

GENERAL NOTES:

- 1- DEFINITION: THIS PRODUCT IS A ROLLING TYPE SHUTTER, DESIGNED, CONSTRUCTED AND ERECTED TO EASILY ENCLOSE AN AREA, PROVIDING PROTECTION FROM HURRICANE FORCE WINDS WITHIN THE ALLOWABLE DESIGNED PRESSURES AND LIMITATIONS STATED IN THIS APPROVAL.
- 2- CODE: THIS PRODUCT HAS BEEN TESTED UNDER THE ASTM E1886 & 1996 (MISSILE LEVEL D) AND ASTM E330, TAS 202, 201 (LARGE MISSILE), 203 AND HAS BEEN DESIGNED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, 2004 EDITION (2006 SUPPLEMENT).
- 3- POSTING: A LEGIBLE DECAL SHALL BE PLACED AT A READILY VISIBLE LOCATION STATING THE FOLLOWING:
 'ROLLER STAR USA, POMPANO BEACH, FLORIDA
 MISSILE LEVEL D IMPACT RESISTANT
 RE1500 ULTRA ER ROLLING SHUTTER'
- 4- LOADS: THE DESIGNED LOAD MUST BE CALCULATED BY A PROFESSIONAL ARCHITECT OR ENGINEER AS PER ASCE 7-02. 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 AS SPECIFIED IN THE CURRENT SET OF DRAWINGS. INSTALLATION AND LOADS AS PER THIS APPROVAL.
- 7- USE: IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, ARCHITECT OR ENGINEER OF RECORD TO VERIFY THE FOLLOWING:
 7.1- THE STABILITY OF THE STRUCTURE WHERE THE SHUTTER IS TO BE ATTACHED INSURING PROPER ANCHORAGE.
 7.2- THE SITE SPECIFIC PROJECT CRITERIA, SUCH AS BUT NOT LIMITED TO, WIND LOADS, LOCAL CODE REQUIREMENTS, DESIGNED PRESSURES ETC.
 7.3- THAT THIS APPROVAL IS ADEQUATE TO THE SPECIFIC PROJECT.
- 8- DISCLAIMER: ENGCO INC. HAS NO CONTROL IN THE MANUFACTURING AND/OR PERFORMANCE OF THIS PRODUCT. THESE GENERIC PLANS WERE ENGINEERED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES AND TEST DATA PROVIDED BY THE MANUFACTURER.
- 9- 33 1/3% INCREASE IN ALLOWABLE LOADS HAVE NOT BEEN USED IN THE DESIGN OF THE ANCHORS FOR THIS PRODUCT APPROVAL.
- 10- THE ROLL-UP MECHANISM (GEARS, MOTORS, SUPPORTING END PLATES) ARE NOT PART OF THIS APPROVAL. MANUFACTURER ARE RESPONSIBLE TO SPECIFY THESE COMPONENTS FOR PROPER SHUTTER OPERATION.
- 11- THIS PRODUCT IS DESIGN FOR USE ONLY IN THE NON HIGH VELOCITY HURRICANE ZONES (HVHZ).
 11.1 'NON HVHZ' - PRODUCT MEETS THE CLASSIFICATION OF ASTM E1996-05 FOR 'NON POROUS' PROTECTIVE DEVICE. SEPARATION FROM FENESTRATION ASSEMBLIES ARE NOT REQUIRED.
 EXCEPTION: FOR INSTALLATION IN WIND ZONE 4 (WIND SPEED >140 mph) AND IN ESSENTIAL FACILITIES IN ALL WIND ZONES SYSTEM MUST BE INSTALLED OFFSET FROM THE FENESTRATION ASSEMBLY TO BE PROTECTED AS PER TABLE 1 (GS)
 11.2 'HVHZ' (BROWARD AND MIAMI-DADE COUNTIES)- NOT ACCEPTABLE

TABLE 1 - ALLOWABLE DESIGNED PRESSURE				CONTRACTOR TO VERIFY ADEQUACY OF STRUCTURE FOR MAXIMUM IMPOSED LOADS VY AND VX	
TT MAX.	ALLOWABLE WIND PRESSURES		G. S.	TRACK REACTIONS	
	POSITIVE	NEGATIVE		Vy	Vx
273'	+ 40.0	- 40.0	17	455	2382
249'	+ 45.0	- 45.0	17	467	2323
225'	+ 52.0	- 52.0	16	488	2321
201'	+ 61.0	- 61.0	15	512	2355
177'	+ 71.0	- 71.0	13	524	2344
153'	+ 82.0	- 82.0	12	524	2281
120'	+105.0	-105.0	8	525	2438

NOTES:
 1- DESIGNED PRESSURES MUST NOT EXCEED 105 PSF
 2- SHUTTER SIZE (TT) MUST NOT EXCEED 273'
 3- GS - GLASS SEPARATION IN INCHES AS PER NOTE 11

MULTIPLE SHUTTERS NOTES:
 1- USE TABLE 1 TO VERIFY MAXIMUM ALLOWABLE PRESSURE
 2- USE TABLE 6 TO SELECT INTERMEDIATE MULLIONS
 3- USE TABLE 7 TO SELECT PROPER MULLION ANCHORAGE

