

**GENERAL NOTES:**

1. ROLL-UP SHUTTER SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2014 (5th EDITION) OF THE FLORIDA BUILDING CODE. THIS ROLL-UP SHUTTER SHALL NOT BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES (MIAMI-DADE/BROWARD COUNTIES).

DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE ABOVE MENTIONED CODE, FOR A BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE THESE SHUTTERS WILL BE INSTALLED FOR A DIRECTIONALITY FACTOR  $K_d=0.85$ . USING ASCE 7-10 FOR INSTALLATIONS UNDER 2014 FBC AND SHALL NOT EXCEED THE MAXIMUM (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 5, 6 & 8 THRU 11.

IN ORDER TO VERIFY THE ABOVE CONDITION, ULTIMATE DESIGN WIND LOADS DETERMINED PER ASCE 7-10 SHALL BE FIRST REDUCED TO A.S.D. DESIGN WIND LOADS BY MULTIPLYING THEM BY 0.6 IN ORDER TO TO COMPARE THESE W/ MAX. (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 5, 6 & 8 THRU 11.

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. FASTENERS SPACING TO WOOD HAS BEEN DETERMINED IN ACCORDANCE WITH N.D.S. 2012. ROLL-UP SHUTTER'S ADEQUACY FOR WIND RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE ABOVE MENTIONED CODE AS PER HURRICANE TESTING LAB. REPORT #0187-0413-99 (ONLY FOR STORM BARS) AND FENESTRATION TESTING LAB REPORTS #6242 AND 6244 (SLAT AND MULLION). AS PER ASTM E 1886-05, E 1996 AND E 330-02 STANDARDS, QUALIFYING INSTALLATIONS FOR WIND ZONES 1, 2, 3 & 4, MISSILE TYPE D, APPLICABLE TO BASIC PROTECTION ONLY, INSTALLATIONS AT NON ESSENTIAL FACILITIES AS DEFINED BY SECTIONS 6.2.1.1, 6.2.1.2 AND 8.3 OF ASTM E 1996.

2. ALL ALUMINUM EXTRUSIONS SHALL BE AS INDICATED ON SHEETS 2 & 3.

3. ALL SCREWS TO BE STAINLESS STEEL 304 OR 316 AISI SERIES OR CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018 AND SECTION 2411.3.3.4 OF THE FLORIDA BUILDING CODE WITH 50 ksi YIELD STRENGTH AND 90 ksi TENSILE STRENGTH. ALL TEK SCREWS SHALL BE AS MANUFACTURED BY ITW BUILDEX, INC.

4. BOLTS TO BE ASTM A-307, GALVANIZED OR AISI 304 OR 316 SERIES STAINLESS STEEL WITH 36 ksi MINIMUM YIELD STRENGTH.

5. ANCHORS TO WALL FOR (P) & (Q) SIDE RAILS AND BOX CONNECTION SHALL BE AS FOLLOWS:

(A) TO EXISTING POURED CONCRETE: MIN.  $f'_c = 3192$  p.s.i. COMPRESSIVE STRENGTH.

-1/4"Ø CARBON STEEL TAPCON ANCHORS AS MANUFACTURED BY ITW BUILDEX, INC.

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) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON ANCHORS INTO POURED CONCRETE SHALL BE 2 1/2". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

A.3) 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 HOLLOW BLOCK WALL: ASTM C-90

-1/4"Ø CARBON STEEL TAPCON ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.

B.1) MINIMUM EMBEDMENT OF TAPCON ANCHORS INTO THE HOLLOW BLOCK UNIT SHALL BE 1 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.

B.2) MINIMUM EDGE DISTANCE (E.D.) OF 1/4" TAPCON ANCHORS INTO HOLLOW BLOCK SHALL BE 2 1/2". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.

B.3) 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 B.1 ABOVE.

(C) TO EXISTING WOOD FRAME BUILDING: SOUTHERN PINE #2 W/  $G=0.55$  MIN.

- 1/4"Ø TAPCON ITW BUILDEX PER N.D.S.

**NOTES:**

C.1) MINIMUM THREADED PENETRATION OF TAPCON ANCHORS INTO THE WOOD FRAME UNIT SHALL BE 1 1/2" NO THREADED PENETRATION INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED THREADED PENETRATION.

C.2) MINIMUM EDGE DISTANCE OF TAPCON ANCHORS INTO WOOD SHALL BE AS INDICATED ON SHEET 9.

C.3) 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 THREADED PENETRATION SHALL BE AS INDICATED ON NOTE C.1 ABOVE.

6. ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.  
7. ANCHORS REQUIRED FOR STORM BARS, HEADERS & MULLION TO CONCRETE SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 5, 6, 7 & 8 OF 11 RESPECTIVELY.

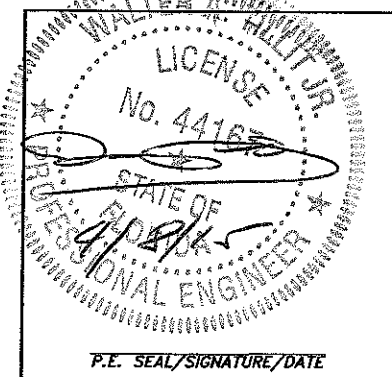
- 410 SS WEDGE BOLT ANCHORS TO BE AS MANUFACTURED BY POWERS FASTENERS, INC.
- CALK-IN ANCHORS TO BE AS MANUFACTURED BY POWERS FASTENERS, INC.
- TAPCON ANCHORS XL TO BE AS MANUFACTURED BY ITW BUILDEX, INC.

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

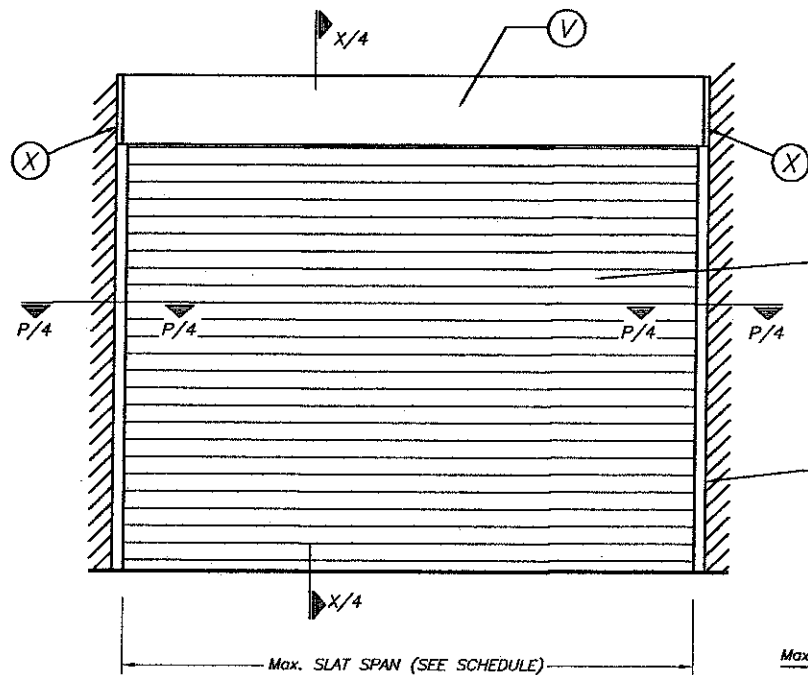
ANCHOR	SPACING @ 100%	EDGE DISTANCE @ 100%	EMBEDMENT	
			CONCRETE	CONCRETE BLOCK
3/8"Ø 410 SS WEDGE-BOLT	4 1/2"	4 1/2"	2 1/2" (3000 psi.)	-
1/2"Ø 410 SS WEDGE-BOLT	6"	6"	3" (3000 psi.)	-
1/4"Ø CALK-IN	2 1/2"	3"	7/8" (3000 psi.)	-
3/8"Ø CALK-IN	3 3/4"	4 1/2"	1 1/4" (2899 psi.)	-
1/4"Ø TAPCON	3"	3"	1 3/4" (3192 psi)	-
5/16"Ø TAPCON XL	3 3/4"	4"		1 3/4" (ASTM C-90, GROUT FILLED)

- 8. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION.
- 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 CONCRETE, CONCRETE BLOCK OR WOOD FRAME BUILDINGS.
- 10. ROLL-UP SHUTTERS INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.
- 11. ROLL-UP MECHANISM NOT PART OF THIS APPROVAL.
- 12. (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 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. 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.
- 13. SHUTTER MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT ROLL-UP SHUTTER IN ACCORDANCE WITH SECTION 1710.8.3 OF FLORIDA BUILDING CODE. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABELING TO COMPLY WITH SECTION 1710.8.2 OF THE FLORIDA BUILDING CODE.

THIS DRAWING SHALL ONLY BE USED TO OBTAIN PERMITS IN THE STATE OF FLORIDA

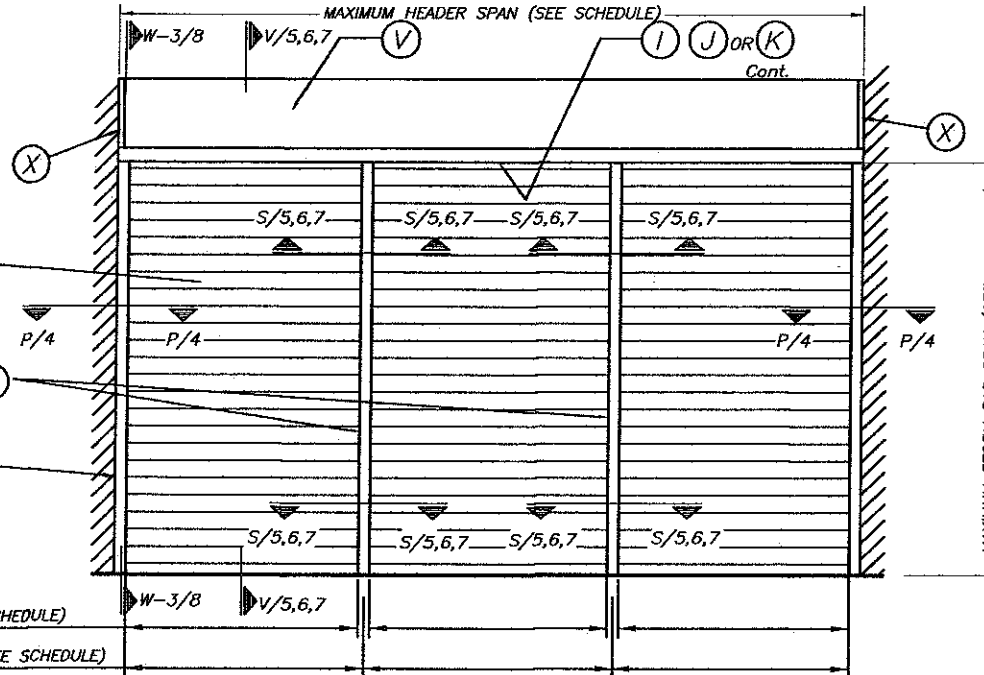


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© 2015 TILTECO INC. <b>TILTECO INC.</b> TILLIT TESTING & ENGINEERING COMPANY 6355 N.W. 38th. St., Ste. 305 - VIRGINIA GARDENS, FL 33166 Phone : (305) 871-1530 , Fax : (305) 871-1531 e-mail: tilteco@aol.com EB-0006719 WALTER A. TILLIT Jr., P.E. FLORIDA Lic. # 44167		<b>RLL 55-X SLAT NON END RETENTION ROLL-UP SHUTTER</b>  <b>ROLLAC SHUTTER OF TEXAS, INC.</b> 5331 ORANGE STREET PEARLAND, TX 77581 PH: (800) 880-0922, FAX: (281) 485-0839																		
15-061 DRAWING N°	04/02/15 DATE																			
SHEET 1 OF 11	<table border="1" style="width: 100%;"> <thead> <tr> <th>REV #</th> <th>DESCRIPTION</th> <th>DATE</th> <th>REV #</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>OLD 11-241</td> <td>04/02/15</td> <td>3</td> <td>-</td> <td>-</td> </tr> <tr> <td>2</td> <td>-</td> <td>-</td> <td>4</td> <td>-</td> <td>-</td> </tr> </tbody> </table>		REV #	DESCRIPTION	DATE	REV #	DESCRIPTION	DATE	1	OLD 11-241	04/02/15	3	-	-	2	-	-	4	-	-
REV #	DESCRIPTION	DATE	REV #	DESCRIPTION	DATE															
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2	-	-	4	-	-															



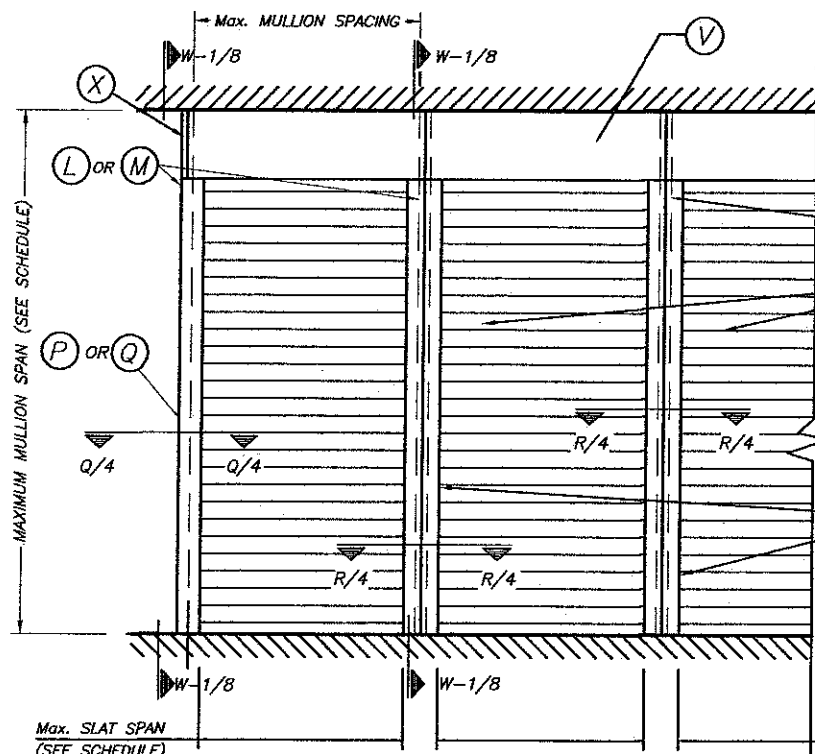
**TYPICAL SINGLE UNIT ELEVATION (NO STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 11 FOR COMPONENTS NOMENCLATURE.



