Product Approval
USER: Public User

FL #	FL21557-R6
Application Type	Revision
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	Jalal Farooq veronica@afceng.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	Horizontal Slider
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	Jalal Farooq
Florida License	PE-81223
Quality Assurance Entity	Keystone Certifications, Inc.
Quality Assurance Contract Expiration Date	03/25/2035
Validated By	Abel Carrasco, PE ☑ Validation Checklist - Hardcopy Received
Certificate of Independence	FL21557_R6_COI_SS - Certificate of Independence 2023.pdf

Referenced Standard and Year (of Standard)

Standard	Year
ASTM E1886	2013
ASTM E1996	2017
TAS 201	1994
TAS 202	1994
TAS 203	1994

Equivalence of Product Standards Certified By	Florida Licensed Professional Engineer or Architect FL21557_R6_Equiv_Equiv Ltr ASTM E1886-1996.pdf

Sections from the Code

Product Approval Method	Method 1 Option D
Date Submitted	08/21/2023
Date Validated	08/21/2023
Date Pending FBC Approval	08/27/2023
Date Approved	10/17/2023

Summary of Products

FL #	Model, Number or Name	Description
21557.1	Series ES-EL200 Aluminum Horizontal Rolling Window	Large missile impact resistant aluminum horizontal rolling window.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** Yes **Design Pressure:** +80/-90 **Other:** See attached drawing W16-69 for installation details.		**Installation Instructions** FL21557_R6_II_SS - ES-EL200 HR (LMI) - DWG W16-69 (2023).pdf Verified By: Jalal Farooq PE # 81223 Created by Independent Third Party: Yes **Evaluation Reports** FL21557_R6_AE_SS - ES-EL200 HR (LMI)-PAE 2023.pdf Created by Independent Third Party: Yes
21557.2	Series ES-EL200 Aluminum Horizontal Rolling Window	Non-Impact resistant aluminum horizontal rolling window.
Limits of Use **Approved for use in HVHZ:** Yes **Approved for use outside HVHZ:** Yes **Impact Resistant:** No **Design Pressure:** +80/-100 **Other:** See attached drawing 20-63F for installation details.		**Installation Instructions** FL21557_R6_II_SS - ES-EL200 HR (NI) - DWG 20-63F (2023).pdf Verified By: Jalal Farooq PE #81223 Created by Independent Third Party: Yes **Evaluation Reports** FL21557_R6_AE_SS - ES-EL200 HR (NI)-PAE 2023.pdf Created by Independent Third Party: Yes

Back Next

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Product Approval Accepts:

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AL-FAROOQ CORPORATION

CONSULTING ENGINEERS & PRODUCT DEVELOPMENT

PRODUCT APPROVAL EVALUATION
RULE CHAPTER #61G20-3 • METHOD 1 OPTION D

FL 21557
Date: 07/17/2023

Detailed Product Description:
Manufacturer: E.S. WINDOWS, LLC.
Manufacturer Address: 3550 N.W. 49 STREET – MIAMI, FL. 33142
Model Name: SERIES ES-EL200 ALUMINUM HORIZONTAL ROLLING WINDOW
Maximum Load: +80 PSF, -90 PSF (Large Missile Impact)
Installation Drawings # W16-69

This product complies with the High Velocity Hurricane Zone (HVHZ) testing requirements.

For maximum sizes, combination of span vs loads and anchor type refer to installation drawings.

Comparative analysis used X Yes __ No

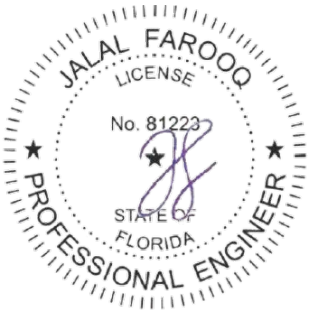
Mandatory Tests (Tested in accordance with AAMA 101/I.S.2/NAFS/TAS-202)

TEST	DESCRIPTION	TEST LOCATION	TEST REPORT DATE	TEST REPORT #	TEST SEALED BY
ASTM E283	Air Infiltration Leakage	Blackwater Testing Inc. Fenestration Testing Lab QAI Laboratories	12/08/2016 04/23/2020 10/19/2022	BT-ESW-16-007 FTL-11027 QAI-13090	Constantin Bortes, PE Idalmis Ortega, PE Idalmis Ortega, PE
ASTM E331 OR ASTM 547 & TAS 202	Water Penetration	Blackwater Testing Inc. Fenestration Testing Lab QAI Laboratories	12/08/2016 04/23/2020 10/19/2022	BT-ESW-16-007 FTL-11027 QAI-13090	Constantin Bortes, PE Idalmis Ortega, PE Idalmis Ortega, PE
ASTM E330 & TAS 202	Uniform Static Air Press.	Blackwater Testing Inc. Fenestration Testing Lab QAI Laboratories	12/08/2016 04/23/2020 10/19/2022	BT-ESW-16-007 FTL-11027 QAI-13090	Constantin Bortes, PE Idalmis Ortega, PE Idalmis Ortega, PE
ASTM F588	Forced Entry	Blackwater Testing Inc. QAI Laboratories	12/08/2016 10/19/2022	BT-ESW-16-007 QAI-13090	Constantin Bortes, PE Idalmis Ortega, PE

Supplemental Tests (Tested in accordance with TAS-201 and TAS-203)					
TEST	**DESCRIPTION**	**TEST LOCATION**	**TEST REPORT DATE**	**TEST REPORT #**	**TEST SEALED BY**
FBC 1626.2 TAS 201 & 203 ASTM E1886/1996	Large Missile Impact & Cyclic	Blackwater Testing Inc. Fenestration Testing Lab QAI Laboratories	12/08/2016 10/24/2017 04/23/2020 10/19/2022	BT-ESW-16-007 BT-ESW-17-007 FTL-11027 QAI-13090	Constantin Bortes, PE Idalmis Ortega, PE Idalmis Ortega, PE

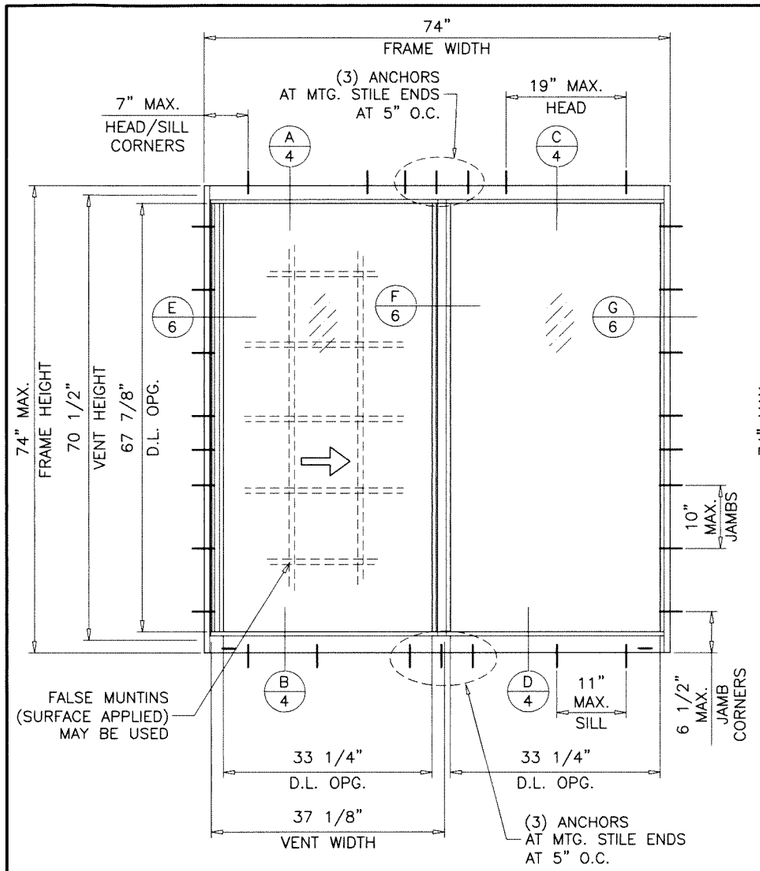
Under the limitations of the attached installation drawings, to the best of my knowledge and ability, the above product conforms to the requirements of the 2023 Florida Building Code.

Evaluation Report Engineer:



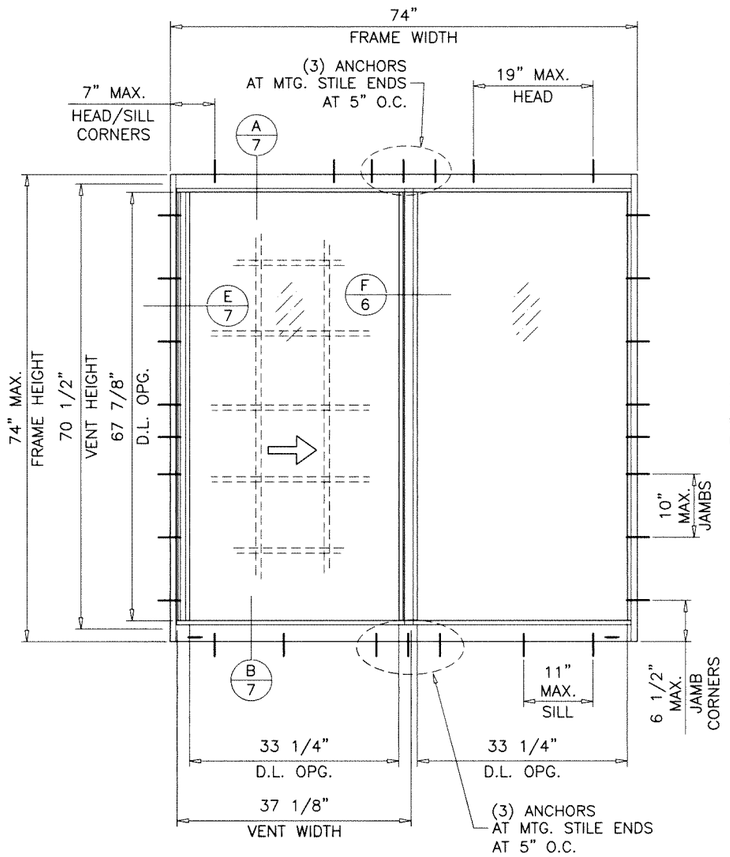
Jalal Farooq PE # 81223
Al-Farooq Corporation EB # 3538

