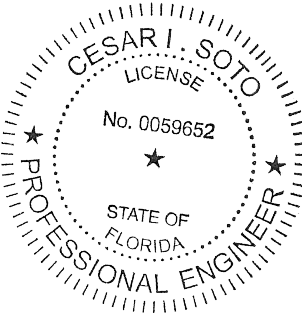


PRODUCT DEVELOPMENT

ML-100 ALUMINUM
TUBE MULLION - L.M.I.

PRODUCT APPROVAL DRAWINGS



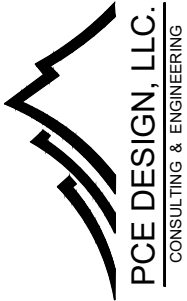
Digitally signed by Cesar I Soto
Contact Info: PE #59652
cesar.soto@paramountce.com
Date: 2025.01.28 15:39:20-05'00'

CONTACT: (305)698-0550 OR (786)877-2699

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY CESAR I. SOTO P.E. ON THE DATE ADJACENT TO THE SEAL.

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01/28/2025



6135 NW 167th St. STE E-1
Miami Gardends, FL 33015
Ph. (305) 698-0550

SERIES "ML 100"
ALUMINIUM TUBE
MULLION
LARGE MISSILE IMPACT (L.M.I.)

RC BES WINDOWS LLC
12900 NW 38th AVE.
OPA-LOCKA, FL 33054
Ph. 305-203-0780
Contact@BESmiami.com

DRAWINGS NUMBER
24-0197P.7

REVISIONS:

No.	Date	Description

DATE:
May 31st, 2024

DRAWN BY SM	SCALE N.T.S.
Sheet No. 00 OF 06	SHEET NO. Cover

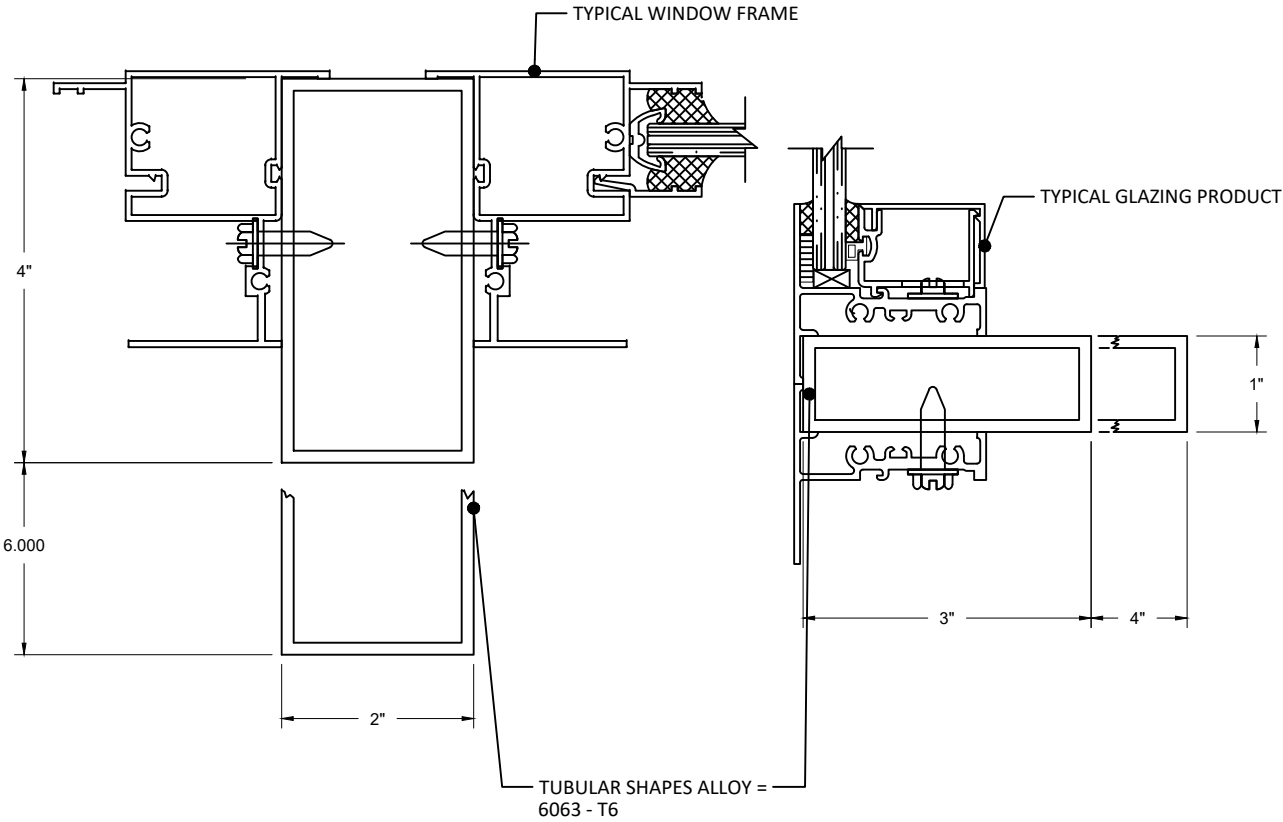
ML 100 ALUMINIUM TUBE MULLION

GENERAL NOTES

- A. THE PRODUCT SHOWN HEREIN IS DESIGNED AND TESTED TO COMPLY WITH THE FLORIDA BUILDING CODE 8TH EDITION 2023 (FBC 2023), INCLUDING HVHZ (HIGH VELOCITY HURRICANE ZONE)
- B. ADEQUACY OF THE EXISTING STRUCTURAL SUBSTRATE (METAL, CONCRETE, MASONRY, WOOD, ETC) NEEDS TO BE ABLE TO WITHSTANDING AND TRANSFERRING APPLIED PRODUCT LOADS TO THE FOUNDATION IS THE RESPONSIBILITY OF THE ENGINEER OR ARCHITECT OF RECORD FOR THE PROJECT OF INSTALLATION.
- C. WOODBUCKS EITHER 1BY OR 2BY (OPTIONAL) NEED TO BE DESIGNED AND SPECIFIED BY THE ARCHITECT OF RECORD OR THE ENGINEER OF RECORD AND NEED TO BE ABLE TO WITHSTAND ALL THE TRANSFERRED LOADS FROM THE GLAZING PRODUCT CORRECTLY.
- D. ALL ANCHORS NEED TO BE CORROSION RESISTANT, SEE PRODUCT APPROVAL FOR SPECIFIED ANCHORS REQUIRED.
- E. ALL DESIGN LOADS SHOWN IN APPROVAL ARE BASED ON ASD (ALLOWABLE STRESS DESIGN), TO GET ULTIMATE LOADS ASD LOADS NEED TO BE MULTIPLIED BY A FACTOR MULTIPLIER OF 1.6
- F. FINAL PRODUCT NEED TO HAVE LABEL.
- G. THESE GLAZING PRODUCTS ARE RATED FOR LARGE MISSILE IMPACT (L.M.I.) & SMALL MISSILE IMPACT (S.M.I.)
- H. ALL SITE SPECIFIC CONDITIONS IN ANY PROJECT NEEDS TO BE PROCURED BY A LICENSED REGISTERED ENGINEERED OR ARCHITECT.
- I. WHEN USING THIS PRODUCT, SHUTTERS ARE NOT NECESSARY.
- J. SHIMS THAT ARE USED WITH THIS SYSTEM NEED TO BE HIGH IMPACT, NON-METALLIC AND NON-COMPRESSIBLE.
- K. THIS PRODUCT APPROVAL COMPLIES WITH ALL WATER INFILTRATION REQUIREMENTS FOR IMPACT AND HVHZ SYSTEMS
- L. MANUFACTURER NEEDS TO SHOW PRODUCT LABEL IN ALL MANUFACTURED SYSTEMS.

MAXIMUM DESIGN LOADS

- A. SHEET 02 CONTAINS THE MULLION MAXIMUM ALLOWABLE DESIGN LOAD CAPACITY.
- B. SHEET 03 CONTAINS THE ANCHOR MAXIMUM ALLOWABLE DESIGN LOAD CAPACITY.
- C. ANCHOR TYPES ARE SHOWN ON SHEET 04. THIS SHEET SHOWS THE EDGE DISTANCE, EMBEDMENT, TYPE OF ANCHOR, AND ALL REQUIREMENTS ANCHORES NEED TO COMPLY WITH THESE SPECIFIATIONS



MULLIONS CONTAINING TYPICAL GLAZING PRODUCTS HORIZONTAL OR VERTICAL



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REVISIONS:		
No.	Date	Description

DATE: May 31st, 2024	
DRAWN BY SM	SCALE 6"=1'-0"
Sheet No. 01 OF 06	SHEET NO. G-1