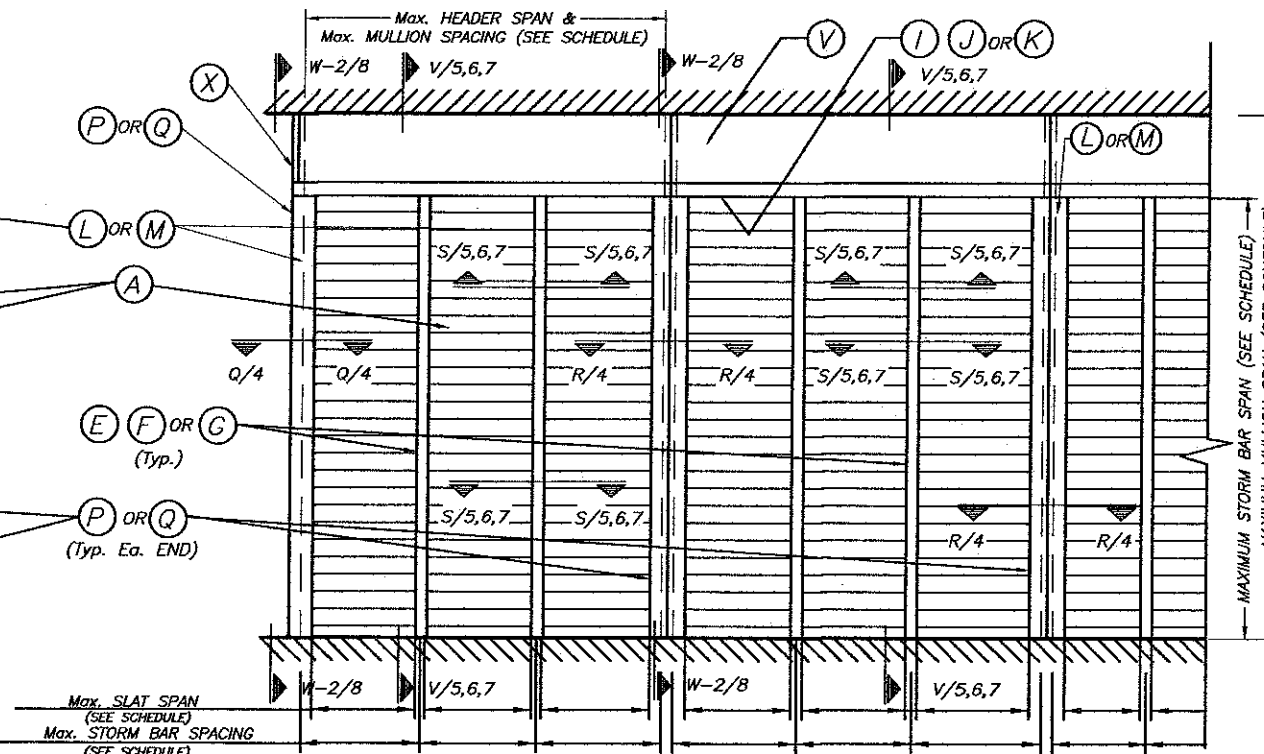
**TYPICAL MULTIPLE UNIT ELEVATION (STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 11 FOR COMPONENTS NOMENCLATURE.



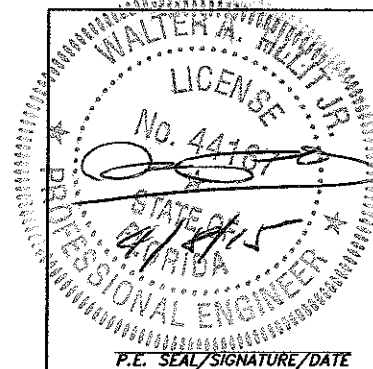
**TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION (NO STORM BARS REQUIRED)**

NOTE: SEE SHEET 2 & 3 OF 11 FOR COMPONENTS NOMENCLATURE.



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

NOTE: SEE SHEET 2 & 3 OF 11 FOR COMPONENTS NOMENCLATURE.



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 FLORIDA Lic. # 44167

**RLI 55-X SLAT NON END RETENTION  
 ROLL-UP SHUTTER**

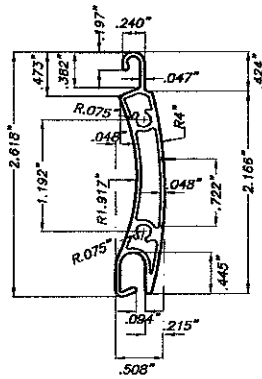
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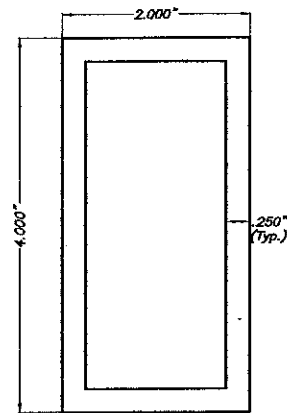
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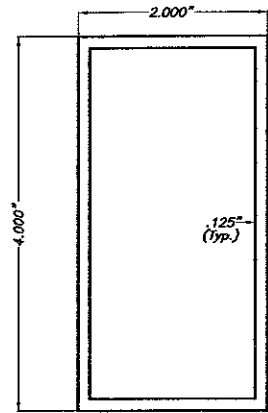
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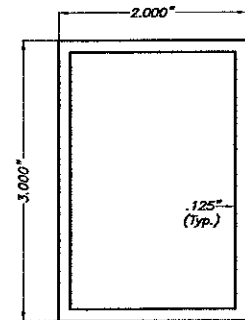
**(A) SLAT**  
 RLL 55-X SLAT  
 6061-T6 OR 6005-T5 ALUM. ALLOY



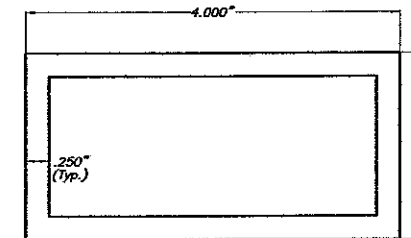
**(E) TYPE 1 STORM BAR:**  
 4" HEAVY EXTRUDED STORM BAR  
 6063-T6 ALUMINUM ALLOY



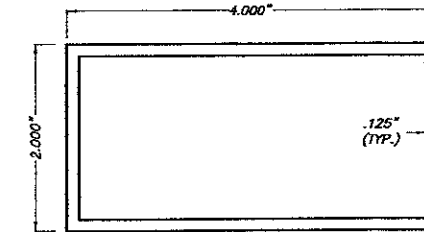
**(F) TYPE 2 STORM BAR:**  
 4" EXTRUDED STORM BARS  
 6063-T6 ALUMINUM ALLOY



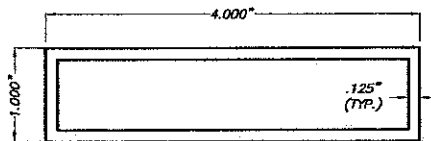
**(G) TYPE 3 STORM BAR:**  
 3" EXTRUDED STORM BARS  
 6063-T6 ALUMINUM ALLOY



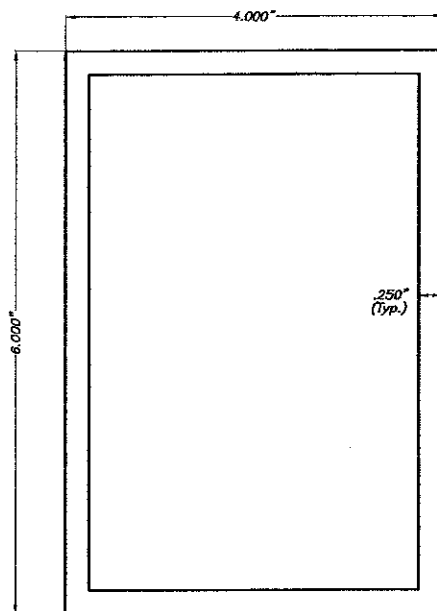
**(I) TYPE 1 HEADER:**  
 4" HEAVY EXTRUDED HEADER  
 6063-T6 ALUMINUM ALLOY



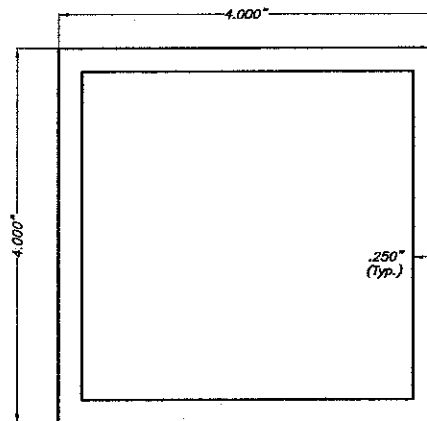
**(J) TYPE 2 HEADER:**  
 4" EXTRUDED HEADER  
 6063-T6 ALUMINUM ALLOY



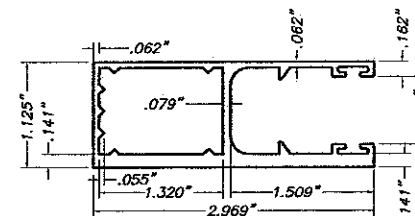
**(K) TYPE 3 HEADER:**  
 1"x4" EXTRUDED HEADER  
 6063-T6 ALUMINUM ALLOY



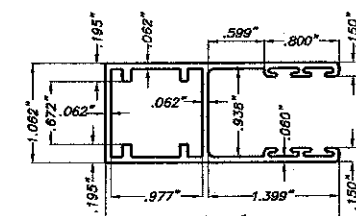
**(L) TYPE 1 MULLION:**  
 6" EXTRUDED MULLION  
 6063-T6 ALUMINUM ALLOY



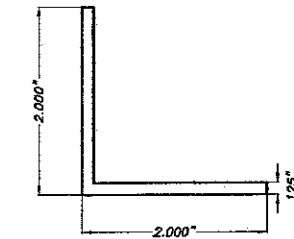
**(M) TYPE 2 MULLION:**  
 4" EXTRUDED MULLION  
 6063-T6 ALUMINUM ALLOY



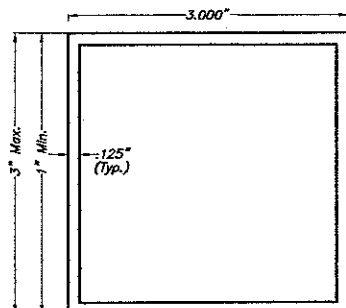
**(P) TYPE 1 SIDE RAIL**  
 RLL-40 SIDE RAIL  
 6063-T5 ALUM. ALLOY



**(Q) TYPE 2 SIDE RAIL**  
 RLL-1 SIDE RAIL  
 6063-T5 ALUM. ALLOY



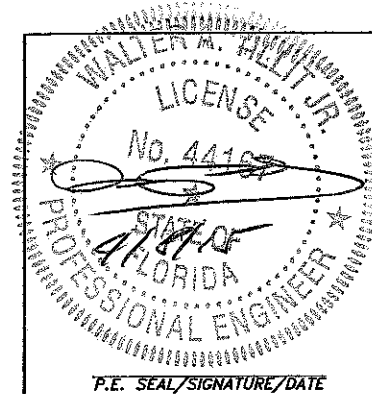
**(S) INSIDE MOUNT ALUM. ANGLE:**  
 EXTRUDED ALUMINUM  
 6063-T6 ALUMINUM ALLOY



**(Y) BUILD-OUT TUBES**  
 3"x3" EXTRUDED TUBE  
 6063-T5 ALUMINUM ALLOY

# COMPONENTS

SCALE: 1/2" = 1"



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RLL 55-X SLAT NON END RETENTION  
 ROLL-UP SHUTTER

F.R.L.  
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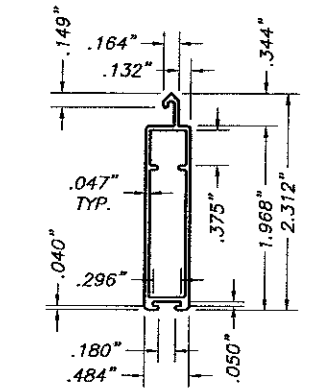
**ROLLAC SHUTTER OF TEXAS, INC.**

04/02/15  
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5331 ORANGE STREET  
 PEARLAND, TX 77581  
 PH: (800) 880-0922, FAX: (281) 485-0839

15-061  
 DRAWING N°

REV N°	DESCRIPTION	DATE	REV N°	DESCRIPTION	DATE
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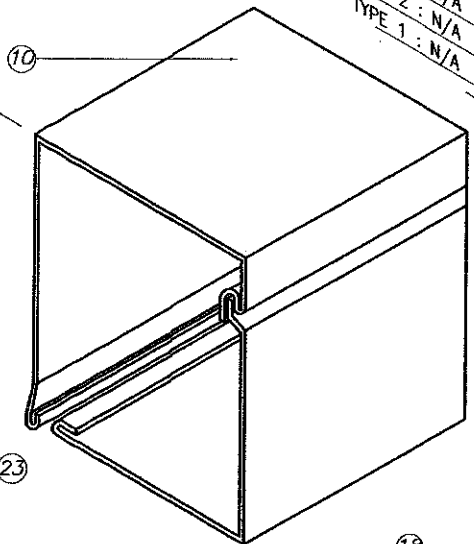


**RLL-6**  
RLL 55-X SLAT  
EXTRUDED ALUMINUM  
6063-T6 ALUMINUM ALLOY

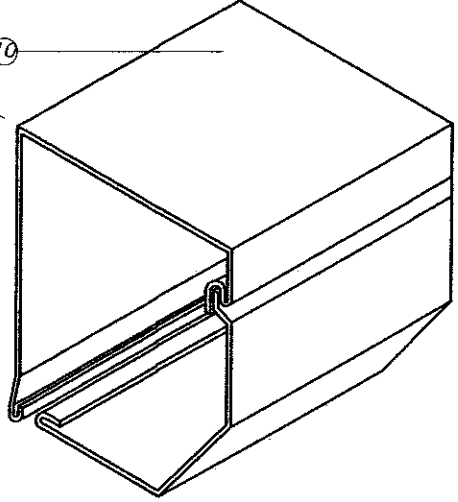
**(14) DETAILS**

- 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"

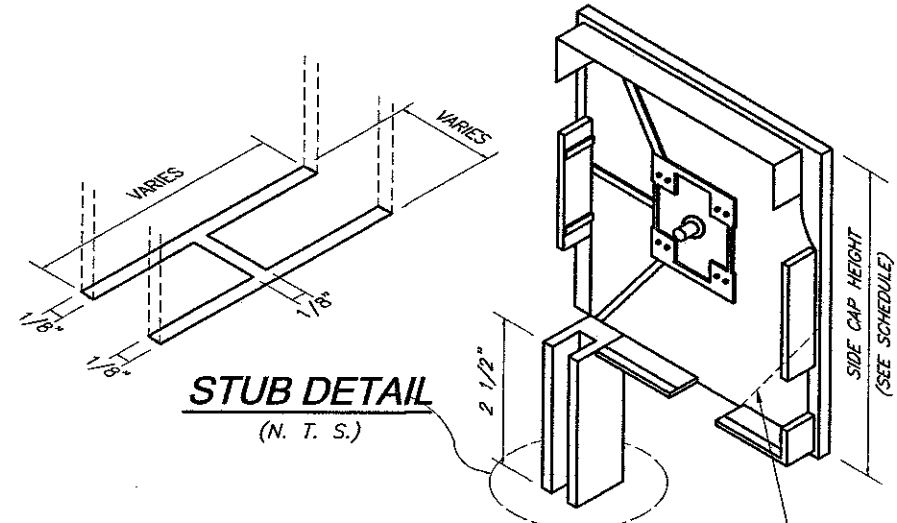
- TYPE 10 : 12"
- TYPE 9 : 10"
- TYPE 8 : 9"
- TYPE 7 : 8"
- TYPE 6 : 7"
- TYPE 5 : 6.5"
- TYPE 4 : 6"
- TYPE 3 : N/A
- TYPE 2 : N/A
- TYPE 1 : N/A



