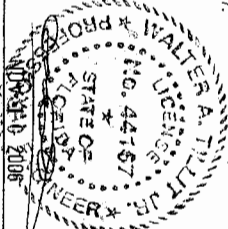


**GENERAL NOTES:**

1. ASSA/40mm & 60mm BERTHA ROLL-UP SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR CODE COMPLIANCE IN ACCORDANCE WITH THE 2004 EDITION OF THE FLORIDA BUILDING CODE WITH THE 2005 SUPPLEMENT.
- THIS ROLL-UP SHUTTER SYSTEM MAY BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES CORRESPONDING ONLY TO BASIC WIND SPEEDS OF 140 M.P.H.
- DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1620 OF THE ABOVE MENTIONED CODE. IN ORDER TO VERIFY THAT COMPONENTS AND ANCHORS ON THIS P.E.D. AS TESTED WERE NOT OVER STRESSED, A 33% INCREASE IN ALLOWABLE STRESS FOR WIND LOADS WAS **NOT** USED IN THEIR ANALYSIS. A DURATION FACTOR CD=1.60 WAS USED FOR VERIFICATION OF FASTENERS IN WOOD.
- ASSA/40mm & 60mm BERTHA ROLL-UP ADEQUACY FOR IMPACT AND FATIGUE RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.4 OF THE ABOVE MENTIONED CODE AS PER FENESTRATION TESTING LAB REPORTS # 2749 & 2760 (FOR 40mm SLAT) AND 2751 & 2760 (FOR 60mm SLAT) AS PER TAS-201, TAS-202 & TAS-203 PROTOCOLS.
2. ALL ALUMINUM EXTRUSIONS SHALL BE 6063-T6 ALLOY (UNLESS OTHERWISE NOTED).
3. ALL SCREWS TO BE STAINLESS STEEL 304 OR 316 SERIES W/50 KSI YIELD STRENGTH AND 90 KSI TENSILE STRENGTH OR CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018. ALL S.M.S. ARE TEK SCREWS MANUFACTURED BY INW-BULDEX.
4. BOLTS TO BE A.S.T.M. A-307, GALVANIZED OR AISI 304 SERIES STAINLESS STEEL WITH 36 KSI MINIMUM YIELD STRENGTH.
5. STORM BARS AT FLOOR OR CEILING MOUNTING INSTALLATIONS MAY BE REMOVABLE AT NON HURRICANE CONDITIONS. HOWEVER, EACH STORM BAR SHALL BEAR A PERMANENT LABEL IN A VISIBLE PLACE WITH A WARNING NOTE INSTRUCTING THE TENANT OR OWNER THAT STORM BARS MUST BE INSTALLED WITH CORRESPONDING HARDWARE DURING PERIODS OF HURRICANE WARNING AND THAT ROLL UP SHUTTERS WILL NOT OFFER HURRICANE PROTECTION UNLESS ALL STORM BARS ARE INSTALLED AS DIRECTED.
6. REMOVABLE STORM BARS SHALL BE STORED IN A CONSPICUOUS PLACE WITH EASY AND IMMEDIATE ACCESS SO THAT THEY CAN BE REACHED AND INSTALLED ANY TIME (HURRICANE CONDITIONS OR NOT) SLATS ARE ROLLED DOWN. THE EFFECT OF THE SLATS ROLLED DOWN WITHOUT STORM BARS IS: THOSE SLATS WILL SLIP OUT OF TRACK DUE TO THE DEFLECTION CAUSED BY WIND FORCES.
7. ANCHORS TO WALL FOR SIDE RAILS & BOX CONNECTION SHALL BE AS FOLLOWS: (UNLESS OTHERWISE NOTED)
  - (A) TO EXISTING POURED CONCRETE ( $f'_c = 3320 \text{ psi Min.}$ ):
    - 1/4"  $\emptyset$  TAPCON ANCHORS AS MANUFACTURED BY ELCO TEXTRON.
  - NOTES:
    - A.1) MINIMUM EMBEDMENT OF TAPCON ANCHORS INTO POURED CONCRETE SHALL BE 1 3/4".
    - NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
  - A.2) IN CASE THAT PRECAST STONE, PRECAST CONCRETE PANELS, OR PAVERS BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS.
- (B) TO EXISTING CONCRETE BLOCK WALL: ASTM C--90
  - 1/4"  $\emptyset$  TAPCON ANCHORS, AS MANUFACTURED BY ELCO TEXTRON.
- NOTES:
  - B.1) MINIMUM EMBEDMENT OF TAPCON ANCHORS INTO THE CONCRETE BLOCK UNIT SHALL BE 1 1/4".
  - B.2) IN CASE THAT PRECAST STONE, PRECAST CONCRETE PANELS, OR PAVERS BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS.
- (C) ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.
- (D) ANCHORS REQUIRED FOR STORM BARS, HEADERS & MILLION CONNECTIONS TO CONCRETE ( $f'_c = 3 \text{ ksi Min.}$ ) SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEET 5, 6A, 6, & 7 OF 14 RESPECTIVELY. POWER BOLTS & CALK-IN ANCHORS TO BE AS MANUFACTURED BY POWERS FASTENERS, INC. 1/4"  $\emptyset$  TAPCON ANCHORS, AS MANUFACTURED BY ELCO TEXTRON. MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT CORRESPONDING SHEET, WHICHEVER IS LARGER (MORE CRITICAL).

ANCHOR	SPACING	EDGE DISTANCE	CONCRETE EMBEDMENT	CONCRETE BLOCK
3/8" $\emptyset$ POWER BOLT	3 3/4"	4 1/2"	2 1/2" (2000 psi)	1 1/2"
1/4" $\emptyset$ CALK-IN	2 1/2"	3"	7/8" (3000 psi)	1 1/8"
3/8" $\emptyset$ CALK-IN	3 3/4"	4 1/2"	1 1/4" (3000 psi)	1 1/4"
1/4" $\emptyset$ TAPCON	5"	2 1/2"	1 3/4" (3000 psi)	1 1/4"
1/2" $\emptyset$ POWER BOLT	5"	6"	2 1/2" (2000 psi)	1 1/2"

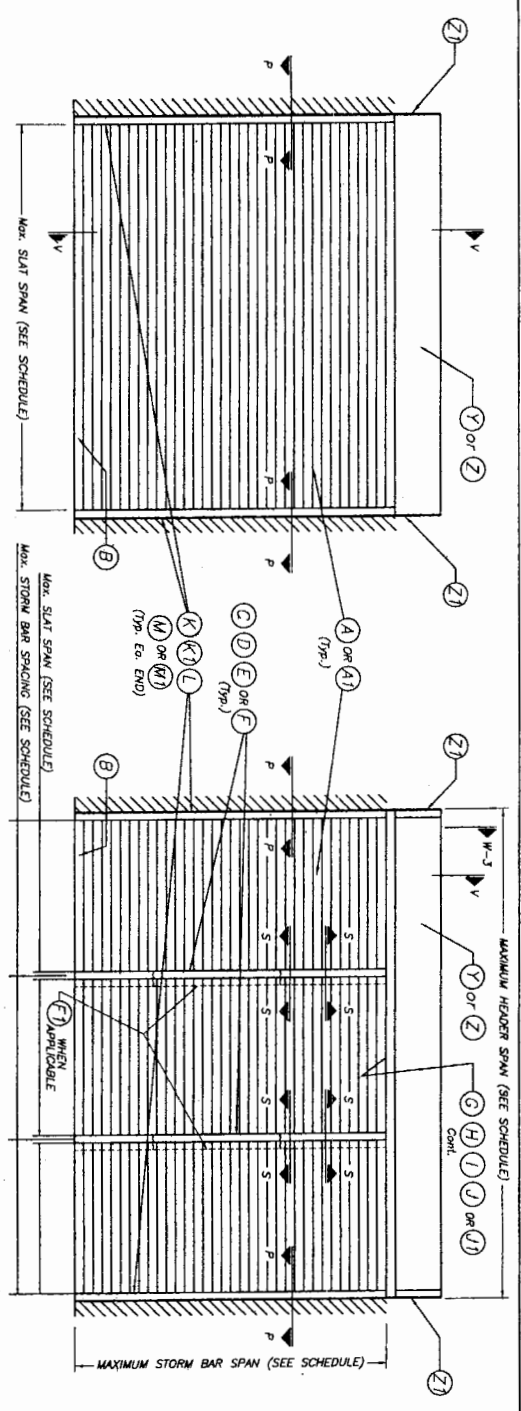
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE.
9. SHUTTER MANUFACTURER'S STAMP LABEL BE PLACED ON THE EXPOSED SURFACE OF THE SIDE RAIL APPROXIMATELY 4" ABOVE THE BOTTOM OF SUCH RAIL. LABEL SHALL READ AS FOLLOWS:  
AMERICAN SHUTTERS SYSTEMS ASSOC., INC.  
WEST PALM BEACH, FL.  
FLORIDA STATEWIDE PRODUCT APPROVED.
10. ROLL-UP MECHANISM NOT PART OF THIS APPROVAL, BUT SHALL BE CERTIFIED BY AN INDEPENDENT TESTING AGENCY.
11. (A) THIS (P.E.D.) PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT, I.E. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.E.D.  
(B) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS PRODUCT P.E.D. PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.  
(C) THIS PRODUCT EVALUATION DOCUMENT WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.  
(D) SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A FLORIDA REGISTERED ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D.  
(E) THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.
12. ONCE ALL COMPONENTS HAVE BEEN CHOSEN, CHECK FOR COMPLIANCE WITH SECTION 1613.1.9 OF THE FLORIDA BUILDING CODE 2004.



**TILECO INC.**  
TILE TESTING & ENGINEERING COMPANY  
4288 WESTWOODS DRIVE  
WEST PALM BEACH, FL 33407  
WALTER A. TRUITT, P.E.  
FLORIDA LIC # 44187

ASSA/40mm & 60mm BERTHA ROLL-UP	DRAWN BY F.P.
AMERICAN SHUTTER SYSTEMS ASSOC., INC.	DATE 11/04/06
4288 WESTWOODS DRIVE WEST PALM BEACH, FL 33407	06--263
SHEET 1 OF 14	DRAWING NO

F.B.C. (High Velocity Hurricane Zone)

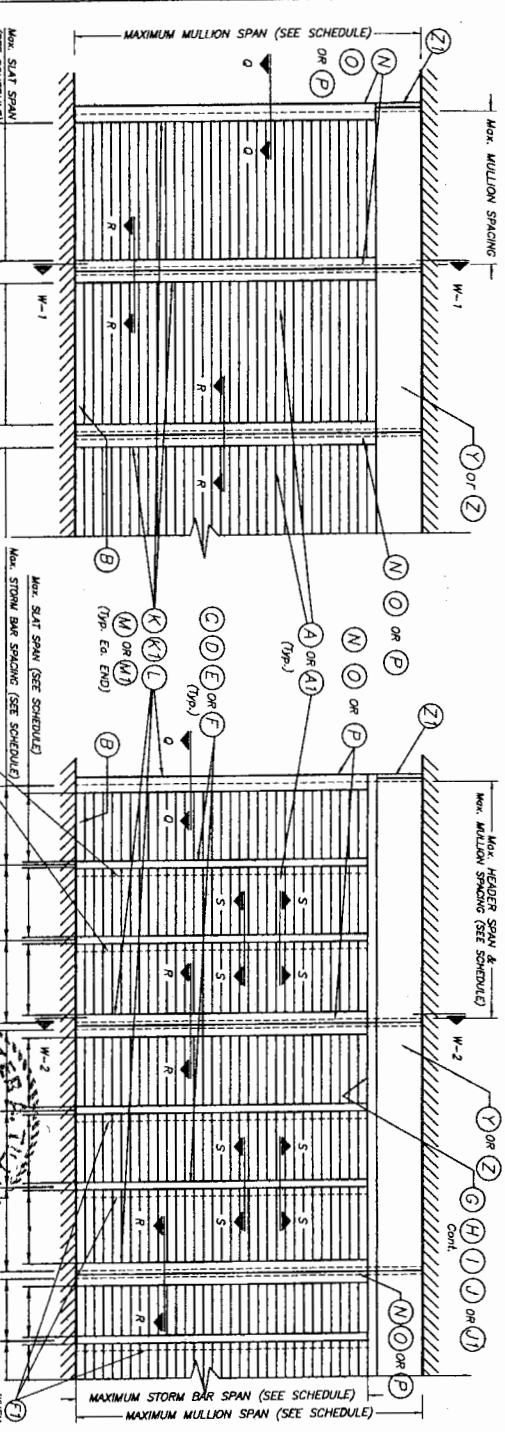


**TYPICAL SINGLE UNIT ELEVATION (NO STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 14 FOR COMPONENTS NOMENCLATURE.

