



**Product Approval**  
USER: Public User

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OFFICE OF THE  
SECRETARY

FL #

Application Type

Code Version

Application Status

FL39086-R1

Revision

2023

Approved

Comments

Archived



Product Manufacturer

Address/Phone/Email

E.S. Windows, Inc.

10653 NE Quaybridge Ct.

Miami, FL 33138

(305) 624-7775

achamorro@eswillc.com

Authorized Signature

Jalal Farooq

veronica@afceng.com

Technical Representative

Address/Phone/Email

Samir Sabagh

3550 NW 49th St.

Miami, FL 33142

(305) 638-5151

ssabagh@energiasolarsa.com

Quality Assurance Representative

Address/Phone/Email

Category

Subcategory

Windows

Mullions

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

07/16/2025

Validated By

Abel Carrasco, PE

☒ Validation Checklist - Hardcopy Received

Certificate of Independence

[FL39086\\_R1\\_COI\\_SS - Certificate of Independence.pdf](#)

Referenced Standard and Year (of Standard)

**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

07/19/2023

Date Validated

07/20/2023

Date Pending FBC Approval

07/24/2023

Date Approved

10/18/2023

#### Summary of Products

| FL #                                                                                                                                                                                                                                         | Model, Number or Name                   | Description                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 39086.1                                                                                                                                                                                                                                      | Clipped, Extruded Aluminum Tube Mullion | Large missile impact resistant clipped aluminum tube mullion.                                                                                                                                                                                                                                                                                                     |
| <b>Limits of Use</b><br><b>Approved for use in HVHZ:</b> Yes<br><b>Approved for use outside HVHZ:</b> Yes<br><b>Impact Resistant:</b> Yes<br><b>Design Pressure:</b> +150/-150<br><b>Other:</b> See drawing 21-45F for installation details. |                                         | <b>Installation Instructions</b><br><a href="#">FL39086_R1_II_SS - Clipped Tube Mullion (LMI) - DWG 21-45F 2023.pdf</a><br>Verified By: Jalal Farooq PE #81223<br>Created by Independent Third Party: Yes<br><b>Evaluation Reports</b><br><a href="#">FL39086_R1_AE_SS - Clipped Tube Mullion (LMI) - PAE 2023.pdf</a><br>Created by Independent Third Party: Yes |

[Back](#)

[Next](#)

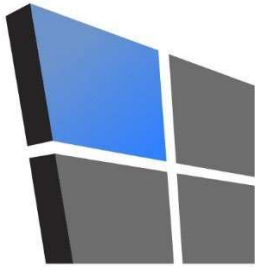
[Contact Us](#) :: 2601 Blair Stone Road, Tallahassee FL 32399 Phone: 850-487-1824

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#### Product Approval Accepts:





# **AL-FAROOQ CORPORATION**

CONSULTING ENGINEERS & PRODUCT DEVELOPMENT

August 11, 2020

Product Approval Administrator  
Building Codes & Standards Section  
Department of Business & Professional Regulations  
1940 North Monroe Street, Suite 90  
Tallahassee, FL 32399-2100

To whom it may concern,

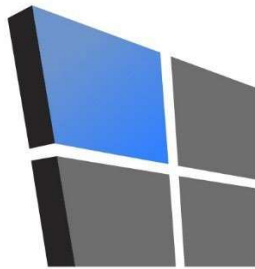
As the design engineer retained to prepare the product approval(s) associated with this letter as shown below on this same web page, I do hereby declare that I do not have and will not have any financial interest in any company manufacturing or distributing the referenced product(s), nor do I have or will have any financial interest with any other entity involved in the approval process of the referenced product(s).

Sincerely,



Sealed 8-11-2020

Jalal Farooq, P.E.  
CFO



# AL-FAROOQ CORPORATION

CONSULTING ENGINEERS & PRODUCT DEVELOPMENT

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

FL 39086

Date: 07/19/2023

### Detailed Product Description:

**Manufacturer:** E.S. WINDOWS, LLC

**Manufacturer Address:** 3550 NW 49 STREET, MIAMI, FL 33142

**Model Name:** CLIPPED, EXTRUDED ALUMINUM TUBE MULLION

**Maximum Load:** +150.0 PSF, -150.0 PSF (Large Missile Impact)

**Installation Drawings #** 21-45F

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 ☒ Yes ☐ No

### Mandatory Tests (Tested in accordance with ANSI/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  | Fenestration Testing Laboratory, Inc. | 05/16/2003<br>06/09/2003<br>06/09/2003 | FTL-3810<br>FTL-3819<br>FTL-3820 | Joseph Chan, PE |
| ASTM E331<br>OR ASTM 547<br>& TAS 202 | Water Penetration         | Fenestration Testing Laboratory, Inc. | 05/16/2003<br>06/09/2003<br>06/09/2003 | FTL-3810<br>FTL-3819<br>FTL-3820 | Joseph Chan, PE |
| ASTM E330<br>& TAS 202                | Uniform Static Air Press. | Fenestration Testing Laboratory, Inc. | 05/16/2003<br>06/09/2003<br>06/09/2003 | FTL-3810<br>FTL-3819<br>FTL-3820 | Joseph Chan, PE |
| ASTM F588                             | Forced Entry              | Fenestration Testing Laboratory, Inc. | 05/16/2003<br>06/09/2003<br>06/09/2003 | FTL-3810<br>FTL-3819<br>FTL-3820 | Joseph Chan, 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<br>(TAS 201 & 203) | Large Missile Impact & Cyclic | Fenestration Testing Laboratory, Inc. | 05/16/2003<br>06/09/2003<br>06/09/2003 | FTL-3810<br>FTL-3819<br>FTL-3820 | Joseph Chan, 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.

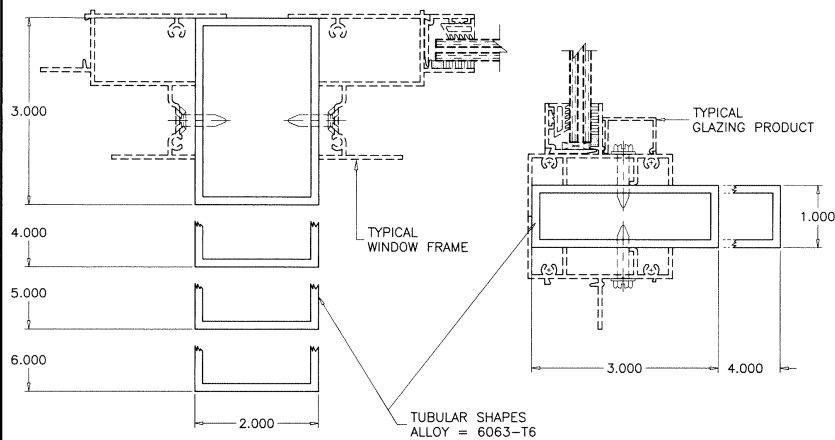
### Evaluation Report Engineer:

Jalal Farooq  
Al-Farooq Corporation

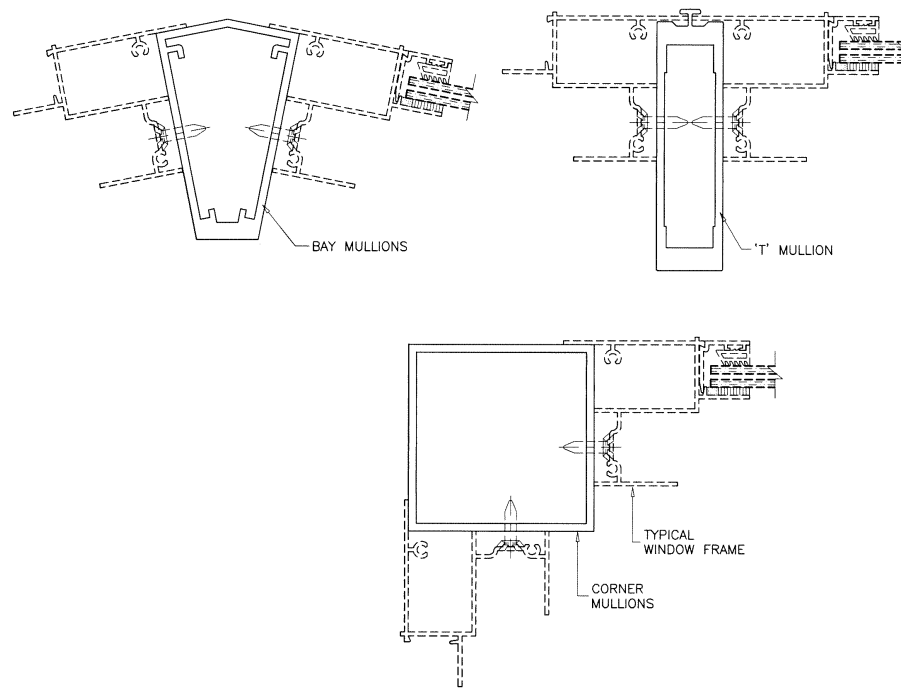
PE # 81223  
EB # 3538



Sealed: 7/19/2023



**MULLIONS CONTAINING TYPICAL GLAZING PRODUCTS**  
SEE WINDOW OR DOOR APPROVAL FOR FASTENERS SIZES AND SPACING



**ALUMINUM TUBE MULLIONS  
USING MULLION PROPERTIES ONLY**

**NOTES:**

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).

ALL GLAZING PRODUCTS USED WITH THESE MULLIONS MUST MEET THE APPLICABLE BUILDING CODE REQUIREMENTS I.E: WIND LOAD, WATER INFILTRATION, FORCED ENTRY RESISTANCE, SAFEGUARDS ETC.

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.

**INSTRUCTIONS:**

USE CHARTS AS FOLLOWS.

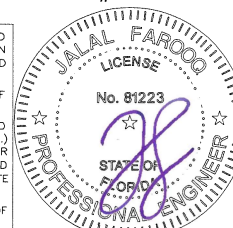
- STEP 1** DETERMINE DESIGN LOAD REQUIRED PER ASCE 7 FOR PARTICULAR OPENING.
- STEP 2** USE F.B.C. APPROVED GLAZING PRODUCTS MEETING ABOVE LOAD REQUIREMENTS.
- STEP 3** USE CONNECTION TO MULLION AS PER PRODUCT APPROVAL.
- STEP 4** USING CHARTS ON SHEETS 4 & 5 SELECT MULLION SIZE WITH DESIGN RATING MORE THAN DESIGN LOAD SPECIFIED IN STEP 1 ABOVE.
- STEP 5** USING ANCHOR TYPES ON SHEETS 7 THRU 13 AND ANCHOR CHARTS ON SHEET 6, SELECT ANCHOR TYPE WITH DESIGN RATING MORE THAN THE DESIGN LOADS SPECIFIED IN STEP 1 ABOVE.

MULLION SYSTEM IS RATED FOR LARGE & SMALL MISSILE IMPACT. AND CAN BE USED WITH ALL F.B.C. APPROVED IMPACT AND NON-IMPACT RESISTANT PRODUCTS.

Sealed: 7/19/2023

FL #39086

- 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.



