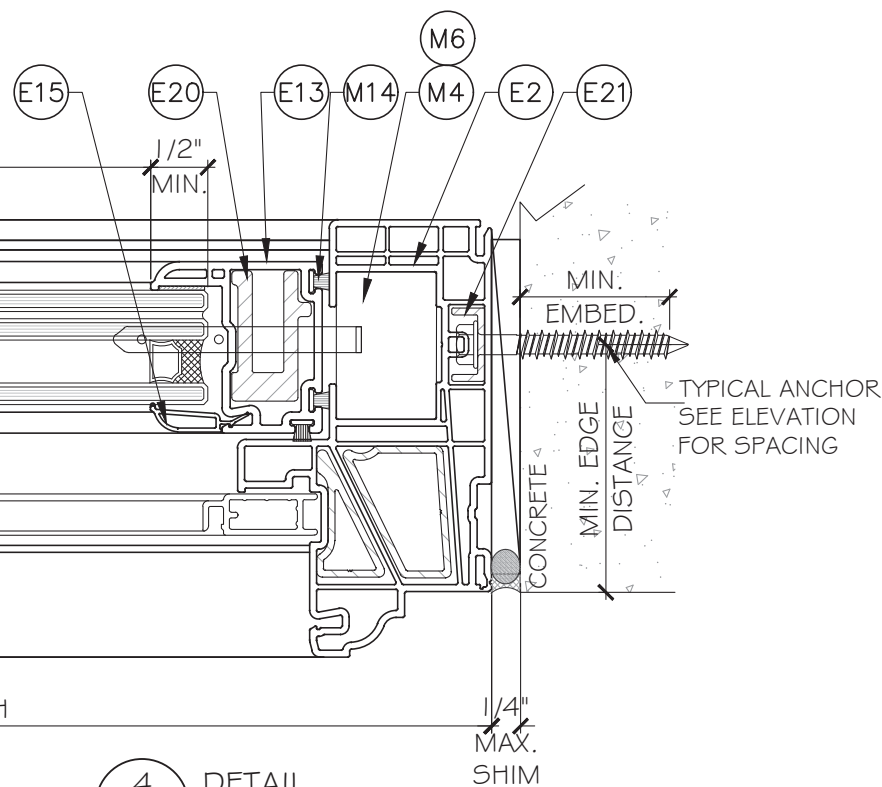
1
D4
DETAIL



2
D4
DETAIL



3
D4
DETAIL



4
D4
DETAIL

TYPICAL ANCHOR TYPES: (SEE ELEVATIONS FOR SPACING)

TYPE 'A' -- 1/4" DIA. ULTRACON+ BY 'DEWALT' ($F_u = 164 \text{ KSI}$, $F_y = 148 \text{ KSI}$) INTO 2 BY WOOD BUCKS OR WOOD STRUCTURES.
1 1/2" MIN. PENETRATION INTO WOOD (HEAD/ JAMBS)

THRU 1 BY BUCKS INTO CONCRETE OR BLOCKS
1 3/4" MIN. EMBED INTO CONCRETE (HEAD/ SILL/ JAMBS)
1 3/4" MIN. EMBED IN TO BLOCKS (JAMBS)

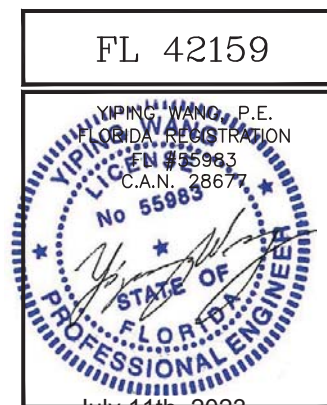
DIRECTLY INTO CONCRETE OR BLOCKS
1 3/4" MIN. EMBED IN TO CONCRETE (HEAD/ SILL/ JAMBS)
1 3/4" MIN. EMBED IN TO BLOCKS (JAMBS)

TYPE 'B' -- #14 SMS OR SELF-DRILLING SCREWS: (GRADE 2 CRS) INTO FBC APPROVED MULLIONS 1/8" THK. MIN. (6063-T5 MIN.) OR INTO METAL STRUCTURES, STEEL: 12 GA. MIN. ($F_y = 36 \text{ ksi}$ MIN.). (3) THREADS MIN. TO EXTEND BEYOND METAL THICKNESS (STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

TYPICAL EDGE DISTANCE

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

WOOD AT HEAD, SILL OR JAMBS $SG = 0.55$ MIN.
CONCRETE AT HEAD, SILL OR JAMB $f'_c = 3 \text{ ksi}$ MIN.
C-90 HOLLOW/ FILLED BLOCK AT JAMBS $f_m = 2000 \text{ PSI}$ MIN.



