MIAMI-DADE COUNTY
DEPARTMENT OF PERMITTING, ENVIRONMENT, AND REGULATORY AFFAIRS (PERA)
BOARD AND CODE ADMINISTRATION DIVISION

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/pera/

NOTICE OF ACCEPTANCE (NOA)

PGT Industries
1070 Technology Drive,
North 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 PERA - 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. PERA 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 "PGT" Clipped Extruded Aluminum Tube Mullion - L.M.I.

APPROVAL DOCUMENT: Drawing No. **6300JR**, titled "Impact-Resistant Aluminum Tube Mullions", sheets 1 through 22 of 22, prepared by manufacturer, dated 08/29/11, 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 # 10-0819.05** and consists of this page 1 and evidence page E-1, as well as approval document mentioned above.

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

MIAMI-DADE COUNTY APPROVED

PGT Industries

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

A. DRAWINGS

1. Manufacturer's die drawings and sections.
2. Drawing No. **6300JR**, titled "Impact-Resistant Aluminum Tube Mullions", sheets 1 through 22 of 22, prepared by manufacturer, dated 08/29/11, signed and sealed by Anthony Lynn Miller, P.E.

B. TESTS

1. Test reports on: 1) Air Infiltration Test, per FBC, TAS 202-94
   2) Uniform Static Air Pressure Test, Loading per FBC, TAS 202-94
   3) Water Resistance Test, per FBC, TAS 202-94
   4) Large Missile Impact Test per FBC, TAS 201-94
   5) Cyclic Wind Pressure Loading per FBC, TAS 203-94
   6) Forced Entry Test, 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, all signed and sealed by Marlin D. Brinson, P. E.
   (Submitted under previous NOA #10-0819.05)

C. CALCULATIONS

1. Anchor verification calculations and structural analysis, complying with FBC-2007 and FBC-2010, prepared by manufacturer, dated 09/20/11, signed and sealed by Anthony Lynn Miller, P.E.

D. QUALITY ASSURANCE

1. Miami-Dade Department of Permitting, Environment, and Regulatory Affairs (PERA).

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS

1. Statement letter of conformance with the FBC-2007 and FBC-2010, and no financial interest, dated June 06, 2011, signed and sealed by Anthony Lynn Miller, P.E.
2. Proposal # **10-1070-R** issued by BNC to PGT Industries, dated 01/07/11, signed by Ishaq I. Chanda, Product Control Examiner.

G. OTHER

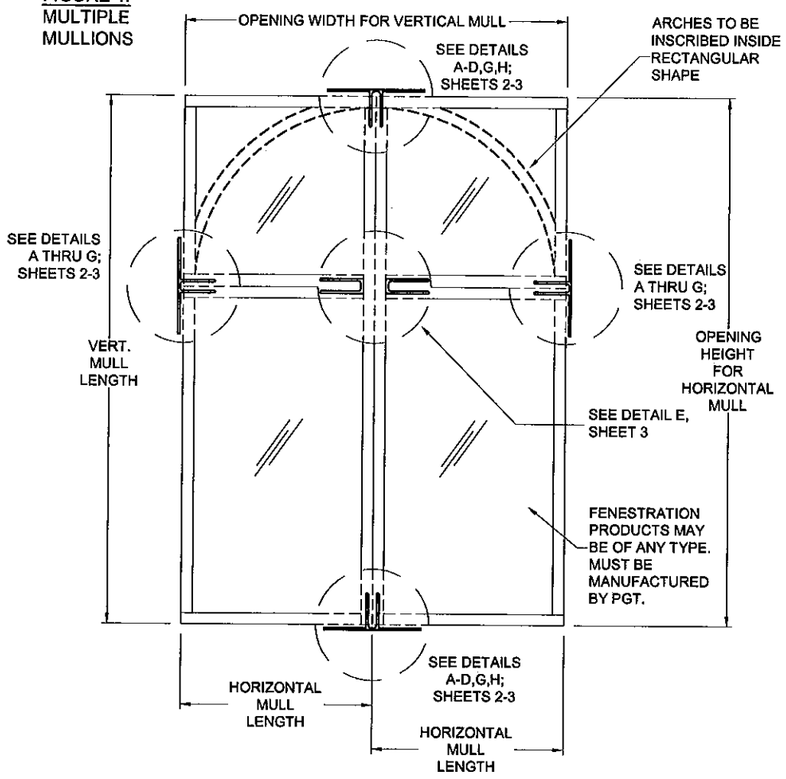
1. Notice of Acceptance No. **10-0819.05**, issued to PGT Industries, for their PGT Series Aluminum Clipped Mullion – L.M.I., approved on 05/26/11 and expiring on 05/26/16.

4

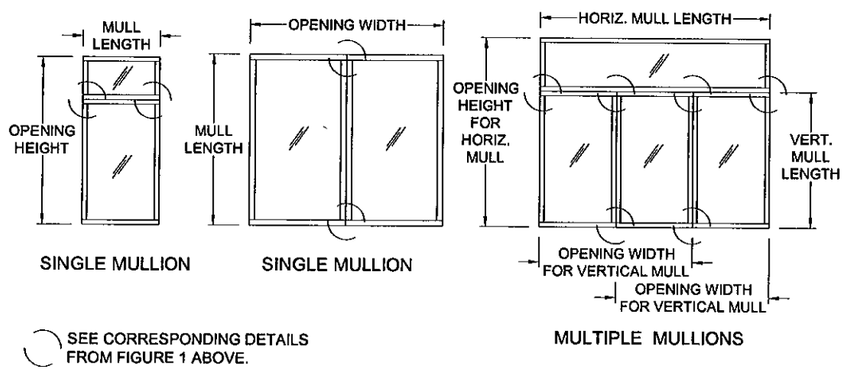
Manuel Perez, P.E.
Product Control Examiner
NOA No. 11-0922.01
Expiration Date: May 26, 2016
Approval Date: December 08, 2011

SUITABLE FOR ALL LOCATIONS REQUIRING NON-IMPACT OR LARGE AND SMALL MISSILE IMPACT-RESISTANT PRODUCTS

FIGURE 1:
MULTIPLE MULLIONS



ADDITIONAL EXAMPLES OF MULL CONFIGURATIONS:



SEE CORRESPONDING DETAILS FROM FIGURE 1 ABOVE.

GENERAL NOTES:

1) 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.

2) 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.

3) 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.

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

5) USE THE COMBINED WIDTH OR HEIGHT OF ONLY TWO ADJACENT FENESTRATION PRODUCTS TO DETERMINE PRESSURES AND ANCHORAGE FOR THE COMMON MULLION, SEE EXAMPLES ON THIS SHEET AND SHEET 21. 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.

6) WHEN FINDING YOUR SIZE IN THE MULLION TABLES, ALWAYS ROUND UP TO THE NEXT SIZE SHOWN ON THE TABLE(S).

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: TEST REPORTS: FTL-6443; ELCO ULTRACON/AGGRE-GATOR NOA'S; ANSI/AF&PA NDS FOR WOOD CONSTRUCTION; ADM-ALUMINUM DESIGN MANUAL

9) 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. MULLIONS ARE ONLY TO BE USED WITH PGT-APPROVED FENESTRATION PRODUCTS HAVING CURRENT APPROVALS.

10) MULLIONS ARE IN COMPLIANCE FOR USE IN THE HVHZ.

INSTRUCTIONS:

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

2) CHOOSE A MULLION TYPE THAT WILL FIT THE DEPTH OF THE FENESTRATION PRODUCT'S FRAME DEPTH.

3) REFER TO SHEET 22 TO DETERMINE IF THE WIND LOADING IS "RECTANGULAR" OR "TRIANGULAR/TRAPEZOIDAL".

4) FIND THE CHOSEN MULLION'S MULLION CAPACITY (LBS/FT²) FROM TABLES 1A THROUGH 13A, ON SHEETS 5 THROUGH 17 RESPECTIVELY, USING THE MULLION TYPE, LENGTH AND OPENING WIDTH OR HEIGHT (DEPENDING IF THE MULLION IS SPANNING VERTICALLY OR HORIZONTALLY). THE MULLION CAPACITY (LBS/FT²) OBTAINED SHALL MEET OR EXCEED THE DESIGN PRESSURE REQUIREMENT (LBS/FT²) FOR THE OPENING OBTAINED IN STEP 1).

5) FROM THE SAME TABLE USED IN STEP 4) ABOVE, FIND THE VALUE IN THE NEXT COLUMN ANCHOR CAPACITY REQUIRED (LBS). THIS VALUE REPRESENTS THE WINDLOAD TRANSFERRED TO THE SUBSTRATE BY THE ANCHORS AND MUST BE MET TO ATTAIN THE FULL MULLION CAPACITY.

6) FROM THE ANCHOR CAPACITY (LBS) TABLE ON THE SAME SHEET AND USING YOUR ACTUAL SUBSTRATE CONDITION (MULTIPLE ANCHOR/SUBSTRATE/ANCHOR-CLIP PATTERN MAY APPLY) SELECT AN ANCHOR CLIP PATTERN AND VERIFY THAT THE REQUIRED ANCHOR CAPACITY IS MET.

7) IF THE MULLION CAPACITY (LBS/FT²) OBTAINED IN THE TABLE IS HIGHER THAN THE DESIGN PRESSURE REQUIREMENT (LBS/FT²) FOR THE OPENING, YOU MAY USE THE **"ANCHOR CAPACITY ADJUSTMENT FORMULA"** TO OBTAIN THE LOWER ANCHOR CAPACITY REQUIRED. WITH THIS VALUE A LOWER ANCHOR CAPACITY OPTION MAY BE SELECTED FOR THE SAME SUBSTRATE

8) VERIFY THE DESIGN PRESSURE RATING (LBS/FT²) FOR THE FENESTRATION PRODUCT TO BE USED AND COMPARE WITH THE FINAL MULLION CAPACITY (LBS/FT²) OBTAINED FOR THE MULLION SYSTEM. THE LOWER OF THE TWO SHALL APPLY FOR THE ENTIRE MULLED FENESTRATION PRODUCT ASSEMBLY.
9) HIGHLIGHT OPTION USED AND TABLE VALUES USED IN A SPECIFIC APPLICATION WHEN USING THIS NOA TO APPLY FOR A PERMIT.

GENERAL NOTES..... 1
INSTRUCTIONS..... 1
ELEVATIONS..... 1
MULL TO 2X WOOD..... 2
MULL TO 1X & MASONRY..... 2
INSTALLATION NOTES..... 2
MULL TO MASONRY..... 3
MULL TO STEEL STUD..... 3
MULL TO MULL..... 3
ANCHOR SPECS..... 3
ALTERNATATE CLIPS..... 4
BAY MULL INSTALLATION..... 4
1 X 2 X .125 MULL SPECS..... 5
1 X 2 X .375 MULL SPECS..... 6
1 X 2.75 X .375 MULL SPECS..... 7
1 X 2.75 X .65 MULL SPECS..... 8
1 X 3.125 X .500 MULL SPECS..... 9
1 X 4 X .125 MULL SPECS..... 10
1 X 4 X .375 MULL SPECS..... 11
1.25 X 3.188 X .265 MULL SPECS... 12
2 X 4 X .25 MULL SPECS..... 13
2 X 6 X .25 MULL SPECS..... 14
1.26 X 2.11 X .125 MULL SPECS.... 15
30° X 3.25 BAY MULL SPECS..... 16
45° X 3.25 BAY MULL SPECS..... 17
MULLION & CLIP DIMENSIONS..... 18-20
EXAMPLES 1 & 2..... 21
LOADING EXAMPLES..... 22

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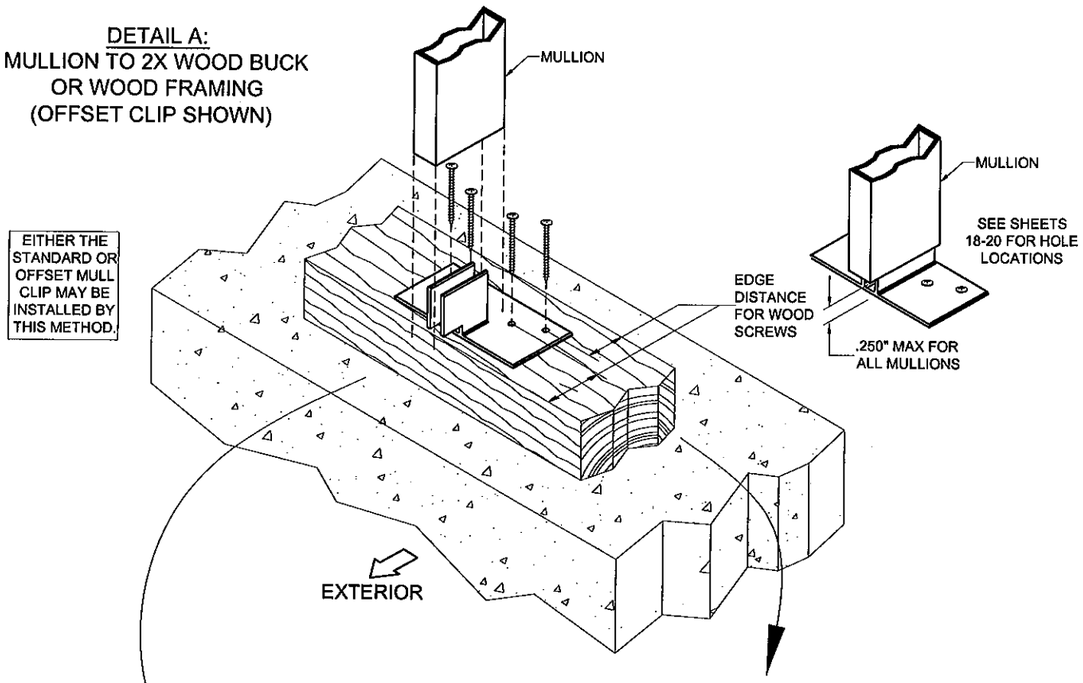
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: GENERAL NOTES AND ELEVATION
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Date: 08/29/11
Drawing No. 6300JR
Checked By:
Date:
Revision:
Date:
Sheet: 1 of 22
Rev.

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date JULY 26, 2016
By Manuel Perez
Miami-Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
11/30/11
A. LYNN MILLER, P.E.
FL P.E.# 58705

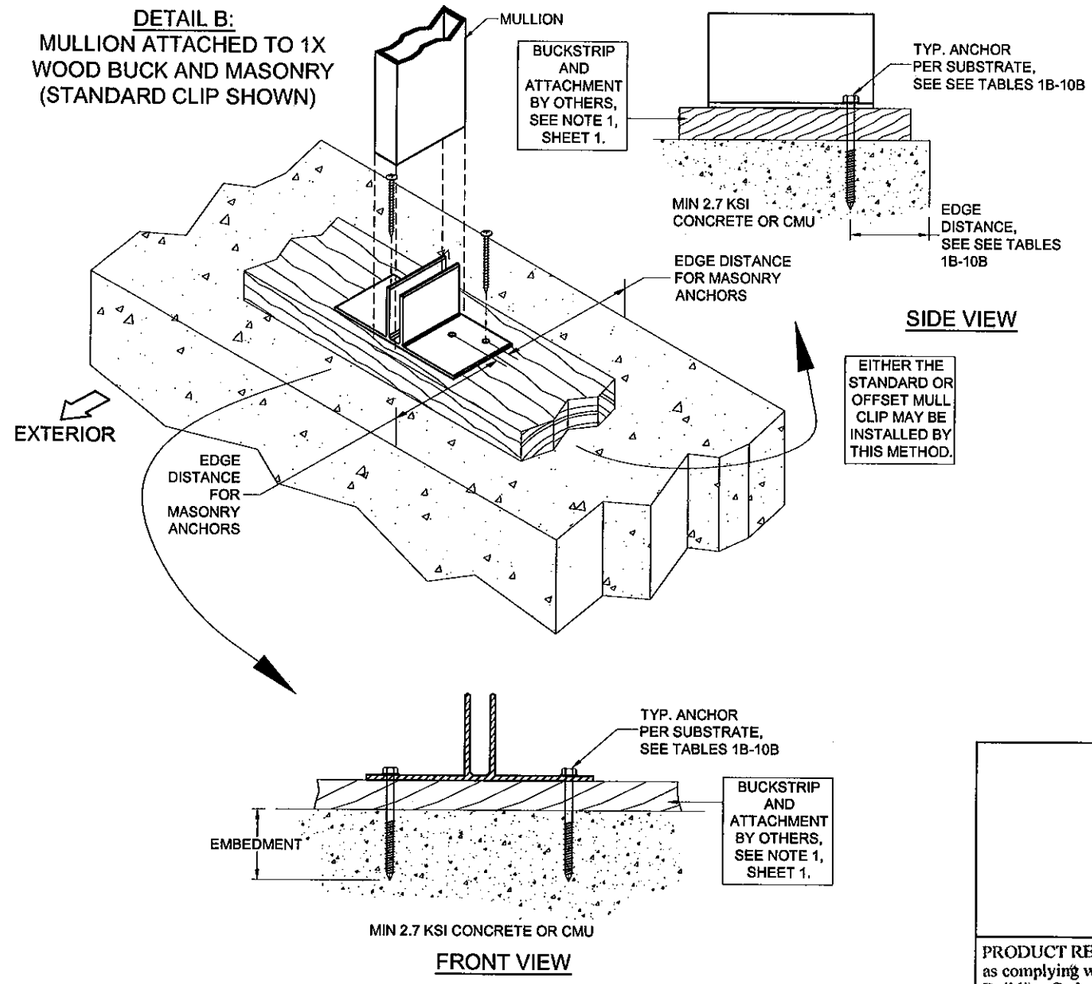
DETAIL A:
MULLION TO 2X WOOD BUCK
OR WOOD FRAMING
(OFFSET CLIP SHOWN)



FRONT VIEW

SIDE VIEW

DETAIL B:
MULLION ATTACHED TO 1X
WOOD BUCK AND MASONRY
(STANDARD CLIP SHOWN)



SIDE VIEW

FRONT VIEW

INSTALLATION NOTES:

1) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

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. FOR DETAILS A-D, EITHER THE STANDARD OR INTERIOR CLIP MAY BE USED.

3) ANCHOR HEAD TYPE MAY BE PANHEAD, HEXHEAD OR FLATHEAD.

4) WOOD BUCKS ARE OPTIONAL, SEE DETAIL C, SHEET 3.

