MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION
11805 SW 26 Street, Room 208
Miami, Florida 33175
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)

WinDoor, Inc.
104 Triple Diamond Blvd.
N. Venice, FL 34275

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 "238" Impact Resistant Aluminum Tube Mullions- L.M.I.

APPROVAL DOCUMENT: Drawing No. 238MULL-1, titled "Aluminum Tube Mullions (LM)", sheets 1 thru 7 of 7, dated 02/22/2022, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E., bearing the Miami-Dade County Product Control Renewal 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 **renews NOA# 20-0610.15** and consists of this page 1 and evidence pages E-1 and E-2, as well as approval document mentioned above.

The submitted documentation was reviewed by **Sifang Zhao, P.E.**

S.Z.
04/07/2022

NOA No. 22-0309.02
Expiration Date: April 26, 2027
Approval Date: April 07, 2022

WinDoor, Inc.

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's

A. DRAWINGS

1. Manufacturer's die drawings and sections. ***(Submitted under NOA#02-0123.07)***

1. Drawing No. MD-MUL238, titled "238 Flange Frame Clipped Mullion", sheets 1 thru 7 of 7, dated 05/14/2020, 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.

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 aluminum fixed windows mulled together, prepared by Hurricane Test Laboratory, LLC, Test Report No. **HTL-0080-0105-08**, dated 03/26/08, signed and sealed by Vinu J. Abraham, P.E. ***(Submitted under NOA#08-0429.04)***

2. Test reports on: 1) Uniform Static Air Pressure Test, Loading per FBC PA-202-94 along with marked-up drawings and installation diagram of an aluminum fixed window, prepared by Hurricane Engineering & Testing Inc., Test Report No. **HETI-96-525**, dated 02/12/95 signed and sealed by Hector Medina, P.E. ***(Submitted under NOA#02-0123.07)***

3. Test reports on: 1) Large Missile Impact Test, Loading per FBC PA 201-94 along with marked-up drawings and installation diagram of an aluminum fixed window, prepared by Hurricane Engineering & Testing Inc., Test Report No. **HETI-96-525**, dated 10/30/95, signed and sealed by Timothy S. Marshall, P.E. ***(Submitted under NOA#02-0123.07)***

C. CALCULATIONS

1. Anchor verification calculations and structural analysis, complying with **FBC-6th Edition (2017)** and **FBC-7th (2020)** dated 06/05/2020, 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 6th Edition (2017)** and with **FBC 7th Edition (2020),** and of no financial interest, dated 05/22/2020, signed and sealed by Anthony Lynn Miller, P.E.

2. Statement letter of successor engineer per 61G15-27.001 Florida Administrative Code.

Sifang Zhao, P.E.
Product Control Examiner
NOA No. 22-0309.02
Expiration Date: April 26, 2027
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NOTICE OF ACCEPTANCE:EVIDENCE SUBMITTED

G. OTHERS

1. Private labeling agreement between WinDoor, Inc. and CGI Windows and Doors, Inc. document in conformance of RER guideline dated 09/12/2018.
(Submitted under NOA#18-1001.20)

2. Notice of Acceptance No. **18-1001.20**, issued to WinDoor for their Series Clipped, Extruded Aluminum Tube Mullion with #373 Framing Member – L.M.I., approved on 12/13/18 and expiring on 04/26/22.

3. Notice of Acceptance No. **20-0610.08**, issued to CGI Windows & Doors for their Series "238 Flange Frame Clipped Mullion -L.M.I., approved on 09/24/20 and expiring on 04/26/22.

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. 238MULL-1, titled "Aluminum Tube Mullions (LM)", sheets 1 thru 7 of 7, dated 02/22/2022, prepared by manufacturer, signed and sealed by Anthony Lynn Miller, P.E.

B. TESTS

1. None.

C. CALCULATIONS

1. Anchor verification calculations and structural analysis, complying **FBC 7th (2020)** dated 03/04/2022, 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 7th Edition (2020),** and of no financial interest, dated 03/04/2022, signed and sealed by Anthony Lynn Miller, P.E.

G. OTHERS

1. Notice of Acceptance No. **20-0610.15**, issued Windor Inc. for their Series Clipped, Extruded Aluminum Tube Mullion with #373 Framing Member – L.M.I., approved on 10/28/2020 and expiring on 04/26/22.

Sifang Zhao, P.E.
Product Control Examiner
NOA No. 22-0309.02
Expiration Date: April 26, 2027
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SERIES 238, IMPACT-RESISTANT, 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) 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" WHEN USING THE MULLION CLIP (ITEM# 4), BUT SHALL NOT HAVE A GAP OF MORE THAN 1/4" FROM THE END OF THE MULLION TO THE BOTTOM OF THE CLIP, SEE SHEET 3.

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+, DEWALT/ELCO 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 BE PRESSURE-TREATED YELLOW SOUTHERN PINE WITH AN 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 .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.

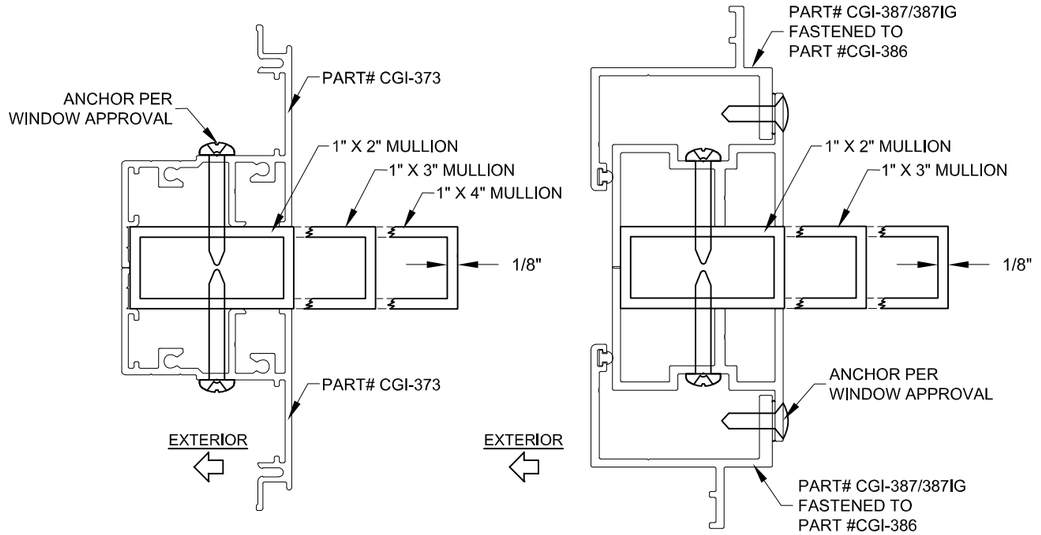
ANCHOR CAPACITY ADJUSTMENT FORMULA:

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

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.

CODES / STANDARDS USED:

- 2020 FLORIDA BUILDING CODE (FBC), 7TH EDITION
- ANSI/AF&PA NDS-2018 FOR WOOD CONSTRUCTION
- ALUMINUM DESIGN MANUAL, ADM-2015
- AISI S100-16
- AISC 360-16



WINDOW-TO-MULLION DETAIL

INSTRUCTIONS:

1) DETERMINE THE ALLOWABLE STRESS DESIGN (ASD) 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 3A. 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 CLIP/ANCHOR 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 FENESTRATION 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 THIS SHEET TO OBTAIN A LOWER CLIP/ANCHOR CAPACITY.