M C Y MCY ENGINEERING, INC. GLAZING CONSULTANTS 12781 MIRAMAR PARKWAY #301 MIRAMAR, FL 33027 P: 305.271.0117 www.MCYEngineering.com mcy@mcyengineering.com				ES-V100 Vinyl Single Hung Windows-L.M.I. & S.M.I. ES WINDOWS, INC. 3550 N.W. 49 STREET Miami, FL 33142 TEL. (305) 638-5151 EMAIL: ssabagh@energiasolar.com					

E4 FLANGE FRAME HEAD

E6 FLANGE FRAME SILL

E5 FLANGE FRAME JAMB

E1 FLUSH FRAME HEAD

E1 FLUSH FRAME SILL

E2 FLUSH FRAME JAMB

E7 FLUSH FRAME HEAD

E9 FLUSH FRAME SILL

E8 FLUSH FRAME JAMB

E10 SCREW COVER

E12 LOCK STILE

E14 JAMB STILE

E11 FIXED STILE

E13 VENT RAIL

E15 GLAZING BEAD

E16 GLAZING BEAD

E17 FIXED RAIL REINFORCING

E18 TOP RAIL REINFORCING

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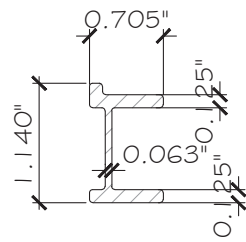
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08 OF 12

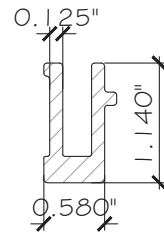
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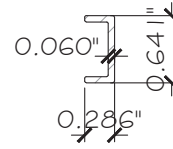
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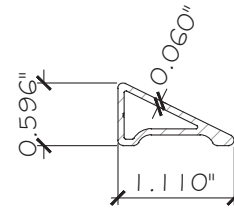
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 BOTTOM RAIL REINF.



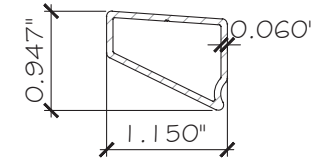
(E20) JAMB STILE REINF.