5) FOR MASONRY APPLICATIONS IN MIAMI-DADE COUNTY, USE ONLY MIAMI-DADE COUNTY APPROVED ELCO ULTRACON OR ELCO 1/4" S.S. AGGREGATOR MASONRY ANCHORS.

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Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: INSTALLATION INSTRUCTIONS A
Sheet: 2 of 22
Drawing No. 6300JR
Rev:
Scale: N/A
Checked By:
Date:
Date: 08/29/11
Revision:
Series: N/A
Drawn By: J ROSOWSKI
Date:
Rev. By:

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as complying with the Florida
Building Code
Acceptance No 11-0922.01
Expiration Date May 26, 2016
By Manuel Perez
Miami-Dade Product Control

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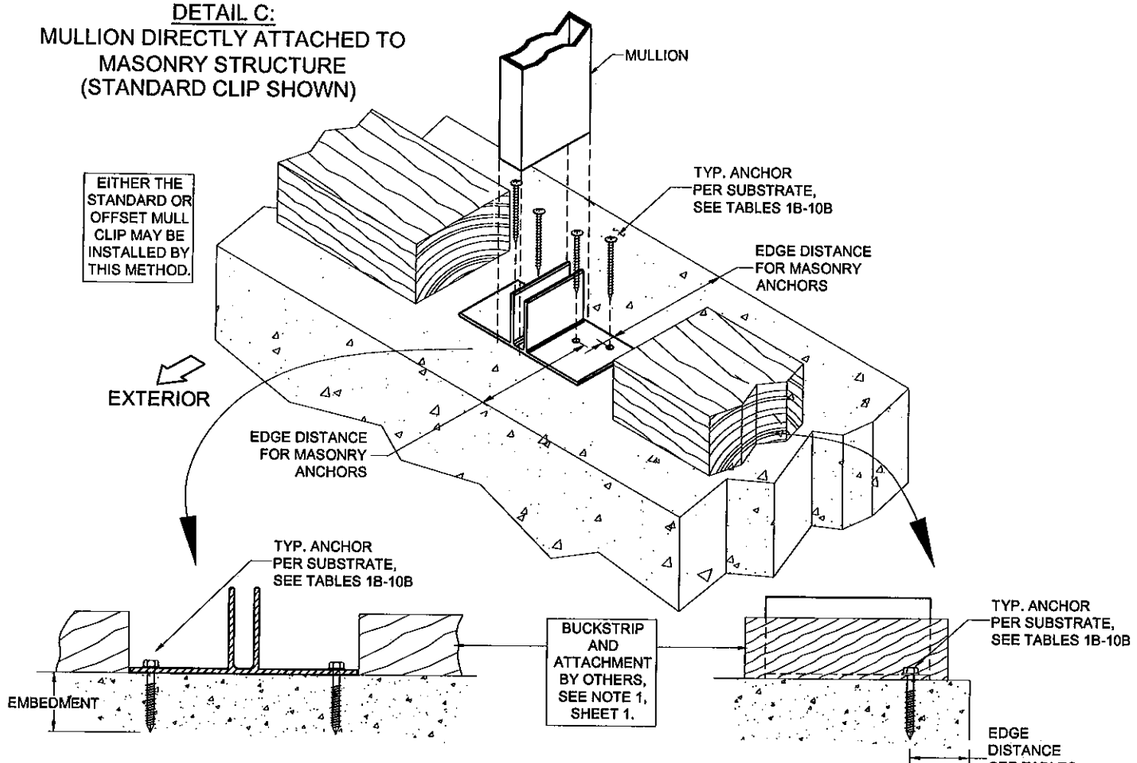
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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

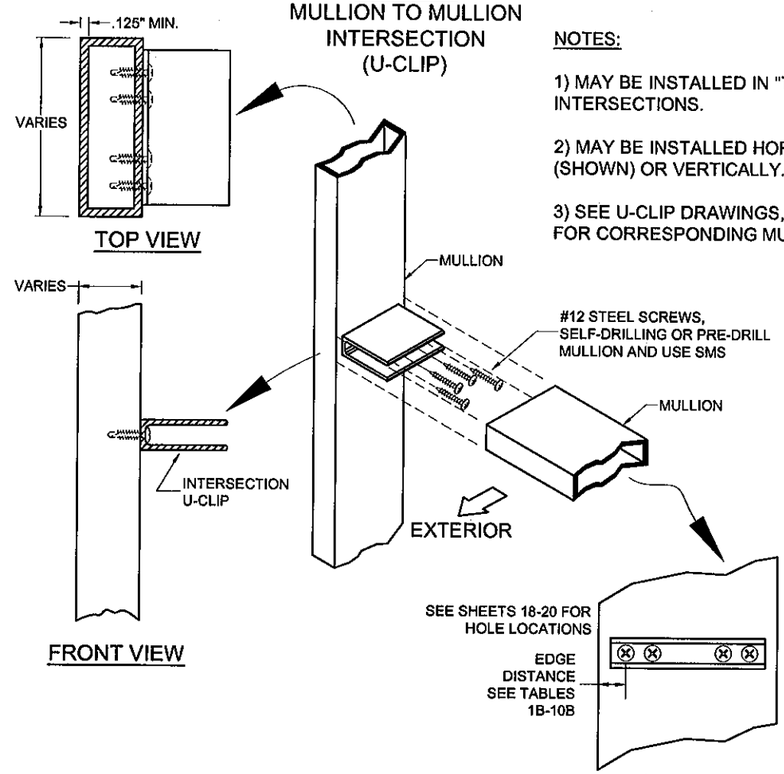
DETAIL C:
MULLION DIRECTLY ATTACHED TO MASONRY STRUCTURE (STANDARD CLIP SHOWN)



FRONT VIEW

SIDE VIEW

DETAIL E:
MULLION TO MULLION INTERSECTION (U-CLIP)



NOTES:

1) MAY BE INSTALLED IN "TEE" OR "CROSS" INTERSECTIONS.

2) MAY BE INSTALLED HORIZONTALLY (SHOWN) OR VERTICALLY.

3) SEE U-CLIP DRAWINGS, SHEETS 18-20 FOR CORRESPONDING MULLION.

INSTALLATION NOTES:

1) ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.

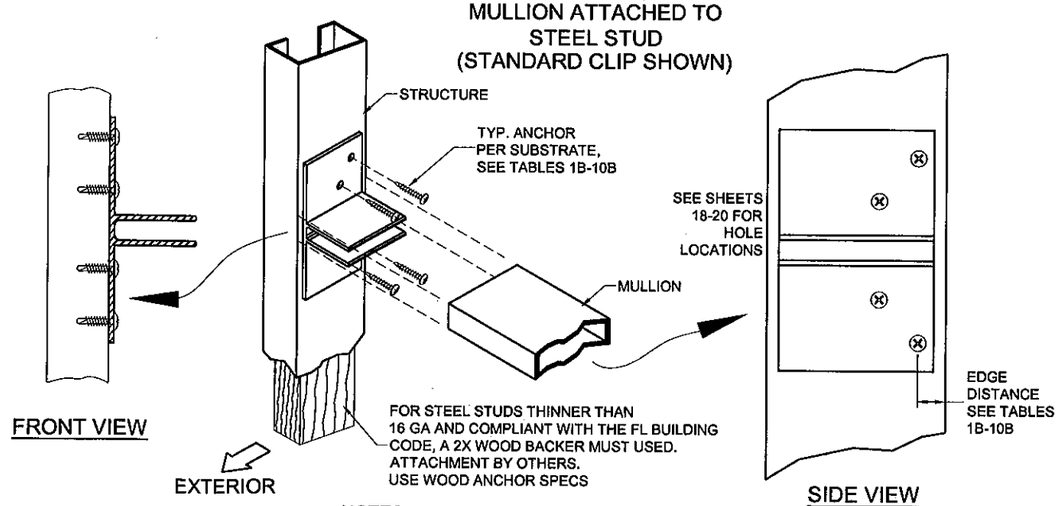
2) QUANTITY OF ANCHORS AND MULLION SIZE SHOWN ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY. BECAUSE THE ANCHOR CAPACITY IS BASED PARTLY ON THE ANCHOR TO ANCHOR DISTANCE, THE CORRECT QUANTITY AND LOCATION OF ANCHORS MUST BE FOLLOWED, REFER TO THE TABLES ON THE FOLLOWING SHEETS. FOR DETAILS A-D, EITHER THE STANDARD OR INTERIOR CLIP MAY BE USED.

3) ANCHOR HEAD TYPE MAY BE PANHEAD, HEXHEAD OR FLATHEAD.

4) WOOD BUCKS ARE OPTIONAL, SEE DETAIL C, SHEET 3.

5) FOR MASONRY APPLICATIONS IN MIAMI-DADE COUNTY, USE ONLY MIAMI-DADE COUNTY APPROVED ELCO ULTRACON OR ELCO 1/4" S.S. AGGREGATOR MASONRY ANCHORS.

DETAIL D:
MULLION ATTACHED TO STEEL STUD (STANDARD CLIP SHOWN)



FRONT VIEW

SIDE VIEW

NOTES:

1) FOR 2X WOOD-BACKED STEEL STUDS, WOOD ANCHOR VALUES MAY BE USED.

2) SEE CORRESPONDING MULLION TABLES, SHEETS 5-17, FOR QUANTITY OF SCREWS.

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Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: INSTALLATION INSTRUCTIONS B
Series: N/A
Drawing No. 6300JR
Scale: N/A
Date: 08/29/11
Sheet: 3 of 22
Rev:
Date:
Checked By:
Date:
Revision:
Drawn By: J ROSOWSKI
Rev. By:
Date:

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11/30/11

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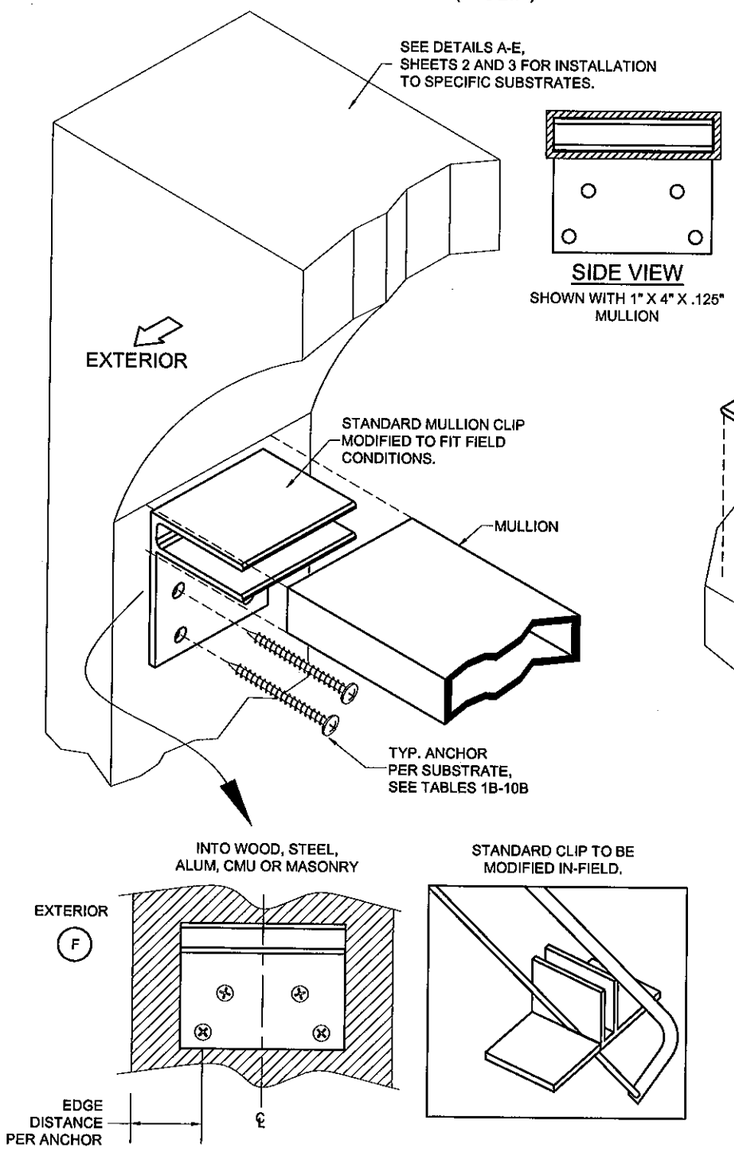
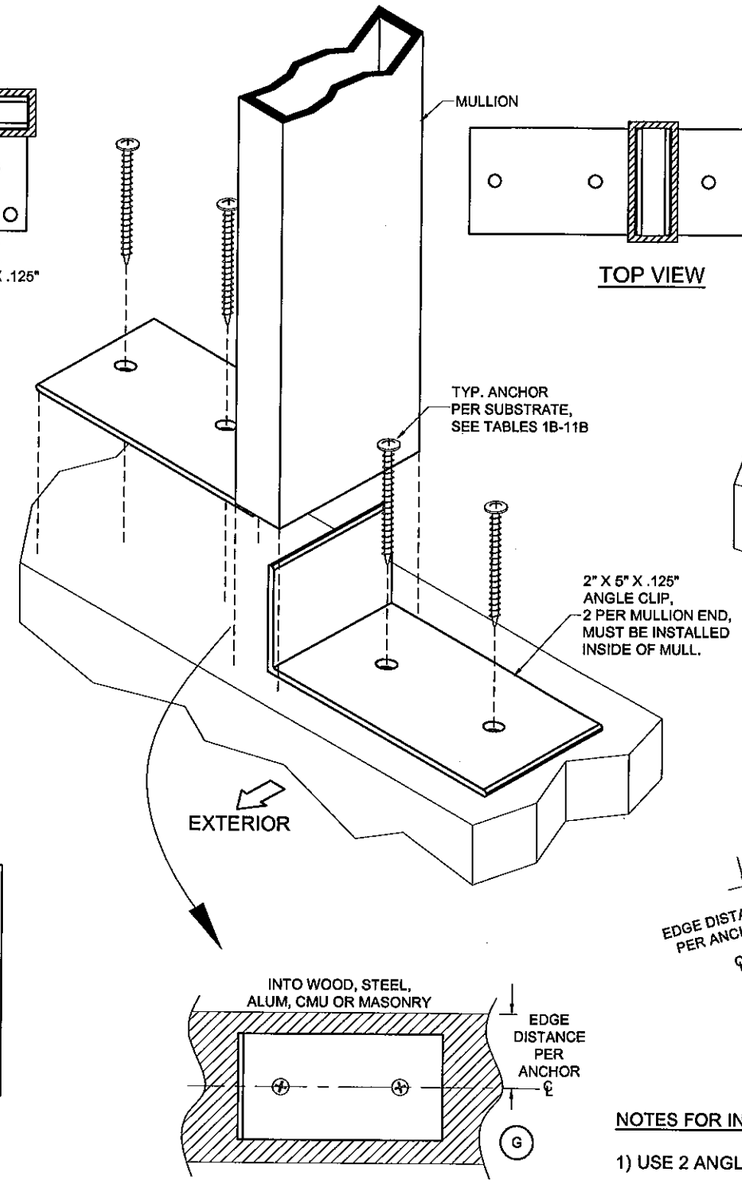
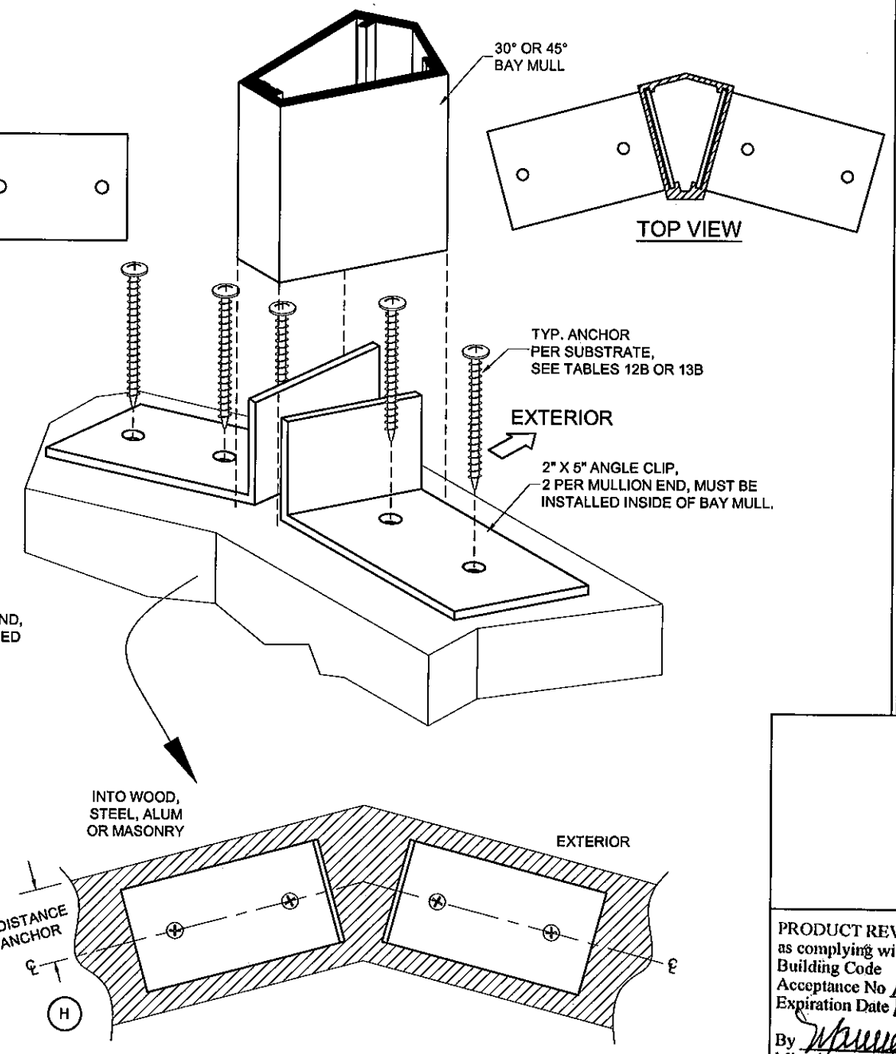
DETAIL F:
FIELD-MODIFIED MULLION CLIP
(F-CLIP)



DETAIL G:
ANGLE MULLION CLIP
(ANGLE CLIP)



DETAIL H:
BAY MULLION INSTALLATION
(ANGLE CLIP)



NOTES FOR INSTALLATION OPTIONS F:

1) DETAIL IS NOT APPLICABLE FOR THE BAY OR 1.26" X 2.11" X .125" MULLION.

