



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)  
BOARD AND CODE ADMINISTRATION DIVISION

## NOTICE OF ACCEPTANCE (NOA)

MIAMI-DADE COUNTY  
PRODUCT CONTROL SECTION  
11805 SW 26 Street, Room 208  
Miami, Florida 33175-2474  
T (786) 315-2590 F (786) 315-2599

[www.miamidade.gov/building](http://www.miamidade.gov/building)

E.S. Windows, LLC  
3550 NW 49<sup>th</sup> Street  
Miami, FL 33142

### SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER-Product Control Section to be used in Miami-Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Section (In Miami-Dade County) and/ or the AHJ (in areas other than Miami-Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein and has been designed to comply with the Florida Building Code, including the High Velocity Hurricane Zone.

### DESCRIPTION: Clipped, Extruded Aluminum Tube Mullion – L.M.I.

**APPROVAL DOCUMENT:** Drawing No. **M04-04**, titled "Aluminum Tube Mullions", sheets 1 through 9 of 9, dated 04/26/04, with revision **I** dated 11/05/20, prepared by Al-Farooq Corporation, signed and sealed by Jalal Farooq, P.E., bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and expiration date by the Miami-Dade County Product Control Section.

### MISSILE IMPACT RATING: Large and Small Missile Impact Resistant

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, **Barranquilla, Colombia**, model/series, and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

**RENEWAL** of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

**TERMINATION** of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/ or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

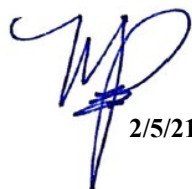
**ADVERTISEMENT:** The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

**INSPECTION:** A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA **revises NOA No. 19-0405.10** and consists of this page 1 and evidence pages E-1, E-2 and E-3, as well as approval document mentioned above.

The submitted documentation was reviewed by **Manuel Perez, P.E.**



  
2/5/21

NOA No. 20-1118.13  
Expiration Date: September 16, 2024  
Approval Date: February 18, 2021  
Page 1

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's**

**A. DRAWINGS**

1. Manufacturer's die drawings and sections.  
*(Submitted under NOA No. 04-0712.01)*
2. Drawing No. **M04-04**, titled "Aluminum Tube Mullions", sheets 1 through 9 of 9, dated 04/26/04, with revision H dated 01/17/18, prepared by Al-Farooq Corporation, signed and sealed by Javad Ahmad, P.E.  
*(Submitted under NOA No. 18-0205.05)*

**B. TESTS**

1. Test reports on: 1) Air Infiltration Test, per FBC, TAS 202-94  
2) Uniform Static Air Pressure Test, Loading per FBC TAS 202-94  
3) Water Resistance Test, per FBC, TAS 202-94  
4) Large Missile Impact Test per FBC, TAS 201-94  
5) Cyclic Wind Pressure Loading per FBC, TAS 203-94  
6) Forced Entry Test, Type "D-A" fixed window, Grade 10, Level LV 1 per ASTM F 588-04, Side-Hinged Door Systems per AAMA 1304-02 and per FBC 2411.3.2.1, TAS 202-94  
along with marked-up drawings and installation diagram of windows mulled together, prepared by Fenestration Testing Laboratory, Inc., Test Reports No. **FTL-3810**, dated 05/16/03; **FTL-3819**, dated 06/09/03 and **FTL-3820**, dated 06/09/03, all signed and sealed by Joseph Chan, P.E.  
*(Submitted under NOA No. 04-0712.01)*

**C. CALCULATIONS**

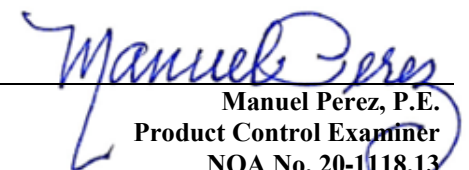
1. Anchor verification calculations and structural analysis, complying with **FBC 6<sup>th</sup> Edition (2017)**, dated 01/12/18, prepared by Al-Farooq Corporation, signed and sealed by Javad Ahmad, P.E.  
*(Submitted under NOA No. 18-0205.05)*
2. Glazing complies with **ASTM E1300-09**

**D. QUALITY ASSURANCE**

1. Miami-Dade Department of Regulatory and Economic Resources (RER).

**E. MATERIAL CERTIFICATIONS**

1. None.

  
Manuel Perez, P.E.  
Product Control Examiner  
NOA No. 20-1118.13  
Expiration Date: September 16, 2024  
Approval Date: February 18, 2021

**E.S. Windows, LLC**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

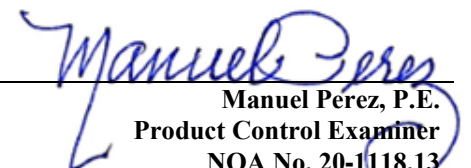
**1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's (CONTINUED)**

**F. STATEMENTS**

1. Statement letter of conformance, complying with **FBC 6<sup>th</sup> Edition (2017)**, dated March 28, 2019, issued by Al-Farooq Corporation, signed and sealed by Javad Ahmad, P.E.  
*(Submitted under NOA No. 19-0405.10)*
2. Laboratory compliance letter for Test Reports No. **FTL-3810**, dated 05/16/03; **FTL-3819**, dated 06/09/03 and **FTL-3820**, dated 06/09/03, all issued by Fenestration Testing Laboratory, Inc. and all signed and sealed by Joseph C. Chan, P.E.  
*(Submitted under NOA No. 04-0712.01)*

**G. OTHERS**

1. Notice of Acceptance No. **18-0205.05**, issued to ES Windows, LLC for their Clipped, Extruded Aluminum Tube Mullion – L.M.I., approved on 03/08/18 and expiring on 09/16/19.

  
Manuel Perez, P.E.  
Product Control Examiner  
NOA No. 20-1118.13  
Expiration Date: September 16, 2024  
Approval Date: February 18, 2021

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**2. NEW EVIDENCE SUBMITTED**

**A. DRAWINGS**

1. Drawing No. **M04-04**, titled “Aluminum Tube Mullions”, sheets 1 through 9 of 9, dated 04/26/04, with revision **I** dated 11/05/20, prepared by Al-Farooq Corporation, signed and sealed by Jalal Farooq, P.E.

**B. TESTS**

1. None.

**C. CALCULATIONS**

1. Anchor verification calculations and structural analysis, complying with **FBC 6<sup>th</sup> Edition (2017)**, dated 01/12/18, and updated on 11/04/20 to comply with **FBC 7<sup>th</sup> Edition (2020)**, prepared by Al-Farooq Corporation, signed and sealed by Jalal Farooq, P.E.
2. Glazing complies with **ASTM E1300-09**

**D. QUALITY ASSURANCE**

1. Miami-Dade Department of Regulatory and Economic Resources (RER)

**E. MATERIAL CERTIFICATIONS**

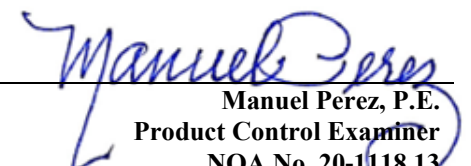
1. None.

**F. STATEMENTS**

1. Statement letter of conformance, complying with **FBC 6<sup>th</sup> Edition (2017)**, with **FBC 7<sup>th</sup> Edition (2020)**, and of no financial interest, dated November 4, 2020, issued by Al-Farooq Corporation, signed and sealed by Jalal Farooq, P.E.

**G. OTHERS**

1. Notice of Acceptance No. **19-0405.10**, issued to E.S. Windows, LLC for their Clipped, Extruded Aluminum Tube Mullion – L.M.I., approved on 05/30/19 and expiring on 09/16/24.

  
Manuel Perez, P.E.  
Product Control Examiner  
NOA No. 20-1118.13  
Expiration Date: September 16, 2024  
Approval Date: February 18, 2021

MULLION SYSTEM IS RATED FOR LARGE MISSILE IMPACT.  
AND CAN BE USED WITH ALL MIAMI-DADE COUNTY APPROVED  
IMPACT AND NON-IMPACT RESISTANT PRODUCTS.

### RECTANGULAR ALUMINUM TUBE MULLIONS USING MULLION PROPERTIES ONLY

#### NOTES:

THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE  
REQUIREMENTS OF THE 2017 (6TH EDITION)/2020 (7TH 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 2017/2020 FLORIDA BLDG. CODE & ADOPTED STANDARDS.

