MIAMI-DADE COUNTY
DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
T (786) 315-2590 F (786) 315-2599
www.miamidade.gov/economy

NOTICE OF ACCEPTANCE (NOA)

ES Windows, LLC
10653 NE Quaybridge Ct.
Miami, FL 33138

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: 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 G dated 07/14/14, prepared by Al-Farooq Corporation, signed and sealed by Javad Ahmad, 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, city, state, 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 and renews NOA# 12-0308.37** and consists of this page 1 and evidence pages E-1 and E-2, as well as approval document mentioned above.

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

MIAMI-DADE COUNTY APPROVED

9/12/14

NOA No. 14-0731.06
Expiration Date: September 16, 2019
Approval Date: September 18, 2014

ES Windows, LLC

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

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 G dated 07/14/14, prepared by Al-Farooq Corporation, signed and sealed by Javad Ahmad, P.E.

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-2010, dated 09/01/09 and updated on 07/10/14 to comply with **FBC 5th Edition (2014)**, prepared by Al-Farooq Corporation, signed and sealed by Javad Ahmad, P.E.
   (Submitted partially under NOA# 09-0825.03)

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. 14-0731.06
Expiration Date: September 16, 2019
Approval Date: September 18, 2014

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

F. STATEMENTS

1. Statement letter of conformance, complying with the **FBC - 5th Edition (2014)**, and of no financial interest, dated July 10, 2014, issued by Al-Farooq Corporation, signed and sealed by Javad Ahmad, P.E.
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, issued by Fenestration Testing Laboratory, Inc., all signed and sealed by Joseph C. Chan, P.E.
   (Submitted under NOA No. 04-0712.01)

G. OTHERS

1. Notice of Acceptance No. **12-0308.37**, issued to ES Windows, LLC for their Series Aluminum Tube Mullions – L.M.I., approved on 05/31/12 and expiring on 09/16/14.

Manuel Perez, P.E.
Product Control Examiner
NOA No. 14-0731.06
Expiration Date: September 16, 2019
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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 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.

WOOD BUCKS BY OTHERS, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE STRUCTURE.

ANCHORS SHALL BE AS LISTED, SPACED AS SHOWN ON DETAILS, EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL COVERING (STUCCO, TILE ETC.).

ANCHORING CONDITIONS OTHER THAN THOSE SHOWN IN THESE DETAILS ARE NOT PART OF THIS APPROVAL.

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

MATERIALS INCLUDING BUT NOT LIMITED TO STEEL/METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE FLORIDA BLDG. CODE.

INSTRUCTIONS:

USE CHARTS AND GRAPHS AS FOLLOWS.

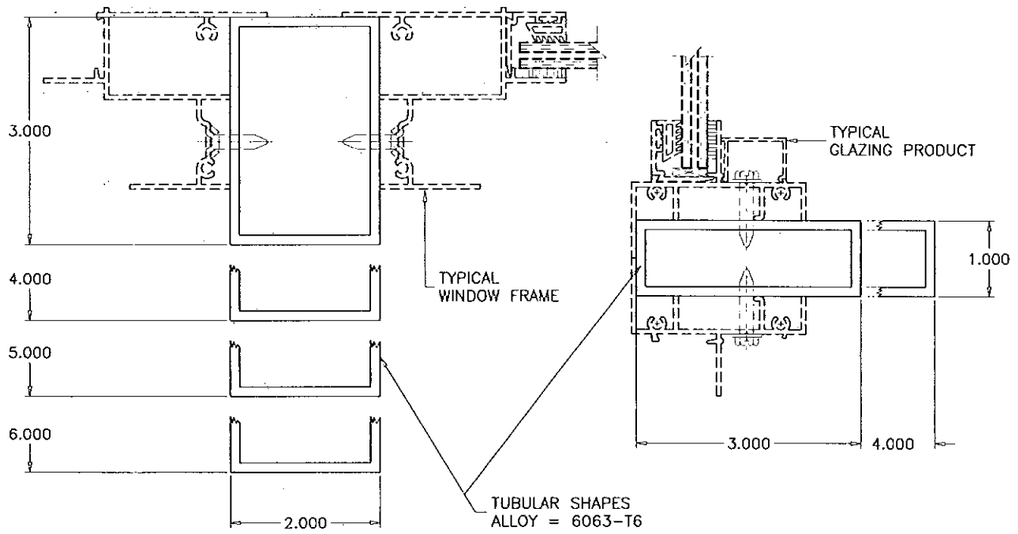
STEP 1 DETERMINE DESIGN LOAD REQUIRED PER ASCE 7 FOR PARTICULAR OPENING.

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

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538
JUL 21 2014

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 14-0731.06
Expiration Date Sept. 16, 2019
By
Miami Dade Product Control

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
1235 S.W. 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978

MULLION\M04-04ESW

ALUMINUM TUBE MULLIONS

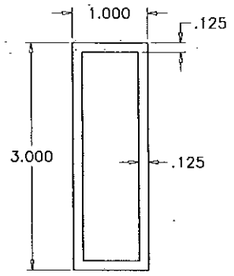
E.S. WINDOWS, LLC
5220 N.W. 72 AVE. BAY #4
MIAMI, FL. 33166
TEL. (305) 624-7777 FAX. (305) 624-7775

revisions:

no	date	by	description
C	12.26.06		NO CHANGE THIS SHEET
D	08.26.09		UPDATED FOR 2007 FBC
E	09.28.09		REV. PER BCCO COMMENTS
F	03.05.12		UPDATED TO 2010 FBC
G	07.14.14		UPDATED TO 2014 FBC

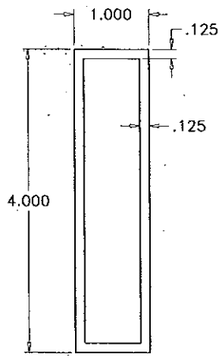
date: 04-26-04
scale: 1/2" = 1"
dr. by: HAMID
chk. by:

drawing no.
M04-04



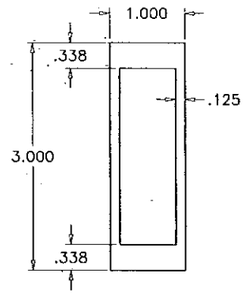
Ix = .950 IN\4
Sx = .634 IN\3

1 X 3
STD. MULLION
6063-T6



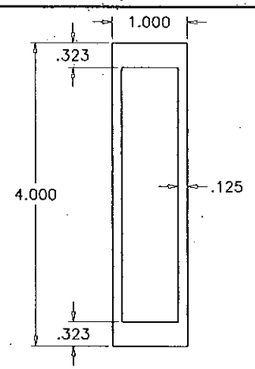
Ix = 2.037 IN\4
Sx = 1.018 IN\3

1 X 4
STD. MULLION
6063-T6



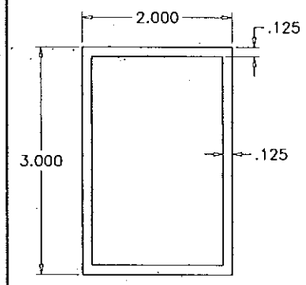
Ix = 1.466 IN\4
Sx = .977 IN\3

1 X 3
CUSTOM MULLION
6063-T6



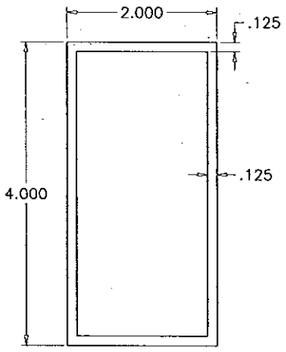
Ix = 2.975 IN\4
Sx = 1.487 IN\3

1 X 4
CUSTOM MULLION
6063-T6



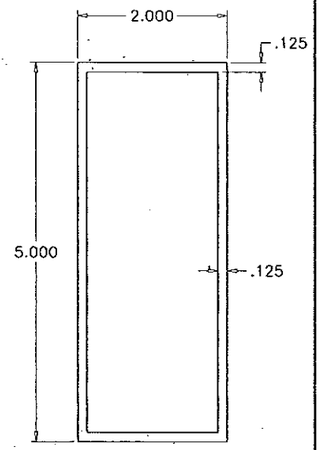
Ix = 1.467 IN\4
Sx = .978 IN\3

2 X 3
STD. MULLION
6063-T6



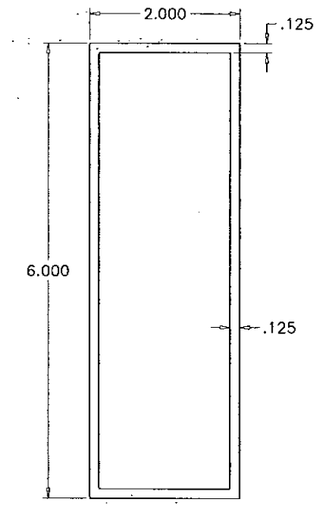
Ix = 2.976 IN\4
Sx = 1.488 IN\3

2 X 4
STD. MULLION
6063-T6



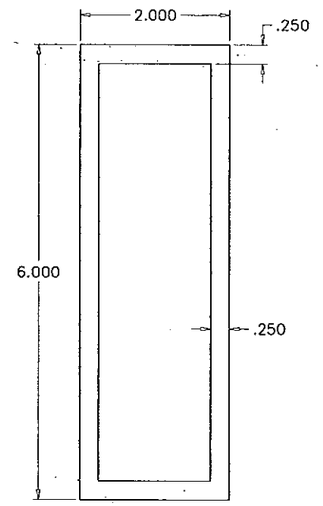
Ix = 5.204 IN\4
Sx = 2.082 IN\3

2 X 5
STD. MULLION
6063-T6



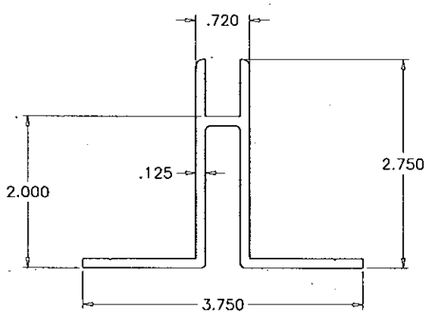
Ix = 8.276 IN\4
Sx = 2.758 IN\3

2 X 6
STD. MULLION
6063-T6



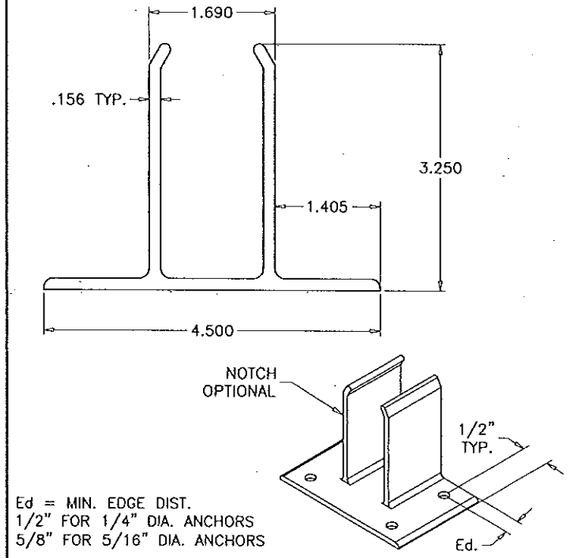
Ix = 15.203 IN\4
Sx = 5.068 IN\3

2 X 6
HEAVY MULLION
6063-T6



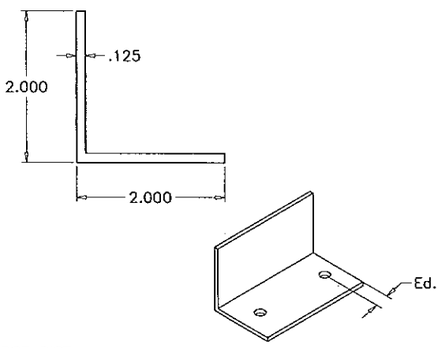
Ed = MIN. EDGE DIST.
1/2" FOR 1/4" DIA. ANCHORS
5/8" FOR 5/16" DIA. ANCHORS

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



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

ANGLE CLIP
6063-T5

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538

JUL 21 2014

PRODUCT REVISED
as complying with the Florida
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MULLION\M04-04ESW

ALUMINUM TUBE MULLIONS

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

drawing no.
M04-04

sheet 2 of 9

DESIGN LOAD CAPACITY – PSF (TUBE MULLIONS)

WINDOW DIMS.		1 X 3 STD.	1 X 4 STD.	1 X 3 CUSTOM 2 X 3 STD.	1 X 4 CUSTOM 2 X 4 STD.	2 X 5 STD.	2 X 6 STD.	2 X 6 HEAVY
WIDTH (W)	MULL. SPAN							
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"		149.6	150.0	150.0	150.0	150.0	150.0	150.0
48"		130.9	150.0	150.0	150.0	150.0	150.0	150.0
54"		116.3	150.0	150.0	150.0	150.0	150.0	150.0
60"		104.7	150.0	150.0	150.0	150.0	150.0	150.0
66"		95.2	150.0	146.8	150.0	150.0	150.0	150.0
72"		87.3	140.1	134.6	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"		136.2	150.0	150.0	150.0	150.0	150.0	150.0
30"		120.3	150.0	150.0	150.0	150.0	150.0	150.0
37"		97.6	150.0	150.0	150.0	150.0	150.0	150.0
42"		85.9	138.0	132.6	150.0	150.0	150.0	150.0
48"		75.2	120.8	116.0	150.0	150.0	150.0	150.0
54"		66.8	107.3	103.1	150.0	150.0	150.0	150.0
60"		60.2	96.6	92.8	141.2	150.0	150.0	150.0
66"		54.7	87.8	84.4	128.4	150.0	150.0	150.0
72"		50.1	80.5	77.3	117.7	150.0	150.0	150.0
19-1/8"	58"	143.8	150.0	150.0	150.0	150.0	150.0	150.0
26-1/2"		103.8	150.0	150.0	150.0	150.0	150.0	150.0
30"		91.7	147.2	141.4	150.0	150.0	150.0	150.0
37"		74.3	119.3	114.7	150.0	150.0	150.0	150.0
42"		65.5	105.1	101.0	150.0	150.0	150.0	150.0
48"		57.3	92.0	88.4	134.5	150.0	150.0	150.0
54"		50.9	81.8	78.6	119.5	150.0	150.0	150.0
60"		45.8	73.6	70.7	107.6	150.0	150.0	150.0
66"		41.7	66.9	64.3	97.8	136.8	150.0	150.0
72"		38.2	61.3	58.9	89.6	125.4	150.0	150.0
19-1/8"	63"	121.9	150.0	150.0	150.0	150.0	150.0	150.0
26-1/2"		88.0	141.2	135.7	150.0	150.0	150.0	150.0
30"		77.7	124.8	119.9	150.0	150.0	150.0	150.0
37"		63.0	101.2	97.2	147.9	150.0	150.0	150.0
42"		55.5	89.1	85.6	130.3	150.0	150.0	150.0
48"		48.6	78.0	74.9	114.0	150.0	150.0	150.0
54"		43.2	69.3	66.6	101.3	141.8	150.0	150.0
60"		38.8	62.4	59.9	91.2	127.6	150.0	150.0
66"		35.3	56.7	54.5	82.9	116.0	150.0	150.0
72"		32.4	52.0	49.9	76.0	106.3	140.8	150.0

