

GENERAL NOTES: (SEE INDEX OF SHEETS ON SHEET 2)

1. BERTHA ROLL-UP HURRICANE SHUTTER SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2017 (6th EDITION) OF THE FLORIDA BUILDING CODE. THIS PRODUCT MAY BE INSTALLED AT ZONES OUT OF THE HIGH VELOCITY HURRICANE ZONES.
- DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE ABOVE MENTIONED CODE. USING ASCE 7-10 AND SHALL NOT EXCEED THE MAXIMUM (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 7, 17 THRU 29.
- 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 COMPARE THESE W/ MAX. (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 7, 17 THRU 29.
- 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. 2015.
- BERTHA ROLL-UP HURRICANE SHUTTER'S ADEQUACY FOR IMPACT (BASIC PROTECTION, LEVEL D MISSILE) AND FATIGUE RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE ABOVE MENTIONED CODE AS PER:
- AMERICAN TESTING LAB OF SOUTH FLORIDA REPORTS # 0730.01-13 WITH ADDENDUM #1, DATED 8/5/14 , 0404.01-08, 0612.01-14, 0530.01-14 WITH ADDENDUM #1, DATED 10/12/14, 0917.01-14 & 1211.01-14.
2. ALL ALUMINUM EXTRUSIONS SHALL BE ALUMINUM ASSOCIATION 6063-T6 ALLOY & TEMPER (UNLESS OTHERWISE NOTED).
3. ALL SELF DRILL SCREWS (EXCEPT COMPONENT ①) TO BE CORROSION RESISTANT STEEL AS PER DIN 50018 AND SHALL COMPLY W/ FLORIDA BUILDING CODE SECTION 2411.3.3.4. TEK SCREWS SHALL BE AS MANUFACTURED BY ITW/BUILDEX. ALL SCREWS SHALL BE HEX HD HWH.
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 ⑤ & ⑥ SIDE RAILS SHALL BE AS FOLLOWS: SEE NOTE 8 FOR SUBSTRATE LIMITATIONS.

END RETENTION SYSTEM : SLATS ① & ③

SUBSTRATE: POURED CONCRETE									
ANCHOR TYPE & MANUFACTURER									
3/8" Ø WEDGE BOLT/ POWER FASTENERS, INC.		5/16" Ø TAPCON XL/ ITW/BUILDEX		5/16" Ø TAPPER+XTREME/ POWER FASTENERS, INC. *		5/16" Ø ULTRACON/ ELCO CONST. PRODUCTS *			
MIN. E.D.	MIN. EMBED.	MIN. f'c	MIN. E.D.	MIN. EMBED.	MIN. f'c	MIN. E.D.	MIN. EMBED.	MIN. f'c	MIN. EMBED.
4 1/2"	3 1/2"	3 ksi	2 1/2"	2 1/4"	3 ksi	3 5/16"	2 1/2"	3 ksi	3 1/8"
* THIS ANCHOR SHALL NOT BE USED W/ SLAT ③									
SUBSTRATE: WOOD (G=0.46)									
ANCHOR TYPE & MANUFACTURER									
		1/4" Ø MAXI SET/ ITW/BUILDEX		MIN. E.D.		MIN. EMBED.			
						2 1/4"			

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

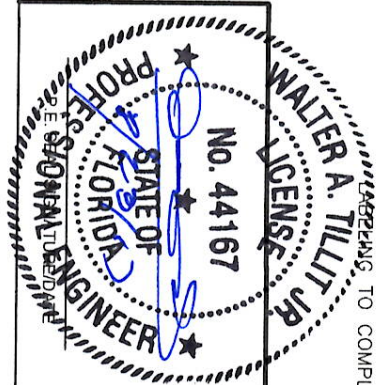
ANCHORS NOTES:

- (1) NO EMBEDMENT INTO FINISH MATERIAL SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
- (2) EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.
- (3) ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.
6. ANCHORS REQUIRED FOR MULLION CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 12 THRU 15.
- KWIK BOLT TZ EXPANSION ANCHOR MANUFACTURED BY HILTI, INC.
- KWIK HUS-H SCREW ANCHOR MANUFACTURED BY HILTI, INC.
- WEDGE-BOLT ANCHOR MANUFACTURED BY POWER FASTENERS, 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 @ 100%	
			CONCRETE	CONCRETE BLOCK
3/4" Ø KWIK BOLT TZ	27"	9"	4 3/4" (3000 psi)	NOT ALLOWED
1/2" Ø KWIK BOLT TZ	22 1/2"	7 1/2"	3 1/4" (3000 psi)	NOT ALLOWED
3/8" Ø KWIK BOLT TZ	6"	4 3/8"	2" (3000 psi)	NOT ALLOWED
3/8" Ø KWIK HUS-H SCREW	4"	5"	2" (3000 psi)	NOT ALLOWED
3/8" Ø WEDGE-BOLT	4 1/2"	4 1/2"	2 1/2" (3000 psi)	NOT ALLOWED
1/2" Ø KWIK HUS-H SCREW OR WEDGE BOLT	6"	6"	3" (3000 psi)	NOT ALLOWED
5/8" Ø KWIK HUS-H SCREW	7 1/2"	7 1/2"	2 1/2" (3000 psi)	NOT ALLOWED

7. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL PRODUCT COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL PRODUCT TRACKS ALL AROUND FULL LENGTH.
8. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE PRODUCT IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. THIS PRODUCT SHALL ONLY BE ATTACHED TO CONCRETE, GROUT FILLED CELL CONCRETE BLOCK OR WOOD FRAME BUILDINGS. SEE SHEETS 7 THRU 15 FOR LIMITATIONS FOR SUBSTRATE.
9. PRODUCTS INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.
10. PRODUCT LIFTING MECHANISM NOT PART OF THIS APPROVAL.
11. (a) THIS P.E.D. PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; i.e. WHERE THE SITE CONDITIONS DEViate FROM THE P.E.D.
- (b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS 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) ORIGINAL P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.
12. SHUTTER MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT PRODUCT IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. ATTACHING TO COMPLY WITH SECTION 1709.9.2 OF THE FLORIDA BUILDING CODE.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



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EB-0006719
WALTER A. TILIT Jr., P.E.
FLORIDA Lic. # 44167

**40mm ER SLAT BERTHA ROLL-UP
HURRICANE SHUTTER**

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

L.C.
DRAWN BY:

08/18/17
DATE

4268 WESTROADS DRIVE
WEST PALM BEACH, FL 33407
PHONE: (877)999-2772 FAX: (561)209-8380

17-226
DRAWING No

REV. No

DESCRIPTION

DATE

REV. No

DESCRIPTION

DATE

1

QID 15-000

08/18/17

3

2

4

SHEET

1

OF 29

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NO. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
P.E. *Walter A. Tiltit*

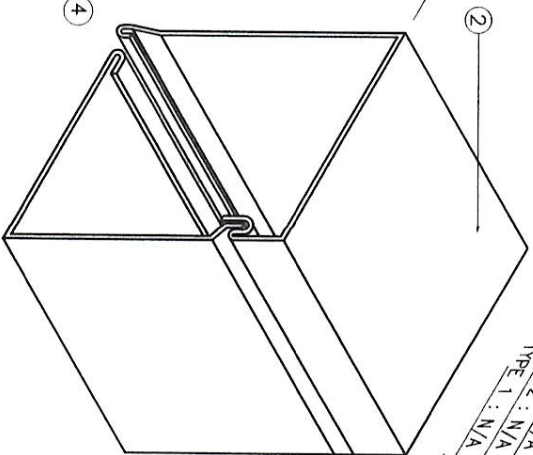
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FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER				L.C. DRAWN BY:
AMERICAN SHUTTER SYSTEMS ASSOC., INC.				08/18/11 DATE
4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8380				17-226 DRAWING No
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION
1	QUD 15-090	08/18/11	3	
2			4	

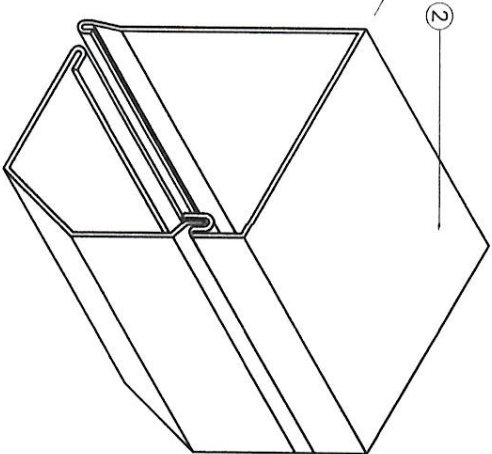
SHEET 2 OF 29

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

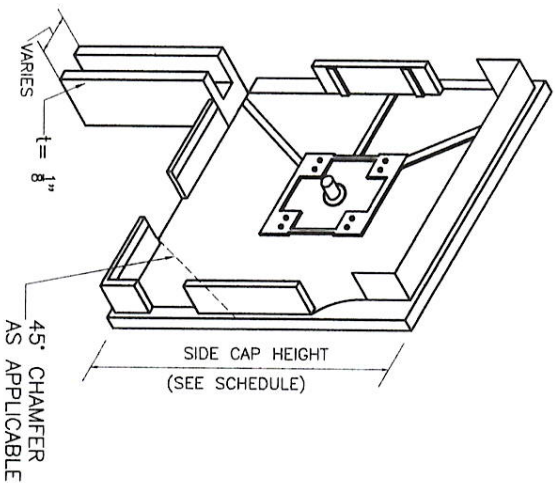
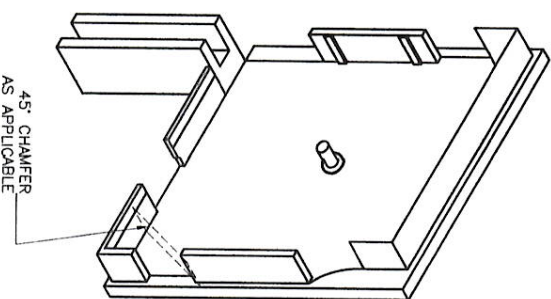


90 HOUSING

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



45 & 45/S
HOUSINGS



1 END CAPS:

STRUCTURAL COMPONENTS FOR OPERATING SYSTEM

- 1 - SIDE/END CAP (CAST ALUMINUM) *
- 2 - HOUSING, 0.040" THICK SHEET METAL (3105-H14 OR STRONGER)
- 3 - SIDE RAIL

FASTENERS

- 4 - 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 NOTES 10/1 & 11(b)/1)

BOX STRUCTURAL COMPONENTS AND ASSEMBLY DETAIL

(SEE NOTES 10 & 11(b) ON SHEET 1)

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L.C.

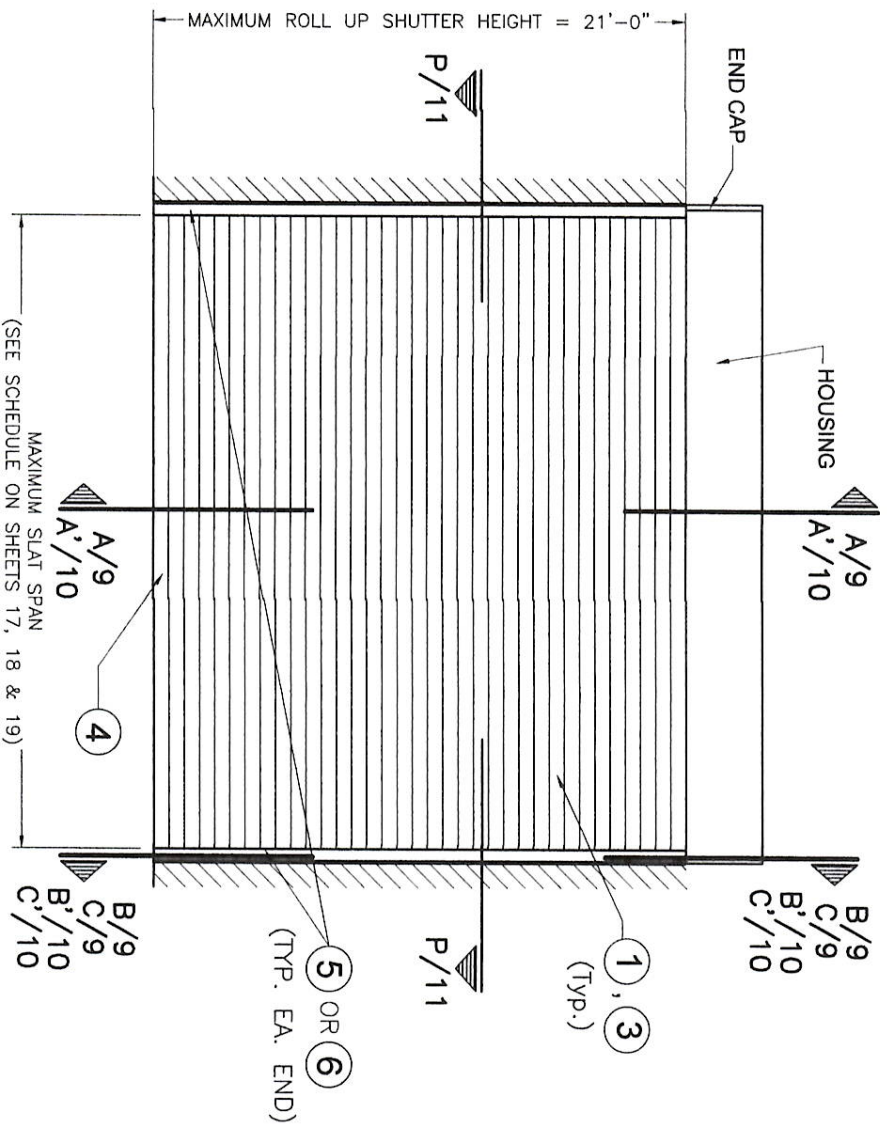
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DATE

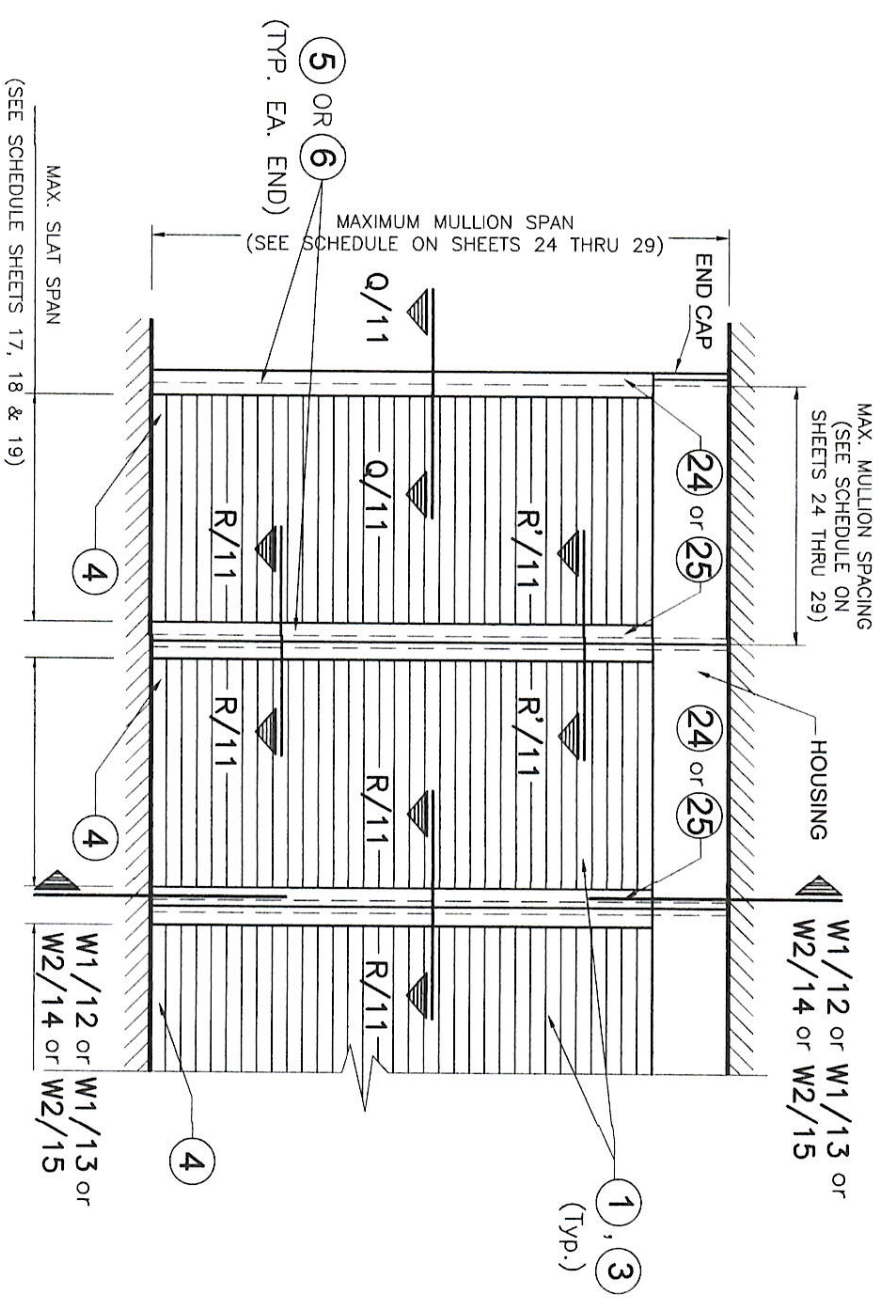
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DRAWING No

SHEET 4 OF 29

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1	OLD 15-090	08/18/17	3		
2			4		



TYPICAL SINGLE UNIT ELEVATION W/O MULLIONS
NOTE: SEE SHEETS 3 & 4 FOR COMPONENTS NOMENCLATURE.



TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION W/ MULLIONS
NOTE: SEE SHEET 3 & 4 FOR COMPONENTS NOMENCLATURE.

END RETENTION SYSTEM

INSTALLATION INTO CONCRETE/GROUTED CONCRETE BLOCK BUILDINGS

WALTER A. TILLIT JR.
LICENSE
NO. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
P.E. SIGNATURE/DRAWN

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L.C.
DRAWN BY:
08/18/17
DATE
17-226
DRAWING No
SHEET 5 OF 29

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 15-050	08/18/17	3		
2			4		

V_x FORCES (Lb/FT) & V_y FORCES (Lb/FT) ACTING AT JAMBS FOR AN A.S.D. DESIGN LOAD RANGE,
SLAT SPAN RANGE FOR POURED CONCRETE OR GROUTED CONCRETE BLOCK WALL BUILDINGS

APPLICABLE TO INSTALLATIONS W/ SLATS ① & ③*

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

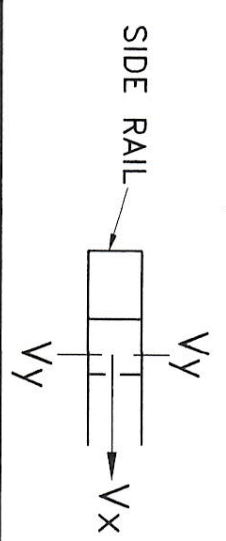
SLAT TYPE ①

A.S.D. DESIGN PRESSURE RATING (p.s.f.)	SLAT SPAN RANGE													
	0'-4'		> 4'-5'		> 5'-6'		> 6'-7'		> 7'-9'		> 9'-12'		> 12'-16'	
	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy
≤ 30.0	1164	60	1164	75	1164	90	1164	105	1164	135	1164	180	1164	240
>30-40	1524	80	1524	100	1524	120	1524	140	1524	180	1524	240	1524	320
>40-60	1909	120	1909	150	1909	180	1909	210	1909	270	1909	360	1909	429
>60-80	1972	160	1972	200	1972	240	1972	280	1972	360	1972	480	-	-
>80-105	1634	210	1634	263	1634	315	1634	368	1634	460	-	-	-	-
>105-120	1248	240	1248	300	1248	360	1248	410	-	-	-	-	-	-

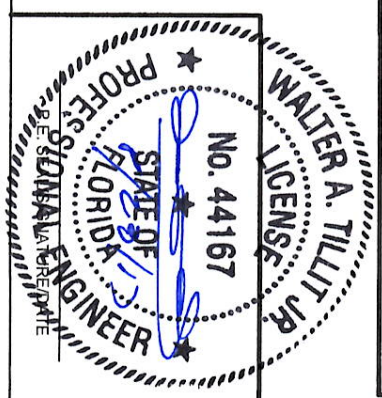
SLAT TYPE ③

A.S.D. DESIGN PRESSURE RATING (p.s.f.)	SLAT SPAN RANGE											
	0'-4'		> 4'-5'		> 5'-6'		> 6'-7'		>7'-(8'-4")			
	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy	Vx	Vy
≤ 30.0	434	125	434	125	434	125	434	125	434	125	434	125
>30-40	587	167	587	167	587	167	587	167	587	167	587	167
>40-60	883	250	883	250	883	250	883	250	883	250	883	250
>60-80	860	273	860	273	860	273	860	273	860	273	-	-

* NOTE:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR PERMIT HOLDER TO VERIFY THAT EXISTING STRUCTURE IS DESIGNED TO SUPPORT V_x AND V_y FORCES IN POUNDS PER UNIT FOOT OF PRODUCT HEIGHT AT BOTH JAMBS. SEE THIS SHEET FOR V_x & V_y VALUES.