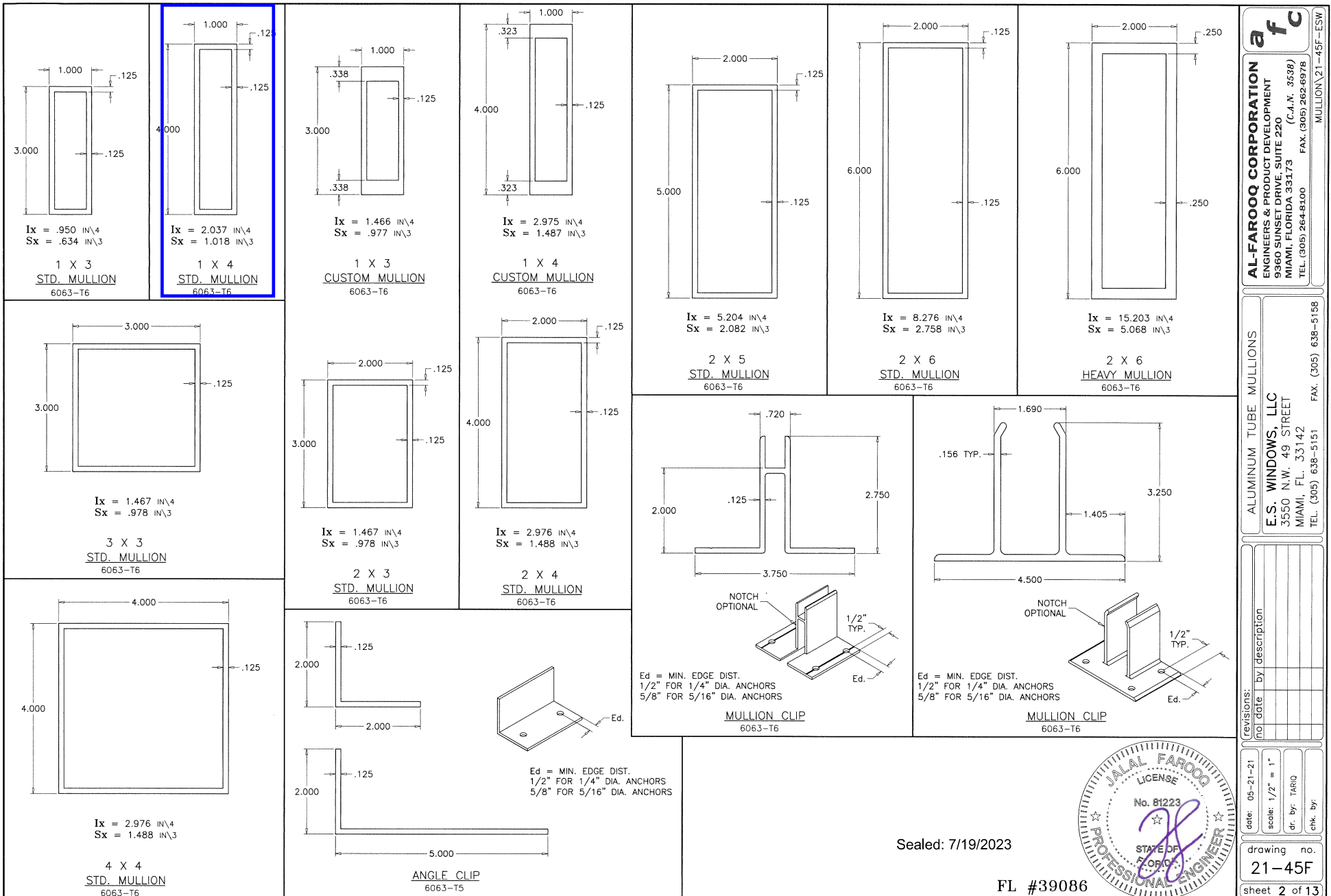
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
TEL (305) 262-6978 FAX (305) 262-6978  
(C.A.N. 3538)

**ALUMINUM TUBE MULLIONS**  
**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         |
|------------|-----|----------|----|---------------------|
|            | A   | 07/07/23 |    | UPDATED TO 2023 FBC |

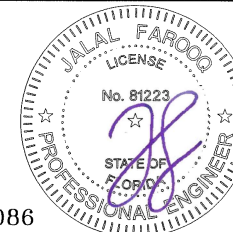
date: 05-21-21  
scale: 1/2" = 1"  
dr. by: TARIQ  
chk. by:

drawing no.  
**21-45F**  
sheet 1 of 13



Sealed: 7/19/2023

FL #39086



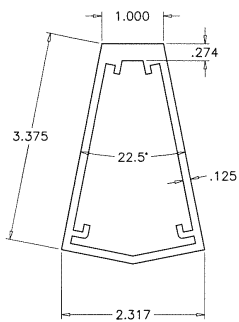
**AL-FAROOQ CORPORATION**  
 ENGINEERS & PRODUCT DEVELOPMENT  
 9360 SUNSET DRIVE, SUITE 220 (C.A.N. 3538)  
 MIAMI, FLORIDA 33173  
 TEL. (305) 264-8100 FAX. (305) 262-6978

**ALUMINUM TUBE MULLIONS**  
**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 |
|------------|----|------|----|-------------|
|            |    |      |    |             |

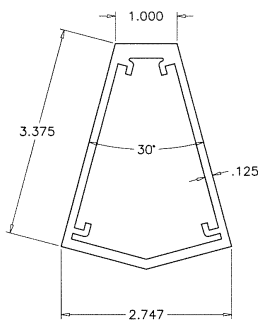
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 scale: 1/2" = 1"  
 dr. by: TARIQ  
 ch. by:

drawing no. **21-45F**  
 sheet 2 of 13



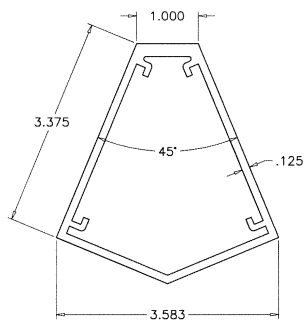
$I_x = 2.2762 \text{ IN}^4$   
 $S_x = 1.2717 \text{ IN}^3$

22-1/2" BAY MULLION  
 6063-T6



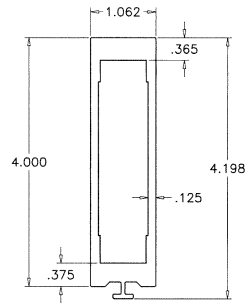
$I_x = 2.5623 \text{ IN}^4$   
 $S_x = 1.3526 \text{ IN}^3$

30" BAY MULLION  
 6063-T6



$I_x = 2.680 \text{ IN}^4$   
 $S_x = 1.3827 \text{ IN}^3$

45" BAY MULLION  
 6063-T6

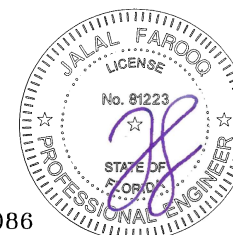


$I_x = 3.439 \text{ IN}^4$   
 $S_x = 1.5754 \text{ IN}^3$

"T" MULLION  
 6063-T6

Sealed: 7/19/2023

FL #39086

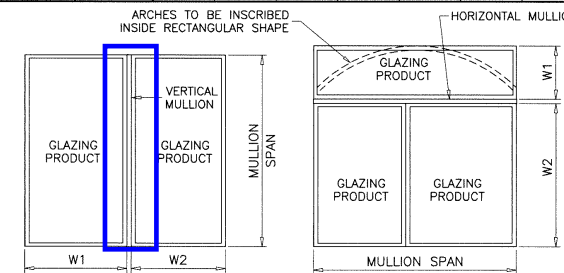


|                                                                                                                                                                                                                     |                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <b>af c</b><br><b>AL-FAROOQ CORPORATION</b><br>ENGINEERS & PRODUCT DEVELOPMENT<br>9360 SUNSET DRIVE, SUITE 220<br>MIAMI, FLORIDA 33173 (C.A.N. 3558)<br>TEL (305) 264-8100 FAX (305) 262-6978<br>MULLION\21-45F-ESW |                                                                |
| ALUMINUM TUBE MULLIONS<br><b>E.S. WINDOWS, LLC</b><br>3550 N.W. 49 STREET<br>MIAMI, FL. 33142<br>TEL (305) 638-5151 FAX (305) 638-5158                                                                              |                                                                |
| Revisions:<br>no. date by description                                                                                                                                                                               | date: 05-21-21<br>scale: 1/2" = 1"<br>dr. by: TARIQ<br>ch. by: |
| drawing no.<br><b>21-45F</b>                                                                                                                                                                                        |                                                                |
| sheet 3 of 13                                                                                                                                                                                                       |                                                                |

| DESIGN LOAD CAPACITY - PSF (TUBE MULLIONS) |           |               |               |                 |                 |               |               |                |
|--------------------------------------------|-----------|---------------|---------------|-----------------|-----------------|---------------|---------------|----------------|
| WINDOW DIMS.                               |           | 1 X 3<br>STD. | 1 X 4<br>STD. | 1 X 3<br>CUSTOM | 1 X 4<br>CUSTOM | 2 X 5<br>STD. | 2 X 6<br>STD. | 2 X 6<br>HEAVY |
| WIDTH (W)                                  | MULL SPAN |               |               | 2 X 3<br>STD.   | 2 X 4<br>STD.   |               |               |                |
| 19-1/8"                                    | 38-3/8"   | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 30"                                        |           | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 37"                                        |           | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 42"                                        |           | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 48"                                        |           | 140.6         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 54"                                        |           | 124.9         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 60"                                        | 50-5/8"   | 112.5         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 66"                                        |           | 102.2         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 72"                                        |           | 93.7          | 149.3         | 142.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 19-1/8"                                    |           | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | 143.9         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 30"                                        |           | 127.1         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 37"                                        |           | 103.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 42"                                        | 58"       | 90.8          | 144.4         | 137.1           | 150.0           | 150.0         | 150.0         | 150.0          |
| 48"                                        |           | 79.4          | 126.4         | 119.9           | 150.0           | 150.0         | 150.0         | 150.0          |
| 54"                                        |           | 70.6          | 112.3         | 106.6           | 150.0           | 150.0         | 150.0         | 150.0          |
| 60"                                        |           | 63.5          | 101.1         | 95.9            | 144.4           | 150.0         | 150.0         | 150.0          |
| 66"                                        |           | 57.8          | 91.9          | 87.2            | 131.3           | 150.0         | 150.0         | 150.0          |
| 72"                                        |           | 53.0          | 84.2          | 80.0            | 120.4           | 150.0         | 150.0         | 150.0          |
| 19-1/8"                                    | 63"       | 150.0         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | 108.6         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 30"                                        |           | 95.9          | 150.0         | 144.6           | 150.0           | 150.0         | 150.0         | 150.0          |
| 37"                                        |           | 77.8          | 123.6         | 117.2           | 150.0           | 150.0         | 150.0         | 150.0          |
| 42"                                        |           | 68.5          | 108.9         | 103.3           | 150.0           | 150.0         | 150.0         | 150.0          |
| 48"                                        |           | 60.0          | 95.3          | 90.4            | 135.9           | 150.0         | 150.0         | 150.0          |
| 54"                                        |           | 53.3          | 84.7          | 80.3            | 120.8           | 150.0         | 150.0         | 150.0          |
| 60"                                        | 63"       | 48.0          | 76.2          | 72.3            | 108.7           | 150.0         | 150.0         | 150.0          |
| 66"                                        |           | 43.6          | 69.3          | 65.7            | 98.9            | 150.0         | 150.0         | 150.0          |
| 72"                                        |           | 40.0          | 63.5          | 60.2            | 90.6            | 137.8         | 150.0         | 150.0          |
| 19-1/8"                                    |           | 123.3         | 150.0         | 150.0           | 150.0           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | 89.0          | 145.3         | 137.3           | 150.0           | 150.0         | 150.0         | 150.0          |
| 30"                                        |           | 78.6          | 128.4         | 121.3           | 150.0           | 150.0         | 150.0         | 150.0          |
| 37"                                        |           | 63.7          | 104.1         | 98.3            | 148.3           | 150.0         | 150.0         | 150.0          |
| 42"                                        | 108"      | 56.1          | 91.7          | 86.6            | 130.7           | 150.0         | 150.0         | 150.0          |
| 48"                                        |           | 49.1          | 80.2          | 75.8            | 114.3           | 150.0         | 150.0         | 150.0          |
| 54"                                        |           | 43.7          | 71.3          | 67.4            | 101.6           | 150.0         | 150.0         | 150.0          |
| 60"                                        |           | 39.3          | 64.2          | 60.6            | 91.5            | 139.7         | 150.0         | 150.0          |
| 66"                                        |           | 35.7          | 58.4          | 55.1            | 83.1            | 127.0         | 150.0         | 150.0          |
| 72"                                        |           | 32.7          | 53.5          | 50.5            | 76.2            | 116.4         | 150.0         | 150.0          |

