

**GENERAL NOTES:**

1. ROLL-UP SHUTTER SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL BUILDING CODE, (I.B.C.) AND INTERNATIONAL RESIDENTIAL CODE, (I.R.C.). 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 KD=0.85, IN ACCORDANCE W/ ASCE 7-16 STANDARD.  
IN ORDER TO VERIFY THE ABOVE CONDITION, ULTIMATE DESIGN WIND LOADS DETERMINED PER ASCE 7-16 STANDARD SHALL BE FIRST REDUCED TO A.S.D. DESIGN WIND LOADS BY MULTIPLYING THEM BY 0.60 IN ORDER TO COMPARE THESE W/MAX. (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 10 THRU 12, AND SHEETS 15 THRU 19.  
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. 2018.  
ROLL-UP SHUTTER ADEQUACY FOR IMPACT AND CYCLIC RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.2 OF THE INTERNATIONAL BUILDING CODE, AS PER PENETRATION TESTING LAB. REPORTS # 5908, 5905 AND 6235 AS PER ASTM E 1886, E 1996 AND INSTALLATIONS. QUALIFYING INSTALLATIONS FOR WIND ZONES 1, 2, 3 & 4, MISSILE TYPE D, APPLICABLE TO BASIC PROTECTION ONLY. ESSENTIAL FACILITIES AS DEFINED BY SECTIONS 6.2.1.1, 6.2.1.2 AND 8.3 OF ASTM E 1996. SEE NOTES A, A ON SHEETS 12 & 18 FOR ADDITIONAL LIMITATIONS.
2. ALL ALUMINUM EXTRUSIONS SHALL BE AS INDICATED ON SHEET 2. ALL ALUMINUM EXTRUSIONS IN CONTACT WITH DISSIMILAR MATERIALS SHALL COMPLY WITH SECTION III-6 OF THE ALUMINUM DESIGN MANUAL 2015 EDITION.
3. EVERY OTHER SLAT SHALL INCLUDE WIND LOCKS AT EACH END (SEE COMPONENTS SHEET). EVERY SLAT (A) ADJACENT AND ABOVE BOTTOM SLAT (B) MUST INCLUDE WIND LOCKS.
4. ALL SCREWS & BOLTS (EXCEPT COMPONENT (C)) INSTALLED TO BE STAINLESS STEEL 304 OR 316 AISI SERIES AND MEET ASTM A167, OR HOT DIPPED GALVANIZED (AFTER FABRICATION) CARBON STEEL AS PER ASTM A123 OR ASTM A153, OR HOT DIPPED GALVANIZED OR GALVANNEALZED (PRIOR TO FABRICATION) AND MEET ASTM A653 WITH 50 KSI YIELD STRENGTH AND 90 KSI TENSILE STRENGTH.
5. ANCHORS TO WALL FOR (B), (C) & (D) SIDE RAILS SHALL BE AS FOLLOWS: (UNLESS OTHERWISE NOTED)
  - (A) TO EXISTING POURED CONCRETE: MIN.  $f_c = 2889$  p.s.i. COMPRESSIVE STRENGTH.
    - 5/16" CARBON STEEL TAPCON XL ANCHORS AS MANUFACTURED BY ITW BUILDEX, INC.
      - A.1) MINIMUM EMBEDMENT OF TAPCON XL ANCHORS INTO POURED CONCRETE SHALL BE 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
      - A.2) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON XL ANCHORS INTO POURED CONCRETE SHALL BE 4" 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 GROUT FILLED CELL CONCRETE BLOCK WALL: ASTM C-90
      - 5/16" CARBON STEEL TAPCON XL ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.
        - B.1) MINIMUM EMBEDMENT OF TAPCON XL ANCHORS INTO THE GROUT FILLED CELL CONCRETE BLOCK UNIT SHALL BE 2 1/4". NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
        - B.2) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON XL ANCHORS INTO GROUT FILLED CELL CONCRETE BLOCK SHALL BE 4". 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., DOUGLAS FIR-SOUTH (G=0.46) OR SPRUCE PINE-FR SOUTH, (G=0.36), SHEATHING TO BE MIN. 1/2" PLYWOOD OR 7/16" O.S.B. WITH LIMITATIONS AS PER SHEET 18.
      - 5/16" CARBON STEEL ULTRACON ANCHORS, AS MANUFACTURED BY ELCO CONSTRUCTION PRODUCTS.
        - C.1) MINIMUM PENETRATION OF ULTRACON ANCHORS INTO THE WOOD FRAME UNIT SHALL BE 2 1/2". (MUST INCLUDE 2" THEADED LENGTH) NO PENETRATION INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED PENETRATION.
        - C.2) MINIMUM EDGE DISTANCE OF ULTRACON ANCHORS INTO WOOD SHALL BE 2". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.
        - 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 THEADED 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 MULLION CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 13 & 14 RESPECTIVELY.

-3/4" KWIK BOLT TZ 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	GROUT FILLED OR CONCRETE BLOCK
KWIK BOLT TZ	27"	9"	CONCRETE	4 3/4" (3000 psi)
				-

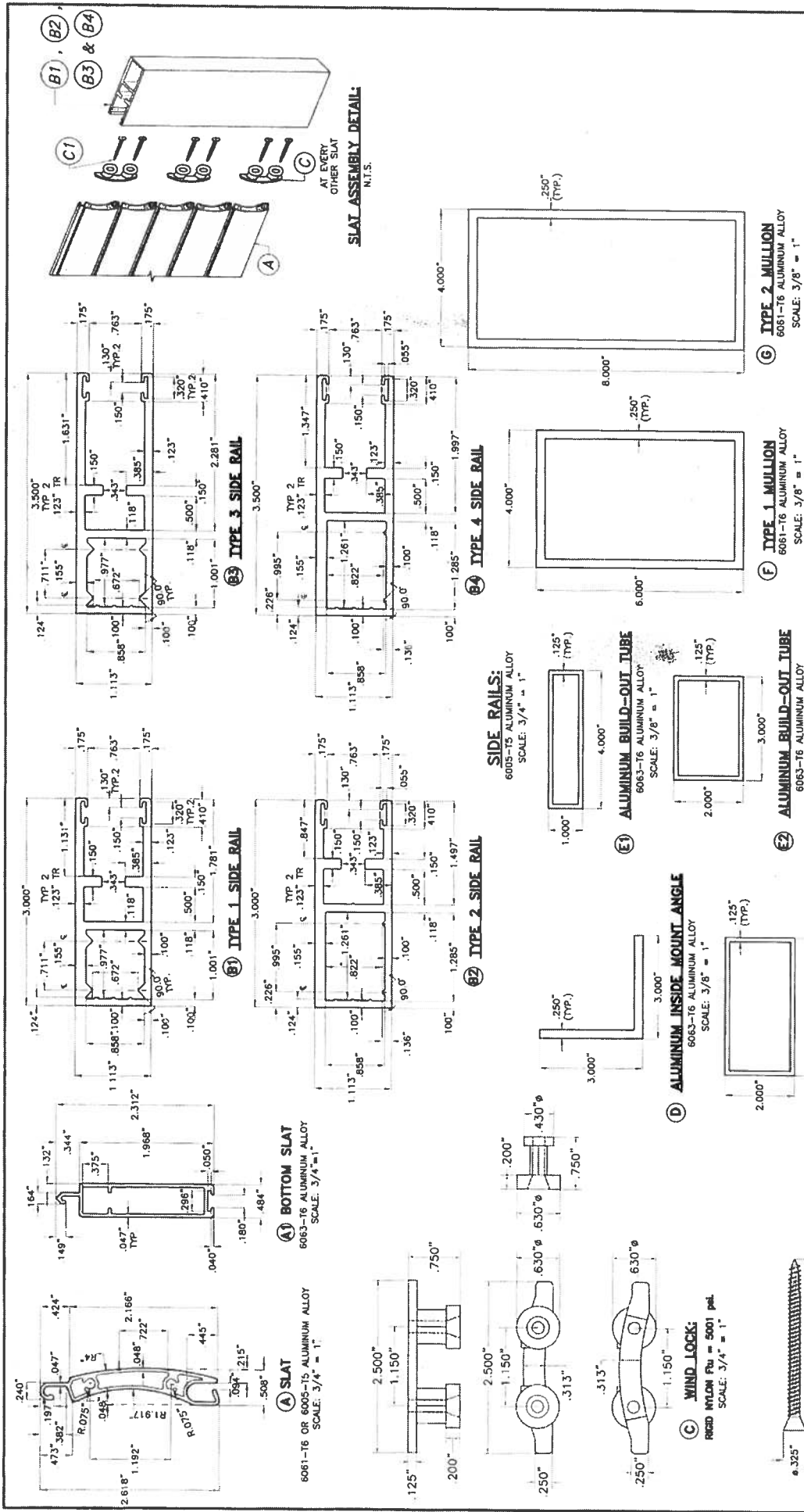
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. THIS SHUTTER SHALL ONLY BE ATTACHED TO CONCRETE, GROUT FILLED CELL CONCRETE BLOCK OR WOOD FRAME BUILDINGS.
9. ROLL-UP MECHANISM NOT PART OF THIS APPROVAL, BUT SHALL BE CERTIFIED BY AN INDEPENDENT TESTING AGENCY.
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. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL SHUTTER TRACKS ALL AROUND FULL LENGTH.
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 PROFESSIONAL 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 THIS 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. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABELING SHALL INDICATE MANUFACTURER'S NAME, PRODUCT NAME & ASTM E-330, E-1886, E-1996 COMPLIANT.

**THIS DRAWING SHALL BE USED ONLY TO OBTAIN PERMITS UNDER THE TEXAS DEPARTMENT OF INSURANCE JURISDICTION**



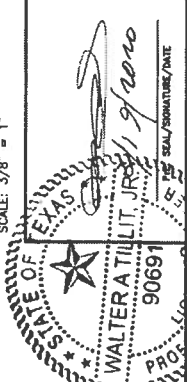
WALTER A. TILLIT JR. P.E.  
PROFESSIONAL ENGINEER  
6500 W. 30th St., Ste. 308  
Ft. Worth, TX 76107  
PHONE: (817) 412-1333  
FAX: (817) 412-1333  
TXS LIC. # 90591  
FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018	
W.P. DRAWN BY	ROLL-UP SHUTTER
DATE	3/19/2020
DRAWING #	20-044
ROLLAC SHUTTER OF TEXAS, INC. 9331 ORANGE STREET PARLAND, TX 77881 PH: (936) 486-1911, FAX: (936) 486-0809	
REV #	DATE
1	18-2020
2	
3	
4	
SHEET 1 OF 19	

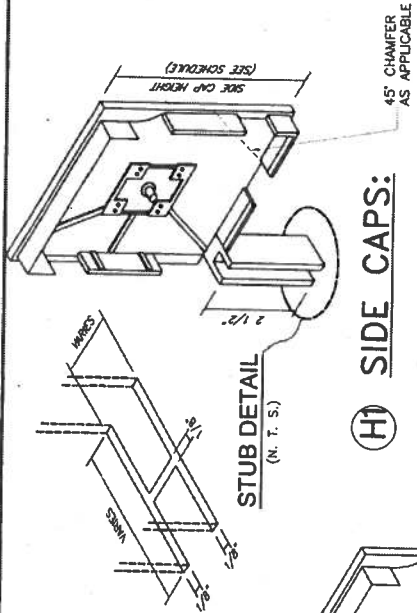


TEXAS DEPARTMENT OF INSURANCE - 2018	
R.L.P. DRAWN BY	3/18/2020 DATE
ROLLAC SHUTTER OF TEXAS, INC.	
5131 ORANGE STREET PEARLAND, TX 77661 PH: (281) 424-1911 FAX: (281) 424-0839	
CONTRACT NO.	DATE
REV. 1	REV. 1
REV. 2	REV. 2
REV. 3	REV. 3
REV. 4	REV. 4
REV. 5	REV. 5
REV. 6	REV. 6
REV. 7	REV. 7
REV. 8	REV. 8
REV. 9	REV. 9
REV. 10	REV. 10
REV. 11	REV. 11
REV. 12	REV. 12
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REV. 92	REV. 92
REV. 93	REV. 93
REV. 94	REV. 94
REV. 95	REV. 95
REV. 96	REV. 96
REV. 97	REV. 97
REV. 98	REV. 98
REV. 99	REV. 99
REV. 100	REV. 100

WALTER A. TILLOT JR., P.E.  
PROFESSIONAL ENGINEER  
6005 NW 30TH ST., STE. 300  
FORT WORTH, TX 76116  
PHONE: (817) 424-1338  
FAX: (817) 424-1339  
TEXAS LIC. # 90691  
FORM REGISTRATION # F-13790



**(I) WIND LOCK SCREW:**  
(2) #8-18 x 2 1/2" F.H. S.S. A316 410 SERIES.  
COATED WITH ROLLAC-1000 CHROMED-FREE  
ANTI-CORROSION COATING SYSTEM; MANUFACTURED  
AND APPLIED BY SUN BELT COATING, LLC  
(Min F<sub>y</sub> = 121.1 ksi, Min. F<sub>u</sub> = 164.6 ksi)  
SCALE: 3/4" = 1"

