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

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

NOTICE OF ACCEPTANCE (NOA)

Custom Window Systems, Inc.
1900 SW 44th Avenue
Ocala, FL 34474

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 w/ and w/o Steel Reinforcement – L.M.I.

APPROVAL DOCUMENT: Drawing No. **CWS-1229,** titled "Aluminum Tube Mullions" sheets 1 through 10 of 10, dated 11/17/23, prepared by manufacturer, signed and sealed by Thomas J. Sotos, 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, 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. 23-1017.11** and consists of this page 1 and evidence pages E-1, E-2, E-3 and E-4, as well as approval document mentioned above.

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

MIAMI-DADE COUNTY APPROVED

1/25/24

Custom Window Systems, Inc.

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's

A. DRAWINGS

1. Manufacturer's die drawings and sections.
(Submitted under NOA's No. 02-0501.05 and 95-1212.09)

2. Drawing No. **LAW-ML-1001**, titled "Aluminum Tube Mullions", sheets 1 through 10 of 10, dated 04/27/10, with revision **G** dated 10/13/23, prepared by manufacturer, signed and sealed by Thomas J. Sotos, P.E.
(Submitted under NOA No. 23-1017.11)

B. TESTS

1. Test report on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94 along with marked-up drawings and installation diagram of 108-1/2" span aluminum 2" x 4"tube mullion with no reinforcement, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-18-6036**, dated 05/04/18, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 18-0529.03)

2. Test reports on: 1) Large Missile Impact Test per FBC, TAS 201-94.
2) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of 108-1/2" span aluminum 2" x 4" tube mullions with no reinforcement, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-18-6037**, dated 05/04/18, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 18-0529.03)

3. Test report on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94 along with marked-up drawings and installation diagram of 120" horizontal span and 74" vertical span, 2" x 6" aluminum tube mullions with C4 x 4.5 steel channel reinforcement, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-18-6038**, dated 05/22/18, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 18-0529.03)

4. Test reports on: 1) Large Missile Impact Test per FBC, TAS 201-94.
2) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of 120" horizontal span and 74" vertical span, 2" x 6" aluminum tube mullions with C4 x 4.5 steel channel reinforcement, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-18-6040**, dated 05/22/18, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 18-0529.03)

Manuel Perez

Manuel Perez, P.E.
Product Control Examiner
NOA No. 24-0116.22
Expiration Date: May 30, 2028
Approval Date: February 01, 2024

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

B. TESTS (CONTINUED)

5. Tensile Test report on 0.10" thick wall aluminum tube mullion, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-02-T071**, dated 09/16/02, tested per **ASTM E8,** signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 02-0501.05)

6. Test report on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94 along with marked-up drawings and installation diagram of 120" span aluminum tube mullions with C4 x 4.5 steel channel reinforcement, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-02-1714**, dated 08/27/02, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 02-0501.05)

7. Test reports on: 1) Large Missile Impact Test per FBC, TAS 201-94.
2) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of 120" span aluminum tube mullion with C4 x 4.5 steel channel reinforcement, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-02-1716**, dated 8/27/02, signed and sealed by Rafael E. Droz-Seda, P.E. ***(Submitted under NOA No. 02-0501.05)***

8. Test reports on: 1) Large Missile Impact Test per FBC, TAS 201-94.
2) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of an aluminum sliding glass door, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-02-1718**, dated 8/27/02, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 02-0501.05)

9. Test report on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94 along with marked-up drawings and installation diagram of an aluminum sliding glass door, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-02-1717**, dated 08/27/02, signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 02-0501.05)

10. Test report on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94 along with marked-up drawings and installation diagram of an aluminum sliding glass door, prepared by Fenestration Testing Laboratory, Inc., Test Report No. **FTL-1376**, dated 01/31/96, signed and sealed by Gilbert Diamond, P.E.
(Submitted under NOA No. 95-1212.09)

11. Test report on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94 along with marked-up drawings and installation diagram of two aluminum horizontal sliding windows mulled at top with a 90" span mullion and a 45" high fixed window on top, prepared by Fenestration Testing Laboratory, Inc., Test Report No. **FTL-1383**, dated 02/13/96, signed and sealed by Gilbert Diamond, P.E.
(Submitted under NOA No. 95-1212.09)

Manuel Perez, P.E.
Product Control Examiner
NOA No. 24-0116.22
Expiration Date: May 30, 2028
Approval Date: February 01, 2024

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

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

C. CALCULATIONS

1. Anchor verification calculations and structural analysis, complying with FBC 6th Edition (2017), prepared by manufacturer, dated 05/24/18, signed and sealed by Thomas J. Sotos, P.E.
(Submitted under NOA No. 18-0529.03)

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 8th Edition (2023)**, dated October 16, 2023, issued by manufacturer, signed and sealed by Thomas J. Sotos, P.E.
(Submitted under NOA No. 23-1017.11)

2. Statement letter of no financial interest, dated October 16, 2023, issued by the manufacturer, signed and sealed by Thomas J. Sotos, P.E.
(Submitted under NOA No. 23-1017.11)

3. Laboratory compliance letter for Test Reports No.: **FTL-3619, FTL-3620**, **FTL-3621**, **FTL-3622**, **FTL-3623**, **FTL-3624**, **FTL-3625**, **FTL-3626**, **FTL-3627,** all dated 11/27/02, issued by Fenestration Testing Laboratory, Inc., and signed and sealed by Joseph C. Chan, P.E.
(Submitted under NOA No. 03-0128.06)

4. Laboratory compliance letter for Test Reports No. **HETI-02-1714**, **HETI-02-1716**, **HETI-02-1717**, **HETI-02-1718**, dated 8/27/02 and **HETI-02-T071**, dated 09/16/02, all issued by Hurricane Engineering & Testing, Inc., signed and sealed by Rafael E. Droz-Seda, P.E.
(Submitted under NOA No. 02-0501.05)

5. Laboratory compliance letter for Test Reports No. **FTL-1376**, dated 01/31/96, and **FTL-1383**, dated 02/13/96, both issued by Fenestration Testing Laboratory, Inc., signed and sealed by Gilbert Diamond, P.E.
(Submitted under NOA No. 02-0501.05)

G. OTHERS

1. Notice of Acceptance No. **23-0404.01** issued to Lawson Industries, Inc. for their Clipped, Extruded Aluminum Tube Mullion w/ and w/o Steel Reinforcement – L.M.I., approved on 05/11/23 and expiring on 05/30/28.

Manuel Perez, P.E.
Product Control Examiner
NOA No. 24-0116.22
Expiration Date: May 30, 2028
Approval Date: February 01, 2024

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. **CWS-1229**, titled "Aluminum Tube Mullions", sheets 1 through 10 of 10, dated 11/17/23, prepared by manufacturer, signed and sealed by Thomas J. Sotos, P.E.

B. TESTS

1. None.

C. CALCULATIONS

1. None.

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 8th Edition (2023),** dated December 18, 2023, issued by the manufacturer, signed and sealed by Thomas J. Sotos, P.E.

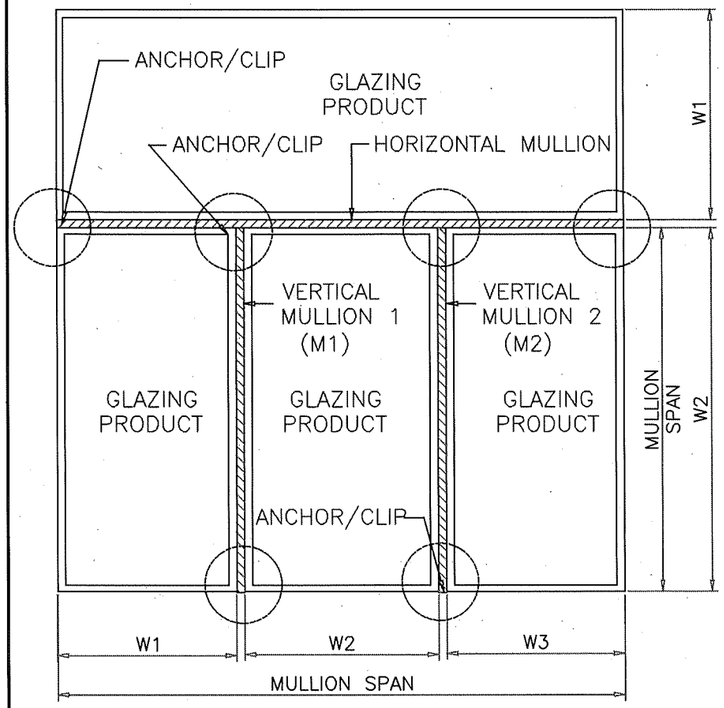
2. Statement letter of no financial interest, dated December 18, 2023, issued by the manufacturer, signed and sealed by Thomas J. Sotos, P.E.

3. Private Labeling Agreement document in conformance to Product Control guidelines dated 01/11/24, signed by Kevin E. Pine, vice president.

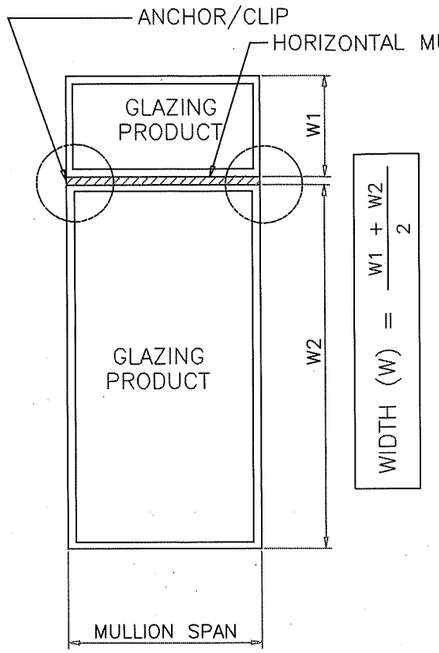
G. OTHERS

1. Notice of Acceptance No. **23-1017.11** issued to Lawson Industries, Inc. for their Clipped, Extruded Aluminum Tube Mullion w/ and w/o Steel Reinforcement – L.M.I., approved on 11/16/23 and expiring on 05/30/28.

Manuel Perez, P.E.
Product Control Examiner
NOA No. 24-0116.22
Expiration Date: May 30, 2028
Approval Date: February 01, 2024



$$\text{WIDTH (W)} = (M1)\frac{W1 + W2}{2} \mid (M2)\frac{W2 + W3}{2}$$



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

THESE MULLIONS ARE RATED FOR LARGE MISSILE IMPACT AND CAN BE USED WITH ALL CWS'S MIAMI-DADE COUNTY APPROVED IMPACT AND NON-IMPACT PRODUCTS.

RECTANGULAR ALUMINUM TUBE MULLIONS
USING MULLION PROPERTIES ONLY

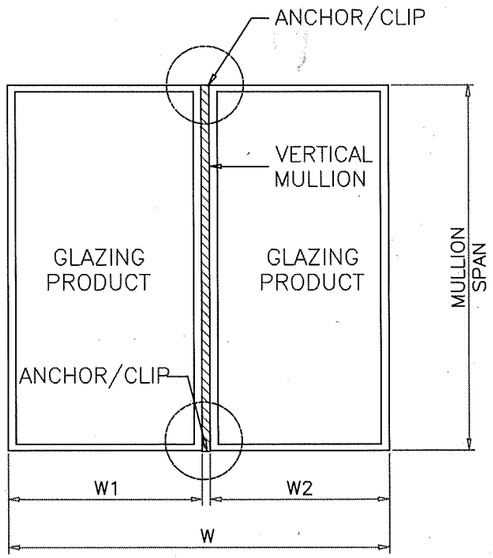
GENERAL NOTES:

1. THIS PRODUCT HAS BEEN DESIGNED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE (2020-7th Edition & 2023-8th Edition) INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).
2. ALL GLAZING PRODUCTS USED WITH THESE MULLIONS MUST MEET THE APPLICABLE FLORIDA BLDG. CODE REQUIREMENTS I.E: WIND LOAD, WATER INFILTRATION, FORCED ENTRY RESISTANCE, SAFEGUARDS ETC.
3. MULLIONS ARE APPROVED FOR IMPACT AND NON-IMPACT APPLICATIONS, INCLUDING WINDOWS, DOORS OR COMBINATIONS MAY BE MULLED.
4. WOOD BUCKS BY OTHERS, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE STRUCTURE.
5. ANCHORS SHALL BE AS LISTED, SPACED AS SHOWN ON DETAILS, ANCHORS EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.
6. ANCHORING OR LOADING CONDITIONS NOT SHOWN IN THESE DETAILS ARE NOT PART OF THIS APPROVAL.
7. A LOAD DURATION INCREASE IN ALLOWABLE STRESS IS USED IN DESIGN OF WOOD ANCHORS ONLY.
8. MATERIALS INCLUDING BUT NOT LIMITED TO STEEL OR METAL SCREWS, THAT COME INTO CONTACT WITH OTHER DISSIMILAR MATERIALS SHALL MEET THE REQUIREMENTS OF THE FLORIDA BLDG. CODE – SECTION 2003.8.4.