| DESIGN LOAD CAPACITY - PSF (TUBE MULLIONS) |           |               |               |                 |                 |               |               |                |
|--------------------------------------------|-----------|---------------|---------------|-----------------|-----------------|---------------|---------------|----------------|
| WINDOW DIMS.                               |           | 1 X 3<br>STD. | 1 X 4<br>STD. | 1 X 3<br>CUSTOM | 1 X 4<br>CUSTOM | 2 X 5<br>STD. | 2 X 6<br>STD. | 2 X 6<br>HEAVY |
| WIDTH (W)                                  | MULL SPAN |               |               | 2 X 3<br>STD.   | 2 X 4<br>STD.   |               |               |                |
| 19-1/8"                                    | 74-1/4"   | 75.3          | 143.0         | 116.2           | 150.0           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | 54.3          | 103.2         | 83.9            | 146.6           | 150.0         | 150.0         | 150.0          |
| 30"                                        |           | 48.0          | 91.1          | 74.1            | 129.5           | 150.0         | 150.0         | 150.0          |
| 37"                                        |           | 38.9          | 73.9          | 60.1            | 105.0           | 150.0         | 150.0         | 150.0          |
| 42"                                        |           | 34.3          | 65.1          | 52.9            | 92.5            | 142.5         | 150.0         | 150.0          |
| 48"                                        |           | 30.0          | 57.0          | 46.3            | 81.0            | 124.7         | 150.0         | 150.0          |
| 54"                                        |           | 26.7          | 50.6          | 41.2            | 72.0            | 110.8         | 146.2         | 150.0          |
| 60"                                        | 84"       | 24.0          | 45.6          | 37.0            | 64.8            | 99.7          | 131.6         | 150.0          |
| 66"                                        |           | 21.8          | 41.4          | 33.7            | 58.9            | 90.7          | 119.6         | 150.0          |
| 72"                                        |           | 20.0          | 38.0          | 30.9            | 54.0            | 83.1          | 109.7         | 150.0          |
| 19-1/8"                                    |           | 52.0          | 110.4         | 80.3            | 150.0           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | 37.5          | 79.7          | 57.9            | 113.0           | 150.0         | 150.0         | 150.0          |
| 30"                                        |           | 33.2          | 70.4          | 51.2            | 99.8            | 150.0         | 150.0         | 150.0          |
| 37"                                        |           | 26.9          | 57.1          | 41.5            | 81.0            | 125.6         | 150.0         | 150.0          |
| 42"                                        | 96"       | 23.7          | 50.3          | 36.5            | 71.3            | 110.6         | 145.9         | 150.0          |
| 48"                                        |           | 20.7          | 44.0          | 32.0            | 62.4            | 96.8          | 127.6         | 150.0          |
| 54"                                        |           | -             | 39.1          | 28.4            | 55.5            | 86.0          | 113.5         | 150.0          |
| 60"                                        |           | -             | 35.2          | 25.6            | 49.9            | 77.4          | 102.1         | 150.0          |
| 66"                                        |           | -             | 32.0          | 23.3            | 45.4            | 70.4          | 92.8          | 150.0          |
| 72"                                        |           | -             | 29.3          | 21.3            | 41.6            | 64.5          | 85.1          | 150.0          |
| 19-1/8"                                    |           | 34.8          | 74.7          | 53.8            | 109.1           | 150.0         | 150.0         | 150.0          |
| 26-1/2"                                    | 96"       | 25.1          | 53.9          | 38.8            | 78.7            | 133.2         | 150.0         | 150.0          |
| 30"                                        |           | 22.2          | 47.6          | 34.3            | 69.6            | 117.7         | 150.0         | 150.0          |
| 37"                                        |           | -             | 38.6          | 27.8            | 56.4            | 95.4          | 125.8         | 150.0          |
| 42"                                        |           | -             | 34.0          | 24.5            | 49.7            | 84.1          | 110.8         | 150.0          |
| 48"                                        |           | -             | 29.8          | 21.4            | 43.5            | 73.5          | 97.0          | 150.0          |
| 54"                                        |           | -             | 26.5          | -               | 38.6            | 65.4          | 86.2          | 150.0          |
| 60"                                        |           | -             | 23.8          | -               | 34.8            | 58.8          | 77.6          | 142.0          |
| 66"                                        | 108"      | -             | 21.6          | -               | 31.6            | 53.5          | 70.5          | 129.0          |
| 72"                                        |           | -             | -             | -               | 29.0            | 49.0          | 64.6          | 118.3          |
| 19-1/8"                                    |           | -             | 52.5          | 37.8            | 76.6            | 134.0         | 150.0         | 150.0          |
| 26-1/2"                                    |           | -             | 37.9          | 27.3            | 55.3            | 96.7          | 137.7         | 150.0          |
| 30"                                        |           | -             | 33.4          | 24.1            | 48.9            | 85.5          | 121.7         | 150.0          |
| 37"                                        |           | -             | 27.1          | -               | 39.6            | 69.3          | 98.7          | 150.0          |
| 42"                                        |           | -             | 23.9          | -               | 34.9            | 61.0          | 86.9          | 150.0          |
| 48"                                        | 108"      | -             | 20.9          | -               | 30.5            | 53.4          | 76.0          | 139.1          |
| 54"                                        |           | -             | -             | -               | 27.1            | 47.5          | 67.6          | 123.7          |
| 60"                                        |           | -             | -             | -               | 24.4            | 42.7          | 60.8          | 111.3          |
| 66"                                        |           | -             | -             | -               | 22.2            | 38.8          | 55.3          | 101.2          |
| 72"                                        |           | -             | -             | -               | 20.4            | 35.6          | 50.7          | 92.7           |

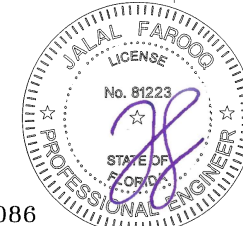
| DESIGN LOAD CAPACITY - PSF (TUBE MULLIONS) |           |               |               |                 |                 |               |               |                |
|--------------------------------------------|-----------|---------------|---------------|-----------------|-----------------|---------------|---------------|----------------|
| WINDOW DIMS.                               |           | 1 X 3<br>STD. | 1 X 4<br>STD. | 1 X 3<br>CUSTOM | 1 X 4<br>CUSTOM | 2 X 5<br>STD. | 2 X 6<br>STD. | 2 X 6<br>HEAVY |
| WIDTH (W)                                  | MULL SPAN |               |               | 2 X 3<br>STD.   | 2 X 4<br>STD.   |               |               |                |
| 19-1/8"                                    | 120"      | -             | 38.2          | 27.5            | 55.9            | 97.7          | 150.0         | 150.0          |
| 26-1/2"                                    |           | -             | 27.6          | -               | 40.3            | 70.5          | 110.8         | 150.0          |
| 30"                                        |           | -             | 24.4          | -               | 35.6            | 62.3          | 97.9          | 150.0          |
| 37"                                        |           | -             | -             | -               | 28.9            | 50.5          | 79.3          | 145.1          |
| 42"                                        |           | -             | -             | -               | 25.4            | 44.5          | 69.9          | 127.8          |
| 48"                                        |           | -             | -             | -               | 22.3            | 38.9          | 61.2          | 111.9          |
| 54"                                        |           | -             | -             | -               | -               | 34.6          | 54.4          | 99.4           |
| 60"                                        | 132"      | -             | -             | -               | -               | 31.1          | 48.9          | 89.5           |
| 66"                                        |           | -             | -             | -               | -               | 28.3          | 44.5          | 81.4           |
| 72"                                        |           | -             | -             | -               | -               | 26.0          | 40.8          | 74.6           |
| 19-1/8"                                    |           | -             | 28.7          | 20.7            | 42.0            | 73.4          | 116.8         | 150.0          |
| 26-1/2"                                    |           | -             | 20.7          | -               | 30.3            | 53.0          | 84.3          | 150.0          |
| 30"                                        |           | -             | -             | -               | 26.8            | 46.8          | 74.4          | 136.7          |
| 37"                                        |           | -             | -             | -               | 21.7            | 37.9          | 60.3          | 110.9          |
| 42"                                        | 144"      | -             | -             | -               | -               | 33.4          | 53.2          | 97.7           |
| 48"                                        |           | -             | -             | -               | -               | 29.3          | 46.5          | 85.5           |
| 54"                                        |           | -             | -             | -               | -               | 26.0          | 41.4          | 76.0           |
| 60"                                        |           | -             | -             | -               | -               | 23.4          | 37.2          | 68.4           |
| 66"                                        |           | -             | -             | -               | -               | 21.3          | 33.8          | 62.1           |
| 72"                                        |           | -             | -             | -               | -               | -             | 31.0          | 57.0           |
| 19-1/8"                                    |           | -             | -             | -               | 32.3            | 56.5          | 89.9          | 150.0          |
| 26-1/2"                                    | 144"      | -             | -             | -               | 23.3            | 40.8          | 64.9          | 119.2          |
| 30"                                        |           | -             | -             | -               | 20.6            | 36.0          | 57.3          | 105.3          |
| 37"                                        |           | -             | -             | -               | -               | 29.2          | 46.5          | 85.4           |
| 42"                                        |           | -             | -             | -               | -               | 25.7          | 41.0          | 75.2           |
| 48"                                        |           | -             | -             | -               | -               | 22.5          | 35.8          | 65.8           |
| 54"                                        |           | -             | -             | -               | -               | 20.0          | 31.9          | 58.5           |
| 60"                                        |           | -             | -             | -               | -               | -             | 28.7          | 52.7           |
| 66"                                        |           | -             | -             | -               | -               | -             | 26.1          | 47.9           |
| 72"                                        |           | -             | -             | -               | -               | -             | 23.9          | 43.9           |



TYPICAL MULLION ARRANGEMENTS

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

Sealed: 7/19/2023



FL #39086

ALL LOADS ARE EXT.(+)/INT.(-).

NOTE:  
MULLIONS RATED IN THESE CHARTS MAY BE ORIENTED  
VERTICALLY OR HORIZONTALLY.  
(INTERPOLATION BETWEEN WIDTHS ALLOWED)

ANCHORS TYPE 'D' AND 'E' APPLICABLE TO  
4", 5" AND 6" TUBE MULLIONS.  
ANCHORS TYPE 'A', 'B', 'C', 'F' AND 'G' APPLICABLE  
TO ALL TUBE MULLIONS.

MULLIONS

**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173 (C.A.N. 3558)  
TEL (305) 262-6978 FAX (305) 262-6978  
MULLION 21-45F-ESW

**ALUMINUM TUBE MULLIONS**  
**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: 05-21-21  
scale:  
dr. by: TARIQ  
chk. by:

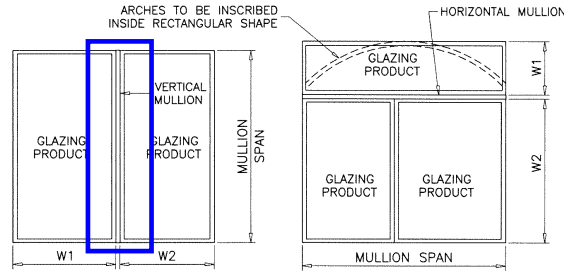
drawing no.  
**21-45F**

sheet 4 of 13

| DESIGN LOAD CAPACITY - PSF (BAY MULLIONS) |           |          |          |          |       | DESIGN LOAD CAPACITY - PSF (BAY MULLIONS) |           |          |          |          |       |      |
|-------------------------------------------|-----------|----------|----------|----------|-------|-------------------------------------------|-----------|----------|----------|----------|-------|------|
| WINDOW DIMS.                              |           | 22-1/2"  | 30"      | 45"      | 'T'   | WINDOW DIMS.                              |           | 22-1/2"  | 30"      | 45"      | 'T'   |      |
| WIDTH (W)                                 | MULL SPAN | BAY MULL | BAY MULL | BAY MULL | MULL  | WIDTH (W)                                 | MULL SPAN | BAY MULL | BAY MULL | BAY MULL | MULL  |      |
| 19-1/8"                                   | 38-3/8"   | 150.0    | 150.0    | 150.0    | 150.0 | 19-1/8"                                   | 84"       | 124.6    | 140.3    | 146.7    | 150.0 |      |
| 26-1/2"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 26-1/2"                                   |           | 89.9     | 101.2    | 105.9    | 118.4 |      |
| 30"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 30"                                       |           | 79.4     | 89.4     | 93.5     | 104.6 |      |
| 36"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 36"                                       |           | 66.2     | 74.5     | 77.9     | 87.1  |      |
| 42"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 42"                                       |           | 56.7     | 63.9     | 66.8     | 74.7  |      |
| 48"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 48"                                       |           | 49.6     | 55.9     | 58.5     | 65.3  |      |
| 54"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 54"                                       |           | 44.1     | 49.7     | 52.0     | 58.1  |      |
| 60"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 60"                                       |           | 39.7     | 44.7     | 46.8     | 52.3  |      |
| 66"                                       | 50-5/8"   | 150.0    | 150.0    | 150.0    | 150.0 | 66"                                       | 96"       | 36.1     | 40.6     | 42.5     | 47.5  |      |
| 72"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 72"                                       |           | 33.1     | 37.3     | 39.0     | 43.6  |      |
| 19-1/8"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 19-1/8"                                   |           | 83.5     | 94.0     | 98.3     | 123.5 |      |
| 26-1/2"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 26-1/2"                                   |           | 60.2     | 67.8     | 70.9     | 89.1  |      |
| 30"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 30"                                       |           | 53.2     | 59.9     | 62.7     | 78.7  |      |
| 36"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 36"                                       |           | 44.3     | 49.9     | 52.2     | 65.6  |      |
| 42"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 42"                                       |           | 38.0     | 42.8     | 44.8     | 56.2  |      |
| 48"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 48"                                       |           | 33.3     | 37.4     | 39.2     | 49.2  |      |
| 54"                                       | 58"       | 150.0    | 150.0    | 150.0    | 150.0 | 54"                                       | 108"      | 29.6     | 33.3     | 34.8     | 43.7  |      |
| 60"                                       |           | 143.0    | 140.4    | 145.1    | 150.0 | 60"                                       |           | 26.6     | 30.0     | 31.3     | 39.4  |      |
| 66"                                       |           | 130.0    | 127.7    | 131.9    | 137.9 | 66"                                       |           | 24.2     | 27.2     | 28.5     | 35.8  |      |
| 72"                                       |           | 119.2    | 117.0    | 120.9    | 126.4 | 72"                                       |           | 22.2     | 25.0     | 26.1     | 32.8  |      |
| 19-1/8"                                   | 63"       | 150.0    | 150.0    | 150.0    | 150.0 | 19-1/8"                                   |           | 120"     | 58.6     | 66.0     | 69.0  | 88.6 |
| 26-1/2"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 26-1/2"                                   |           |          | 42.3     | 47.6     | 49.8  | 63.9 |
| 30"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 30"                                       |           |          | 37.4     | 42.1     | 44.0  | 56.5 |
| 36"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 36"                                       |           |          | 31.1     | 35.1     | 36.7  | 47.1 |
| 42"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 42"                                       |           |          | 26.7     | 30.1     | 31.4  | 40.3 |
| 48"                                       |           | 136.1    | 132.9    | 137.4    | 142.7 | 48"                                       |           |          | 23.4     | 26.3     | 27.5  | 35.3 |
| 54"                                       |           | 121.0    | 118.1    | 122.1    | 126.8 | 54"                                       | 20.8      |          | 23.4     | 24.4     | 31.4  |      |
| 60"                                       |           | 108.9    | 106.3    | 109.9    | 114.1 | 60"                                       | -         |          | 21.0     | 22.0     | 28.2  |      |
| 66"                                       | 74-1/4"   | 99.0     | 96.6     | 99.9     | 103.8 | 66"                                       | -         |          | -        | 20.0     | 25.7  |      |
| 72"                                       |           | 90.8     | 88.6     | 91.6     | 95.1  | 72"                                       | -         |          | -        | -        | 23.5  |      |
| 19-1/8"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 19-1/8"                                   | 132"      | 42.7     | 48.1     | 50.3     | 64.6  |      |
| 26-1/2"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 26-1/2"                                   |           | 30.8     | 34.7     | 36.3     | 46.6  |      |
| 30"                                       |           | 150.0    | 150.0    | 150.0    | 150.0 | 30"                                       |           | 27.2     | 30.7     | 32.1     | 41.2  |      |
| 36"                                       |           | 150.0    | 149.5    | 150.0    | 150.0 | 36"                                       |           | 22.7     | 25.6     | 26.7     | 34.3  |      |
| 42"                                       |           | 131.8    | 128.1    | 132.6    | 137.1 | 42"                                       |           | -        | 21.9     | 22.9     | 29.4  |      |
| 48"                                       |           | 115.3    | 112.1    | 116.0    | 119.9 | 48"                                       |           | -        | -        | 20.1     | 25.7  |      |
| 54"                                       | 102.5     | 99.7     | 103.1    | 106.6    | 54"   | -                                         |           | -        | -        | 22.9     |       |      |
| 60"                                       | 92.3      | 89.7     | 92.8     | 96.0     | 60"   | -                                         |           | -        | -        | 20.6     |       |      |
| 66"                                       | 144"      | 83.9     | 81.5     | 84.4     | 87.2  | 19-1/8"                                   | 144"      | 32.1     | 36.1     | 37.8     | 48.5  |      |
| 72"                                       |           | 76.9     | 74.8     | 77.3     | 80.0  | 26-1/2"                                   |           | 23.2     | 26.1     | 27.3     | 35.0  |      |
| 19-1/8"                                   |           | 150.0    | 150.0    | 150.0    | 150.0 | 30"                                       |           | 20.5     | 23.0     | 24.1     | 30.9  |      |
| 26-1/2"                                   |           | 130.2    | 144.9    | 150.0    | 150.0 | 36"                                       |           | -        | -        | 20.1     | 25.8  |      |
| 30"                                       |           | 115.0    | 128.0    | 132.6    | 135.8 | 42"                                       |           | -        | -        | -        | 22.1  |      |
| 36"                                       |           | 95.8     | 106.7    | 110.5    | 113.1 | 19-1/8"                                   | 144"      | 24.7     | 27.8     | 29.1     | 37.4  |      |
| 42"                                       |           | 82.2     | 91.4     | 94.7     | 97.0  | 26-1/2"                                   |           | -        | 20.1     | 21.0     | 27.0  |      |
| 48"                                       |           | 71.9     | 80.0     | 82.8     | 84.8  | 30"                                       |           | -        | -        | -        | 23.8  |      |
| 54"                                       | 63.9      | 71.1     | 73.6     | 75.4     |       |                                           |           |          |          |          |       |      |
| 60"                                       | 57.5      | 64.0     | 66.3     | 67.9     |       |                                           |           |          |          |          |       |      |
| 66"                                       | 52.3      | 58.2     | 60.3     | 61.7     |       |                                           |           |          |          |          |       |      |
| 72"                                       | 47.9      | 53.3     | 55.2     | 56.6     |       |                                           |           |          |          |          |       |      |

ALL LOADS ARE EXT.(+)/INT.(-)

ALL LOADS ARE EXT.(+)/INT.(-).



TYPICAL MULLION ARRANGEMENTS

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

NOTE:

'T' MULLION RATED IN THESE CHARTS MAY BE ORIENTED VERTICALLY OR HORIZONTALLY. (INTERPOLATION BETWEEN WIDTHS ALLOWED)

Sealed: 7/19/2023



MULLIONS

FL #39086

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

MULLION \ 21 - 45F - ESW

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ALUMINUM TUBE MULLIONS

**E.S. WINDOWS, LLC**  
3550 N.W. 49 STREET  
MIAMI, FL. 33142  
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revisions:

| no | date | by | description |
|----|------|----|-------------|
|    |      |    |             |
|    |      |    |             |
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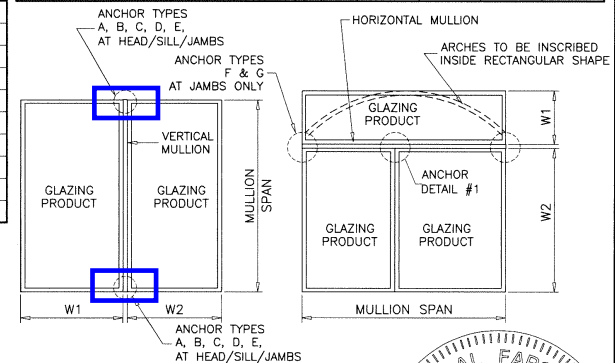
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scale:  
dr. by: TARIQ  
chk. by:

drawing no.  
**21-45F**  
sheet 5 of 13

| DESIGN LOAD CAPACITY - PSF |           |              |       |       |       |       |       |       |
|----------------------------|-----------|--------------|-------|-------|-------|-------|-------|-------|
| WINDOW DIMS.               |           | ANCHORS TYPE |       |       |       |       |       |       |
| WIDTH (W)                  | MULL SPAN | A            | B     | C     | D     | E     | F     | G     |
| 19-1/8"                    | 38-3/8"   | 150.0        | 150.0 | 150.0 | 150.0 | 150.0 | 117.7 | 150.0 |
| 26-1/2"                    |           | 143.9        | 150.0 | 150.0 | 150.0 | 150.0 | 85.0  | 150.0 |
| 30"                        |           | 127.1        | 150.0 | 150.0 | 150.0 | 150.0 | 75.0  | 150.0 |
| 37"                        |           | 103.0        | 150.0 | 140.8 | 150.0 | 150.0 | 60.9  | 121.7 |
| 42"                        |           | 90.8         | 150.0 | 124.0 | 150.0 | 150.0 | 53.6  | 107.2 |
| 48"                        |           | 79.4         | 150.0 | 108.5 | 150.0 | 150.0 | 46.9  | 93.8  |
| 54"                        |           | 70.6         | 141.2 | 96.5  | 150.0 | 150.0 | 41.7  | 83.4  |
| 60"                        |           | 63.5         | 127.1 | 86.8  | 150.0 | 150.0 | 37.5  | 75.0  |
| 66"                        | 72"       | 57.8         | 115.5 | 78.9  | 150.0 | 150.0 | 34.1  | 68.2  |
| 72"                        |           | 53.0         | 105.9 | 72.3  | 144.7 | 150.0 | 31.3  | 62.5  |
| 19-1/8"                    | 50-5/8"   | 150.0        | 150.0 | 150.0 | 150.0 | 150.0 | 89.2  | 150.0 |
| 26-1/2"                    |           | 109.1        | 150.0 | 149.0 | 150.0 | 150.0 | 64.4  | 128.8 |
| 30"                        |           | 96.3         | 150.0 | 131.6 | 150.0 | 150.0 | 56.9  | 113.8 |
| 37"                        |           | 78.1         | 150.0 | 106.7 | 150.0 | 150.0 | 46.1  | 92.3  |
| 42"                        |           | 68.8         | 137.6 | 94.0  | 150.0 | 150.0 | 40.6  | 81.3  |
| 48"                        |           | 60.2         | 120.4 | 82.3  | 150.0 | 150.0 | 35.6  | 71.1  |
| 54"                        |           | 53.5         | 107.0 | 73.1  | 146.2 | 150.0 | 31.6  | 63.2  |
| 60"                        |           | 48.2         | 96.3  | 65.8  | 131.6 | 150.0 | 28.4  | 56.9  |
| 66"                        | 72"       | 43.8         | 87.6  | 59.8  | 119.6 | 139.3 | 25.9  | 51.7  |
| 72"                        |           | 40.1         | 80.3  | 54.8  | 109.7 | 127.7 | 23.7  | 47.4  |
| 19-1/8"                    | 58"       | 131.9        | 150.0 | 150.0 | 150.0 | 150.0 | 77.9  | 150.0 |
| 26-1/2"                    |           | 95.2         | 150.0 | 130.0 | 150.0 | 150.0 | 56.2  | 112.4 |
| 30"                        |           | 84.1         | 150.0 | 114.9 | 150.0 | 150.0 | 49.7  | 99.3  |
| 37"                        |           | 68.2         | 136.4 | 93.1  | 150.0 | 150.0 | 40.3  | 80.5  |
| 42"                        |           | 60.1         | 120.1 | 82.0  | 150.0 | 150.0 | 35.5  | 70.9  |
| 48"                        |           | 52.6         | 105.1 | 71.8  | 143.6 | 150.0 | 31.0  | 62.1  |
| 54"                        |           | 46.7         | 93.4  | 63.8  | 127.6 | 148.6 | 27.6  | 55.2  |
| 60"                        |           | 42.0         | 84.1  | 57.4  | 114.9 | 133.7 | 24.8  | 49.7  |
| 66"                        | 72"       | 38.2         | 76.4  | 52.2  | 104.4 | 121.6 | 22.6  | 45.1  |
| 72"                        |           | 35.0         | 70.1  | 47.9  | 95.7  | 111.4 | 20.7  | 41.4  |
| 19-1/8"                    | 63"       | 121.4        | 150.0 | 150.0 | 150.0 | 150.0 | 71.7  | 143.4 |
| 26-1/2"                    |           | 87.6         | 150.0 | 119.7 | 150.0 | 150.0 | 51.8  | 103.5 |
| 30"                        |           | 77.4         | 150.0 | 105.8 | 150.0 | 150.0 | 45.7  | 91.4  |
| 37"                        |           | 62.8         | 125.5 | 85.7  | 150.0 | 150.0 | 37.1  | 74.1  |
| 42"                        |           | 55.3         | 110.6 | 75.5  | 150.0 | 150.0 | 32.7  | 65.3  |
| 48"                        |           | 48.4         | 96.8  | 66.1  | 132.2 | 150.0 | 28.6  | 57.1  |
| 54"                        |           | 43.0         | 86.0  | 58.8  | 117.5 | 136.8 | 25.4  | 50.8  |
| 60"                        |           | 38.7         | 77.4  | 52.9  | 105.8 | 123.1 | 22.9  | 45.7  |
| 66"                        | 72"       | 35.2         | 70.4  | 48.1  | 96.1  | 111.9 | 20.8  | 41.6  |
| 72"                        |           | 32.3         | 64.5  | 44.1  | 88.1  | 102.6 | -     | 38.1  |