2) SEE TABLES 1B-10B FOR ANCHOR QUANTITIES AND SHEETS 18-20 FOR HOLE LOCATIONS.

3) THE 2X5 CLIP IS NOT SUITABLE FOR THIS APPLICATION.

NOTES FOR INSTALLATION OPTION G & H:

1) USE 2 ANGLE CLIPS PER MULLION END. CLIPS MUST BE INSERTED INSIDE OF MULLION.

2) DETAIL G: SEE TABLES 1B-11B FOR ANCHOR QUANTITIES AND SHEETS 18-20 FOR HOLE LOCATIONS.

3) DETAIL H: SEE TABLES 12B OR 13B FOR ANCHOR QUANTITIES AND SHEETS 18-20 FOR HOLE LOCATIONS.

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Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: INSTALLATION INSTRUCTIONS C
Series: N/A
Scale: N/A
Drawing No. 6300JR
Sheet: 4 of 22
Drawn By: J ROSOWSKI
Date: 08/29/11
Checked By:
Date:
Rev:
Rev. By:
Date:
Revision:

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Expiration Date May 26, 2016
By [signature]
Miami Dade Product Control

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11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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

TABLE 1A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1 x 2 x .125 Alum. Tube Mullion		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	42 in	111.9	408	129.5	332	93.2	408	115.5	325	79.9	408	107.8	321	69.9	408	104.4	319	62.1	408	104.0	319	55.9	408	104.0	319	46.6	408	104.0	319	39.9	408	104.0	319	35.0	408	104.0	319
	48 in	74.9	312	83.8	258	62.4	312	73.4	252	53.5	312	67.0	248	46.8	312	63.2	246	41.6	312	61.3	244	37.5	312	61.0	244	31.2	312	61.0	244	26.8	312	61.0	244	23.4	312	61.0	244
	50.625 in	63.9	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	31.9	281	49.3	219	26.6	281	49.3	219	22.8	281	49.3	219	20.0	281	49.3	219
	54 in	52.6	247	57.5	207	43.9	247	49.8	202	37.6	247	44.8	199	32.9	247	41.5	196	29.2	247	39.4	194	26.3	247	38.4	193	21.9	247	38.1	193	18.8	247	38.1	193	16.4	247	38.1	193
	60 in	38.4	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	27.1	159	19.2	200	25.9	157	16.0	200	25.0	156								
	63 in	33.1	181	35.3	155	27.6	181	30.3	152	23.7	181	26.9	149	20.7	181	24.5	146	18.4	181	22.8	144	16.6	181	21.7	143												
	66 in	28.8	165	30.6	142	24.0	165	26.1	139	20.6	165	23.1	136	18.0	165	21.0	134																				
	72 in	22.2	139	23.3	120	18.5	139	19.9	118	15.9	139	17.5	116																								
	76 in	18.9	125	19.7	109	15.7	125	16.8	107																												
	78 in	17.5	118	18.2	104																																

TABLE 1B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard or Offset Clip (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard (or Offset) Clip (Fig. 2):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips / (Fig. 3):		780 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
2 Anchors @ 0.45" Min. O.C. / U-Clip, into 1/8" 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	716 lbs
1 Anchor / F-Clip (Fig. 5):		195 lbs	195 lbs	225 lbs	445 lbs	822 lbs	135 lbs	140 lbs	177 lbs	370 lbs	234 lbs	332 lbs	591 lbs	163 lbs	210 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C./ F-Clip (Fig. 6):		240 lbs	350 lbs	N/A	N/A	N/A	N/A	190 lbs	N/A	N/A	N/A	N/A	N/A	326 lbs	420 lbs	560 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

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 ANCHOR CAPACITY TABLE.

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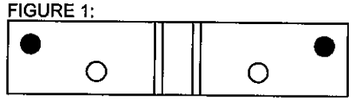


FIGURE 2:

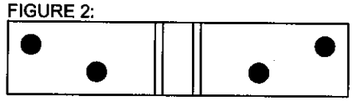


FIGURE 3:

ANGLE CLIP MUST BE USED IN PAIRS.

FIGURE 4:

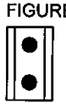
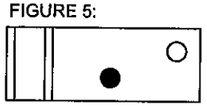


FIGURE 5:



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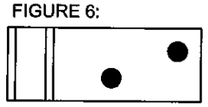

TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

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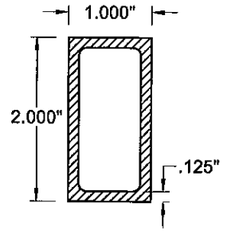

1" X 2" X .125" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date Mar 26, 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA PROFESSIONAL ENGINEER
11/30/11
A. LYNN MILLER, P.E.
FL P.E.# 58705

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1 X 2 X .125 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Checked By:
Revision:
Date: 08/29/11
Date:
Date:
Sheet: 5 of 22
Date:
Rev:

TABLE 2A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1 x 2 x .375 Alum. Tube Mullion		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)
Mull Length	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
	50.625 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								
	96 in	15.2	127	15.6	113												

1 x 2 x .375 Alum. Tube Mullion		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)
Mull Length	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
	50.625 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	10.9	202	15.9	158	9.6	202	15.8	158
	78 in	15.7	192	18.1	157	14.2	192	16.8	155	11.8	192	15.2	152	10.1	192	14.4	150	8.9	192	14.2	150
	90 in																				
	96 in																				

TABLE 2B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard or Offset Clip (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard (or Offset) Clip (Fig. 2):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips / (Fig. 3):		780 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
2 Anchors @ 0.45" Min. O.C. / U-Clip, into 1/8" 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	716 lbs
1 Anchor / F-Clip (Fig. 5):		195 lbs	195 lbs	225 lbs	445 lbs	822 lbs	135 lbs	140 lbs	177 lbs	370 lbs	234 lbs	332 lbs	591 lbs	163 lbs	210 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C./ F-Clip (Fig. 6):		240 lbs	350 lbs	N/A	N/A	N/A	N/A	190 lbs	N/A	N/A	N/A	N/A	N/A	326 lbs	420 lbs	560 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

ANCHOR CAPACITY ADJUSTMENT FORMULA:

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

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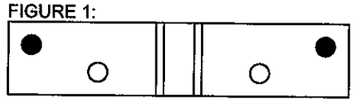

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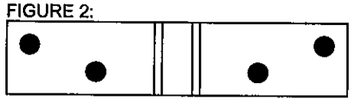
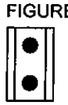


FIGURE 3:

ANGLE CLIP MUST BE USED IN PAIRS.

FIGURE 4:



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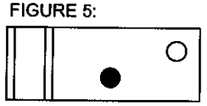
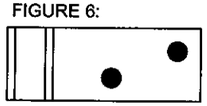


FIGURE 6:



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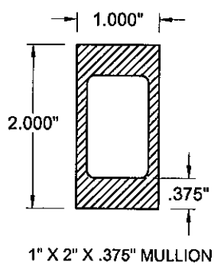

1" X 2" X .375" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date Mar 26,2016
By
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
11/30/11

A. LYNN MILLER, P.E.
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Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1 X 2 X .375 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Checked By:
Revision:
Date: 08/29/11
Date:
Date:
Sheet: 6 of 22
Rev:

TABLE 3A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1 x 2.75 x .375 Alum. Tube Mullion		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 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)
Mull Length	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	151.8	1139	170.0	677
	50.625 in	170.0	747	170.0	563	170.0	896	170.0	631	167.8	1032	170.0	684	146.8	1032	170.0	723	130.5	1032	170.0	747
	54 in	170.0	797	170.0	612	161.3	907	170.0	691	138.2	907	164.7	730	120.9	907	152.5	720	107.5	907	145.0	714
	60 in	141.1	735	151.5	625	117.6	735	130.3	611	100.8	735	116.0	599	88.2	735	106.2	590	78.4	735	99.5	583
	63 in	121.9	666	130.0	570	101.6	666	111.5	557	87.0	666	98.9	547	76.2	666	90.1	538	67.7	666	83.9	531
	66 in	106.0	607	112.4	522	88.3	607	96.1	511	75.7	607	85.0	501	66.2	607	77.1	493	58.9	607	71.5	486
	72 in	81.6	510	85.8	443	68.0	510	73.0	434	58.3	510	64.3	426	51.0	510	57.9	419	45.4	510	53.3	413
	76 in	69.4	458	72.5	400	57.8	458	61.7	392	49.6	458	54.1	385	43.4	458	48.6	378	38.6	458	44.6	373
	78 in	64.2	435	67.0	381	53.5	435	56.8	373	45.9	435	49.8	366	40.1	435	44.7	360	35.7	435	40.9	355
	90 in	41.8	327	43.1	290	34.8	327	36.4	285	29.9	327	31.8	280	26.1	327	28.3	275	23.2	327	25.7	271
	96 in	34.4	287	35.4	257	28.7	287	29.9	252	24.6	287	26.0	248	21.5	287	23.1	244	19.1	287	20.9	240
	108 in	24.2	227	24.7	205	20.2	227	20.8	201	17.3	227	18.0	198	15.1	227	16.0	195				
	111 in	22.3	215	22.7	194	18.6	215	19.1	191	15.9	215	16.6	188								
	120 in	17.6	184	17.9	167																

1 x 2.75 x .375 Alum. Tube Mullion		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 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)
Mull Length	42 in	170.0	1240	170.0	521	148.7	1301	170.0	521	127.5	1301	170.0	521	111.5	1301	170.0	521
	48 in	136.6	1139	170.0	680	113.9	1139	170.0	680	97.6	1139	170.0	680	85.4	1139	170.0	680
	50.625 in	117.4	1032	170.0	756	97.9	1032	170.0	756	83.9	1032	170.0	756	73.4	1032	170.0	756
	54 in	96.8	907	141.1	710	80.6	907	140.0	709	69.1	907	140.0	709	60.5	907	140.0	709
	60 in	70.5	735	95.1	578	58.8	735	91.8	574	50.4	735	91.8	574	44.1	735	91.8	574
	63 in	60.9	666	79.8	526	50.8	666	75.8	521	43.5	666	75.6	521	38.1	666	75.6	521
	66 in	53.0	607	67.6	481	44.2	607	63.4	476	37.9	607	62.7	474	33.1	607	62.7	474
	72 in	40.8	510	50.0	408	34.0	510	45.9	402	29.2	510	44.4	399	25.5	510	44.3	399
	76 in	34.7	458	41.6	368	28.9	458	37.7	362	24.8	458	36.0	359	21.7	458	35.7	358
	78 in	32.1	435	38.1	351	26.8	435	34.4	344	22.9	435	32.6	341	20.1	435	32.2	340
	90 in	20.9	327	23.7	268	17.4	327	21.0	262	14.9	327	19.3	258				
	96 in	17.2	287	19.3	237	14.4	287	16.9	232								
	108 in																
	111 in																
	120 in																

TABLE 3B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	0.46"	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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard or Offset Clip (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard (or Offset) Clip (Fig. 2):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips / (Fig. 3):		780 lbs	780 lbs	880 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
2 Anchors @ 0.45" Min. O.C. / U-Clip, into 1/8" 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	716 lbs
1 Anchor / F-Clip (Fig. 5):		195 lbs	195 lbs	225 lbs	445 lbs	822 lbs	135 lbs	140 lbs	177 lbs	370 lbs	234 lbs	332 lbs	591 lbs	163 lbs	210 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C./ F-Clip (Fig. 6):		240 lbs	350 lbs	N/A	N/A	N/A	N/A	190 lbs	N/A	N/A	N/A	N/A	N/A	326 lbs	420 lbs	560 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

CIRCLED VALUES ARE USED IN THE EXAMPLE ON SHEET 21.

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 ANCHOR CAPACITY TABLE.

FIGURE 1:

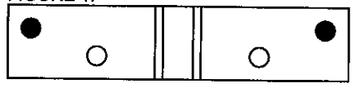


FIGURE 2:

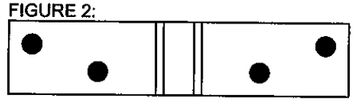
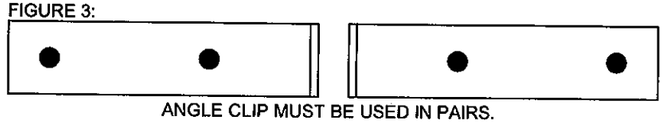


FIGURE 3:



ANGLE CLIP MUST BE USED IN PAIRS.

FIGURE 4:

FIGURE 5:

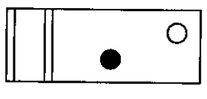


FIGURE 6:

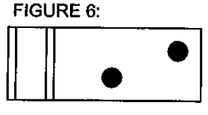


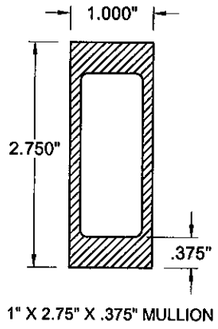
TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.

4) 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.



1" X 2.75" X .375" MULLION

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1 X 2.75 X .375 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Checked By:
Revision:
Date: 08/29/11
Sheet 7 of 22
Rev:
Date:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date MAY 26, 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

TABLE 4A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1 x 2.75 x .650 Alum. Tube Mullion		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	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	158.7	1620	170.0	521	138.8	1620	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	141.7	1417	170.0	680	121.5	1417	170.0	680	106.3	1417	170.0	680
	50.625 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 4B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard or Offset Clip (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard (or Offset) Clip (Fig. 2):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	(840 lbs)	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips / (Fig. 3):		780 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	(840 lbs)	1120 lbs
2 Anchors @ 0.45" Min. O.C. / U-Clip, into 1/8" 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	716 lbs
1 Anchor / F-Clip (Fig. 5):		195 lbs	195 lbs	225 lbs	445 lbs	822 lbs	135 lbs	140 lbs	177 lbs	370 lbs	234 lbs	332 lbs	591 lbs	163 lbs	210 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C./ F-Clip (Fig. 6):		240 lbs	350 lbs	N/A	N/A	N/A	N/A	190 lbs	N/A	N/A	N/A	N/A	N/A	326 lbs	420 lbs	560 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP. CIRCLED VALUES ARE USED IN THE EXAMPLE ON SHEET 21.

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 ANCHOR CAPACITY TABLE.

FIGURE 1:

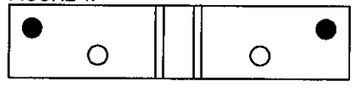


FIGURE 2:

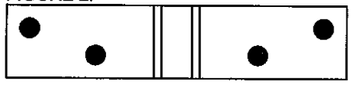
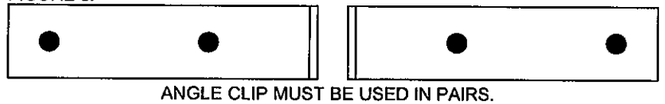


FIGURE 3:



ANGLE CLIP MUST BE USED IN PAIRS.

FIGURE 4:

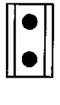


FIGURE 5:

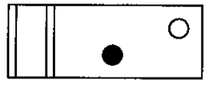
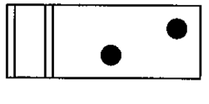


FIGURE 6:



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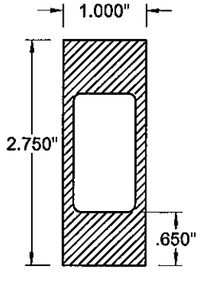


1" X 2.75" X .650" MULLION

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1 X 2.75 X .650 MULL SPECS
Series: N/A
Drawn By: JROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Sheet: 8 of 22
Rev:
Date: 08/29/11
Checked By:
Date:
Revision:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date May 26, 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

TABLE 5A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1" x 3.125" x .500" Alum Tube Mull		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	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	154.4	1802	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	157.7	1577	170.0	680	135.1	1577	170.0	680	118.2	1577	170.0	680
	50.625 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	170.0	1494	170.0	756	141.7	1495	170.0	756	121.5	1495	170.0	756	106.3	1495	170.0	756
	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	166.1	1401	170.0	837	149.5	1401	170.0	856	124.6	1401	170.0	861	106.8	1401	170.0	861	93.4	1401	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	158.5	1156	170.0	878	138.7	1156	167.0	928	123.3	1156	156.5	917	111.0	1156	149.7	910	92.5	1156	144.5	903	79.3	1156	144.5	903	69.4	1156	144.5	903
	63 in	170.0	930	170.0	745	159.8	1049	170.0	850	137.0	1049	155.5	860	119.8	1049	141.7	846	106.5	1049	132.0	836	95.9	1049	125.5	828	79.9	1049	119.3	820	68.5	1049	118.9	819	59.9	1049	118.9	819
	66 in	166.8	955	170.0	789	139.0	955	151.3	804	119.1	955	133.7	788	104.2	955	121.4	775	92.6	955	112.6	765	83.4	955	106.4	757	69.5	955	99.8	749	59.6	955	98.7	746	52.1	955	98.7	746
	72 in	128.5	803	134.9	697	107.0	803	114.9	682	91.8	803	101.1	670	80.3	803	91.2	659	71.4	803	83.9	649	64.2	803	78.6	642	53.5	803	72.2	632	45.9	803	69.8	628	40.1	803	69.7	627
	76 in	109.2	721	114.1	629	91.0	721	97.0	616	78.0	721	85.1	605	68.3	721	76.5	595	60.7	721	70.1	586	54.6	721	65.4	579	45.5	721	59.4	569	39.0	721	56.6	564	34.1	721	56.1	563
	78 in	101.0	684	105.4	599	84.2	684	89.4	587	72.2	684	78.4	576	63.1	684	70.4	567	56.1	684	64.4	558	50.5	684	59.9	551	42.1	684	54.1	541	36.1	684	51.3	536	31.6	684	50.6	534
	90 in	65.8	514	67.9	456	54.8	514	57.3	448	47.0	514	50.0	440	41.1	514	44.8	433	36.5	514	40.5	427	32.9	514	37.3	421	27.4	514	33.0	412	23.5	514	30.4	406	20.6	514	29.0	403
	96 in	54.2	452	55.7	404	45.2	452	47.0	396	38.7	452	40.9	390	33.9	452	36.4	384	30.1	452	32.9	378	27.1	452	30.3	373	22.6	452	26.6	365	19.4	452	24.2	359	16.9	452	22.8	355
	108 in	38.1	357	38.9	322	31.7	357	32.7	317	27.2	357	28.4	312	23.8	357	25.2	308	21.1	357	22.7	303	19.0	357	20.8	299	15.9	357	18.0	293	13.6	357	16.2	287	11.9	357	15.0	283
	111 in	35.1	338	35.8	306	29.2	338	30.1	301	25.0	338	26.1	296	21.9	338	23.1	292	19.5	338	20.8	288	17.5	338	19.0	284	14.6	338	16.5	278	12.5	338	14.8	273	11.0	338	13.6	269
	120 in	27.7	289	28.2	263	23.1	289	23.7	259	19.8	289	20.5	256	17.3	289	18.1	252	15.4	289	16.3	249	13.9	289	14.9	246	11.6	289	12.8	240	9.9	289	11.4	236	8.7	289	10.4	232

TABLE 5B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	0.46"	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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard Clip (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard Clip (Fig. 2):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 3):		780 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
3 Anchors @ 0.45" Min. O.C. / U-Clip, into 1/8" 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	1074 lbs
1 Anchor / F-Clip (Fig. 5):		195 lbs	195 lbs	225 lbs	445 lbs	822 lbs	135 lbs	140 lbs	177 lbs	370 lbs	234 lbs	332 lbs	591 lbs	163 lbs	210 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C. / F-Clip (Fig. 6):		240 lbs	350 lbs	N/A	N/A	N/A	N/A	190 lbs	N/A	N/A	N/A	N/A	N/A	326 lbs	420 lbs	560 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

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 ANCHOR CAPACITY TABLE.