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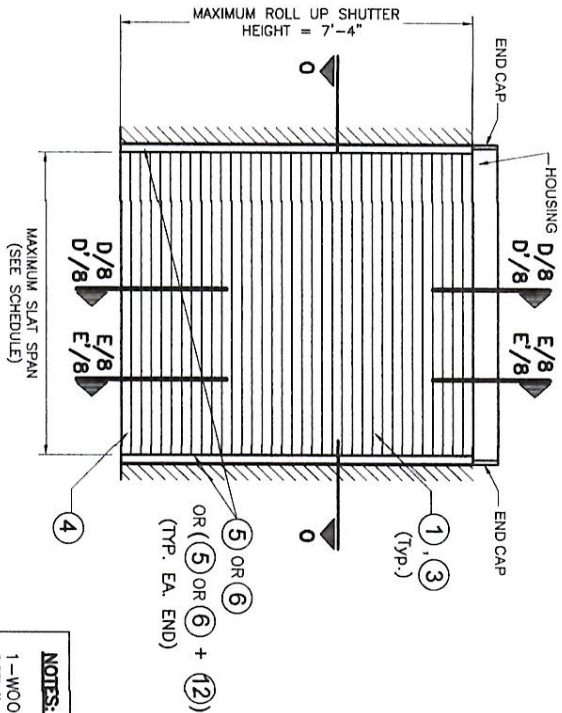
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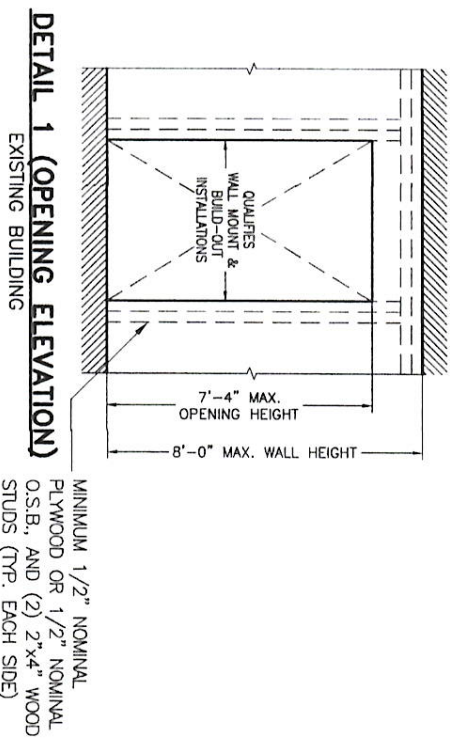
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						08/18/17	
						DATE	
						17-226	
						DRAWING No	
						SHEET 6 OF 29	



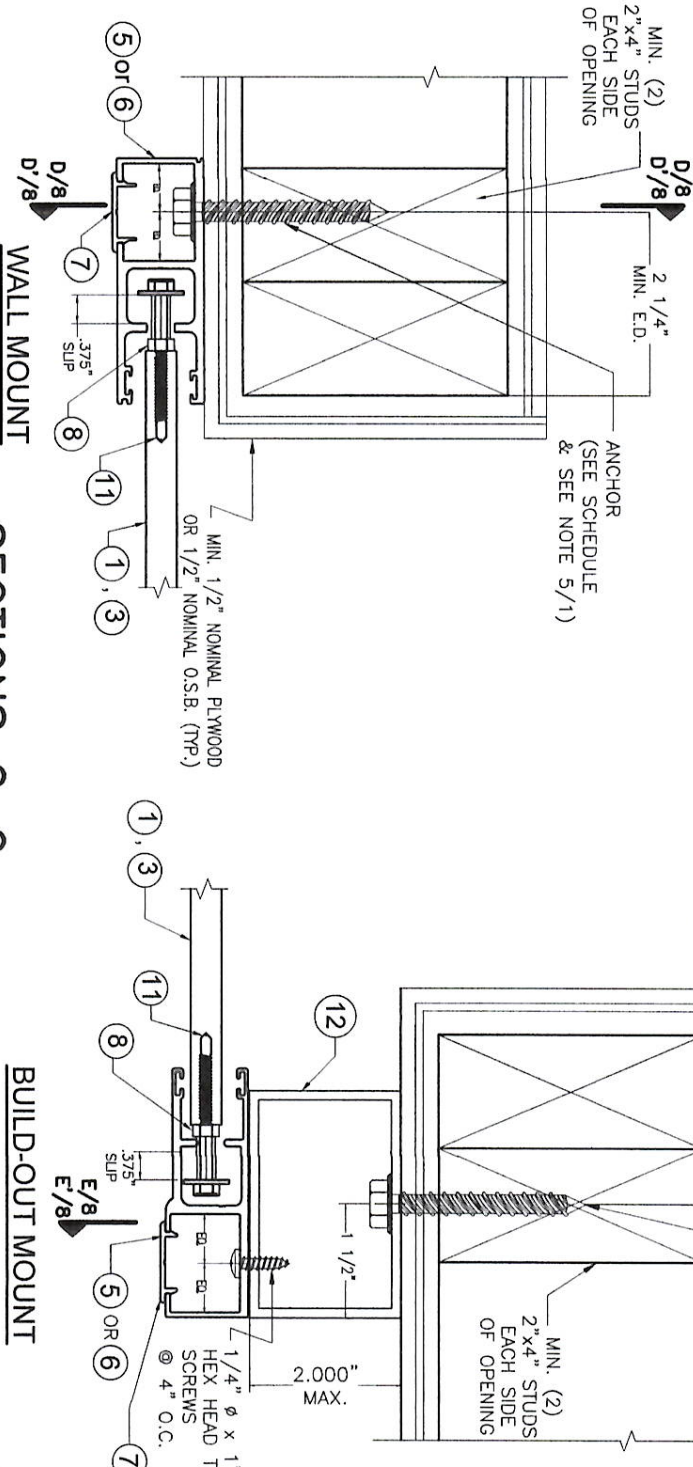
TYPICAL SINGLE UNIT ELEVATION W/O MULLIONS

NOTE: SEE SHEETS 3 & 4 FOR COMPONENTS
NOMENCLATURE.



NOTES: FOR DETAIL 1

- 1-WOOD FRAME WALL TO BE STRICTLY BUILT IN ACCORDANCE WITH SPECS GIVEN ON DETAIL 1 AND PROVISIONS FROM CHAPTER 23 OF THE FLORIDA BUILDING CODE. MINIMUM LENGTH OF WALL AT EITHER SIDE OF OPENING SHALL BE 33".
- 2-VALID ONLY FOR INSTALLATIONS INTO WOOD STUDS W/ (G=0.46 MIN.) STRUCTURES.



SECTIONS 0-0

N.T.S.

END RETENTION SYSTEM

INSTALLATION INTO WOOD FRAME STRUCTURES

(SEE DETAIL 1)

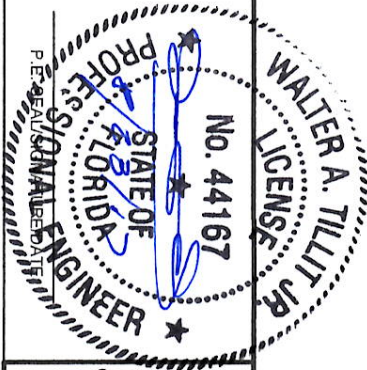
SLAT PERFORMANCE CHART IN WOOD

FOR A GIVEN MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER TYPICAL ELEVATION

MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT ① SPAN "L _{MAX.} " (ft)		REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	MAX. SLAT ③ SPAN "L _{MAX.} " (ft)		REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)
	SLAT ①			SLAT ③		
	WALL MOUNT	BUILD-OUT MOUNT w/ ②		WALL MOUNT	BUILD-OUT MOUNT w/ ②a	
±30.0	12'-0"	12'-0"	8 1/2" *	8'-4"	8'-4"	7 1/8" *
±40.0	10'-0"	10'-0"	8 1/2" *	8'-4"	8'-4"	7 1/8" *
±45.0	9'-0"	9'-0"	8 1/2" *	8'-4"	8'-4"	7 1/8" *
±55.0	8'-0"	8'-0"	7 1/8" *	8'-4"	8'-4"	7 1/8" *

* ONLY REQUIRED FOR WIND ZONE 4. USE 1" FOR WIND ZONES 1, 2 & 3.

1/4" Ø MAXI SET ANCHORS			
MAX. ANCHORS SPACING SCHEDULE SLATS ① & ③			
MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	SIDE RAILS ⑤ & ⑥		
	WALL MOUNT	BUILD-OUT MOUNT	
		W/ 2" B.O. ②	
± 30.0 psf	4"	4"	
>± 30.0 TO ±55.0	4"	4"	



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TILIT TESTING & ENGINEERING COMPANY

6355 N.W. 36th St., Ste. 305 - VIRGINIA GARDENS, FL 33166

Phone : (305) 871-1530, Fax : (305) 871-1531

e-mail: tiliteco@tiliteco.com

EB-0006719

WALTER A. TILIT Jr., P.E.

FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

4288 WESTROADS DRIVE
WEST PALM BEACH, FL 33407

PHONE: (877)999-2772 FAX: (561)209-8380

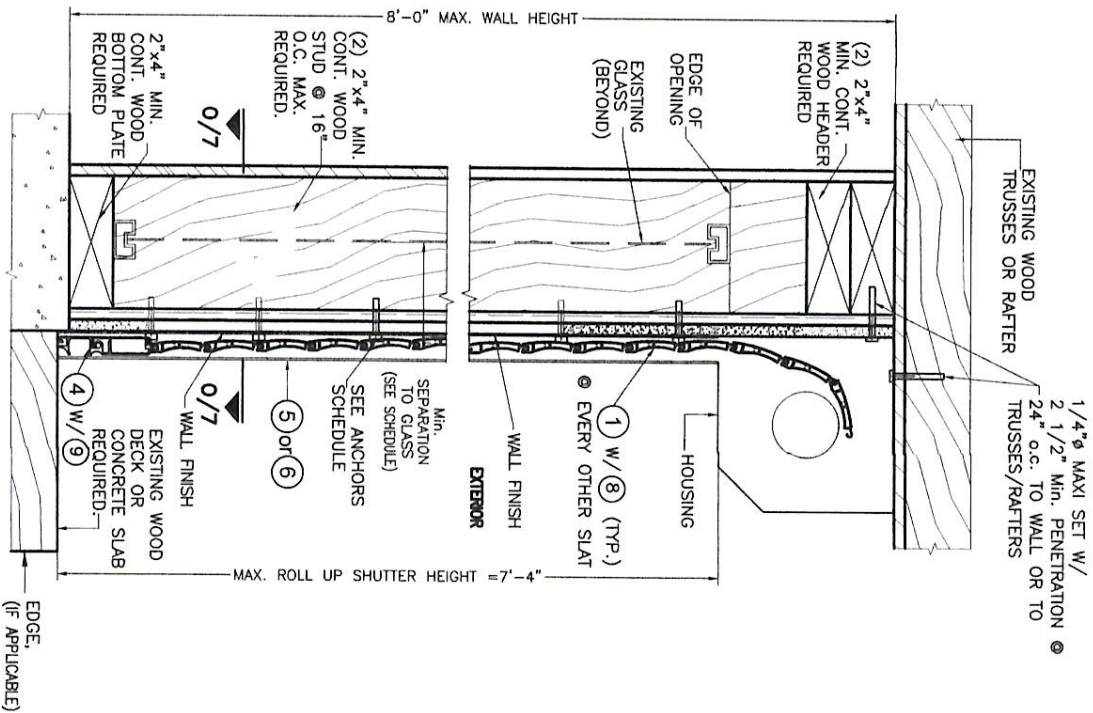
L.C.
DRAWN BY:

08/16/17
DATE

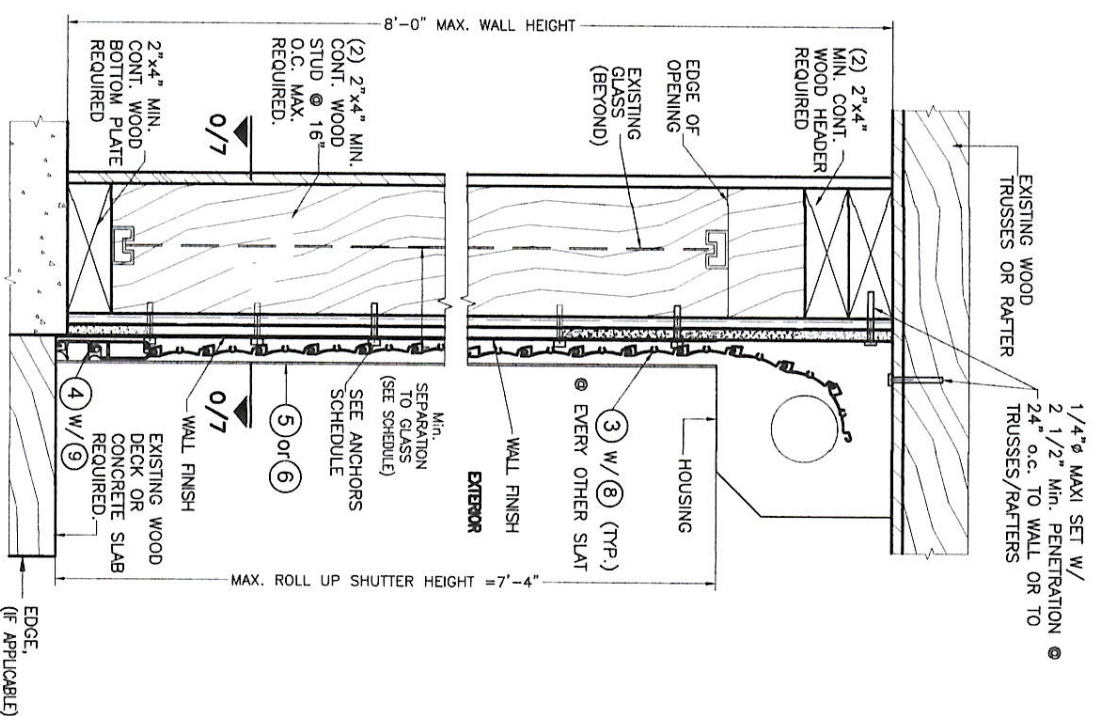
17-226
DRAWING No

SHEET 7 OF 29

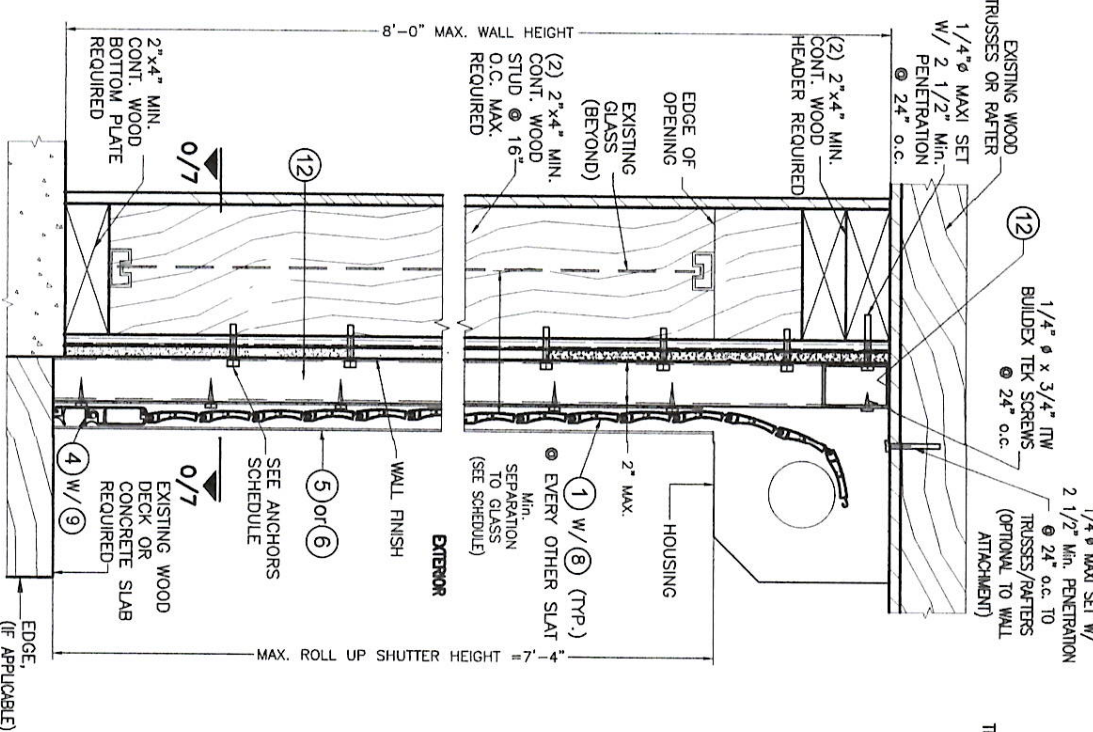
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



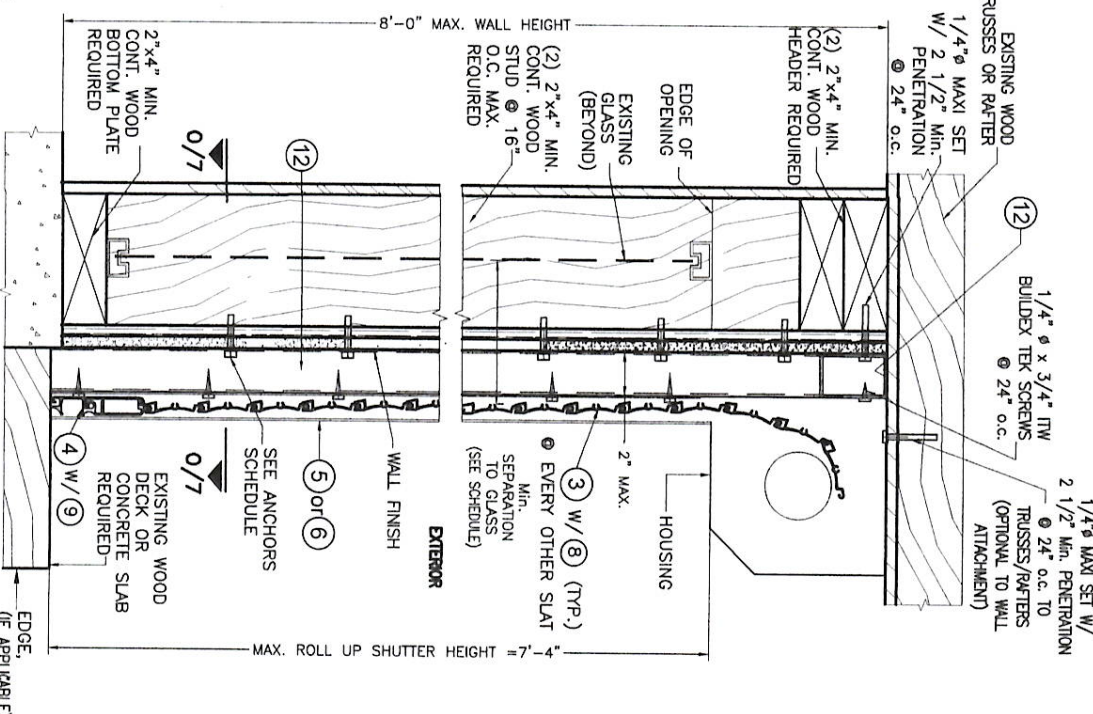
WALL MOUNTING
SECTION D-D
N.T.S.



WALL MOUNTING
SECTION D'-D'
N.T.S.

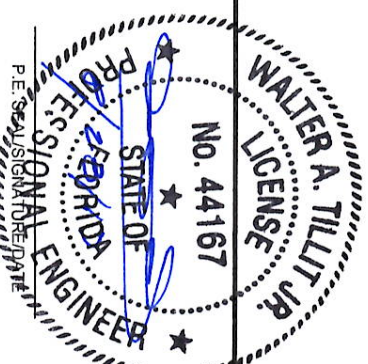


BUILD-OUT MOUNTING
SECTION E-E
N.T.S.



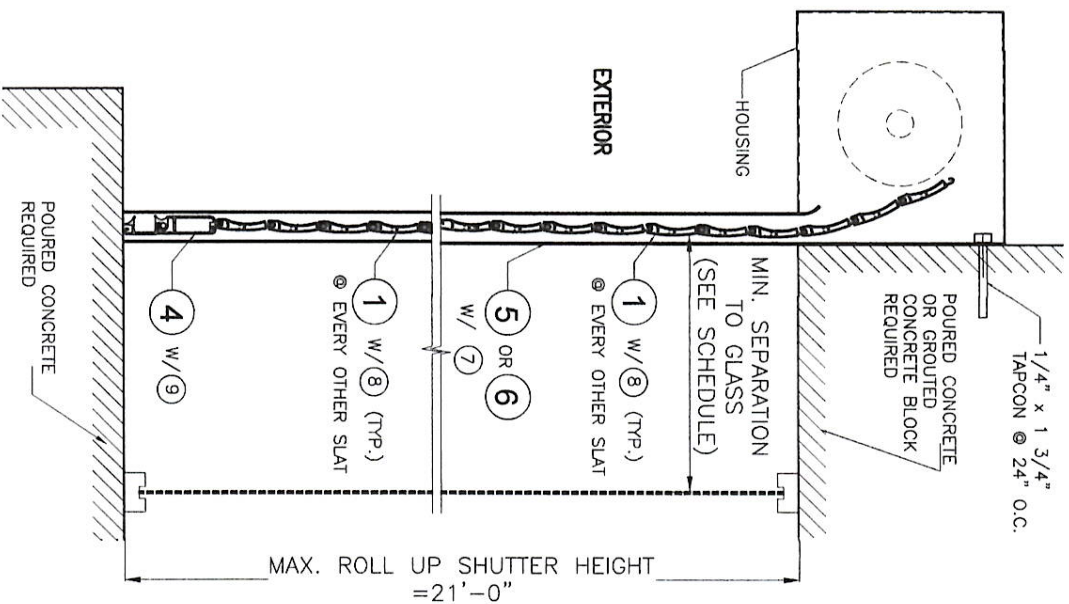
BUILD-OUT MOUNTING
SECTION E'-E'
N.T.S.