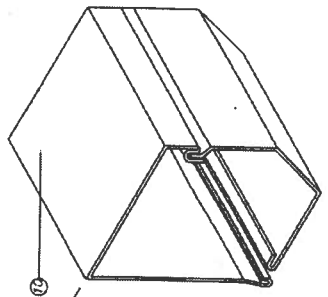


**(H) SIDE CAPS:**

**COMPONENTS FOR GEAR OPERATED SYSTEM**

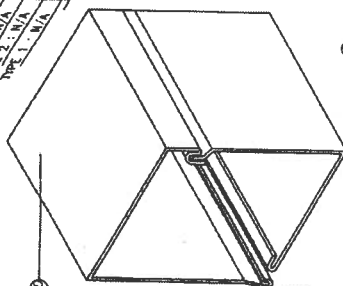
- 1 - GEAR
  - 2 - UNIVERSAL & CRANK
  - 3 - CRANK HOLDER (OPTIONAL)
  - 4 - GEAR INSERT (GEAR TO AXLE CONNECTOR)
  - 5 - IDLER INSERT
  - 6 - BALL BEARING
  - 7 - OCTAGONAL AXLE \*
  - 8 - SIDE/END CAP \*
  - 9 - HOUSING (FRONT & BOTTOM), 0.040" THICK
  - 10 - SIDE RAIL
  - 11 - PLUG-BUTTONS
  - 12 - ALUMINUM SLATS
  - 13 - BASE SLAT
  - 14 - PLASTIC STOPS (OPTIONAL)
  - 15 - SIDE LOCKS (OPTIONAL)
  - 16 - STAPLES (OPTIONAL)
  - 17 - SPRINGLOCK HANGER
  - 18 - SAFETY PLATES
  - 19 - 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

\* SHALL BE CAPABLE TO SUSTAIN SLAT'S WEIGHT AND ASSURE LIFTING MECHANISM (SEE NOTE 10/1)



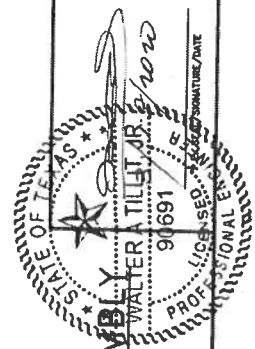
**RV 45 & RV 45/S HOUSINGS**

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



**RV 90 HOUSING**

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



**WALTER A. TILT JR. P.E.**  
 PROFESSIONAL ENGINEER  
 4508 HWY 30A, STE. 300  
 WIKON, TEXAS 75159  
 PHONE : (202) 971-1330  
 FAX : (202) 971-1331  
 TEXAS LIC. # 90691  
 FIRM REGISTRATION # F-13790

**(H) BOX COMPONENTS AND ASSEMBLY  
 DETAIL END CAP SYSTEM**

(SEE NOTE 10 ON SHEET 1)

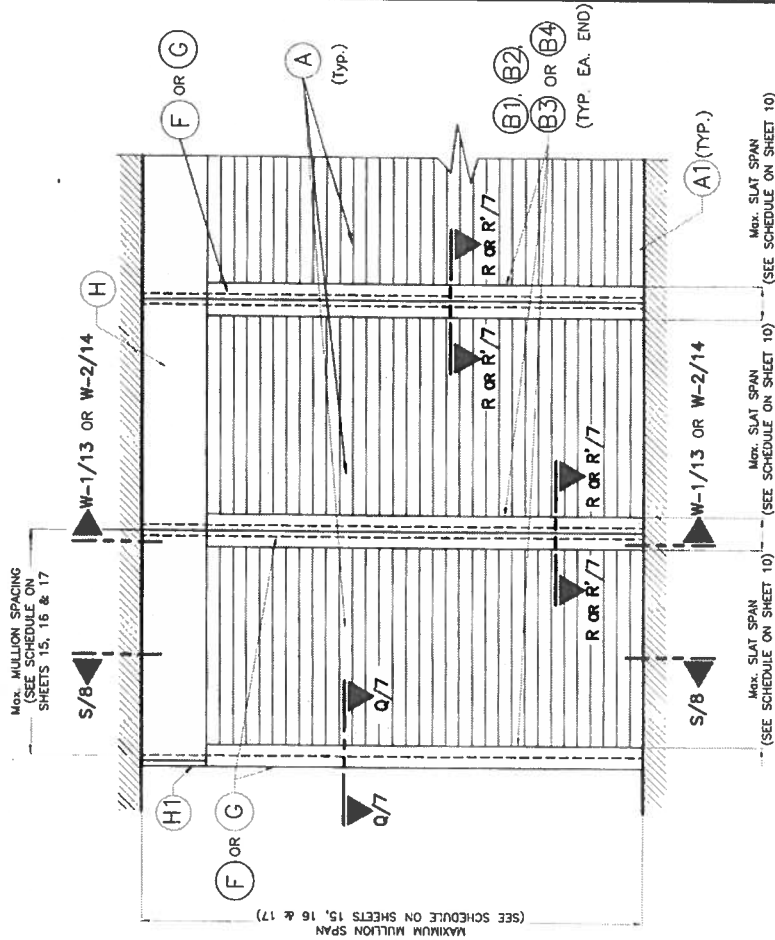
**TEXAS DEPARTMENT OF INSURANCE - 2018**

**ROLL-UP SHUTTER**

**ROLLAC SHUTTER OF TEXAS, INC.**  
 5331 ORANGE STREET  
 PEARLAND, TX 77661  
 PH: (281) 485-1911, FAX: (281) 485 0808

REV #	DESCRIPTION	DATE	BY	CHKD
1	OLD 18-2002	18-2002	3	
2			4	

M.P. DRAWN BY: 3/19/2020 DATE: 20-044 DRAWING N°: SHEET 3 OF 19

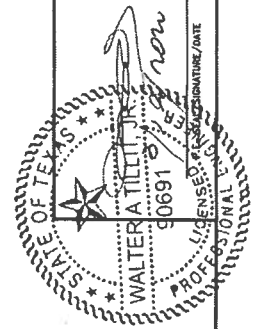


**TYPICAL SINGLE UNIT ELEVATION:  
INSTALLATION INTO POURED CONCRETE,  
GROUT FILLED CELL CONCRETE BLOCK & WOOD**

**TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION W/ MULLIONS:  
INSTALLATION INTO POURED CONCRETE**

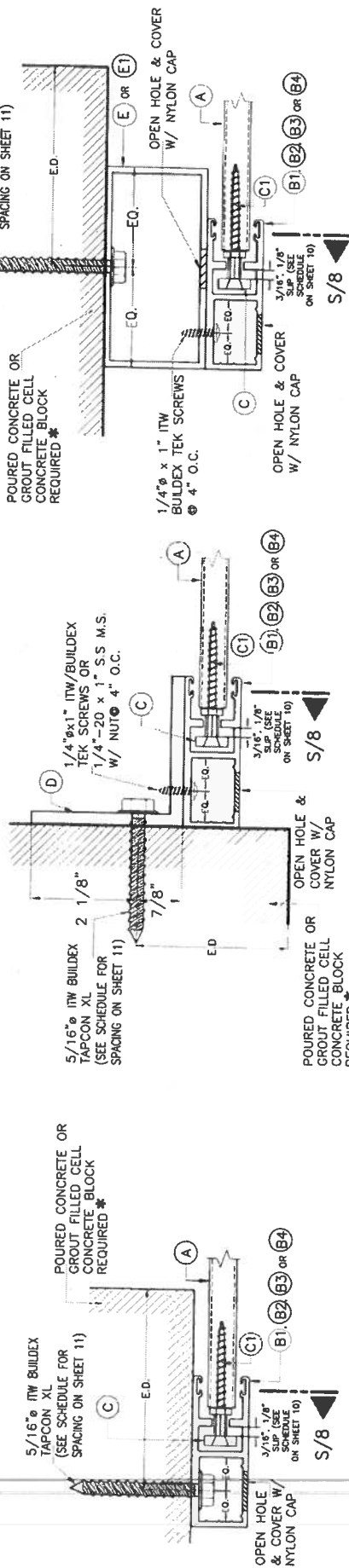
NOTES: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.  
N.T.S

NOTES: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.  
N.T.S



WALTER A. TULLIT JR. P.E.  
PROFESSIONAL ENGINEER  
6300 NW 30TH ST., SU. 202  
VIENNA, GEORGIA, 31466  
PHONE (404) 871-1300  
FAX (404) 871-1301  
TEXAS LIC. # 90691  
FROM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018	
M.P. DRAWN BY	3/16/2020 DATE
ROLLAC SHUTTER OF TEXAS, INC.	
9531 ORANGE STREET PEARLAND, TX, 77881 PH: (281) 482-1911 FAX: (281) 485 0818	
REV #	DESCRIPTION
1	OLD 09-2008
2	18-2020
3	
4	
SHEET 4 OF 19	



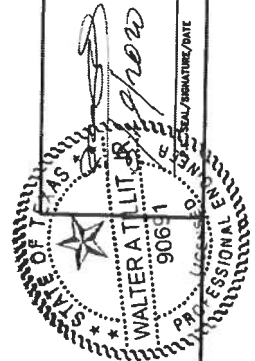
**SECTION P-P (1):**  
WALL MOUNT

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

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

**SIDE RAIL CONNECTIONS  
TO POURED CONCRETE OR GROUT FILLED CELL  
CONCRETE BLOCK**

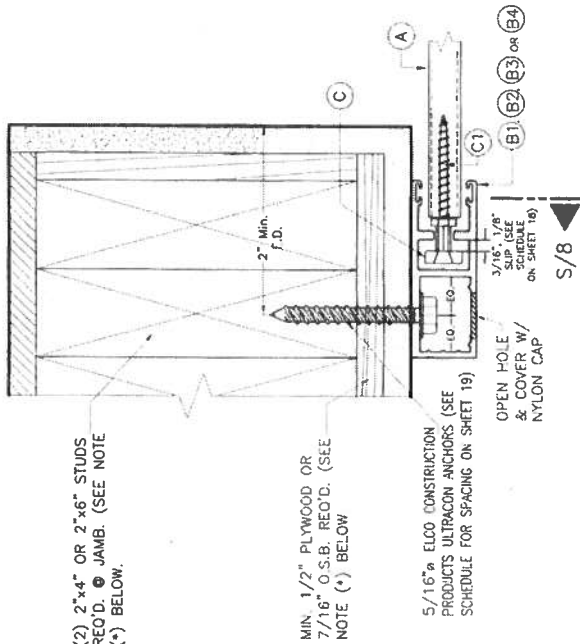
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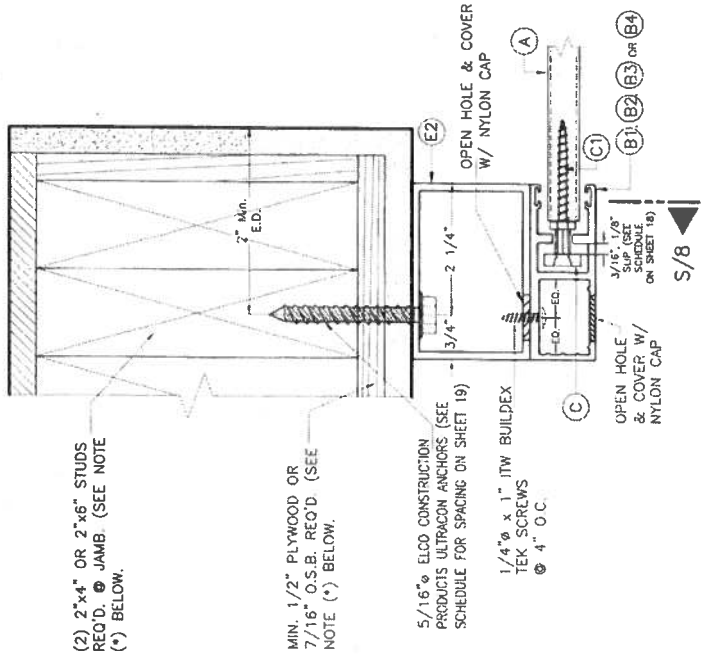
**WALTER A. TILLIT JR. P.E.**  
PROFESSIONAL ENGINEER  
6000 AVE. 20TH ST., STE. 305  
WEDONA GROVES, TX, 75166  
PHONE: (202) 871-1300  
FAX: (202) 871-1331  
TEXAS LIC. # 90691  
PRM REGISTRATION # F-13780

TEXAS DEPARTMENT OF INSURANCE - 2018	
M.P. DRAWN BY	ROLL-55-X SIAT END RETENTION ROLL-UP SHUTTER
DATE	3/18/2020
DRAWING NO.	20-044
SHEET NO.	5 OF 19

**ROLLAC SHUTTER OF TEXAS, INC.**  
6331 ORANGE STREET  
DALLAS, TX, 75237  
PH: (214) 462-1511 FAX: (214) 462-0839



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

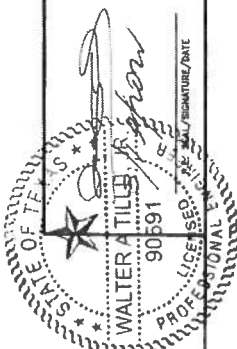


**SECTION P-P (2):  
BUILD-OUT MOUNT**

**SIDE RAIL CONNECTIONS  
TO WOOD WALL**

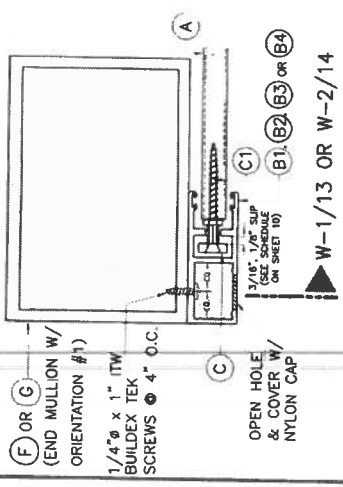
SCALE: 1/2" = 1"

(\* SEE LIMITATIONS FOR SHUTTER SPAN AND DESIGN PRESSURE RATING ON SHEET 18.