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3	TYPICAL HORIZONTAL SECTIONS & ANCHORAGE SCHEDULE
4	TYPICAL HORIZONTAL SECTIONS & ANCHORAGE SCHEDULE
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7	EQUALLY SPACED MULLIONS CONNECTIONS
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DESIGN SCHEDULE	
COMPONENT	SHEET
SLAT ALLOWABLE PRESSURE	1
TRACK ANCHORAGE SPACING	3 & 4
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ALLOWABLE DESIGNED PRESSURE FOR MULTIPLE SHUTTERS ARE FUNCTION OF THE LOWEST ALLOWABLE DESIGNED LOAD FOR THE SLATS, MULLIONS AND ANCHORAGE.

MANUFACTURER:
Roller Star USA
 1460 SW 6TH CT
 BUILDING 1400
 POMPANO BEACH -
 FLORIDA
 TEL.: 800 782-7005
 FAX: 954 917-6641

PRODUCT:
RE1500 ULTRA ER
 EXTRUDED ALUMINUM
 ROLLING SHUTTER W/
 END RETENTION

Engineering:
EngCo Inc.
 CA 8116
 6971 W. Sunrise Blvd. 104
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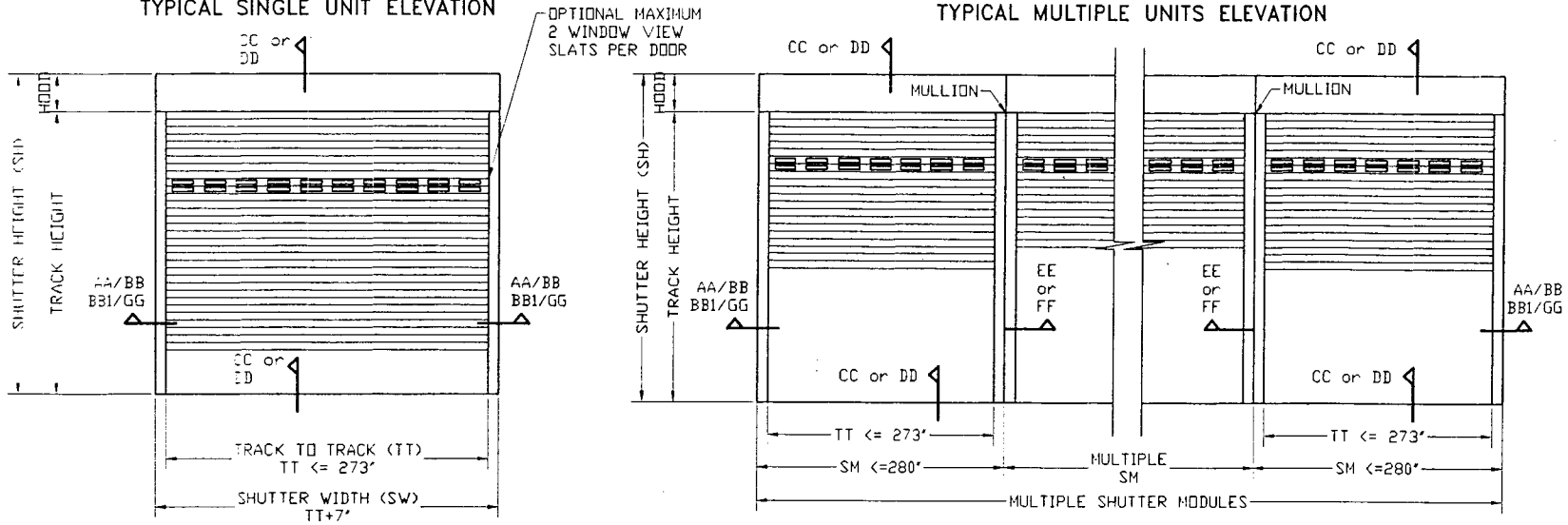
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TYPICAL ELEVATIONS