**TYPICAL MULTIPLE UNIT ELEVATION (STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 14 FOR COMPONENTS NOMENCLATURE.



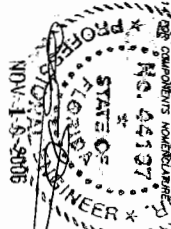
**TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION (NO STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 14 FOR COMPONENTS NOMENCLATURE.

**TYPICAL CONSECUTIVE MULTIPLE UNIT ELEVATION (STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 14 FOR COMPONENTS NOMENCLATURE.

NOTE: SEE SCHEDULE FOR SHEETS 4 THRU 7.



**TILECO INC.**  
 TILT UP TESTING & ENGINEERING COMPANY  
 4408 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407  
 WALTER A. TILIT, P.E.  
 FLORIDA LIC. # 14157

F.B.C. (High Velocity Hurricane Zone)  
 ASSA 40mm & 60mm BERTHA ROLL-UP

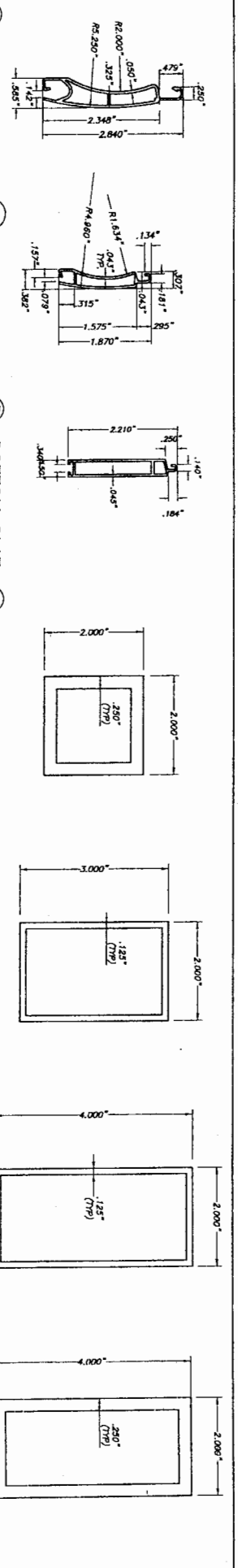
REV. NO.	DESCRIPTION	DATE	BY	DATE
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2				
3				

AMERICAN SHUTTER SYSTEMS ASSOC., INC.  
 4408 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407

11/24/06  
 DATE

06-263  
 DRAWING NO.

SHEET 14 OF 14



**(A) TYPE 1 SLAT:** 60 mm EXTRUDED ALUMINUM SLAT  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"

**(A1) TYPE 2 SLAT:** 40 mm EXTRUDED ALUMINUM SLAT  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"

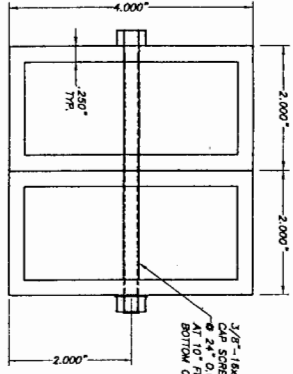
**(B) BOTTOM SLAT:** EXTRUDED ALUMINUM BOTTOM SLAT  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"

**(C) TYPE 1 STORM BAR:** 2" EXTRUDED STORM BAR  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"

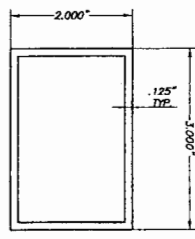
**(D) TYPE 2 STORM BAR:** 3" EXTRUDED STORM BAR  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"

**(E) TYPE 3 STORM BAR:** 4" EXTRUDED STORM BAR  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"

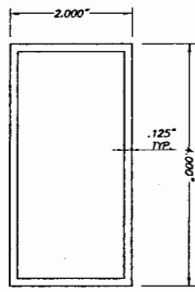
**(F) TYPE 4 STORM BAR:** 4" HEAVY EXTRUDED STORM BAR  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"



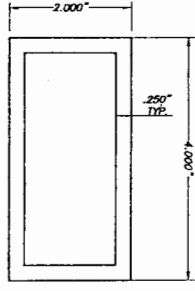
**(F1) TYPE 5 STORM BAR:** 4" HEAVY EXTRUDED STORM BAR  
6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"



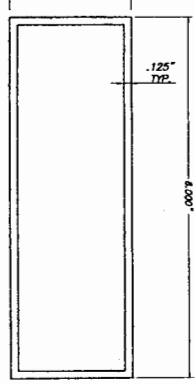
**(G) HEADER TYPE 1:** 6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"



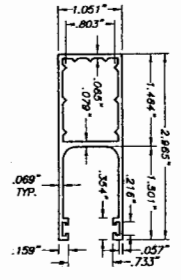
**(H) HEADER TYPE 2:** 6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"



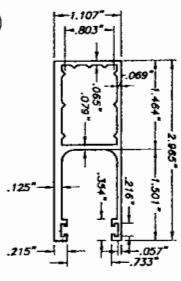
**(I) HEADER TYPE 3:** 6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"



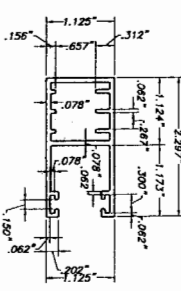
**(J) HEADER TYPE 4:** 6063-T6 ALUMINUM ALLOY  
SCALE: 1/2" = 1"



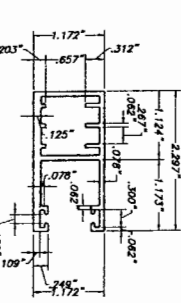
**(K) TYPE 1 SIDE RAIL: FOR (A)**  
6063-T6 ALUM. ALLOY  
SCALE: 1/2" = 1"



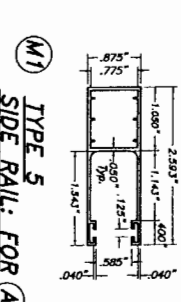
**(K1) TYPE 2 SIDE RAIL: FOR (A)**  
6063-T6 ALUM. ALLOY  
SCALE: 1/2" = 1"



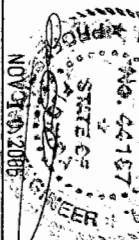
**(L) TYPE 3 SIDE RAIL: FOR (A)**  
6063-T6 ALUM. ALLOY  
SCALE: 1/2" = 1"



**(M) TYPE 4 SIDE RAIL: FOR (A)**  
6063-T6 ALUM. ALLOY  
SCALE: 1/2" = 1"



**(M1) TYPE 5 SIDE RAIL: FOR (A)**  
6063-T6 ALUM. ALLOY  
SCALE: 1/2" = 1"



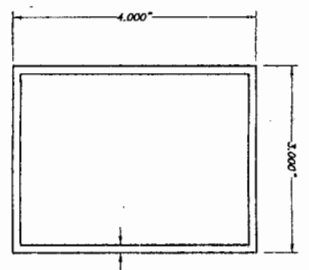
**TILECO INC.**  
TILT TESTING & ENGINEERING COMPANY  
426 WESTWOODS DRIVE  
WEST PALM BEACH, FL 33407  
WALTER E. WILSON, P. E.  
FLORIDA LIC. #44187

REV. NO.	DESCRIPTION	DATE	REV. NO.	DESCRIPTION	DATE
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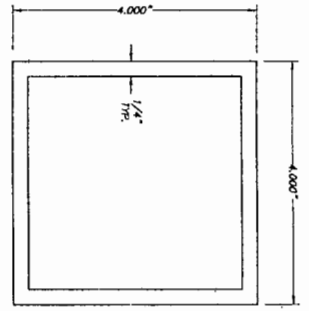
AMERICAN SHUTTER SYSTEMS ASSOC., INC.  
426 WESTWOODS DRIVE  
WEST PALM BEACH, FL 33407

ASSA/40mm & 60mm BERTHA ROLL-UP  
DRAWN BY: F.P.  
DATE: 11/04/08  
06-263  
DRAWING NO.  
SHEET 2 OF 14

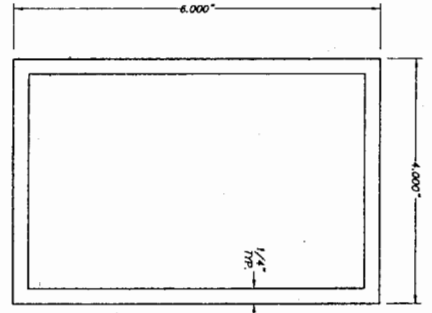
F.B.C. (High Velocity Hurricane Zone)



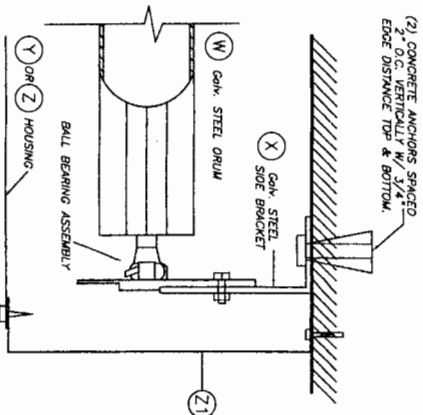
**(N) TYPE 1 MULLION:**  
4" EXTRUDED MULLION  
6063-T6 ALUMINIUM ALLOY  
SCALE: 1/2" = 1"



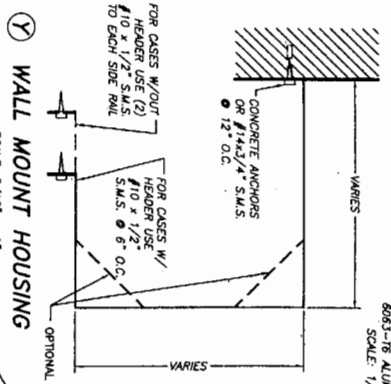
**(O) TYPE 2 MULLION:**  
4" EXTRUDED MULLION  
6063-T6 ALUMINIUM ALLOY  
SCALE: 1/2" = 1"



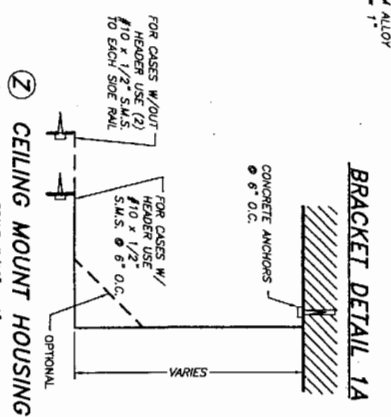
**(P) TYPE 3 MULLION:**  
6" EXTRUDED MULLION  
6063-T6 ALUMINIUM ALLOY  
SCALE: 1/2" = 1"



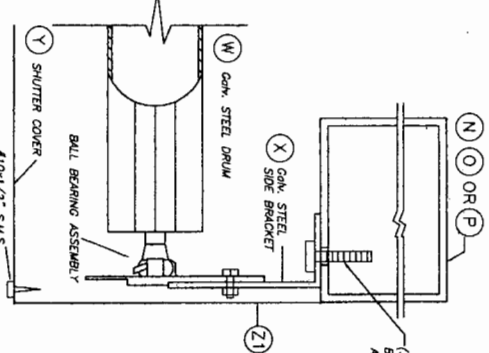
**BRACKET DETAIL 1**



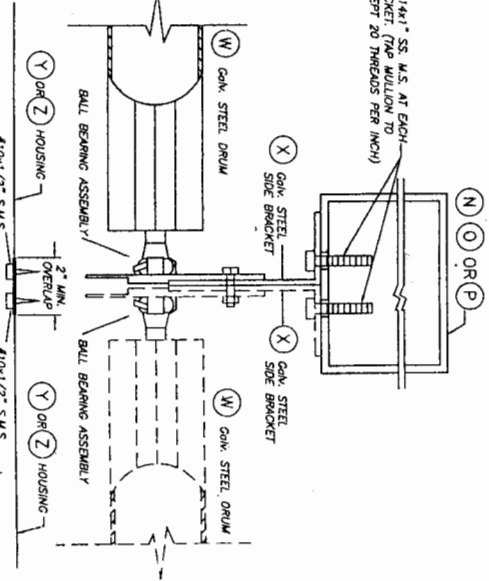
**(Y) WALL MOUNT HOUSING**  
SCALE: 3/16" = 1"  
3105-H14 ALUMINIUM ALLOY  
THICKNESS: .032"