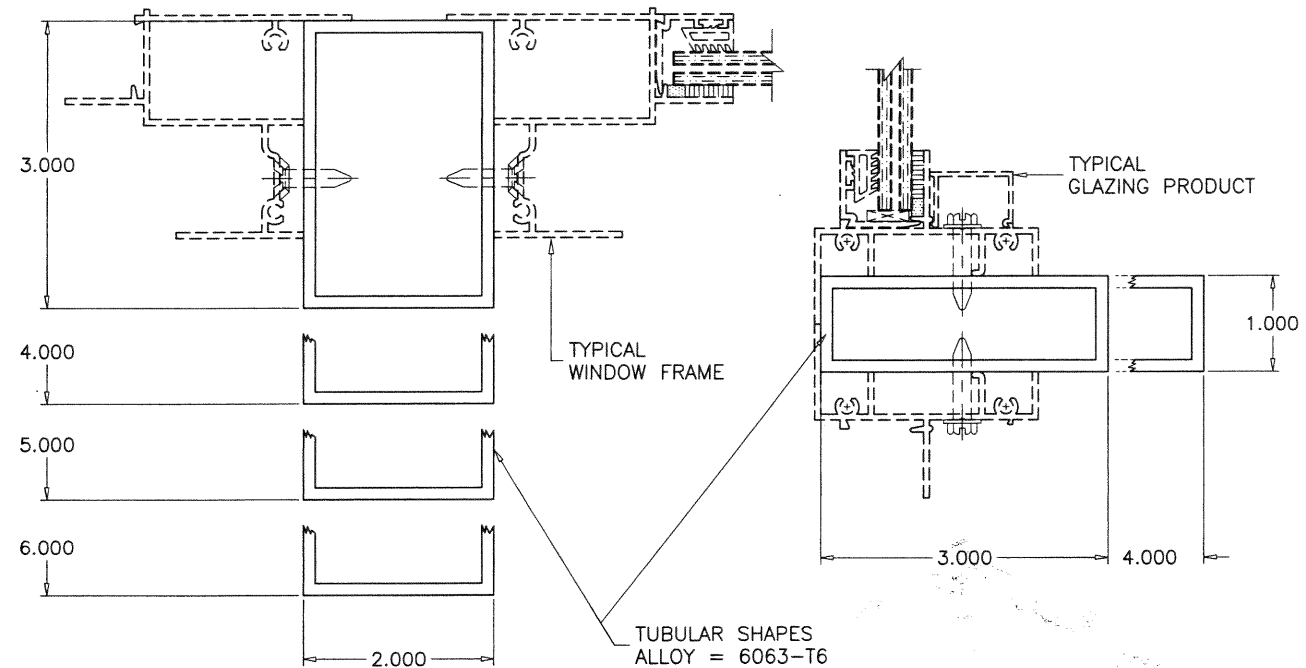
THIS PRODUCT APPROVAL IS GENERIC AND DOES NOT PROVIDE INFORMATION  
FOR A SITE SPECIFIC PROJECT, i.e. LIFE SAFETY OF THIS PRODUCT, ADEQUACY  
OF STRUCTURE RECEIVING THIS PRODUCT AND SEALING AROUND OPENING FOR  
WATER INFILTRATION RESISTANCE ETC.  
CONDITIONS NOT SHOWN IN THIS DRAWING ARE TO BE ANALYZED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

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

#### INSTRUCTIONS:

USE CHARTS AND GRAPHS AS FOLLOWS.

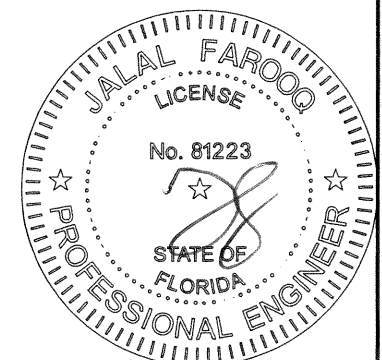
- STEP 1** DETERMINE DESIGN LOAD REQUIRED PER ASCE 7  
FOR PARTICULAR OPENING.
- STEP 2** USE MIAMI-DADE COUNTY APPROVED GLAZING PRODUCTS  
MEETING ABOVE LOAD REQUIREMENTS.
- STEP 3** USE CONNECTION TO MULLION AS PER PRODUCT  
APPROVAL.
- STEP 4** USING CHARTS ON SHEET 3 SELECT MULLION SIZE WITH  
DESIGN RATING MORE THAN DESIGN LOAD SPECIFIED  
IN STEP 1 ABOVE.
- STEP 5** USING ANCHOR TYPES ON SHEETS 5 THRU 9 AND ANCHOR CHARTS  
ON SHEET 4, SELECT ANCHOR TYPE WITH DESIGN RATING  
MORE THAN THE DESIGN LOADS SPECIFIED IN STEP 1 ABOVE.



### MULLIONS CONTAINING TYPICAL GLAZING PRODUCTS HORIZONTAL OR VERTICAL

SEE WINDOW OR DOOR APPROVAL FOR FASTENERS SIZES AND SPACING

**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
NOA-No. **20-1118.13**  
Expiration Date: **09/16/2024**  
By: *Manuel Perez*  
Miami-Dade Product Control



**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  
MULLION M04-04ESW

#### ALUMINUM TUBE MULLIONS

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

| revisions: |          | by description |                   |
|------------|----------|----------------|-------------------|
| no         | date     | rev.           | per BCCO COMMENTS |
| E          | 09.28.09 | F              | 03.05.12          |
| F          | 03.05.12 | G              | 07.14.14          |
| G          | 07.14.14 | H              | 01.17.18          |
| H          | 01.17.18 | I              | 11.05.20          |
| I          | 11.05.20 |                |                   |

date: 04-26-04  
scale: 1/2" = 1"  
dr. by: TARIQ  
chk. by:

drawing no.  
**M04-04**

sheet 1 of 9

$I_x = .950 \text{ IN}^4$   
 $S_x = .634 \text{ IN}^3$

1 X 3  
STD. MULLION  
6063-T6

$I_x = 2.037 \text{ IN}^4$   
 $S_x = 1.018 \text{ IN}^3$

1 X 4  
STD. MULLION  
6063-T6

$I_x = 1.466 \text{ IN}^4$   
 $S_x = .977 \text{ IN}^3$

1 X 3  
CUSTOM MULLION  
6063-T6

$I_x = 1.467 \text{ IN}^4$   
 $S_x = .978 \text{ IN}^3$

2 X 3  
STD. MULLION  
6063-T6

$I_x = 2.975 \text{ IN}^4$   
 $S_x = 1.487 \text{ IN}^3$

1 X 4  
CUSTOM MULLION  
6063-T6

$I_x = 2.976 \text{ IN}^4$   
 $S_x = 1.488 \text{ IN}^3$

2 X 4  
STD. MULLION  
6063-T6

$I_x = 5.204 \text{ IN}^4$   
 $S_x = 2.082 \text{ IN}^3$

2 X 5  
STD. MULLION  
6063-T6

Ed = MIN. EDGE DIST.  
1/2" FOR 1/4" DIA. ANCHORS  
5/8" FOR 5/16" DIA. ANCHORS

ANGLE CLIP  
6063-T5

$I_x = 8.276 \text{ IN}^4$   
 $S_x = 2.758 \text{ IN}^3$

2 X 6  
STD. MULLION  
6063-T6

$I_x = 15.203 \text{ IN}^4$   
 $S_x = 5.068 \text{ IN}^3$

2 X 6  
HEAVY MULLION  
6063-T6

Ed = MIN. EDGE DIST.  
1/2" FOR 1/4" DIA. ANCHORS  
5/8" FOR 5/16" DIA. ANCHORS

MULLION CLIP  
6063-T6

Ed = MIN. EDGE DIST.  
1/2" FOR 1/4" DIA. ANCHORS  
5/8" FOR 5/16" DIA. ANCHORS

MULLION CLIP  
6063-T6

**PRODUCT REVISED**  
as complying with the Florida Building Code  
NOA-No. **20-1118.13**  
Expiration Date: **09/16/2024**  
By: *Manuel Perez*  
Miami-Dade Product Control

NOV 10 2020

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

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

| no | date     | by      | description       |
|----|----------|---------|-------------------|
| E  | 09.28.09 | REV.    | PER BCCO COMMENTS |
| F  | 03.05.12 | NO      | CHANGE THIS SHEET |
| G  | 07.14.14 | UPDATED | TO 2014 FBC       |
| H  | 01.17.18 | UPDATED | TO 2017 FBC       |
| I  | 11.05.20 | UPDATED | TO 2020 FBC       |

date: 04-26-04

scale: 1/2" = 1"

dr. by: TARIQ

chk. by:

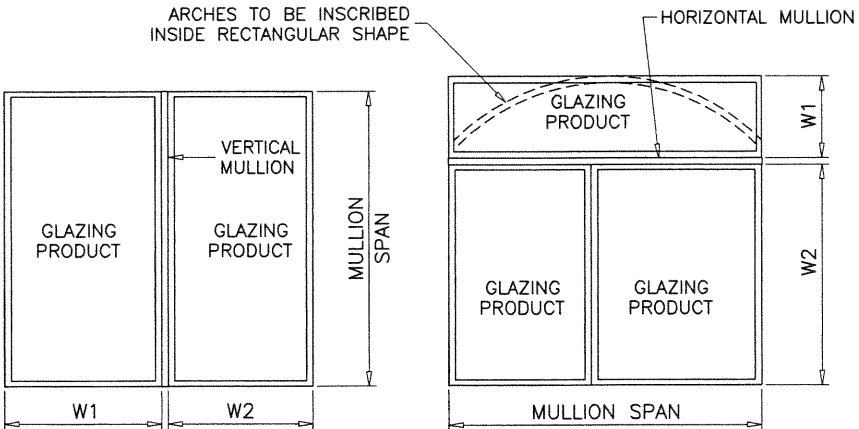
drawing no.  
**M04-04**

sheet 2 of 9

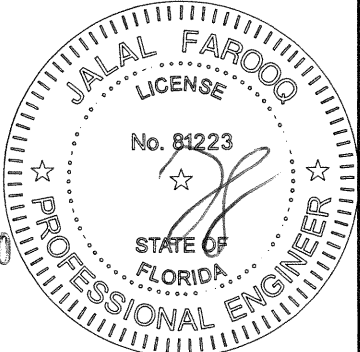
| DESIGN LOAD CAPACITY – PSF (TUBE MULLIONS) |           |               |               |                 |                 |               |               |                |
|--------------------------------------------|-----------|---------------|---------------|-----------------|-----------------|---------------|---------------|----------------|
| 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"                                        |           | 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"                                    | 50–5/8"   | 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"                                        |           | 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"                                    | 58"       | 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"                                        |           | 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"                                    | 63"       | 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"                                        |           | 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"                                        |           | 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"                                    | 84"       | 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"                                        |           | 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"                                    | 96"       | 34.8          | 74.7          | 53.8            | 109.1           | 150.0         | 150.0         | 150.0          |
| 26–1/2"                                    |           | 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"                                        |           | –             | 21.6          | –               | 31.6            | 53.5          | 70.5          | 129.0          |
| 72"                                        |           | –             | –             | –               | 29.0            | 49.0          | 64.6          | 118.3          |
| 19–1/8"                                    | 108"      | –             | 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"                                        |           | –             | 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"                                        |           | –             | –             | –               | –               | 31.1          | 48.9          | 89.5           |
| 66"                                        |           | –             | –             | –               | –               | 28.3          | 44.5          | 81.4           |
| 72"                                        |           | –             | –             | –               | –               | 26.0          | 40.8          | 74.6           |
| 19–1/8"                                    | 132"      | –             | 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"                                        |           | –             | –             | –               | –               | 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"                                    | 144"      | –             | –             | –               | 32.3            | 56.5          | 89.9          | 150.0          |
| 26–1/2"                                    |           | –             | –             | –               | 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           |



**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
NOA-No. **20-1118.13**  
Expiration Date: **09/16/2024**  
By: *Manuel Perez*  
Miami-Dade Product Control



NOV 10 2020

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

TYPICAL MULLION ARRANGEMENTS

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

**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
TEL. (305) 262-6978 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            |
|----|----------|----|------------------------|
| E  | 09.28.09 |    | REV. PER BCCO COMMENTS |
| F  | 03.05.12 |    | NO CHANGE THIS SHEET   |
| G  | 07.14.14 |    | UPDATED TO 2014 FBC    |
| H  | 01.17.18 |    | UPDATED TO 2017 FBC    |
| I  | 11.05.20 |    | UPDATED TO 2020 FBC    |

date: 04-26-04

scale:

dr. by: TARIQ

chk. by:

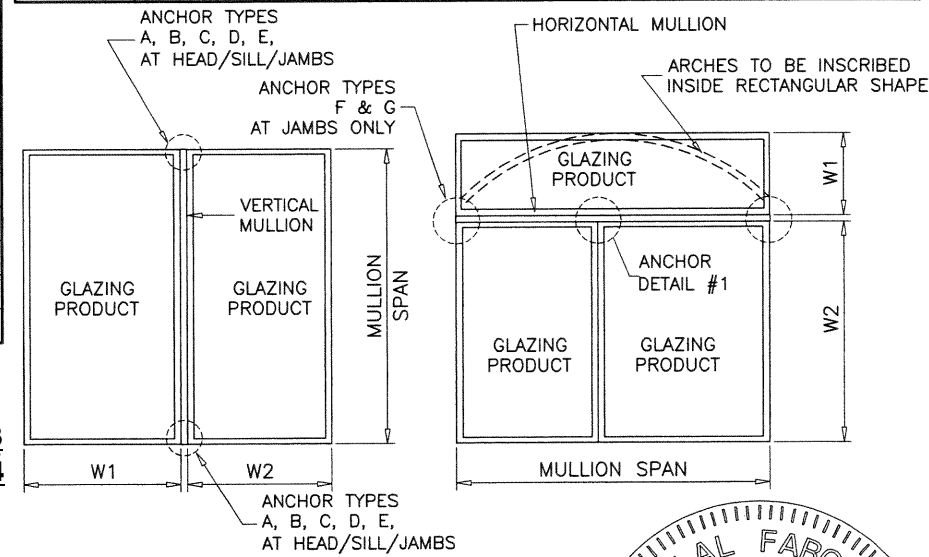
drawing no. **M04-04**

sheet **3** of **9**

| 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"                        | 50-5/8"   | 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"                    |           | 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"                        | 58"       | 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"                        |           | 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"                    |           | 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"                        | 63"       | 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"                        |           | 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"                    |           | 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"                        | 74-1/4"   | 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"                        |           | 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"                        | 84"       | 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"                    |           | 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"                        | 96"       | 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"                        |           | 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"                    |           | 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"                        | 108"      | 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"                        |           | 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"                    |           | 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"                        | 120"      | 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"                        |           | 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"                        | 132"      | -            | 36.9  | 25.2 | 50.5  | 58.8  | -    | 21.8 |
| 72"                        |           | -            | 33.9  | 23.1 | 46.3  | 53.9  | -    | 20.0 |
| 19-1/8"                    |           | 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"                        | 144"      | 20.5         | 41.1  | 28.0 | 56.1  | 65.3  | -    | 24.2 |
| 60"                        |           | -            | 36.9  | 25.2 | 50.5  | 58.8  | -    | 21.8 |
| 66"                        |           | -            | 33.6  | 22.9 | 45.9  | 53.4  | -    | -    |
| 72"                        |           | -            | 30.8  | 21.0 | 42.1  | 49.0  | -    | -    |
| 19-1/8"                    |           | 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"                        | 144"      | 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"                        |           | -            | 30.8  | 21.0 | 42.1  | 49.0  | -    | -    |
| 72"                        |           | -            | 28.2  | -    | 38.6  | 44.9  | -    | -    |



**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
NOA-No. **20-1118.13**  
Expiration Date: **09/16/2024**  
By: *Manuel Perez*  
Miami-Dade Product Control  
TYPICAL MULLION ARRANGEMENTS

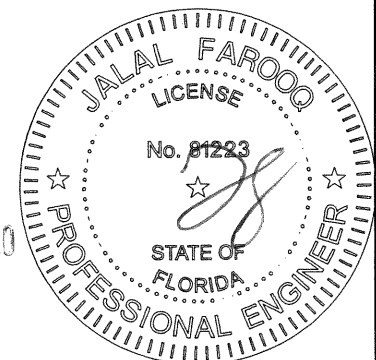
$$\text{WIDTH (W)} = \frac{W1 + W2}{2}$$

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 5 THRU 9.  
(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



