GENERAL NOTES: (IBC 2006 & IRC 2006 w/ 2006 TEXAS REVISIONS)

1- DEFINITION: THIS PRODUCT IS A HURRICANE PROTECTION DEVICE; DESIGNED, CONSTRUCTED AND ERECTED TO EASILY ENCLOSE AN AREA, PROVIDING PROTECTION FROM HURRICANE FORCE WINDS AND WIND BORNE DEBRIS WITHIN THE ALLOWABLE DESIGNED PRESSURES AND LIMITATIONS STATED IN THIS APPROVAL.

2- POSTING: A PERMANENT LABEL SHALL BE PROVIDED AS PER IBC 2006 SECTION 1703.5. IT SHALL BE PLACED ON A READILY VISIBLE LOCATION AND A MINIMUM OF ONE LABEL PER OPENING.

3- GLASS SEPARATION: PRODUCT IS QUALIFIED AS "NON POROUS", THEREFORE GLAZING SEPARATION IS NOT REQUIRED WITH EXCEPTION FOR THE FOLLOWING LOCATIONS:
3.1- WIND ZONE 4 AS DEFINED IN ASTM E 1996 (LOCATIONS WITH WIND GUST GREATER THAN 140 MPH)
3.2- ESSENTIAL FACILITIES AS DEFINED IN ASCE 7
FOR THE ABOVE LOCATIONS THE PRODUCT MUST BE SEPARATED 20" FROM GLAZING AREAS.

4- LOADS: DESIGNED LOAD CALCULATED BASED ON THE ASCE 7 AND PROVIDED BY A PROFESSIONAL ARCHITECT OR ENGINEER FOR EACH SPECIFIC PROJECT. THE CALCULATED DESIGNED PRESSURE MUST NOT EXCEED THE ALLOWABLE PRESSURES FOR EACH SHUTTER COMPONENT TO BE USED.

5- MATERIAL: ALL EXTRUDED ALUMINUM SHAPES SHALL BE MADE OF 6063-T6 OR AS NOTED.

6- FASTENERS: ASSEMBLY SCREWS AND ANCHORS SHALL BE CORROSION RESISTANT AS SPECIFIED IN SECTION R325 (IRC 2006 TEXAS REVISIONS) AND CHAPTER 17 (IBC 2006 TEXAS REVISIONS). ANCHORS ARE TO BE SELECTED BASED ON AREA LOCATION (SEAWARD, INLAND I OR INLAND II).

7- REINFORCEMENTS SUCH AS MULLIONS WERE DESIGNED BY RATIONAL ANALYSIS AND ARE PART OF THESE DRAWINGS. DUE TO MANY VARIATIONS OF REINFORCEMENTS, LOADS AND SHUTTER DIMENSIONS BECOME IMPRACTICAL ADDRESSING ALL CONDITIONS IN ONE SET OF DRAWINGS. THE CONDITIONS ADDRESSED IN THE PROPOSED DRAWINGS HAVE CONSERVATIVE LIMITATIONS IN ORDER TO FACILITATE THE DESIGN. SITE SPECIFIC CONDITIONS CAN BE ADDRESSED ON A JOB BASIS PROVIDED PROPER ENGINEERING BASED ON THE ALUMINUM DESIGN MANUAL.

8- USE: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, ARCHITECT OR ENGINEER OF RECORD TO VERIFY THE FOLLOWING:
8.1- THE STABILITY OF THE STRUCTURE WHERE THE PRODUCT IS TO BE ATTACHED INSURING PROPER ANCHORAGE.
8.2- THE SITE SPECIFIC PROJECT CRITERIA, SUCH AS BUT NOT LIMITED TO, LOCAL CODE REQUIREMENTS, DESIGNED PRESSURES ETC.
8.3- THAT THIS APPROVAL IS ADEQUATE TO THE SPECIFIC PROJECT.

9- INCREASE IN ALLOWABLE STRESS BY 33 1/3% HAVE NOT BEEN USED IN THE DESIGN OF THE ANCHORS FOR THIS PRODUCT APPROVAL.

CODE AND STANDARD COMPLIANCE:

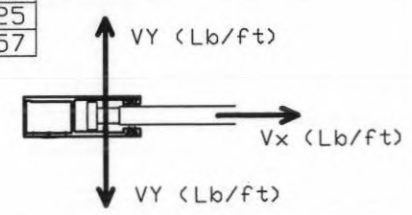
INTERNATIONAL BUILDING CODE (IBC 2006) WITH TEXAS REVISIONS
INTERNATIONAL RESIDENTIAL CODE (IRC 2006) WITH TEXAS REVISIONS
ASTM E330, E1886, E1996 (LEVEL D MISSILE)

TABLE 1 - ALLOWABLE DESIGNED PRESSURE

SW MAX.	ALLOWABLE WIND PRESSURES	
	POSITIVE	NEGATIVE
124"	+ 40.0	- 40.0
109"	+ 50.0	- 50.0
94"	+ 60.0	- 60.0
82"	+ 80.0	- 80.0
64"	+110.0	-110.0

TRACK REACTION (LB/FT)

	SHUTTER WIDTH (SW) OR SHUTTER MODULE (SM)									
LOAD	64		82		94		109		124	
Psf	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy
30	62	74	359	96	540	111	443	130	361	149
40	149	99	496	129	712	149	516	174	397	199
45	187	111	557	145	789	167	545	195		
50	220	123	614	161	862	186	571	217		
55	251	135	667	177	930	204				
60	280	148	716	193	993	223				
65	306	160	763	209						
70	330	172	807	225						
80	373	197	887	257						
90	410	222								
100	442	246								
105	457	259								
110	471	271								



CONTRACTOR TO VERIFY ADEQUACY OF STRUCTURE FOR MAXIMUM IMPOSED LOADS VY AND Vx

DESIGN SCHEDULE	
COMPONENT	SHEET
SLAT ALLOWABLE PRESSURE - TABLE 1	1
TRACK ANCHORAGE	4, 5, 6 & 7
EQUALLY SPACED MULLIONS	8 & 9
UNEQUALLY SPACED AND END MULLIONS	10 & 11

NOTES:
1-ALLOWABLE DESIGNED PRESSURE FOR MULTIPLE SHUTTERS ARE FUNCTION OF THE LOWEST ALLOWABLE DESIGNED LOAD FOR THE SLATS, MULLIONS AND ANCHORAGE.
2- DESIGNED PRESSURES MUST NOT EXCEED 110 PSF.
3- SHUTTER SIZE (SW) MUST NOT EXCEED 124".
4- FOR MULTIPLE SHUTTERS USE TABLE 1 TO VERIFY MAXIMUM ALLOWABLE PRESSURE THAN USE TABLE 6 AND 7 TO SELECT INTERMEDIATE AND END MULLIONS AND SELECT PROPER MULLION ANCHORAGE

Manufacturer:
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FORT MYERS, FL 33966
Tel.: (239) 278-3066
Fax: (239) 278-5977

PRODUCT:

ES 44 SUP

EXTRUDED ALUMINUM ROLL-UP SHUTTER

Engineering:
EngCo Inc.
CR 11234
5595 ORANGE DR. SUITE 201
DAVIE - FLORIDA 333314
www.engcoinc.com

STATE OF TEXAS
PEDRO FIGUEIREDO
102937
LICENSED PROFESSIONAL ENGINEER
OCT 02 2013

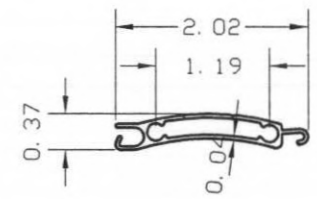
Engineer Seal
Pedro De Figueiredo
TEXAS - PE 102937

Date: 03/18/13
Scale: NA
Design by: PPMF

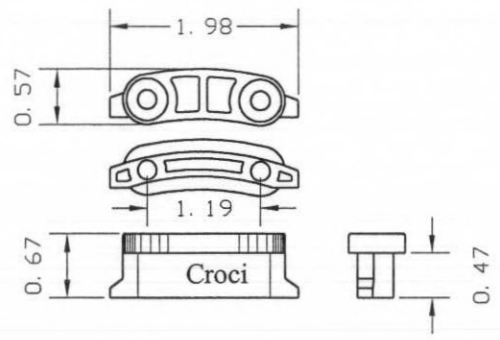
REVISION:
REPLACE DWG 09-107

Drawing Number
13-069

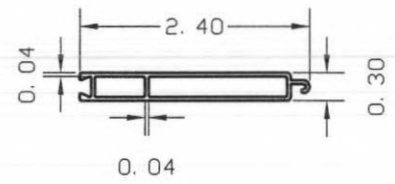
PRODUCT COMPONENTS



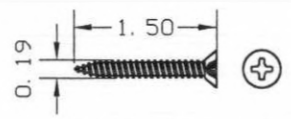
A- ES44SUP SLAT
6063-T5 EXTRUDED ALUMINUM



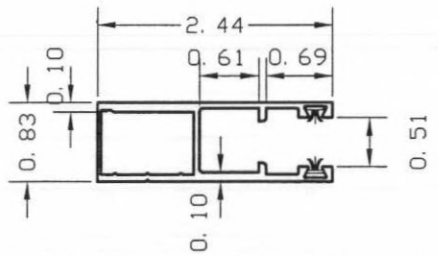
A1- TLES 44 SUP
SLAT NYLON RETAINER
SECURED TO SLAT BY
(2) #10X1 1/2" PFHSMS



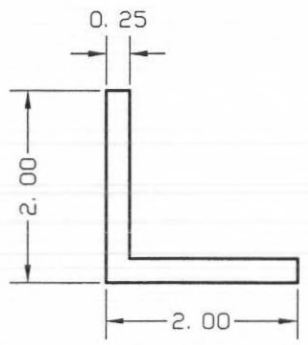
B- TE7X56U END SLAT
6063-T6 EXTRUDED ALUMINUM