**RV 90 HOUSING**



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



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

**(X) SIDE CAPS:**  
**BK 90, BK 45 & BK 45/S**

**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 (ONLY FOR A-150-H SLAT)
- ⑨ - SIDE/END CAP \*
- ⑩ - HOUSING (FRONT & BOTTOM), 0.040" THICK
- ⑪ - SIDE RAIL
- ⑫ - PLUG-BOTTOMS
- ⑬ - ALUMINUM SLATS W/PLASTIC SLAT LOCKS @ EVERY OTHER SLAT W/ (2) #4x1" F.H. S.M.S.
- ⑭ - BASE SLAT
- ⑮ - SPRINGLOCK HANGER
- ⑯ - SAFETY PLATES

**ADDITIONAL COMPONENTS FOR  
MOTORIZED OPERATED SYSTEM**

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

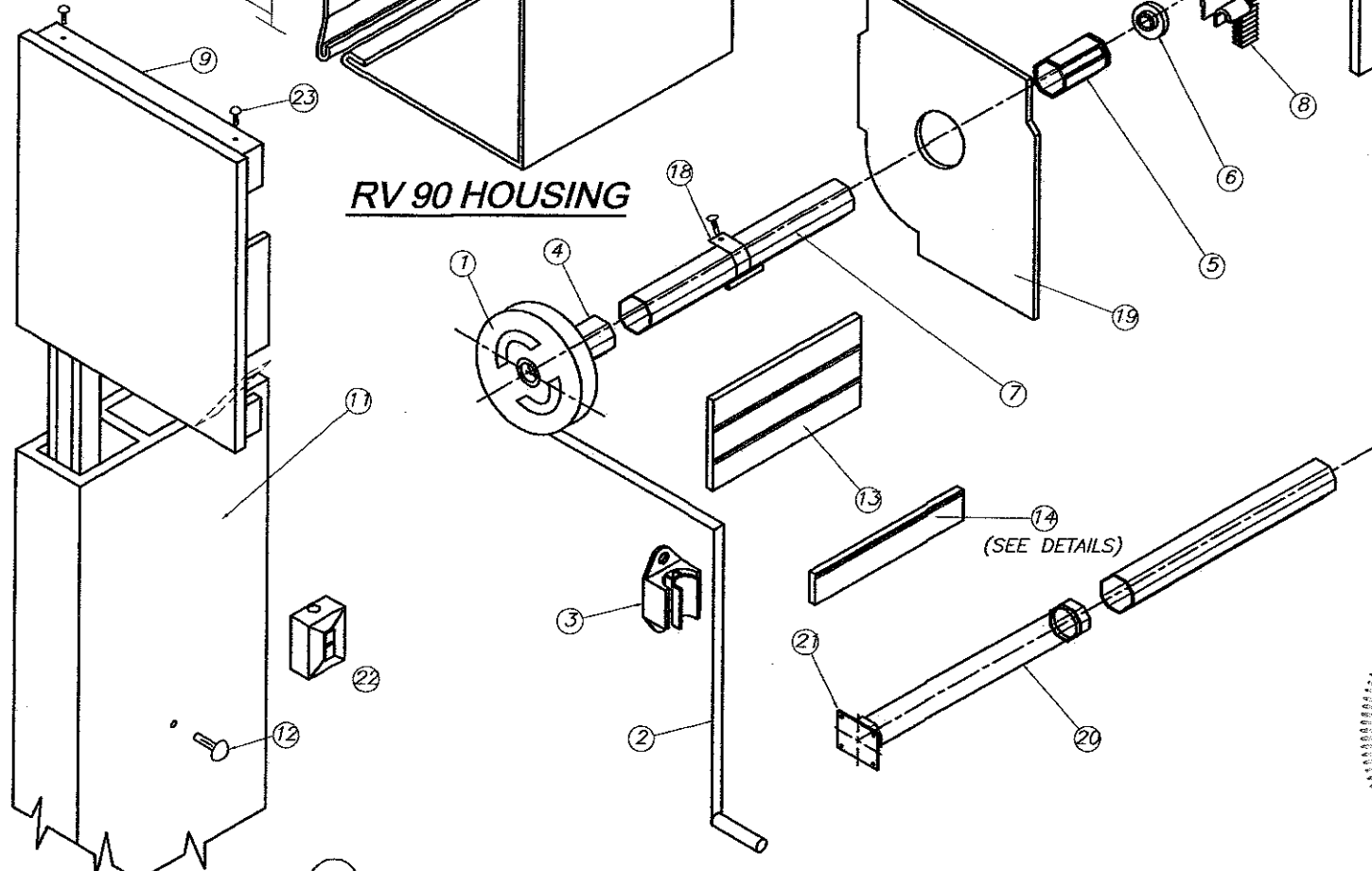
**FASTENERS**

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

SIDE CAP HEIGHT SCHEDULE		
TYPE	90"	45"
1	4.0"	N/A
2	5.0"	N/A
3	5.5"	N/A
4	6.0"	6.0"
5	6.5"	6.5"
6	7.0"	7.0"
7	8.0"	8.0"
8	9.0"	9.0"
9	10.0"	10.0"
10	N/A	12.0"

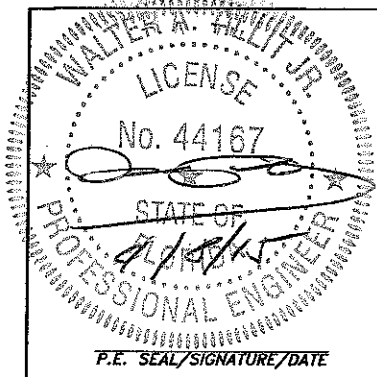
N/A = NOT APPLICABLE

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



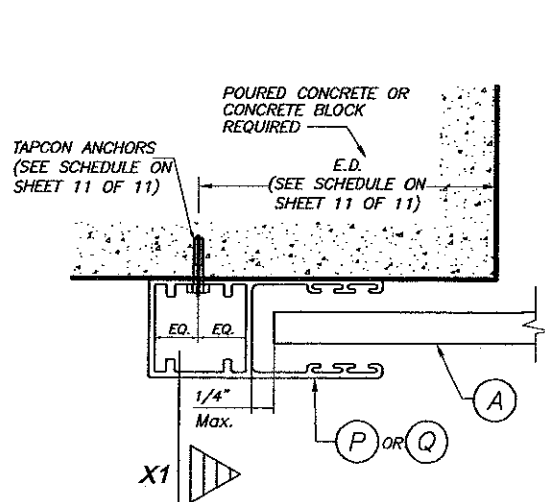
**(V) BOX COMPONENTS AND ASSEMBLY DETAIL**

(SEE NOTE 11 ON SHEET 1)

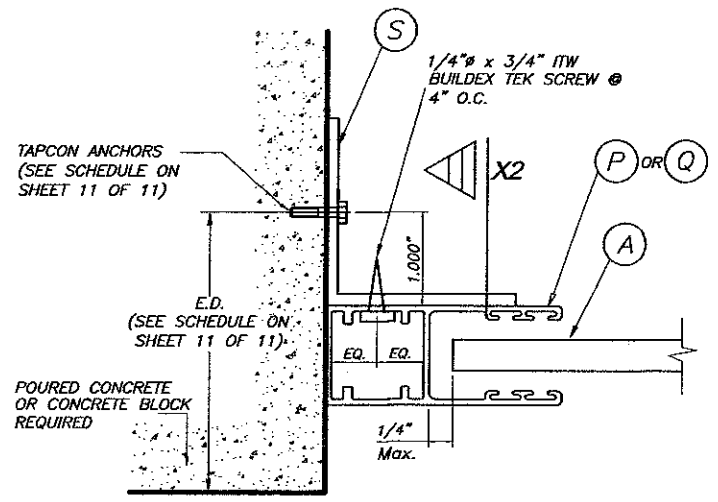


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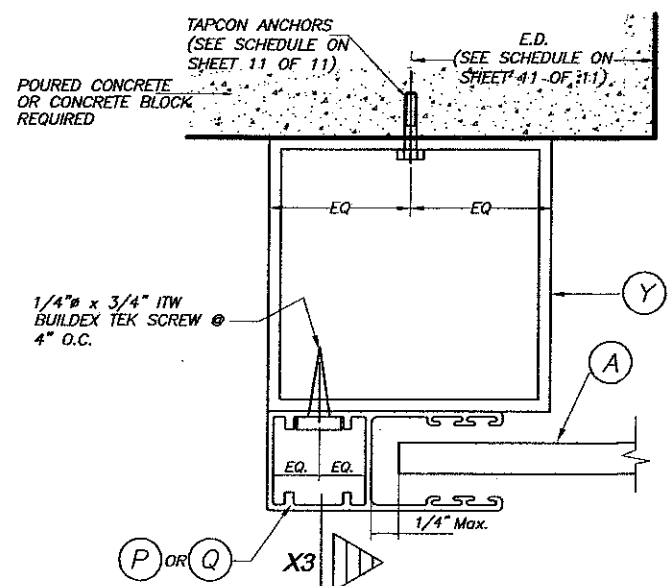
© 2015 TILTECO INC. <b>TILTECO INC.</b> TILLIT TESTING & ENGINEERING COMPANY 6355 N.W. 36th St., Ste. 305 - VIRGINIA GARDENS, FL 33166 Phone : (305) 871-1530 , Fax : (305) 871-1531 e-mail: tilteco@aol.com EB-0006719 WALTER A. TILLIT Jr., P.E. FLORIDA Lic. # 44167	<b>RLL 55-X SLAT NON END RETENTION ROLL-UP SHUTTER</b>  <b>ROLLAC SHUTTER OF TEXAS, INC.</b> 5331 ORANGE STREET PEARLAND, TX 77581 PH: (800) 880-0922, FAX: (281) 485-0839	F.R.L. DRAWN BY  04/02/15 DATE  15-061 DRAWING N°																		
<table border="1" style="width: 100%; font-size: small;"> <thead> <tr> <th>REV N°</th> <th>DESCRIPTION</th> <th>DATE</th> <th>REV N°</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>OLD 11-241</td> <td>04/02/15</td> <td>3</td> <td>-</td> <td>-</td> </tr> <tr> <td>2</td> <td>-</td> <td>-</td> <td>4</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	REV N°	DESCRIPTION	DATE	REV N°	DESCRIPTION	DATE	1	OLD 11-241	04/02/15	3	-	-	2	-	-	4	-	-	SHEET 3 OF 11	
REV N°	DESCRIPTION	DATE	REV N°	DESCRIPTION	DATE															
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2	-	-	4	-	-															



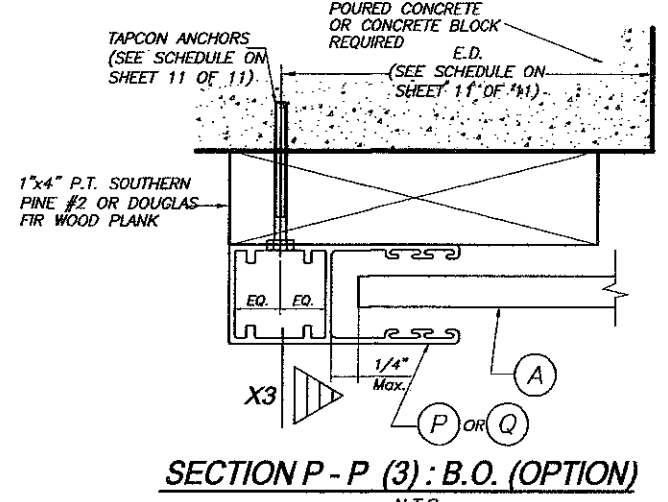
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N.T.S.



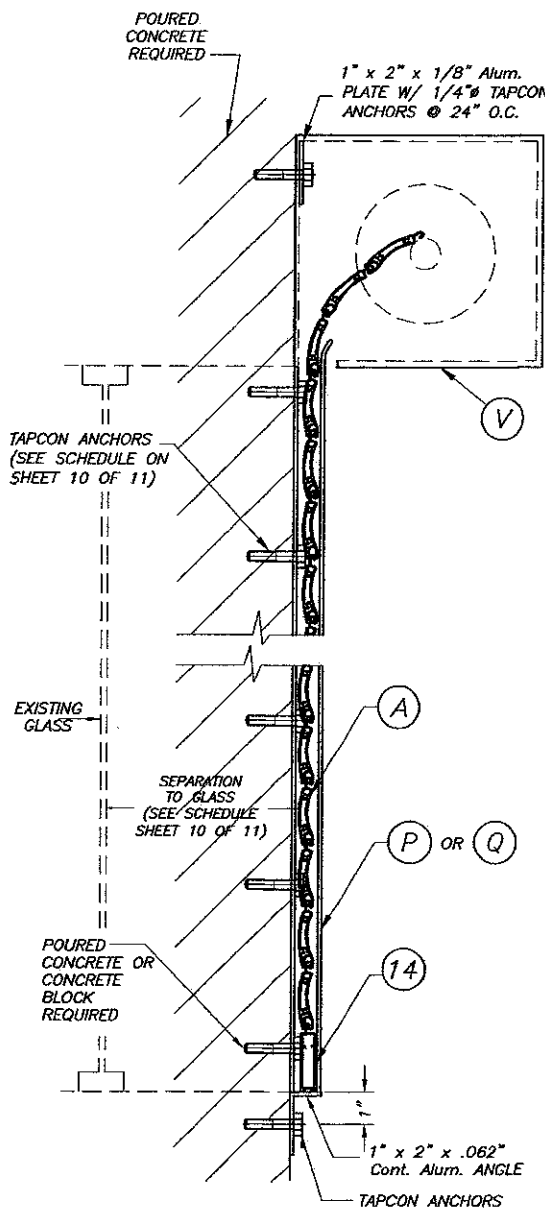
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N.T.S.