DESIGN PRESSURE RATING
SEE TABLES 1A - 3A

IMPACT RATING
RATED FOR LARGE & SMALL MISSILE IMPACT RESISTANCE

PRODUCT REVISED
as complying with the Florida Building Code
NOA No. 22-0309.02
Expiration Date 04/26/2027
By
Miami-Dade Product Control

Revision:

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

WINDOOR® INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

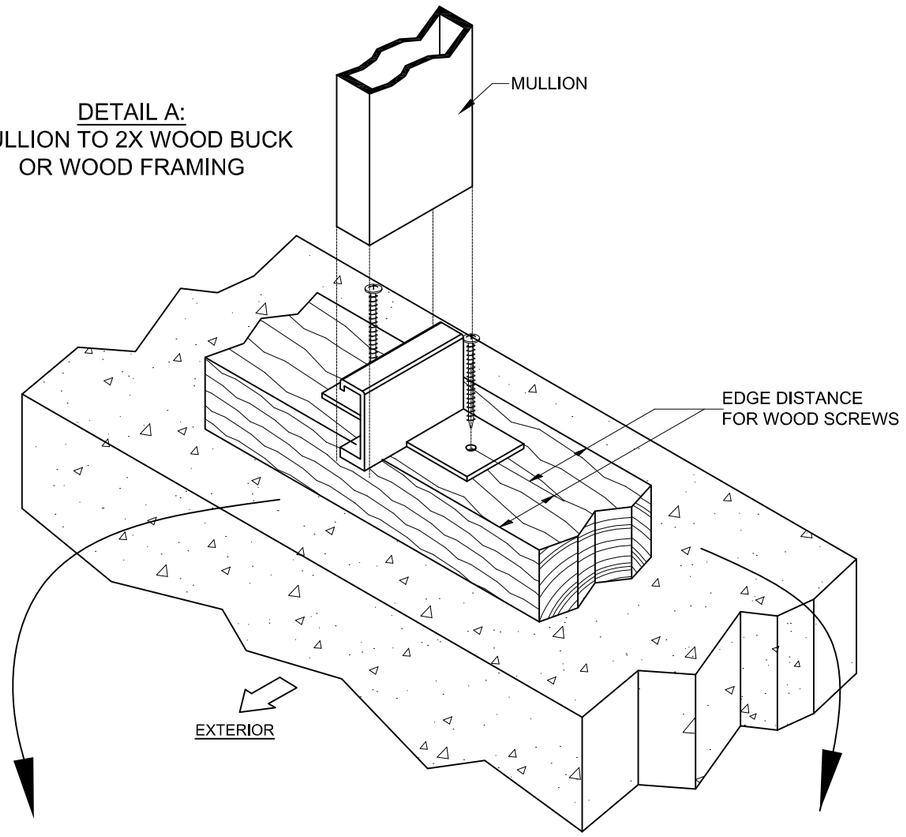
Series	Title	Desc.
238 MULLS	GEN. NOTES & INSTRUCTIONS	ALUMINUM TUBE MULLIONS (LM)

Scale	Sheet	DWG No.	Drawn By	Date	Rev.
NTS	1 OF 7	238MULL-1	JENS ROSOWSKI	02/22/22	

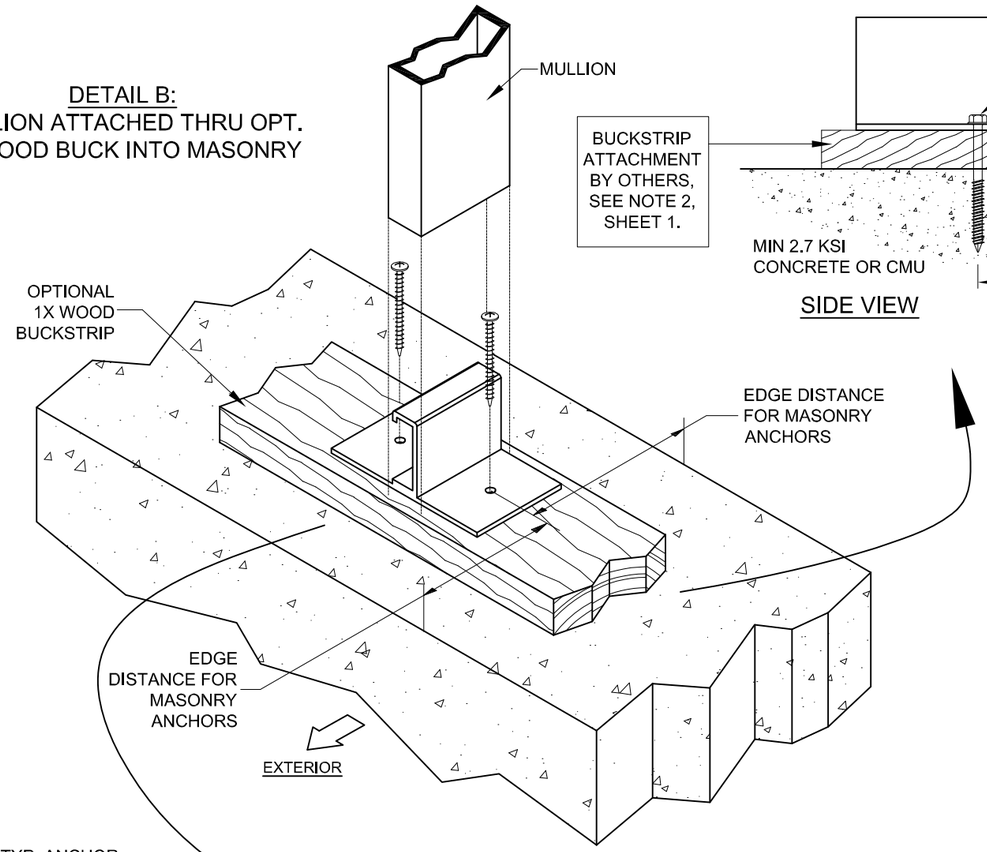
ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
2/28/22

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

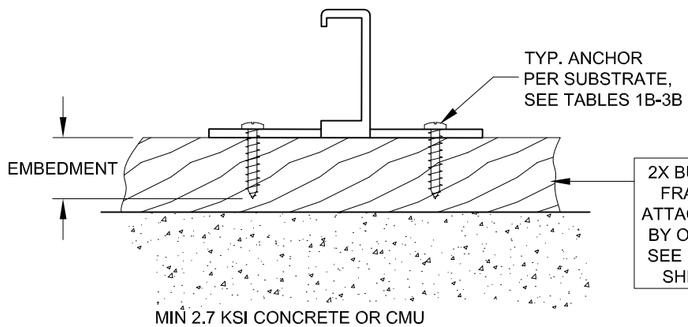
DETAIL A:
MULLION TO 2X WOOD BUCK
OR WOOD FRAMING



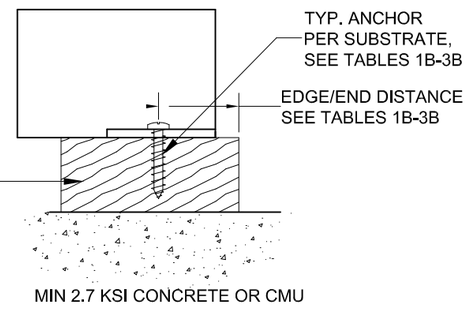
DETAIL B:
MULLION ATTACHED THRU OPT.
1X WOOD BUCK INTO MASONRY



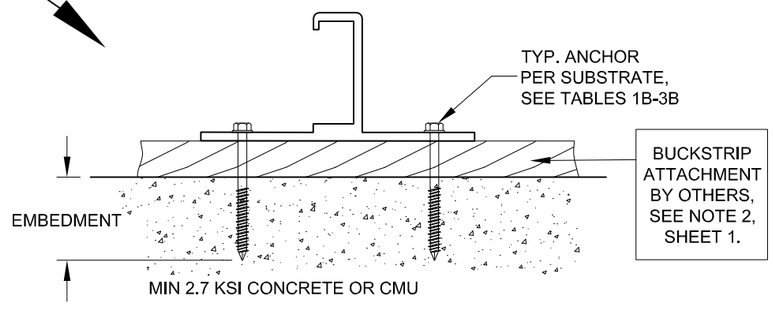
SIDE VIEW



FRONT VIEW



SIDE VIEW



FRONT VIEW

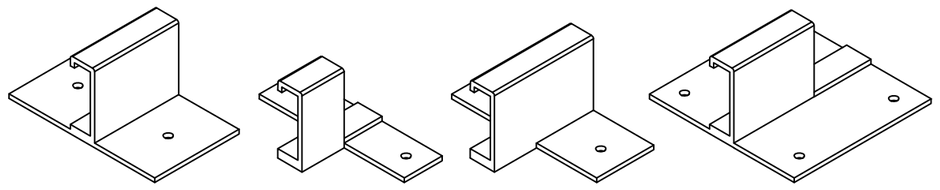
INSTALLATION NOTES:

1) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO. ANCHOR HEAD TYPE MAY BE PANHEAD, HEXHEAD OR FLATHEAD.

2) QUANTITY OF ANCHORS AND MULLION SIZE SHOWN ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY. BECAUSE THE ANCHOR CAPACITY IS BASED PARTLY ON THE ANCHOR TO ANCHOR DISTANCE, THE CORRECT QUANTITY AND LOCATION OF ANCHORS MUST BE FOLLOWED, REFER TO THE TABLES ON THE FOLLOWING SHEETS.

