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/economy

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

NOTICE OF ACCEPTANCE (NOA)

CGI Windows and Doors, LLC
3780 W 104th Street
Hialeah, FL 33018

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

APPROVAL DOCUMENT: Drawing No. **TUBEMULL-1**, titled "Aluminum Tube Mullions, Clipped (LM)", sheets 1 through 23 of 23, dated 02/02/23, with revision **B** dated 03/12/25, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, 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 NOA No. 23-0913.04** and consists of this page 1 and evidence pages E-1, E-2, and E -3, as well as approval document mentioned above.

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

MIAMI-DADE COUNTY APPROVED

4/3/25

CGI Windows and Doors, LLC

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's

A. DRAWINGS

1. Manufacturer's die drawings and sections.
(Submitted under NOA No. 95-0929.39)

2. Drawing No. **TUBEMULL-1**, titled "Aluminum Tube Mullions, Clipped (LM)", sheets 1 through 23 of 23, dated 02/02/23, with revision **A** dated 08/23/23, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.
(Submitted under NOA No. 23-0913.04)

B. TESTS

1. Test reports on: 1) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94
2) Large Missile Impact Test per FBC, TAS 201-94
3) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of two series 1000 fixed windows mulled together, prepared by Fenestration Testing Laboratory, Inc. Test Report No. **FTL-18-8511**, dated 11/27/18, signed and sealed by Idalmis Ortega, P.E.
(Submitted under NOA's No. 15-0728.01 and 20-0826.03)

2. 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, per FBC 2411.3.2.1, and TAS 202-94
along with marked-up drawings and installation diagram of clipped aluminum mullions, prepared by Fenestration Testing Lab, Inc., Test Report No. **FTL-6443** (samples A-1 thru E-1), dated 02/28/11, and addendum letter dated 05/05/11, signed and sealed by Marlin D. Brinson, P.E.
(Submitted under NOA's No. 17-0630.11)

3. Test reports on: 1) Air Infiltration Test, per FBC, TAS 201-94
2) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94
3) Water Resistance Test, per FBC, TAS 202-94
4) Small Missile Impact Test per FBC, TAS 201-94
5) Large Missile Impact Test per FBC, TAS 201-94
along with marked-up drawings and installation diagram of casement windows mulled using a 1"x 2"x 1/8" aluminum tube mullion, prepared by Hurricane Testing Lab, Inc., Test Report No. **HTL-0080-0105-08**, dated 03/26/08 for Specimens No. 1 and 2, signed and sealed by Vinu J. Abraham, P.E.
(Submitted under NOA No. 08-0331.07)

Manuel Perez, P.E.
Product Control Examiner
NOA No. 25-0319.05
Expiration Date: March 28, 2028
Approval Date: April 10, 2025

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

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

B. TESTS (CONTINUED)

4. Test reports on: 1) Large Missile Impact Test, Loading per SFBC, PA 201-94 along with marked-up drawings and installation diagram of an aluminum fixed window, prepared by Hurricane Test Laboratory, Inc. Test Report No. **HTL-0080-0303-*96***, dated 03/06/96, signed and sealed by Timothy S. Marshall, P.E.
(Submitted under NOA No. 95-0929.39)

5. Test reports on: 1) Uniform Static Air Pressure Test, Loading per SFBC, PA 202-94 along with marked-up dwgs. and installation diagram of fixed windows mulled with a 1"x2"x1/8" alum. tube mullion, prepared by Hurricane Engineering & Testing, Inc., Test Report No. **HETI-96-525**, dated 02/12/96, signed and sealed by Hector M. Medina, P.E.
(Submitted under NOA No. 95-0929.39)

C. CALCULATIONS

1. Mullion calculations, clip details, anchor verification calculations and structural analysis, adding additional mullions and clip options from NOA No. **20-0826.03,** also adding different clip styles from NOA's No. **20-0406.08** and No. **20-0610.10**, all complying with FBC 7th Edition *(*2020), dated 02/15/23, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E**.**
(Submitted under NOA No. 23-0221.03)

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, of complying with **FBC 7th Edition (2020)** and with **FBC 8th Edition (2023)**, dated August 23, 2023, issued by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.
(Submitted under NOA No.23-0913.04)

2. Statement letter of no financial interest dated August 23, 2023, issued by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.
(Submitted under NOA No.23-0913.04)

3. Private labeling agreement between WinDoor, Inc. and CGI Windows and Doors, Inc. document in conformance of RER guideline, dated 02/15/23.
(Submitted under NOA No.23-0221.03)

4. Statement letter of successor engineer per 61G15-27.001 Florida Administrative Code.
(Submitted under NOA No. 20-0610.10)

Manuel Perez

Manuel Perez, P.E.
Product Control Examiner
NOA No. 25-0319.05
Expiration Date: March 28, 2028
Approval Date: April 10, 2025

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

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

G. OTHERS

1. Notice of Acceptance No. **23-0221.03**, issued to CGI Windows and Doors, Inc. for their Series Clipped Mullion - L.M.I., approved on 03/23/23 and expiring on 03/28/28.

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. **TUBEMULL-1**, titled "Aluminum Tube Mullions, Clipped (LM)", sheets 1 through 23 of 23, dated 02/02/23, with revision **B** dated 03/12/25, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

B. TESTS

1. None.

C. CALCULATIONS

1. Mullion calculations, clip details, anchor verification calculations and structural analysis, adding additional mullions, dated 11/03/25, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

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 March 13, 2025, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

2. Statement letter of no financial interest, dated March 13, 2025, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

3. Certificate of conversion for the formation of CGI Windows and Doors, LLC from CGI Windows and Doors, Inc. dated March 28, 2024, issued by the State of Delaware, signed by Mathew G. DeSoto.

4. Florida Department of State, Division of Corporation listing # M240000058609 of CGI Windows and Doors, LLC as active status since 07/08/24.

5. CGI Name change organization chart layout prepared by RER (for file use only).

G. OTHERS

1. Notice of Acceptance No. **23-0913.04**, issued to CGI Windows and Doors, Inc. for their Series Clipped, Extruded Aluminum Tube Mullion - L.M.I., approved on 10/26/23 and expiring on 03/28/28.

Manuel Perez, P.E.
Product Control Examiner
NOA No. 25-0319.05
Expiration Date: March 28, 2028
Approval Date: April 10, 2025

IMPACT-RESISTANT, CLIPPED, ALUMINUM TUBE MULLIONS

1) MULLIONS AND CLIPS HAVE BEEN DESIGNED & TESTED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE, AND ARE APPROVED FOR IMPACT AND NON-IMPACT APPLICATIONS IN THE HVHZ. MULLIONS ARE ONLY TO BE USED WITH THE MANUFACTURER'S FENESTRATION PRODUCTS.

2) INSTALLATION DETAILS SHOWN ARE FOR THE MULLION ONLY. ANCHORS SHOWN ARE IN ADDITION TO ANY ANCHORS REQUIRED FOR THE FENESTRATION PRODUCT INSTALLATION. TYPICAL APPLICATIONS ARE SHOWN. EACH SITUATION IS UNIQUE AND SHOULD BE EVALUATED BY AN EXPERIENCED INSTALLER FOR THE BEST INSTALLATION METHOD. OPTIONAL 1X OR 2X WOOD BUCKS IF USED, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS AND ARE TO BE DESIGNED BY OTHERS.

3) THE TYPE AND NUMBER OF ANCHORS IS CRITICAL TO THE STRUCTURAL PERFORMANCE OF THE MULLED UNITS. MULLIONS HAVE BEEN TESTED AS "FREE-FLOATING" AND DO NOT NEED TO BE DIRECTLY ATTACHED TO THE MULLION CLIPS, BUT SHALL NOT HAVE A GAP OF MORE THAN 1/4" FROM THE CLIP, SEE FIG. 1, SHEET 4.

4) THE ANCHORAGE METHODS SHOWN HAVE BEEN DESIGNED TO RESIST THE WINDLOADS CORRESPONDING TO THE REQUIRED DESIGN PRESSURE. MULLIONS ARE CALCULATED TO DEFLECT NO MORE THAN L/180. THE 1/3 STRESS INCREASE WAS NOT USED IN THIS ANCHOR EVALUATION. THE 1.6 LOAD DURATION FACTOR WAS USED FOR THE EVALUATION OF WOOD SCREWS.

5) PROPER SEALING OF ENTIRE ASSEMBLY IS THE RESPONSIBILITY OF OTHERS AND IS BEYOND THE SCOPE OF THESE INSTRUCTIONS.

6) USE THE COMBINED WIDTH OR HEIGHT OF ONLY TWO ADJACENT FENESTRATION PRODUCTS TO DETERMINE PRESSURES AND ANCHORAGE FOR THE COMMON MULLION. FOR MULTIPLE UNITS, CONSIDER ONLY TWO ADJACENT UNITS AT A TIME WHEN USING THE DESIGN PRESSURE AND ANCHORAGE TABLES. THE LOWEST DESIGN PRESSURE OF MULTIPLE MULLIONS OR FENESTRATION PRODUCTS SHALL APPLY.

7) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO. WOOD BUCKS BY OTHERS, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE STRUCTURE. ANCHORS SHALL BE COATED OR CORROSION RESISTANT AS APPROPRIATE FOR SUBSTRATE MATERIAL. DISSIMILAR MATERIALS SHALL BE PROTECTED AS REQUIRED TO PREVENT REACTIONS.

8) REFERENCE: DEWALT ULTRACON+, AGGRE-GATOR & CRETEFLEX NOA'S.

9) QUANTITY OF UNITS WITHIN A MULTIPLE MULLED ASSEMBLY IS UNLIMITED PROVIDED THAT THE SPAN AND OPENING WIDTH/HEIGHT OF EACH INDIVIDUAL MULLION COMPLIES WITH THE REQUIREMENTS OF THIS APPROVAL.

10) SUBSTRATES: CONCRETE SHALL CONFORM TO ACI 301 SPECIFICATIONS. HOLLOW AND GROUT-FILLED CONCRETE BLOCK UNIT (CMU) SHALL CONFORM TO ASTM C-90. WOOD SHALL HAVE A MIN. SG OF 0.55. ALUMINUM SHALL BE 6063-T5 AND BE A MINIMUM OF .125" THICK. STEEL STUDS TO BE A MINIMUM GRADE 33 AND 0.045" THICK (18 GAUGE). STRUCTURAL STEEL TO BE AT LEAST .125" THICK AND A36. ALL ANCHORS INTO METAL SHALL EXTEND AT LEAST 3 SCREW THREADS BEYOND THE MATERIAL. #12 & #14 ANCHORS INTO WOOD MAY BE STEEL, 18-8 S.S. OR 410 S.S.

CODES / STANDARDS USED:

- 2023 FLORIDA BUILDING CODE (FBC), 8TH EDITION
- ANSI/AF&PA NDS-2018 FOR WOOD CONSTRUCTION
- ALUMINUM DESIGN MANUAL, ADM-2020
- AISI S100-16
- AISC 360-16

FIGURE 1: MULTIPLE MULLIONS

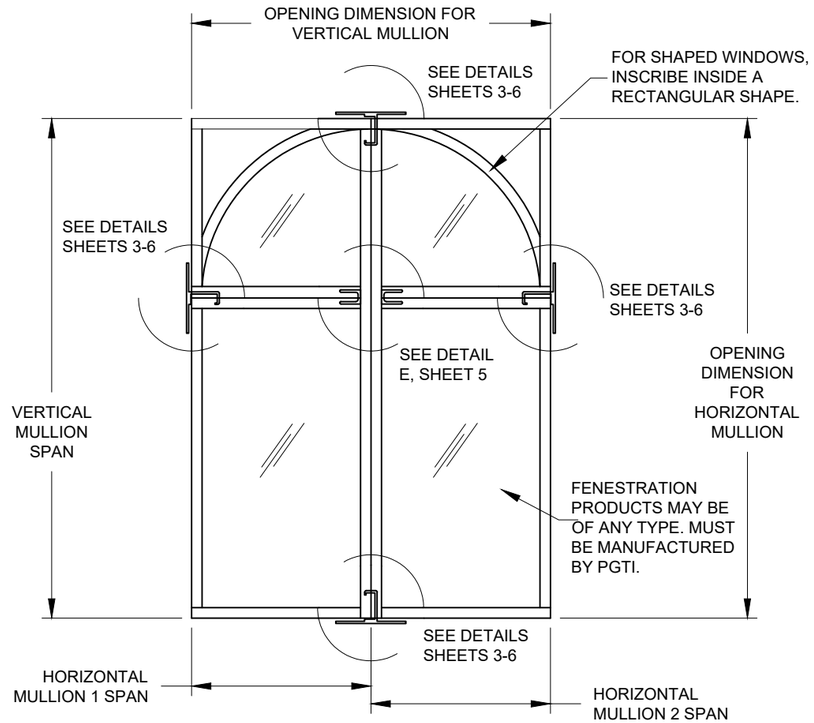
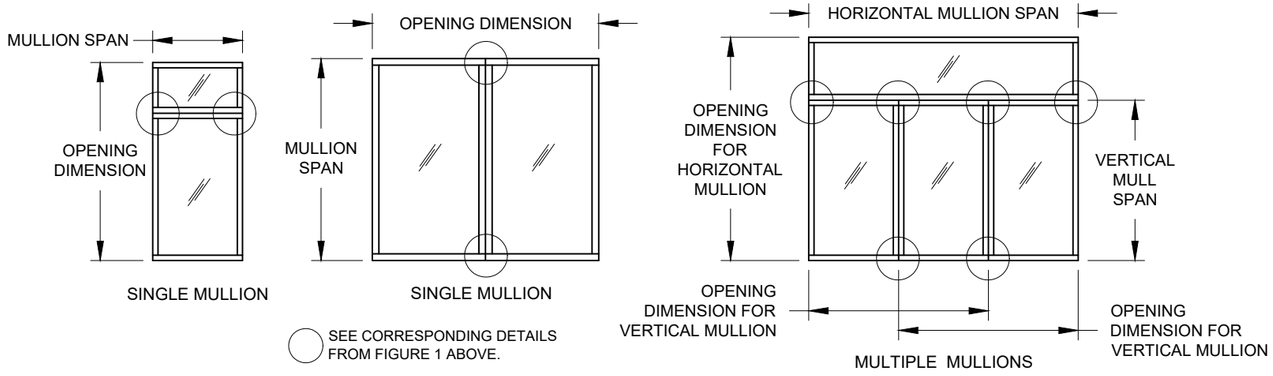


FIGURE 2: ADDITIONAL EXAMPLES OF MULLION CONFIGURATIONS:



DESIGN PRESSURE RATING
SEE TABLES 1A - 15A

IMPACT RATING
RATED FOR LARGE & SMALL MISSILE IMPACT RESISTANCE

CONTENTS:

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami–Dade Product Control

Revision:
REMOVE 2020 FBC REFERENCE.
ADD 1X2.75X.650 MULL
AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Series	Title	Desc.
MULLS	GENERAL NOTES & ELEVATIONS	ALUMINUM TUBE MULLIONS, CLIPPED (LM)

Scale	Sheet	DWG No.	Drawn By	Date	Rev.
NTS	1 OF 24	TUBEMULL-1	JENS ROSOWSKI	02/02/23	B

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
A. Lynn Miller 3/13/25

A. LYNN MILLER, P.E., P.E.# 58705

INSTRUCTIONS:

1) DETERMINE THE ALLOWABLE STRESS DESIGN PRESSURE REQUIREMENT (LBS/FT²) FOR THE OPENING USING THE **ASCE-7 STANDARD**.

2) TO FIND THE DESIGN PRESSURE OF THE MULLION, USE TABLES 1A THROUGH 15A. THE MULLION DESIGN PRESSURE OBTAINED SHALL MEET OR EXCEED THE DESIGN PRESSURE REQUIREMENT FOR THE OPENING OBTAINED IN STEP 1. NOTE THAT YOU MUST FIRST DETERMINE WHETHER YOU HAVE A SINGLE MULLION OR CROSSING MULLIONS.

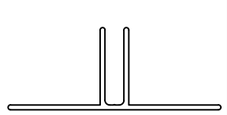
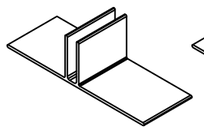
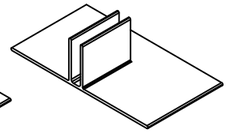
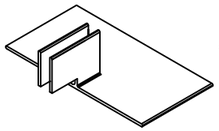
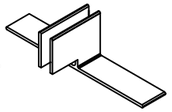
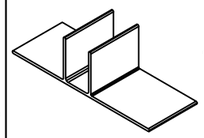
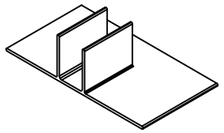
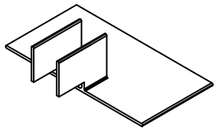
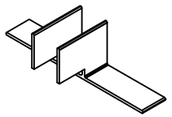
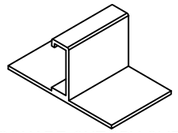
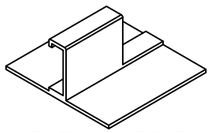
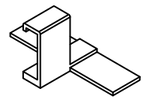
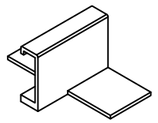
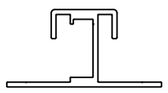
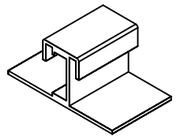
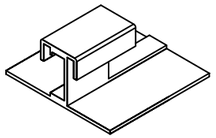
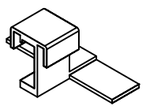
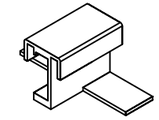
3) AFTER OBTAINING THE MULLION'S DESIGN PRESSURE, FIND THE VALUE IN THE COLUMN TITLED "ANCHOR CAPACITY REQUIRED (LBS)". THIS VALUE REPRESENTS THE CLIP/ANCHOR CAPACITY THAT MUST BE MET TO ATTAIN THE MULLION DESIGN PRESSURE.

4) FROM THE ANCHOR/CLIP CAPACITY TABLE ON THE SAME SHEET, CHOOSE AN ANCHOR/CLIP/SUBSTRATE CONDITION THAT MEETS OR EXCEEDS THE VALUE OBTAINED FROM STEP 3.

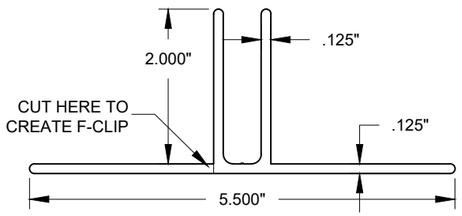
5) VERIFY THE DESIGN PRESSURE OF THE FENESTRATION PRODUCT TO BE USED AND COMPARE WITH THE FINAL DESIGN PRESSURE FOR THIS MULLION SYSTEM. THE LOWER OF THE TWO SHALL APPLY FOR THE ENTIRE MULLED ASSEMBLY.

6) HIGHLIGHT OPTION USED AND TABLE VALUES USED IN A SPECIFIC APPLICATION WHEN USING THIS APPROVAL TO APPLY FOR A PERMIT.

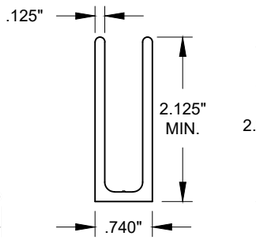
7) OPTIONALLY, IF THE MULLION DESIGN PRESSURE OBTAINED IN THE TABLE IS MUCH HIGHER THAN THE DESIGN PRESSURE REQUIREMENT FOR THE OPENING, YOU MAY USE THE **"ANCHOR CAPACITY ADJUSTMENT FORMULA"** ON SHEET 1 TO OBTAIN A LOWER ANCHOR/CLIP CAPACITY.

IF USING THIS TYPE OF CLIP.....	.....THESE CLIP STYLE OPTIONS MAY BE USED INTERCHANGEABLY PROVIDED THAT THE SAME ANCHOR HOLE QUANTITY AND HOLE SPACING IS MAINTAINED.			
 STANDARD 1BY CLIP	 SQUARE-CUT 1BY CLIP	 1BY FULL LOAD CLIP	 1BY CLEARANCE CLIP*	 1BY OFFSET CLIP*
 STANDARD 2BY CLIP	 SQUARE-CUT 2BY CLIP	 2BY FULL LOAD CLIP	 2BY CLEARANCE CLIP*	 2BY OFFSET CLIP*
 HOOK-TYPE 1BY CLIP	 SQUARE-CUT 1BY CLIP	 1BY FULL LOAD CLIP	 1BY CLEARANCE CLIP*	 1BY OFFSET CLIP*
 HOOK-TYPE 2BY CLIP	 SQUARE-CUT 2BY CLIP	 2BY FULL LOAD CLIP	 2BY CLEARANCE CLIP*	 2BY OFFSET CLIP*

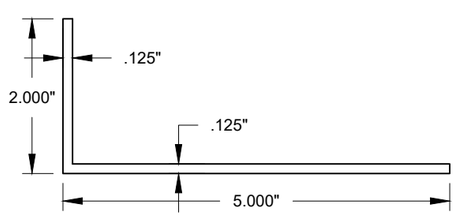
* THE CLEARANCE OR OFFSET CLIPS ARE RECOMMENDED FOR FIN-FRAMED WINDOWS, BUT MAY ALSO BE USED FOR OTHER FRAME TYPES.



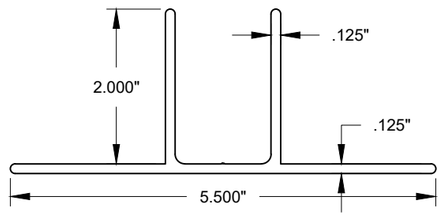
STANDARD 1BY MULLION CLIP



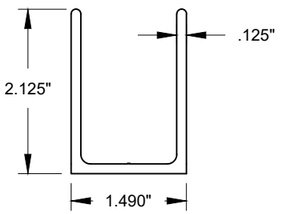
STANDARD 1BY U-CLIP



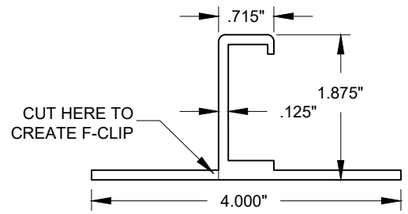
STOCK 2" X 5" ANGLE CLIP



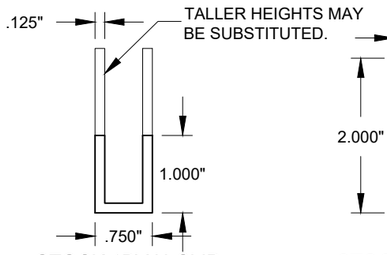
STANDARD 2BY MULLION CLIP



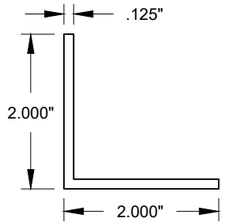
STANDARD 2BY U-CLIP
FOR MULLIONS WITH 1/4" SIDE WALLS



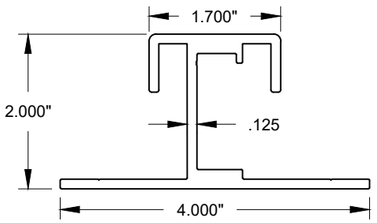
HOOK-TYPE 1BY MULLION CLIP



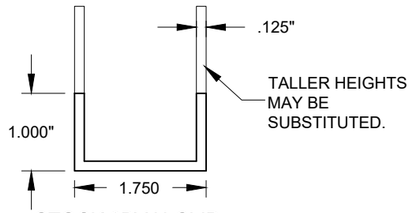
STOCK 1BY U-CLIP



STOCK 2" X 2" ANGLE CLIP



HOOK-TYPE 2BY MULLION CLIP



STOCK 2BY U-CLIP
FOR MULLIONS WITH 1/8" SIDE WALLS

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By: Manuel Perez
Miami-Dade Product Control

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REMOVE 2020 FBC REFERENCE.
ADD 1X2.75X.650 MULL
AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Series	Title	Desc:
MULLS	INSTRUCTIONS & CLIP INFO	ALUMINUM TUBE MULLIONS, CLIPPED (LM)