D- SLAT RETENTION SCREW
#10x1-1/2" 18-8 SS PFH
SHEET METAL SCREW

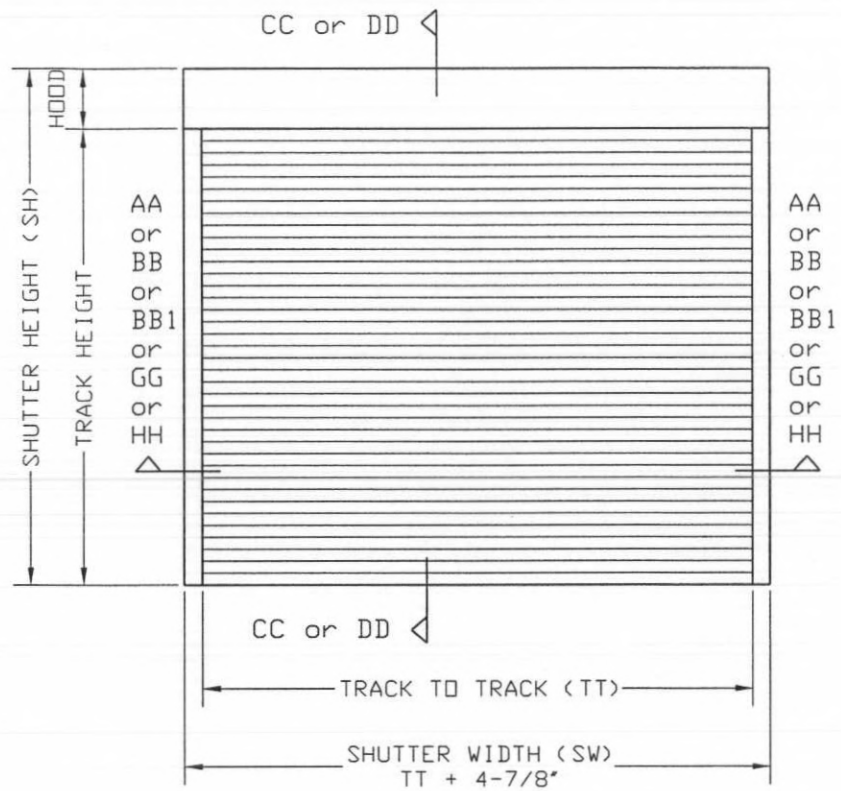


C- GE62X21SUP GUIDE RAIL W/ FELT
6063-T5 EXTRUDED ALUMINUM

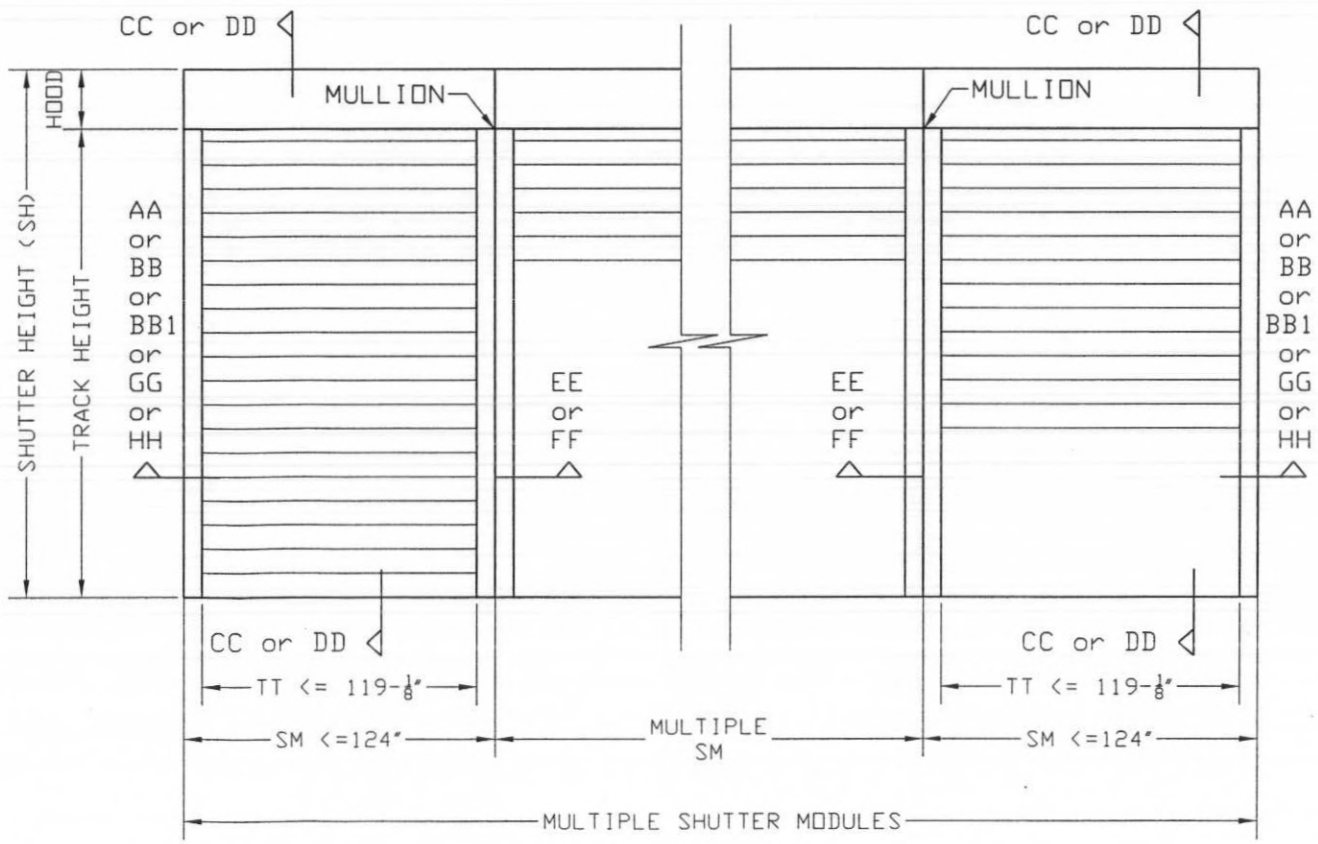


E- INSET SUPPORT ANGLE
EXTRUDED ALUMINUM
6061-T6 or 6005-T5

TYPICAL SINGLE UNIT ELEVATION



TYPICAL MULTIPLE UNITS ELEVATION



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PRODUCT:

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OCT 02 2013

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Pedro De Figueiredo
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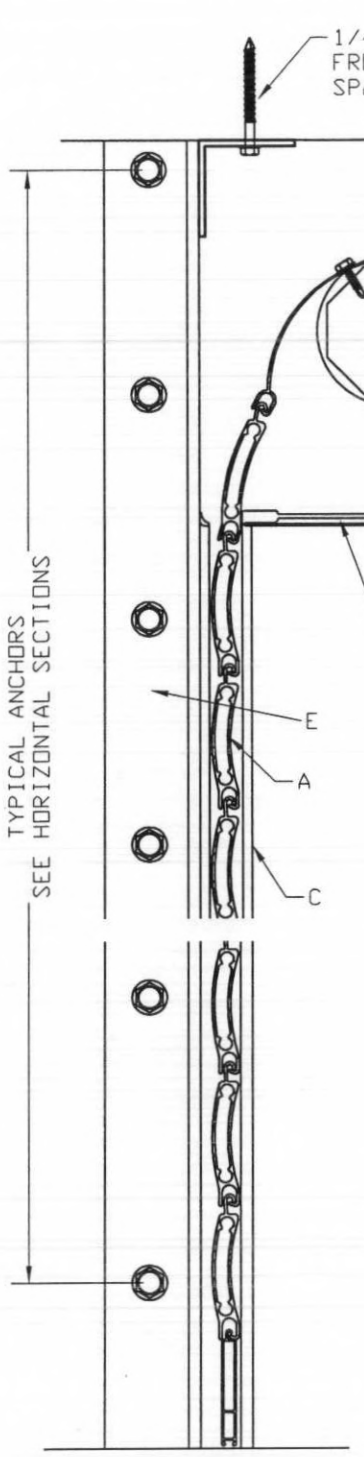
Date: 03/18/13
Scale: NA
Design by: PPMF