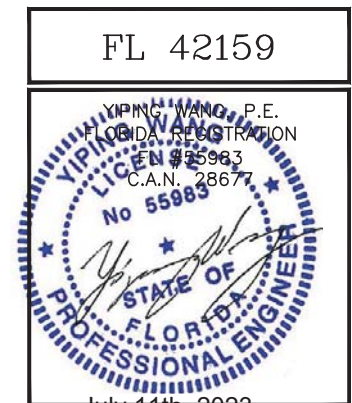
JAMB ANCHOR REINF.
E21



E22 FRAME REINF. SMALL



E23 FRAME REINF. LARGE



									Description
								NEW	
								MAY	Drawn By
								06-23-2023	Date
						I.		Rev. No.	
Drawn Date 06.23.2023							Scale		
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BILL OF MATERIALS					
ITEM	PART	DESCRIPTION	MATERIAL	MANUF.	REMARKS
E1	ES-1000	EQUAL LEG FRAME HEAD	PVC	DECEUNINCK NORTH AERICA LLC	-
E2	ES-1001	EQUAL LEG FRAME JAMB	PVC	DECEUNINCK NORTH AERICA LLC	-
E3	ES-1002	FLANGE FRAME SILL	PVC	DECEUNINCK NORTH AERICA LLC	-
E4	ES-1013	FLANGE FRAME HEAD	PVC	DECEUNINCK NORTH AERICA LLC	-
E5	ES-1014	FLANGE FRAME JAMB	PVC	DECEUNINCK NORTH AERICA LLC	-
E6	ES-1015	FLANGE FRAME SILL	PVC	DECEUNINCK NORTH AERICA LLC	-
E7	ES-1018	FIN FRAME HEAD	PVC	DECEUNINCK NORTH AERICA LLC	-
E8	ES-1019	FIN FRAME JAMB	PVC	DECEUNINCK NORTH AERICA LLC	-
E9	ES-1020	FIN FRAME SILL	PVC	DECEUNINCK NORTH AERICA LLC	-
E10	ES-1003	SCREW COVER	PVC	DECEUNINCK NORTH AERICA LLC	-
E11	ES-1004	FIXED MEETING RAIL	PVC	DECEUNINCK NORTH AERICA LLC	-
E12	ES-1005	LOCK RAIL	PVC	DECEUNINCK NORTH AERICA LLC	-
E13	ES-1006	SIDE RAIL	PVC	DECEUNINCK NORTH AERICA LLC	-
E14	ES-1007	LIFT RAIL	6005A-T5	ES WINDOWS	-
E15	ES-1008	IG GLAZING BEAD	6005A-T5	ES WINDOWS	-
E16	ES-1025	7/16" MONOLITHIC GLAZING BEAD	6005A-T5	ES WINDOWS	-
E17	ES-802	MEETING RAIL REINFORCEMENT	6005A-T5	ES WINDOWS	-
E18	ES-807	LOCK RAIL REINFORCEMENT	6005A-T5	ES WINDOWS	
E19	ES-800	LIFT RAIL REINFORCEMENT	6005A-T5	ES WINDOWS	
E20	ES-801	SIDE RAIL REINFORCEMENT	6005A-T5	ES WINDOWS	
E21	ES-1023	JAMB ANCHOR REINFORCEMENT	6005A-T5	ES WINDOWS	
E22	ES-1026	FRAME REINFORCEMENT SMALL	6005A-T5	ES WINDOWS	6" LONG AT MTG. RAIL
E23	ES-1027	FRAME REINFORCEMENT LARGE	6005A-T5	ES WINDOWS	6" LONG AT MTG. RAIL
M1	SCS 1200	GLAZING SILICONE (1/2" X 3/16" BEAD)	SILICONE	GENERAL ELECTIC	-
M2	DOW 995	GLAZING SILICONE (1/2" X 3/16" BEAD)	SILICONE	DOW CORNING	-
M3	DOW 899	GLAZING SILICONE (1/2" X 3/16" BEAD)	SILICONE	DOW CORNING	-
M4	ULTRALIFT	SPIRAL BALANCE	NYLON/ SS	SULLIVAN OR EQUIV	-
M5	218137	BALANCE SHOE (FOR SPIRAL BALANCE)			
M6	ROLLER TILT ELITE	CONSTANT FORCE BALANCE	-	ES WINDOWS	ATTACHED WITH (2) #6 X 3/4" FH SMS
M7	RT880	BALANCE SHOE (FOR CONSTANT FORCE BALANCE)	-	ES WINDOWS	ATTACHED WITH (2) #6 X 3/4" FH SMS
M8	16Y513	PIVOT BAR	PVC	ES WINDOWS	
M9	46.13.32.101(102)	TITLT LATCH	WOOL	ULTRAFAB	
M10	-	SETTING BLOCK, 2 PER LITE	EPDM	-	DUROMETER 85±5
M11	70-10044	SWEEP LOCK	-		AT FIN FRAME
M12	70-10045	KEEPER	WOOL	ULTRAFAB	

YIPING WANG, P.E.
FLORIDA REGISTRATION
25983
C.A.N. 28677

[illegible]

BILL OF MATERIALS					
ITEM	PART	DESCRIPTION	MATERIAL	MANUF.	REMARKS
M13	I46-1A	WEEP HOLE COVERS	WOOL	ULTRAFAB	REQD. WITH FLAT HEAD ANCHORS AT FIX. LITE ONLY
M14	W43291NW	.187 X .290 WEATHERSTRIP PILE W/ COVER FIN	NYLON	ES WINDOWS	
M16		PROTECTO WRAP WATERPROOFING OR EQUIV.			
M17	W2315NW		WOOL	ULTRAFAB	
M18	W23221NG		WOOL	ULTRAFAB	
S3		#8 X 3" TRUSS HEAD SMS - MEETING RAIL ATTACHMENT			
S4		#8 X 5/8" FLAT HEAD SMS - CONSTANT FORCE BALANCE.			4 PER MTG RAIL
S5		#8 X 3/4" PAN HEAD SMS - PIVOT BAR			
S7		#8 X 1-1/8" FLAT HEAD SMS - SPIRAL BALANCE			
S8		#8 X 1/2" FLAT HEAD SMS - TILT LATCH			

BILL OF MATERIALS					
ITEM	PART	DESCRIPTION	MATERIAL	MANUF.	REMARKS
M13	I46-1A	WEEP HOLE COVERS	WOOL	ULTRAFAB	REQD. WITH FLAT HEAD ANCHORS AT FIX. LITE ONLY
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3550 N.W. 49 STREET
Miami, FL 33142
EMAIL: ssabach@e

TEL. (305) 638-5151 EMAIL: ssabagh@energiasolar.com

1.	06.23.2023	MCY	NEW						
Rev. No.	Date	Drawn By	Description						

Drawn Date

scale

DRAWING NO.