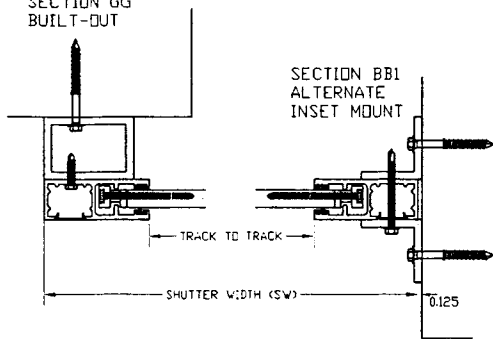
TYPICAL SINGLE UNIT ELEVATION

TYPICAL MULTIPLE UNITS ELEVATION



SECTION GG
BUILT-OUT

SECTION BB1
ALTERNATE
INSET MOUNT

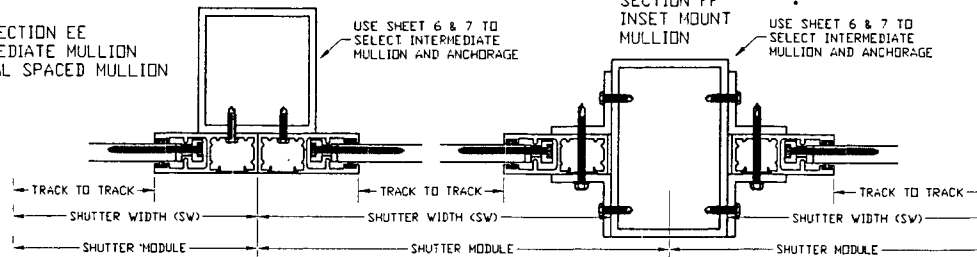


SECTION EE
INTERMEDIATE MULLION
WITH EQUAL SPACED MULLION

USE SHEET 6 & 7 TO
SELECT INTERMEDIATE
MULLION AND ANCHORAGE

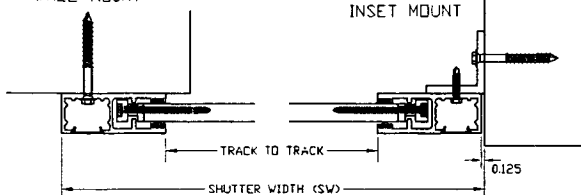
SECTION FF
INSET MOUNT
MULLION

USE SHEET 6 & 7 TO
SELECT INTERMEDIATE
MULLION AND ANCHORAGE



SECTION AA
WALL MOUNT

SECTION BB
INSET MOUNT



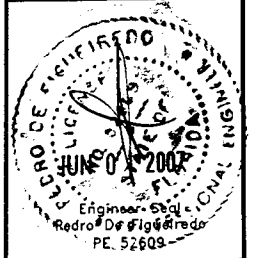
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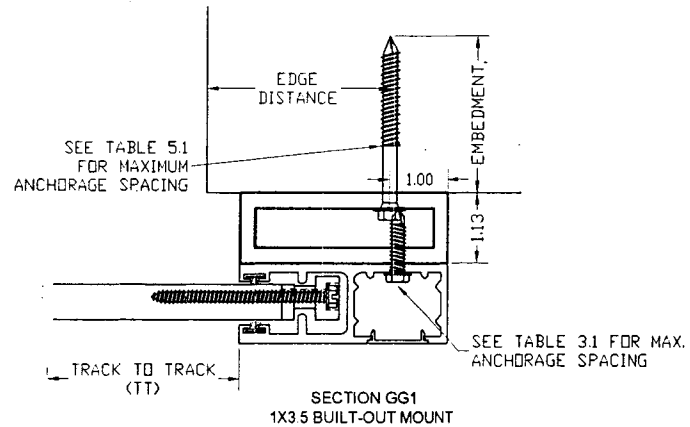
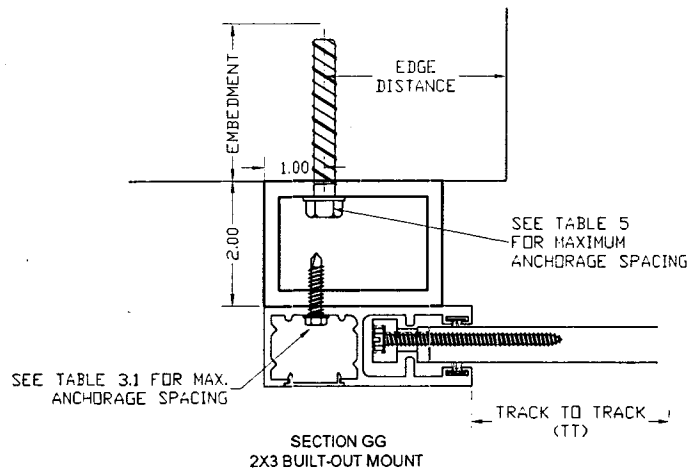


TABLE 5 - SECTION GG
MAXIMUM ANCHORAGE SPACING (in. OC)

MAX. TT	ANCHOR TYPE A			ANCHOR TYPE SEE ANCHOR SCHEDULE
	PD	120	153	
40	7.0	5.0	4.5	
45	6.0	5.0		
46	6.0	5.0		
52	5.0	4.5		
53	5.0	4.5		
60	5.0			
61	5.0			
62	4.5			

EXAMPLE: TT=153", PD=62PSF
ANCHOR TYPE A
SPACED AT 4 1/2" OC

TABLE 5.1 - SECTION GG1
MAXIMUM ANCHORAGE SPACING (in. OC)

MAX. TT	ANCHOR TYPE A								ANCHOR TYPE SEE ANCHOR SCHEDULE	
	PD	120	153	177	201	225	249	273		
40	8.0	4.0	4.0	4.0	7.0	6.0	5.0	5.0	5.0	4.5
45	8.0	3.8	4.0	3.8	6.0	5.0	5.0	5.0	5.0	5.0
46	8.0	3.8	4.0	3.8	6.0	5.0	5.0	5.0	5.0	5.0
52	7.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
53	7.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
60	6.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
61	6.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
62	6.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
70	5.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
71	5.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
79	5.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
80	5.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
82	5.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0
105	5.0	---	---	---	5.0	5.0	5.0	5.0	5.0	5.0