END RETENTION SYSTEM INSTALLATION INTO WOOD FRAME STRUCTURES

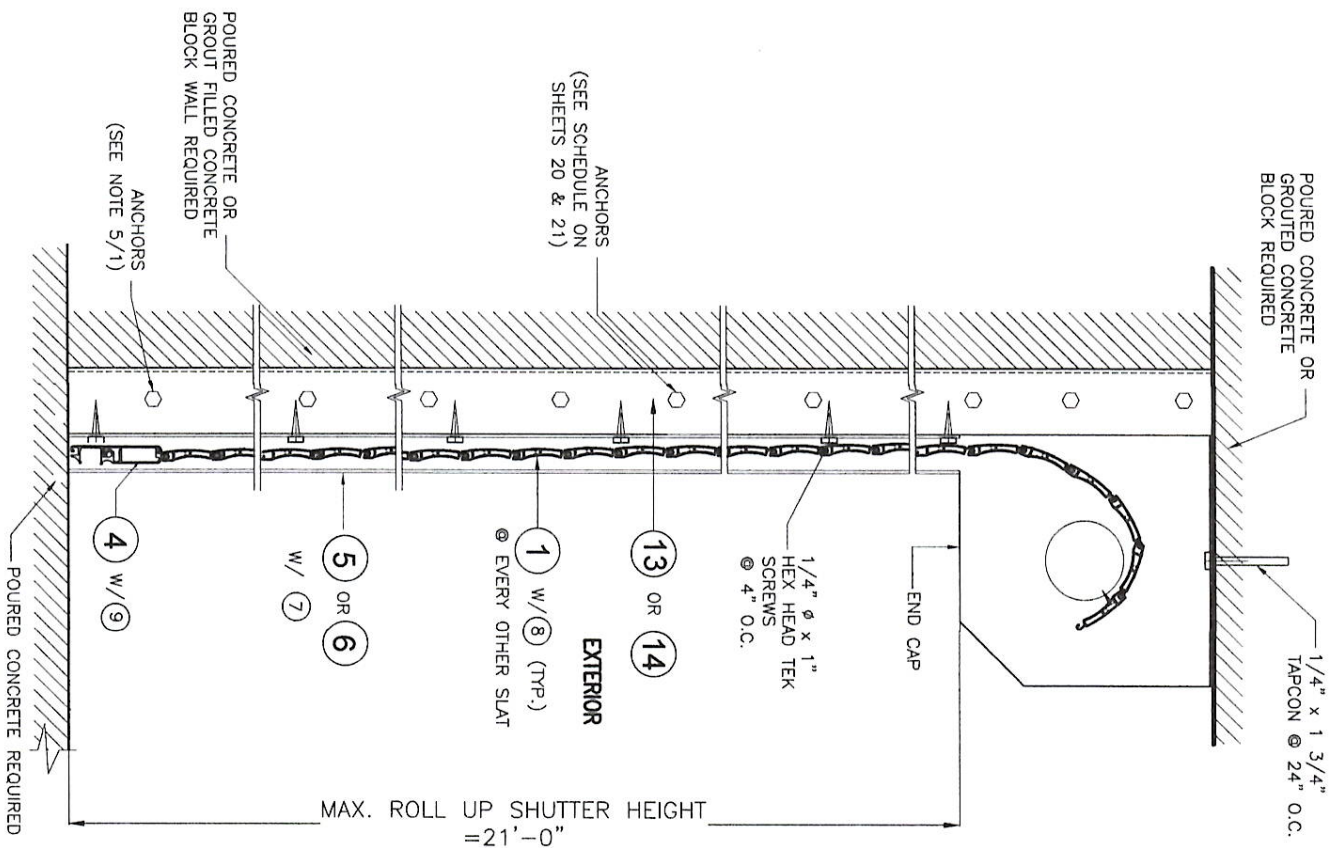


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Phone : (305) 871-1530, Fax : (305) 871-1531
e-mail: tiltco@oil.com
FLORIDA LIC. # 44167

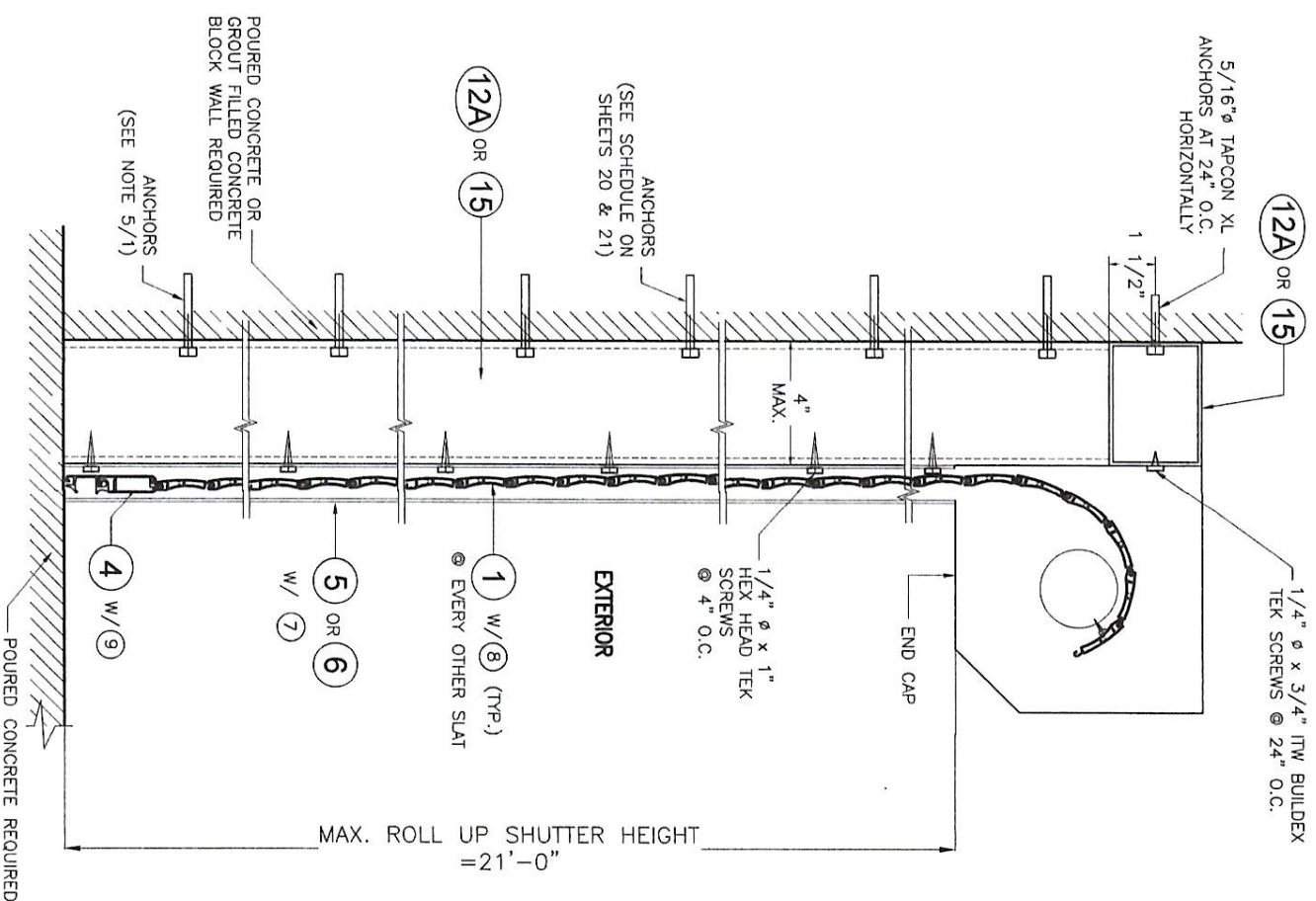
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER				L.C.
AMERICAN SHUTTER SYSTEMS ASSOC., INC.				DRAWN BY:
4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8380				DATE
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION
1	QAD 15-090	08/18/17	3	
2			4	
SHEET 8 OF 29				DRAWING No



WALL MOUNTED
SECTION A-A



FLOOR/CEILING / TRAPPED MOUNTED
SECTION B-B



BUILD-OUT MOUNTED
SECTION C-C

INSTALLATION DETAILS ON EXISTING POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK
BUILDINGS FOR SINGLE UNIT END RETENTION SYSTEMS AS APPLICABLE

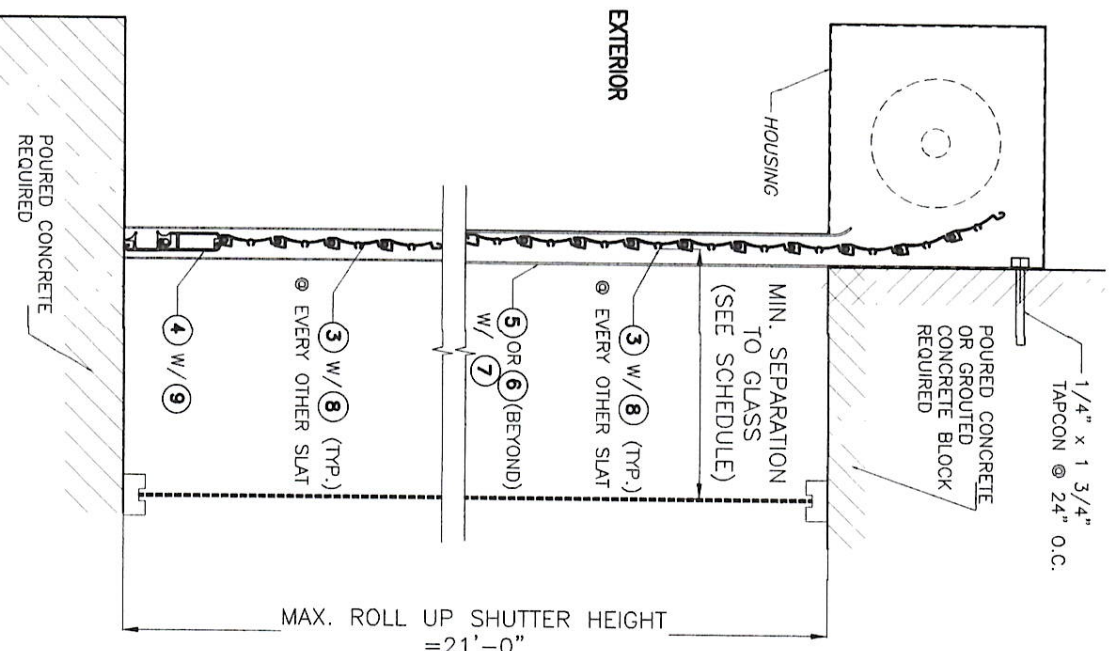
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FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

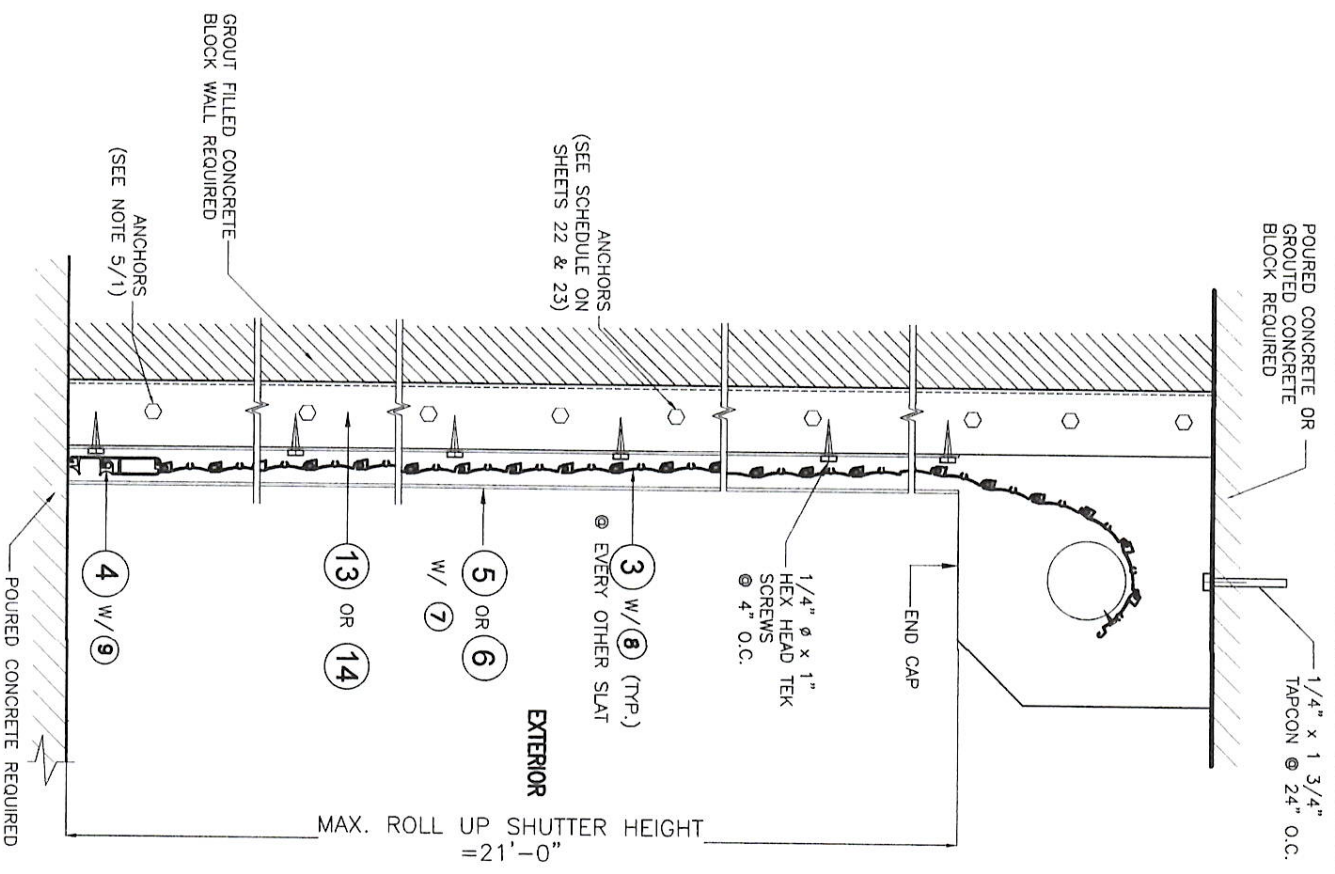
PROFESSIONAL ENGINEER
STATE OF FLORIDA
NO. 44167
P. SEABORN

TILECO INC.
TILIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305 - VIRGINIA GARDENS, FL 33166
Phone : (305) 871-1531, Fax : (305) 871-1531
e-mail: tileco@col.com
EB-0006719
WALTER A. TILIT JR., P.E.
FLORIDA Lic. # 44167

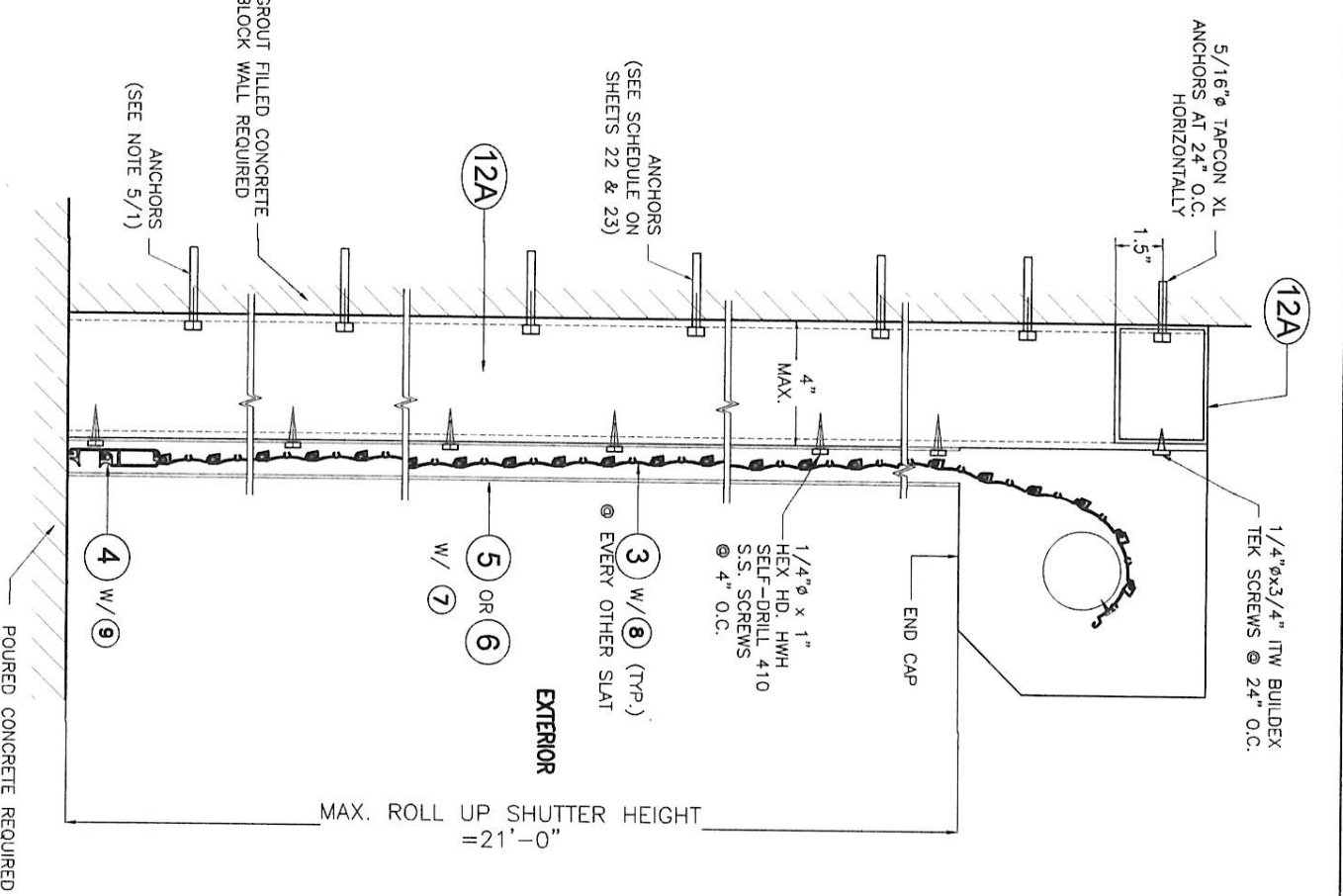
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER		L.C. DRAWN BY:
AMERICAN SHUTTER SYSTEMS ASSOC., INC. 4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8380		08/18/17 DATE
REV. No	DESCRIPTION	DATE
1	QUD 13-090	09/18/17
2		4
SHEET 9 OF 29		DRAWING No



WALL MOUNTED
SECTION A'-A'



FLOOR/CEILING / TRAPPED MOUNTED
SECTION B'-B'



BUILD-OUT MOUNTED
SECTION C'-C'

INSTALLATION DETAILS ON EXISTING POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK
BUILDINGS FOR SINGLE UNIT END RETENTION SYSTEM AS APPLICABLE

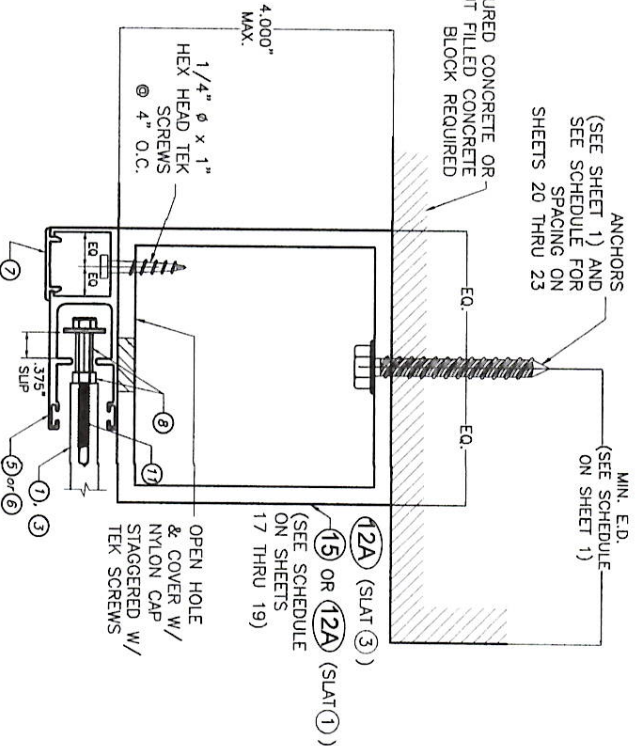
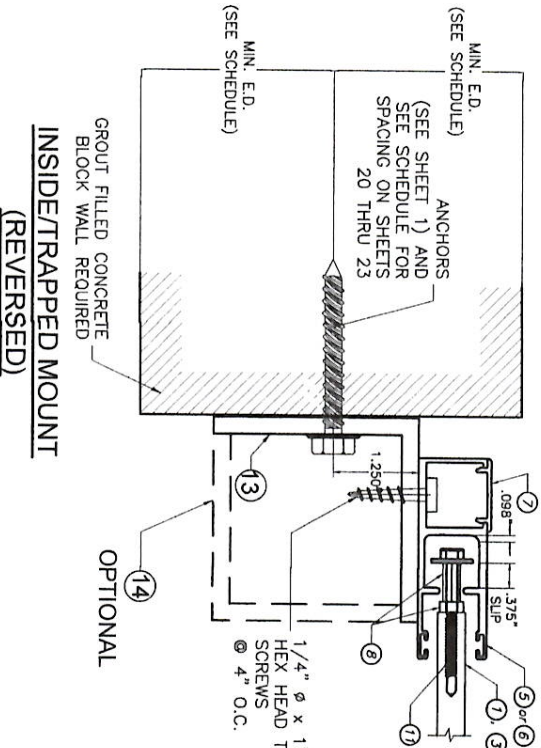
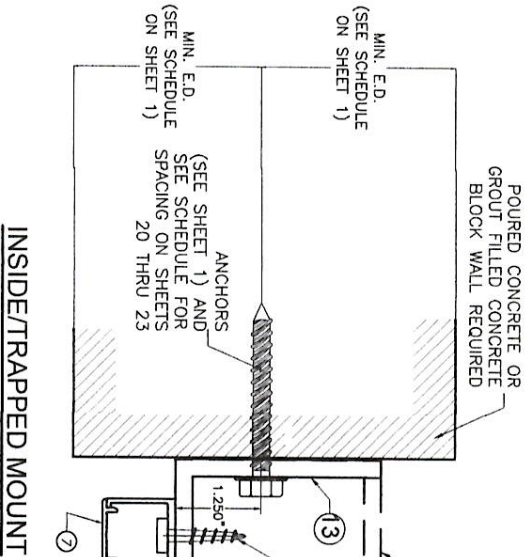
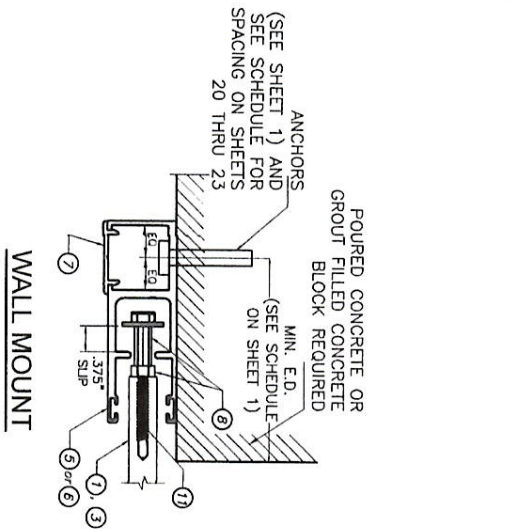
N.T.S.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