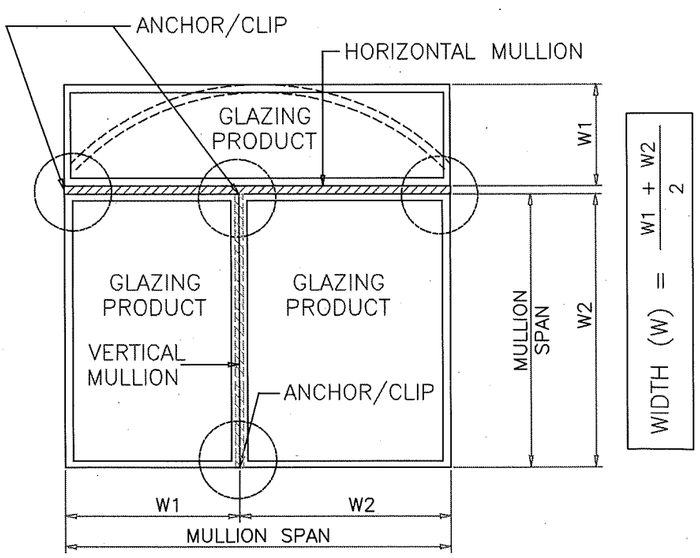
MULLION & CLIP NOTES:

1. FOR MULLIONS WITHOUT REINFORCEMENT REFER TO SHEET 2 OF 10 FOR DETAILS AND NOTES.
   * REFER TO SHEET 3 OF 10 FOR MAX. MULL DESIGN PRESSURE CHARTS
2. FOR MULLIONS WITH STEEL REINFORCEMENT REFER TO SHEET 4 OF 10 FOR DETAILS AND NOTES.
   * REFER TO SHEET 5 OF 10 FOR MAX. MULL DESIGN PRESSURE CHARTS
3. FOR CLIP TYPES AND ANCHOR CONDITIONS REFER TO SHEETS 6, 7, 8, & 9 OF 10 FOR DETAILS AND NOTES.

* REFER TO SHEET 10 OF 10 FOR MAX. ANCHOR DESIGN PRESSURE CHARTS



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



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

TYPICAL MULLION ARRANGEMENTS

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

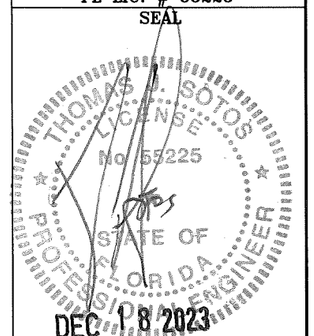
ALUMINUM TUBE MULLIONS

REVISIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

SEAL



DATE

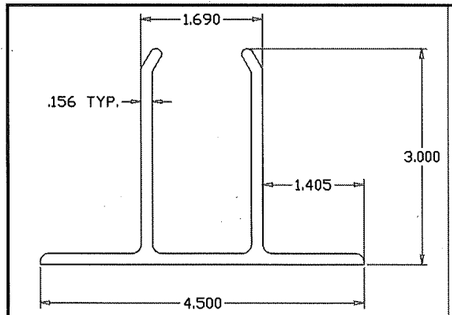
SHEET DESCRIPTION:
TYPICAL MULL ARRANGEMENTS, AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
-	
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 1 OF 10

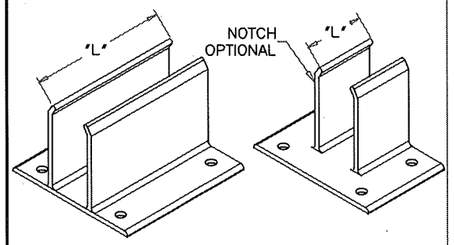
PRODUCT REVISED
As complying with the Florida Building Code
NOA No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

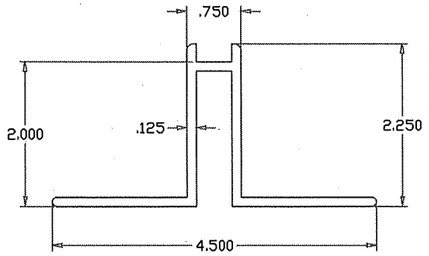
CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

ALUMINUM TUBE MULLIONS

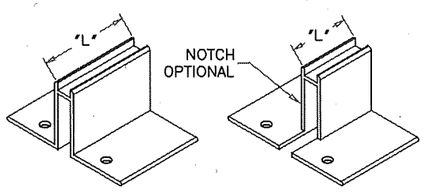


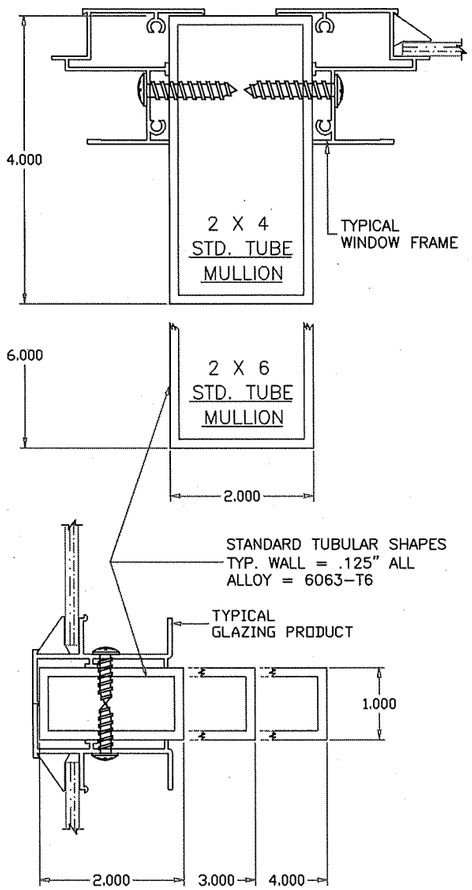
2X MULLION CLIP
6063-T6





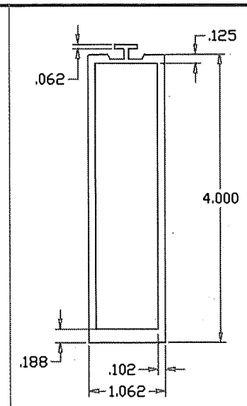
1X MULLION CLIP
6063-T6



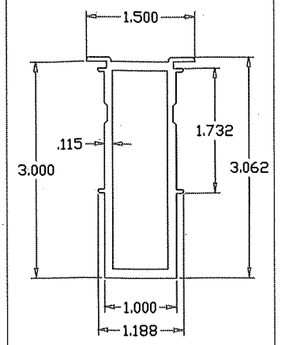


MULLIONS CONTAINING
TYPICAL GLAZING PRODUCTS
HORIZONTAL OR VERTICAL

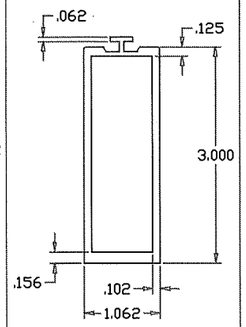
SEE WINDOW OR DOOR APPROVAL FOR
FASTENERS SIZES AND SPACING



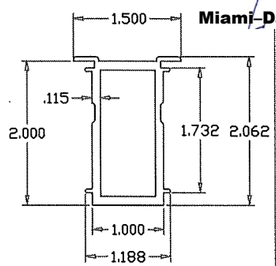
1 X 4
CUSTOM MULLION
6063-T6
Ixx: 2.070 $in.^4$
Sxx: 1.035 $in.^3$
(FLANGE FRAME)



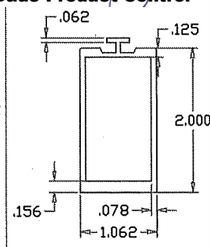
1 X 3
CUSTOM MULLION
6063-T6
Ixx: 1.000 $in.^4$
Sxx: 0.667 $in.^3$
(FIN FRAME)



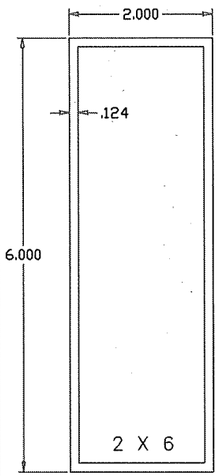
1 X 3
CUSTOM MULLION
6063-T6
Ixx: 0.950 $in.^4$
Sxx: 0.633 $in.^3$
(FLANGE FRAME)



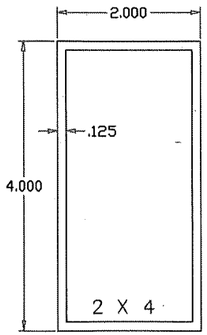
1 X 2
CUSTOM MULLION
6063-T6
Ixx: 0.370 $in.^4$
Sxx: 0.370 $in.^3$
(FIN FRAME)



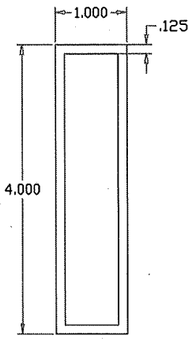
1 X 2
CUSTOM MULLION
6063-T6
Ixx: 0.330 $in.^4$
Sxx: 0.330 $in.^3$
(FLANGE FRAME)



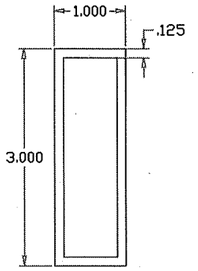
STD. TUBE MULLION
6063-T6
Ixx: 8.280 $in.^4$
Sxx: 2.760 $in.^3$



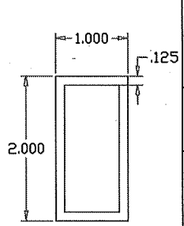
STD. TUBE MULLION
6063-T6
Ixx: 2.980 $in.^4$
Sxx: 1.490 $in.^3$



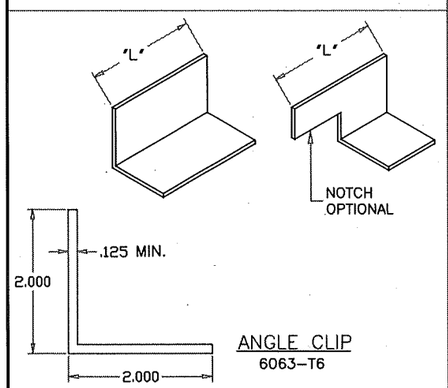
1 X 4
STD. TUBE MULLION
6063-T6
Ixx: 2.070 $in.^4$
Sxx: 1.035 $in.^3$



1 X 3
STD. TUBE MULLION
6063-T6
Ixx: 0.950 $in.^4$
Sxx: 0.633 $in.^3$



1 X 2
STD. TUBE MULLION
6063-T6
Ixx: 0.330 $in.^4$
Sxx: 0.330 $in.^3$



ANGLE CLIP
6063-T6

CLIP LENGTH	
MULL	"L"
1 X 2	1.688"
1 X 3	2.688"
1 X 4	3.688"
2 X 4	3.688"
2 X 6	5.688"

1. ALL CLIPS AND ANGLES ARE TO FIT SNUG INTO TUBE MULLIONS.
2. WHERE ANGLES ARE NOT FIT SNUG INTO TUBE MULLIONS, SEE OPTIONAL ANCHOR DETAIL AT SHEET 9 OF 10.

INSTRUCTIONS:

USE CHARTS AND GRAPHS AS FOLLOWS.

STEP 1 DETERMINE DESIGN LOAD REQUIRED FOR PARTICULAR OPENING.

STEP 2 USE APPROVED GLAZING PRODUCTS MEETING ABOVE LOAD REQUIREMENTS.

STEP 3 USE CONNECTION TO MULLION AS PER PRODUCT APPROVAL.

STEP 4 SPECIFY MAXIMUM SHIM SPACING.

STEP 5 USING CHARTS ON SHEET 3 OF 10 SELECT MULLION SIZE WITH DESIGN RATING MORE THAN DESIGN LOAD SPECIFIED IN STEP 1 ABOVE.

STEP 6 USING ANCHOR TYPES ON SHEET 6 THRU 9 AND ANCHOR CHARTS ON SHEET 9, SELECT ANCHOR TYPE WITH DESIGN RATING MORE THAN THE DESIGN LOADS SPECIFIED IN STEP 1 ABOVE.