FIGURE 1:

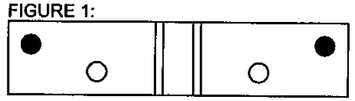


FIGURE 2:

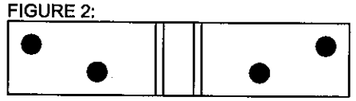
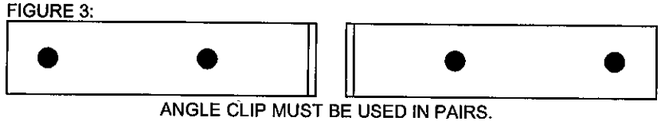
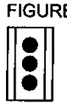


FIGURE 3:



ANGLE CLIP MUST BE USED IN PAIRS.

FIGURE 4:



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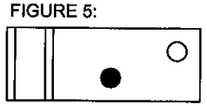

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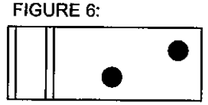

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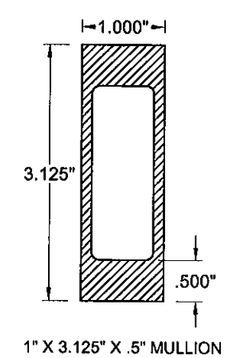

1" X 3.125" X .5" MULLION
(1" VF MULLION)

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date May 26, 2016
By Manuel Perez
Miami-Dade Product Control

ANTHONY LYNN MILLER
LICENSE
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STATE OF FLORIDA
PROFESSIONAL ENGINEER
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Scale: N/A
Date: 08/29/11
Date:
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Drawing No. 6300JR
Checked By:
Revision:
Sheet: 9 of 22
Rev:

TABLE 6A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1 x 4 x .125 Alum. Tube Mullion		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)
Mull Length	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
	50.625 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	154.4	1158	170.0	803
	60 in	170.0	885	170.0	701	166.7	1042	170.0	797	142.9	1042	161.1	832	125.1	1042	146.7	815
	63 in	170.0	930	170.0	745	151.2	992	163.6	818	129.6	992	144.4	799	113.4	992	131.0	782
	66 in	165.4	947	170.0	789	137.8	947	148.0	786	118.1	947	130.3	768	103.4	947	117.7	752
	72 in	135.9	849	142.7	737	113.2	849	121.6	722	97.0	849	106.9	708	84.9	849	96.4	696
	76 in	115.5	762	120.7	665	96.3	762	102.6	652	82.5	762	90.0	640	72.2	762	80.9	629
	78 in	106.9	724	111.4	634	89.0	724	94.6	621	76.3	724	82.9	609	66.8	724	74.4	599
	90 in	69.6	543	71.8	483	58.0	543	60.7	474	49.7	543	52.9	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	40.3	377	41.1	341	33.5	377	34.6	335	28.8	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	279	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												

1 x 4 x .125 Alum. Tube Mullion		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)
Mull Length	42 in	170.0	1116	170.0	521	170.0	1240	170.0	521	170.0	1488	170.0	521	145.8	1489	170.0	521	127.6	1489	170.0	521
	48 in	170.0	1275	170.0	677	156.3	1303	170.0	680	130.3	1303	170.0	680	111.7	1303	170.0	680	97.7	1303	170.0	680
	50.625 in	156.1	1235	170.0	747	140.5	1235	170.0	756	117.1	1235	170.0	756	100.4	1235	170.0	756	87.8	1235	170.0	756
	54 in	137.2	1158	170.0	837	123.5	1158	170.0	856	102.9	1158	170.0	861	88.2	1158	170.0	861	77.2	1158	170.0	861
	60 in	111.2	1042	136.8	801	100.0	1042	130.2	791	83.4	1042	125.1	782	71.5	1042	125.1	782	62.5	1042	125.1	782
	63 in	100.8	992	121.4	768	90.7	992	114.8	758	75.6	992	108.4	745	64.8	992	108.0	744	56.7	992	108.0	744
	66 in	91.9	947	108.7	738	82.7	947	102.2	727	68.9	947	95.1	713	59.1	947	94.0	711	51.7	947	94.0	711
	72 in	75.5	849	88.7	686	67.9	849	82.7	675	56.6	849	75.3	659	48.5	849	72.5	652	42.5	849	72.4	651
	76 in	64.2	762	74.2	620	57.8	762	69.2	613	48.1	762	62.8	602	41.3	762	59.9	597	36.1	762	59.4	595
	78 in	59.4	724	68.1	591	53.4	724	63.4	583	44.5	724	57.3	573	38.2	724	54.3	567	33.4	724	53.5	565
	90 in	38.6	543	42.8	452	34.8	543	39.5	446	29.0	543	34.9	436	24.8	543	32.1	430	21.7	543	30.7	426
	96 in	31.8	478	34.8	400	28.7	478	32.0	395	23.9	478	28.1	386	20.5	478	25.6	380	17.9	478	24.2	376
	108 in	22.4	377	24.0	321	20.1	377	22.0	317	16.8	377	19.0	310	14.4	377	17.1	304				
	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																				

TABLE 6B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard Clip (Fig. 1 or 2):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 2.25" Min. O.C. / Standard Clip (Fig. 3):		700 lbs	700 lbs	580 lbs	1410 lbs	952 lbs	N/A	560 lbs	N/A	630 lbs	N/A	880 lbs	N/A	652 lbs	840 lbs	1120 lbs
8 Anchors @ 1.15" Min. O.C. / Standard Clip (Fig. 4):		960 lbs	1400 lbs	N/A	N/A	N/A	N/A	760 lbs	N/A	N/A	N/A	N/A	N/A	1304 lbs	1680 lbs	2240 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 5):		780 lbs	780 lbs	900 lbs	1780 lbs	3288 lbs	540 lbs	560 lbs	708 lbs	1480 lbs	936 lbs	1328 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
6 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 6):		1170 lbs	1170 lbs	1020 lbs	2340 lbs	2844 lbs	810 lbs	840 lbs	N/A	1140 lbs	1404 lbs	1320 lbs	3546 lbs	978 lbs	1260 lbs	1680 lbs
4 Anchors @ 0.45 Min. O.C. / U-Clip, into 1/8" Alum. (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	1432 lbs
2 Anchors @ 2.25" Min. O.C. / F-Clip (Fig. 8):		350 lbs	350 lbs	290 lbs	705 lbs	476 lbs	N/A	280 lbs	N/A	315 lbs	0 lbs	440 lbs	0 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / F-Clip (Fig. 9):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

FIGURE 1: FIGURE 2: FIGURE 3: FIGURE 4: FIGURE 8: FIGURE 9:

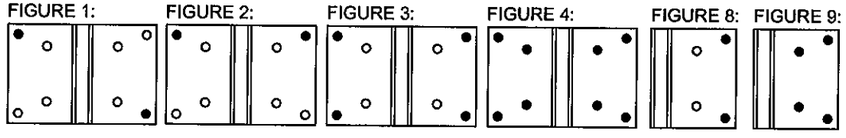
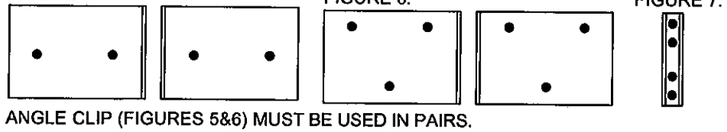


FIGURE 5: FIGURE 6: FIGURE 7:



ANGLE CLIP (FIGURES 5&6) MUST BE USED IN PAIRS.

TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

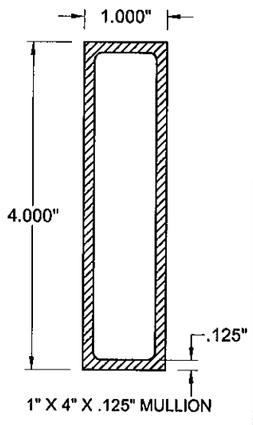
3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.

4) 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 ANCHOR CAPACITY TABLE.



PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1 X 4 X .125 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Date: 08/29/11
Date:
Drawing No. 6300JR
Checked By:
Date:
Revision:
Sheet: 10 of 22
Rev:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date May 22, 2016
By Manuel Perez
Miami-Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

TABLE 7A

Mullion Capacity Table (lbs/ft²)

1 x 4 x .375 Alum. Tube Mullion	Opening Width (for vertically-spanning mullions) or Opening Height (for horizontally-spanning mullions)																													
	50 in				60 in				70 in				80 in				90 in				100 in				120 in				140 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	
	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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length 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	170.0	1983	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	170.0	1700	170.0	680	170.0	1983	170.0	680	151.8	2024	170.0	680
50.625 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	170.0	1494	170.0	756	170.0	1793	170.0	756	156.0	1919	170.0	756	136.5	1919	170.0	756
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	170.0	1594	170.0	856	159.9	1799	170.0	861	137.1	1799	170.0	861	120.0	1799	170.0	861
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	155.5	1619	170.0	1033	129.6	1619	170.0	1063	111.0	1619	170.0	1063	97.2	1619	170.0	1063
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	156.7	1542	170.0	1076	141.0	1542	170.0	1122	117.5	1542	168.5	1158	100.7	1542	167.9	1157	88.1	1542	167.9	1157
66 in	170.0	974	170.0	789	170.0	1169	170.0	903	170.0	1364	170.0	1002	160.6	1472	170.0	1086	142.8	1472	168.8	1148	128.5	1472	158.8	1130	107.1	1472	147.8	1108	91.8	1472	146.0	1104	80.3	1472	146.0	1104
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	137.8	1066	105.6	1320	128.6	1049	88.0	1320	117.0	1024	75.4	1320	112.6	1013	66.0	1320	112.5	1012
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	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	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	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	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	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	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	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	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	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	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	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	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	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	26.4	330	26.7	305	22.0	330	22.4	301	18.9	330	19.3	297	16.5	330	17.0	293																				

TABLE 7B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard Clip (Fig. 1 or 2):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 2.25" Min. O.C. / Standard Clip (Fig. 3):		700 lbs	700 lbs	580 lbs	1410 lbs	952 lbs	N/A	560 lbs	N/A	630 lbs	N/A	880 lbs	N/A	652 lbs	840 lbs	1120 lbs
8 Anchors @ 1.15" Min. O.C. / Standard Clip (Fig. 4):		960 lbs	1400 lbs	N/A	N/A	N/A	N/A	760 lbs	N/A	N/A	N/A	N/A	N/A	1304 lbs	1680 lbs	2240 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 5):		780 lbs	780 lbs	900 lbs	1780 lbs	3288 lbs	540 lbs	560 lbs	708 lbs	1480 lbs	936 lbs	1328 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
6 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 6):		1170 lbs	1170 lbs	1020 lbs	2340 lbs	2844 lbs	810 lbs	840 lbs	N/A	1140 lbs	1404 lbs	1320 lbs	3546 lbs	978 lbs	1260 lbs	1680 lbs
4 Anchors @ 0.45 Min. O.C. / U-Clip, into 1/8" Alum. (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	1432 lbs
2 Anchors @ 2.25" Min. O.C. / F-Clip (Fig. 8):		350 lbs	350 lbs	290 lbs	705 lbs	476 lbs	N/A	280 lbs	N/A	315 lbs	0 lbs	440 lbs	0 lbs	326 lbs	420 lbs	560 lbs
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NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

FIGURE 1: FIGURE 2: FIGURE 3: FIGURE 4: FIGURE 8: FIGURE 9:

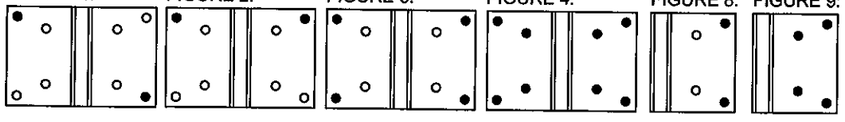
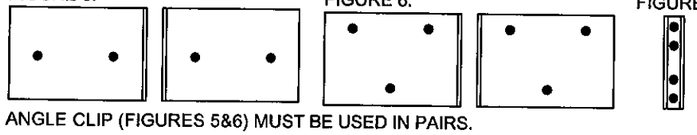


FIGURE 5: FIGURE 6: FIGURE 7:



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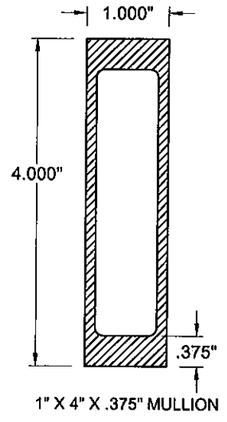
$$(DP_{REQ}) \times \left(\frac{\text{ANCHOR CAP.}_{\text{FROM TABLE}}}{\text{MULLION CAP.}_{\text{FROM TABLE}}}\right) = \text{ANCHOR CAP.}_{\text{REQ.}}$$

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 ANCHOR CAPACITY TABLE.



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1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1 X 4 X .375 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Sheet: 11 of 22
Rev.
Date: 08/29/11
Checked By:
Date:
Revision:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date MAY 26 2016
By Manuel Perez
Miami-Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

TABLE 8A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

1.25" x 3.188" x .265" Alum Tube Mull		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	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	151.6	1769	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	154.8	1548	170.0	680	132.7	1548	170.0	680	116.1	1548	170.0	680
	50.625 in	170.0	747	170.0	563	170.0	898	170.0	631	170.0	1046	170.0	684	170.0	1195	170.0	723	170.0	1345	170.0	747	167.0	1468	170.0	756	139.2	1468	170.0	756	119.3	1468	170.0	756	104.4	1468	170.0	756
	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	163.1	1376	170.0	837	146.8	1376	170.0	856	122.3	1376	170.0	861	104.8	1376	170.0	861	91.7	1376	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	158.9	1158	170.0	878	139.0	1158	167.4	930	123.6	1158	156.8	919	111.2	1158	150.0	912	92.7	1158	144.8	905	79.4	1158	144.8	905	69.5	1158	144.8	905
	63 in	170.0	930	170.0	745	160.1	1051	170.0	850	137.2	1051	155.9	862	120.1	1051	142.0	848	106.7	1051	132.3	837	96.1	1051	125.7	830	80.1	1051	119.5	822	68.6	1051	119.1	821	60.0	1051	119.1	821
	66 in	167.1	957	170.0	789	139.3	957	151.6	805	119.4	957	134.0	790	104.4	957	121.6	777	92.8	957	112.8	767	83.6	957	106.6	759	69.6	957	100.0	750	59.7	957	98.9	748	52.2	957	98.9	748
	72 in	128.7	804	135.2	698	107.3	804	115.2	684	91.9	804	101.3	671	80.4	804	91.4	660	71.5	804	84.1	650	64.4	804	78.8	643	53.6	804	72.3	633	46.0	804	69.9	629	40.2	804	69.8	628
	76 in	109.4	722	114.4	630	91.2	722	97.2	618	78.2	722	85.3	606	68.4	722	76.7	596	60.8	722	70.3	588	54.7	722	65.5	580	45.6	722	59.5	570	39.1	722	56.7	565	34.2	722	56.2	564
	78 in	101.2	685	105.6	600	84.4	685	89.6	588	72.3	685	78.5	577	63.3	685	70.5	568	56.2	685	64.5	560	50.6	685	60.1	553	42.2	685	54.3	543	36.2	685	51.4	537	31.6	685	50.7	536
	90 in	65.9	515	68.0	457	54.9	515	57.5	449	47.1	515	50.1	441	41.2	515	44.7	434	36.6	515	40.6	428	33.0	515	37.4	422	27.5	515	33.1	413	23.5	515	30.5	407	20.6	515	29.1	404
	96 in	54.3	453	55.8	404	45.3	453	47.1	397	38.8	453	41.0	391	33.9	453	36.4	385	30.2	453	33.0	379	27.2	453	30.4	374	22.6	453	26.6	366	19.4	453	24.3	360	17.0	453	22.9	356
	108 in	38.1	358	39.0	323	31.8	358	32.8	318	27.2	358	28.4	313	23.8	358	25.2	308	21.2	358	22.7	304	19.1	358	20.8	300	15.9	358	18.0	293								
	111 in	35.1	338	35.8	306	29.3	338	30.1	301	25.1	338	26.1	297	22.0	338	23.2	293	19.5	338	20.9	289	17.6	338	19.1	285												
	120 in	27.8	290	28.3	264	23.2	290	23.8	260	19.9	290	20.6	256	17.4	290	18.2	253	15.4	290	16.4	249																
	144 in	16.1	201	16.3	186																																

TABLE 8B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard Clip (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.15" Min. O.C. / Standard Clip (Fig. 2):		480 lbs	700 lbs	N/A	N/A	N/A	N/A	380 lbs	N/A	N/A	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 3):		780 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
4 Anchors @ 0.45" Min. O.C. / U-Clip, into 1/8" 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	1432 lbs
1 Anchor / F-Clip (Fig. 5):		195 lbs	195 lbs	225 lbs	445 lbs	822 lbs	135 lbs	140 lbs	177 lbs	370 lbs	234 lbs	332 lbs	591 lbs	163 lbs	210 lbs	280 lbs
2 Anchors @ 1.15" Min. O.C. / F-Clip (Fig. 6):		240 lbs	350 lbs	N/A	N/A	N/A	N/A	190 lbs	N/A	N/A	N/A	N/A	N/A	326 lbs	420 lbs	560 lbs

NOTE: FOR THE OFFSET CLIP, USE THE SAME ANCHOR PATTERN AND ANCHOR VALUES AS THE STANDARD CLIP.