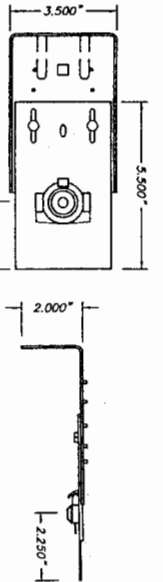
**(Z) CEILING MOUNT HOUSING**  
SCALE: 3/16" = 1"  
3105-H14 ALUMINIUM ALLOY  
THICKNESS: .032"



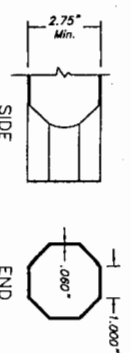
**BRACKET DETAIL 1A**



**BRACKET DETAIL 2**

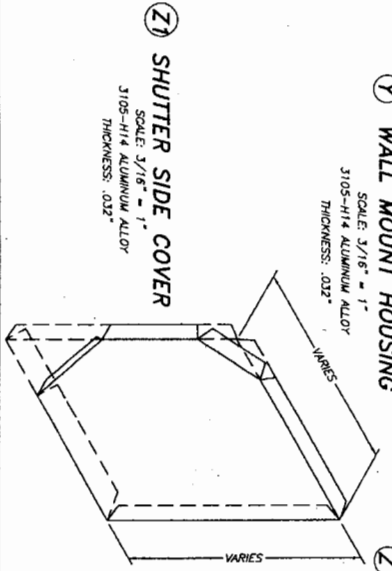


**(X) SIDE BRACKET** SCALE: 1/4" = 1"

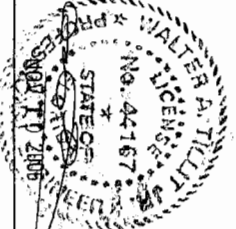


**(W) DRUM** SCALE: 1/4" = 1"

1010 ELITE ROLLED STEEL, F. E.  
P. D. I. Z 200 DESIGNATION  
FIN: 410 ANV/ML/2 OF STRETCH  
MINIMAL ON TEST, BAR OF 80 MM, 24 X  
G-90 GALVANIZED COATING THK: .080"



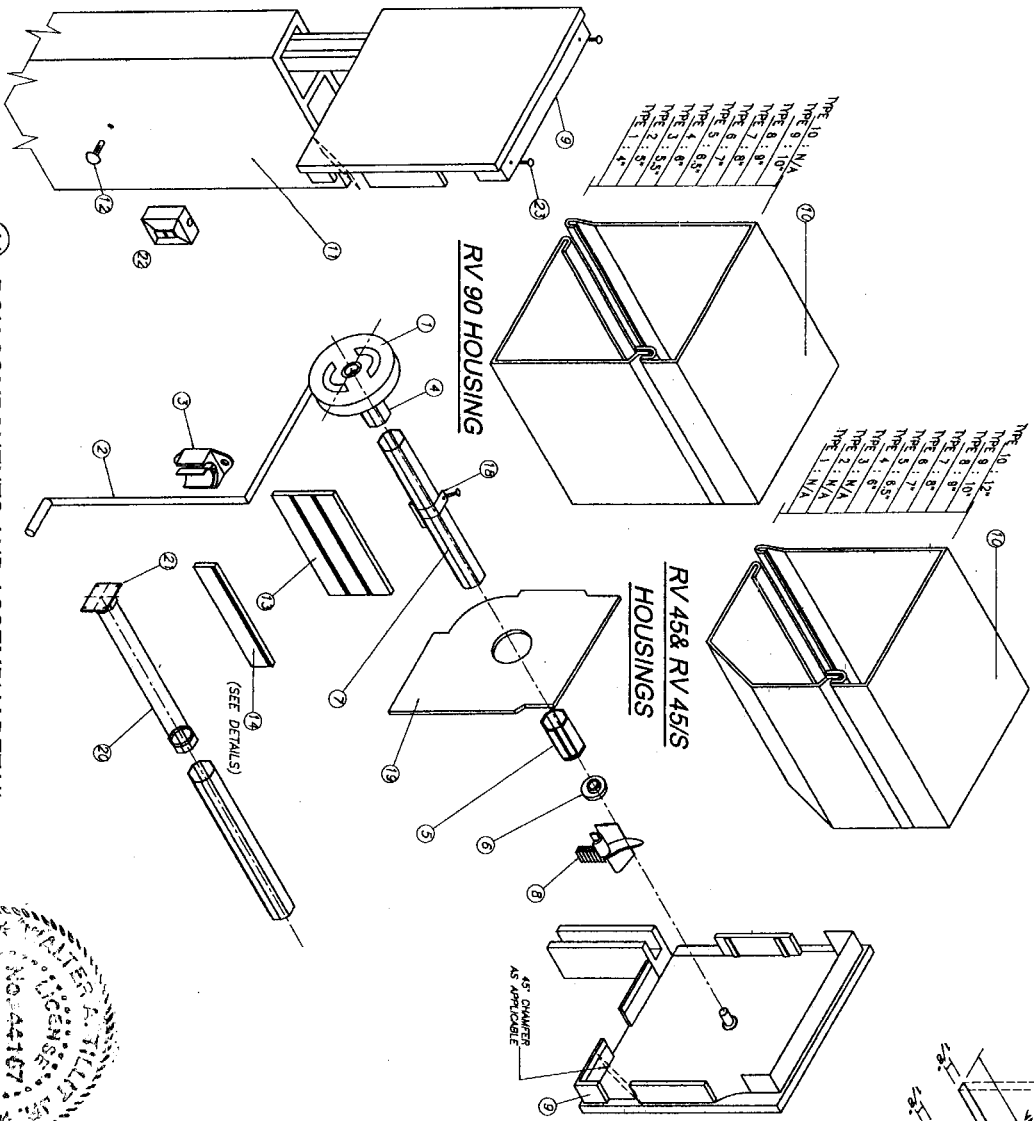
**(Z) SHUTTER SIDE COVER**  
SCALE: 3/16" = 1"  
3105-H14 ALUMINIUM ALLOY  
THICKNESS: .032"



**TILECO INC.**  
TULLIT TESTING & ENGINEERING COMPANY  
1000 N. W. 13th St., Ft. Lauderdale, FL 33304  
WALTER A. TULLIT, P. E.  
FLORIDA LICENSE NO. 44167

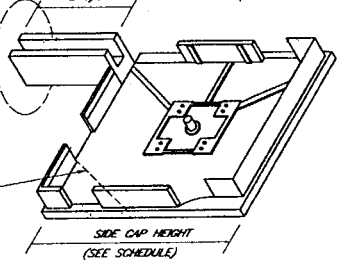
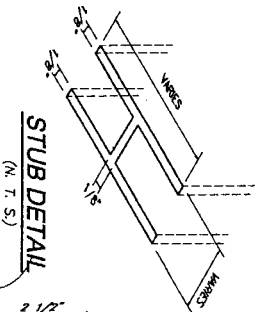
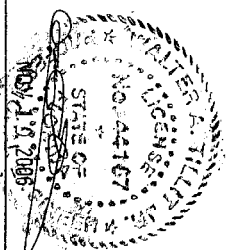
F.B.C. (High Velocity Hurricane Zone)  
ASSA/40mm & 60mm BERTHA ROLL-UP  
DRAWN BY: 11/04/06  
DATE: 06-263  
AMERICAN SHUTTER SYSTEMS ASSOC., INC.  
4296 WESTWOODS DRIVE  
WEST PALM BEACH, FL 33407  
DRAWING NO. SHEET 3 OF 14

**END BRACKET SYSTEM**  
\* SEE NOTE 11 ON SHEET 1 OF 12



**BOX COMPONENTS AND ASSEMBLY DETAIL**

(SEE NOTE 10 ON SHEET 1 OF 14)



**V1 SIDE CAPS:**  
(SEE NOTE 10 ON SHEET 1 OF 14)

**COMPONENTS FOR GEAR OPERATED SYSTEM**

- 1 - GEAR
  - 2 - UNIVERSAL & CRANK
  - 3 - CRANK HOLDER(OPTIONAL)
  - 4 - GEAR INSERT(GEAR TO AXLE CONNECTOR)
  - 5 - IDLER INSERT
  - 6 - BALL BEARING
  - 7 - OCTAGONAL AXLE
  - 8 - ENTRY GUIDES
  - 9 - SIDE/END CAP
  - 10 - HOUSING(FRONT & BOTTOM), 0.040" THICK
  - 11 - SIDE RAIL
  - 12 - PLUG-BOTTOMS
  - 13 - ALUMINUM SLATS
  - 14 - BASE SLAT
  - 15 - PLASTIC STOPS(OPTIONAL)
  - 16 - SIDE LOCKS(OPTIONAL)
  - 17 - STAPLES(OPTIONAL)
  - 18 - SPRINGLOCK HANGER
  - 19 - SAFETY PLATES
- ADDITIONAL COMPONENTS FOR  
MOTORIZED OPERATED SYSTEM
- 20 - TUBULAR MOTOR
  - 21 - MOTOR BRACKET
  - 22 - SWITCH
- EASTENERS**
- 23 - 3/16" ALUMINUM POP RIVETS(6 REAR, 2 SIDE CAP) : 2 TOP, 2 REAR, 20 BOTTOM

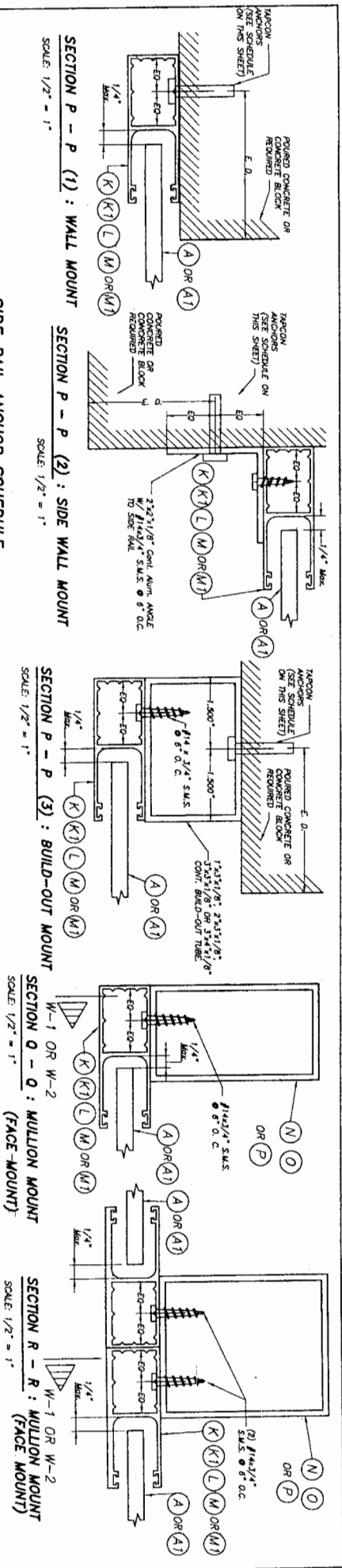
**TILTECO INC.**  
TILLET TESTING & ENGINEERING COMPANY  
1400 N.W. 20th St., Ft. Lauderdale, FL 33309  
TEL: 954-582-7719 FAX: 954-582-7719  
WALTER A. TILLET, P.E., P.E.  
FLORIDA Lic. # 44167

REV. NO.	DESCRIPTION	DATE	BY	CHK	APP

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
4398 WESTWOODS DRIVE  
WEST PALM BEACH, FL 33407

DRAWING NO. 06-263  
SHEET 14 OF 14

ASSA/40mm & 60mm BERTHA ROLL-UP  
F.B.C. (High Velocity Hurricane Zone)  
DPM/ BR.  
1/24/06  
DATE



**SIDE RAIL ANCHOR SCHEDULE**  
 MAXIMUM DESIGN PRESSURE RATING "W" (p. s. f.) AND  
 CORRESPONDING MAXIMUM ANCHOR SPACING (in) \* FOR  
 SIDE RAILS (K), (L), (M) & (W) CONNECTION TO  
 POURED CONCRETE OR MASONRY WALL

**SUBSTRATE LEGEND**

MASONRY
POURED CONCRETE

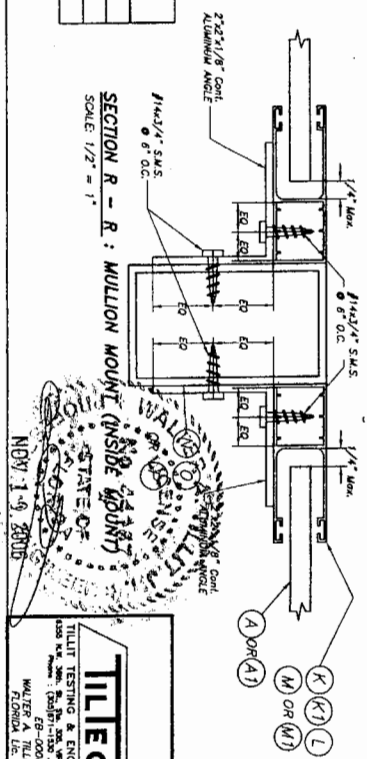
MAXIMUM DESIGN LOAD "W" (p. s. f.)	SIDE RAIL (K)		SIDE RAIL (L)		SIDE RAIL (M)	
	WALL MOUNT	BUILD-OUT MOUNT	WALL MOUNT	BUILD-OUT MOUNT	WALL MOUNT	BUILD-OUT MOUNT
80 OR LESS	6"	4"	6"	4"	6"	5"
>80 TO 150	6"	6"	6"	6"	6"	6"
>150 TO 195	6"	6"	6"	6"	6"	6"

MAXIMUM DESIGN LOAD "W" (p. s. f.)	SIDE RAIL (M)	
	WALL MOUNT	BUILD-OUT MOUNT
80.0 OR LESS	6"	6"
>80.0 TO 100.0	6"	6"

\* MAXIMUM ANCHOR SPACING (in.) AT SIDE  
 RAILS VERSUS EDGE DISTANCE = E. D.