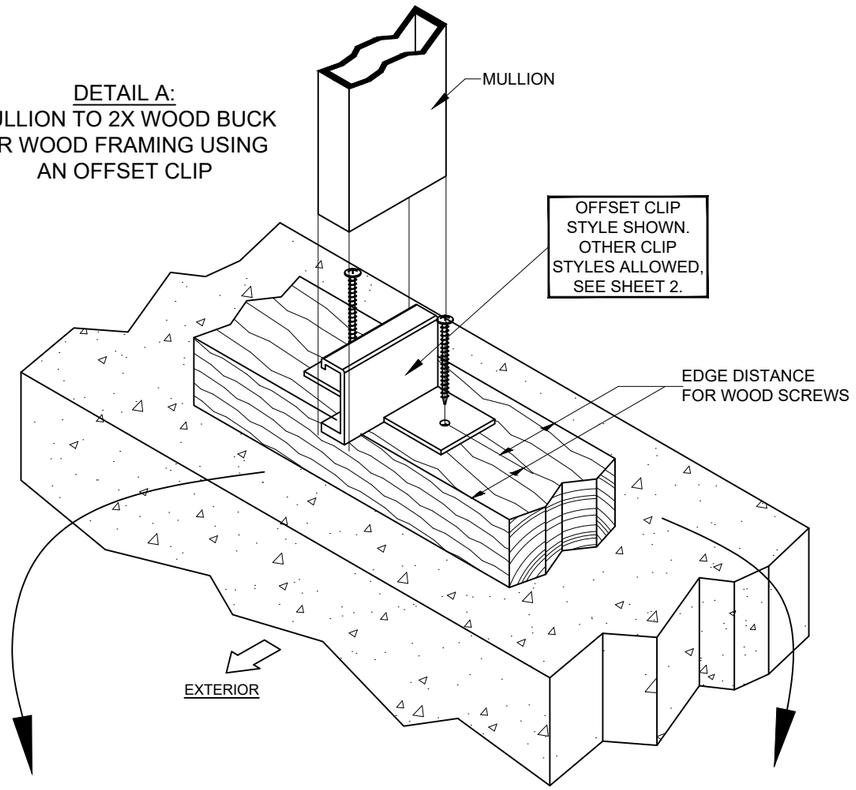
Scale	Sheet	DWG No.	Drawn By	Date	Rev.
NTS	2 OF 24	TUBEMULL-1	JENS ROSOWSKI	02/02/23	B

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

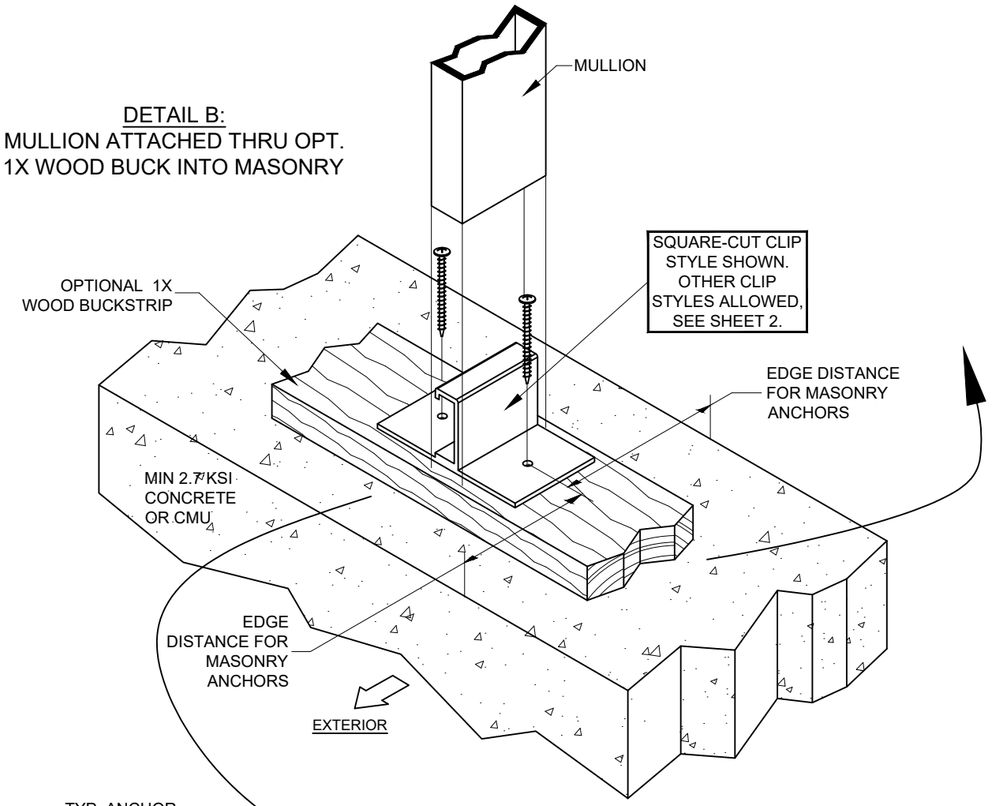
ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
3/13/25

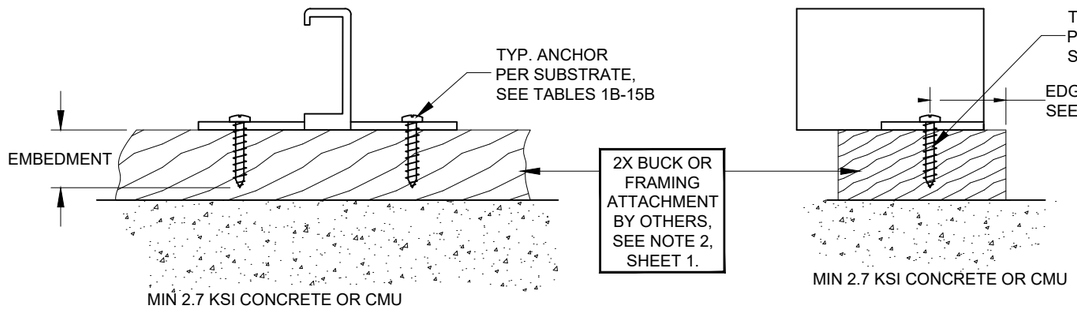
A. LYNN MILLER, P.E., P.E.# 58705

DETAIL A:
MULLION TO 2X WOOD BUCK
OR WOOD FRAMING USING
AN OFFSET CLIP

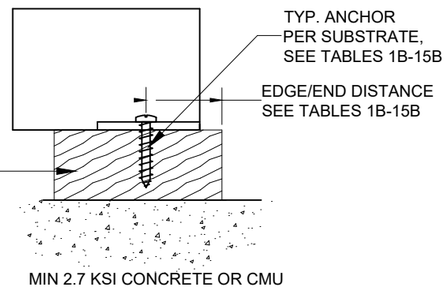


DETAIL B:
MULLION ATTACHED THRU OPT.
1X WOOD BUCK INTO MASONRY

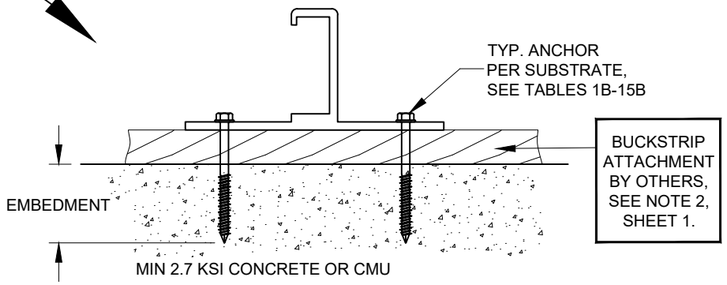




FRONT VIEW



SIDE VIEW



FRONT VIEW

INSTALLATION NOTES:

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3) MULLIONS MAY BE INSTALLED HORIZONTALLY OR VERTICALLY. 2X2 OR 2X5 ANGLE CLIPS, IF USED, MUST BE INSTALLED IN PAIRS AND PULLED AGAINST THE MULLION'S INSIDE WALL FOR A SECURE FIT.

4) FOR MASONRY APPLICATIONS IN MIAMI-DADE COUNTY, USE ONLY MIAMI-DADE COUNTY APPROVED DEWALT ULTRACON, DEWALT ULTRACON+, DEWALT 1/4" AGGREGATOR OR DEWALT CRETEFLEX MASONRY ANCHORS AS LISTED IN TABLES 1B-15B.

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AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
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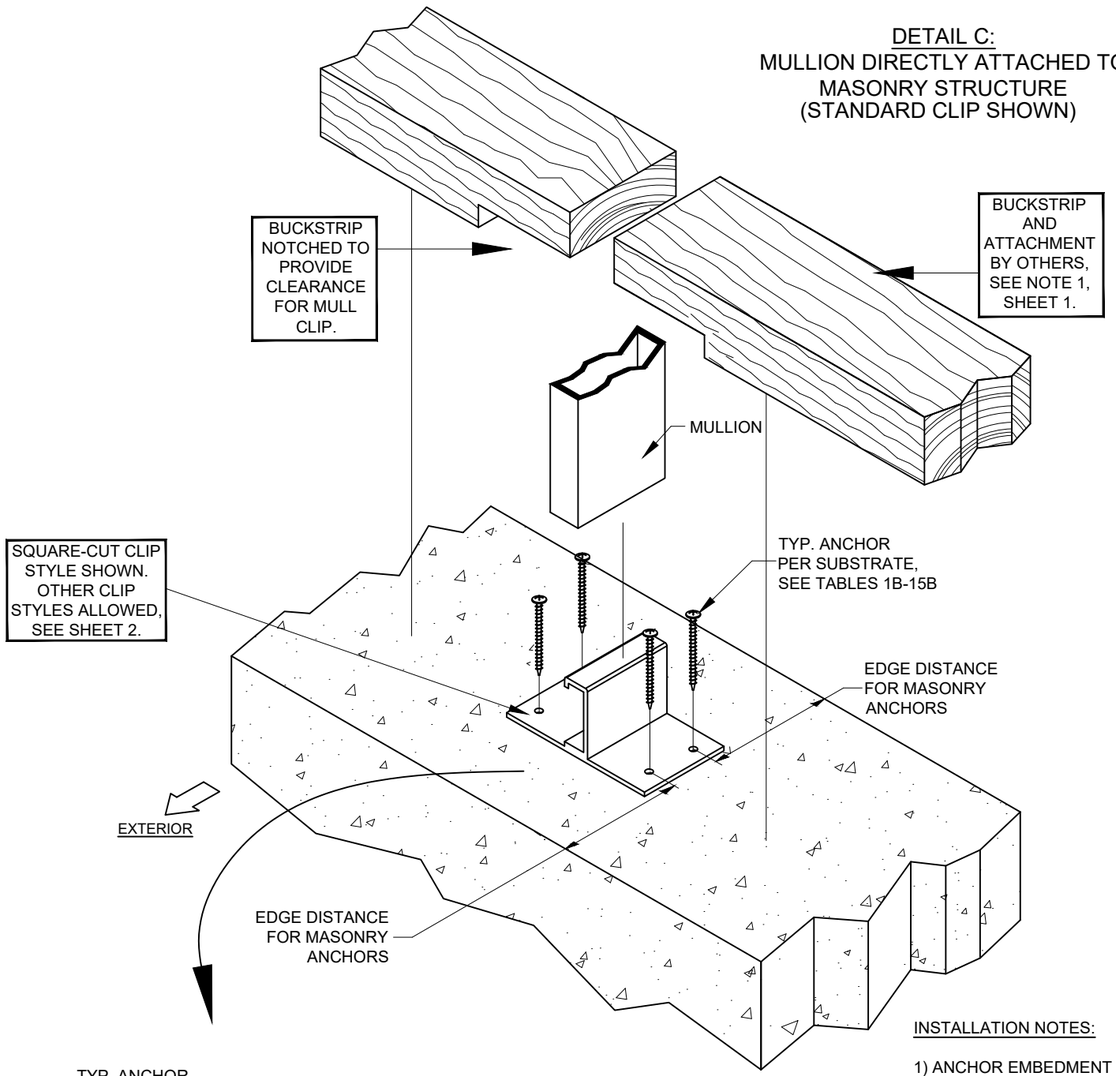
(305) 593-6590

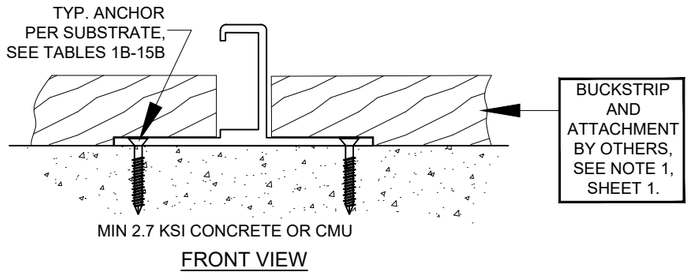
Series	Title	Desc:	Date	Drawn By	DWG No.	Sheet	Scale	Rev.
MULLS	INSTALLATION INSTRUCTIONS	ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23	JENS ROSOWSKI	TUBEMULL-1	3 OF 24	NTS	B

ANTHONY LYNN MILLER
LICENSE
No. 58705
A Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

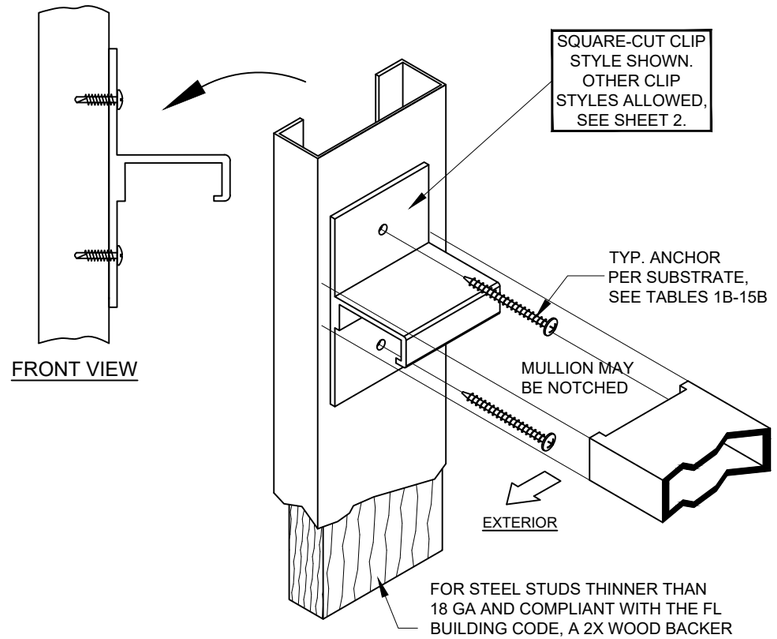
A. LYNN MILLER, P.E., P.E.# 58705

DETAIL C:
MULLION DIRECTLY ATTACHED TO
MASONRY STRUCTURE
(STANDARD CLIP SHOWN)





FRONT VIEW



DETAIL D:
MULLION ATTACHED
TO STEEL STUD

INSTALLATION NOTES:

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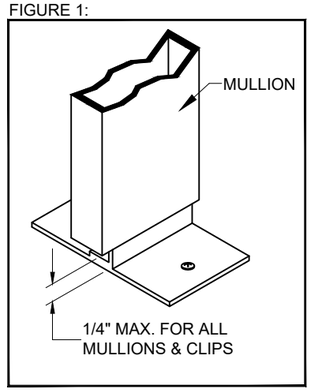
FIGURE 1:



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Series	Title	Desc.
MULLS	INSTALLATION INSTRUCTIONS	ALUMINUM TUBE MULLIONS, CLIPPED (LM)

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NTS	4 OF 24	TUBEMULL-1	JENS ROSOWSKI	02/02/23	B

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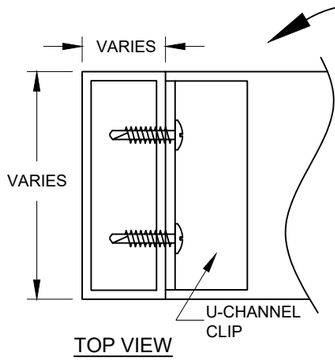
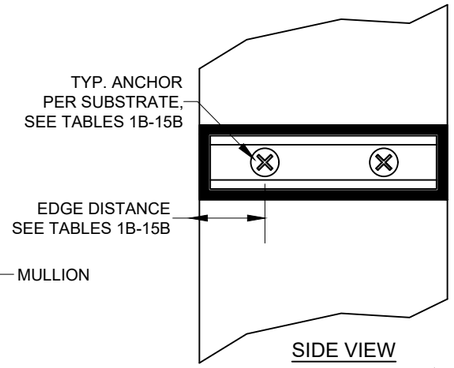
3/13/25

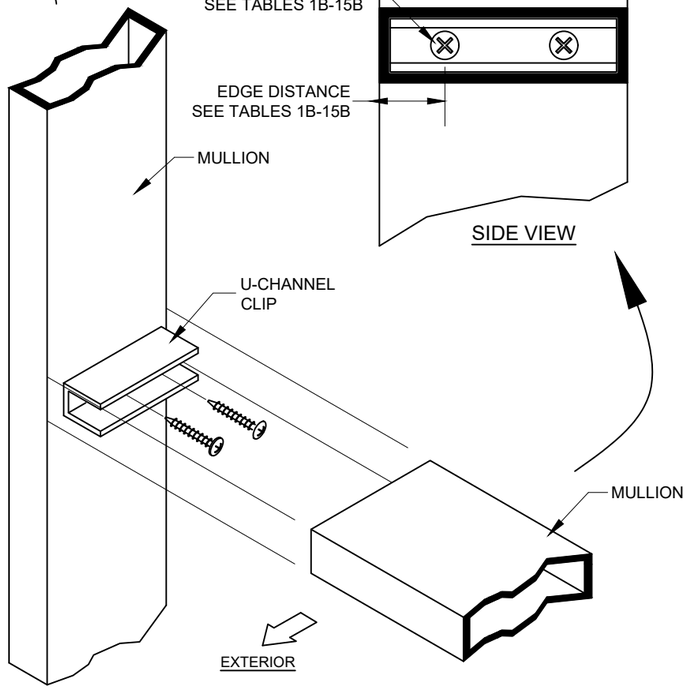
A. LYNN MILLER, P.E., P.E.# 58705



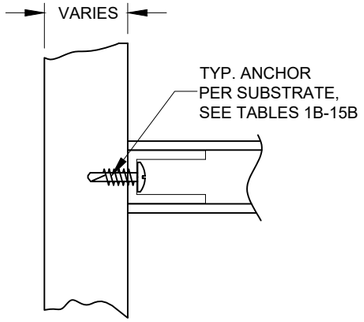
TOP VIEW



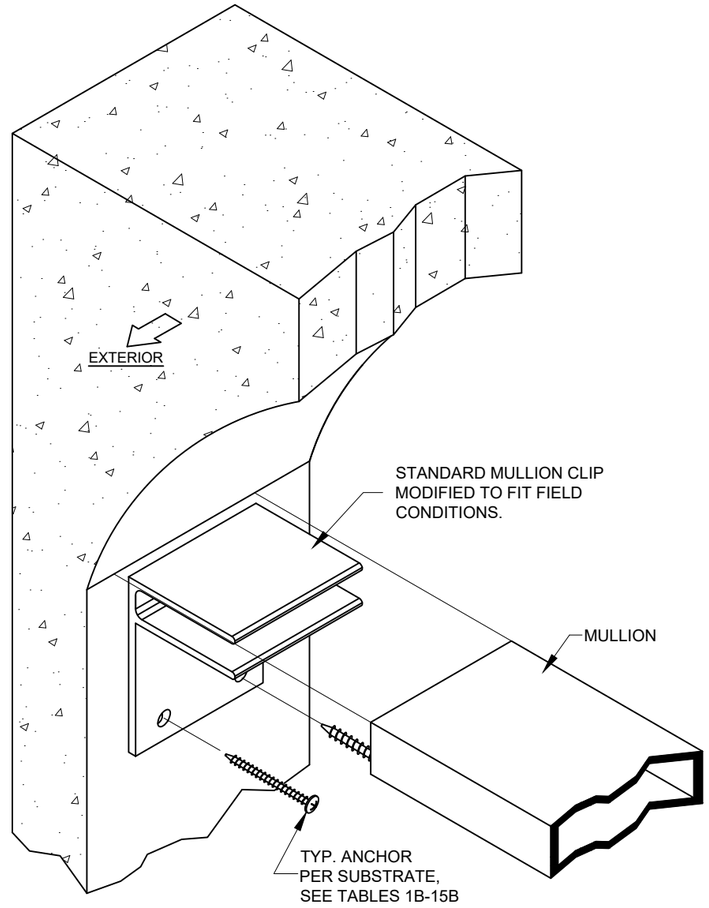
SIDE VIEW



DETAIL E:
MULLION TO MULLION INTERSECTION



FRONT VIEW



DETAIL F:
OPTIONAL FIELD-MODIFIED
MULLION F-CLIP

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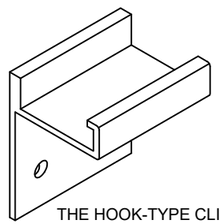
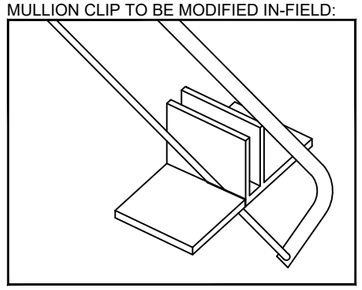


THE HOOK-TYPE CLIP MAY ALSO BE MODIFIED AND USED AS AN F-CLIP.

MULLION CLIP TO BE MODIFIED IN-FIELD:



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AM - 03/12/25

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REGISTRATION #29296

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Series	Title	Desc.
MULLS	INSTALLATION INSTRUCTIONS	ALUMINUM TUBE MULLIONS, CLIPPED

Scale	Sheet	DWG No.	Drawn By	Date	Rev.
NTS	5 OF 24	TUBEMULL-1	JENS ROSOWSKI	02/02/23	B

ANTHONY LYNN MILLER
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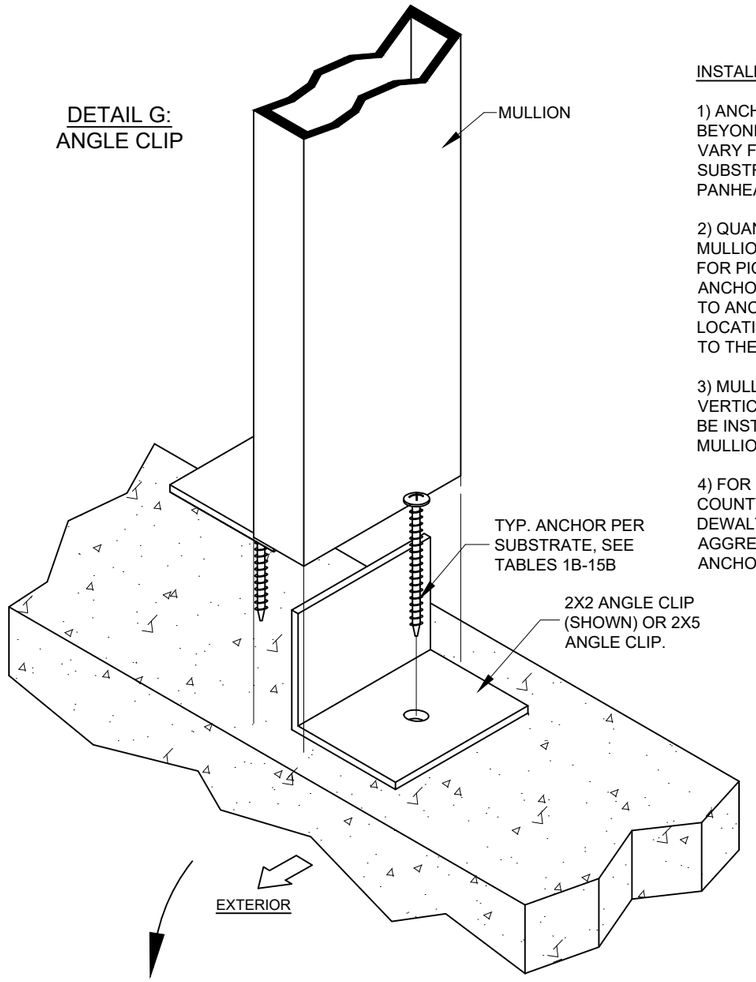
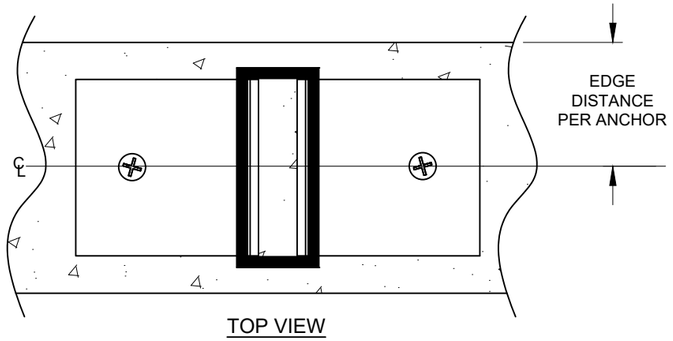
No. 58705
A Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