RECTANGULAR ALUMINUM TUBE MULLIONS
USING MULLION PROPERTIES ONLY

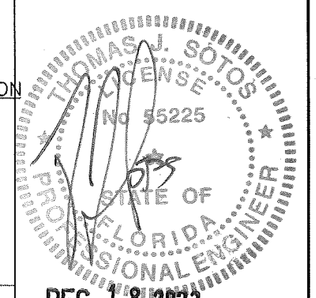
THESE MULLIONS ARE RATED FOR LARGE MISSILE IMPACT AND CAN BE USED WITH ALL CWS'S MIAMI-DADE COUNTY APPROVED IMPACT AND NON-IMPACT PRODUCTS.

NOTES:

1. REFER TO THE GENERAL NOTES ON SHEET 1 OF 10 FOR BUILDING CODE COMPLIANCE.
2. MULLIONS MAY BE ORIENTED VERTICALLY OR HORIZONTALLY.
3. REFER TO SHEET 1 OF 10 FOR TYPICAL MULLION ARRANGEMENTS OR STACK CONFIGURATIONS.

REVISIONS			
NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225
SEAL



DATE: DEC 18 2023

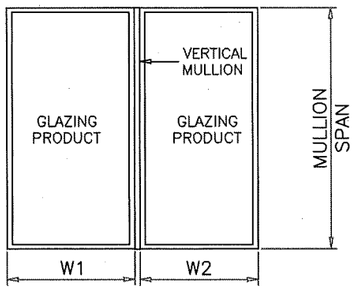
SHEET DESCRIPTION:
MULL AND CLIPS CROSS SECTIONS, AND GENERAL NOTES

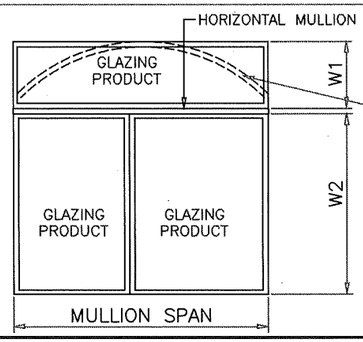
DRAWN BY: NELSON ERAZO	DATE: 11/17/2023
REV. BY:	DATE:
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 2 OF 10

Width (w)	MULL SPAN	TUBE MULLIONS 1 X 2	1 X 3	1 X 4	2 X 4	2 X 6
18		125.0	125.0	125.0	125.0	125.0
24		125.0	125.0	125.0	125.0	125.0
30		123.0	125.0	125.0	125.0	125.0
36		102.5	125.0	125.0	125.0	125.0
42		87.9	125.0	125.0	125.0	125.0
48	38- 3/8"	76.9	125.0	125.0	125.0	125.0
54		68.3	137.6	125.0	125.0	125.0
60		61.5	123.9	125.0	125.0	125.0
66		55.9	112.6	125.0	125.0	125.0
72		51.3	103.2	125.0	125.0	125.0
78		47.3	95.3	125.0	125.0	125.0
18		89.3	125.0	125.0	125.0	125.0
24		67.0	125.0	125.0	125.0	125.0
30		53.6	142.3	125.0	125.0	125.0
36		44.6	118.6	125.0	125.0	125.0
42		38.3	101.7	125.0	125.0	125.0
48	50-5/8"	33.5	89.0	145.4	125.0	125.0
54		29.8	79.1	129.2	125.0	125.0
60		26.8	71.2	116.3	125.0	125.0
66		24.4	64.7	105.7	125.0	125.0
72		22.3	59.3	96.9	139.5	125.0
78		20.6	54.7	89.5	128.8	125.0
18		62.6	125.0	125.0	125.0	125.0
24		46.9	135.1	125.0	125.0	125.0
30		37.5	108.1	125.0	125.0	125.0
36		31.3	90.1	125.0	125.0	125.0
42		26.8	77.2	131.1	125.0	125.0
48	57"	23.5	67.5	114.7	125.0	125.0
54		20.9	60.0	101.9	146.8	125.0
60		18.8	54.0	91.7	132.1	125.0
66		17.1	49.1	83.4	120.1	125.0
72		15.6	45.0	76.5	110.1	125.0
78		-	41.6	70.6	101.6	125.0
18		46.3	133.4	125.0	125.0	125.0
24		34.8	100.0	125.0	125.0	125.0
30		27.8	80.0	125.0	125.0	125.0
36		23.2	66.7	125.2	125.0	125.0
42		19.9	57.2	107.3	125.0	125.0
48	63"	17.4	50.0	93.9	135.1	125.0
54		15.4	44.5	83.4	120.1	125.0
60		-	40.0	75.1	108.1	125.0
66		-	36.4	68.3	98.3	125.0
72		-	33.3	62.6	90.1	125.0
78		-	30.8	57.8	83.2	125.0

Width (w)	MULL SPAN	TUBE MULLIONS 1 X 2	1 X 3	1 X 4	2 X 4	2 X 6
18		28.3	81.5	125.0	125.0	125.0
24		21.2	61.1	133.2	125.0	125.0
30		17.0	48.9	106.5	125.0	125.0
36		-	40.7	88.8	127.8	125.0
42		-	34.9	76.1	109.5	125.0
48	74-1/4"	-	30.6	66.6	95.8	125.0
54		-	27.2	59.2	85.2	125.0
60		-	24.4	53.3	76.7	144.2
66		-	22.2	48.4	69.7	131.1
72		-	20.4	44.4	63.9	120.2
78		-	18.8	41.0	59.0	110.9
18		-	56.3	122.6	125.0	125.0
24		-	42.2	92.0	132.4	125.0
30		-	33.8	73.6	105.9	125.0
36		-	28.1	61.3	88.3	125.0
42		-	24.1	52.6	75.7	125.0
48	84"	-	21.1	46.0	66.2	140.8
54		-	18.8	40.9	58.8	125.2
60		-	16.9	36.8	53.0	112.7
66		-	15.3	33.4	48.1	102.4
72		-	-	30.7	44.1	93.9
78		-	-	28.3	40.7	86.7
18		-	37.7	82.1	118.3	125.0
24		-	28.3	61.6	88.7	125.0
30		-	22.6	49.3	71.0	125.0
36		-	18.8	41.1	59.1	143.8
42		-	16.2	35.2	50.7	123.2
48	96"	-	-	30.8	44.3	107.8
54		-	-	27.4	39.4	95.8
60		-	-	24.6	35.5	86.3
66		-	-	22.4	32.3	78.4
72		-	-	20.5	29.6	71.9
78		-	-	19.0	27.3	66.3
18		-	26.5	57.7	83.1	125.0
24		-	19.9	43.3	62.3	125.0
30		-	15.9	34.6	49.8	136.3
36		-	-	28.8	41.5	113.6
42		-	-	24.7	35.6	97.4
48	108"	-	-	21.6	31.1	85.2
54		-	-	19.2	27.7	75.7
60		-	-	17.3	24.9	68.1
66		-	-	15.7	22.7	62.0
72		-	-	-	20.8	56.8
78		-	-	-	19.2	52.4

Width (w)	MULL SPAN	TUBE MULLIONS 1 X 2	1 X 3	1 X 4	2 X 4	2 X 6
18		-	19.3	42.1	60.5	125.0
24		-	-	31.5	45.4	126.2
30		-	-	25.2	36.3	100.9
36		-	-	21.0	30.3	84.1
42		-	-	18.0	25.9	72.1
48	120"	-	-	15.8	22.7	63.1
54		-	-	-	20.2	56.1
60		-	-	-	18.2	50.5
66		-	-	-	16.5	45.9
72		-	-	-	15.1	42.1
78		-	-	-	-	38.8
18		-	-	31.6	45.5	126.4
24		-	-	23.7	34.1	94.8
30		-	-	19.0	27.3	75.8
36		-	-	15.8	22.7	63.2
42		-	-	-	19.5	54.2
48	132"	-	-	-	17.1	47.4
54		-	-	-	15.2	42.1
60		-	-	-	-	37.9
66		-	-	-	-	34.5
72		-	-	-	-	31.6
78		-	-	-	-	29.2
18		-	-	24.3	35.0	97.4
24		-	-	18.3	26.3	73.0
30		-	-	-	21.0	58.4
36		-	-	-	17.5	48.7
42		-	-	-	15.0	41.7
48	144"	-	-	-	-	36.5
54		-	-	-	-	32.5
60		-	-	-	-	29.2
66		-	-	-	-	26.6
72		-	-	-	-	24.3
78		-	-	-	-	22.5
18		-	-	-	31.0	86.1
24		-	-	-	23.3	64.6
30		-	-	-	18.6	51.7
36		-	-	-	15.5	43.1
42		-	-	-	-	36.9
48	150"	-	-	-	-	32.3
54		-	-	-	-	28.7
60		-	-	-	-	25.8
66		-	-	-	-	23.5
72		-	-	-	-	21.5
78		-	-	-	-	19.9





TYPICAL MULLION ARRANGEMENTS

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

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

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

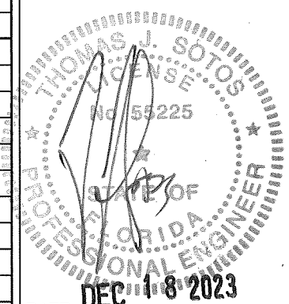
ALUMINUM TUBE MULLIONS

REVISIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

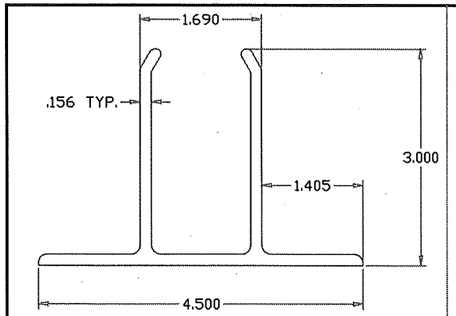
SEAL



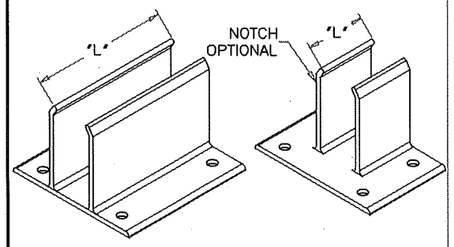
DATE

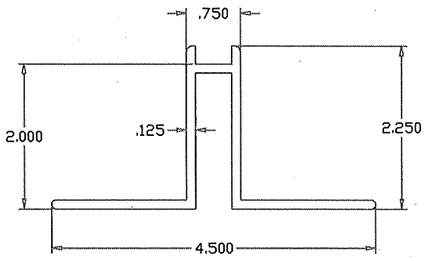
SHEET DESCRIPTION:
UNREINFORCED TUBE MULLIONS DESIGN PRESSURE CHARTS AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
.	
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 3 OF 10

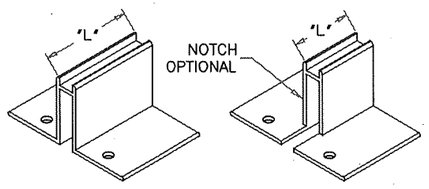


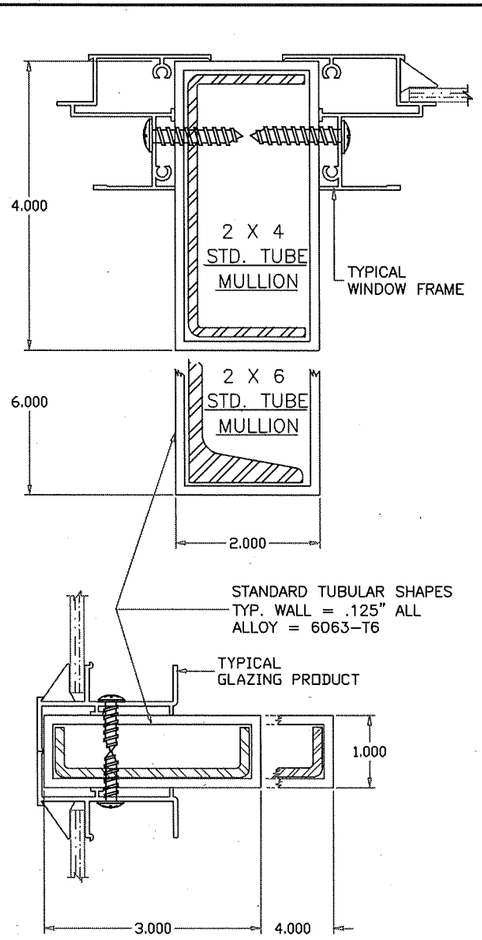
2X MULLION CLIP
6063–T6





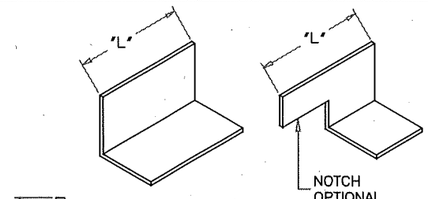
1X MULLION CLIP
6063–T6





MULLIONS CONTAINING
TYPICAL GLAZING PRODUCTS
HORIZONTAL OR VERTICAL

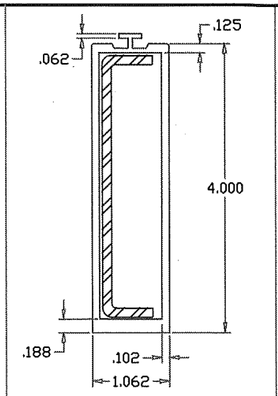
SEE WINDOW OR DOOR APPROVAL FOR
FASTENERS SIZES AND SPACING



ANGLE CLIP
6063–T6

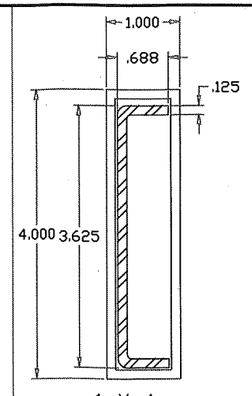
CLIP LENGTH	
MULL	"L"
1 X 2	1.688"
1 X 3	2.688"
1 X 4	3.688"
2 X 4	3.688"
2 X 6	5.688"

1. ALL CLIPS AND ANGLES ARE TO FIT SNUG INTO TUBE MULLIONS.
2. WHERE ANGLES ARE NOT FIT SNUG INTO TUBE MULLIONS, SEE OPTIONAL ANCHOR DETAIL AT SHEET 9 OF 10.