CHART 1

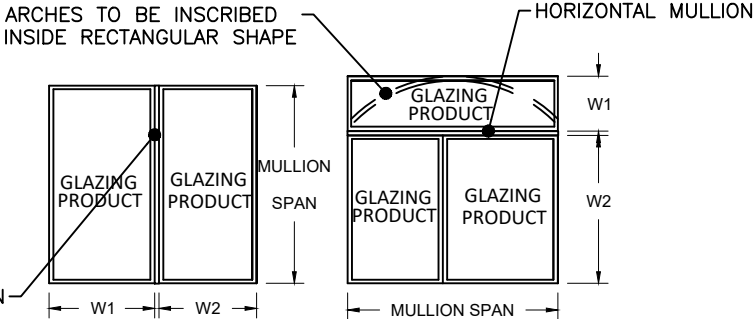
MULLIONS LOAD CAPACITY

DESIGN LOAD CAPACITY - PSF (TUBE MULLIONS)							
WINDOW DIMS.		1 X 3 STD.	1 X 4 STD.	2 X 4 STD.	1-1/2 X 4-1/2 CUSTO M	2 X 6 STD.	2 X 6 HEAVY
WIDTH (W)	MULL SPAN						
19 - 1/8"	38 - 3/8"	150.00	150.00	150.00	150.00	150.00	150.00
26 - 1/2"		150.00	150.00	150.00	150.00	150.00	150.00
30"		150.00	150.00	150.00	150.00	150.00	150.00
37"		150.00	150.00	150.00	150.00	150.00	150.00
42"		150.00	150.00	150.00	150.00	150.00	150.00
48"		140.94	150.00	150.00	150.00	150.00	150.00
54"		125.28	150.00	150.00	150.00	150.00	150.00
60"		112.75	150.00	150.00	150.00	150.00	150.00
66"		102.50	150.00	150.00	150.00	150.00	150.00
72"		93.96	149.57	150.00	150.00	150.00	150.00
19 - 1/8"	50 - 5/8"	150.00	150.00	150.00	150.00	150.00	150.00
26 - 1/2"		144.27	150.00	150.00	150.00	150.00	150.00
30"		127.44	150.00	150.00	150.00	150.00	150.00
37"		103.33	150.00	150.00	150.00	150.00	150.00
42"		91.03	144.68	150.00	150.00	150.00	150.00
48"		79.65	126.59	150.00	150.00	150.00	150.00
54"		70.80	112.53	150.00	150.00	150.00	150.00
60"		63.72	101.27	150.00	150.00	150.00	150.00
66"		57.93	92.07	142.44	150.00	150.00	150.00
72"		53.10	84.40	130.57	150.00	150.00	150.00
19 - 1/8"	60"	140.68	150.00	150.00	150.00	150.00	150.00
26 - 1/2"		101.53	150.00	150.00	150.00	150.00	150.00
30"		89.68	142.39	150.00	150.00	150.00	150.00
37"		72.72	115.45	150.00	150.00	150.00	150.00
42"		64.06	101.70	150.00	150.00	150.00	150.00
48"		56.05	88.99	138.47	150.00	150.00	150.00
54"		49.82	79.10	123.08	150.00	150.00	150.00
60"		44.84	71.19	110.77	150.00	150.00	150.00
66"		40.77	64.72	100.70	150.00	150.00	150.00
72"		37.37	59.33	92.31	150.00	150.00	150.00
19 - 1/8"	63"	123.27	150.00	150.00	150.00	150.00	150.00
26 - 1/2"		88.97	145.64	150.00	150.00	150.00	150.00
30"		78.59	128.65	150.00	150.00	150.00	150.00
37"		63.72	104.31	150.00	150.00	150.00	150.00
42"		56.13	91.89	143.23	150.00	150.00	150.00
48"		49.12	80.41	125.33	150.00	150.00	150.00
54"		43.66	71.47	111.40	150.00	150.00	150.00
60"		39.29	64.32	100.26	150.00	150.00	150.00
66"		35.72	58.48	91.15	150.00	150.00	150.00
72"		32.74	53.60	83.55	150.00	150.00	150.00

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

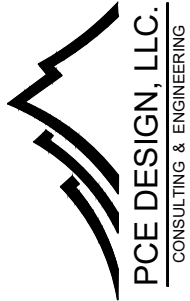
DESIGN LOAD CAPACITY - PSF (TUBE MULLIONS)							
WINDOW DIMS.		1 X 3 STD.	1 X 4 STD.	2 X 4 STD.	1-1/2 X 4-1/2 CUSTO M	2 X 6 STD.	2 X 6 HEAVY
WIDTH (W)	MULL SPAN						
19 - 1/8"	74 - 1/4"	75.30	143.28	150.00	150.00	150.00	150.00
26 - 1/2"		54.35	103.41	150.00	150.00	150.00	150.00
30"		48.00	91.34	143.28	150.00	150.00	150.00
37"		38.92	74.06	116.17	150.00	150.00	150.00
42"		34.29	65.25	102.34	150.00	150.00	150.00
48"		30.00	57.09	89.55	150.00	150.00	150.00
54"		26.67	50.75	79.60	145.38	146.34	150.00
60"		24.00	45.67	71.64	130.84	131.70	150.00
66"		21.82	41.52	65.13	118.94	119.73	150.00
72"		-	38.06	59.70	109.03	109.75	150.00
19 - 1/8"	84"	52.01	110.69	150.00	150.00	150.00	150.00
26 - 1/2"		37.53	79.89	117.58	150.00	150.00	150.00
30"		33.15	70.57	103.87	150.00	150.00	150.00
37"		26.88	57.22	84.22	150.00	150.00	150.00
42"		23.68	50.40	74.19	144.55	146.02	150.00
48"		20.72	44.10	64.92	126.48	127.77	150.00
54"		-	39.20	57.70	112.43	113.57	150.00
60"		-	35.28	51.93	101.18	102.21	150.00
66"		-	32.08	47.21	91.98	92.92	150.00
72"		-	29.40	43.28	84.32	85.18	150.00
19 - 1/8"	96"	34.84	74.72	109.15	150.00	150.00	150.00
26 - 1/2"		25.14	53.92	78.77	150.00	150.00	150.00
30"		22.21	47.63	69.58	150.00	150.00	150.00
37"		-	38.62	56.42	124.13	125.92	150.00
42"		-	34.02	49.70	109.35	110.93	150.00
48"		-	29.77	43.49	95.68	97.06	150.00
54"		-	26.46	38.66	85.05	86.28	150.00
60"		-	23.82	34.79	76.54	77.65	142.14
66"		-	21.65	31.63	69.59	70.59	129.21
72"		-	-	28.99	63.79	64.71	118.45
19 - 1/8"	108"	24.47	52.48	76.66	150.00	150.00	150.00
26 - 1/2"		-	37.87	55.32	123.78	137.88	150.00
30"		-	33.45	48.87	109.34	121.80	150.00
37"		-	27.13	39.62	88.66	98.76	150.00
42"		-	23.90	34.91	78.10	87.00	150.00
48"		-	20.91	30.54	68.34	76.12	139.31
54"		-	-	27.15	60.75	67.67	123.83
60"		-	-	24.43	54.67	60.90	111.45
66"		-	-	22.21	49.70	55.36	101.32
72"		-	-	20.36	45.56	50.75	92.87