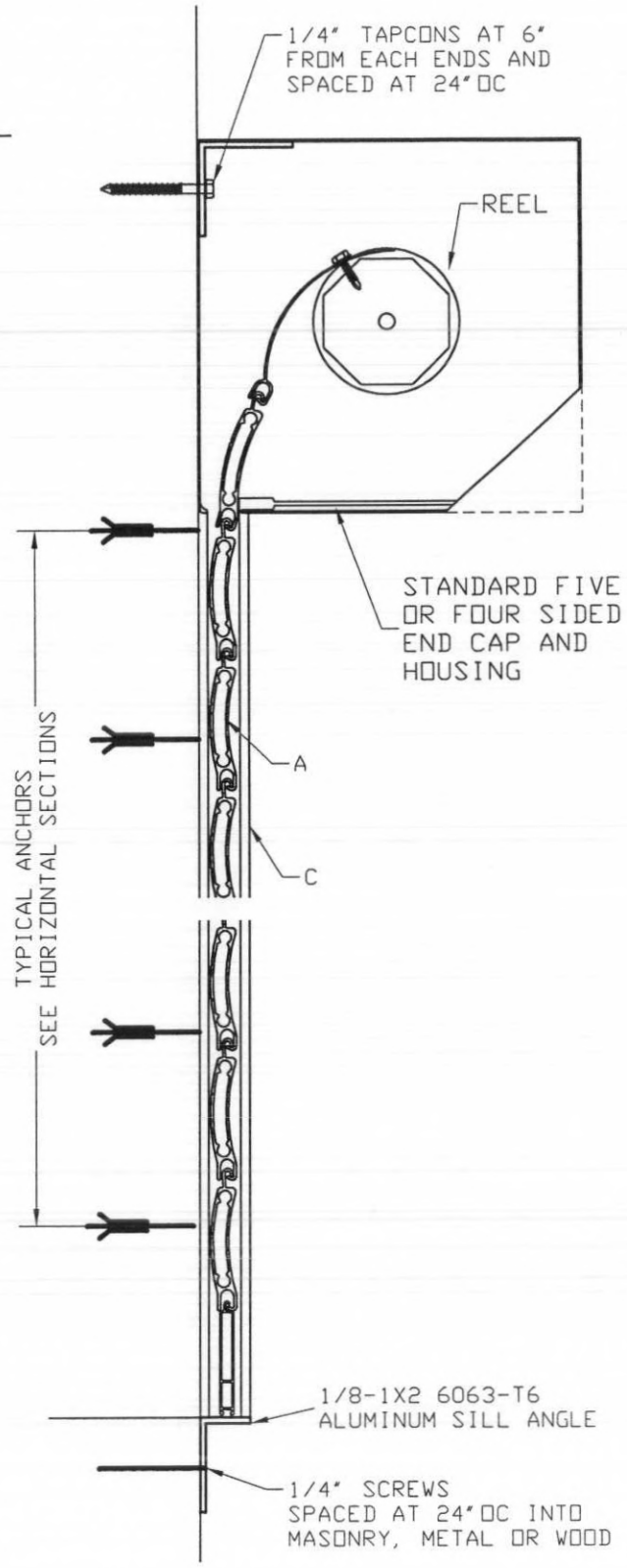
REVISION:
REPLACE DWG 09-107

Drawing Number
13-069

TYPICAL VERTICAL SECTIONS

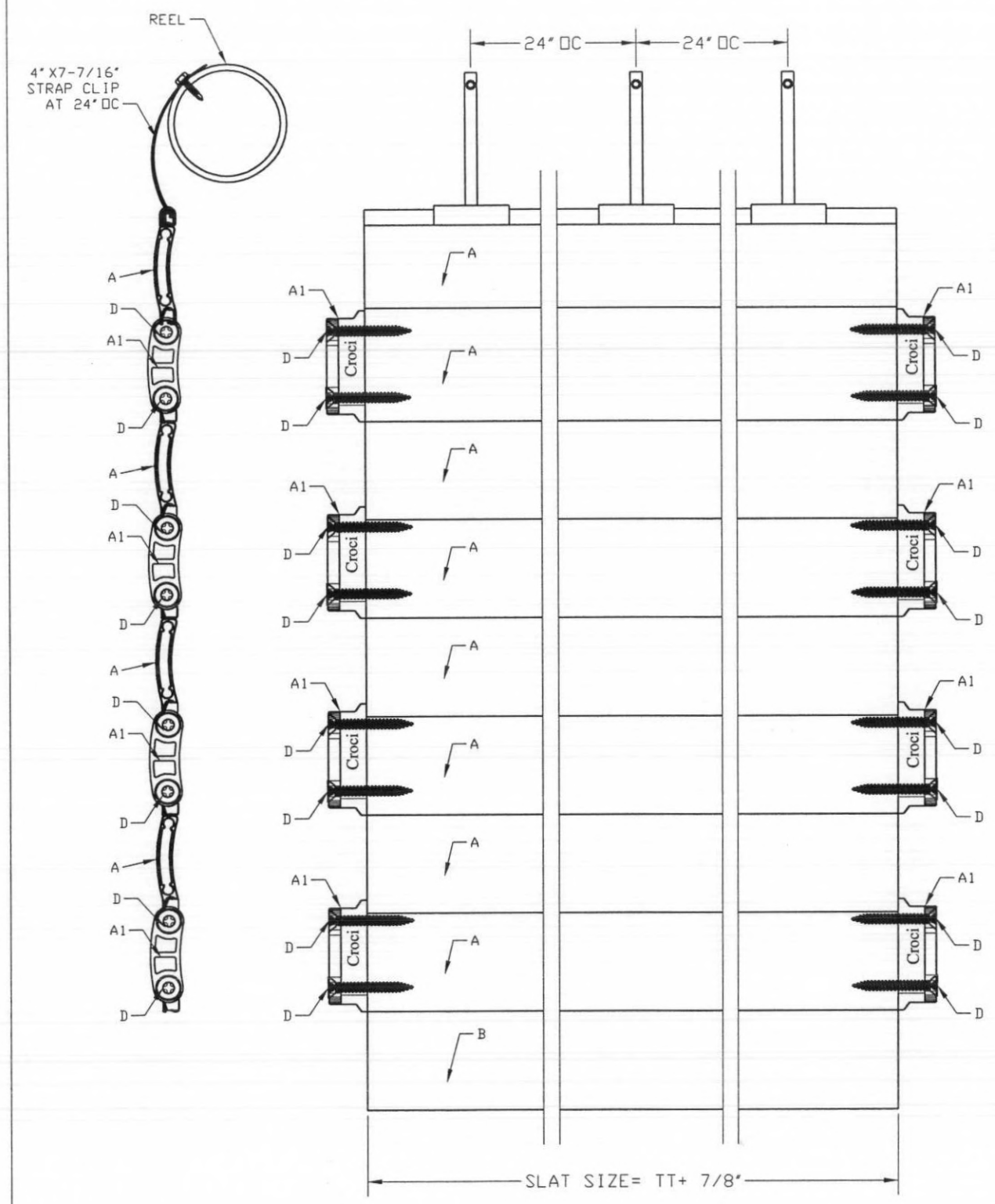


SECTION CC
INSET MOUNT



SECTION DD
WALL SECTION

SLAT END RETENTION LAY-OUT



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Sheet
3 of 12

TYPICAL HORIZONTAL SECTIONS AND ANCHOR SCHEDULE

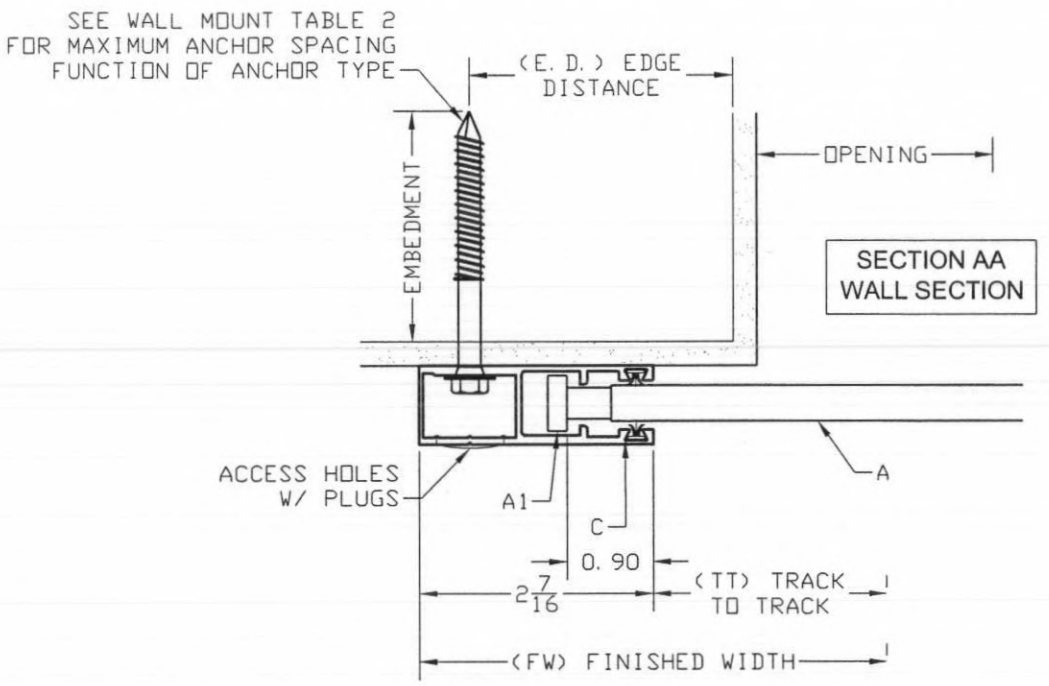

TABLE 2- WALL MOUNT ANCHORAGE SPACING

SHUTTER WIDTH (SW) OR SHUTTER MODULE (SM)			ANCHOR TYPE												
		LOAD PSF	A A1	A2	A3 A4 A5	B	B1	B2	C	C1	D D1	E	E1	E2	E3
	64	30	6	6	6	6	6	6	6	6	6	6	6	6	6
		40	6	6	6	6	6	6	6	6	6	6	6	6	6
		45	6	6	6	6	5	6	6	6	6	6	6	6	6
		50	6	6	6	5	5	6	6	6	6	6	6	6	6
		55	6	6	6	5	4	5	6	6	6	6	6	6	6
		60	6	6	6	4	4	5	6	6	6	6	6	6	6
		65	6	6	6	4	4	4	6	6	6	6	6	6	6
		70	6	6	6	4	3	4	6	6	6	6	6	6	6
		80	6	6	6	3	3	3	6	6	6	6	5	6	6
		90	6	5	6	3	-	3	6	6	6	5	5	6	5
		100	6	5	6	-	-	3	6	6	6	5	4	6	4
		105	6	4	6	-	-	3	6	6	5	4	4	6	4
		110	6	4	6	-	-	-	6	6	5	4	4	6	4
	82	30	6	6	6	6	6	6	6	6	6	6	6	6	6
		40	6	6	6	5	5	5	6	6	6	6	6	6	5
		45	6	6	6	5	5	5	6	6	6	6	5	6	4
		50	6	6	6	4	4	4	6	6	6	5	4	6	4
		55	6	6	6	4	4	4	6	6	6	5	4	6	3
		60	6	6	6	3	3	3	6	6	6	4	4	5	3
		65	6	6	6	3	3	3	6	6	6	4	3	5	3
		70	6	6	6	3	3	3	6	6	6	4	3	5	3
		80	5	5	6	-	-	-	6	6	6	3	3	4	-
	94	30	6	6	6	4	4	4	6	6	6	5	5	6	4
		40	6	5	6	3	3	3	6	6	6	4	3	5	3
		45	5	5	6	-	-	-	6	6	6	3	3	5	3
		50	5	4	6	-	-	-	6	6	5	3	3	4	-
		55	4	4	6	-	-	-	5	6	5	3	-	4	-
		60	4	4	6	-	-	-	5	6	5	3	-	3	-
	109	30	6	6	6	5	5	5	6	6	6	6	6	6	5
		40	6	6	6	4	4	4	6	6	6	5	5	6	4
		45	6	6	6	3	3	3	6	6	6	5	4	6	4
		50	6	6	6	3	3	3	6	6	6	4	4	6	4
	124	30	6	6	6	4	4	5	6	6	6	6	6	6	6
		40	6	6	6	3	3	3	6	6	6	6	5	6	5

ANCHOR SCHEDULE:				
ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
A	1/4" TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
A1	1/4" ss TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
A2	1/4" ss AGGRE-GATOR	MIN. 3275 psi CONCRETE	1-3/4"	3"
A3	5/16" TAPCONS	MIN. 2899 psi CONCRETE	2 1/4"	3 1/8"
A4	3/8" SS DROP-IN	MIN. 3000 psi CONCRETE	1 9/16"	5 1/4"
A5	3/8" POWERS WEDGE BOLT STAINLESS OR CARBON STEEL	MIN. 3000 psi CONCRETE	3 1/2"	4-1/2"
B	1/4" TAPCONS	HOLLOW C-90 BLOCK	1 1/4"	2-1/2"
B1	1/4" ss TAPCONS	HOLLOW C-90 BLOCK	1 1/4"	2-1/2"
B2	1/4" ss AGGRE-GATOR	HOLLOW C-90 BLOCK	1 1/4"	4"
C	1/4" ss AGGRE-GATOR	GF C-90 BLOCK	2"	4"
C1	5/16"X3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
D	1/4"-14X1" GRADE 5 SELF DRILLING SCREWS	MIN. 1/4" 6063-T6 ALUM. OR A36 1/8"STEEL		1/2"
D1	1/4"-14X1" SS SHEET METAL SCREWS			3/8"
E	1/4" TAPCONS	WOOD WITH G>=.55	2 1/4"	2-1/2"
E1	1/4" ss TAPCONS			
E2	5/16" TAPCONS			
E3	5/16"X3" LAG SCREWS			

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Engineer Seal
Pedro De Figueiredo
TEXAS - PE 102937

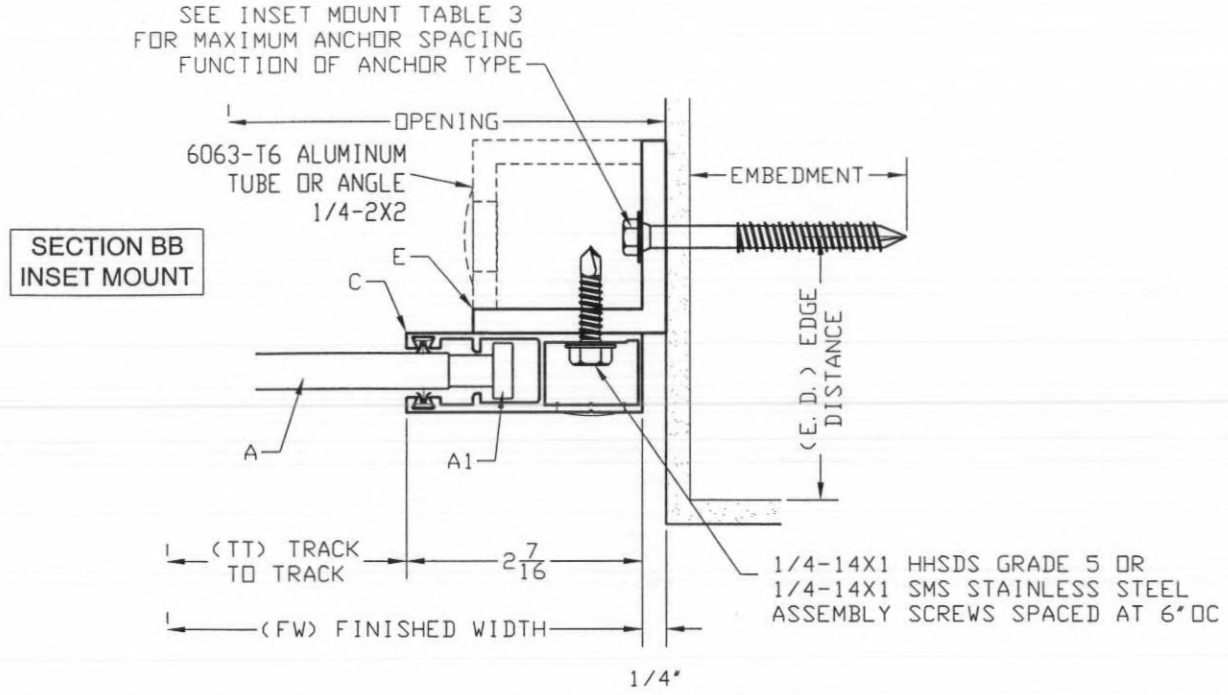
Date: 03/18/13
Scale: NA
Design by: PPMF