Sealed: 8/17/2023



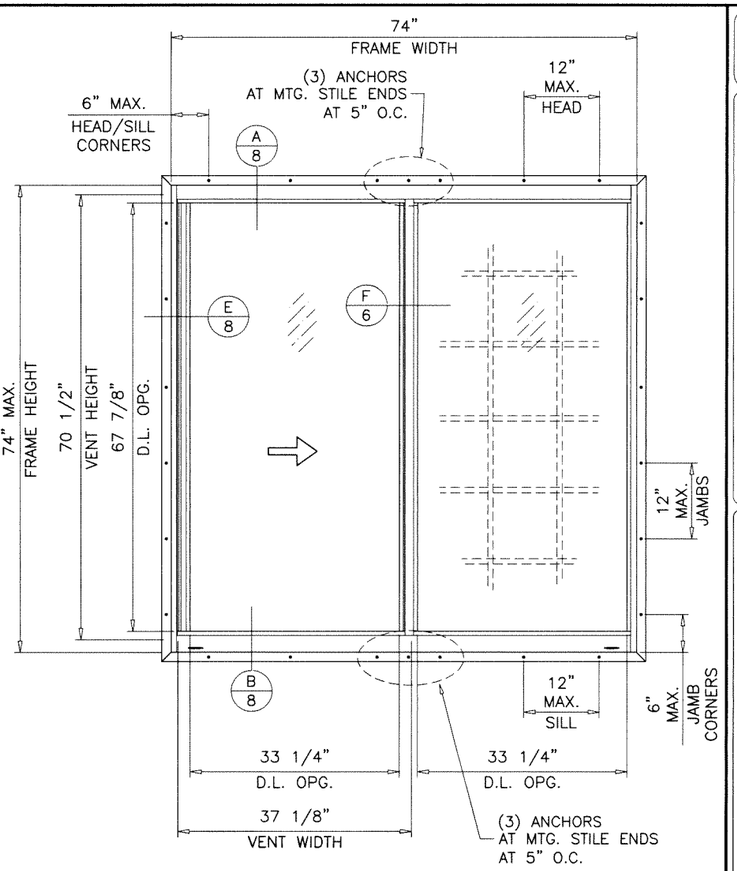
TYPICAL ELEVATION

FLANGE FRAMES



TYPICAL ELEVATION

FLANGE FRAMES WITH FLUSH ADAPTER



TYPICAL ELEVATION

FLANGE FRAMES WITH FIN ADAPTER

ES-EL200
HORIZONTAL ROLLING ALUMINUM WINDOW (L.M.I.)

DESIGN LOAD RATINGS FOR THESE WINDOWS TO BE AS PER CHARTS SHOWN ON SHEETS 2.1 & 2.2.

APPROVAL APPLIES TO SINGLE UNITS OR SIDE BY SIDE COMBINATIONS OF H.R./H.R. OR HORIZONTAL ROLLING WITH OTHER WINDOW TYPES IN MODULES OF TWO OR MORE WINDOWS USING F.B.C. APPROVED MULLIONS IN BETWEEN.

LOWER DESIGN PRESSURE FROM WINDOWS OR MULLION APPROVAL WILL APPLY TO ENTIRE SYSTEM.

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE 2020 (7TH EDITION)/2023 (8TH EDITION) FLORIDA BUILDING CODE INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).

1BY OR 2BY WOOD BUCKS & BUCK FASTENERS BY OTHERS, MUST BE DESIGNED AND INSTALLED ADEQUATELY TO TRANSFER APPLIED PRODUCT LOADS TO THE BUILDING STRUCTURE.

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.

A LOAD DURATION INCREASE IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

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 2020/2023 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)'.

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.

THESE WINDOWS ARE RATED FOR LARGE & SMALL MISSILE IMPACT. SHUTTERS ARE NOT REQUIRED.

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.

FL #21557

Sealed: 8/17/2023

JALAL FAROOQ LICENSE No. 81223 STATE OF FLORIDA PROFESSIONAL ENGINEER

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

COMP-ANL\W16-69ES

ES-EL200 HORIZONTAL ROLLING ALUM. WDW. (L.M.I.)

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

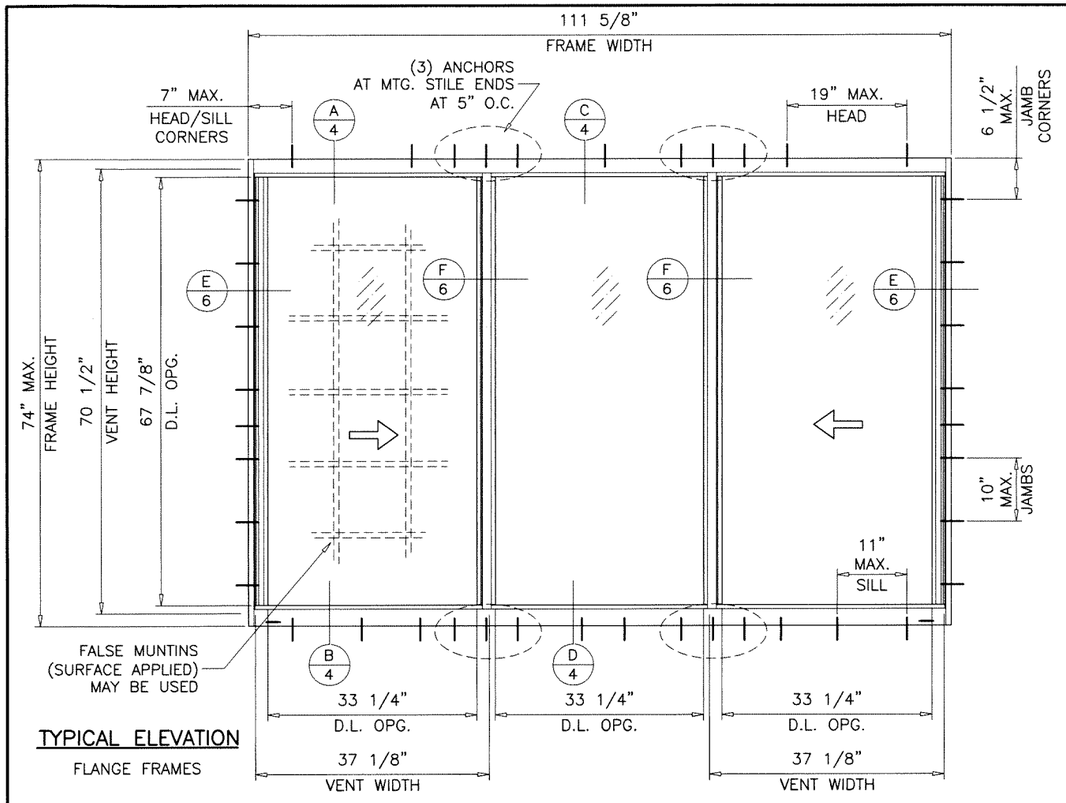
revisions:

no	date	by	description
C	08.05.20		UPDATED TO 2020 FBC
D	09.16.20		GLASS TYPE 4: ADDED
E	07.28.22		GENERAL REVISION
F	07.07.23		UPDATED TO 2023 FBC

date: 11-13-16
scale: 1/2"=1'-0"
dr. by: TARIQ
chk. by:

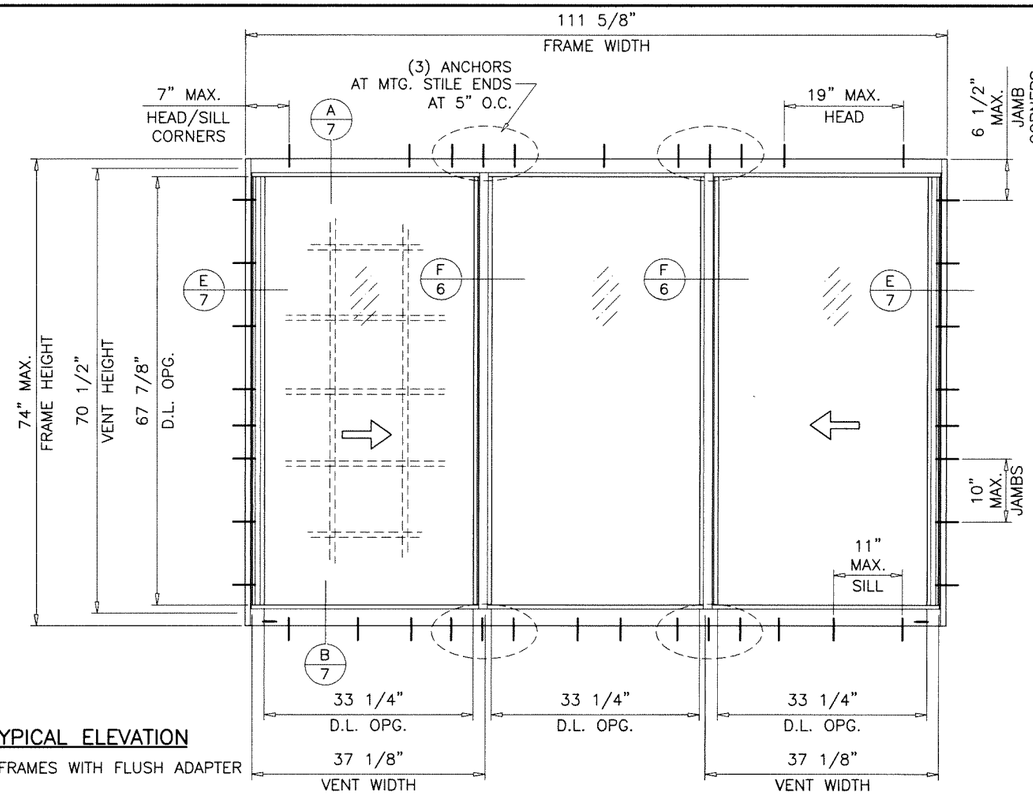
drawing no.
W16-69

sheet 1 of 11



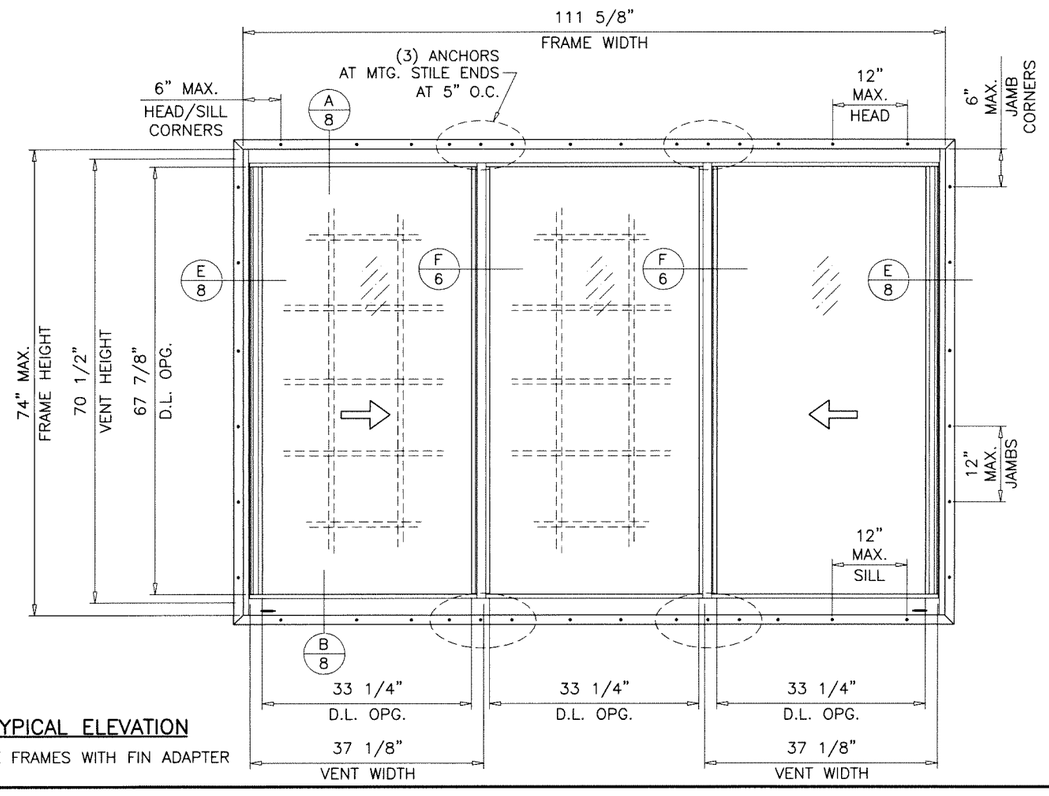
TYPICAL ELEVATION

FLANGE FRAMES



TYPICAL ELEVATION

FLANGE FRAMES WITH FLUSH ADAPTER



TYPICAL ELEVATION

FLANGE FRAMES WITH FIN ADAPTER

Sealed: 8/17/2023

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FL #21557

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revisions:

no	date	by	description

date: 11-13-16
scale: 1/2"=1'-0"
dr. by: TARIQ
chk. by:

drawing no. W16-69

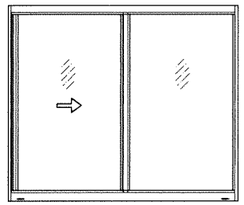
sheet 2 of 11

DESIGN LOAD CAPACITY – PSF (XO OR OX SIZES)