DETAIL G:
ANGLE CLIP





TOP VIEW

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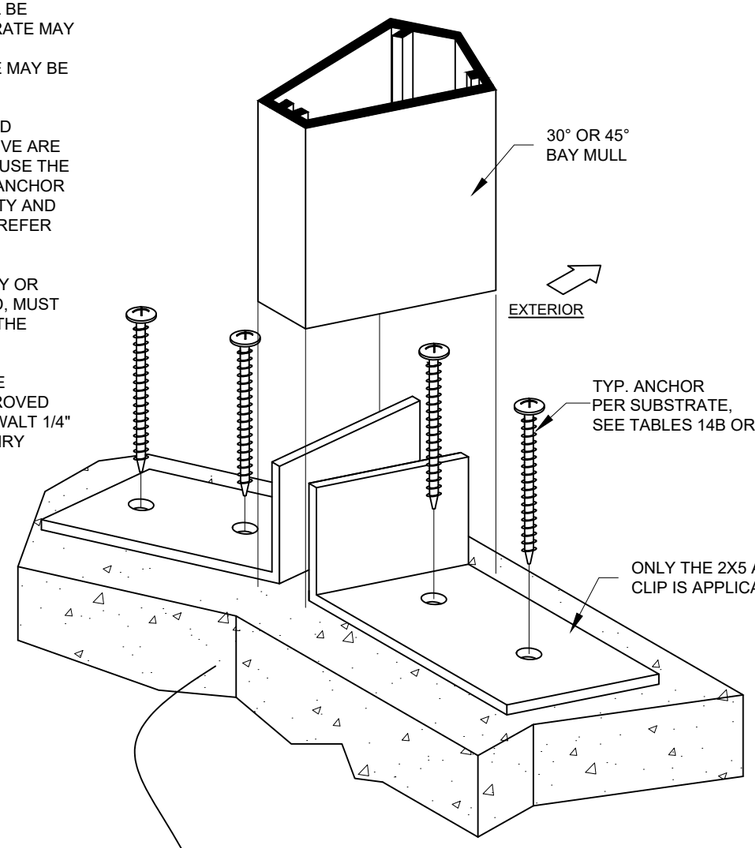
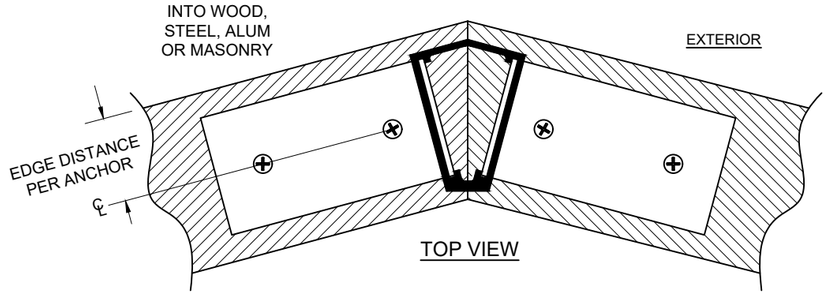
DETAIL H:
BAY MULLION
INSTALLATION





TOP VIEW

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Desc.	Date
ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23

Title	Drawn By
INSTALLATION INSTRUCTIONS	JENS ROSOWSKI

Series	Scale	Sheet	DWG No.	Rev.
MULLS	NTS	6 OF 24	TUBEMULL-1	B

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LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 1A:

1" x 2" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension

Mullion Span	50 in Rectangular Loading Mullion Capacity (lbs/ft²)	50 in Rectangular Loading Anchor Capacity Required (lbs)	50 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	50 in Trap/Triang. Loading Anchor Capacity Required (lbs)	60 in Rectangular Loading Mullion Capacity (lbs/ft²)	60 in Rectangular Loading Anchor Capacity Required (lbs)	60 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	60 in Trap/Triang. Loading Anchor Capacity Required (lbs)	70 in Rectangular Loading Mullion Capacity (lbs/ft²)	70 in Rectangular Loading Anchor Capacity Required (lbs)	70 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	70 in Trap/Triang. Loading Anchor Capacity Required (lbs)	80 in Rectangular Loading Mullion Capacity (lbs/ft²)	80 in Rectangular Loading Anchor Capacity Required (lbs)	80 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	80 in Trap/Triang. Loading Anchor Capacity Required (lbs)	90 in Rectangular Loading Mullion Capacity (lbs/ft²)	90 in Rectangular Loading Anchor Capacity Required (lbs)	90 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	90 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	111.8	408	129.4	331	93.2	408	115.5	325	79.8	408	107.7	321	69.9	408	104.3	319	62.1	408	104.0	318
48 in	74.9	312	83.7	258	62.4	312	73.4	252	53.5	312	66.9	248	46.8	312	63.1	246	41.6	312	61.3	244
50-5/8 in	63.8	281	70.6	234	53.2	281	61.5	228	45.6	281	55.7	224	39.9	281	52.1	222	35.5	281	50.1	220
54 in	52.6	247	57.4	207	43.8	247	49.8	202	37.6	247	44.8	199	32.9	247	41.5	196	29.2	247	39.4	194
60 in	38.3	200	41.2	170	32.0	200	35.4	166	27.4	200	31.5	163	24.0	200	28.9	160	21.3	200	27.0	158
63 in	33.1	181	35.3	155	27.6	181	30.3	151	23.7	181	26.9	149	20.7	181	24.5	146	18.4	181	22.8	144
66 in	28.8	165	30.5	142	24.0	165	26.1	139	20.6	165	23.1	136	18.0	165	21.0	134	16.0	165	19.4	132
72 in	22.2	139	23.3	120	18.5	139	19.9	118	15.8	139	17.5	116								
76 in	18.9	124	19.7	109	15.7	124	16.8	106												
78 in	17.5	118	18.2	103																

Mullion Span	100 in Rectangular Loading Mullion Capacity (lbs/ft²)	100 in Rectangular Loading Anchor Capacity Required (lbs)	100 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	100 in Trap/Triang. Loading Anchor Capacity Required (lbs)	120 in Rectangular Loading Mullion Capacity (lbs/ft²)	120 in Rectangular Loading Anchor Capacity Required (lbs)	120 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	120 in Trap/Triang. Loading Anchor Capacity Required (lbs)	140 in Rectangular Loading Mullion Capacity (lbs/ft²)	140 in Rectangular Loading Anchor Capacity Required (lbs)	140 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	140 in Trap/Triang. Loading Anchor Capacity Required (lbs)	160 in Rectangular Loading Mullion Capacity (lbs/ft²)	160 in Rectangular Loading Anchor Capacity Required (lbs)	160 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	160 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	55.9	408	104.0	318	46.6	408	104.0	318	39.9	408	104.0	318	34.9	408	104.0	318
48 in	37.4	312	60.9	244	31.2	312	60.9	244	26.7	312	60.9	244	23.4	312	60.9	244
50-5/8 in	31.9	281	49.3	219	26.6	281	49.3	219	22.8	281	49.3	219	19.9	281	49.3	219
54 in	26.3	247	38.3	193	21.9	247	38.0	193	18.8	247	38.0	193	16.4	247	38.0	193
60 in	19.2	200	25.9	157	16.0	200	25.0	156	13.7	200	25.0	156	12.0	200	25.0	156
63 in	16.6	181	21.7	143	13.8	181	20.6	142	11.8	181	20.5	142	10.4	181	20.5	142
66 in	14.4	165	18.4	131	12.0	165	17.2	129	10.3	165	17.1	129	9.0	165	17.1	129
72 in																
76 in																
78 in																

TABLE 1B:

Anchor/Clip Capacity (lbs) when using a 1" x 2" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 2):	310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 0.97" Min. O.C. / Mullion Clip (Fig. 3):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
4 Anchors @ 1.53" Min. O.C. / Mullion Clip (Fig. 4):	420 lbs	1260 lbs	400 lbs	1700 lbs	N/A	320 lbs	740 lbs	380 lbs	960 lbs	852 lbs	N/A	340 lbs	400 lbs	N/A	885 lbs	1073 lbs	1073 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 5):	310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 6):	310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	230 lbs	370 lbs	320 lbs	580 lbs	517 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 0.97" O.C. thru 2x2 Angle Clip Pair (Fig. 7):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 8):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 0.875" Min. O.C. / U-Clip (Fig. 9 & 10):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs
1 Anchor / F-Clip (Fig. 11 & 12):	155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 0.97" Min. O.C. / F-Clip (Fig. 13):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs
2 Anchors @ 1.53" Min. O.C. / F-Clip (Fig. 14):	210 lbs	630 lbs	200 lbs	850 lbs	N/A	160 lbs	370 lbs	190 lbs	480 lbs	426 lbs	N/A	170 lbs	200 lbs	N/A	442 lbs	537 lbs	536 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

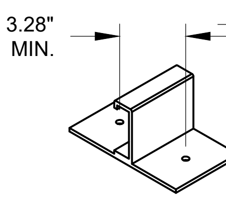


FIGURE 1

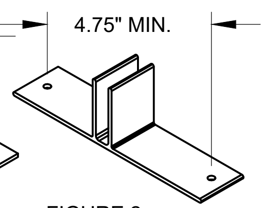


FIGURE 2

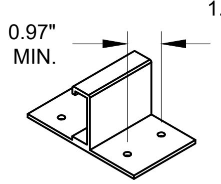
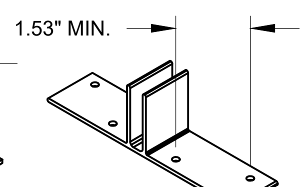


FIGURE 3



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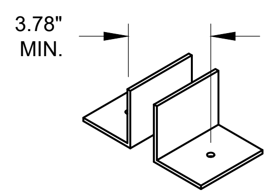

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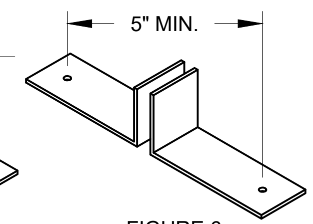

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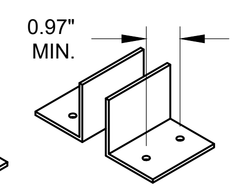

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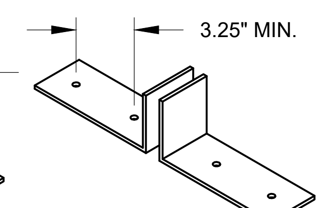

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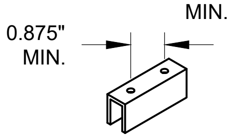

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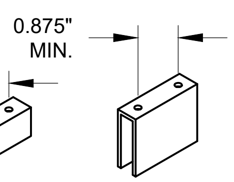

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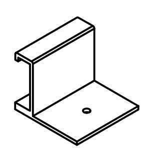
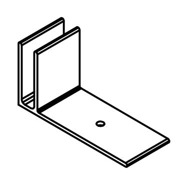


FIGURE 11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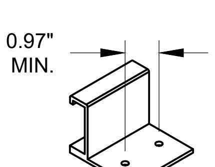

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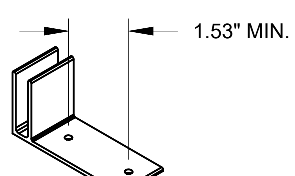


FIGURE 14

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

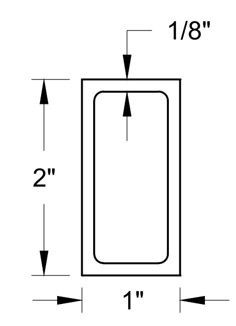
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2" X 1/8"
MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Rev.: B
Title: 1 X 2 X 1/8 CAPACITIES
Sheet: 7 OF 24
DWG No.: TUBEMULL-1
Series: MULLS
Scale: NTS

ANTHONY LYNN MILLER
LICENSE
No. 58705
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 2A:

1" x 2" x 3/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement	Opening Dimension: 50 in				60 in				70 in				80 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
Mullion Span	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	151.3	662	170.0	478	129.7	662	170.0	506	113.5	662	169.5	518
48 in	121.6	507	136.0	419	101.4	507	119.2	410	86.9	507	108.7	403	76.0	507	102.6	399
50-5/8 in	103.7	456	114.6	379	86.4	456	99.9	371	74.1	456	90.5	364	64.8	456	84.6	360
54 in	85.4	400	93.3	336	71.2	400	80.9	328	61.0	400	72.7	322	53.4	400	67.3	318
60 in	62.3	324	66.9	276	51.9	324	57.5	270	44.5	324	51.2	264	38.9	324	46.9	260
63 in	53.8	294	57.4	252	44.8	294	49.2	246	38.4	294	43.6	241	33.6	294	39.8	237
66 in	46.8	268	49.6	230	39.0	268	42.4	225	33.4	268	37.5	221	29.2	268	34.1	218
72 in	36.0	225	37.9	196	30.0	225	32.2	191	25.7	225	28.4	188	22.5	225	25.6	185
76 in	30.6	202	32.0	177	25.5	202	27.2	173	21.9	202	23.9	170	19.2	202	21.5	167
78 in	28.3	192	29.6	168	23.6	192	25.1	165	20.2	192	22.0	162	17.7	192	19.7	159
90 in	18.5	144	19.0	128	15.4	144	16.1	126								

Mullion Span	90 in				100 in				120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	100.9	662	168.9	517	90.8	662	168.9	517	75.7	662	168.9	517	64.9	662	168.9	517	56.7	662	168.9	517
48 in	67.6	507	99.6	397	60.8	507	99.0	396	50.7	507	99.0	396	43.4	507	99.0	396	38.0	507	99.0	396
50-5/8 in	57.6	456	81.3	357	51.8	456	80.0	356	43.2	456	80.0	356	37.0	456	80.0	356	32.4	456	80.0	356
54 in	47.5	400	64.0	315	42.7	400	62.3	314	35.6	400	61.8	313	30.5	400	61.8	313	26.7	400	61.8	313
60 in	34.6	324	43.9	257	31.1	324	42.0	255	26.0	324	40.5	253	22.2	324	40.5	253	19.5	324	40.5	253
63 in	29.9	294	37.1	234	26.9	294	35.2	232	22.4	294	33.5	230	19.2	294	33.4	230	16.8	294	33.4	230
66 in	26.0	268	31.6	215	23.4	268	29.8	212	19.5	268	28.0	210	16.7	268	27.7	209	14.6	268	27.7	209
72 in	20.0	225	23.5	182	18.0	225	22.1	180	15.0	225	20.3	177	12.9	225	19.6	176	11.3	225	19.6	176
76 in	17.0	202	19.7	165	15.3	202	18.4	163	12.8	202	16.7	160								
78 in	15.7	192	18.1	157	14.2	192	16.8	155												
90 in																				

TABLE 2B:

Anchor/Clip Capacity (lbs) when using a 1" x 2" x 3/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.3" Min. O.C. / Mullion Clip (Fig. 2):	353 lbs	1260 lbs	380 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 3):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 0.437" Min. O.C. / U-Clip (Fig. 4):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	536 lbs
1 Anchor / F-Clip (Fig. 5):	155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 1.3" Min. O.C. / F-Clip (Fig. 6):	177 lbs	630 lbs	190 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

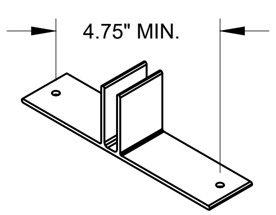
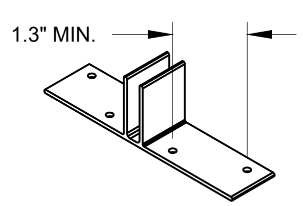


FIGURE 1



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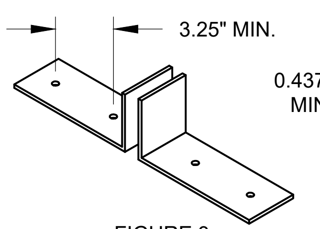

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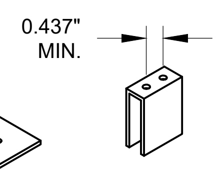

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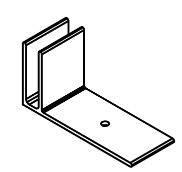
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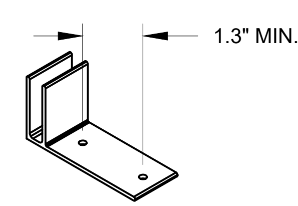


FIGURE 6

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

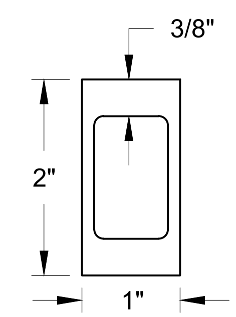
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2" X 3/8" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Title: 1 X 2 X 3/8 CAPACITIES
DWG No.: TUBEMULL-1
Rev.: B
Series: MULLS
Scale: NTS
Sheet: 8 OF 23

ANTHONY LYNN MILLER
LICENSE
No. 58705
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 3A:

1 x 2.75 x .650 Alum. Tube Mullion		Opening Dimension																																			
		50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 in				160 in			
		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
		Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
Mullion Span	42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	160.1	1868	170.0	521
	48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680	143.0	1430	170.0	680	122.6	1430	170.0	680	107.3	1430	170.0	680
	50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	162.6	1286	170.0	747	146.3	1286	170.0	756	121.9	1286	170.0	756	104.5	1286	170.0	756	91.4	1286	170.0	756
	54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	150.7	1130	170.0	803	133.9	1130	170.0	837	120.6	1130	170.0	856	100.5	1130	170.0	861	86.1	1130	170.0	861	75.3	1130	170.0	861
	60 in	170.0	885	170.0	701	146.5	915	162.3	761	125.5	915	144.5	746	109.9	915	132.3	735	97.6	915	123.9	726	87.9	915	118.5	720	73.2	915	114.4	715	62.8	915	114.4	715	54.9	915	114.4	715
	63 in	151.8	830	161.9	710	126.5	830	138.9	694	108.5	830	123.2	681	94.9	830	112.2	670	84.4	830	104.6	662	75.9	830	99.4	656	63.3	830	94.5	649	54.2	830	94.1	649	47.4	830	94.1	649
	66 in	132.1	757	140.0	650	110.0	757	119.8	636	94.3	757	105.9	624	82.5	757	96.1	614	73.4	757	89.1	606	66.0	757	84.2	600	55.0	757	79.0	593	47.2	757	78.2	591	41.3	757	78.2	591
	72 in	101.7	636	106.8	552	84.8	636	91.0	540	72.7	636	80.1	530	63.6	636	72.2	521	56.5	636	66.5	514	50.9	636	62.3	508	42.4	636	57.2	500	36.3	636	55.3	497	31.8	636	55.2	497
	76 in	86.5	571	90.4	498	72.1	571	76.8	488	61.8	571	67.4	479	54.1	571	60.6	471	48.0	571	55.5	464	43.2	571	51.8	459	36.0	571	47.0	451	30.9	571	44.8	447	27.0	571	44.5	446
	78 in	80.0	542	83.4	474	66.7	542	70.8	465	57.1	542	62.1	456	50.0	542	55.7	449	44.4	542	51.0	442	40.0	542	47.5	437	33.3	542	42.9	429	28.6	542	40.6	425	25.0	542	40.1	423
	90 in	52.1	407	53.7	361	43.4	407	45.4	355	37.2	407	39.6	349	32.5	407	35.3	343	28.9	407	32.1	338	26.0	407	29.6	334	21.7	407	26.1	327	18.6	407	24.1	322	16.3	407	23.0	319
	96 in	42.9	358	44.1	320	35.8	358	37.2	314	30.7	358	32.4	309	26.8	358	28.8	304	23.8	358	26.1	300	21.5	358	24.0	296	17.9	358	21.0	289	15.3	358	19.2	284				
	108 in	30.1	283	30.8	255	25.1	283	25.9	251	21.5	283	22.5	247	18.8	283	19.9	244	16.7	283	18.0	240	15.1	283	16.5	237												
	111 in	27.8	267	28.3	242	23.1	267	23.8	238	19.8	267	20.6	235	17.3	267	18.3	231	15.4	267	16.5	228																
	120 in	22.0	229	22.3	209	18.3	229	18.8	205	15.7	229	16.2	202																								

TABLE 3B:

Anchor/Clip Capacity (lbs) when using a 1" x 2 3/4" x 0.650" Tube Mullion	Substrate:	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU	Wood		Metal
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" SS DeWalt AggreGator	5/16" DeWalt Ultracon	1/4" SS DeWalt AggreGator	#10 Steel Screw (G5)	#12 Steel Screw (G5)	#12 Steel Screw (G5)
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2"	3-1/8"	2"	0.48"	0.54"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	2"	1-3/8"	1-3/8"	varies
2 Anchors @ 4.75" Min. O.C. / Standard or Offset Clip (Fig. 1):		310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	374 lbs	664 lbs	946 lbs	341 lbs	442 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard (or Offset) Clip (Fig. 2):		320 lbs	1260 lbs	370 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	682 lbs	885 lbs	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips / (Fig. 3):		620 lbs	1260 lbs	440 lbs	1740 lbs	1896 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	748 lbs	880 lbs	1892 lbs	682 lbs	885 lbs	1120 lbs
2 Anchors @ 0.45" Min. O.C. / U-Clip, into .125" Alum. (Fig. 4):		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	715 lbs
1 Anchor / F-Clip (Fig. 5):		155 lbs	315 lbs	110 lbs	435 lbs	822 lbs	115 lbs	185 lbs	160 lbs	290 lbs	187 lbs	332 lbs	473 lbs	170 lbs	221 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C./ F-Clip (Fig. 6):		160 lbs	630 lbs	185 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	341 lbs	442 lbs	560 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

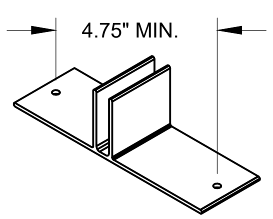


FIGURE 1

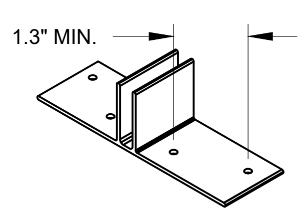


FIGURE 2

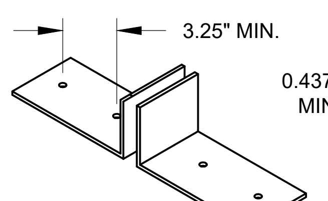


FIGURE 3

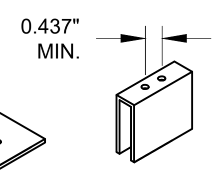


FIGURE 4

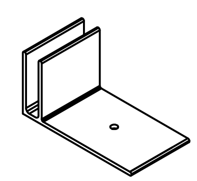


FIGURE 5

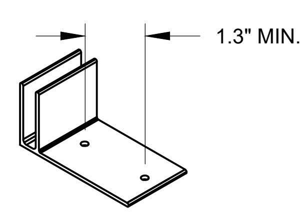


FIGURE 6

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

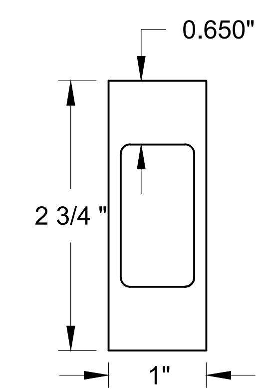
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP}_{\text{FROM TABLE}}}{\text{MULLION CAP}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP}_{REQ}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2" X 0.650" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami–Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Date: 02/02/23
Drawn By: JENS ROSOWSKI
Rev.: B

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 1 X 2 X 0.625 CAPACITIES
Series: MULLS
Scale: NTS
Sheet: 9 OF 24
DWG No.: TUBEMULL-1

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
A. Lynn Miller 3/13/25

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 4A:

1" x 2-1/2" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension

Mullion Span	50 in				60 in				70 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	163.1	714	170.0	478	139.8	714	170.0	506
48 in	131.2	546	146.6	452	109.3	546	128.5	442	93.7	546	117.3	435
50-5/8 in	111.8	491	123.6	409	93.2	491	107.7	400	79.9	491	97.6	393
54 in	92.1	432	100.6	362	76.8	432	87.2	354	65.8	432	78.4	348
60 in	67.2	350	72.1	297	56.0	350	62.0	291	48.0	350	55.2	285
63 in	58.0	317	61.9	271	48.3	317	53.1	265	41.4	317	47.1	260
66 in	50.5	289	53.5	248	42.0	289	45.8	243	36.0	289	40.5	238
72 in	38.9	243	40.8	211	32.4	243	34.8	206	27.8	243	30.6	203
76 in	33.0	218	34.5	190	27.5	218	29.3	186	23.6	218	25.7	183
78 in	30.6	207	31.9	181	25.5	207	27.1	178	21.8	207	23.7	174
90 in	19.9	155	20.5	138	16.6	155	17.3	136				
96 in	16.4	137	16.8	122								

Mullion Span	80 in				90 in				100 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	122.4	714	170.0	519	108.8	714	170.0	521	97.9	714	170.0	521
48 in	82.0	546	110.6	430	72.9	546	107.3	428	65.6	546	106.7	427
50-5/8 in	69.9	491	91.2	388	62.1	491	87.7	385	55.9	491	86.3	384
54 in	57.6	432	72.6	343	51.2	432	69.0	340	46.1	432	67.1	338
60 in	42.0	350	50.5	281	37.3	350	47.3	277	33.6	350	45.3	275
63 in	36.3	317	42.9	256	32.2	317	39.9	253	29.0	317	38.0	250
66 in	31.5	289	36.7	235	28.0	289	34.1	231	25.2	289	32.2	229
72 in	24.3	243	27.6	199	21.6	243	25.4	196	19.4	243	23.8	194
76 in	20.7	218	23.1	180	18.4	218	21.2	177	16.5	218	19.8	175
78 in	19.1	207	21.3	171	17.0	207	19.5	169	15.3	207	18.1	167
90 in												
96 in												