REVISION:
REPLACE DWG 09-107

Drawing Number
13-069

TABLE 3- INSET MOUNT ANCHORAGE SPACING

SHUTTER WIDTH (SW) OR SHUTTER MODULE (SM)	LOAD PSF	ANCHOR TYPE A A1	A2	A3 A4 A5	B	B1	B2	C	C1	D D1	E	E1	E2	E3
64	30	6	6	6	6	5	6	6	6	6	6	6	6	6
	40	6	6	6	3	3	4	6	6	6	6	6	6	6
	45	6	5	6	3	-	3	6	6	5	6	6	6	6
	50	6	4	6	-	-	3	6	6	5	6	6	6	6
	55	6	4	6	-	-	-	6	6	4	5	5	6	6
	60	5	3	6	-	-	-	5	6	4	5	4	6	6
	65	5	3	6	-	-	-	5	6	3	4	4	6	6
	70	4	3	6	-	-	-	4	6	3	4	4	6	6
	80	4	-	6	-	-	-	4	6	3	3	3	6	5
	90	3	-	5	-	-	-	3	6	-	3	3	5	5
	100	3	-	5	-	-	-	3	6	-	3	3	5	4
	105	3	-	5	-	-	-	3	5	-	3	-	5	4
	110	3	-	-	-	-	-	3	5	-	-	-	4	4
82	30	5	3	6	-	-	-	5	6	3	5	5	6	6
	40	4	-	6	-	-	-	3	6	-	3	3	6	6
	45	3	-	5	-	-	-	3	6	-	3	3	5	5
	50	3	-	-	-	-	-	3	5	-	3	-	5	5
	55	3	-	-	-	-	-	-	5	-	-	-	4	4
	60	-	-	-	-	-	-	-	4	-	-	-	4	4
	65	-	-	-	-	-	-	-	4	-	-	-	4	4
	70	-	-	-	-	-	-	-	4	-	-	-	3	3
	80	-	-	-	-	-	-	-	-	-	-	-	3	3
94	30	4	-	5	-	-	-	3	6	-	3	3	6	6
	40	3	-	-	-	-	-	-	5	-	-	-	4	4
	45	-	-	-	-	-	-	-	4	-	-	-	4	4
	50	-	-	-	-	-	-	-	4	-	-	-	3	3
	55	-	-	-	-	-	-	-	-	-	-	-	3	3
	60	-	-	-	-	-	-	-	-	-	-	-	3	3
109	30	4	-	6	-	-	-	4	6	3	4	3	6	6
	40	3	-	5	-	-	-	3	6	-	3	3	5	5
	45	3	-	5	-	-	-	3	5	-	3	-	5	4
	50	3	-	-	-	-	-	3	5	-	-	-	4	4
124	30	4	3	6	-	-	-	4	6	3	4	4	6	6
	40	4	-	6	-	-	-	4	6	-	3	3	6	5



SECTION BB
INSET MOUNT

ANCHOR SCHEDULE:				
ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
A	1/4" TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
A1	1/4" ss TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
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B	1/4" TAPCONS	HOLLOW C-90 BLOCK	1 1/4"	2-1/2"
B1	1/4" ss TAPCONS	HOLLOW C-90 BLOCK	1 1/4"	2-1/2"
B2	1/4" ss AGGRE-GATOR	HOLLOW C-90 BLOCK	1 1/4"	4"
C	1/4" ss AGGRE-GATOR	GF C-90 BLOCK	2"	4"
C1	5/16"X3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
D	1/4"-14X1" GRADE 5 SELF DRILLING SCREWS	MIN. 1/4" 6063-T6 ALUM. OR A36 1/8"STEEL		1/2"
D1	1/4"-14X1" SS SHEET METAL SCREWS			3/8"
E	1/4" TAPCONS	WOOD WITH G>=.55	2 1/4"	2-1/2"
E1	1/4" ss TAPCONS			
E2	5/16" TAPCONS			
E3	5/16"X3" LAG SCREWS			

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PRODUCT:

ES 44 SUP

EXTRUDED ALUMINUM ROLL-UP SHUTTER

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EngCo Inc.
CR 11234
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STATE OF TEXAS
PEDRO FIGUEIREDO
102937
LICENSED
PROFESSIONAL ENGINEER
OCT 02 2013

Engineer Seal
Pedro De Figueiredo
TEXAS - PE 102937

Date: 03/18/13
Scale: NA
Design by: PPMF

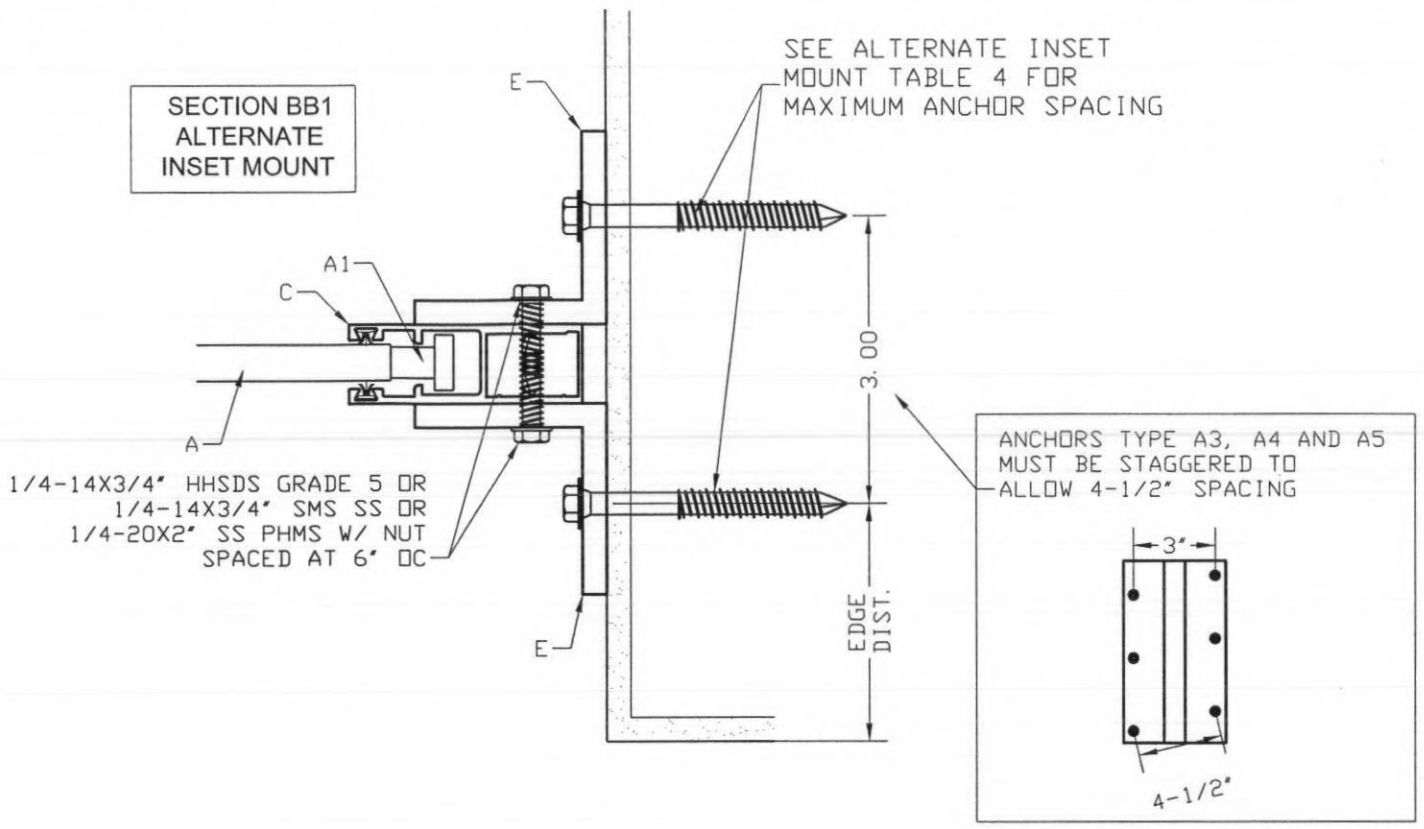
REVISION:
REPLACE DWG 09-107

Drawing Number
13-069

TABLE 4- ALTERNATE INSET MOUNT ANCHORAGE SPACING

SHUTTER WIDTH (SW) OR SHUTTER MODULE (SM)		ANCHOR TYPE												
	LOAD PSF	A A1	A2	A3 A4 A5	B	B1	B2	C	C1	D D1	E	E1	E2	E3
64	30	6	6	6	6	6	6	6	6	6	6	6	6	6
	40	6	6	6	6	6	6	6	6	6	6	6	6	6
	45	6	6	6	6	6	6	6	6	6	6	6	6	6
	50	6	6	6	6	6	6	6	6	6	6	6	6	6
	55	6	6	6	6	6	6	6	6	6	6	6	6	6
	60	6	6	6	6	6	6	6	6	6	6	6	6	6
	65	6	6	6	6	6	6	6	6	6	6	6	6	6
	70	6	6	6	6	5	6	6	6	6	6	6	6	6
	80	6	6	6	6	5	6	6	6	6	6	6	6	6
	90	6	6	6	5	4	5	6	6	6	6	6	6	6
	100	6	6	6	4	4	5	6	6	6	6	6	6	6
	105	6	6	6	4	4	5	6	6	6	6	6	6	6
	110	6	6	6	4	3	5	6	6	6	6	6	6	6
82	30	6	6	6	6	6	6	6	6	6	6	6	6	6
	40	6	6	6	6	5	6	6	6	6	6	6	6	6
	45	6	6	6	5	4	6	6	6	6	6	6	6	6
	50	6	6	6	4	4	5	6	6	6	6	6	6	6
	55	6	6	6	4	3	5	6	6	6	6	6	6	6
	60	6	6	6	4	3	4	6	6	6	6	6	6	6
	65	6	6	6	3	3	4	6	6	6	6	6	6	6
	70	6	6	6	3	3	4	6	6	6	6	6	6	6
	80	6	5	6	3	-	3	6	6	6	6	6	6	6
94	30	6	6	6	6	5	6	6	6	6	6	6	6	6
	40	6	6	6	4	3	5	6	6	6	6	6	6	6
	45	6	6	6	4	3	4	6	6	6	6	6	6	6
	50	6	6	6	3	3	4	6	6	6	6	6	6	6
	55	6	5	6	3	-	3	6	6	6	6	6	6	6
	60	6	5	6	3	-	3	6	6	6	6	6	6	6
109	30	6	6	6	6	5	6	6	6	6	6	6	6	6
	40	6	6	6	5	4	5	6	6	6	6	6	6	6
	45	6	6	6	4	4	5	6	6	6	6	6	6	6
	50	6	6	6	4	3	5	6	6	6	6	6	6	6
124	30	6	6	6	6	5	6	6	6	6	6	6	6	6
	40	6	6	6	5	4	6	6	6	6	6	6	6	6

SECTION BB1
ALTERNATE
INSET MOUNT



ANCHOR SCHEDULE:				
ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
A	1/4" TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
A1	1/4" ss TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
A2	1/4" ss AGGRE-GATOR	MIN. 3275 psi CONCRETE	1-3/4"	3"
A3	5/16" TAPCONS	MIN. 2899 psi CONCRETE	2 1/4"	3 1/8"
A4	3/8" SS DROP-IN	MIN. 3000 psi CONCRETE	1 9/16"	5 1/4"
A5	3/8" POWERS WEDGE BOLT STAINLESS OR CARBON STEEL	MIN. 3000 psi CONCRETE	3 1/2"	4-1/2"
B	1/4" TAPCONS	HOLLOW C-90 BLOCK	1 1/4"	2-1/2"
B1	1/4" ss TAPCONS	HOLLOW C-90 BLOCK	1 1/4"	2-1/2"
B2	1/4" ss AGGRE-GATOR	HOLLOW C-90 BLOCK	1 1/4"	4"
C	1/4" ss AGGRE-GATOR	GF C-90 BLOCK	2"	4"
C1	5/16"X3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
D	1/4"-14X1" GRADE 5 SELF DRILLING SCREWS	MIN. 1/4" 6063-T6 ALUM. OR A36 1/8" STEEL		1/2"
D1	1/4"-14X1" SS SHEET METAL SCREWS			3/8"
E	1/4" TAPCONS	WOOD WITH G>=.55	2 1/4"	2-1/2"
E1	1/4" ss TAPCONS			
E2	5/16" TAPCONS			
E3	5/16"X3" LAG SCREWS			