| DESIGN LOAD CAPACITY - PSF |           |              |       |       |       |       |      |       |
|----------------------------|-----------|--------------|-------|-------|-------|-------|------|-------|
| WINDOW DIMS.               |           | ANCHORS TYPE |       |       |       |       |      |       |
| WIDTH (W)                  | MULL SPAN | A            | B     | C     | D     | E     | F    | G     |
| 19-1/8"                    | 74-1/4"   | 103.0        | 150.0 | 140.8 | 150.0 | 150.0 | 60.8 | 121.7 |
| 26-1/2"                    |           | 74.4         | 148.7 | 101.6 | 150.0 | 150.0 | 43.9 | 87.8  |
| 30"                        |           | 65.7         | 131.4 | 89.7  | 150.0 | 150.0 | 38.8 | 77.6  |
| 37"                        |           | 53.3         | 106.5 | 72.8  | 145.5 | 150.0 | 31.4 | 62.9  |
| 42"                        |           | 46.9         | 93.8  | 64.1  | 128.2 | 149.2 | 27.7 | 55.4  |
| 48"                        |           | 41.1         | 82.1  | 56.1  | 112.2 | 130.6 | 24.2 | 48.5  |
| 54"                        |           | 36.5         | 73.0  | 49.8  | 99.7  | 116.1 | 21.5 | 43.1  |
| 60"                        |           | 32.8         | 65.7  | 44.9  | 89.7  | 104.5 | -    | 38.8  |
| 66"                        | 72"       | 29.9         | 59.7  | 40.8  | 81.6  | 95.0  | -    | 35.3  |
| 72"                        |           | 27.4         | 54.7  | 37.4  | 74.8  | 87.1  | -    | 32.3  |
| 19-1/8"                    | 84"       | 91.1         | 150.0 | 124.4 | 150.0 | 150.0 | 53.8 | 107.6 |
| 26-1/2"                    |           | 65.7         | 131.5 | 89.8  | 150.0 | 150.0 | 38.8 | 77.6  |
| 30"                        |           | 58.1         | 116.1 | 79.3  | 150.0 | 150.0 | 34.3 | 68.6  |
| 37"                        |           | 47.1         | 94.1  | 64.3  | 128.6 | 149.7 | 27.8 | 55.6  |
| 42"                        |           | 41.5         | 82.9  | 56.7  | 113.3 | 131.9 | 24.5 | 49.0  |
| 48"                        |           | 36.3         | 72.6  | 49.6  | 99.1  | 115.4 | 21.4 | 42.9  |
| 54"                        |           | 32.3         | 64.5  | 44.1  | 88.1  | 102.6 | -    | 38.1  |
| 60"                        |           | 29.0         | 58.1  | 39.7  | 79.3  | 92.3  | -    | 34.3  |
| 66"                        | 72"       | 26.4         | 52.8  | 36.1  | 72.1  | 83.9  | -    | 31.2  |
| 72"                        |           | 24.2         | 48.4  | 33.0  | 66.1  | 77.0  | -    | 28.6  |
| 19-1/8"                    | 96"       | 79.7         | 150.0 | 108.9 | 150.0 | 150.0 | 47.1 | 94.1  |
| 26-1/2"                    |           | 57.5         | 115.0 | 78.6  | 150.0 | 150.0 | 34.0 | 67.9  |
| 30"                        |           | 50.8         | 101.6 | 69.4  | 138.8 | 150.0 | 30.0 | 60.0  |
| 37"                        |           | 41.2         | 82.4  | 56.3  | 112.5 | 131.0 | 24.3 | 48.6  |
| 42"                        |           | 36.3         | 72.6  | 49.6  | 99.1  | 115.4 | 21.4 | 42.9  |
| 48"                        |           | 31.8         | 63.5  | 43.4  | 86.8  | 101.0 | -    | 37.5  |
| 54"                        |           | 28.2         | 56.4  | 38.6  | 77.1  | 89.8  | -    | 33.3  |
| 60"                        |           | 25.4         | 50.8  | 34.7  | 69.4  | 80.8  | -    | 30.0  |
| 66"                        | 72"       | 23.1         | 46.2  | 31.5  | 63.1  | 73.5  | -    | 27.3  |
| 72"                        |           | 21.2         | 42.3  | 28.9  | 57.8  | 67.3  | -    | 25.0  |
| 19-1/8"                    | 108"      | 70.8         | 141.7 | 96.8  | 150.0 | 150.0 | 41.8 | 83.7  |
| 26-1/2"                    |           | 51.1         | 102.2 | 69.8  | 139.7 | 150.0 | 30.2 | 60.4  |
| 30"                        |           | 45.2         | 90.3  | 61.7  | 123.4 | 143.6 | 26.7 | 53.3  |
| 37"                        |           | 36.6         | 73.2  | 50.0  | 100.0 | 116.5 | 21.6 | 43.2  |
| 42"                        |           | 32.3         | 64.5  | 44.1  | 88.1  | 102.6 | -    | 38.1  |
| 48"                        |           | 28.2         | 56.4  | 38.6  | 77.1  | 89.8  | -    | 33.3  |
| 54"                        |           | 25.1         | 50.2  | 34.3  | 68.5  | 79.8  | -    | 29.6  |
| 60"                        |           | 22.6         | 45.2  | 30.8  | 61.7  | 71.8  | -    | 26.7  |
| 66"                        | 72"       | 20.5         | 41.1  | 28.0  | 56.1  | 65.3  | -    | 24.2  |
| 72"                        |           | -            | 37.6  | 25.7  | 51.4  | 59.9  | -    | 22.2  |

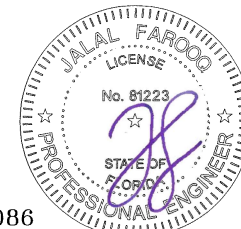
| DESIGN LOAD CAPACITY - PSF |           |              |       |      |       |       |      |      |
|----------------------------|-----------|--------------|-------|------|-------|-------|------|------|
| WINDOW DIMS.               |           | ANCHORS TYPE |       |      |       |       |      |      |
| WIDTH (W)                  | MULL SPAN | A            | B     | C    | D     | E     | F    | G    |
| 19-1/8"                    | 120"      | 63.7         | 127.5 | 87.1 | 150.0 | 150.0 | 37.6 | 75.3 |
| 26-1/2"                    |           | 46.0         | 92.0  | 62.9 | 125.7 | 146.4 | 27.2 | 54.3 |
| 30"                        |           | 40.6         | 81.3  | 55.5 | 111.0 | 129.3 | 24.0 | 48.0 |
| 37"                        |           | 33.0         | 65.9  | 45.0 | 90.0  | 104.8 | -    | 38.9 |
| 42"                        |           | 29.0         | 58.1  | 39.7 | 79.3  | 92.3  | -    | 34.3 |
| 48"                        |           | 25.4         | 50.8  | 34.7 | 69.4  | 80.8  | -    | 30.0 |
| 54"                        |           | 22.6         | 45.2  | 30.8 | 61.7  | 71.8  | -    | 26.7 |
| 60"                        |           | 20.3         | 40.6  | 27.8 | 55.5  | 64.6  | -    | 24.0 |
| 66"                        | 72"       | -            | 36.9  | 25.2 | 50.5  | 58.8  | -    | 21.8 |
| 72"                        |           | -            | 33.9  | 23.1 | 46.3  | 53.9  | -    | 20.0 |
| 19-1/8"                    | 132"      | 58.0         | 115.9 | 79.2 | 150.0 | 150.0 | 34.2 | 68.4 |
| 26-1/2"                    |           | 41.8         | 83.7  | 57.1 | 114.3 | 133.0 | 24.7 | 49.4 |
| 30"                        |           | 36.9         | 73.9  | 50.5 | 100.9 | 117.5 | 21.8 | 43.6 |
| 37"                        |           | 30.0         | 59.9  | 40.9 | 81.8  | 95.3  | -    | 35.4 |
| 42"                        |           | 26.4         | 52.8  | 36.1 | 72.1  | 83.9  | -    | 31.2 |
| 48"                        |           | 23.1         | 46.2  | 31.5 | 63.1  | 73.5  | -    | 27.3 |
| 54"                        |           | 20.5         | 41.1  | 28.0 | 56.1  | 65.3  | -    | 24.2 |
| 60"                        |           | -            | 36.9  | 25.2 | 50.5  | 58.8  | -    | 21.8 |
| 66"                        | 72"       | -            | 33.6  | 22.9 | 45.9  | 53.4  | -    | -    |
| 72"                        |           | -            | 30.8  | 21.0 | 42.1  | 49.0  | -    | -    |
| 19-1/8"                    | 144"      | 53.1         | 106.2 | 72.6 | 145.2 | 150.0 | 31.4 | 62.7 |
| 26-1/2"                    |           | 38.3         | 76.7  | 52.4 | 104.8 | 122.0 | 22.6 | 45.3 |
| 30"                        |           | 33.9         | 67.7  | 46.3 | 92.5  | 107.7 | 20.0 | 40.0 |
| 37"                        |           | 27.5         | 54.9  | 37.5 | 75.0  | 87.4  | -    | 32.4 |
| 42"                        |           | 24.2         | 48.4  | 33.0 | 66.1  | 77.0  | -    | 28.6 |
| 48"                        |           | -            | 42.3  | 28.9 | 57.8  | 67.3  | -    | 25.0 |
| 54"                        |           | -            | 37.6  | 25.7 | 51.4  | 59.9  | -    | 22.2 |
| 60"                        |           | -            | 33.9  | 23.1 | 46.3  | 53.9  | -    | 20.0 |
| 66"                        | 72"       | -            | 30.8  | 21.0 | 42.1  | 49.0  | -    | -    |
| 72"                        |           | -            | 28.2  | -    | 38.6  | 44.9  | -    | -    |



TYPICAL MULLION ARRANGEMENTS

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

Sealed: 7/19/2023



FL #39086

ALL LOADS ARE EXT.(+)/INT.(-).

**NOTE:**

ANY ANCHOR CONDITION SHOWN HEREIN MAY COVER LOCATIONS AT HEAD, SILL OR JAMB ENDS.

FOR ANCHORS DESCRIPTION SEE SHEETS 7 THRU 13. (INTERPOLATION BETWEEN WIDTHS OR SPANS ALLOWED)

ANCHORS TYPE 'D' AND 'E' APPLICABLE TO 4", 5" AND 6" TUBE MULLIONS.

ANCHORS TYPE 'A', 'B', 'C', 'F' AND 'G' APPLICABLE TO ALL TUBE MULLIONS.

ANCHORS

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

ALUMINUM TUBE MULLIONS

**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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|    |      |    |             |

date: 05-21-21

scale: 1"=1'-0"

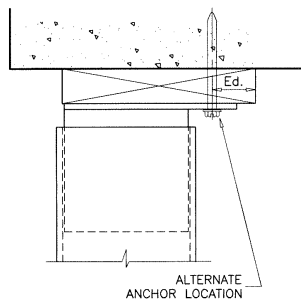
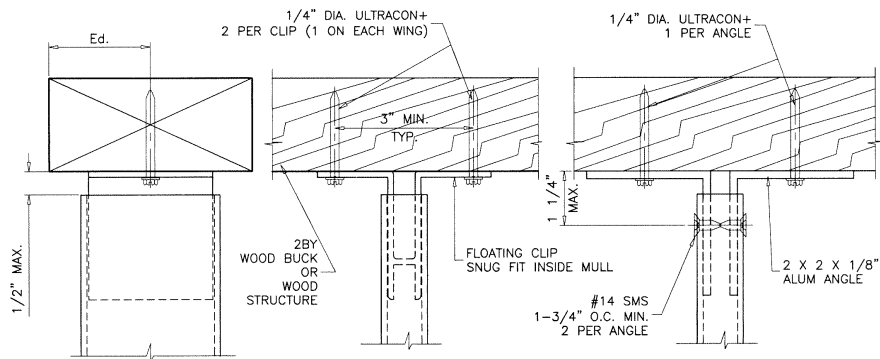
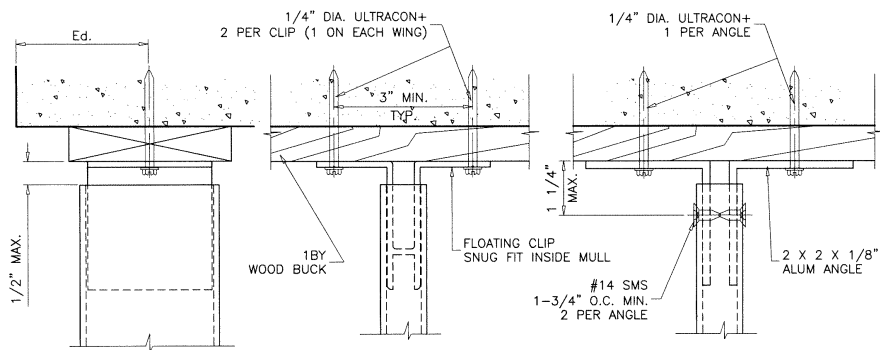
dr: TARIQ

chk: BY

drawing no.