EXAMPLE: TT=120", PD=105 PSF
ANCHOR TYPE A
SPACED AT 5" OC

ANCHOR SCHEDULE:				
ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
A	3/8" X 4" WEDGE BOLTS	MIN. 3000 PSI CONCRETE	3 1/2"	4 1/2"
A1	5/16" X 3" TAPCONS	MIN. 2899 PSI CONCRETE	2 1/4"	3 1/8"
B	3/8" X 4" WEDGE BOLTS	GROUT FILLED C-90 BLOCK	3 1/2"	3 3/4"
B1	5/16" X 3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
C	1/4"-14X1" SDS GRADE 5	MIN. 1/4" 6063-T6 ALUM.	-	1/2"

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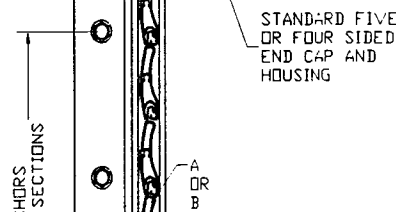
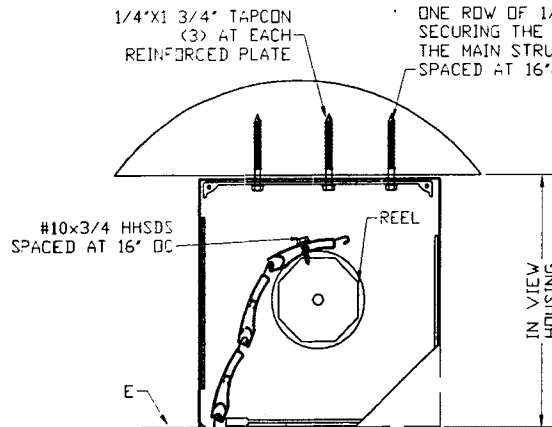
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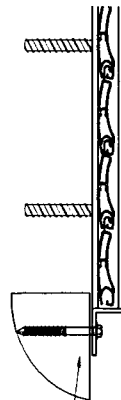
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TYPICAL VERTICAL SECTIONS

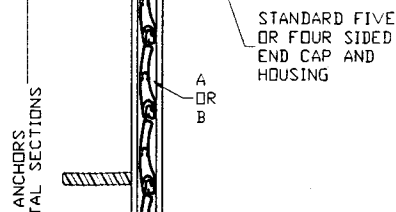
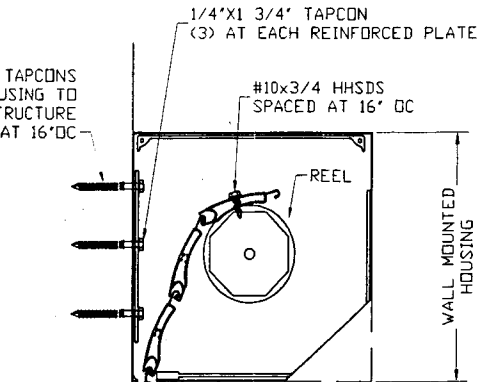


SECTION CC
CEILING / FLOOR MOUNT
CEILING / WALL MOUNT

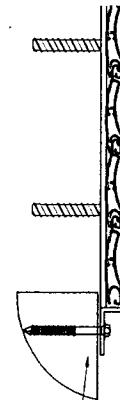


OPTIONAL SILL WALL MOUNTED
1/8-2x1 NON STRUCTURAL 6063-T5
ANGLE ANCHORED TO WALL WITH
1/4" x 1 3/4" TAPCONS SPACED AT 24" OC