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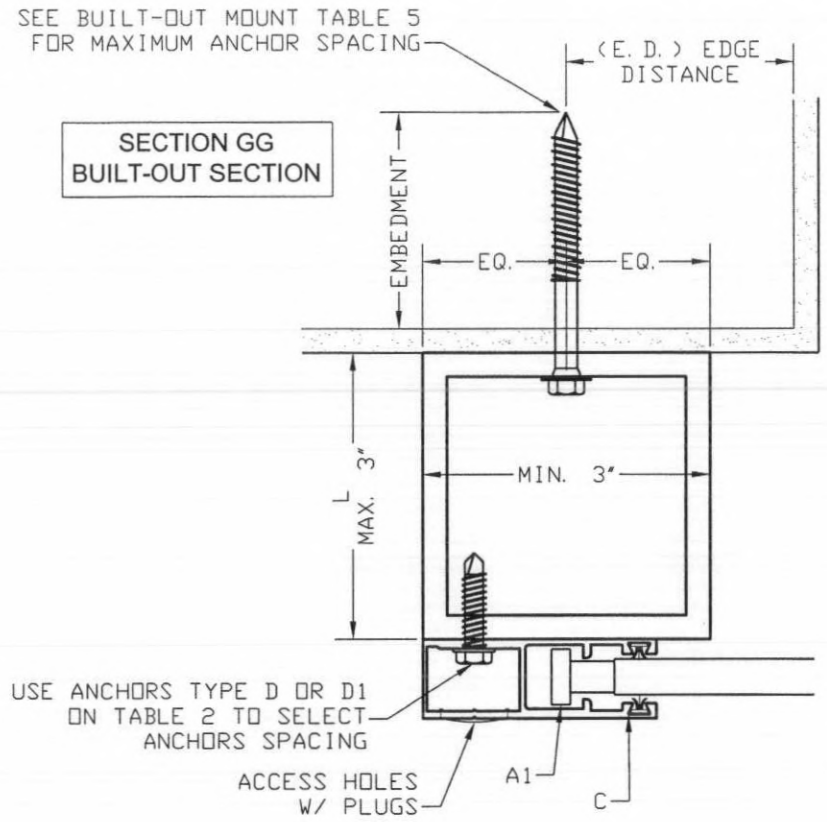
TABLE 5- BUILT-OUT MOUNT ANCHORAGE SPACING

SHUTTER WIDTH (SW) OR SHUTTER MODULE (SM)	LOAD PSF	ANCHOR TYPE: A A1	A2	A3 A4 A5	B	B1	B2	C	C1	D D1	E	E1	E2	E3
64	30	6	6	6	6	6	6	6	6	6	6	6	6	6
	40	6	6	6	4	3	4	6	6	6	6	6	6	6
	45	6	6	6	3	3	3	6	6	6	6	6	6	6
	50	6	5	6	3	-	3	6	6	5	6	5	6	6
	55	6	4	6	-	-	-	6	6	5	5	5	6	6
	60	6	4	6	-	-	-	6	6	4	5	4	6	6
	65	5	3	6	-	-	-	5	6	4	4	4	6	5
	70	5	3	6	-	-	-	5	6	4	4	3	6	5
	80	4	3	6	-	-	-	4	6	3	3	3	5	4
	90	4	-	6	-	-	-	4	6	3	3	3	5	4
	100	3	-	5	-	-	-	3	6	-	3	-	4	3
	105	3	-	5	-	-	-	3	6	-	3	-	4	3
	110	3	-	5	-	-	-	3	6	-	-	-	4	3
82	30	5	3	6	-	-	-	5	6	3	4	3	6	4
	40	3	-	5	-	-	-	3	6	-	-	-	4	3
	45	3	-	-	-	-	-	3	5	-	-	-	4	3
	50	-	-	-	-	-	-	-	4	-	-	-	3	-
	55	-	-	-	-	-	-	-	4	-	-	-	3	-
	60	-	-	-	-	-	-	-	4	-	-	-	3	-
	65	-	-	-	-	-	-	-	4	-	-	-	-	-
	70	-	-	-	-	-	-	-	-	-	-	-	-	-
	80	-	-	-	-	-	-	-	-	-	-	-	-	-
94	30	3	-	5	-	-	-	3	5	-	-	-	4	3
	40	-	-	-	-	-	-	-	4	-	-	-	3	-
	45	-	-	-	-	-	-	-	-	-	-	-	-	-
	50	-	-	-	-	-	-	-	-	-	-	-	-	-
	55	-	-	-	-	-	-	-	-	-	-	-	-	-
	60	-	-	-	-	-	-	-	-	-	-	-	-	-
109	30	4	-	6	-	-	-	4	6	3	3	3	5	4
	40	3	-	5	-	-	-	3	5	-	-	-	4	3
	45	3	-	-	-	-	-	3	5	-	-	-	4	3
	50	3	-	-	-	-	-	3	5	-	-	-	3	3
124	30	4	3	6	-	-	-	4	6	3	3	3	6	4
	40	4	-	6	-	-	-	4	6	3	3	3	5	4



ANCHOR SCHEDULE:				
ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
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B2	1/4" ss AGGRE-GATOR	HOLLOW C-90 BLOCK	1 1/4"	4"
C	1/4" ss AGGRE-GATOR	GF C-90 BLOCK	2"	4"
C1	5/16"X3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
D	1/4"-14X1" GRADE 5 SELF DRILLING SCREWS	MIN. 1/4" 6063-T6 ALUM. OR A36 1/8" STEEL		1/2"
D1	1/4"-14X1" SS SHEET METAL SCREWS			3/8"
E	1/4" TAPCONS	WOOD WITH G>=.55	2 1/4"	2-1/2"
E1	1/4" ss TAPCONS			
E2	5/16" TAPCONS			
E3	5/16"X3" LAG SCREWS			

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REVISION:
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EQUALLY SPACED MULLIONS SELECTION

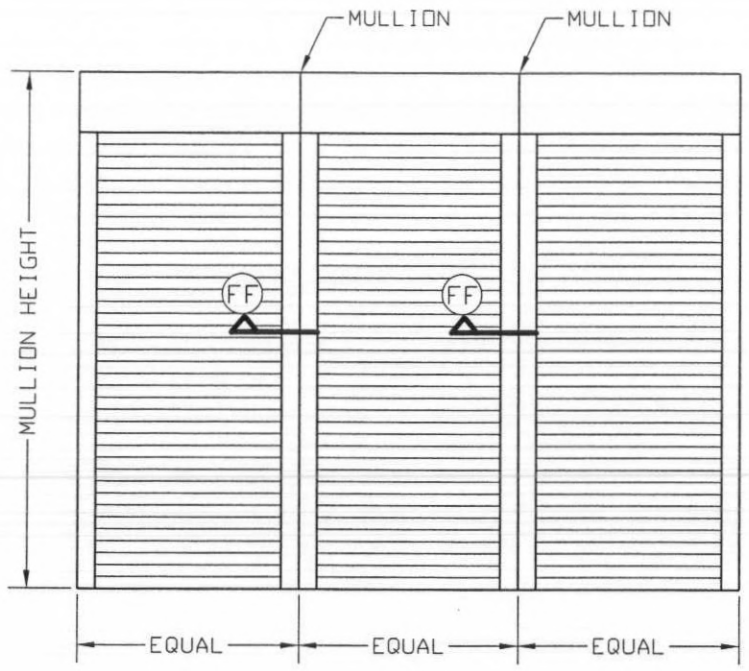


TABLE 6 - EQUAL SPACED MULLION DESIGNED PRESSURES (PSF)

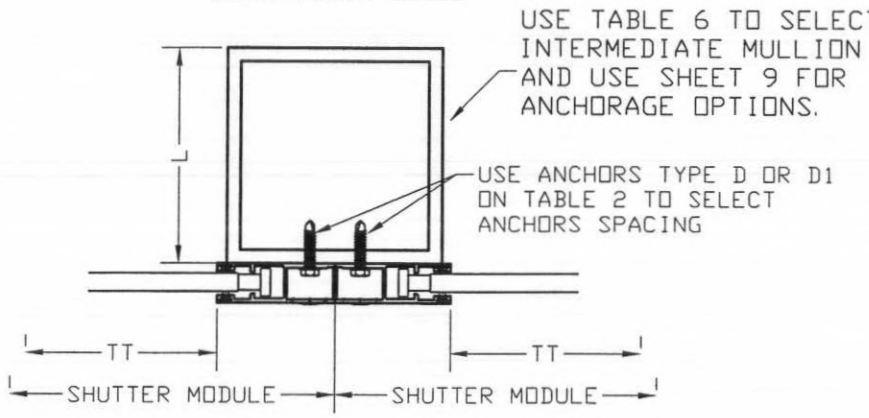
SHUTTER MODULE	MULLION TYPE & MAX. HEIGHT								
	1/4-4x6			1/4-4x4			1/4-3x3		
	144	120	108	120	108	96	108	96	84
124	40	40	40	38	40	40	20	29	40
109	50	50	50	43	50	50	23	33	50
94	60	60	60	50	60	60	27	39	58
82	79	80	80	57	79	80	31	44	66
64	101	110	110	74	101	110	40	57	85