DESIGN LOAD CAPACITY – PSF (TUBE MULLIONS)

WINDOW DIMS.		1 X 3 STD.	1 X 4 STD.	1 X 3 CUSTOM 2 X 3 STD.	1 X 4 CUSTOM 2 X 4 STD.	2 X 5 STD.	2 X 6 STD.	2 X 6 HEAVY
WIDTH (W)	MULL. SPAN							
19-1/8"	74-1/4"	74.6	140.9	115.1	150.0	150.0	150.0	150.0
26-1/2"		53.8	101.7	83.1	148.6	150.0	150.0	150.0
30"		47.5	89.8	73.4	131.3	150.0	150.0	150.0
37"		38.5	72.8	59.5	106.4	148.9	150.0	150.0
42"		33.9	64.2	52.4	93.8	131.2	150.0	150.0
48"		29.7	56.1	45.9	82.1	114.8	150.0	150.0
54"		26.4	49.9	40.8	72.9	102.1	135.2	150.0
60"		23.8	44.9	36.7	65.6	91.8	121.7	150.0
66"		21.6	40.8	33.4	59.7	83.5	110.6	150.0
72"		–	37.4	30.6	54.7	76.5	101.4	150.0
19-1/8"	84"	51.5	110.1	79.5	150.0	150.0	150.0	150.0
26-1/2"		37.2	79.4	57.4	116.1	150.0	150.0	150.0
30"		32.8	70.2	50.7	102.6	143.5	150.0	150.0
37"		26.6	56.9	41.1	83.2	116.4	150.0	150.0
42"		23.4	50.1	36.2	73.3	102.5	135.8	150.0
48"		20.5	43.9	31.7	64.1	89.7	118.8	150.0
54"		–	39.0	28.2	57.0	79.7	105.6	150.0
60"		–	35.1	25.3	51.3	71.8	95.1	150.0
66"		–	31.9	23.0	46.6	65.2	86.4	150.0
72"		–	29.2	21.1	42.7	59.8	79.2	145.6
19-1/8"	96"	34.5	74.0	53.3	108.1	150.0	150.0	150.0
26-1/2"		24.9	53.4	38.4	78.0	124.4	150.0	150.0
30"		22.0	47.2	34.0	68.9	109.9	145.6	150.0
37"		–	38.2	27.5	55.9	89.1	118.0	150.0
42"		–	33.7	24.3	49.2	78.5	104.0	150.0
48"		–	29.5	21.2	43.1	68.7	91.0	150.0
54"		–	26.2	–	38.3	61.0	80.9	148.6
60"		–	23.6	–	34.4	54.9	72.8	133.7
66"		–	21.4	–	31.3	49.9	66.2	121.6
72"		–	–	–	28.7	45.8	60.7	111.5
19-1/8"	108"	24.2	51.9	37.4	75.9	132.7	150.0	150.0
26-1/2"		–	37.5	27.0	54.8	95.8	130.2	150.0
30"		–	33.1	23.9	48.4	84.6	115.0	150.0
37"		–	26.9	–	39.2	68.6	93.3	150.0
42"		–	23.7	–	34.6	60.4	82.2	150.0
48"		–	20.7	–	30.2	52.9	71.9	132.1
54"		–	–	–	26.9	47.0	63.9	117.4
60"		–	–	–	24.2	42.3	57.5	105.7
66"		–	–	–	22.0	38.5	52.3	96.1
72"		–	–	–	20.2	35.3	47.9	88.1

DESIGN LOAD CAPACITY – PSF (TUBE MULLIONS)

WINDOW DIMS.		1 X 3 STD.	1 X 4 STD.	1 X 3 CUSTOM 2 X 3 STD.	1 X 4 CUSTOM 2 X 4 STD.	2 X 5 STD.	2 X 6 STD.	2 X 6 HEAVY
WIDTH (W)	MULL. SPAN							
19-1/8"	120"	–	37.9	27.3	55.3	96.7	146.1	150.0
26-1/2"		–	27.3	–	39.9	69.8	105.5	150.0
30"		–	24.1	–	35.3	61.7	93.2	150.0
37"		–	–	–	28.6	50.0	75.5	138.8
42"		–	–	–	25.2	44.1	66.5	122.3
48"		–	–	–	22.0	38.5	58.2	107.0
54"		–	–	–	–	34.3	51.8	95.1
60"		–	–	–	–	30.8	46.6	85.6
66"		–	–	–	–	28.0	42.3	77.8
72"		–	–	–	–	25.7	38.8	71.3
19-1/8"	132"	–	28.5	20.5	41.6	72.7	115.6	150.0
26-1/2"		–	20.5	–	30.0	52.5	83.4	150.0
30"		–	–	–	26.5	46.3	73.7	135.4
37"		–	–	–	21.5	37.6	59.7	109.8
42"		–	–	–	–	33.1	52.6	96.7
48"		–	–	–	–	29.0	46.1	84.6
54"		–	–	–	–	25.7	40.9	75.2
60"		–	–	–	–	23.2	36.8	67.7
66"		–	–	–	–	21.1	33.5	61.5
72"		–	–	–	–	–	30.7	56.4
19-1/8"	144"	–	21.9	–	32.0	56.0	89.0	150.0
26-1/2"		–	–	–	23.1	40.4	64.3	118.0
30"		–	–	–	20.4	35.7	56.8	104.3
37"		–	–	–	–	28.9	46.0	84.5
42"		–	–	–	–	25.5	40.5	74.5
48"		–	–	–	–	22.3	35.5	65.2
54"		–	–	–	–	–	31.5	57.9
60"		–	–	–	–	–	28.4	52.1
66"		–	–	–	–	–	25.8	47.4
72"		–	–	–	–	–	23.6	43.4

ALL LOADS ARE EXT.(+)/INT.(–).