Mullion Span	120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	81.6	714	170.0	521	69.9	714	170.0	521	61.2	714	170.0	521
48 in	54.6	546	106.7	427	46.8	546	106.7	427	41.0	546	106.7	427
50-5/8 in	46.6	491	86.3	384	39.9	491	86.3	384	34.9	491	86.3	384
54 in	38.4	432	66.6	337	32.9	432	66.6	337	28.8	432	66.6	337
60 in	28.0	350	43.7	273	24.0	350	43.7	273	21.0	350	43.7	273
63 in	24.2	317	36.1	248	20.7	317	36.0	248	18.1	317	36.0	248
66 in	21.0	289	30.2	226	18.0	289	29.9	226	15.8	289	29.9	226
72 in	16.2	243	21.8	191	13.9	243	21.1	190	12.1	243	21.1	190
76 in	13.8	218	18.0	172	11.8	218	17.1	171	10.3	218	17.0	170
78 in	12.7	207	16.4	164								
90 in												
96 in												

TABLE 4B:

Anchor/Clip Capacity (lbs) when using a 1" x 2-1/2" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.47" Min. O.C. / Mullion Clip (Fig. 2):	403 lbs	1260 lbs	395 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 3):	310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 1.47" O.C. thru 2x2 Angle Clip Pair (Fig. 4):	403 lbs	1260 lbs	395 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 1.47" Min. O.C. / U-Clip (Fig. 5):	202 lbs	630 lbs	198 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 0.734" Min. O.C. / U-Clip (Fig. 6):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
1 Anchor / F-Clip (Fig. 7):	155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 1.47" Min. O.C. / F-Clip (Fig. 8):	202 lbs	630 lbs	198 lbs	N/A	N/A	N/A	370 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	442 lbs	537 lbs	536 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

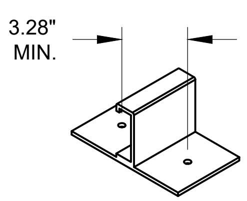


FIGURE 1

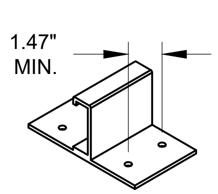


FIGURE 2

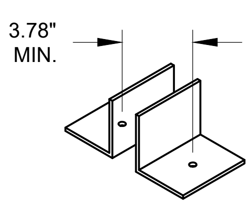


FIGURE 3

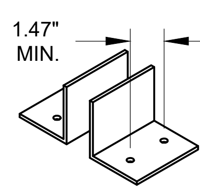


FIGURE 4

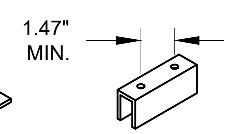


FIGURE 5

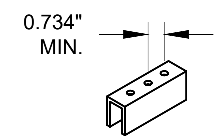


FIGURE 6

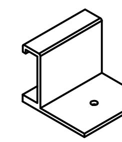


FIGURE 7

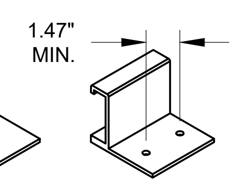


FIGURE 8

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

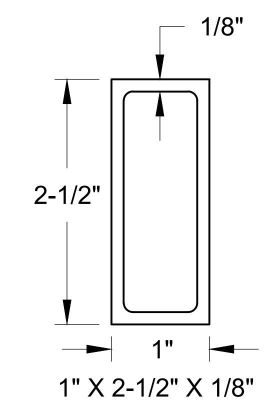
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{ANCHOR\ CAP._{FROM\ TABLE}}{MULLION\ CAP._{FROM\ TABLE}}\right) = ANCHOR\ CAP._{REQ.}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2-1/2" X 1/8" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

CGI Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 1 X 2-1/2 X 1/8 CAPACITIES
Series: MULLS
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Scale: NTS
Sheet: 10 OF 24
DWG No.: TUBEMULL-1
Rev.: B

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 5A:

1" x 3" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Mullion Span	50 in Rectangular Loading Mullion Capacity (lbs/ft^2)	50 in Rectangular Loading Anchor Capacity Required (lbs)	50 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	50 in Trap/Triang. Loading Anchor Capacity Required (lbs)	60 in Rectangular Loading Mullion Capacity (lbs/ft^2)	60 in Rectangular Loading Anchor Capacity Required (lbs)	60 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	60 in Trap/Triang. Loading Anchor Capacity Required (lbs)	70 in Rectangular Loading Mullion Capacity (lbs/ft^2)	70 in Rectangular Loading Anchor Capacity Required (lbs)	70 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	70 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506
48 in	170.0	708	170.0	524	170.0	850	170.0	584	150.8	880	170.0	630
50-5/8 in	170.0	747	170.0	563	150.0	791	170.0	631	128.6	791	157.1	632
54 in	148.3	695	161.9	583	123.6	695	140.4	570	105.9	695	126.2	560
60 in	108.1	563	116.1	479	90.1	563	99.8	468	77.2	563	88.9	459
63 in	93.4	511	99.6	437	77.8	511	85.4	427	66.7	511	75.8	419
66 in	81.2	465	86.1	400	67.7	465	73.7	391	58.0	465	65.1	384
72 in	62.6	391	65.7	339	52.1	391	56.0	332	44.7	391	49.2	326
76 in	53.2	351	55.6	306	44.3	351	47.3	300	38.0	351	41.5	295
78 in	49.2	333	51.3	292	41.0	333	43.6	286	35.1	333	38.2	281
90 in	32.0	250	33.0	222	26.7	250	27.9	218	22.9	250	24.3	214
96 in	26.4	220	27.1	197	22.0	220	22.9	193	18.9	220	19.9	190
108 in	18.5	174	18.9	157								
111 in	17.1	165	17.4	149								

Mullion Span	80 in Rectangular Loading Mullion Capacity (lbs/ft^2)	80 in Rectangular Loading Anchor Capacity Required (lbs)	80 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	80 in Trap/Triang. Loading Anchor Capacity Required (lbs)	90 in Rectangular Loading Mullion Capacity (lbs/ft^2)	90 in Rectangular Loading Anchor Capacity Required (lbs)	90 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	90 in Trap/Triang. Loading Anchor Capacity Required (lbs)	100 in Rectangular Loading Mullion Capacity (lbs/ft^2)	100 in Rectangular Loading Anchor Capacity Required (lbs)	100 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	100 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	170.0	992	170.0	519	170.0	1116	170.0	521	157.6	1149	170.0	521
48 in	132.0	880	170.0	661	117.3	880	170.0	677	105.6	880	170.0	680
50-5/8 in	112.5	791	146.9	625	100.0	791	141.1	620	90.0	791	138.9	618
54 in	92.7	695	116.9	552	82.4	695	111.1	547	74.2	695	108.1	544
60 in	67.6	563	81.4	452	60.1	563	76.2	447	54.1	563	72.9	443
63 in	58.4	511	69.0	412	51.9	511	64.3	407	46.7	511	61.1	403
66 in	50.8	465	59.1	378	45.1	465	54.8	373	40.6	465	51.8	369
72 in	39.1	391	44.4	321	34.8	391	40.9	316	31.3	391	38.3	312
76 in	33.2	351	37.3	290	29.6	351	34.2	286	26.6	351	31.9	282
78 in	30.8	333	34.3	276	27.3	333	31.4	272	24.6	333	29.2	269
90 in	20.0	250	21.7	211	17.8	250	19.7	208	16.0	250	18.2	205
96 in	16.5	220	17.7	187	14.7	220	16.0	184				
108 in												
111 in												

Mullion Span	120 in Rectangular Loading Mullion Capacity (lbs/ft^2)	120 in Rectangular Loading Anchor Capacity Required (lbs)	120 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	120 in Trap/Triang. Loading Anchor Capacity Required (lbs)	140 in Rectangular Loading Mullion Capacity (lbs/ft^2)	140 in Rectangular Loading Anchor Capacity Required (lbs)	140 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	140 in Trap/Triang. Loading Anchor Capacity Required (lbs)	160 in Rectangular Loading Mullion Capacity (lbs/ft^2)	160 in Rectangular Loading Anchor Capacity Required (lbs)	160 in Trap/Triang. Loading Mullion Capacity (lbs/ft^2)	160 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	131.3	1149	170.0	521	112.6	1149	170.0	521	98.5	1149	170.0	521
48 in	88.0	880	170.0	680	75.4	880	170.0	680	66.0	880	170.0	680
50-5/8 in	75.0	791	138.9	618	64.3	791	138.9	618	56.2	791	138.9	618
54 in	61.8	695	107.3	543	53.0	695	107.3	543	46.3	695	107.3	543
60 in	45.0	563	70.4	440	38.6	563	70.4	440	33.8	563	70.4	440
63 in	38.9	511	58.1	400	33.4	511	57.9	399	29.2	511	57.9	399
66 in	33.8	465	48.6	365	29.0	465	48.1	364	25.4	465	48.1	364
72 in	26.1	391	35.2	308	22.3	391	34.0	306	19.6	391	33.9	305
76 in	22.2	351	28.9	277	19.0	351	27.6	275	16.6	351	27.3	274
78 in	20.5	333	26.4	264	17.6	333	25.0	261	15.4	333	24.6	260
90 in	13.3	250	16.1	201								
96 in												
108 in												
111 in												

TABLE 5B:

Anchor/Clip Capacity (lbs) when using a 1" x 3" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.97" Min. O.C. / Mullion Clip (Fig. 2):	537 lbs	1260 lbs	412 lbs	1712 lbs	559 lbs	361 lbs	740 lbs	456 lbs	1018 lbs	892 lbs	N/A	340 lbs	474 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 0.984" Min. O.C. / Mullion Clip (Fig. 3):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 4):	310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 1.97" O.C. thru 2x2 Angle Clip Pair (Fig. 5):	537 lbs	1260 lbs	412 lbs	1712 lbs	559 lbs	361 lbs	740 lbs	456 lbs	1018 lbs	892 lbs	N/A	340 lbs	474 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 0.984" O.C. thru 2x2 Angle Clip Pair (Fig. 6):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors @ 1.97" Min. O.C. / U-Clip (Fig. 7):	268 lbs	630 lbs	206 lbs	856 lbs	279 lbs	180 lbs	370 lbs	228 lbs	509 lbs	446 lbs	N/A	170 lbs	237 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 0.984" Min. O.C. / U-Clip (Fig. 8):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
1 Anchor / F-Clip (Fig. 9):	155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 1.97" Min. O.C. / F-Clip (Fig. 10):	268 lbs	630 lbs	206 lbs	856 lbs	279 lbs	180 lbs	370 lbs	228 lbs	509 lbs	446 lbs	N/A	170 lbs	237 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 0.984" Min. O.C. / F-Clip (Fig. 11):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

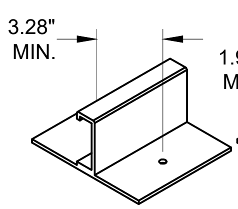


FIGURE 1

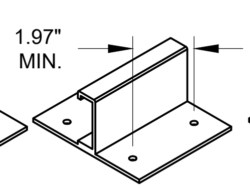
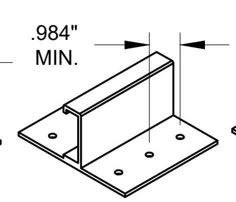


FIGURE 2



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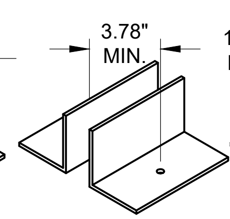


FIGURE 4

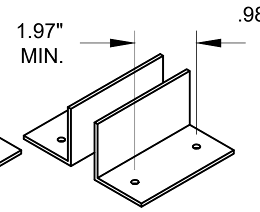


FIGURE 5

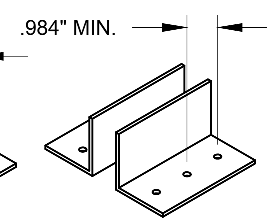


FIGURE 6

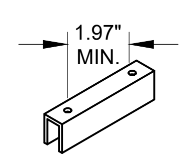


FIGURE 7

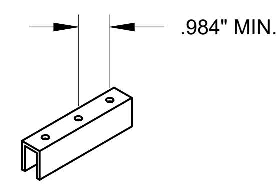


FIGURE 8

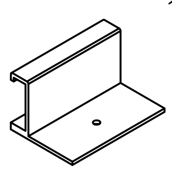


FIGURE 9

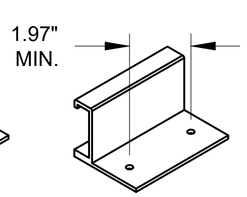


FIGURE 10

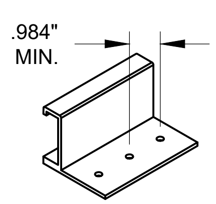


FIGURE 11

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

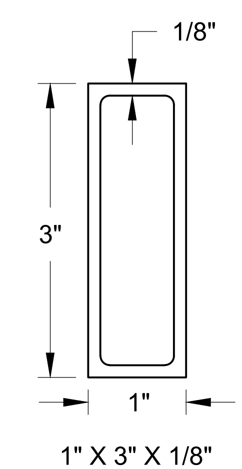
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 3" X 1/8"
MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Rev.: B
Title: 1 X 3 X 1/8 CAPACITIES
DWG No.: TUBEMULL-1
Series: MULLS
Scale: NTS
Sheet: 11 OF 24

ANTHONY LYNN MILLER
LICENSE
No. 58705
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 6A:

1" x 4" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension, by Mullion Span

Mullion Span	50 in Rectangular Loading: Mullion Capacity (lbs/ft²)	50 in Rectangular Loading: Anchor Capacity Required (lbs)	50 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	50 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	60 in Rectangular Loading: Mullion Capacity (lbs/ft²)	60 in Rectangular Loading: Anchor Capacity Required (lbs)	60 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	60 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	70 in Rectangular Loading: Mullion Capacity (lbs/ft²)	70 in Rectangular Loading: Anchor Capacity Required (lbs)	70 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	70 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	80 in Rectangular Loading: Mullion Capacity (lbs/ft²)	80 in Rectangular Loading: Anchor Capacity Required (lbs)	80 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	80 in Trap/Triang. Loading: Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	167.7	1223	170.0	878	146.7	1223	170.0	944
63 in	170.0	930	170.0	745	169.0	1109	170.0	850	144.8	1109	164.5	910	126.7	1109	149.8	895
66 in	170.0	974	170.0	789	147.0	1010	160.0	850	126.0	1010	141.4	834	110.2	1010	128.3	820
72 in	135.8	849	142.7	737	113.2	849	121.5	722	97.0	849	106.9	708	84.9	849	96.4	696
76 in	115.5	762	120.7	665	96.2	762	102.6	652	82.5	762	90.0	640	72.2	762	80.9	629
78 in	106.8	723	111.4	633	89.0	723	94.6	621	76.3	723	82.9	609	66.8	723	74.4	599
90 in	69.5	543	71.8	483	58.0	543	60.6	474	49.7	543	52.8	466	43.5	543	47.1	458
96 in	57.3	478	58.9	427	47.8	478	49.7	419	40.9	478	43.2	412	35.8	478	38.5	406
108 in	40.2	377	41.1	341	33.5	377	34.6	335	28.7	377	30.0	330	25.2	377	26.6	325
111 in	37.1	357	37.8	323	30.9	357	31.8	318	26.5	357	27.6	313	23.2	357	24.4	309
120 in	29.3	306	29.8	278	24.5	306	25.1	274	21.0	306	21.7	270	18.3	306	19.2	267
144 in	17.0	212	17.2	196												

Mullion Span	90 in Rectangular Loading: Mullion Capacity (lbs/ft²)	90 in Rectangular Loading: Anchor Capacity Required (lbs)	90 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	90 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	100 in Rectangular Loading: Mullion Capacity (lbs/ft²)	100 in Rectangular Loading: Anchor Capacity Required (lbs)	100 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	100 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	120 in Rectangular Loading: Mullion Capacity (lbs/ft²)	120 in Rectangular Loading: Anchor Capacity Required (lbs)	120 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	120 in Trap/Triang. Loading: Anchor Capacity Required (lbs)
42 in	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521
48 in	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680
50-5/8 in	170.0	1345	170.0	747	170.0	1494	170.0	756	162.8	1717	170.0	756
54 in	170.0	1434	170.0	837	161.0	1509	170.0	856	134.2	1509	170.0	861
60 in	130.4	1223	165.5	970	117.4	1223	158.3	962	97.8	1223	152.8	955
63 in	112.6	1109	139.6	884	101.4	1109	132.7	875	84.5	1109	126.2	867
66 in	98.0	1010	119.0	809	88.2	1010	112.5	801	73.5	1010	105.5	792
72 in	75.5	849	88.8	686	67.9	849	83.1	678	56.6	849	76.3	668
76 in	64.2	762	74.2	620	57.7	762	69.2	612	48.1	762	62.8	602
78 in	59.4	723	68.1	591	53.4	723	63.4	583	44.5	723	57.3	573
90 in	38.6	543	42.8	452	34.8	543	39.5	446	29.0	543	34.9	436
96 in	31.8	478	34.8	400	28.7	478	32.0	395	23.9	478	28.1	386
108 in	22.4	377	24.0	321	20.1	377	22.0	317	16.8	377	19.0	309
111 in	20.6	357	22.0	305	18.5	357	20.1	301	15.4	357	17.4	294
120 in	16.3	306	17.3	263								
144 in												

Mullion Span	140 in Rectangular Loading: Mullion Capacity (lbs/ft²)	140 in Rectangular Loading: Anchor Capacity Required (lbs)	140 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	140 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	160 in Rectangular Loading: Mullion Capacity (lbs/ft²)	160 in Rectangular Loading: Anchor Capacity Required (lbs)	160 in Trap/Triang. Loading: Mullion Capacity (lbs/ft²)	160 in Trap/Triang. Loading: Anchor Capacity Required (lbs)
42 in	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	163.7	1910	170.0	680	143.3	1910	170.0	680
50-5/8 in	139.6	1717	170.0	756	122.1	1717	170.0	756
54 in	115.0	1509	170.0	861	100.6	1509	170.0	861
60 in	83.8	1223	152.8	955	73.4	1223	152.8	955
63 in	72.4	1109	125.7	866	63.4	1109	125.7	866
66 in	63.0	1010	104.4	789	55.1	1010	104.4	789
72 in	48.5	849	73.8	664	42.4	849	73.7	663
76 in	41.2	762	59.9	597	36.1	762	59.4	595
78 in	38.2	723	54.3	567	33.4	723	53.5	565
90 in	24.8	543	32.1	430	21.7	543	30.7	426
96 in	20.5	478	25.6	380	17.9	478	24.2	376
108 in	14.4	377	17.1	304				
111 in								
120 in								
144 in								

TABLE 6B:

Anchor/Clip Capacity (lbs) when using a 1" x 4" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 3.28" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1105 lbs	230 lbs	370 lbs	320 lbs	580 lbs	497 lbs	374 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 2.97" Min. O.C. / Mullion Clip (Fig. 2):	620 lbs	1260 lbs	438 lbs	1738 lbs	1817 lbs	454 lbs	740 lbs	629 lbs	1152 lbs	982 lbs	N/A	340 lbs	642 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 1.48" Min. O.C. / Mullion Clip (Fig. 3):	605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Total Anchors @ 3.78" O.C. thru 2x2 Angle Clip Pair (Fig. 4):	310 lbs	630 lbs	220 lbs	870 lbs	1420 lbs	230 lbs	370 lbs	320 lbs	580 lbs	503 lbs	374 lbs	170 lbs	389 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 2.97" O.C. thru 2x2 Angle Clip Pair (Fig. 5):	620 lbs	1260 lbs	438 lbs	1738 lbs	1817 lbs	454 lbs	740 lbs	629 lbs	1152 lbs	982 lbs	N/A	340 lbs	642 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 1.48" O.C. thru 2x2 Angle Clip Pair (Fig. 6):	605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors @ 2.97" Min. O.C. / U-Clip (Fig. 7):	310 lbs	630 lbs	219 lbs	869 lbs	909 lbs	227 lbs	370 lbs	315 lbs	576 lbs	491 lbs	N/A	170 lbs	321 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.48" Min. O.C. / U-Clip (Fig. 8):	303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
1 Anchor / F-Clip (Fig. 9):	155 lbs	315 lbs	110 lbs	435 lbs	850 lbs	115 lbs	185 lbs	160 lbs	290 lbs	258 lbs	187 lbs	85 lbs	205 lbs	473 lbs	221 lbs	268 lbs	268 lbs
2 Anchors @ 2.97" Min. O.C. / F-Clip (Fig. 10):	310 lbs	630 lbs	219 lbs	869 lbs	909 lbs	227 lbs	370 lbs	315 lbs	576 lbs	491 lbs	N/A	170 lbs	321 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.48" Min. O.C. / F-Clip (Fig. 11):	303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

CIRCLED VALUES ARE USED IN THE EXAMPLES ON SHEETS 22 & 23.

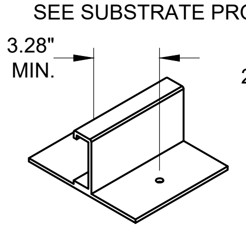


FIGURE 1

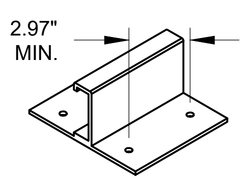


FIGURE 2

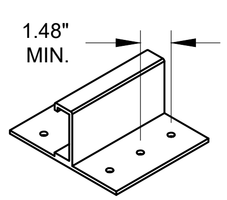
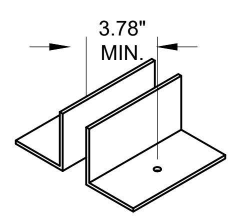


FIGURE 3



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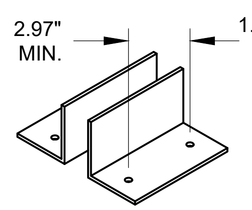


FIGURE 5

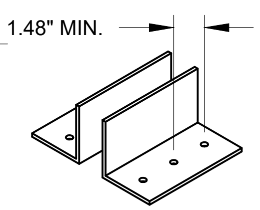


FIGURE 6

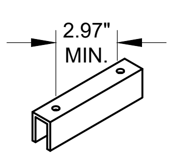


FIGURE 7

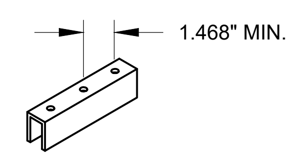


FIGURE 8

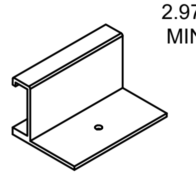


FIGURE 9

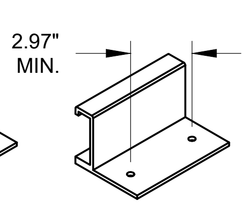


FIGURE 10

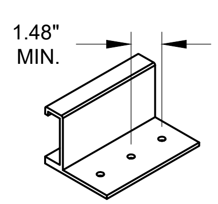


FIGURE 11

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

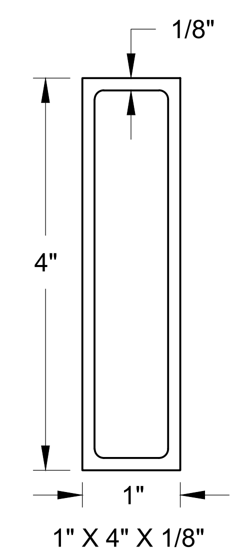
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP}_{\text{FROM TABLE}}}{\text{MULLION CAP}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP}_{REQ}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 4" X 1/8" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami–Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Rev.: B
Title: 1 X 4 X 1/8 CAPACITIES
Scale: NTS
Sheet: 12 OF 24
DWG No.: TUBEMULL-1
Series: MULLS

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 7A:

1" x 4" x 3/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement

Opening Dimension (50 in – 90 in). MC = Mullion Capacity (lbs/ft^2); AC = Anchor Capacity Required (lbs)

Mullion Span	50 in Rectangular Loading MC	50 in Rectangular Loading AC	50 in Trap/Triang. Loading MC	50 in Trap/Triang. Loading AC	60 in Rectangular Loading MC	60 in Rectangular Loading AC	60 in Trap/Triang. Loading MC	60 in Trap/Triang. Loading AC	70 in Rectangular Loading MC	70 in Rectangular Loading AC	70 in Trap/Triang. Loading MC	70 in Trap/Triang. Loading AC	80 in Rectangular Loading MC	80 in Rectangular Loading AC	80 in Trap/Triang. Loading MC	80 in Trap/Triang. Loading AC	90 in Rectangular Loading MC	90 in Rectangular Loading AC	90 in Trap/Triang. Loading MC	90 in Trap/Triang. Loading AC
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086	152.3	1570	170.0	1155
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	150.8	1320	166.2	1101	132.0	1320	149.9	1082	117.3	1320	137.9	1067
76 in	170.0	1122	170.0	937	149.6	1184	159.4	1013	128.2	1184	139.9	994	112.2	1184	125.7	978	99.7	1184	115.3	964
78 in	166.1	1124	170.0	967	138.4	1124	147.0	965	118.6	1124	128.8	947	103.8	1124	115.6	931	92.3	1124	105.8	918
90 in	108.1	844	111.5	750	90.1	844	94.3	736	77.2	844	82.1	724	67.6	844	73.3	712	60.1	844	66.5	702
96 in	89.1	742	91.5	663	74.2	742	77.2	652	63.6	742	67.2	641	55.7	742	59.8	631	49.5	742	54.1	622
108 in	62.6	586	63.9	530	52.1	586	53.8	521	44.7	586	46.6	513	39.1	586	41.4	505	34.8	586	37.3	498
111 in	57.6	555	58.8	503	48.0	555	49.5	495	41.2	555	42.9	487	36.0	555	38.0	480	32.0	555	34.2	473
120 in	45.6	475	46.4	433	38.0	475	39.0	426	32.6	475	33.7	420	28.5	475	29.8	414	25.3	475	26.8	409
144 in	26.4	330	26.7	305	22.0	330	22.4	301	18.9	330	19.3	297	16.5	330	17.0	293				