MAXIMUM SIDE RAIL ANCHOR SPACINGS SHOWN ON THIS SHEET ARE VALID FOR 3 1/2" EDGE DISTANCE. FOR E. D. LESS THAN 3 1/2", REDUCE ANCHOR SPACING BY MULTIPLES SPACINGS SHOWN ABOVE. ANCHOR SCHEDULES FOLLOWING ARE VALID FOR REDUCED SPACING (OBTAINED USING FACTORS SMALL NOT BE LESS THAN 3")

ACTUAL E. D. =	FACTOR
3"	.86
2 1/2"	.71
2"	.50



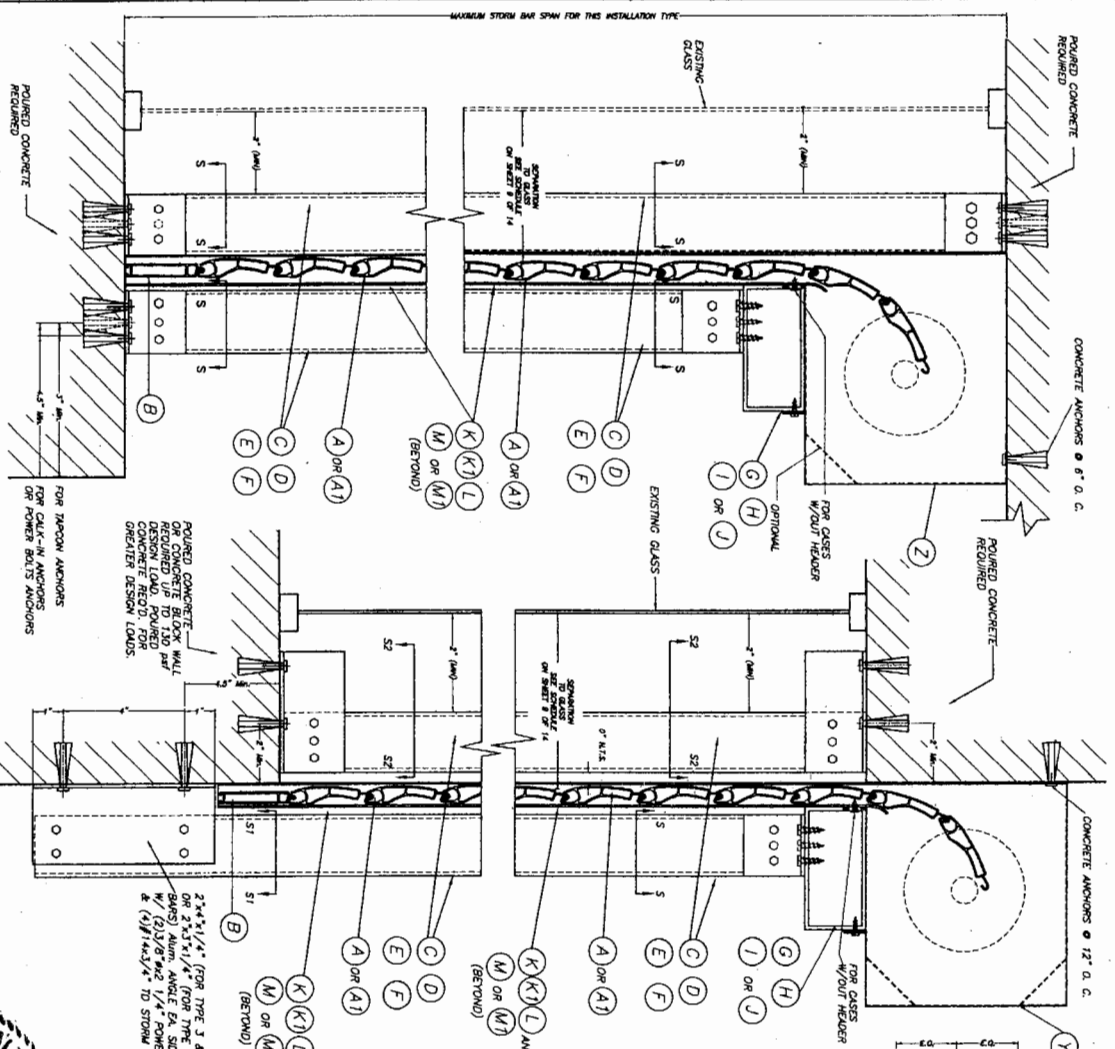
**TILECO INC.**  
 TILT TESTING & ENGINEERING COMPANY  
 4200 N.W. 36th Ave., Suite 200, Fort Lauderdale, FL 33309  
 WALTER A. TILIT, Jr., P. E.  
 FLORENCE, FL 34437

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
 2909 W. 13th Ave., Suite 13407  
 WEST PALM BEACH, FL 33411

DRAWN BY: 11/09/06  
 DATE: 1/2  
 06-263  
 DRAWING NO.  
 SHEET 4 OF 14

F.B.C. (High Velocity Hurricane Zone)

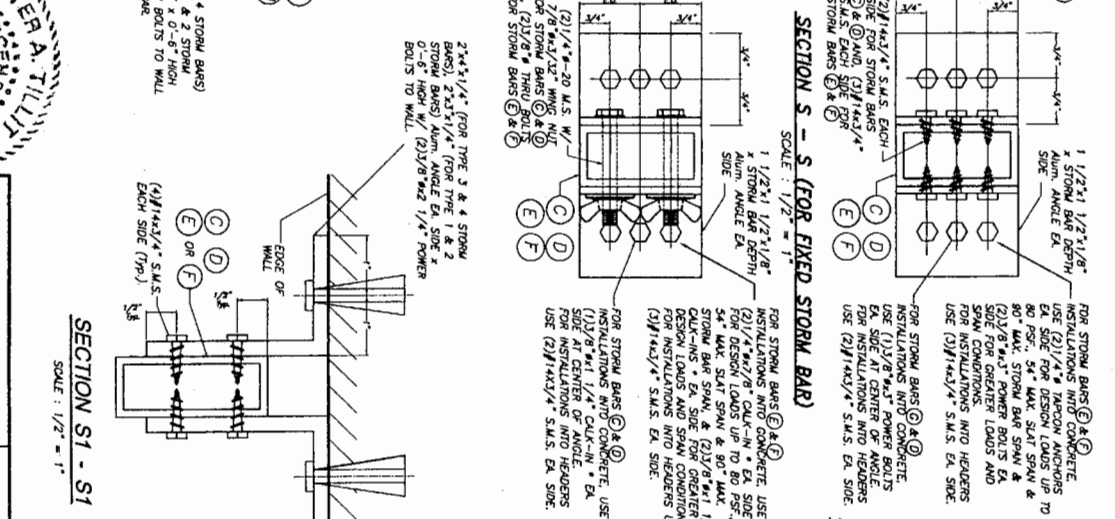
NOV 14 2006



**CEILING & FLOOR MOUNTING: SECTION V-Y(2) INSTALLATION.**  
**W/ FIXED OR REMOVABLE STORM BARS W/ CONCRETE ANCHORS**  
 (SEE SECTION 5" FOR ANCHOR TYPE REQUIREMENT)  
 SCALE: N.T.S.  
 SINGLE SPAN SECTIONS AND DETAILS  
 STORM BAR & HEADERS

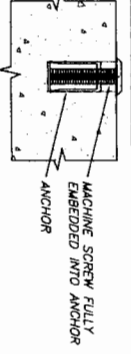
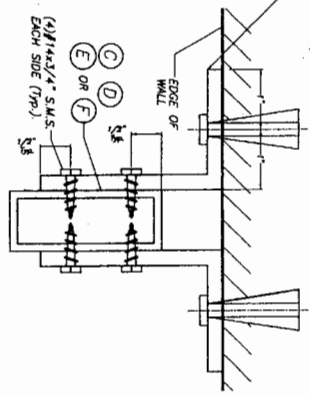
**WALL MOUNTING: SECTION V-Y(1) INSTALLATION.**  
**STORM BARS W/ CONCRETE ANCHORS**  
 SCALE: N.T.S.

**SECTION V - V**



**SECTION S - S (FOR FIXED STORM BAR)**  
 SCALE: 1/2" = 1'

**SECTION S1 - S1**  
 SCALE: 1/2" = 1'



**DETAIL A**  
 SCALE: 1/2" = 1'



**TILECO INC.**  
 TILT TESTING & ENGINEERING COMPANY  
 6000 W. BIRCHWOOD BLVD., SUITE 100  
 WEST PALM BEACH, FL 33407  
 WALTER A. TILLET, P.E.  
 LICENSE NO. 44167

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
 4288 WINDWARD DRIVE  
 WEST PALM BEACH, FL 33407

ASS4/40mm & 60mm BERTHA ROLL-UP

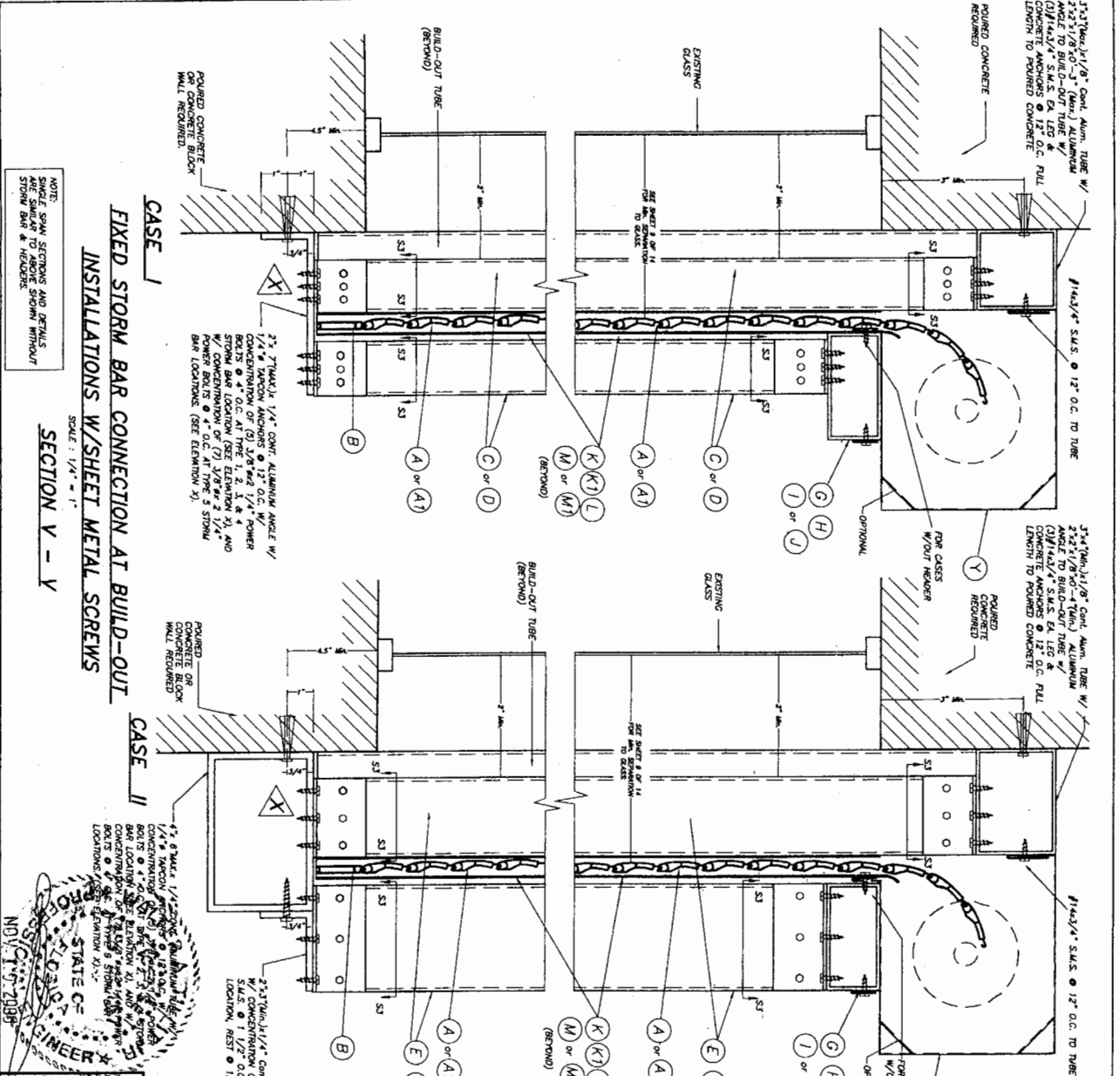
11/04/06  
 DWAIN BR  
 F.P.