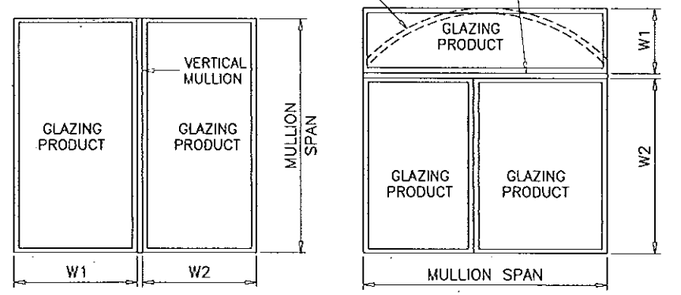
NOTE:
MULLIONS RATED IN THESE CHARTS MAY BE ORIENTED VERTICALLY OR HORIZONTALLY.
(INTERPOLATION BETWEEN WIDTHS ALLOWED)

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

ARCHES TO BE INSCRIBED INSIDE RECTANGULAR SHAPE

HORIZONTAL MULLION



TYPICAL MULLION ARRANGEMENTS

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

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538

JUL 21 2014

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 14-0731.06
Expiration Date ~~Sept. 16~~ 2019

By _____
Miami Dade Product Control

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
1235 S.W. 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978

MULLION\M04-04ESW

ALUMINUM TUBE MULLIONS

E.S. WINDOWS, LLC
5220 N.W. 72 AVE. BAY #4
MIAMI, FL. 33166
TEL (305) 624-7775 FAX. (305) 624-7777

revisions:

no.	date	by	description
C	12.26.06		CHART REV.
D	08.26.09		UPDATED FOR 2007 FBC
E	09.28.09		REV. PER BCCO COMMENTS
F	03.05.12		NO CHANGE THIS SHEET
G	07.14.14		UPDATED TO 2014 FBC

date: 04-26-04
scale:
dr. by: HAMID
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	150.0	150.0
26–1/2"		141.0	150.0	150.0	150.0	150.0	150.0	150.0
30"		124.6	150.0	150.0	150.0	150.0	148.7	150.0
37"		101.0	150.0	139.6	150.0	150.0	120.6	150.0
42"		89.0	150.0	122.9	150.0	150.0	106.2	150.0
48"		77.9	150.0	107.6	150.0	150.0	92.9	150.0
54"		69.2	138.4	95.6	150.0	150.0	82.6	150.0
60"		62.3	124.6	86.1	150.0	150.0	74.3	148.7
66"		56.6	113.3	78.2	150.0	150.0	67.6	135.2
72"		51.9	103.8	71.7	143.3	150.0	62.0	123.9
19–1/8"	50–5/8"	148.1	150.0	150.0	150.0	150.0	150.0	150.0
26–1/2"		106.9	150.0	147.7	150.0	150.0	127.6	150.0
30"		94.4	150.0	130.5	150.0	150.0	112.7	150.0
37"		76.6	150.0	105.8	150.0	150.0	91.4	150.0
42"		67.5	134.9	93.2	150.0	150.0	80.5	150.0
48"		59.0	118.0	81.5	150.0	150.0	70.4	140.9
54"		52.5	104.9	72.5	144.9	150.0	62.6	125.2
60"		47.2	94.4	65.2	130.4	150.0	56.4	112.7
66"		42.9	85.9	59.3	118.5	148.3	51.2	102.5
72"		39.3	78.7	54.4	108.6	135.9	47.0	93.9
19–1/8"	58"	129.3	150.0	150.0	150.0	150.0	150.0	150.0
26–1/2"		93.3	150.0	128.9	150.0	150.0	111.4	150.0
30"		82.4	150.0	113.9	150.0	150.0	98.4	150.0
37"		66.8	133.7	92.3	150.0	150.0	79.8	150.0
42"		58.9	117.8	81.3	150.0	150.0	70.3	140.5
48"		51.5	103.0	71.2	142.2	150.0	61.5	123.0
54"		45.8	91.6	63.3	126.4	150.0	54.7	109.3
60"		41.2	82.4	56.9	113.8	142.3	49.2	98.4
66"		37.5	74.9	51.8	103.4	129.4	44.7	89.4
72"		34.3	68.7	47.4	94.8	118.6	41.0	82.0
19–1/8"	63"	119.0	150.0	150.0	150.0	150.0	142.1	150.0
26–1/2"		85.9	150.0	118.7	150.0	150.0	102.5	150.0
30"		75.9	150.0	104.8	150.0	150.0	90.6	150.0
37"		61.5	123.1	85.0	150.0	150.0	73.4	146.9
42"		54.2	108.4	74.9	149.7	150.0	64.7	129.4
48"		47.4	94.9	65.5	131.0	150.0	56.6	113.2
54"		42.2	84.3	58.2	116.4	145.6	50.3	100.6
60"		37.9	75.9	52.4	104.8	131.0	45.3	90.6
66"		34.5	69.0	47.7	95.2	119.1	41.2	82.3
72"		31.6	63.2	43.7	87.3	109.2	37.7	75.5

DESIGN LOAD CAPACITY – PSF								
		ANCHORS TYPE						
WIDTH (W)	MULL SPAN	A	B	C	D	E	F	G
19–1/8"	74–1/4"	101.0	150.0	139.5	150.0	150.0	120.6	150.0
26–1/2"		72.9	145.8	100.7	150.0	150.0	87.0	150.0
30"		64.4	128.8	89.0	150.0	150.0	76.9	150.0
37"		52.2	104.4	72.1	144.1	150.0	62.3	124.6
42"		46.0	92.0	63.5	127.0	150.0	54.9	109.8
48"		40.2	80.5	55.6	111.1	139.0	48.0	96.1
54"		35.8	71.5	49.4	98.8	123.5	42.7	85.4
60"		32.2	64.4	44.5	88.9	111.2	38.4	76.9
66"		29.3	58.5	40.4	80.8	101.1	34.9	69.9
72"		26.8	53.7	37.1	74.1	92.7	32.0	64.0
19–1/8"	84"	89.3	150.0	123.3	150.0	150.0	106.6	150.0
26–1/2"		64.4	128.9	89.0	150.0	150.0	76.9	150.0
30"		56.9	113.8	78.6	150.0	150.0	67.9	135.9
37"		46.1	92.3	63.8	127.4	150.0	55.1	110.2
42"		40.7	81.3	56.2	112.2	140.4	48.5	97.0
48"		35.6	71.1	49.1	98.2	122.9	42.5	84.9
54"		31.6	63.2	43.7	87.3	109.2	37.7	75.5
60"		28.5	56.9	39.3	78.6	98.3	34.0	67.9
66"		25.9	51.7	35.7	71.4	89.4	30.9	61.8
72"		23.7	47.4	32.8	65.5	81.9	28.3	56.6
19–1/8"	96"	78.1	150.0	107.9	150.0	150.0	93.2	150.0
26–1/2"		56.4	112.8	77.9	150.0	150.0	67.3	134.6
30"		49.8	99.6	68.8	137.5	150.0	59.4	118.9
37"		40.4	80.8	55.8	111.5	139.5	48.2	96.4
42"		35.6	71.1	49.1	98.2	122.9	42.5	84.9
48"		31.1	62.3	43.0	85.9	107.5	37.2	74.3
54"		27.7	55.3	38.2	76.4	95.6	33.0	66.0
60"		24.9	49.8	34.4	68.8	86.0	29.7	59.4
66"		22.6	45.3	31.3	62.5	78.2	27.0	54.0
72"		20.8	41.5	28.7	57.3	71.7	24.8	49.5
19–1/8"	108"	69.4	138.9	95.9	150.0	150.0	82.9	150.0
26–1/2"		50.1	100.2	69.2	138.4	150.0	59.8	119.6
30"		44.3	88.5	61.2	122.2	150.0	52.8	105.7
37"		35.9	71.8	49.6	99.1	124.0	42.8	85.7
42"		31.6	63.2	43.7	87.3	109.2	37.7	75.5
48"		27.7	55.3	38.2	76.4	95.6	33.0	66.0
54"		24.6	49.2	34.0	67.9	84.9	29.4	58.7
60"		22.1	44.3	30.6	61.1	76.4	26.4	52.8
66"		20.1	40.2	27.8	55.6	69.5	24.0	48.0
72"		–	36.9	25.5	50.9	63.7	22.0	44.0