MULLION MAX. HEIGHT

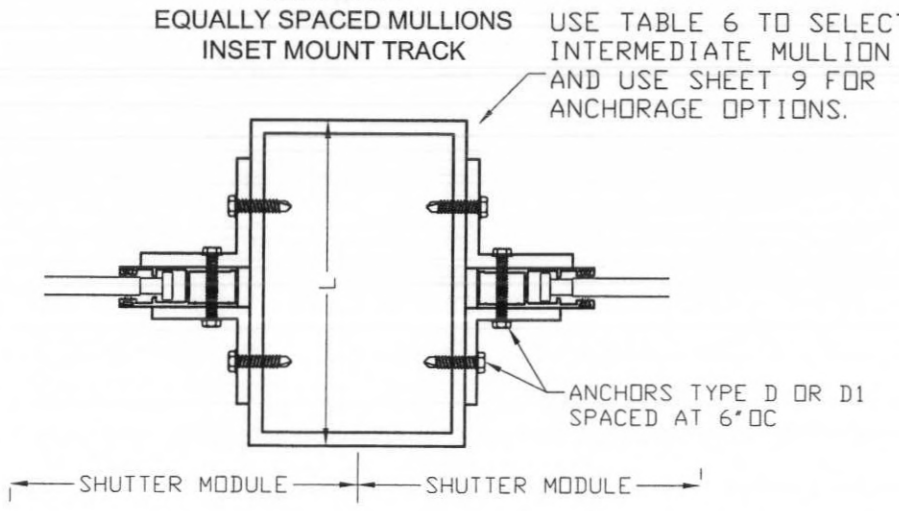
MAXIMUM PRESSURE IN PSF

NOTE: TABLE 2 IS APPLICABLE ONLY FOR EQUAL SHUTTER MODULES

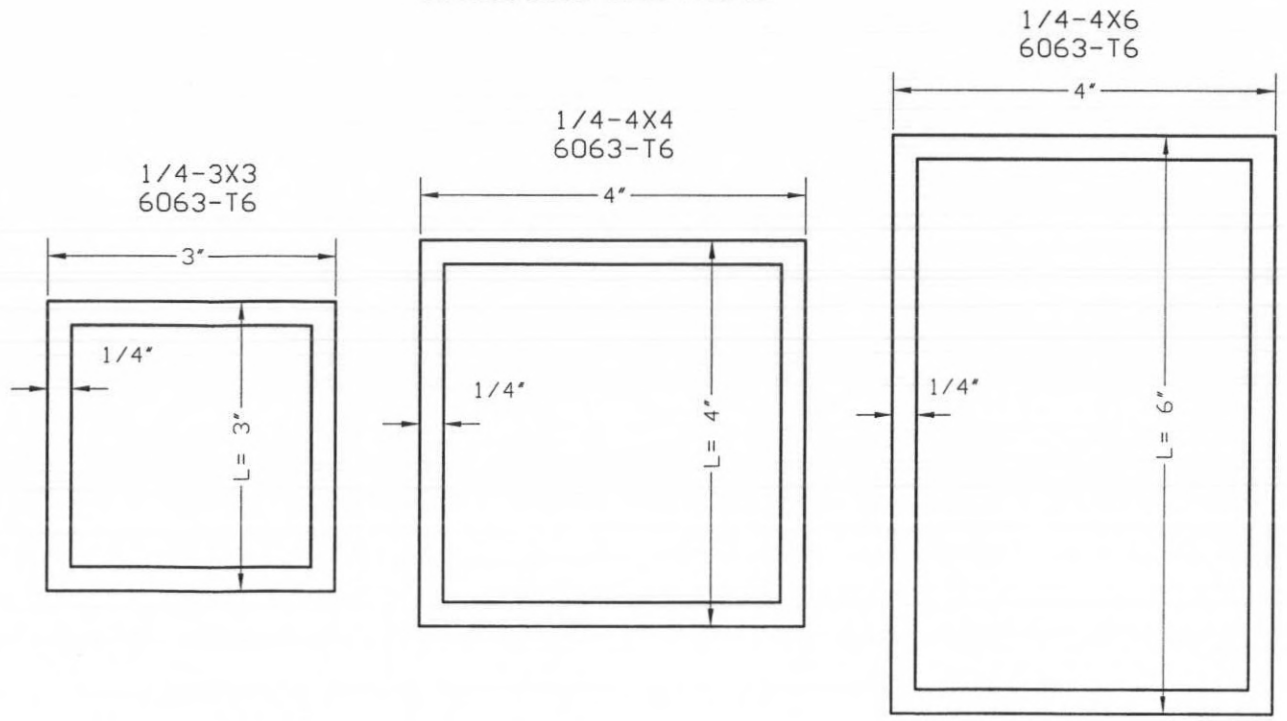
SECTION FF
EQUALLY SPACED MULLIONS
WALL MOUNT TRACK



SECTION FF
EQUALLY SPACED MULLIONS
INSET MOUNT TRACK



MULLIONS SECTIONS



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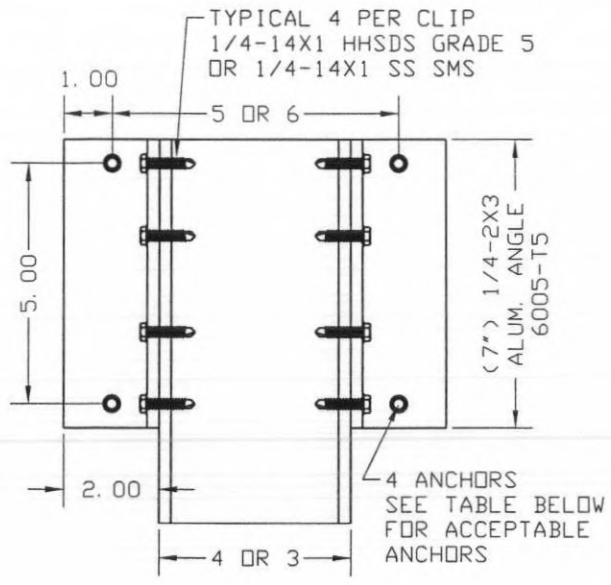
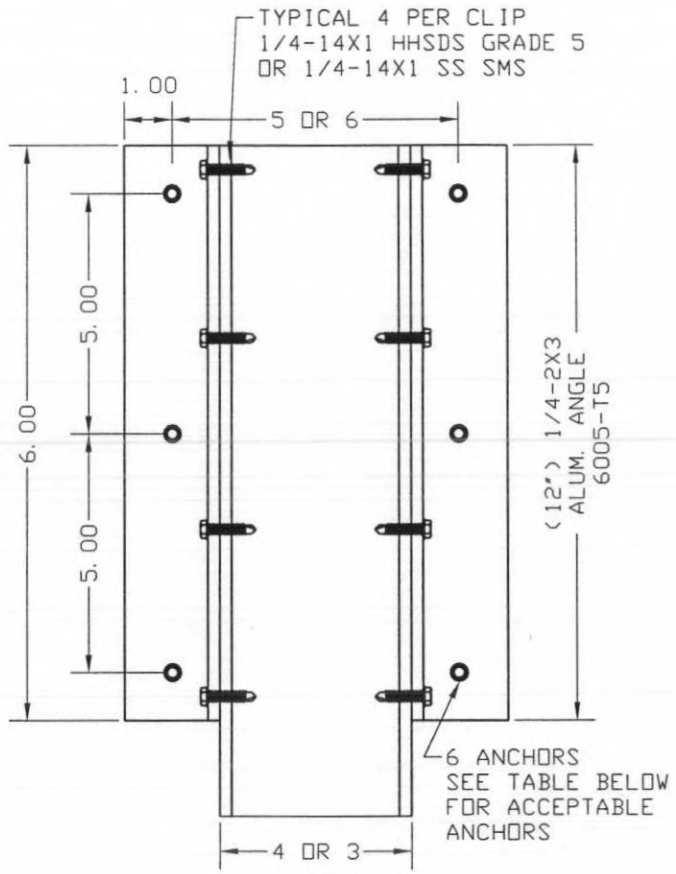
EQUALLY SPACED MULLIONS WALL AND FLOOR CONNECTIONS

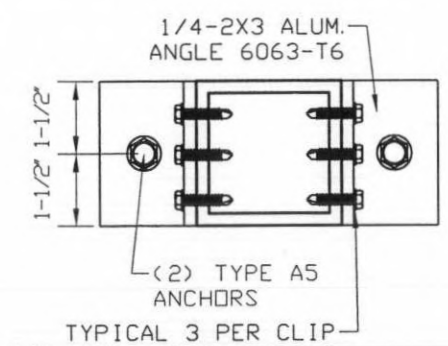


MULLION
WITH 4 ANCHORS

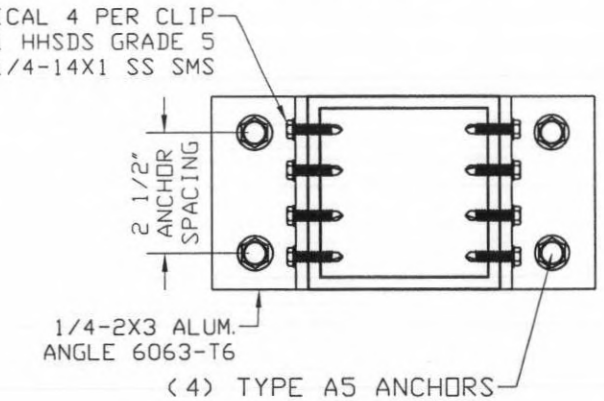


MULLION
WITH 6 ANCHORS

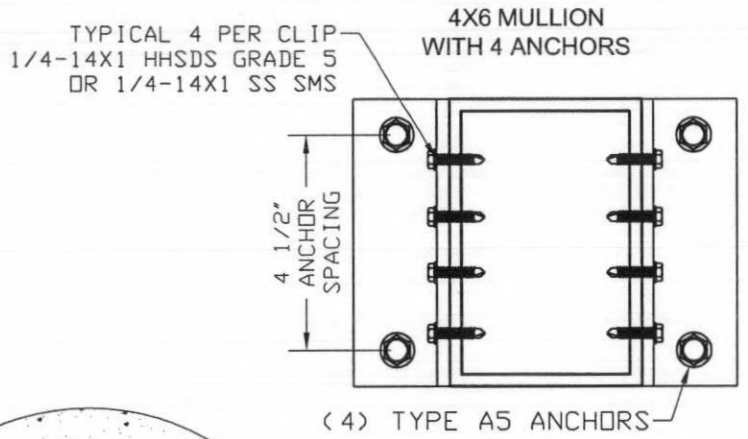
3X3 MULLION
WITH 2 ANCHORS

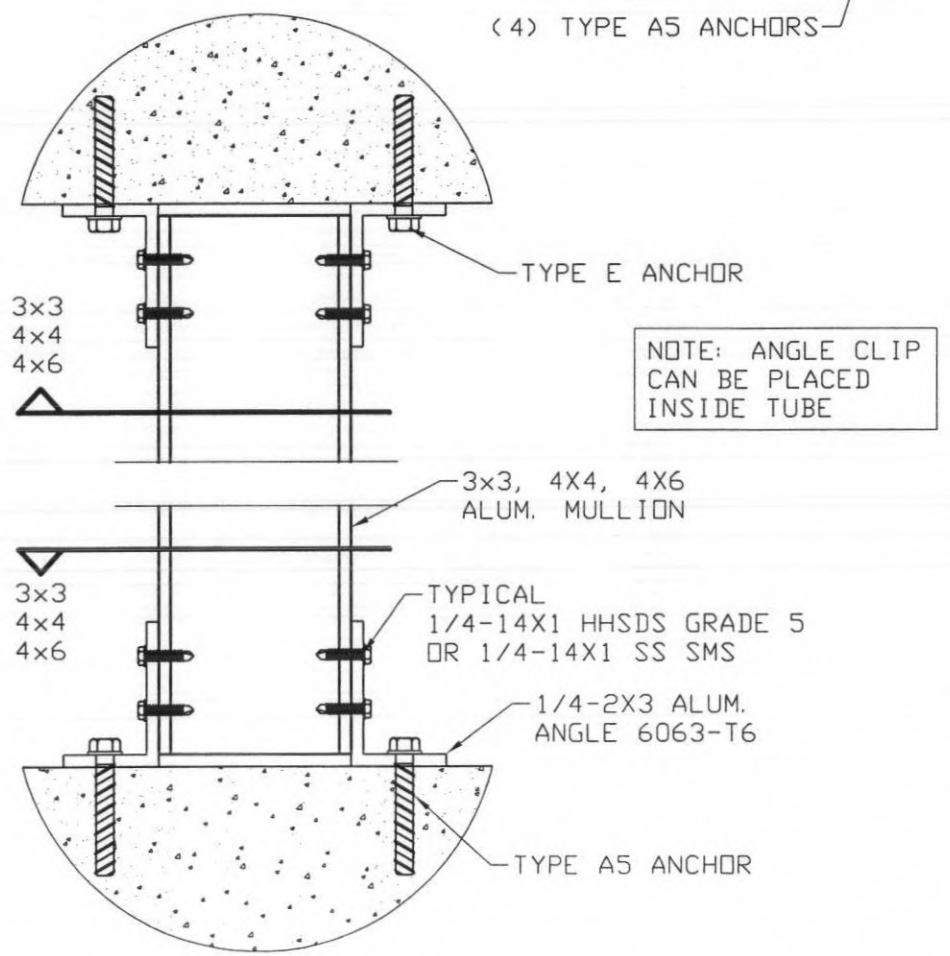


4X4 MULLION
WITH 4 ANCHORS



4X6 MULLION
WITH 4 ANCHORS





ANCHORAGE DESIGN FOR MAXIMUM LOADS FROM TABLE 6

MULL	# OF ANCHORS	ACCEPTABLE ANCHORS
3X3	4	A, A1, A3, A4, A5, C, C1, E, E1, E2, E3
	6	A, A1, A2, A3, A4, A5, C, C1, D, D1, E, E1, E2, E3
4X4	4	A3, A4, A5, C1, E2, E3
	6	A, A1, A3, A4, A5, C, C1, E, E1, E2, E3
4X6	4	A5, E2, E3
	6	A, A1, A3, A4, A5, C1, E2, E3

ANCHOR SCHEDULE:

ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
A	1/4" TAPCONS	MIN. 3192 psi CONCRETE	1-3/4"	2-1/2"
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A5	3/8" POWERS WEDGE BOLT STAINLESS OR CARBON STEEL	MIN. 3000 psi CONCRETE	3 1/2"	4-1/2"
C	1/4" ss AGGRE-GATOR	GF C-90 BLOCK	2"	4"
C1	5/16"X3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
D	1/4"-14X1" GRADE 5 SELF DRILLING SCREWS	MIN. 1/4" 6063-T6 ALUM. OR A36 1/8" STEEL		1/2"
D1	1/4"-14X1" SS SHEET METAL SCREWS			3/8"
E	1/4" TAPCONS	WOOD WITH G>=.55	2 1/4"	2-1/2"
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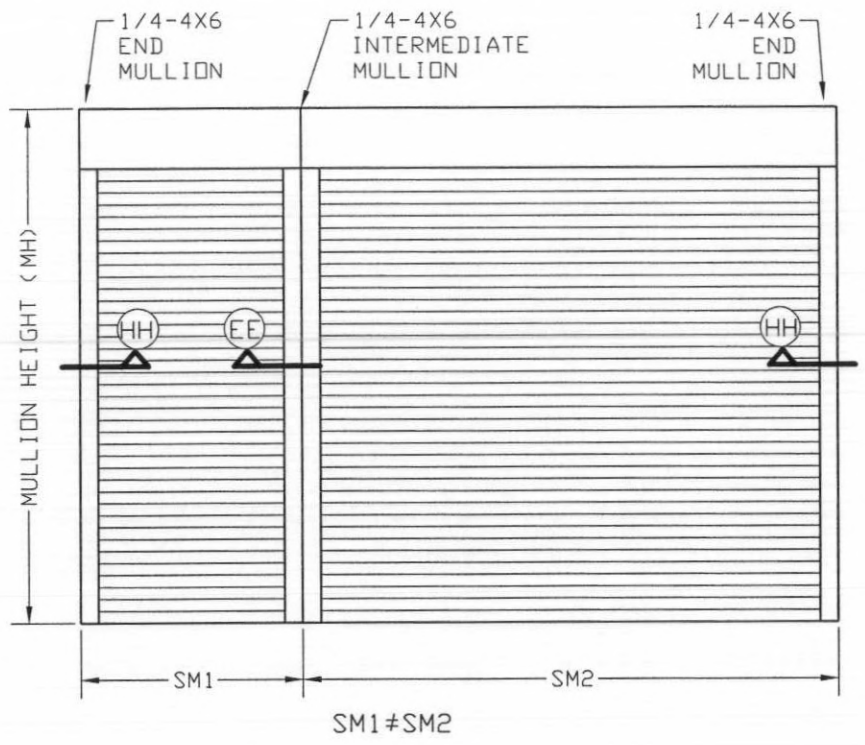
Sheet
9 of 12