NOV 10 2020

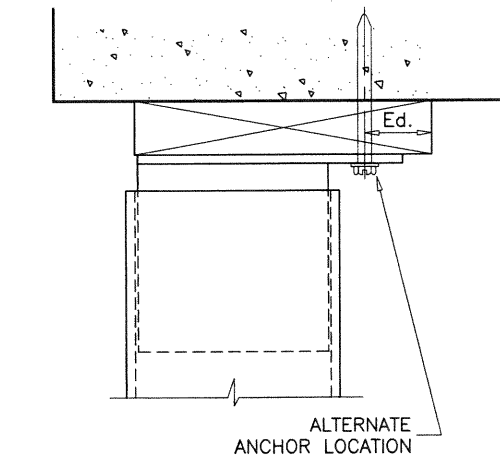
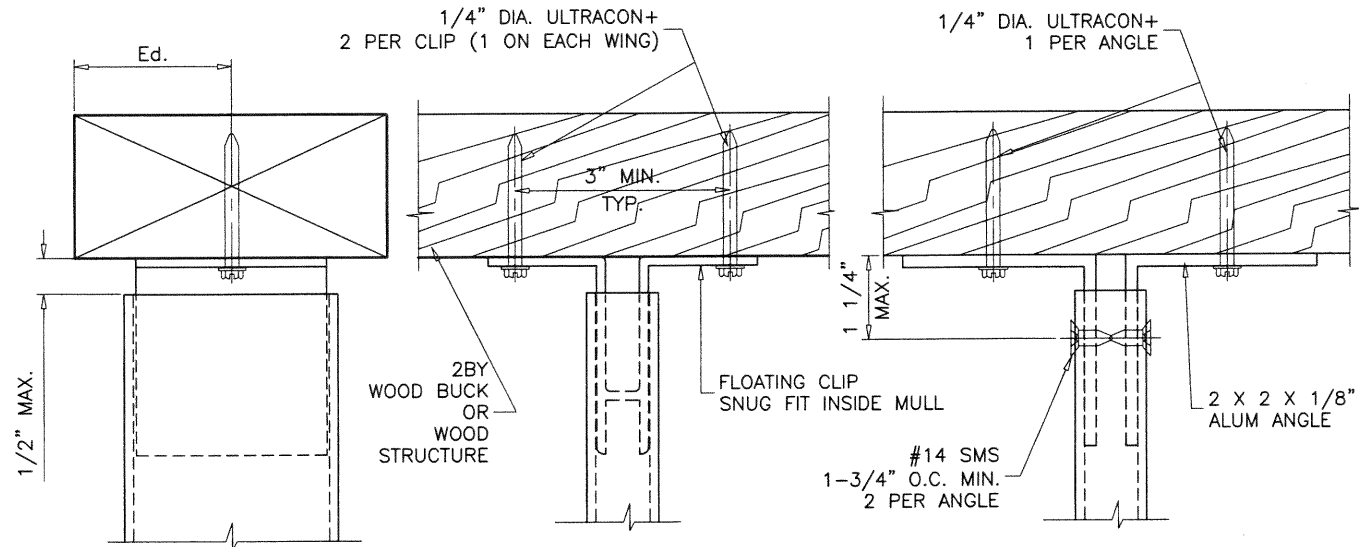
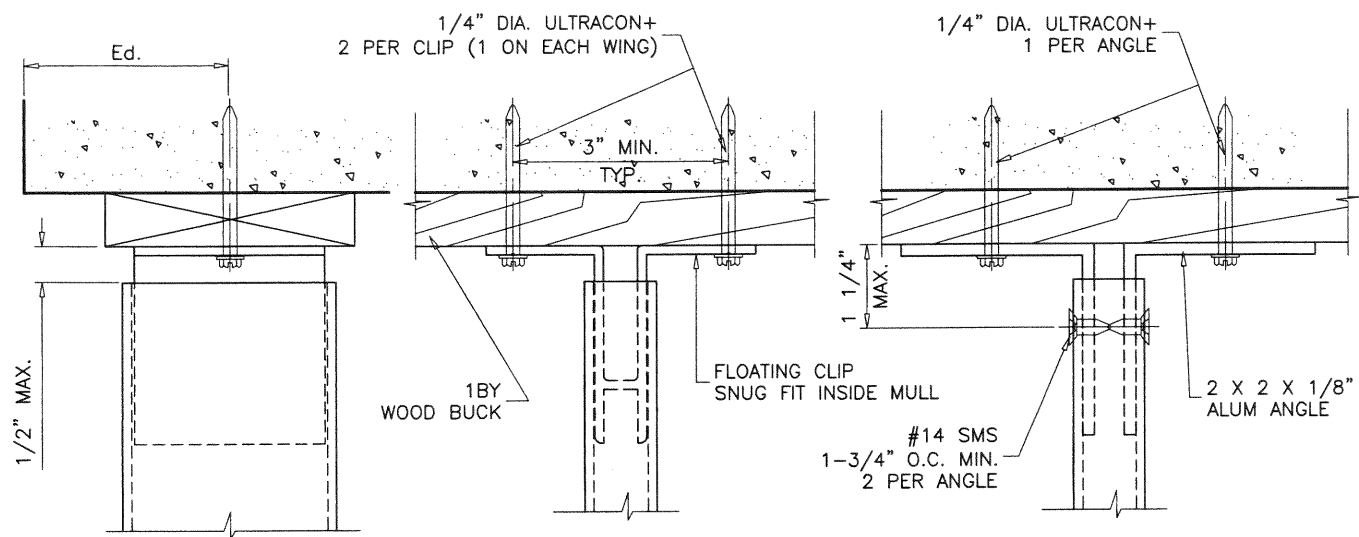
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
TEL. (305) 262-6978  
FAX. (305) 262-6978

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

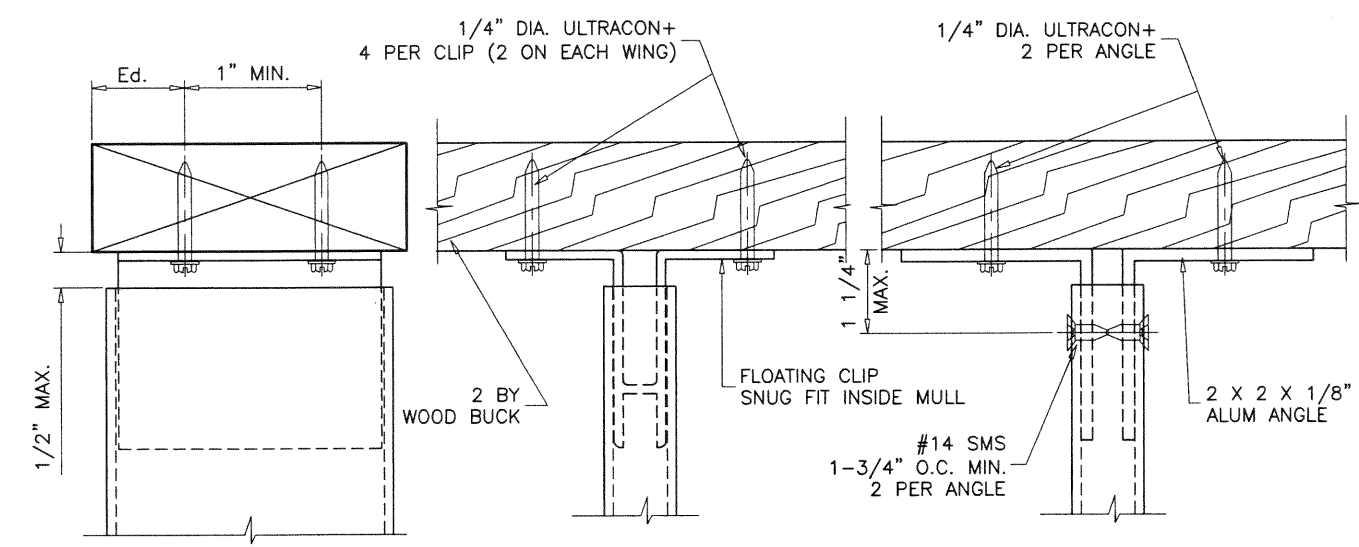
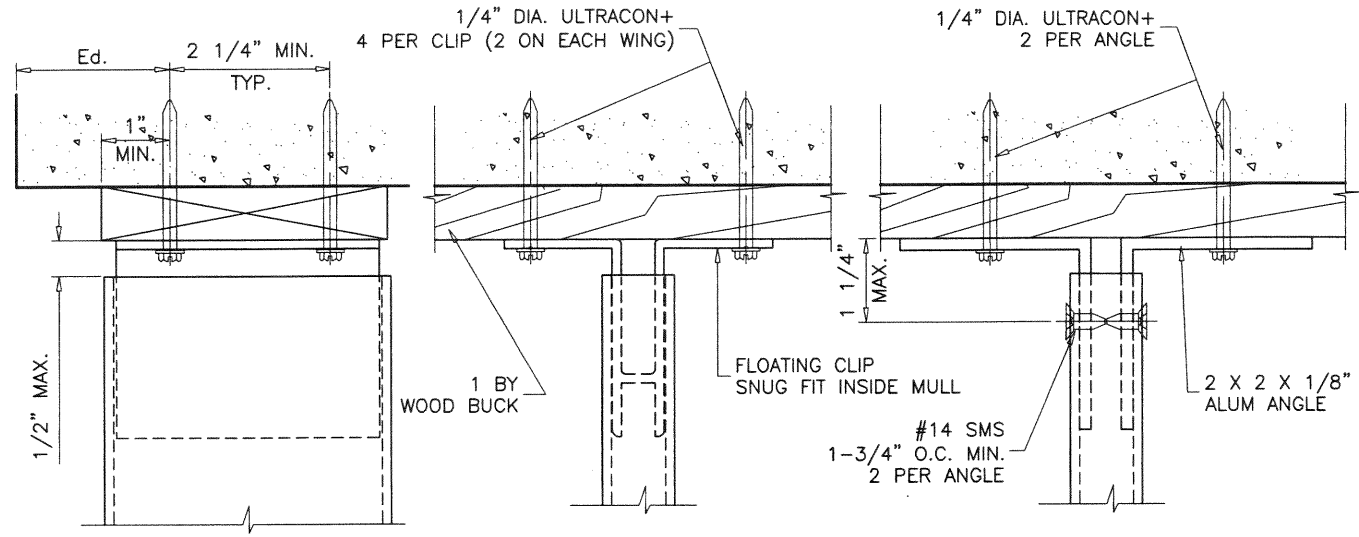
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scale:  
dr. by: TARIQ  
chk. by:

drawing no.  
**M04-04**  
sheet 4 of 9

revisions:  
no. date by description  
E 09.28.09 REV. PER BCCO COMMENTS  
F 03.05.12 NO CHANGE THIS SHEET  
G 07.14.14 UPDATED TO 2014 FBC  
H 01.17.18 UPDATED TO 2017 FBC  
I 11.05.20 UPDATED TO 2020 FBC



ANCHORS TYPE 'A'



ANCHORS TYPE 'B'

|                                   |                       |                |
|-----------------------------------|-----------------------|----------------|
| 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.