DESIGN LOAD CAPACITY – PSF								
		ANCHORS TYPE						
WIDTH (W)	MULL SPAN	A	B	C	D	E	F	G
19–1/8"	120"	62.5	125.0	86.3	150.0	150.0	74.6	149.2
26–1/2"		45.1	90.2	62.3	124.5	150.0	53.8	107.7
30"		39.8	79.7	55.0	110.0	137.6	47.6	95.1
37"		32.3	64.6	44.6	89.2	111.6	38.6	77.1
42"		28.5	56.9	39.3	78.6	98.3	34.0	67.9
48"		24.9	49.8	34.4	68.8	86.0	29.7	59.4
54"		22.1	44.3	30.6	61.1	76.4	26.4	52.8
60"		–	39.8	27.5	55.0	68.8	23.8	47.6
66"		–	36.2	25.0	50.0	62.5	21.6	43.2
72"		–	33.2	22.9	45.8	57.3	–	39.6
19–1/8"	132"	56.8	113.6	78.5	150.0	150.0	67.8	135.6
26–1/2"		41.0	82.0	56.6	113.2	141.6	48.9	97.9
30"		36.2	72.4	50.0	100.0	125.1	43.2	86.5
37"		29.4	58.7	40.6	81.1	101.4	35.1	70.1
42"		25.9	51.7	35.7	71.4	89.4	30.9	61.8
48"		22.6	45.3	31.3	62.5	78.2	27.0	54.0
54"		20.1	40.2	27.8	55.6	69.5	24.0	48.0
60"		–	36.2	25.0	50.0	62.5	21.6	43.2
66"		–	32.9	22.7	45.5	56.9	–	39.3
72"		–	30.2	20.8	41.7	52.1	–	36.0
19–1/8"	144"	52.1	104.2	71.9	143.8	150.0	62.2	124.3
26–1/2"		37.6	75.2	51.9	103.8	129.8	44.9	89.7
30"		33.2	66.4	45.9	91.7	114.7	39.6	79.3
37"		26.9	53.8	37.2	74.3	93.0	32.1	64.3
42"		23.7	47.4	32.8	65.5	81.9	28.3	56.6
48"		20.8	41.5	28.7	57.3	71.7	24.8	49.5
54"		–	36.9	25.5	50.9	63.7	22.0	44.0
60"		–	33.2	22.9	45.8	57.3	–	39.6
66"		–	30.2	20.8	41.7	52.1	–	36.0
72"		–	27.7	–	38.2	47.8	–	33.0

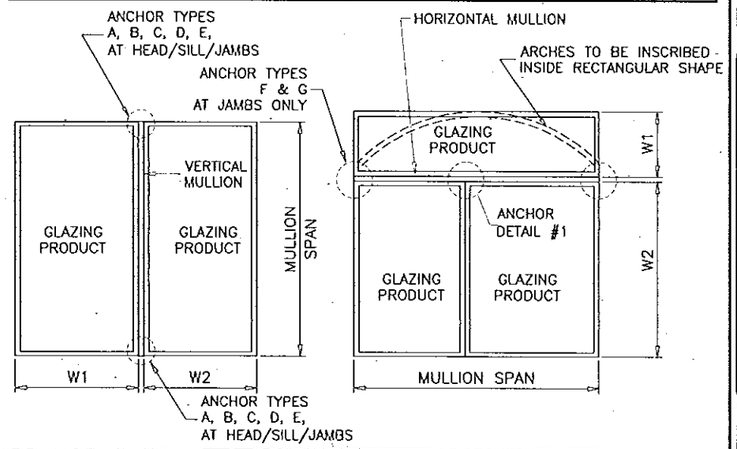
ALL LOADS ARE EXT.(+)/INT.(–).

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



TYPICAL MULLION ARRANGEMENTS

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

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538

JUL 21 2014

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 14-0731.06
Expiration Date Sept 16, 2019
By Manuel Perez
Miami Dade Product Control

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
1235 S.W. 87 AVE
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MULLION\M04-04ESW

ALUMINUM TUBE MULLIONS

E.S. WINDOWS, LLC
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MIAMI, FL. 33166
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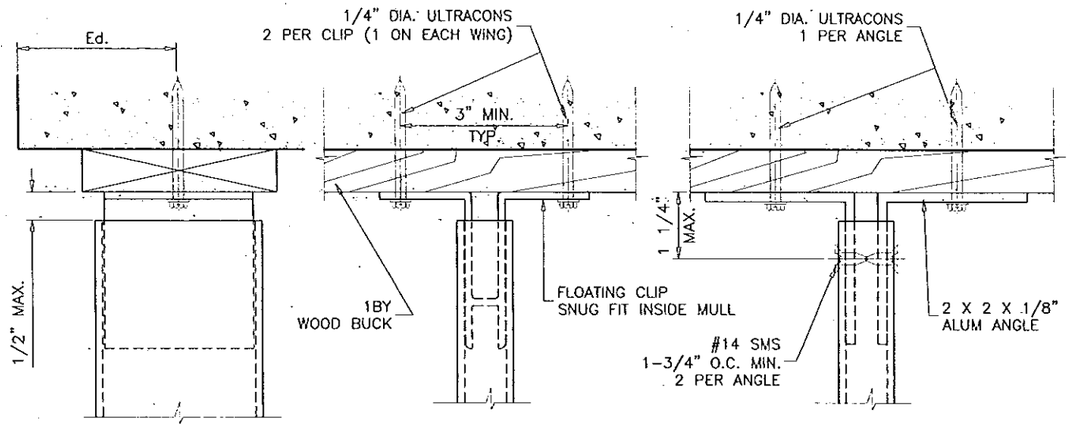
revisions:

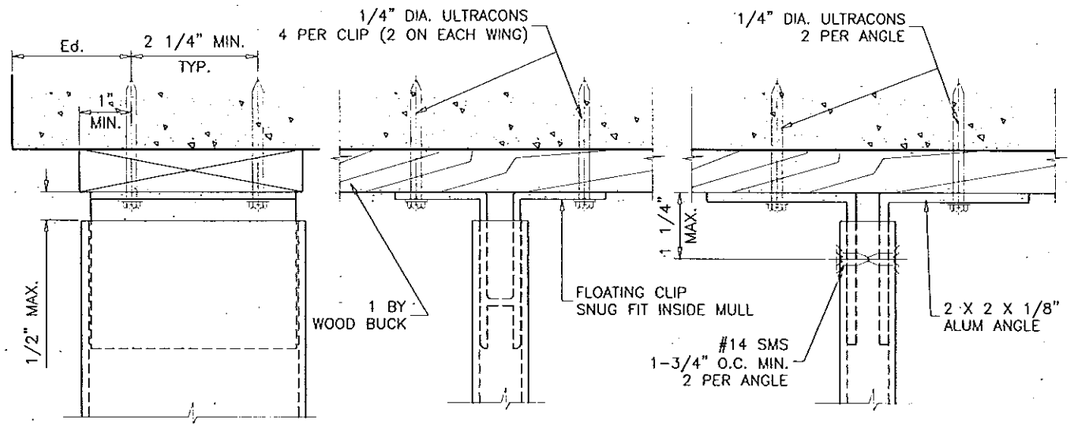
no	date	by	description
C	12.26.06		NO CHANGE THIS SHEET
D	06.26.09		UPDATED FOR 2007 FBC
E	09.28.09		REV. PER BCCO COMMENTS
F	03.05.12		NO CHANGE THIS SHEET
G	07.14.14		UPDATED TO 2014 FBC