FIGURE 1:

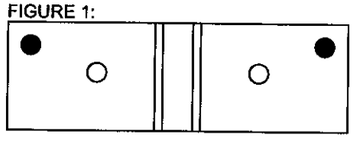


FIGURE 2:

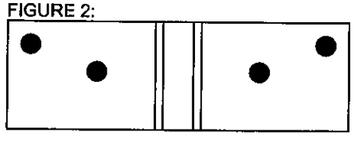
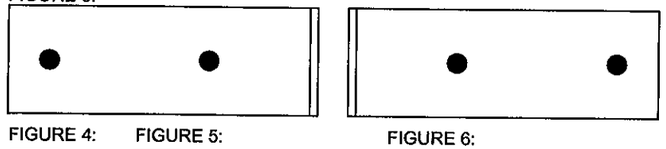


FIGURE 3:



ANGLE CLIP MUST BE USED IN PAIRS.

FIGURE 4:

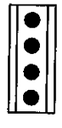


FIGURE 5:

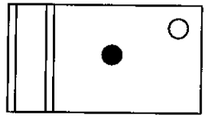


FIGURE 6:

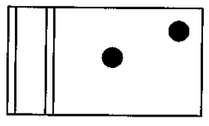


TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

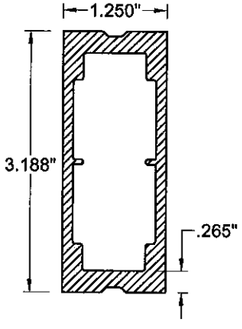
3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.

4) 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 ANCHOR CAPACITY TABLE.



1.25" X 3.188" X .265" MULLION
(1-1/4" VF MULLION)

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1.25 X 3.188 X .265 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Sheet: 12 of 22
Rev:
Checked By:
Date: 08/29/11
Revision:
Date:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date MAY 22, 2016
By Miami-Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

TABLE 9A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

2 x 4 x .25 Alum. Tube Mullion		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	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	170.0	1983	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	170.0	1700	170.0	680	170.0	1983	170.0	680	170.0	2267	170.0	680
	50.625 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	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	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	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	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	998	170.0	1771	170.0	1033	170.0	2125	170.0	1063	170.0	2479	170.0	1063	160.8	2680	170.0	1063
	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	170.0	1859	170.0	1122	170.0	2231	170.0	1169	166.7	2553	170.0	1171	145.9	2553	170.0	1171
	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	170.0	1948	170.0	1210	170.0	2338	170.0	1275	151.9	2437	170.0	1286	132.9	2437	170.0	1286
	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	170.0	2125	170.0	1387	145.6	2184	170.0	1488	124.8	2184	170.0	1529	109.2	2184	170.0	1530
	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	165.1	1960	170.0	1421	148.6	1960	170.0	1505	123.8	1960	161.6	1548	106.1	1960	154.0	1535	92.9	1960	152.7	1531
	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	152.7	1861	170.0	1474	137.4	1861	163.1	1500	114.5	1861	147.3	1473	98.2	1861	139.6	1459	85.9	1861	137.6	1454
	90 in	170.0	1328	170.0	1144	149.1	1398	156.0	1219	127.8	1398	136.0	1198	111.8	1398	121.3	1179	99.4	1398	110.2	1162	89.5	1398	101.6	1147	74.5	1398	89.8	1122	63.9	1398	82.7	1105	55.9	1398	78.9	1096
	96 in	147.4	1229	151.5	1098	122.9	1229	127.8	1079	105.3	1229	111.2	1061	92.1	1229	98.9	1044	81.9	1229	89.6	1029	73.7	1229	82.4	1016	61.4	1229	72.2	993	52.7	1229	65.9	977	46.1	1229	62.1	967
	108 in	103.5	971	105.8	877	86.3	971	89.0	862	74.0	971	77.2	849	64.7	971	68.4	837	57.5	971	61.8	825	51.8	971	56.5	815	43.1	971	49.0	796	37.0	971	44.0	782	32.4	971	40.8	771
	111 in	95.4	919	97.3	832	79.5	919	81.9	819	68.1	919	70.9	806	59.6	919	62.9	794	53.0	919	56.7	784	47.7	919	51.8	774	39.7	919	44.8	756	34.1	919	40.2	742	29.8	919	37.1	732
	120 in	75.5	786	76.8	716	62.9	786	64.5	705	53.9	786	55.8	695	47.2	786	49.4	686	41.9	786	44.4	677	37.7	786	40.5	668	31.5	786	34.9	653	27.0	786	31.0	641	23.6	786	28.4	631
	144 in	43.7	546	44.2	504	36.4	546	37.0	498	31.2	546	31.9	491	27.3	546	28.2	485	24.3	546	25.3	479	21.8	546	22.9	474	18.2	546	19.5	464	15.6	546	17.2	455	13.7	546	15.5	448

TABLE 9B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	0.46"	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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard Clip (Fig. 1 or 2):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 2.68" Min. O.C. / Standard Clip (Fig. 3):		740 lbs	740 lbs	630 lbs	1485 lbs	1424 lbs	N/A	560 lbs	N/A	695 lbs	N/A	880 lbs	N/A	652 lbs	840 lbs	1120 lbs
6 Anchors @ 1.71" Min. O.C. / Standard Clip (Fig. 4):		885 lbs	1050 lbs	758 lbs	1946 lbs	N/A	N/A	705 lbs	N/A	799 lbs	N/A	N/A	N/A	978 lbs	1260 lbs	1680 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 5):		760 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
6 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 6):		1170 lbs	1170 lbs	1020 lbs	2340 lbs	2844 lbs	810 lbs	840 lbs	N/A	1140 lbs	1404 lbs	1320 lbs	3546 lbs	978 lbs	1260 lbs	1680 lbs
3 Anchors @ 1.34" Min. O.C. / U-Clip, into 1/8" Alum. (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	1074 lbs
6 Anchors @ 0.64" Min. O.C. / U-Clip, into 1/8" Alum. (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	2148 lbs
2 Anchors @ 2.68" Min. O.C. / F-Clip (Fig. 9):		370 lbs	370 lbs	315 lbs	743 lbs	712 lbs	N/A	280 lbs	N/A	348 lbs	N/A	440 lbs	N/A	326 lbs	420 lbs	560 lbs
3 Anchors @ 1.71" Min. O.C. / F-Clip (Fig. 10):		390 lbs	390 lbs	340 lbs	780 lbs	948 lbs	270 lbs	280 lbs	N/A	360 lbs	468 lbs	440 lbs	1182 lbs	326 lbs	420 lbs	560 lbs

CIRCLED VALUES ARE USED IN THE EXAMPLE ON SHEET 21.

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 ANCHOR CAPACITY TABLE.

FIGURE 1:

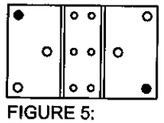


FIGURE 2:

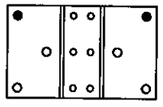


FIGURE 3:

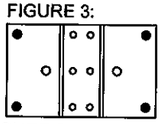


FIGURE 4:

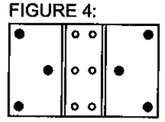


FIGURE 5:

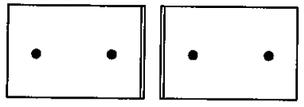


FIGURE 6:

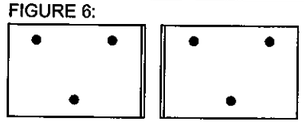


FIGURE 7:

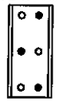


FIGURE 8:

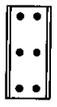


FIGURE 9:

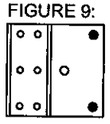
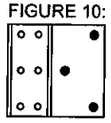


FIGURE 10:



ANGLE CLIP (FIGURES 5&6) MUST BE USED IN PAIRS.

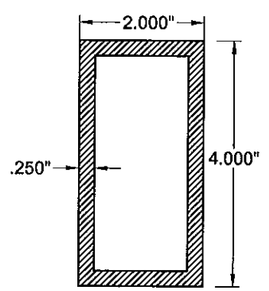
TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.

4) 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.



2" X 4" X .25" MULLION

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date Mar 26, 2016
By Manuel Perez
Miami-Dade Product Control

ANTHONY LYNN MILLER LICENSE No. 58705 STATE OF FLORIDA 11/30/11 PROFESSIONAL ENGINEER

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

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 2 X 4 X .25 MULL SPECS
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Date: 08/29/11
Drawing No. 6300JR
Checked By:
Revision:
Sheet: 13 of 22
Rev:
Date:
Date:

TABLE 10A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

2 x 6 x .25 Alum. Tube Mullion		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 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)
Mull Length	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
	50.625 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	170.0	2391	170.0	1793
	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	170.0	2550	170.0	1952
	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	164.8	2781	170.0	2271
	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	151.8	2632	162.3	2245
	120 in	170.0	1771	170.0	1566	170.0	2125	170.0	1859	154.4	2252	159.9	1991	135.1	2252	141.4	1964	120.1	2252	127.2	1938
	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	69.5	1564	72.3	1373

2 x 6 x .25 Alum. Tube Mullion		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 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)
Mull Length	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
	50.625 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	170.0	3140	170.0	1694	170.0	3589	170.0	1705
	78 in	170.0	2302	170.0	1564	170.0	2763	170.0	1700	170.0	3223	170.0	1777	170.0	3683	170.0	1796
	90 in	170.0	2656	170.0	1918	170.0	3188	170.0	2125	156.0	3413	170.0	2273	136.5	3413	170.0	2361
	96 in	170.0	2833	170.0	2095	160.0	3199	170.0	2338	137.1	3199	166.6	2470	120.0	3199	156.1	2428
	108 in	148.3	2781	161.9	2333	123.6	2781	140.4	2281	105.9	2781	125.9	2234	92.7	2781	116.0	2190
	111 in	136.6	2632	148.4	2216	113.8	2632	128.4	2166	97.6	2632	115.1	2126	85.4	2632	106.3	2096
	120 in	108.1	2252	116.1	1915	90.1	2252	99.8	1872	77.2	2252	88.9	1836	67.6	2252	81.4	1808
	144 in	78.2	1564	65.7	1358	52.1	1564	56.0	1330	44.7	1564	49.2	1305	39.1	1564	44.4	1283

TABLE 10B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 4.75" Min. O.C. / Standard Clip (Fig. 1 or 2):		390 lbs	390 lbs	450 lbs	890 lbs	1644 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	664 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 4.68" Min. O.C. / Standard Clip (Fig. 3):		780 lbs	780 lbs	900 lbs	1780 lbs	3064 lbs	540 lbs	560 lbs	708 lbs	1480 lbs	936 lbs	1104 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
8 Anchors @ 1.71" Min. O.C. / Standard Clip (Fig. 4):		1180 lbs	1400 lbs	1010 lbs	2595 lbs	N/A	N/A	940 lbs	N/A	1065 lbs	N/A	N/A	N/A	1304 lbs	1680 lbs	2240 lbs
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 5):		780 lbs	780 lbs	680 lbs	1560 lbs	1898 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
8 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 6):		1560 lbs	1560 lbs	1360 lbs	3120 lbs	3792 lbs	1080 lbs	1120 lbs	N/A	1520 lbs	1872 lbs	1760 lbs	4728 lbs	1304 lbs	1680 lbs	2240 lbs
12 Anchors @ 1.5" Min. O.C. / (2) 2x5 Angle Clips (Fig. 7):		1660 lbs	2100 lbs	1440 lbs	3780 lbs	N/A	N/A	1320 lbs	N/A	1500 lbs	N/A	N/A	N/A	1956 lbs	2520 lbs	3360 lbs
4 Anchors @ 1.34" Min. O.C. / U-Clip, into 1/8" Alum. (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	1432 lbs
8 Anchors @ 0.64" Min. O.C. / U-Clip, into 1/8" Alum. (Fig. 9):		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	2864 lbs
2 Anchors @ 4.68" Min. O.C. / F-Clip (Fig. 10):		390 lbs	390 lbs	450 lbs	890 lbs	1532 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	552 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 1.71" Min. O.C. / F-Clip (Fig. 11):		590 lbs	700 lbs	505 lbs	1298 lbs	N/A	N/A	470 lbs	N/A	533 lbs	N/A	N/A	N/A	652 lbs	840 lbs	1120 lbs

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 ANCHOR CAPACITY TABLE.

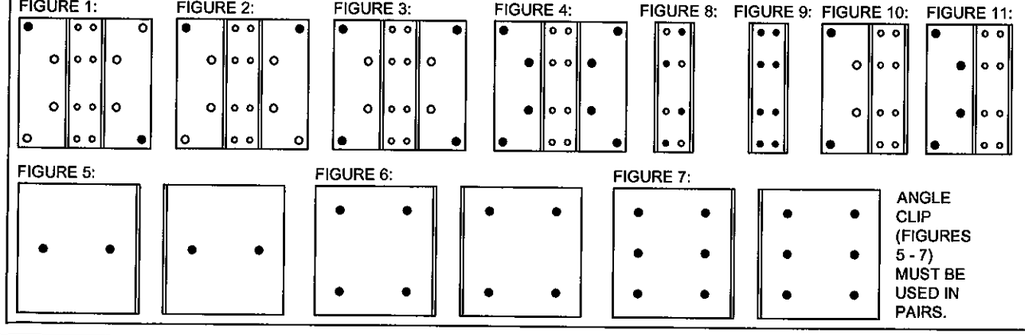


TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.
2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.
3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.
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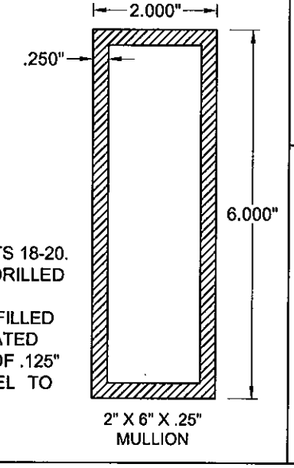

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By Manuel Perez
Miami Dade Product Control

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Rev. By:
Scale: N/A
Date: 08/29/11
Date:
Date:
Drawing No. 6300JR
Checked By:
Revision:
Sheet: 14 of 22
Rev:

TABLE 11A

Mullion Capacity Table (lbs/ft²)

1.26" x 2.11" x .125" Alum Tube Mull		Opening Width (for vertically-spanning mullions) or Opening Height (for horizontally-spanning mullions)																													
		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	42 in	144.2	526	167.0	428	120.2	526	148.9	419	103.0	526	138.9	414	90.1	526	134.6	411	80.1	526	134.1	411	72.1	526	134.1	411	60.1	526	134.1	411	51.5	526	134.1	411	45.1	526	134.1	411
	48 in	96.6	403	108.0	333	80.5	403	94.7	325	69.0	403	86.4	320	60.4	403	81.4	317	53.7	403	79.1	315	48.3	403	78.6	314	40.3	403	78.6	314	34.5	403	78.6	314	30.2	403	78.6	314
	50.625 in	82.3	362	91.0	301	68.6	362	79.3	294	58.8	362	71.9	289	51.5	362	67.2	286	45.7	362	64.6	284	41.2	362	63.6	283	34.3	362	63.5	283	29.4	362	63.5	283	25.7	362	63.5	283
	54 in	67.8	318	74.1	267	56.5	318	64.2	261	48.5	318	57.7	256	42.4	318	53.5	253	37.7	318	50.8	250	33.9	318	49.5	249	28.3	318	49.1	248	24.2	318	49.1	248	21.2	318	49.1	248
	60 in	49.5	258	53.1	219	41.2	258	45.7	214	35.3	258	40.7	210	30.9	258	37.2	207	27.5	258	34.9	204	24.7	258	33.4	203	20.6	258	32.2	201	17.7	258	32.2	201	15.5	258	32.2	201
	63 in	42.7	234	45.6	200	35.6	234	39.1	195	30.5	234	34.7	192	26.7	234	31.6	189	23.7	234	29.4	186	21.4	234	28.0	184	17.8	234	26.6	183	15.3	234	26.5	183	13.4	234	26.5	183
	66 in	37.2	213	39.4	183	31.0	213	33.7	179	26.5	213	29.8	176	23.2	213	27.0	173	20.6	213	25.1	170	18.6	213	23.7	169	15.5	213	22.2	167	13.3	213	22.0	166	11.6	213	22.0	166
	72 in	28.6	179	30.1	155	23.9	179	25.6	152	20.4	179	22.5	149	17.9	179	20.3	147	15.9	179	18.7	145																
	76 in	24.3	161	25.4	140	20.3	161	21.6	137	17.4	161	19.0	135	15.2	161	17.0	133																				
	78 in	22.5	152	23.5	133	18.8	152	19.9	131	16.1	152	17.5	128																								

TABLE 11B

Anchor Capacity Table (lbs)

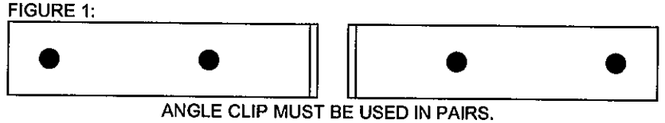
Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco AggreGator	#10 Steel Screw (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"	(see note 4)
4 Anchors @ 3" Min. O.C. / (2) 2x5 Angle Clips (Fig. 1):		780 lbs	780 lbs	680 lbs	1560 lbs	1896 lbs	540 lbs	560 lbs	N/A	760 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1432 lbs

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 ANCHOR CAPACITY TABLE.

FIGURE 1:



ANGLE CLIP MUST BE USED IN PAIRS.

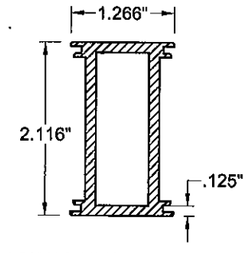
TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.

4) 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.