06-263  
 DRAWING No

SHEET 5 OF 14

F.B.C. (High Velocity Hurricane Zone)





**NOTE:** SPAN SECTIONS AND DETAILS SINGLE SPAN FROM SECTION WITHOUT STORM BAR & HEADERS.

**SCALE: 1/4" = 1'**

**SECTION V - V**

**FIXED STORM BAR CONNECTION AT BUILD-OUT INSTALLATIONS W/SHEET METAL SCREWS**

**SCALE: 1/2" = 1'**

**SECTION S3 - S3**

**SCALE: 1/2" = 1'**

**ELEVATION X**

**SCALE: 1/8" = 1'**

**F.B.C. (High Velocity Hurricane Zone)**

**ASS4/40mm & 60mm BERTHA ROLL-UP**

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**

**4588 WESTMINSTER DRIVE**

**WEST PALM BEACH, FL 33407**

**11/04/06**

**DATE**

**06-263**

**DRAWING NO.**

**17/04/06**

**DATE**

**SHEET 6 OF 14**



**TILECO INC.**

**TILEFIT TESTING & ENGINEERING COMPANY**

**1300 N.W. 13th Ave., Suite 100**

**MIAMI, FL 33136**

**TEL: 305-581-1300**

**FAX: 305-581-1301**

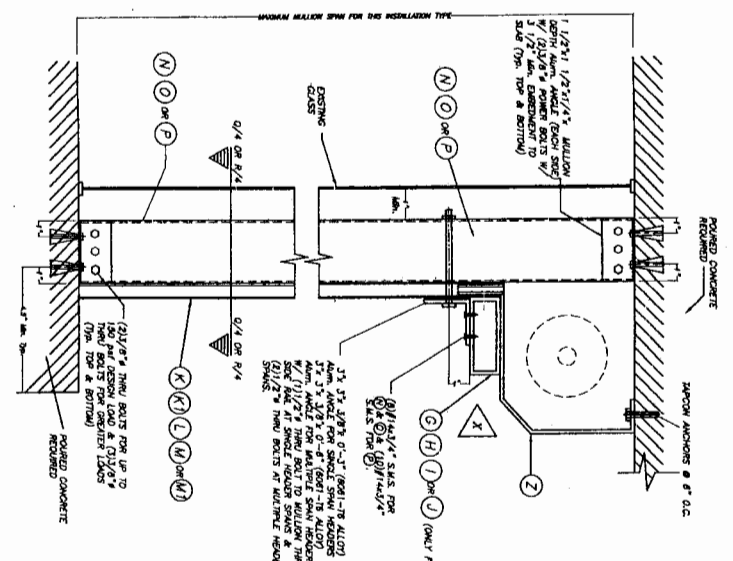
**WWW.TILEFIT.COM**

**WALTER A. TILLEY, P.E.**

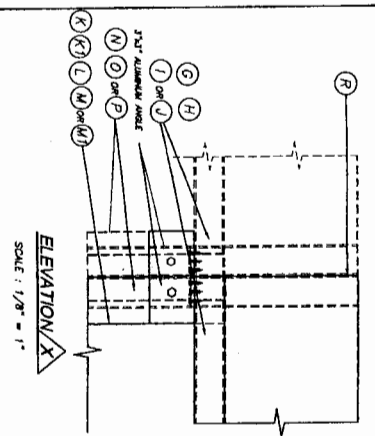
**FL 0000719**

**FL 0000113**

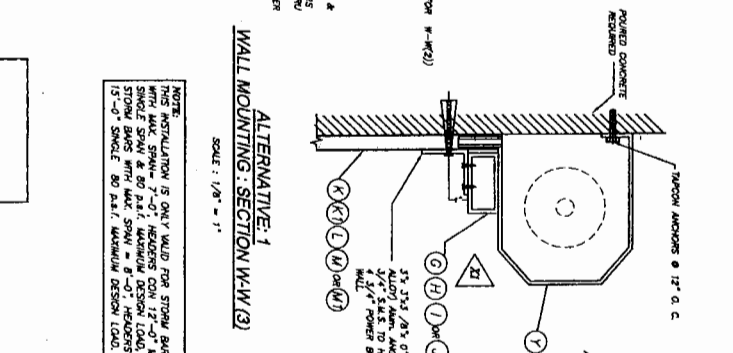
NO.	DESCRIPTION	DATE	BY	CHKD.	REVISION
1					



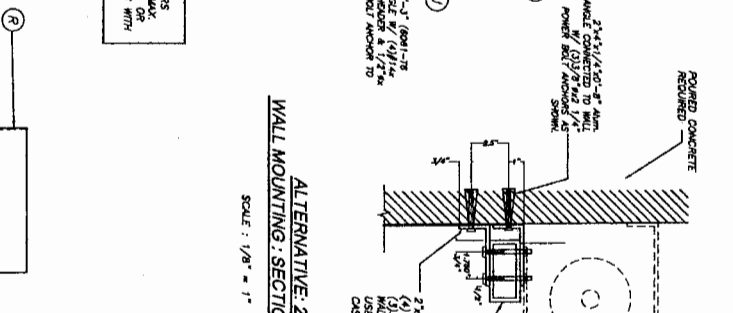
**FLOORCEILING MOUNTING:**  
SECTION W-W (1) W/O HEADER  
SECTION W-W (2) W/HEADER  
SCALE: 1/8" = 1'



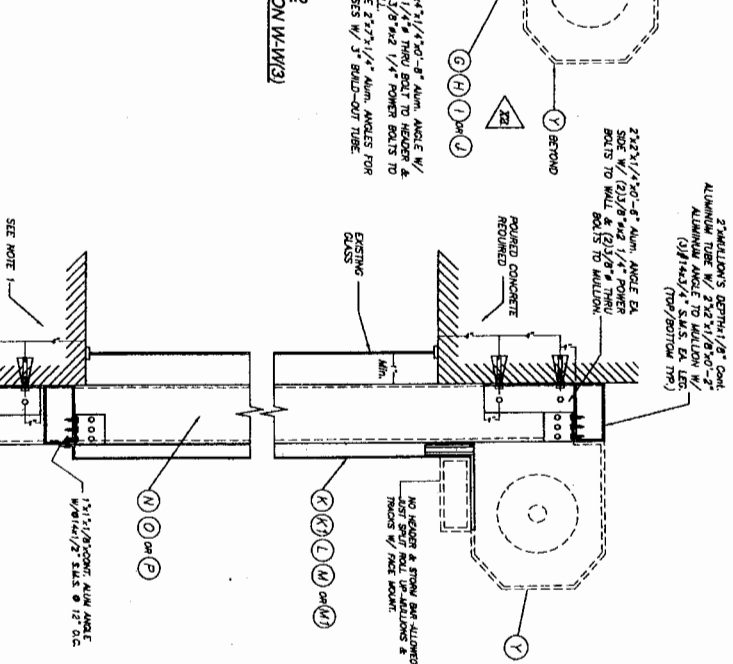
**TYPICAL HEADER CONNECTION AT ENDS**  
SECTION W-W  
SCALE: 1/8" = 1'



**WALL MOUNTING: ALTERNATIVE 1**  
SECTION W-W (3)  
SCALE: 1/8" = 1'

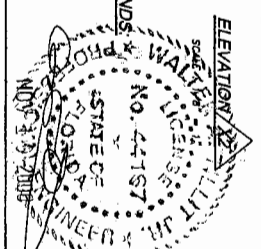


**WALL MOUNTING: ALTERNATIVE 2**  
SECTION W-W (3)  
SCALE: 1/8" = 1'



**WALL MOUNTING: MILLION CONNECTION**  
AT TOP & BOTTOM: SECTION W-W (1)  
SCALE: 1/8" = 1'

NOTE 1: WALL MAY BE CONCRETE BLOCK FOR DESIGN LOADS UP TO 600 LBS PER W/ 8'-0" Hgt. MILLION HEIGHT AND SHALL BE POURED CONCRETE OR CONCRETE FILLED BLOCK FOR GREATER LOADS.



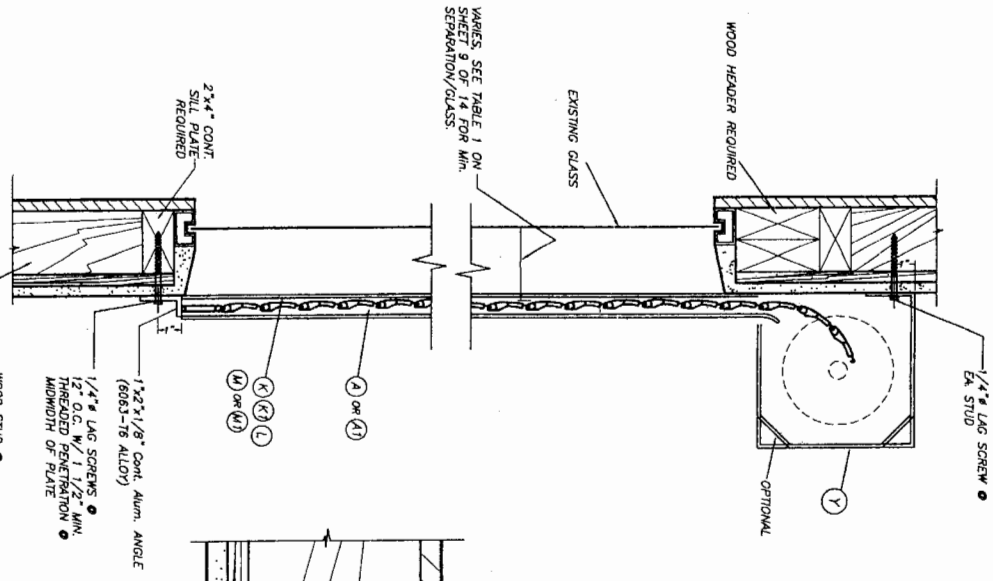
**TILECO INC.**  
TILTUP TESTING & ENGINEERING COMPANY  
4000 N.W. 11th Ave., Suite 100, Fort Lauderdale, FL 33309  
TEL: 754-447-1111  
FAX: 754-447-1112  
WWW.TILECO.COM

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
4598 WESTMINSTER DRIVE  
WEST PALM BEACH, FL 33407  
TEL: 561-833-1111  
FAX: 561-833-1112  
WWW.ASSA-USA.COM

NO.	DATE	DESCRIPTION
1	11/20/06	ISSUED FOR PERMIT
2	06-263	REVISED PER COMMENTS
3		
4		
5		

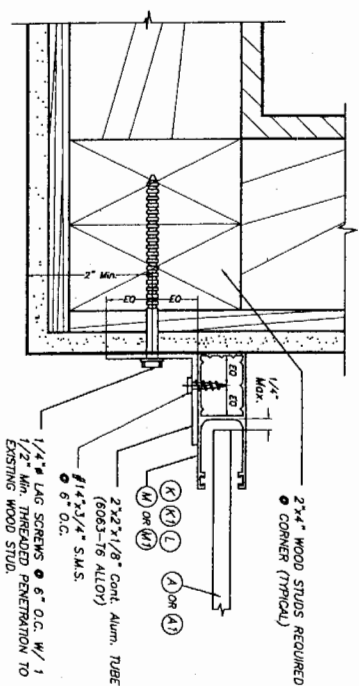
SHEET 7 OF 14  
DRAWING NO. 06-263  
DATE 11/20/06  
F.P. DRWING BY