NO. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
P.E. SIGNATURE DATE

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Phone : (305) 871-1530 , Fax : (305) 871-1531
e-mail: tiliteco@aol.com
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WALTER A. TILIT JR., P.E.
FLORIDA Lic. # 44167

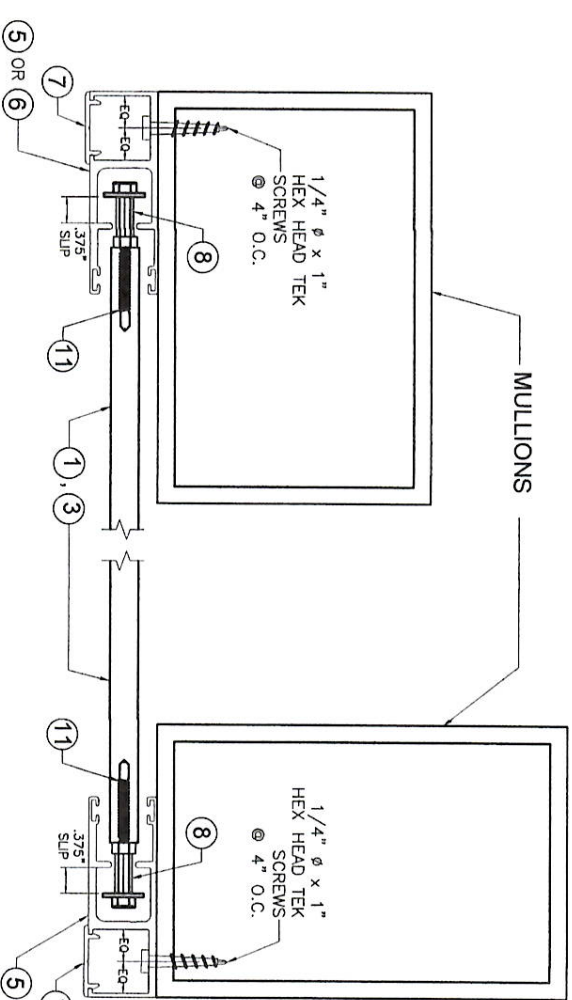
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER				L.C. DRAWN BY:	08/16/17 DATE
AMERICAN SHUTTER SYSTEMS ASSOC., INC.				4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8380	17-226 DRAWING No
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	QAD 15-090	08/16/17	3		
2			4		
					SHEET 10 OF 29



SECTIONS P-P (PLAN)

SIDE RAIL CONNECTIONS INTO EXISTING POURED CONCRETE OR GROUT FILLED BLOCK (AS APPLICABLE)

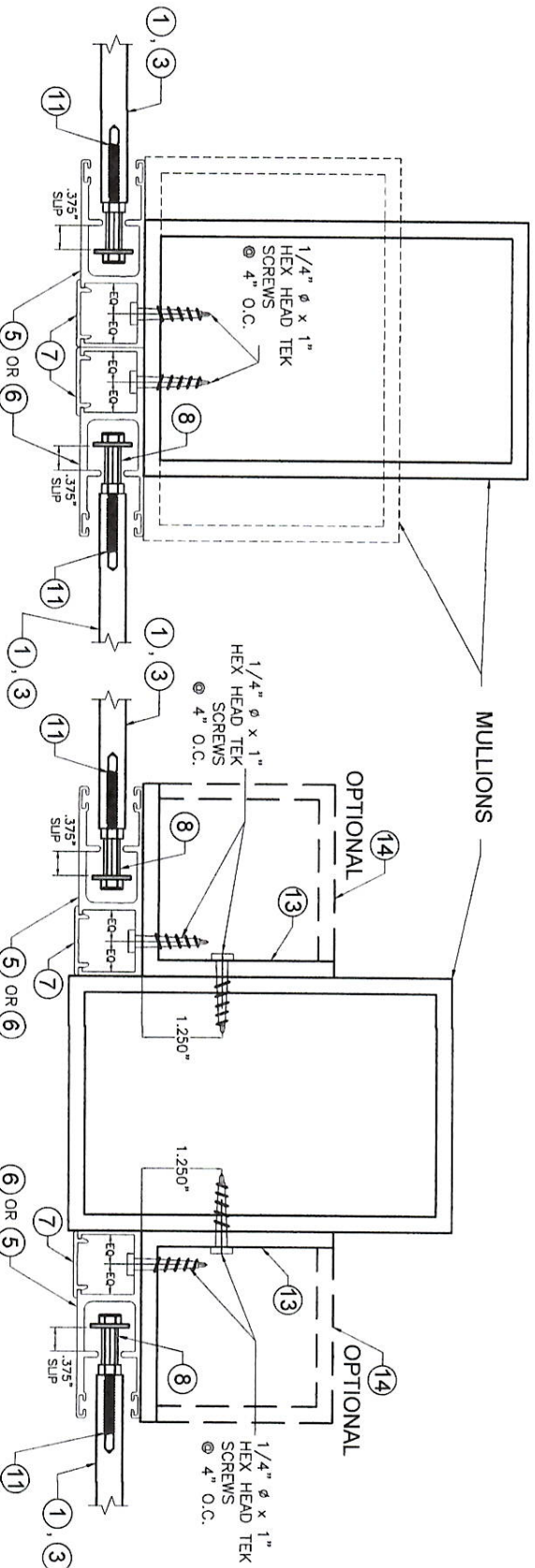
N.T.S.



SECTION Q-Q (PLAN)

ORIENTATION #2

FACE MOUNT END MULLION



SECTION R-R (PLAN)

ORIENTATIONS #1 & #2

FACE MOUNT INTERIOR MULLION

SECTION R-R (PLAN)

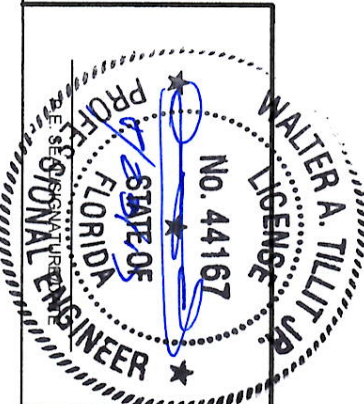
ORIENTATION #2

TRAPPED MOUNT INTERIOR MULLION

SIDE RAIL CONNECTIONS INTO MULLIONS

N.T.S.

END RETENTION SYSTEM



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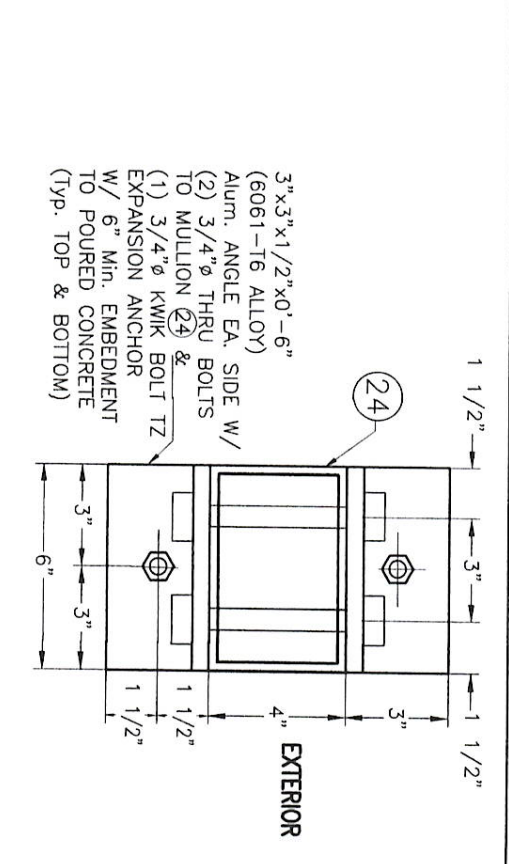
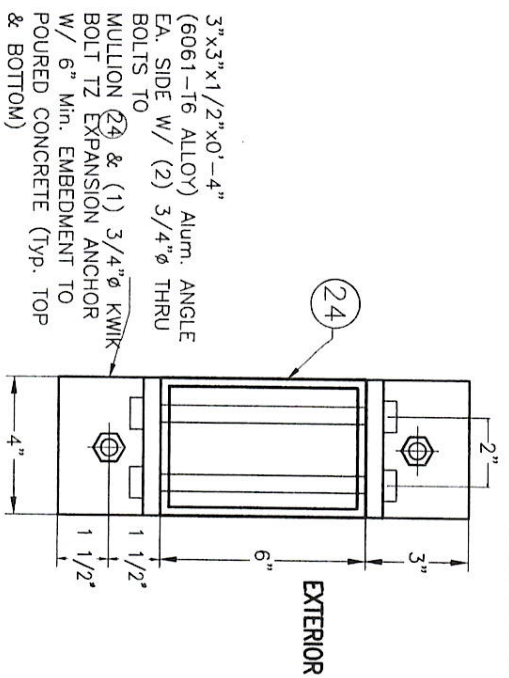
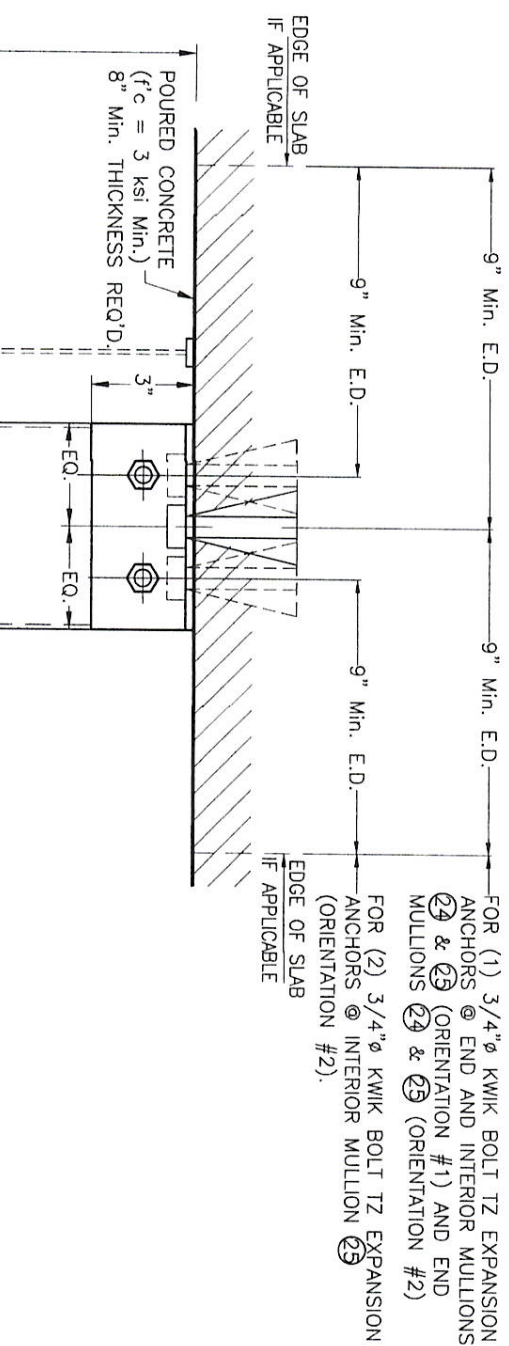
e-mail: tilteco@aol.com

EB-0006719

WALTER A. TILIT JR., P.E.

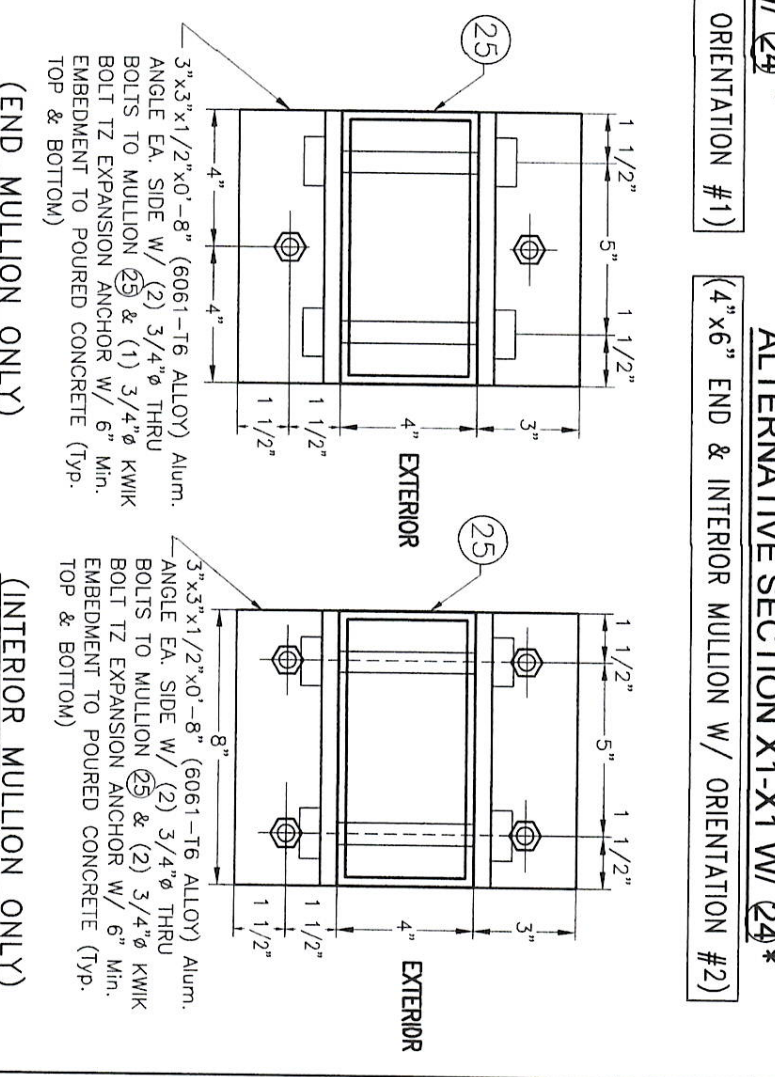
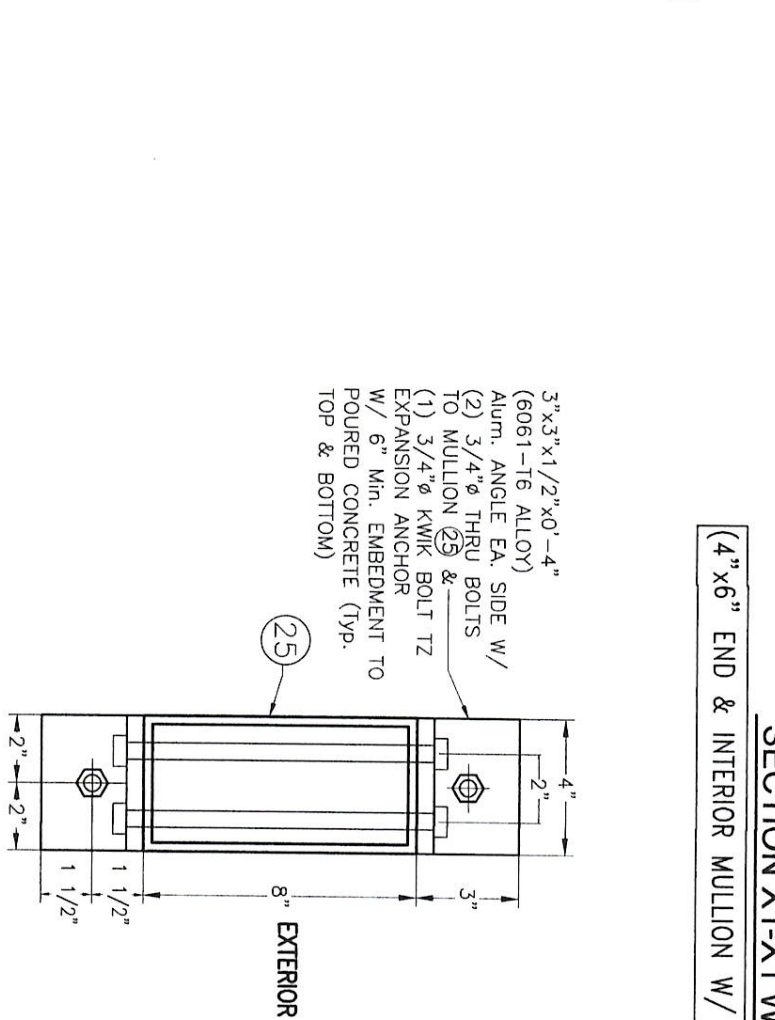
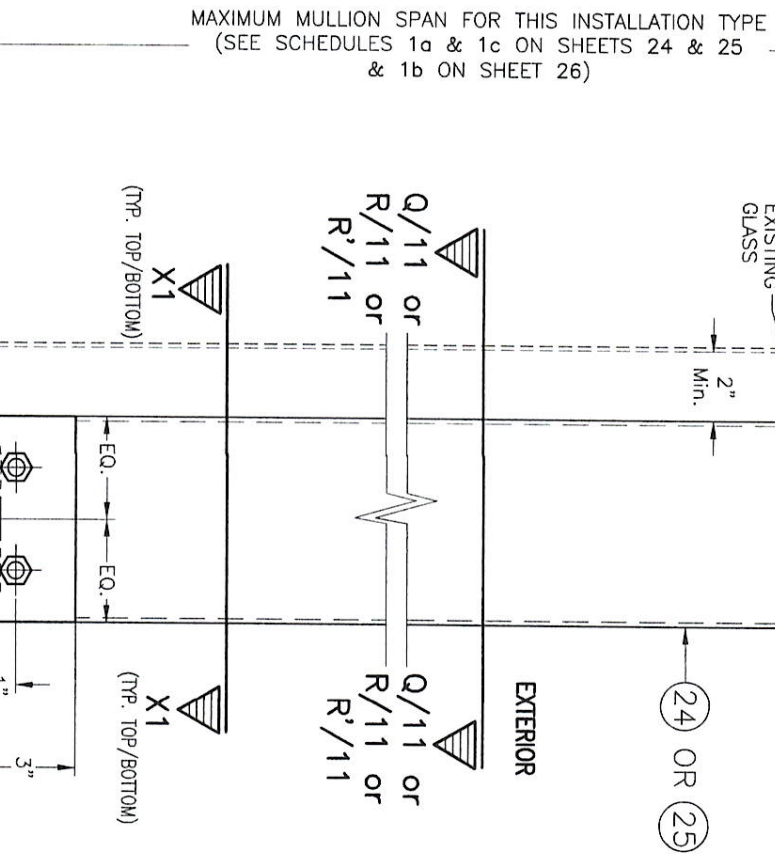
FLORIDA LIC. # 44167

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER				L.C.
AMERICAN SHUTTER SYSTEMS ASSOC., INC.				DRAWN BY:
4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8380				DATE
08/18/13				17-226
DRAWING No				
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION
1	QID 15-090	08/18/13	3	
2			4	
SHEET 11 OF 29				



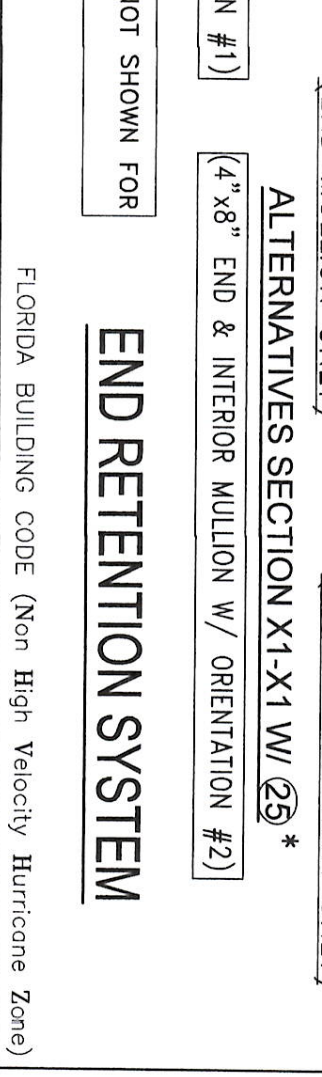
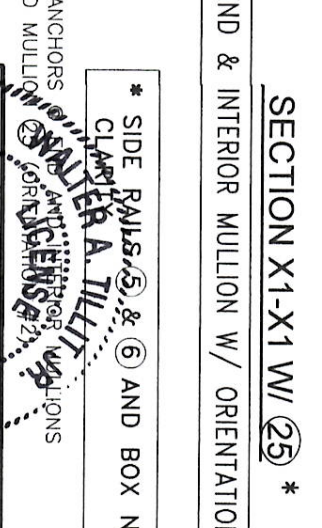
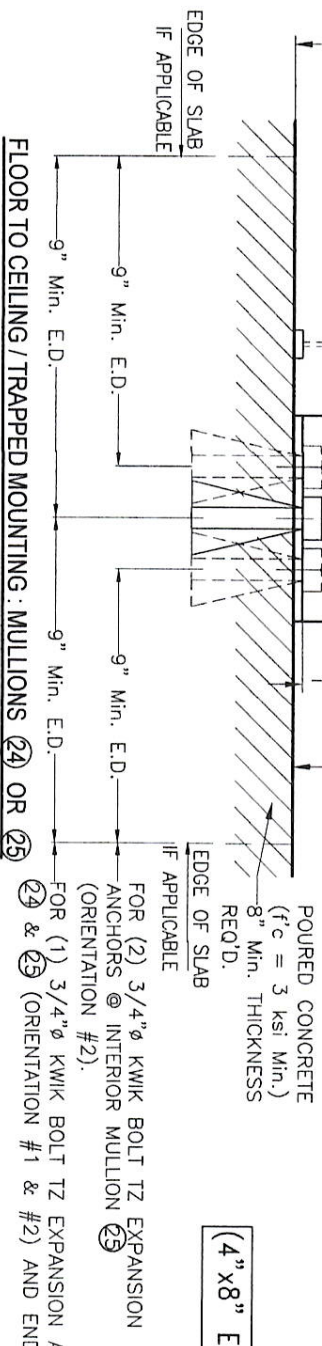
SECTION X1-X1 w/ 24 *

ALTERNATIVE SECTION X1-X1 w/ 24 *



SECTION X1-X1 w/ 25 *

ALTERNATIVES SECTION X1-X1 w/ 25 *



SECTIONS W-1

END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION *
APPLICABLE TO ALL INSTALLATIONS EXCEPT THOSE W/ LIMITATIONS COVERED ON SHEET 13

SCALE: 1/8" = 1"