ONE ROW OF 1/4x1 3/4" TAPCONS
SECURING THE HOUSING TO
THE MAIN STRUCTURE
SPACED AT 16" OC



SECTION DD
WALL / FLOOR MOUNT
WALL / WALL MOUNT

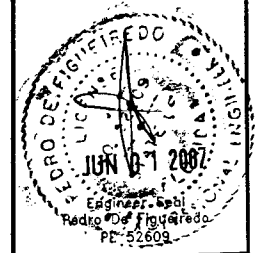


OPTIONAL SILL WALL MOUNTED
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EQUALLY SPACED MULLIONS SELECTION

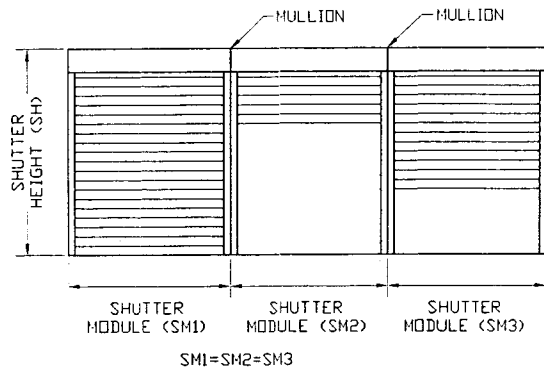


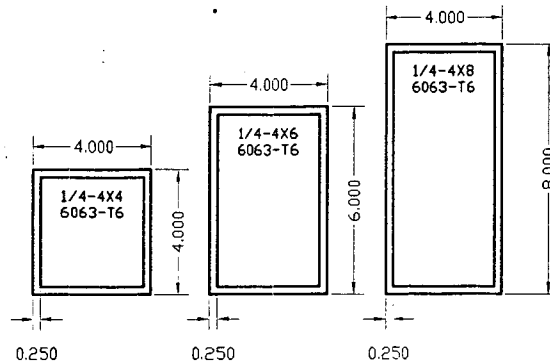
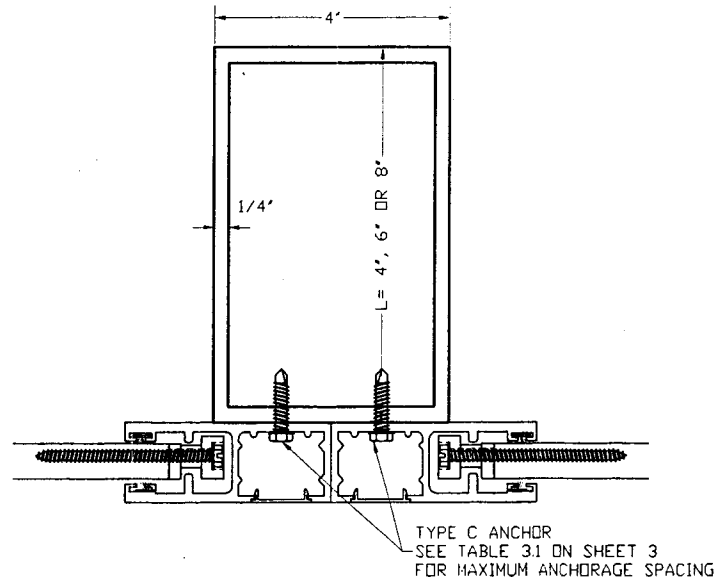
TABLE 6 - EQUAL SPACED MULLION DESIGNED PRESSURES (PSF)

SHUTTER MODULE	MULLION TYPE & MAX. HEIGHT								
	1/4-4x8			1/4-4x6			1/4-4x4		
280	35	39	40	30	40	40	--	--	30
256	38	45	45	32	45	45	--	30	35
232	42	50	52	36	49	52	31	35	41
208	47	56	61	40	55	61	34	39	45
184	53	64	71	45	62	71	42	48	56
160	61	73	82	52	72	82	55	63	73
127	77	92	105	66	91	105	69	79	92

NOTES:

- 1- MULLIONS WERE DESIGNED BY RATIONAL ANALYSIS BASED ON THE ALUMINUM DESIGN MANUAL 2005 ED. AND THE FLORIDA BUILDING CODE.
- 2- DEFLECTION CRITERIA: MAXIMUM SPAN /180
- 3- TABLE 6 IS APPLICABLE ONLY FOR EQUAL MODULES SM1=SM2=SM3.
- 4- UNEQUAL MODULES ARE TO BE DESIGNED BY RATIONAL ANALYSIS IN A CASE BY CASE BASIS.