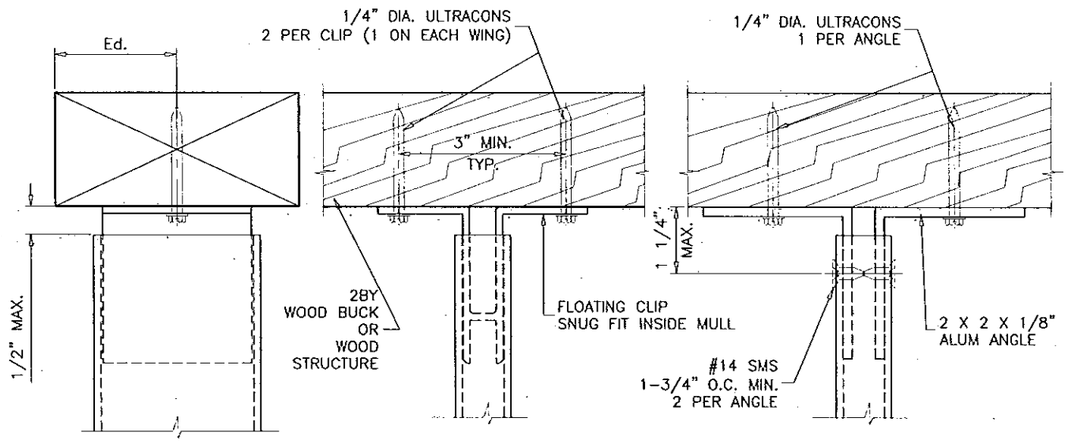
date: 04-26-04
scale:
dr. by: HAMID
chk. by:

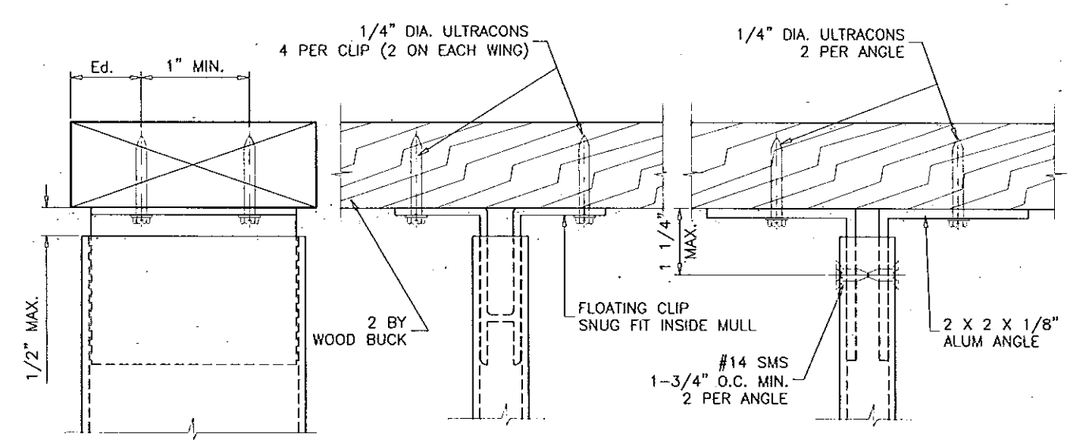
drawing no.
M04-04

sheet 4 of 9

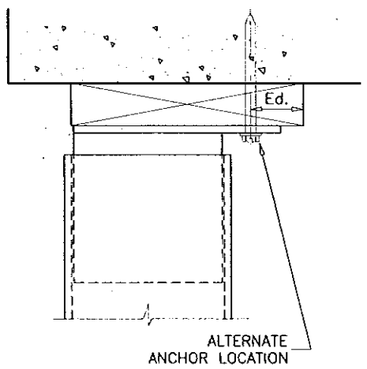








ANCHORS TYPE 'B'



1/4" DIA. ULTRACONS BY 'ELCO' ULTRACONS MAY BE HEX OR FLAT HEAD		
SUBSTRATE	Ed. = MIN. EDGE DIST.	MIN. EMBEDMENT
WOOD	1"	1-1/2"
CONCRETE	2-1/2"	1-1/2"

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.

ANCHORS TYPE 'A'

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538
JUL 21 2014

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 14-0731.06
Expiration Date 5-11-2019
By Manuel Perez
Miami-Dade Product Control

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
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MULLION\M04-04ESW

ALUMINUM TUBE MULLIONS

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MIAMI, FL. 33166
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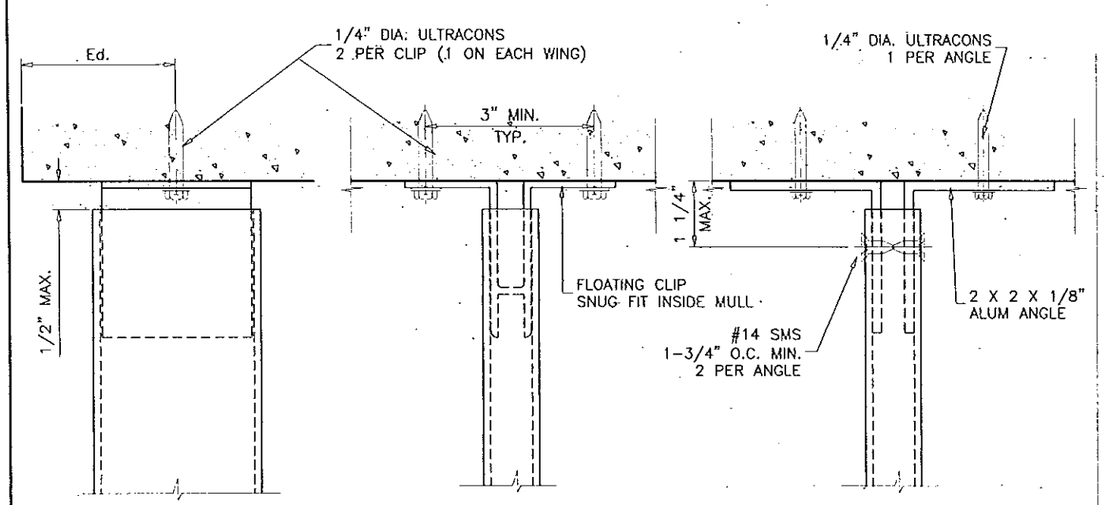
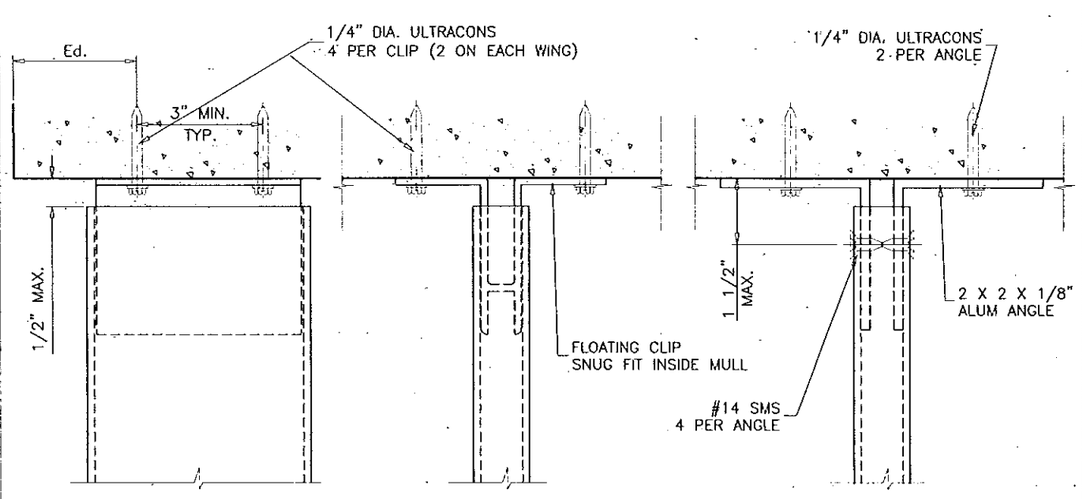
revisions:			
no	date	by	description
C	12.26.06		NO CHANGE THIS SHEET
D	08.26.09		UPDATED FOR 2007 FBC
E	09.28.09		NO CHANGE THIS SHEET
F	03.05.12		NO CHANGE THIS SHEET
G	07.14.14		UPDATED TO 2014 FBC