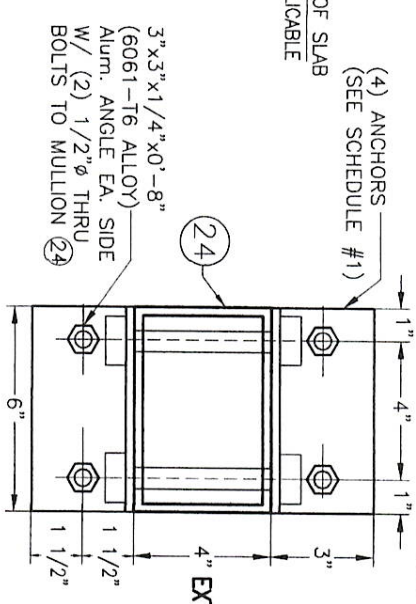
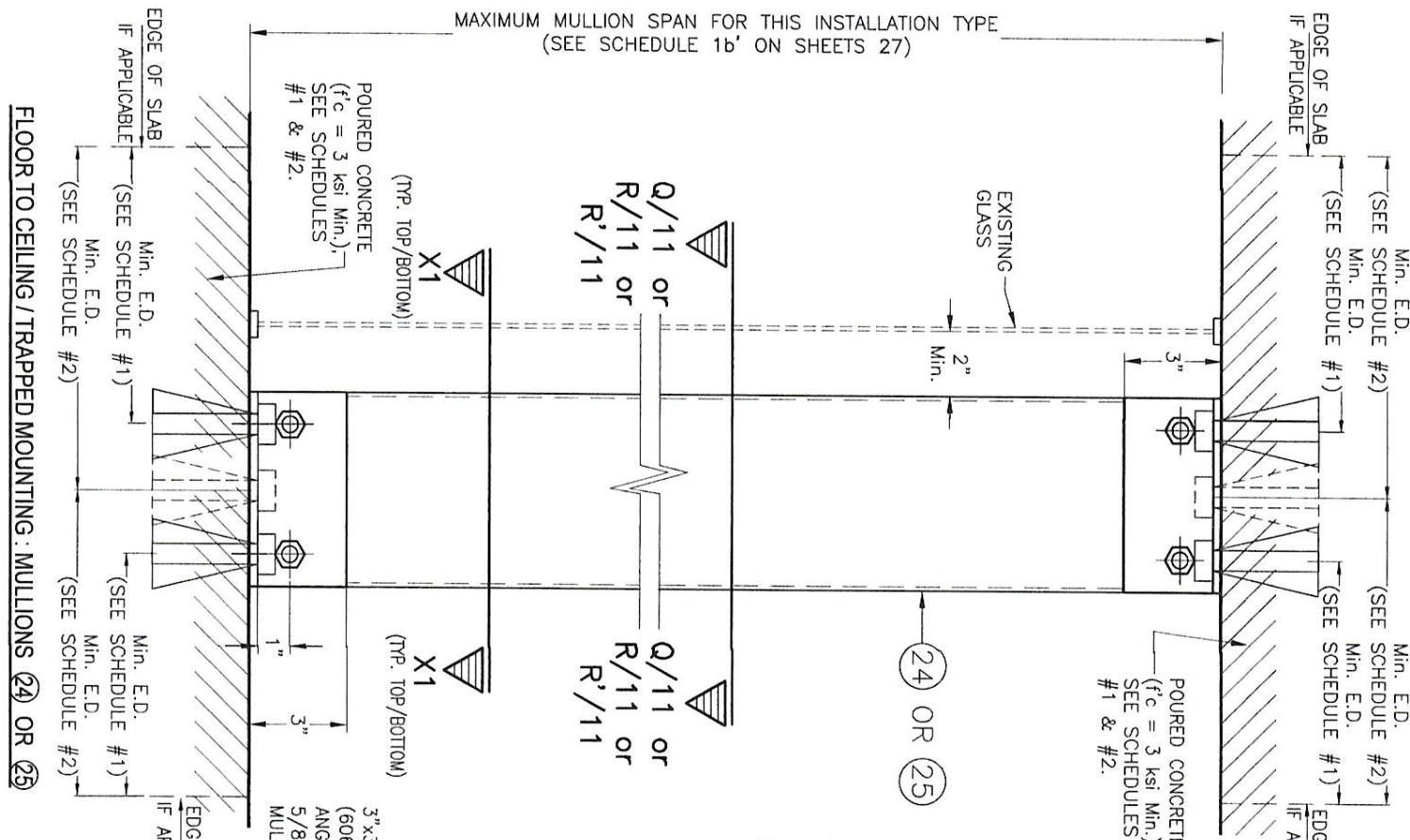


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TILTECO TESTING & ENGINEERING COMPANY
6335 N.W. 36th St., Suite 100, Fort Lauderdale, FL 33366
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e-mail: tiltco@tilteco.com
WALTER A. TILT JR., P.E.
FLORIDA LIC. # 44167

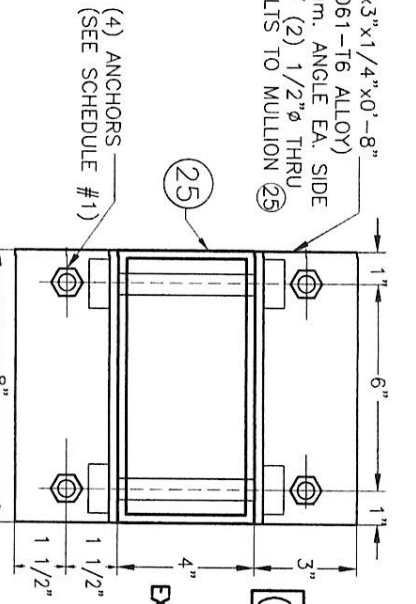
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER				L.C. DRAWN BY:	
AMERICAN SHUTTER SYSTEMS ASSOC., INC.				08/18/17	
4268 WESTROADS DRIVE				DATE	
WEST PALM BEACH, FL 33407				17-226	
PHONE: (877)999-2772 FAX: (561)209-8380				DRAWING No	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	QLD 15-050	05/18/17	3		
2			4		
					SHEET 12 OF 29

END RETENTION SYSTEM

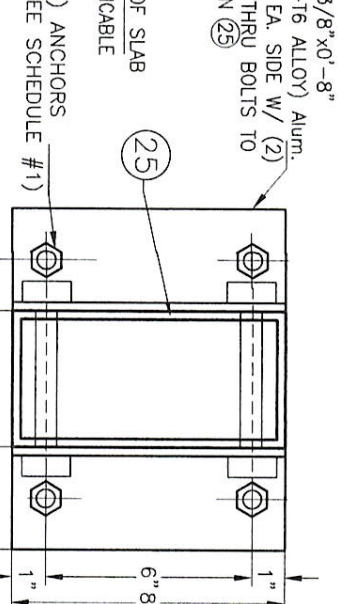
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



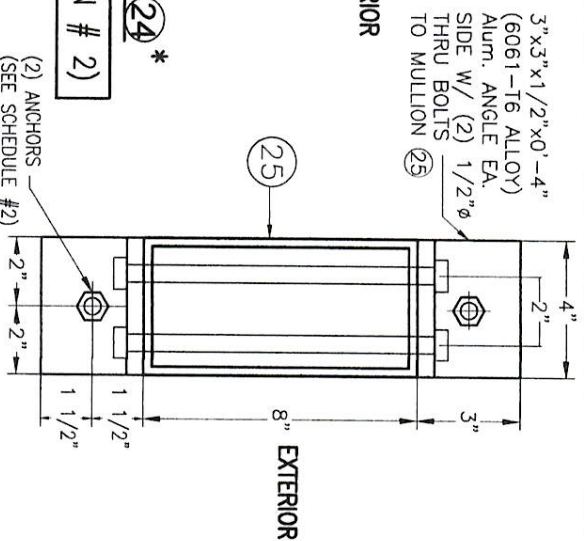
ALTERNATIVE SECTION X1-X1 W/ (24) *
(4"x6" INTERIOR MULLION ONLY W/ ORIENTATION # 2)



ALTERNATIVE SECTION X1-X1 W/ (25) *
(4"x8" INTERIOR MULLION ONLY W/ ORIENTATION # 2)



ALTERNATIVE SECTION X1-X1 W/ (25) *
(4"x8" END & INTERIOR MULLION W/ ORIENTATION # 2)



ALTERNATIVE SECTION X1-X1 W/ (25) *
(4"x8" END & INTERIOR MULLION W/ ORIENTATION # 1)

◇ SEE MAXIMUM (24) (INTERIOR) & (25) (END & INTERIOR) TRAPPED MOUNTED MULLIONS SPAN COVERED BY SCHEDULE 1b' FOR INSTALLATION CASES I, Ia & II ON SHEET 27 (LIMITED LOAD, MULLION SPACING AND SPAN INSTALLATION):

INSTALLATION CASE I - RESIDENTIAL AND COMMERCIAL APPLICATIONS W/ MAXIMUM A.S.D. DESIGN LOAD, MAXIMUM MULLION SPACING. SEE SCHEDULES #1 & #2 FOR ANCHOR SPECS.

INSTALLATION CASE Ia - RESIDENTIAL AND COMMERCIAL APPLICATION W/ MAXIMUM A.S.D. DESIGN LOAD, MAXIMUM MULLION SPACING. SEE SCHEDULES #1 & #2 FOR ANCHOR SPECS.

INSTALLATION CASE II - COMMERCIAL APPLICATION FOR MAXIMUM A.S.D. DESIGN LOAD, MAXIMUM MULLION SPACING. SEE SCHEDULES #1 & #2 FOR ANCHOR SPECS.

* SIDE RAILS (5) & (6) AND BOX NOT SHOWN FOR CLARITY.

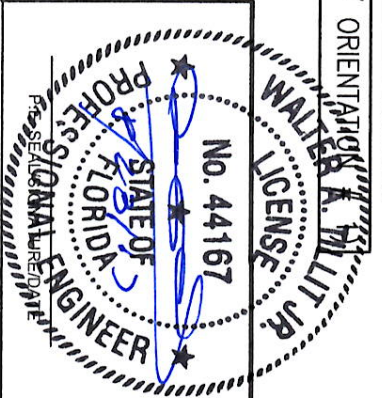
SCHEDULE #1				
INSTALLATION CASES	MIN. SLAB THICKNESS REQ'D.	ANCHOR TYPE & SIZE (TYP. TOP & BOTTOM)	MIN. ANCHOR EMBEDMENT	MIN. EDGE DISTANCE FOR ANCHOR
I	4"	3/8" HILTI INC KWIK HUS-H SCREW & 3/8" POWER FASTENER WEDGE-BOLT ANCHOR FOR (24) & (25) (INTERIOR) MULLIONS W/ ORIENTATION #2.	2 1/2"	5 1/2"
		1/2" HILTI INC KWIK HUS-H SCREW & 1/2" POWER FASTENER WEDGE-BOLT ANCHOR FOR (25) (END & INTERIOR) MULLION W/ ORIENTATION #1.	3"	6"
Ia	4"	1/2" HILTI INC KWIK BOLT TZ ONLY FOR (24) & (25) INTERIOR MULLIONS W/ ORIENTATION #2 & (25) (END MULLION W/ ORIENTATION #1).	2 1/2"	5 1/2"
		1/2" HILTI INC KWIK HUS-H SCREW & 1/2" POWER FASTENER WEDGE-BOLT ANCHOR FOR (24) & (25) (END OR INTERIOR MULLION) W/ ORIENTATIONS #1 OR #2.	3"	6"
II	6"	1/2" HILTI INC KWIK BOLT TZ ONLY FOR (24) & (25) INTERIOR MULLIONS W/ ORIENTATION #2 & (25) (END MULLION W/ ORIENTATION #1).	3 1/4"	7 1/2"
		1/2" HILTI INC KWIK HUS-H SCREW OR 1/2" POWER FASTENER WEDGE-BOLT ANCHOR SEE * NOTE ON SCHEDULE 1b' ON SHEET 25. VALID FOR END & INTERIOR MULLIONS (24) & (25) W/ ORIENTATIONS #1 OR #2.	3"	6"

SCHEDULE #2				
INSTALLATION CASES	MIN. SLAB THICKNESS REQ'D.	ANCHOR TYPE & SIZE (TYP. TOP & BOTTOM)	MIN. ANCHOR EMBEDMENT	MIN. EDGE DISTANCE FOR ANCHOR
I, Ia & II	4"	5/8" HILTI INC KWIK HUS-H SCREW & 5/8" POWER FASTENER WEDGE-BOLT ANCHOR W/ ORIENTATION #1.	2 1/2"	7 1/2"

END RETENTION SYSTEM

◇ END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION *
APPLICABLE TO A LIMITED LOAD, MULLION SPAN AND MULLION SPACING INSTALLATIONS

SCALE: 1/8" = 1"



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e-mail: tiltco@col.com
EB-0006719
WALTER A. TILT JR., P.E.
FLORIDA Lic. # 44167

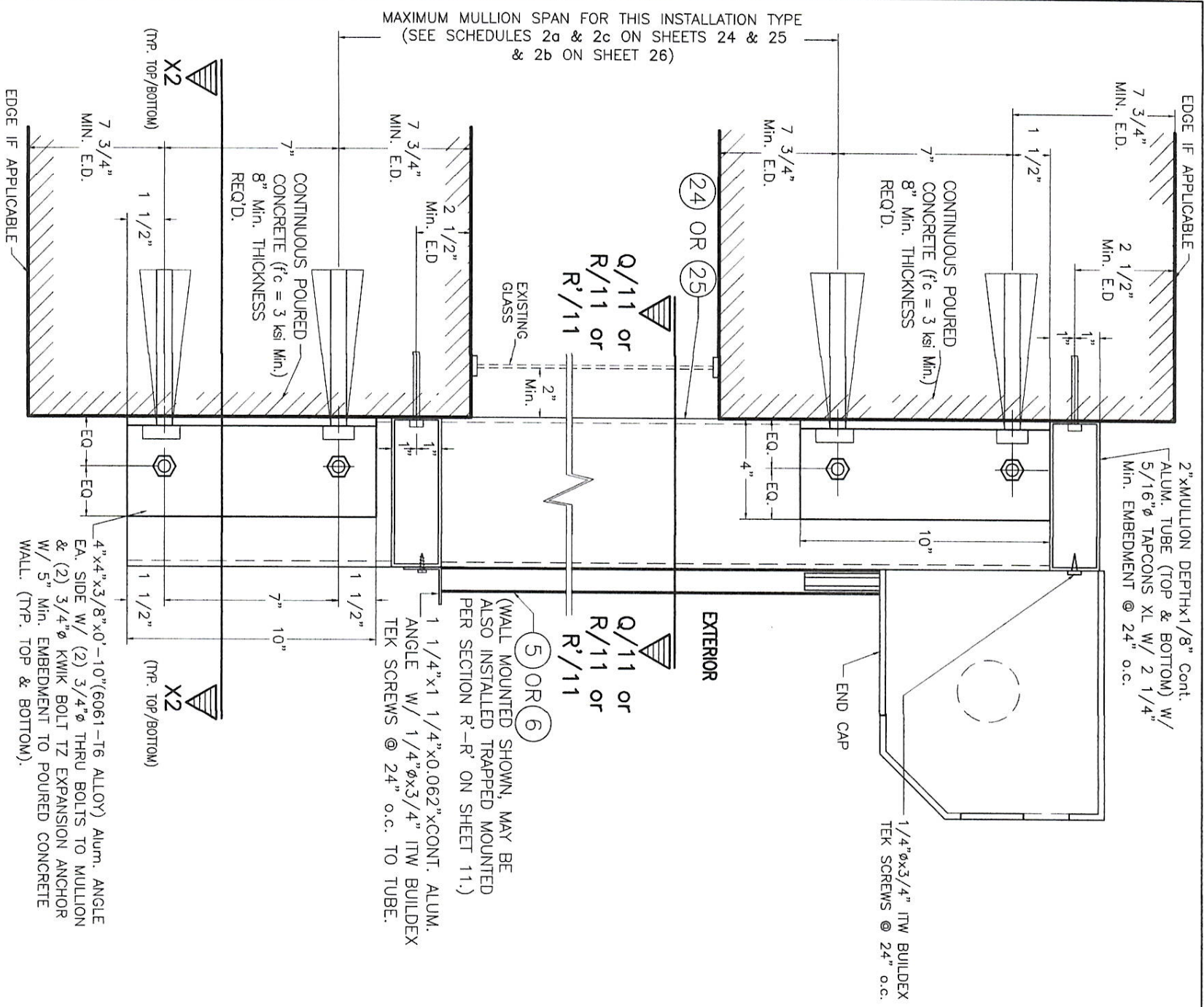
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.
4268 WESTROADS DRIVE
WEST PALM BEACH, FL 33407
PHONE: (877)999-2772 FAX: (561)209-8380

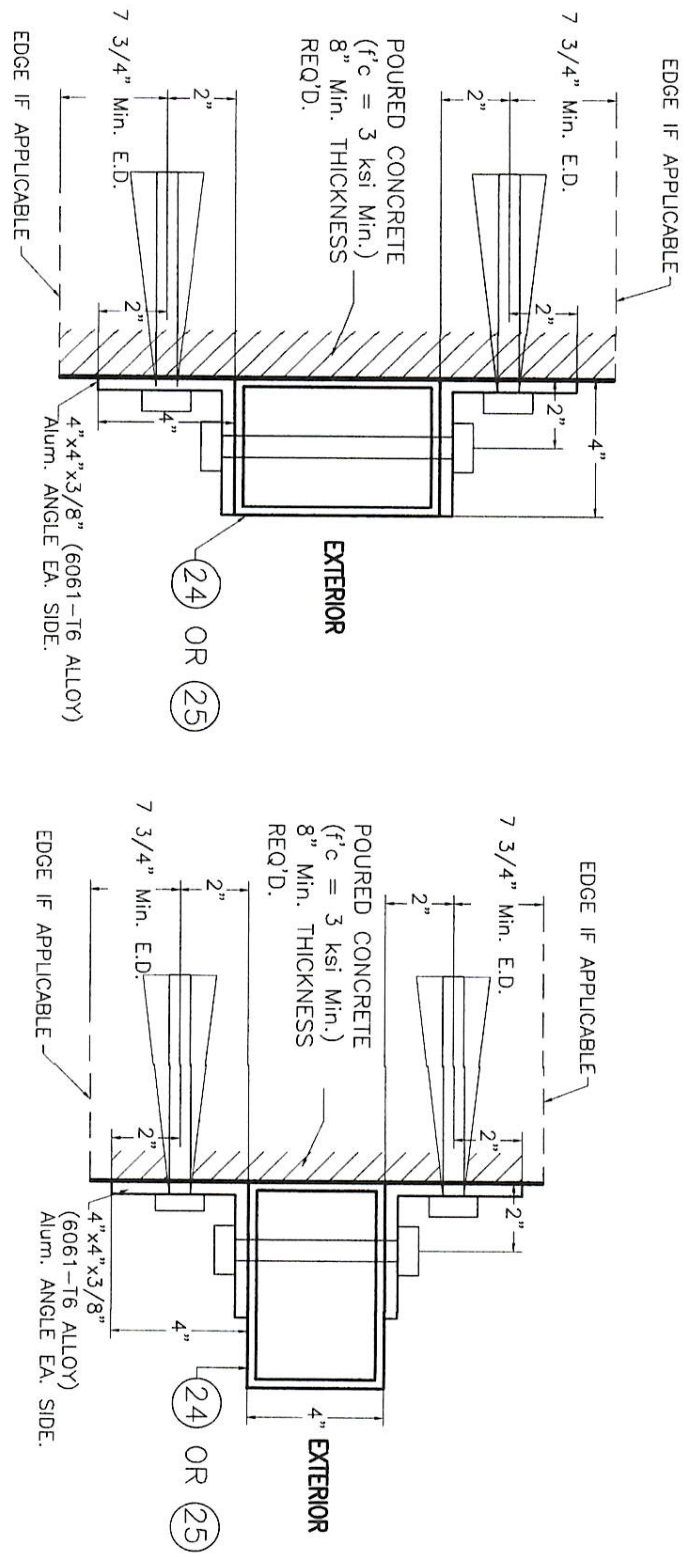
REV. No. 1 DATE 08/18/17
2 DATE 08/18/17

17-226 DRAWING No
SHEET 13 OF 29

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



WALL MOUNTING: MULLIONS 24 OR 25
POURED CONCRETE WALL
SECTION W-2



SECTION X2-X2 W/ 24 OR 25*
(END & INTERIOR MULLION)
(W/ ORIENTATION # 1)
(6" x 4" OR 8" x 4")

ALTERNATIVE SECTION X2-X2 W/ 24 OR 25*
(END & INTERIOR MULLION)
(W/ ORIENTATION # 2)
(4" x 6" OR 4" x 8")