3) FOR MASONRY APPLICATIONS IN MIAMI-DADE COUNTY, USE ONLY MIAMI-DADE COUNTY APPROVED DEWALT ULTRACON+, AGGREGATOR OR CRETEFLEX MASONRY ANCHORS.

4) MAY BE INSTALLED HORIZONTALLY OR VERTICALLY.



ALLOWABLE CLIP VARIATIONS

ANCHOR HOLE DIMENSIONS FROM
SHEETS 5-7 MUST BE FOLLOWED.

PRODUCT REVISED
as complying with the Florida Building Code
NOA–No. 22-0309.02
Expiration Date 04/26/2027
By
Miami–Dade Product Control

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

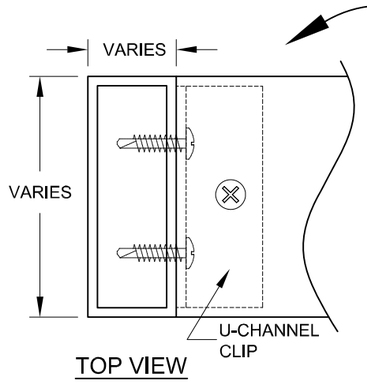
REGISTRATION #29296

WINDOOR®
INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

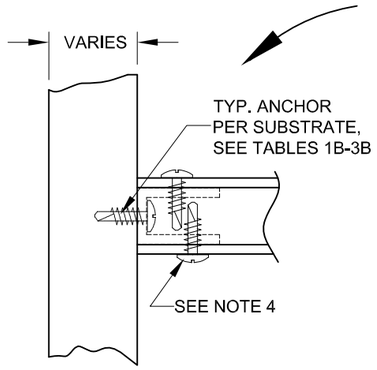
Desc.	Title	Scale	Sheet	DWG No.	Drawn By	Date	Rev.
ALUMINUM TUBE MULLIONS (LM)	INSTALLATION INSTRUCTIONS	NTS	2 OF 7	238MULL-1	JENS ROSOWSKI	02/22/22	
Series: 238 MULLS							

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
2/28/22
STATE OF FLORIDA
PROFESSIONAL ENGINEER

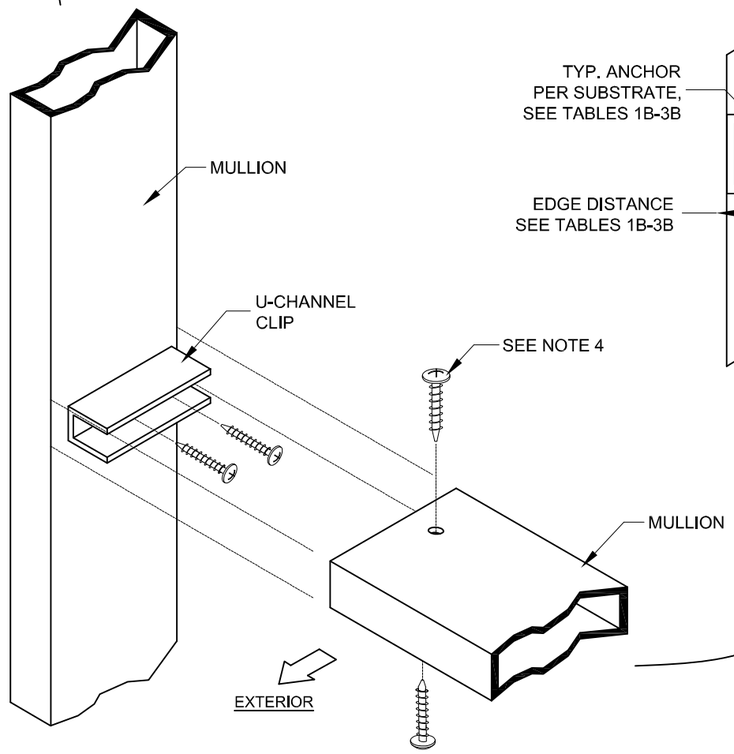
A. LYNN MILLER, P.E., P.E.# 58705



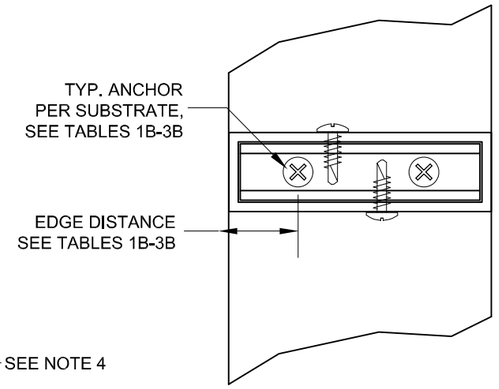
TOP VIEW



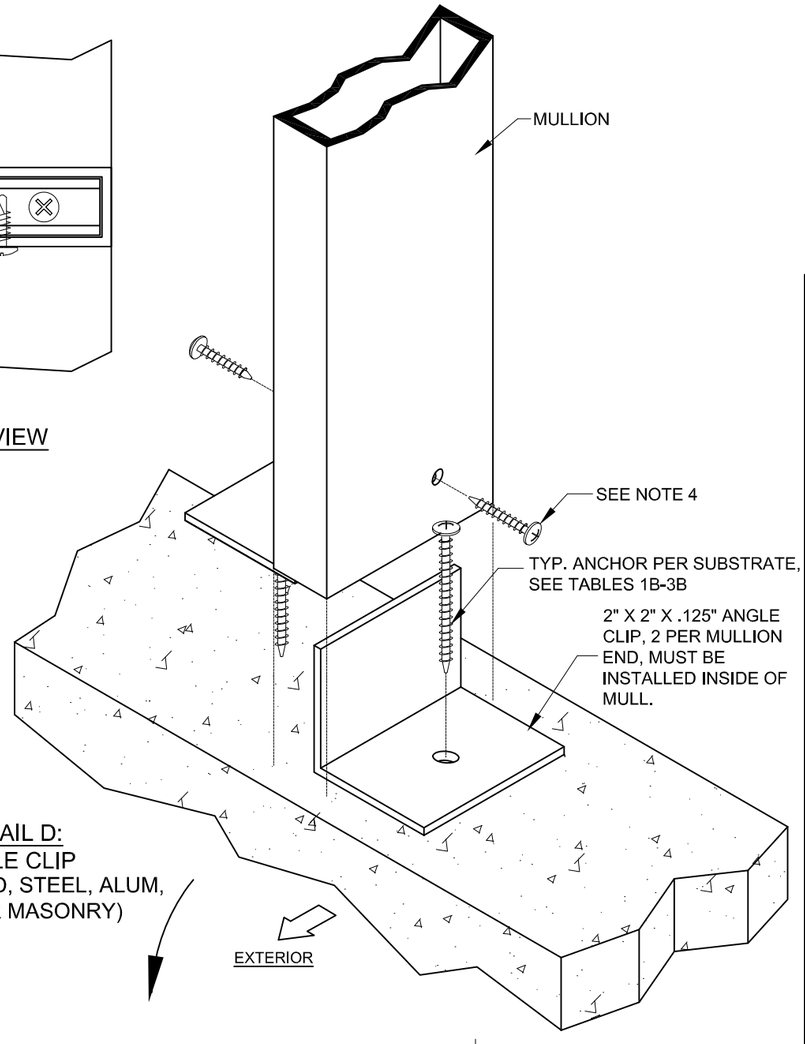
FRONT VIEW



DETAIL C:
MULLION TO MULLION INTERSECTION



SIDE VIEW



DETAIL D:
ANGLE CLIP
(INTO WOOD, STEEL, ALUM, CMU OR MASONRY)

INSTALLATION NOTES:

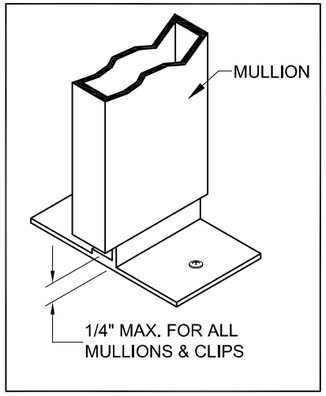
1) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO. ANCHOR HEAD TYPE MAY BE PANHEAD, HEXHEAD OR FLATHEAD.