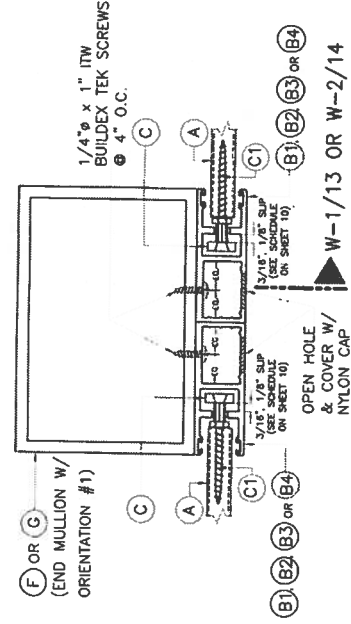


**WALTER A. TILLIT JR. P.E.**  
PROFESSIONAL ENGINEER  
6520 N.W. 20TH ST., SU. 202  
VIENNA GARDENS, FL 33596  
PHONE: (202) 671-1300  
FAX: (202) 671-1300  
TEXAS LIC. # 90691  
FIRM REGISTRATION # F-13790

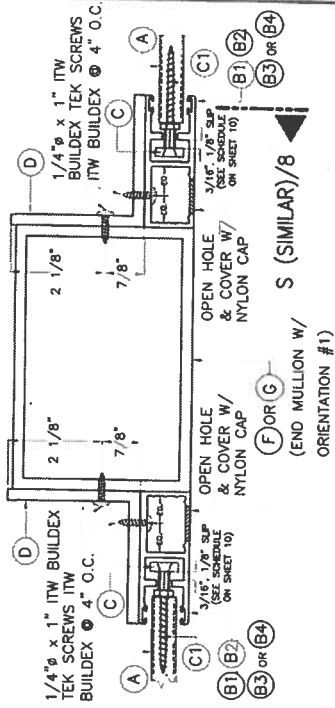
<b>TEXAS DEPARTMENT OF INSURANCE - 2018</b> RLL 55-X SLAT END RETENTION ROLL-UP SHUTTER		M.P. DRAWN BY 3/18/2020 DATE
<b>ROLLAC SHUTTER OF TEXAS, INC.</b> 4531 ORANGE STREET PEARLAND, TX 77661 P: (281) 663-1811 FAX: (281) 665-0039		20-044 DRAWING #
REV #	DESCRIPTION	DATE
1	ISSUE	3/18/2020
2	REVISED	3/18/2020
3	REVISED	3/18/2020
4	REVISED	3/18/2020



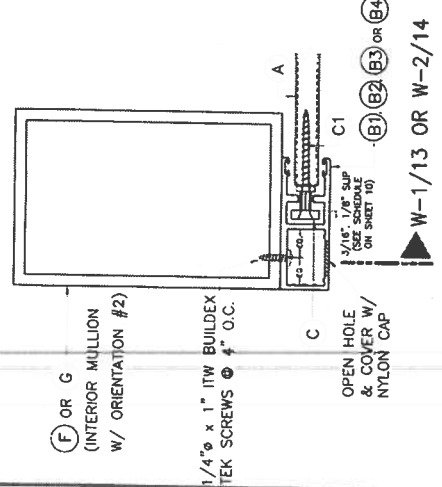
**SECTION Q-Q:**  
MULLION MOUNT (FACE MOUNT)



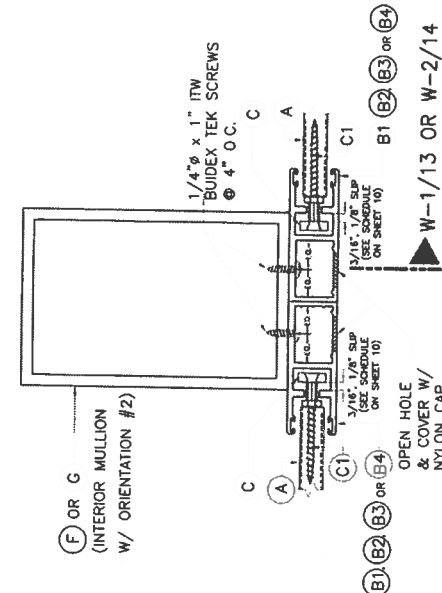
**SECTION R-R:**  
MULLION MOUNT (FACE MOUNT)



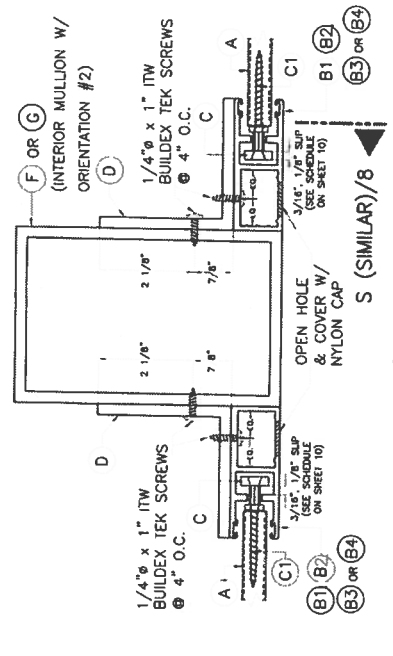
**SECTION R'-R':**  
MULLION MOUNT (INSIDE MOUNT)



**SECTION Q-Q:**  
MULLION MOUNT (FACE MOUNT)



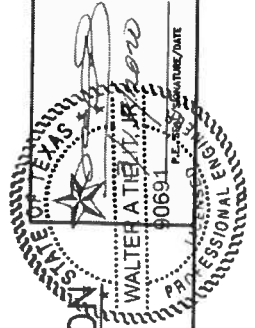
**SECTION R-R:**  
MULLION MOUNT (FACE MOUNT)



**SECTION R'-R':**  
MULLION MOUNT (INSIDE MOUNT)

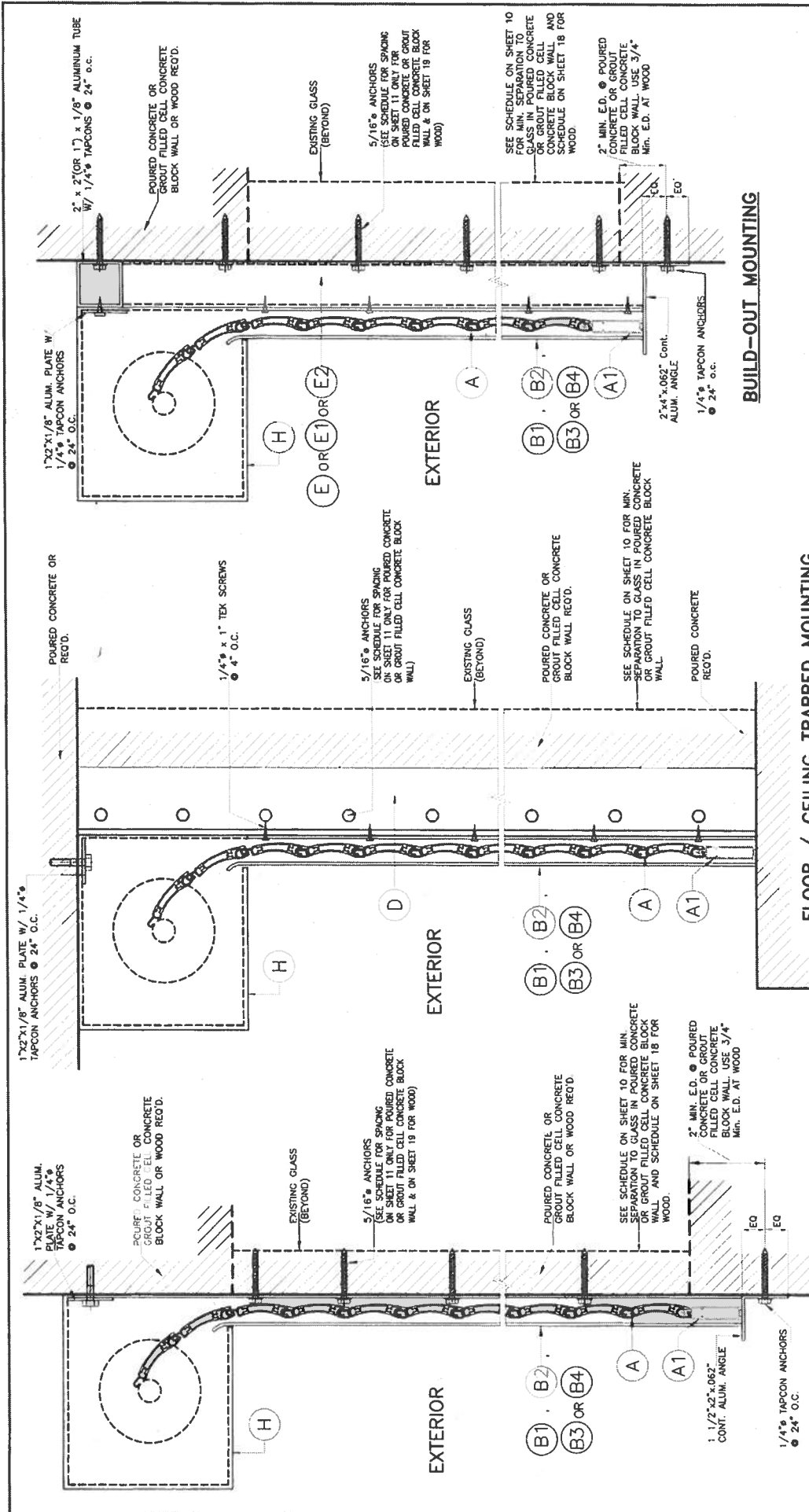
**SIDE RAIL CONNECTION  
TO MULLIONS**

SCALE: 3/8" = 1"



WALTER A. TILLIT JR., P.E.  
PROFESSIONAL ENGINEER  
605 N.E. 30th St., Ste. 300  
Mesa, Oklahoma, 74110  
PHONE: (405) 871-1300  
(405) 871-1301  
TEXAS LIC. # 90691  
FROM REGISTRATION # P-13790

TEXAS DEPARTMENT OF INSURANCE - 2018	
RLL 55-X SLAT END RETENTION ROLL-UP SHUTTER	M.P. DRAWN BY
ROLLAC SHUTTER OF TEXAS, INC.	DATE
5331 ORANGE STREET PASADENA, TX 77581 PH: (281) 488-1811, FAX: (281) 488-0838	3/18/2020
REV #	DESCRIPTION
1	20-044
2	DRAWING NO.
3	DATE
4	BY
5	DATE
6	BY
7	DATE
8	BY
9	DATE
10	BY
11	DATE
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**SECTION S-S**  
N.T.S.

**INSTALLATION DETAILS ON EXISTING POURED CONCRETE WALL OR WOOD GROUT FILLED CELL CONCRETE BLOCK WALL OR WOOD**

**WALL MOUNTING**

**FLOOR / CEILING TRAPPED MOUNTING**

**BUILD-OUT MOUNTING**

**TEXAS DEPARTMENT OF INSURANCE - 2018**

ROLL-UP SHUTTER

ROLLAC SHUTTER OF TEXAS, INC.

5531 ORANGE STREET  
PH: (817) 453-1811 FAX: (817) 484-0838

WALTER A. TILLIT JR. P.E.  
PROFESSIONAL ENGINEER  
1000 W. 11TH ST. SUITE 200  
MCKINNEY, TEXAS 75069  
PHONE: (202) 871-1330  
FAX: (202) 871-1331  
TEXAS LIC. # 90891  
FRM REGISTRATION # F-12780

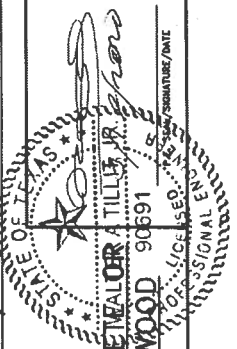
DATE: 3/18/2020

DRAWN BY: M.P.

20-044

DRAWING #

SHEET 8 OF 18





**TYPICAL MANDATORY PROCEDURE FOR VERIFYING SHUTTER CODE COMPLIANCE  
RELATED TO ITS INSTALLATION INTO EXISTING POURED CONCRETE OR  
GROUT FILLED CELL CONCRETE BLOCK STRUCTURES (\*)**

**STEP 1:**

OBTAIN JOB SITE'S DESIGN LOAD (p.s.f.) FOR THE OPENING AND DESIRED SHUTTER SPAN "L" (ft) TO PROTECT IT (SEE GENERAL NOTE #1, ON SHEET 1).