F.B.C. (High Velocity Hurricane Zone)

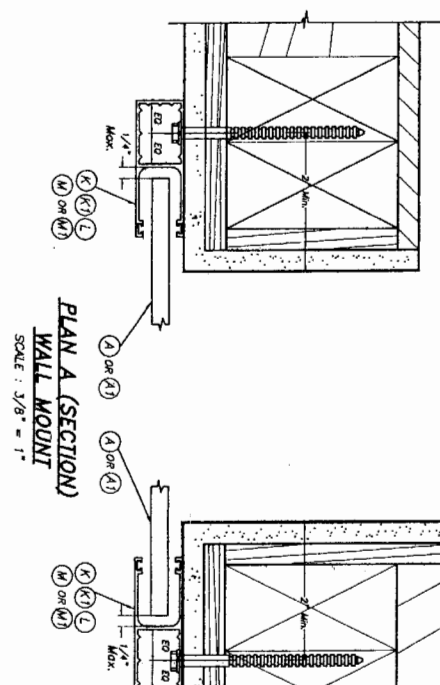


**WALL MOUNTING INSTALLATION**  
**SINGLE SPAN CONDITION**

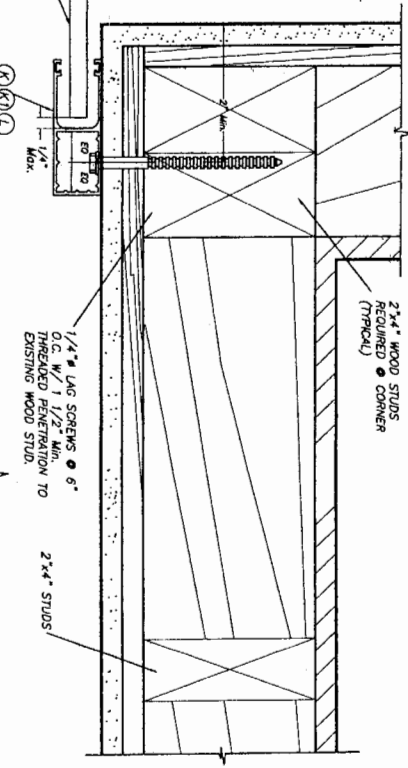
SCALE: N.T.S.



**PLAN B (SECTION)**  
**INSIDE MOUNT**  
SCALE: 3/8" = 1"

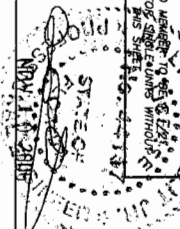


**PLAN A (SECTION)**  
**WALL MOUNT**  
SCALE: 3/8" = 1"



**PLAN C (SECTION)**  
**BUILD-OUT**  
SCALE: 3/8" = 1"

- NOTES:
1. INSTALLATIONS ARE ONLY VALID FOR BUILDINGS WITH DESIGN LOADS OF 70 PSF TO 150 PSF.
  2. 750 PSF PER FRAME CONSTRUCTION. WOOD MEMBER TO BE SPANNING PER PLAN B OR C.
  3. FOR SPAN LENGTHS EXCEEDING 10 FEET, SEE TABLE 1 ON SHEET 9 OF 14 FOR MIN. SEPARATION/GLASS.
  4. THIS APPROVAL INCLUDES INSTALLATION IN WOOD FOR SINGLE-SPAN WINDOW STOPS. BARS, MULLIONS & HEADERS AS SHOWN IN THIS SHEET.



**TILECO INC.**  
TILT UP TESTING & ENGINEERING COMPANY  
4000 N.W. 30th St., Suite 200, Miramar, Florida 33181  
Phone: (305) 771-1100 Fax: (305) 771-1131  
WALTER A. TILLOT, P.E.  
FLORIDA Lic. # 44187

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
4288 WESTWOODS DRIVE  
WEST PALM BEACH, FL 33407

ASSA/40mm & 60mm BERTHA ROLL-UP

F.B.C. (High Velocity Hurricane Zone)

DRAWN BY: F.P.  
DATE: 11/24/06

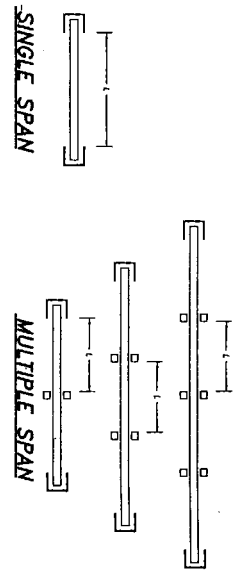
06-263  
DRAWING NO.

SHEET 8 OF 14

**SLAT PERFORMANCE CHART  
MAXIMUM NEGATIVE DESIGN PRESSURE RATING "W" (p. s. f.)  
AND CORRESPONDING MAXIMUM SLAT SPAN "L" FOR TYPE 1 SLAT**

(USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)

SLAT TYPE	A			A1		
	MAXIMUM DESIGN LOAD "W" (p.s.f.)	MAXIMUM SLAT SPAN SINGLE & MULTIPLE UNIT *	MINIMUM SEPARATION TO GLASS SINGLE & MULTIPLE UNIT **	MAXIMUM SLAT SPAN SINGLE & MULTIPLE UNIT *	MINIMUM SEPARATION TO GLASS SINGLE & MULTIPLE UNIT **	MINIMUM SEPARATION TO GLASS SINGLE & MULTIPLE UNIT ***
40.0	6'-5"	4 3/8"	3 5/8"	4'-2"	2 3/4"	2 3/4"
45.0	6'-2"	4"	3 1/2"	4'-0"	2 5/8"	2 5/8"
50.0	5'-11"	4"	3 3/8"	3'-11"	2 5/8"	2 5/8"
55.0	5'-9"	4"	3 3/8"	3'-9"	2 1/2"	2 1/2"
60.0	5'-7"	4"	3 1/4"	3'-8"	2 1/2"	2 1/2"
65.0	5'-5"	4"	3 1/4"	3'-6"	2 1/2"	2 1/2"
70.0	5'-4"	4"	3 1/8"	3'-5"	2 3/8"	2 3/8"
75.0	5'-2"	4"	3 1/8"	3'-3"	2 3/8"	2 3/8"
80.0	5'-1"	4"	3"	3'-2"	2 3/8"	2 3/8"
85.0	5'-0"	4"	3"	3'-1"	2 1/4"	2 1/4"
90.0	4'-11"	4"	3"	3'-0"	2 1/4"	2 1/4"
95.0	4'-10"	4"	3"	2'-11"	2 1/4"	2 1/4"
100.0	4'-9"	4"	3"	2'-10"	2 1/4"	2 1/4"
105.0	4'-8"	4"	3"			
110.0	4'-7"	4"	2 7/8"			
115.0	4'-6"	2 7/8"	2 7/8"			
120.0	4'-5"	2 7/8"	2 7/8"			
125.0	4'-5"	2 7/8"	2 7/8"			
130.0	4'-4"	2 3/4"	2 3/4"			
135.0	4'-3"	2 3/4"	2 3/4"			
140.0	4'-3"	2 3/4"	2 3/4"			
145.0	4'-2"	2 3/4"	2 3/4"			
150.0	4'-1"	2 3/4"	2 3/4"			
155.0	4'-1"	2 3/4"	2 3/4"			
160.0	4'-0"	2 5/8"	2 5/8"			
165.0	4'-0"	2 5/8"	2 5/8"			
170.0	3'-11"	2 5/8"	2 5/8"			
175.0	3'-11"	2 5/8"	2 5/8"			
180.0	3'-11"	2 5/8"	2 5/8"			
185.0	3'-10"	2 5/8"	2 5/8"			
190.0	3'-10"	2 5/8"	2 5/8"			
195.0	3'-9"	2 1/2"	2 1/2"			



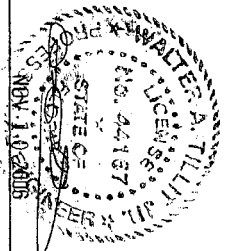
\* SPANS VALID FOR EVERY INSTALLATION LOCATED AT ANY ELEVATION OF BUILDING MEASURED AT BOTTOM OF SHUTTER. MINIMUM SEPARATION TO GLASS FOR SINGLE AND MULTIPLE UNITS SHALL BE MEASURED FROM BACK OF SLAT TO GLASS.

\*\* MINIMUM SEPARATION TO GLASS FOR SHUTTERS INSTALLED WITHIN THE FIRST 30'-0" ELEVATION OF BUILDING AND MAXIMUM SPAN. SEE TABLE 1 FOR MIN. SEPARATION TO GLASS FOR SPANS LESS THAN THE MAX. ALLOWED. MINIMUM SEPARATION TO GLASS FOR SHUTTERS INSTALLED ABOVE 30'-0" ELEVATION OF BUILDING, MEASURED AT BOTTOM OF SHUTTER.

**TABLE 1:**

60mm SLAT A	
SLAT SPAN (ft.)	MINIMUM SEPARATION TO GLASS
49" OR LESS	2 5/8"
> 48" TO 54"	2 7/8"
> 54" TO 74"	4"
> 74" TO 77"	4 3/8"

40mm SLAT A1	
SLAT SPAN (ft.)	MINIMUM SEPARATION TO GLASS
36" OR LESS	2 1/4"
> 36" TO 48"	2 5/8"
> 48" TO 50"	2 3/4"



**TILECO INC.**  
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WALTER A. TILUT, P.E.  
FLORIDA LICENSE NO. 44187

F.B.C. (High Velocity Hurricane Zone)

ASSA/Adm'n & 60mm BERTHA ROLL-UP

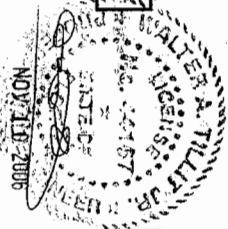
**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
4188 WESTBORO DRIVE  
WEST PALM BEACH, FL 33407

DATE: 11/24/06  
DRAWING NO: 06-263  
SHEET 9 OF 14

**STORM BAR LOADING CHART**  
**MAXIMUM DESIGN PRESSURE RATING "W" (p. s. f.) AND CORRESPONDING MAXIMUM SPAN "L" FOR**  
**A GIVEN TYPE OF STORM BAR AND STORM BAR SPACING.**  
 (USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)  
 MAX. SPAN FOR STORM BARS W/REGULAR CONCRETE ANCHORS

