

**GENERAL NOTES:**

1. ROLL UP SHUTTER SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2006 EDITIONS OF THE INTERNATIONAL BUILDING CODE, (I.B.C.) AND INTERNATIONAL RESIDENTIAL CODE, (I.R.C.) WITH THE 2006 TEXAS REVISIONS, EFFECTIVE JANUARY 1, 2008. ROLL UP SHUTTER SHALL BE INSTALLED AT SEAWARD AND INLAND AREAS, AS DEFINED BY THE TEXAS DEPARTMENT OF INSURANCE. DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE INTERNATIONAL BUILDING CODE, FOR A BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE SHUTTER WILL BE INSTALLED, AND FOR A DIRECTIONALITY FACTOR  $K_d = 0.85$ , IN ACCORDANCE WITH ASCE 7-05 STANDARD. ROLL UP SHUTTER ADEQUACY FOR IMPACT AND CYCLIC RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTIONS 1609.1.2 AND R301.1.3 OF THE ABOVE MENTIONED CODES RESPECTIVELY, AS PER ARCHITECTURAL TESTING INC. REPORTS # 66443.02-109-18 & 78796.01-109-18, PER ASTM E 1886-02, E 1996-02 AND ASTM E 330-02 STANDARDS, CORRESPONDING TO MISSILE TYPE "D" AND WIND ZONE 4. SEE NOTE \* ON SHEET 4 FOR ADDITIONAL LIMITATIONS. MAXIMUM DESIGN PRESSURE RATING SHALL BE AS INDICATED ON SHEET 5.

2. ALL ALUMINUM EXTRUSIONS SHALL BE ALUMINUM ASSOCIATION 6063-T6 ALLOY AND TEMPER (SEE SHEET COMPONENTS).

3. EVERY OTHER SLAT (INCLUDING BASE SLAT) SHALL INCLUDE ONE RETAIN SCREW (C), AISI 304 SERIES STAINLESS STEEL (SEE SHEET 2).

4. ALL SCREWS (EXCEPT COMPONENT # (C)) TO BE STAINLESS STEEL 304 OR 316 AISI SERIES OR ITW BUILDEX CORROSION RESISTANT COATED CARBON STEEL TEK SCREWS, AS PER DIN 50018.

5. BOLTS TO BE ASTM A-307 GALVANIZED STEEL OR AISI 304 SERIES STAINLESS STEEL, WITH 35 ksi MINIMUM YIELD STRENGTH.

6. ANCHORS TO WALL FOR SIDE RAILS CONNECTION SHALL BE AS FOLLOWS:

(A) TO EXISTING POURED CONCRETE (MIN.  $f'_c = 2899$  psi) OR GROUT FILLED CELL ASTM C-90 CONCRETE BLOCK:  
 - 5/16"  $\phi$  CARBON STEEL TAPCON XL ANCHORS, AS MANUFACTURED BY ITW/BUILDEX, INC.

NOTES:

A.1) MINIMUM EMBEDMENT OF ANCHORS INTO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK IS 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.

A.2) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN SUBSTRATE BEHIND SUCH PANELS. MINIMUM EMBEDMENT SHALL BE AS INDICATED ON NOTE A.1 ABOVE.

(B) TO EXISTING WOOD FRAME WALL: MIN. SPECIFIC GRAVITY  $G = 0.46$  OR  $G = 0.55$  (SEE SCHEDULE)  
 - 1/4"  $\phi$  N.D.S. WOOD SCREWS.

NOTES:

B.1) MINIMUM THREADED PENETRATION OF ANCHORS INTO WOOD STUDS SHALL BE 3".

B.2) ANCHORAGE SHALL BE PERFORMED BEYOND ANY FINISH MATERIAL AT WALL LIKE BRICK VENEER, STUCCO OR ANY OTHER FINISH. ANCHORAGE SHALL BE AS INDICATED ON NOTE B.1 ABOVE.

7. ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

8. ANCHORS REQUIRED FOR MULLION CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 6 & 7 RESPECTIVELY.

-5/8"  $\phi$  KWIK BOLT TZ EXPANSION ANCHOR TO BE AS MANUFACTURED BY HILTI, INC.  
 -1/2"  $\phi$  KWIK BOLT 3 EXPANSION ANCHOR TO BE AS MANUFACTURED BY HILTI, INC.

MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT ABOVE MENTIONED SHEET. EDGE DISTANCE AND EMBEDMENTS ARE BEYOND ANY FINISH MATERIAL.

ANCHOR	SPACING @ 100%	EDGE DISTANCE @ 100%	EMBEDMENT	
			CONCRETE	GROUT FILLED OR CONCRETE BLOCK
KWIK BOLT TZ	3"	4 1/4"	4" (3000 psi)	-
KWIK BOLT 3	8"	4"	-	3 1/2"

9. 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. THIS SHUTTER SHALL ONLY BE ATTACHED TO POURED CONCRETE, GROUT FILLED CELL CONCRETE BLOCK, AND WOOD FRAME BUILDINGS.

10. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION.

11. ROLL-UP MECHANISM NOT PART OF THIS APPROVAL, BUT SHALL BE CERTIFIED BY AN INDEPENDENT TESTING AGENCY.

12. ROLL-UP SHUTTER INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.

13. (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.

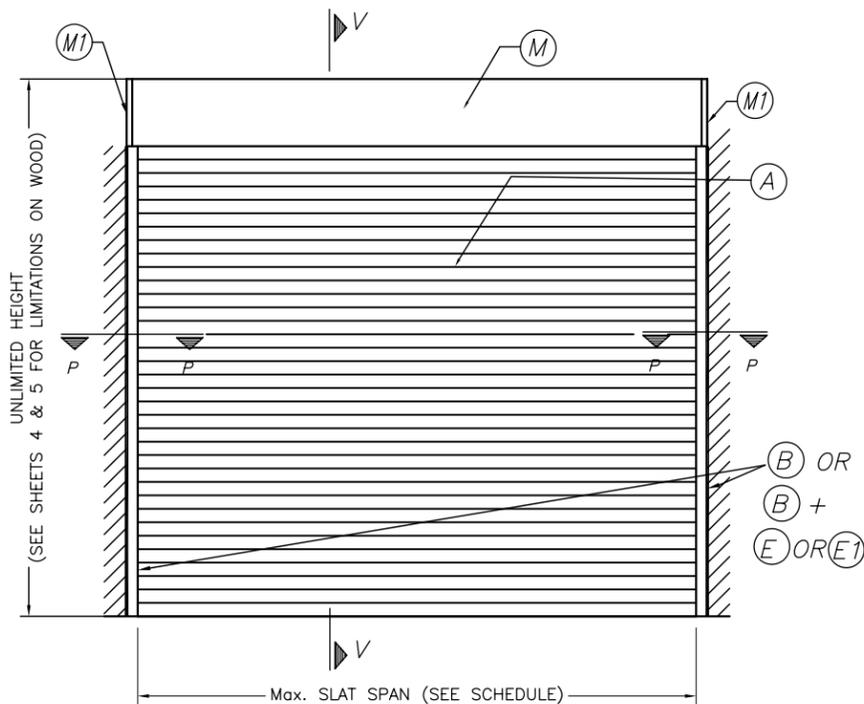
(b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS P.E.D. PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.

(c) THIS P.E.D. WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

(d) SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER OR REGISTERED 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. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.E.D. ENGINEER, SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.

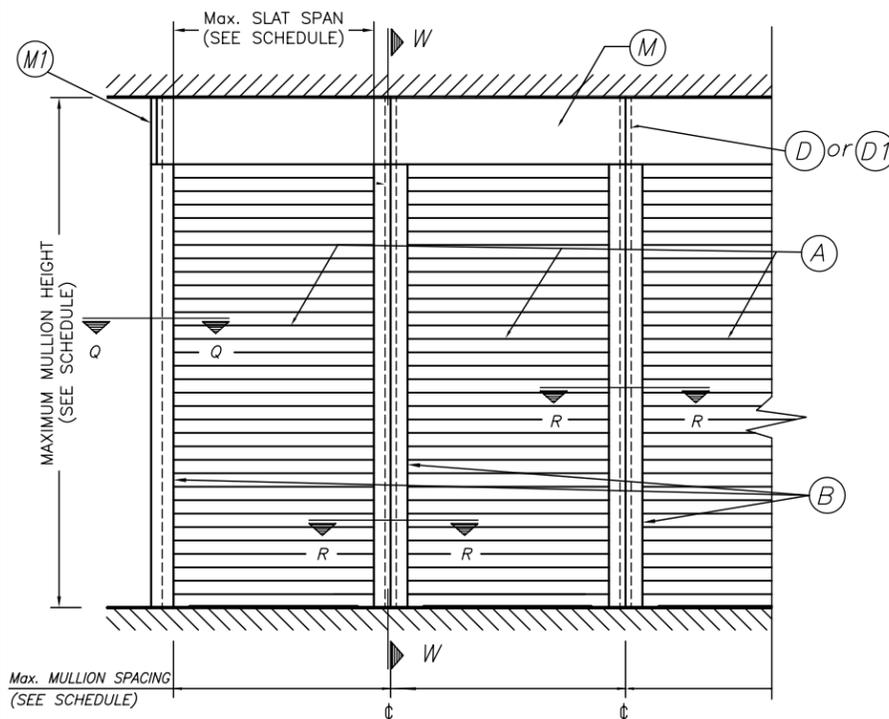
(e) THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

T.D.I. 2006



**TYPICAL SINGLE UNIT ELEVATION**

NOTE: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.