**STEP 2:**

ENTER TO CHARTS I THRU III ON SHEET 10 TO DETERMINE, BASED ON AN ASSUMED SLAT SLIP (in); DESIGN LOAD (p.s.f.); AND SHUTTER SPAN "L" (ft); THE REQUIRED FINAL SLAT SLIP THAT SLATS MUST BE INSTALLED WITH TO MEET THE REQUIRED LOAD AND DESIRED SHUTTER SPAN.

THE FOLLOWING INFORMATION IS PROVIDED AT CHARTS I THRU III TO PROCEED WITH SHUTTER INSTALLATION VERIFICATION:

- ENTER DESIGN LOAD: SEE STEP (1) ABOVE.
- FOR A SPECIFIC SHUTTER MOUNTING INSTALLATION TYPE, THE FOLLOWING DEFINITIONS FOR SLAT SPAN SHALL BE CONSIDERED:

**Lmax:** THIS IS THE MAXIMUM ALLOWABLE SHUTTER SPAN FOR WHICH A GIVEN SLAT SLIP (3/16", 1/8" OR LESS THAN 1/8") MAY BE USED, FOR A GIVEN DESIGN LOAD.

**Lmin:** THIS IS THE MINIMUM ALLOWABLE SHUTTER SPAN FOR WHICH A GIVEN SLIP (3/16", 1/8" OR LESS THAN 1/8") MAY BE USED, FOR A GIVEN DESIGN LOAD. IN CASE JOB SITE DESIRED SHUTTER SPAN (L) WAS SHORTER THAN Lmin, THEN GO TO THE OTHER CHARTS WITH A SHORTER SLAT SLIP AND VERIFY THAT (L) IS ALLOWED FOR THAT OTHER SHORTER SLIP.

- MINIMUM REQUIRED SEPARATION TO GLASS IS PROVIDED ON CHARTS I, II & III. PROVIDES SEPARATION TO GLASS FOR SHUTTERS WITH OR WITHOUT MULLIONS BASED ON SHUTTER INSTALLATIONS WITHIN WIND ZONES 1 THRU 4, AS DEFINED BY ASTM E 1996-05, SECTION 6.2.2.

**STEP 3:**

OBTAIN INFORMATION ON SHUTTER'S SIDE RAIL ANCHOR SPACING REQUIREMENTS, FOR CONNECTION TO EXISTING STRUCTURE FROM ANCHOR SCHEDULE IV ON SHEET 11. ENTER SCHEDULE WITH FINALLY DETERMINED SUBSTRATE, MOUNTING TYPE, DESIGN LOAD & SHUTTER SPAN AND OBTAIN MAXIMUM ANCHOR SPACING (INCHES ON CENTERS). SEE GENERAL NOTE 6 ON SHEET 1 FOR ANCHOR SPECS.

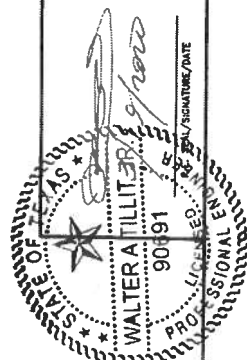
**STEP 4:**

IF SHUTTER INSTALLATION INCLUDES MULLIONS, THE FOLLOWING MANDATORY ADDITIONAL PROCEDURE IS APPLICABLE.

**PROCEDURE 4a:** IF MULLIONS ARE USED

1. MINIMUM SEPARATION TO GLASS FOR SLATS IF MULLIONS ARE USED SHALL BE BASED ON INSTALLATIONS PERFORMED WITHIN ASTM WIND ZONES 1 THRU 4 INDICATED ON CHARTS I, II & III ON SHEET 10. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS. FOR INSTALLATIONS WITHIN ASTM WIND ZONES 1 THRU 3 WHERE MINIMIZING OF THE PROBABILITY OF BREACHING OF GLASS IS DESIRED EVEN THOUGH IT IS NOT REQUIRED BY THE INTERNATIONAL BUILDING CODE, MINIMUM SEPARATION TO GLASS FOR SLATS SHALL BE IDENTICAL TO WIND ZONE 4 VALUES.
2. ENTER SCHEDULES 1a THRU 2c ON SHEETS 15, 16 & 17 W/ DESIGN LOAD; MAXIMUM MULLION SPACING (MAX. 12' OR 7') AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN (a) & (b). MULLION TYPE & MULLION ORIENTATION.
3. SEE SHEETS 13 & 14 FOR REQUIRED MULLION CONNECTION DETAILS AT TOP & BOTTOM FOR FLOOR TO CEILING (TRAPPED) OR WALL MOUNTINGS OF MULLIONS INTO CONCRETE FOR A GIVEN MULLION TYPE (c) & (d).

\* PROCEDURE PER STEPS 1 THRU 3 IS SIMILAR FOR INSTALLATIONS INTO WOOD FRAME STRUCTURES. SEE SHEETS 18 & 19 FOR LIMITATIONS APPLICABLE TO INSTALLATIONS INTO WOOD FRAME STRUCTURES.



**WALTER A. TILLIT JR. P.E.**  
PROFESSIONAL ENGINEER  
6303 N.W. 30th St., Ste. 300  
Weslaco, Texas 79780  
PHONE: (361) 871-1330  
FAX: (361) 871-1331  
TEXAS LIC. # 90691  
FROM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018	
RLL 55-X SLAT END RETENTION ROLL-UP SHUTTER	M.P. DRAWN BY
<b>ROLLAC SHUTTER OF TEXAS, INC.</b> 6331 ORANGE STREET PH: (817) 485-1911 FAX: (817) 485-0039	3/18/2020 DATE
REV #	DESCRIPTION
1	OLD 08-008
2	18-2020
3	
SHEET 9 OF 19	

**SLAT PERFORMANCE CHARTS I, II & III:**  
**VALID FOR INSTALLATION INTO POURED CONCRETE, GROUT FILLED CELL CONCRETE BLOCK OR MULLIONS**  
 FOR A GIVEN DESIGN LOAD (p.s.f.) AND SHUTTER MOUNT CONDITION

**CHART I (ONLY VALID FOR 3/16" SLIP)**

DESIGN LOAD (p.s.f.)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MIN. SEPARATION TO GLASS (in)		WIND ZONE	WIND ZONE 4
	MAX. SLAT SPAN		REQUIRED MIN. SLAT SPAN		MIN. SEPARATION TO GLASS (in)			
	WALL MOUNT (SEE NOTES)	TRAPPED MOUNT (SEE NOTES)	BUILD-OUT MOUNT W/ (E) MOUNT W/ (E) (SEE NOTES)	BUILD-OUT MOUNT W/ (E) MOUNT W/ (E) (SEE NOTES)	WALL TRAPPED & BUILD-OUT MOUNT W/ (E) & (E) (SEE NOTES)	MIN. SEPARATION TO GLASS (in)	WIND ZONE 1, 2 & 3	WIND ZONE 4
30.0	19'-8"	19'-8"	16'-6"	13'-11"	6'-6"	1"	12.00"	7"
35.0	18'-3"	18'-3"	14'-11"	12'-7"	6'-3"	1"	12.00"	7"
40.0	16'-8"	16'-8"	13'-7"	11'-6"	6'-0"	1"	12.00"	7"
45.0	15'-3"	15'-3"	12'-6"	10'-9"	5'-9"	1"	12.00"	7"
50.0	14'-3"	14'-3"	11'-8"	10'-0"	5'-7"	1"	12.00"	7"
55.0	13'-3"	13'-3"	11'-0"	9'-6"	5'-6"	1"	12.00"	7"
60.0	12'-6"	12'-6"	10'-4"	9'-0"	5'-4"	1"	12.00"	7"
65.0	11'-11"	11'-11"	9'-10"	8'-6"	5'-3"	1"	9 3/4"	7"
70.0	11'-5"	11'-5"	9'-5"	8'-2"	5'-1"	1"	9 3/4"	7"
75.0	10'-11"	10'-11"	9'-0"	7'-11"	5'-0"	1"	9 3/4"	7"
80.0	10'-5"	10'-5"	8'-8"	7'-7"	4'-11"	1"	9 3/4"	7"
85.0	10'-0"	10'-0"	8'-3"	7'-4"	4'-10"	1"	9 3/4"	7"
90.0	9'-6"	9'-6"	8'-0"	7'-1"	4'-9"	1"	9 3/4"	7"
95.0	9'-3"	9'-2"	7'-9"	6'-11"	4'-8"	1"	9 3/4"	7"
100.0	8'-11"	8'-10"	7'-6"	6'-9"	4'-7"	1"	9 3/4"	7"
105.0	8'-8"	8'-6"	7'-3"	6'-6"	4'-7"	1"	9 3/4"	7"
110.0	8'-6"	8'-3"	7'-1"	6'-5"	4'-6"	1"	9 3/4"	7"
115.0	8'-5"	8'-0"	6'-11"	6'-3"	4'-5"	1"	9 3/4"	7"
120.0	8'-0"	7'-9"	6'-9"	6'-1"	4'-5"	1"	9 3/4"	7"
125.0	7'-10"	7'-6"	6'-7"	6'-0"	4'-4"	1"	9 3/4"	7"
130.0	7'-8"	7'-5"	6'-5"	5'-10"	4'-3"	1"	9 3/4"	7"
135.0	7'-6"	7'-2"	6'-3"	5'-9"	4'-3"	1"	9 3/4"	7"
140.0	7'-3"	7'-0"	6'-2"	5'-8"	4'-2"	1"	9 3/4"	7"
145.0	7'-2"	6'-10"	6'-0"	5'-6"	4'-2"	1"	9 3/4"	7"
150.0	7'-0"	6'-8"	6'-0"	5'-5"	4'-1"	1"	9 3/4"	7"
155.0	6'-10"	6'-6"	5'-10"	5'-4"	4'-1"	1"	9 3/4"	7"
160.0	6'-9"	6'-5"	5'-9"	5'-3"	4'-1"	1"	7"	7"

**CHART II (ONLY VALID FOR 1/8" SLIP)**

DESIGN LOAD (p.s.f.)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MIN. SEPARATION TO GLASS (in)		WIND ZONE	WIND ZONE 4
	MAX. SLAT SPAN		REQUIRED MIN. SLAT SPAN		MIN. SEPARATION TO GLASS (in)			
	WALL MOUNT (SEE NOTES)	TRAPPED MOUNT (SEE NOTES)	BUILD-OUT MOUNT W/ (E) MOUNT W/ (E) (SEE NOTES)	BUILD-OUT MOUNT W/ (E) MOUNT W/ (E) (SEE NOTES)	WALL TRAPPED & BUILD-OUT MOUNT W/ (E) & (E) (SEE NOTES)	MIN. SEPARATION TO GLASS (in)	WIND ZONE 1, 2 & 3	WIND ZONE 4
30.0	18'-3"	18'-3"	15'-0"	12'-7"	6'-2"	1"	12.00"	7"
35.0	16'-4"	16'-4"	13'-5"	11'-5"	5'-10"	1"	12.00"	7"
40.0	14'-11"	14'-11"	12'-3"	10'-5"	5'-8"	1"	12.00"	7"
45.0	13'-9"	13'-9"	11'-4"	9'-9"	5'-6"	1"	12.00"	7"
50.0	12'-9"	12'-9"	10'-7"	9'-1"	5'-4"	1"	12.00"	7"
55.0	12'-0"	12'-0"	9'-11"	8'-7"	5'-2"	1"	12.00"	7"
60.0	11'-4"	11'-4"	9'-5"	8'-2"	5'-0"	1"	9 3/4"	7"
65.0	10'-9"	10'-9"	8'-11"	7'-10"	4'-11"	1"	9 3/4"	7"
70.0	10'-2"	10'-2"	8'-6"	7'-6"	4'-10"	1"	9 3/4"	7"
75.0	9'-9"	9'-9"	8'-2"	7'-2"	4'-9"	1"	9 3/4"	7"
80.0	9'-4"	9'-4"	7'-10"	6'-11"	4'-8"	1"	9 3/4"	7"
85.0	9'-0"	9'-0"	7'-7"	6'-9"	4'-8"	1"	9 3/4"	7"
90.0	8'-8"	8'-8"	7'-4"	6'-6"	4'-6"	1"	9 3/4"	7"
95.0	8'-5"	8'-5"	7'-1"	6'-4"	4'-5"	1"	9 3/4"	7"
100.0	8'-2"	8'-2"	6'-10"	6'-2"	4'-4"	1"	9 3/4"	7"
105.0	7'-11"	7'-11"	6'-8"	5'-10"	4'-3"	1"	9 3/4"	7"
110.0	7'-8"	7'-8"	6'-6"	5'-10"	4'-3"	1"	9 3/4"	7"
115.0	7'-6"	7'-5"	6'-4"	5'-9"	4'-2"	1"	9 3/4"	7"
120.0	7'-3"	7'-2"	6'-2"	5'-7"	4'-2"	1"	9 3/4"	7"
125.0	7'-1"	7'-0"	6'-1"	5'-6"	4'-1"	1"	9 3/4"	7"
130.0	6'-11"	6'-10"	5'-11"	5'-5"	4'-1"	1"	9 3/4"	7"
135.0	6'-9"	6'-8"	5'-10"	5'-3"	4'-0"	1"	7"	7"
140.0	6'-8"	6'-6"	5'-8"	5'-2"	4'-0"	1"	7"	7"
145.0	6'-6"	6'-4"	5'-7"	5'-1"	3'-11"	1"	7"	7"
150.0	6'-5"	6'-2"	5'-6"	5'-0"	3'-11"	1"	7"	7"
155.0	6'-3"	6'-1"	5'-5"	4'-11"	3'-10"	1"	7"	7"
160.0	6'-2"	5'-11"	5'-4"	4'-10"	3'-10"	1"	7"	7"