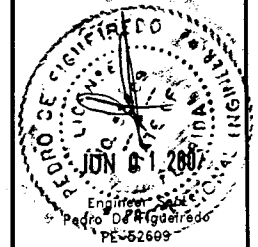
MULLIONS SECTIONS



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EQUALLY SPACED MULLIONS WALL AND FLOOR CONNECTIONS

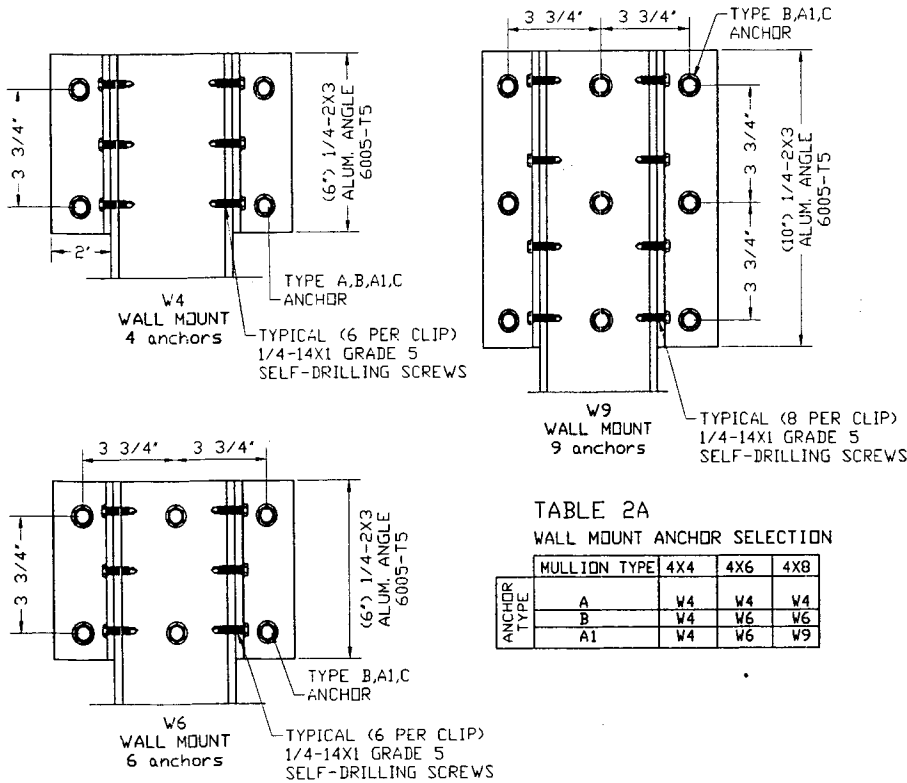
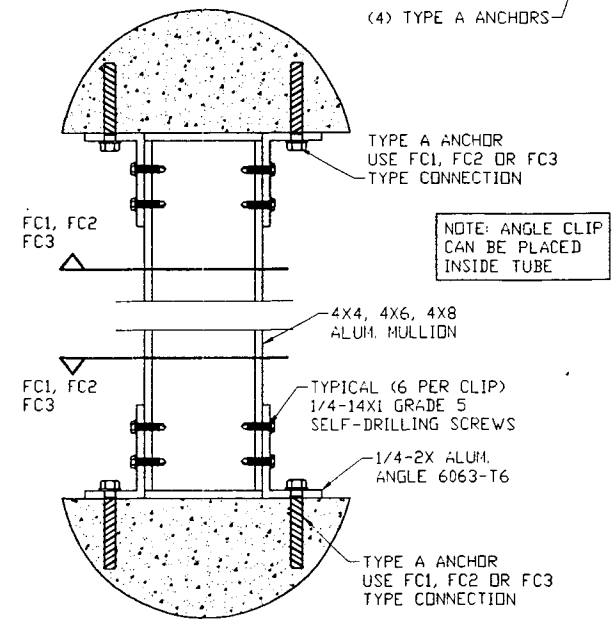
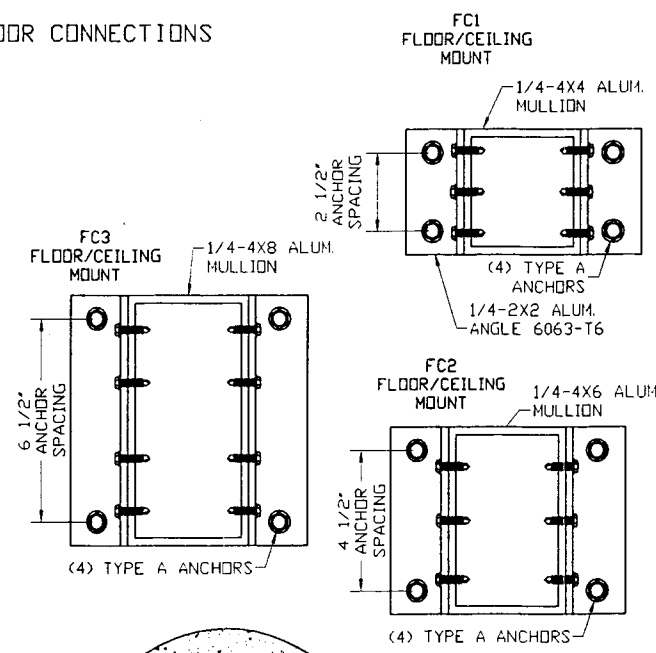


TABLE 2A
WALL MOUNT ANCHOR SELECTION

ANCHOR TYPE	MULLION TYPE		
	4X4	4X6	4X8
A	W4	W4	W4
B	W4	W6	W6
A1	W4	W6	W9

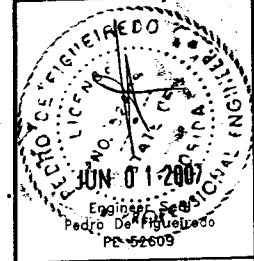
ANCHOR SCHEDULE:				
ANCHOR	DESCRIPTION	MATERIAL	EMBEDMENT	EDGE DISTANCE
A	3/8" x 4" WEDGE BOLTS	MIN. 3000 psi CONCRETE	3 1/2"	4 1/2"
A1	5/16" x 3" TAPCONS	MIN. 2899 psi CONCRETE	2 1/4"	3 1/8"
B	3/8" x 4" WEDGE BOLTS	GROUT FILLED C-90 BLOCK	3 1/2"	3 3/4"
B1	5/16" x 3" TAPCONS	GROUT FILLED C-90 BLOCK	2 1/4"	4"
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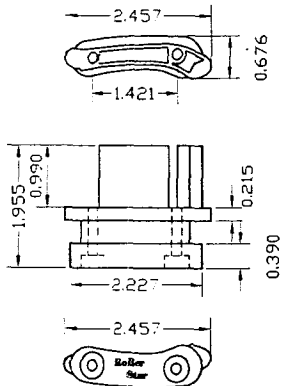