**21-45F**

sheet 6 of 13

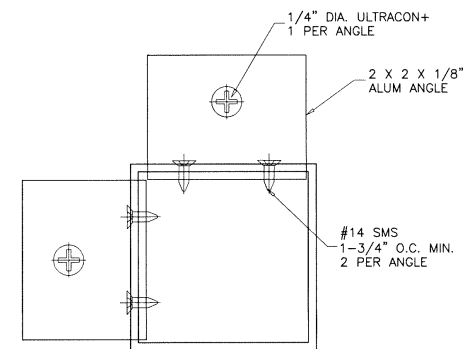
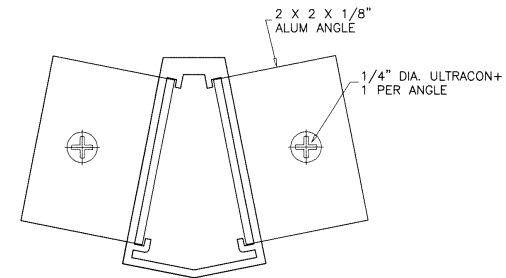


**ANCHORS TYPE 'A'**

| 1/4" DIA. ULTRACON+ BY 'DEWALT'   |                       |                |
|-----------------------------------|-----------------------|----------------|
| (Fu=164 KSI, Fy=148 KSI)          |                       |                |
| ULTRACON+ MAY BE HEX OR FLAT HEAD |                       |                |
| SUBSTRATE                         | Ed. = MIN. EDGE DIST. | MIN. EMBEDMENT |
| WOOD                              | 1"                    | 1-1/2"         |
| CONCRETE                          | 2-1/2"                | 1-3/4"         |

WOOD = 2BY WOOD BUCKS OR WOOD STRUCTURE S.G. = 0.55 MIN.  
CONCRETE = f'c = 3000 PSI MIN.

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.



Sealed: 7/19/2023

FL #39086



**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173 (C.A.N. 9538)  
TEL. (305) 264-8100 FAX. (305) 262-6978  
MULLION 21-45F-ESW

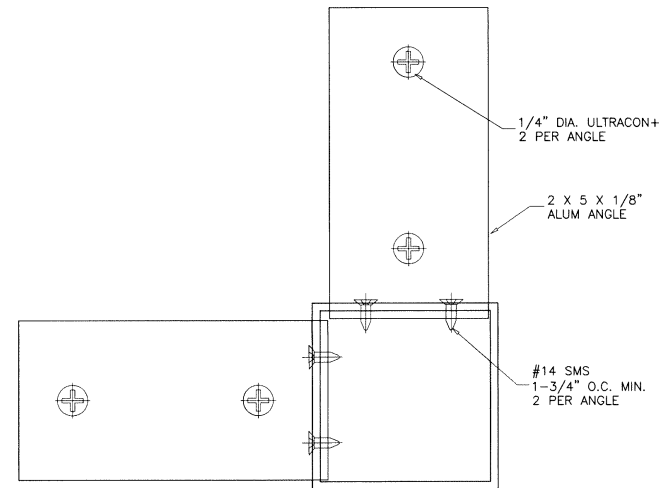
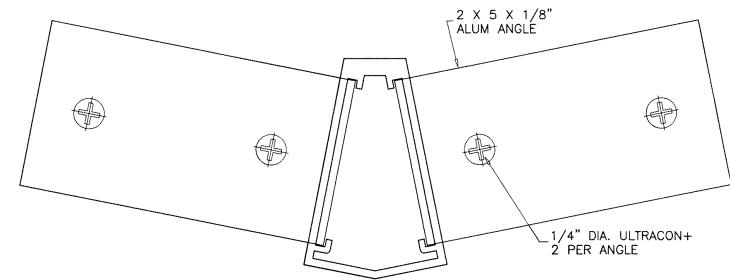
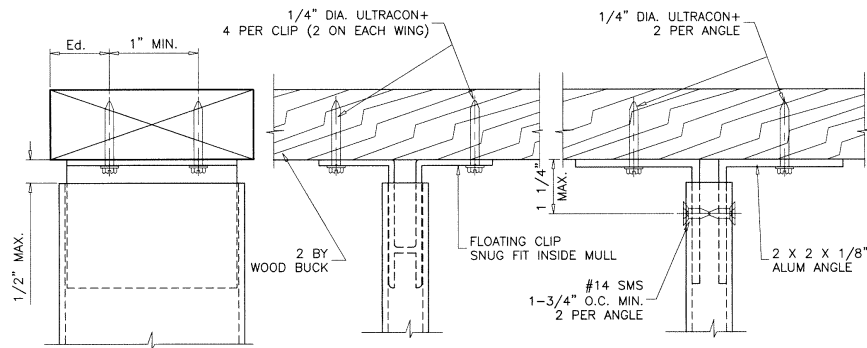
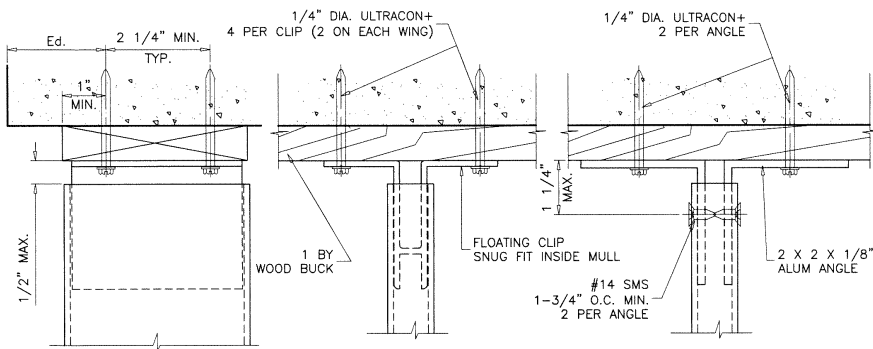
ALUMINUM TUBE MULLIONS  
**E.S. WINDOWS, LLC**  
3550 N.W. 49 STREET  
MIAMI, FL. 33142  
TEL. (305) 638-5151 FAX. (305) 638-5158

| revisions: | no | date | by | description |
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| date: 05-21-21 | scale: 3/8" = 1" | dr: by: TARIQ | chk: by: |
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drawing no.  
**21-45F**

sheet 7 of 13



**ANCHORS TYPE 'B'**

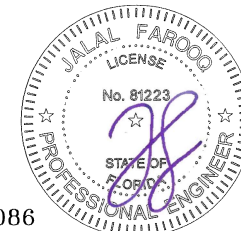
| 1/4" DIA. ULTRA-CON+ BY 'DEWALT'   |                       |                |
|------------------------------------|-----------------------|----------------|
| (Fu=164 KSI, Fy=148 KSI)           |                       |                |
| ULTRA-CON+ MAY BE HEX OR FLAT HEAD |                       |                |
| SUBSTRATE                          | Ed. = MIN. EDGE DIST. | MIN. EMBEDMENT |
| WOOD                               | 1"                    | 1-1/2"         |
| CONCRETE                           | 2-1/2"                | 1-3/4"         |

WOOD = 2BY WOOD BUCKS OR WOOD STRUCTURE S.G. = 0.55 MIN.  
CONCRETE = f'c = 3000 PSI MIN.

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.

Sealed: 7/19/2023

FL #39086



**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
TEL. (305) 264-8100 FAX. (305) 262-6978  
(C.A.N. 3538)

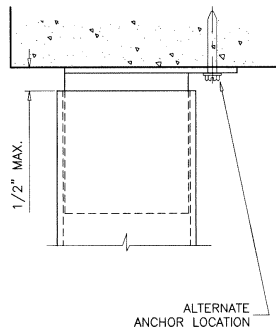
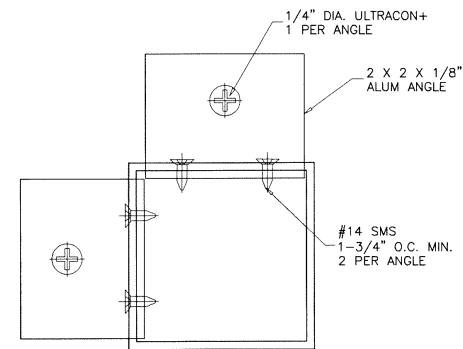
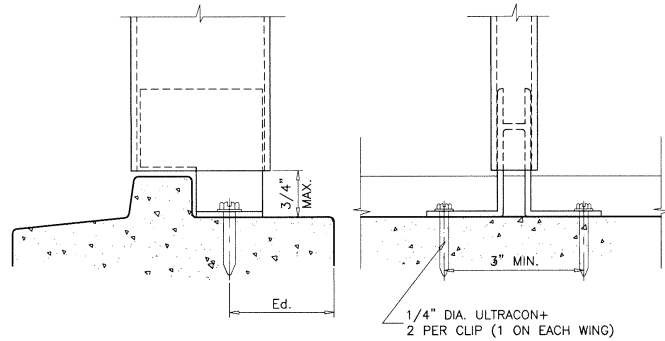
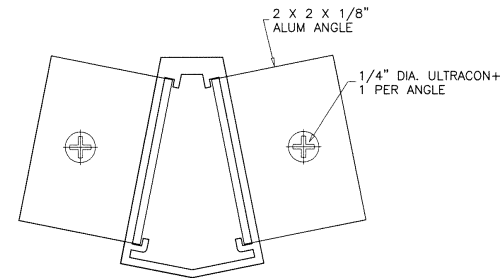
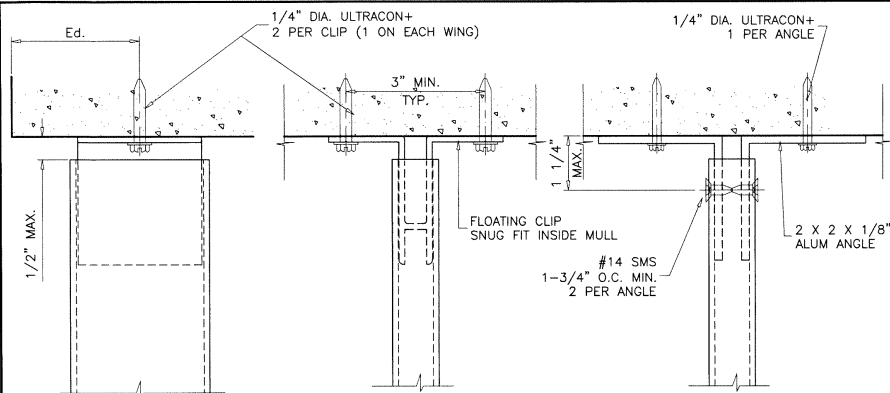
ALUMINUM TUBE MULLIONS  
**E.S. WINDOWS, LLC**  
3550 N.W. 49 STREET  
MIAMI, FL. 33142  
TEL. (305) 638-5151 FAX. (305) 638-5158

| revisions: | no | date | by | description |
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|          |           |
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| date:    | 05-21-21  |
| scale:   | 3/8" = 1" |
| dr. by:  | TARLO     |
| chk. by: |           |

drawing no.  
**21-45F**

sheet 8 of 13



ANCHORS TYPE 'C'

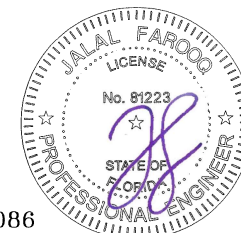
|                                   |                       |                |
|-----------------------------------|-----------------------|----------------|
| 1/4" DIA. ULTRACON+ BY 'DEWALT'   |                       |                |
| (Fu=164 KSI, Fy=148 KSI)          |                       |                |
| ULTRACON+ MAY BE HEX OR FLAT HEAD |                       |                |
| SUBSTRATE                         | Ed. = MIN. EDGE DIST. | MIN. EMBEDMENT |
| CONCRETE                          | 2-1/2"                | 1-3/4"         |

CONCRETE = f'c = 3000 PSI MIN.

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.