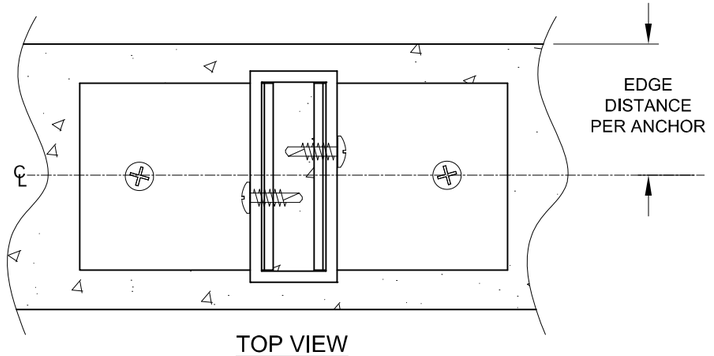
2) QUANTITY OF ANCHORS AND MULLION SIZE SHOWN ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY. BECAUSE THE ANCHOR CAPACITY IS BASED PARTLY ON THE ANCHOR TO ANCHOR DISTANCE, THE CORRECT QUANTITY AND LOCATION OF ANCHORS MUST BE FOLLOWED, REFER TO THE TABLES ON THE FOLLOWING SHEETS.

3) FOR MASONRY APPLICATIONS IN MIAMI-DADE COUNTY, USE ONLY MIAMI-DADE COUNTY APPROVED DEWALT ULTRACON+, AGGREGATOR OR CRETEFLEX MASONRY ANCHORS.

4) IF USED, THE U-CHANNEL OR 2X2 ANGLE CLIP MUST ALSO BE ANCHORED TO THE MULLION (CLIPPED). USE THE SAME QUANTITY OF #12 ANCHORS THAT ARE USED IN ANCHORING THE CLIP TO THE SUBSTRATE.

5) MAY BE INSTALLED HORIZONTALLY OR VERTICALLY.





TOP VIEW

PRODUCT REVISED
as complying with the Florida Building Code
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Miami–Dade Product Control

Revision:

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

REGISTRATION #29296

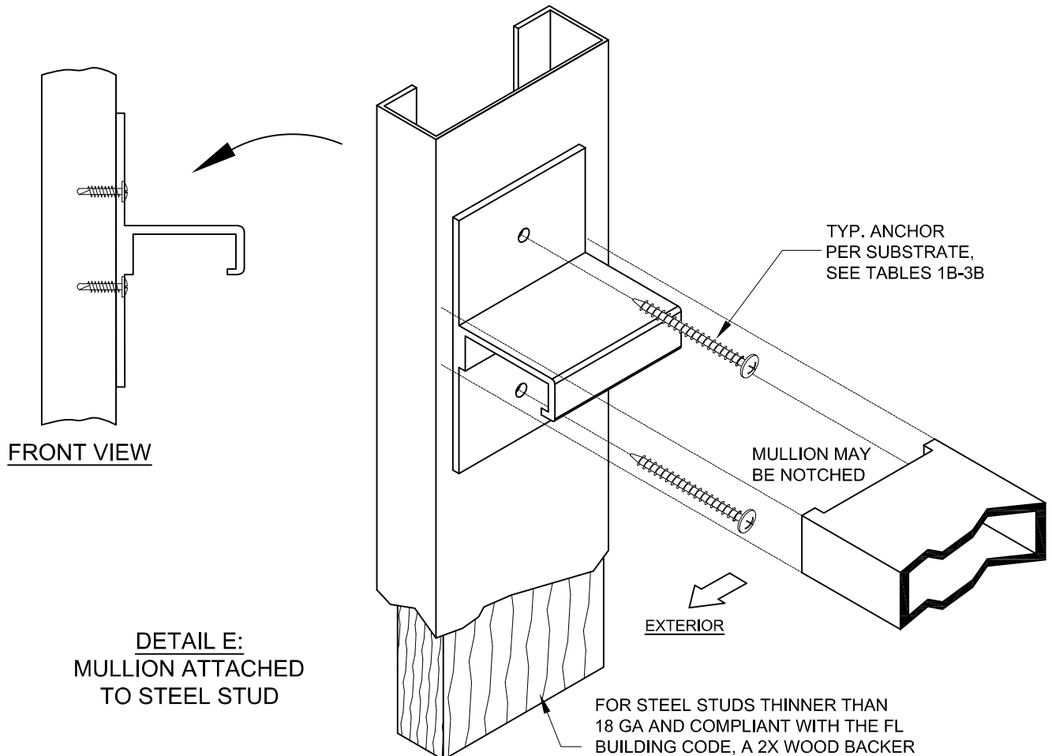
Date 02/22/22
Drawn By JENS ROSOWSKI
DWG No. 238MULL-1
Rev.

WINDOOR® INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

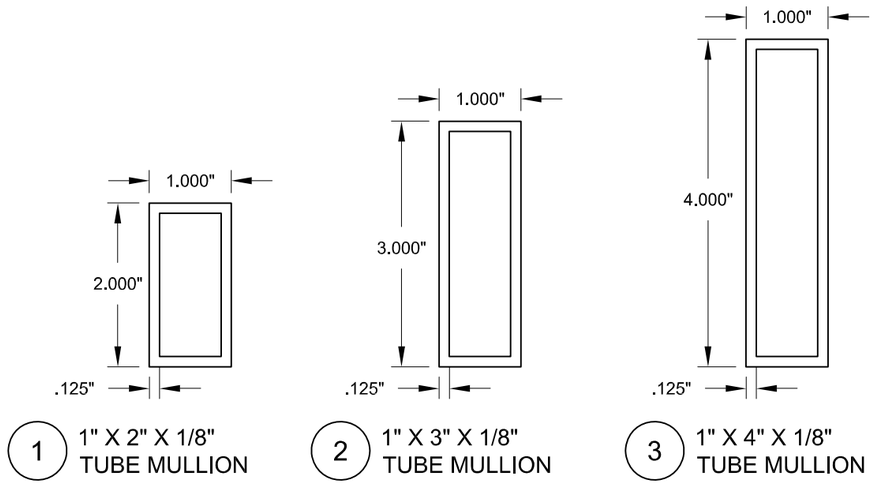
Desc: ALUMINUM TUBE MULLIONS (LM)
Title INSTALLATION INSTRUCTIONS
Series 238 MULLS
Scale NTS
Sheet 3 OF 7

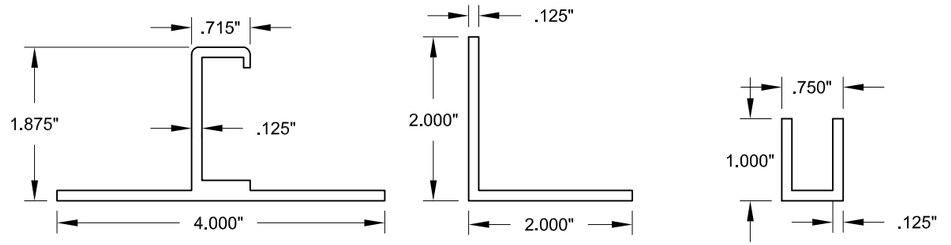
ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
2/28/22
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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



DETAIL E:
MULLION ATTACHED
TO STEEL STUD





INSTALLATION NOTES:

1) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO. ANCHOR HEAD TYPE MAY BE PANHEAD, HEXHEAD OR FLATHEAD.

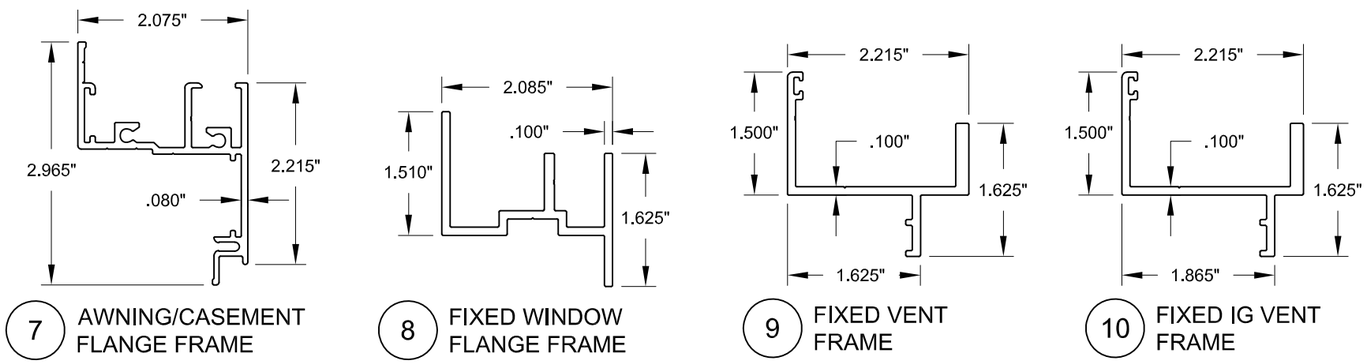
2) QUANTITY OF ANCHORS AND MULLION SIZE SHOWN ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY. BECAUSE THE ANCHOR CAPACITY IS BASED PARTLY ON THE ANCHOR TO ANCHOR DISTANCE, THE CORRECT QUANTITY AND LOCATION OF ANCHORS MUST BE FOLLOWED, REFER TO THE TABLES ON THE FOLLOWING SHEETS.