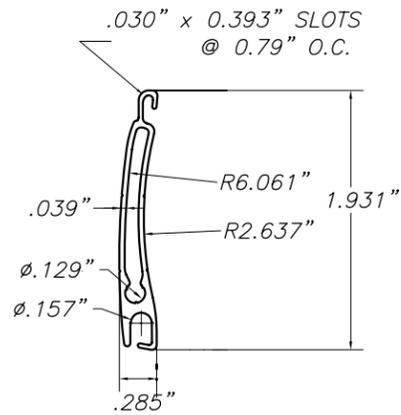
**TYPICAL MULTIPLE UNIT ELEVATION**

NOTE: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.

NOTES:

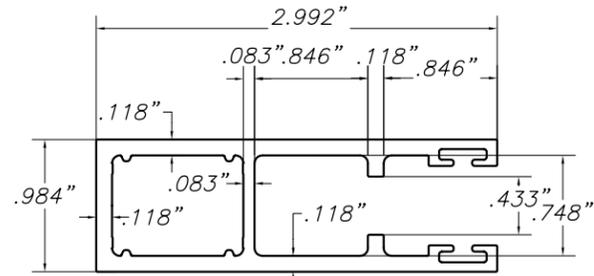
- (1) SEE SECTIONS ON SHEETS 4 THRU 7
- (2) SEE SCHEDULES ON SHEETS 5 & 8

WALTER A. TILLIT Jr. P.E. PROFESSIONAL ENGINEER  6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531  TEXAS LIC. # 90691		BARRACUDA I END RETENTION ROLL-UP SHUTTER SYSTEM		L.G. DRAWN BY	
		ALUTECH UNITED INC.  15 DIXON STREET SELBYVILLE, DE 19975 PHONE: (800) 233-1144, FAX: (302) 436-5100		10/15/07 DATE	
		07-263 DRAWING No			
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD DWG 07-117	10/15/07	3		
2	TITLE BLOCK / P.E.#	11/25/08	4		



**(A) SLAT**

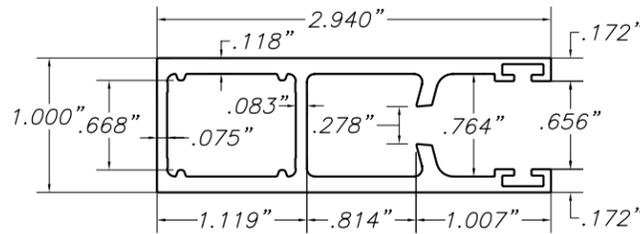
6063-T6 ALUMINUM ALLOY  
SCALE: 3/4" = 1"



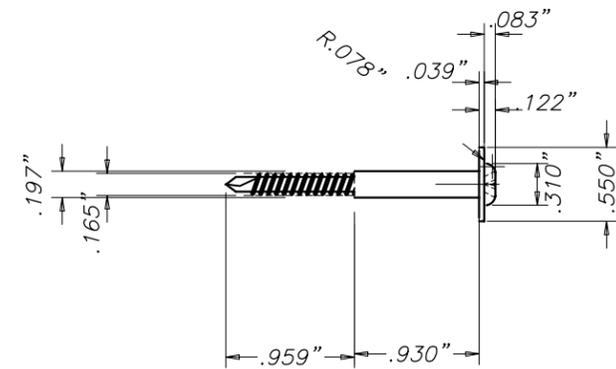
**OPTION #1**

**(B) SIDE RAIL**

6063-T5 ALUMINUM ALLOY  
SCALE: 3/4" = 1"



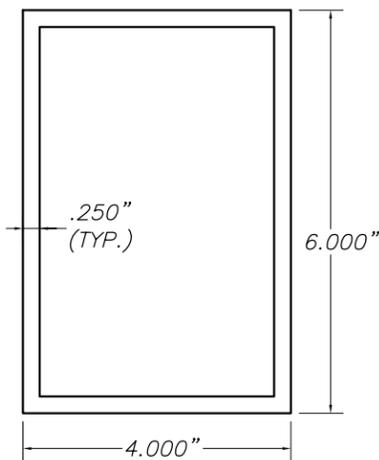
**OPTION #2**



**(C)**

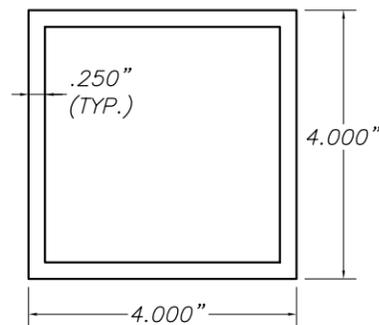
**RETAIN SCREW**

(1 EVERY OTHER SLAT INCLUDING BASE SLAT AND SHALL BE INSTALLED W/A 0.576" MIN. SLIP AS SHOWN ON SECTIONS)  
AISI/SAE 304 SERIES STAINLESS STEEL  
SCALE: 3/4" = 1"



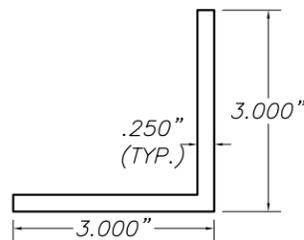
**(D) 4"x6" MULLION:**

6063-T6 ALUMINUM ALLOY  
SCALE: 3/8" = 1"



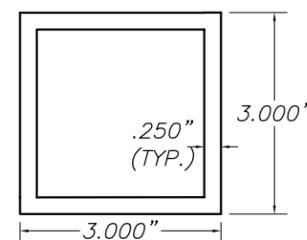
**(D1) 4"x4"x1/4" ALTERNATE MULLION**

6063-T6 ALUMINUM ALLOY  
SCALE: 3/8" = 1"



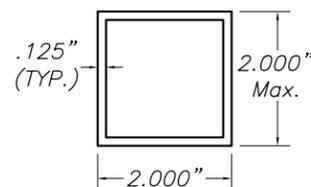
**(E) 3"x3"x1/4" INSIDE MOUNT ANGLE**

6061-T6 ALUMINUM ALLOY  
SCALE: 3/8" = 1"



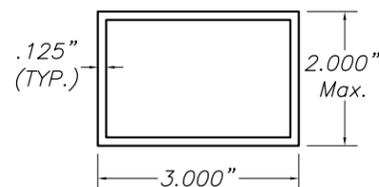
**(E1) 3"x3"x1/4" ALTERNATE INSIDE MOUNT TUBE**

6061-T6 ALUMINUM ALLOY  
SCALE: 3/8" = 1"



**(G) BUILD-OUT TUBE**

6061-T6 ALUMINUM ALLOY  
SCALE: 3/8" = 1"



**(G1) BUILD-OUT TUBE ALTERNATE**

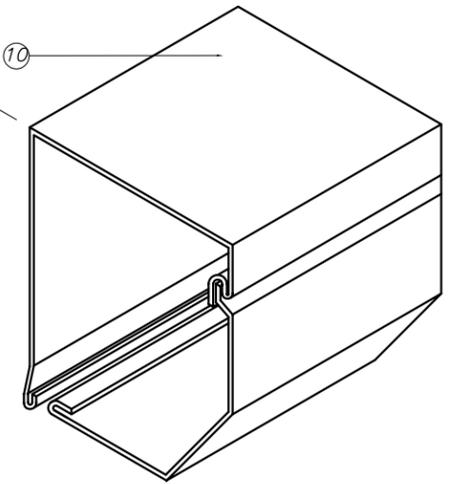
(SEE SHEET 5 FOR REQUIREMENTS TO ANCHORS SPACING)  
6061-T6 ALUMINUM ALLOY  
SCALE: 3/8" = 1"

**COMPONENTS**

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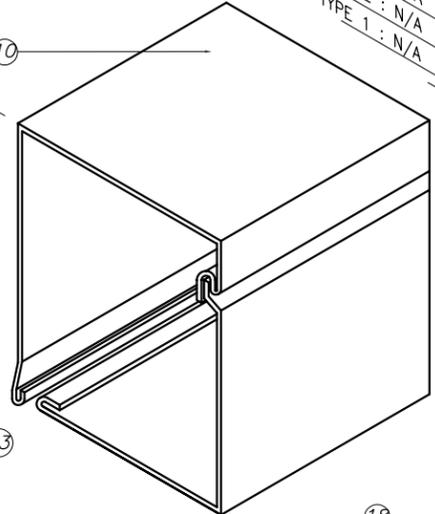
<b>WALTER A. TILLIT Jr. P.E.</b> PROFESSIONAL ENGINEER  6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531  TEXAS LIC. # 90691		<b>BARRACUDA I END RETENTION ROLL-UP SHUTTER SYSTEM</b>			L.G. DRAWN BY
		<b>ALUTECH UNITED INC.</b> 15 DIXON STREET SELBYVILLE, DE 19975 PHONE: (800) 233-1144, FAX: (302) 436-5100			10/15/07 DATE
		07-263 DRAWING No			SHEET 2 OF 8
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	
1	OLD DWG 07-117	10/15/07	3		
2	TITLE BLOCK / P.E.#	11/25/08	4		