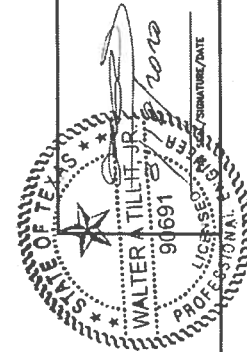
**CHART III (ONLY VALID FOR LESS THAN 1/8" SLIP)**

DESIGN LOAD (p.s.f.)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD		REQUIRED MIN. SLAT SPAN		MIN. SEPARATION TO GLASS (in)		WIND ZONE	WIND ZONE 1, 2 & 3	WIND ZONE 4
	WALL TRAPPED & BUILD-OUT MOUNT W/ (E) & (E) (SEE NOTES)	BUILD-OUT MOUNT W/ (E) MOUNT W/ (E) (SEE NOTES)	WALL TRAPPED & BUILD-OUT MOUNT W/ (E) & (E) (SEE NOTES)	MIN. SEPARATION TO GLASS (in)					
30.0	6'-0"	6'-0"	0'-0"	0'-0"	1"	1"	7"	7"	7"
35.0	5'-9"	5'-9"	0'-0"	0'-0"	1"	1"	7"	7"	7"
40.0	5'-5"	5'-5"	0'-0"	0'-0"	1"	1"	7"	7"	7"
45.0	5'-1"	5'-1"	0'-0"	0'-0"	1"	1"	7"	7"	7"
50.0	4'-10"	4'-10"	0'-0"	0'-0"	1"	1"	7"	7"	7"
55.0	4'-7"	4'-7"	0'-0"	0'-0"	1"	1"	7"	7"	7"
60.0	4'-5"	4'-5"	0'-0"	0'-0"	1"	1"	7"	7"	7"
65.0	4'-3"	4'-3"	0'-0"	0'-0"	1"	1"	7"	7"	7"
70.0	4'-1"	4'-1"	0'-0"	0'-0"	1"	1"	7"	7"	7"
75.0	3'-11"	3'-11"	0'-0"	0'-0"	1"	1"	7"	7"	7"
80.0	3'-8"	3'-8"	0'-0"	0'-0"	1"	1"	7"	7"	7"
85.0	3'-7"	3'-7"	0'-0"	0'-0"	1"	1"	7"	7"	7"
90.0	3'-6"	3'-6"	0'-0"	0'-0"	1"	1"	7"	7"	7"
95.0	3'-5"	3'-5"	0'-0"	0'-0"	1"	1"	7"	7"	7"
100.0	3'-5"	3'-5"	0'-0"	0'-0"	1"	1"	7"	7"	7"
105.0	3'-4"	3'-4"	0'-0"	0'-0"	1"	1"	7"	7"	7"
110.0	3'-3"	3'-3"	0'-0"	0'-0"	1"	1"	7"	7"	7"
115.0	3'-2"	3'-2"	0'-0"	0'-0"	1"	1"	7"	7"	7"
120.0	3'-1"	3'-1"	0'-0"	0'-0"	1"	1"	7"	7"	7"
125.0	3'-1"	3'-1"	0'-0"	0'-0"	1"	1"	7"	7"	7"
130.0	3'-0"	3'-0"	0'-0"	0'-0"	1"	1"	7"	7"	7"
135.0	2'-11"	2'-11"	0'-0"	0'-0"	1"	1"	7"	7"	7"
140.0	2'-11"	2'-11"	0'-0"	0'-0"	1"	1"	7"	7"	7"
145.0	2'-10"	2'-10"	0'-0"	0'-0"	1"	1"	7"	7"	7"
150.0	2'-9"	2'-9"	0'-0"	0'-0"	1"	1"	7"	7"	7"
155.0	2'-8"	2'-8"	0'-0"	0'-0"	1"	1"	7"	7"	7"
160.0	2'-8"	2'-8"	0'-0"	0'-0"	1"	1"	7"	7"	7"

\* NOTES:  
 1. ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 11 INDICATE THAT A SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND DESIGN LOAD.

2. REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH 5/16" ITW BUILDEX TAPCON XL INTO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK OR 1/4" TEK SCREWS AT MULLIONS CONNECTION VALID FOR WALL MOUNTED, INSIDE MOUNTED, AND BUILD-OUT MOUNTED.

3. MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.



WALTER A. TILLITT JR. P.E.  
 PROFESSIONAL ENGINEER  
 604 W. WILSON ST. SUITE 300  
 WEAVER CAROLAS P., TX 76168  
 PHONE: (262) 971-1330  
 FAX: (262) 971-1331  
 TEXAS LIC. # 90691  
 FIRM REGISTRATION # F-13780

**TEXAS DEPARTMENT OF INSURANCE - 2018**

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

**ROLLAC SHUTTER OF TEXAS, INC.**

5532 ORANGE STREET  
 HOUSTON, TEXAS 77056  
 PH: (281) 485-1811, FAX: (281) 485-0839

DATE: 3/18/2020  
 DRAWN BY: M.P.  
 SHEET 10 OF 18

**MAX. ANCHOR'S SPACING SCHEDULE IV FOR A GIVEN PRODUCT MOUNTING TYPE W/  $\phi$  5/16" ITW BUILDEX  
TAPCON XL ANCHORS TO POURED CONCRETE WALL OR GROUT FILLED CELL CONCRETE BLOCK WALL, DESIGN LOAD & SLAT SPAN RANGE**

**WALL MOUNT**

DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	< 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 12'	> 12' to 16'	> 16' to 18'-8"		
≤ 30.0	6.0"	6.0"	6.0"	8"	8"	7"	4 1/2"	4"		
>31-40	6.0"	6.0"	6.0"	8"	8"	5"	4"	3 3/4"		
>41-60	6.0"	6.0"	6.0"	8"	5 1/2"	4"	4"	—		
>61-80	6.0"	6.0"	6.0"	6"	4"	3 3/4"	—	—		
>81-105	6.0"	6.0"	6.0"	4 1/2"	3 3/4"	3 3/4"	—	—		
>106-120	6.0"	6.0"	5 1/2"	4"	3 3/4"	—	—	—		
>121-140	6.0"	6.0"	4 1/2"	3 3/4"	3 3/4"	—	—	—		
>141-160	6.0"	6.0"	4"	3 3/4"	3 3/4"	—	—	—		

**4" x 2" OR 4" x 1" BUILD-OUT MOUNT**

DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	< 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 12'	> 12' to 16'	> 16' to 18'-8"		
≤ 30.0	6"	6"	6"	8"	8"	7"	4"	5	3 3/4"	3 3/4"
>31-40	6"	6"	6"	8"	8"	5"	3 3/4"	3 3/4"	3 3/4"	—
>41-60	6"	6"	6"	6"	5"	3 3/4"	4"	3 3/4"	3 3/4"	—
>61-80	6"	6"	6"	5 1/2"	5 3/4"	4 1/2"	3 3/4"	—	—	—
>81-105	6"	6"	6"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	—	—	—
>106-120	6"	6"	6"	3 3/4"	3 3/4"	—	—	—	—	—
>121-140	6"	6"	6"	3 3/4"	3 3/4"	—	—	—	—	—
>141-160	6"	6"	6"	3 3/4"	3 3/4"	—	—	—	—	—

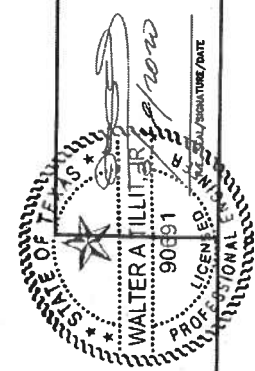
**TRAPPED MOUNT**

DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	< 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 9'	> 9' to 12'	> 12' to 16'	> 16' to 18'-8"		
≤ 30.0	6"	6"	6"	8"	8"	6 1/2"	4 1/2"	4"		
>31-40	6"	6"	6"	8"	7 1/2"	5"	4"	4"		
>41-60	6"	6"	6"	6"	5 1/2"	3 3/4"	3 3/4"	—		
>61-80	6"	6"	6"	6"	5 1/2"	4"	—	—		
>81-105	6"	6"	6"	6"	4"	3 3/4"	—	—		
>106-120	6"	6"	5 1/2"	4"	3 3/4"	—	—	—		
>121-140	6"	6"	1/2"	3 3/4"	3 3/4"	—	—	—		
>141-160	6"	6"	4"	3 3/4"	—	—	—	—		



**SLAT SPAN DEFINITION**

**NOTE:**  
MAX. SPAN FOR SLAT FOR A GIVEN DESIGN LOAD SHALL NEVER EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 10.



**WALTER A. TILLIT JR., P.E.**  
PROFESSIONAL ENGINEER  
6325 N.W. 30th St., Ste. 306  
Mesa, Arizona 85207  
PH: (480) 971-1533  
FAX: (480) 971-1533  
TEXAS LIC. # 90691  
FROM REGISTRATION # F-15790

**TEXAS DEPARTMENT OF INSURANCE -- 2018**

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

**ROLLAC SHUTTER OF TEXAS, INC.**  
6331 ORANGE STREET  
PEARLAND, TX, 77581  
PH: (281) 465-1911, FAX: (281) 465-0839

REV #	DESCRIPTION	DATE	BY	CHK
1	OLD 09-005	3-10-2017	3	—
2	—	—	4	—

M.P. DRAWN BY: 3/16/2020 DATE: 20-044 DRAWING NO: SHEET 11 OF 18

**SCHEDULE V:**

**V<sub>x</sub> FORCES (lb/ft) & V<sub>y</sub> FORCES (lb/ft) ACTING AT JAMBS FOR A DESIGN LOAD RANGE SLAT SPAN RANGE FOR POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK WALL BUILDINGS \***

(USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD)

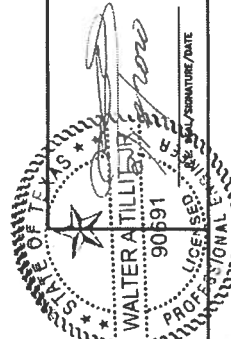
DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE															
	0' to 4'		>4' to 5'		> 5' to 6'		> 6' to 7'		> 7' to 9'		> 9' to 12'		> 12' to 16'		>16' to 19'-8'	
	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>
≤ 30.0	10	60	10	75	191	90	141	105	528	135	979	180	1523	240	2011	295
>31-40	10	80	10	100	20	120	319	140	764	180	1314	240	1994	320	2106	333
>41-60	10	120	10	150	312	180	658	210	1219	270	1955	360	2073	375	-	-
>61-80	10	153	26	197	585	240	983	280	1656	360	2094	417	-	-	-	-
>81-105	10	175	58	241	914	315	1375	368	2088	459	2088	425	-	-	-	-
>106-120	10	185	67	265	1106	360	1605	420	2061	480	-	-	-	-	-	-
>121-140	10	204	67	292	1358	420	1907	490	2036	508	-	-	-	-	-	-
>141-160	10	213	96	327	1606	480	2059	540	2055	525	-	-	-	-	-	-



**SLAT SPAN DEFINITION**

**\* NOTE:**  
 IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR PERMIT HOLDER TO VERIFY THAT EXISTING STRUCTURE IS DESIGNED TO SUPPORT V<sub>x</sub> AND V<sub>y</sub> FORCES IN POUNDS PER UNIT FOOT OF SHUTTER HEIGHT AT BOTH JAMBS. SEE THIS SHEET FOR V<sub>x</sub> & V<sub>y</sub> VALUES.