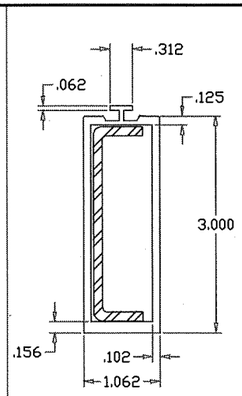
1 X 4
CUSTOM MULLION
6063–T6

Ixx: 4.709 in.^{4}
Sxx: 2.355 in.^{3}
(FLANGE FRAME)



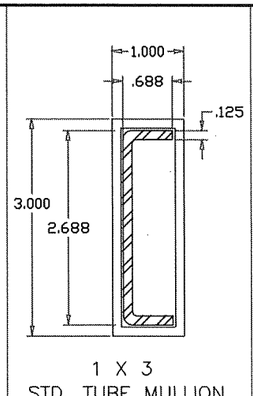
1 X 4
STD. TUBE MULLION
6063–T6

Ixx: 4.709 in.^{4}
Sxx: 2.355 in.^{3}



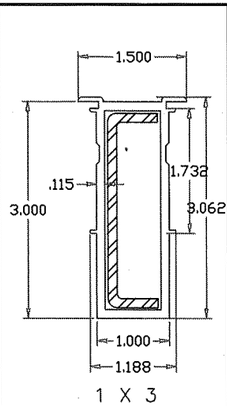
1 X 3
CUSTOM MULLION
6063–T6

Ixx: 2.168 in.^{4}
Sxx: 1.445 in.^{3}
(FLANGE FRAME)



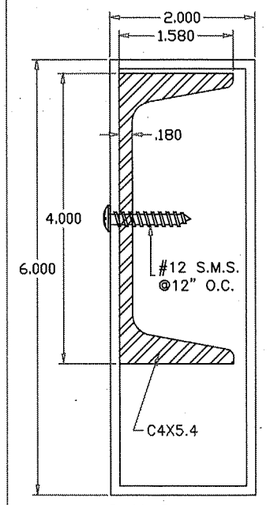
1 X 3
STD. TUBE MULLION
6063–T6

Ixx: 2.168 in.^{4}
Sxx: 1.445 in.^{3}



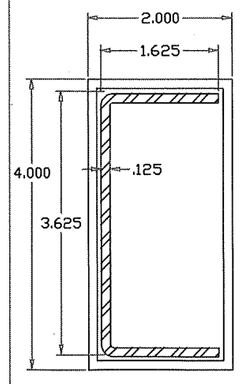
1 X 3
CUSTOM MULLION
6063–T6

Ixx: 2.218 in.^{4}
Sxx: 1.479 in.^{3}
(FIN FRAME)



2 X 6
STD. TUBE MULLION
6063–T6

Ixx:19.648 in.^{4}
Sxx: 6.549 in.^{3}



2 X 4
STD. TUBE MULLION
6063–T6

Ixx: 7.649 in.^{4}
Sxx: 3.825 in.^{3}

INSTRUCTIONS:

USE CHARTS AND GRAPHS AS FOLLOWS.

STEP 1 DETERMINE DESIGN LOAD REQUIRED FOR PARTICULAR OPENING.

STEP 2 USE APPROVED GLAZING PRODUCTS MEETING ABOVE LOAD REQUIREMENTS.

STEP 3 USE CONNECTION TO MULLION AS PER PRODUCT APPROVAL.

STEP 4 SPECIFY MAXIMUM SHIM SPACING.

STEP 5 USING CHARTS ON SHEET 5 OF 10 SELECT MULLION SIZE WITH DESIGN RATING MORE THAN DESIGN LOAD SPECIFIED IN STEP 1 ABOVE.

STEP 6 USING ANCHOR TYPES ON SHEET 6 THRU 9 AND ANCHOR CHARTS ON SHEET 9, SELECT ANCHOR TYPE WITH DESIGN RATING MORE THAN THE DESIGN LOADS SPECIFIED IN STEP 1 ABOVE.

RECTANGULAR ALUMINUM TUBE MULLIONS
USING MULLION PROPERTIES ONLY

THESE MULLIONS ARE RATED FOR LARGE MISSILE IMPACT AND CAN BE USED WITH ALL CWS'S MIAMI–DADE COUNTY APPROVED IMPACT AND NON–IMPACT PRODUCTS.

NOTES:

1. REFER TO THE GENERAL NOTES ON SHEET 1 OF 10 FOR BUILDING CODE COMPLIANCE.
2. MULLIONS MAY BE ORIENTED VERTICALLY OR HORIZONTALLY.
3. REFER TO SHEET 1 OF 10 FOR TYPICAL MULLION ARRANGEMENTS OR STACK CONFIGURATIONS.

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami–Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

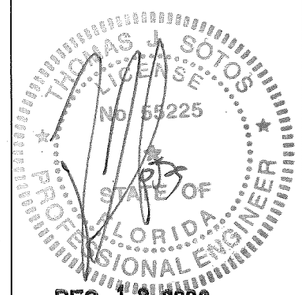
ALUMINUM TUBE MULLIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

REVISIONS

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

SEAL



DATE: DEC 18 2023

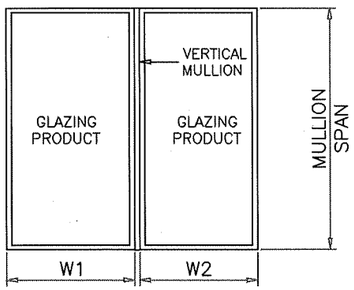
SHEET DESCRIPTION:
MULL & CLIPS CROSS SECTIONS, REINFORCEMENTS AND GENERAL NOTES

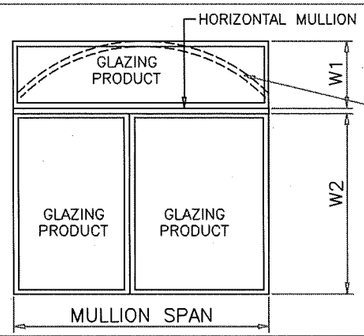
DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 4 OF 10

		STEEL REINFORCED TUBE MULLIONS			
Width (w)	MULL SPAN	1 X 3	1 X 4	2 X 4	2 X 6
18	38- 3/8"	125.0	125.0	125.0	125.0
24		125.0	125.0	125.0	125.0
30		125.0	125.0	125.0	125.0
36		125.0	125.0	125.0	125.0
42		125.0	125.0	125.0	125.0
48		125.0	125.0	125.0	125.0
54		125.0	125.0	125.0	125.0
60		125.0	125.0	125.0	125.0
66		125.0	125.0	125.0	125.0
72		125.0	125.0	125.0	125.0
78		125.0	125.0	125.0	125.0
18	50-5/8"	125.0	125.0	125.0	125.0
24		125.0	125.0	125.0	125.0
30		125.0	125.0	125.0	125.0
36		125.0	125.0	125.0	125.0
42		125.0	125.0	125.0	125.0
48		125.0	125.0	125.0	125.0
54		125.0	125.0	125.0	125.0
60		125.0	125.0	125.0	125.0
66		147.7	125.0	125.0	125.0
72		135.3	125.0	125.0	125.0
78		124.9	125.0	125.0	125.0
18	57"	125.0	125.0	125.0	125.0
24		125.0	125.0	125.0	125.0
30		125.0	125.0	125.0	125.0
36		125.0	125.0	125.0	125.0
42		125.0	125.0	125.0	125.0
48		125.0	125.0	125.0	125.0
54		137.0	125.0	125.0	125.0
60		123.3	125.0	125.0	125.0
66		112.1	125.0	125.0	125.0
72		102.8	125.0	125.0	125.0
78		94.8	125.0	125.0	125.0
18	63"	125.0	125.0	125.0	125.0
24		125.0	125.0	125.0	125.0
30		125.0	125.0	125.0	125.0
36		125.0	125.0	125.0	125.0
42		130.5	125.0	125.0	125.0
48		114.2	125.0	125.0	125.0
54		101.5	125.0	125.0	125.0
60		91.3	125.0	125.0	125.0
66		83.0	125.0	125.0	125.0
72		76.1	142.4	125.0	125.0
78		70.2	131.4	125.0	125.0

		STEEL REINFORCED TUBE MULLIONS			
Width (w)	MULL SPAN	1 X 3	1 X 4	2 X 4	2 X 6
18	74-1/4"	125.0	125.0	125.0	125.0
24		139.5	125.0	125.0	125.0
30		111.6	125.0	125.0	125.0
36		93.0	125.0	125.0	125.0
42		79.7	125.0	125.0	125.0
48		69.7	125.0	125.0	125.0
54		62.0	134.6	125.0	125.0
60		55.8	121.2	125.0	125.0
66		50.7	110.1	125.0	125.0
72		46.5	101.0	125.0	125.0
78		42.9	93.2	125.0	125.0
18	84"	128.4	125.0	125.0	125.0
24		96.3	125.0	125.0	125.0
30		77.1	125.0	125.0	125.0
36		64.2	139.5	125.0	125.0
42		55.0	119.5	125.0	125.0
48		48.2	104.6	125.0	125.0
54		42.8	93.0	125.0	125.0
60		38.5	83.7	135.9	125.0
66		35.0	76.1	123.6	125.0
72		32.1	69.7	113.3	125.0
78		29.6	64.4	104.6	125.0
18	96"	86.0	125.0	125.0	125.0
24		64.5	140.1	125.0	125.0
30		51.6	112.1	125.0	125.0
36		43.0	93.4	125.0	125.0
42		36.9	80.1	130.1	125.0
48		32.3	70.1	113.8	125.0
54		28.7	62.3	101.2	125.0
60		25.8	56.1	91.1	125.0
66		23.5	51.0	82.8	125.0
72		21.5	46.7	75.9	125.0
78		19.9	43.1	70.0	125.0
18	108"	60.4	131.2	125.0	125.0
24		45.3	98.4	125.0	125.0
30		36.3	78.7	127.9	125.0
36		30.2	65.6	106.6	125.0
42		25.9	56.2	91.4	125.0
48		22.7	49.2	79.9	125.0
54		20.1	43.7	71.1	125.0
60		18.1	39.4	64.0	125.0
66		16.5	35.8	58.1	147.0
72		15.1	32.8	53.3	134.8
78		-	30.3	49.2	124.4