- TYPE 10 : 12"
- TYPE 9 : 10"
- TYPE 8 : 9"
- TYPE 7 : 8"
- TYPE 6 : 7"
- TYPE 5 : 6.5"
- TYPE 4 : 6"
- TYPE 3 : N/A
- TYPE 2 : N/A
- TYPE 1 : N/A

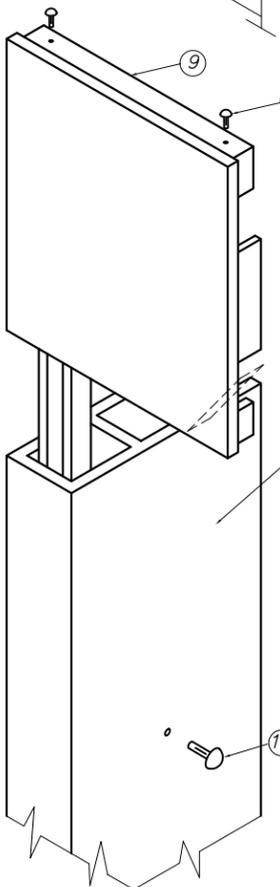


**RV 45 & RV 45/S  
HOUSINGS**

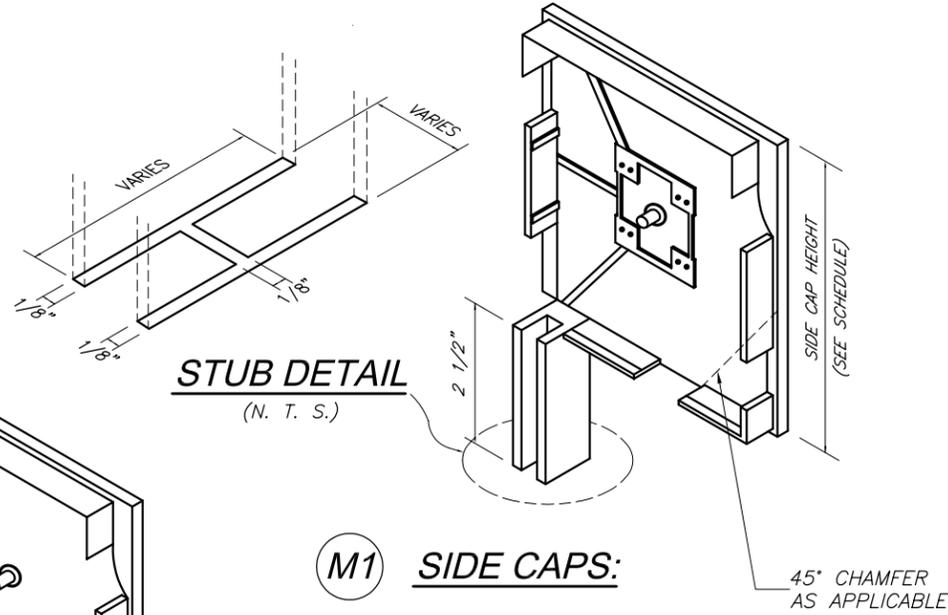
- TYPE 10 : N/A
- TYPE 9 : 10"
- TYPE 8 : 9"
- TYPE 7 : 8"
- TYPE 6 : 7"
- TYPE 5 : 6.5"
- TYPE 4 : 6"
- TYPE 3 : 5.5"
- TYPE 2 : 5"
- TYPE 1 : 4"



**RV 90 HOUSING**



**(M) BOX COMPONENTS AND ASSEMBLY DETAIL  
END CAP SYSTEM**  
(SEE NOTE 11 ON SHEET 1)



**STUB DETAIL**  
(N. T. S.)

**(M1) SIDE CAPS:**

45° CHAMFER  
AS APPLICABLE

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-BUTTOMS
- ⑬ - ALUMINUM SLATS
- ⑭ - BASE SLAT
- ⑮ - PLASTIC STOPS(OPTIONAL)
- ⑯ - SIDE LOCKS(OPTIONAL)
- ⑰ - STAPLES(OPTIONAL)
- ⑱ - SPRINGLOCK HANGER
- ⑲ - SAFETY PLATES

\* SHALL BE CAPABLE TO SUSTAIN SLAT'S  
WEIGHT AND ASSURE LIFTING MECHANISM  
(SEE NOTE 11/1)

ADDITIONAL COMPONENTS FOR  
MOTORIZED OPERATED SYSTEM

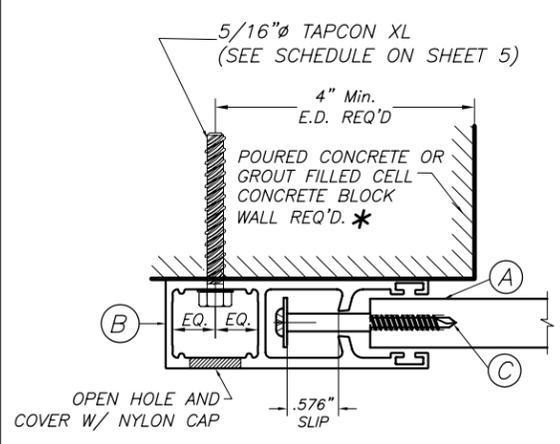
- ⑳ - TUBULAR MOTOR
- ㉑ - MOTOR BRACKET
- ㉒ - SWITCH

FASTENERS

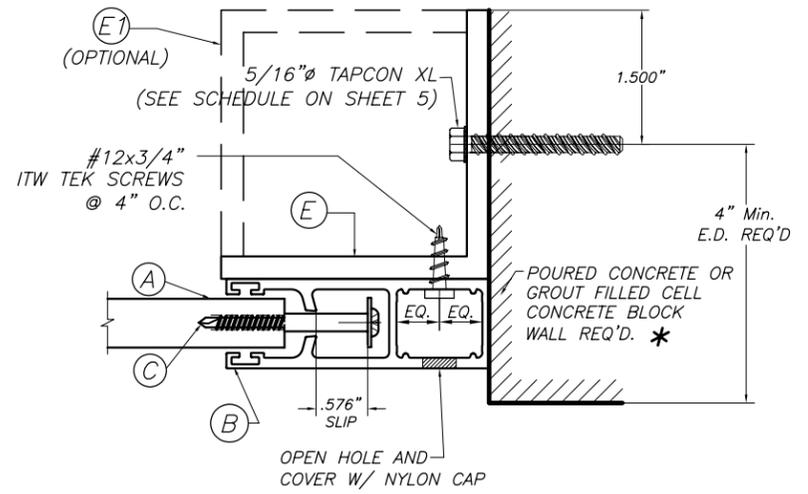
- ㉓ - 3/16" ALUMINUM POP RIVETS(6 REQ'D EA.  
SIDE CAP) : 2 @ TOP, 2 @ REAR, 2@ BOTTOM

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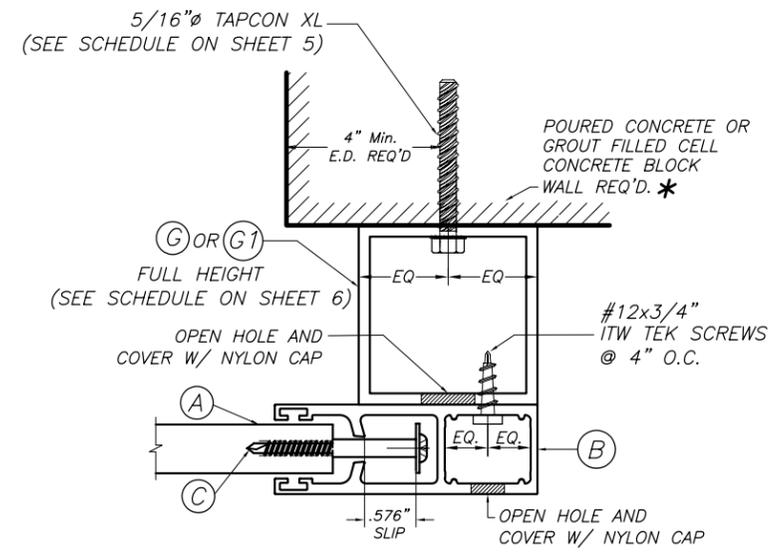
<b>WALTER A. TILLIT Jr. P.E.</b> PROFESSIONAL ENGINEER  6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531  TEXAS LIC. # 90691		<b>BARRACUDA I END RETENTION ROLL-UP SHUTTER SYSTEM</b>			L.G. DRAWN BY
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REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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2	TITLE BLOCK / P.E.#	11/25/08	4		