SIDE RAIL  
 (B1), (B2), (B3) or (B4)



**WALTER A. TILLIT JR. P.E.**  
 PROFESSIONAL ENGINEER  
 6000 N.W. 30th St., Ste. 300  
 Viera, Florida, FL 32929  
 PHONE: (321) 291-1330  
 FAX: (321) 291-1330  
 TEXAS LIC. # 90691  
 FROM REGISTRATION # 7-13790

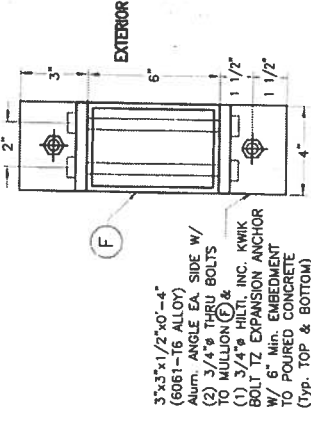
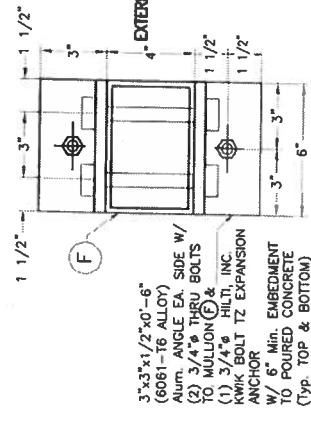
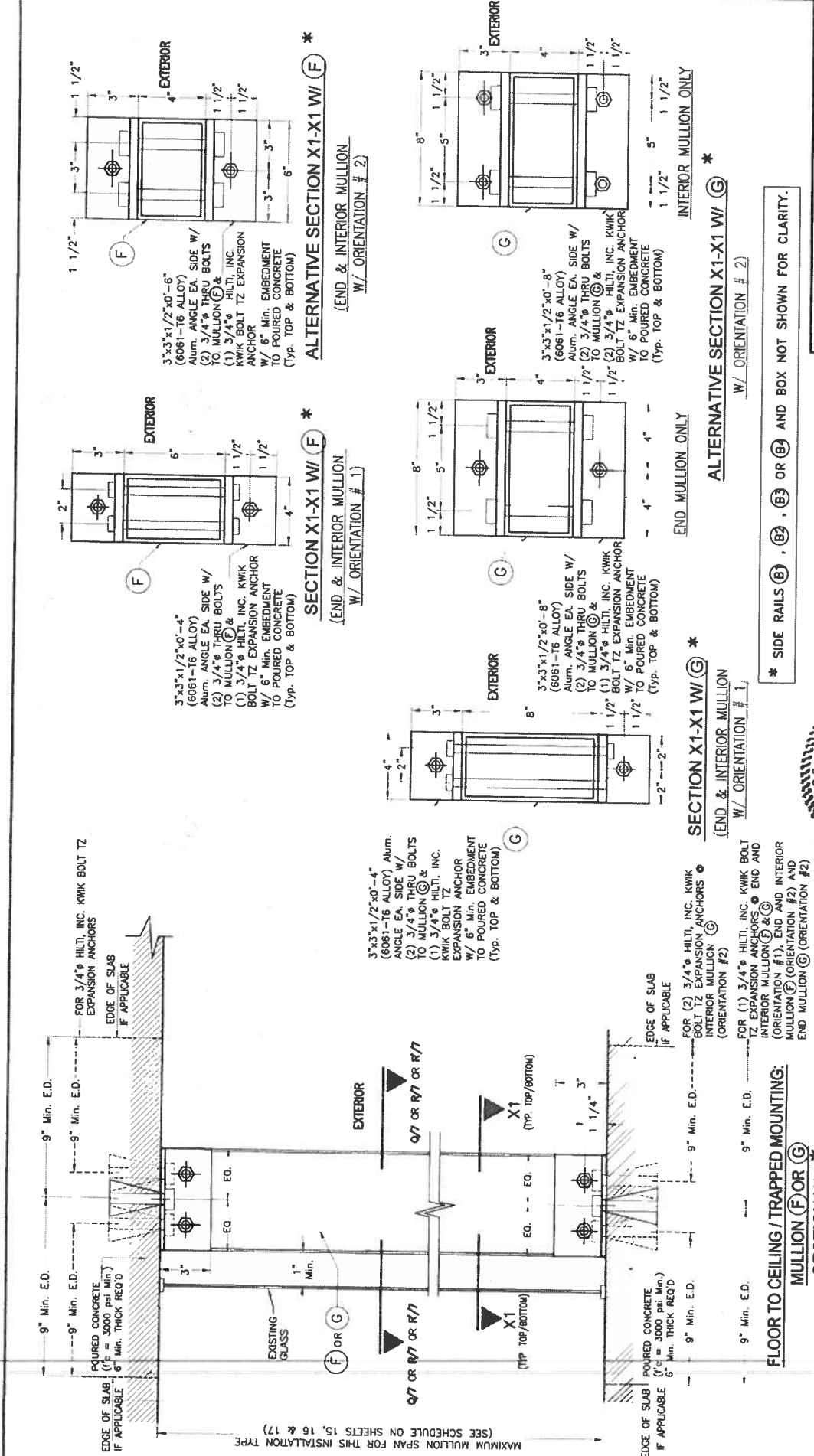
**TEXAS DEPARTMENT OF INSURANCE - 2018**

ROLL 55-X SLAT END RETENTION  
 ROLL-UP SHUTTER

**ROLLAC SHUTTER OF TEXAS, INC.**  
 6331 ORANGE STREET  
 GARLAND, TX 75041  
 PH: (972) 428-1911 FAX: (972) 484-0039

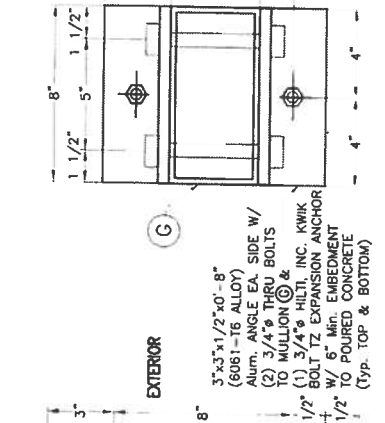
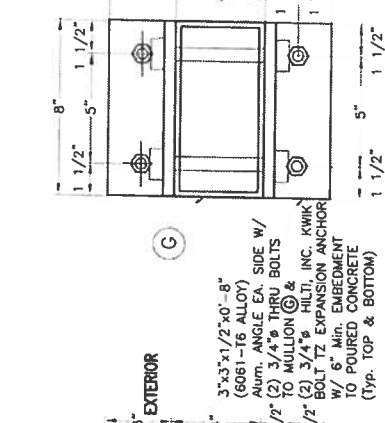
REV'S	DESCRIPTION	DATE	BY	CHK'D
1	OLD 09-005	3-10-2003		
2				
3				

M.P. DRAWN BY: 3/18/2020 DATE: 20-044 DRAWING NO. SHEET 12 OF 19



**ALTERNATIVE SECTION X1-X1 W/F (F)**  
 (END & INTERIOR MULLION)  
 W/ ORIENTATION # 2

**ALTERNATIVE SECTION X1-X1 W/G (G)**  
 (END & INTERIOR MULLION)  
 W/ ORIENTATION # 2



**SECTION X1-X1 W/F (F)**  
 (END & INTERIOR MULLION)  
 W/ ORIENTATION # 1

**SECTION X1-X1 W/G (G)**  
 (END & INTERIOR MULLION)  
 W/ ORIENTATION # 1

\* SIDE RAILS (B), (B2), (B3) OR (B4) AND BOX NOT SHOWN FOR CLARITY.



**WALTER A. TILLIT JR. P.E.**  
 PROFESSIONAL ENGINEER  
 626 W. 30th St., Ste. 300  
 Irving, TX 75039  
 PHONE: (214) 871-1530  
 FAX: (214) 871-1530  
 TEXAS LIC. # 90691  
 FIRM REGISTRATION # F-13790

**TEXAS DEPARTMENT OF INSURANCE - 2018**  
 RLL 55-X SLAT END RETENTION  
 ROLL-UP SHUTTER  
**ROLLAC SHUTTER OF TEXAS, INC.**  
 5331 ORANGE STREET  
 FEARLAND, TX 77841  
 PH: (811) 465-1911, FAX: (811) 465-0639

M.P. DOWN BY  
 DATE  
 3/16/2020  
 20-044  
 DRAWING IN  
 SHEET 13 OF 19

**END & INTERIOR TRAPPED MOUNTING MULLION INSTALLATION**

SCALE: 3/16" = 1"

**MULLION (F) OR (G)**  
**SECTION W-1 \***  
 FLOOR TO CEILING / TRAPPED MOUNTING:

(SEE SCHEDULE ON SHEETS 15, 16 & 17)



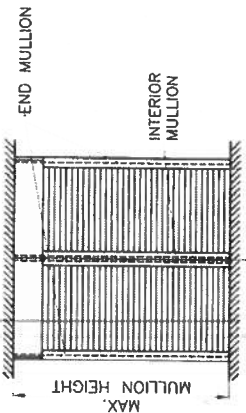
**SCHEDULE 1a**

**FLOOR TO CEILING (TRAPPED) MOUNTING**

**MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A MAX. MULLION SPACING (ft.) \***

**VALID ONLY FOR INSTALLATIONS INTO CONCRETE**

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (ft.)													
	(F) 4"x6"x1/4" MULLION					(G) 4"x8"x1/4" MULLION								
	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR				
30.0	9'-9"	6'-2"	12'-0"	8'-1"	10'-7"	7'-11"	12'-0"	9'-9"	6'-2"	12'-0"	8'-1"	10'-7"	7'-11"	12'-0"
35.0	9'-7"	6'-1"	11'-9"	7'-10"	10'-4"	6'-11"	12'-0"	9'-7"	6'-1"	11'-9"	7'-10"	10'-4"	6'-11"	12'-0"
40.0	9'-5"	6'-1"	11'-7"	7'-10"	10'-2"	6'-11"	12'-0"	9'-5"	6'-1"	11'-7"	7'-10"	10'-2"	6'-11"	12'-0"
45.0	9'-3"	6'-1"	11'-6"	7'-9"	10'-1"	6'-11"	12'-0"	9'-3"	6'-1"	11'-6"	7'-9"	10'-1"	6'-11"	12'-0"
50.0	9'-2"	6'-0"	11'-4"	7'-9"	10'-0"	6'-11"	12'-0"	9'-2"	6'-0"	11'-4"	7'-9"	10'-0"	6'-11"	12'-0"
55.0	9'-1"	6'-0"	11'-3"	7'-9"	9'-11"	6'-11"	12'-0"	9'-1"	6'-0"	11'-3"	7'-9"	9'-11"	6'-11"	12'-0"
60.0	9'-0"	6'-0"	11'-2"	7'-9"	9'-10"	6'-11"	12'-0"	9'-0"	6'-0"	11'-2"	7'-9"	9'-10"	6'-11"	12'-0"
65.0	8'-11"	6'-0"	11'-1"	7'-9"	9'-8"	6'-11"	12'-0"	8'-11"	6'-0"	11'-1"	7'-9"	9'-8"	6'-11"	12'-0"
70.0	8'-10"	6'-0"	10'-11"	7'-8"	9'-7"	6'-10"	12'-0"	8'-10"	6'-0"	10'-11"	7'-8"	9'-7"	6'-10"	12'-0"
75.0	8'-9"	6'-0"	10'-10"	7'-8"	9'-6"	6'-10"	12'-0"	8'-9"	6'-0"	10'-10"	7'-8"	9'-6"	6'-10"	12'-0"
80.0	8'-9"	6'-0"	10'-9"	7'-8"	9'-6"	6'-10"	12'-0"	8'-9"	6'-0"	10'-9"	7'-8"	9'-6"	6'-10"	12'-0"
85.0	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"
90.0	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"
95.0	8'-7"	6'-0"	10'-7"	7'-8"	9'-4"	6'-10"	12'-0"	8'-7"	6'-0"	10'-7"	7'-8"	9'-4"	6'-10"	12'-0"
100.0	8'-6"	6'-0"	10'-7"	7'-8"	9'-3"	6'-11"	12'-0"	8'-6"	6'-0"	10'-7"	7'-8"	9'-3"	6'-11"	12'-0"
105.0	8'-5"	5'-11"	10'-5"	7'-7"	9'-2"	6'-10"	12'-0"	8'-5"	5'-11"	10'-5"	7'-7"	9'-2"	6'-10"	12'-0"
110.0	8'-5"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"	8'-5"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"
115.0	8'-4"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"	8'-4"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"
120.0	8'-4"	5'-11"	10'-3"	7'-7"	9'-0"	6'-10"	12'-0"	8'-4"	5'-11"	10'-3"	7'-7"	9'-0"	6'-10"	12'-0"
125.0	8'-3"	5'-11"	10'-2"	7'-7"	9'-0"	6'-10"	12'-0"	8'-3"	5'-11"	10'-2"	7'-7"	9'-0"	6'-10"	12'-0"
130.0	8'-3"	5'-11"	10'-2"	7'-7"	8'-11"	6'-10"	12'-0"	8'-3"	5'-11"	10'-2"	7'-7"	8'-11"	6'-10"	12'-0"
135.0	8'-2"	5'-11"	9'-10"	7'-6"	8'-10"	6'-9"	12'-0"	8'-2"	5'-11"	9'-10"	7'-6"	8'-10"	6'-9"	12'-0"
140.0	8'-2"	5'-11"	9'-9"	7'-6"	8'-10"	6'-9"	12'-0"	8'-2"	5'-11"	9'-9"	7'-6"	8'-10"	6'-9"	12'-0"
145.0	8'-1"	5'-11"	9'-7"	7'-6"	8'-10"	6'-10"	12'-0"	8'-1"	5'-11"	9'-7"	7'-6"	8'-10"	6'-10"	12'-0"
150.0	8'-1"	5'-11"	9'-5"	7'-6"	8'-9"	6'-10"	12'-0"	8'-1"	5'-11"	9'-5"	7'-6"	8'-9"	6'-10"	12'-0"
155.0	8'-0"	5'-11"	9'-4"	7'-6"	8'-9"	6'-10"	12'-0"	8'-0"	5'-11"	9'-4"	7'-6"	8'-9"	6'-10"	12'-0"
160.0	8'-0"	5'-11"	9'-2"	7'-6"	8'-8"	6'-9"	12'-0"	8'-0"	5'-11"	9'-2"	7'-6"	8'-8"	6'-9"	12'-0"



\* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX SPAN FOR THAT DESIGN LOAD SHALL NOT BE EXCEEDED.