DESIGN LOAD CAPACITY - PSF (TUBE MULLIONS)							
WINDOW DIMS.		1 X 3 STD.	1 X 4 STD.	2 X 4 STD.	1-1/2 X 4-1/2 CUSTO M	2 X 6 STD.	2 X 6 HEAVY
WIDTH (W)	MULL SPAN						
19 - 1/8"	120"	-	38.26	55.88	125.04	150.00	150.00
26 - 1/2"		-	27.61	40.33	90.24	110.90	150.00
30"		-	24.39	35.63	79.71	97.96	150.00
37"		-	-	28.89	64.63	79.43	145.33
42"		-	-	25.45	56.94	69.97	128.03
48"		-	-	22.27	49.82	61.23	112.02
54"		-	-	-	44.28	54.42	99.58
60"		-	-	-	39.86	48.98	89.62
66"		-	-	-	36.23	44.53	81.47
72"		-	-	-	33.21	40.82	74.68
19 - 1/8"	132"	-	28.74	41.99	93.94	116.75	150.00
26 - 1/2"		-	20.74	30.30	67.80	84.26	150.00
30"		-	-	26.77	59.89	74.43	136.73
37"		-	-	21.70	48.56	60.35	110.86
42"		-	-	-	42.78	53.16	97.66
48"		-	-	-	37.43	46.52	85.46
54"		-	-	-	33.27	41.35	75.96
60"		-	-	-	29.94	37.21	68.36
66"		-	-	-	27.22	33.83	62.15
72"		-	-	-	24.95	31.01	56.97
19 - 1/8"	144"	-	22.14	32.34	72.36	89.93	150.00
26 - 1/2"		-	-	23.34	52.22	64.90	119.23
30"		-	-	20.62	46.13	57.33	105.32
37"		-	-	-	37.40	46.48	85.39
42"		-	-	-	32.95	40.95	75.23
48"		-	-	-	28.83	35.83	65.82
54"		-	-	-	25.63	31.85	58.51
60"		-	-	-	23.06	28.66	52.66
66"		-	-	-	20.97	26.06	47.87
72"		-	-	-	-	23.89	43.88



TYPICAL MULLION ARRANGEMENTS

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



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DRAWINGS NUMBER

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SM

SCALE
NTS

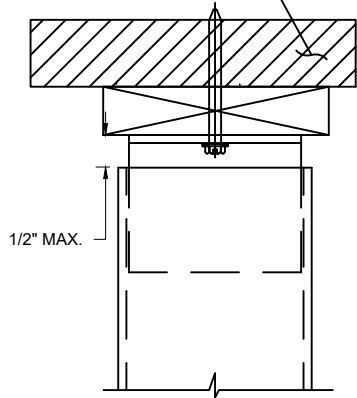
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SHEET NO.