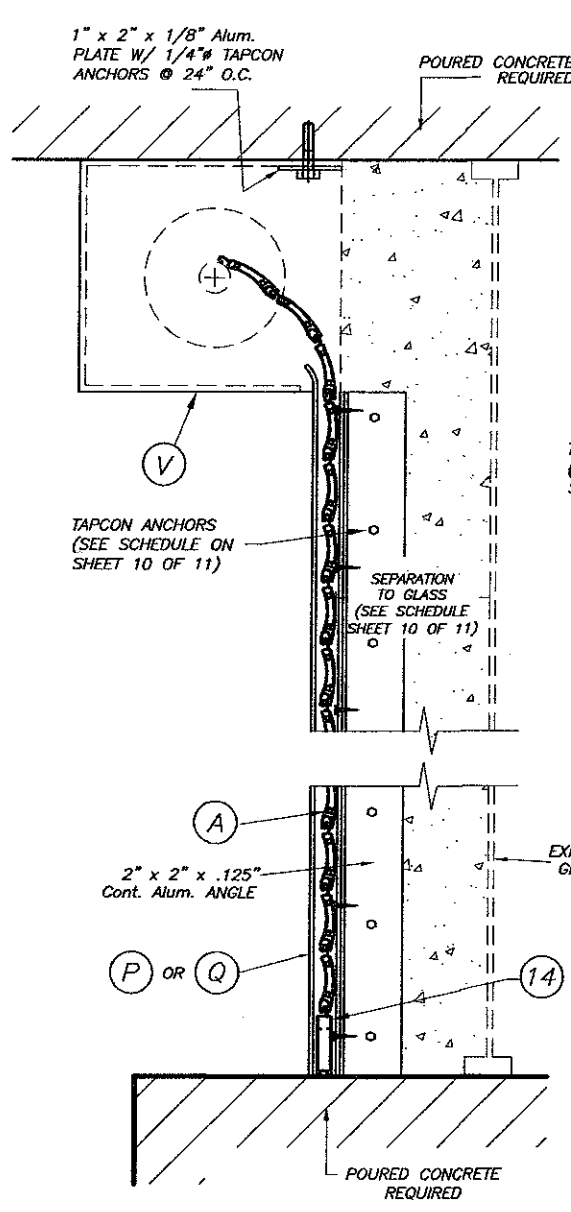
**SECTION P-P (3): BUILD-OUT**  
N.T.S.



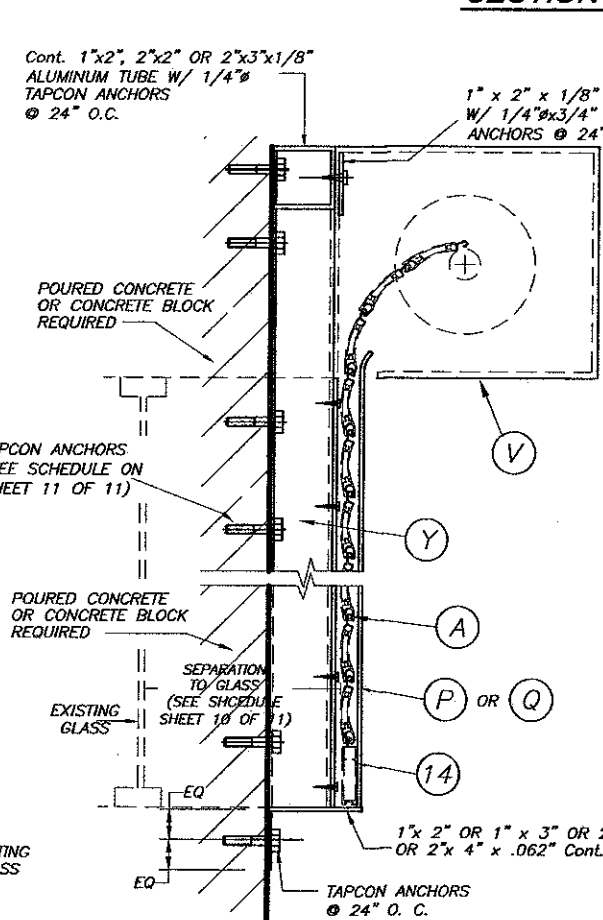
**SECTION P-P (3): B.O. (OPTION)**  
N.T.S.



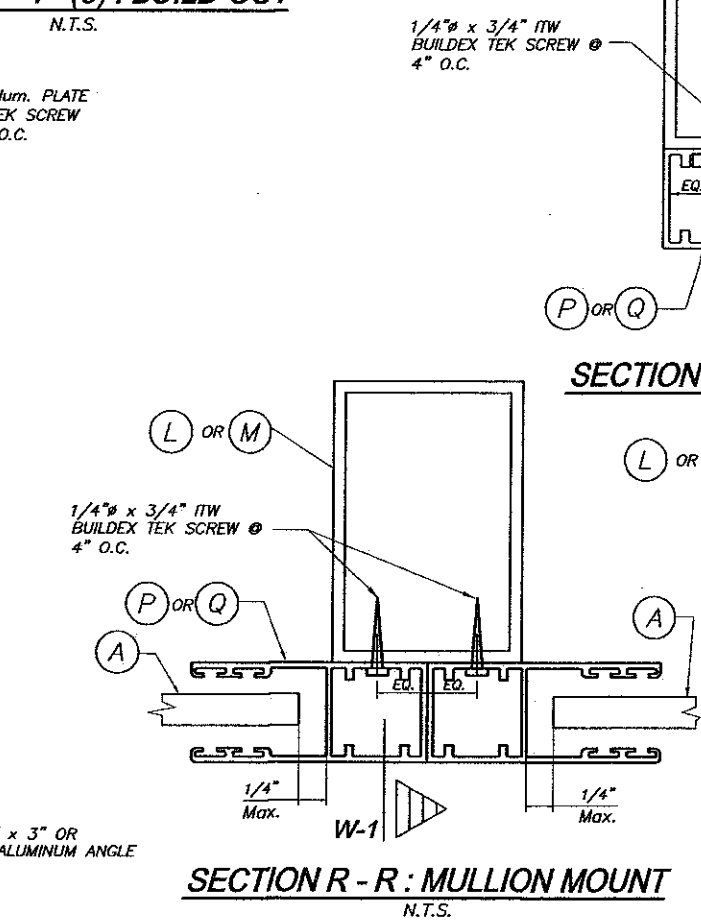
**SECTION X-X (1)**  
N. T. S.



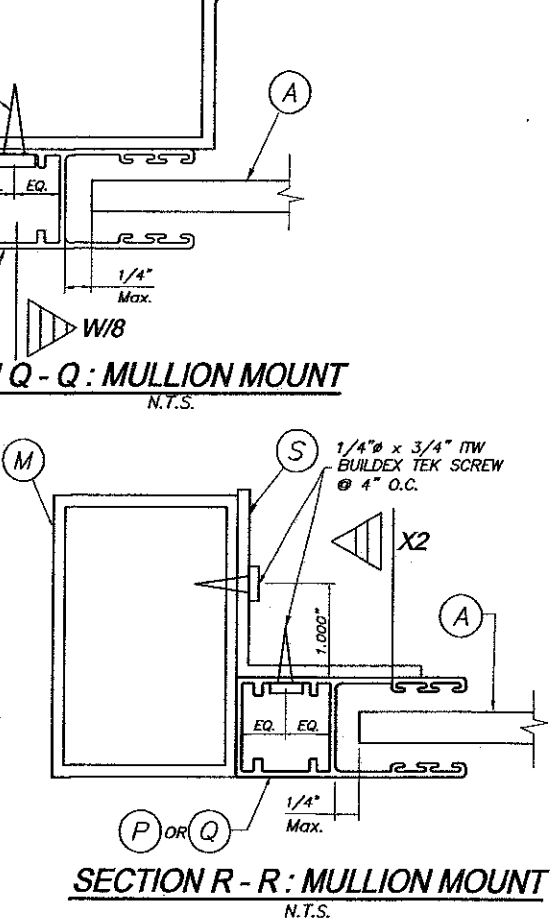
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N. T. S.



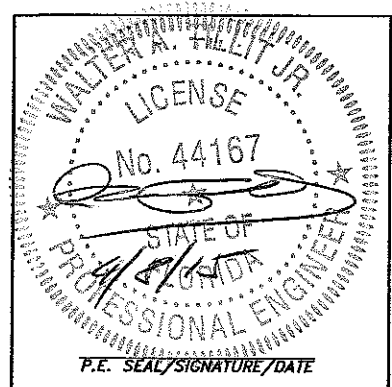
**SECTION X-X (3)**  
N. T. S.



**SECTION R-R: MULLION MOUNT**  
N.T.S.



**SECTION R-R: MULLION MOUNT**  
N.T.S.



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**RLL 55-X SLAT NON END RETENTION  
ROLL-UP SHUTTER**

**ROLLAC SHUTTER OF TEXAS, INC.**

5331 ORANGE STREET  
PEARLAND, TX 77581  
PH: (800) 880-0922, FAX: (281) 485-0839

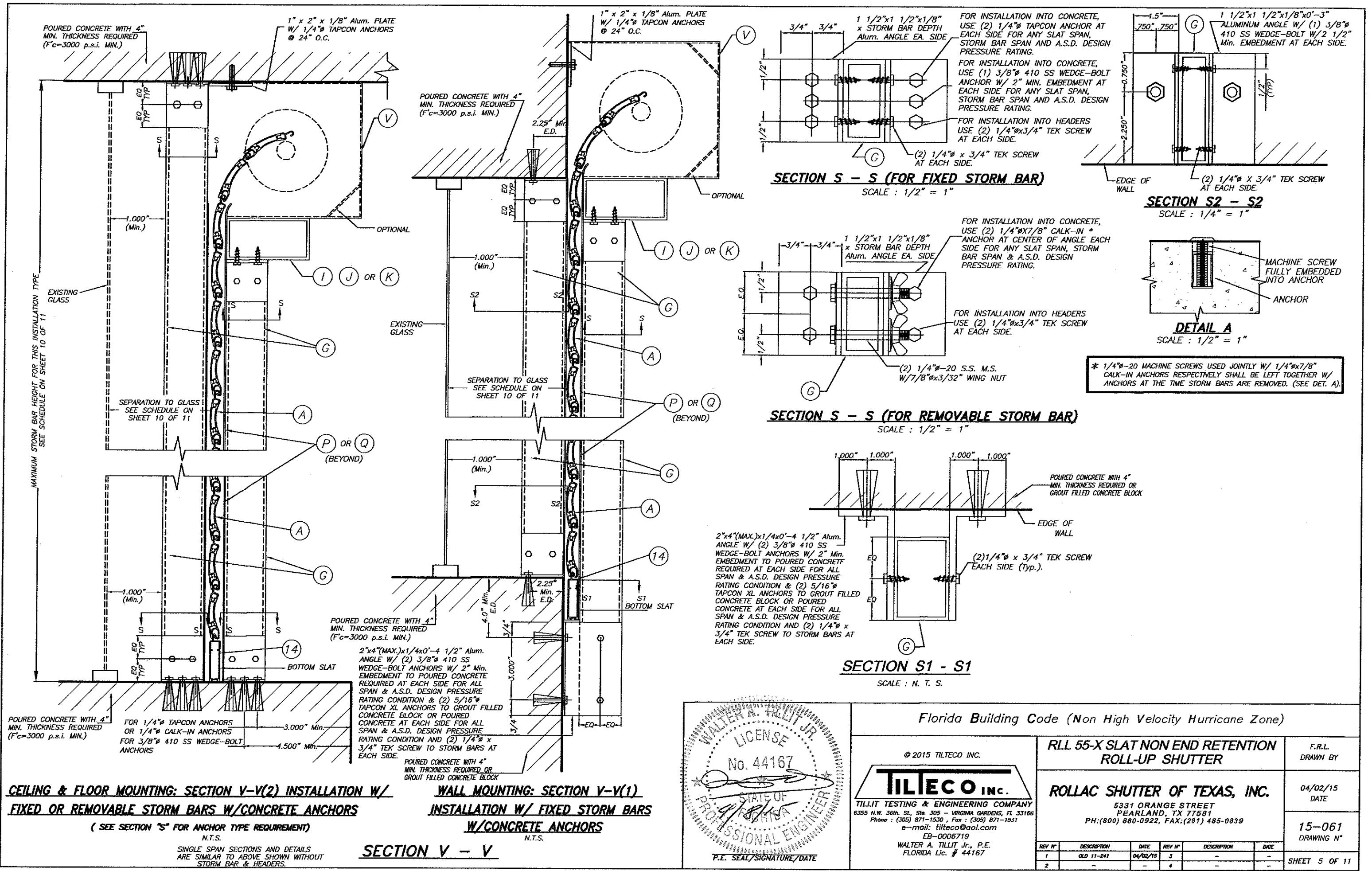
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04/02/15  
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REV N°	DESCRIPTION	DATE	REV N°	DESCRIPTION	DATE
1	OLD 11-241	04/02/15	3	-	-
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SHEET 4 OF 11



POURED CONCRETE WITH 4" MIN. THICKNESS REQUIRED (F<sub>c</sub>=3000 p.s.i. MIN.)

1" x 2" x 1/8" Alum. PLATE W/ 1/4" TAPCON ANCHORS @ 24" O.C.

1" x 2" x 1/8" Alum. PLATE W/ 1/4" TAPCON ANCHORS @ 24" O.C.

POURED CONCRETE WITH 4" MIN. THICKNESS REQUIRED (F<sub>c</sub>=3000 p.s.i. MIN.)

MAXIMUM STORM BAR HEIGHT FOR THIS INSTALLATION TYPE SEE SCHEDULE ON SHEET 10 OF 11

EXISTING GLASS

1,000" (Min.)

SEPARATION TO GLASS SEE SCHEDULE ON SHEET 10 OF 11

1,000" (Min.)

POURED CONCRETE WITH 4" MIN. THICKNESS REQUIRED (F<sub>c</sub>=3000 p.s.i. MIN.)

FOR 1/4" TAPCON ANCHORS OR 1/4" CALK-IN ANCHORS FOR 3/8" 410 SS WEDGE-BOLT ANCHORS

3,000" Min. 4,500" Min.

**CEILING & FLOOR MOUNTING: SECTION V-V(2) INSTALLATION W/ FIXED OR REMOVABLE STORM BARS W/ CONCRETE ANCHORS**  
(SEE SECTION "S" FOR ANCHOR TYPE REQUIREMENT)  
N.T.S.

POURED CONCRETE WITH 4" MIN. THICKNESS REQUIRED (F<sub>c</sub>=3000 p.s.i. MIN.)

2.25" Min. E.D.

1,000" (Min.)

SEPARATION TO GLASS SEE SCHEDULE ON SHEET 10 OF 11

1,000" (Min.)

POURED CONCRETE WITH 4" MIN. THICKNESS REQUIRED (F<sub>c</sub>=3000 p.s.i. MIN.)

2"x4"(MAX.)x1/4"x0'-4 1/2" Alum. ANGLE W/ (2) 3/8" 410 SS WEDGE-BOLT ANCHORS W/ 2" Min. EMBEDMENT TO POURED CONCRETE REQUIRED AT EACH SIDE FOR ALL SPAN & A.S.D. DESIGN PRESSURE RATING CONDITION & (2) 5/16" TAPCON XL ANCHORS TO GROUT FILLED CONCRETE BLOCK OR POURED CONCRETE AT EACH SIDE FOR ALL SPAN & A.S.D. DESIGN PRESSURE RATING CONDITION AND (2) 1/4" x 3/4" TEK SCREW TO STORM BARS AT EACH SIDE.