Sealed: 7/19/2023

FL #39086



**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
TEL. (305) 264-8100 FAX. (305) 262-6978  
C.E.N. 3538

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

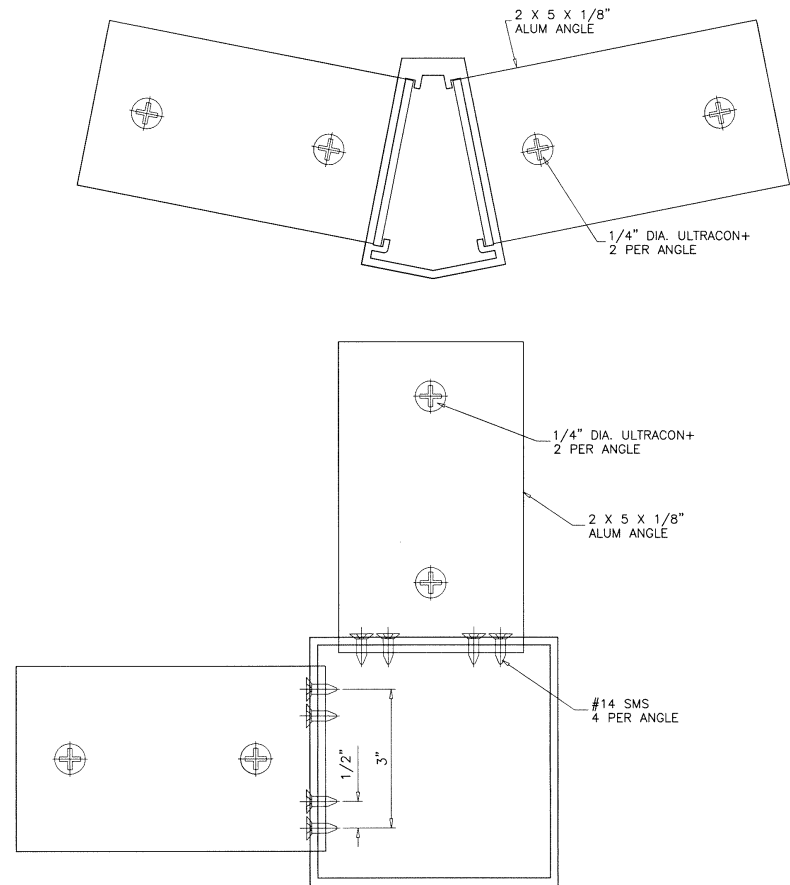
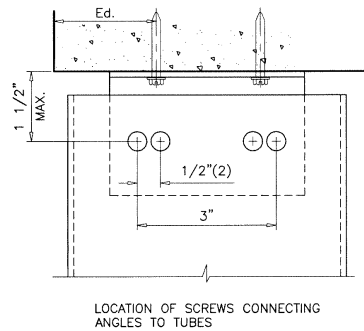
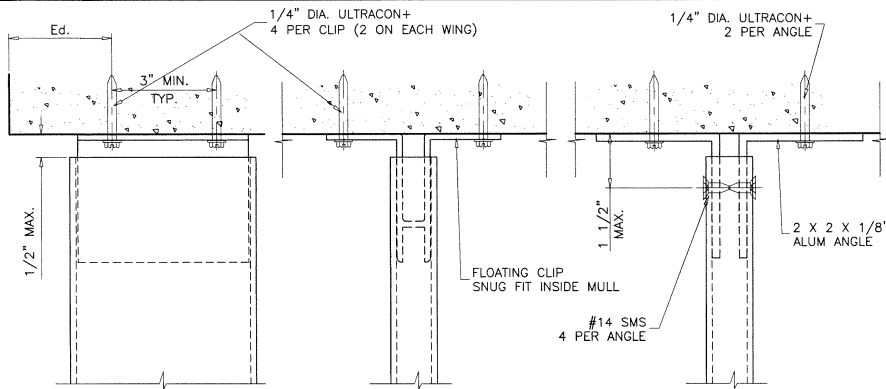
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date: 05-21-21  
scale: 3/8" = 1"  
dr. by: TARIO  
chk. by:

drawing no.  
**21-45F**

sheet 9 of 13

MULLION 21-45F-ESW



### ANCHORS TYPE 'D'

APPLICABLE FOR 4", 5" AND 6" TUBE MULLIONS

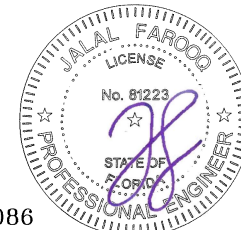
|                                                    |                       |                |  |
|----------------------------------------------------|-----------------------|----------------|--|
| 1/4" DIA. ULTRACON+ BY 'DEWALT'                    |                       |                |  |
| (F <sub>u</sub> =164 KSI, F <sub>y</sub> =148 KSI) |                       |                |  |
| ULTRACON+ MAY BE HEX OR FLAT HEAD                  |                       |                |  |
| SUBSTRATE                                          | Ed. = MIN. EDGE DIST. | MIN. EMBEDMENT |  |
| CONCRETE                                           | 2-1/2"                | 1-3/4"         |  |

CONCRETE = f'<sub>c</sub> = 3000 PSI MIN.

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.

Sealed: 7/19/2023

FL #39086



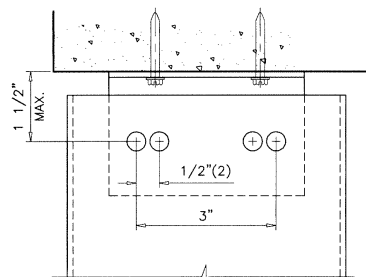
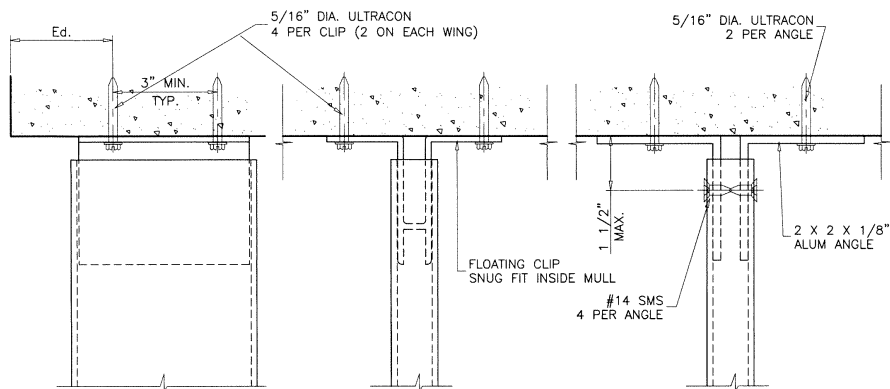
**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
TEL. (305) 264-8100 FAX. (305) 262-6978  
C.O.N. 3538

ALUMINUM TUBE MULLIONS  
**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: 05-21-21  
scale: 3/8" = 1"  
dr. by: TARIQ  
chk. by:

drawing no.  
**21-45F**  
sheet 10 of 13



LOCATION OF SCREWS CONNECTING  
ANGLES TO TUBES

### ANCHORS TYPE 'E'

APPLICABLE FOR 4", 5" AND 6" TUBE MULLIONS

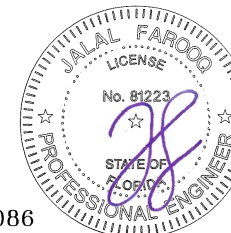
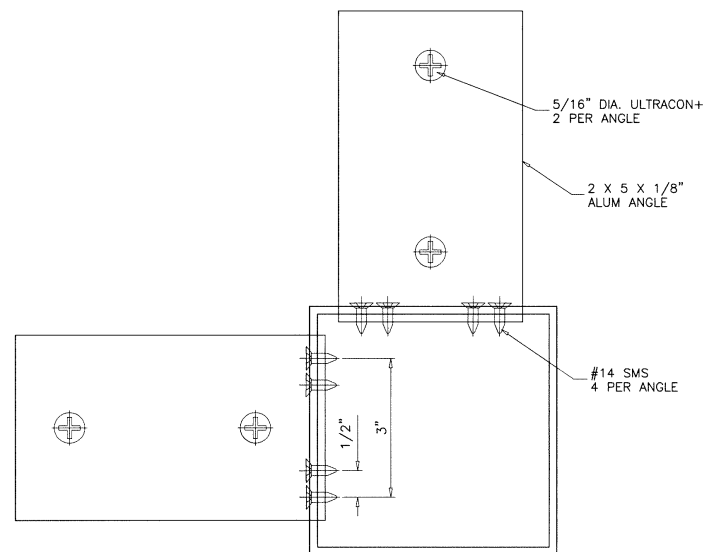
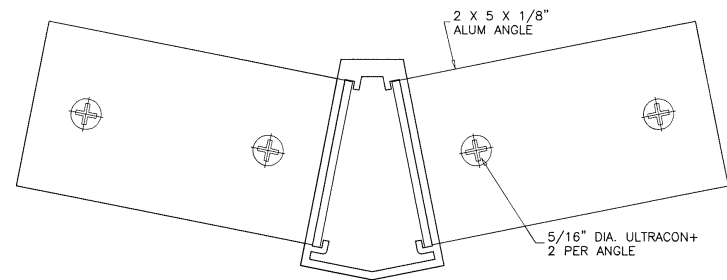
5/16" DIA. ULTRACON BY 'DEWALT'  
(Fu=177 KSI, Fy=155 KSI)

ULTRACON MAY BE HEX OR FLAT HEAD

| SUBSTRATE | Ed. = MIN. EDGE DIST. | MIN. EMBEDMENT |
|-----------|-----------------------|----------------|
| CONCRETE  | 3-1/8"                | 2"             |

CONCRETE = f'c = 3000 PSI MIN.

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO CONCRETE TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.



Sealed: 7/19/2023

FL #39086

**af c**  
**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

ALUMINUM TUBE MULLIONS

**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: 05-21-21  
scale: 3/8" = 1"

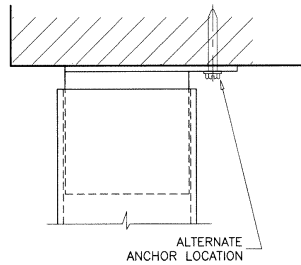
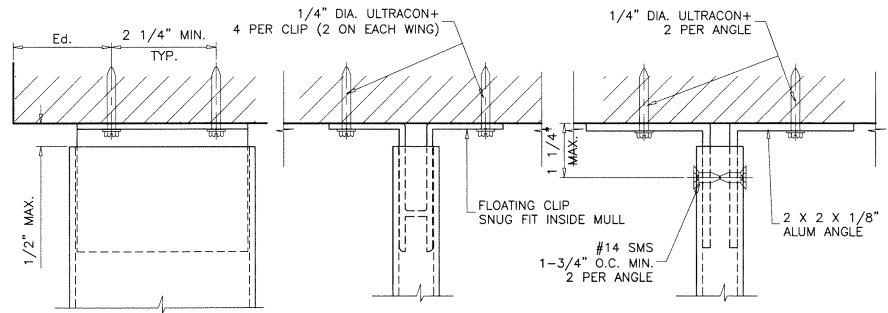
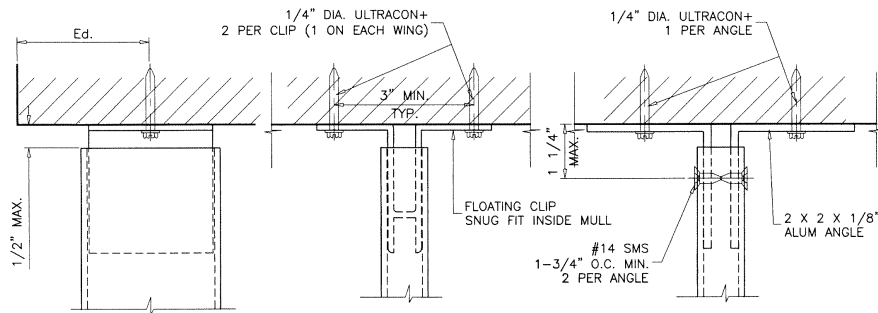
dr. by: TARIQ

chk. by:

drawing no.  
**21-45F**

sheet 11 of 13

MULLION 21-45F-ESW



ANCHORS TYPE 'F'  
AT JAMBS ONLY

ANCHORS TYPE 'G'  
AT JAMBS ONLY

|                                   |                       |                |
|-----------------------------------|-----------------------|----------------|
| 1/4" DIA. ULTRACON+ BY 'DEWALT'   |                       |                |
| (Fu=164 KSI, Fy=148 KSI)          |                       |                |
| ULTRACON+ MAY BE HEX OR FLAT HEAD |                       |                |
| SUBSTRATE                         | Ed. = MIN. EDGE DIST. | MIN. EMBEDMENT |
| MASONRY                           | 2-1/2"                | 1-1/4"         |

MASONRY = C-90 HOLLOW/FILLED BLOCK f'm = 2000 PSI MIN.

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.