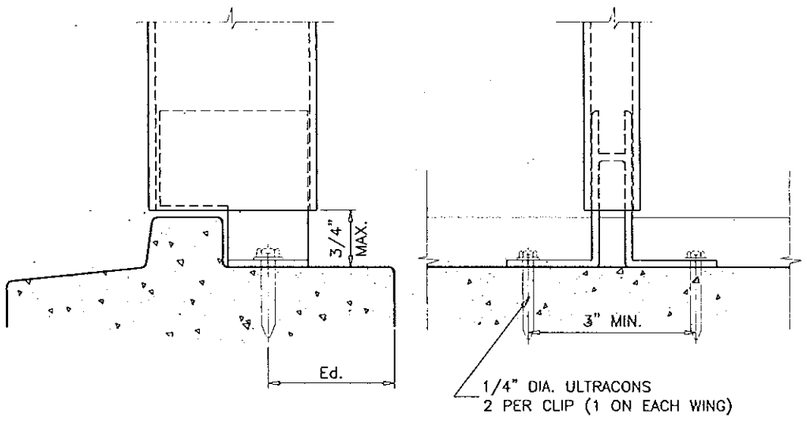
date: 04-26-04
scale: 3/8" = 1"
dr. by: HAMID
chk. by:

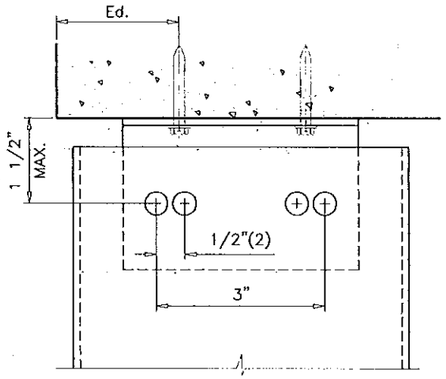
drawing no.
M04-04

sheet 5 of 9

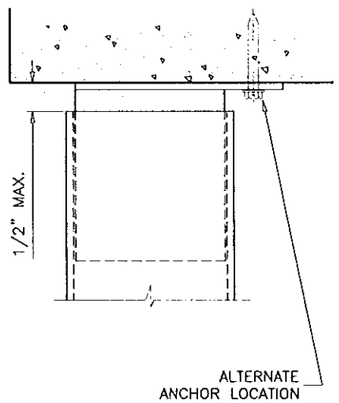








LOCATION OF SCREWS CONNECTING
ANGLES TO TUBES



ANCHORS TYPE 'C'

ANCHORS TYPE 'D'

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

1/4" DIA. ULTRACONS BY 'ELCO' ULTRACONS MAY BE HEX OR FLAT HEAD		
SUBSTRATE	Ed. = MIN. EDGE DIST.	MIN. EMBEDMENT
CONCRETE	2-1/2"	1-1/2"

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.

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538
JUL 21 2014

PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 14-0731.06
Expiration Date Sept.16,2019
By
Miami Dade Product Control

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
1235 S.W. 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978

MULLION MO4-04ESW

ALUMINUM TUBE MULLIONS

E.S. WINDOWS, LLC
5220 N.W. 72 AVE. BAY #4
MIAMI, FL. 33166
TEL. (305) 624-7775 FAX. (305) 624-7777

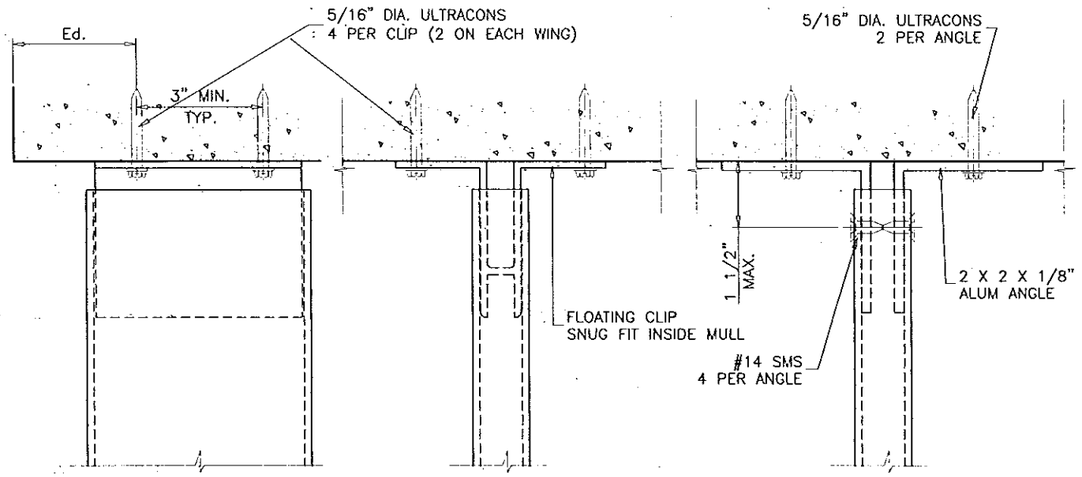
revisions:

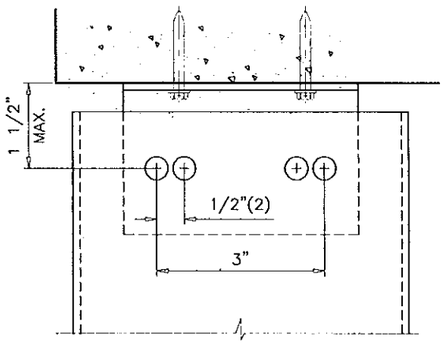
no	date	by	description
C	12.26.05		NO CHANGE THIS SHEET
D	08.26.09		UPDATED FOR 2007 FBC
E	09.28.09		REV. PER BCCO COMMENTS
F	03.05.12		NO CHANGE THIS SHEET
G	07.14.14		UPDATED TO 2014 FBC

date: 04-26-04
scale: 3/8" = 1"
dr. by: HAMID
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. ULTRACONS BY 'ELCO' ULTRACONS 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 CONCRETE TO BE PROTECTED WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR WATER-WHITE METHACRYLATE LACQUER.