END RETENTION SYSTEM

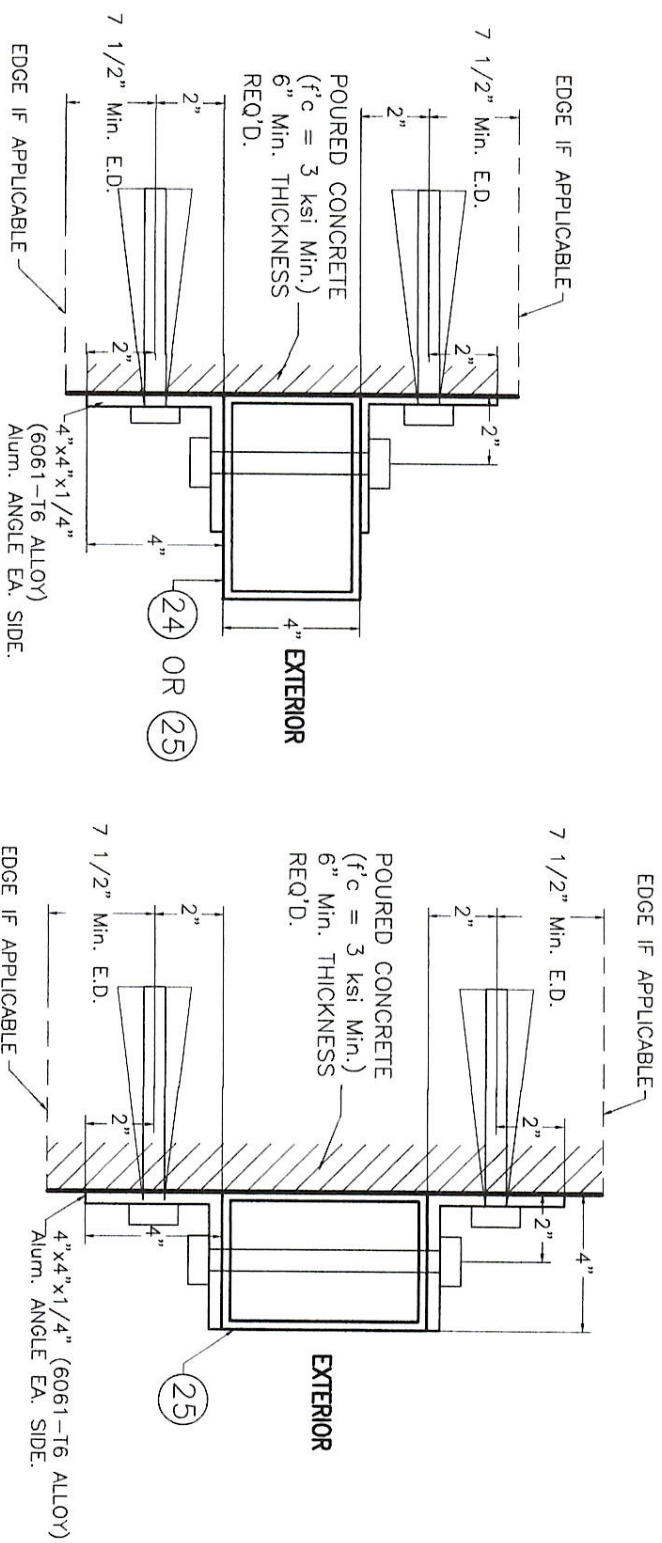
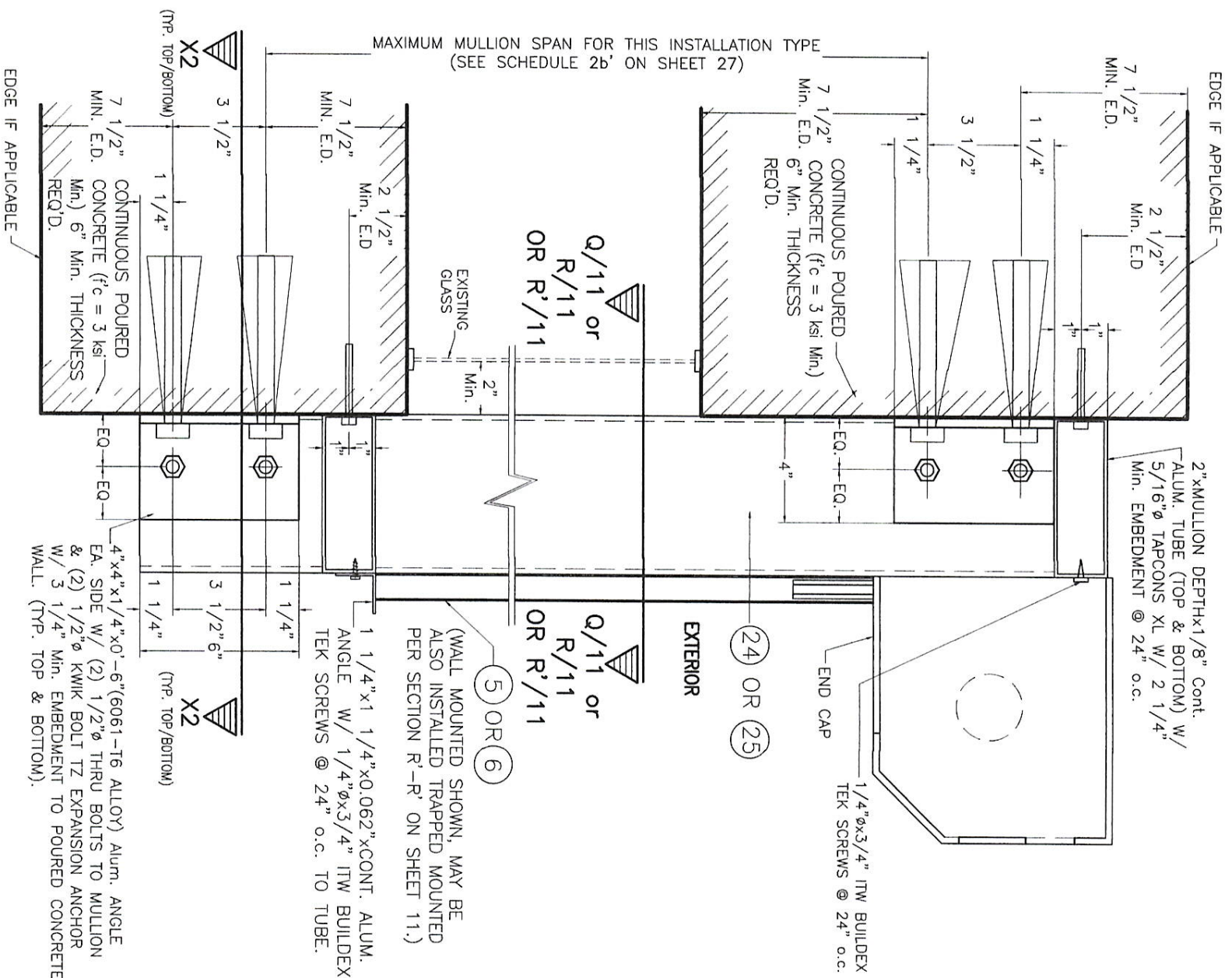
END & INTERIOR WALL MOUNTED MULLION INSTALLATION
APPLICABLE TO ALL INSTALLATIONS EXCEPT THOSE W/ LIMITATIONS COVERED ON SHEET 15

SCALE: 1/8" = 1"



FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

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REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 15-090	08/18/17	3		
2			4		



ALTERNATIVE SECTION X2-X2 W/ 24 OR 25 *

(INTERIOR MULLION)

(W/ ORIENTATION # 2)

(4" x 6" or 4" x 8")

ALTERNATIVE SECTION X2-X2 W/ 25 *

(END & INTERIOR MULLIONS)

(W/ ORIENTATION # 1)

(8" x 4")

◇ SEE MAXIMUM 24 (INTERIOR) & 25 (END & INTERIOR) WALL MOUNTED MULLIONS SPAN COVERED BY SCHEDULE 2b FOR INSTALLATION CASES I' & II' ON SHEET 27 (LIMITED LOAD, MULLION SPACING AND SPAN INSTALLATION):

INSTALLATION CASE I' – RESIDENTIAL AND COMMERCIAL APPLICATIONS W/ MAXIMUM A.S.D. DESIGN LOAD, MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO CONCRETE W/ HILTI INC KWIK HUS-H OR POWER FASTENERS WEDGE-BOLT ANCHORS.

INSTALLATION CASE II' – COMMERCIAL APPLICATION FOR MAXIMUM A.S.D. DESIGN LOAD, MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO CONCRETE W/ HILTI INC KWIK BOLT TZ ANCHORS.

END RETENTION SYSTEM

◇ **END & INTERIOR WALL MOUNTED MULLION INSTALLATION**

APPLICABLE TO A LIMITED LOAD, MULLION SPAN AND MULLION SPACING INSTALLATIONS

SCALE: 1/8" = 1"

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

WALTER A. TILIT JR.
Professional Engineer
No. 44167
FLORIDA

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e-mail: tiliteco@tdci.com
EB-0006719
WALTER A. TILIT JR., P.E.
FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER				L.C. DRAWN BY:	
AMERICAN SHUTTER SYSTEMS ASSOC., INC.				08/18/17	
4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877) 999-2772 FAX: (561) 209-8380				DATE	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 15-090	08/18/17	3		
2			4		
				DRAWING No	
				17-226	
				SHEET 15 OF 29	

END RETENTION SYSTEM

TYPICAL MANDATORY PROCEDURE FOR VERIFYING PRODUCT CODE COMPLIANCE RELATED TO ITS INSTALLATION INTO EXISTING POURED CONCRETE OR GROUTED CONCRETE BLOCK STRUCTURES (VALID FOR SLATS ① & ③)

STEP 1: OBTAIN JOB SITES A.S.D. DESIGN LOAD (p.s.f.) FOR THE OPENING AND DESIRED PRODUCT SPAN "L" (ft) TO PROTECT (SEE GENERAL NOTE #1, SHEET 1).

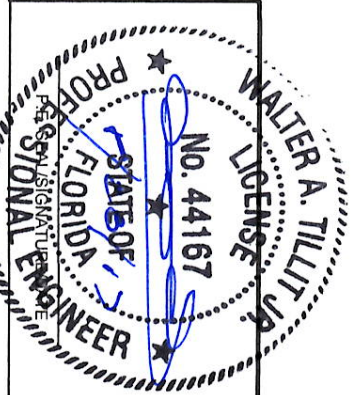

STEP 2: ENTER TO CHARTS 1a, 1b & 1c ON SHEETS 17 & 18 FOR SLAT ①, AND TO CHARTS 1a, 1b & 1c ON SHEET 19 FOR SLAT ③ TO DETERMINE, BASED ON SUBSTRATE, ANCHOR TYPE AT SIDE RAILS & A.S.D. DESIGN LOAD (p.s.f.); THE MAXIMUM SLAT SPAN "LMAX" (ft) AND THE REQUIRED SEPARATION TO GLASS.

STEP 3: OBTAIN INFORMATION ON PRODUCT'S SIDE RAIL ANCHOR SPACING REQUIREMENTS FOR CONNECTION TO EXISTING STRUCTURE FROM ANCHOR SCHEDULES 11a & 11b ON SHEETS 20 & 21 FOR SLAT ① & FROM ANCHOR SCHEDULES 11a & 11b ON SHEETS 22 & 23 FOR SLAT ③. ENTER SCHEDULES WITH FINALLY DETERMINED ANCHOR TYPE, SUBSTRATE, MOUNTING TYPE, A.S.D. DESIGN LOAD & PRODUCT SPAN AND OBTAIN MAXIMUM ANCHOR SPACING (INCHES ON CENTERS). SEE GENERAL NOTE 5 ON SHEET 1 FOR ANCHOR SPECS.

STEP 4: IF PRODUCT INSTALLATION INCLUDES MULLIONS, THE FOLLOWING MANDATORY ADDITIONAL PROCEDURE IS APPLICABLE:

1. MINIMUM SEPARATION TO GLASS FOR SLATS IF MULLIONS ARE USED SHALL BE BASED ON INSTALLATIONS INDICATED ON CHARTS 1c ON SHEET 25 FOR SLAT ① & ON SHEET 28 FOR SLAT ③. IT SHALL BE MEASURED FROM BACK OF SLAT TO GLASS.
2. ENTER SCHEDULES 1a, 2a, 1c, 2c, 1b, 2b, 1b' & 2b' ON SHEETS 24 THRU 27 W/ A.S.D. DESIGN LOAD : MAXIMUM MULLION SPACING (MAX., 12', 8', 7' OR 6'-10") FOR SLAT ① & SHEETS 28 & 29 FOR SLAT ③, AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN ②⑨, ②⑤), MULLION TYPE & MULLION ORIENTATION.
3. SEE SHEETS 12 THRU 15 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 ②④, ②⑤)

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

					
					
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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					
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER					
AMERICAN SHUTTER SYSTEMS ASSOC., INC.					
4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-6380					
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 15-030	08/18/17	3		
2			4		
					L.C. DRAWN BY:
					08/18/17 DATE
					17-226 DRAWING No
					SHEET 16 OF 29

SLAT 1 PERFORMANCE CHART

POURED CONCRETE

SLAT PERFORMANCE CHARTS **Ia, Ib & Ic**: (ONLY VALID FOR 3/8" SLIP)
FOR A GIVEN A.S.D. DESIGN LOAD (p.s.f.), PRODUCT MOUNT CONDITION INCLUDING ANCHOR TYPE

CHART Ia		CHART Ib		CHART Ic							
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE							
3/8"Ø WEDGE BOLT ANCHOR		5/16"Ø TAPCON XL, ULTRACON OR TAPPER +XTREME ANCHORS									
MAX. SLAT SPAN "L _{MAX} " (FT)		MAX. SLAT SPAN "L _{MAX} " (FT)		REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) SEE NOTES *							
A.S.D. DESIGN LOAD (psf)	WALL MOUNT SEE NOTES *	TRAPPED MOUNT SEE NOTES *	2" BUILD-OUT MOUNT W/ (12) SEE NOTES *	4" BUILD-OUT MOUNT W/ (12) SEE NOTES *	2" BUILD-OUT MOUNT W/ (15) SEE NOTES *	4" BUILD-OUT MOUNT W/ (15) SEE NOTES *					
30.0	16'-0"	16'-0"	8'-0"	8'-0"	16'-0"	16'-0"	8'-0"	8'-0"	12'-0"	10'-3"	7 1/4"
35.0	16'-0"	16'-0"	8'-0"	8'-0"	16'-0"	15'-0"	8'-0"	8'-0"	15'-0"	9'-3"	7 1/4"
40.0	16'-0"	16'-0"	8'-0"	8'-0"	16'-0"	14'-0"	8'-0"	8'-0"	14'-0"	8'-5"	7 1/4"
45.0	16'-0"	15'-6"	8'-0"	8'-0"	15'-0"	13'-0"	8'-0"	8'-0"	13'-0"	7'-10"	7 1/4"
50.0	15'-5"	14'-11"	8'-0"	8'-0"	14'-0"	12'-3"	8'-0"	7'-4"	11'-6"	8'-9"	8 1/4"
55.0	14'-10"	14'-4"	8'-0"	8'-0"	13'-3"	11'-4"	8'-0"	6'-10"	10'-9"	8'-3"	8 1/4"
60.0	14'-3"	13'-9"	8'-0"	8'-0"	12'-3"	10'-9"	7'-9"	6'-6"	10'-0"	7'-9"	9"
65.0	13'-9"	13'-3"	8'-0"	8'-0"	11'-6"	10'-3"	7'-6"	6'-3"	9'-3"	7'-6"	9"
70.0	13'-1"	12'-7"	8'-0"	8'-0"	10'-9"	9'-9"	7'-3"	6'-0"	8'-9"	7'-3"	9"
75.0	12'-7"	12'-1"	8'-0"	8'-0"	10'-3"	9'-3"	7'-0"	5'-10"	8'-3"	7'-0"	9"
80.0	12'-0"	11'-6"	8'-0"	8'-0"	9'-9"	8'-9"	6'-9"	5'-9"	7'-10"	6'-9"	9"
85.0	11'-4"	10'-10"	-	-	-	9'-9"	7'-4"	-	7'-4"	-	8 1/2"
90.0	10'-9"	10'-3"	-	-	-	9'-6"	7'-0"	-	7'-0"	-	8"
95.0	10'-0"	9'-5"	-	-	-	8'-9"	6'-9"	-	6'-9"	-	8"
100.0	9'-5"	8'-11"	-	-	-	8'-0"	6'-8"	-	6'-8"	-	7 1/2"
105.0	8'-9"	8'-3"	-	-	-	7'-6"	6'-6"	-	6'-6"	-	7"
110.0	8'-1"	7'-7"	-	-	-	7'-4"	6'-3"	-	6'-3"	-	7"
115.0	7'-6"	7'-0"	-	-	-	7'-0"	6'-0"	-	6'-0"	-	6 5/8"
120.0	6'-10"	6'-10"	-	-	-	6'-10"	5'-0"	-	5'-0"	-	6 5/8"



SLAT SPAN DEFINITION

* NOTES:

1. ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 20 INDICATE THAT AN ANCHOR SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND A.S.D. DESIGN LOAD.
2. REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH 3/8"Ø WEDGE BOLT, 5/16"Ø TAPCON XL, 5/16"Ø ULTRACON OR 5/16"Ø TAPPER+XTREME ANCHORS, INTO POURED CONCRETE OR WITH 1/4"Ø HEX HEAD HHW SELF-DRILL TEK SCREWS AT MULLIONS CONNECTION. VALID FOR WALL MOUNTED, TRAPPED MOUNTED, AND BUILD-OUT MOUNTED.
3. MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.
4. MIN. SEPARATION TO GLASS FOR WIND ZONES 1, 2 & 3 IS 1" AND AS SHOWN ON CHART Ic FOR WIND ZONE 4, PER ASTM E 1996.

END RETENTION SYSTEM INTO POURED CONCRETE

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

NO. 44167

STATE OF FLORIDA

PROFESSIONAL ENGINEER

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TILTECO INC.

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e-mail: tilteco@aol.com
EB-0006719
WALTER A. TILIT Jr., P.E.
FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP
HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.
4268 WESTROADS DRIVE
WEST PALM BEACH, FL 33407
PHONE: (877)999-2772 FAX: (561)209-8380

17-226
DRAWING No

L.C.
DRAWN BY:

08/18/13
DATE

1
REV. No

2
DISCREPION

3
DATE

4
REV. No

5
DESCRIPTION

6
DATE

SHEET 17 OF 29

SLAT 1 PERFORMANCE CHART

ROUTED CONCRETE BLOCK

SLAT PERFORMANCE CHARTS **Ia, Ib & Ic**: (ONLY VALID FOR 3/8" SLIP)
FOR A GIVEN A.S.D. DESIGN LOAD (psf), PRODUCT MOUNT CONDITION INCLUDING ANCHOR TYPE

CHART Ia		CHART Ib		CHART Ic									
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE									
3/8"Ø HILTI KWIK HUS BOLT ANCHOR				5/16"Ø TAPCON XL, ULTRACON OR TAPPER+XTREME ANCHORS									
MAX. SLAT SPAN "L _{MAX} " (FT)		MAX. SLAT SPAN "L _{MAX} " (FT)		REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) SEE NOTES *									
A.S.D. DESIGN LOAD (psf)	WALL MOUNT SEE NOTES *	TRAPPED MOUNT SEE NOTES *	2" BUILD-OUT MOUNT W/ (12) SEE NOTES *	4" BUILD-OUT MOUNT W/ (12) SEE NOTES *	2" BUILD-OUT MOUNT W/ (15) SEE NOTES *	4" BUILD-OUT MOUNT W/ (15) SEE NOTES *							
30.0	14'-7"	14'-7"	8'-0"	8'-0"	11'-0"	9'-7"	10'-6"	8'-0"	7'-3"	6'-6"	7'-6"	6'-10"	7 1/4"
35.0	13'-7"	13'-7"	8'-0"	8'-0"	10'-0"	8'-8"	9'-6"	7'-4"	6'-8"	6'-1"	7'-0"	6'-4"	7 1/4"
40.0	13'-0"	12'-6"	8'-0"	7'-6"	9'-4"	8'-0"	9'-0"	6'-8"	6'-3"	5'-10"	6'-6"	5'-9"	7 1/4"
45.0	12'-0"	11'-6"	8'-0"	7'-0"	8'-10"	7'-7"	8'-6"	6'-3"	6'-0"	5'-6"	6'-3"	5'-7"	7 1/4"
50.0	11'-1"	10'-6"	7'-9"	6'-6"	8'-4"	7'-2"	8'-0"	6'-0"	5'-9"	5'-3"	5'-11"	5'-4"	8 1/4"
55.0	10'-0"	9'-9"	7'-2"	6'-4"	7'-10"	6'-7"	7'-4"	5'-8"	5'-6"	5'-9"	5'-6"	5'-2"	8 1/4"
60.0	9'-6"	9'-3"	6'-10"	6'-0"	7'-6"	6'-4"	7'-0"	5'-5"	5'-3"	5'-6"	5'-3"	5'-0"	7 1/2"
65.0	9'-0"	8'-9"	6'-8"	5'-8"	7'-0"	6'-3"	6'-6"	5'-3"	5'-1"	4'-11"	5'-6"	4'-11"	7 1/2"
70.0	8'-6"	8'-3"	6'-6"	5'-6"	6'-9"	6'-0"	6'-4"	5'-0"	4'-10"	4'-8"	5'-0"	4'-10"	7 1/2"
75.0	8'-0"	7'-9"	6'-3"	5'-5"	6'-6"	5'-9"	6'-3"	4'-10"	4'-10"	4'-7"	4'-11"	4'-8"	7 1/2"
80.0	7'-6"	7'-3"	6'-0"	5'-4"	6'-0"	5'-6"	6'-0"	4'-8"	4'-8"	4'-6"	4'-10"	4'-7"	7 1/2"
85.0	7'-3"	7'-0"	-	-	-	-	5'-6"	4'-6"	-	-	-	-	6 5/8"
90.0	7'-0"	6'-9"	-	-	-	-	5'-0"	4'-4"	-	-	-	-	6 5/8"
95.0	7'-0"	6'-6"	-	-	-	-	4'-11"	4'-3"	-	-	-	-	6 5/8"
100.0	6'-9"	6'-4"	-	-	-	-	4'-10"	4'-2"	-	-	-	-	6 5/8"
105.0	6'-6"	6'-0"	-	-	-	-	4'-9"	4'-0"	-	-	-	-	6 5/8"
110.0	6'-6"	5'-9"	-	-	-	-	4'-8"	3'-11"	-	-	-	-	6 5/8"
115.0	6'-5"	5'-6"	-	-	-	-	4'-7"	3'-10"	-	-	-	-	6 5/8"
120.0	6'-3"	5'-3"	-	-	-	-	4'-6"	3'-9"	-	-	-	-	6 5/8"

* NOTES:

- ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 21 INDICATE THAT AN ANCHOR SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND A.S.D. DESIGN LOAD.
- REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH 3/8"Ø HILTI KWIK HUS BOLT, 5/16"Ø TAPCON XL, 5/16"Ø ULTRACON OR 5/16"Ø TAPPER+XTREME ANCHORS INTO GROUTED CONCRETE BLOCK OR WITH 1/4"Ø HEX HD. HHW SELF-DRILL TEK SCREWS AT MULLIONS CONNECTION. VALID FOR WALL MOUNTED, TRAPPED MOUNTED, AND BUILD-OUT MOUNTED.
- MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.
- MIN. SEPARATION TO GLASS FOR WIND ZONES 1, 2 & 3 IS 1" AND AS SHOWN ON CHART Ic FOR WIND ZONE 4, PER ASTM E 1996.

SLAT SPAN DEFINITION



END RETENTION SYSTEM INTO GROUTED CONCRETE BLOCK

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

NO. 44167

STEVEN J. WALTER

PROFESSIONAL ENGINEER

FLORIDA

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TILTECO INC.

TILIT TESTING & ENGINEERING COMPANY

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EB-0006719

WALTER A. TILIT Jr., P.E.

FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP

HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

4268 WESTROADS DRIVE

WEST PALM BEACH, FL 33407

PHONE: (877)999-2772 FAX: (561)209-8380

08/18/17

DATE

17-226

DRAWING No

2

REV. No

DESCRIPTION

DATE

1

OLD 15-090

08/18/17

3

4

SHEET 18 OF 29

[illegible]

SLAT SPAN DEFINITION

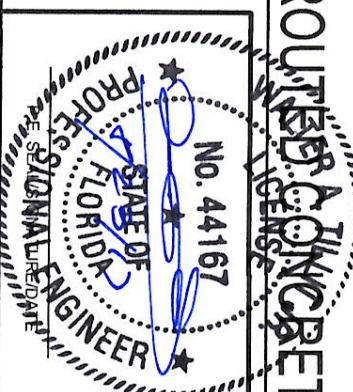
1. ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 22 INDICATE THAT AN ANCHOR SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND A.S.D. DESIGN LOAD.
2. REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH **3/8"Ø WEDGE BOLTS ANCHOR OR 5/16"Ø TAPCON XL ANCHOR**, INTO POURED CONCRETE OR WITH 1/4"Ø HEX HD. HWH SELF-DRILL 410 S.S. SCREWS AT MULLIONS CONNECTION. VALID FOR WALL MOUNTED, TRAPPED MOUNTED, AND BUILD-OUT MOUNTED.
3. MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.
4. MIN. SEPARATION TO GLASS FOR WIND ZONES 1, 2 & 3 IS 1" AND AS SHOWN ON CHART 1c FOR WIND ZONE 4, PER ASTM E 1996.

END RETENTION SYSTEM

INTO CONCRETE OR GROUTED A CONCRETE BLOCK

GROUTED CONCRETE BLOCK											
SLAT PERFORMANCE CHARTS Ia, Ib & Ic (ONLY VALID FOR 3/8" SLIP) FOR A GIVEN A.S.D. DESIGN LOAD (p.s.f.), PRODUCT MOUNT CONDITION INCLUDING ANCHOR TYPE											
CHART Ia				CHART Ib				CHART Ic			
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE			
3/8"Ø HILTI KWIK HUS BOLT ANCHOR				5/16"Ø TAPCON XL ANCHORS							
A.S.D. DESIGN LOAD (psf)		MAX. SLAT SPAN "L _{MAX.} " (FT)				A.S.D. DESIGN LOAD (psf)		MAX. SLAT SPAN "L _{MAX.} " (FT)			
WALL MOUNT	TRAPPED MOUNT	2" BUILD-OUT MOUNT W/ (12d)	4" BUILD-OUT MOUNT W/ (12d)	WALL MOUNT	TRAPPED MOUNT	2" BUILD-OUT MOUNT W/ (12d)	4" BUILD-OUT MOUNT W/ (12d)	WALL MOUNT	TRAPPED MOUNT	2" BUILD-OUT MOUNT W/ (12d)	4" BUILD-OUT MOUNT W/ (12d)
SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *	SEE NOTES *
30.0	8'-4"	8'-4"	8'-4"	8'-4"	8'-4"	7'-9"	6'-4"	6 3/4"			
35.0	8'-4"	8'-4"	8'-4"	8'-4"	8'-4"	7'-0"	5'-10"	6 3/4"			
40.0	8'-4"	8'-4"	8'-4"	8'-4"	8'-4"	6'-6"	5'-6"	6 3/4"			
45.0	8'-4"	8'-4"	8'-0"	6'-6"	8'-4"	8'-4"	5'-2"	6 3/4"			
50.0	8'-4"	8'-4"	7'-6"	6'-2"	8'-4"	8'-4"	4'-10"	6 3/4"			
55.0	8'-4"	8'-4"	7'-0"	5'-10"	8'-4"	8'-4"	4'-9"	6 3/4"			
60.0	8'-4"	8'-4"	6'-8"	5'-7"	8'-4"	8'-4"	4'-7"	6 3/4"			
65.0	7'-9"	7'-9"	6'-4"	5'-4"	7'-9"	7'-9"	4'-5"	6 5/8"			
70.0	7'-5"	7'-5"	6'-0"	5'-0"	7'-5"	7'-5"	4'-3"	6 3/8"			
75.0	7'-0"	7'-0"	5'-10"	4'-11"	7'-0"	7'-0"	4'-2"	6 1/4"			
80.0	6'-10"	6'-10"	5'-7"	4'-9"	6'-10"	6'-10"	4'-0"	6 1/8"			

1. ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 23 INDICATE THAT AN ANCHOR SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND A.S.D. DESIGN LOAD.
2. REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH **3/8"Ø HILTI KWIK HUS BOLT ANCHOR OR 5/16"Ø TAPCON XL ANCHOR** INTO GROUTED CONCRETE BLOCK OR WITH **1/4"Ø HEX HD. HHW SELF-DRILL 410 S.S. SCREWS** AT MULLIONS CONNECTION. VALID FOR WALL MOUNTED, TRAPPED MOUNTED, AND BUILD-OUT MOUNTED.
3. MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.
4. MIN. SEPARATION TO GLASS FOR WIND ZONES 1, 2 & 3 IS 1" AND AS SHOWN ON CHART 1c FOR WIND ZONE 4, PER ASTM E 1996.



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Index

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EB-000671

WALTER A. TILLIT JR., P.E.

FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER						L.C. DRAWN BY:
AMERICAN SHUTTER SYSTEMS ASSOC., INC. 4268 WESTROADS DRIVE WEST PALM BEACH, FL. 33407 PHONE: (877)999-2772 FAX: (561)209-8380						08/18/17 DATE
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE	
1	OLD 15-090	09/18/17	3			
2						
SHEET 19 OF 29						17-226 DRAWING No

END RETENTION SYSTEM W/ SLAT 1

MAX. ANCHOR'S SPACING SCHEDULE IIA

FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 3/8"Ø WEDGE BOLT ANCHORS TO POURED CONCRETE WALL, A.S.D. DESIGN LOAD & SLAT SPAN RANGE †

WALL MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' † > 12'-16' †
≤ 30.0	9"	9"	9"	9"	9"	9"
>30-40	8"	8"	8"	8"	8"	8"
>40-60	7"	7"	7"	7"	7"	7"
>60-80	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"
>80-105	7 1/2"	7 1/2"	7 1/2"	7 1/2"	7 1/2"	—
>105-120	9"	9"	9"	9"	—	—

TRAPPED MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' † > 12'-16' †
≤ 30.0	6"	6"	6"	6"	6"	6"
>30-40	6"	6"	6"	6"	6"	6"
>40-60	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"
>60-80	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	—
>80-105	5"	5"	5"	5"	5"	—
>105-120	6"	6"	6"	6"	—	—



SLAT SPAN DEFINITION

† NOTE:
MAX. SLAT SPAN FOR A
GIVEN A.S.D. DESIGN LOAD
SHALL **NEVER** EXCEED MAX.
SLAT SPAN INDICATED ON
SLAT PERFORMANCE CHART
ON SHEET 17.

MAX. ANCHOR'S SPACING SCHEDULE IIA

FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 5/16"Ø TAPCON XL, ULTRACON OR TAPER+XTREME ANCHORS TO POURED CONCRETE WALL, A.S.D. DESIGN LOAD & SLAT SPAN RANGE †

WALL MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' † > 12'-16' †
≤ 30.0	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"
>30-40	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"
>40-60	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"
>60-80	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"
>80-105	4"	4"	4"	4"	4"	—
>105-120	4"	4"	4"	4"	—	—

TRAPPED MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' † > 12'-16' †
≤ 30.0	5"	5"	5"	5"	5"	5"
>30-40	4"	4"	4"	4"	4"	4"
>40-60	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"
>60-80	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	—
>80-105	4"	4"	4"	4"	4"	—
>105-120	4"	4"	4"	4"	—	—

BUILD-OUT MOUNT W/12A

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †	> 7'-8' †
≤ 30.0	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
>30-40	6"	4 1/2"	6"	4 1/2"	6"	4 1/2"
>40-60	5"	4 1/2"	5"	4 1/2"	5"	4 1/2"
>60-80	5"	4"	5"	4"	5"	4"

BUILD-OUT MOUNT W/15

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' † > 12'-16' †
≤ 30.0	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
>30-40	5"	5"	5"	5"	5"	5"
>40-60	5"	5"	5"	5"	5"	5"
>60-80	5"	5"	5"	5"	5"	—

BUILD-OUT MOUNT W/12A

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †	> 7'-8' †
≤ 30.0	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
>30-40	4"	3 1/2"	4"	3 1/2"	4"	3 1/2"
>40-60	4"	4"	4"	4"	4"	4"
>60-80	4"	4"	4"	4"	3 1/2"	—

BUILD-OUT MOUNT W/15

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE					
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' † > 12'-16' †
≤ 30.0	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
>30-40	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	—
>40-60	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	—
>60-80	4 1/2"	4 1/2"	4 1/2"	4 1/2"	4 1/2"	—

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

NO. 44167

PROFESSIONAL ENGINEER

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TILTIT TESTING & ENGINEERING COMPANY

6355 N.W. 36th St., Ste. 305 - VIRGINIA GARDENS, FL 33166

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EB-0006719

WALTER A. TILTIT Jr., P.E.

FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP

HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

4268 WESTROADS DRIVE

WEST PALM BEACH, FL 33407

PHONE: (877)999-2772 FAX: (561)209-8380

L.C.

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08/18/17

DATE

17-226

DRAWING No

SHEET 20 OF 29

END RETENTION SYSTEM W/ SLAT ①

MAX. ANCHOR'S SPACING SCHEDULE IIB

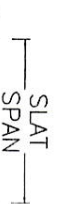
FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 3/8"Ø HILTI KWIK HUS BOLT ANCHORS TO GROUTED CONCRETE BLOCK WALL, A.S.D. DESIGN LOAD & SLAT SPAN RANGE +

WALL MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE						
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †
≤ 30.0	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"
>30-40	6"	6"	6"	6"	6"	6"	6"
>40-60	6"	6"	6"	6"	6"	6"	-
>60-80	6"	6"	6"	6"	6"	-	-
>80-105	6 1/2"	6 1/2"	6 1/2"	6 1/2"	-	-	-
>105-120	6"	6"	6"	-	-	-	-

TRAPPED MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE						
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †
≤ 30.0	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"	6 1/2"
>30-40	6"	6"	6"	6"	6"	6"	6"
>40-60	6"	6"	6"	6"	6"	6"	-
>60-80	6"	6"	6"	6"	6"	-	-
>80-105	6"	6"	6"	-	-	-	-
>105-120	6 1/2"	6 1/2"	6 1/2"	-	-	-	-



SLAT SPAN DEFINITION

† NOTE:
MAX. SLAT SPAN FOR A GIVEN A.S.D. DESIGN LOAD SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 18.

MAX. ANCHOR'S SPACING SCHEDULE IIB
FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 5/16"Ø TAPCON XL, ULTRACON OR TAPPER+XTREME ANCHORS TO GROUTED CONCRETE BLOCK WALL, A.S.D. DESIGN LOAD & SLAT + SPAN RANGE

WALL MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE						
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †
≤ 30.0	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	-
>30-40	5"	5"	5"	5"	5"	-	-
>40-60	5"	5"	5"	5"	-	-	-
>60-80	5"	5"	5"	-	-	-	-
>80-105	6"	6"	-	-	-	-	-
>105-120	6"	6"	-	-	-	-	-

TRAPPED MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE						
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †
≤ 30.0	5"	5"	5"	5"	5"	-	-
>30-40	5"	5"	5"	5"	-	-	-
>40-60	5"	5"	5"	-	-	-	-
>60-80	5"	5"	-	-	-	-	-
>80-105	5"	5"	-	-	-	-	-
>105-120	5 1/2"	-	-	-	-	-	-

BUILD-OUT MOUNT W/ ①2A

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	0'-4' †		> 4'-5' †		> 5'-6' †		> 6'-7' †		> 7'-8' †	
	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"
>30-40	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"
>40-60	6"	6"	6"	6"	6"	6"	6"	6"	—	—
>60-80	6"	6"	6"	6"	6"	6"	—	—	—	—

BUILD-OUT MOUNT W/ ①5

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE													
	0'-4' †		> 4'-5' †		> 5'-6' †		> 6'-7' †		> 7'-9' †		> 9'-12' †		> 12'-16' †	
	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	—	—
>30-40	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	—	—
>40-60	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	—	—
>60-80	6"	6"	6"	6"	6"	6"	6"	—	—	—	—	—	—	—

BUILD-OUT MOUNT W/ ①2A

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	0'-4' †		> 4'-5' †		> 5'-6' †		> 6'-7' †		> 7'-8' †	
	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O
≤ 30.0	5"	5"	5"	5"	5"	5"	5"	5"	—	—
>30-40	5"	5"	5"	5"	5"	5"	5"	—	—	—
>40-60	5"	5"	5"	5"	5"	—	—	—	—	—
>60-80	5"	5"	5"	5"	—	—	—	—	—	—

BUILD-OUT MOUNT W/ ①5

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE												
	0'-4' †	> 4'-5' †		> 5'-6' †		> 6'-7' †		> 7'-9' †		> 9'-12' †		> 12'-16' †	
	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O
≤ 30.0	5"	5"	5"	5"	5"	5"	5"	5"	—	—	—	—	—
>30-40	5"	5"	5"	5"	5"	5"	—	—	—	—	—	—	—
>40-60	5"	5"	5"	5"	—	—	—	—	—	—	—	—	—
>60-80	5"	5"	5"	—	—	—	—	—	—	—	—	—	—

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



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**40mm ER SLAT BERTHA ROLL-UP
HURRICANE SHUTTER**

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PHONE: (877) 999-2772 FAX: (561) 209-8380

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FLORIDA Lic. # 44167

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SHEET 21 OF 29

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BUILD-OUT MOI INT W/ (12A)

ASD. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	0'-4' †		> 4'-5' †		> 5'-6' †		> 6'-7' †		> 7'-8' †	
	2" B.O.	4" B.O.	2" B.O.	4" B.O.	2" B.O.	4" B.O.	2" B.O.	4" B.O.	2" B.O.	4" B.O.
≤ 30.0	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>30-40	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>40-60	8 1/2"	6 1/2"	8 1/2"	6 1/2"	8 1/2"	6 1/2"	8 1/2"	6 1/2"	8 1/2"	6 1/2"
>60-80	8 1/2"	6"	8 1/2"	6"	8 1/2"	6"	8 1/2"	6"	8 1/2"	6"

† NOTE: MAX. SLAT SPAN FOR A GIVEN A.S.D. DESIGN LOAD SHALL NEVER EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 19.

† NOTE:
MAX. SLAT SPAN FOR A
GIVEN A.S.D. DESIGN LOAD
SHALL **NEVER** EXCEED MAX.
SLAT SPAN INDICATED ON
SLAT PERFORMANCE CHART
ON SHEET 19

2

+

BUILD-OUT WITH 42A

ASD DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	0'-4' †		> 4'-5' †		> 5'-6' †		> 6'-7' †		> 7'-8' †	
	2" B.O.	4" B.O.	2" B.O.	4" B.O.	2" B.O.	4" B.O.	2" B.O.	4" B.O.	2" B.O.	4" B.O.
≤ 30.0	6"	5 1/2"	6"	5 1/2"	6"	5 1/2"	6"	5 1/2"	6"	5 1/2"
>30-40	6"	4"	6"	4"	6"	4"	6"	4"	6"	4"
>40-60	4"	3 3/4"	4"	3 3/4"	4"	3 3/4"	4"	3 3/4"	4"	—
>60-80	4"	3 3/4"	4"	3 3/4"	4"	3 3/4"	4"	3 3/4"	4"	—

FLORIDA BUILD

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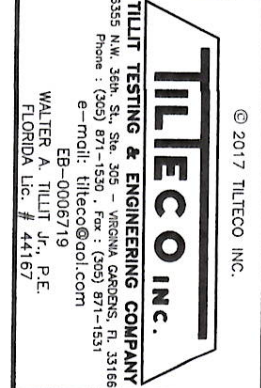
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Page 22 of 22



END RETENTION SYSTEM W/ SLAT 3

MAX. ANCHOR'S SPACING SCHEDULE I1b

FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 3/8"Ø HILTI KWIK HUS BOLT ANCHORS TO GROUTED CONCRETE BLOCK WALL, A.S.D. DESIGN LOAD & SLAT SPAN RANGE

WALL MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE				
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †
≤ 30.0	10"	10"	10"	10"	10"
>30-40	10"	10"	10"	10"	10"
>40-60	7 1/2"	7 1/2"	7 1/2"	7 1/2"	7 1/2"
>60-80	7 1/2"	7 1/2"	7 1/2"	7 1/2"	—

TRAPPED MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE				
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †
≤ 30.0	9"	9"	9"	9"	9"
>30-40	9"	9"	9"	9"	9"
>40-60	7"	7"	7"	7"	7"
>60-80	6 1/2"	6 1/2"	6 1/2"	6 1/2"	—

BUILD-OUT MOUNT W/ 12A

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O
≤ 30.0	8 1/2"	6"	8 1/2"	6"	8 1/2"	6"	8 1/2"	6"	8 1/2"	6"
>30-40	6 1/2"	6"	6 1/2"	6"	6 1/2"	6"	6 1/2"	6"	6 1/2"	6"
>40-60	6"	6"	6"	6"	6"	6"	6"	6"	6"	—
>60-80	6"	6"	6"	6"	6"	6"	6"	6"	6"	—



SLAT SPAN DEFINITION

† NOTE:
MAX. SLAT SPAN FOR A
GIVEN A.S.D. DESIGN LOAD
SHALL NEVER EXCEED MAX.
SLAT SPAN INDICATED ON
SLAT PERFORMANCE CHART
ON SHEET 19.

MAX. ANCHOR'S SPACING SCHEDULE I1b

FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 5/16"Ø TAPCON XL ANCHORS TO GROUTED CONCRETE BLOCK WALL,
A.S.D. DESIGN LOAD & SLAT SPAN RANGE †

WALL MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE				
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †
≤ 30.0	8"	8"	8"	8"	8"
>30-40	8"	8"	8"	8"	8"
>40-60	7"	7"	7"	7"	7"
>60-80	7"	7"	7"	7"	—

BUILD-OUT MOUNT W/ 12A

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE									
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †	2" B.O	4" B.O	2" B.O	4" B.O	2" B.O
≤ 30.0	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"
>30-40	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	—
>40-60	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	—	—	—	—	—
>60-80	3 3/4"	3 3/4"	3 3/4"	3 3/4"	—	—	—	—	—	—

TRAPPED MOUNT

A.S.D. DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE				
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-8' †
≤ 30.0	6"	6"	6"	6"	6"
>30-40	6"	6"	6"	6"	6"
>40-60	5 1/2"	5 1/2"	5 1/2"	5 1/2"	5 1/2"
>60-80	5 1/2"	5 1/2"	5 1/2"	5 1/2"	—

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

40mm ER SLAT BERTHA ROLL-UP
HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

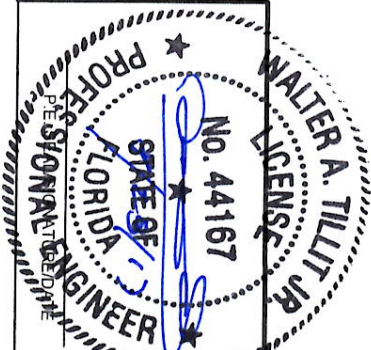
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WEST PALM BEACH, FL. 33407
PHONE: (877)999-2772 FAX: (561)209-8390

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TILECO INC.

TILITEC TESTING & ENGINEERING COMPANY
6555 N.W. 16th St. Suite 302
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MULLION SCHEDULE FOR END RETENTION SYSTEM W/ SLAT 1

SCHEDULE 1a

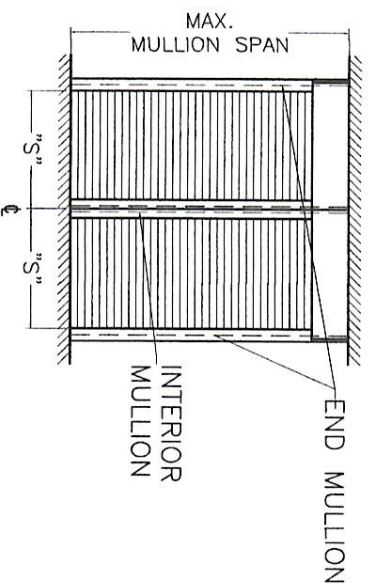
FLOOR TO CEILING (TRAPPED) MOUNTING

MAX SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A MAX MULLION SPACING (ft) *

A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
		24' 4"x6"x1/4" MULLION			25' 4"x8"x1/4" MULLION		
		ORIENTATION #1 ()	ORIENTATION #2 ()	ORIENTATION #1 ()	ORIENTATION #2 ()	ORIENTATION #1 ()	ORIENTATION #2 ()
		END	INTERIOR	END	INTERIOR	END	INTERIOR
30	16'-0"	6' - 6"	9' - 4"	5' - 11"	11' - 6"	7' - 8"	9' - 7"
35	16'-0"	6' - 0"	8' - 10"	5' - 6"	10' - 11"	7' - 2"	8' - 11"
40	16'-0"	5' - 8"	8' - 5"	5' - 2"	10' - 5"	6' - 5"	8' - 0"
45	16'-0"	5' - 8"	8' - 4"	5' - 2"	10' - 4"	6' - 4"	8' - 1"
50	15'-5"	5' - 6"	8' - 2"	5' - 1"	9' - 10"	6' - 1"	7' - 10"
55	14'-10"	5' - 6"	8' - 1"	5' - 0"	9' - 5"	5' - 11"	7' - 9"
60	14'-3"	5' - 6"	8' - 0"	5' - 1"	9' - 3"	5' - 11"	7' - 10"
65	13'-9"	5' - 6"	7' - 11"	5' - 0"	9' - 0"	5' - 11"	7' - 7"
70	13'-2"	5' - 5"	7' - 11"	5' - 0"	8' - 7"	5' - 10"	7' - 5"
75	12'-6"	5' - 6"	7' - 10"	5' - 1"	8' - 7"	5' - 11"	7' - 5"
80	12'-0"	5' - 5"	7' - 10"	5' - 0"	8' - 6"	5' - 9"	7' - 2"
85	11'-4"	5' - 6"	7' - 10"	5' - 1"	8' - 7"	6' - 0"	7' - 4"
90	10'-9"	5' - 8"	7' - 10"	5' - 3"	8' - 9"	6' - 2"	7' - 7"
95	10'-0"	5' - 10"	7' - 11"	5' - 5"	9' - 0"	6' - 7"	8' - 0"
100	9'-5"	6' - 0"	8' - 1"	5' - 7"	9' - 4"	7' - 0"	8' - 6"
105	8'-9"	6' - 4"	8' - 2"	5' - 11"	9' - 10"	7' - 6"	8' - 6"
110	8'-1"	6' - 2"	8' - 1"	5' - 10"	9' - 6"	7' - 5"	8' - 6"
115	7'-5"	6' - 0"	8' - 0"	5' - 9"	9' - 2"	7' - 2"	8' - 3"
120	6'-10"	6' - 0"	7' - 11"	5' - 8"	8' - 10"	6' - 11"	7' - 10"

* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX. ALLOWABLE SLAT SPAN FOR THAT A.S.D. DESIGN LOAD SHALL NOT BE EXCEEDED.