POURED CONCRETE WITH 4" MIN. THICKNESS REQUIRED OR GROUT FILLED CONCRETE BLOCK

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

**SECTION V - V**

**SECTION S - S (FOR FIXED STORM BAR)**

SCALE: 1/2" = 1"

**SECTION S - S (FOR REMOVABLE STORM BAR)**

SCALE: 1/2" = 1"

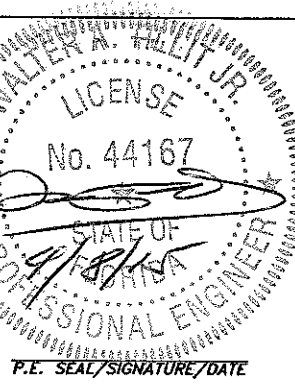
**SECTION S2 - S2**

SCALE: 1/4" = 1"

**DETAIL A**

SCALE: 1/2" = 1"

\* 1/4"-20 MACHINE SCREWS USED JOINTLY W/ 1/4"x7/8" CALK-IN ANCHORS RESPECTIVELY SHALL BE LEFT TOGETHER W/ ANCHORS AT THE TIME STORM BARS ARE REMOVED. (SEE DET. A).



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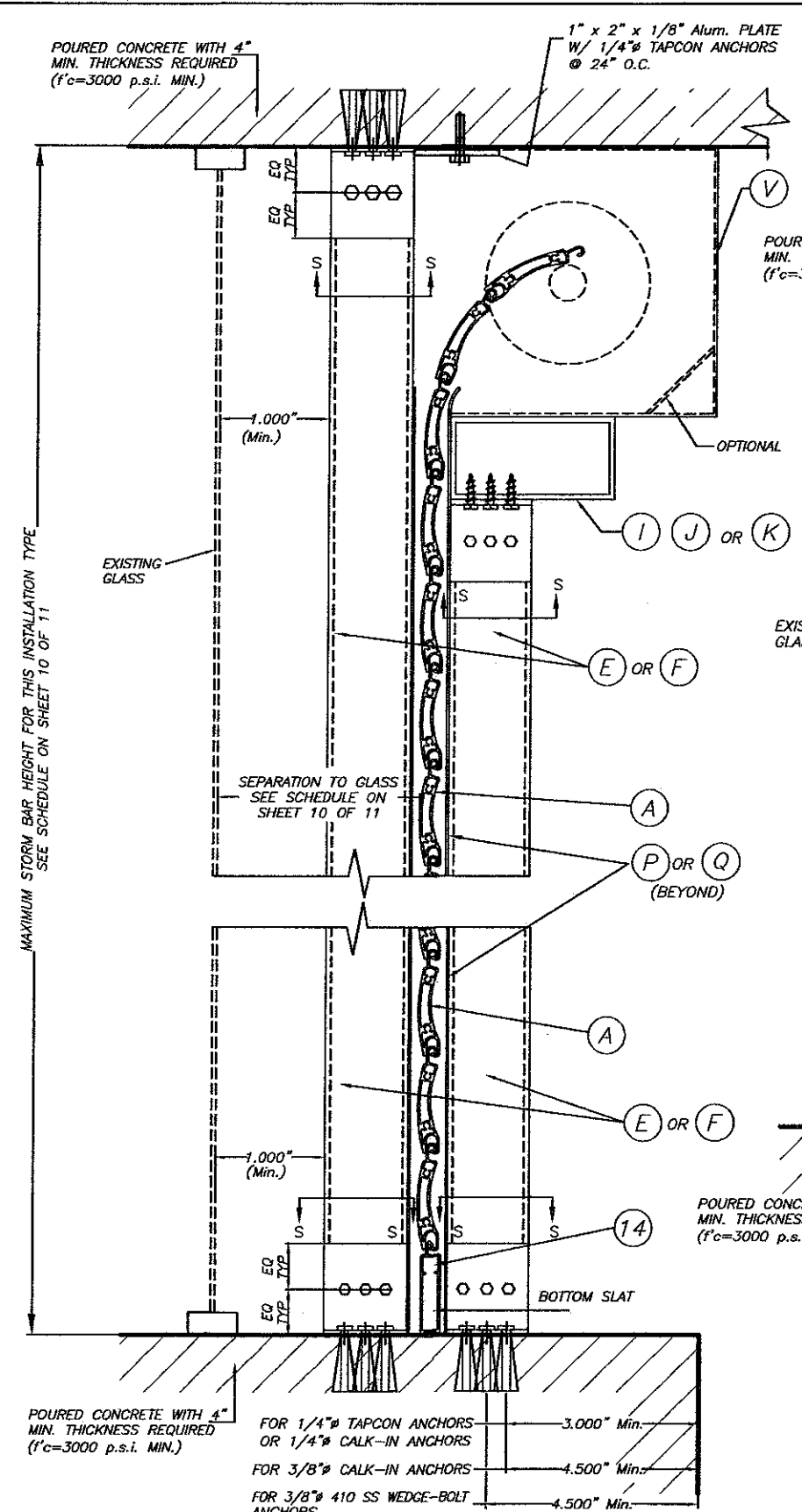
F.R.L. DRAWN BY

04/02/15 DATE

15-061 DRAWING N°

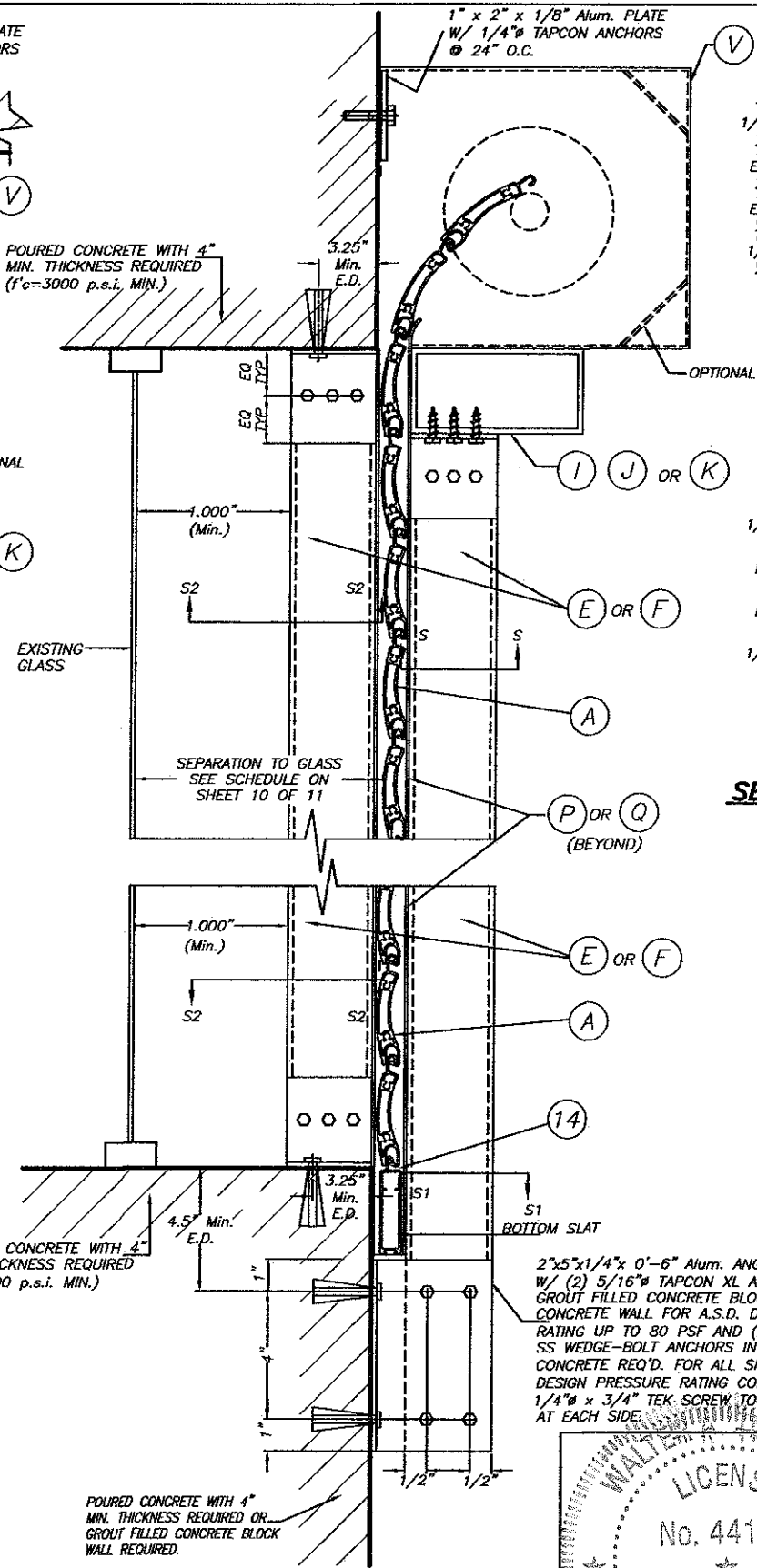
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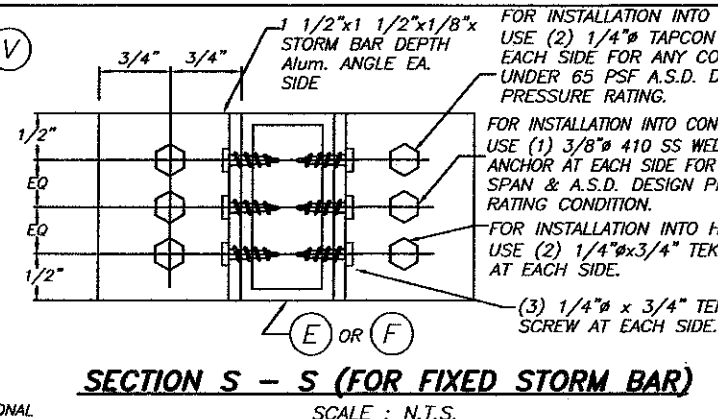
**CEILING & FLOOR MOUNTING: SECTION V-V(2) INSTALLATION W/ FIXED OR REMOVABLE STORM BARS W/CONCRETE ANCHORS**  
(SEE SECTION "S" FOR ANCHOR TYPE REQUIREMENT)  
SCALE: N.T.S.

SINGLE SPAN SECTIONS AND DETAILS ARE SIMILAR TO ABOVE SHOWN WITHOUT STORM BAR & HEADERS.

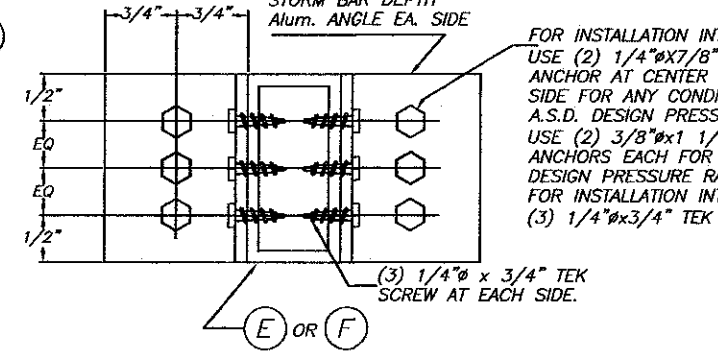


**WALL MOUNTING: SECTION V-V(1) INSTALLATION W/ FIXED STORM BARS W/CONCRETE ANCHORS**  
SCALE: N.T.S.

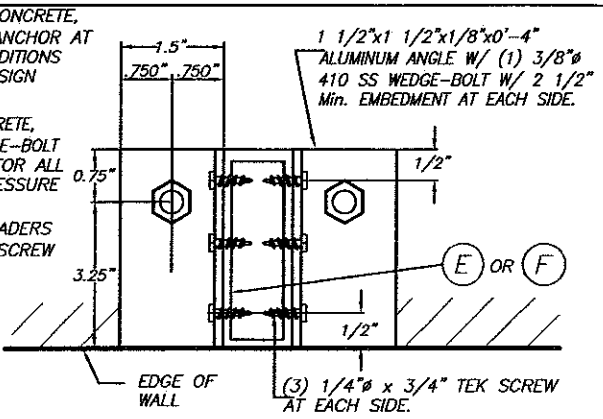
**SECTION V - V**



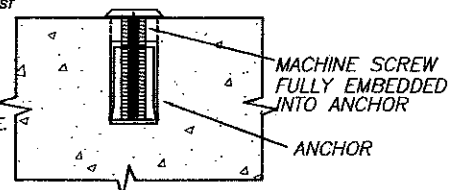
**SECTION S - S (FOR FIXED STORM BAR)**  
SCALE: N.T.S.



**SECTION S - S (FOR REMOVABLE STORM BAR)**  
SCALE: N.T.S.

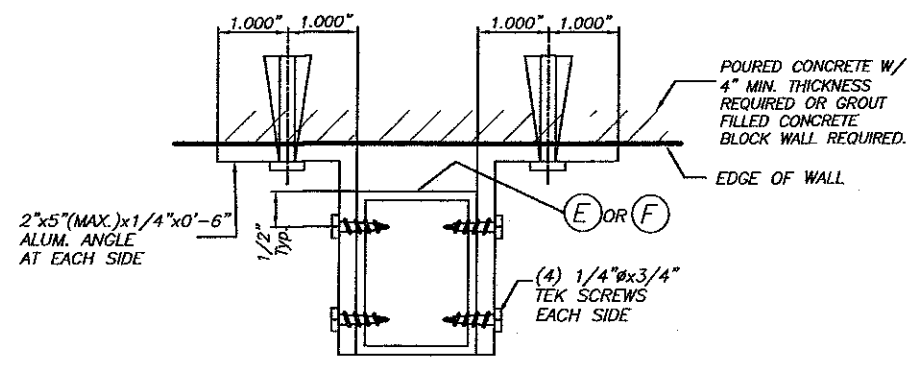


**SECTION S2 - S2**  
SCALE: N.T.S.



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

\* 1/4" #20 OR 3/8" #16 MACHINE SCREWS USED JOINTLY W/ 1/4" # x 7/8" OR 3/8" # x 1 1/4" CALK-IN ANCHORS RESPECTIVELY SHALL BE LEFT TOGETHER W/ ANCHORS AT THE TIME STORM BARS ARE REMOVED. (SEE DET. A).