Opening Dimension (100 in – 160 in)

Mullion Span	100 in Rectangular Loading MC	100 in Rectangular Loading AC	100 in Trap/Triang. Loading MC	100 in Trap/Triang. Loading AC	120 in Rectangular Loading MC	120 in Rectangular Loading AC	120 in Trap/Triang. Loading MC	120 in Trap/Triang. Loading AC	140 in Rectangular Loading MC	140 in Rectangular Loading AC	140 in Trap/Triang. Loading MC	140 in Trap/Triang. Loading AC	160 in Rectangular Loading MC	160 in Rectangular Loading AC	160 in Trap/Triang. Loading MC	160 in Trap/Triang. Loading AC
42 in	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	1594	170.0	856	170.0	1913	170.0	861	170.0	2231	170.0	861	156.4	2346	170.0	861
60 in	170.0	1771	170.0	1033	152.0	1900	170.0	1063	130.3	1900	170.0	1063	114.0	1900	170.0	1063
63 in	157.6	1723	170.0	1122	131.3	1723	170.0	1169	112.6	1723	170.0	1171	98.5	1723	170.0	1171
66 in	137.0	1570	170.0	1210	114.2	1570	164.0	1230	97.9	1570	162.2	1227	85.7	1570	162.2	1227
72 in	105.6	1320	129.2	1054	88.0	1320	118.7	1038	75.4	1320	114.7	1032	66.0	1320	114.5	1031
76 in	89.8	1184	107.5	952	74.8	1184	97.6	935	64.1	1184	93.1	927	56.1	1184	92.3	925
78 in	83.0	1124	98.5	906	69.2	1124	89.0	890	59.3	1124	84.3	881	51.9	1124	83.2	878
90 in	54.0	844	61.4	693	45.0	844	54.2	678	38.6	844	50.0	668	33.8	844	47.7	662
96 in	44.5	742	49.8	614	37.1	742	43.6	600	31.8	742	39.8	590	27.8	742	37.5	584
108 in	31.3	586	34.2	492	26.1	586	29.6	481	22.3	586	26.6	472	19.5	586	24.7	466
111 in	28.8	555	31.3	467	24.0	555	27.1	457	20.6	555	24.3	448	18.0	555	22.4	442
120 in	22.8	475	24.5	404	19.0	475	21.1	395	16.3	475	18.7	387	14.3	475	17.2	381
144 in																

TABLE 7B:

Anchor/Clip Capacity (lbs) when using a 1" x 4" x 3/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 2.375" Min. O.C. / Mullion Clip (Fig. 2):	620 lbs	1260 lbs	423 lbs	1723 lbs	1109 lbs	402 lbs	740 lbs	532 lbs	1077 lbs	931 lbs	N/A	340 lbs	547 lbs	N/A	885 lbs	1073 lbs	1073 lbs
8 Anchors @ 1.25" Min. O.C. / Mullion Clip (Fig. 3):	707 lbs	2520 lbs	760 lbs	N/A	N/A	N/A	1480 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 4):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 3" O.C. thru 2x5 Angle Clip Pair (Fig. 5):	930 lbs	1890 lbs	660 lbs	2610 lbs	2844 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1482 lbs	1122 lbs	510 lbs	978 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
4 Anchors @ 0.79" Min. O.C. / U-Clip (Fig. 6):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1073 lbs
2 Anchors @ 2.375" Min. O.C. / F-Clip (Fig. 7):	310 lbs	630 lbs	212 lbs	862 lbs	555 lbs	201 lbs	370 lbs	266 lbs	538 lbs	466 lbs	N/A	170 lbs	274 lbs	N/A	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.25" Min. O.C. / F-Clip (Fig. 8):	353 lbs	1260 lbs	380 lbs	N/A	N/A	N/A	740 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

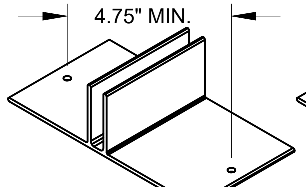


FIGURE 1

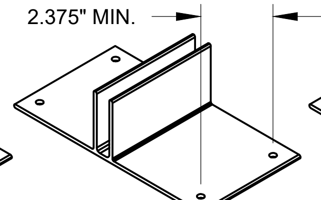


FIGURE 2

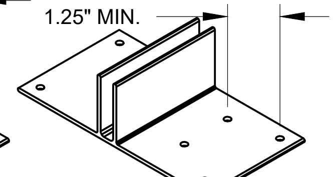


FIGURE 3

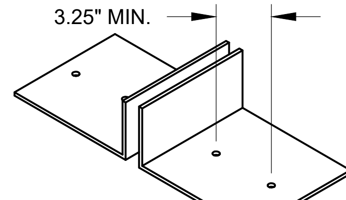


FIGURE 4

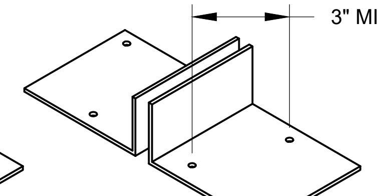


FIGURE 5

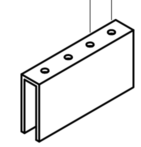


FIGURE 6

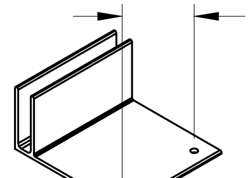


FIGURE 7

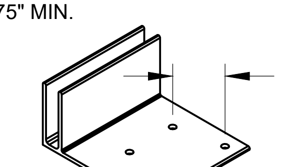


FIGURE 8

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

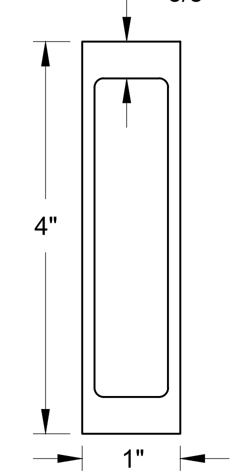
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 4" X 3/8" MULLION

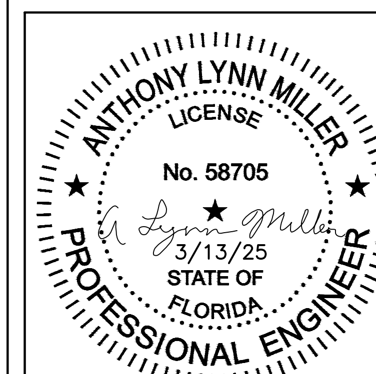
PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 1 X 4 X 3/8 CAPACITIES
Series: MULLS
Date: 02/02/23
Drawn By: JENS ROSOWSKI
DWG No.: TUBEMULL-1
Rev.: B
Scale: NTS
Sheet: 13 OF 24



A. LYNN MILLER, P.E., P.E.# 58705

TABLE 8A:

1" x 2-1/8" x 1/8" Fin Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension

Mullion Span	50 in				60 in				70 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	144.2	526	167.0	428	120.2	526	148.9	419	103.0	526	138.9	414
48 in	96.6	403	108.0	333	80.5	403	94.7	325	69.0	403	86.4	320
50-5/8 in	82.3	362	91.0	301	68.6	362	79.3	294	58.8	362	71.9	289
54 in	67.8	318	74.1	267	56.5	318	64.2	261	48.5	318	57.7	256
60 in	49.5	258	53.1	219	41.2	258	45.7	214	35.3	258	40.7	210
63 in	42.7	234	45.6	200	35.6	234	39.1	195	30.5	234	34.7	192
66 in	37.2	213	39.4	183	31.0	213	33.7	179	26.5	213	29.8	176
72 in	28.6	179	30.1	155	23.9	179	25.6	152	20.4	179	22.5	149
76 in	24.3	161	25.4	140	20.3	161	21.6	137	17.4	161	19.0	135
78 in	22.5	152	23.5	133	18.8	152	19.9	131	16.1	152	17.5	128

Mullion Span	80 in				90 in				100 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	90.1	526	134.6	411	80.1	526	134.1	411	72.1	526	134.1	411
48 in	60.4	403	81.4	317	53.7	403	79.1	315	48.3	403	78.6	314
50-5/8 in	51.5	362	67.2	286	45.7	362	64.6	284	41.2	362	63.6	283
54 in	42.4	318	53.5	253	37.7	318	50.8	250	33.9	318	49.5	249
60 in	30.9	258	37.2	207	27.5	258	34.9	204	24.7	258	33.4	203
63 in	26.7	234	31.6	189	23.7	234	29.4	186	21.4	234	28.0	184
66 in	23.2	213	27.0	173	20.6	213	25.1	170	18.6	213	23.7	169
72 in	17.9	179	20.3	147	15.9	179	18.7	145	14.3	179	17.5	143
76 in	15.2	161	17.0	133								
78 in												

Mullion Span	120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	60.1	526	134.1	411	51.5	526	134.1	411	45.1	526	134.1	411
48 in	40.3	403	78.6	314	34.5	403	78.6	314	30.2	403	78.6	314
50-5/8 in	34.3	362	63.5	283	29.4	362	63.5	283	25.7	362	63.5	283
54 in	28.3	318	49.1	248	24.2	318	49.1	248	21.2	318	49.1	248
60 in	20.6	258	32.2	201	17.7	258	32.2	201	15.5	258	32.2	201
63 in	17.8	234	26.6	183	15.3	234	26.5	183	13.4	234	26.5	183
66 in	15.5	213	22.2	167	13.3	213	22.0	166	11.6	213	22.0	166
72 in	11.9	179	16.1	141								
76 in												
78 in												

TABLE 8B:

Anchor/Clip Capacity (lbs) when using a 1-1/4" x 2-1/8" x 1/8" Fin Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	230 lbs	370 lbs	320 lbs	580 lbs	517 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 2):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

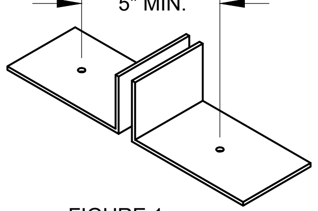


FIGURE 1

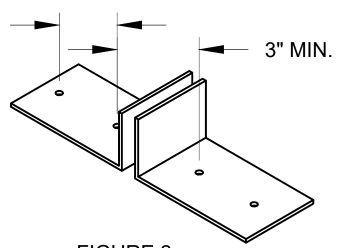


FIGURE 2

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

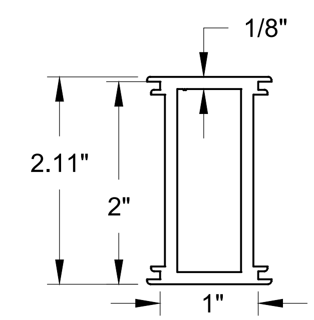
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



1" X 2-1/8" X 1/8" FIN MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Date: 02/02/23 | Drawn By: JENS ROSOWSKI | Rev.: B

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 1 X 2-1/8 X 1/8 FIN CAPACITIES
Series: MULLS | Scale: NTS | Sheet: 14 OF 24 | DWG No.: TUBEMULL-1

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
A. Lynn Miller 3/13/25

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 9A:

2" x 4" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension (50 in – 70 in)

Mullion Span	50 in				60 in				70 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002
72 in	170.0	1063	170.0	878	163.3	1225	170.0	1009	140.0	1225	154.2	1022
76 in	166.6	1099	170.0	937	138.9	1099	148.0	940	119.0	1099	129.8	923
78 in	154.1	1044	160.7	914	128.4	1044	136.5	896	110.1	1044	119.6	879
90 in	100.3	784	103.5	696	83.6	784	87.5	684	71.7	784	76.2	672
96 in	82.7	689	85.0	616	68.9	689	71.7	605	59.1	689	62.3	595
108 in	58.1	544	59.3	492	48.4	544	49.9	484	41.5	544	43.3	476
111 in	53.5	515	54.6	467	44.6	515	45.9	459	38.2	515	39.8	452
120 in	42.3	441	43.1	402	35.3	441	36.2	396	30.2	441	31.3	390
144 in	24.5	306	24.8	283	20.4	306	20.8	279	17.5	306	17.9	275

Opening Dimension (80 in – 100 in)

Mullion Span	80 in				90 in				100 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521
48 in	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680
50-5/8 in	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756
54 in	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856
60 in	170.0	1417	170.0	944	170.0	1594	170.0	996	169.3	1764	170.0	1033
63 in	170.0	1488	170.0	1015	162.5	1600	170.0	1076	146.3	1600	170.0	1122
66 in	159.0	1458	170.0	1086	141.3	1458	170.0	1155	127.2	1458	162.3	1155
72 in	122.5	1225	139.1	1005	108.9	1225	128.0	990	98.0	1225	120.0	979
76 in	104.1	1099	116.7	908	92.6	1099	107.0	895	83.3	1099	99.8	884
78 in	96.3	1044	107.3	865	85.6	1044	98.2	852	77.1	1044	91.4	841
90 in	62.7	784	68.0	661	55.7	784	61.8	651	50.2	784	57.0	643
96 in	51.7	689	55.5	586	45.9	689	50.3	577	41.3	689	46.2	570
108 in	36.3	544	38.4	469	32.3	544	34.6	463	29.0	544	31.7	457
111 in	33.4	515	35.2	446	29.7	515	31.8	439	26.7	515	29.1	434
120 in	26.5	441	27.7	384	23.5	441	24.9	379	21.2	441	22.7	375
144 in												

Opening Dimension (120 in – 160 in)

Mullion Span	120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	1913	170.0	861	165.9	2177	170.0	861	145.2	2177	170.0	861
60 in	141.1	1764	170.0	1063	120.9	1764	170.0	1063	105.8	1764	170.0	1063
63 in	121.9	1600	170.0	1169	104.5	1600	170.0	1171	91.4	1600	170.0	1171
66 in	106.0	1458	152.3	1142	90.9	1458	150.6	1139	79.5	1458	150.6	1139
72 in	81.7	1225	110.1	964	70.0	1225	106.5	958	61.2	1225	106.3	957
76 in	69.4	1099	90.6	868	59.5	1099	86.4	861	52.1	1099	85.6	859
78 in	64.2	1044	82.6	826	55.0	1044	78.3	818	48.2	1044	77.2	815
90 in	41.8	784	50.3	629	35.8	784	46.4	620	31.4	784	44.3	615
96 in	34.4	689	40.5	557	29.5	689	37.0	548	25.8	689	34.8	542
108 in	24.2	544	27.5	446	20.7	544	24.7	438	18.1	544	22.9	432
111 in	22.3	515	25.1	424	19.1	515	22.5	416	16.7	515	20.8	410
120 in	17.6	441	19.5	366	15.1	441	17.4	359				
144 in												

TABLE 9B:

Anchor/Clip Capacity (lbs) when using a 2" x 4" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
4 Anchors @ 2.94" Min. O.C. / Mullion Clip (Fig. 1):	620 lbs	1260 lbs	437 lbs	1737 lbs	1739 lbs	448 lbs	740 lbs	618 lbs	1143 lbs	977 lbs	N/A	340 lbs	631 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 1.47" Min. O.C. / Mullion Clip (Fig. 2):	605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
4 Total Anchors @ 2.94" O.C. thru 2x5 Angle Clip Pair (Fig. 3):	620 lbs	1260 lbs	437 lbs	1737 lbs	1739 lbs	448 lbs	740 lbs	618 lbs	1143 lbs	977 lbs	N/A	340 lbs	631 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 1.47" O.C. thru 2x5 Angle Clip Pair (Fig. 4):	605 lbs	1890 lbs	593 lbs	N/A	N/A	N/A	1110 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors @ 2.94" Min. O.C. / U-Clip (Fig. 5):	310 lbs	630 lbs	218 lbs	868 lbs	869 lbs	224 lbs	370 lbs	309 lbs	572 lbs	488 lbs	N/A	170 lbs	316 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.47" Min. O.C. / U-Clip (Fig. 6):	303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs
4 Anchors @ 0.98" Min. O.C. / U-Clip (Fig. 7):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 2.94" Min. O.C. / F-Clip (Fig. 8):	310 lbs	630 lbs	218 lbs	868 lbs	869 lbs	224 lbs	370 lbs	309 lbs	572 lbs	488 lbs	N/A	170 lbs	316 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.47" Min. O.C. / F-Clip (Fig. 9):	303 lbs	945 lbs	296 lbs	N/A	N/A	N/A	555 lbs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

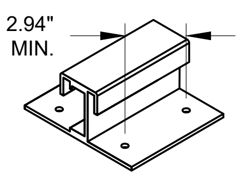


FIGURE 1

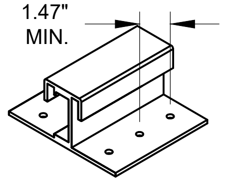


FIGURE 2

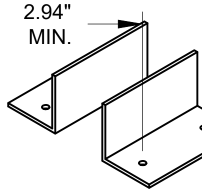


FIGURE 3

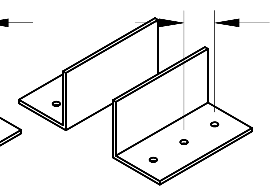
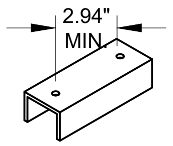


FIGURE 4



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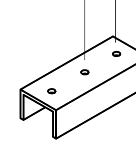

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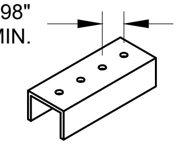

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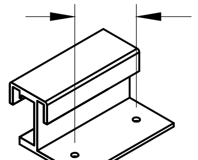

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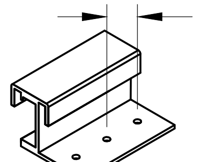


FIGURE 9

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

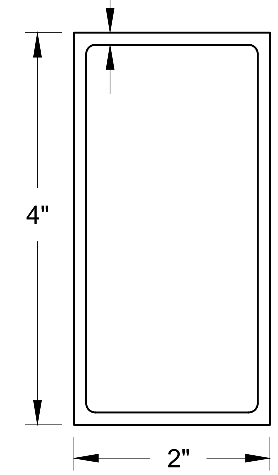
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ.}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 4" X 1/8"
MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Date: 02/02/23
Drawn By: JENS ROSOWSKI
Rev.: B

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 2 X 4 X 1/8 CAPACITIES
Series: MULLS
Scale: NTS
Sheet: 15 OF 24
DWG No.: TUBEMULL-1

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

ANTHONY LYNN MILLER
LICENSE
No. 58705
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 10A:

2" x 4" x 1/4" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement

Opening Dimension (R = Rectangular Loading, T = Trap/Triang. Loading; Mullion Capacity in lbs/ft², Anchor Capacity Required in lbs)

Mullion Span	50 in R Mullion Capacity (lbs/ft^2)	50 in R Anchor Capacity Required (lbs)	50 in T Mullion Capacity (lbs/ft^2)	50 in T Anchor Capacity Required (lbs)	60 in R Mullion Capacity (lbs/ft^2)	60 in R Anchor Capacity Required (lbs)	60 in T Mullion Capacity (lbs/ft^2)	60 in T Anchor Capacity Required (lbs)	70 in R Mullion Capacity (lbs/ft^2)	70 in R Anchor Capacity Required (lbs)	70 in T Mullion Capacity (lbs/ft^2)	70 in T Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126
76 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209
78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250
90 in	170.0	1328	170.0	1144	149.1	1398	156.0	1219	127.8	1398	136.0	1198
96 in	147.4	1229	151.5	1098	122.9	1229	127.8	1079	105.3	1229	111.2	1061
108 in	103.5	971	105.8	877	86.3	971	89.0	862	74.0	971	77.2	849
111 in	95.4	919	97.3	832	79.5	919	81.9	819	68.1	919	70.9	806
120 in	75.5	786	76.8	716	62.9	786	64.5	705	53.9	786	55.8	695
144 in	43.7	546	44.2	504	36.4	546	37.0	498	31.2	546	31.9	491

Mullion Span	80 in R Mullion Capacity (lbs/ft^2)	80 in R Anchor Capacity Required (lbs)	80 in T Mullion Capacity (lbs/ft^2)	80 in T Anchor Capacity Required (lbs)	90 in R Mullion Capacity (lbs/ft^2)	90 in R Anchor Capacity Required (lbs)	90 in T Mullion Capacity (lbs/ft^2)	90 in T Anchor Capacity Required (lbs)	100 in R Mullion Capacity (lbs/ft^2)	100 in R Anchor Capacity Required (lbs)	100 in T Mullion Capacity (lbs/ft^2)	100 in T Anchor Capacity Required (lbs)
42 in	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521
48 in	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680
50-5/8 in	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756
54 in	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856
60 in	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033
63 in	170.0	1488	170.0	1015	170.0	1673	170.0	1076	170.0	1859	170.0	1122
66 in	170.0	1558	170.0	1086	170.0	1753	170.0	1155	170.0	1948	170.0	1210
72 in	170.0	1700	170.0	1228	170.0	1913	170.0	1315	170.0	2125	170.0	1387
76 in	170.0	1794	170.0	1322	165.1	1960	170.0	1421	148.6	1960	170.0	1505
78 in	170.0	1842	170.0	1369	152.7	1861	170.0	1474	137.4	1861	163.1	1500
90 in	111.8	1398	121.3	1179	99.4	1398	110.2	1162	89.5	1398	101.6	1147
96 in	92.1	1229	98.9	1044	81.9	1229	89.6	1029	73.7	1229	82.4	1016
108 in	64.7	971	68.4	837	57.5	971	61.8	825	51.8	971	56.5	815
111 in	59.6	919	62.9	794	53.0	919	56.7	784	47.7	919	51.8	774
120 in	47.2	786	49.4	686	41.9	786	44.4	677	37.7	786	40.5	668
144 in	27.3	546	28.2	485	24.3	546	25.3	479	21.8	546	22.9	474

Mullion Span	120 in R Mullion Capacity (lbs/ft^2)	120 in R Anchor Capacity Required (lbs)	120 in T Mullion Capacity (lbs/ft^2)	120 in T Anchor Capacity Required (lbs)	140 in R Mullion Capacity (lbs/ft^2)	140 in R Anchor Capacity Required (lbs)	140 in T Mullion Capacity (lbs/ft^2)	140 in T Anchor Capacity Required (lbs)	160 in R Mullion Capacity (lbs/ft^2)	160 in R Anchor Capacity Required (lbs)	160 in T Mullion Capacity (lbs/ft^2)	160 in T Anchor Capacity Required (lbs)
42 in	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
60 in	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
63 in	170.0	2231	170.0	1169	170.0	2603	170.0	1171	163.0	2853	170.0	1171
66 in	170.0	2338	170.0	1275	162.0	2599	170.0	1286	141.8	2599	170.0	1286
72 in	145.6	2184	170.0	1488	124.8	2184	170.0	1529	109.2	2184	170.0	1530
76 in	123.8	1960	161.6	1548	106.1	1960	154.0	1535	92.9	1960	152.7	1531
78 in	114.5	1861	147.3	1473	98.2	1861	139.6	1459	85.9	1861	137.6	1454
90 in	74.5	1398	89.8	1122	63.9	1398	82.7	1105	55.9	1398	78.9	1096
96 in	61.4	1229	72.2	993	52.7	1229	65.9	977	46.1	1229	62.1	967
108 in	43.1	971	49.0	796	37.0	971	44.0	782	32.4	971	40.8	771
111 in	39.7	919	44.8	756	34.1	919	40.2	742	29.8	919	37.1	732
120 in	31.5	786	34.9	653	27.0	786	31.0	641	23.6	786	28.4	631
144 in	18.2	546	19.5	464	15.6	546	17.2	455				

TABLE 10B:

Anchor/Clip Capacity (lbs) when using a 2" x 4" x 1/4" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 2.68" Min. O.C. / Mullion Clip (Fig. 2):	620 lbs	1260 lbs	430 lbs	1730 lbs	1424 lbs	425 lbs	740 lbs	575 lbs	1110 lbs	954 lbs	N/A	340 lbs	589 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 1.71" Min. O.C. / Mullion Clip (Fig. 3):	705 lbs	1890 lbs	608 lbs	2558 lbs	N/A	506 lbs	1110 lbs	619 lbs	1478 lbs	1304 lbs	N/A	510 lbs	647 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 4):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 3" O.C. thru 2x5 Angle Clip Pair (Fig. 5):	930 lbs	1890 lbs	660 lbs	2610 lbs	2844 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1482 lbs	1122 lbs	510 lbs	978 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
3 Anchors @ 1.34" Min. O.C. / U-Clip (Fig. 6):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	805 lbs
6 Anchors @ 0.64" Min. O.C. / U-Clip (Fig. 7):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1609 lbs
2 Anchors @ 2.68" Min. O.C. / F-Clip (Fig. 8):	310 lbs	630 lbs	215 lbs	865 lbs	712 lbs	213 lbs	370 lbs	288 lbs	555 lbs	477 lbs	N/A	170 lbs	295 lbs	N/A	442 lbs	537 lbs	536 lbs
3 Anchors @ 1.71" Min. O.C. / F-Clip (Fig. 9):	353 lbs	945 lbs	304 lbs	1279 lbs	N/A	253 lbs	555 lbs	309 lbs	739 lbs	652 lbs	N/A	255 lbs	324 lbs	N/A	664 lbs	805 lbs	805 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

CIRCLED VALUES ARE USED IN THE EXAMPLES ON SHEETS 22 & 23.