WINDOW DIMS.		W/O REINF.		WITH REINF.					
		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 5, 5i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3	
WIDTH	HEIGHT	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
26–1/2"	26"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
37"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
53–1/8"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
74"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
26–1/2"	38–3/8"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
37"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
53–1/8"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
74"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
26–1/2"	50–5/8"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
37"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
53–1/8"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
74"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
26–1/2"	63"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
37"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
53–1/8"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
74"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
26–1/2"	74"	–	–	–	–	75.0	80.0	–	–
37"		–	–	–	–	75.0	80.0	–	–
53–1/8"		–	–	–	–	75.0	80.0	–	–
74"		–	–	–	–	75.0	75.0	–	–

DESIGN LOAD CAPACITY – PSF (XO OR OX SIZES)

WINDOW DIMS.		W/O REINF.		WITH REINF.					
		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 5, 5i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3	
WIDTH	HEIGHT	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)	EXT.(+)	INT.(–)
24"	24"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
36"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
48"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
60"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
72"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
24"	36"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
36"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
48"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
60"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
72"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
24"	48"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
36"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
48"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
60"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
72"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
24"	60"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
36"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
48"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
60"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
72"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
76"		–	–	–	–	75.0	80.0	–	–
80"		–	–	–	–	75.0	80.0	–	–
24"	72"	–	–	–	–	75.0	80.0	–	–
36"		–	–	–	–	75.0	80.0	–	–
48"		–	–	–	–	75.0	80.0	–	–
60"		–	–	–	–	75.0	80.0	–	–
72"		–	–	–	–	75.0	79.2	–	–
76"		–	–	–	–	75.0	76.5	–	–



'XO OR OX'

OPERATING VENTS CAN BE 1/4 TO 1/3 OF WINDOW WIDTH
MAX. D.L. OPG. FOR FIXED LITE NOT TO EXCEED
12.7 SQ. FT. FOR GLASS TYPES 1, 1i, 2, 2i, 2A, 2Ai, 3 & 4i
15.7 SQ. FT. FOR GLASS TYPES 5 & 5i

FOR ALTERNATE SIZE UNITS MAX. FRAME AREA OF WINDOW
NOT TO EXCEED TESTED FRAME AREA OF
31.5 SQ. FT. FOR GLASS TYPES 1, 1i, 2, 2i, 2, 2Ai, 3 & 4i
38.0 SQ. FT. FOR GLASS TYPES 5 & 5i

NOTE:
GLASS CAPACITIES ARE
BASED ON ASTM E1300–09 (3 SEC. GUSTS)
AND FLORIDA BUILDING COMMISSION
DECLARATORY STATEMENT DCA05–DEC–219

Sealed: 8/17/2023

JALAL FAROOQ LICENSE No. 81223 STATE OF FLORIDA PROFESSIONAL ENGINEER

FL #21557

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

COMP–ANL\W16–69ES

ES–EL200 HORIZONTAL ROLLING ALUM. WDW. (L.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

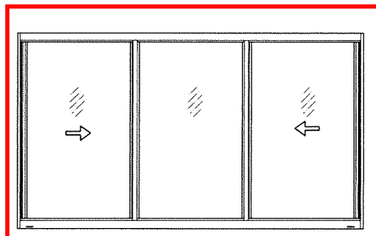
date: 11–13–16
scale: 1/2"=1'–0"
dr. by: TARIQ
chk. by:

drawing no. W16–69

DESIGN LOAD CAPACITY – PSF (XOX SIZES)									
WINDOW DIMS.		W/O REINF.		WITH REINF.					
		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 5, 5i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3	
WIDTH	HEIGHT	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
74"	26"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
106-1/4"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
111"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
114"		–	–	–	–	75.0	80.0	–	–
118"		–	–	–	–	75.0	80.0	–	–
74"	38-3/8"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
106-1/4"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
111"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
114"		–	–	–	–	75.0	80.0	–	–
118"		–	–	–	–	75.0	80.0	–	–
74"	50-5/8"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
106-1/4"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
111"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
114"		–	–	–	–	75.0	80.0	–	–
118"		–	–	–	–	75.0	80.0	–	–
74"	63"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
106-1/4"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
111"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
114"		–	–	–	–	75.0	80.0	–	–
118"		–	–	–	–	75.0	80.0	–	–
74"	74"	–	–	–	–	75.0	80.0	–	–
106-1/4"		–	–	–	–	75.0	77.3	–	–
111"		–	–	–	–	75.0	75.0	–	–

U

DESIGN LOAD CAPACITY – PSF (XOX SIZES)									
WINDOW DIMS.		W/O REINF.		WITH REINF.					
		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3, 4i		GLASS TYPES 5, 5i		GLASS TYPES 1, 1i, 2, 2i 2A, 2Ai, 3	
WIDTH	HEIGHT	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)	EXT.(+)	INT.(−)
72"	24"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
84"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
96"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
108"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
120"		–	–	–	–	75.0	80.0	–	–
72"	36"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
84"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
96"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
108"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
120"		–	–	–	–	75.0	80.0	–	–
72"	48"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
84"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
96"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
108"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
120"		–	–	–	–	75.0	80.0	–	–
72"	60"	65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
84"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
96"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
108"		65.0	65.0	80.0	80.0	75.0	80.0	80.0	90.0
120"		–	–	–	–	75.0	80.0	–	–
72"	72"	–	–	–	–	75.0	80.0	–	–
84"		–	–	–	–	75.0	80.0	–	–
96"		–	–	–	–	75.0	80.0	–	–
108"		–	–	–	–	75.0	79.2	–	–



'XOX'

OPERATING VENTS CAN BE 1/4 TO 1/3 OF WINDOW WIDTH
MAX. D.L. OPG. FOR FIXED LITE NOT TO EXCEED
12.7 SQ. FT. FOR GLASS TYPES 1, 1i, 2, 2i, 2A, 2Ai, 3 & 4i
15.7 SQ. FT. FOR GLASS TYPES 5 & 5i

FOR ALTERNATE SIZE UNITS MAX. FRAME AREA OF WINDOW
NOT TO EXCEED TESTED FRAME AREA OF
47.4 SQ. FT. FOR GLASS TYPES 1, 1i, 2, 2i, 2, 2Ai, 3 & 4i
57.3 SQ. FT. FOR GLASS TYPES 5 & 5i

NOTE:
GLASS CAPACITIES ARE
BASED ON ASTM E1300-09 (3 SEC. GUSTS)
AND FLORIDA BUILDING COMMISSION
DECLARATORY STATEMENT DCA05-DEC-219

Sealed: 8/17/2023

JALAL FAROOQ LICENSE No. 81223 STATE OF FLORIDA PROFESSIONAL ENGINEER

FL #21557

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

COMP-ANL\W16-69ES

ES-EL200 HORIZONTAL ROLLING ALUM. WDW. (L.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

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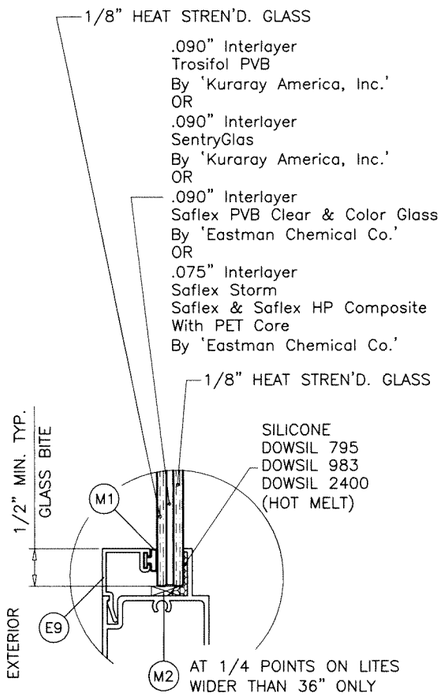
scale: 1/2"=1'-0"
dr. by: TARIQ
chk. by:

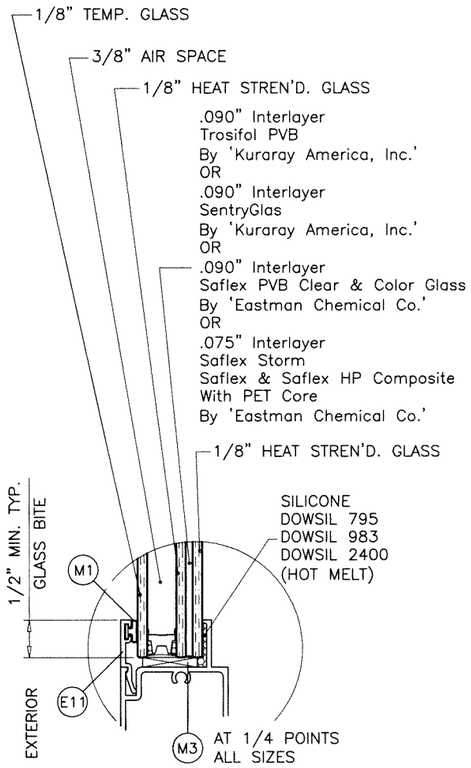
drawing no. W16-69

sheet 2.2 of 11



GLASS TYPE '1'

5/16" OVERALL LAM. GLASS



GLASS TYPE '1i'

7/8" OVERALL INSUL. LAM. GLASS

GLAZING OPTIONS

5/16" & 3/8" AIR SPACE CONSISTING OF:

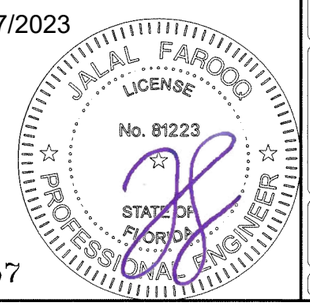
SPACER:

'HELIMA' LOW PROFILE ALUMINUM SPACER
BY 'LINGERMANN GMBH'
AROUND THE PERIMETER OF THE GLASS.