**SECTION S1 - S1**  
SCALE: N. T. S.



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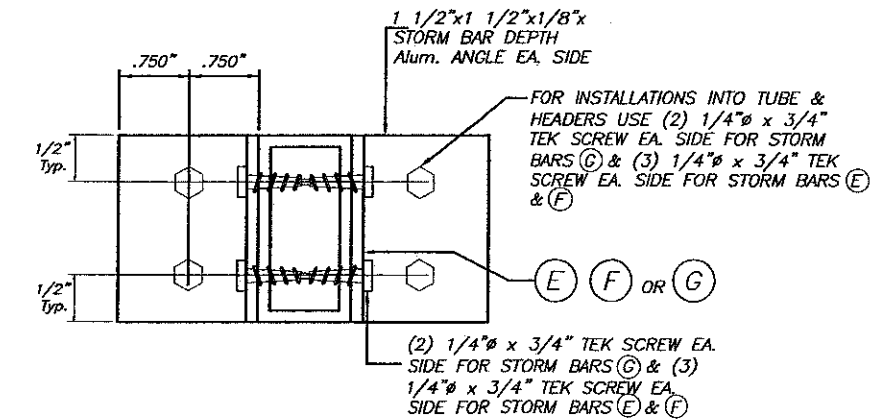
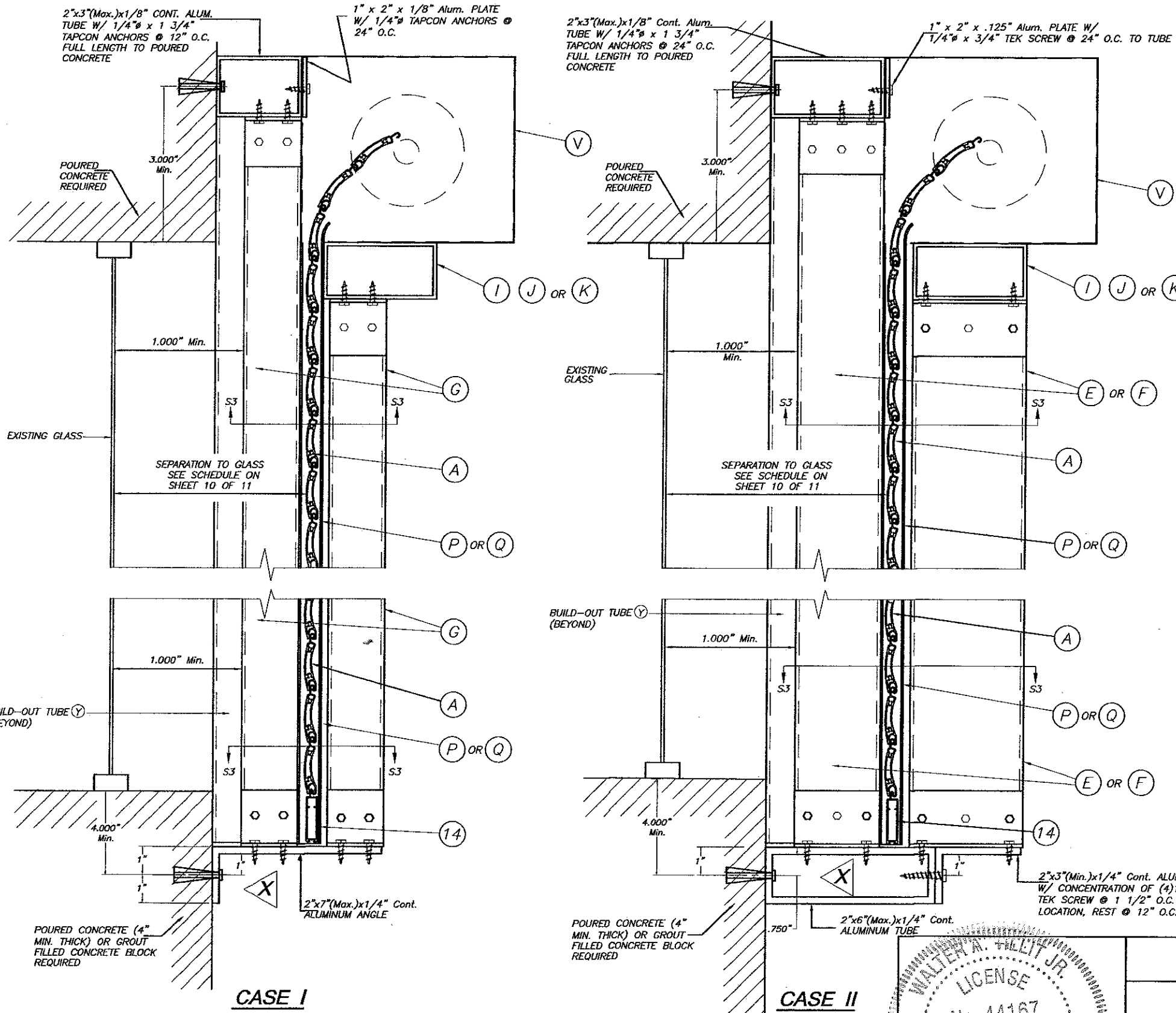
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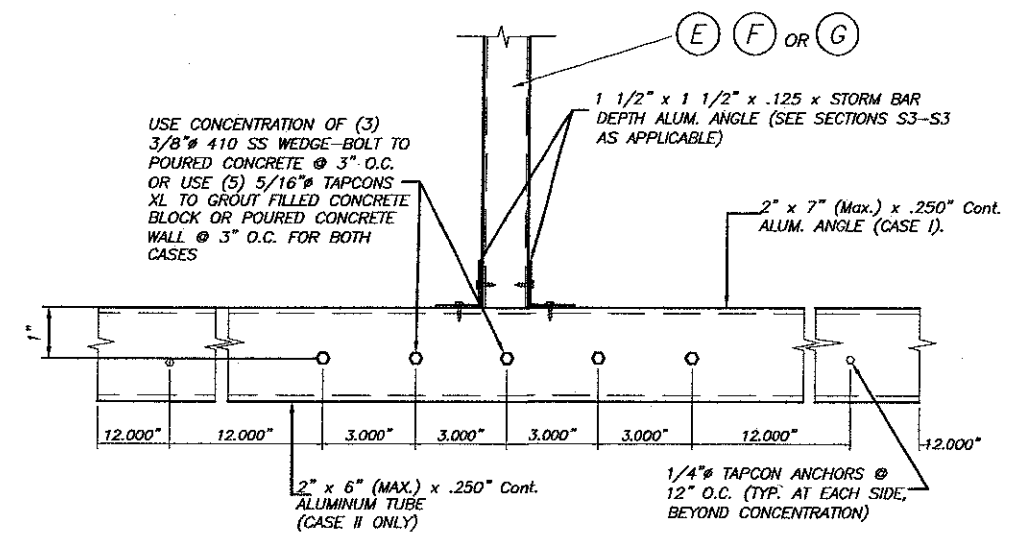
15-061  
DRAWING N°

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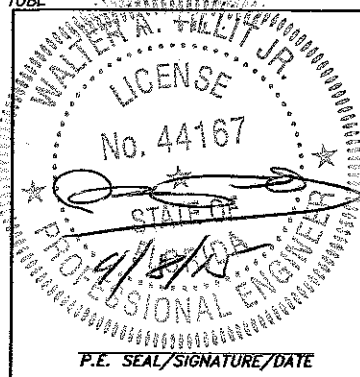


**SECTION S3 - S3**  
SCALE : 1/2" = 1"



**ELEVATION X**  
SCALE : N.T.S.

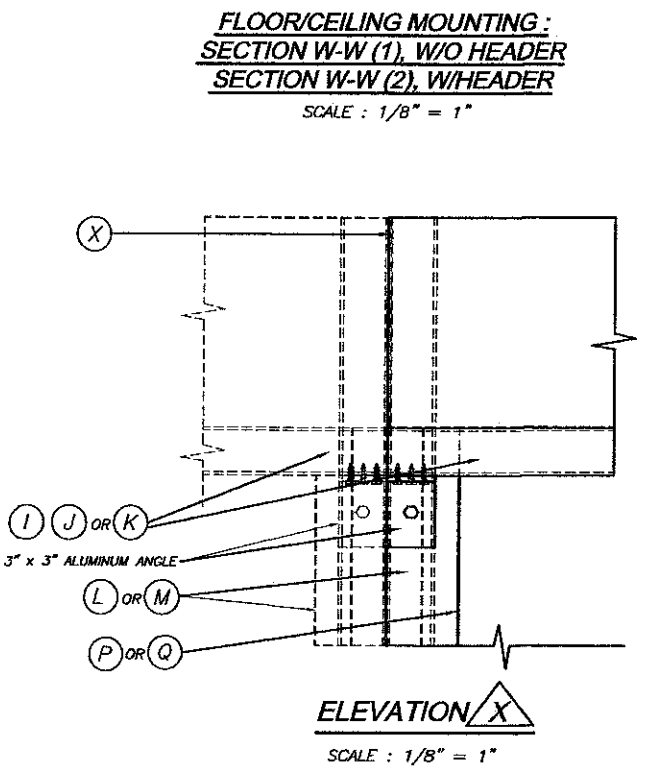
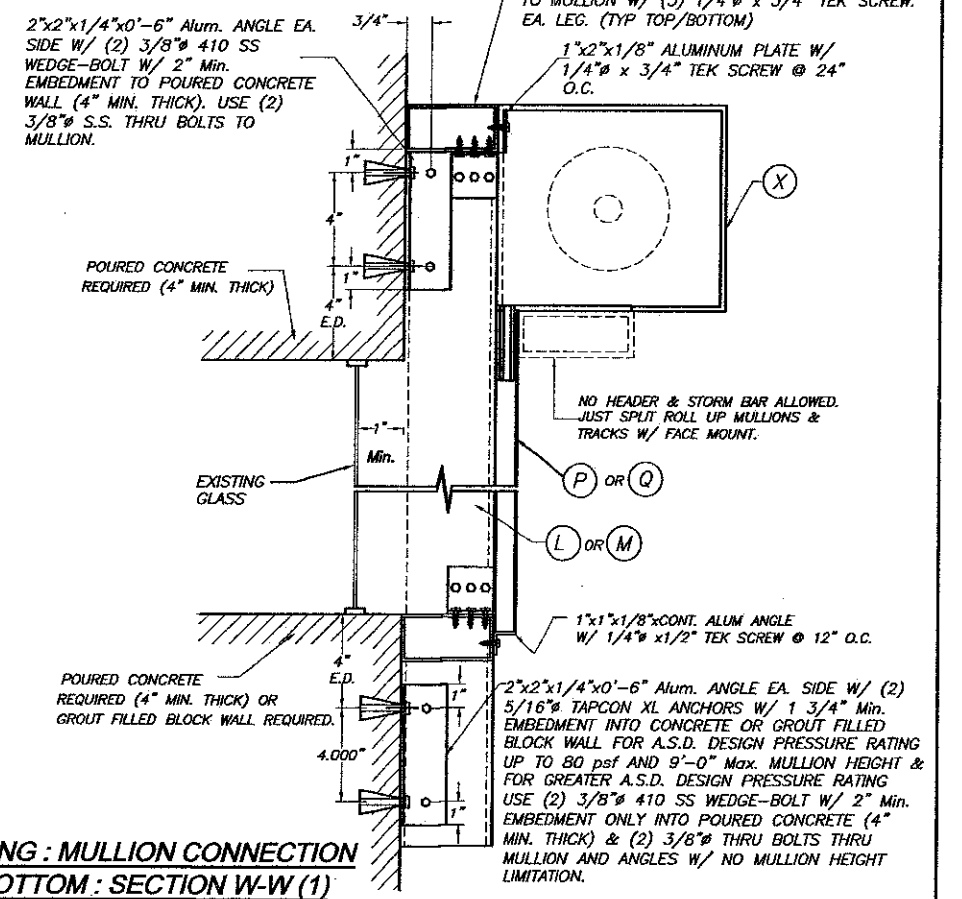
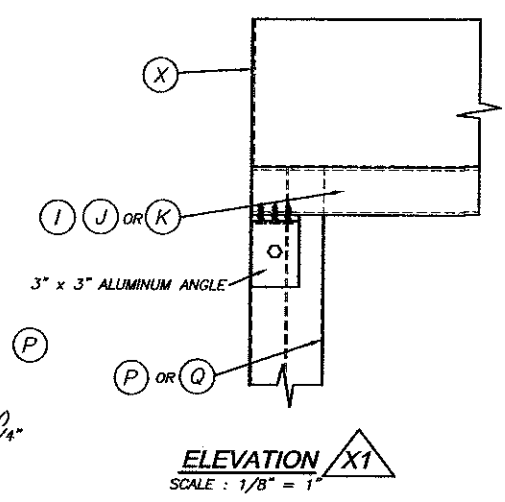
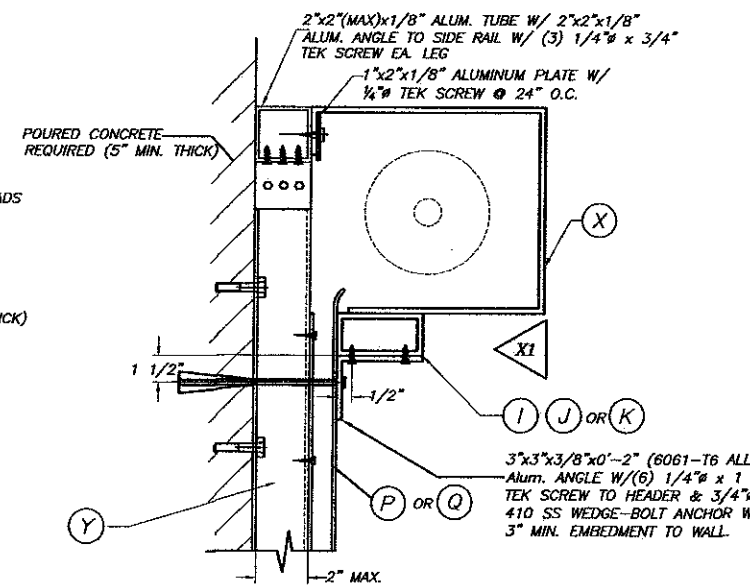
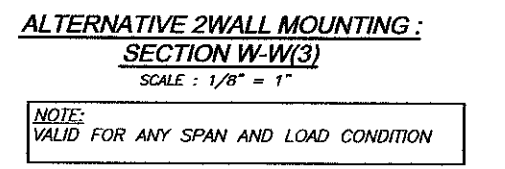
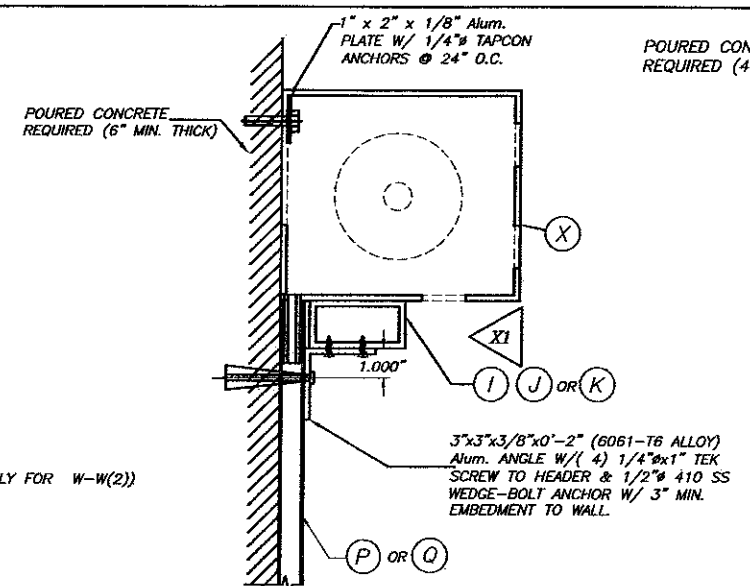
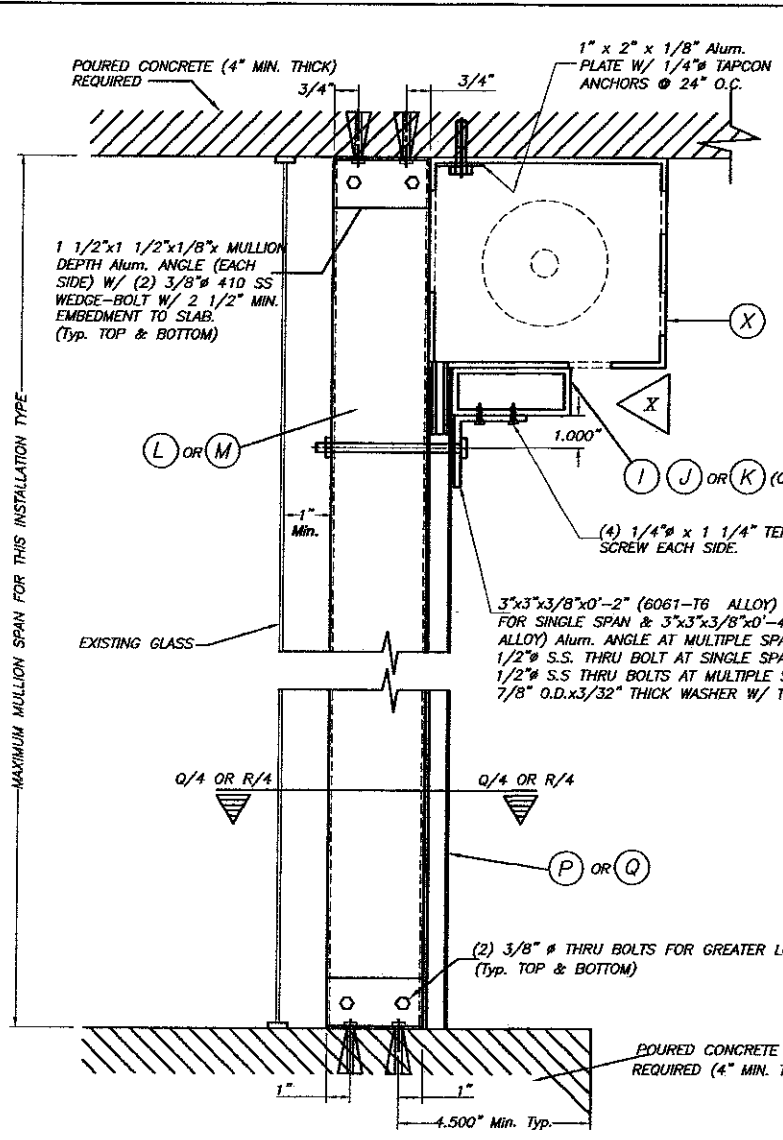
**STORM BAR CONNECTION AT BUILD-OUT INSTALLATION : SECTIONS V - V (3)**  
SCALE : 1/4" = 1"