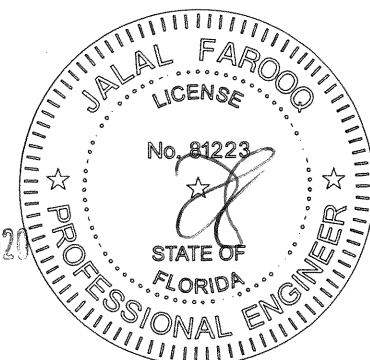
ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.  
CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED  
WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR  
WATER-WHITE METHACRYLATE LACQUER.

**PRODUCT REVISED**  
as complying with the Florida  
Building Code

NOA-No. 20-1118.13

Expiration Date: 09/16/2024

By: *Manuel Perera*  
Miami-Dade Product Control



**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

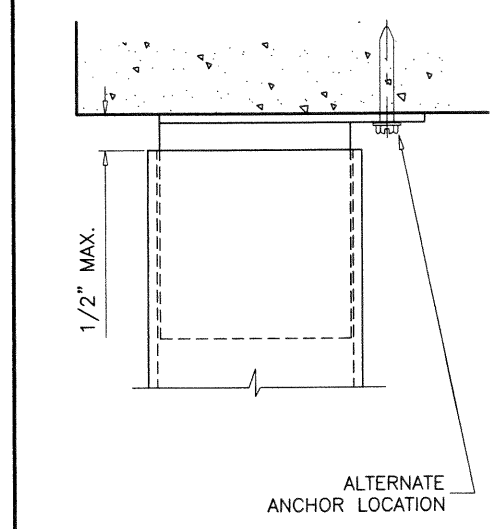
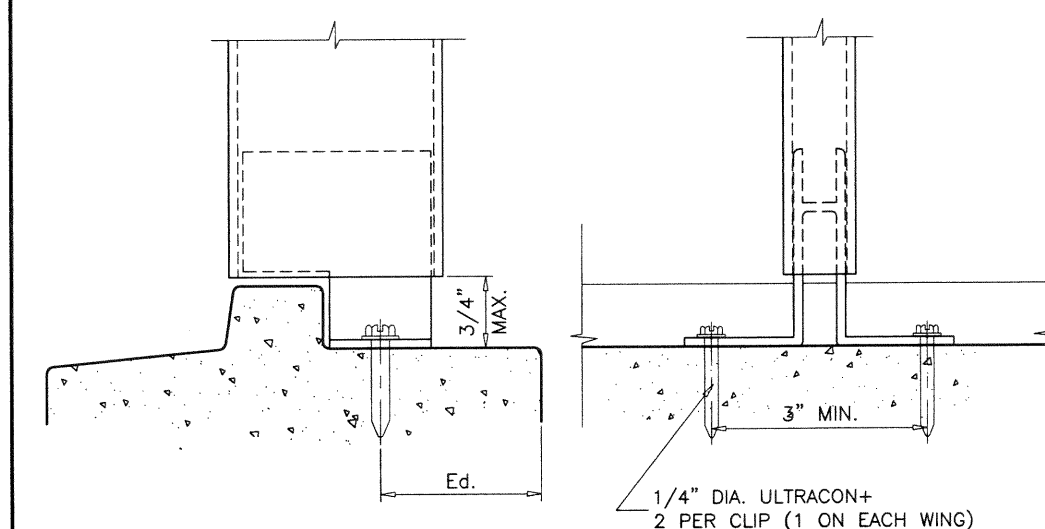
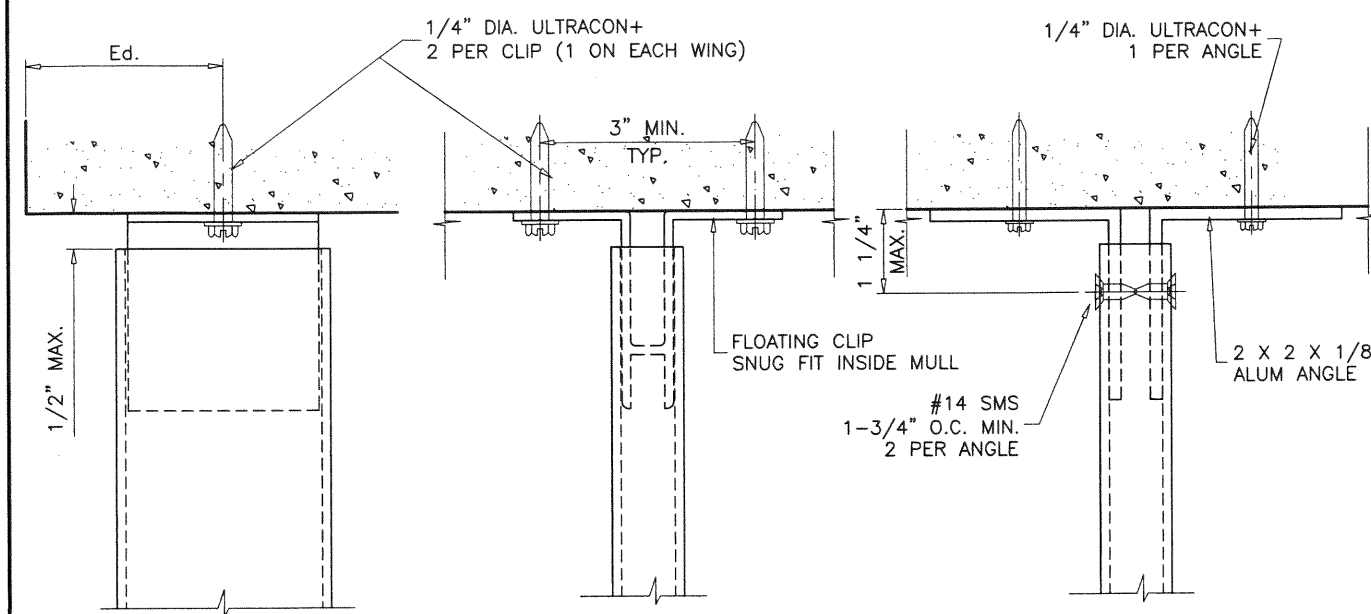
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|----|----------|----|----------------------|
| E  | 09.28.09 |    | NO CHANGE THIS SHEET |
| F  | 03.05.12 |    | NO CHANGE THIS SHEET |
| G  | 07.14.14 |    | UPDATED TO 2014 FBC  |
| H  | 01.17.18 |    | UPDATED TO 2017 FBC  |
| I  | 11.05.20 |    | UPDATED TO 2020 FBC  |

date: 04-26-04  
scale: 3/8" = 1"  
dr. by: TARIQ  
chk. by:

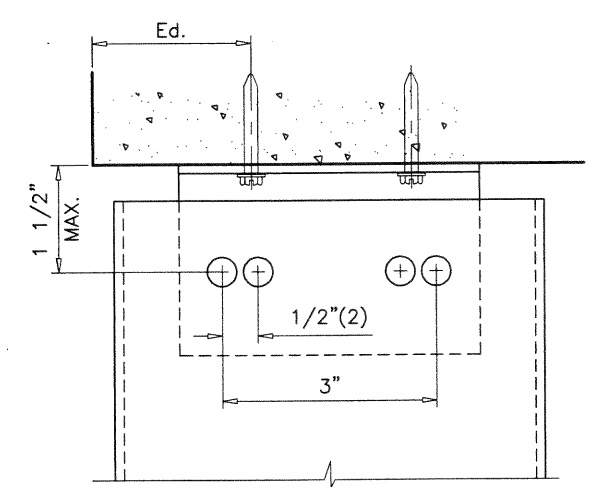
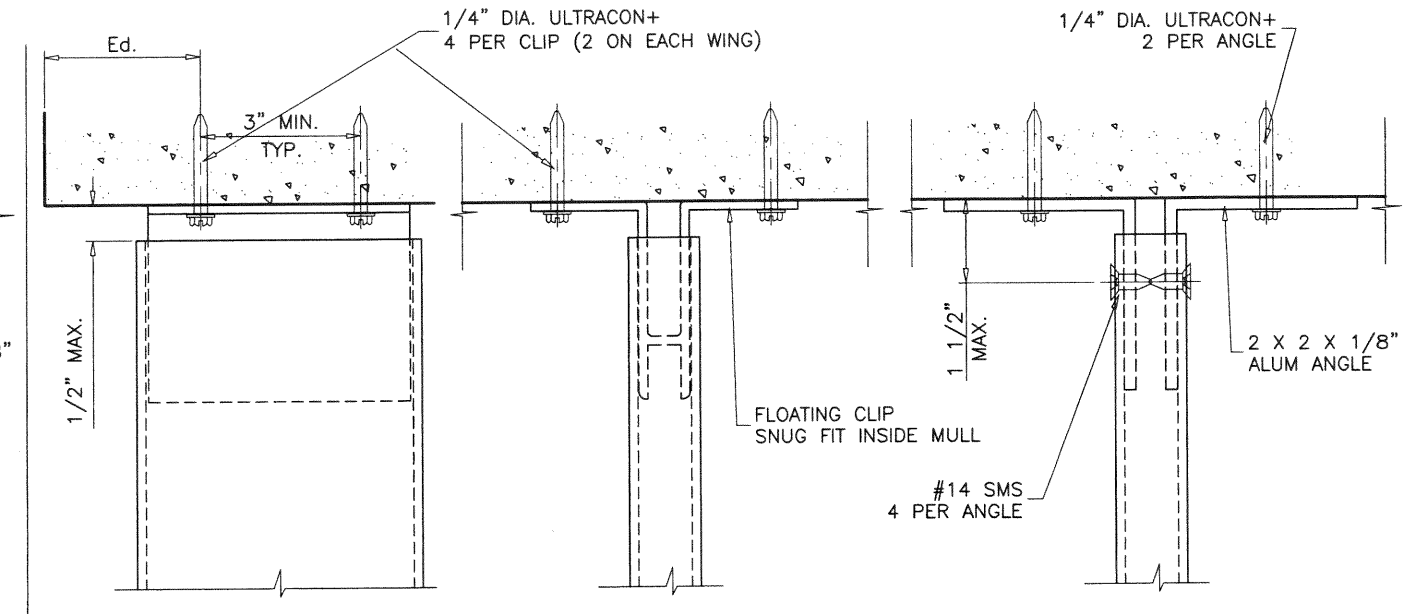
drawing no.