PERIMETER SEALANT:

SILICONE
DOWSIL 791
GE 2000

Sealed: 8/17/2023



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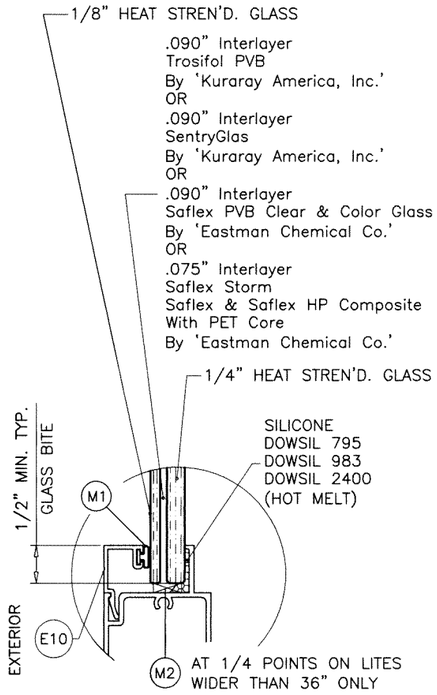
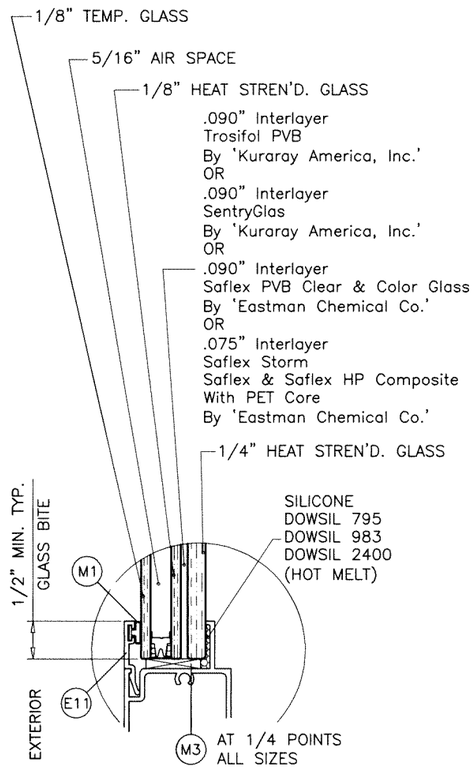
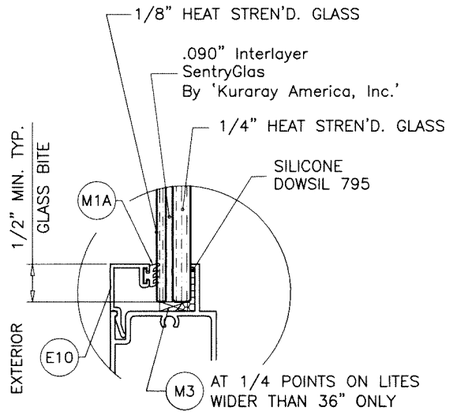
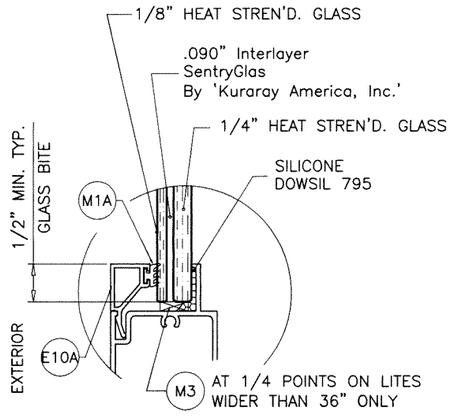


GLASS TYPE '2'
7/16" OVERALL LAM. GLASS

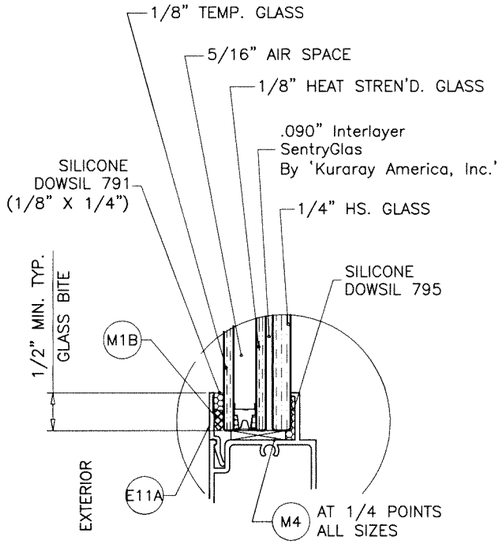


GLASS TYPE '2i'
7/8" OVERALL INSUL. LAM. GLASS





GLASS TYPE '2A'
7/16" OVERALL LAM. GLASS



GLASS TYPE '2Ai'
7/8" OVERALL INSUL. LAM. GLASS

5/16" & 3/8" AIR SPACE CONSISTING OF:
SPACER:
'HELIMA' LOW PROFILE ALUMINUM SPACER
BY 'LINGERMANN GMBH'
AROUND THE PERIMETER OF THE GLASS.
PERIMETER SEALANT:
SILICONE
DOWSIL 791
GE 2000

Sealed: 8/17/2023

JALAL FAROOQ
LICENSE
No. 81223
STATE OF FLORIDA
PROFESSIONAL ENGINEER

FL #21557

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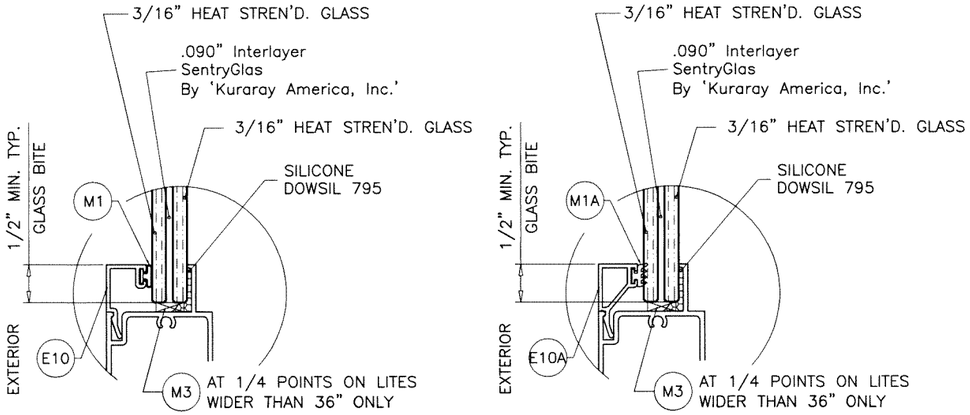
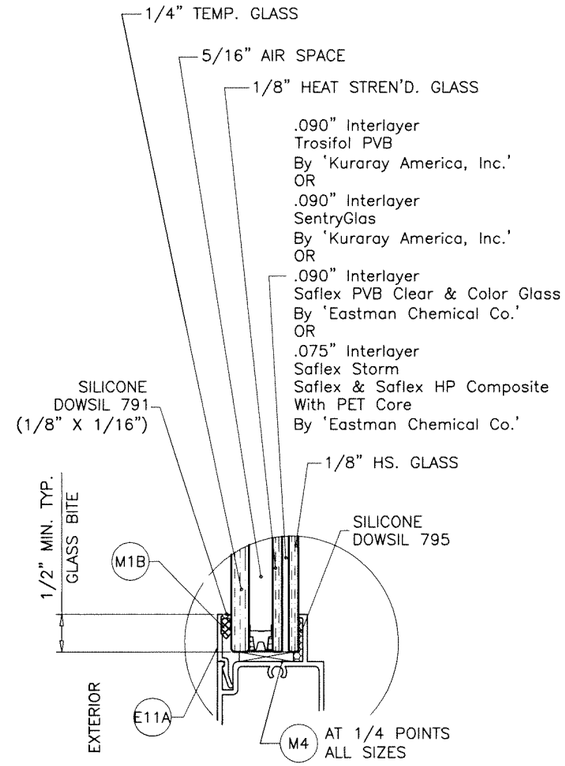
chk. by:

drawing no. W16-69

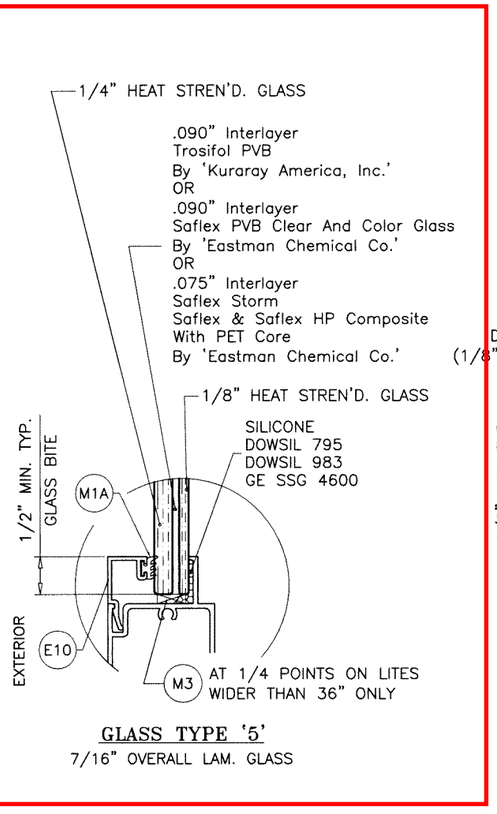
sheet 3.1 of 11



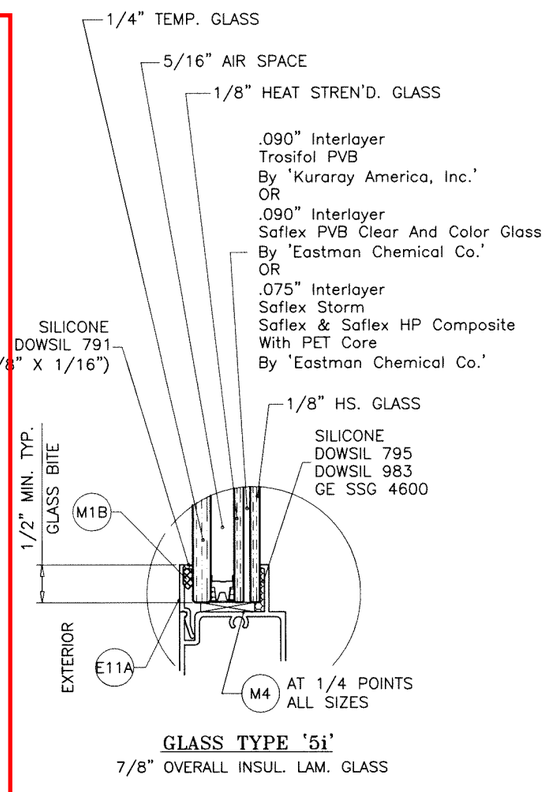
GLASS TYPE '3'
7/16" OVERALL LAM. GLASS



GLASS TYPE '4i'
7/8" OVERALL INSUL. LAM. GLASS



GLASS TYPE '5'
7/16" OVERALL LAM. GLASS



GLASS TYPE '5i'
7/8" OVERALL INSUL. LAM. GLASS

5/16" AIR SPACE CONSISTING OF:
SPACER:
'HELIMA' LOW PROFILE ALUMINUM SPACER
BY 'LINGERMANN GMBH'
AROUND THE PERIMETER OF THE GLASS.
PERIMETER SEALANT:
SILICONE
DOWSIL 791
GE 2000