UNEQUALLY SPACED MULLIONS SELECTION

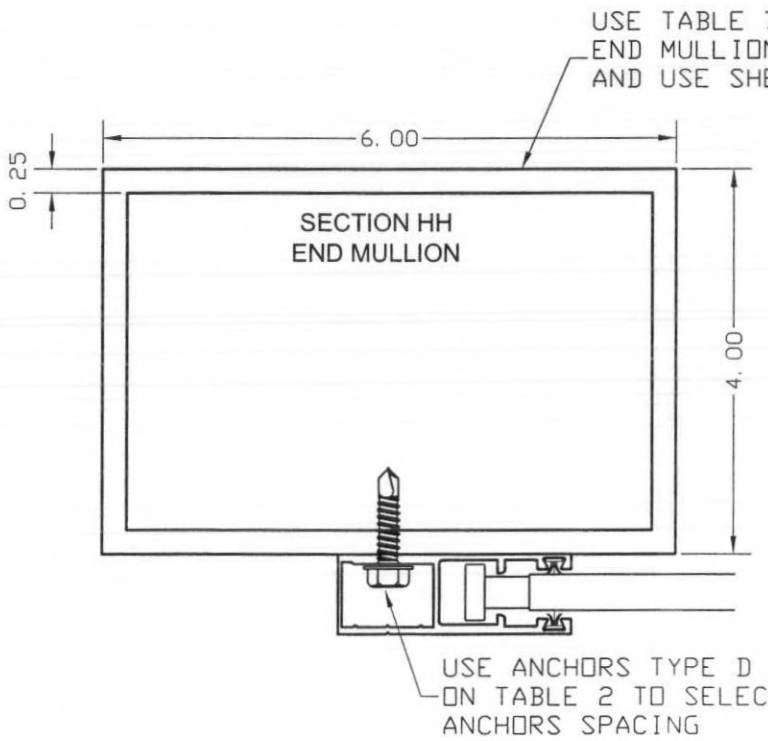
TABLE 7 - MAXIMUM MULLION HEIGHT FOR UNEQUAL SPACED MULLIONS AND END MULLIONS

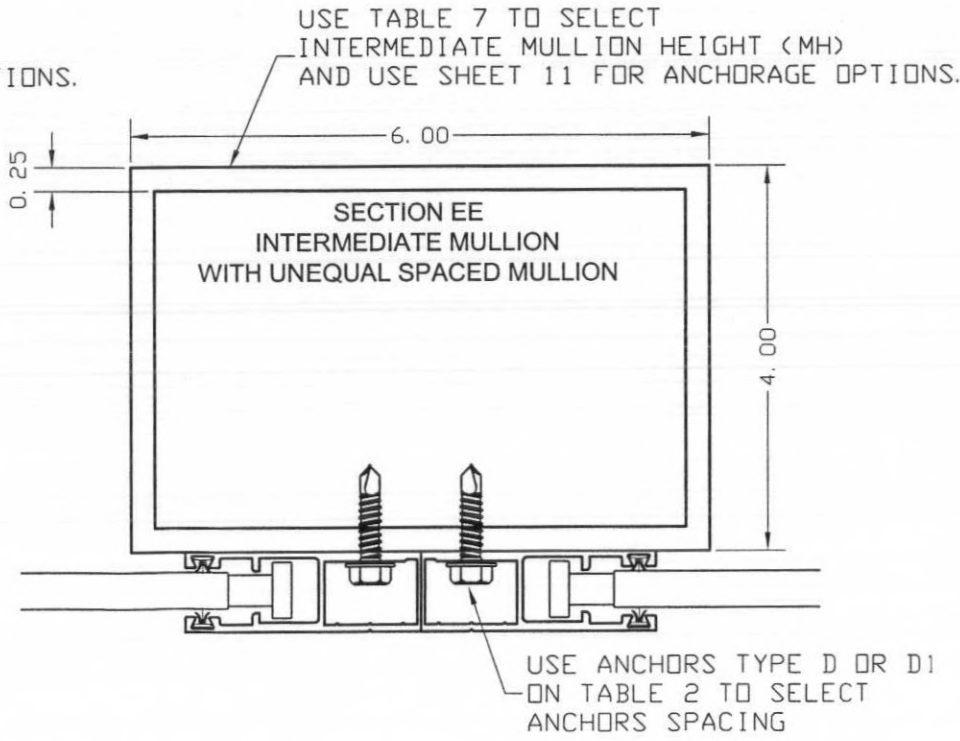
Pd (Psf)	SM1 (in)	SM2 (in)	MH (in)	
40	124	0-<64	132	END MULL
		64	132	INT. MULL
		82	132	
		94	120	
		109	120	
50	109	0-<64	114	END MULL
		64	102	INT. MULL
		82	90	
		94	96	
60	94	0-<64	84	END MULL
		64	96	INT. MULL
		82	120	
80	82	0-<64	90	END MULL
		64	102	INT. MULL
110	64	0	114	END MULL

NOTES:
1- TABLE IS APPLICABLE ONLY FOR UNEQUAL SHUTTER MODULES AND END MULLION.
2- USE 1/4-4X6 MULLION AS PER SECTIONS EE, HH
3- PD= MAXIMUM DESIGNED PRESSURE IN PSF
4- THE MAXIMUM END MULLION SIZES (SM2=0) ARE FOUND WHEN SM2=0
5- SPECIFIC CONDITIONS NOT INCLUDED HERE IN ARE TO BE ADDRESSED WITH SITE SPECIFIFC PROVIDED BY A PROFESSIONAL ENGINEER.



SM1≠SM2





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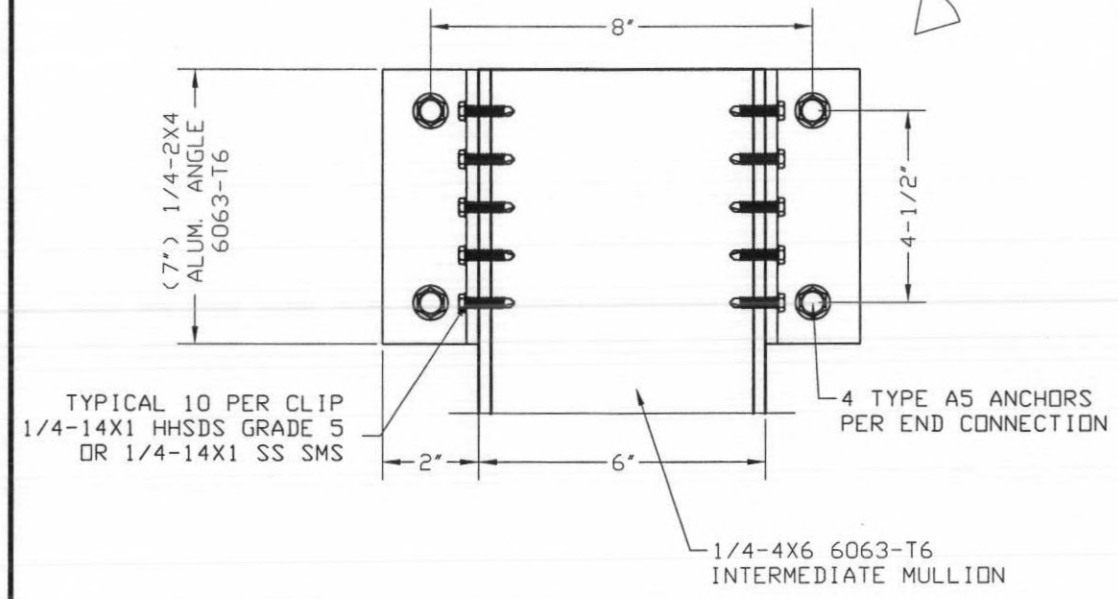
Scale: NA
Design by: PPMF