**SECTION P-P (1): WALL MOUNT**



**SECTION P-P (2): INSIDE MOUNT**

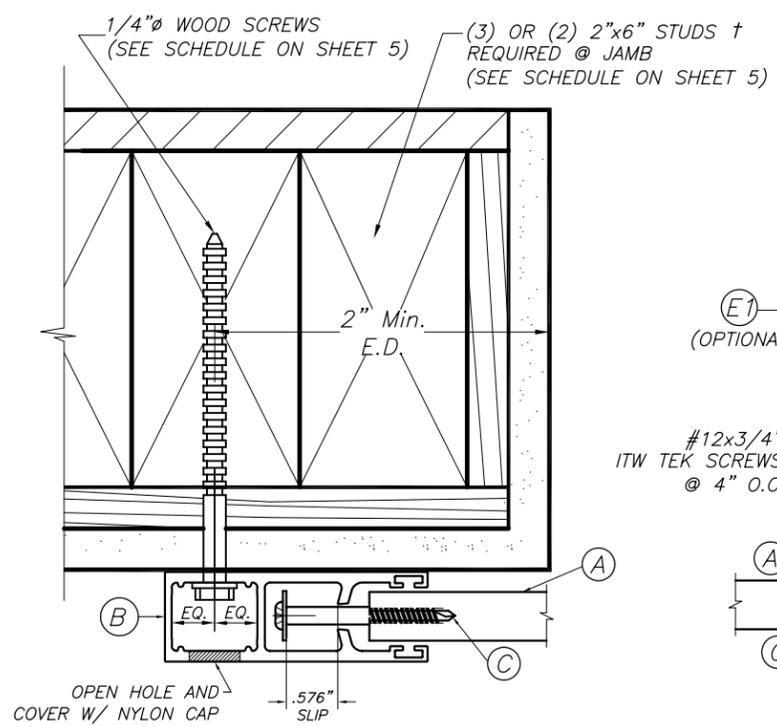


**SECTION P-P (3): BUILD-OUT**

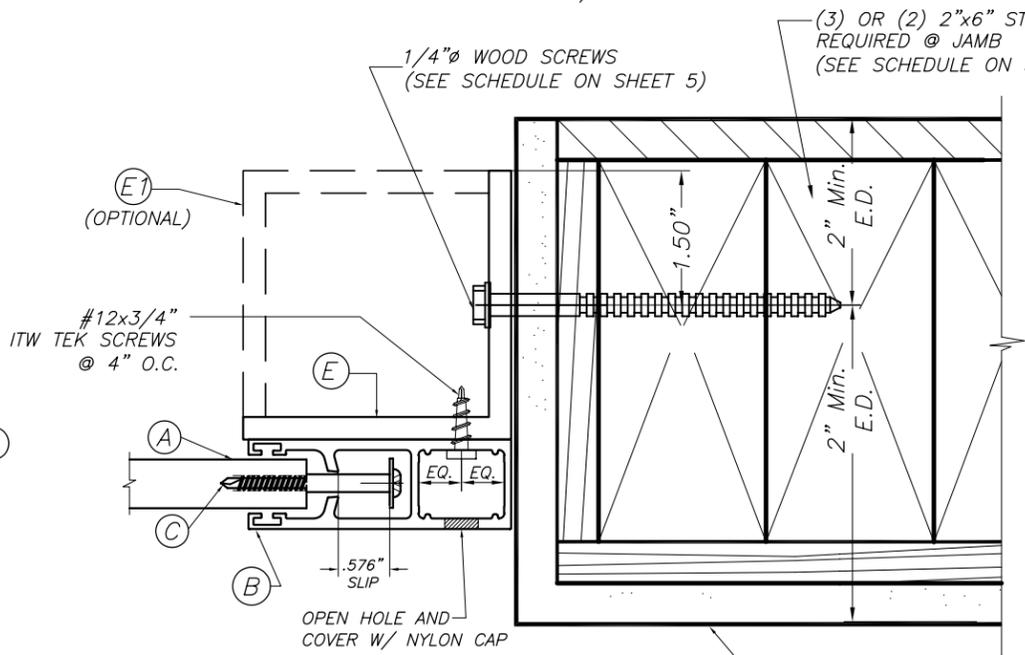
**\* NOTE:**  
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT EXISTING STRUCTURE IS DESIGNED TO SUPPORT  $V_x=971 \text{ Lb/FT}$  AND  $V_y=1/2 \times \text{DESIGN LOAD (psf)} \times \text{SHUTTER SPAN (ft)}$  FORCES PER UNIT FOOT OF SHUTTER HEIGHT AT BOTH JAMBS.

**SIDE RAIL CONNECTIONS**

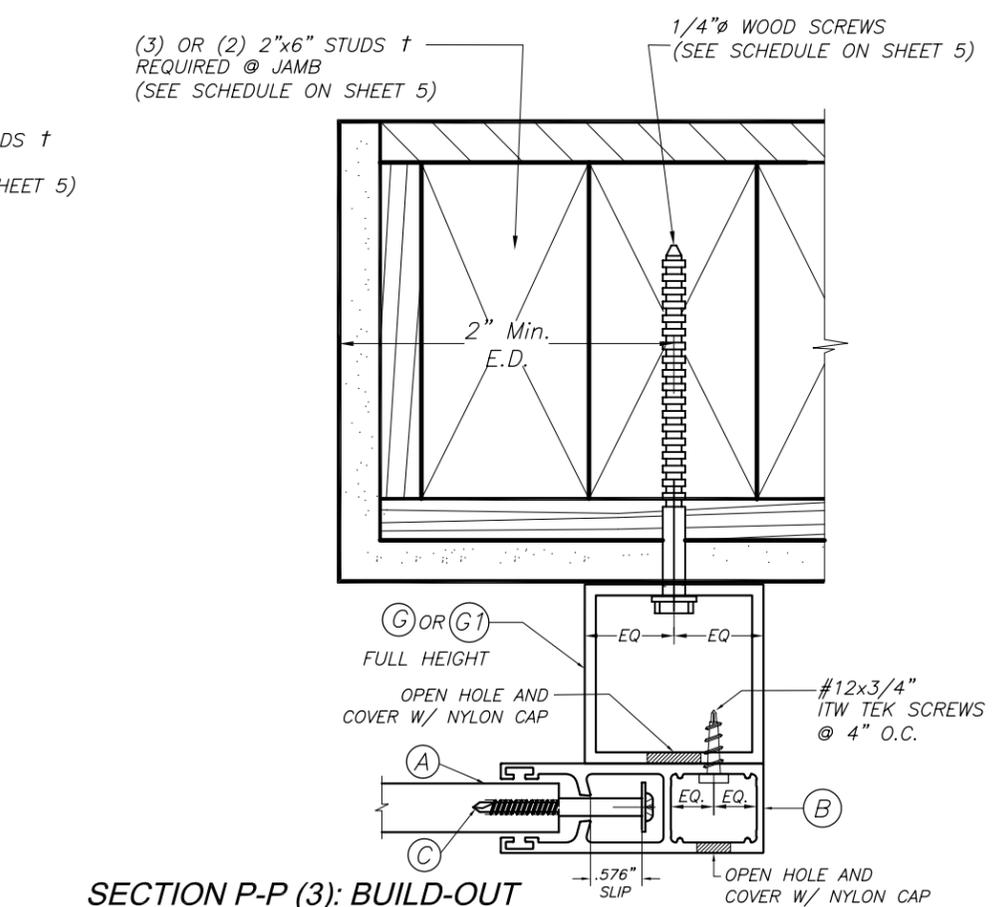
TO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK WALL  
(SEE MAX. SLAT SPAN SCHEDULE ON SHEET 5)  
SCALE : 3/8" = 1"



**SECTION P-P (1): WALL MOUNT**



**SECTION P-P (2): INSIDE MOUNT**



**SECTION P-P (3): BUILD-OUT**

**SIDE RAIL CONNECTIONS**

TO WOOD FRAME WALL  
(SEE MAX. SLAT SPAN SCHEDULE ON SHEET 5)  
SCALE : 3/8" = 1"

† MULTIPLE STUDS TO BE FASTENED TO EACH OTHER W/ 2-#14x3" F.H. WOOD SCREWS @ 4" O.C. FULL HEIGHT, FOLLOWING A SEQUENCE FROM FIRST TO LAST STUD. ALTERNATIVELY, USE 1/2" THRU BOLTS @ 8" O.C. W/ NUT & WASHER FROM FIRST TO LAST STUD. CONNECTION OF MULTIPLE STUDS TOP & BOTTOM SHALL RESIST A HORIZONTAL REACTION OF 1600 LB. DESIGN OF THIS CONNECTION IS BY PROFESSIONAL OF RECORD FOR THE STRUCTURE.

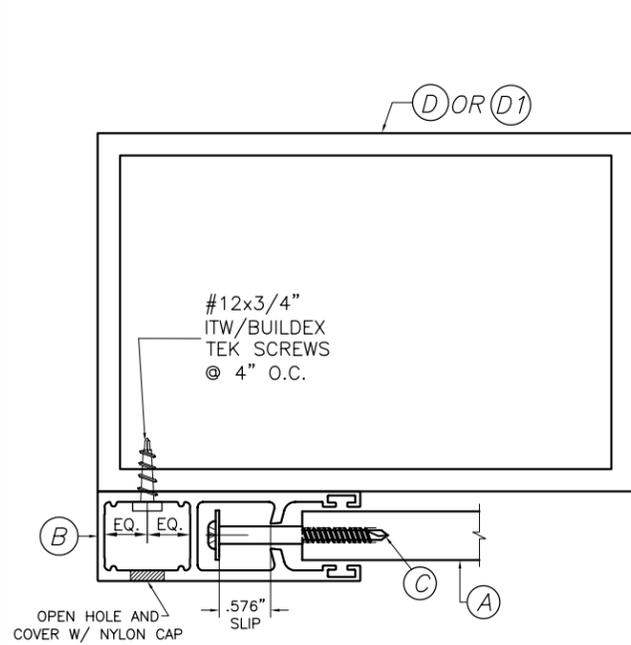
WALTER A. TILLIT Jr. P.E.  
PROFESSIONAL ENGINEER  
6355 N.W. 36 STREET, STE. 305  
VIRGINIA GARDENS, FL 33166  
PHONE (305) 871-1530 FAX (305) 871-1531  
TEXAS LIC. # 90691