AD23-14

BOM

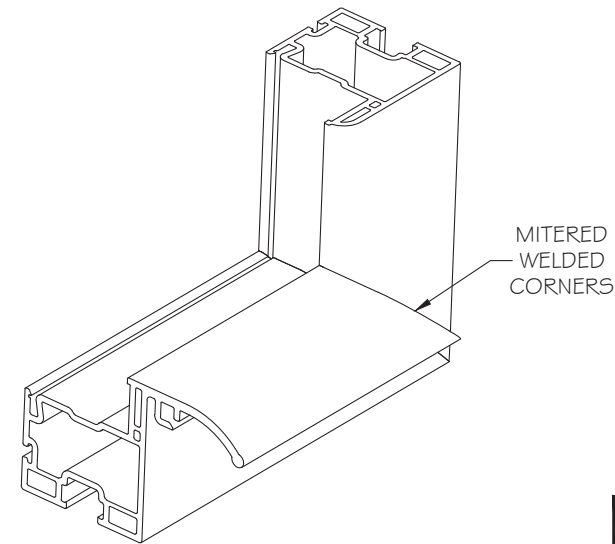
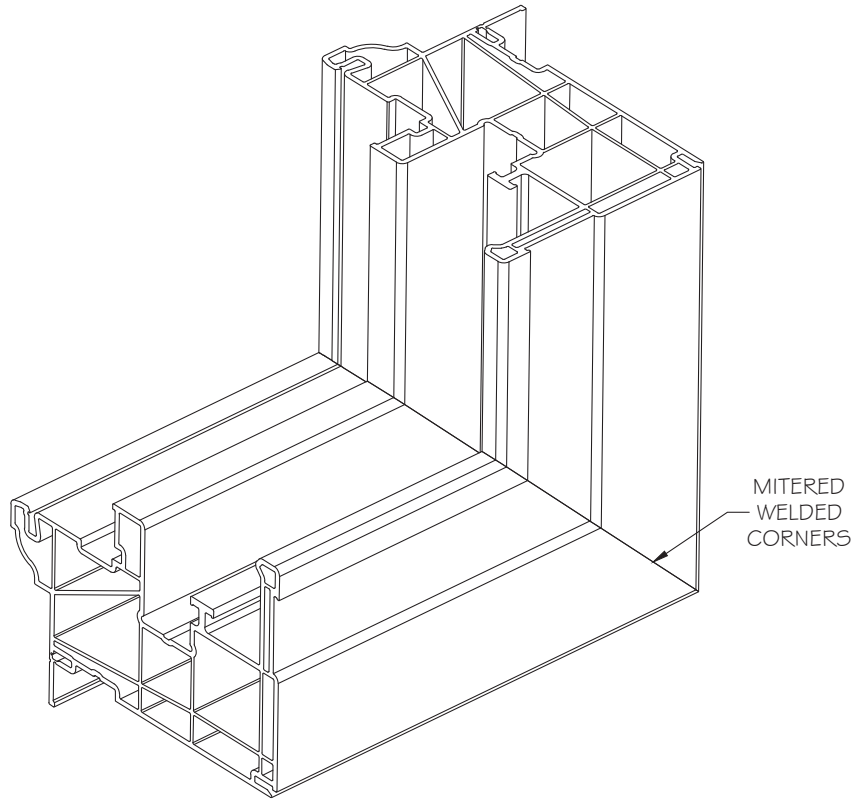
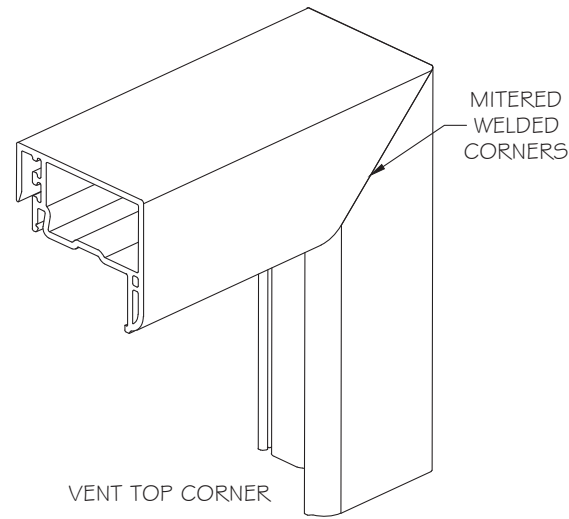
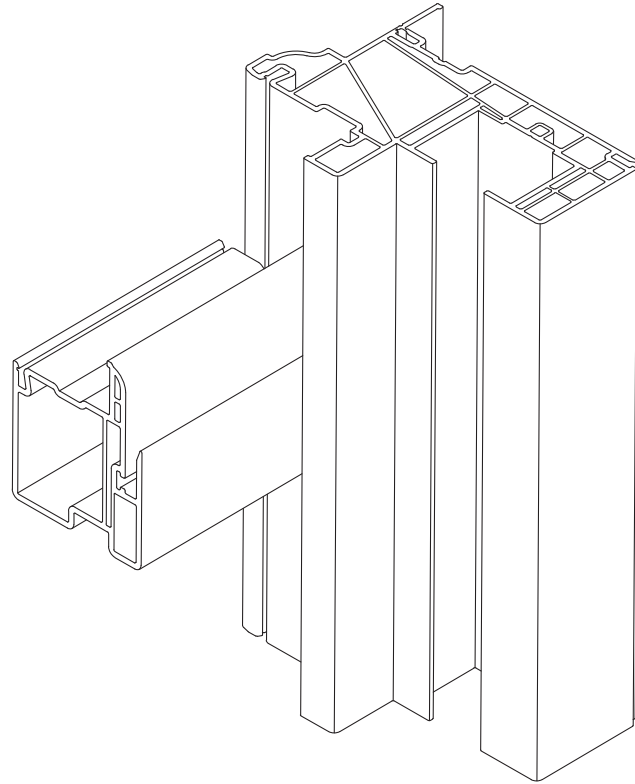
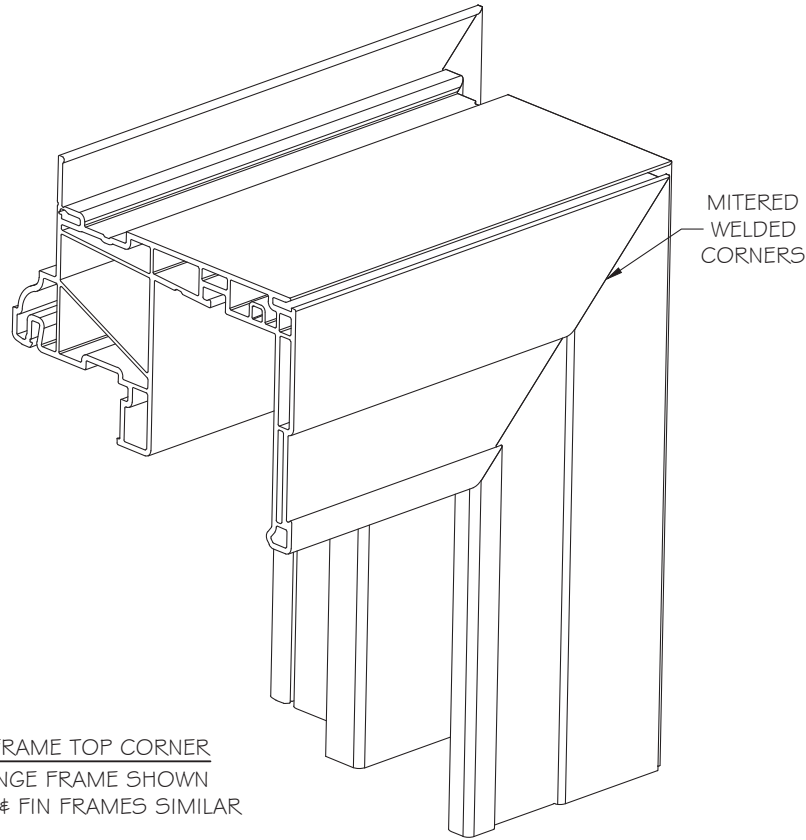
Sheet No.

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FL 42159



~~July 11th, 2023~~



FL 42159

YIPING WANG, P.E.
FLORIDA REGISTRATION
#55983
C.A.N. 28677

YIPING WANG
LICENSED PROFESSIONAL ENGINEER
STATE OF FLORIDA
No 55983

July 11th, 2023

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Rev. No.	Date	Drawn By	Description
1.	06.23.2023	MCY	NEW

Drawn Date
06.23.2023

DRAWING NO.
AD23-14

ASSEMBLY

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Scale