1.26" X 2.11" X .125" MULLION
(INTEGRAL FIN MULLION)

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 1.26 X 2.11 X .125 MULL SPECS
Series: N/A
Drawing No. 6300JR
Sheet: 15 of 22
Rev:
Drawn By: J ROSOWSKI
Date: 08/29/11
Checked By:
Date:
Revision:
Rev. By:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0926.01
Expiration Date MAY 26, 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

TABLE 12A

Mullion Capacity Table (lbs/ft²)

Opening Width (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)

3.25" 30 DEG. AL BAY MULL		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 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)
Mull Length	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
	50.625 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	160.4	1353	170.0	837
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	167.0	1218	170.0	878	146.1	1218	170.0	944	129.9	1218	159.8	936
	63 in	170.0	930	170.0	745	170.0	1116	170.0	850	150.2	1150	168.8	933	131.4	1150	153.0	914	116.8	1150	141.9	898
	66 in	170.0	974	170.0	789	152.4	1048	165.8	881	130.6	1048	146.6	864	114.3	1048	133.1	850	101.6	1048	123.4	839
	72 in	140.8	880	147.9	764	117.4	880	126.0	748	100.6	880	110.8	734	88.0	880	100.0	722	78.2	880	92.0	712
	76 in	119.7	790	125.1	690	99.8	790	106.4	676	85.5	790	93.3	663	74.8	790	83.9	652	66.5	790	76.9	643
	78 in	110.8	750	115.5	657	92.3	750	98.1	644	79.1	750	85.9	632	69.2	750	77.1	621	61.5	750	70.6	612
	90 in	72.1	563	74.4	500	60.1	563	62.9	491	51.5	563	54.8	483	45.1	563	48.9	475	40.1	563	44.4	468
	96 in	59.4	495	61.1	443	49.5	495	51.5	435	42.4	495	44.8	427	37.1	495	39.9	421	33.0	495	36.1	415
	108 in	41.7	391	42.6	353	34.8	391	35.9	348	29.8	391	31.1	342	26.1	391	27.6	337	23.2	391	24.9	333
	111 in	38.4	370	39.2	335	32.0	370	33.0	330	27.5	370	28.6	325	24.0	370	25.3	320	21.4	370	22.8	316
	120 in	30.4	317	30.9	289	25.3	317	26.0	284	21.7	317	22.5	280	19.0	317	19.9	276	16.9	317	17.9	273
	144 in	17.6	220	17.8	203																

3.25" 30 DEG. AL BAY MULL		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 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)
Mull Length	42 in	170.0	1240	170.0	521	170.0	1488	170.0	521	170.0	1735	170.0	521	149.1	1740	170.0	521
	48 in	170.0	1417	170.0	680	152.2	1522	170.0	680	130.5	1522	170.0	680	114.2	1522	170.0	680
	50.625 in	164.2	1443	170.0	756	136.9	1443	170.0	756	117.3	1443	170.0	756	102.6	1443	170.0	756
	54 in	144.3	1353	170.0	856	120.3	1353	170.0	861	103.1	1353	170.0	861	90.2	1353	170.0	861
	60 in	116.9	1218	152.1	924	97.4	1218	146.1	913	83.5	1218	146.1	913	73.1	1218	146.1	913
	63 in	105.1	1150	134.2	885	87.6	1150	126.7	871	75.1	1150	126.2	870	65.7	1150	126.2	870
	66 in	91.4	1048	116.6	830	76.2	1048	109.4	821	65.3	1048	108.2	818	57.1	1048	108.2	818
	72 in	70.4	880	86.2	703	58.7	880	79.2	693	50.3	880	76.5	688	44.0	880	76.4	688
	76 in	59.9	790	71.7	635	49.9	790	65.1	624	42.8	790	62.1	619	37.4	790	61.5	617
	78 in	55.4	750	65.7	605	46.2	750	59.4	594	39.6	750	56.2	588	34.6	750	55.5	586
	90 in	36.1	563	40.9	462	30.0	563	36.2	452	25.8	563	33.3	445	22.5	563	31.8	442
	96 in	29.7	495	33.2	409	24.8	495	29.1	400	21.2	495	26.6	394	18.6	495	25.0	390
	108 in	20.9	391	22.8	328	17.4	391	19.7	321	14.9	391	17.8	315				
	111 in	19.2	370	20.9	312	16.0	370	18.1	305								
	120 in																
	144 in																

TABLE 12B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 5" Min. O.C. / (2) 2x5 Angle Clips (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1700 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	720 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 3.5" Min. O.C. / (2) 2x5 Angle Clips (Fig. 2):		780 lbs	780 lbs	790 lbs	1670 lbs	2525 lbs	540 lbs	560 lbs	N/A	1120 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
6 Anchors @ 2.71" Min. O.C. / (2) 2x5 Angle Clips (Fig. 3):		1120 lbs	1120 lbs	958 lbs	2246 lbs	2254 lbs	N/A	840 lbs	N/A	1059 lbs	N/A	1320 lbs	N/A	978 lbs	1260 lbs	1680 lbs

FIGURE 1:

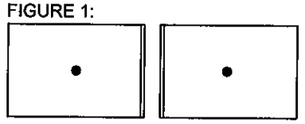


FIGURE 2:

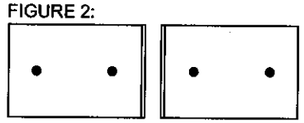
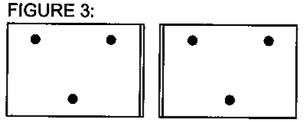


FIGURE 3:



ANGLE CLIP (FIGURES 1-3) MUST BE USED IN PAIRS.

TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

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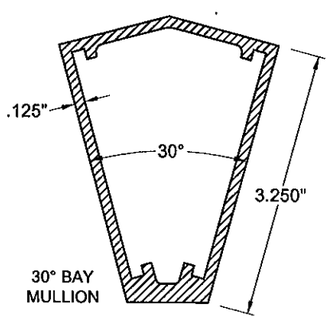
ANCHOR CAPACITY ADJUSTMENT FORMULA:

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

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 ANCHOR CAPACITY TABLE.



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P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 30 DEGREE BAY MULL SPECS
Drawing No. 6300JR
Sheet: 16 of 22
Scale: N/A
Date: 08/29/11
Checked By:
Date:
Revision:
Series: N/A
Drawn By: J ROSOWSKI
Date:
Rev. By:
Date:
Rev:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date MAY 26, 2016
By Manuel Perez
Miami-Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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

TABLE 13A

Mullion Capacity Table (lbs/ft²)

3.25" 45 DEG. AL BAY MULL		**Opening Width** (for vertically-spanning mullions) **or Opening Height** (for horizontally-spanning mullions)																													
		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/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 Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)	Mullion Capacity (lbs/ft2)	Anchor Capacity Required (lbs)
Mull Length	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	160.3	1871	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	163.7	1637	170.0	680	140.3	1637	170.0	680	122.8	1637	170.0	680
	50.625 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	170.0	1494	170.0	756	147.1	1552	170.0	756	126.1	1552	170.0	756	110.4	1552	170.0	756
	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	155.2	1455	170.0	856	129.3	1455	170.0	861	110.8	1455	170.0	861	97.0	1455	170.0	861
	60 in	170.0	885	170.0	701	170.0	1063	170.0	797	170.0	1240	170.0	878	157.1	1309	170.0	944	139.7	1309	170.0	996	125.7	1309	163.5	994	104.8	1309	157.1	982	89.8	1309	157.1	982	78.6	1309	157.1	982
	63 in	170.0	930	170.0	745	170.0	1116	170.0	850	162.9	1247	170.0	940	142.5	1247	164.5	983	126.7	1247	152.6	965	114.0	1247	144.3	952	95.0	1247	136.2	936	81.4	1247	135.7	935	71.3	1247	135.7	935
	66 in	170.0	974	170.0	789	170.0	1169	170.0	903	148.4	1190	163.7	965	129.9	1190	147.9	945	115.4	1190	136.5	928	103.9	1190	128.4	914	86.6	1190	119.5	896	74.2	1190	118.1	893	64.9	1190	118.1	893
	72 in	161.6	1010	169.8	877	134.7	1010	144.6	859	115.4	1010	127.2	842	101.0	1010	114.7	828	89.8	1010	105.6	817	80.8	1010	98.9	807	67.3	1010	90.8	795	57.7	1010	87.8	790	50.5	1010	87.7	789
	76 in	137.4	906	143.6	792	114.5	906	122.0	775	98.1	906	107.1	761	85.9	906	96.2	749	76.3	906	88.2	738	68.7	906	82.3	729	57.3	906	74.7	716	49.1	906	71.2	710	42.9	906	70.6	708
	78 in	127.1	861	132.5	754	105.9	861	112.5	738	90.8	861	98.6	725	79.4	861	88.5	713	70.6	861	81.0	703	63.6	861	75.4	694	53.0	861	68.1	681	45.4	861	64.5	675	39.7	861	63.7	672
	90 in	82.7	646	85.4	574	68.9	646	72.1	584	59.1	646	62.9	554	51.7	646	56.1	545	46.0	646	50.9	537	41.4	646	47.0	530	34.5	646	41.5	519	29.5	646	38.2	511	25.9	646	36.5	507
	96 in	68.2	568	70.1	508	56.8	568	59.1	499	48.7	568	51.4	491	42.6	568	45.8	483	37.9	568	41.4	476	34.1	568	38.1	470	28.4	568	33.4	459	24.3	568	30.5	452	21.3	568	28.7	447
	108 in	47.9	449	48.9	405	39.9	449	41.2	399	34.2	449	35.7	393	29.9	449	31.7	387	26.6	449	28.6	382	23.9	449	26.1	377	20.0	449	22.7	368	17.1	449	20.4	361	15.0	449	18.9	356
	111 in	44.1	425	45.0	385	36.8	425	37.9	379	31.5	425	32.8	373	27.6	425	29.1	367	24.5	425	26.2	362	22.1	425	24.0	358	18.4	425	20.7	350	15.8	425	18.6	343				
	120 in	34.9	364	35.5	331	29.1	364	29.8	326	24.9	364	25.8	321	21.8	364	22.8	317	19.4	364	20.5	313	17.5	364	18.7	309												
	144 in	20.2	253	20.4	233	16.8	253	17.1	230																												

TABLE 13B

Anchor Capacity Table (lbs)

Anchor Clip Patterns	Substrate:	2.7k Concrete				3.5k Conc.	Hollow CMU						Filled CMU	PT Wood		Metal
	Anchor Type:	3/16" Elco Ultracon		1/4" Elco Ultracon		5/16" Elco Ultracon	3/16" Elco Ultracon		1/4" Elco Ultracon		1/4" SS Elco AggreGator	5/16" Elco Ultracon	1/4" SS Elco 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"	(see note 4)
2 Anchors @ 5" Min. O.C. / (2) 2x5 Angle Clips (Fig. 1):		390 lbs	390 lbs	450 lbs	890 lbs	1700 lbs	270 lbs	280 lbs	354 lbs	740 lbs	468 lbs	720 lbs	1182 lbs	326 lbs	420 lbs	560 lbs
4 Anchors @ 3.5" Min. O.C. / (2) 2x5 Angle Clips (Fig. 2):		780 lbs	780 lbs	790 lbs	1670 lbs	2525 lbs	540 lbs	560 lbs	N/A	1120 lbs	936 lbs	880 lbs	2364 lbs	652 lbs	840 lbs	1120 lbs
6 Anchors @ 2.71" Min. O.C. / (2) 2x5 Angle Clips (Fig. 3):		1120 lbs	1120 lbs	958 lbs	2246 lbs	2254 lbs	N/A	840 lbs	N/A	1059 lbs	N/A	1320 lbs	N/A	978 lbs	1260 lbs	1680 lbs

FIGURE 1:

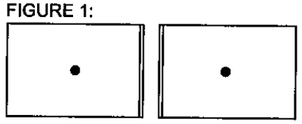


FIGURE 2:

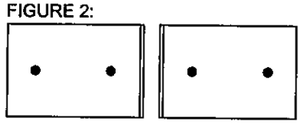
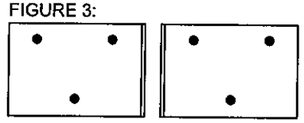


FIGURE 3:



ANGLE CLIP (FIGURES 1-3) MUST BE USED IN PAIRS.

TABLE NOTES:

1) SEE SHEET 1 FOR INSTRUCTIONS ON USING THE TABLES AND SHEET 22 FOR INFORMATION ON LOADING. SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

2) LINEAR INTERPOLATION BETWEEN MULL LENGTHS AND/OR OPENING WIDTHS IS ALLOWABLE.

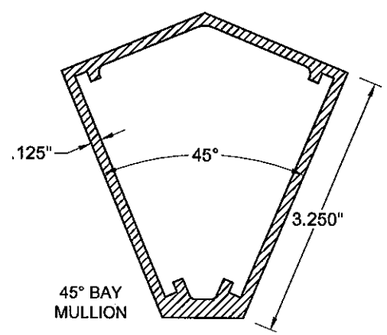
3) MULLION AND MULLION CLIPS SHOWN ARE NOT TO SCALE. FOR EXACT DIMENSIONS, SEE SHEETS 18-20. ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS SHOWN ON SHEETS 18-20.

4) 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 ANCHOR CAPACITY TABLE.



45° BAY MULLION

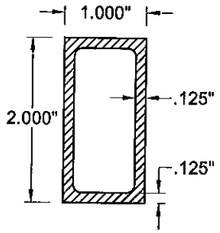
PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date JULY 26, 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER

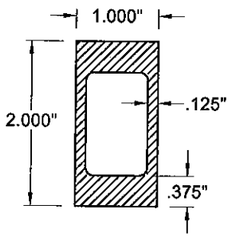
A. LYNN MILLER, P.E.
FL P.E.# 58705

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

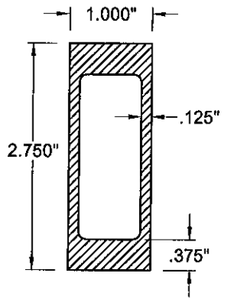
Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: 45 DEGREE BAY MULL SPECS
Drawing No. 6300JR
Sheet: 17 of 22
Rev:
Series: N/A
Scale: N/A
Date: 08/29/11
Checked By:
Date:
Revision:
Drawn By: J ROSOWSKI
Date:
Rev. By:



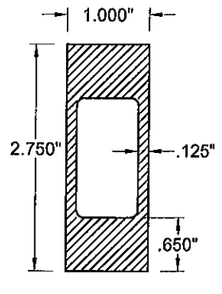
1" X 2" X .125" MULLION
6063-T6 ALUM.
X-SECTION



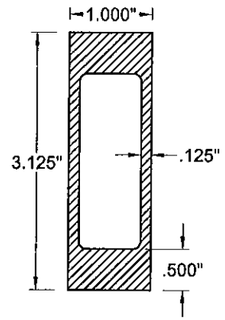
1" X 2" X .375" MULLION
6063-T6 ALUM.
X-SECTION



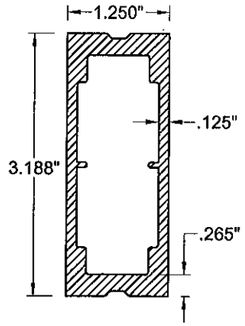
1" X 2.75" X .375" MULLION
6063-T6 ALUM.
X-SECTION



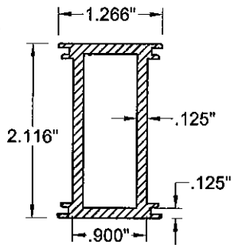
1" X 2.75" X .650" MULLION
6063-T6 ALUM.
X-SECTION



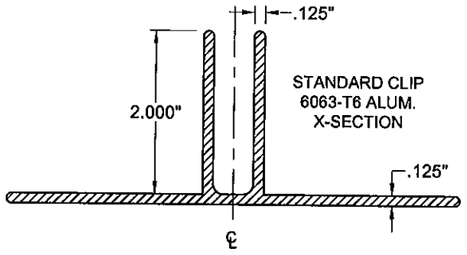
1" X 3.125" X .5" MULLION
6063-T6 ALUM.
X-SECTION

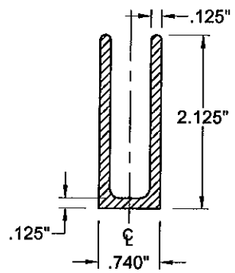


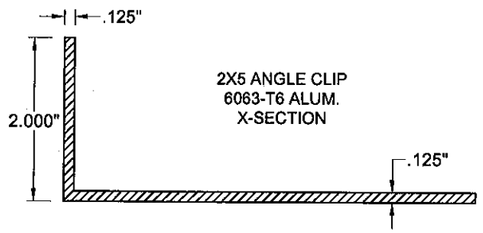
1.25" X 3.188" X .265" MULLION
6063-T6 ALUM.
X-SECTION

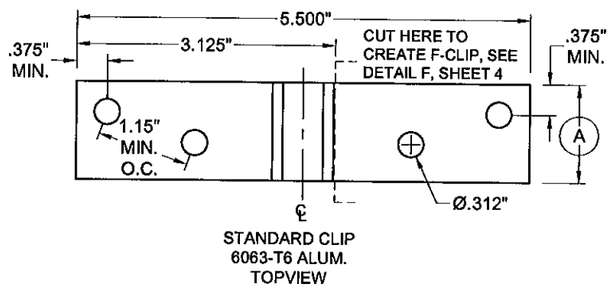


1.26" X 2.11" X .125" MULLION
6063-T6 ALUM.
X-SECTION

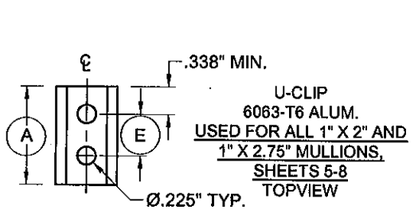




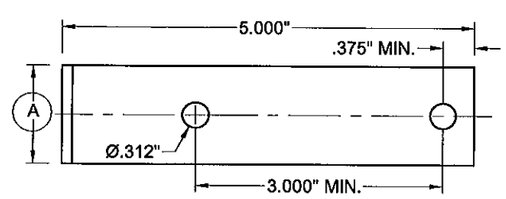




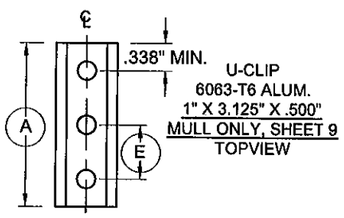
STANDARD CLIP
6063-T6 ALUM.
TOPVIEW



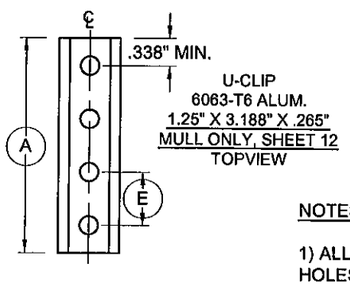
U-CLIP
6063-T6 ALUM.
USED FOR ALL 1" X 2" AND
1" X 2.75" MULLIONS,
SHEETS 5-8
TOPVIEW



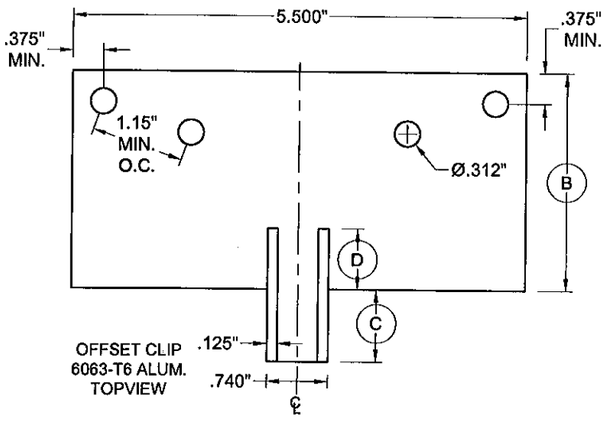
2X5 ANGLE CLIP
6063-T6 ALUM.
TOPVIEW



U-CLIP
6063-T6 ALUM.
1" X 3.125" X .500"
MULL ONLY, SHEET 9
TOPVIEW



U-CLIP
6063-T6 ALUM.
1.25" X 3.188" X .265"
MULL ONLY, SHEET 12
TOPVIEW



OFFSET CLIP
6063-T6 ALUM.
TOPVIEW

TABLE B

Mull Dimension (sheet #)	PGT Part #				
	Mullion	Std. Clip	Offset Clip	U-Clip	Angle Clip
1" X 2" X .125" (5)	66605	666113M	6661118M	666243M	666511M
1" X 2" X .375" (6)	666006	666114M	6661119M	666244M	666512M
1" X 2.75" X .375" (7)	66607	666115M	6661120M	666245M	666513M
1" X 2.75" X .650" (8)	66608	666116M	6661121M	666246M	666514M
1" X 3.125" X .500" (9)	66637M	6661116M	6661114M	666242M	666515M
1.25" X 3.188" X .265" (12)	66641M	6661117M	6661113M	666241M	666516M
1.26" X 2.11" X .125" (15)	69370	N/A	N/A	N/A	666517M

NOTES:

1) ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. IF NEEDED, HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS GIVEN ON THIS SHEET.

2) SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

TABLE A

Dimension	Value (in)	For Mullion:
A	1.625	1" X 2" X .125" Aluminum Tube Mullion
B	2.654	
C	0.895	
D	0.740	
E	.450 Min.	
A	1.125	1" X 2" X .375" Aluminum Tube Mullion
B	2.404	
C	0.635	
D	0.490	
E	0.450	
A	1.875	1" X 2.75"" X .375 Aluminum Tube Mullion
B	3.000	
C	0.757	
D	1.118	
E	.450 Min.	
A	1.312	1" X 2.75" X .650" Aluminum Tube Mullion
B	3.000	
C	0.476	
D	0.836	
E	.450 Min.	
A	2.000	1" X 3.125" X .500" Alum Tube Mull
B	2.637	
C	0.863	
D	1.137	
E	.450 Min.	
A	2.625	1.25" X 3.188" X .265" Alum Tube Mull
B	3.262	
C	0.862	
D	1.762	
E	.450 Min.	
A	1.813	1.26" X 2.11" X .121" Alum Tube Mull

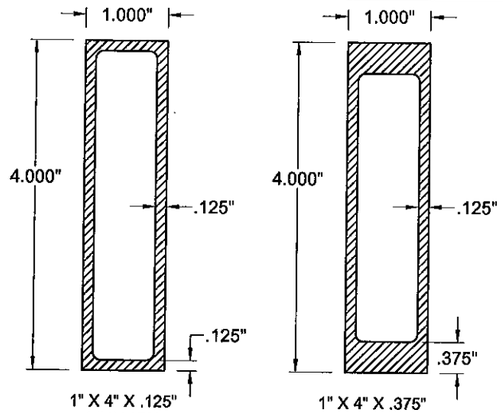
PRODUCT REVISED
as complying with the Florida
Building Code
Acceptance No 11-0922.01
Expiration Date MAY 26, 2016
By Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

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

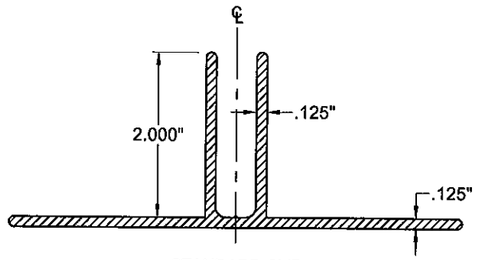
PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: MULLION AND CLIP DIMENSIONS A
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Date: 08/29/11
Scale: N/A
Drawing No. 6300JR
Checked By:
Revision:
Sheet: 18 of 22
Rev:
Date:

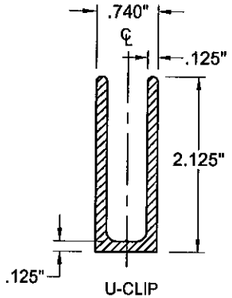


1" X 4" X .125" MULLION 6063-T6 ALUM. X-SECTION

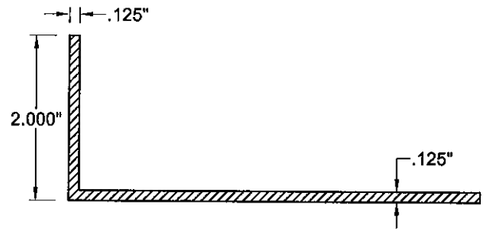
1" X 4" X .375" MULLION 6063-T6 ALUM. X-SECTION



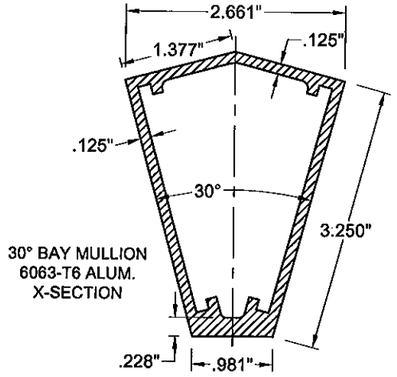
STANDARD CLIP 6063-T6 ALUM. X-SECTION



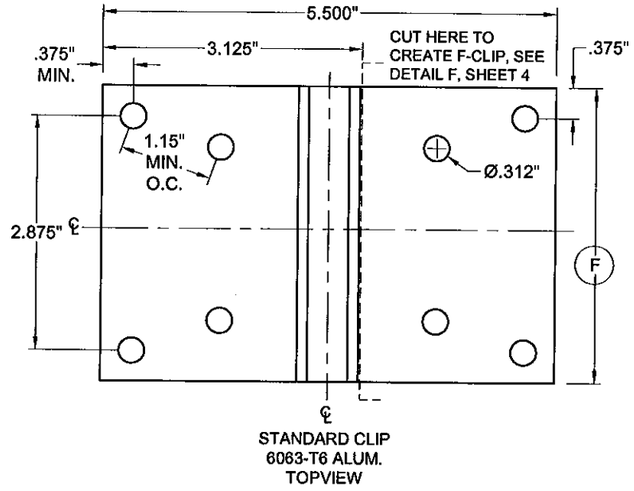
U-CLIP 6063-T6 ALUM. X-SECTION



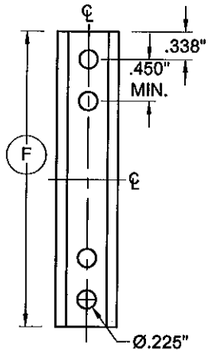
2X5 ANGLE CLIP 6063-T6 ALUM. X-SECTION



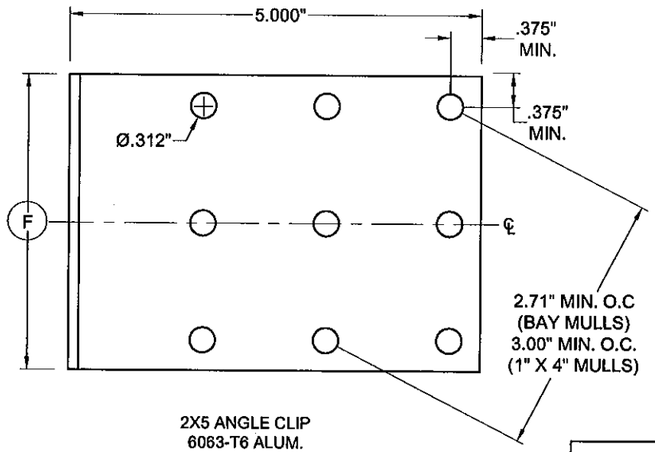
30° BAY MULLION 6063-T6 ALUM. X-SECTION



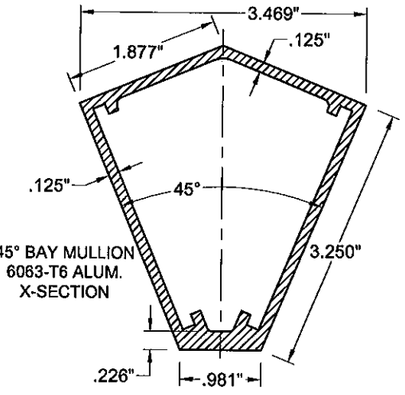
STANDARD CLIP 6063-T6 ALUM. TOPVIEW



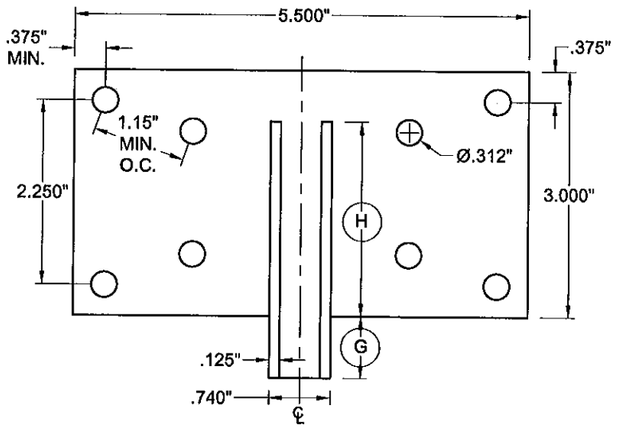
U-CLIP 6063-T6 ALUM. USED FOR ALL 1" X 4" MULLIONS, SHEETS 10 & 11 TOPVIEW



2X5 ANGLE CLIP 6063-T6 ALUM. TOPVIEW



45° BAY MULLION 6063-T6 ALUM. X-SECTION



OFFSET CLIP 6063-T6 ALUM. TOPVIEW

TABLE C

Dimension	Value (in)	For Mullion:
F	3.687	1" X 4" X .125" Aluminum Tube Mullion
G	1.000	
H	2.680	
F	3.187	1" X 4" X .375" Aluminum Tube Mullion
G	0.757	
H	2.430	
F	2.813	30° Bay Mull
F	2.875	45° Bay Mull

TABLE D

Mull Dimension (sheet #)	PGT Part #				
	Mullion	Std. Clip	Offset Clip	U-Clip	Angle Clip
1" X 4" X .125" (10)	69364	666111M	6661122M	666241M	666518M
1" X 4" X .375" (11)	66610	666112M	6661123M	666242M	666519M
30 Degree (16)	66649	N/A	N/A	N/A	6665110M
45 Degree (17)	66650	N/A	N/A	N/A	6665111M

NOTES:

1) ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. IF NEEDED, HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS GIVEN ON THIS SHEET.

2) SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.

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FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: MULLION AND CLIP DIMENSIONS B
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Scale: N/A
Drawing No. 6300JR
Sheet: 19 of 22
Rev:
Date: 08/29/11
Checked By:
Revision:
Date:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No. 11-0922.01
Expiration Date MAY 26 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
11/30/11
STATE OF FLORIDA
PROFESSIONAL ENGINEER
A. LYNN MILLER, P.E.
FL P.E.# 58705

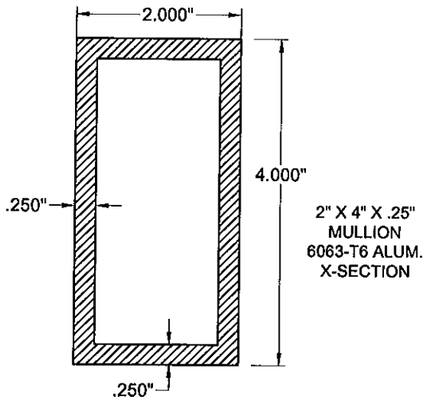
TABLE E

Mull Dimension (sheet #)	PGT Part #			
	Mullion	Std. Clip	U-Clip	Angle Clip
2" X 4" X .25" (13)	66602	666261M	666271M	6665112M
2" X 6" X .25" (14)	66604	666262M	666272M	6665113M

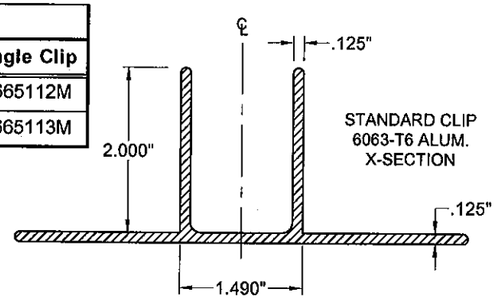
NOTES:

1) ALL MULLION CLIPS MAY BE FACTORY MACHINED AND CONTAIN UNUSED HOLES. IF NEEDED, HOLES MAY BE DRILLED IN THE FIELD FOLLOWING DIMENSIONS GIVEN ON THIS SHEET.

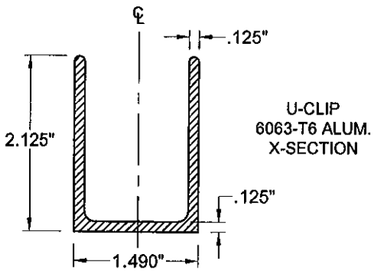
2) SEE SHEETS 2-4 FOR GENERAL INSTALLATION METHODS.



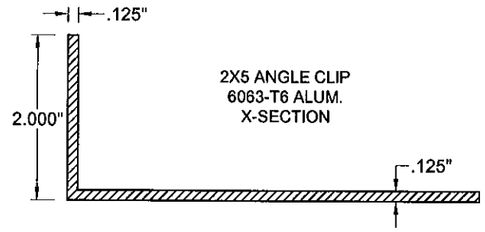
2" X 4" X .25"
MULLION
6063-T6 ALUM.
X-SECTION



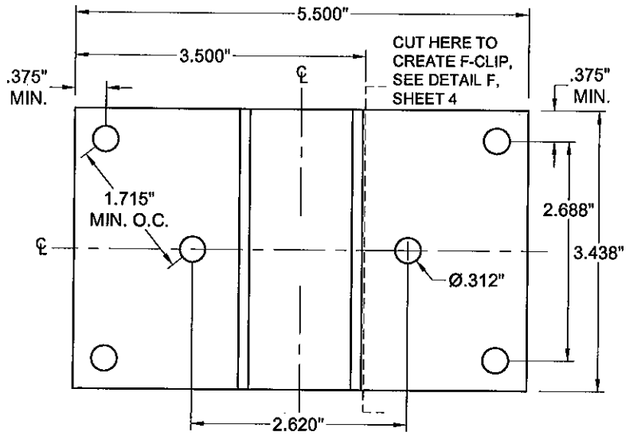
STANDARD CLIP
6063-T6 ALUM.
X-SECTION



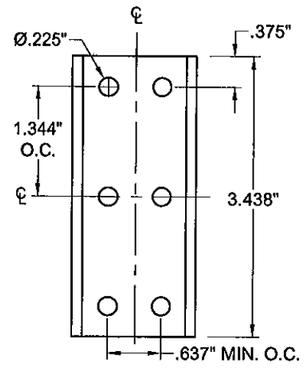
U-CLIP
6063-T6 ALUM.
X-SECTION



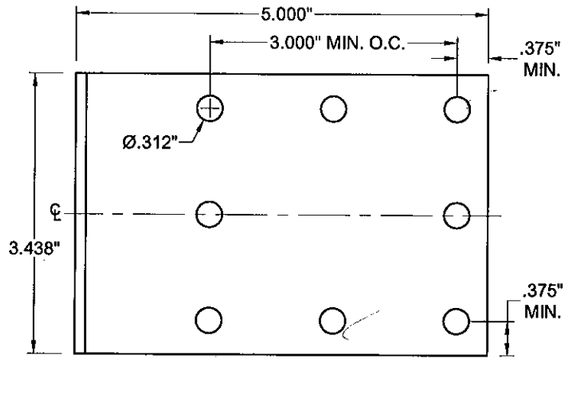
2X5 ANGLE CLIP
6063-T6 ALUM.
X-SECTION



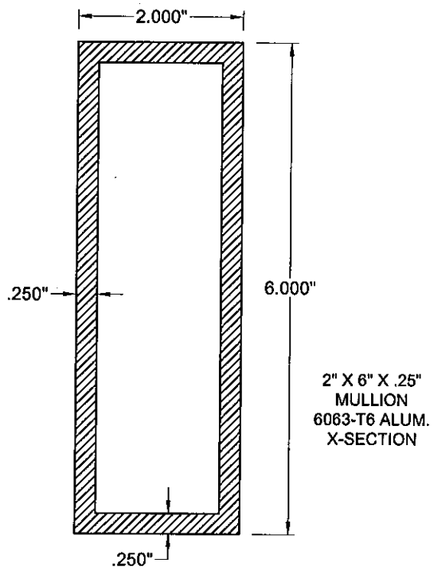
STANDARD CLIP
6063-T6 ALUM.
TOPVIEW



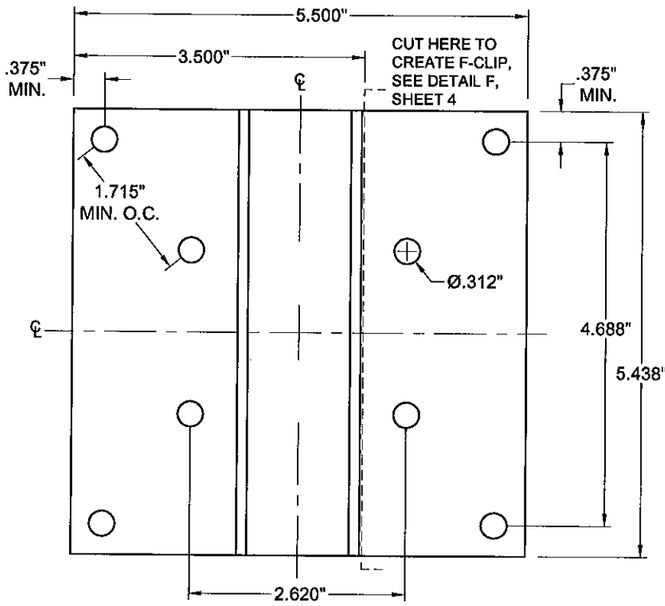
U-CLIP
6063-T6 ALUM.
USED FOR 2" X 4"
MULLION, SHEET 13
TOPVIEW