		STEEL REINFORCED TUBE MULLIONS			
Width (w)	MULL SPAN	1 X 3	1 X 4	2 X 4	2 X 6
18	120"	44.0	95.7	125.0	125.0
24		33.0	71.8	116.6	125.0
30		26.4	57.4	93.2	125.0
36		22.0	47.8	77.7	125.0
42		18.9	41.0	66.6	125.0
48		16.5	35.9	58.3	149.7
54		-	31.9	51.8	133.1
60		-	28.7	46.6	119.8
66		-	26.1	42.4	108.9
72		-	23.9	38.9	99.8
78		-	22.1	35.9	92.1
18	132"	33.1	71.9	116.8	125.0
24		24.8	53.9	87.6	125.0
30		19.9	43.1	70.1	125.0
36		16.5	35.9	58.4	125.0
42		-	30.8	50.0	128.5
48		-	27.0	43.8	112.5
54		-	24.0	38.9	100.0
60		-	21.6	35.0	90.0
66		-	19.6	31.8	81.8
72		-	18.0	29.2	75.0
78		-	16.6	26.9	69.2
18	144"	25.5	55.4	89.9	125.0
24		19.1	41.5	67.5	125.0
30		15.3	33.2	54.0	138.6
36		-	27.7	45.0	115.5
42		-	23.7	38.5	99.0
48		-	20.8	33.7	86.6
54		-	18.5	30.0	77.0
60		-	16.6	27.0	69.3
66		-	15.1	24.5	63.0
72		-	-	22.5	57.8
78		-	-	20.8	53.3
18	150"	22.6	49.0	79.6	125.0
24		16.9	36.7	59.7	125.0
30		-	29.4	47.7	122.6
36		-	24.5	39.8	102.2
42		-	21.0	34.1	87.6
48		-	18.4	29.8	76.6
54		-	16.3	26.5	68.1
60		-	-	23.9	61.3
66		-	-	21.7	55.7
72		-	-	19.9	51.1
78		-	-	18.4	47.2





TYPICAL MULLION ARRANGEMENTS

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

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

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

ALUMINUM TUBE MULLIONS

REVISIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

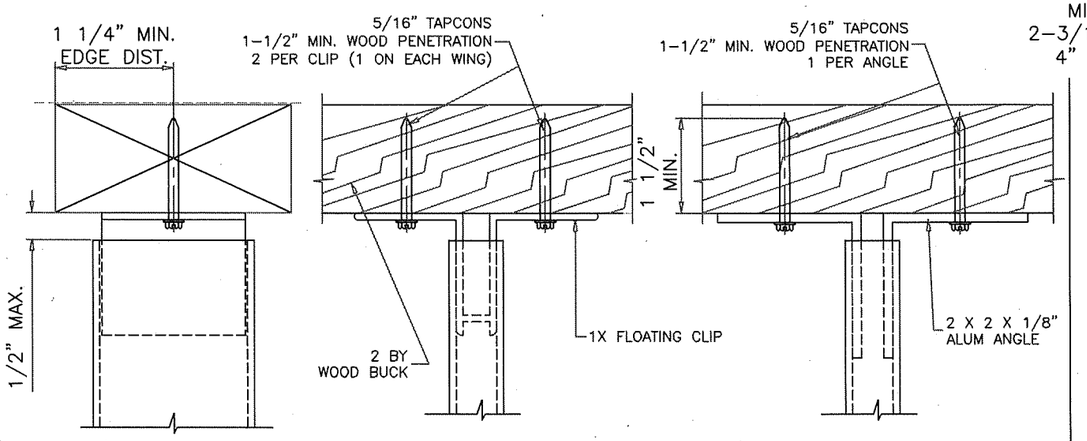
SEAL

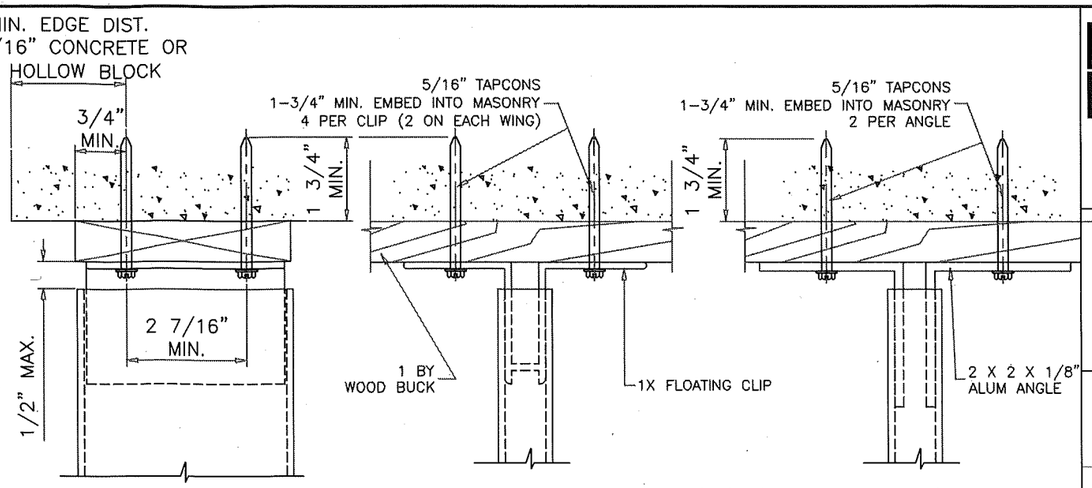
THOMAS J. SOTOS LICENSE No. 55225 STATE OF FLORIDA PROFESSIONAL ENGINEER

DATE DEC 18 2023

SHEET DESCRIPTION:
REINFORCED TUBE MULLIONS DESIGN PRESSURE CHARTS AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
-	
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 5 OF 10



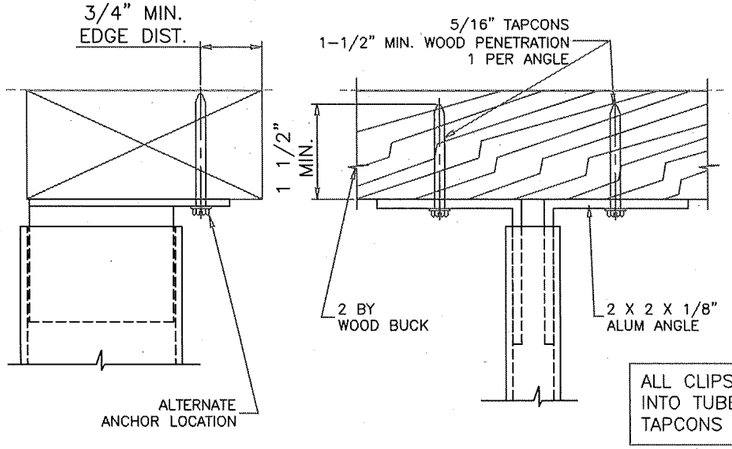


ANCHORS TYPE 'D' (INTO BLOCK)

ANCHORS TYPE 'G' (INTO CONCRETE)

4 ANCHORS THRU 1X BUCK
INTO CONCRETE OR BLOCK
1"x4" & 2"x4" MULL

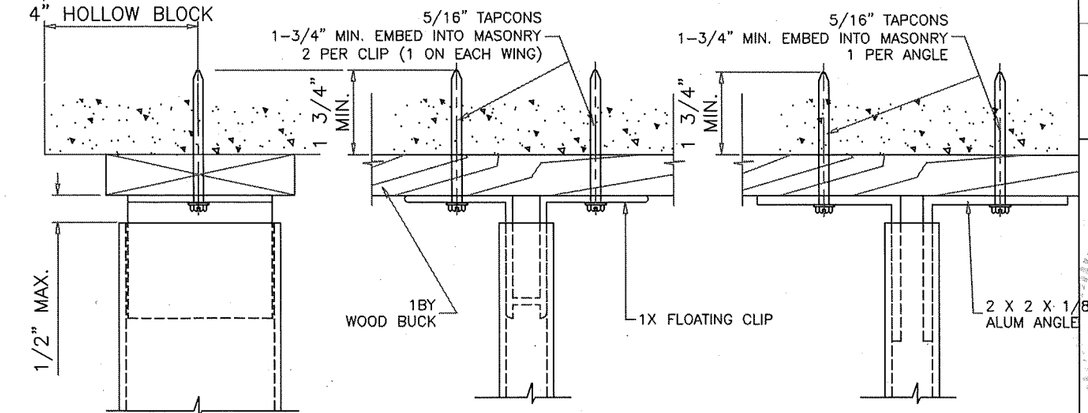
ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.
TAPCONS MAY BE HEX OR FLAT HEAD.



ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.
TAPCONS MAY BE HEX OR FLAT HEAD.

ANCHORS TYPE 'A'

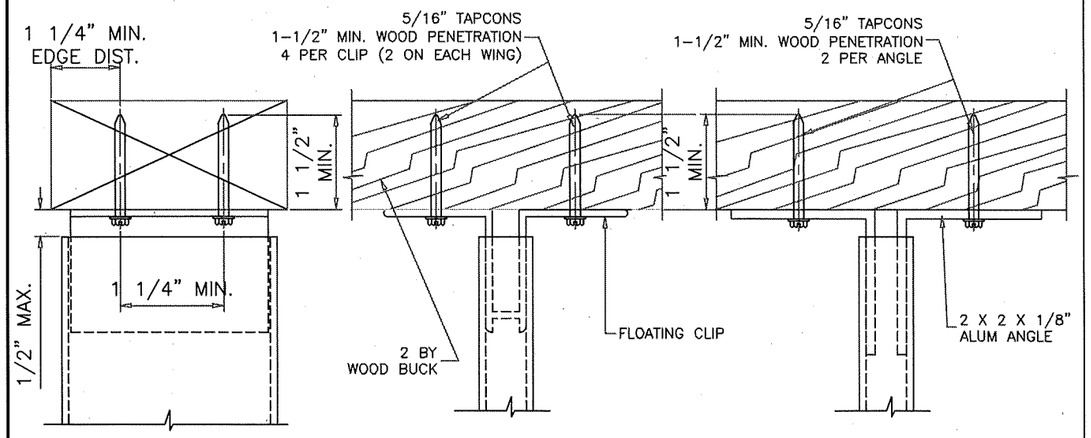
2 ANCHORS INTO WOOD



ANCHORS TYPE 'C' (INTO BLOCK)

ANCHORS TYPE 'F' (INTO CONCRETE)

2 ANCHORS THRU 1X BUCK
INTO CONCRETE OR BLOCK



ANCHORS TYPE 'B'