3) FOR 2X WOOD-BACKED STEEL STUDS, WOOD ANCHOR VALUES ARE TO BE USED.

4) MAY BE INSTALLED HORIZONTALLY OR VERTICALLY.

BILL OF MATERIALS:

ITEM#	PART#	DESCRIPTION	MATERIAL
1	AL-403	1" X 2" X 1/8" Tube Mullion	6063-T6
2	AL-1035	1" X 3" X 1/8" Tube Mullion	6063-T6
3	AL-404	1" X 4" X 1/8" Tube Mullion	6063-T6
4	CGI-383	Mullion Clip	6063-T6
5	STD	2" X 2" X 1/8" Angle Clip	6063-T6
6	AL-416	1" X 3/4" X 1/8" U-Channel Clip	6063-T6
7	CGI-373	Panel Top Rail	6063-T6
8	CGI-386	Panel Top Rail	6063-T6
9	CGI-387	Panel Top Rail	6063-T6
10	CGI-387IG	Panel Top Rail	6063-T6



PRODUCT REVISED
as complying with the Florida Building Code
NOA–No. 22-0309.02
Expiration Date 04/26/2027
By
Miami–Dade Product Control

Revision:

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

WINDOOR® INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

Desc.	Title	Series	Date	Drawn By	DWG No.	Rev.
ALUMINUM TUBE MULLIONS (LM)	INSTALL/BOM/EXTRUSIONS	238 MULLS	02/22/22	JENS ROSOWSKI	4 OF 7	238MULL-1
		Scale NTS			Sheet	

ANTHONY LYNN MILLER
LICENSE
No. 58705
A. Lynn Miller
2/28/22
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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

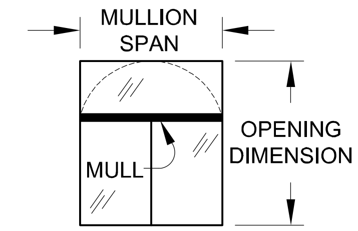
TABLE 1A:

1" x 2" Mullion Design Pressure & Anchor Load Requirement	Opening Dimension: 50 in, Point Loaded Mullion: Mullion Capacity (lbs/ft2)	50 in, Point Loaded Mullion: Anchor Capacity Required (lbs)	50 in, Uniformly Loaded Mullion: Mullion Capacity (lbs/ft2)	50 in, Uniformly Loaded Mullion: Anchor Capacity Required (lbs)	60 in, Point: Mullion Capacity (lbs/ft2)	60 in, Point: Anchor Capacity Required (lbs)	60 in, Uniformly: Mullion Capacity (lbs/ft2)	60 in, Uniformly: Anchor Capacity Required (lbs)	70 in, Point: Mullion Capacity (lbs/ft2)	70 in, Point: Anchor Capacity Required (lbs)	70 in, Uniformly: Mullion Capacity (lbs/ft2)	70 in, Uniformly: Anchor Capacity Required (lbs)	80 in, Point: Mullion Capacity (lbs/ft2)	80 in, Point: Anchor Capacity Required (lbs)	80 in, Uniformly: Mullion Capacity (lbs/ft2)	80 in, Uniformly: Anchor Capacity Required (lbs)	90 in, Point: Mullion Capacity (lbs/ft2)	90 in, Point: Anchor Capacity Required (lbs)	90 in, Uniformly: Mullion Capacity (lbs/ft2)	90 in, Uniformly: Anchor Capacity Required (lbs)	100 in, Point: Mullion Capacity (lbs/ft2)	100 in, Point: Anchor Capacity Required (lbs)	100 in, Uniformly: Mullion Capacity (lbs/ft2)	100 in, Uniformly: Anchor Capacity Required (lbs)	120 in, Point: Mullion Capacity (lbs/ft2)	120 in, Point: Anchor Capacity Required (lbs)	120 in, Uniformly: Mullion Capacity (lbs/ft2)	120 in, Uniformly: 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	156.0	1365	170.0	521
48 in	170.0	708	170.0	524	170.0	850	170.0	584	170.0	992	170.0	630	156.8	1045	170.0	661	139.4	1045	170.0	677	125.4	1045	170.0	680	104.5	1045	170.0	680
50-5/8 in	170.0	747	170.0	563	170.0	896	170.0	631	152.7	940	170.0	684	133.6	940	170.0	723	118.8	940	167.7	737	106.9	940	165.1	734	89.1	940	165.0	734
54 in	170.0	797	170.0	612	146.8	826	166.7	677	125.9	826	149.9	665	110.1	826	138.9	656	97.9	826	132.0	650	88.1	826	128.4	647	73.4	826	127.5	645
60 in	128.4	669	137.9	569	107.0	669	118.6	556	91.7	669	105.6	545	80.3	669	96.7	537	71.4	669	90.6	531	64.2	669	86.6	526	53.5	669	83.6	523
63 in	111.0	607	118.3	519	92.5	607	101.5	507	79.3	607	90.0	498	69.3	607	82.0	490	61.6	607	76.4	484	55.5	607	72.6	479	46.2	607	69.0	475
66 in	96.5	553	102.3	475	80.4	553	87.5	465	68.9	553	77.4	456	60.3	553	70.2	449	53.6	553	65.1	443	48.3	553	61.6	438	40.2	553	57.8	433
72 in	74.3	465	78.1	403	61.9	465	66.5	395	53.1	465	58.5	387	46.5	465	52.8	381	41.3	465	48.6	376	37.2	465	45.5	371	31.0	465	41.8	366
76 in	63.2	417	66.1	364	52.7	417	56.1	357	45.1	417	49.2	350	39.5	417	44.3	344	35.1	417	40.6	339	31.6	417	37.9	335	26.3	417	34.4	329
78 in	58.5	396	61.0	347	48.7	396	51.8	340	41.8	396	45.4	333	36.5	396	40.7	328	32.5	396	37.3	323	29.2	396	34.7	319	24.4	396	31.3	313
90 in	38.1	297	39.3	264	31.7	297	33.2	259	27.2	297	28.9	255																
96 in	31.4	261	32.2	234	26.1	261	27.2	229	22.4	261																		

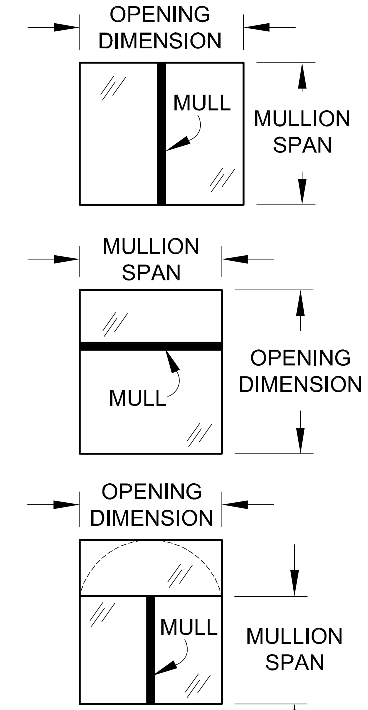
TABLE 1B:

1" x 2" Clip/Anchor Capacity — Substrate:	3k Concrete				3.5k Conc.	Hollow CMU						Filled CMU			PT Wood *		Metal *
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" Elco AggreGator	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" Elco AggreGator	1/4" Elco CreteFlex	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" Elco AggreGator	#12 Steel Screw (G5)	#14 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"	2-1/2"	1"	1"	2"	0.54"	0.60	0.36
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"	varies *
2 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 1:	310 lbs	630 lbs	220 lbs	870 lbs	518 lbs	230 lbs	370 lbs	320 lbs	580 lbs	374 lbs	497 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 2:	320 lbs	N/A	360 lbs	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
6 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 3:	480 lbs	N/A	540 lbs	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 into 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

* SEE NOTE 10 ON SHEET 1 FOR ADDITIONAL SUBSTRATE INFORMATION.