Sealed: 8/17/2023

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COMP-ANL\W16-69ES

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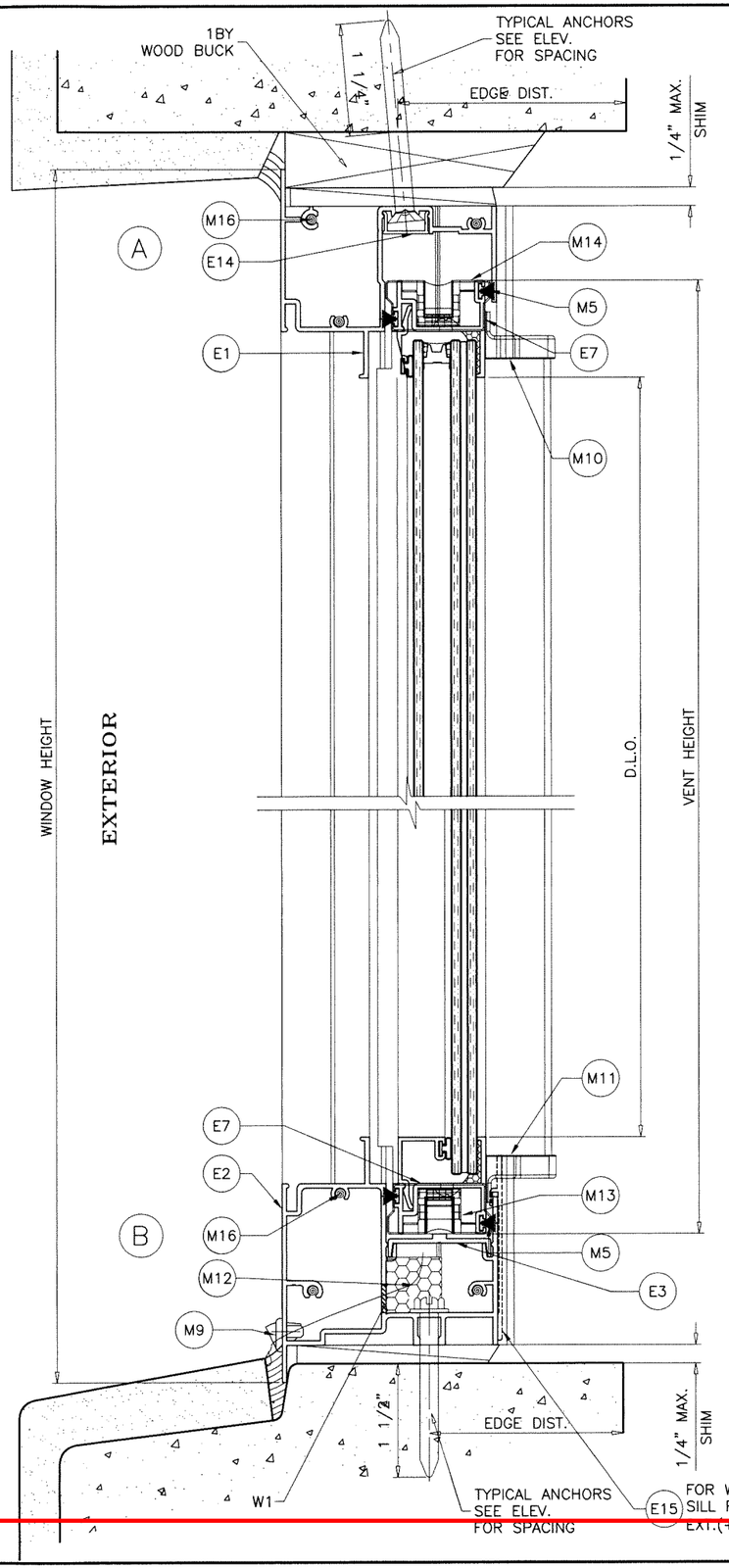
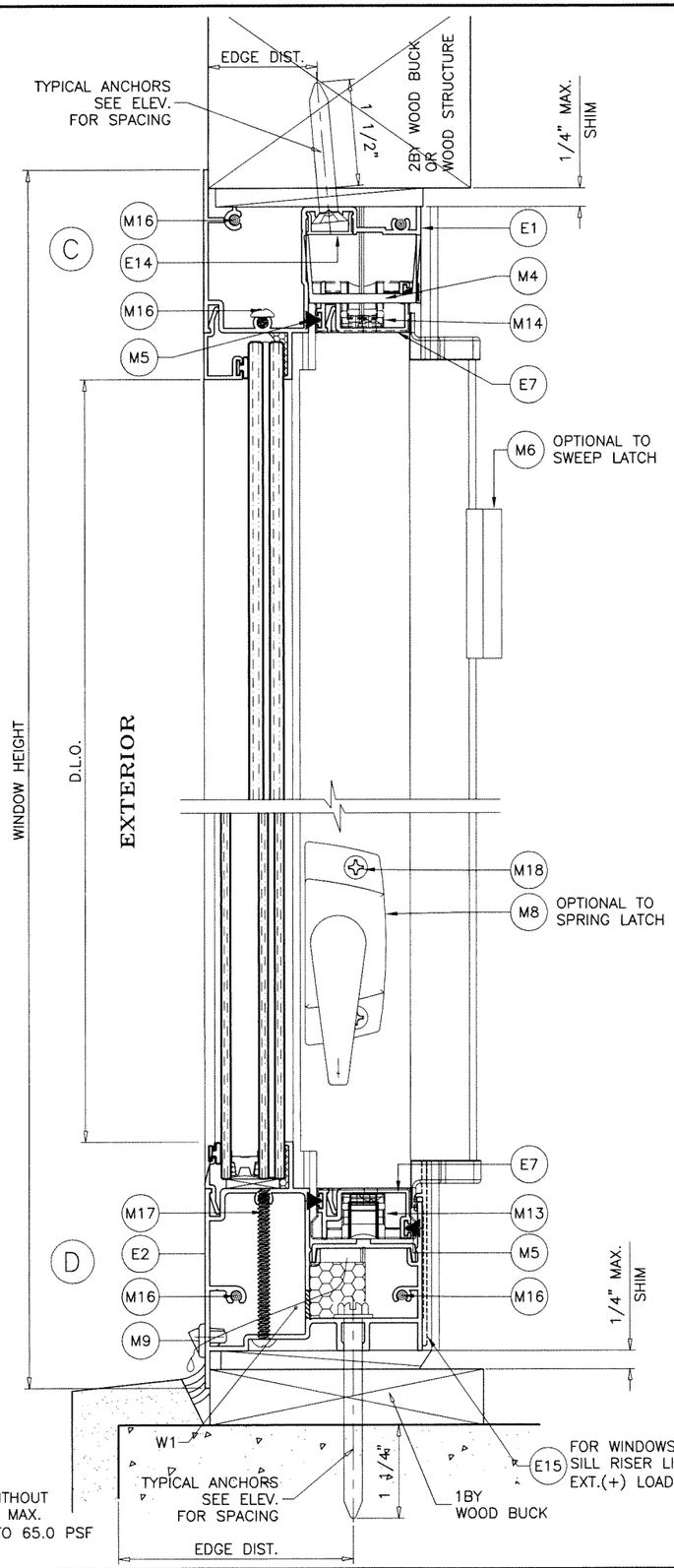
dr. by: TARIQ
chk. by:

drawing no. W16-69

sheet 3.2 of 11





WEEPHOLES:

W1 = 1-1/2" X 5/16" WEEPHOLES AT 5-1/2" FROM EACH END

Sealed: 8/17/2023

JALAL FAROOQ
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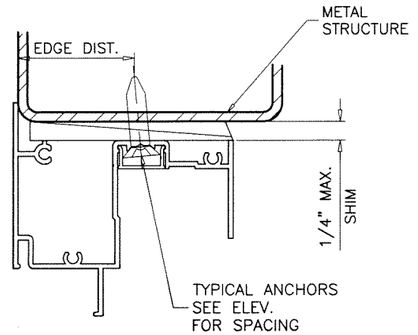
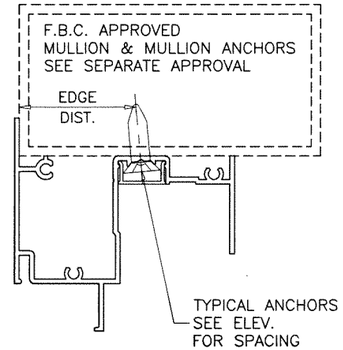
sheet 4 of 11





WOOD BUCKS AND METAL STRUCTURE NOT BY E.S. WINDOWS MUST SUSTAIN LOADS IMPOSED BY GLAZING SYSTEM AND TRANSFER THEM TO THE BUILDING STRUCTURE.

TYPICAL ANCHORS: SEE ELEV. FOR SPACING

1/4" DIA. ULTRACON+ BY 'DEWALT' (Fu=164 KSI, Fy=148 KSI)
INTO 2BY WOOD BUCKS OR WOOD STRUCTURES
1-1/2" MIN. PENETRATION INTO WOOD (HEAD/SILL/JAMBS)

THRU 1BY BUCKS INTO CONC. OR BLOCKS
1-1/4" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

DIRECTLY INTO CONCRETE OR BLOCKS
1-1/2" MIN. EMBED INTO CONCRETE (HEAD/SILL/JAMBS)
1-1/4" MIN. EMBED INTO BLOCKS (JAMBS)

1/4" DIA. TEKS OR SELF DRILLING SCREWS (GRADE 5 CRS)
INTO F.B.C. APPROVED MULLIONS
OR
INTO METAL STRUCTURES (HEAD/SILL/JAMBS)
(3) THREADS MIN. PENETRATION BEYOND SUBSTRATE
ALUMINUM: 1/8" THK. MIN. (6063-T5 MIN.)
STEEL: 1/8" THK. MIN. (Fy = 36 KSI MIN.)
(STEEL IN CONTACT WITH ALUMINUM TO BE PLATED OR PAINTED)

TYPICAL EDGE DISTANCE

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

WOOD AT HEAD, SILL OR JAMBS SG = 0.55 MIN.
CONCRETE AT HEAD, SILL OR JAMBS f'c = 3000 PSI MIN.
C-90 HOLLOW/FILLED BLOCK AT JAMBS f'm = 2000 PSI MIN.