‡ MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF SHUTTER.

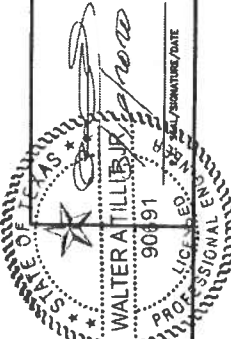
**SCHEDULE 2a**

**WALL MOUNTING**

**MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A MAX. MULLION SPACING (ft.) \***

**VALID ONLY FOR INSTALLATIONS INTO CONCRETE**

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (ft.)													
	(F) 4"x6"x1/4" MULLION					(G) 4"x8"x1/4" MULLION								
	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR				
30.0	9'-9"	6'-2"	12'-0"	8'-1"	10'-7"	7'-11"	12'-0"	9'-9"	6'-2"	12'-0"	8'-1"	10'-7"	7'-11"	12'-0"
35.0	9'-7"	6'-1"	11'-9"	7'-10"	10'-4"	6'-11"	12'-0"	9'-7"	6'-1"	11'-9"	7'-10"	10'-4"	6'-11"	12'-0"
40.0	9'-5"	6'-1"	11'-7"	7'-10"	10'-2"	6'-11"	12'-0"	9'-5"	6'-1"	11'-7"	7'-10"	10'-2"	6'-11"	12'-0"
45.0	9'-3"	6'-1"	11'-6"	7'-9"	10'-1"	6'-11"	12'-0"	9'-3"	6'-1"	11'-6"	7'-9"	10'-1"	6'-11"	12'-0"
50.0	9'-2"	6'-0"	11'-4"	7'-9"	10'-0"	6'-11"	12'-0"	9'-2"	6'-0"	11'-4"	7'-9"	10'-0"	6'-11"	12'-0"
55.0	9'-1"	6'-0"	11'-3"	7'-9"	9'-11"	6'-11"	12'-0"	9'-1"	6'-0"	11'-3"	7'-9"	9'-11"	6'-11"	12'-0"
60.0	9'-0"	6'-0"	11'-2"	7'-9"	9'-10"	6'-11"	12'-0"	9'-0"	6'-0"	11'-2"	7'-9"	9'-10"	6'-11"	12'-0"
65.0	8'-11"	6'-0"	11'-1"	7'-9"	9'-8"	6'-11"	12'-0"	8'-11"	6'-0"	11'-1"	7'-9"	9'-8"	6'-11"	12'-0"
70.0	8'-10"	6'-0"	10'-11"	7'-8"	9'-7"	6'-10"	12'-0"	8'-10"	6'-0"	10'-11"	7'-8"	9'-7"	6'-10"	12'-0"
75.0	8'-9"	6'-0"	10'-10"	7'-8"	9'-6"	6'-10"	12'-0"	8'-9"	6'-0"	10'-10"	7'-8"	9'-6"	6'-10"	12'-0"
80.0	8'-9"	6'-0"	10'-9"	7'-8"	9'-6"	6'-10"	12'-0"	8'-9"	6'-0"	10'-9"	7'-8"	9'-6"	6'-10"	12'-0"
85.0	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"
90.0	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"	8'-8"	6'-0"	10'-8"	7'-8"	9'-5"	6'-10"	12'-0"
95.0	8'-7"	6'-0"	10'-7"	7'-8"	9'-4"	6'-10"	12'-0"	8'-7"	6'-0"	10'-7"	7'-8"	9'-4"	6'-10"	12'-0"
100.0	8'-6"	6'-0"	10'-7"	7'-8"	9'-3"	6'-11"	12'-0"	8'-6"	6'-0"	10'-7"	7'-8"	9'-3"	6'-11"	12'-0"
105.0	8'-5"	5'-11"	10'-5"	7'-7"	9'-2"	6'-10"	12'-0"	8'-5"	5'-11"	10'-5"	7'-7"	9'-2"	6'-10"	12'-0"
110.0	8'-5"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"	8'-5"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"
115.0	8'-4"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"	8'-4"	5'-11"	10'-4"	7'-7"	9'-1"	6'-10"	12'-0"
120.0	8'-4"	5'-11"	10'-3"	7'-7"	9'-0"	6'-10"	12'-0"	8'-4"	5'-11"	10'-3"	7'-7"	9'-0"	6'-10"	12'-0"
125.0	8'-3"	5'-11"	10'-2"	7'-7"	9'-0"	6'-10"	12'-0"	8'-3"	5'-11"	10'-2"	7'-7"	9'-0"	6'-10"	12'-0"
130.0	8'-3"	5'-11"	10'-2"	7'-7"	8'-11"	6'-10"	12'-0"	8'-3"	5'-11"	10'-2"	7'-7"	8'-11"	6'-10"	12'-0"
135.0	8'-2"	5'-11"	9'-10"	7'-6"	8'-10"	6'-9"	12'-0"	8'-2"	5'-11"	9'-10"	7'-6"	8'-10"	6'-9"	12'-0"
140.0	8'-2"	5'-11"	9'-9"	7'-6"	8'-10"	6'-9"	12'-0"	8'-2"	5'-11"	9'-9"	7'-6"	8'-10"	6'-9"	12'-0"
145.0	8'-1"	5'-11"	9'-7"	7'-6"	8'-10"	6'-10"	12'-0"	8'-1"	5'-11"	9'-7"	7'-6"	8'-10"	6'-10"	12'-0"
150.0	8'-1"	5'-11"	9'-5"	7'-6"	8'-9"	6'-10"	12'-0"	8'-1"	5'-11"	9'-5"	7'-6"	8'-9"	6'-10"	12'-0"
155.0	8'-0"	5'-11"	9'-4"	7'-6"	8'-9"	6'-10"	12'-0"	8'-0"	5'-11"	9'-4"	7'-6"	8'-9"	6'-10"	12'-0"
160.0	8'-0"	5'-11"	9'-2"	7'-6"	8'-8"	6'-9"	12'-0"	8'-0"	5'-11"	9'-2"	7'-6"	8'-8"	6'-9"	12'-0"



**WALTER A. TILLUT JR. P.E.**  
 PROFESSIONAL ENGINEER  
 6305 A.M. JOHN ST., STE. 305  
 WEDINA OAKS, TX 75168  
 PHONE: (281) 871-1330  
 FAX: (281) 871-1331  
 TEXAS LIC. # 90491  
 FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE - 2018	
M.P.	DATE
ROLL-UP SHUTTER	3/18/2020
ROLLAC SHUTTER OF TEXAS, INC.	
DATE	DATE
20-044	20-044
DRAWING NO.	DRAWING NO.
1	1
2	2
3	3
4	4
5	5
6	6
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100	100

**SCHEDULE 1b**

**FLOOR TO CEILING (TRAPPED) MOUNTING**

**MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 12'-0" MAX. MULLION SPACING (ft.)\***

**VALID ONLY FOR INSTALLATIONS INTO CONCRETE**

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (ft.)												
	(F) 4"x6"x1/4" MULLION						(G) 4"x8"x1/4" MULLION						
	ORIENTATION #1 (↔) :		ORIENTATION #2 (⊥) :		ORIENTATION #1 (↔) :		ORIENTATION #2 (⊥) :		ORIENTATION #1 (↔) :		ORIENTATION #2 (⊥) :		
30.0	12'-0"	9'-6"	11'-6"	8'-3"	12'-0"	11'-4"	12'-0"	9'-0"	12'-0"	11'-4"	12'-0"	9'-0"	12'-0"
35.0	12'-0"	8'-10"	10'-11"	7'-10"	12'-0"	10'-5"	11'-11"	8'-6"	12'-0"	9'-9"	11'-4"	8'-6"	12'-0"
40.0	12'-0"	8'-3"	10'-5"	7'-6"	12'-0"	9'-9"	11'-4"	8'-6"	12'-0"	9'-9"	11'-4"	8'-6"	12'-0"
45.0	12'-0"	7'-9"	10'-1"	7'-2"	12'-0"	9'-3"	10'-11"	8'-1"	12'-0"	9'-3"	10'-11"	8'-1"	12'-0"
50.0	12'-0"	7'-4"	9'-8"	6'-9"	12'-0"	8'-9"	10'-7"	8'-9"	12'-0"	8'-9"	10'-7"	8'-9"	12'-0"
55.0	12'-0"	7'-0"	9'-5"	6'-6"	12'-0"	8'-4"	10'-3"	8'-4"	12'-0"	8'-4"	10'-3"	8'-4"	12'-0"
60.0	12'-0"	6'-9"	9'-2"	6'-3"	11'-4"	8'-0"	9'-11"	8'-3"	12'-0"	8'-0"	9'-11"	8'-3"	12'-0"
65.0	12'-0"	6'-6"	8'-11"	6'-0"	11'-0"	7'-8"	9'-8"	8'-0"	12'-0"	7'-8"	9'-8"	8'-0"	12'-0"

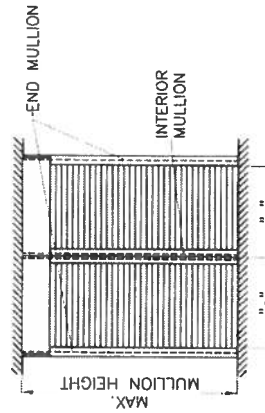
**SCHEDULE 2b**

**WALL MOUNTING**

**MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 12'-0" MAX. MULLION SPACING (ft.)\***

**VALID ONLY FOR INSTALLATIONS INTO CONCRETE**

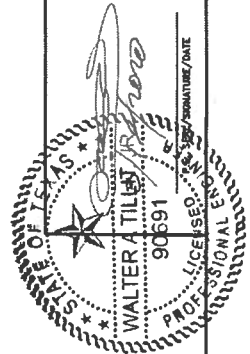
DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (ft.)												
	(F) 4"x6"x1/4" MULLION						(G) 4"x8"x1/4" MULLION						
	ORIENTATION #1 (↔) :		ORIENTATION #2 (⊥) :		ORIENTATION #1 (↔) :		ORIENTATION #2 (⊥) :		ORIENTATION #1 (↔) :		ORIENTATION #2 (⊥) :		
30.0	12'-0"	8'-3"	11'-6"	8'-3"	12'-0"	11'-4"	12'-0"	9'-0"	12'-0"	11'-4"	12'-0"	9'-0"	12'-0"
35.0	12'-0"	7'-10"	10'-11"	7'-10"	12'-0"	10'-5"	11'-11"	8'-6"	12'-0"	9'-9"	11'-4"	8'-6"	12'-0"
40.0	12'-0"	7'-6"	10'-5"	7'-6"	12'-0"	9'-9"	11'-4"	8'-6"	12'-0"	9'-9"	11'-4"	8'-6"	12'-0"
45.0	12'-0"	7'-2"	10'-1"	7'-2"	12'-0"	9'-3"	10'-11"	8'-1"	12'-0"	9'-3"	10'-11"	8'-1"	12'-0"
50.0	12'-0"	6'-9"	9'-8"	6'-9"	12'-0"	8'-9"	10'-7"	8'-9"	12'-0"	8'-9"	10'-7"	8'-9"	12'-0"
55.0	12'-0"	6'-6"	9'-5"	6'-6"	12'-0"	8'-4"	10'-3"	8'-4"	12'-0"	8'-4"	10'-3"	8'-4"	12'-0"
60.0	12'-0"	6'-3"	9'-2"	6'-3"	11'-4"	8'-0"	9'-11"	8'-3"	12'-0"	8'-0"	9'-11"	8'-3"	12'-0"
65.0	12'-0"	6'-0"	8'-11"	6'-0"	11'-0"	7'-8"	9'-8"	8'-0"	12'-0"	7'-8"	9'-8"	8'-0"	12'-0"



**MULLION SPACING: "5"**

\* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX SLAT SPAN FOR THAT DESIGN LOAD SHALL NOT BE EXCEEDED.

† MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF SHUTTER.