Sealed: 7/19/2023

FL #39086



**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173 (C.A.N. 3558)  
TEL (305) 264-8100 FAX (305) 262-6978  
MULLION\21-45F-ESW

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

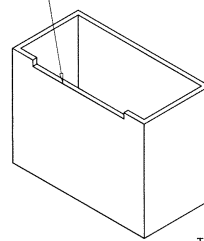
| revisions: | no | date | by | description |
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|          |           |
|----------|-----------|
| date:    | 05-21-21  |
| scale:   | 3/8" = 1" |
| dr. by:  | TARIQ     |
| chk. by: |           |

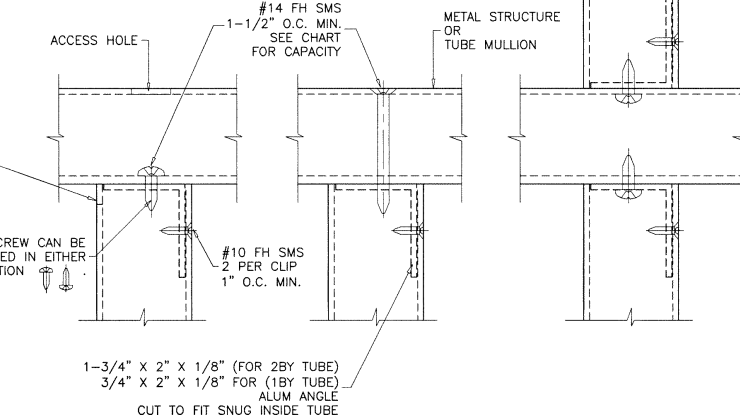
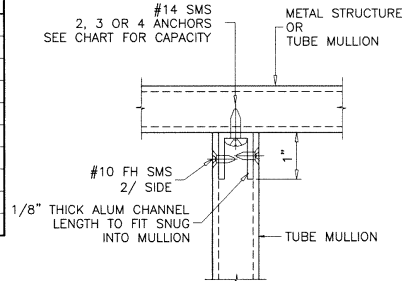
drawing no.  
**21-45F**  
sheet 12 of 13

| DESIGN LOAD CAPACITY - PSF |           |                  |       |       | DESIGN LOAD CAPACITY - PSF |           |                  |       |       | DESIGN LOAD CAPACITY - PSF |           |                  |       |       |
|----------------------------|-----------|------------------|-------|-------|----------------------------|-----------|------------------|-------|-------|----------------------------|-----------|------------------|-------|-------|
| WINDOW DIMS.               |           | ANCHORS QUANTITY |       |       | WINDOW DIMS.               |           | ANCHORS QUANTITY |       |       | WINDOW DIMS.               |           | ANCHORS QUANTITY |       |       |
| WIDTH (W)                  | MULL SPAN | 2                | 3     | 4     | WIDTH (W)                  | MULL SPAN | 2                | 3     | 4     | WIDTH (W)                  | MULL SPAN | 2                | 3     | 4     |
| 19-1/8"                    | 38-3/8"   | 150.0            | 150.0 | 150.0 | 19-1/8"                    | 84"       | 150.0            | 150.0 | 150.0 | 19-1/8"                    | 144"      | 93.7             | 140.5 | 150.0 |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 | 26-1/2"                    |           | 115.9            | 150.0 | 150.0 | 26-1/2"                    |           | 67.6             | 101.4 | 135.2 |
| 30"                        |           | 150.0            | 150.0 | 150.0 | 30"                        |           | 102.4            | 150.0 | 150.0 | 30"                        |           | 59.7             | 89.6  | 119.5 |
| 37"                        |           | 150.0            | 150.0 | 150.0 | 37"                        |           | 83.0             | 124.5 | 150.0 | 37"                        |           | 48.4             | 72.6  | 96.9  |
| 42"                        |           | 150.0            | 150.0 | 150.0 | 42"                        |           | 73.1             | 109.7 | 146.3 | 42"                        |           | 42.7             | 64.0  | 85.3  |
| 48"                        |           | 140.1            | 150.0 | 150.0 | 48"                        |           | 64.0             | 96.0  | 128.0 | 48"                        |           | 37.3             | 56.0  | 74.7  |
| 54"                        |           | 124.5            | 150.0 | 150.0 | 54"                        |           | 56.9             | 85.3  | 113.8 | 54"                        |           | 33.2             | 49.8  | 66.4  |
| 60"                        |           | 112.1            | 150.0 | 150.0 | 60"                        |           | 51.2             | 76.8  | 102.4 | 60"                        |           | 29.9             | 44.8  | 59.7  |
| 66"                        | 50-5/8"   | 101.9            | 150.0 | 150.0 | 66"                        | 96"       | 46.5             | 69.8  | 93.1  | 66"                        |           | 27.2             | 40.7  | 54.3  |
| 72"                        |           | 93.4             | 140.1 | 150.0 | 72"                        |           | 42.7             | 64.0  | 85.3  | 72"                        |           | 24.9             | 37.3  | 49.8  |
| 19-1/8"                    |           | 150.0            | 150.0 | 150.0 | 19-1/8"                    |           | 140.5            | 150.0 | 150.0 |                            |           |                  |       |       |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 | 26-1/2"                    |           | 101.4            | 150.0 | 150.0 |                            |           |                  |       |       |
| 30"                        |           | 150.0            | 150.0 | 150.0 | 30"                        |           | 89.6             | 134.4 | 150.0 |                            |           |                  |       |       |
| 37"                        |           | 137.8            | 150.0 | 150.0 | 37"                        |           | 72.6             | 109.0 | 145.3 |                            |           |                  |       |       |
| 42"                        |           | 121.4            | 150.0 | 150.0 | 42"                        |           | 64.0             | 96.0  | 128.0 |                            |           |                  |       |       |
| 48"                        |           | 106.2            | 150.0 | 150.0 | 48"                        |           | 56.0             | 84.0  | 112.0 |                            |           |                  |       |       |
| 54"                        | 58"       | 94.4             | 141.6 | 150.0 | 54"                        | 108"      | 49.8             | 74.7  | 99.6  |                            |           |                  |       |       |
| 60"                        |           | 85.0             | 127.4 | 150.0 | 60"                        |           | 44.8             | 67.2  | 89.6  |                            |           |                  |       |       |
| 66"                        |           | 77.2             | 115.8 | 150.0 | 66"                        |           | 40.7             | 61.1  | 81.5  |                            |           |                  |       |       |
| 72"                        |           | 70.8             | 106.2 | 141.6 | 72"                        |           | 37.3             | 56.0  | 74.7  |                            |           |                  |       |       |
| 19-1/8"                    |           | 150.0            | 150.0 | 150.0 | 19-1/8"                    |           | 124.9            | 150.0 | 150.0 |                            |           |                  |       |       |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 | 26-1/2"                    |           | 90.2             | 135.2 | 150.0 |                            |           |                  |       |       |
| 30"                        |           | 148.3            | 150.0 | 150.0 | 30"                        |           | 79.6             | 119.5 | 150.0 |                            |           |                  |       |       |
| 37"                        |           | 120.2            | 150.0 | 150.0 | 37"                        |           | 64.6             | 96.9  | 129.2 |                            |           |                  |       |       |
| 42"                        | 63"       | 105.9            | 150.0 | 150.0 | 42"                        |           | 56.9             | 85.3  | 113.8 |                            |           |                  |       |       |
| 48"                        |           | 92.7             | 139.0 | 150.0 | 48"                        |           | 49.8             | 74.7  | 99.6  |                            |           |                  |       |       |
| 54"                        |           | 82.4             | 123.6 | 150.0 | 54"                        |           | 44.2             | 66.4  | 88.5  |                            |           |                  |       |       |
| 60"                        |           | 74.2             | 111.2 | 148.3 | 60"                        |           | 39.8             | 59.7  | 79.6  |                            |           |                  |       |       |
| 66"                        |           | 67.4             | 101.1 | 134.8 | 66"                        |           | 36.2             | 54.3  | 72.4  |                            |           |                  |       |       |
| 72"                        |           | 61.8             | 92.7  | 123.6 | 72"                        |           | 33.2             | 49.8  | 66.4  |                            |           |                  |       |       |
| 19-1/8"                    | 74-1/4"   | 150.0            | 150.0 | 150.0 | 19-1/8"                    | 120"      | 112.4            | 150.0 | 150.0 |                            |           |                  |       |       |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 | 26-1/2"                    |           | 81.1             | 121.7 | 150.0 |                            |           |                  |       |       |
| 30"                        |           | 136.5            | 150.0 | 150.0 | 30"                        |           | 71.7             | 107.5 | 143.4 |                            |           |                  |       |       |
| 37"                        |           | 110.7            | 150.0 | 150.0 | 37"                        |           | 58.1             | 87.2  | 116.2 |                            |           |                  |       |       |
| 42"                        |           | 97.5             | 146.3 | 150.0 | 42"                        |           | 51.2             | 76.8  | 102.4 |                            |           |                  |       |       |
| 48"                        |           | 85.3             | 128.0 | 150.0 | 48"                        |           | 44.8             | 67.2  | 89.6  |                            |           |                  |       |       |
| 54"                        |           | 75.9             | 113.8 | 150.0 | 54"                        |           | 39.8             | 59.7  | 79.6  |                            |           |                  |       |       |
| 60"                        |           | 68.3             | 102.4 | 136.5 | 60"                        |           | 35.8             | 53.8  | 71.7  |                            |           |                  |       |       |
| 66"                        |           | 62.1             | 93.1  | 124.1 | 66"                        | 132"      | 32.6             | 48.9  | 65.2  |                            |           |                  |       |       |
| 72"                        |           | 56.9             | 85.3  | 113.8 | 72"                        |           | 29.9             | 44.8  | 59.7  |                            |           |                  |       |       |
| 19-1/8"                    |           | 150.0            | 150.0 | 150.0 | 19-1/8"                    |           | 102.2            | 150.0 | 150.0 |                            |           |                  |       |       |
| 26-1/2"                    |           | 131.1            | 150.0 | 150.0 | 26-1/2"                    |           | 73.8             | 110.7 | 147.5 |                            |           |                  |       |       |
| 30"                        |           | 115.8            | 150.0 | 150.0 | 30"                        |           | 65.2             | 97.7  | 130.3 |                            |           |                  |       |       |
| 37"                        |           | 93.9             | 140.9 | 150.0 | 37"                        |           | 52.8             | 79.3  | 105.7 |                            |           |                  |       |       |
| 42"                        |           | 82.7             | 124.1 | 150.0 | 42"                        |           | 46.5             | 69.8  | 93.1  |                            |           |                  |       |       |
| 48"                        |           | 72.4             | 108.6 | 144.8 | 48"                        |           | 40.7             | 61.1  | 81.5  |                            |           |                  |       |       |
| 54"                        |           | 64.4             | 96.5  | 128.7 | 54"                        |           | 36.2             | 54.3  | 72.4  |                            |           |                  |       |       |
| 60"                        |           | 57.9             | 86.9  | 115.8 | 60"                        |           | 32.6             | 48.9  | 65.2  |                            |           |                  |       |       |
| 66"                        |           | 52.7             | 79.0  | 105.3 | 66"                        |           | 29.6             | 44.4  | 59.2  |                            |           |                  |       |       |
| 72"                        |           | 48.3             | 72.4  | 96.5  | 72"                        |           | 27.2             | 40.7  | 54.3  |                            |           |                  |       |       |

TUBES MAY BE NOTCHED  
AS SHOWN TO ALLOW INSTALLATION  
OF CLIP ANGLE  
CAULK JOINT AFTER ASSEMBLY



THIS SCREW CAN BE  
INSTALLED IN EITHER  
DIRECTION

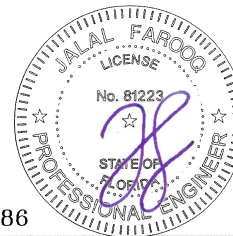


### ANCHORS DETAIL #1

METAL TO METAL CONNECTION

| #14 SMS/TEKS |                                             |      |
|--------------|---------------------------------------------|------|
| SUBSTRATE    | Ed. = MIN. EDGE DIST. MIN. CL TO CL SPACING |      |
| METAL        | 5/8"                                        | 1/2" |

METAL = 1/8" MIN. THK. STEEL Fy = 36 KSI MIN.  
1/8" MIN. THK. ALUMINUM (6063-T6 MIN.)



Sealed: 7/19/2023

FL #39086

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

MULLION 21-45F-ESW

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MIAMI, FL. 33142  
TEL. (305) 638-5151 FAX. (305) 638-5158

ALUMINUM TUBE MULLIONS

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revisions:  
no. date by description

date: 05-21-21  
scale: 3/8" = 1"  
dr. by: TARIQ  
chk. by:

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drawing no.  
**21-45F**

sheet 13 of 13