Sealed: 8/17/2023

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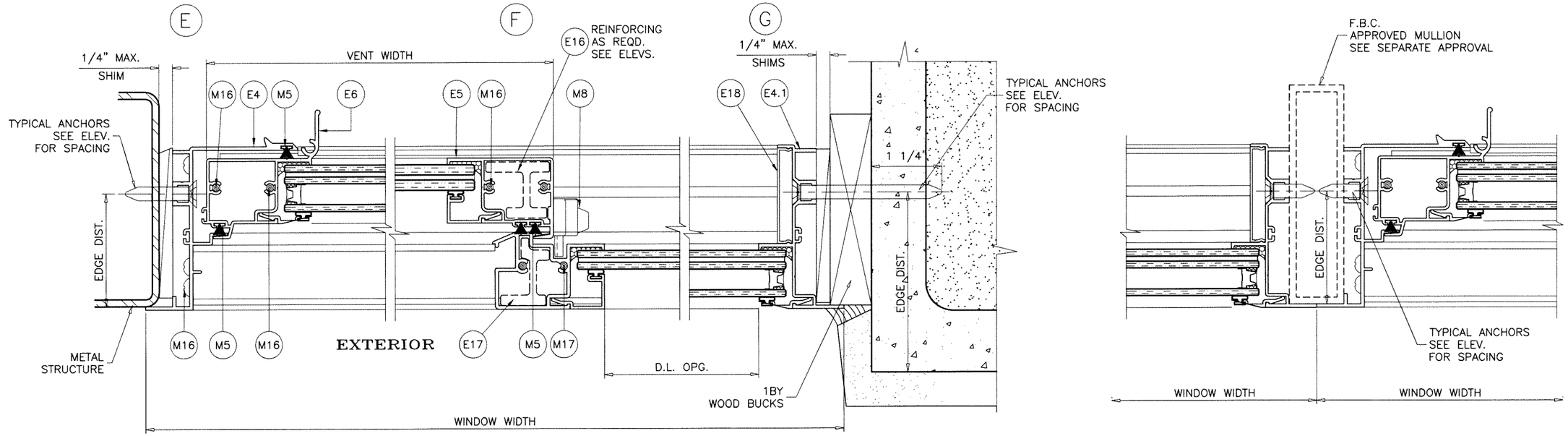
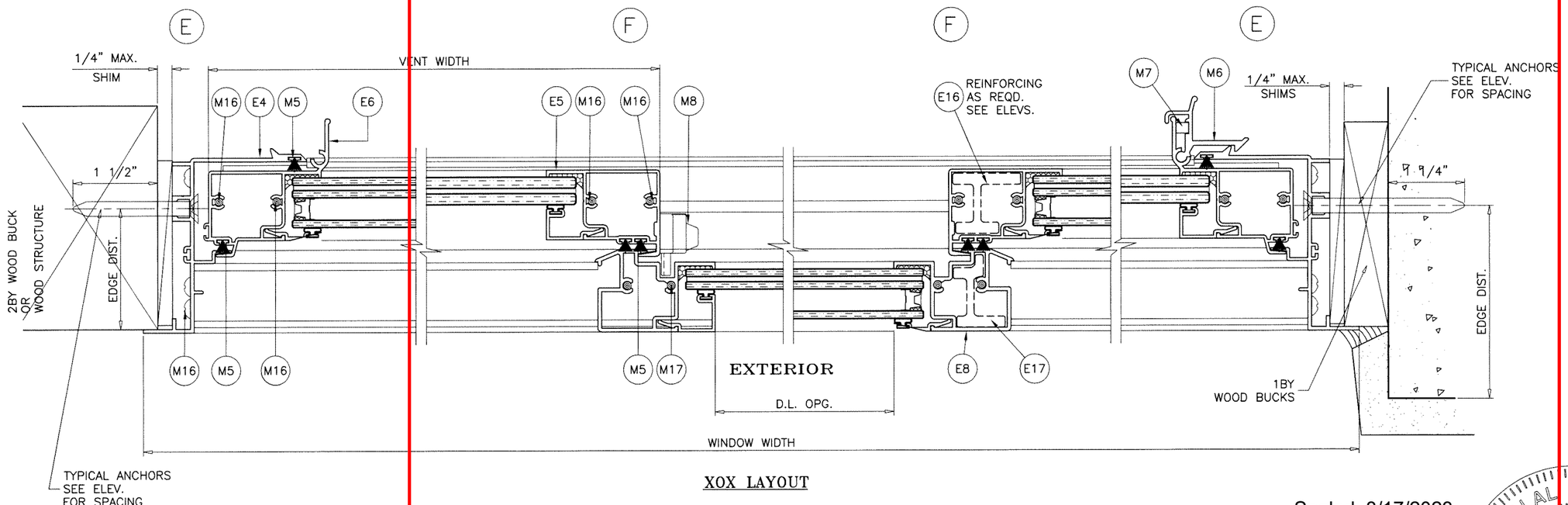
sheet 5 of 11



XO LAYOUT
OX OPPOSITE



XOX LAYOUT

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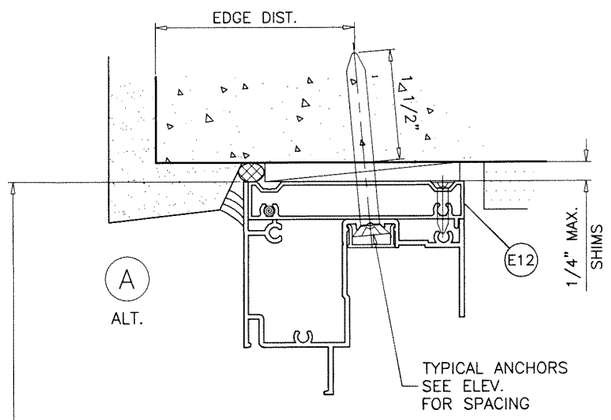
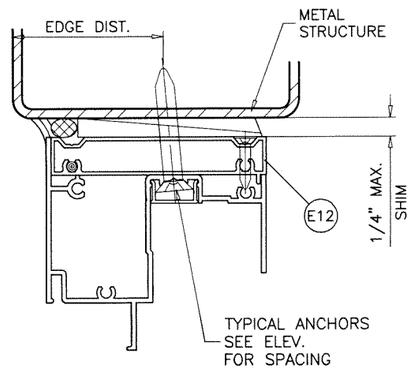
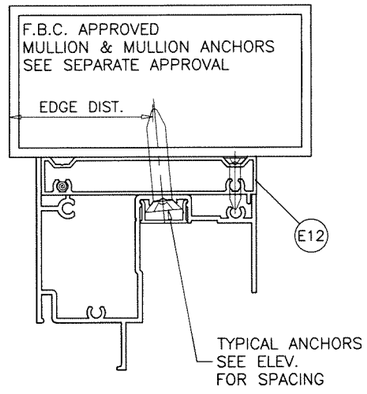
chk. by:

drawing no.
W16-69

sheet 6 of 11

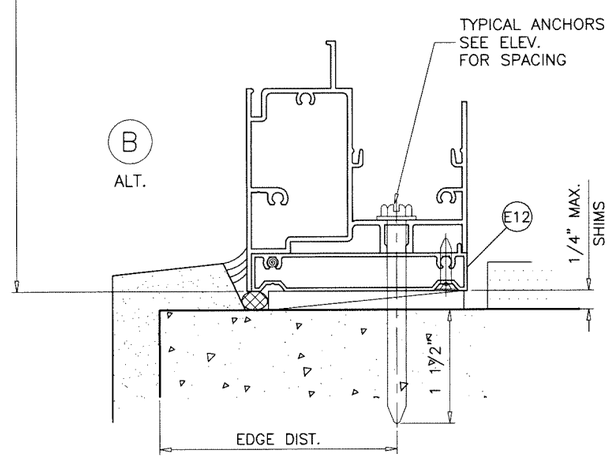


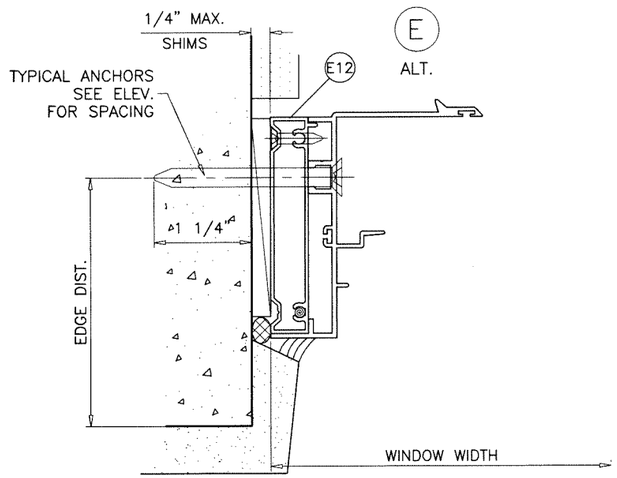




EXTERIOR

WINDOW HEIGHT





INSTALLATION DETAILS WITH FLUSH FRAME ADAPTER

SEE SHEETS 4 & 6 FOR WINDOW DETAILS

Sealed: 8/17/2023

JALAL FAROOQ LICENSE No. 81223 STATE OF FLORIDA PROFESSIONAL ENGINEER

FL #21557

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

COMP-ANL\W16-69ES

ES-EL200 HORIZONTAL ROLLING ALUM. WDW. (L.M.I.)

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

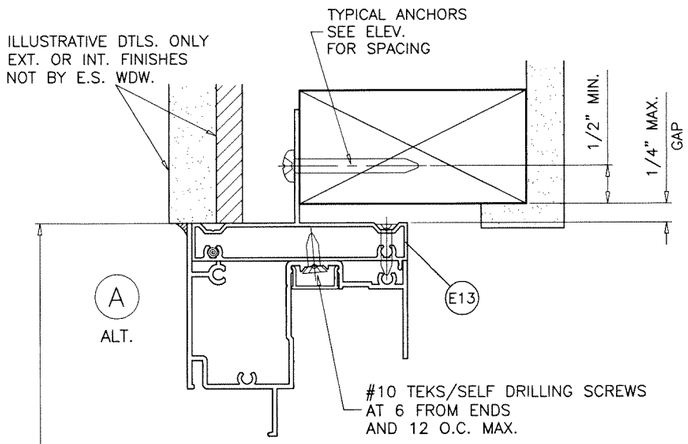
revisions:

no	date	by	description

date: 11-13-16
scale: 1/2" = 1"
dr. by: TARIQ
chk. by:

drawing no. W16-69

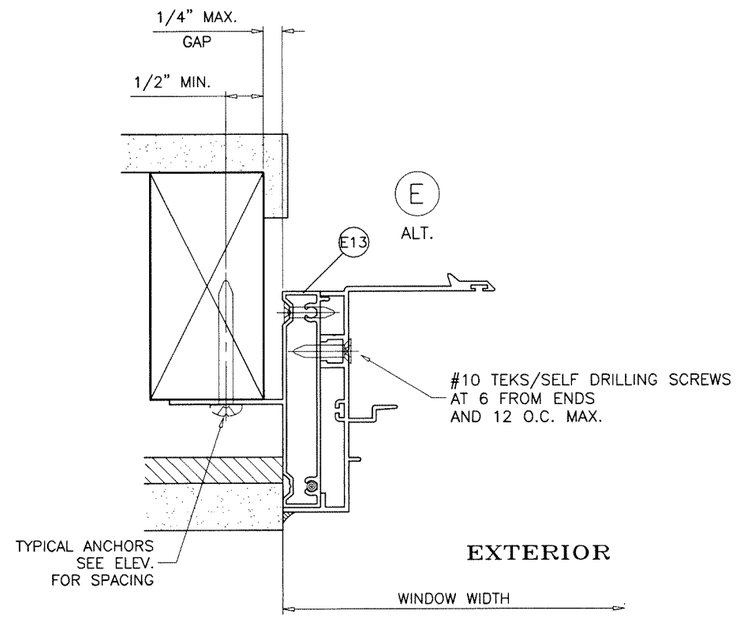
sheet 7 of 11

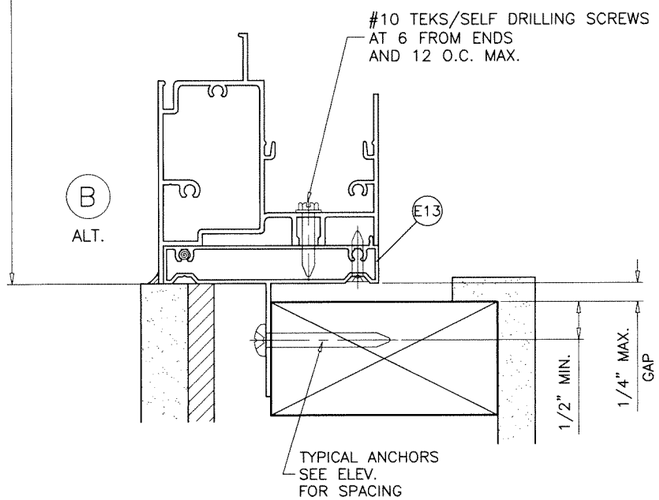


TYPICAL ANCHORS: SEE ELEV. FOR SPACING

#10 WOOD SCREWS (GRADE 2 CRS)

INTO 2BY WOOD BUCKS OR WOOD STRUCTURES
1-1/2" MIN. PENETRATION INTO WOOD





INSTALLATION DETAILS WITH FIN FRAME ADAPTER

SEE SHEETS 4 & 6 FOR WINDOW DETAILS

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sheet 8 of 11

ITEM #	PART #	REQD.	DESCRIPTION	MATERIAL	MANF./SUPPLIER/REMARKS
E1	ES-EL104	1	FRAME HEAD	6063-T6	-
E2	ES-EL201	1	FRAME SILL	6063-T6	-
E3	ES-EL202	1	SILL TRACK	6063-T6	-
E4	ES-EL102	2	FRAME JAMB (OPERATING)	6063-T6	-
E4.1	ES-EL101A	2	FRAME JAMB (FIXED)	6063-T6	-
E5	ES-EL105	1	INTERLOCK STILE	6063-T6	-
E6	ES-EL106	1	JAMB STILE	6063-T6	-
E7	ES-EL107	2	VENT TOP & BOTTOM RAIL	6063-T6	-
E8	ES-EL108A	1	FIXED MTG. STILE	6063-T6	-
E9	ES-EL109	AS RQD.	GLAZING BEAD (5/16" LAM. GLASS)	6063-T6	-
E10	ES-EL110	AS RQD.	GLAZING BEAD (7/16" LAM. GLASS)	6063-T6	-
E10A	ES-EL123	AS RQD.	GLAZING BEAD (7/16" LAM. GLASS)	6063-T6	-
E11	ES-EL111	AS RQD.	GLAZING BEAD (INSUL. LAM. GLASS)	6063-T6	-
E11A	ES-EL116	AS RQD.	GLAZING BEAD (INSUL. LAM. GLASS)	6063-T6	-
E12	ES-EL112	AS REQD.	FLUSH FRAME ADAPTER	6063-T6	-
E13	ES-EL115	AS REQD.	FLUSH FRAME ADAPTER WITH FIN	6063-T5	-
E14	ES-EL114	AS REQD.	HEAD SCREW COVER	6063-T6	-
E15	ES-2011	AS REQD.	SILL RISER	6063-T6	-
E16	ES-EL220	AS REQD.	INTERLOCK STILE STIFFENER	6005-T5	-
E17	ES-EL221	AS REQD.	FIX. MTG. STILE STIFFENER	6005-T5	-
E18	ES-EL113A	AS REQD.	JAMB SCREW COVER	6063-T6	-
M1	ES-5008A	AS REQD.	GLAZING BEAD BULB	SILICONE	DUROMETER 60±5 SHORE A
M1A	EL100-G02	AS REQD.	EXTERIOR LEAF GASKET	SILICONE	DUROMETER 60±5 SHORE A
M1B	ES-H-340-G05	AS REQD.	EXTERIOR WEDGE GASKET	SILICONE	DUROMETER 65±5 SHORE A
M2	80-372A	2/ LITE	SETTING BLOCK AT 1/4 POINTS (LAM. GLASS)	SILICONE	DUROMETER 80±5 SHORE A
M3	EL100-B01	2/ LITE	SETTING BLOCK AT 1/4 POINTS (INSUL. LAM. GLASS)	SILICONE	DUROMETER 80±5 SHORE A
M4	EL100-301	AS REQD.	VENT STOP	RIGID PVC	-
M5	W23211NG	AS REQD.	PILE W'STRIPPING WITH PLASTIC FIN	POLYPROPYLENE	-
M6	SK08-4010	2/ VENT	SPRING LOADED LATCH	6063-T6	ALTERNATE TO SWEEP LATCH
M7	ES-1012	2/ LATCH	LATCH SPRING	ST. STEEL	-
M8	SL302-XX	2/ VENT	SWEEP LATCH	DIE CAST ALUM	-
M9	WA2L	2	WEEP HOLE COVER	RIGID PVC	-
M10	ES-1000-P1L	-	LEFT NOTCH CAP	NYLON	-
M11	ES-1000-P1R	-	RIGHT NOTCH CAP	NYLON	-
M12	WPSA-N1	2	3/4" X 3/4" RETIC FOAM PAD	FOAM	-
M13	TAR-16019P-A	2	ROLLER	POLYAMIDE & ACETAL	-
M14	TAR-16019P	2	ROLLER HOUSING	POLYAMIDE	-
M15	#8 X 1"	-	FLUSH FRAME ADAPTER ASSEMBLY FASTENERS	ST. STEEL	FH SMS
M16	#8 X 1"	-	FRAME AND VENT ASSEMBLY FASTENERS	ST. STEEL	PH SMS
M17	#8 X 3"	-	FRAME SILL ASSEMBLY FASTENERS	ST. STEEL	PH SMS
M18	#8 X 3/4"	-	SWEEP LATCH FASTENERS	ST. STEEL	FH SMS
M20	#14 X 3/4"	-	ASSEMBLY FASTENERS FOR FLUSH ADAPTER	ST. STEEL	PH SMS

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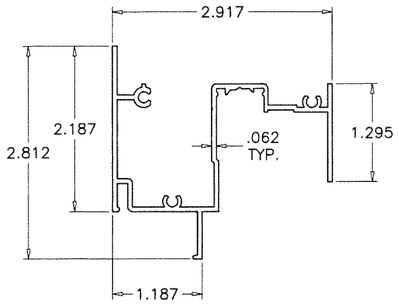
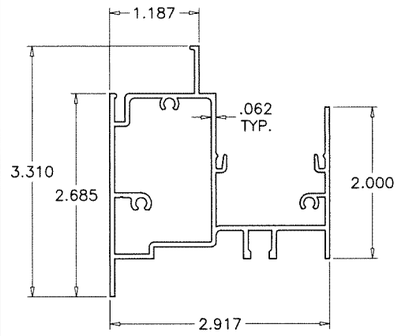
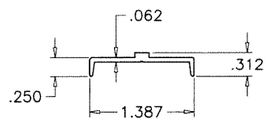


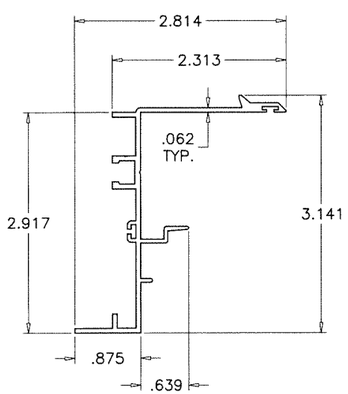
E1 FRAME HEAD



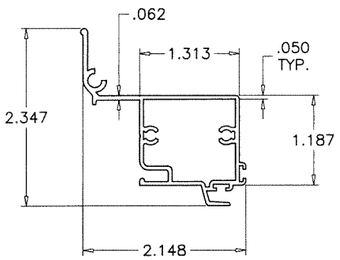
E2 FRAME SILL



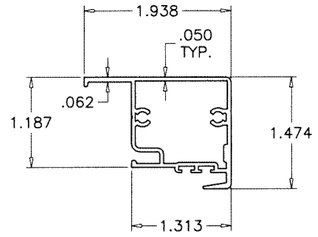
E3 SILL TRACK



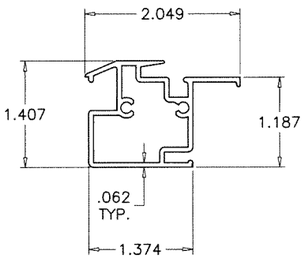
E4 FRAME JAMB (OPERATING)



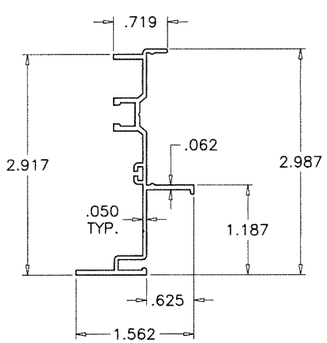
E6 JAMB STILE



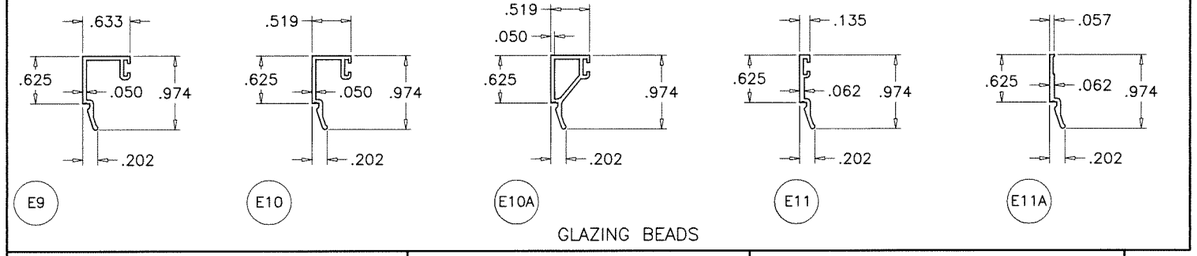
E5 INTERLOCK STILE



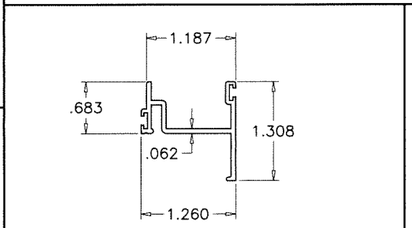
E8 FIXED MTG. STILE



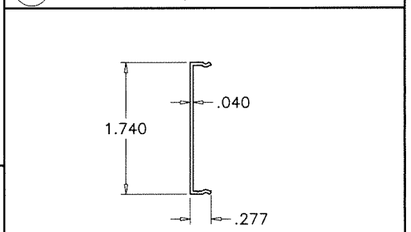
E4.1 FRAME JAMB (FIXED)