BARRACUDA I END RETENTION  
ROLL-UP SHUTTER SYSTEM  
**ALUTECH UNITED INC.**  
15 DIXON STREET  
SELBYVILLE, DE 19975  
PHONE: (800) 233-1144, FAX: (302) 436-5100

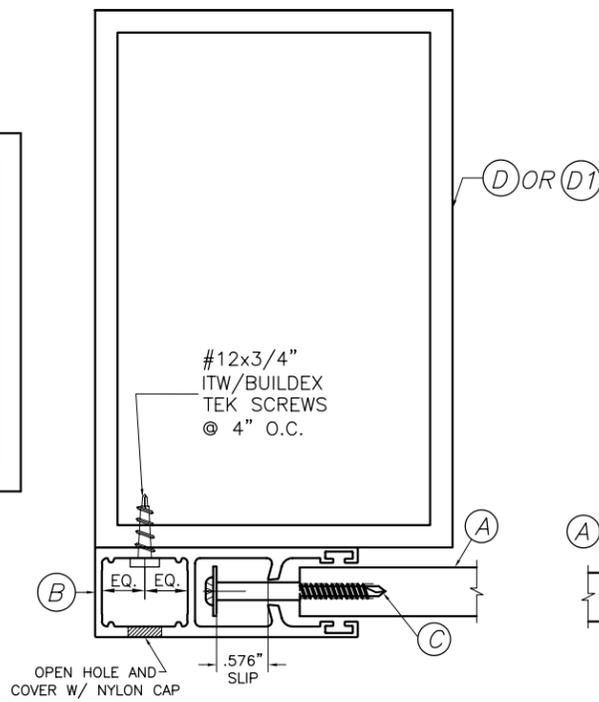
T.D.I. 2006

L.G.  
DRAWN BY  
10/15/07  
DATE  
07-263  
DRAWING No

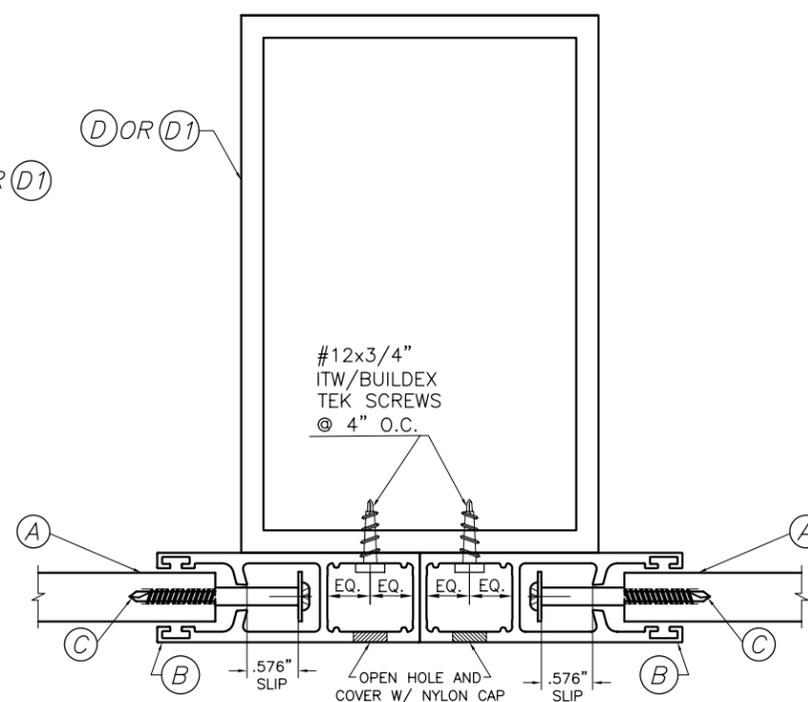
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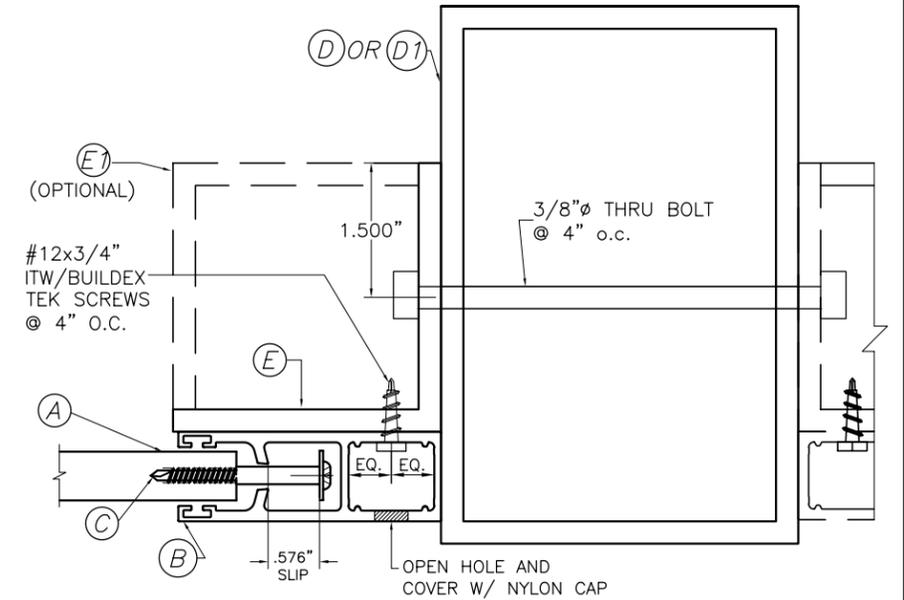
**SECTION Q-Q (1): (END MULLION)**  
**FACE MOUNT (MULLION ORIENTATION # 1)**



**SECTION Q-Q (1): (END MULLION)**  
**FACE MOUNT (MULLION ORIENTATION # 2)**



**SECTION R-R (1): (INTERIOR MULLION)**  
**FACE MOUNT (MULLION ORIENTATION # 2)**



**SECTION Q-Q (3): (END OR INTERIOR MULLION)**  
**INSIDE MOUNT (MULLION ORIENTATION # 1 OR 2 AS APPLICABLE)**

**MAXIMUM ANCHOR SPACING SCHEDULE FOR INSTALLATIONS INTO CONCRETE OR GROUT FILLED CONCRETE BLOCK.**

DESIGN LOAD (P.S.F)	SPAN L (ft)	WALL MOUNTING		TRAPPED MOUNTING		BUILD-OUT MOUNTING	
		POURED CONCRETE	GROUT FILLED BLOCK	POURED CONCRETE	GROUT FILLED BLOCK	POURED CONCRETE	GROUT FILLED BLOCK
+45, -45	≤ 6'-0"	4"	4"	4"	4"	4"	4"
	>6'-0" TO 7'-0"	4"	4"	4"	4"	4"	4"
	>7'-0" TO 12'-0"	4"	4"	4"	4"	◇ 3 3/4"	◇ 3 3/4"
+50, -50	≤ 6'-0"	4"	4"	4"	4"	4"	4"
	>6'-0" TO 7'-0"	4"	4"	4"	4"	4"	4"

◇ REQUIRES INSTALLATION TO BE PERFORMED ONLY W/ (G1) (2"x3"x1/8") B.O. TUBE.

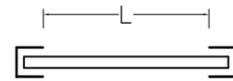
**MAXIMUM ANCHOR SPACING SCHEDULE FOR INSTALLATIONS INTO WOOD FRAME BUILDINGS.**

DESIGN LOAD (P.S.F)	SPAN L (ft)	WALL MOUNTING		TRAPPED MOUNTING		BUILD-OUT MOUNTING	
		G=0.46	G=0.55	G=0.46	G=0.46	G=0.46	G=0.55
+45, -45	≤ 6'-0"	4"	4"	4"	4"	4"	4"
	>6'-0" TO 7'-0"	4"	4"	4"	4"	4"	4"
	>7'-0" TO 12'-0"	3"	3 1/2"	4"	4"	□ 2 1/2"	3 1/2"
+50, -50	≤ 6'-0"	4"	4"	4"	4"	4"	4"
	>6'-0" TO 7'-0"	4"	4"	4"	4"	4"	4"

□ ALTERNATIVELY, MAX. SPACING MAY BE 3" o.c. IF B.O. TUBE (G1) (2"x3"x1/8") IS USED IN LIEU OF (G) (2"x2"x1/8").