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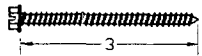
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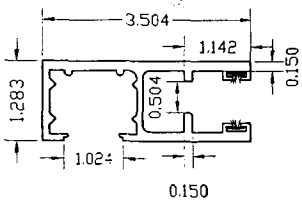
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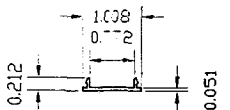
D1- NYLON RETAINER



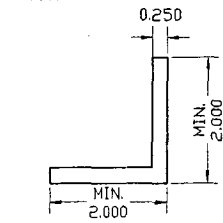
D- SLAT RETENTION SCREW
#14X3" HEX HEAD SDS



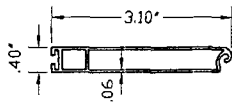
C- GUIDE RAIL W/ FELT
6005-T5 EXTRUDED ALUMINUM



C1- TRACK SNAP COVER
6063-T5 EXTRUDED ALUMINUM

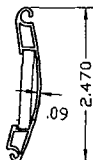


E- INSET SUPPORT ANGLE
EXTRUDED ALUMINUM
6061-T6 or 60005-T5

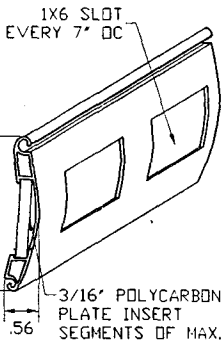


G- BAS#A75 END SLAT
COMPATIBLE WITH RE 1500
6063-T6 Alloy

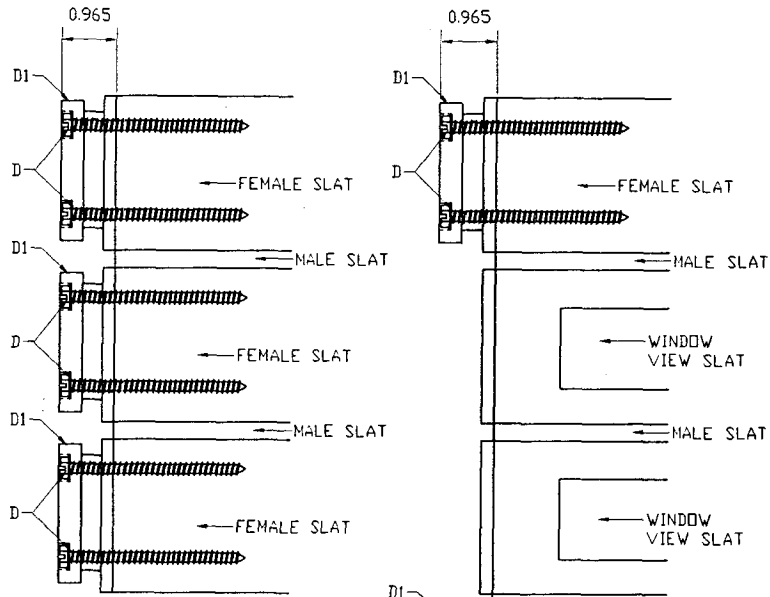
A- RE1500 ULTRA ER
MALE & FEMALE SLATS
6063-T6 EXTRUDED ALUMINUM



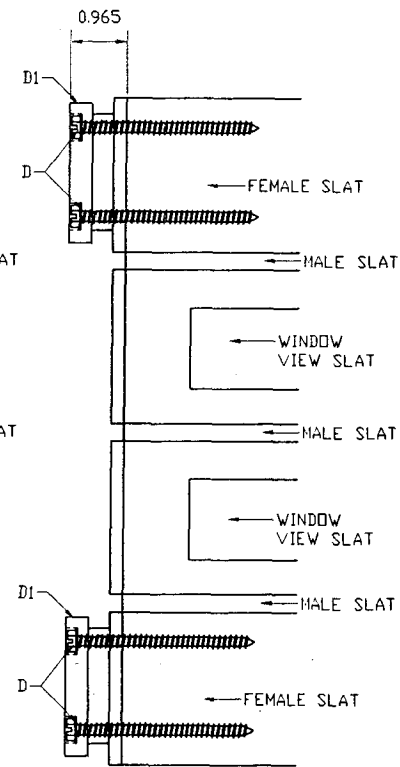
RE 1500VP WINDOW VIEW SLATS
.05 EXTRUDED ALUMINUM
6063-T5 Alloy
NOTE: MAXIMUM 2 SLATS PER DOOR



1X6 SLOT
EVERY 7" OC
3/16" POLYCARBONATE
PLATE INSERT
SEGMENTS OF MAX. 135"



RE1500 END RETENTION



RE1500 END RETENTION
AT WINDOW VIEW SLATS

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PRODUCT:
RE1500 ULTRA ER
EXTRUDED ALUMINUM
ROLLING SHUTTER W/
END RETENTION

Engineering:
EngCo Inc.
CA 8116
6971 W. Sunrise Blvd. 104
Plantation, FL 33313
Tel.: (954) 585-0304
Fax: (954) 585-0305