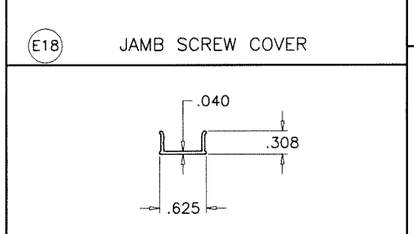
E9 E10 E10A E11 E11A GLAZING BEADS



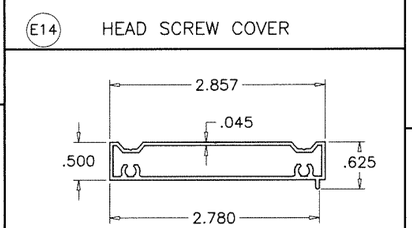
E7 VENT TOP/BOTTOM RAIL



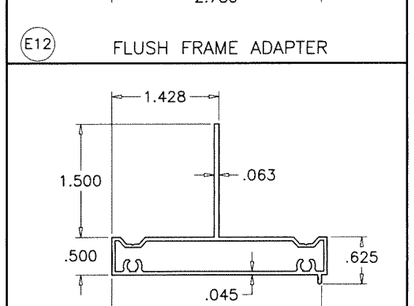
E18 JAMB SCREW COVER



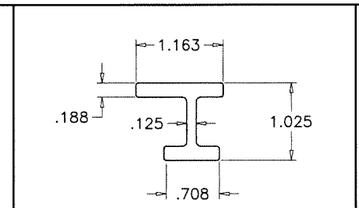
E14 HEAD SCREW COVER



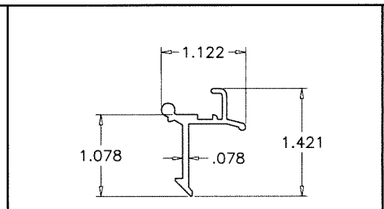
E12 FLUSH FRAME ADAPTER



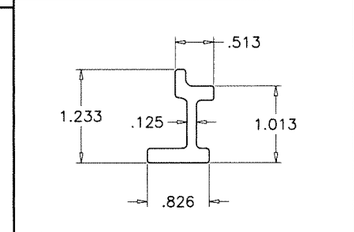
E13 FLUSH FRAME ADAPTER WITH FIN



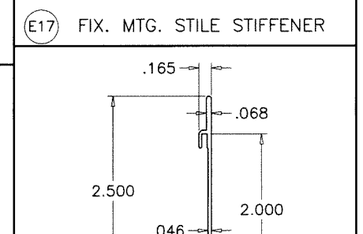
E16 INTERLOCK STILE STIFFENER



M6 SPRING LOADED LATCH



E17 FIX. MTG. STILE STIFFENER



E15 SILL RISER

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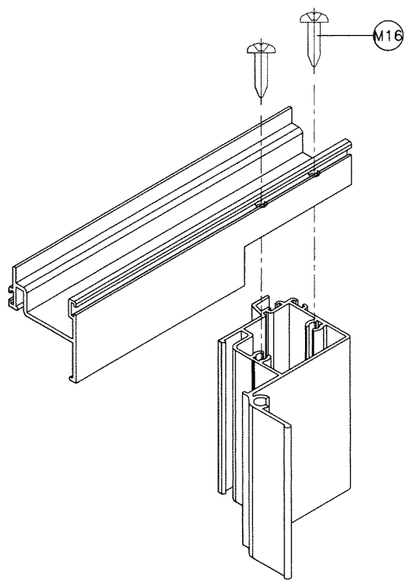
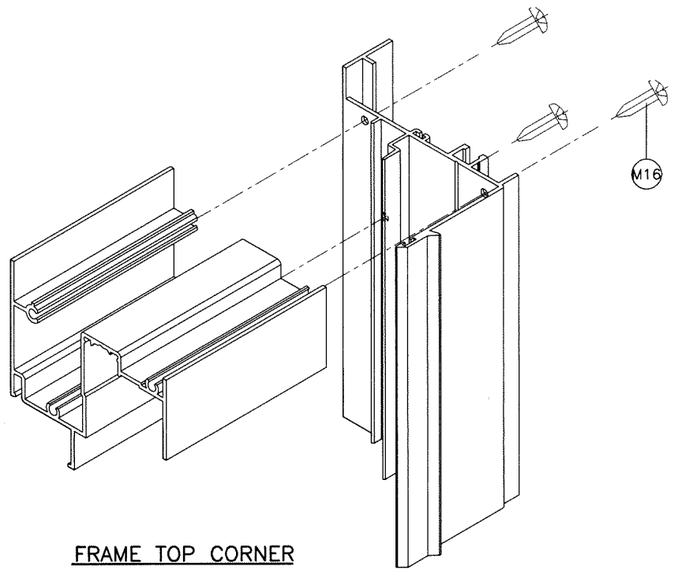
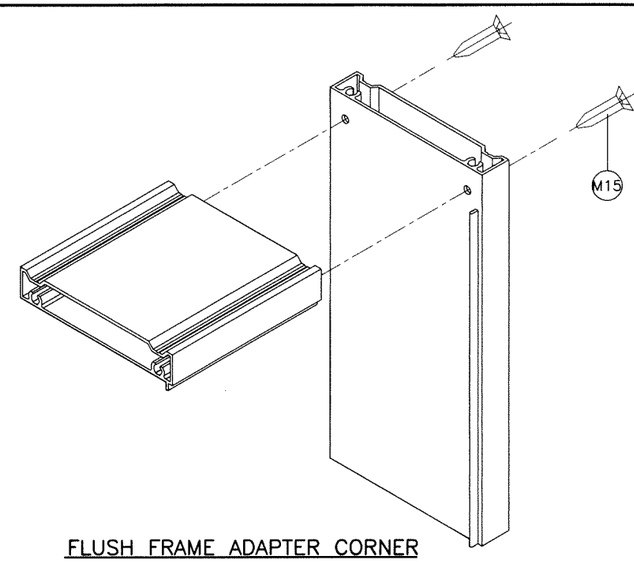


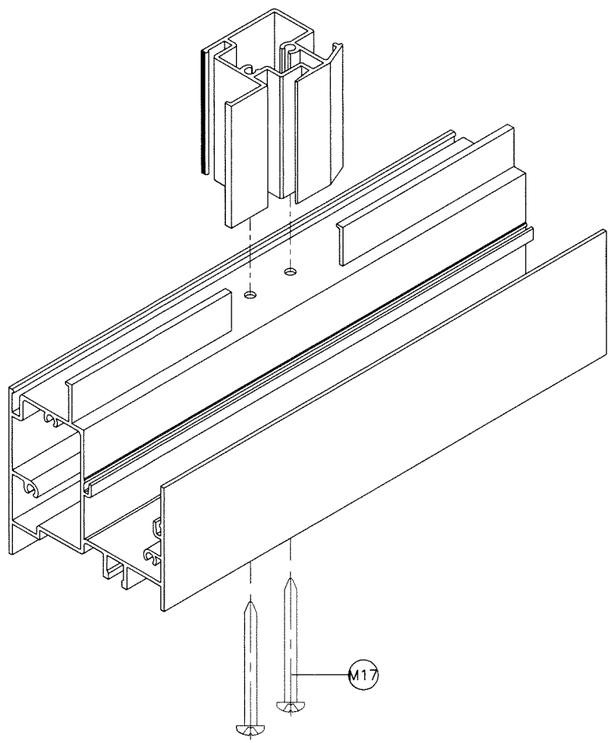
VENT TOP & BOTTOM CORNER



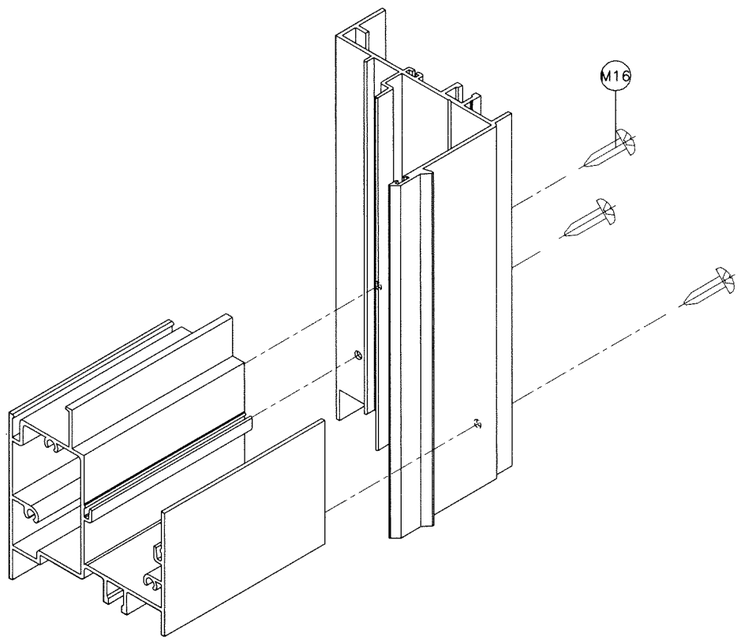
FRAME TOP CORNER



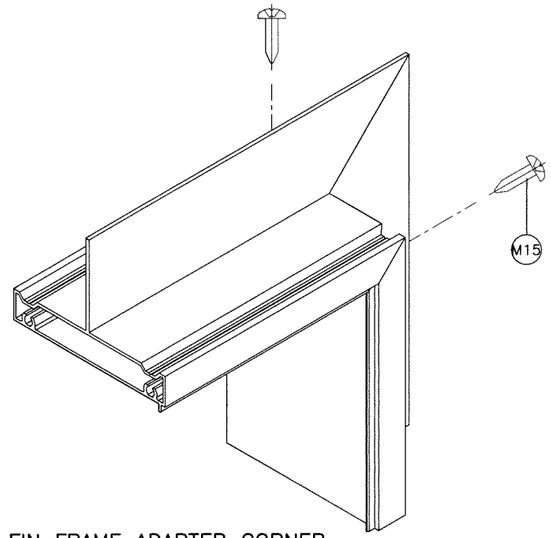
FLUSH FRAME ADAPTER CORNER



FIX. MTG. RAIL CORNER



FRAME BOTTOM CORNER



FIN FRAME ADAPTER CORNER

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