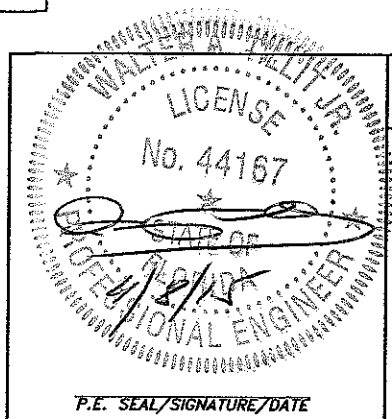
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2	-	-	4	-	-															





NOTE: INSTALLATION DETAILS SHOWN ON ALTERNATIVES 1 & 2 ARE VALID FOR ANY STORM BAR HEIGHT AND HEADER SPAN CONDITION UNDER 175 psf. A.S.D. DESIGN PRESSURE RATING.



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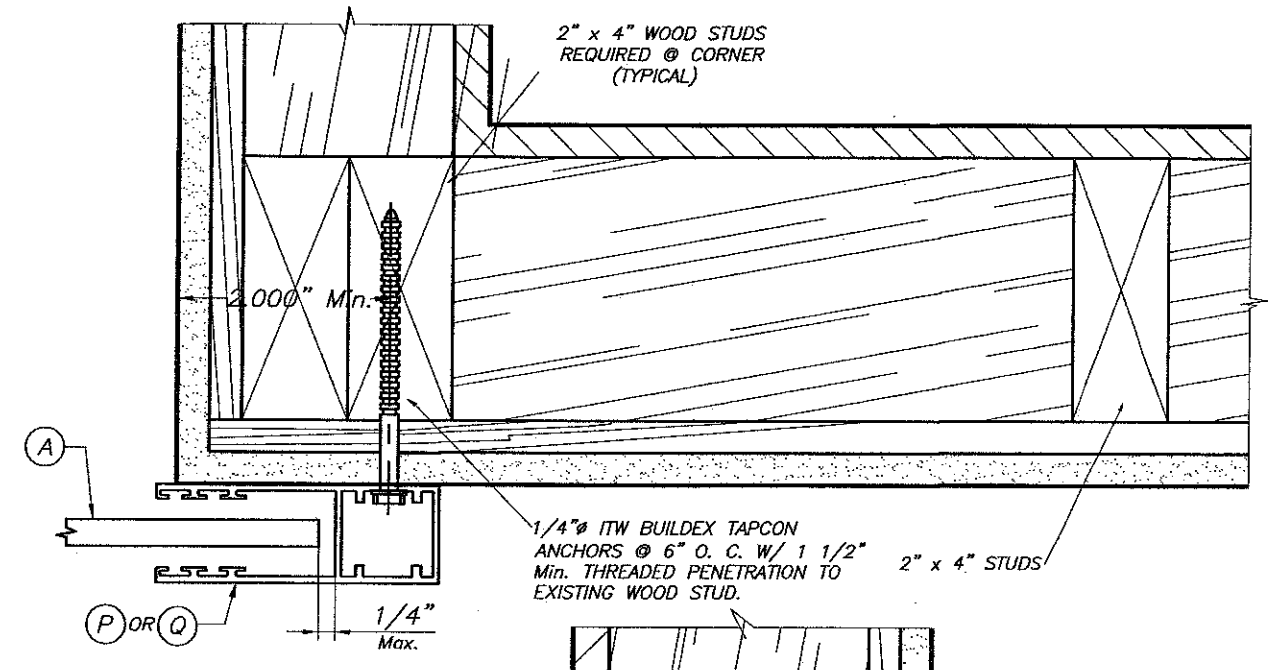
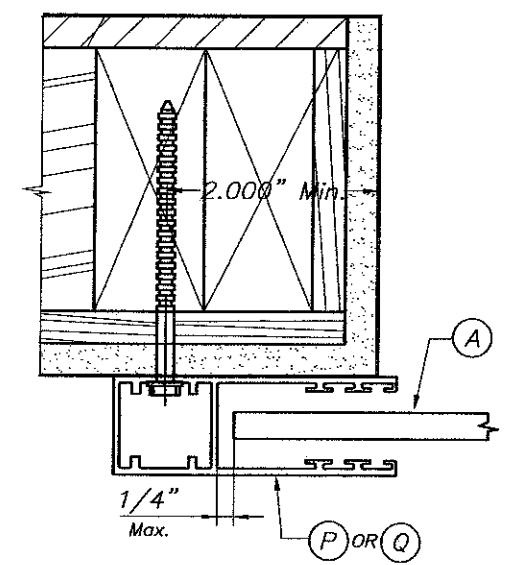
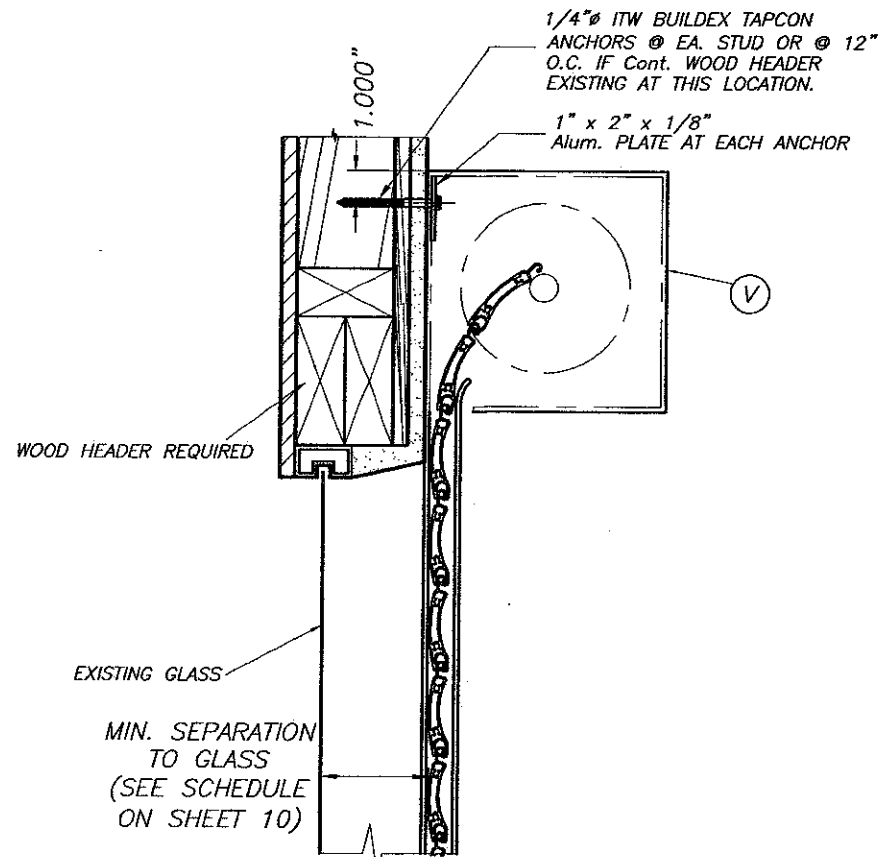
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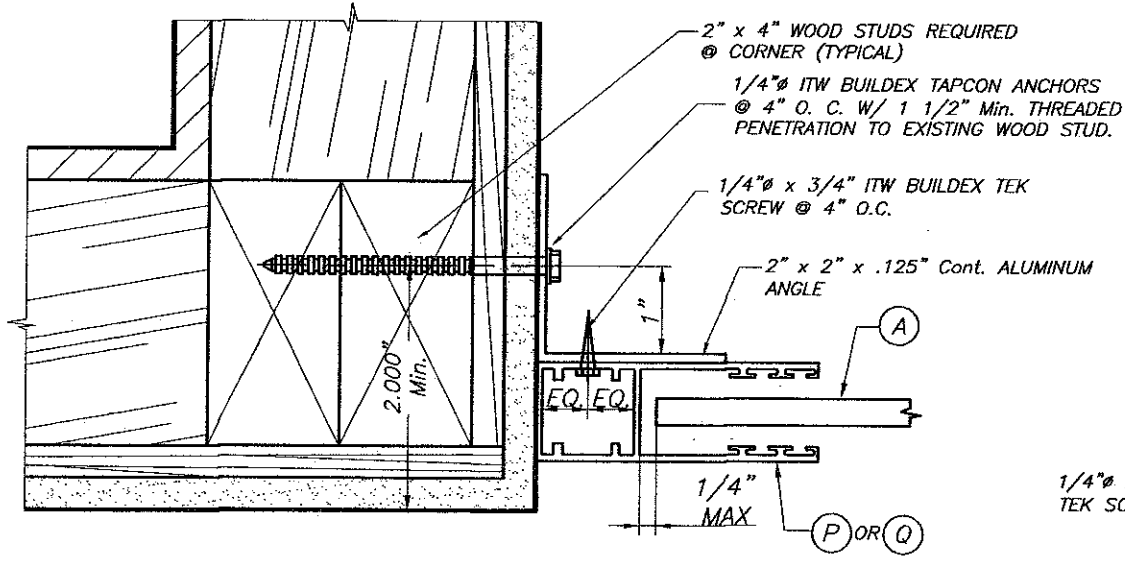
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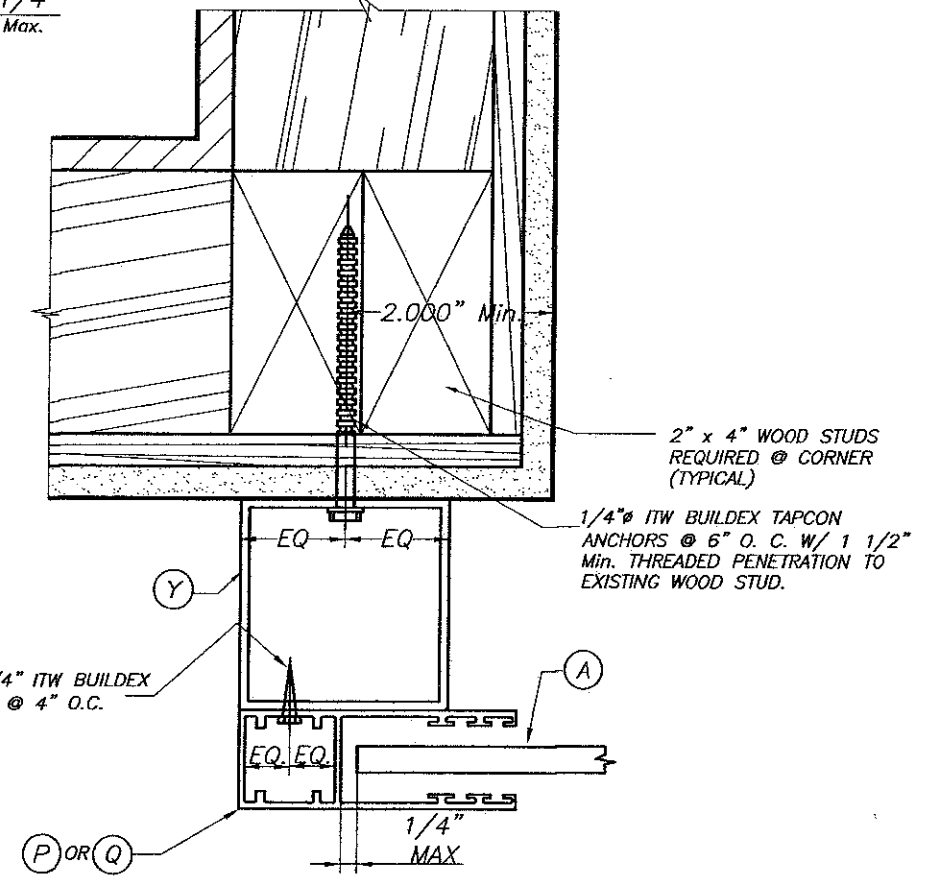
SHEET 8 OF 11



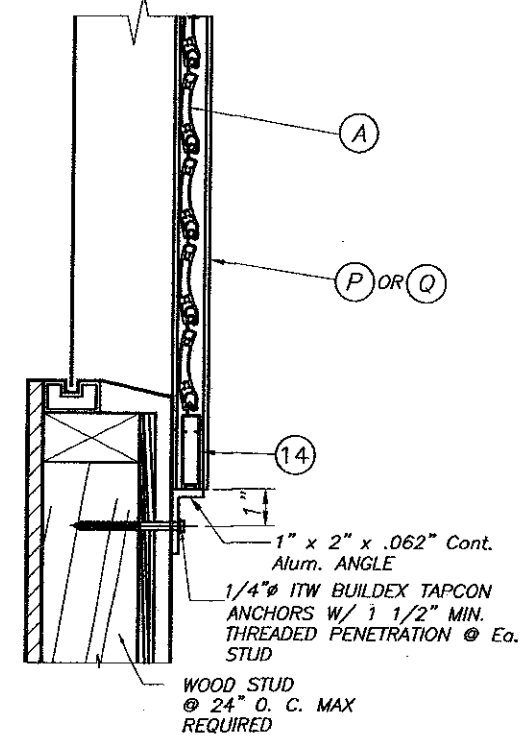
**PLAN A (SECTION)**  
**WALL MOUNT**  
SCALE : 3/8" = 1"



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



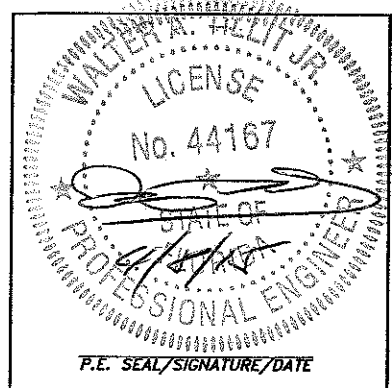
**PLAN C (SECTION) BUILD-OUT**  
SCALE : 3/8" = 1"



**WALL MOUNTING INSTALLATION**  
**SINGLE SPAN CONDITION**  
N. T. S.

**INSTALLATIONS INTO EXISTING WOOD BUILDINGS**

- NOTES:
- INSTALLATIONS ARE ONLY VALID FOR BUILDINGS WITH DESIGN LOAD UP TO 72 p.s.f. A.S.D. DESIGN PRESSURE RATING.
  - FOR NEW FRAME CONSTRUCTION: WOOD MEMBER TO BE SOUTHERN PINE No. 2 W/ SPECIFIC DENSITY OF 0.55 OR DOUGLAS FIR W/ SPECIFIC DENSITY OF 0.42.