MAXIMUM DESIGN LOAD W <sup>o</sup> (p.s.f.)	TYPE 1 STORM BAR 2" x 2" x 1/4"						TYPE 2 STORM BAR 2" x 2" x 1/8"						TYPE 3 STORM BAR 2" x 4" x 1/8"					
	* STORM BAR SPACING						* STORM BAR SPACING						* STORM BAR SPACING					
	3' TO 4'	4' TO 5'	5' TO 6'	6' TO 6.5'	6' TO 6.5'	6' TO 6.5'	3' TO 4'	4' TO 5'	5' TO 6'	6' TO 6.5'	6' TO 6.5'	6' TO 6.5'	3' TO 4'	4' TO 5'	5' TO 6'	6' TO 6.5'	6' TO 6.5'	
40 OR LESS	7-2"	7-1"	6-9"	6-2"	5-11"	8-0"	7-9"	6-11"	6-4"	6-1"	10-0"	9-8"	7-5"	7-2"	8-6"	7-9"	7-5"	
45	7-5"	6-11"	6-4"	5-10"	5-7"	8-0"	7-4"	6-7"	5-0"	5-9"	9-11"	8-0"	7-4"	8-0"	7-4"	7-4"	7-0"	
50	7-3"	6-9"	6-0"	5-6"	5-4"	8-0"	6-11"	6-3"	5-8"	5-5"	9-8"	8-6"	7-7"	7-7"	6-11"	6-11"	6-8"	
55	7-0"	6-5"	5-9"	5-3"	5-1"	7-8"	6-8"	5-11"	5-5"	5-5"	9-4"	8-1"	7-3"	7-3"	6-7"	6-7"	6-4"	
60	6-11"	6-2"	5-6"	5-0"	4-10"	7-4"	6-4"	5-8"	5-2"	5-2"	8-11"	7-9"	7-9"	6-11"	6-4"	6-4"	6-1"	
65	6-9"	5-11"	5-4"	4-10"	4-8"	7-1"	6-1"	5-5"	5-0"	5-0"	8-7"	7-5"	7-2"	6-5"	5-10"	5-10"	5-8"	
70	6-7"	5-8"	5-1"	4-8"	4-6"	6-9"	5-11"	5-3"	4-10"	4-10"	8-3"	7-2"	7-2"	6-2"	5-8"	5-8"	5-6"	
75	6-4"	5-6"	4-11"	4-6"	4-4"	6-7"	5-8"	5-1"	4-8"	4-8"	8-0"	6-11"	6-11"	6-2"	5-8"	5-8"	5-6"	
80	6-2"	5-4"	4-9"	4-4"	4-2"	6-4"	5-6"	4-11"	4-6"	4-6"	7-9"	6-9"	6-9"	6-0"	5-6"	5-6"	5-4"	
85	6-0"	5-2"	4-8"	4-3"	4-1"	6-2"	5-4"	4-9"	4-4"	4-4"	7-6"	6-6"	6-6"	5-10"	5-4"	5-4"	5-2"	
90	5-10"	5-0"	4-6"	4-1"	3-11"	6-0"	5-2"	4-8"	4-3"	4-3"	7-4"	6-4"	6-4"	5-8"	5-2"	5-2"	5-0"	
95	5-8"	4-11"	4-5"	4-0"	3-10"	5-10"	5-1"	4-6"	4-1"	4-1"	7-1"	6-2"	6-2"	5-6"	5-0"	5-0"	4-8"	
100	5-6"	4-9"	4-3"	3-11"	3-9"	5-8"	4-11"	4-5"	4-0"	4-0"	6-11"	6-0"	6-0"	5-4"	4-11"	4-11"	4-9"	
105	5-5"	4-8"	4-2"	3-10"	3-8"	5-7"	4-10"	4-4"	3-11"	3-11"	6-9"	6-9"	5-10"	5-3"	4-9"	4-9"	4-7"	
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120	5-0"	4-4"	3-11"	3-7"	3-5"	5-2"	4-6"	4-0"	3-8"	3-8"	6-4"	5-6"	5-6"	4-11"	4-6"	4-6"	4-4"	
125	4-11"	4-3"	3-10"	3-6"	3-4"	5-1"	4-5"	3-10"	3-7"	3-7"	6-2"	5-4"	5-4"	4-10"	4-5"	4-5"	4-3"	
130	4-10"	4-2"	3-9"	3-5"	3-3"	5-0"	4-4"	3-10"	3-6"	3-6"	6-1"	5-3"	5-3"	4-9"	4-4"	4-4"	4-2"	
135	4-9"	4-1"	3-8"	3-4"	3-3"	4-11"	4-3"	3-9"	3-5"	3-5"	6-0"	5-2"	5-2"	4-7"	4-3"	4-3"	4-1"	
140	4-8"	4-0"	3-7"	3-4"	3-2"	4-10"	4-2"	3-9"	3-5"	3-5"	5-10"	5-1"	5-1"	4-6"	4-2"	4-2"	4-0"	
145	4-7"	4-0"	3-7"	3-3"	3-1"	4-9"	4-1"	3-8"	3-4"	3-4"	5-9"	5-0"	5-0"	4-6"	4-1"	4-1"	3-9"	
150	4-6"	3-11"	3-6"	3-2"	3-1"	4-8"	4-0"	3-7"	3-3"	3-3"	5-8"	4-11"	4-11"	4-5"	4-0"	4-0"	3-8"	
155	4-5"	3-10"	3-5"	3-2"	3-0"	4-7"	3-11"	3-6"	3-3"	3-3"	5-7"	4-10"	4-10"	4-4"	3-11"	3-11"	3-9"	
160	4-4"	3-9"	3-4"	3-1"	3-0"	4-6"	3-11"	3-6"	3-2"	3-2"	5-6"	4-9"	4-9"	4-4"	3-11"	3-11"	3-9"	
165	4-3"	3-9"	3-4"	3-0"	2-11"	4-5"	3-10"	3-5"	3-2"	3-2"	5-5"	4-8"	4-8"	4-2"	3-10"	3-10"	3-8"	
170	4-3"	3-8"	3-3"	3-0"	2-10"	4-4"	3-9"	3-4"	3-1"	3-1"	5-4"	4-7"	4-7"	4-1"	3-9"	3-9"	3-7"	
175	4-2"	3-7"	3-3"	3-0"	2-11"	4-4"	3-9"	3-4"	3-0"	3-0"	5-3"	4-6"	4-6"	4-1"	3-8"	3-8"	3-6"	
180	4-1"	3-7"	3-2"	2-11"	2-9"	4-3"	3-8"	3-3"	3-0"	3-0"	5-2"	4-6"	4-6"	4-0"	3-8"	3-8"	3-6"	
185	4-1"	3-6"	3-2"	2-10"	2-9"	4-2"	3-7"	3-3"	3-0"	3-0"	5-1"	4-5"	4-5"	3-11"	3-7"	3-7"	3-5"	
190	4-0"	3-6"	3-1"	2-10"	2-9"	4-1"	3-7"	3-2"	2-11"	2-11"	5-0"	4-4"	4-4"	3-11"	3-7"	3-7"	3-5"	
195	3-11"	3-5"	3-1"	2-9"	2-8"	4-1"	3-6"	3-2"	2-11"	2-11"	5-0"	4-4"	4-4"	3-10"	3-6"	3-6"	3-4"	

\* STORM BAR SPACING SHALL BE SUCH THAT MAXIMUM SLAT SPAN SHALL NOT BE EXCEEDED.



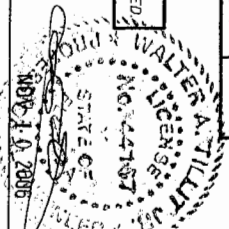
<b>TILECO INC.</b>		TILE TESTING & ENGINEERING COMPANY	
428 WESTWOODS DRIVE		WEST PALM BEACH, FL 33407	
REV. NO.	DESCRIPTION	DATE	REV. NO.
1			
2			
3			
4			
5			
DRAWN BY: F.B.		DATE: 11/06/06	
PROJECT: ASSA/40mm & 60mm BERTHA ROLL-UP		DRAWING NO: 06-263	
SHEET: 10 OF 14		DATE: 11/06/06	

F.B.C. (High Velocity Hurricane Zone)

**STORM BAR LOADING CHART**  
**MAXIMUM DESIGN PRESSURE RATING "W" (p. s. f.) AND CORRESPONDING MAXIMUM SPAN "L" FOR**  
**A GIVEN TYPE OF STORM BAR AND STORM BAR SPACING.**  
 (USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)  
**MAX. SPAN FOR STORM BARS W/REGULAR CONCRETE ANCHORS**

MAXIMUM DESIGN LOAD "W" (p.s.f.)	TYPE 4 STORM BAR 2" x 4" x .250"					TYPE 5 STORM BAR (2) 2" x 4" x .250"				
	* STORM BAR SPACING					* STORM BAR SPACING				
	3' TO 4'	4' TO 5'	5' TO 6'	6' TO 6.5'	6' TO 6.5'	3' TO 4'	4' TO 5'	5' TO 6'	6' TO 6.5'	6' TO 6.5'
40 OR LESS	11'-0"	11'-0"	10'-5"	9'-11"	9'-9"	14'-1"	13'-1"	12'-5"	11'-10"	11'-7"
45	11'-6"	10'-8"	10'-1"	9'-8"	9'-5"	13'-8"	12'-9"	12'-0"	11'-6"	11'-3"
50	11'-2"	10'-5"	9'-10"	9'-2"	8'-10"	13'-4"	12'-5"	11'-9"	11'-2"	11'-0"
55	10'-11"	10'-2"	9'-7"	8'-9"	8'-4"	13'-0"	12'-1"	11'-5"	10'-11"	-
60	10'-8"	9'-11"	9'-2"	8'-4"	8'-1"	12'-9"	11'-10"	11'-2"	10'-8"	-
65	10'-6"	9'-9"	8'-10"	8'-1"	7'-9"	12'-6"	11'-7"	11'-0"	10'-6"	-
70	10'-4"	9'-6"	8'-6"	7'-9"	7'-6"	12'-3"	11'-5"	10'-9"	10'-4"	-
75	10'-1"	9'-2"	8'-2"	7'-6"	7'-3"	12'-0"	11'-2"	10'-7"	10'-1"	-
80	9'-11"	8'-11"	7'-11"	7'-3"	7'-0"	11'-10"	11'-0"	10'-5"	9'-11"	-
85	9'-10"	8'-7"	7'-8"	7'-0"	6'-8"	11'-8"	10'-10"	10'-3"	9'-10"	-
90	9'-8"	8'-4"	7'-6"	6'-10"	6'-8"	11'-6"	10'-8"	10'-1"	9'-8"	-
95	9'-5"	8'-2"	7'-3"	6'-8"	6'-6"	11'-4"	10'-7"	10'-0"	9'-5"	-
100	9'-2"	7'-11"	7'-1"	6'-6"	6'-4"	11'-2"	10'-5"	9'-10"	9'-2"	-
105	8'-11"	7'-9"	6'-11"	6'-4"	6'-2"	11'-1"	10'-4"	9'-9"	8'-11"	-
110	8'-9"	7'-7"	6'-9"	6'-2"	6'-1"	10'-11"	10'-2"	9'-7"	8'-9"	-
115	8'-7"	7'-5"	6'-8"	6'-1"	5'-11"	10'-10"	10'-1"	9'-4"	8'-7"	-
120	8'-4"	7'-3"	6'-6"	5'-11"	5'-10"	10'-8"	9'-11"	9'-2"	8'-4"	-
125	8'-2"	7'-1"	6'-4"	5'-10"	5'-8"	10'-7"	9'-10"	9'-0"	8'-2"	-
130	8'-1"	7'-0"	6'-3"	5'-7"	5'-6"	10'-6"	9'-9"	8'-10"	8'-0"	-
135	7'-11"	6'-10"	6'-1"	5'-7"	5'-6"	10'-5"	9'-8"	8'-8"	7'-11"	-
140	7'-9"	6'-9"	6'-0"	5'-6"	5'-5"	10'-4"	9'-6"	8'-6"	7'-9"	-
145	7'-7"	6'-7"	5'-11"	5'-5"	5'-4"	10'-2"	9'-4"	8'-4"	7'-7"	-
150	7'-6"	6'-6"	5'-10"	5'-4"	5'-3"	10'-1"	9'-2"	8'-2"	7'-6"	-
155	7'-4"	6'-5"	5'-8"	5'-3"	5'-2"	10'-0"	9'-0"	8'-1"	7'-4"	-
160	7'-3"	6'-3"	5'-7"	5'-2"	5'-1"	9'-11"	8'-10"	7'-11"	7'-3"	-
165	7'-2"	6'-2"	5'-6"	5'-1"	5'-0"	9'-11"	8'-9"	7'-10"	7'-2"	-
170	7'-0"	6'-1"	5'-5"	5'-0"	4'-11"	9'-10"	8'-7"	7'-8"	7'-0"	-
175	6'-11"	6'-0"	5'-4"	4'-11"	4'-10"	9'-9"	8'-6"	7'-7"	6'-11"	-
180	6'-10"	5'-11"	5'-4"	4'-10"	4'-9"	9'-8"	8'-4"	7'-6"	6'-10"	-
185	6'-9"	5'-10"	5'-3"	4'-9"	4'-8"	9'-8"	8'-3"	7'-5"	6'-9"	-
190	6'-8"	5'-9"	5'-2"	4'-8"	4'-7"	9'-5"	8'-2"	7'-3"	6'-8"	-
195	6'-7"	5'-8"	5'-1"	4'-8"	4'-7"	9'-3"	8'-0"	7'-2"	6'-7"	-

\* STORM BAR SPACING SHALL BE SUCH THAT MAXIMUM SLAT SPAN SHALL NOT BE EXCEEDED.