**WALTER A. TILLIT JR., P.E.**  
 PROFESSIONAL ENGINEER  
 5531 ORANGE STREET  
 SUITE 200, HOUSTON, TX 77056  
 PHONE: (281) 871-1530  
 FAX: (281) 871-1531  
 TEXAS LIC. # 90691  
 FIRM REGISTRATION # F-13790

<b>TEXAS DEPARTMENT OF INSURANCE - 2018</b>	
ROLL UP SHUTTER	ROLLAC SHUTTER OF TEXAS, INC.
5531 ORANGE STREET HOUSTON, TX 77056 PHONE: (281) 453-1111	5531 ORANGE STREET HOUSTON, TX 77056 PHONE: (281) 453-1111
DATE: 3/19/2020	DRAWING #: 20-044
DRAWN BY: [Blank]	SHEET 16 OF 19

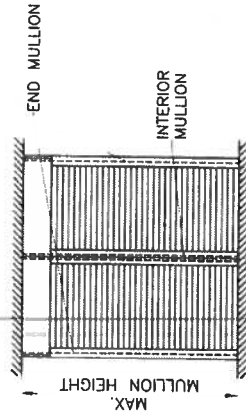


**SCHEDULE 1C**

**FLOOR TO CEILING (TRAPPED) MOUNTING**

**MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 7'-0" MAX. MULLION SPACING (ft.) \***  
**VALID ONLY FOR INSTALLATIONS INTO CONCRETE**

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (ft.)											
	(F) 4"x6"x1/4" MULLION						(G) 4"x8"x1/4" MULLION					
	ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2	
30.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
35.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
40.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
45.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
50.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
55.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
60.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
65.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
70.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
75.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
80.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
85.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
90.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
95.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
100.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
105.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
110.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
115.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
120.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
125.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
130.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
135.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
140.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
145.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
150.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	



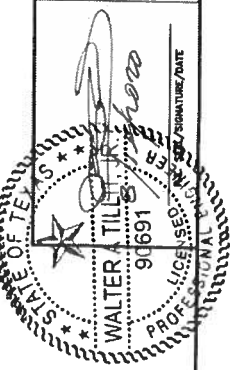
**MULLION SPACING: "S"**

\* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX SLAT SPAN FOR THAT DESIGN LOAD SHALL NOT BE EXCEEDED.  
 † MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF SHUTTER.

**SCHEDULE 2c**  
**WALL MOUNTING**

**MAX. SPAN (ft.) FOR END AND INTERIOR MULLION FOR A GIVEN DESIGN LOAD (p.s.f.) AND A 7'-0" MAX. MULLION SPACING (ft.) \***  
**VALID ONLY FOR INSTALLATIONS INTO CONCRETE**

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (ft.)											
	(F) 4"x6"x1/4" MULLION						(G) 4"x8"x1/4" MULLION					
	ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2	
30.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
35.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
40.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
45.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
50.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
55.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
60.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
65.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
70.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
75.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
80.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
85.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
90.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
95.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
100.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
105.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
110.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
115.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
120.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
125.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
130.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
135.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
140.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
145.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	
150.0	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	



**WALTER A. TILLIT JR. P.E.**  
 PROFESSIONAL ENGINEER  
 635 NW 30th St., Ste 300  
 Virginia Beach, VA 23166  
 Phone: (804) 671-1300  
 Fax: (804) 671-1301  
 TEXAS LIC. # 90691  
 FROM REGISTRATION # F-13780

**TEXAS DEPARTMENT OF INSURANCE - 2018**

**ROLL-UP SHUTTER**  
 RLL 65-X SLAT END RETENTION

**ROLLAC SHUTTER OF TEXAS, INC.**  
 5331 GRANGE STREET  
 PEARLAND, TX 77661  
 PH: (281) 465-1911, FAX: (281) 465-0839

M.P. DRAWN BY: 3/16/2020 DATE  
 20-044 DRAWING #  
 SHEET 17 OF 19

# SLAT PERFORMANCE CHARTS Ib, Iib & IIb:

FOR A GIVEN DESIGN LOAD (p.s.f.) AND SHUTTER MOUNT CONDITION PER DETAIL 1 BELOW

**CHART Ib: (ONLY VALID FOR 3/16" SLIP)**

SHEATHING & STUDS REQUIREMENTS	DESIGN PRESSURE RATING (p.s.f.)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MAX. SLAT SPAN "L <sub>MAX.</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	WIND ZONES 1-3	WIND ZONE 4
		WALL MOUNT (SEE NOTES A)		BUILD-OUT MOUNT W/ (E)					
		G-0.55	G-0.46	G-0.55	G-0.46				
1/2" PLYWOOD W/ 2"x6" STUDS	30.0	11'-11"	11'-5"	10'-3"	9'-4"	8'-4"	9 3/4"	1"	
	35.0	11'-11"	10'-5"	11'-11"	8'-7"	6'-3"			
	40.0	11'-11"	9'-7"	10'-11"	8'-0"	6'-0"			
	45.0	11'-11"	9'-7"	10'-0"	8'-0"	5'-9"			
	50.0	11'-11"	9'-7"	10'-0"	8'-0"	5'-7"			
7/16" O.S.B. W/ 2"x6" OR 2"x4" STUDS	30.0	11'-11"	11'-11"	10'-0"	9'-4"	8'-4"	8 7/8"	1"	
	35.0	10'-0"	10'-0"	10'-0"	8'-7"	6'-3"			
	40.0	10'-0"	10'-0"	9'-7"	8'-0"	6'-0"			
	45.0	10'-0"	10'-0"	9'-7"	8'-0"	5'-9"			
	50.0	10'-0"	10'-0"	9'-6"	8'-0"	5'-7"			

**CHART Iib: (ONLY VALID FOR 1/8" SLIP)**

SHEATHING & STUDS REQUIREMENTS	DESIGN PRESSURE RATING (p.s.f.)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MAX. SLAT SPAN "L <sub>MAX.</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	WIND ZONES 1-3	WIND ZONE 4
		WALL MOUNT (SEE NOTES A)		BUILD-OUT MOUNT W/ (E)					
		G-0.55	G-0.46	G-0.55	G-0.46				
1/2" PLYWOOD W/ 2"x6" STUDS	30.0	10'-8"	10'-3"	9'-4"	8'-8"	7'-8"	9 3/4"	1"	
	35.0	10'-8"	9'-5"	10'-8"	7'-10"	5'-10"			
	40.0	10'-8"	8'-8"	9'-10"	7'-4"	5'-8"			
	45.0	10'-8"	8'-8"	9'-0"	7'-4"	5'-6"			
	50.0	10'-8"	8'-8"	8'-7"	7'-4"	5'-4"			
7/16" O.S.B. W/ 2"x6" OR 2"x4" STUDS	30.0	10'-8"	10'-0"	10'-0"	9'-4"	8'-6"	8 7/8"	1"	
	35.0	10'-0"	10'-0"	10'-0"	7'-10"	6'-3"			
	40.0	10'-0"	10'-0"	9'-7"	7'-4"	6'-0"			
	45.0	10'-0"	10'-0"	9'-7"	7'-4"	5'-9"			
	50.0	10'-0"	10'-0"	9'-6"	7'-4"	5'-7"			

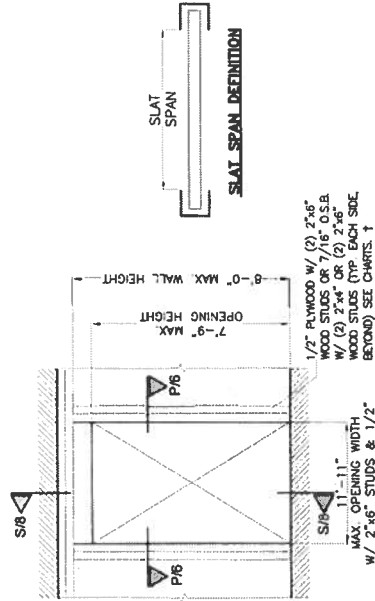
**CHART IIb: (LESS THAN 1/8" SLIP)**

SHEATHING & STUDS REQUIREMENTS	DESIGN PRESSURE RATING (p.s.f.)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MAX. SLAT SPAN "L <sub>MAX.</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	WIND ZONES 1-3	WIND ZONE 4
		WALL MOUNT (SEE NOTES A)		BUILD-OUT MOUNT W/ (E)					
		G-0.55*	G-0.46	G-0.55*	G-0.46				
1/2" PLYWOOD W/ 2"x6" STUDS	30.0	6'-0"	5'-9"	5'-5"	5'-5"	0'-0"	1"	7"	
	35.0	4'-0"	5'-9"	5'-5"	5'-5"				
	40.0	4'-0"	5'-9"	5'-5"	5'-5"				
	45.0	4'-0"	5'-9"	5'-5"	5'-5"				
	50.0	4'-0"	5'-9"	5'-5"	5'-5"				
7/16" O.S.B. W/ 2"x6" OR 2"x4" STUDS	30.0	6'-0"	5'-9"	5'-5"	5'-5"	0'-0"	1"	7"	
	35.0	4'-0"	5'-9"	5'-5"	5'-5"				
	40.0	4'-0"	5'-9"	5'-5"	5'-5"				
	45.0	4'-0"	5'-9"	5'-5"	5'-5"				
	50.0	4'-0"	5'-9"	5'-5"	5'-5"				

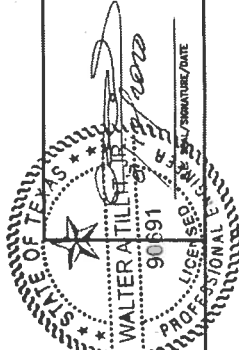
\*: G=0.55, APPLICABLE TO SOUTHERN YELLOW PINE #2 WOOD GRADE  
 G=0.46, APPLICABLE TO DOUGLAS FIR-SOUTH WOOD GRADE  
 G=0.36, APPLICABLE TO SPRUCE PINE-FIR SOUTH WOOD GRADE

**A NOTES:**

- ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 19 INDICATE THAT A SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND DESIGN LOAD.
- WOOD FRAME WALL TO BE BUILT STRICTLY IN ACCORDANCE WITH SPECS GIVEN ON DETAIL 1 AND PROVISIONS FROM CHAPTER 23 OF THE INTERNATIONAL BUILDING CODE. MIN. WALL LENGTH AT EITHER SIDE OF OPENING MUST BE 33 INCHES.
- INSTALLATIONS VALID ONLY FOR SHUTTERS WITHOUT MULLIONS.



## INSTALLATIONS INTO WOOD FRAME STRUCTURES



**TEXAS DEPARTMENT OF INSURANCE - 2018**

ROLLAC SHUTTER OF TEXAS, INC.  
 5531 ORANGE STREET  
 HOUSTON, TEXAS 77055  
 PHONE: (281) 485-1911 FAX: (281) 485-0438

WALTER A. TILIUT JR., P.E.  
 PROFESSIONAL ENGINEER  
 1000 N. GULF BLVD., SUITE 200  
 HOUSTON, TEXAS 77055  
 PHONE: (281) 971-1330  
 FAX: (281) 971-1331  
 TEXAS LIC. # 90691  
 FIRM REGISTRATION # F-13790

DATE: 3/18/2020  
 DRAWING #: 20-044  
 SHEET 16 OF 19

**MAX. ANCHOR'S SPACING SCHEDULE VI FOR A GIVEN PRODUCT MOUNTING TYPE W/  $\phi$  5/16" ELCO CONSTRUCTION PRODUCTS ULTRACON ANCHORS TO WOOD GRADE, DESIGN LOAD (psf) AND SLAT SPAN RANGE \***

**WALL MOUNT**

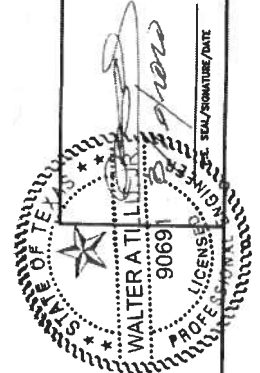
TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD  
OR 2"x4"/2"x6" WOOD STUDS WITH MINIMUM 7/16" O.S.B.  
(SEE DETAIL 1 ON SHEET 18)

BUILD-OUT MOUNT  
TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD  
OR 2"x4"/2"x6" WOOD STUDS WITH MINIMUM 7/16" O.S.B.  
(SEE DETAIL 1 ON SHEET 18)

WOOD GRADE	DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE							
		0 to 4'	> 4 to 5'	> 5 to 6'	> 6 to 7'	> 7 to 8'	> 8 to 10'	> 10 to 11.11'	
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	6"	6"	6"	6"	5"	4"	3"	-
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	3"	4"	3"	3"

WOOD GRADE	DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE							
		0 to 4'	> 4 to 5'	> 5 to 6'	> 6 to 7'	> 7 to 8'	> 8 to 10'	> 10 to 11.11'	
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	6"	6"	6"	6"	4"	3"	3"	-
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	5"	3"	3"	-

\* NOTE: MAX. SPAN FOR SLAT FOR A GIVEN DESIGN LOAD SHALL NEVER EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHARTS ON SHEET 18.



WALTER A. TILLITT JR., P.E.  
PROFESSIONAL ENGINEER  
6500 N.W. 30th St., Ste. 300  
Vero Beach, FL 32906  
PH: (888) 871-1300  
TX: (888) 871-1301  
TX REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE -- 2018

ROLLAC SHUTTER OF TEXAS, INC.  
5331 ORANGE STREET  
PEARLAND, TX 77581  
PH: (936) 485-1911 FAX: (936) 485-0838

ROLL-UP SHUTTER

DATE: 5/19/2020  
DRAWN BY: M.P.  
DATE: 20-044  
DRAWING NO.

DATE: 19-2000  
DATE: 19-2000  
DATE: 19-2000

SHEET 13 OF 19