M04-04

sheet 5 of 9



ANCHORS TYPE 'C'



LOCATION OF SCREWS CONNECTING ANGLES TO TUBES

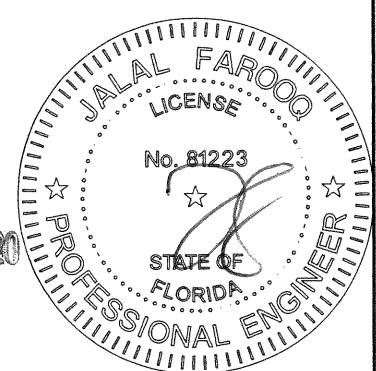
ANCHORS TYPE 'D'  
APPLICABLE FOR 4", 5" AND 6" TUBE MULLIONS

|                                                              |                       |                |
|--------------------------------------------------------------|-----------------------|----------------|
| 1/4" DIA. ULTRAACON+ BY 'DEWALT'<br>(Fu=164 KSI, Fy=148 KSI) |                       |                |
| ULTRAACON+ 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.

**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
NOA-No. **20-1118.13**  
Expiration Date: **09/16/2024**  
By: *Manuel Perez*  
Miami-Dade Product Control



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

**a f c**

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

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ALUMINUM TUBE MULLIONS

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

MULLION\MO4-04ESW

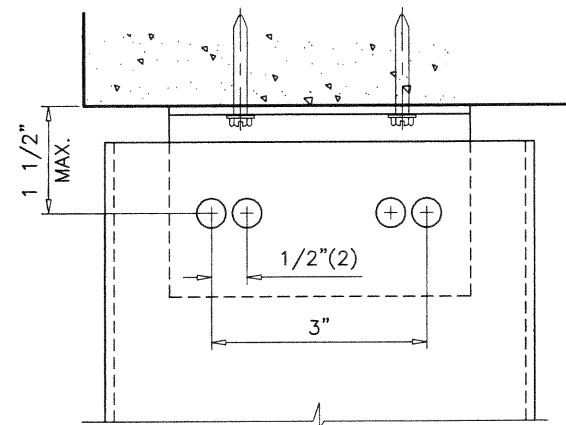
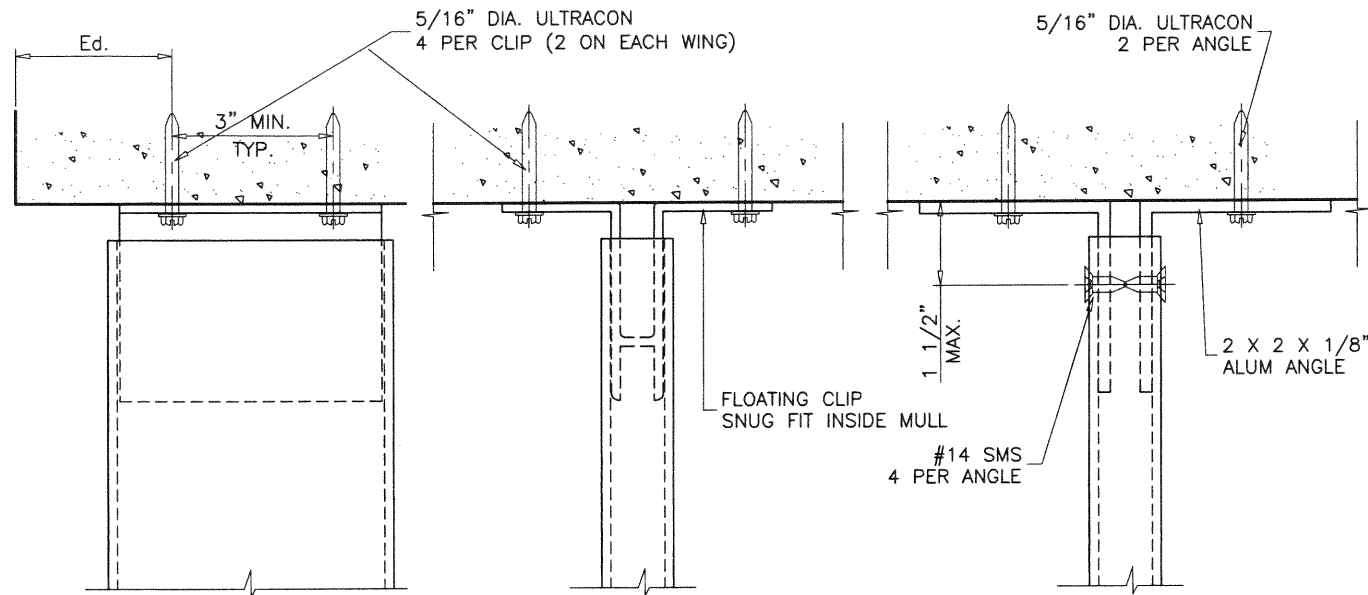
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| no | date     | by                     | description |
|----|----------|------------------------|-------------|
| E  | 09.28.09 | REV. PER BCCO COMMENTS |             |
| F  | 03.05.12 | NO CHANGE THIS SHEET   |             |
| G  | 07.14.14 | UPDATED TO 2014 FBC    |             |
| H  | 01.17.18 | UPDATED TO 2017 FBC    |             |
| I  | 11.05.20 | UPDATED TO 2020 FBC    |             |

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date: 04-26-04  
scale: 3/8" = 1"  
dr. by: TARIQ  
chk. by:

drawing no.  
**M04-04**  
sheet 6 of 9



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.

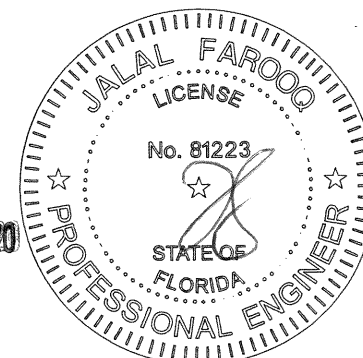
**PRODUCT REVISED**  
as complying with the Florida  
Building Code