**TILECO INC.**  
 TILLET TESTING & ENGINEERING COMPANY  
 4386 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407  
 EB-0008719  
 WALTER A. TILLET, P.E.  
 LICENSE NO. 44187

F.B.C. (High Velocity Hurricane Zone)

ASSA/40mm & 60mm BERTHA ROLL-UP

AMERICAN SHUTTER SYSTEMS ASSOC., INC.  
 4386 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407

DRAWING NO. 05-263  
 SHEET 11 OF 14

DATE 11/04/06

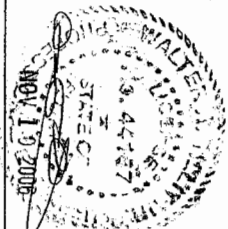
REV. NO. 1  
 DESCRIPTION  
 DATE



**HEADER LOADING CHART**  
**MAXIMUM NEGATIVE DESIGN PRESSURE RATING "W" (p.s.f.) AND CORRESPONDING**  
**MAXIMUM SPAN "L" FOR A GIVEN TYPE OF HEADER.**  
 (USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)

MAXIMUM DESIGN LOAD "W" (p.s.f.)	TYPE 1 HEADER (G) 2" x 3" x 1/8"		TYPE 2 HEADER (H) 2" x 4" x 1/8"		TYPE 3 HEADER (I) 2" x 4" x 1/4"				TYPE 4 HEADER (J) 2" x 6" x 1/8"					
	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	STORM BAR HEIGHT	
140.0	≤ 5'-0"	5' TO 7'	≤ 5'-0"	5' TO 8'	≤ 6'-0"	6' TO 8'	8' TO 10'	10' TO 12'	12' TO 14'	≤ 6'-0"	6' TO 8'	8' TO 10'	10' TO 12'	12' TO 14'
145.0	5'-3"	4'-6"	6'-5"	5'-2"	7'-11"	6'-11"	6'-2"	5'-7"	5'-2"	8'-1"	7'-0"	6'-3"	5'-8"	5'-3"
150.0	5'-1"	4'-4"	6'-4"	5'-0"	7'-8"	6'-8"	5'-11"	5'-5"	5'-0"	7'-10"	6'-10"	6'-2"	5'-7"	5'-2"
155.0	5'-0"	4'-3"	6'-2"	4'-11"	7'-7"	6'-6"	5'-10"	5'-4"	4'-11"	7'-8"	6'-8"	5'-11"	5'-5"	5'-0"
160.0	4'-11"	4'-2"	6'-1"	4'-10"	7'-5"	6'-5"	5'-9"	5'-3"	4'-10"	7'-7"	6'-6"	5'-10"	5'-4"	4'-11"
165.0	4'-10"	4'-1"	6'-0"	4'-9"	7'-4"	6'-4"	5'-8"	5'-2"	4'-9"	7'-5"	6'-5"	5'-9"	5'-3"	4'-10"
170.0	4'-10"	4'-1"	5'-11"	4'-8"	7'-3"	6'-3"	5'-7"	5'-1"	4'-9"	7'-4"	6'-4"	5'-8"	5'-2"	4'-10"
175.0	4'-9"	4'-0"	5'-10"	4'-7"	7'-1"	6'-2"	5'-6"	5'-0"	4'-8"	7'-3"	6'-3"	5'-7"	5'-1"	4'-9"
180.0	4'-8"	3'-11"	5'-9"	4'-7"	7'-0"	6'-1"	5'-5"	4'-11"	4'-7"	7'-1"	6'-2"	5'-6"	5'-0"	4'-8"
185.0	4'-7"	3'-11"	5'-8"	4'-6"	6'-11"	6'-0"	5'-4"	4'-11"	4'-6"	7'-0"	6'-1"	5'-5"	5'-0"	4'-7"
190.0	4'-6"	3'-10"	5'-7"	4'-5"	6'-10"	5'-11"	5'-3"	4'-10"	4'-6"	6'-11"	6'-0"	5'-4"	4'-11"	4'-6"
195.0	4'-6"	3'-9"	5'-6"	4'-4"	6'-9"	5'-10"	5'-3"	4'-9"	4'-5"	6'-10"	5'-11"	5'-4"	4'-10"	4'-6"

F.B.C. (High Velocity Hurricane Zone)



**TILECO INC.**  
 TILE TESTING & ENGINEERING GROUP INC.  
 4288 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407  
 WALTER D. TUTTLE, P. E.  
 FLORIDA LICENSE # 44187

ASSA/40mm & 60mm BERTHA ROLL-UP

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
 4288 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407

DRAWN BY: F.P.  
 DATE: 11/04/08

06-263  
 DRAWING NO.

SHEET 13 OF 14

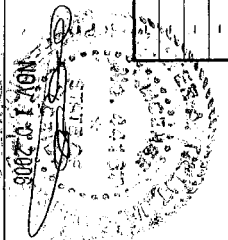
**MULLION LOADING CHART**  
**MAXIMUM DESIGN PRESSURE RATING "W" (p. s. f.) AND CORRESPONDING MAXIMUM SPAN "L" (Ft) FOR A GIVEN TYPE OF MULLION AND MULLION SPACING (Ft).**  
 (USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE LOAD)

MAXIMUM DESIGN LOAD "W" (p.s.f.)	TYPE 1 MULLION (N) 3" x 4" x 1/8"								TYPE 2 MULLION (C) 4" x 4" x 1/4"								TYPE 3 MULLION (P) 4" x 6" x 1/4"							
	MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING		MULLION SPACING					
40.0 OR LESS	9'-0"	8'-4"	7'-10"	8'-2"	11'-9"	10'-11"	10'-3"	10'-8"	16'-4"	15'-2"	14'-3"	14'-10"	13'-10"	13'-0"	12'-6"	12'-1"	11'-4"	10'-9"	9'-7"	8'-8"	8'-8"			
45.0	8'-8"	8'-0"	7'-7"	7'-10"	11'-4"	10'-6"	9'-11"	10'-3"	15'-8"	14'-7"	13'-8"	14'-4"	13'-3"	12'-6"	12'-1"	11'-4"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"			
50.0	8'-4"	7'-9"	7'-3"	7'-7"	10'-11"	10'-2"	9'-7"	9'-11"	15'-2"	14'-1"	13'-3"	13'-10"	12'-10"	12'-1"	11'-4"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"			
55.0	8'-1"	7'-6"	7'-1"	7'-4"	10'-7"	9'-10"	9'-3"	9'-7"	14'-8"	13'-7"	12'-10"	12'-5"	12'-5"	12'-1"	11'-4"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"			
60.0	7'-10"	7'-3"	6'-10"	7'-2"	10'-3"	9'-7"	9'-0"	9'-4"	14'-3"	13'-3"	12'-5"	13'-0"	12'-1"	11'-4"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
65.0	7'-8"	7'-1"	6'-8"	7'-0"	10'-0"	9'-4"	8'-9"	9'-1"	13'-11"	12'-11"	12'-2"	12'-8"	12'-1"	11'-4"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
70.0	7'-5"	6'-11"	6'-6"	6'-10"	9'-9"	9'-1"	8'-6"	8'-10"	13'-7"	12'-7"	11'-10"	12'-4"	11'-5"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
75.0	7'-3"	6'-9"	6'-4"	6'-8"	9'-7"	8'-10"	8'-4"	8'-8"	13'-3"	12'-3"	11'-7"	12'-1"	11'-2"	10'-6"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
80.0	7'-2"	6'-7"	6'-3"	6'-6"	9'-4"	8'-8"	8'-2"	8'-6"	12'-11"	12'-0"	11'-4"	10'-11"	10'-4"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
85.0	7'-0"	6'-6"	6'-1"	6'-4"	9'-2"	8'-6"	8'-0"	8'-4"	12'-8"	12'-0"	11'-1"	11'-7"	10'-9"	10'-9"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
90.0	6'-10"	6'-4"	6'-0"	6'-3"	9'-0"	8'-4"	7'-10"	8'-2"	12'-5"	11'-7"	10'-11"	11'-4"	10'-6"	9'-11"	9'-11"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
95.0	6'-9"	6'-3"	5'-10"	6'-2"	8'-10"	8'-2"	7'-9"	8'-1"	12'-3"	11'-4"	10'-8"	11'-2"	10'-4"	9'-9"	9'-9"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
100.0	6'-7"	6'-2"	5'-9"	6'-0"	8'-8"	8'-0"	7'-7"	7'-11"	12'-0"	11'-0"	10'-6"	10'-11"	10'-2"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
105.0	6'-6"	6'-1"	5'-7"	5'-11"	8'-6"	7'-11"	7'-6"	7'-9"	11'-10"	11'-0"	10'-4"	10'-9"	10'-2"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
110.0	6'-5"	5'-11"	5'-5"	5'-10"	8'-5"	7'-10"	7'-4"	7'-8"	11'-8"	10'-10"	10'-2"	10'-7"	10'-2"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
115.0	6'-4"	5'-10"	5'-4"	5'-8"	8'-3"	7'-8"	7'-3"	7'-7"	11'-6"	10'-8"	10'-0"	10'-5"	10'-2"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
120.0	6'-3"	5'-9"	5'-3"	5'-7"	8'-2"	7'-7"	7'-2"	7'-5"	11'-4"	10'-6"	10'-6"	10'-4"	10'-2"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
125.0	6'-2"	5'-7"	5'-1"	5'-5"	8'-1"	7'-6"	7'-0"	7'-4"	11'-2"	10'-4"	9'-9"	10'-2"	10'-2"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
130.0	6'-1"	5'-6"	5'-0"	5'-4"	7'-11"	7'-5"	7'-3"	7'-3"	11'-0"	10'-3"	9'-8"	10'-0"	10'-0"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
135.0	6'-0"	5'-5"	4'-11"	5'-3"	7'-10"	7'-3"	6'-10"	7'-2"	10'-11"	10'-1"	9'-6"	9'-11"	9'-11"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
140.0	5'-11"	5'-3"	4'-10"	5'-2"	7'-9"	7'-2"	6'-9"	7'-1"	10'-9"	10'-0"	9'-5"	9'-10"	9'-10"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
145.0	5'-10"	5'-2"	4'-9"	5'-1"	7'-8"	7'-1"	6'-8"	7'-0"	10'-7"	9'-10"	9'-3"	9'-8"	9'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
150.0	5'-9"	5'-1"	4'-8"	5'-0"	7'-7"	7'-0"	6'-7"	6'-11"	10'-6"	9'-9"	9'-2"	9'-7"	9'-7"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
155.0	5'-7"	5'-0"	4'-7"	4'-11"	7'-6"	7'-0"	6'-7"	6'-10"	10'-5"	9'-8"	9'-1"	9'-6"	9'-6"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
160.0	5'-6"	4'-11"	4'-6"	4'-10"	7'-5"	6'-11"	6'-6"	6'-9"	10'-3"	9'-7"	9'-0"	9'-4"	9'-4"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
165.0	5'-5"	4'-10"	4'-5"	4'-9"	7'-4"	6'-10"	6'-5"	6'-8"	10'-2"	9'-5"	8'-10"	9'-3"	9'-3"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
170.0	5'-4"	4'-10"	4'-5"	4'-8"	7'-3"	6'-9"	6'-4"	6'-7"	10'-1"	9'-4"	8'-9"	9'-2"	9'-2"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
175.0	5'-3"	4'-9"	4'-4"	4'-7"	7'-2"	6'-8"	6'-4"	6'-7"	10'-0"	9'-3"	8'-7"	9'-1"	9'-1"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
180.0	5'-3"	4'-8"	4'-3"	4'-6"	7'-2"	6'-7"	6'-3"	6'-6"	9'-11"	9'-2"	8'-6"	9'-0"	9'-0"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
185.0	5'-2"	4'-7"	4'-2"	4'-6"	7'-1"	6'-7"	6'-2"	6'-5"	9'-10"	9'-1"	8'-4"	8'-11"	8'-11"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
190.0	5'-1"	4'-6"	4'-2"	4'-5"	7'-0"	6'-6"	6'-1"	6'-5"	9'-9"	9'-0"	8'-3"	8'-9"	8'-9"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			
195.0	5'-0"	4'-6"	4'-1"	4'-4"	6'-11"	6'-5"	6'-1"	6'-4"	9'-8"	8'-11"	8'-2"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"	8'-8"			

**NOTES :** REFER TO ELEVATIONS ON SHEET 14 OF 14

- FOR MULLIONS INSTALLED W/O STORM BARS
- FOR MULLIONS INSTALLED W/ STORM BARS & HEADERS

A) MULLION SPACING SHALL BE SUCH THAT MAXIMUM SLAT SPAN SHALL NOT BE EXCEEDED  
 B) STORM BAR SPACING SHALL BE SUCH THAT MAXIMUM SLAT SPAN SHALL NOT BE EXCEEDED



**TILTeco INC.**  
 TILT TESTING & ENGINEERING COMPANY  
 4286 WESTWOODS DRIVE  
 WEST PALM BEACH, FL 33407  
 WALTER TILLOT JR., P. E.  
 FLORIDA LIC # 44187

**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
 ASSA/40mm & 60mm BERTHA ROLL-UP

DESIGN BY: 11/04/06  
 DATE: 06-26/07  
 DRAWING NO: SHEET 14 OF 14

NO.	DESCRIPTION	DATE	REV. NO.	DESCRIPTION	DATE
1			1		

F.B.C. (High Velocity Hurricane Zone)