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SHEET 9 OF 11

**SLAT PERFORMANCE CHART**

**MAXIMUM A.S.D. DESIGN PRESSURE RATING (p. s. f.) AND CORRESPONDING MAXIMUM SLAT SPAN "L"**

(USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.)	TYPE 1 SLAT RLL 55-X		
	MAXIMUM SLAT SPAN	MINIMUM SEPARATION TO GLASS	
		SINGLE & MULTIPLE UNIT	SINGLE & MULTIPLE UNIT
		WIND ZONES 1-3	WIND ZONE 4
25.0	7'-0"	1"	6"
30.0	7'-0"	1"	6"
35.0	7'-0"	1"	6"
40.0	7'-0"	1"	6"
45.0	6'-7"	1"	6"
50.0	6'-3"	1"	6"
55.0	6'-0"	1"	6"
60.0	5'-8"	1"	6"
65.0	5'-6"	1"	6"
70.0	5'-3"	1"	6"
72.0	5'-2 1/2"	1"	6"

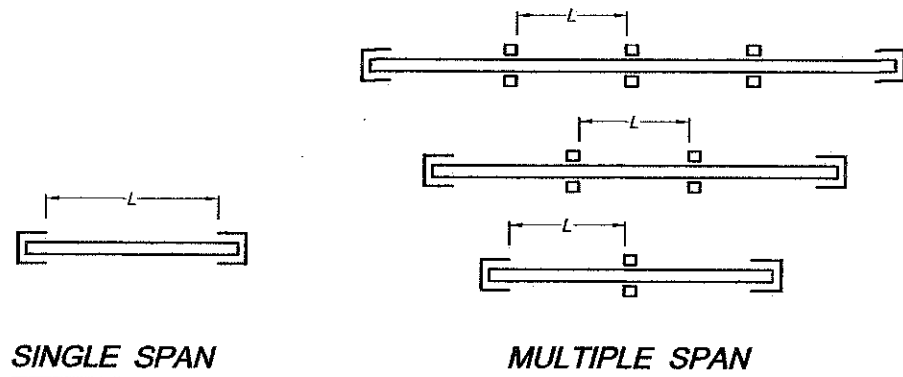
**STORM BAR LOADING CHART**

**MAXIMUM A.S.D. DESIGN PRESSURE RATING (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 A.S.D. LOAD)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.)	Ⓔ TYPE 1 STORM BAR 2" x 4" x 1/4"				Ⓕ TYPE 2 STORM BAR 2" x 4" x 1/8"				Ⓖ TYPE 3 STORM BAR 2" x 3" x 1/8"			
	◇ STORM BAR SPACING				◇ STORM BAR SPACING				◇ STORM BAR SPACING			
	≤ 3'-0"	3' TO 4'	4' TO 5'	5' TO 6'	≤ 3'-0"	3' TO 4'	4' TO 5'	5' TO 6'	≤ 3'-0"	3' TO 4'	4' TO 5'	5' TO 6'
30.0 OR LESS	10'-0"	10'-0"	10'-0"	10'-0"	9'-0"	9'-0"	9'-0"	8'-11"	8'-0"	8'-0"	8'-0"	7'-3"
35.0	10'-0"	10'-0"	10'-0"	10'-0"	9'-0"	9'-0"	9'-0"	8'-3"	8'-0"	8'-0"	7'-5"	6'-9"
40.0	10'-0"	10'-0"	10'-0"	9'-11"	9'-0"	9'-0"	8'-6"	7'-9"	8'-0"	7'-9"	6'-11"	6'-4"
45.0	10'-0"	10'-0"	10'-0"	9'-8"	9'-0"	8'-11"	8'-0"	7'-4"	8'-0"	7'-3"	6'-6"	5'-11"
50.0	10'-0"	10'-0"	9'-10"	9'-3"	9'-0"	8'-6"	7'-7"	6'-11"	8'-0"	6'-11"	6'-2"	5'-8"
55.0	10'-0"	10'-0"	9'-7"	8'-10"	9'-0"	8'-1"	7'-3"	6'-7"	7'-7"	6'-7"	5'-11"	5'-5"
60.0	10'-0"	9'-11"	9'-3"	8'-5"	8'-11"	7'-9"	6'-11"	6'-4"	7'-3"	6'-4"	5'-8"	5'-2"
65.0	10'-0"	9'-9"	8'-11"	8'-1"	8'-7"	7'-5"	6'-8"	6'-1"	7'-0"	6'-1"	5'-5"	4'-11"
70.0	10'-0"	9'-7"	8'-7"	7'-10"	8'-3"	7'-2"	6'-5"	5'-10"	6'-9"	5'-10"	5'-3"	4'-9"
72.0	10'-0"	9'-3"	8'-3"	7'-7"	8'-0"	6'-11"	6'-2"	5'-8"	6'-6"	5'-8"	5'-1"	4'-7"

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



**SPAN LAYOUT**

NOTES: -MINIMUM SEPARATION TO GLASS FOR SINGLE AND MULTIPLE UNITS SHALL BE MEASURED FROM BACK OF SLAT TO GLASS.

Florida Building Code (Non High Velocity Hurricane Zone)

<p>WALTER A. TILLIT JR. LICENSE No. 44167 STATE OF FLORIDA PROFESSIONAL ENGINEER P.E. SEAL/SIGNATURE/DATE</p>	<p>© 2015 TILTECO INC.</p> <p><b>TILTECO INC.</b></p> <p>TILLIT TESTING &amp; ENGINEERING COMPANY 6305 N.W. 36th St., Ste. 305 - VIRGINIA GARDENS, FL 33166 Phone : (305) 871-1530 , Fax : (305) 871-1531 e-mail: tilteco@aol.com EB-0006719 WALTER A. TILLIT Jr., P.E. FLORIDA Lic. # 44167</p>	<p>RLL 55-X SLAT NON END RETENTION ROLL-UP SHUTTER</p>			<p>F.R.L. DRAWN BY</p>																	
		<p>ROLLAC SHUTTER OF TEXAS, INC.</p> <p>5331 ORANGE STREET PEARLAND, TX 77581 PH:(800) 880-0922, FAX:(281) 485-0839</p>			<p>04/02/15 DATE</p>																	
<table border="1"> <thead> <tr> <th>REV #</th> <th>DESCRIPTION</th> <th>DATE</th> <th>REV #</th> <th>DESCRIPTION</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>OLD 11-241</td> <td>04/02/15</td> <td>3</td> <td>-</td> <td>-</td> </tr> <tr> <td>2</td> <td>-</td> <td>-</td> <td>4</td> <td>-</td> <td>-</td> </tr> </tbody> </table>				REV #	DESCRIPTION	DATE	REV #	DESCRIPTION	DATE	1	OLD 11-241	04/02/15	3	-	-	2	-	-	4	-	-	<p>15-061 DRAWING N°</p>
REV #	DESCRIPTION	DATE	REV #	DESCRIPTION	DATE																	
1	OLD 11-241	04/02/15	3	-	-																	
2	-	-	4	-	-																	
					<p>SHEET 10 OF 11</p>																	

**HEADER LOADING CHART**

**MAXIMUM A.S.D. DESIGN PRESSURE RATING (p. s. f.) AND CORRESPONDING MAXIMUM SPAN "L" (Ft.) FOR A GIVEN TYPE OF HEADER AND STORM BAR HEIGHT (Ft.).**

(USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.)	Ⓜ TYPE 1 HEADER 2" x 4" X 1/4"			Ⓜ TYPE 2 HEADER 2" x 4" X 1/8"		Ⓜ TYPE 3 HEADER 1" x 4" X 1/8"	
	STORM BAR HEIGHT			STORM BAR HEIGHT		STORM BAR HEIGHT	
	≤ 7'-0"	7' TO 9'	9' TO 10'	≤ 5'-0"	5' TO 8'	≤ 5'-0"	5' TO 7'
30.0 OR LESS	15'-1"	14'-0"	13'-2"	12'-0"	11'-2"	7'-1"	6'-6"
35.0	14'-9"	13'-0"	12'-4"	12'-0"	10'-4"	7'-1"	6'-6"
40.0	13'-9"	12'-2"	11'-6"	12'-0"	9'-8"	7'-1"	6'-6"
45.0	13'-0"	11'-5"	10'-10"	11'-6"	9'-1"	7'-1"	6'-4"
50.0	12'-4"	10'-10"	10'-4"	10'-11"	8'-8"	7'-1"	6'-0"
55.0	11'-9"	10'-4"	9'-10"	10'-5"	8'-3"	6'-10"	5'-9"
60.0	11'-3"	9'-11"	9'-5"	10'-0"	7'-11"	6'-6"	5'-6"
65.0	10'-10"	9'-6"	9'-0"	9'-7"	7'-7"	6'-3"	5'-4"
70.0	10'-5"	9'-2"	8'-8"	9'-3"	7'-4"	6'-0"	5'-1"
72.0	10'-1"	8'-10"	8'-5"	8'-11"	7'-1"	5'-10"	4'-11"

**SIDE RAIL ANCHOR SCHEDULE. MAXIMUM A.S.D. DESIGN PRESSURE RATING (p. s. f.) AND CORRESPONDING MAXIMUM ANCHOR SPACING(in) \* FOR SIDE RAILS (P) & (Q) CONNECTION TO POURED CONCRETE OR CONCRETE BLOCK WALL \***

(USE MAXIMUM VALUES BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD)

SLAT TYPE 1 (A) (RLL 55-X)							
MAX. A.S.D. DESIGN PRESSURE RATING (psf)	SUBSTRATE	FASTENERS' SPACING "spcg" (in o.c.)					
		P (RLL-40) SIDE RAL			Q (RLL-1) SIDE RAL		
		WALL MOUNT	INSIDE MOUNT	BUILD-OUT MOUNT	WALL MOUNT	INSIDE MOUNT	BUILD-OUT MOUNT
45 OR LESS	POURED CONCRETE	8"	8"	6"	8"	7.5"	6"
	CONCRETE BLOCK	7.5"	5.5"	6"	7.5"	6"	6"
> 45 to 72	POURED CONCRETE	8"	8"	6"	8"	7.5"	6"
	CONCRETE BLOCK	5.5"	4"	6"	5.5"	5"	6"

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

MAXIMUM ANCHOR SPACING IS VALID FOR 3" EDGE DISTANCE.

**MULLION LOADING CHART**

**MAXIMUM A.S.D. DESIGN PRESSURE RATING (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 A.S.D. LOAD)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (psf)	Ⓜ TYPE 1 MULLION (4"x6"x1/4")			Ⓜ TYPE 2 MULLION (4"x4"x1/4")		
	MULLION SPACING					
	≤ 4'-0"	4' TO 5'	5' TO 8'	≤ 4'-0"	4' TO 5'	5' TO 8'
30 OR LESS	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-10"
35	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	11'-3"
40	12'-0"	12'-0"	12'-0"	11'-9"	12'-0"	10'-9"
45	12'-0"	12'-0"	12'-0"	11'-4"	12'-0"	10'-4"
50	12'-0"	12'-0"	12'-0"	10'-11"	11'-8"	10'-0"
55	12'-0"	12'-0"	12'-0"	10'-7"	11'-3"	9'-8"
60	12'-0"	12'-0"	12'-0"	10'-3"	11'-0"	9'-5"
65	12'-0"	12'-0"	12'-0"	10'-0"	10'-8"	9'-2"
70	12'-0"	12'-0"	12'-0"	9'-9"	10'-5"	8'-11"
72	12'-0"	12'-0"	12'-0"	9'-7"	10'-2"	8'-8"

NOTES : REFER TO ELEVATIONS ON SHEET 1A OF 11

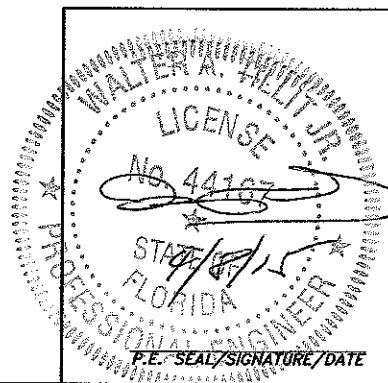
1- FOR MULLIONS INSTALLED W/O STORM BARS

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

2- FOR MULLIONS INSTALLED W/ STORM BARS & HEADERS

A) MULLION SPACING SHALL BE SUCH THAT MAXIMUM HEADER SPAN SHALL NOT BE EXCEEDED

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



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**RLL 55-X SLAT NON END RETENTION ROLL-UP SHUTTER**

**ROLLAC SHUTTER OF TEXAS, INC.**  
5331 ORANGE STREET  
PEARLAND, TX 77581  
PH:(800) 880-0922, FAX:(281) 485-0839

F.R.L.  
DRAWN BY

04/02/15  
DATE

15-061  
DRAWING N°

REV N°	DESCRIPTION	DATE	REV N°	DESCRIPTION	DATE
1	OLD 11-241	04/02/15	3	-	-
2	-	-	4	-	-