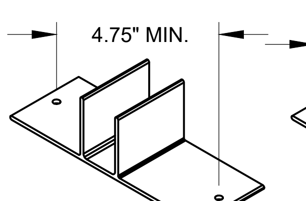
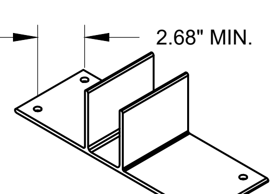


FIGURE 1



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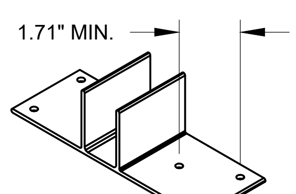

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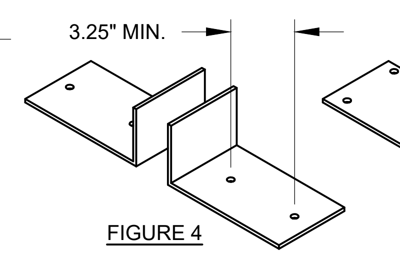

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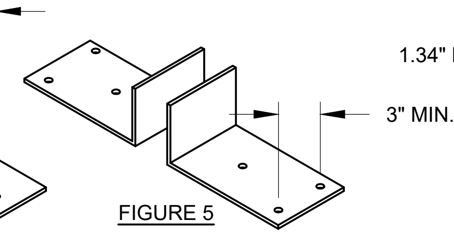


FIGURE 5

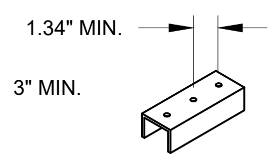


FIGURE 6

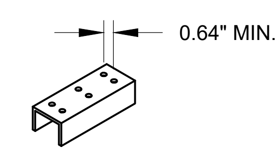


FIGURE 7

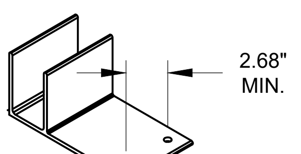


FIGURE 8

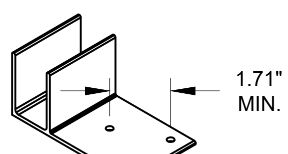


FIGURE 9

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

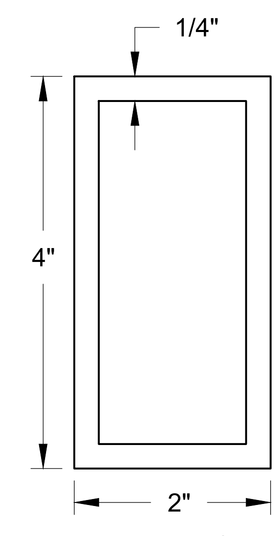
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 4" X 1/4" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 2 X 4 X 1/4 CAPACITIES
Series: MULLS
Date: 02/02/23
Drawn By: JENS ROSOWSKI
DWG No.: TUBEMULL-1
Rev.: B
Sheet: 16 OF 24
Scale: NTS

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
A. Lynn Miller 3/13/25

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 11A:

2" x 6" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement	Opening Dimension: 50 in				60 in				70 in				80 in				90 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
Mullion Span	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519	170.0	1116	170.0	521
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661	170.0	1275	170.0	677
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803	170.0	1434	170.0	837
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944	170.0	1594	170.0	996
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015	170.0	1673	170.0	1076
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086	170.0	1753	170.0	1155
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126	170.0	1700	170.0	1228	170.0	1913	170.0	1315
76 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209	170.0	1794	170.0	1322	170.0	2019	170.0	1421
78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250	170.0	1842	170.0	1369	170.0	2072	170.0	1474
90 in	170.0	1328	170.0	1144	170.0	1594	170.0	1328	170.0	1859	170.0	1498	170.0	2125	170.0	1653	155.0	2180	170.0	1793
96 in	170.0	1417	170.0	1232	170.0	1700	170.0	1434	164.2	1916	170.0	1622	143.7	1916	154.3	1628	127.7	1916	139.8	1605
108 in	161.5	1514	164.9	1367	134.5	1514	138.8	1345	115.3	1514	120.4	1324	100.9	1514	106.7	1304	89.7	1514	96.3	1287
111 in	148.7	1433	151.7	1297	123.9	1433	127.6	1276	106.2	1433	110.6	1257	92.9	1433	98.0	1239	82.6	1433	88.4	1222
120 in	117.7	1226	119.7	1117	98.1	1226	100.6	1100	84.1	1226	87.0	1084	73.6	1226	77.0	1069	65.4	1226	69.3	1055
144 in	68.1	851	68.9	786	56.8	851	57.7	776	48.7	851	49.8	766	42.6	851	43.9	756	37.8	851	39.4	748

2" x 6" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement	Opening Dimension: 100 in				120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
Mullion Span	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	1417	170.0	680	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	1494	170.0	756	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	1594	170.0	856	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
60 in	170.0	1771	170.0	1033	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
63 in	170.0	1859	170.0	1122	170.0	2231	170.0	1169	170.0	2603	170.0	1171	170.0	2975	170.0	1171
66 in	170.0	1948	170.0	1210	170.0	2338	170.0	1275	170.0	2727	170.0	1286	170.0	3117	170.0	1286
72 in	170.0	2125	170.0	1387	170.0	2550	170.0	1488	170.0	2975	170.0	1529	170.0	3400	170.0	1530
76 in	170.0	2243	170.0	1505	170.0	2692	170.0	1629	165.5	3057	170.0	1694	144.8	3057	170.0	1705
78 in	170.0	2302	170.0	1564	170.0	2763	170.0	1700	153.1	2902	170.0	1777	133.9	2902	170.0	1796
90 in	139.5	2180	158.4	1788	116.2	2180	140.0	1749	99.6	2180	128.9	1724	87.2	2180	123.1	1709
96 in	114.9	1916	128.5	1584	95.8	1916	112.6	1549	82.1	1916	102.8	1523	71.8	1916	96.9	1507
108 in	80.7	1514	88.1	1270	67.3	1514	76.4	1241	57.7	1514	68.7	1219	50.5	1514	63.6	1202
111 in	74.4	1433	80.8	1206	62.0	1433	69.9	1179	53.1	1433	62.7	1157	46.5	1433	57.8	1141
120 in	58.8	1226	63.2	1042	49.0	1226	54.3	1019	42.0	1226	48.4	1000	36.8	1226	44.3	984
144 in	34.1	851	35.8	739	28.4	851	30.5	724	24.3	851	26.8	710	21.3	851	24.2	698

TABLE 11B:

Anchor/Clip Capacity (lbs) when using a 2" x 6" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
4 Anchors @ 3.25" Min. O.C. / Mullion Clip (Fig. 1):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 2.47" Min. O.C. / Mullion Clip (Fig. 2):	930 lbs	1890 lbs	638 lbs	2588 lbs	1782 lbs	611 lbs	1110 lbs	814 lbs	1628 lbs	1406 lbs	N/A	510 lbs	836 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
8 Anchors @ 1.65" Min. O.C. / Mullion Clip (Fig. 3):	907 lbs	2520 lbs	807 lbs	3407 lbs	N/A	663 lbs	1480 lbs	803 lbs	1953 lbs	1727 lbs	N/A	680 lbs	842 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 4" O.C. thru 2x5 Angle Clip Pair (Fig. 4):	620 lbs	1260 lbs	440 lbs	1740 lbs	2952 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	1011 lbs	748 lbs	340 lbs	820 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 2.47" O.C. thru 2x5 Angle Clip Pair (Fig. 5):	930 lbs	1890 lbs	638 lbs	2588 lbs	1782 lbs	611 lbs	1110 lbs	814 lbs	1628 lbs	1406 lbs	N/A	510 lbs	836 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
8 Total Anchors @ 1.65" O.C. thru 2x5 Angle Clip Pair (Fig. 6):	907 lbs	2520 lbs	807 lbs	3407 lbs	N/A	663 lbs	1480 lbs	803 lbs	1953 lbs	1727 lbs	N/A	680 lbs	842 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
2 Anchors @ 4" Min. O.C. / U-Clip (Fig. 7):	310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 2.47" Min. O.C. / U-Clip (Fig. 8):	465 lbs	945 lbs	319 lbs	1294 lbs	891 lbs	306 lbs	555 lbs	407 lbs	814 lbs	703 lbs	N/A	255 lbs	418 lbs	N/A	664 lbs	805 lbs	805 lbs
4 Anchors @ 1.65" Min. O.C. / U-Clip (Fig. 9):	453 lbs	1260 lbs	403 lbs	1703 lbs	N/A	332 lbs	740 lbs	402 lbs	977 lbs	863 lbs	N/A	340 lbs	421 lbs	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 4" Min. O.C. / F-Clip (Fig. 10):	310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 2.47" Min. O.C. / F-Clip (Fig. 11):	465 lbs	945 lbs	319 lbs	1294 lbs	891 lbs	306 lbs	555 lbs	407 lbs	814 lbs	703 lbs	N/A	255 lbs	418 lbs	N/A	664 lbs	805 lbs	805 lbs
4 Anchors @ 1.65" Min. O.C. / F-Clip (Fig. 12):	453 lbs	1260 lbs	403 lbs	1703 lbs	N/A	332 lbs	740 lbs	402 lbs	977 lbs	863 lbs	N/A	340 lbs	421 lbs	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

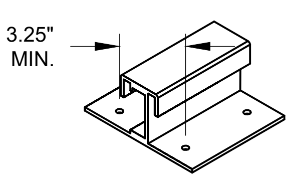


FIGURE 1

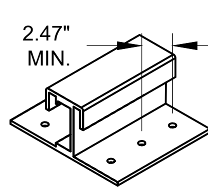


FIGURE 2

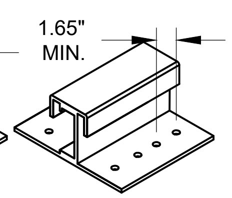
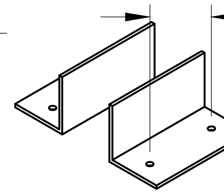


FIGURE 3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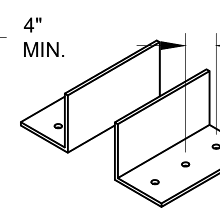

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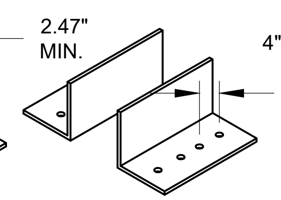


FIGURE 6

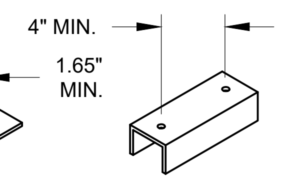


FIGURE 7

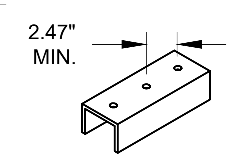


FIGURE 8

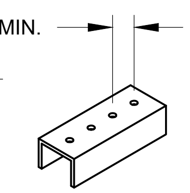


FIGURE 9

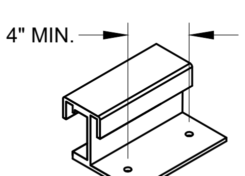


FIGURE 10

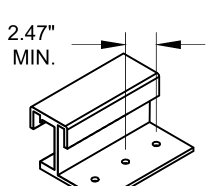


FIGURE 11

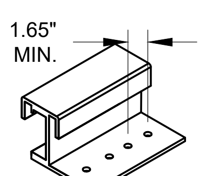


FIGURE 12

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

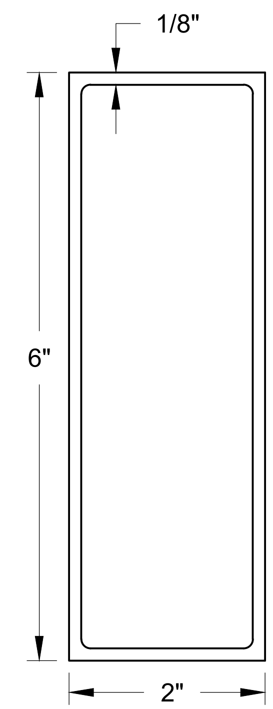
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 6" X 1/8" MULLION

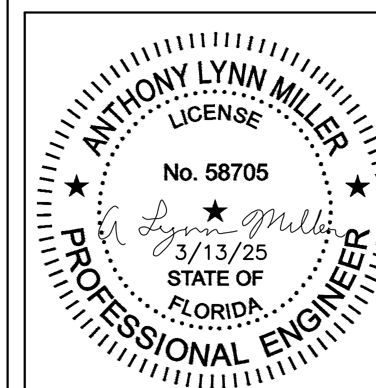
PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

CGI Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
DWG No.: TUBEMULL-1
Rev.: B
Title: 2 X 6 X 1/8 CAPACITIES
Scale: NTS
Sheet: 17 OF 24
Series: MULLS



A. LYNN MILLER, P.E., P.E.# 58705

TABLE 12A:

2" x 6" x 1/4" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension (50 in – 80 in)

Mullion Span	50 in Rectangular Loading Mullion Capacity (lbs/ft²)	50 in Rectangular Loading Anchor Capacity Required (lbs)	50 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	50 in Trap/Triang. Loading Anchor Capacity Required (lbs)	60 in Rectangular Loading Mullion Capacity (lbs/ft²)	60 in Rectangular Loading Anchor Capacity Required (lbs)	60 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	60 in Trap/Triang. Loading Anchor Capacity Required (lbs)	70 in Rectangular Loading Mullion Capacity (lbs/ft²)	70 in Rectangular Loading Anchor Capacity Required (lbs)	70 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	70 in Trap/Triang. Loading Anchor Capacity Required (lbs)	80 in Rectangular Loading Mullion Capacity (lbs/ft²)	80 in Rectangular Loading Anchor Capacity Required (lbs)	80 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	80 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	170.0	1275	170.0	803
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	170.0	1417	170.0	944
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940	170.0	1488	170.0	1015
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	170.0	1558	170.0	1086
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126	170.0	1700	170.0	1228
76 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209	170.0	1794	170.0	1322
78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250	170.0	1842	170.0	1369
90 in	170.0	1328	170.0	1144	170.0	1594	170.0	1328	170.0	1859	170.0	1498	170.0	2125	170.0	1653
96 in	170.0	1417	170.0	1232	170.0	1700	170.0	1434	170.0	1983	170.0	1622	170.0	2267	170.0	1794
108 in	170.0	1594	170.0	1409	170.0	1913	170.0	1647	170.0	2231	170.0	1870	170.0	2550	170.0	2078
111 in	170.0	1638	170.0	1454	170.0	1966	170.0	1700	170.0	2293	170.0	1932	170.0	2621	170.0	2149
120 in	170.0	1771	170.0	1586	170.0	2125	170.0	1859	154.4	2252	159.9	1991	135.1	2252	141.4	1964
144 in	125.1	1564	126.6	1445	104.3	1564	106.1	1425	89.4	1564	91.5	1407	78.2	1564	80.7	1390

Opening Dimension (90 in – 120 in)

Mullion Span	90 in Rectangular Loading Mullion Capacity (lbs/ft²)	90 in Rectangular Loading Anchor Capacity Required (lbs)	90 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	90 in Trap/Triang. Loading Anchor Capacity Required (lbs)	100 in Rectangular Loading Mullion Capacity (lbs/ft²)	100 in Rectangular Loading Anchor Capacity Required (lbs)	100 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	100 in Trap/Triang. Loading Anchor Capacity Required (lbs)	120 in Rectangular Loading Mullion Capacity (lbs/ft²)	120 in Rectangular Loading Anchor Capacity Required (lbs)	120 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	120 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521
48 in	170.0	1275	170.0	677	170.0	1417	170.0	680	170.0	1700	170.0	680
50-5/8 in	170.0	1345	170.0	747	170.0	1494	170.0	756	170.0	1793	170.0	756
54 in	170.0	1434	170.0	837	170.0	1594	170.0	856	170.0	1913	170.0	861
60 in	170.0	1594	170.0	996	170.0	1771	170.0	1033	170.0	2125	170.0	1063
63 in	170.0	1673	170.0	1076	170.0	1859	170.0	1122	170.0	2231	170.0	1169
66 in	170.0	1753	170.0	1155	170.0	1948	170.0	1210	170.0	2338	170.0	1275
72 in	170.0	1913	170.0	1315	170.0	2125	170.0	1387	170.0	2550	170.0	1488
76 in	170.0	2019	170.0	1421	170.0	2243	170.0	1505	170.0	2692	170.0	1629
78 in	170.0	2072	170.0	1474	170.0	2302	170.0	1564	170.0	2763	170.0	1700
90 in	170.0	2391	170.0	1793	170.0	2656	170.0	1918	170.0	3188	170.0	2125
96 in	170.0	2550	170.0	1952	170.0	2833	170.0	2095	170.0	3400	170.0	2338
108 in	164.8	2781	170.0	2271	148.3	2781	161.9	2333	123.6	2781	140.4	2281
111 in	151.8	2632	162.3	2245	136.6	2632	148.4	2216	113.8	2632	128.4	2166
120 in	120.1	2252	127.2	1938	108.1	2252	116.1	1915	90.1	2252	99.8	1872
144 in	69.5	1564	72.3	1373	62.6	1564	65.7	1358	52.1	1564	56.0	1330

Opening Dimension (140 in – 160 in)

Mullion Span	140 in Rectangular Loading Mullion Capacity (lbs/ft²)	140 in Rectangular Loading Anchor Capacity Required (lbs)	140 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	140 in Trap/Triang. Loading Anchor Capacity Required (lbs)	160 in Rectangular Loading Mullion Capacity (lbs/ft²)	160 in Rectangular Loading Anchor Capacity Required (lbs)	160 in Trap/Triang. Loading Mullion Capacity (lbs/ft²)	160 in Trap/Triang. Loading Anchor Capacity Required (lbs)
42 in	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	2231	170.0	861	170.0	2550	170.0	861
60 in	170.0	2479	170.0	1063	170.0	2833	170.0	1063
63 in	170.0	2603	170.0	1171	170.0	2975	170.0	1171
66 in	170.0	2727	170.0	1286	170.0	3117	170.0	1286
72 in	170.0	2975	170.0	1529	170.0	3400	170.0	1530
76 in	170.0	3140	170.0	1694	170.0	3589	170.0	1705
78 in	170.0	3223	170.0	1777	170.0	3683	170.0	1796
90 in	170.0	3719	170.0	2273	160.2	4004	170.0	2361
96 in	150.8	3519	170.0	2520	132.0	3519	170.0	2644
108 in	105.9	2781	126.2	2239	92.7	2781	116.9	2208
111 in	97.6	2632	115.1	2126	85.4	2632	106.3	2096
120 in	77.2	2252	88.9	1836	67.6	2252	81.4	1808
144 in	44.7	1564	49.2	1305	39.1	1564	44.4	1283

TABLE 12B:

Anchor/Clip Capacity (lbs) when using a 2" x 6" x 1/4" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Anchors @ 4.75" Min. O.C. / Mullion Clip (Fig. 1):	310 lbs	630 lbs	220 lbs	870 lbs	1644 lbs	230 lbs	370 lbs	320 lbs	580 lbs	514 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 4.68" Min. O.C. / Mullion Clip (Fig. 2):	620 lbs	1260 lbs	440 lbs	1740 lbs	3232 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	1025 lbs	748 lbs	340 lbs	820 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
8 Anchors @ 1.71" Min. O.C. / Mullion Clip (Fig. 3):	940 lbs	2520 lbs	810 lbs	3410 lbs	N/A	675 lbs	1480 lbs	825 lbs	1970 lbs	1738 lbs	N/A	680 lbs	863 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 4):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
8 Total Anchors @ 3" O.C. thru 2x5 Angle Clip Pair (Fig. 5):	1240 lbs	2520 lbs	880 lbs	3480 lbs	3792 lbs	920 lbs	1480 lbs	1280 lbs	2320 lbs	1976 lbs	1496 lbs	680 lbs	1304 lbs	3784 lbs	1770 lbs	2146 lbs	2146 lbs
12 Total Anchors @ 2.34" O.C. thru 2x5 Angle Clip Pair (Fig. 6):	1860 lbs	3780 lbs	1265 lbs	5165 lbs	3092 lbs	1188 lbs	2220 lbs	1563 lbs	3205 lbs	2777 lbs	N/A	1020 lbs	1610 lbs	N/A	2654 lbs	3220 lbs	3218 lbs
4 Anchors @ 1.65" Min. O.C. / U-Clip (Fig. 7):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1073 lbs
8 Anchors @ 0.64" Min. O.C. / U-Clip (Fig. 8):	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2146 lbs
2 Anchors @ 4.68" Min. O.C. / F-Clip (Fig. 9):	310 lbs	630 lbs	220 lbs	870 lbs	1616 lbs	230 lbs	370 lbs	320 lbs	580 lbs	512 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors @ 1.71" Min. O.C. / F-Clip (Fig. 10):	470 lbs	1260 lbs	405 lbs	1705 lbs	N/A	338 lbs	740 lbs	413 lbs	985 lbs	869 lbs	N/A	340 lbs	432 lbs	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

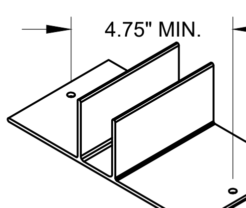


FIGURE 1

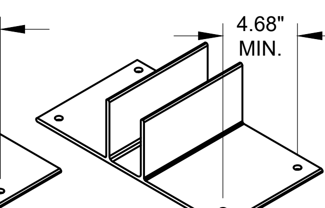


FIGURE 2

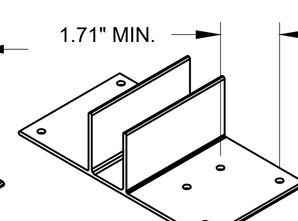


FIGURE 3

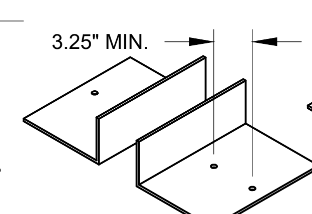


FIGURE 4

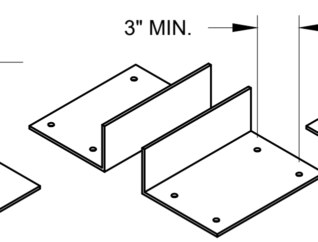


FIGURE 5

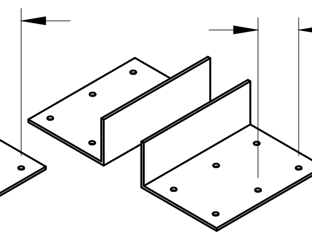


FIGURE 6

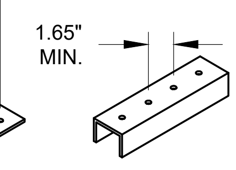


FIGURE 7

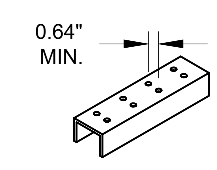


FIGURE 8

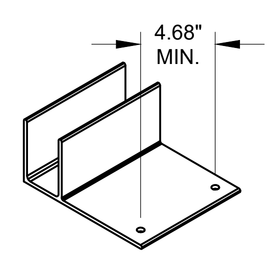


FIGURE 9

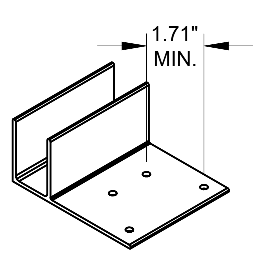


FIGURE 10

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

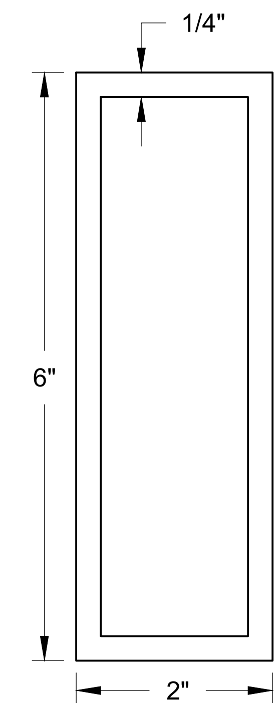
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 6" X 1/4" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Rev.: B
Title: 2 X 6 X 1/4 CAPACITIES
Sheet: 18 OF 24
DWG No.: TUBEMULL-1
Series: MULLS
Scale: NTS

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER 3/13/25

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 13A:

2" x 8" x 1/8" Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement

Opening Dimension

Mullion Span	50 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	50 in Rectangular Loading: Anchor Capacity Required (lbs)	50 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	50 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	60 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	60 in Rectangular Loading: Anchor Capacity Required (lbs)	60 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	60 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	70 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	70 in Rectangular Loading: Anchor Capacity Required (lbs)	70 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	70 in Trap/Triang. Loading: Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754
60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878
63 in	170.0	930	170.0	745	170.0	1116	170.0	850	170.0	1302	170.0	940
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002
72 in	170.0	1063	170.0	878	170.0	1275	170.0	1009	170.0	1488	170.0	1126
76 in	170.0	1122	170.0	937	170.0	1346	170.0	1080	170.0	1570	170.0	1209
78 in	170.0	1151	170.0	967	170.0	1381	170.0	1116	170.0	1611	170.0	1250
90 in	170.0	1328	170.0	1144	170.0	1594	170.0	1328	170.0	1859	170.0	1498
96 in	170.0	1417	170.0	1232	170.0	1700	170.0	1434	170.0	1983	170.0	1622
108 in	170.0	1594	170.0	1409	170.0	1913	170.0	1647	170.0	2231	170.0	1870
111 in	170.0	1638	170.0	1454	170.0	1966	170.0	1700	170.0	2293	170.0	1932
120 in	170.0	1771	170.0	1586	170.0	2125	170.0	1859	170.0	2479	170.0	2118
144 in	143.6	1795	145.3	1658	119.7	1795	121.7	1636	102.6	1795	105.0	1615

Mullion Span	80 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	80 in Rectangular Loading: Anchor Capacity Required (lbs)	80 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	80 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	90 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	90 in Rectangular Loading: Anchor Capacity Required (lbs)	90 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	90 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	100 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	100 in Rectangular Loading: Anchor Capacity Required (lbs)	100 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	100 in Trap/Triang. Loading: Anchor Capacity Required (lbs)
42 in	170.0	992	170.0	519	170.0	1116	170.0	521	170.0	1240	170.0	521
48 in	170.0	1133	170.0	661	170.0	1275	170.0	677	170.0	1417	170.0	680
50-5/8 in	170.0	1195	170.0	723	170.0	1345	170.0	747	170.0	1494	170.0	756
54 in	170.0	1275	170.0	803	170.0	1434	170.0	837	170.0	1594	170.0	856
60 in	170.0	1417	170.0	944	170.0	1594	170.0	996	170.0	1771	170.0	1033
63 in	170.0	1488	170.0	1015	170.0	1673	170.0	1076	170.0	1859	170.0	1122
66 in	170.0	1558	170.0	1086	170.0	1753	170.0	1155	170.0	1948	170.0	1210
72 in	170.0	1700	170.0	1228	170.0	1913	170.0	1315	170.0	2125	170.0	1387
76 in	170.0	1794	170.0	1322	170.0	2019	170.0	1421	170.0	2243	170.0	1505
78 in	170.0	1842	170.0	1369	170.0	2072	170.0	1474	170.0	2302	170.0	1564
90 in	170.0	2125	170.0	1653	170.0	2391	170.0	1793	170.0	2656	170.0	1918
96 in	170.0	2267	170.0	1794	170.0	2550	170.0	1952	170.0	2833	170.0	2095
108 in	170.0	2550	170.0	2078	170.0	2869	170.0	2271	170.0	3188	170.0	2450
111 in	170.0	2621	170.0	2149	170.0	2948	170.0	2351	156.8	3021	170.0	2538
120 in	155.1	2585	162.3	2254	137.9	2585	146.0	2225	124.1	2585	133.2	2197
144 in	89.8	1795	92.6	1595	79.8	1795	83.0	1576	71.8	1795	75.4	1558

Mullion Span	120 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	120 in Rectangular Loading: Anchor Capacity Required (lbs)	120 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	120 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	140 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	140 in Rectangular Loading: Anchor Capacity Required (lbs)	140 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	140 in Trap/Triang. Loading: Anchor Capacity Required (lbs)	160 in Rectangular Loading: Mullion Capacity (lbs/ft^2)	160 in Rectangular Loading: Anchor Capacity Required (lbs)	160 in Trap/Triang. Loading: Mullion Capacity (lbs/ft^2)	160 in Trap/Triang. Loading: Anchor Capacity Required (lbs)
42 in	170.0	1488	170.0	521	170.0	1735	170.0	521	170.0	1983	170.0	521
48 in	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
50-5/8 in	170.0	1793	170.0	756	170.0	2092	170.0	756	170.0	2391	170.0	756
54 in	170.0	1913	170.0	861	170.0	2231	170.0	861	170.0	2550	170.0	861
60 in	170.0	2125	170.0	1063	170.0	2479	170.0	1063	170.0	2833	170.0	1063
63 in	170.0	2231	170.0	1169	170.0	2603	170.0	1171	170.0	2975	170.0	1171
66 in	170.0	2338	170.0	1275	170.0	2727	170.0	1286	170.0	3117	170.0	1286
72 in	170.0	2550	170.0	1488	170.0	2975	170.0	1529	170.0	3400	170.0	1530
76 in	170.0	2692	170.0	1629	170.0	3140	170.0	1694	170.0	3589	170.0	1705
78 in	170.0	2763	170.0	1700	170.0	3223	170.0	1777	170.0	3683	170.0	1796
90 in	170.0	3188	170.0	2125	170.0	3719	170.0	2273	170.0	4250	170.0	2361
96 in	170.0	3400	170.0	2338	170.0	3967	170.0	2520	151.5	4039	170.0	2644
108 in	141.8	3192	161.1	2618	121.6	3192	144.8	2570	106.4	3192	134.2	2534
111 in	130.7	3021	147.4	2487	112.0	3021	132.1	2440	98.0	3021	122.0	2406
120 in	103.4	2585	114.6	2149	88.6	2585	102.0	2108	77.6	2585	93.4	2075
144 in	59.8	1795	64.3	1526	51.3	1795	56.5	1497	44.9	1795	51.0	1473

TABLE 13B:

Anchor/Clip Capacity (lbs) when using a 2" x 8" x 1/8" Tube Mullion	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Substrate:	3k Concrete				3.5k Conc.	Hollow or Filled CMU						Filled CMU			Wood		Metal
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" DeWalt CreteFlex	1/4" DeWalt AggreGator	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" DeWalt AggreGator	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	1"	2-1/2"	1"	2-1/2"	2-1/2"	2"	1"	1"	2"	0.54"	0.60"	0.324"
Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-1/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
4 Anchors @ 3.25" Min. O.C. / Mullion Clip (Fig. 1):	620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	994 lbs	748 lbs	340 lbs	694 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Anchors @ 3.25" Min. O.C. / Mullion Clip (Fig. 2):	930 lbs	1890 lbs	660 lbs	2610 lbs	3316 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1491 lbs	1122 lbs	510 lbs	1041 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
8 Anchors @ 2.313" Min. O.C. / Mullion Clip (Fig. 3):	1240 lbs	2520 lbs	843 lbs	3443 lbs	2061 lbs	792 lbs	1480 lbs	1042 lbs	2137 lbs	1851 lbs	N/A	680 lbs	1073 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
4 Total Anchors @ 4" O.C. thru 2x5 Angle Clip Pair (Fig. 4):	620 lbs	1260 lbs	440 lbs	1740 lbs	2952 lbs	460 lbs	740 lbs	640 lbs	1160 lbs	1011 lbs	748 lbs	340 lbs	820 lbs	1892 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 3.47" O.C. thru 2x5 Angle Clip Pair (Fig. 5):	930 lbs	1890 lbs	660 lbs	2610 lbs	3670 lbs	690 lbs	1110 lbs	960 lbs	1740 lbs	1497 lbs	1122 lbs	510 lbs	1088 lbs	2838 lbs	1327 lbs	1610 lbs	1609 lbs
8 Total Anchors @ 2.313" O.C. thru 2x5 Angle Clip Pair (Fig. 6):	1240 lbs	2520 lbs	843 lbs	3443 lbs	2061 lbs	792 lbs	1480 lbs	1042 lbs	2137 lbs	1851 lbs	N/A	680 lbs	1073 lbs	N/A	1770 lbs	2146 lbs	2146 lbs
2 Anchors @ 4" Min. O.C. / U-Clip (Fig. 7):	310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 3.47" Min. O.C. / U-Clip (Fig. 8):	465 lbs	945 lbs	330 lbs	1305 lbs	1835 lbs	345 lbs	555 lbs	480 lbs	870 lbs	748 lbs	561 lbs	255 lbs	544 lbs	1419 lbs	664 lbs	805 lbs	805 lbs
4 Anchors @ 2.313" Min. O.C. / U-Clip (Fig. 9):	620 lbs	1260 lbs	422 lbs	1722 lbs	1031 lbs	396 lbs	740 lbs	521 lbs	1068 lbs	926 lbs	N/A	340 lbs	537 lbs	N/A	885 lbs	1073 lbs	1073 lbs
2 Anchors @ 4" Min. O.C. / F-Clip (Fig. 10):	310 lbs	630 lbs	220 lbs	870 lbs	1476 lbs	230 lbs	370 lbs	320 lbs	580 lbs	505 lbs	374 lbs	170 lbs	410 lbs	946 lbs	442 lbs	537 lbs	536 lbs
3 Anchors @ 3.47" Min. O.C. / F-Clip (Fig. 11):	465 lbs	945 lbs	330 lbs	1305 lbs	1835 lbs	345 lbs	555 lbs	480 lbs	870 lbs	748 lbs	561 lbs	255 lbs	544 lbs	1419 lbs	664 lbs	805 lbs	805 lbs
4 Anchors @ 2.313" Min. O.C. / F-Clip (Fig. 12):	620 lbs	1260 lbs	422 lbs	1722 lbs	1031 lbs	396 lbs	740 lbs	521 lbs	1068 lbs	926 lbs	N/A	340 lbs	537 lbs	N/A	885 lbs	1073 lbs	1073 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

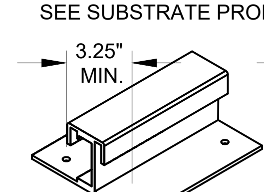


FIGURE 1

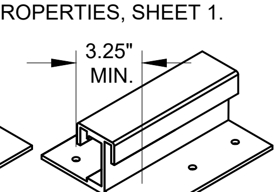


FIGURE 2

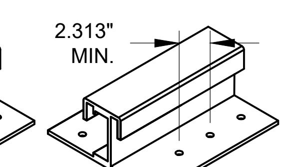


FIGURE 3

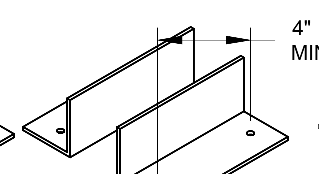


FIGURE 4

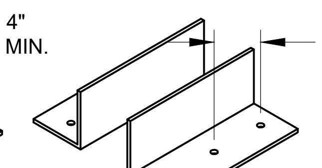


FIGURE 5

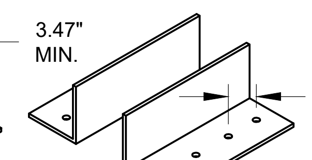


FIGURE 6

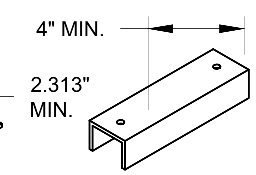


FIGURE 7

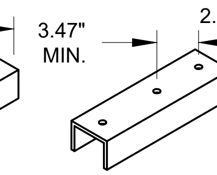


FIGURE 8

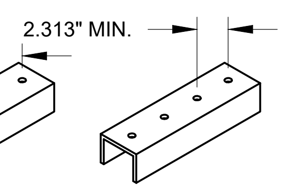


FIGURE 9

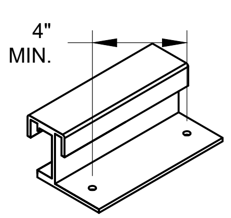


FIGURE 10

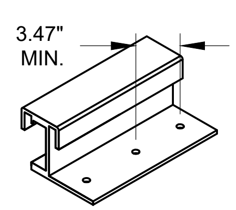


FIGURE 11

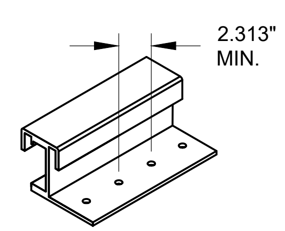


FIGURE 12

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

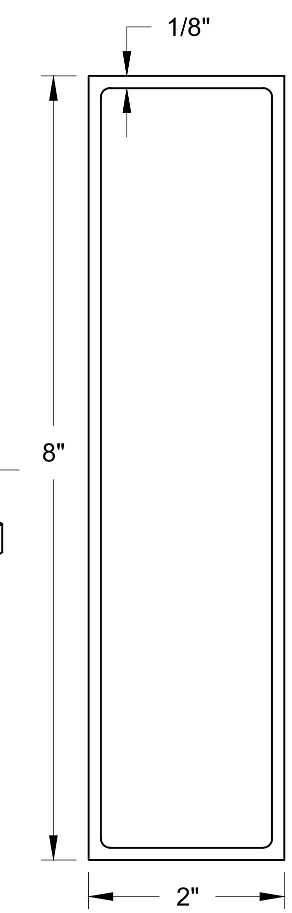
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



2" X 8" X 1/8" MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Title: 2 X 8 X 1/8 CAPACITIES
Series: MULLS
Date: 02/02/23
Drawn By: JENS ROSOWSKI
DWG No.: TUBEMULL-1
Rev.: B
Scale: NTS
Sheet: 19 OF 24

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 14A:

30 Degree Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension

Mullion Span	50 in				60 in				70 in				80 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	163.4	1149	170.0	723
54 in	170.0	797	170.0	612	170.0	956	170.0	691	153.9	1010	170.0	754	134.7	1010	169.8	802
60 in	157.1	818	168.6	695	130.9	818	145.0	680	112.2	818	129.1	667	98.2	818	118.2	657
63 in	135.7	742	144.7	634	113.1	742	124.1	620	96.9	742	110.1	609	84.8	742	100.3	599
66 in	118.0	676	125.1	581	98.3	676	107.0	569	84.3	676	94.6	558	73.8	676	85.9	549
72 in	90.9	568	95.5	493	75.7	568	81.3	483	64.9	568	71.5	474	56.8	568	64.5	466
76 in	77.3	510	80.8	445	64.4	510	68.6	436	55.2	510	60.2	428	48.3	510	54.1	421
78 in	71.5	484	74.5	424	59.6	484	63.3	415	51.1	484	55.5	408	44.7	484	49.8	401
90 in	46.5	364	48.0	323	38.8	364	40.6	317	33.2	364	35.4	312	29.1	364	31.5	307
96 in	38.3	320	39.4	286	32.0	320	33.3	281	27.4	320	28.9	276	24.0	320	25.7	272
108 in	26.9	252	27.5	228	22.4	252	23.2	224	19.2	252	20.1	221	16.8	252	17.8	218
111 in	24.8	239	25.3	216	20.7	239	21.3	213	17.7	239	18.5	210	15.5	239	16.3	207
120 in	19.6	205	20.0	186	16.4	205	16.8	183								

Mullion Span	90 in				100 in				120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft²)	Anchor Capacity Required (lbs)
42 in	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	163.5	1670	170.0	521	143.1	1670	170.0	521
48 in	170.0	1275	170.0	677	153.4	1278	170.0	680	127.8	1278	170.0	680	109.6	1278	170.0	680	95.9	1278	170.0	680
50-5/8 in	145.3	1149	170.0	747	130.7	1149	170.0	756	109.0	1149	170.0	756	93.4	1149	170.0	756	81.7	1149	170.0	756
54 in	119.7	1010	161.5	795	107.7	1010	157.1	791	89.8	1010	155.9	789	76.9	1010	155.9	789	67.3	1010	155.9	789
60 in	87.3	818	110.7	649	78.5	818	105.9	644	65.4	818	102.3	639	56.1	818	102.3	639	49.1	818	102.3	639
63 in	75.4	742	93.4	591	67.8	742	88.8	586	56.5	742	84.4	580	48.5	742	84.1	580	42.4	742	84.1	580
66 in	65.6	676	79.6	541	59.0	676	75.3	536	49.2	676	70.6	530	42.1	676	69.8	528	36.9	676	69.8	528
72 in	50.5	568	59.4	459	45.4	568	55.6	454	37.9	568	51.1	447	32.5	568	49.4	444	28.4	568	49.3	444
76 in	42.9	510	49.6	415	38.6	510	46.3	410	32.2	510	42.0	403	27.6	510	40.1	399	24.2	510	39.7	398
78 in	39.7	484	45.6	395	35.7	484	42.4	390	29.8	484	38.3	383	25.5	484	36.3	379	22.3	484	35.8	378
90 in	25.9	364	28.7	302	23.3	364	26.4	298	19.4	364	23.3	292	16.6	364	21.5	288	14.5	364	20.5	285
96 in	21.3	320	23.3	268	19.2	320	21.4	264	16.0	320	18.8	258	13.7	320	17.1	254	12.0	320	16.2	251
108 in	15.0	252	16.1	215																
111 in																				
120 in																				

TABLE 14B:

Anchor/Clip Capacity (lbs) when using a 30 Degree Tube Mullion	Substrate:	3k Concrete				3.5k Conc.	Wood		Metal
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 1):		310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 2):		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 2.71" O.C. thru 2x5 Angle Clip Pair (Fig. 3):		930 lbs	1890 lbs	648 lbs	2598 lbs	2254 lbs	1327 lbs	1610 lbs	1609 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

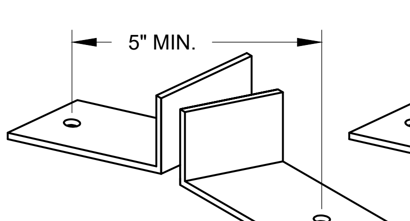


FIGURE 1

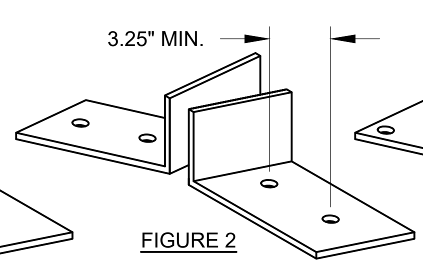


FIGURE 2

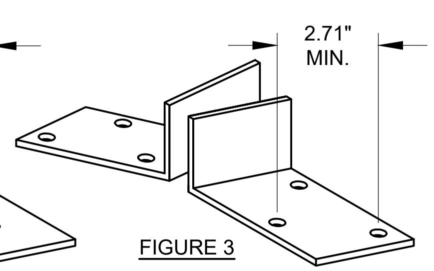


FIGURE 3

TABLE NOTES:
1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

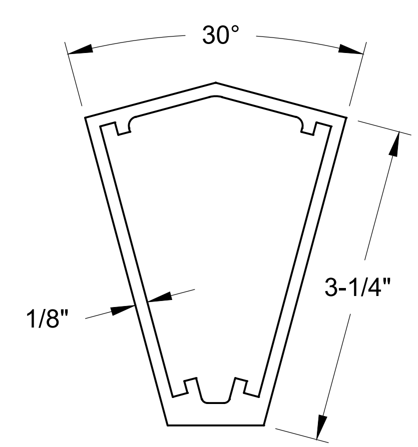
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



30 DEGREE BAY MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM) | Date: 02/02/23 | Drawn By: JENS ROSOWSKI | Rev.: B

Title: 30 DEGREE BAY CAPACITIES | Sheet: 20 OF 24 | DWG No.: TUBEMULL-1

Series: MULLS | Scale: NTS

ANTHONY LYNN MILLER LICENSE No. 58705 3/13/25 STATE OF FLORIDA PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705

TABLE 15A:

45 Degree Tube Mullion Design Pressure & Clip/Anchor Capacity Requirement — Opening Dimension

Mullion Span	50 in				60 in				70 in				80 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	620	170.0	435	170.0	744	170.0	478	170.0	868	170.0	506	170.0	992	170.0	519
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	170.0	1133	170.0	661
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723
54 in	170.0	797	170.0	612	170.0	956	170.0	691	170.0	1116	170.0	754	154.8	1161	170.0	803
60 in	170.0	885	170.0	701	150.5	940	166.7	782	129.0	940	148.4	767	112.8	940	135.9	755
63 in	156.0	853	166.3	729	130.0	853	142.6	713	111.4	853	126.5	700	97.5	853	115.3	688
66 in	135.6	777	143.8	668	113.0	777	123.0	654	96.9	777	108.8	641	84.8	777	98.7	631
72 in	104.5	653	109.8	567	87.1	653	93.5	555	74.6	653	82.2	545	65.3	653	74.2	536
76 in	88.8	586	92.8	512	74.0	586	78.9	501	63.5	586	69.2	492	55.5	586	62.2	484
78 in	82.2	556	85.7	487	68.5	556	72.8	477	58.7	556	63.7	469	51.4	556	57.2	461
90 in	53.5	418	55.2	371	44.6	418	46.6	364	38.2	418	40.7	358	33.4	418	36.3	352
96 in	44.1	367	45.3	328	36.7	367	38.2	322	31.5	367	33.2	317	27.5	367	29.6	312
108 in	31.0	290	31.6	262	25.8	290	26.6	258	22.1	290	23.1	254	19.3	290	20.5	250
111 in	28.5	275	29.1	249	23.8	275	24.5	245	20.4	275	21.2	241	17.8	275	18.8	238
120 in	22.6	235	23.0	214	18.8	235	19.3	211	16.1	235	16.7	208				

Mullion Span	90 in				100 in				120 in				140 in				160 in			
	Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading		Rectangular Loading		Trap/Triang. Loading	
	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft^2)	Anchor Capacity Required (lbs)
42 in	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	164.5	1919	170.0	521
48 in	170.0	1275	170.0	677	170.0	1417	170.0	680	146.9	1469	170.0	680	125.9	1469	170.0	680	110.2	1469	170.0	680
50-5/8 in	167.0	1321	170.0	747	150.3	1321	170.0	756	125.2	1321	170.0	756	107.3	1321	170.0	756	93.9	1321	170.0	756
54 in	137.6	1161	170.0	837	123.8	1161	170.0	856	103.2	1161	170.0	861	88.4	1161	170.0	861	77.4	1161	170.0	861
60 in	100.3	940	127.3	746	90.3	940	121.8	740	75.2	940	117.5	735	64.5	940	117.5	735	56.4	940	117.5	735
63 in	86.6	853	107.4	680	78.0	853	102.1	673	65.0	853	97.0	667	55.7	853	96.7	666	48.7	853	96.7	666
66 in	75.4	777	91.5	622	67.8	777	86.5	616	56.5	777	81.2	609	48.4	777	80.3	607	42.4	777	80.3	607
72 in	58.0	653	68.3	528	52.2	653	64.0	522	43.5	653	58.7	514	37.3	653	56.8	511	32.7	653	56.7	510
76 in	49.4	586	57.1	477	44.4	586	53.2	471	37.0	586	48.3	463	31.7	586	46.1	459	27.8	586	45.7	458
78 in	45.7	556	52.4	454	41.1	556	48.7	449	34.2	556	44.0	440	29.3	556	41.7	436	25.7	556	41.2	435
90 in	29.7	418	32.9	347	26.7	418	30.4	343	22.3	418	26.8	335	19.1	418	24.7	330	16.7	418	23.6	328
96 in	24.5	367	26.8	308	22.0	367	24.6	304	18.4	367	21.6	297	15.7	367	19.7	292	13.8	367	18.6	289
108 in	17.2	290	18.5	247	15.5	290	16.9	244												
111 in	15.8	275	16.9	234																
120 in																				

TABLE 15B:

Anchor/Clip Capacity (lbs) when using a 45 Degree Tube Mullion	Substrate:	3k Concrete				3.5k Conc.	Wood		Metal
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		5/16" DeWalt Ultracon	#12 Steel Screw	#14 Steel Screw	#12 Steel Screw
	Edge Distance (in):	1"	2-1/2"	1"	2-1/2"	3-1/8"	0.54"	0.60"	0.324"
	Embedment (in):	1-3/4"	1-3/4"	1-3/4"	1-3/4"	2"	1-3/8"	1-3/8"	See Sheet 1
2 Total Anchors @ 5" O.C. thru 2x5 Angle Clip Pair (Fig. 1):		310 lbs	630 lbs	220 lbs	870 lbs	1700 lbs	442 lbs	537 lbs	536 lbs
4 Total Anchors @ 3.25" O.C. thru 2x5 Angle Clip Pair (Fig. 2):		620 lbs	1260 lbs	440 lbs	1740 lbs	2211 lbs	885 lbs	1073 lbs	1073 lbs
6 Total Anchors @ 2.71" O.C. thru 2x5 Angle Clip Pair (Fig. 3):		930 lbs	1890 lbs	648 lbs	2598 lbs	2254 lbs	1327 lbs	1610 lbs	1609 lbs

SEE SUBSTRATE PROPERTIES, SHEET 1.