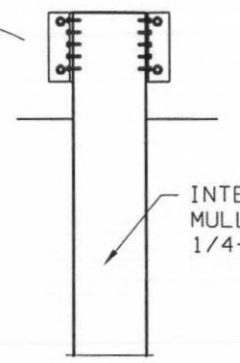
REVISION:
REPLACE DWG 09-107

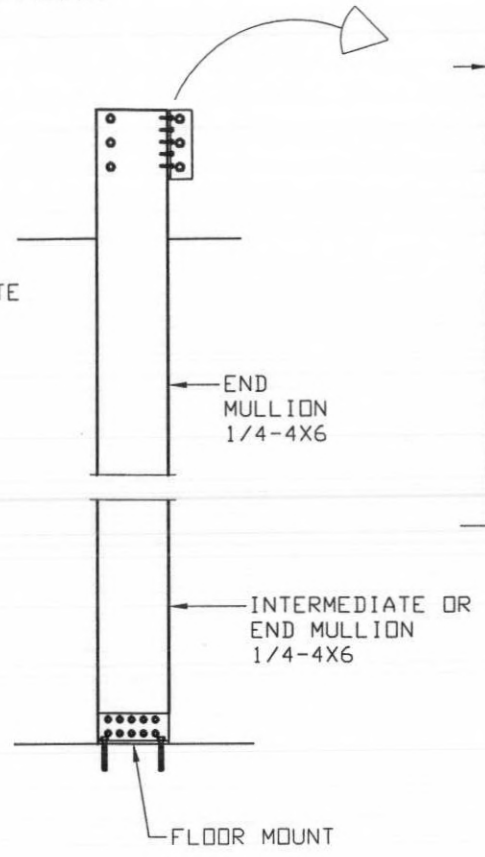
Drawing Number
13-069

UNEQUAL SPACED MULLIONS AND END MULLIONS
WALL AND FLOOR CONNECTIONS

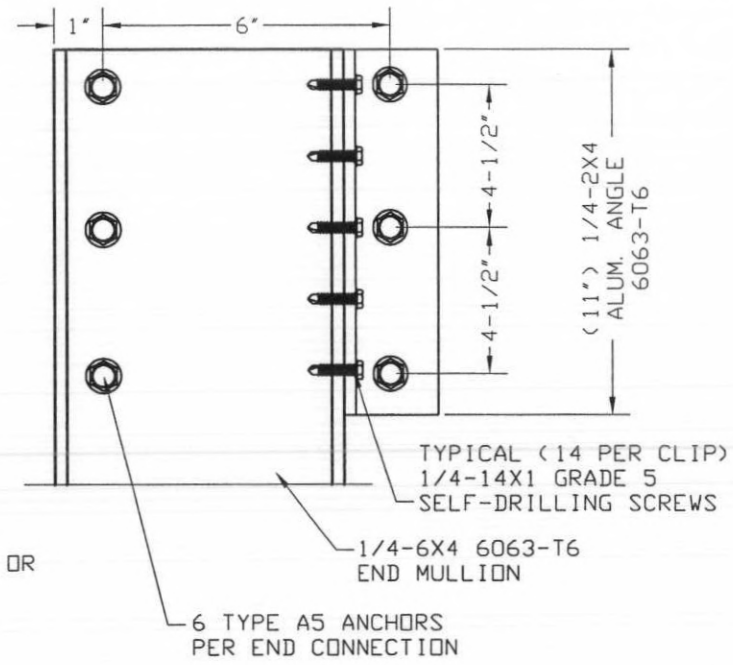
WALL MOUNT INTERMEDIATE MULLION



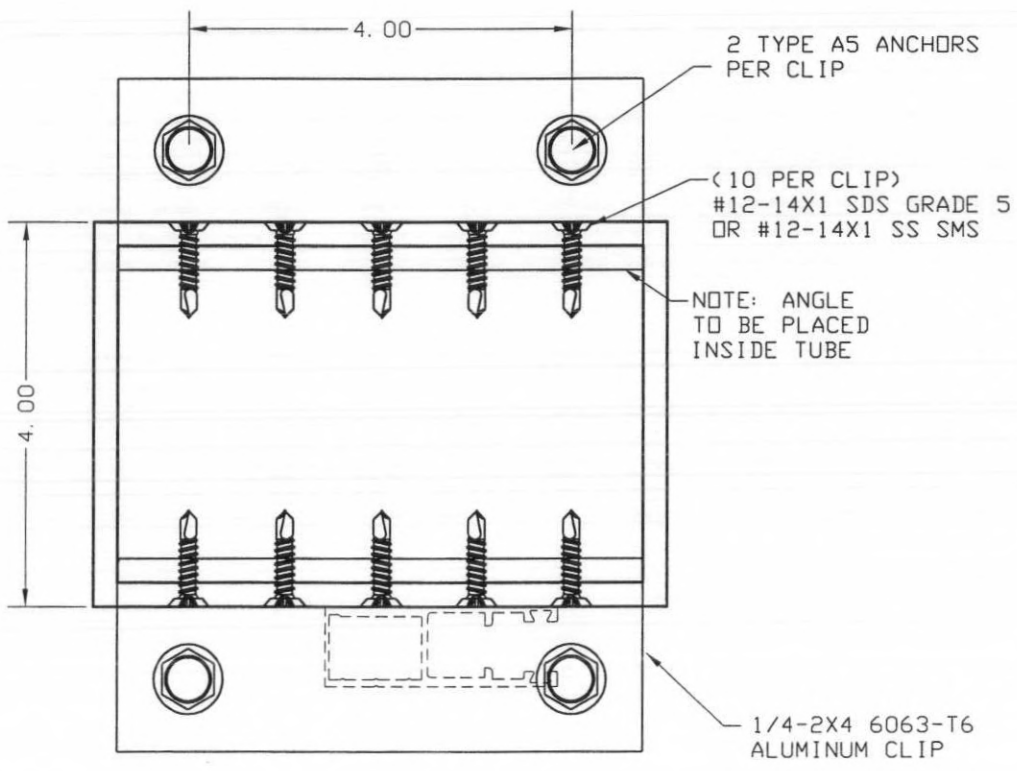


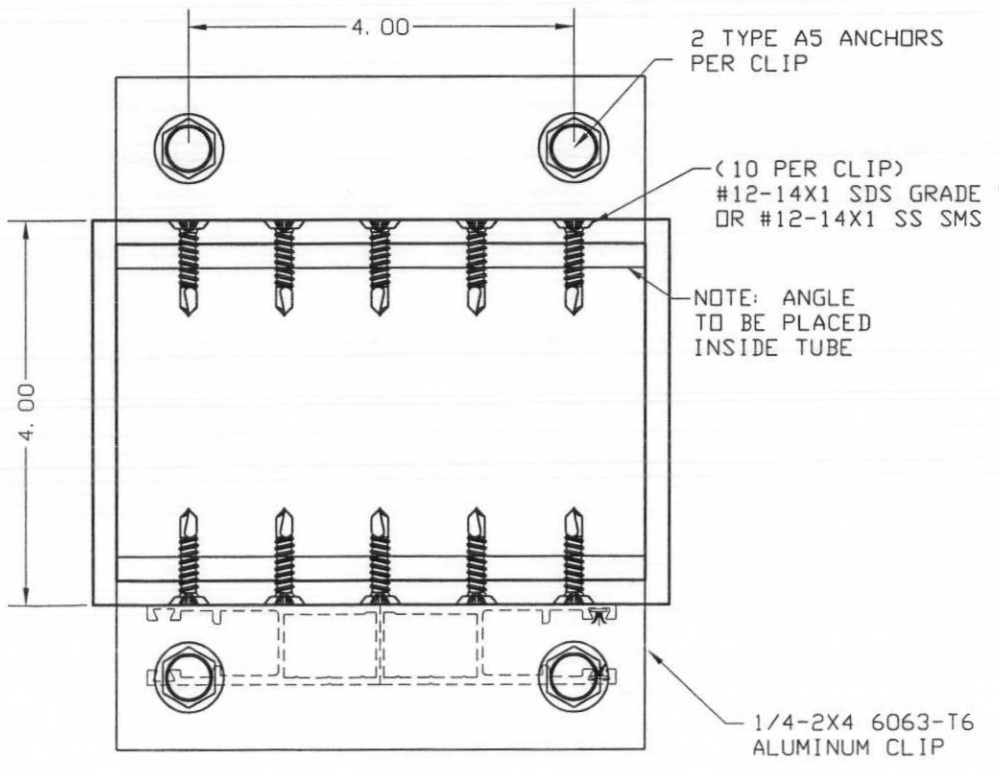


WALL MOUNT END MULLION



FLOOR MOUNT INTERMEDIATE & END MULLION





Manufacturer:
CROCI NORTH AMERICA
11600 ADELMO LANE
FORT MYERS, FL 33966
Tel.: (239) 278-3066
Fax: (239) 278-5977

PRODUCT:

ES 44 SUP

EXTRUDED ALUMINUM
ROLL-UP SHUTTER

Engineering:
EngCo Inc.
CR 11234
5595 ORANGE DR. SUITE 201
DAVIE - FLORIDA 333314
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STATE OF TEXAS
PEDRO FIGUEIREDO
102937
LICENSED
PROFESSIONAL ENGINEER
OCT 02 2013

Engineer Seal
Pedro De Figueiredo
TEXAS - PE 102937

Date: 03/18/13
Scale: NA
Design by: PPMF

REVISION:
REPLACE DWG 09-107

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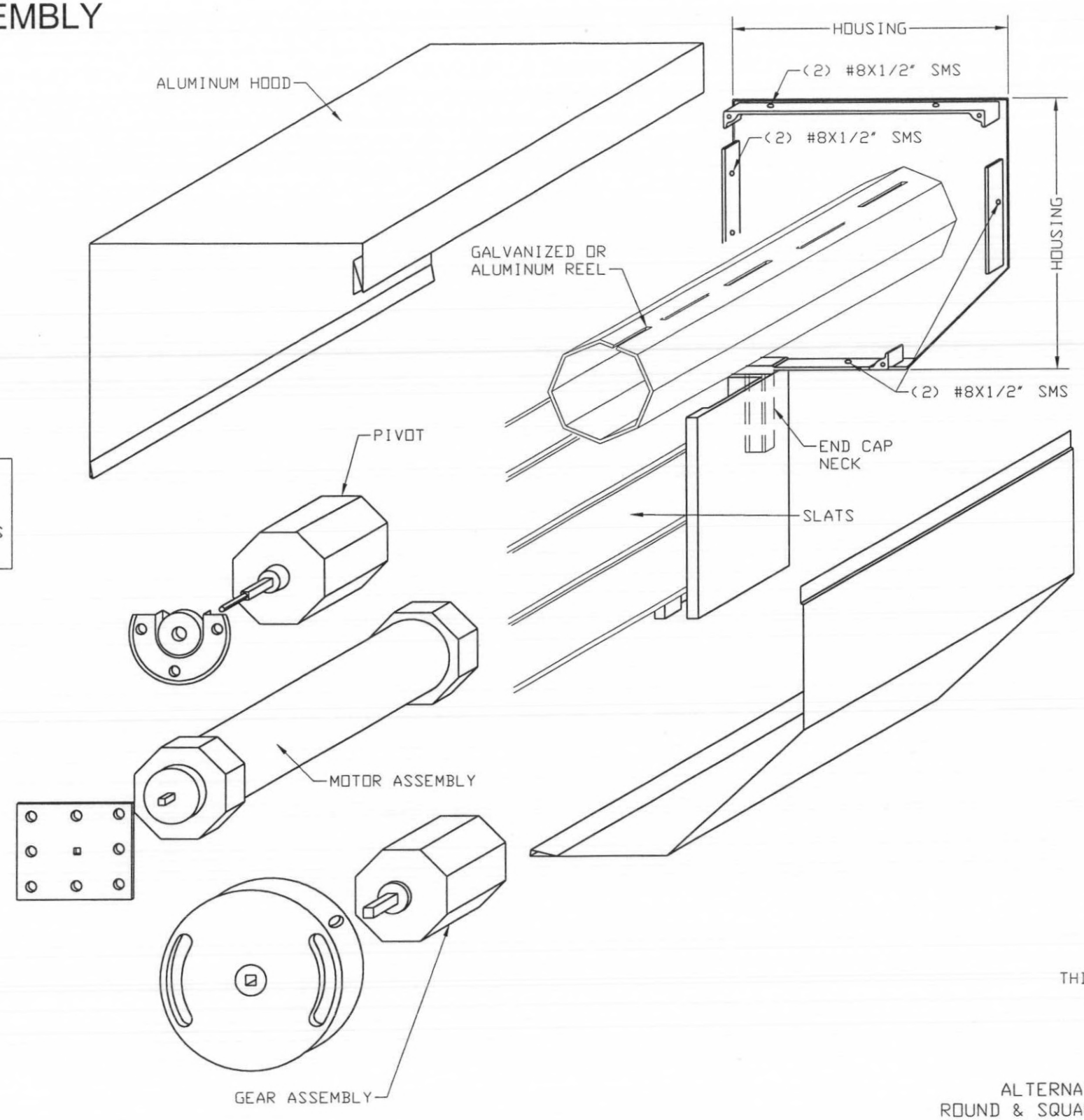
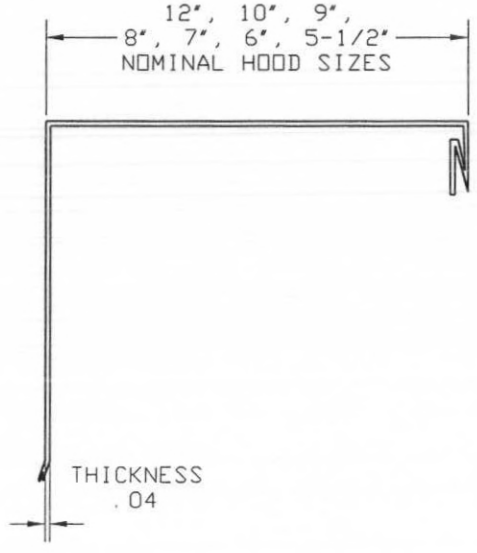
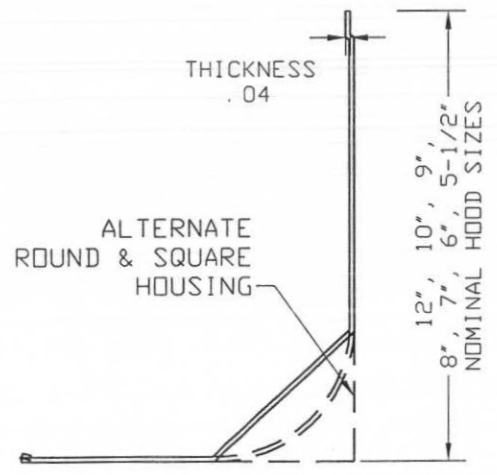
13-069

HOOD ASSEMBLY



NOTE: THE ROLL-UP MECHANISM (GEARS, MOTORS, SUPPORTING END PLATES) ARE NOT PART OF THIS APPROVAL. MANUFACTURER IS RESPONSIBLE TO SPECIFY THESE COMPONENTS FOR PROPER SHUTTER OPERATION.





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Sheet
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