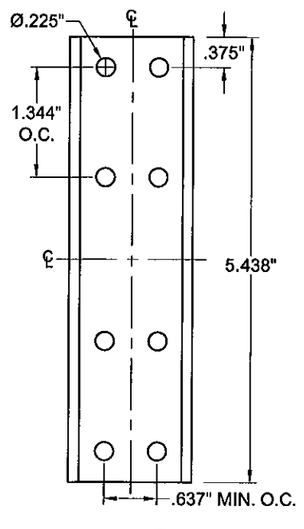
2X5 ANGLE CLIP
6063-T6 ALUM.
TOPVIEW



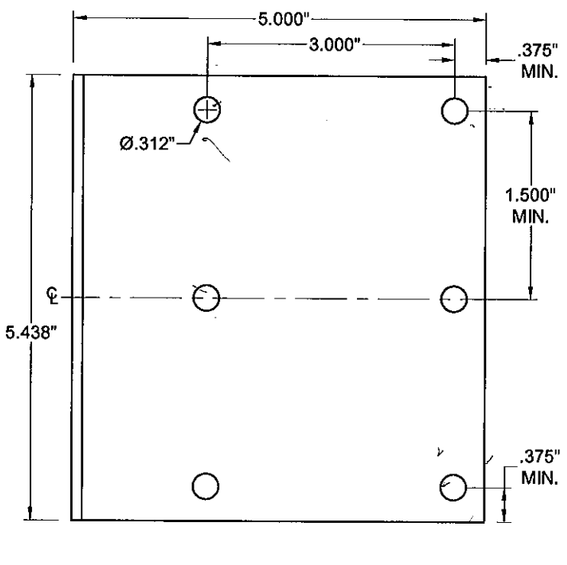
2" X 6" X .25"
MULLION
6063-T6 ALUM.
X-SECTION



STANDARD CLIP
6063-T6 ALUM.
TOP VIEW



U-CLIP
6063-T6 ALUM.
USED FOR 2" X 6"
MULLION, SHEET 14
TOPVIEW



2X5 ANGLE CLIP
6063-T6 ALUM.
TOPVIEW

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Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONS
Description: MULLION AND CLIP DIMENSIONS C
Drawing No. 6300JR
Sheet: 20 of 22
Rev:
Scale: N/A
Date: 08/29/11
Checked By:
Date:
Revision:
Series: N/A
Drawn By: J ROSOWSKI
Date:
Rev. By:

PRODUCT REVISED
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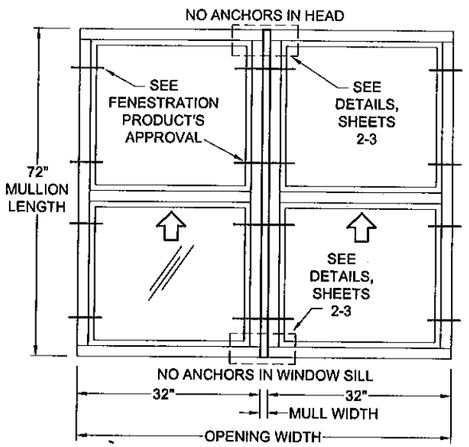
FL P.E.# 58705

EXAMPLE 1: SINGLE VERTICAL MULLION



THE BUILDING SUBSTRATE IS KNOWN TO BE WOOD ON ALL FOUR SIDES. THE WINDOW FRAME DEPTH IS 2-1/4". THE OPENING REQUIRES A DESIGN PRESSURE OF +60.0/-60.0 PSF.

1) INITIALLY ASSUMING THAT A 1" WIDE MULLION IS SUITABLE,THE MULLION LENGTH IS 72" AND THE OPENING WIDTH IS 32"+32+1" =65". REFERENCING SHEET 22, THE COLUMN USING RECTANGULAR LOADING MUST BE USED. SCAN THE MULLION TABLES FOR A MULLION THAT IS AT LEAST THE WINDOW FRAME DEPTH OF 2-1/4" 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 AVAILABLE.

FROM TABLE 3A, SHEET 7, THE 1" X 2.75" X .375" MULLION (LENGTH = 72", OPENING WIDTH = 70") MEETS THE DEPTH REQUIRED, HOWEVER THE DESIGN PRESSURE IS +/-58.3 PSF AND WOULD NOT BE SUITABLE FOR THIS APPLICATION.

FROM TABLE 4A, SHEET 8, THE 1" X 2.75" X .650" MULLION (LENGTH = 72", OPENING WIDTH = 70") HAS A DESIGN PRESSURE OF +/-72.7 PSF WHICH EXCEEDS THE REQUIREMENTS FOR THE OPENING AND MAY BE USED IN THIS APPLICATION. NOTE THE ANCHOR CAPACITY REQUIRED OF 636 LBS.

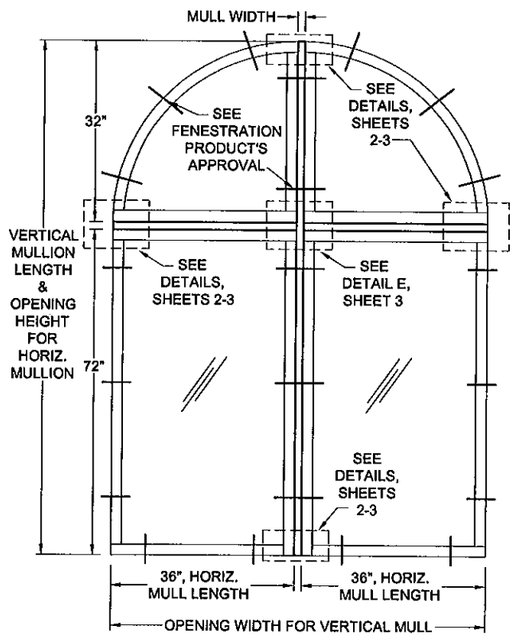
2) USE TABLE 4B TO FIND THE ANCHOR TYPE, ANCHOR QUANTITY AND CLIP TYPE REQUIRED FOR THE WOOD SUBSTRATE. BOTH THE STANDARD CLIP WITH (4) #12 ANCHORS AND THE 2X5 ANGLE CLIPS WITH (4) #12 ANCHORS HAVE A CAPACITY 0F 840 LBS. THOUGH EITHER ONE COULD BE USED, THE STANDARD CLIP IS EASIER TO INSTALL.

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 72.7 PSF WITH AN ANCHOR CAPACITY OF 636 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:

$$(60\ \text{PSF}) \times \left(\frac{636\ \text{LBS}}{72.7\ \text{PSF}}\right) = 524.9\ \text{LBS}$$ (MAY BE USED TO QUALIFY # 10 STEEL SCREWS FROM TABLE 4B)

EXAMPLE 2: 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 2-3/8". 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 LENGTH IS 32"+72"+1"=105" AND THE OPENING WIDTH IS 36"+36"+1" =73". REFERENCING SHEET 22, THE COLUMN USING RECTANGULAR LOADING SHALL BE USED. SCAN THE MULLION TABLES FOR A MULLION THAT IS AT LEAST THE WINDOW FRAME DEPTH OF 2-3/8" 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 3A, SHEET 7, THE 1" X 2.75" X .375" MULLION (LENGTH = 108", OPENING WIDTH = 80") MEETS THE DEPTH REQUIRED, HOWEVER THE DESIGN PRESSURE IS +/-15.1 PSF AND WOULD NOT BE SUITABLE FOR THIS APPLICATION.

FROM TABLE 9A, SHEET 13, THE 2" X 4" X .250" MULLION (LENGTH = 108", OPENING WIDTH = 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, THE ADJUSTED OPENING WIDTH 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 9B 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 (6) 3/16" ULTRACON ANCHORS AT AN EDGE DISTANCE OF 2-1/2" GIVES AN ANCHOR CAPACITY OF 1050 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 LENGTH IS 36" AND THE OPENING HEIGHT IS 32"+72"+2" =106". REFERENCING SHEET 22, THE COLUMN USING TRAPEZOIDAL/TRIANGULAR LOADING MAY BE USED. FROM TABLE 9A, SHEET 13, THE 2" X 4" X .250" MULLION (@ LENGTH = 42", OPENING HEIGHT = 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 9B 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 2X5 ANGLE CLIPS WITH (4) 3/16" ULTRACON ANCHORS AT AN EDGE DISTANCE OF 1" GIVES AN ANCHOR CAPACITY OF 540 LBS WHICH IS GREATER, AND THEREFORE SUITABLE, FOR THE REQUIRED ANCHOR CAPACITY OF 521 LBS.

4) FOR THE U-CLIP IN THE HORIZONTAL MULLION TO VERTICAL MULLION, USE THE SAME ANCHOR CAPACITY OF 521 LBS. TABLE 9B FOR THE U-CLIP SHOWS THE ANCHOR CAPACITY IS 1074 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.

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Description: EXAMPLES
Series: N/A
Drawn By: J ROSOWSKI
Rev. By:
Date: 08/29/11
Scale: N/A
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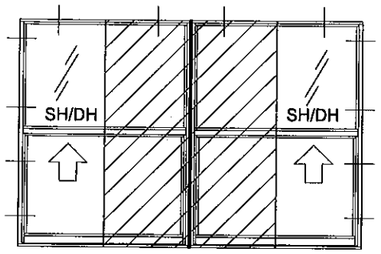
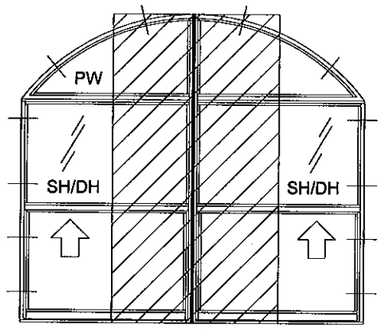
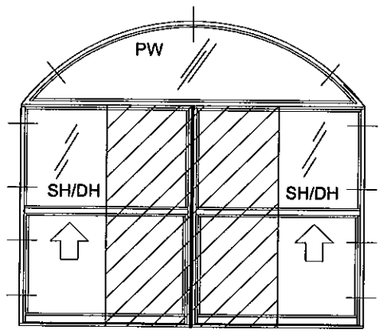
EXAMPLES OF RECTANGULAR LOADING:



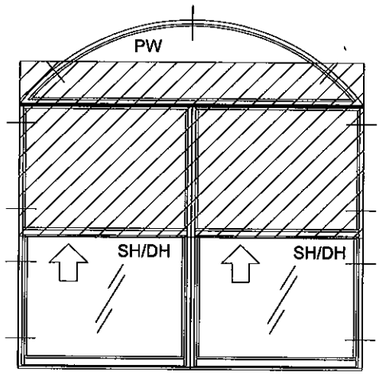
LOADING OF VERTICAL MULLION
SILL OF WINDOWS NOT ANCHORED



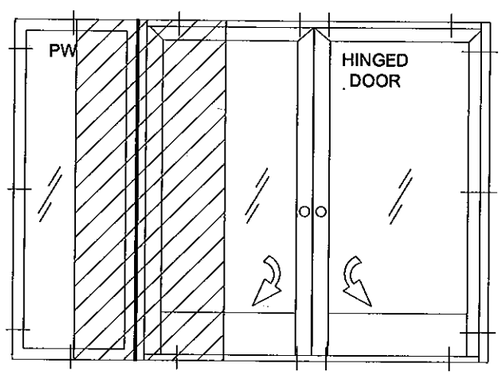
LOADING OF VERTICAL MULLION
WITH INTERSECTING HORIZONTAL MULLIONS



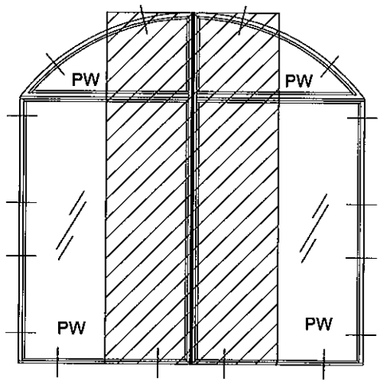
LOADING OF VERTICAL MULLION
SILL OF WINDOWS NOT ANCHORED



LOADING OF HORIZONTAL MULLION
WITH INTERSECTING VERTICAL MULLION

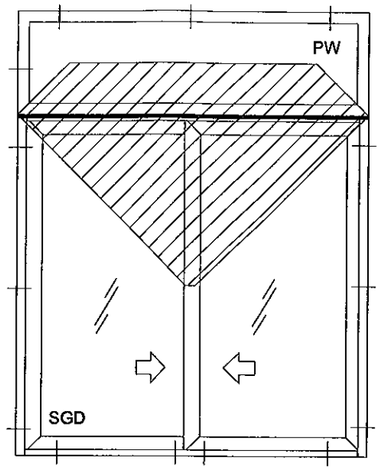


LOADING OF VERTICAL MULLION
PANEL OF HINGED DOOR IS NOT CAPTURED OR ANCHORED

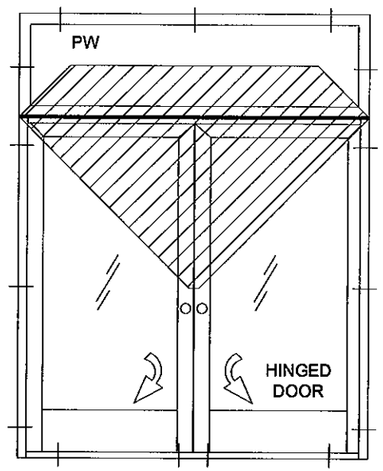


LOADING OF VERTICAL MULLION
WITH INTERSECTING HORIZONTAL MULLIONS

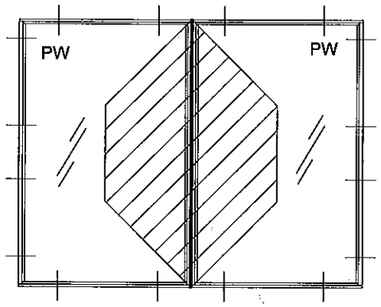
EXAMPLES OF TRAPEZOIDAL/TRIANGULAR LOADING:



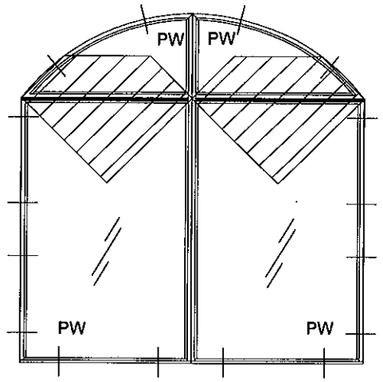
LOADING OF HORIZONTAL MULLION



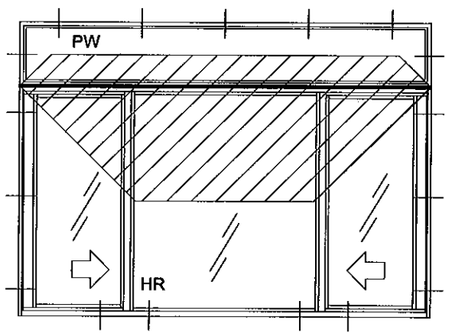
LOADING OF HORIZONTAL MULLION



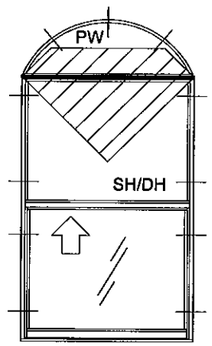
LOADING OF VERTICAL MULLION



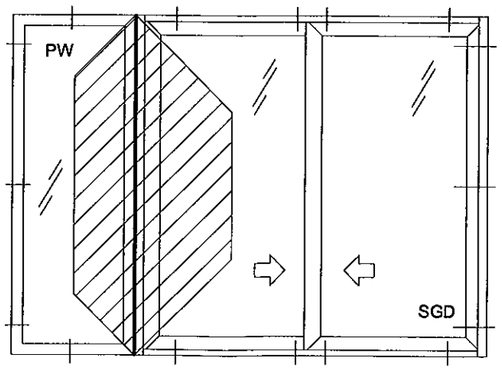
LOADING OF (2) HORIZONTAL MULLIONS



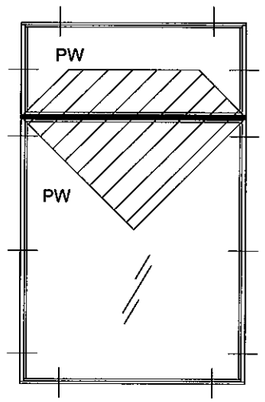
LOADING OF HORIZONTAL MULLION



LOADING OF HORIZONTAL
MULLION



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.

PGT®
1070 TECHNOLOGY DRIVE
N. VENICE, FL 34275
P.O. BOX 1529
NOKOMIS, FL 34274
FL CERT. OF AUTH.# 29296

Title: IMPACT-RESISTANT ALUMINUM TUBE MULLIONIONS
Description: LOADING EXAMPLES
Series: N/A
Drawing No. 6300JR
Sheet: 22 of 22
Rev:
Drawn By: J ROSOWSKI
Scale: N/A
Date: 08/29/11
Checked By:
Date:
Revision:
Rev. By:
Date:

PRODUCT REVISED
as complying with the Florida Building Code
Acceptance No 11-0922.01
Expiration Date Mar 22, 2016
By Manuel Perez
Miami Dade Product Control

ANTHONY LYNN MILLER
LICENSE
No. 58705
STATE OF FLORIDA
PROFESSIONAL ENGINEER
11/30/11

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