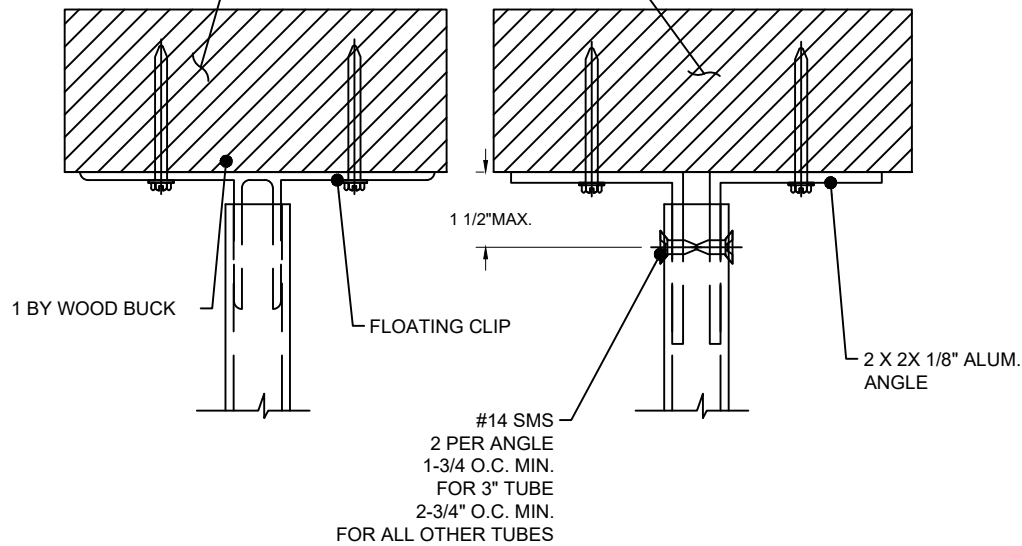
02 OF 06

D-1

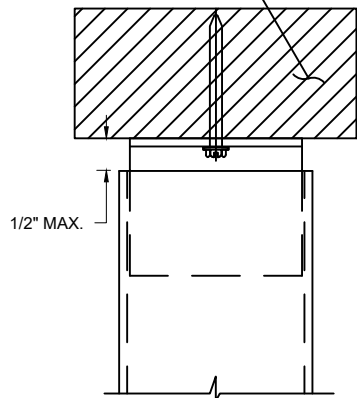
SUBSTRATE BY OTHERS
TYPE OF ANCHOR AS PER
TYPICAL ANCHOR NOTES
SEE SHEET D-3



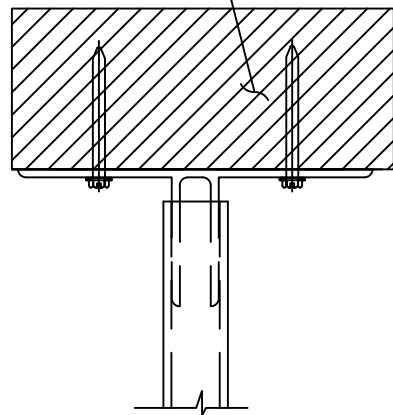
SUBSTRATE BY OTHERS
TYPE OF ANCHOR AS PER
TYPICAL ANCHOR NOTES
SEE SHEET D-3



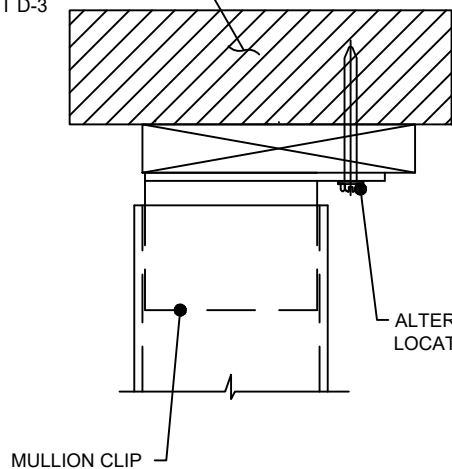
SUBSTRATE BY OTHERS
TYPE OF ANCHOR AS PER
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SEE SHEET D-3



SUBSTRATE BY OTHERS
TYPE OF ANCHOR AS PER
TYPICAL ANCHOR NOTES
SEE SHEET D-3



SUBSTRATE BY OTHERS
TYPE OF ANCHOR AS PER
TYPICAL ANCHOR NOTES
SEE SHEET D-3



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

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

SUBSTRATE NOTES:

- SUBSTRATE IS BY ENGINEER OF RECORD (E.O.R.) OR ARCHITECT OF RECORD (A.O.R.)
- THIS GLAZING SYSTEM CAN IS APPROVED TO BE ANCHORED TO:
 - a. CONCRETE ($f'_c=3000$ PSI MIN.)
 - b. METAL (STEEL / ALUMINUM)
 - c. 1 BY OR 2 BY WOOD BUCK OR WOOD STRUCTURE

TYPICAL ANCHORS:

TYPE 'A2'- **1/4" DIA, HILTI KWIK CON II+**
DIRECTLY INTO CONCRETE OR BLOCK STRUCTURES;
1-1/4" MIN. EMBEDMENT INTO CONCRETE/ BLOCKS
1-3/4" MIN. EDGE DISTANCE
2 PER CLIP (1 ON EACH WING) - 1 PER ANGLE
DIRECTLY INTO 1BY OR 2 BY WOOD ;
1-1/2" MIN. WOOD EMBEDMENT
1" MIN. EDGE DISTANCE
2 PER CLIP (1 ON EACH WING) - 1 PER ANGLE
ALTERNATIVE OPTION;
1-3/4" MIN. EDGE DISTANCE

TYPE 'A4'- **1/4" DIA, HILTI KWIK CON II+**
DIRECTLY INTO CONCRETE OR BLOCK STRUCTURES;
1-1/4" MIN. EMBEDMENT INTO CONCRETE/ BLOCKS
1-3/4" MIN. EDGE DISTANCE
3" MIN. ANCHOR DISTANCE
4 PER CLIP (2 ON EACH WING) - 2 PER ANGLE
DIRECTLY INTO 1BY OR 2BY WOOD ;
1-1/2" MIN. WOOD EMBEDMENT
1" MIN. EDGE DISTANCE
1" MIN. ANCHOR DISTANCE
4 PER CLIP (2 ON EACH WING) - 2 PER ANGLE

TYPE 'AA2'- **1/4" DIA, HILTI KWIK CON II+**
DIRECTLY INTO CONCRETE OR FILLED BLOCK STRUCTURES;
1-3/4" MIN. EMBEDMENT INTO CONCRETE/ BLOCKS
2-1/2" MIN. EDGE DISTANCE
3" MIN. ANCHOR DISTANCE
2 PER CLIP (1 ON EACH WING) - 1 PER ANGLE
ALTERNATIVE OPTION;
2-1/2" MIN. EDGE DISTANCE

TYPE 'AA4'- **1/4" DIA, HILTI KWIK CON II+**
DIRECTLY INTO CONCRETE OR FILLED BLOCK STRUCTURES;
1-3/4" MIN. EMBEDMENT INTO CONCRETE/ BLOCKS
2-1/2" MIN. EDGE DISTANCE
3" MIN. ANCHOR DISTANCE
4 PER CLIP (2 ON EACH WING) - 2 PER ANGLE