4 ANCHORS INTO WOOD

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

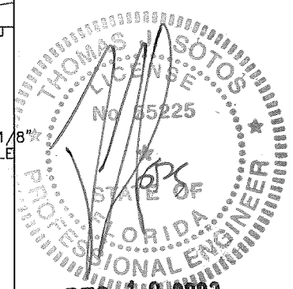
ALUMINUM TUBE MULLIONS

REVISIONS

NO.	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

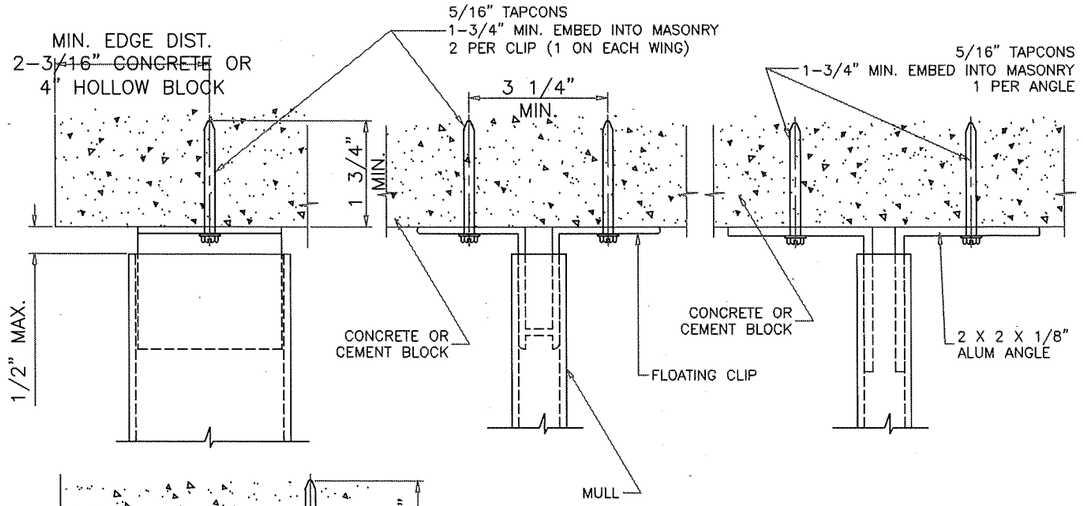
SEAL

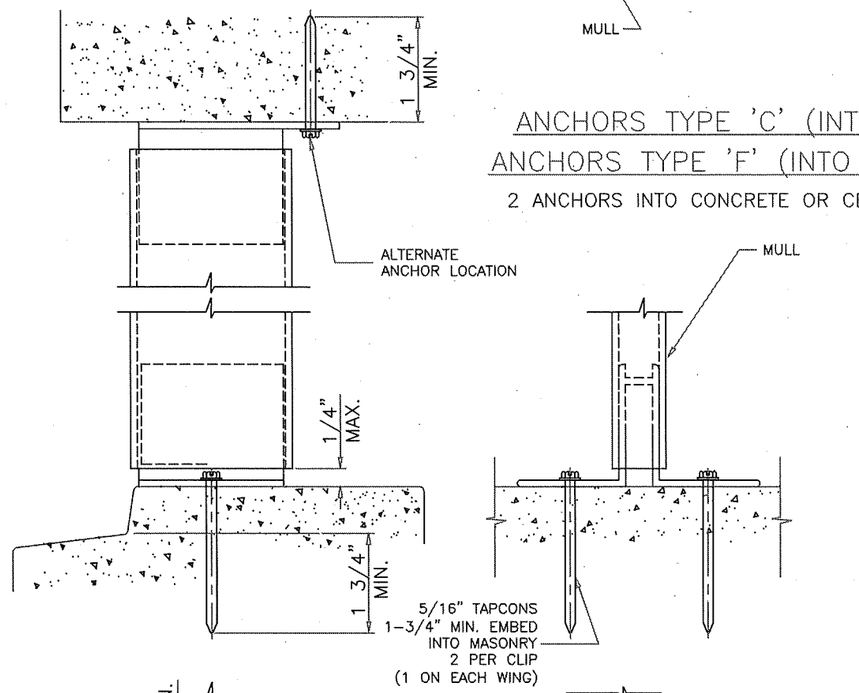


DATE DEC 18 2023

SHEET DESCRIPTION:
ANCHOR/CLIP TYPES, INSTALLATION DETAILS, AND GENERAL NOTES

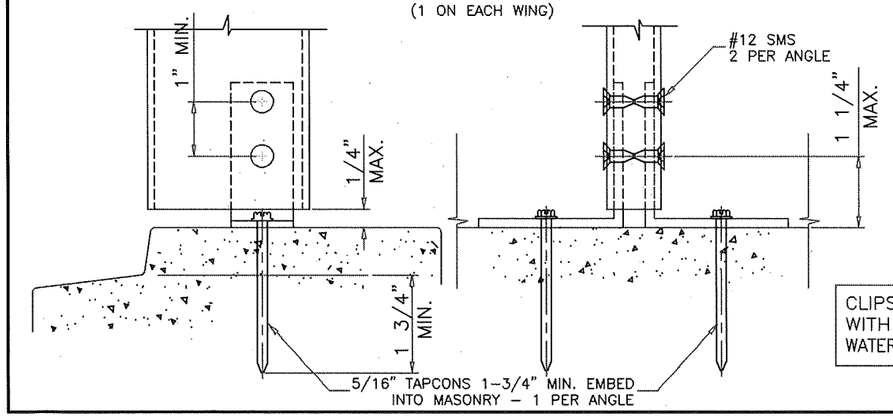
DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 6 OF 10





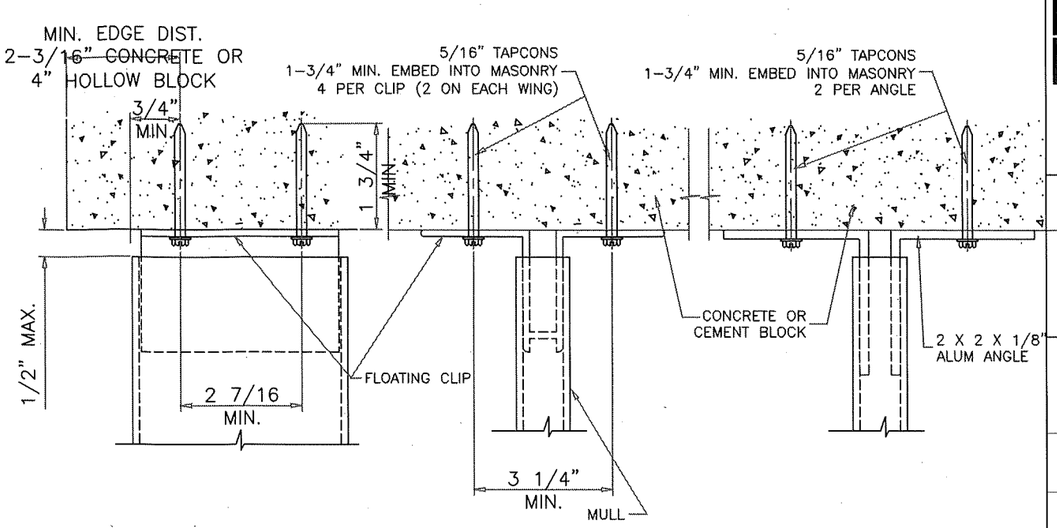
ANCHORS TYPE 'C' (INTO BLOCK)
ANCHORS TYPE 'F' (INTO CONCRETE)

2 ANCHORS INTO CONCRETE OR CEMENT BLOCK



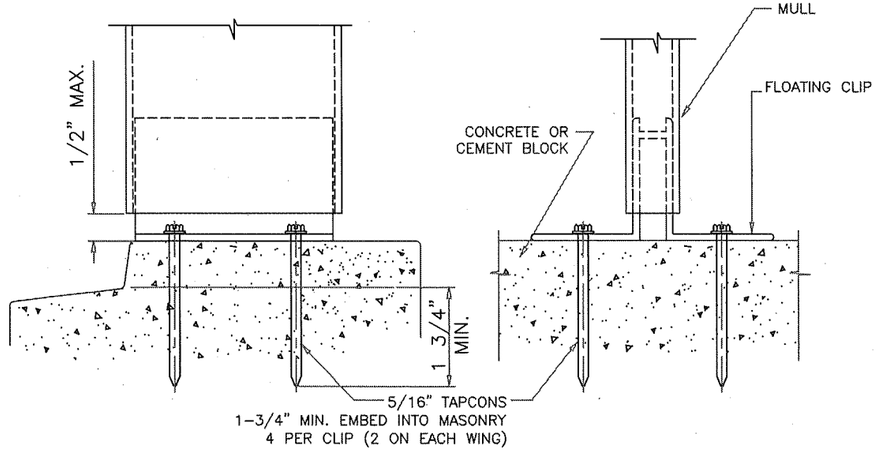
ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.
TAPCONS MAY BE HEX OR FLAT HEAD.

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 'D' (INTO BLOCK)
ANCHORS TYPE 'G' (INTO CONCRETE)

4 ANCHORS INTO CONCRETE OR CEMENT BLOCK
1"x4" & 2"x4" MULL



PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

ALUMINUM TUBE MULLIONS

REVISIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

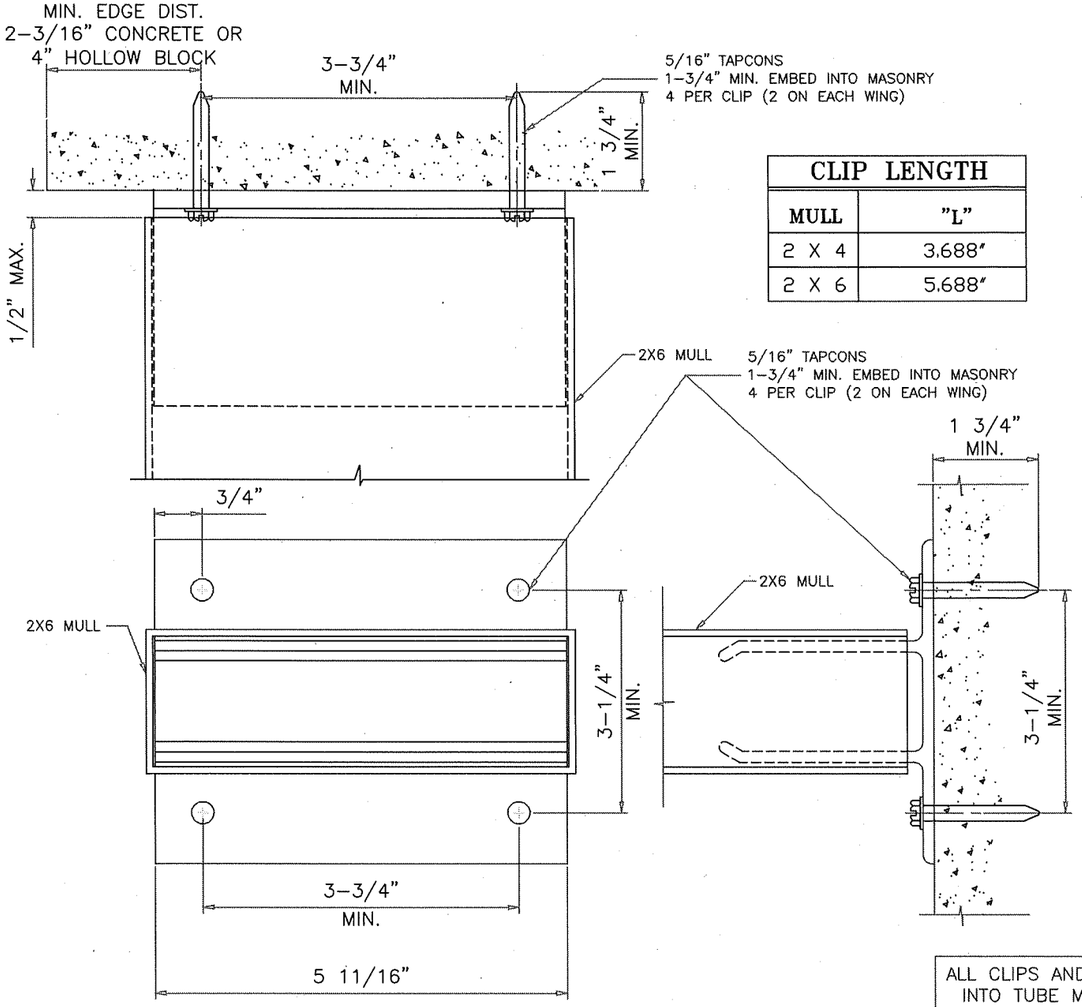
SEAL

THOMAS J. SOTOS LICENSE No. 55225 STATE OF FLORIDA PROFESSIONAL ENGINEER

DATE DEC 18 2023

SHEET DESCRIPTION:
ANCHOR/CLIP TYPES, INSTALLATION DETAILS, AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY: .	DATE:
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 7 OF 10



CLIP LENGTH	
MULL	"L"
2 X 4	3.688"
2 X 6	5.688"

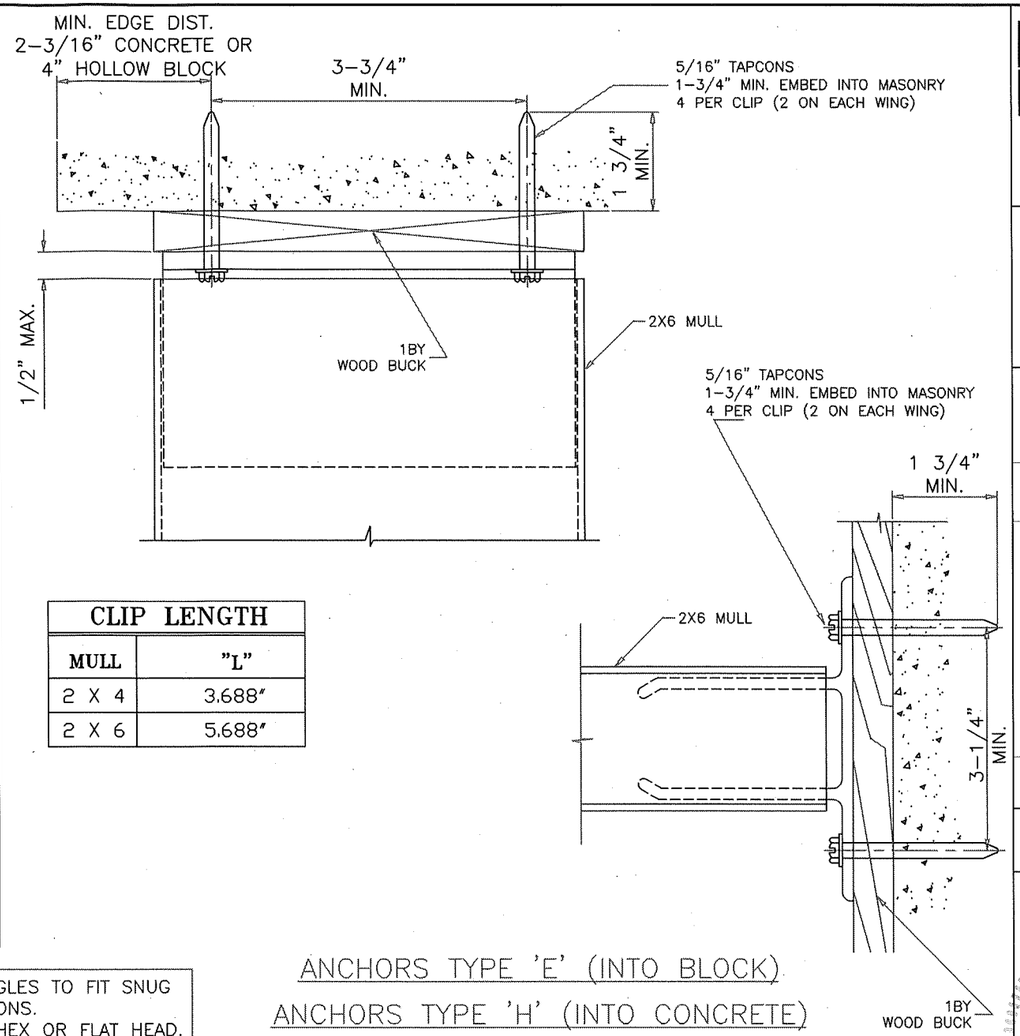
ANCHORS TYPE 'E' (INTO BLOCK)

ANCHORS TYPE 'H' (INTO CONCRETE)

ANCHORS INTO CONCRETE or BLOCK
2"X6" MULL SHOWN

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.
TAPCONS MAY BE HEX OR FLAT HEAD.

CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED WITH ALKALI–RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR WATER–WHITE METHACRYLATE LACQUER.



CLIP LENGTH	
MULL	"L"
2 X 4	3.688"
2 X 6	5.688"

ANCHORS TYPE 'E' (INTO BLOCK)

ANCHORS TYPE 'H' (INTO CONCRETE)

4 ANCHORS THRU 1X BUCK
INTO CONCRETE OR BLOCK
2"X6" MULL SHOWN

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami–Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
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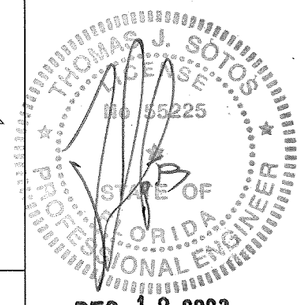
ALUMINUM TUBE MULLIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

REVISIONS

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

SEAL

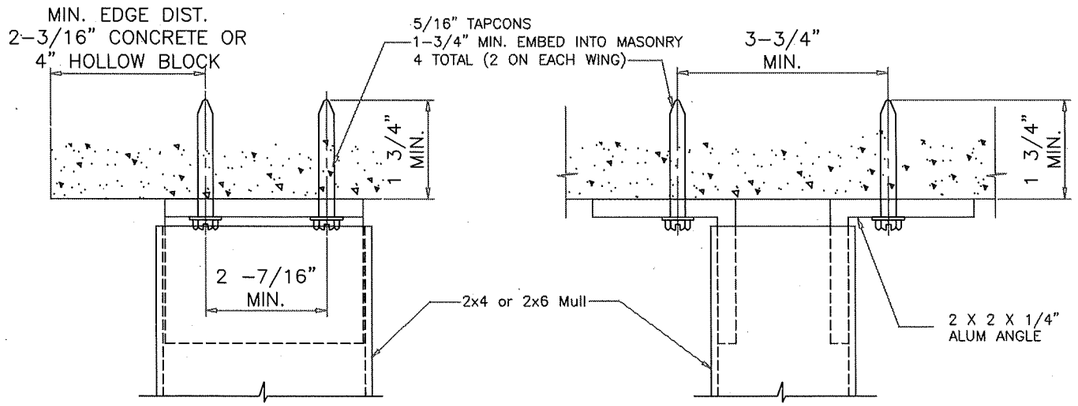


DATE DEC 18 2023

SHEET DESCRIPTION:
ANCHOR/CLIP TYPES, INSTALLATION DETAILS, AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
.	

DWG #:	REV #:
CWS-1229	
SCALE: AS NOTED	SHEET 8 OF 10

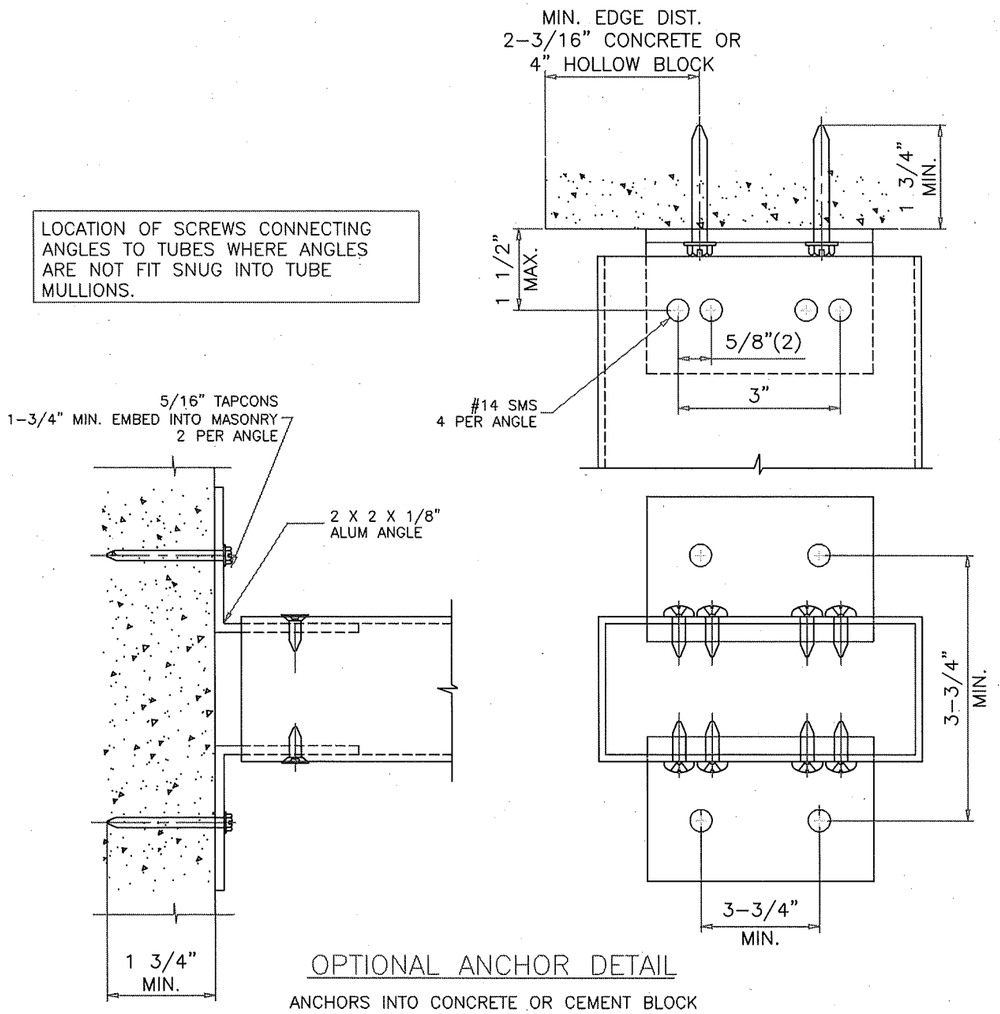


CLIPS OR ANGLES CONNECTED DIRECTLY TO MASONRY TO BE PROTECTED WITH ALKALI-RESISTANT COATINGS, SUCH AS BITUMINOUS PAINT OR WATER-WHITE METHACRYLATE LACQUER.

CLIP LENGTH	
MULL	"L"
1 X 2	1.688"
1 X 3	2.688"
1 X 4	3.688"
2 X 4	3.688"
2 X 6	5.688"

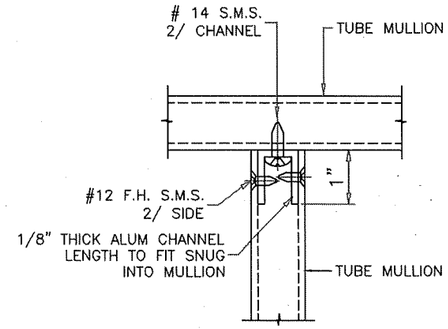
1. ALL CLIPS AND ANGLES ARE TO FIT SNUG INTO TUBE MULLIONS.
2. WHERE ANGLES ARE NOT FIT SNUG INTO TUBE MULLIONS, SEE OPTIONAL ANCHOR DETAIL AT SHEET 9 OF 10.

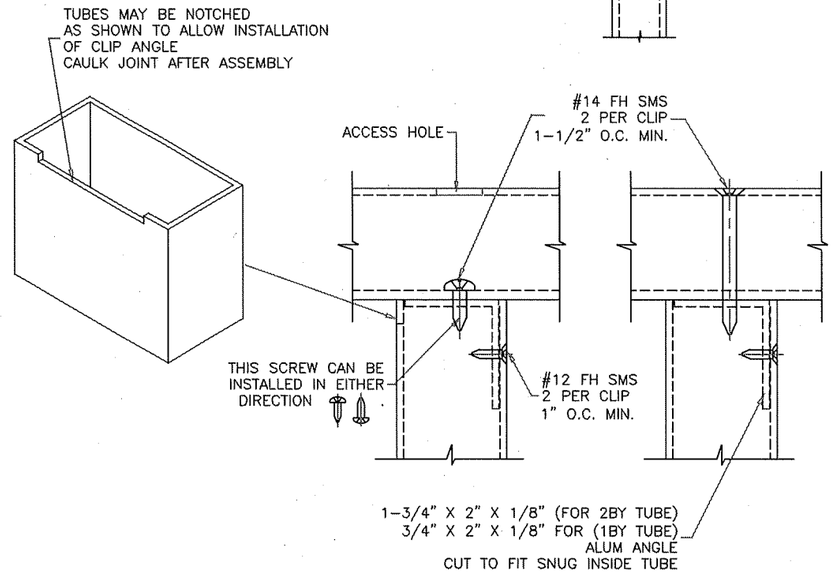
LOCATION OF SCREWS CONNECTING ANGLES TO TUBES WHERE ANGLES ARE NOT FIT SNUG INTO TUBE MULLIONS.



OPTIONAL ANCHOR DETAIL

ANCHORS INTO CONCRETE OR CEMENT BLOCK





ANCHORS TYPE 'I'

METAL TO METAL CONNECTION

USE CHARTS FOR ANCHOR TYPE 'I' TO VERIFY CAPACITY OF CONNECTION

ALL CLIPS AND ANGLES TO FIT SNUG INTO TUBE MULLIONS.
TAPCONS MAY BE HEX OR FLAT HEAD.

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

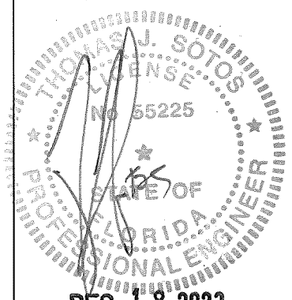
ALUMINUM TUBE MULLIONS

REVISIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

SEAL



DATE DEC 18 2023

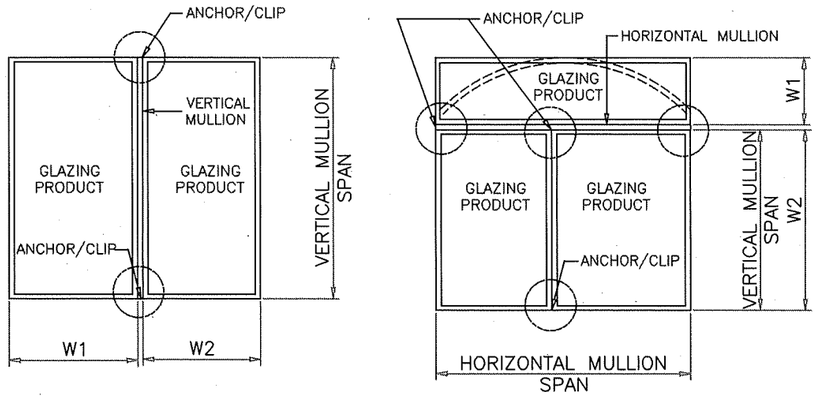
SHEET DESCRIPTION:
ANCHOR/CLIP TYPES, INSTALLATION DETAILS, AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
DWG #:	REV #:
CWS-1229	
SCALE:	SHEET
AS NOTED	9 OF 10