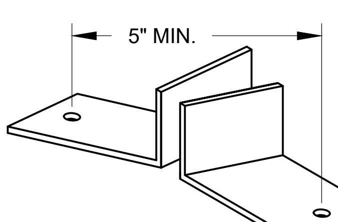


FIGURE 1

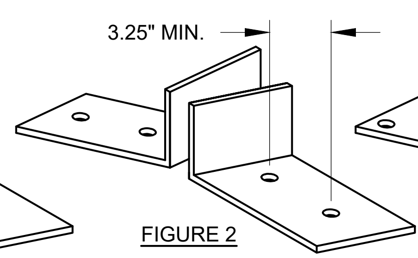


FIGURE 2

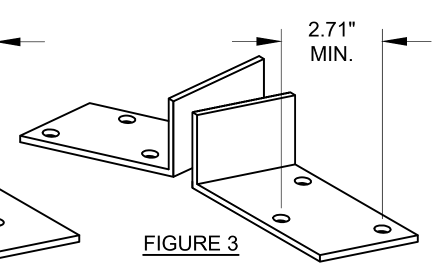


FIGURE 3

TABLE NOTES:

1) LINEAR INTERPOLATION BETWEEN MULLION SPANS AND/OR OPENING DIMENSIONS IS ALLOWABLE.

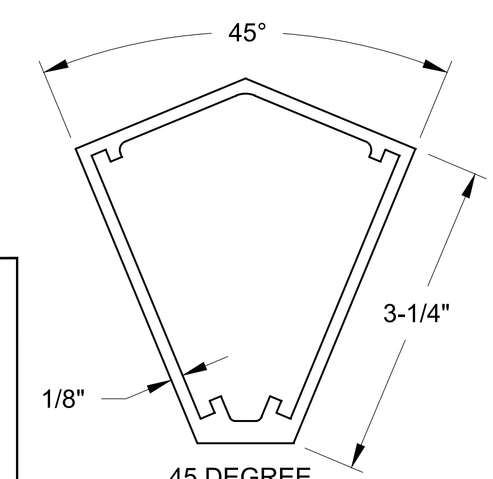
2) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONAL RESTRICTIONS SHOWN ON THIS SHEET. FIGURES SHOW SUGGESTED, APPROXIMATE HOLE LOCATIONS. CLIP HOLES TO BE NO CLOSER THAN 3/8" O.C. FROM CLIP EDGE.

3) SEE SHEET 1 FOR ADDITIONAL ANCHOR/SUBSTRATE NOTES.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

USE THIS FORMULA TO OBTAIN THE "ANCHOR CAPACITY REQUIRED" CORRESPONDING TO AN ACTUAL PRESSURE REQUIREMENT FOR THE OPENING, WHEN IT IS LOWER THAN THE MULLION CAPACITY (FROM THE TABLE) OF THE SELECTED MULLION. IT WILL YIELD A MINIMUM ANCHOR CAPACITY WHICH MAY BE USED TO QUALIFY ADDITIONAL ANCHOR OPTIONS FROM THE CLIP/ANCHOR CAPACITY TABLE.



45 DEGREE BAY MULLION

PRODUCT REVISED
As complying with the Florida Building Code
NOA-No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami-Dade Product Control

Revision: REMOVE 2020 FBC REFERENCE. ADD 1X2.75X.650 MULL AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
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(941) 480-1600

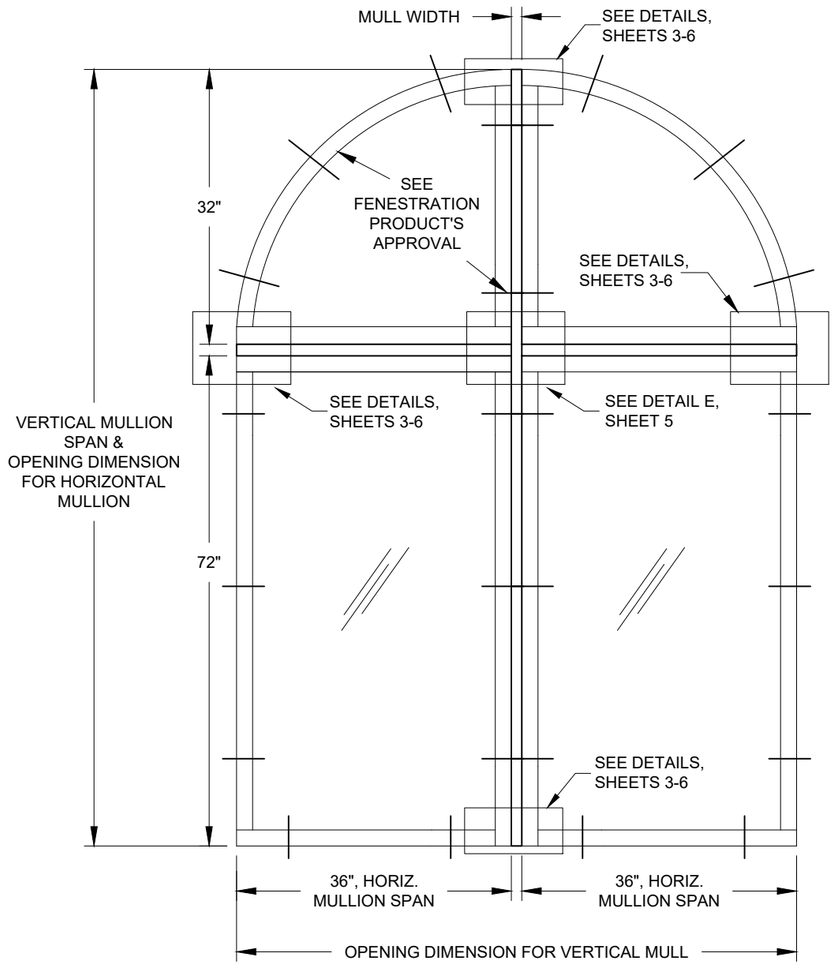
REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.: ALUMINUM TUBE MULLIONS, CLIPPED (LM)
Date: 02/02/23
Drawn By: JENS ROSOWSKI
Title: 45 DEGREE BAY CAPACITIES
Sheet: 21 OF 24
DWG No.: TUBEMULL-1
Rev.: B
Series: MULLS
Scale: NTS

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705



EXAMPLE 1: MULTIPLE MULLIONS

THE BUILDING SUBSTRATE IS KNOWN TO BE CMU ON THE JAMBS AND USES A CONCRETE HEADER AND SILL. THE WINDOW FRAME DEPTH IS 3-1/2". THE OPENING REQUIRES A DESIGN PRESSURE OF +50.0/-55.0 PSF.

FOR THE VERTICAL MULLION:

1) INITIALLY ASSUMING THAT A 1" WIDE MULLION IS SUITABLE, THE MULLION SPAN IS 32"+72"+1"=105" AND THE OPENING DIMENSION IS 36"+36"+1" =73". REFERENCING SHEET 24, THE COLUMN USING RECTANGULAR LOADING SHALL BE USED. SCAN THE MULLION TABLES FOR A MULLION THAT IS AT LEAST THE WINDOW FRAME DEPTH OF 3-1/2" AND WILL MEET OR EXCEED THE REQUIRED DESIGN PRESSURE OF +50.0/-55.0 PSF. IF THE TABLE DOES NOT SHOW THE EXACT SIZE, USE THE NEXT LARGER SIZE AVAILABLE.

FROM TABLE 6A, SHEET 11, THE 1" X 4" X 1/8" MULLION (SPAN = 108", OPENING DIMENSION = 80") MEETS THE DEPTH REQUIRED, HOWEVER THE DESIGN PRESSURE IS ONLY +/-25.2 PSF AND WOULD NOT BE SUITABLE FOR THIS APPLICATION.

FROM TABLE 10A, SHEET 16, THE 2" X 4" X .250" MULLION (SPAN = 108", OPENING DIMENSION = 80") HAS A DESIGN PRESSURE OF +/-64.7 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 971 LBS.

BECAUSE IT IS NOW KNOWN THAT THE MULLION WILL ADD 2" TO THE WIDTH OF THE MULLED UNIT INSTEAD OF 1", THE ADJUSTED OPENING DIMENSION IS 36"+36"+2"=74", NOT 73" AS PREVIOUSLY ASSUMED. VERIFY THAT THE DESIGN PRESSURE IS STILL APPLICABLE FOR THE ADJUSTED OPENING. ALTERNATIVELY, THE WINDOW WIDTHS MAY BE REDUCED TO MAINTAIN THE 73" DIMENSION (35-1/2"+35-1/2"+2"=73").

2) USE TABLE 10B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE CONCRETE SUBSTRATE. IN THIS EXAMPLE, ASSUME THE POURED CONCRETE HEADER AND SILL ARE 8" WIDE. IF THE MULLION CLIP WERE TO BE CENTERED WITHIN THE 8", CARE MUST BE TAKEN TO MAINTAIN THE FASTENER'S EDGE DISTANCE. USING THE STANDARD CLIP WITH (4) 3/16" ULTRACON+ ANCHORS AT AN EDGE DISTANCE OF 2-1/2" GIVES AN ANCHOR CAPACITY OF 1260 LBS WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY OF 971 LBS.

FOR THE HORIZONTAL MULLIONS:

BECAUSE THE VERTICAL MULL WILL BE A 2" X 4" X .250" MULLION, IN THIS EXAMPLE WE WILL MATCH THE HORIZONTAL AND VERTICAL MULLIONS, ALTERNATIVELY, ANOTHER MULLION TYPE COULD BE CHOSEN.

1) THE MULLION SPAN IS 36" AND THE OPENING DIMENSION IS 32"+72"+2" =106". REFERENCING SHEET 24, THE COLUMN USING TRAPEZOIDAL/TRIANGULAR LOADING MAY BE USED. FROM TABLE 10A, SHEET 15, THE 2" X 4" X .250" MULLION (@ SPAN = 42", OPENING DIMENSION = 120") HAS A DESIGN PRESSURE OF +/-170.0 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 521 LBS.

2) USE TABLE 10B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE CMU SUBSTRATE. IN THIS EXAMPLE, ASSUME THE CMU JAMBS ARE 8" WIDE. IF THE MULLION CLIP WERE TO BE CENTERED WITHIN THE 8", CARE MUST BE TAKEN TO MAINTAIN THE FASTENER'S EDGE DISTANCE. USING THE STANDARD MULL CLIPS WITH (4) 3/16" ULTRACON+ ANCHORS AT AN EDGE DISTANCE OF 2-1/2" GIVES AN ANCHOR CAPACITY OF 740 LBS WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY OF 521 LBS. THE SAME ANCHOR TYPES WERE CHOSEN AS BEFORE FOR SIMPLICITY, HOWEVER ANY ANCHOR MEETING THE REQUIREMENTS COULD HAVE BEEN USED.

3) FOR THE U-CLIP IN THE HORIZONTAL MULLION TO VERTICAL MULLION, USE THE SAME ANCHOR CAPACITY OF 521 LBS. TABLE 10B FOR THE U-CLIP SHOWS THE ANCHOR CAPACITY IS 805 LBS WHEN USING 3 ANCHORS, WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY REQUIREMENT OF 521 LBS. THE ANCHOR TYPE IS A #12 STEEL SCREW.

FROM THE ABOVE STEPS, OUR MULLION DESIGN PRESSURE IS:
+/-64.7 PSF FROM THE VERTICAL MULLION;
+/-170.0 PSF FROM THE 36" HORIZONTAL MULLION ATTACHING TO CMU;
+/-170.0 PSF FROM THE 36" HORIZONTAL MULLION ATTACHING TO THE VERTICAL MULLION (INTERSECTION).
THE LOWEST DESIGN PRESSURE IS +/-64.7 PSF AND WOULD APPLY TO ALL OF THE MULLIONS.

VERIFY THE DESIGN PRESSURE OF THE FENESTRATION PRODUCTS USED WITH THIS MULLION SYSTEM. THE LOWER DESIGN PRESSURE, OF MULLIONS OR FENESTRATION PRODUCTS, WILL APPLY TO THE OVERALL ASSEMBLY. FINAL DESIGN PRESSURE REQUIRES THAT THE BOTH THE MULLION AND THE FENESTRATION PRODUCT BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION SPECIFICATIONS INTO RESPECTIVE SUBSTRATES AND FENESTRATION PRODUCTS TO MULLION.

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami–Dade Product Control

Revision:
REMOVE 2020 FBC REFERENCE.
ADD 1X2.75X.650 MULL
AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600
REGISTRATION #29296

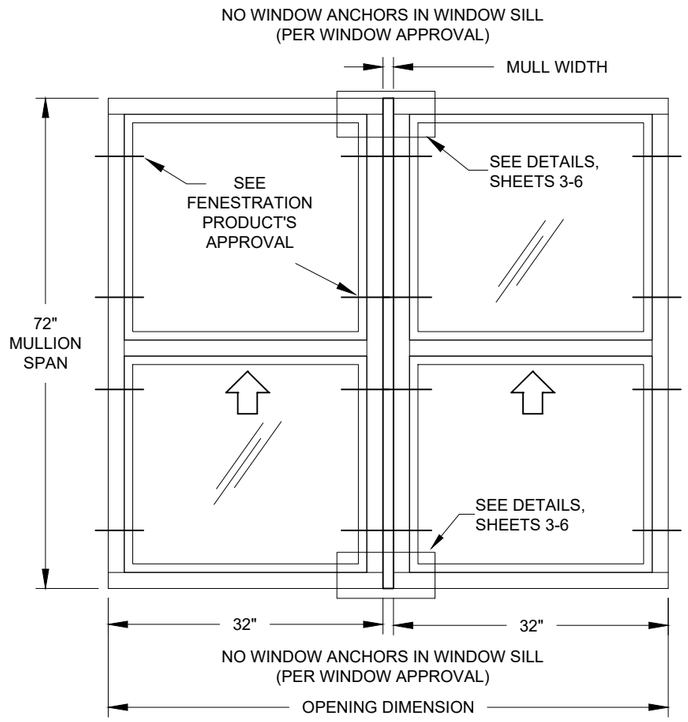
Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Series	Title	Desc.
MULLS	EXAMPLE 1	ALUMINUM TUBE MULLIONS, CLIPPED (LM)

Scale	Sheet	DWG No.	Drawn By	Date	Rev.
NTS	22 OF 24	TUBEMULL-1	JENS ROSOWSKI	02/02/23	B

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705



EXAMPLE 2: SINGLE VERTICAL MULLION

THE BUILDING SUBSTRATE IS KNOWN TO BE WOOD ON ALL FOUR SIDES. THE WINDOW FRAME DEPTH IS 3-1/2". THE OPENING REQUIRES A DESIGN PRESSURE OF +60.0/-60.0 PSF.

1) INITIALLY ASSUMING THAT A 1" WIDE MULLION IS SUITABLE,THE MULLION SPAN IS 72" AND THE OPENING DIMENSION IS 32"+32+1" = 65". REFERENCING SHEET 24, THE COLUMN USING RECTANGULAR LOADING MUST BE USED. SCAN THE MULLION TABLES FOR A MULLION THAT IS AT LEAST THE WINDOW FRAME DEPTH OF 3-1/2" AND WILL MEET OR EXCEED THE REQUIRED DESIGN PRESSURE OF +60.0/-60.0 PSF. IF THE TABLE DOES NOT SHOW THE EXACT SIZE, USE THE NEXT LARGER SIZE

FROM TABLE 6A, SHEET 12, THE 1" X 4" X 1/8" MULLION (SPAN = 72", OPENING DIMENSION = 70") HAS A DESIGN PRESSURE OF +/-97.0 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 849 LBS.

2) USE TABLE 6B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE WOOD SUBSTRATE. BOTH THE STANDARD CLIP WITH (4) #12 ANCHORS AND THE 2X5 ANGLE CLIPS WITH (4) #12 ANCHORS HAVE A CAPACITY 0F 885 LBS. THOUGH EITHER ONE COULD BE USED, THE STANDARD CLIP IS EASIEST TO INSTALL.

3) VERIFY THE DESIGN PRESSURE OF THE FENESTRATION PRODUCTS USED WITH THIS MULLION SYSTEM. THE LOWER DESIGN PRESSURE, OF MULLIONS OR FENESTRATION PRODUCTS, WILL APPLY TO THE OVERALL ASSEMBLY. FINAL DESIGN PRESSURE REQUIRES THAT THE BOTH THE MULLION AND THE FENESTRATION PRODUCT BE INSTALLED IN ACCORDANCE WITH THE INSTALLATION SPECIFICATIONS INTO RESPECTIVE SUBSTRATES AND FENESTRATION PRODUCTS TO MULLION.

IN THIS EXAMPLE, THE DESIGN PRESSURE REQUIRED WAS +/-60.0 PSF. THE OVERALL MULLION SYSTEM WAS DETERMINED TO BE 97.0 PSF WITH AN ANCHOR CAPACITY OF 885 LBS. ALTERNATIVELY, THE ANCHOR CAPACITY ADJUSTMENT FORMULA COULD HAVE BEEN USED TO CALCULATE THE ANCHOR CAPACITY REQUIRED FOR THE EXACT DESIGN PRESSURE OF 60 PSF:

$$(60\ \text{PSF}) \times \left(\frac{885\ \text{LBS}}{97.0\ \text{PSF}}\right) = 547.4\ \text{LBS}$$ (I.E. YOU COULD USE A LOWER CAPACITY ANCHORAGE OPTION OF 547.4 LBS SINCE YOU ONLY REQUIRE A DESIGN PRESSURE OF 60 PSF.)

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Desc.	Date	Rev.
ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23	B

Title	Drawn By	DWG No.
EXAMPLE 2	JENS ROSOWSKI	TUBEMULL-1

Series	Scale	Sheet
MULLS	NTS	23 OF 24

ANTHONY LYNN MILLER
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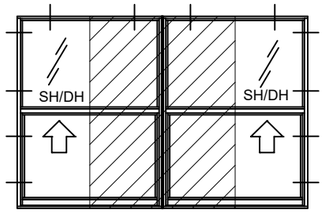
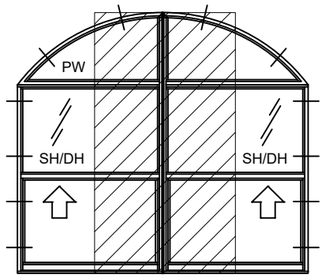
PROFESSIONAL ENGINEER
3/13/25

A. LYNN MILLER, P.E., P.E.# 58705

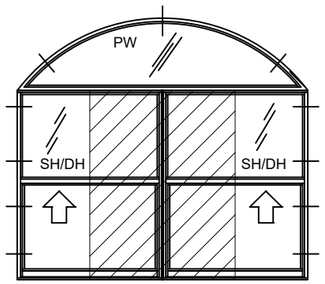
EXAMPLES OF RECTANGULAR LOADING:



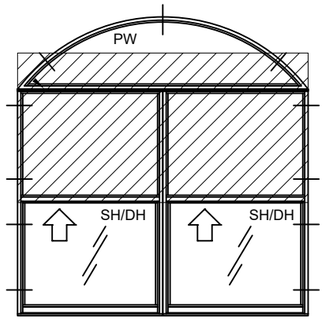
LOADING OF VERTICAL MULLION
SILL OF WINDOWS NOT ANCHORED



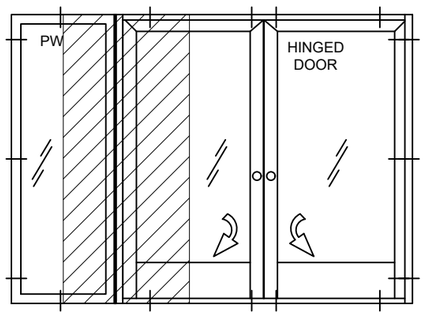
LOADING OF VERTICAL MULLION
WITH INTERSECTING HORIZONTAL MULLIONS



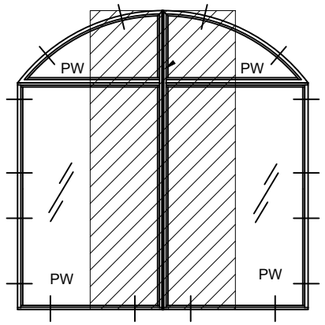
LOADING OF VERTICAL MULLION
SILL OF WINDOWS NOT ANCHORED



LOADING OF HORIZONTAL MULLION
WITH INTERSECTING VERTICAL MULLION

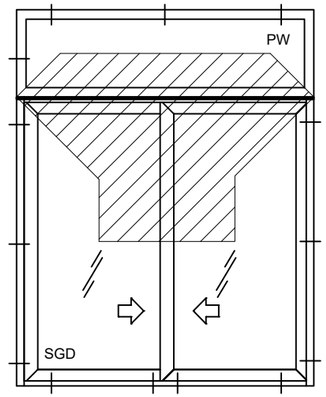


LOADING OF VERTICAL MULLION PANEL OF
HINGED DOOR IS NOT CAPTURED OR ANCHORED

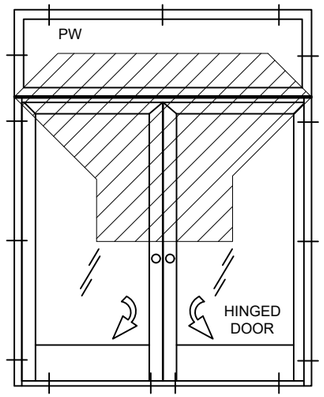


LOADING OF VERTICAL MULLION
WITH INTERSECTING HORIZONTAL MULLIONS

EXAMPLES OF TRAPEZOIDAL/TRIANGULAR LOADING:



LOADING OF HORIZONTAL MULLION



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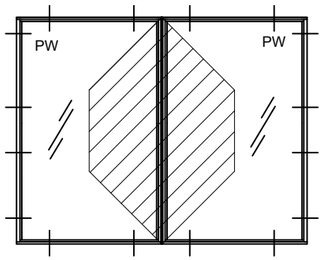
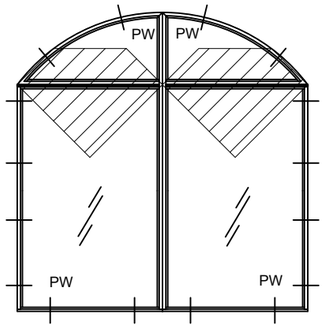
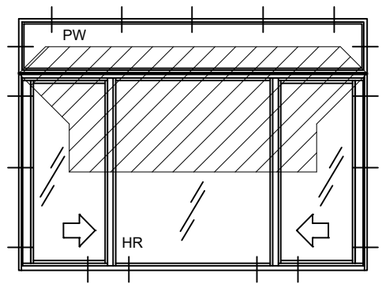


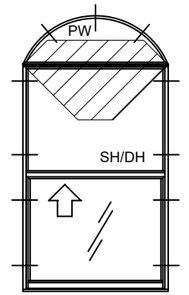
LOADING OF VERTICAL MULLION



LOADING OF (2) HORIZONTAL MULLIONS



LOADING OF HORIZONTAL MULLION



LOADING OF
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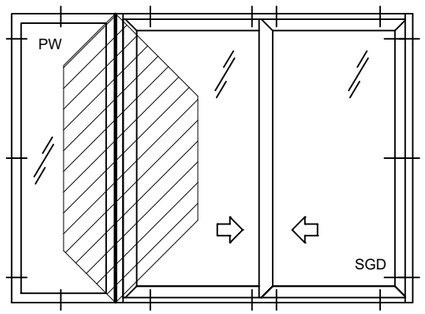
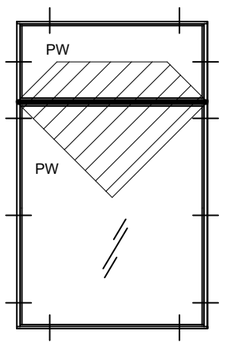


LOADING OF VERTICAL MULLION



LOADING OF
HORIZONTAL MULLION

NOTES:

1) DRAWINGS ARE RERESENTATIONS OF TYPICAL CONFIGURATIONS. CONFIGURATIONS NOT SHOWN MAY BE EXTRAPOLATED FROM THOSE SHOWN.

2) IF THE LOADING TYPE CANNOT BE DETERMINED, USE RECTANGULAR LOADING.

3) SEE PRODUCTS' APPROVAL FOR ACTUAL ANCHOR LOCATIONS.

PRODUCT REVISED
As complying with the Florida Building Code
NOA–No. 25-0319.05
Expiration Date: 03/28/2028
By: Manuel Perez
Miami–Dade Product Control

Revision:
REMOVE 2020 FBC REFERENCE.
ADD 1X2.75X.650 MULL
AM - 03/12/25

PREPARED BY A. LYNN MILLER
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
(941) 480-1600

REGISTRATION #29296

Impact Resistant Windows & Doors
3780 W 104TH STREET
HIALEAH, FL 33018
(305) 593-6590

Desc.	Date	Rev.
ALUMINUM TUBE MULLIONS, CLIPPED (LM)	02/02/23	B
Title	Drawn By	DWG No.
LOADING AREA EXAMPLES	JENS ROSOWSKI	TUBEMULL-1
Scale	Sheet	
MULLS	NTS	24 OF 24
Series		

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
3/13/25
STATE OF FLORIDA
PROFESSIONAL ENGINEER

A. LYNN MILLER, P.E., P.E.# 58705