TYPE 'B2'- **1/4" DIA, TEKS**
DIRECTLY INTO STEEL/ ALUM METAL STRUCTURES;
3/4" MIN. EDGE DISTANCE
2 PER CLIP (1 ON EACH WING) - 1 PER ANGLE

TYPE 'B4'- **1/4" DIA, TEKS**
DIRECTLY INTO STEEL/ ALUM METAL STRUCTURES;
3/4" MIN. EDGE DISTANCE
4 PER CLIP (2 ON EACH WING) - 2 PER ANGLE



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SCALE

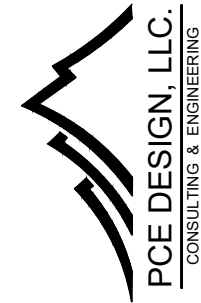
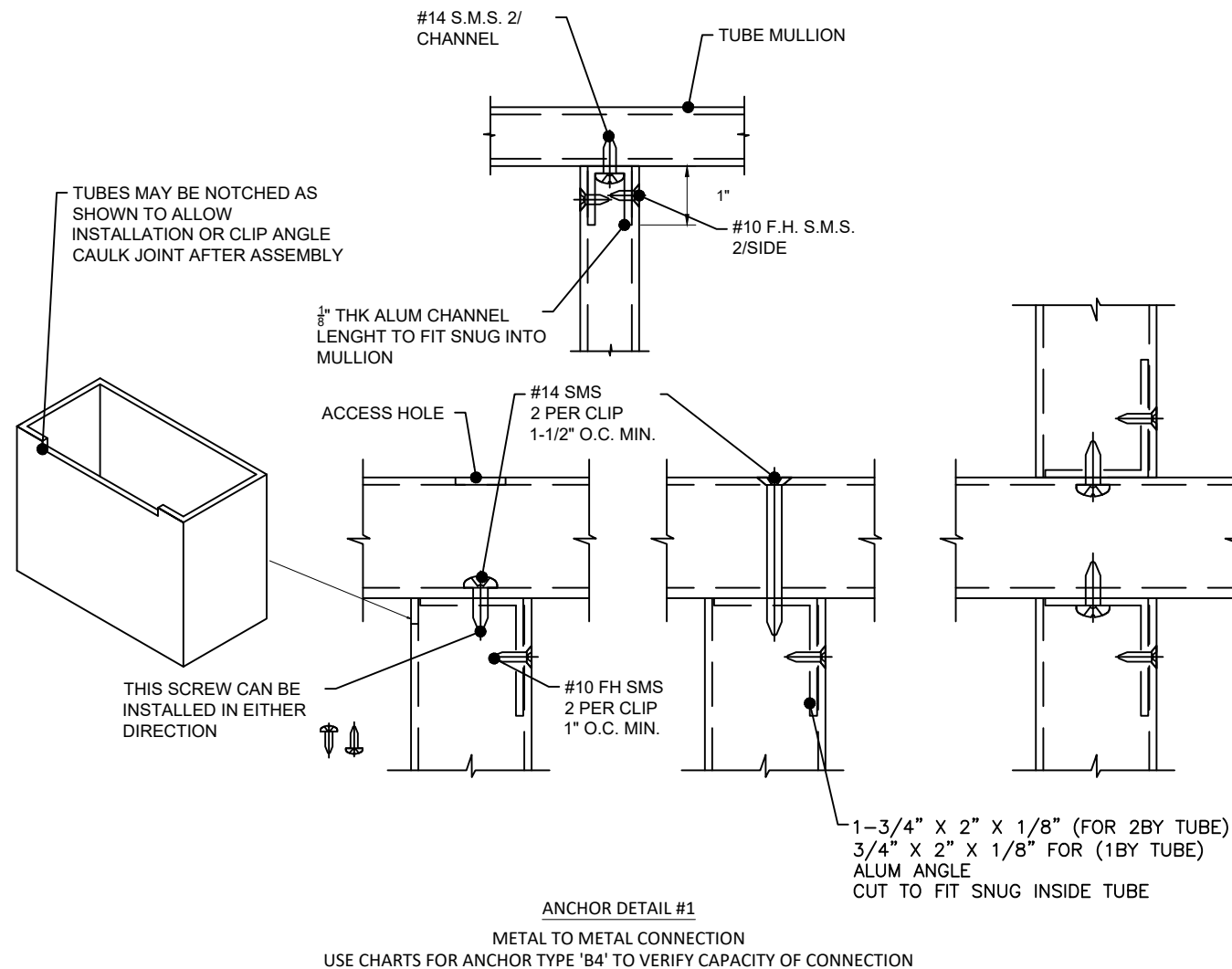
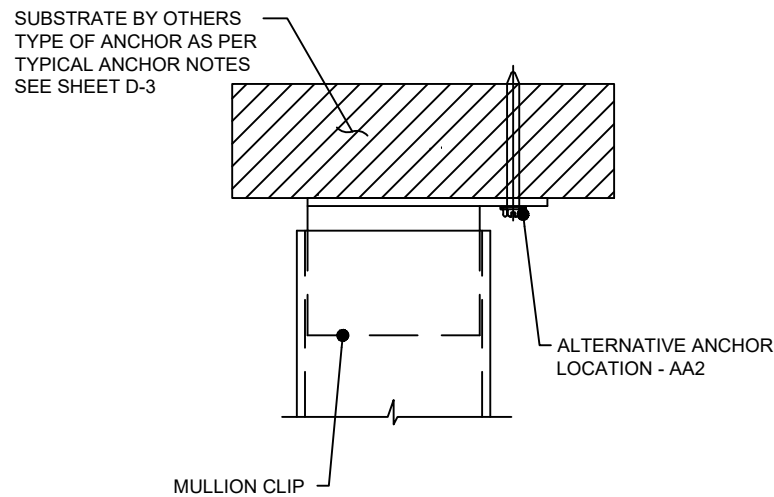
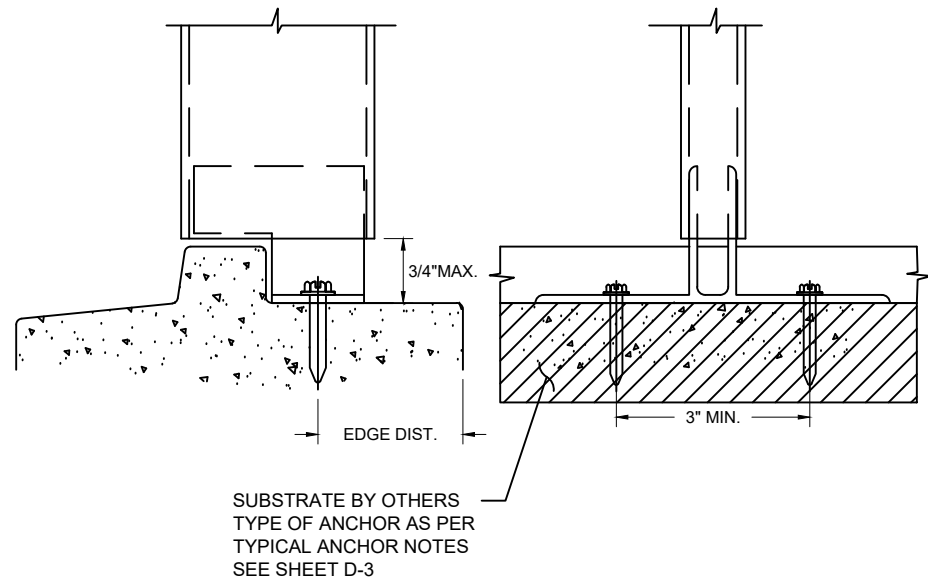
4"=1'-0"