POINT LOADED MULLION (SEE NOTE 5)



UNIFORMLY LOADED MULLIONS

1" X 2" CLIP ANCHOR LOCATIONS, TOP VIEW:

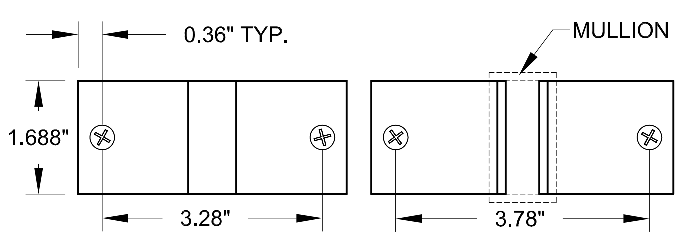


FIGURE 1

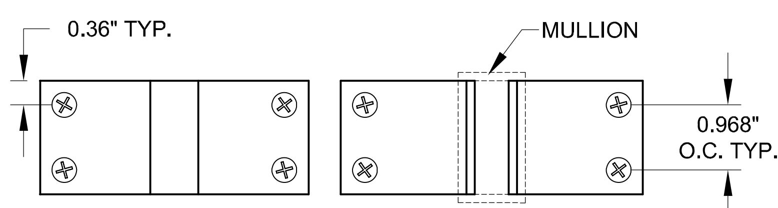


FIGURE 2

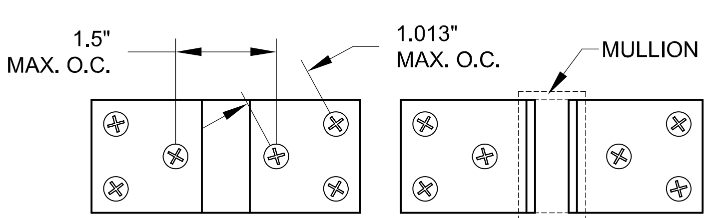


FIGURE 3

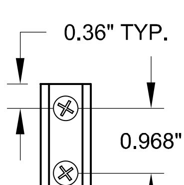


FIGURE 4

CLIP NOTES:

1) CLIP HOLES MAY BE DRILLED IN THE FIELD. CLIP VARIATIONS ARE ALLOWED (SEE SHEET 1), PROVIDED THE DIMENSIONS SHOWN ON THIS SHEET ARE FOLLOWED.

TABLE NOTES:

1) WHEN FINDING YOUR SIZE IN THE MULLION TABLE, ALWAYS ROUND UP TO THE NEXT SIZE SHOWN ON THE TABLE. LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

2) IF A LOWER ANCHOR CAPACITY IS ACCEPTABLE, USE THE FORMULA FROM SHEET 2 TO CALCULATE THE CORRESPONDING, LOWER DESIGN PRESSURE OF THE ANCHOR/MULLION SYSTEM.

3) FOR CROSSING MULLIONS, DETERMINE THE CAPACITIES FOR EACH MULLION. FOR TRIPLE+ MULLED WINDOWS, ONLY USE THE OPENING DIMENSION OF TWO ADJACENT WINDOWS.

4) WINDOW/MULL IMAGES MAY BE ROTATED 90°.

5) A POINT LOADED MULLION IS ONE THAT SUPPORTS THE END OF ANOTHER MULLION ALONG ITS SPAN.

PRODUCT REVISED
as complying with the Florida Building Code
NOA–No. 22-0309.02
Expiration Date 04/26/2027
By
Miami–Dade Product Control

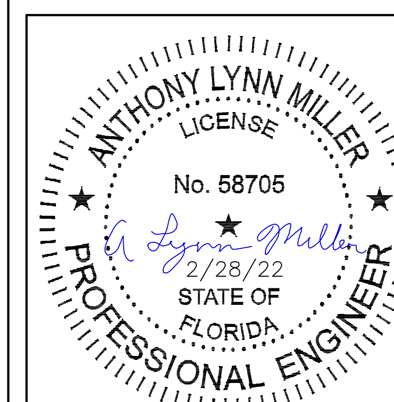
Revision:

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

Date 02/22/22
Drawn By JENS ROSOWSKI
Rev.
DWG No. 238MULL-1

WINDOOR® INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

Desc. ALUMINUM TUBE MULLIONS (LM)
Title 1 X 2 CAPACITIES
Series 238 MULLS
Scale NTS
Sheet 5 OF 7



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

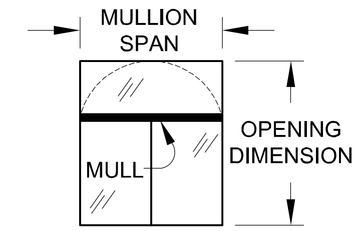
TABLE 2A:

1" x 3" Mullion Design Pressure & Anchor Load Requirement		Opening Dimension																										
		50 in				60 in				70 in				80 in				90 in				100 in				120 in			
		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion	
		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)	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 Span	42 in	190.0	693	190.0	487	190.0	831	190.0	534	190.0	970	190.0	566	190.0	1108	190.0	581	190.0	1247	190.0	582	190.0	1385	190.0	582	190.0	1663	190.0	582
	48 in	190.0	792	190.0	586	190.0	950	190.0	653	190.0	1108	190.0	704	190.0	1267	190.0	739	190.0	1425	190.0	757	190.0	1583	190.0	760	167.0	1670	190.0	760
	50-5/8 in	190.0	835	190.0	629	190.0	1002	190.0	705	190.0	1169	190.0	765	190.0	1336	190.0	808	189.8	1501	190.0	835	170.8	1501	190.0	845	142.3	1501	190.0	845
	54 in	190.0	891	190.0	684	190.0	1069	190.0	772	190.0	1247	190.0	843	175.9	1320	190.0	897	156.4	1320	190.0	935	140.7	1320	190.0	957	117.3	1320	190.0	962
	60 in	190.0	990	190.0	783	171.0	1069	189.5	888	146.6	1069	168.7	871	128.3	1069	154.4	858	114.0	1069	144.7	848	102.6	1069	138.4	841	85.5	1069	133.6	835
	63 in	177.3	969	189.1	829	147.7	969	162.1	811	126.6	969	143.8	795	110.8	969	131.0	782	98.5	969	122.1	773	88.6	969	116.0	765	73.9	969	110.3	758
	66 in	154.2	883	163.5	759	128.5	883	139.8	743	110.1	883	123.6	729	96.4	883	112.2	717	85.7	883	104.1	707	77.1	883	98.3	700	64.2	883	92.3	692
	72 in	118.8	742	124.8	644	99.0	742	106.3	631	84.8	742	93.5	619	74.2	742	84.3	609	66.0	742	77.6	600	59.4	742	72.7	593	49.5	742	66.7	584
	76 in	101.0	666	105.5	582	84.1	666	89.7	570	72.1	666	78.7	559	63.1	666	70.7	550	56.1	666	64.9	542	50.5	666	60.5	535	42.1	666	54.9	526
	78 in	93.4	632	97.4	554	77.8	632	82.7	543	66.7	632	72.5	533	58.4	632	65.0	524	51.9	632	59.5	516	46.7	632	55.4	510	38.9	632	50.1	501
	90 in	60.8	475	62.7	422	50.7	475	53.0	414	43.4	475	46.2	407	38.0	475	41.2	401	33.8	475	37.4	395	30.4	475	34.5	390	25.3	475	30.5	381
	96 in	50.1	418	51.5	373	41.8	418	43.4	367	35.8	418	37.8	360	31.3	418	33.6	355	27.8	418	30.5	350	25.1	418	28.0	345				
	108 in	35.2	330	35.9	298	29.3	330	30.3	293	25.1	330																		

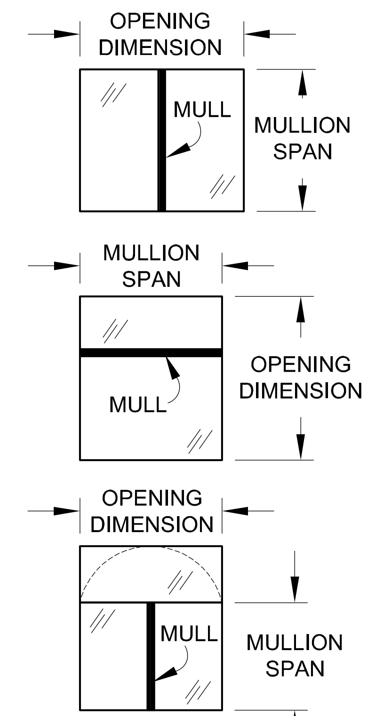
TABLE 2B:

1" x 3" Clip/Anchor Capacity	Substrate:	3k Concrete				3.5k Conc.	Hollow CMU						Filled CMU			PT Wood *		Metal *
	Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" Elco AggreGator	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" Elco AggreGator	1/4" Elco CreteFlex	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" Elco AggreGator	#12 Steel Screw (G5)	#14 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"	2-1/2"	1"	1"	2"	0.54"	0.60	0.36
	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"	varies *
2 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 1:		310 lbs	630 lbs	220 lbs	870 lbs	518 lbs	230 lbs	370 lbs	320 lbs	580 lbs	374 lbs	497 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 2:		537 lbs	1260 lbs	412 lbs	1712 lbs	1036 lbs	361 lbs	740 lbs	456 lbs	1018 lbs	N/A	892 lbs	340 lbs	474 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 3:		555 lbs	1890 lbs	578 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 into 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
3 Anchors into U-Clip, Fig 5:		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

* SEE NOTE 10 ON SHEET 1 FOR ADDITIONAL SUBSTRATE INFORMATION.