NOA-No. **20-1118.13**

Expiration Date: **09/16/2024**

By: *Manuel Perez*  
Miami-Dade Product Control

NOV 10 2020



**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

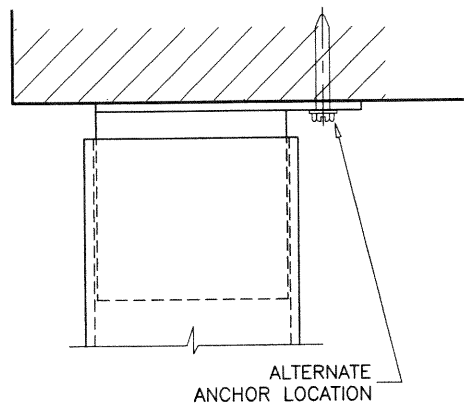
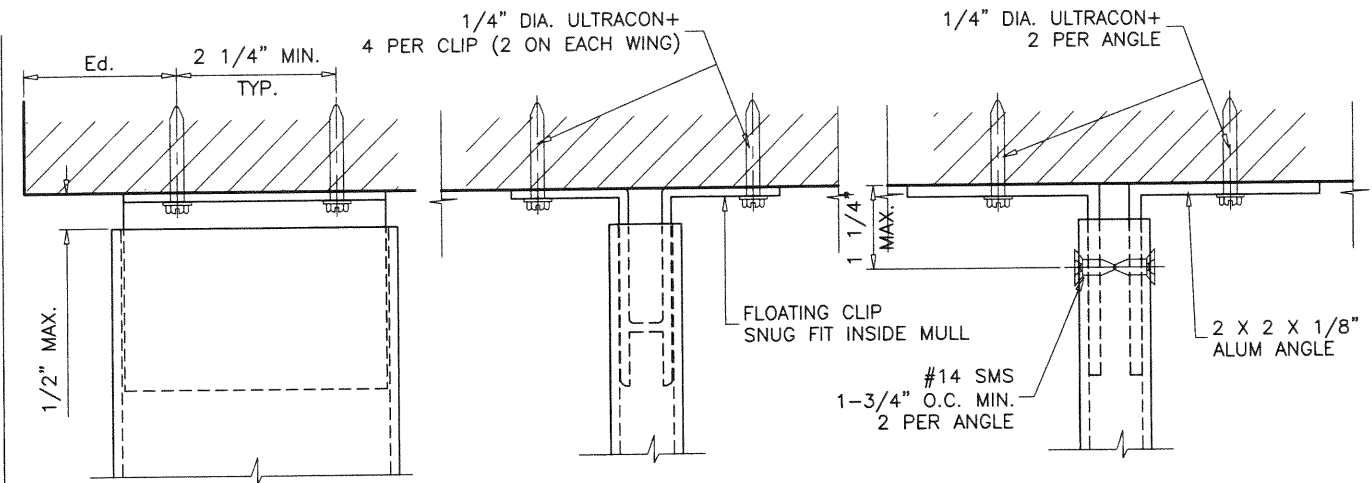
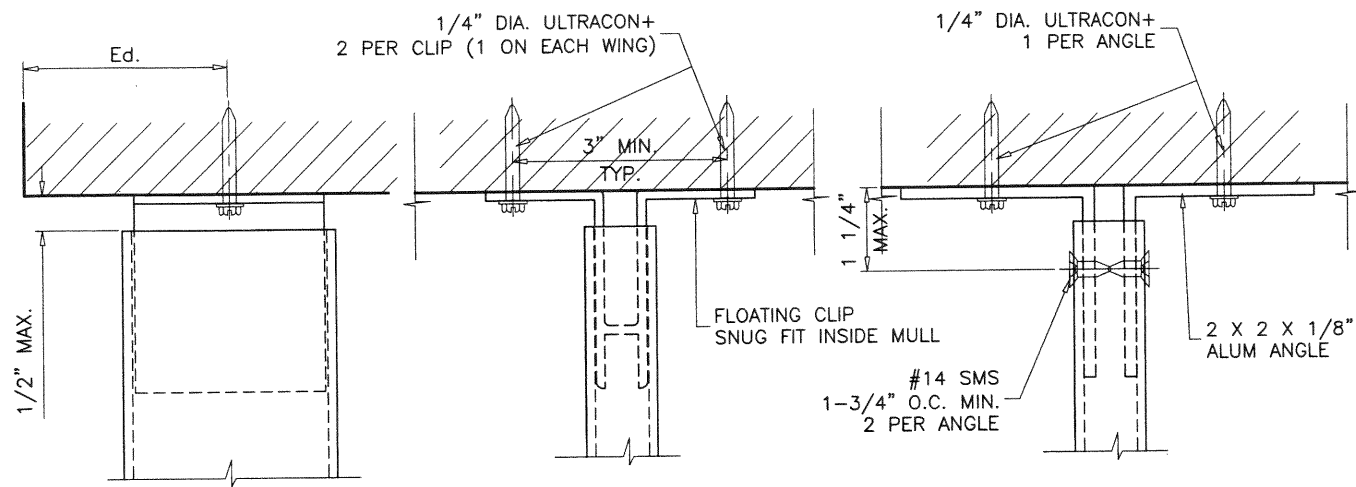
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| E  | 09.28.09 |    | REV. PER BCCO COMMENTS |
| F  | 03.05.12 |    | NO CHANGE THIS SHEET   |
| G  | 07.14.14 |    | UPDATED TO 2014 FBC    |
| H  | 01.17.18 |    | UPDATED TO 2017 FBC    |
| I  | 11.05.20 |    | UPDATED TO 2020 FBC    |

|          |           |
|----------|-----------|
| date:    | 04-26-04  |
| scale:   | 3/8" = 1" |
| dr. by:  | TARIQ     |
| chk. by: |           |

drawing no.

**M04-04**

sheet 7 of 9



**ANCHORS TYPE 'F'**  
**AT JAMBS ONLY**

**ANCHORS TYPE 'G'**  
**AT JAMBS ONLY**

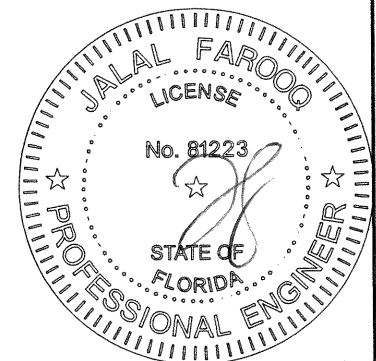
|                                   |                       |                |
|-----------------------------------|-----------------------|----------------|
| 1/4" DIA. ULTRACON+ BY 'DEWALT'   |                       |                |
| (Fu=164 KSI, Fy=148 KSI)          |                       |                |
| 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.

**PRODUCT REVISED**  
**as complying with the Florida**  
**Building Code**  
**NOA-No. 20-1118.13**  
**Expiration Date: 09/16/2024**  
**By: Manuel Perez**  
**Miami-Dade Product Control**

NOV 10 2020



**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173  
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ALUMINUM TUBE MULLIONS

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3550 N.W. 49 STREET  
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| revisions: |          | no | date | by | description         |
|------------|----------|----|------|----|---------------------|
| G          | 07.14.14 |    |      |    | UPDATED TO 2014 FBC |
| H          | 01.17.18 |    |      |    | UPDATED TO 2017 FBC |
| I          | 11.05.20 |    |      |    | UPDATED TO 2020 FBC |

date: 04-26-04

scale: 3/8" = 1"

dr. by: TARIQ

chk. by:

drawing no.

**M04-04**

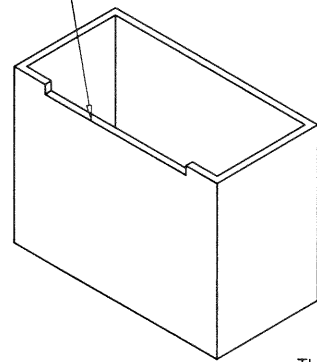
sheet 8 of 9

| DESIGN LOAD CAPACITY - PSF |           |                  |       |       |
|----------------------------|-----------|------------------|-------|-------|
| WINDOW DIMS.               |           | ANCHORS QUANTITY |       |       |
| WIDTH (W)                  | MULL SPAN | 2                | 3     | 4     |
| 19-1/8"                    | 38-3/8"   | 150.0            | 150.0 | 150.0 |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 |
| 30"                        |           | 150.0            | 150.0 | 150.0 |
| 37"                        |           | 150.0            | 150.0 | 150.0 |
| 42"                        |           | 150.0            | 150.0 | 150.0 |
| 48"                        |           | 140.1            | 150.0 | 150.0 |
| 54"                        |           | 124.5            | 150.0 | 150.0 |
| 60"                        |           | 112.1            | 150.0 | 150.0 |
| 66"                        |           | 101.9            | 150.0 | 150.0 |
| 72"                        |           | 93.4             | 140.1 | 150.0 |
| 19-1/8"                    | 50-5/8"   | 150.0            | 150.0 | 150.0 |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 |
| 30"                        |           | 150.0            | 150.0 | 150.0 |
| 37"                        |           | 137.8            | 150.0 | 150.0 |
| 42"                        |           | 121.4            | 150.0 | 150.0 |
| 48"                        |           | 106.2            | 150.0 | 150.0 |
| 54"                        |           | 94.4             | 141.6 | 150.0 |
| 60"                        |           | 85.0             | 127.4 | 150.0 |
| 66"                        |           | 77.2             | 115.8 | 150.0 |
| 72"                        |           | 70.8             | 106.2 | 141.6 |
| 19-1/8"                    | 58"       | 150.0            | 150.0 | 150.0 |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 |
| 30"                        |           | 148.3            | 150.0 | 150.0 |
| 37"                        |           | 120.2            | 150.0 | 150.0 |
| 42"                        |           | 105.9            | 150.0 | 150.0 |
| 48"                        |           | 92.7             | 139.0 | 150.0 |
| 54"                        |           | 82.4             | 123.6 | 150.0 |
| 60"                        |           | 74.2             | 111.2 | 148.3 |
| 66"                        |           | 67.4             | 101.1 | 134.8 |
| 72"                        |           | 61.8             | 92.7  | 123.6 |
| 19-1/8"                    | 63"       | 150.0            | 150.0 | 150.0 |
| 26-1/2"                    |           | 150.0            | 150.0 | 150.0 |
| 30"                        |           | 136.5            | 150.0 | 150.0 |
| 37"                        |           | 110.7            | 150.0 | 150.0 |
| 42"                        |           | 97.5             | 146.3 | 150.0 |
| 48"                        |           | 85.3             | 128.0 | 150.0 |
| 54"                        |           | 75.9             | 113.8 | 150.0 |
| 60"                        |           | 68.3             | 102.4 | 136.5 |
| 66"                        |           | 62.1             | 93.1  | 124.1 |
| 72"                        |           | 56.9             | 85.3  | 113.8 |
| 19-1/8"                    | 74-1/4"   | 150.0            | 150.0 | 150.0 |
| 26-1/2"                    |           | 131.1            | 150.0 | 150.0 |
| 30"                        |           | 115.8            | 150.0 | 150.0 |
| 37"                        |           | 93.9             | 140.9 | 150.0 |
| 42"                        |           | 82.7             | 124.1 | 150.0 |
| 48"                        |           | 72.4             | 108.6 | 144.8 |
| 54"                        |           | 64.4             | 96.5  | 128.7 |
| 60"                        |           | 57.9             | 86.9  | 115.8 |
| 66"                        |           | 52.7             | 79.0  | 105.3 |
| 72"                        |           | 48.3             | 72.4  | 96.5  |