**SIDE RAIL CONNECTIONS TO MULLIONS**

(SEE SLAT SPAN SCHEDULE)  
SCALE: 3/8" = 1"



**SLAT SPAN DEFINITION**

**MAXIMUM SLAT SPAN "L" (ft) SCHEDULE.**

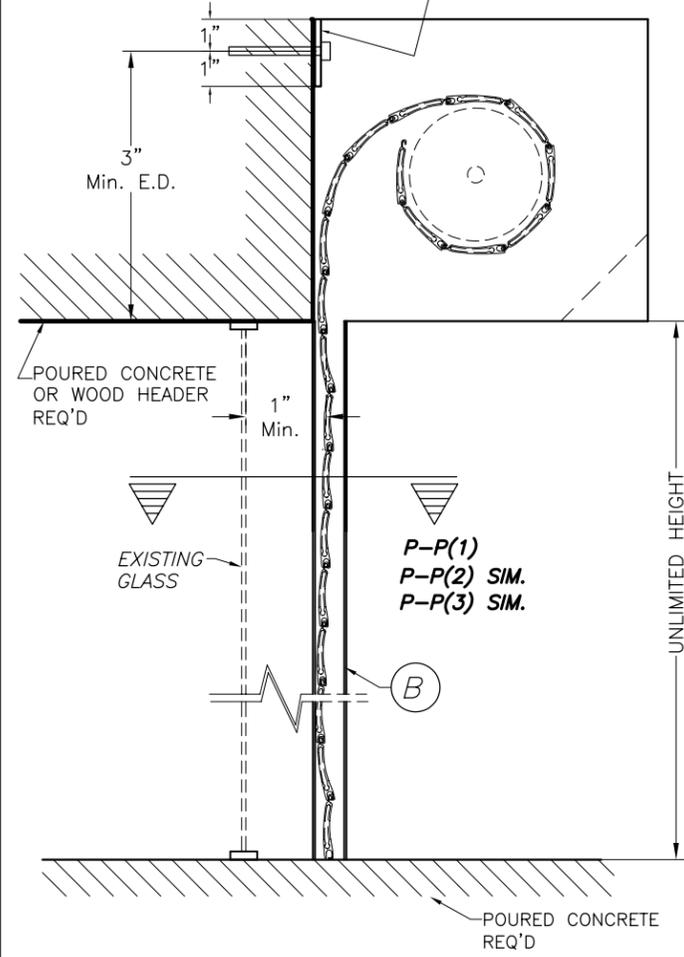
DESIGN LOAD (P.S.F)	REQUIRED SUBSTATE	MAX. SPAN "L" (FT.)	REMARKS
+35, -35	WOOD	6'-0"	LIMITED TO SHUTTER HGT (W/O BOX) UP TO 84" † W/ (2) 2x6 STUDS EA. JAMB
+45, -45	POURED CONCRETE OR GROUT FILLED CONC. BLOCK.	12'-0"	SEE NOTE * ON SHEET 4
	WOOD	12'-0"	LIMITED TO SHUTTER HGT (W/O BOX) UP TO 54" † W/ (3) 2x6 STUDS EA. JAMB
+50, -50	WOOD	6'-0"	LIMITED TO SHUTTER HGT (W/O BOX) UP TO 72" † W/ (2) 2x6 STUDS EA. JAMB
	POURED CONCRETE OR GROUT FILLED CONC. BLOCK.	7'-0"	SEE NOTE * ON SHEET 4
+50, -50	WOOD	7'-0"	LIMITED TO SHUTTER HGT (W/O BOX) UP TO 84" † W/ (3) 2x6 STUDS EA. JAMB

† FOR SHUTTER HEIGHTS LARGER THAN 54", SPECIAL AND SITE SPECIFIC ENGINEERING WILL BE REQUIRED TO DETERMINE THE REQUIRED NUMBER OF WOOD STUDS AT EACH JAMB, WHICH WILL EXCEED (3) STUDS.

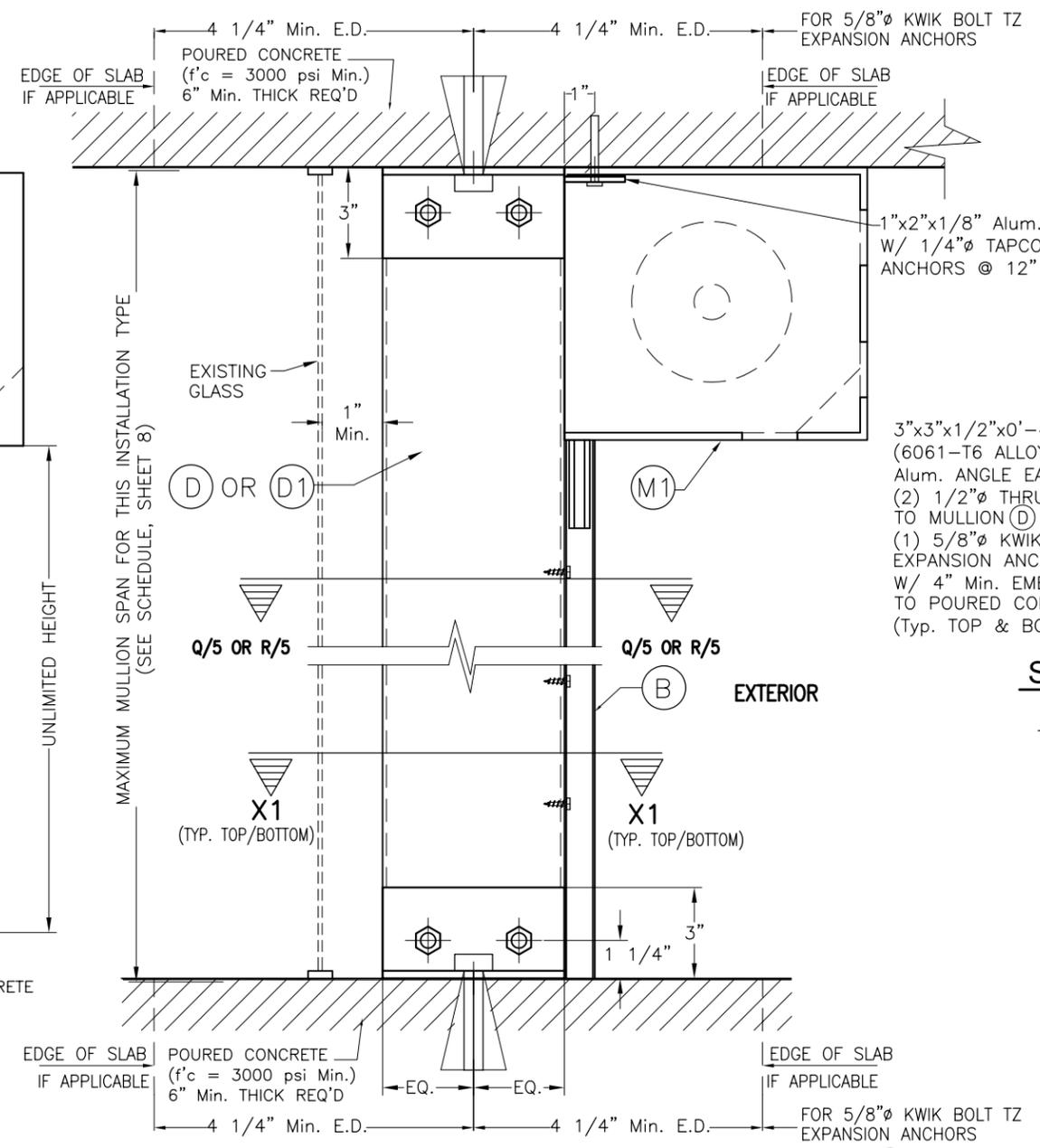
T.D.I. 2006

<b>WALTER A. TILLIT Jr. P.E.</b> PROFESSIONAL ENGINEER  6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531  TEXAS LIC. # 90691	<b>BARRACUDA I END RETENTION</b> <b>ROLL-UP SHUTTER SYSTEM</b>	L.G. DRAWN BY																		
	<b>ALUTECH UNITED INC.</b>  15 DIXON STREET SELBYVILLE, DE 19975 PHONE: (800) 233-1144, FAX: (302) 436-5100	10/15/07 DATE																		
<table border="1"> <thead> <tr> <th>REV. No</th> <th>DESCRIPTION</th> <th>DATE</th> <th>REV. No</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>OLD DWG 07-117</td> <td>10/15/07</td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>TITLE BLOCK / P.E.#</td> <td>11/25/08</td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table>	REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE	1	OLD DWG 07-117	10/15/07	3			2	TITLE BLOCK / P.E.#	11/25/08	4			07-263 DRAWING No	SHEET 5 OF 8
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE															
1	OLD DWG 07-117	10/15/07	3																	
2	TITLE BLOCK / P.E.#	11/25/08	4																	

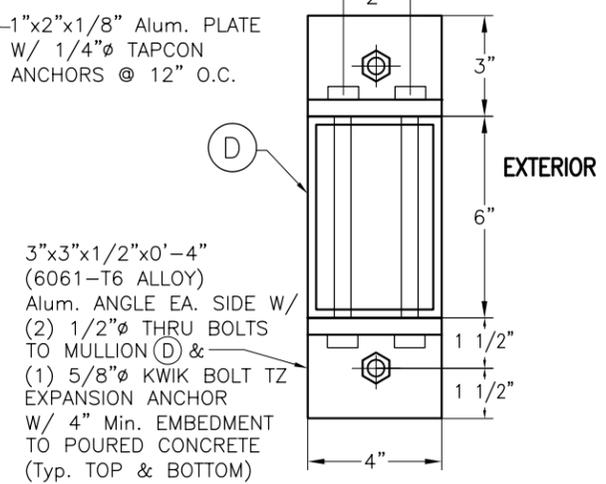
1"x2"x1/8" Alum. PLATE  
W/ 1/4"x1 3/4" TAPCONS  
@ 12" o.c. FOR CONCRETE OR  
16" o.c. (TO EA. STUD) FOR WOOD