POINT LOADED MULLION (SEE NOTE 5)



UNIFORMLY LOADED MULLIONS

1" X 3" CLIP ANCHOR LOCATIONS, TOP VIEW:

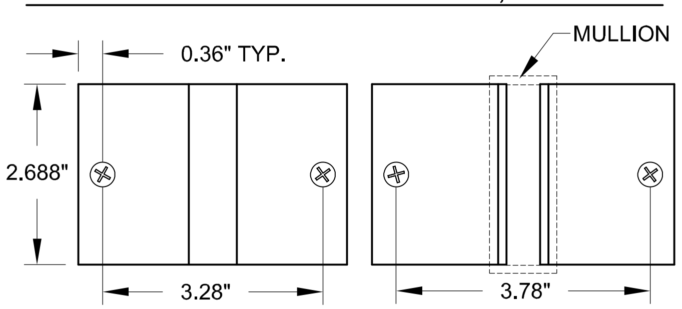


FIGURE 1

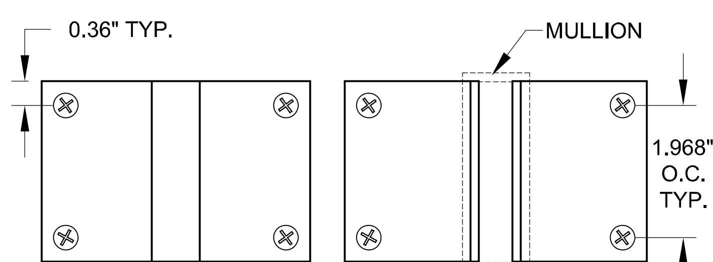
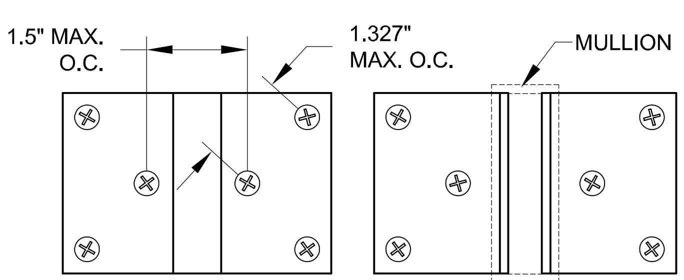


FIGURE 2



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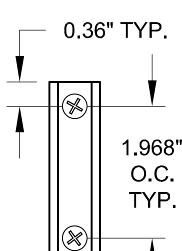


FIGURE 4

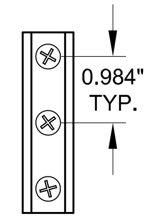


FIGURE 5

CLIP NOTES:

1) CLIP HOLES MAY BE DRILLED IN THE FIELD. CLIP VARIATIONS ARE ALLOWED (SEE SHEET 2), PROVIDED THE DIMENSIONS SHOWN ON THIS SHEET ARE FOLLOWED.

TABLE NOTES:

1) WHEN FINDING YOUR SIZE IN THE MULLION TABLE, ALWAYS ROUND UP TO THE NEXT SIZE SHOWN ON THE TABLE. LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

2) IF A LOWER ANCHOR CAPACITY IS ACCEPTABLE, USE THE FORMULA FROM SHEET 1 TO CALCULATE THE CORRESPONDING, LOWER DESIGN PRESSURE OF THE ANCHOR/MULLION SYSTEM.

3) FOR CROSSING MULLIONS, DETERMINE THE CAPACITIES FOR EACH MULLION. FOR TRIPLE+ MULLED WINDOWS, ONLY USE THE OPENING DIMENSION OF TWO ADJACENT WINDOWS.

4) WINDOW/MULL IMAGES MAY BE ROTATED 90°.

5) A POINT LOADED MULLION IS ONE THAT SUPPORTS THE END OF ANOTHER MULLION ALONG ITS SPAN.

PRODUCT REVISED
as complying with the Florida Building Code
NOA–No. 22-0309.02
Expiration Date 04/26/2027
By [signature]
Miami–Dade Product Control

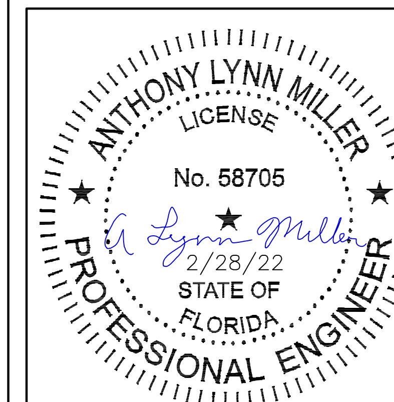
Revision:

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

Date: 02/22/22
Drawn By: JENS ROSOWSKI
Rev.:

WINDOR® INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

Desc.: ALUMINUM TUBE MULLIONS (LM)
Title: 1 X 3 CAPACITIES
Series: 238 MULLS
Scale: NTS
Sheet: 6 OF 7
DWG No.: 238MULL-1



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

TABLE 3A:

Opening Dimension: 50 in – 80 in

1" x 4" Mullion Design Pressure & Anchor Load Requirement	50 in				60 in				70 in				80 in			
	Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion	
Mullion Span	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	210.0	766	210.0	538	210.0	919	210.0	591	210.0	1072	210.0	625	210.0	1225	210.0	642
48 in	210.0	875	210.0	647	210.0	1050	210.0	722	210.0	1225	210.0	778	210.0	1400	210.0	817
50-5/8 in	210.0	923	210.0	695	210.0	1107	210.0	779	210.0	1292	210.0	845	210.0	1477	210.0	893
54 in	210.0	984	210.0	757	210.0	1181	210.0	853	210.0	1378	210.0	932	210.0	1575	210.0	992
60 in	210.0	1094	210.0	866	210.0	1313	210.0	984	210.0	1531	210.0	1085	210.0	1750	210.0	1167
63 in	210.0	1148	210.0	921	210.0	1378	210.0	1050	210.0	1608	210.0	1161	201.5	1763	210.0	1254
66 in	210.0	1203	210.0	975	210.0	1444	210.0	1116	200.3	1606	210.0	1238	175.2	1606	204.0	1303
72 in	210.0	1313	210.0	1085	180.0	1350	193.2	1147	154.2	1350	170.0	1126	135.0	1350	153.3	1107
76 in	183.6	1211	191.9	1058	153.0	1211	163.1	1036	131.2	1211	143.1	1017	114.8	1211	128.6	1000
78 in	169.8	1150	177.1	1007	141.5	1150	150.4	987	121.3	1150	131.8	969	106.2	1150	118.3	953
90 in	110.6	864	114.1	767	92.1	864	96.4	753	79.0	864	84.0	740	69.1	864	74.9	729
96 in	91.1	759	93.6	679	75.9	759	79.0	667	65.1	759	68.7	655	56.9	759	61.1	645
108 in	64.0	600	65.4	542	53.3	600	55.0	533	45.7	600	47.7	525	40.0	600	42.3	517
111 in	58.9	568	60.1	514	49.1	568	50.6	506	42.1	568	43.8	498	36.8	568	38.8	491
120 in	46.6	486	47.4	443	38.9	486	39.9	436	33.3	486	34.5	430	29.2	486	30.5	424