Date: 4/28/07
Scale: na
Design by: PPMF

DRAFTING:
PK DRAFTING & MORE

Drawing Number
07-060

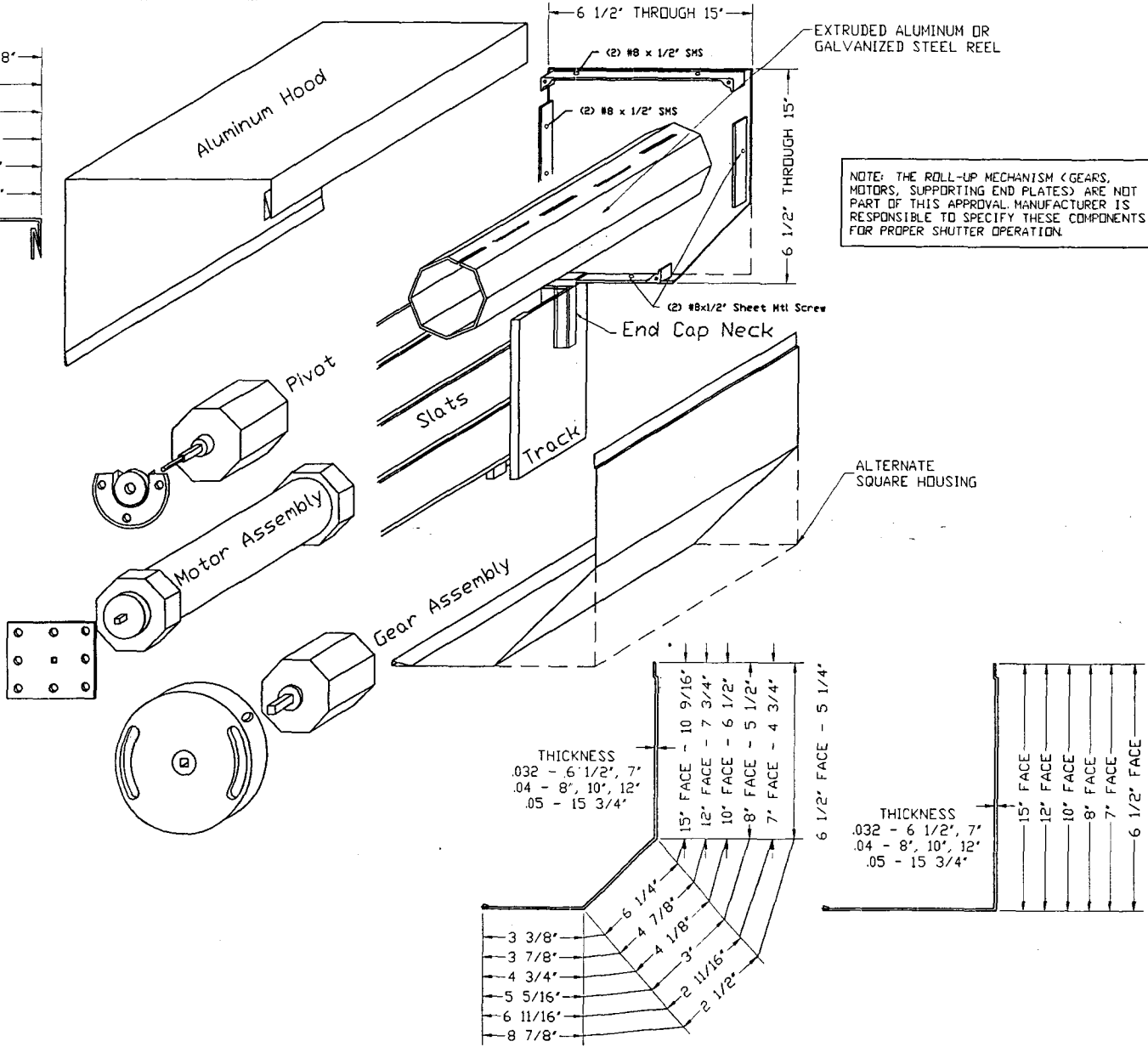
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HOOD ASSEMBLY

6 1/2" HOOD	- 6 3/8"
7" HOOD	- 7"
8" HOOD	- 8"
10" HOOD	- 9 7/8"
12" HOOD	- 11 7/8"
15" HOOD	- 15 5/8"

THICKNESS

.032	- 6 1/2", 7"
.04	- 8", 10", 12"
.05	- 15 3/4"

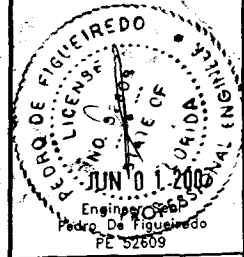


NOTE: THE ROLL-UP MECHANISM (GEARS, MOTORS, SUPPORTING END PLATES) ARE NOT PART OF THIS APPROVAL. MANUFACTURER IS RESPONSIBLE TO SPECIFY THESE COMPONENTS FOR PROPER SHUTTER OPERATION.

MANUFACTURER:
Roller Star USA
 1460 SW 6TH CT
 BUILDING 1400
 POMPAD BEACH -
 FLORIDA
 TEL.: 800 782-7009
 FAX : 954 917-8641

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