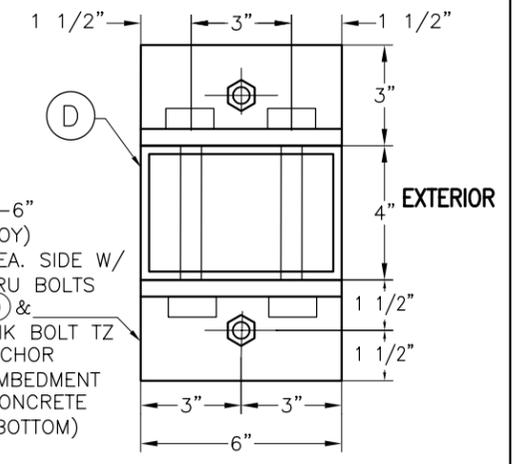
**WALL MOUNTING: NO MULLION CASE**  
**SECTION V-V**



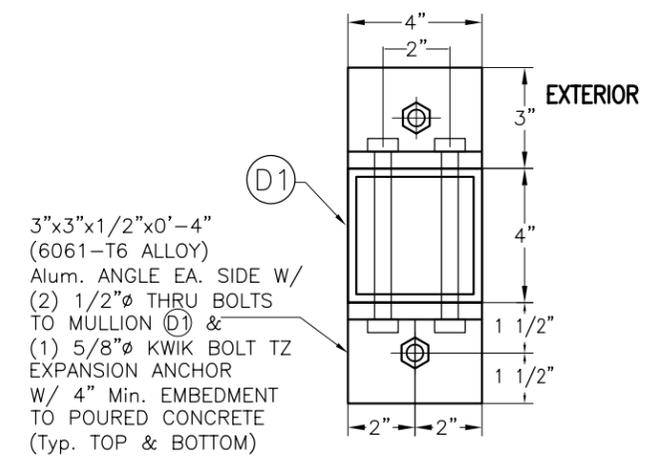
**FLOOR TO CEILING / TRAPPED MOUNTING: MULLION (D) OR (D1)**  
**SECTION W-1**



**SECTION X1-X1 W/ (D) \***  
(W/ ORIENTATION # 1)



**ALTERNATIVE SECTION X1-X1 W/ (D) \***  
(W/ ORIENTATION # 2)



**SECTION X1-X1 W/ (D1) \***

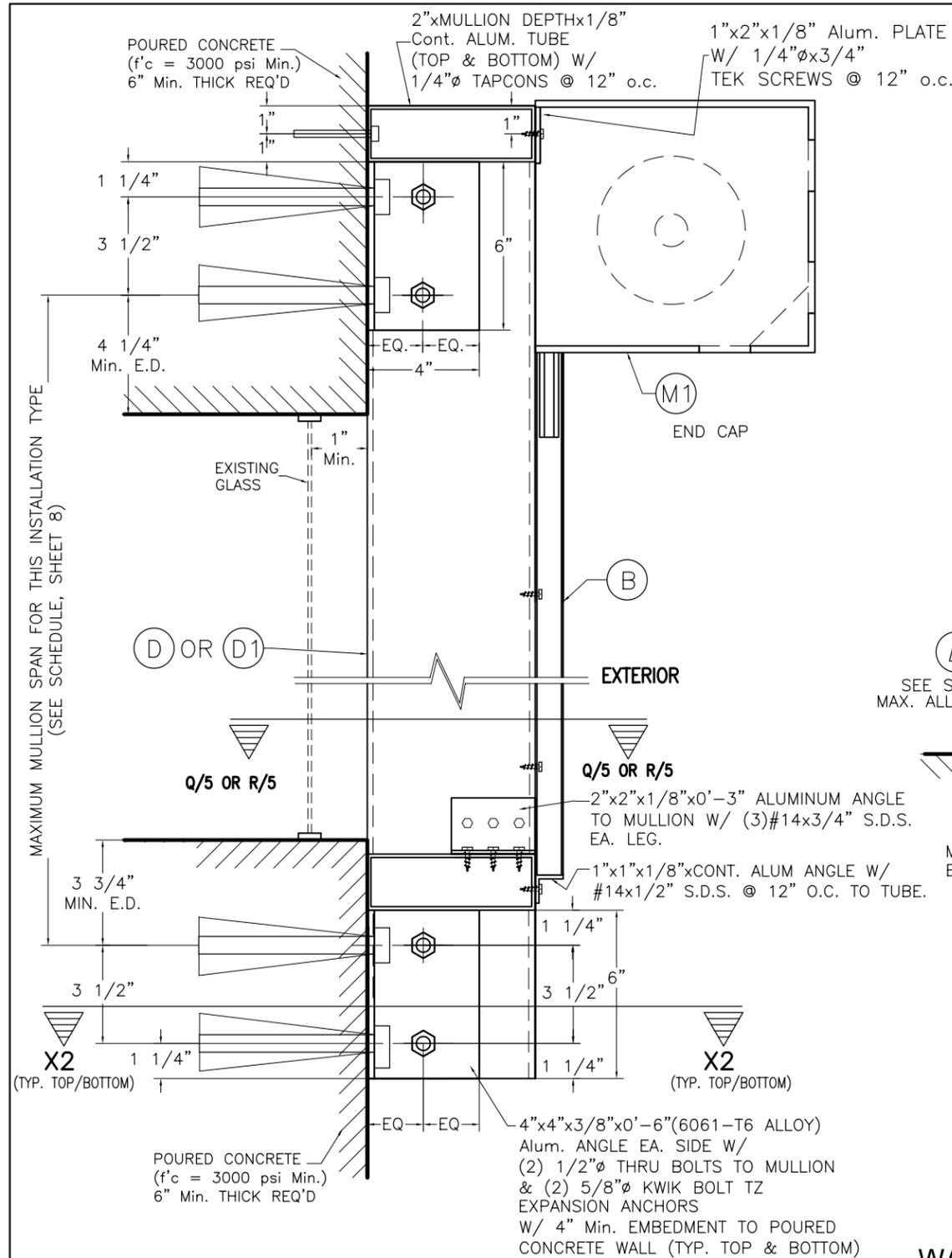
\* SIDE RAIL (B) NOT SHOWN FOR CLARITY.  
IT GOES ON EXTERIOR SIDE OF MULLION.

**END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION**

SCALE: 3/16" = 1"

T.D.I. 2006

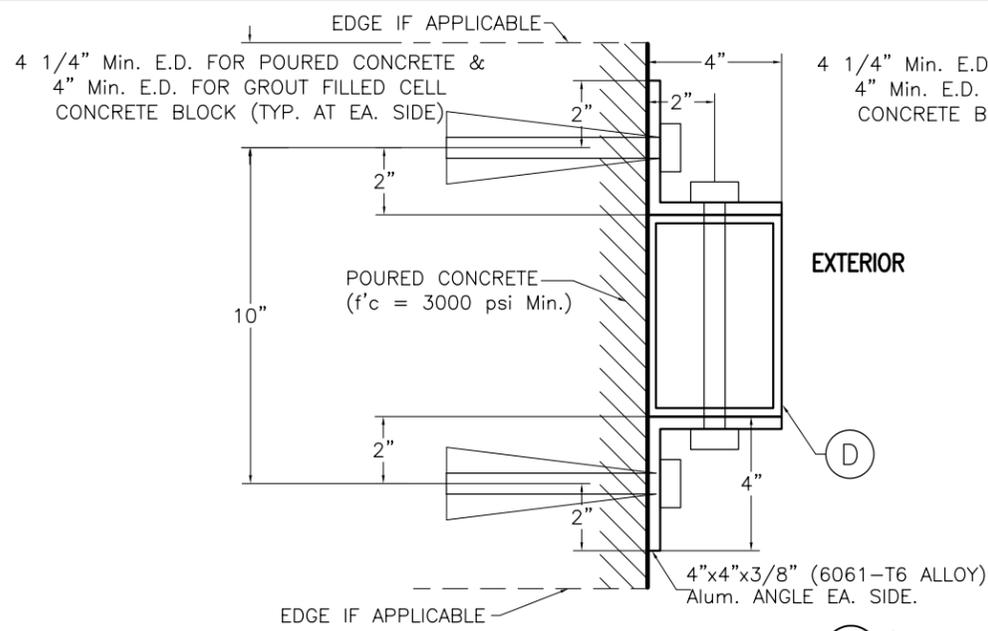
<b>WALTER A. TILLIT Jr. P.E.</b> PROFESSIONAL ENGINEER  6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531  TEXAS LIC. # 90691		<b>BARRACUDA I END RETENTION ROLL-UP SHUTTER SYSTEM</b>		L.G. DRAWN BY	
		<b>ALUTECH UNITED INC.</b> 15 DIXON STREET SELBYVILLE, DE 19975 PHONE: (800) 233-1144, FAX: (302) 436-5100		10/15/07 DATE	
		07-263 DRAWING No			
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD DWG 07-117	10/15/07	3		
2	TITLE BLOCK / P.E.#	11/25/08	4		