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
JUL 21 2014

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By Manuel Perez
Miami Dade Product Control

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MULLION\M04-04ESW

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chk. by:

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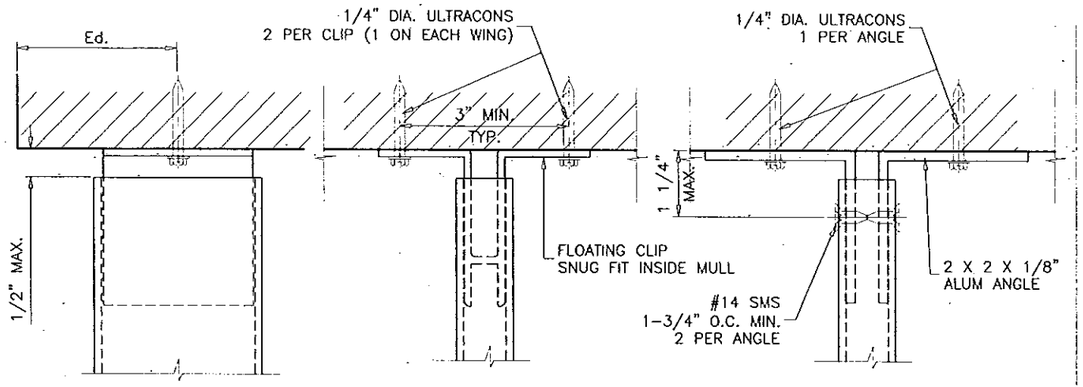
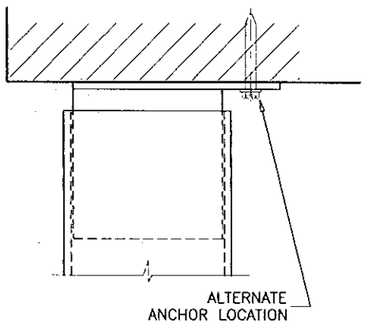
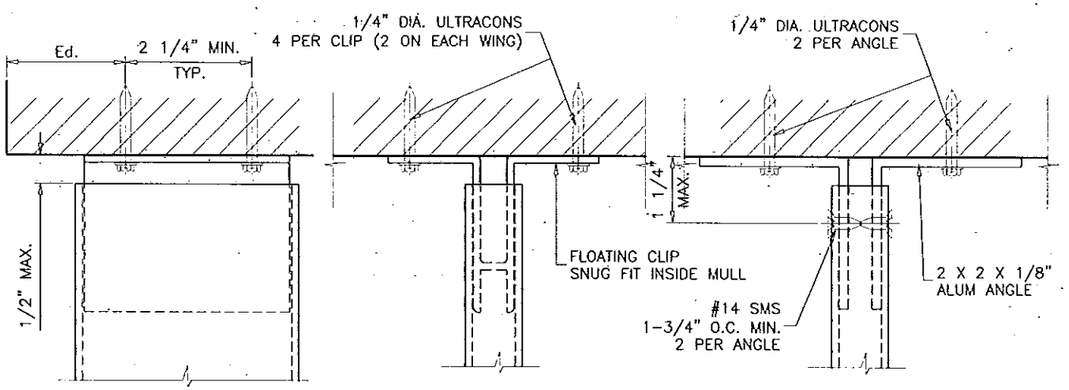
sheet 7 of 9





ANCHORS TYPE 'F'
AT JAMBS ONLY



ANCHORS TYPE 'G'
AT JAMBS ONLY

1/4" DIA. ULTRACONS BY 'ELCO' ULTRACONS 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.

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CIVIL
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MULLION\M04-04ESW

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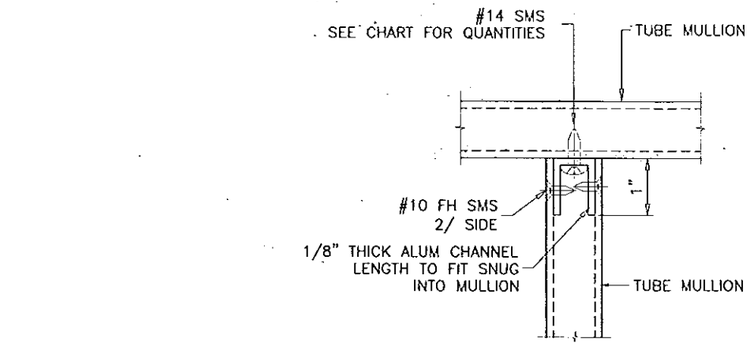
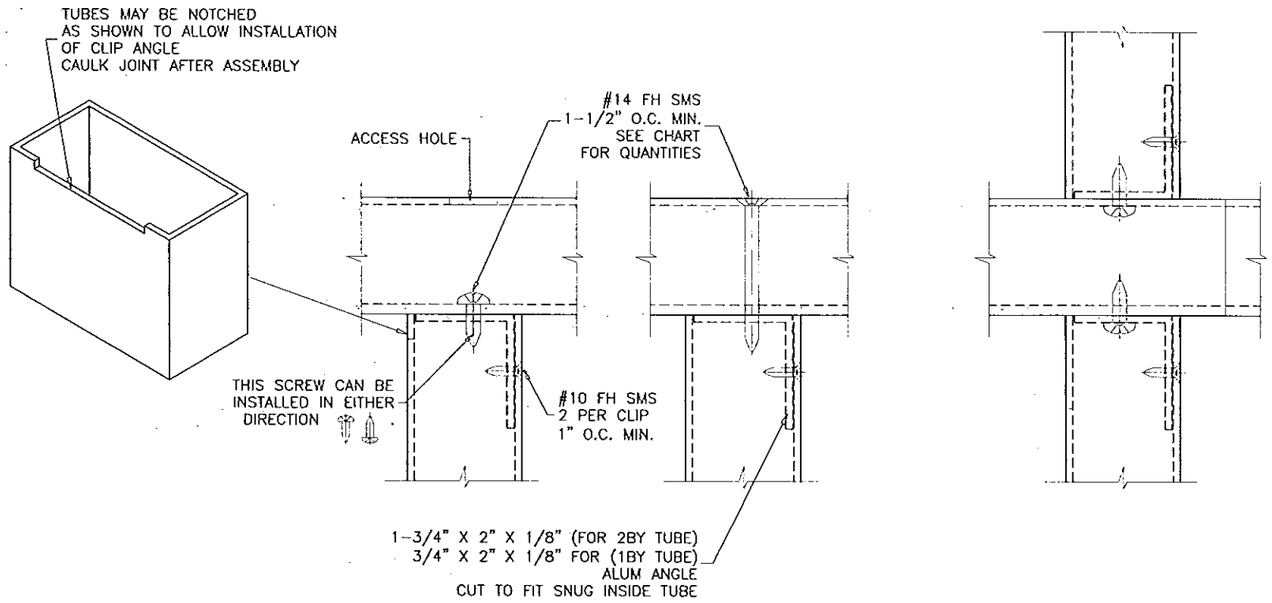


ANCHOR CHART	NO. OF SCREWS
TYPE A	2
TYPE B	3
TYPE C	2
TYPE D	4
TYPE E	4



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-T5 MIN.)

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