Sheet No.

04 OF 06

SHEET NO.

D-3



6135 NW 167th St. STE E-1
Miami Gardends, FL 33015
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SM

SCALE

4" = 1'-0"

Sheet No.

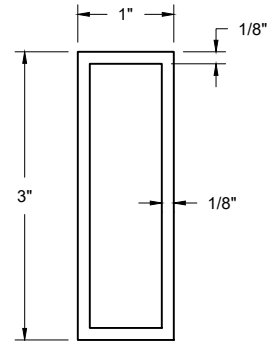
05 OF 06

SHEET NO.

D-4

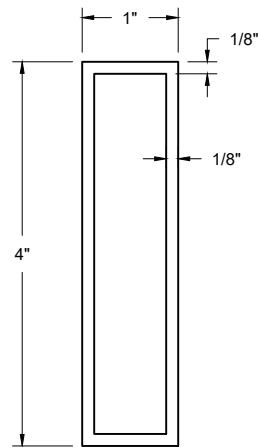
MULLION EXTRUSIONS

1 1X3 STD. MULLION



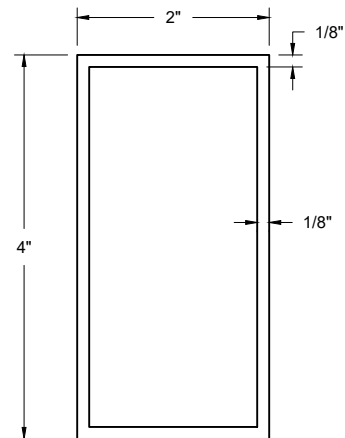
Ix	IN^4	Sx	IN^3
0.950		0.634	

2 1X4 STD. MULLION



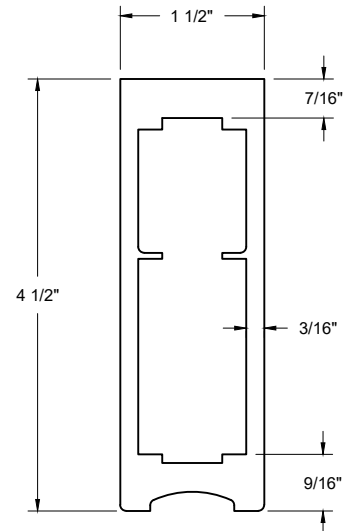
Ix	IN^4	Sx	IN^3
2.037		1.019	

3 2X4 STD. MULLION



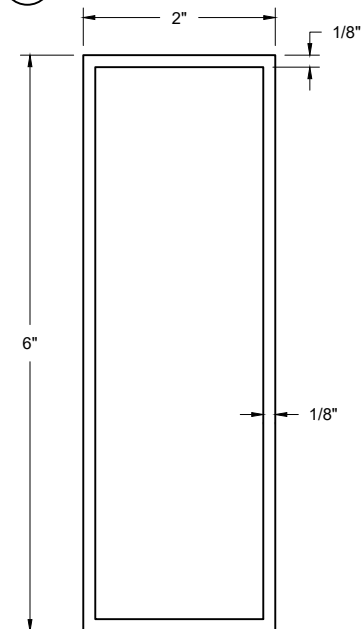
Ix	IN^4	Sx	IN^3
2.976		1.488	

4 1-1/2 X 4-1/2 COSTUM. MULLION



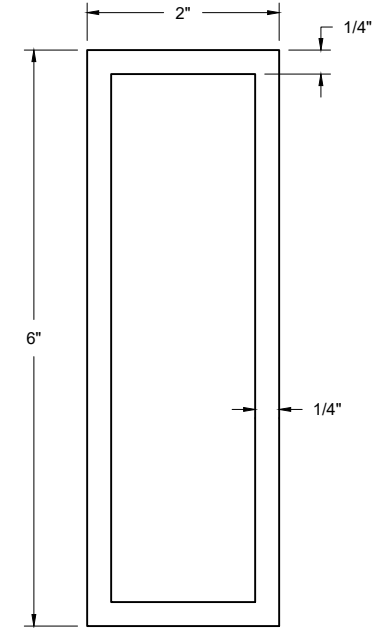
Ix	IN^4	Sx	IN^3
6.659		2.878	

5 2X6 STD. MULLION



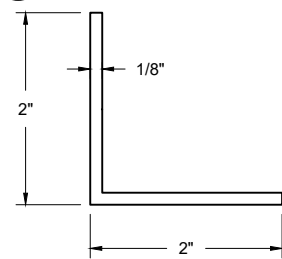
Ix	IN^4	Sx	IN^3
8.276		2.759	

6 2X6 HEAVY MULLION