Width (w)	MULL SPAN	ANCHOR TYPES A	B	C	D	E	F	G	H	I
18		125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		131.65	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
30		105.32	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
36		87.77	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
42		75.23	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
48	38 3/8	65.82	131.65	125.00	125.00	125.00	125.00	125.00	125.00	125.00
54		58.51	117.02	134.53	125.00	125.00	125.00	125.00	125.00	125.00
60		52.66	105.32	121.08	125.00	125.00	125.00	125.00	125.00	144.72
66		47.87	95.74	110.07	125.00	125.00	125.00	125.00	125.00	131.56
72		43.88	87.77	100.90	125.00	125.00	125.00	125.00	125.00	120.60
78		40.51	81.01	93.14	140.09	125.00	104.11	125.00	125.00	111.32
18		133.06	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		99.79	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
30		79.83	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
36		66.53	133.06	125.00	125.00	125.00	125.00	125.00	125.00	125.00
42		57.02	114.05	131.12	125.00	125.00	146.56	125.00	125.00	125.00
48	50 5/8	49.90	99.79	114.73	125.00	125.00	128.24	125.00	125.00	137.13
54		44.35	88.70	101.98	125.00	125.00	113.99	125.00	125.00	121.89
60		39.92	79.83	91.78	138.05	125.00	102.59	125.00	125.00	109.70
66		36.29	72.58	83.44	125.50	125.00	93.26	140.33	125.00	99.73
72		33.26	66.53	76.48	115.04	125.00	85.49	128.63	125.00	91.42
78		30.71	61.41	70.60	106.19	141.13	78.92	118.74	125.00	84.39
18		118.18	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		88.63	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
30		70.91	141.81	125.00	125.00	125.00	125.00	125.00	125.00	125.00
36		59.09	118.18	135.86	125.00	125.00	125.00	125.00	125.00	125.00
42		50.65	101.29	116.45	125.00	125.00	130.17	125.00	125.00	139.19
48	57	44.32	88.63	101.89	125.00	125.00	113.89	125.00	125.00	121.79
54		39.39	78.78	90.57	136.23	125.00	101.24	125.00	125.00	108.26
60		35.45	70.91	81.52	122.61	125.00	91.12	137.09	125.00	97.43
66		32.23	64.46	74.11	111.46	148.13	82.83	124.63	125.00	88.57
72		29.54	59.09	67.93	102.18	135.79	75.93	114.25	125.00	81.19
78		27.27	54.54	62.70	94.32	125.34	70.09	105.46	140.11	74.95
18		106.92	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		80.19	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
30		64.15	128.30	147.50	125.00	125.00	125.00	125.00	125.00	125.00
36		53.46	106.92	122.92	125.00	125.00	137.40	125.00	125.00	146.92
42		45.82	91.65	105.36	125.00	125.00	117.77	125.00	125.00	125.93
48	63	40.10	80.19	92.19	138.67	125.00	103.05	125.00	125.00	110.19
54		35.64	71.28	81.95	123.26	125.00	91.60	137.82	125.00	97.95
60		32.08	64.15	73.75	110.93	147.43	82.44	124.04	125.00	88.15
66		29.16	58.32	67.05	100.85	134.03	74.94	112.76	149.82	80.14
72		26.73	53.46	61.46	92.44	122.86	68.70	103.37	137.33	73.46
78		24.67	49.35	56.73	85.33	113.41	63.41	95.41	126.77	67.81

Width (w)	MULL SPAN	ANCHOR TYPES A	B	C	D	E	F	G	H	I
18		90.72	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		68.04	136.08	125.00	125.00	125.00	125.00	125.00	125.00	125.00
30		54.43	108.86	125.16	125.00	125.00	139.89	125.00	125.00	149.59
36		45.36	90.72	104.30	125.00	125.00	116.58	125.00	125.00	124.66
42		38.88	77.76	89.40	134.46	125.00	99.92	125.00	125.00	106.85
48	74 1/4	34.02	68.04	78.22	117.66	125.00	87.43	131.56	125.00	93.49
54		30.24	60.48	69.53	104.58	138.99	77.72	116.94	125.00	83.11
60		27.22	54.43	62.58	94.13	125.09	69.95	105.24	139.83	74.80
66		24.74	49.48	56.89	85.57	113.72	63.59	95.68	127.12	68.00
72		22.68	45.36	52.15	78.44	104.24	58.29	87.70	116.53	62.33
78		20.94	41.87	48.14	72.40	96.22	53.81	80.96	107.56	57.54
18		80.19	125.00	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		60.14	120.29	138.29	125.00	125.00	125.00	125.00	125.00	125.00
30		48.11	96.23	110.63	125.00	125.00	123.66	125.00	125.00	132.23
36		40.10	80.19	92.19	138.67	125.00	103.05	125.00	125.00	110.19
42		34.37	68.73	79.02	118.86	125.00	88.33	132.90	125.00	94.45
48	84	30.07	60.14	69.14	104.00	138.21	77.29	116.29	125.00	82.64
54		26.73	53.46	61.46	92.44	122.86	68.70	103.37	137.33	73.46
60		24.06	48.11	55.31	83.20	110.57	61.83	93.03	123.60	66.11
66		21.87	43.74	50.29	75.64	100.52	56.21	84.57	112.36	60.10
72		20.05	40.10	46.10	69.33	92.14	51.52	77.52	103.00	55.10
78		18.51	37.01	42.55	64.00	85.05	47.56	71.56	95.08	50.86
18		70.17	140.33	125.00	125.00	125.00	125.00	125.00	125.00	125.00
24		52.63	105.25	121.00	125.00	125.00	135.25	125.00	125.00	144.63
30		42.10	84.20	96.80	145.60	125.00	108.20	125.00	125.00	115.70
36		35.08	70.17	80.67	121.33	125.00	90.17	135.67	125.00	96.42
42		30.07	60.14	69.14	104.00	138.21	77.29	116.29	125.00	82.64
48	96	26.31	52.63	60.50	91.00	120.94	67.63	101.75	135.19	72.31
54		23.39	46.78	53.78	80.89	107.50	60.11	90.44	120.17	64.28
60		21.05	42.10	48.40	72.80	96.75	54.10	81.40	108.15	57.85
66		19.14	38.27	44.00	66.18	87.95	49.18	74.00	98.32	52.59
72		17.54	35.08	40.33	60.67	80.63	45.08	67.83	90.13	48.21
78		16.19	32.38	37.23	56.00	74.42	41.62	62.62	83.19	44.50
18		62.37	124.74	143.41	125.00	125.00	125.00	125.00	125.00	125.00
24		46.78	93.56	107.56	125.00	125.00	120.22	125.00	125.00	128.56
30		37.42	74.84	86.04	129.42	125.00	96.18	144.71	125.00	102.84
36		31.19	62.37	71.70	107.85	143.33	80.15	120.59	125.00	85.70
42		26.73	53.46	61.46	92.44	122.86	68.70	103.37	137.33	73.46
48	108	23.39	46.78	53.78	80.89	107.50	60.11	90.44	120.17	64.28
54		20.79	41.58	47.80	71.90	95.56	53.43	80.40	106.81	57.14
60		18.71	37.42	43.02	64.71	86.00	48.09	72.36	96.13	51.42
66		17.01	34.02	39.11	58.83	78.18	43.72	65.78	87.39	46.75
72		15.59	31.19	35.85	53.93	71.67	40.07	60.30	80.11	42.85
78		14.39	28.79	33.09	49.78	66.15	36.99	55.66	73.95	39.56

Width (w)	MULL SPAN	ANCHOR TYPES A	B	C	D	E	F	G	H	I
18		56.13	112.27	129.07	125.00	125.00	144.27	125.00	125.00	125.00
24		42.10	84.20	96.80	145.60	125.00	108.20	125.00	125.00	115.70
30		33.68	67.36	77.44	116.48	125.00	86.56	130.24	125.00	92.56
36		28.07	56.13	64.53	97.07	129.00	72.13	108.53	144.20	77.13
42		24.06	48.11	55.31	83.20	110.57	61.83	93.03	123.60	66.11
48	120	21.05	42.10	48.40	72.80	96.75	54.10	81.40	108.15	57.85
54		18.71	37.42	43.02	64.71	86.00	48.09	72.36	96.13	51.42
60		16.84	33.68	38.72	58.24	77.40	43.28	65.12	86.52	46.28
66		15.31	30.62	35.20	52.95	70.36	39.35	59.20	78.65	42.07
72		14.03	28.07	32.27	48.53	64.50	36.07	54.27	72.10	38.57
78		12.95	25.91	29.78	44.80	59.54	33.29	50.09	66.55	35.60
18		51.03	102.06	117.33	125.00	125.00	131.15	125.00	125.00	140.24
24		38.27	76.55	88.00	132.36	125.00	98.36	148.00	125.00	105.18
30		30.62	61.24	70.40	105.89	140.73	78.69	118.40	125.00	84.15
36		25.52	51.03	58.67	88.24	117.27	65.58	98.67	131.09	70.12
42		21.87	43.74	50.29	75.64	100.52	56.21	84.57	112.36	60.10
48	132	19.14	38.27	44.00	66.18	87.95	49.18	74.00	98.32	52.59
54		17.01	34.02	39.11	58.83	78.18	43.72	65.78	87.39	46.75
60		15.31	30.62	35.20	52.95	70.36	39.35	59.20	78.65	42.07
66		13.92	27.83	32.00	48.13	63.97	35.77	53.82	71.50	38.25
72		12.76	25.52	29.33	44.12	58.64	32.79	49.33	65.55	35.06
78		11.78	23.55	27.08	40.73	54.13	30.27	45.54	60.50	32.36
18		46.78	93.56	107.56	125.00	125.00	120.22	125.00	125.00	128.56
24		35.08	70.17	80.67	121.33	125.00	90.17	135.67	125.00	96.42
30		28.07	56.13	64.53	97.07	129.00	72.13	108.53	144.20	77.13
36		23.39	46.78	53.78	80.89	107.50	60.11	90.44	120.17	64.28
42		20.05	40.10	46.10	69.33	92.14	51.52	77.52	103.00	55.10
48	144	17.54	35.08	40.33	60.67	80.63	45.08	67.83	90.13	48.21
54		15.59	31.19	35.85	53.93	71.67	40.07	60.30	80.11	42.85
60		14.03	28.07	32.27	48.53	64.50	36.07	54.27	72.10	38.57
66		12.76	25.52	29.33	44.12	58.64	32.79	49.33	65.55	35.06
72		11.69	23.39	26.89	40.44	53.75	30.06	45.22	60.08	32.14
78		10.79	21.59	24.82	37.33	49.62	27.74	41.74	55.46	29.67
18		44.91	89.81	103.25	125.00	125.00	115.41	173.65	125.00	123.41
24		33.68	67.36	77.44	116.48	125.00	86.56	130.24	125.00	92.56
30		26.94	53.89	61.95	93.18	123.84	69.25	104.19	138.43	74.05
36		22.45	44.91	51.63	77.65	103.20	57.71	86.83	115.36	61.71
42		19.25	38.49	44.25	66.56	88.46	49.46	74.42	98.88	52.89
48	150	16.84	33.68	38.72	58.24	77.40	43.28	65.12	86.52	46.28
54		14.97	29.94	34.42	51.77	68.80	38.47	57.88	76.91	41.14
60		13.47	26.94	30.98	46.59	61.92	34.62	52.10	69.22	37.02
66		12.25	24.49	28.16	42.36	56.29	31.48	47.36	62.92	33.66
72		11.23	22.45	25.81	38.83	51.60	28.85	43.41	57.68	30.85
78		10.36	20.73	23.83	35.84	47.63	26.63	40.07	53.24	28.48



TYPICAL MULLION CLIP ARRANGEMENTS

ANCHOR CLIP NOTES:

1. FOR CLIP TYPES AND ANCHOR CONDITIONS REFER TO SHEETS 6, 7, 8, & 9 FOR DETAILS AND NOTES.
2. REFER TO CHARTS ABOVE FOR MAX. DESIGN PRESSURE
3. SELECT ANCHOR TYPE WITH DESIGN RATING MORE THAN THE DESIGN LOADS REQUIRED FOR PARTICULAR OPENING.
4. ANY ANCHOR CONDITION SHOWN HEREIN MAY COVER LOCATIONS AT HEAD, SILL OR JAMB ENDS.
5. INTERPOLATION BETWEEN WIDTHS OR SPANS ALLOWED.

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 24-0116.22
Expiration Date: 05/30/2028
By: Manuel Perez
Miami-Dade Product Control

CWS
1900 SW 44TH AVE.
OCALA, FLORIDA 34474
WWW.CWS.CC

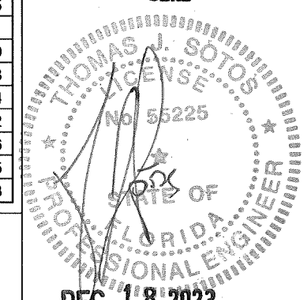
ALUMINUM TUBE MULLIONS

REVISIONS

NO.:	DESCRIPTION:	BY:	DATE:
A			

THOMAS J. SOTOS
PROFESSIONAL ENGINEER
FL LIC. # 55225

SEAL



DATE DEC 18 2023

SHEET DESCRIPTION:
CLIP/ANCHORS DESIGN PRESSURE CHARTS AND GENERAL NOTES

DRAWN BY:	DATE:
NELSON ERAZO	11/17/2023
REV. BY:	DATE:
DWG #: CWS-1229	REV #:
SCALE: AS NOTED	SHEET 10 OF 10