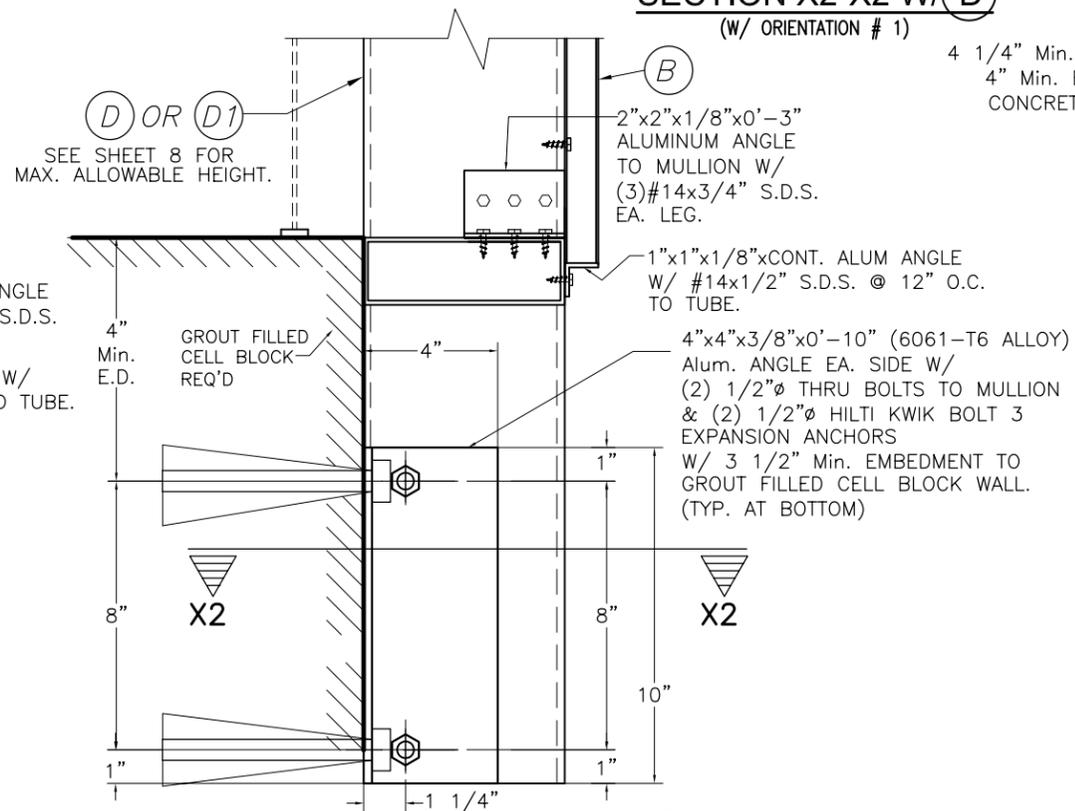
**WALL MOUNTING : MULLION (D) OR (D1)**  
**POURED CONCRETE WALL**  
**SECTION W-2**

**END & INTERIOR WALL MOUNTED MULLION INSTALLATION**

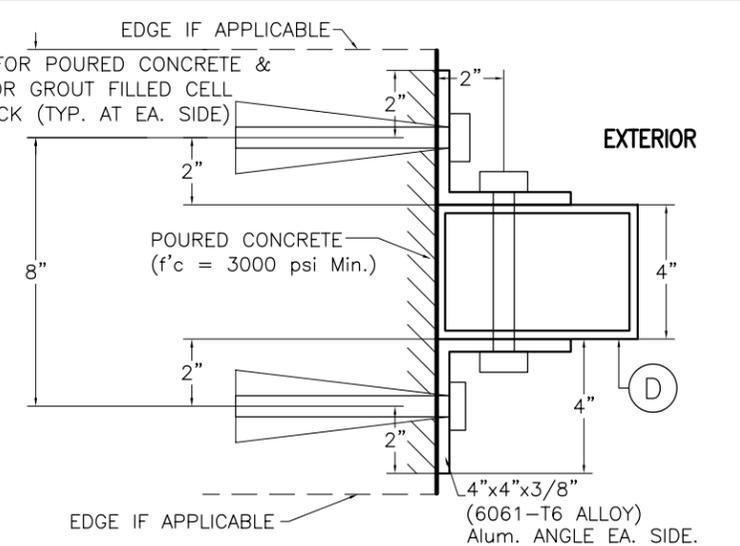
SCALE: 3/16" = 1"



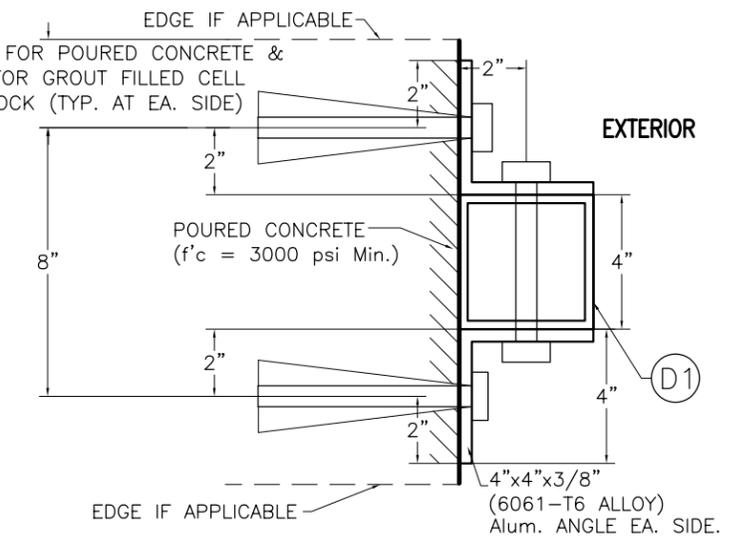
**SECTION X2-X2 W/ (D) \***  
(W/ ORIENTATION # 1)



**WALL MOUNTING : MULLION (D) OR (D1)**  
**GROUT FILLED CELL CONCRETE BLOCK WALL**  
**SECTION W-W**



**ALTERNATIVE SECTION X2-X2 W/ (D) \***  
(W/ ORIENTATION # 2)



**SECTION X2-X2 W/ (D1) \***

\* SIDE RAIL (B) NOT SHOWN FOR CLARITY.  
IT GOES ON EXTERIOR SIDE OF MULLION.

T.D.I. 2006

<b>WALTER A. TILLIT Jr. P.E.</b> PROFESSIONAL ENGINEER 6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531 TEXAS LIC. # 90691		<b>BARRACUDA I END RETENTION</b> <b>ROLL-UP SHUTTER SYSTEM</b>  <b>ALUTECH UNITED INC.</b> 15 DIXON STREET SELBYVILLE, DE 19975 PHONE: (800) 233-1144, FAX: (302) 436-5100		L.G. DRAWN BY 10/15/07 DATE 07-263 DRAWING No	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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2	TITLE BLOCK / P.E.#	11/25/08	4		

MAXIMUM MULLION HEIGHT (Ft) SCHEDULE FOR A GIVEN MAXIMUM DESIGN LOAD "W" (psf),  
MULLION SPACING (Ft), TYPE OF MULLION AND 0.576" SLIP (in),  
FOR INSTALLATION INTO POURED CONCRETE OR GROUT FILLED BLOCK

MULLION SPACING (ft)	TRAPPED MULLIONS									WALL MOUNTED MULLIONS								
				CONCRETE						CONCRETE			GROUT FILLED BLOCK					
	Ⓣ W/ ORIENTATION #1* (☐)			Ⓣ W/ ORIENTATION #2* (☐)			MULLION Ⓣ1 (☐)			Ⓣ W/ ORIENTATION #1* (☐)			Ⓣ W/ ORIENTATION #2* (☐)			MULLION Ⓣ1 (☐)		
DESIGN LOAD (p.s.f.)	6'-0"	7'-0"	12'-0"	6'-0"	7'-0"	12'-0"	6'-0"	7'-0"	12'-0"	6'-0"	7'-0"	12'-0"	6'-0"	7'-0"	12'-0"	6'-0"	7'-0"	12'-0"
+45, -45	12'-0"	11'-6"	7'-9"	12'-0"	11'-0"	7'-2"	10'-7"	9'-0"	5'-11"	12'-0"	11'-6"	7'-8"	12'-0"	11'-0"	7'-3"	10'-7"	9'-0"	5'-11"
										12'-0"	11'-6"	5'-6"	12'-0"	9'-9"	4'-1"	10'-7"	9'-0"	5'-1"
+50, -50	12'-0"	10'-11"	N/A	12'-0"	10'-4"	N/A	9'-11"	8'-6"	N/A	12'-0"	10'-11"	N/A	12'-0"	10'-4"	N/A	9'-11"	8'-6"	N/A
										12'-0"	10'-11"		12'-0"	8'-8"		9'-11"	8'-6"	

\*SEE SHEET 5 FOR ORIENTATION OF MULLIONS DEFINITION.

T.D.I. 2006

WALTER A. TILLIT Jr. P.E. PROFESSIONAL ENGINEER		BARRACUDA I END RETENTION ROLL-UP SHUTTER SYSTEM		L.G. DRAWN BY	
6355 N.W. 36 STREET, STE. 305 VIRGINIA GARDENS, FL 33166 PHONE (305) 871-1530 FAX (305) 871-1531		ALUTECH UNITED INC. 15 DIXON STREET SELBYVILLE, DE 19975 PHONE: (800) 233-1144, FAX: (302) 436-5100		10/15/07 DATE	
TEXAS LIC. # 90691				07-263 DRAWING No	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD DWG 07-117	10/15/07	3		
2	TITLE BLOCK / P.E.#	11/25/08	4		
				SHEET 8 OF 8	