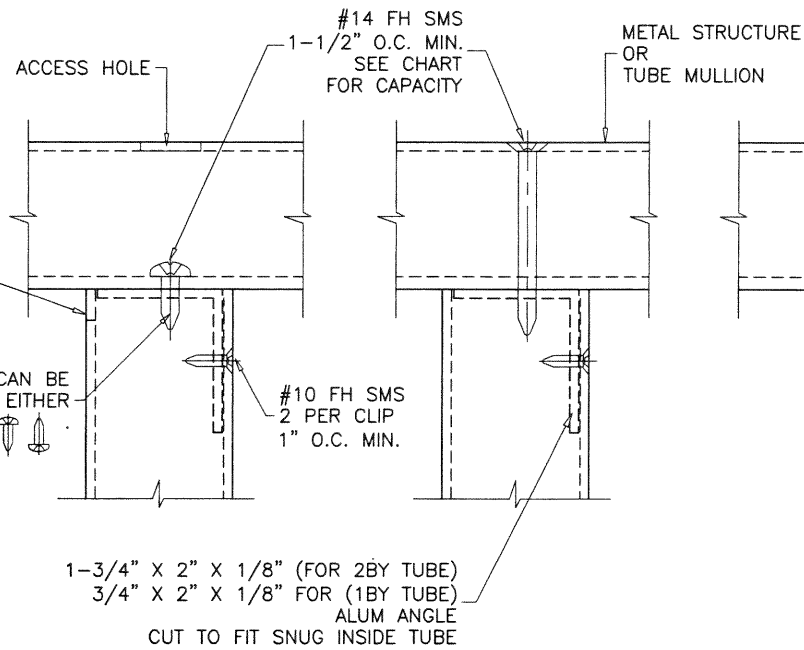
| DESIGN LOAD CAPACITY - PSF |           |                  |       |       |
|----------------------------|-----------|------------------|-------|-------|
| WINDOW DIMS.               |           | ANCHORS QUANTITY |       |       |
| WIDTH (W)                  | MULL SPAN | 2                | 3     | 4     |
| 19-1/8"                    | 84"       | 150.0            | 150.0 | 150.0 |
| 26-1/2"                    |           | 115.9            | 150.0 | 150.0 |
| 30"                        |           | 102.4            | 150.0 | 150.0 |
| 37"                        |           | 83.0             | 124.5 | 150.0 |
| 42"                        |           | 73.1             | 109.7 | 146.3 |
| 48"                        |           | 64.0             | 96.0  | 128.0 |
| 54"                        |           | 56.9             | 85.3  | 113.8 |
| 60"                        |           | 51.2             | 76.8  | 102.4 |
| 66"                        |           | 46.5             | 69.8  | 93.1  |
| 72"                        |           | 42.7             | 64.0  | 85.3  |
| 19-1/8"                    | 96"       | 140.5            | 150.0 | 150.0 |
| 26-1/2"                    |           | 101.4            | 150.0 | 150.0 |
| 30"                        |           | 89.6             | 134.4 | 150.0 |
| 37"                        |           | 72.6             | 109.0 | 145.3 |
| 42"                        |           | 64.0             | 96.0  | 128.0 |
| 48"                        |           | 56.0             | 84.0  | 112.0 |
| 54"                        |           | 49.8             | 74.7  | 99.6  |
| 60"                        |           | 44.8             | 67.2  | 89.6  |
| 66"                        |           | 40.7             | 61.1  | 81.5  |
| 72"                        |           | 37.3             | 56.0  | 74.7  |
| 19-1/8"                    | 108"      | 124.9            | 150.0 | 150.0 |
| 26-1/2"                    |           | 90.2             | 135.2 | 150.0 |
| 30"                        |           | 79.6             | 119.5 | 150.0 |
| 37"                        |           | 64.6             | 96.9  | 129.2 |
| 42"                        |           | 56.9             | 85.3  | 113.8 |
| 48"                        |           | 49.8             | 74.7  | 99.6  |
| 54"                        |           | 44.2             | 66.4  | 88.5  |
| 60"                        |           | 39.8             | 59.7  | 79.6  |
| 66"                        |           | 36.2             | 54.3  | 72.4  |
| 72"                        |           | 33.2             | 49.8  | 66.4  |
| 19-1/8"                    | 120"      | 112.4            | 150.0 | 150.0 |
| 26-1/2"                    |           | 81.1             | 121.7 | 150.0 |
| 30"                        |           | 71.7             | 107.5 | 143.4 |
| 37"                        |           | 58.1             | 87.2  | 116.2 |
| 42"                        |           | 51.2             | 76.8  | 102.4 |
| 48"                        |           | 44.8             | 67.2  | 89.6  |
| 54"                        |           | 39.8             | 59.7  | 79.6  |
| 60"                        |           | 35.8             | 53.8  | 71.7  |
| 66"                        |           | 32.6             | 48.9  | 65.2  |
| 72"                        |           | 29.9             | 44.8  | 59.7  |
| 19-1/8"                    | 132"      | 102.2            | 150.0 | 150.0 |
| 26-1/2"                    |           | 73.8             | 110.7 | 147.5 |
| 30"                        |           | 65.2             | 97.7  | 130.3 |
| 37"                        |           | 52.8             | 79.3  | 105.7 |
| 42"                        |           | 46.5             | 69.8  | 93.1  |
| 48"                        |           | 40.7             | 61.1  | 81.5  |
| 54"                        |           | 36.2             | 54.3  | 72.4  |
| 60"                        |           | 32.6             | 48.9  | 65.2  |
| 66"                        |           | 29.6             | 44.4  | 59.2  |
| 72"                        |           | 27.2             | 40.7  | 54.3  |

| DESIGN LOAD CAPACITY - PSF |           |                  |       |       |
|----------------------------|-----------|------------------|-------|-------|
| WINDOW DIMS.               |           | ANCHORS QUANTITY |       |       |
| WIDTH (W)                  | MULL SPAN | 2                | 3     | 4     |
| 19-1/8"                    | 144"      | 93.7             | 140.5 | 150.0 |
| 26-1/2"                    |           | 67.6             | 101.4 | 135.2 |
| 30"                        |           | 59.7             | 89.6  | 119.5 |
| 37"                        |           | 48.4             | 72.6  | 96.9  |
| 42"                        |           | 42.7             | 64.0  | 85.3  |
| 48"                        |           | 37.3             | 56.0  | 74.7  |
| 54"                        |           | 33.2             | 49.8  | 66.4  |
| 60"                        |           | 29.9             | 44.8  | 59.7  |
| 66"                        |           | 27.2             | 40.7  | 54.3  |
| 72"                        |           | 24.9             | 37.3  | 49.8  |

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.)

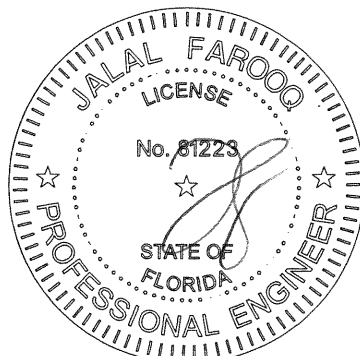
**PRODUCT REVISED**  
as complying with the Florida  
Building Code

NOA-No. **20-1118.13**

Expiration Date: **09/16/2024**

By: *Manuel Torres*  
Miami-Dade Product Control

NOV 10 2020



**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
9360 SUNSET DRIVE, SUITE 220  
MIAMI, FLORIDA 33173 (C.A.N. 3538)  
TEL. (305) 262-8100 FAX. (305) 262-6978  
MULLION/M04-04ESW

ALUMINUM TUBE MULLIONS

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

| revisions: |          | by      | description       |
|------------|----------|---------|-------------------|
| no         | date     |         |                   |
| E          | 09.28.09 | REV.    | PER BCCO COMMENTS |
| F          | 03.05.12 | NO      | CHANGE THIS SHEET |
| G          | 07.14.14 | UPDATED | TO 2014 FBC       |
| H          | 01.17.18 | UPDATED | TO 2017 FBC       |
| I          | 11.05.20 | UPDATED | TO 2020 FBC       |

date: 04-26-04

scale: 3/8" = 1"

dr. by: TARIQ

chk. by:

drawing no.

**M04-04**

sheet 9 of 9