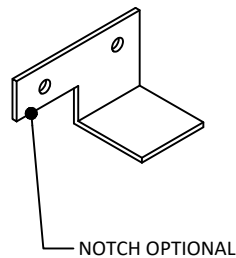
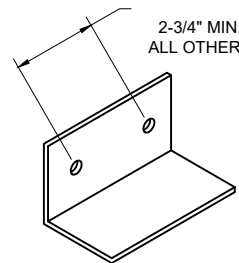


Ix	IN^4	Sx	IN^3
15.203		5.068	

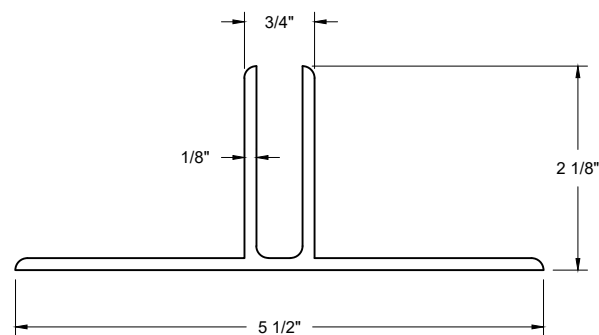
7 ANGLE CLIP



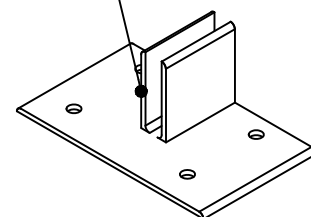
1-3/4" MIN.
FOR 3" TUBES
2-3/4" MIN.
ALL OTHERS



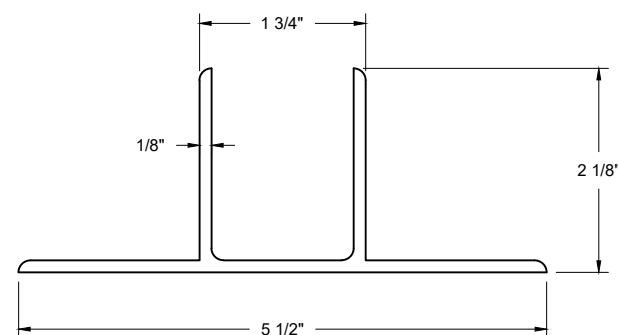
8 MULLION CLIP



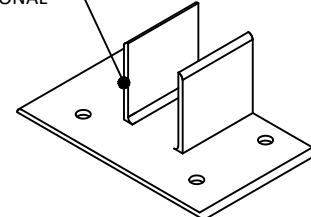
NOTCH OPTIONAL



9 MULLION CLIP



NOTCH OPTIONAL



6135 NW 167th St. STE E-1
Miami Gardends, FL 33015
Ph. (305) 698-0550

SERIES "ML 100"
ALUMINIUM TUBE
MULLION
LARGE MISSILE IMPACT (L.M.I.)

RC BES WINDOWS LLC

12900 NW 38th AVE.
OPA-LOCKA, FL 33054
Ph. 305-203-0780
Contact@BESmiami.com

DRAWINGS NUMBER

24-0197P.7

REVISIONS:

No.	Date	Description

DATE:
May 31st, 2024

DRAWN BY
SM

SCALE
6"=1'-0"

Sheet No.

SHEET NO.

06 OF 06

E-1