Opening Dimension: 90 in – 120 in

1" x 4" Mullion Design Pressure & Anchor Load Requirement	90 in				100 in				120 in			
	Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion		Point Loaded Mullion		Uniformly Loaded Mullion	
Mullion Span	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	210.0	1378	210.0	643	210.0	1531	210.0	643	210.0	1838	210.0	643
48 in	210.0	1575	210.0	837	210.0	1750	210.0	840	210.0	2100	210.0	840
50-5/8 in	210.0	1661	210.0	923	210.0	1846	210.0	934	210.0	2215	210.0	934
54 in	210.0	1772	210.0	1034	210.0	1969	210.0	1057	200.1	2251	210.0	1063
60 in	207.3	1944	210.0	1230	186.6	1944	210.0	1276	155.5	1944	210.0	1313
63 in	179.1	1763	210.0	1329	161.2	1763	210.0	1385	134.3	1763	200.6	1379
66 in	155.8	1606	189.2	1286	140.2	1606	178.8	1273	116.8	1606	167.8	1258
72 in	120.0	1350	141.1	1091	108.0	1350	132.2	1079	90.0	1350	121.4	1062
76 in	102.0	1211	117.9	986	91.8	1211	110.0	974	76.5	1211	99.8	957
78 in	94.4	1150	108.3	939	84.9	1150	100.8	927	70.8	1150	91.0	910
90 in	61.4	864	68.1	718	55.3	864	62.8	708	46.1	864	55.5	693
96 in	50.6	759	55.4	636	45.6	759	50.9	628	38.0	759	44.6	614
108 in	35.5	600	38.2	510	32.0	600	34.9	503	26.7	600	30.3	492
111 in	32.7	568	35.0	484	29.5	568	32.0	478	24.6	568	27.7	467
120 in	25.9	486	27.4	418								

TABLE NOTES:

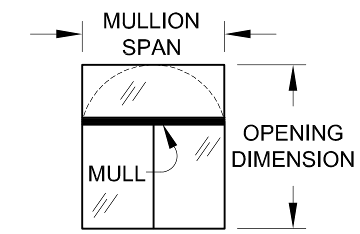
1) WHEN FINDING YOUR SIZE IN THE MULLION TABLE, ALWAYS ROUND UP TO THE NEXT SIZE SHOWN ON THE TABLE. LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

2) IF A LOWER ANCHOR CAPACITY IS ACCEPTABLE, USE THE FORMULA FROM SHEET 1 TO CALCULATE THE CORRESPONDING, LOWER DESIGN PRESSURE OF THE ANCHOR/MULLION SYSTEM.

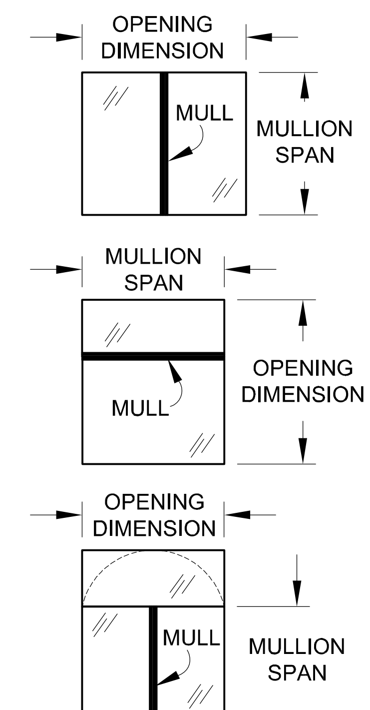
3) FOR CROSSING MULLIONS, DETERMINE THE CAPACITIES FOR EACH MULLION. FOR TRIPLE+ MULLED WINDOWS, ONLY USE THE OPENING DIMENSION OF TWO ADJACENT WINDOWS.

4) WINDOW/MULL IMAGES MAY BE ROTATED 90°.

5) A POINT LOADED MULLION IS ONE THAT SUPPORTS THE END OF ANOTHER MULLION ALONG ITS SPAN.



POINT LOADED MULLION (SEE NOTE 5)



UNIFORMLY LOADED MULLIONS

TABLE 3B:

1" x 4" Clip/Anchor Capacity	3k Concrete				3.5k Conc.	Hollow CMU						Filled CMU			PT Wood *		Metal *
Anchor Type:	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" Elco AggreGator	3/16" DeWalt Ultracon+		1/4" DeWalt Ultracon+		1/4" Elco AggreGator	1/4" Elco CreteFlex	3/16" DeWalt Ultracon+	1/4" DeWalt Ultracon+	1/4" Elco AggreGator	#12 Steel Screw (G5)	#14 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"	2-1/2"	1"	1"	2"	0.54"	0.60	0.36
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"	varies *
2 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 1:	310 lbs	630 lbs	220 lbs	870 lbs	518 lbs	230 lbs	370 lbs	320 lbs	580 lbs	374 lbs	497 lbs	170 lbs	347 lbs	946 lbs	442 lbs	537 lbs	536 lbs
4 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 2:	620 lbs	1260 lbs	438 lbs	1738 lbs	1036 lbs	454 lbs	740 lbs	629 lbs	1152 lbs	N/A	982 lbs	340 lbs	642 lbs	N/A	885 lbs	1073 lbs	1073 lbs
6 Anchors into Mullion Clip or 2x2 Angle Clip Pair, Fig 3:	630 lbs	1890 lbs	600 lbs	2550 lbs	1554 lbs	480 lbs	1110 lbs	570 lbs	1440 lbs	N/A	1278 lbs	510 lbs	600 lbs	N/A	1327 lbs	1610 lbs	1609 lbs
2 Anchors into 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
3 Anchors into U-Clip, Fig 5:	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

* SEE NOTE 10 ON SHEET 1 FOR ADDITIONAL SUBSTRATE INFORMATION.

1" X 4" CLIP ANCHOR LOCATIONS, TOP VIEW:

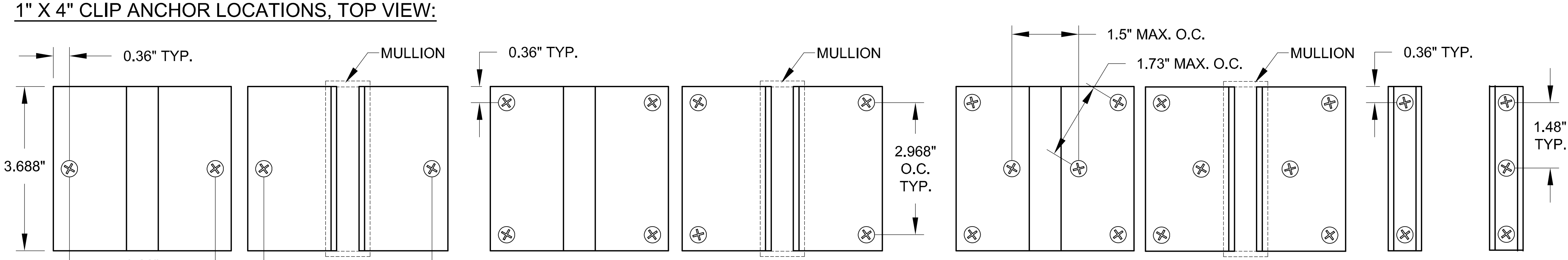


FIGURE 1 FIGURE 2 FIGURE 3 FIGURE 4 FIGURE 5

CLIP NOTES:

1) CLIP HOLES MAY BE DRILLED IN THE FIELD. CLIP VARIATIONS ARE ALLOWED (SEE SHEET 2), PROVIDED THE DIMENSIONS SHOWN ON THIS SHEET ARE FOLLOWED.

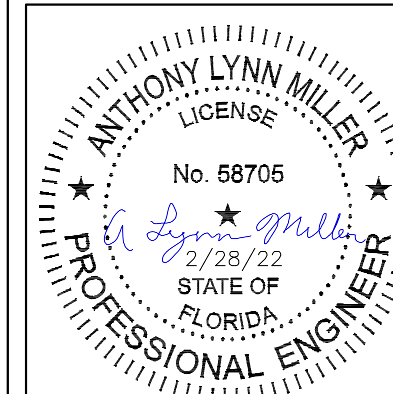
PRODUCT REVISED
as complying with the Florida Building Code
NOA-No. 22-0309.02
Expiration Date 04/26/2027
By
Miami-Dade Product Control

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

Date 02/22/22
Drawn By JENS ROSOWSKI
Rev.

WINDOR® INCORPORATED
104 TRIPLE DIAMOND BLVD.
N. VENICE, FL 34275
(833) 554-5432

Desc. ALUMINUM TUBE MULLIONS (LM)
Title 1 X 4 CAPACITIES
Series 238 MULLS
Scale NTS
Sheet 7 OF 7
DWG No. 238MULL-1



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