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



MULLION SPACING: "S"

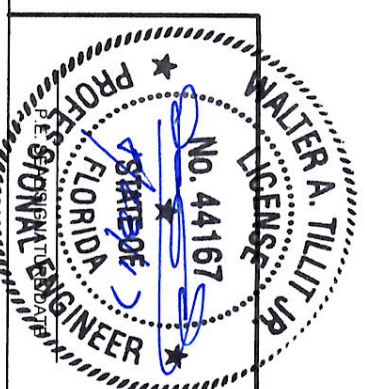
SCHEDULE 2a

WALL MOUNTING

MAX SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A MAX MULLION SPACING (ft) *

A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
		24' 4"x6"x1/4" MULLION			25' 4"x8"x1/4" MULLION		
		ORIENTATION #1 ()	ORIENTATION #2 ()	ORIENTATION #1 ()	ORIENTATION #2 ()	ORIENTATION #1 ()	ORIENTATION #2 ()
		END	INTERIOR	END	INTERIOR	END	INTERIOR
30	16'-0"	6' - 5"	9' - 3"	5' - 11"	11' - 6"	7' - 8"	9' - 7"
35	16'-0"	6' - 0"	8' - 10"	5' - 6"	10' - 11"	7' - 2"	8' - 11"
40	16'-0"	5' - 8"	8' - 5"	5' - 2"	10' - 5"	6' - 9"	8' - 5"
45	16'-0"	5' - 8"	8' - 4"	5' - 2"	10' - 4"	6' - 9"	8' - 5"
50	15'-5"	5' - 6"	8' - 2"	5' - 1"	10' - 2"	6' - 7"	8' - 8"
55	14'-10"	5' - 6"	8' - 1"	5' - 0"	10' - 0"	6' - 6"	8' - 8"
60	14'-3"	5' - 6"	8' - 0"	5' - 1"	9' - 11"	6' - 6"	8' - 7"
65	13'-9"	5' - 6"	7' - 11"	5' - 0"	9' - 10"	6' - 5"	8' - 6"
70	13'-2"	5' - 6"	7' - 10"	5' - 0"	9' - 9"	6' - 6"	8' - 5"
75	12'-6"	5' - 6"	7' - 10"	5' - 1"	9' - 9"	6' - 6"	8' - 5"
80	12'-0"	5' - 6"	7' - 9"	5' - 0"	9' - 8"	6' - 6"	8' - 4"
85	11'-4"	5' - 6"	7' - 10"	5' - 1"	9' - 8"	6' - 7"	8' - 4"
90	10'-9"	5' - 7"	7' - 10"	5' - 3"	9' - 9"	6' - 9"	8' - 5"
95	10'-0"	5' - 10"	7' - 11"	5' - 5"	9' - 10"	6' - 11"	8' - 5"
100	9'-5"	6' - 0"	8' - 0"	5' - 7"	10' - 0"	7' - 2"	8' - 6"
105	8'-9"	6' - 4"	8' - 2"	5' - 11"	10' - 2"	7' - 6"	8' - 6"
110	8'-1"	6' - 3"	8' - 1"	5' - 10"	10' - 0"	7' - 5"	8' - 6"
115	7'-5"	6' - 2"	8' - 0"	5' - 9"	9' - 11"	7' - 3"	8' - 5"
120	6'-10"	6' - 0"	7' - 11"	5' - 8"	9' - 10"	7' - 2"	8' - 5"

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



© 2017 TILTECO INC.		L.C. DRAWN BY:			
40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER		08/18/17 DATE			
AMERICAN SHUTTER SYSTEMS ASSOC., INC.		17-226 DRAWING NO			
TILTECO INC. 6355 N.W. 36th St., Ste. 305 - VIRGINIA GARDENS, FL 33166 Phone: (305) 871-1530, Fax: (305) 871-1531 e-mail: tilttec@qol.com		4268 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8380			
REV. NO	DESCRIPTION	DATE	REV. NO	DESCRIPTION	DATE
1	QAD 15-090	08/18/17	3		
2			4		
WALTER A. TILLITT JR., P.E. FLORIDA LIC. # 44167			SHEET 24 OF 29		

MULLION SCHEDULE FOR END RETENTION SYSTEM W/ SLAT 1

SCHEDULE 1c

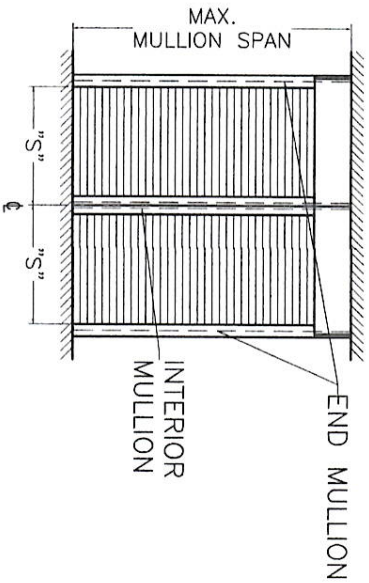
FLOOR TO CEILING (TRAPPED) MOUNTING

MAX SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A 7'-0" MAX. MULLION SPACING (ft) *

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (ft)			
		24) 4"x6"x1/4" MULLION		25) 4"x8"x1/4" MULLION	
		ORIENTATION #1 ()	ORIENTATION #2 ()	ORIENTATION #1 ()	ORIENTATION #2 ()
		END	INTERIOR	END	INTERIOR
30.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
35.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
40.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
45.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
50.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
55.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
60.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
65.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
70.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
75.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
80.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
85.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
90.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
95.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
100.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
105.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
110.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
115.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
120.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"

* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX. ALLOWABLE SLAT SPAN FOR THAT A.S.D. DESIGN LOAD SHALL NOT BE EXCEEDED.

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



MULLION SPACING: "S"

SCHEDULE 2c

WALL MOUNTING

MAX SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A 7'-0" MAX. MULLION SPACING (ft) *

A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (ft)			
		24) 4"x6"x1/4" MULLION		25) 4"x8"x1/4" MULLION	
		ORIENTATION #1 ()	ORIENTATION #2 ()	ORIENTATION #1 ()	ORIENTATION #2 ()
		END	INTERIOR	END	INTERIOR
30.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
35.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
40.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
45.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
50.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
55.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
60.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
65.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
70.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
75.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
80.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
85.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
90.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
95.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
100.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
105.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
110.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
115.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
120.0	7'-0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

40mm ER SLAT BERTHA ROLL-UP
HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

4268 WESTROADS DRIVE
WEST PALM BEACH, FL. 33407
PHONE: (877)999-2772 FAX: (561)209-8380

REV. No. 1 DESCRIPTION OLD 15-090 18/18/17 3 REV. No. 4 DESCRIPTION DATE SHEET 25 OF 29

TILECO INC.

TILIT TESTING & ENGINEERING COMPANY
6355 N.W. 35th, St., Ste. 305 - VIRGINIA GARDENS, FL. 33166
Phone : (305) 871-1530, Fax : (305) 871-1531
e-mail: tileco@tdi.com
EB-0006719
WALTER A. TILIT Jr., P.E.
FLORIDA Lic. # 44167



MULLION SCHEDULE FOR END RETENTION SYSTEM W/ SLAT 1

SCHEDULE 1b

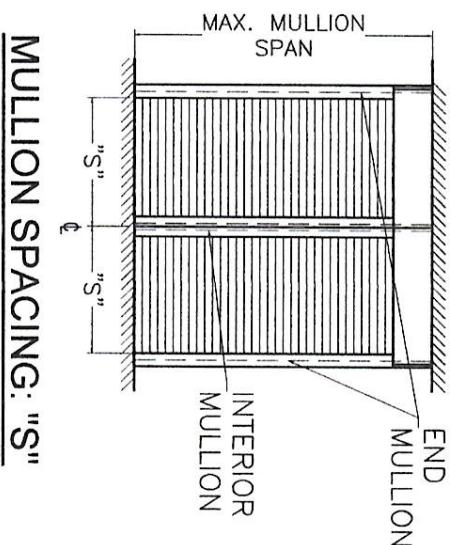
FLOOR TO CEILING (TRAPPED) MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (psf), AND A 12'-0" MAX. MULLION SPACING (ft) *

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)†	MAXIMUM MULLION SPAN (ft)							
		(24) 4"x6"x1/4" MULLION				(25) 4"x8"x1/4" MULLION			
		ORIENTATION #1 ()		ORIENTATION #2 ()		ORIENTATION #1 ()		ORIENTATION #2 ()	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	12'-0"	10' - 1"	11' - 6"	8' - 8"	12' - 0"	12' - 0"	12' - 0"	9' - 5"	12' - 0"
35.0	12'-0"	9' - 4"	10' - 11"	8' - 2"	12' - 0"	11' - 1"	11' - 11"	8' - 11"	12' - 0"
40.0	12'-0"	8' - 8"	10' - 5"	7' - 10"	12' - 0"	10' - 4"	11' - 4"	8' - 6"	12' - 0"
45.0	12'-0"	8' - 2"	10' - 1"	7' - 6"	12' - 0"	9' - 9"	10' - 11"	8' - 2"	12' - 0"
50.0	12'-0"	7' - 9"	9' - 8"	7' - 2"	12' - 0"	9' - 2"	10' - 7"	7' - 11"	12' - 0"
55.0	12'-0"	7' - 5"	9' - 5"	6' - 10"	11' - 8"	8' - 9"	10' - 3"	7' - 8"	12' - 0"
60.0	12'-0"	7' - 1"	9' - 2"	6' - 7"	11' - 4"	8' - 5"	9' - 11"	7' - 5"	12' - 0"
65.0	12'-0"	6' - 10"	8' - 11"	6' - 4"	11' - 0"	8' - 1"	9' - 8"	7' - 3"	12' - 0"
70.0	12'-0"	6' - 7"	8' - 8"	6' - 1"	10' - 9"	7' - 10"	9' - 5"	7' - 0"	12' - 0"
75.0	12'-0"	6' - 4"	8' - 6"	5' - 11"	10' - 6"	7' - 6"	9' - 3"	6' - 9"	12' - 0"
80.0	12'-0"	6' - 2"	8' - 4"	5' - 8"	10' - 3"	7' - 4"	9' - 0"	6' - 6"	12' - 0"

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

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



SCHEDULE 2b

WALL MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (psf), AND A 12'-0" MAX. MULLION SPACING (ft) *

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)†	MAXIMUM MULLION SPAN (ft)							
		(24) 4"x6"x1/4" MULLION				(25) 4"x8"x1/4" MULLION			
		ORIENTATION #1 ()		ORIENTATION #2 ()		ORIENTATION #1 ()		ORIENTATION #2 ()	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	12'-0"	8' - 8"	11' - 6"	8' - 8"	12' - 0"	12' - 0"	12' - 0"	9' - 5"	12' - 0"
35.0	12'-0"	8' - 2"	10' - 11"	8' - 2"	12' - 0"	11' - 1"	11' - 11"	8' - 11"	12' - 0"
40.0	12'-0"	7' - 10"	10' - 5"	7' - 10"	12' - 0"	10' - 4"	11' - 4"	8' - 6"	12' - 0"
45.0	12'-0"	7' - 6"	10' - 1"	7' - 6"	12' - 0"	9' - 9"	10' - 11"	8' - 2"	12' - 0"
50.0	12'-0"	7' - 2"	9' - 8"	7' - 2"	12' - 0"	9' - 2"	10' - 7"	7' - 11"	12' - 0"
55.0	12'-0"	6' - 10"	9' - 5"	6' - 10"	11' - 8"	8' - 9"	10' - 3"	7' - 8"	12' - 0"
60.0	12'-0"	6' - 7"	9' - 2"	6' - 7"	11' - 4"	8' - 5"	9' - 11"	7' - 5"	12' - 0"
65.0	12'-0"	6' - 4"	8' - 11"	6' - 4"	11' - 0"	8' - 1"	9' - 8"	7' - 3"	12' - 0"
70.0	12'-0"	6' - 1"	8' - 8"	6' - 1"	10' - 9"	7' - 10"	9' - 5"	7' - 0"	12' - 0"
75.0	12'-0"	5' - 11"	8' - 6"	5' - 11"	10' - 6"	7' - 6"	9' - 3"	6' - 9"	12' - 0"
80.0	12'-0"	5' - 8"	8' - 4"	5' - 8"	10' - 3"	7' - 4"	9' - 0"	6' - 6"	12' - 0"

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

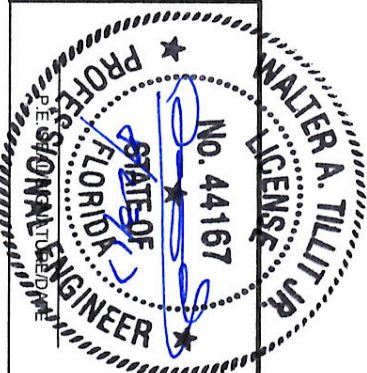
4268 WESTROADS DRIVE
WEST PALM BEACH, FL 33407
PHONE: (877)989-2772 FAX: (561)209-8380

REV. No DESCRIPTION DATE REV. No DESCRIPTION DATE
1 OLD 15-090 15/16/17 3
2 SHEET 26 OF 29

TILECO INC.

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: tillitco@aol.com

WALTER A. TILLIT Jr., P.E.
FLORIDA Lic. # 44167



MULLION SCHEDULE FOR END RETENTION SYSTEM W/ SLAT 1

SCHEDULE 1b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)

FLOOR TO CEILING (TRAPPED) MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (psf),
AND FOR 12'-0" (CASE I) & 8'-0" (CASES Ia & II) MAX. MULLION SPACING (ft) *

INSTALLATION CASES	A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
			24" 4"x6"x1/4" MULLION		25" 4"x8"x1/4" MULLION			
			ORIENTATION #1 () END	ORIENTATION #2 () INTERIOR	ORIENTATION #1 () END	ORIENTATION #1 () INTERIOR	ORIENTATION #2 () INTERIOR	ORIENTATION #2 () INTERIOR
CASE I	30.0	12'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	35.0	12'-0"	-	12' - 0"	11' - 1"	11' - 1"	12' - 0"	12' - 0"
	40.0	12'-0"	-	12' - 0"	10' - 4"	11' - 4"	12' - 0"	12' - 0"
	45.0	12'-0"	-	12' - 0"	9' - 9"	10' - 11"	12' - 0"	12' - 0"
	50.0	12'-0"	-	12' - 0"	8' - 11"	10' - 7"	12' - 0"	12' - 0"
	55.0	12'-0"	-	11' - 8"	8' - 2"	10' - 3"	12' - 0"	12' - 0"
CASE Ia	60.0	12'-0"	-	11' - 4"	7' - 6"	9' - 11"	12' - 0"	12' - 0"
	60.8	12'-0"	-	11' - 3"	7' - 4"	9' - 11"	12' - 0"	12' - 0"
	30.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	35.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	40.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	45.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
CASE II	50.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	55.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	60.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	65.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	70.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	75.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
CASE IIa	80.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	85.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	90.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	95.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	100.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	100.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"

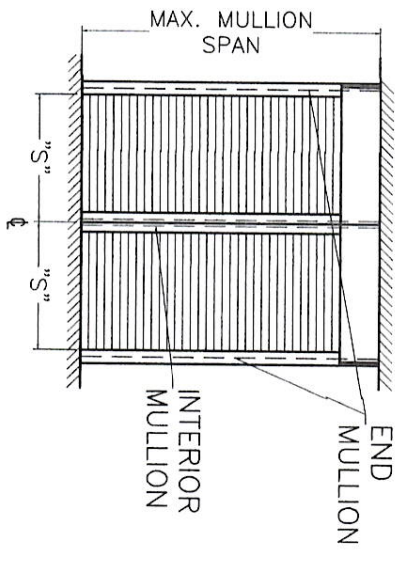
Δ NOTE: USE 9'-0" SPAN IF ANCHOR CONSISTS OF HILTI, INC. KWIK HUS-H
SCREW, POWER FASTENERS OR WEDGE-BOLT ANCHOR IN LIEU OF
HILTI KWIK BOLT TZ, SEE SCHEDULES 1 & 2 ON SHEET 11.

SCHEDULE 2b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)

WALL MOUNTED

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (psf),
AND FOR 12'-0" (CASE I) & 8'-0" (CASE II) MAX. MULLION SPACING (ft) *

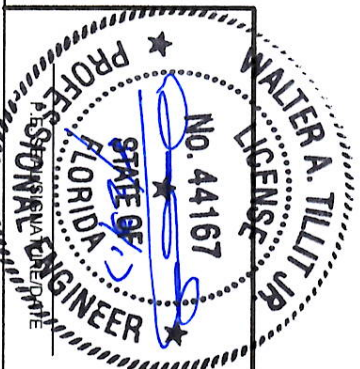
INSTALLATION CASES	A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
			24" 4"x6"x1/4" MULLION		25" 4"x8"x1/4" MULLION			
			ORIENTATION #1 () END	ORIENTATION #2 () INTERIOR	ORIENTATION #1 () END	ORIENTATION #1 () INTERIOR	ORIENTATION #2 () INTERIOR	ORIENTATION #2 () INTERIOR
CASE I	30.0	12'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
	35.0	12'-0"	-	12' - 0"	11' - 1"	11' - 1"	12' - 0"	12' - 0"
	40.0	12'-0"	-	12' - 0"	10' - 4"	11' - 4"	12' - 0"	12' - 0"
	45.0	12'-0"	-	12' - 0"	9' - 9"	10' - 11"	12' - 0"	12' - 0"
	50.0	12'-0"	-	12' - 0"	8' - 11"	10' - 7"	12' - 0"	12' - 0"
	55.0	12'-0"	-	11' - 8"	7' - 3"	10' - 3"	12' - 0"	12' - 0"
CASE II	60.0	12'-0"	-	11' - 4"	6' - 6"	9' - 11"	12' - 0"	12' - 0"
	60.8	12'-0"	-	11' - 3"	6' - 4"	9' - 11"	12' - 0"	12' - 0"
	30.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	35.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	40.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	45.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
CASE IIa	50.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	55.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	60.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	65.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	70.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	75.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
CASE IIb	80.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	85.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	90.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	95.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	100.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"
	100.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"



MULLION SPACING: "S"

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

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



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EB-0006719
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

40mm ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER		L.C. DRAWN BY:
AMERICAN SHUTTER SYSTEMS ASSOC., INC.		08/18/17 DATE
4266 WESTROADS DRIVE WEST PALM BEACH, FL 33407 PHONE: (877)999-2772 FAX: (561)209-8390		17-226 DRAWING No
REV. No	DESCRIPTION	DATE
1	QUD 15-090	29/18/17
2		
		SHEET 27 OF 29

MULLION SCHEDULE FOR END RETENTION SYSTEM W/ SLAT ③

SCHEDULE 1a

FLOOR TO CEILING (TRAPPED) MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A MAX. MULLION SPACING (ft) *

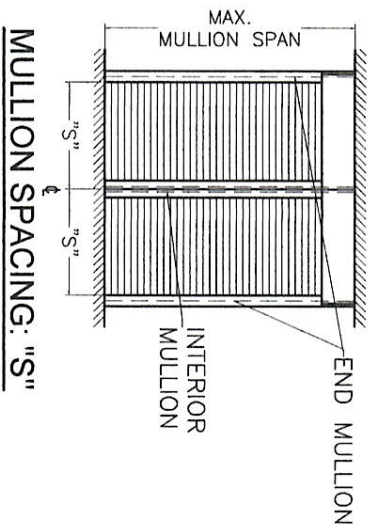
A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
		24" 4"x6"x1/4" MULLION			25" 4"x8"x1/4" MULLION		
		ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■
30	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
35	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
40	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
45	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
50	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
55	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
60	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
65	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
70	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
75	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
80	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"

SCHEDULE 1c

FLOOR TO CEILING (TRAPPED) MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A 6'-10" MAX. MULLION SPACING (ft) *

DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
		24" 4"x6"x1/4" MULLION			25" 4"x8"x1/4" MULLION		
		ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■
30.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
35.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
40.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
45.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
50.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
55.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
60.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
65.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
70.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
75.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
80.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"



SCHEDULE 2a

WALL MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A MAX. MULLION SPACING (ft) *

A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
		24" 4"x6"x1/4" MULLION			25" 4"x8"x1/4" MULLION		
		ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■
30	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
35	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
40	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
45	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
50	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
55	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
60	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
65	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
70	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
75	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"
80	8'-4"	12' - 0"	12' - 0"	10' - 10"	12' - 0"	12' - 0"	11' - 9"

SCHEDULE 2c

WALL MOUNTING

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D. DESIGN LOAD (psf), AND A 6'-10" MAX. MULLION SPACING (ft) *

A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)					
		24" 4"x6"x1/4" MULLION			25" 4"x8"x1/4" MULLION		
		ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■	ORIENTATION #1 (□) ■	ORIENTATION #2 (□) ■
30.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
35.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
40.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
45.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
50.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
55.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
60.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
65.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
70.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
75.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
80.0	6'-10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"

* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX. ALLOWABLE SLAT SPAN FOR THAT A.S.D. DESIGN LOAD SHALL NOT BE EXCEEDED.

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

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



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TILTECO INC.

40mm ER SLAT BERTHA ROLL-UP
HURRICANE SHUTTER

L.C.
DRAWN BY

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th Ave., Ste. 300 - Virginia Gardens, FL 33166
Phone: (305) 871-1531
E-mail: tilliteco@comcast.net

4288 WESTROADS DRIVE
WEST PALM BEACH, FL 33407
PHONE: (877) 999-2772 FAX: (561) 209-8380

17-25
DRAWING NO.

WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44167

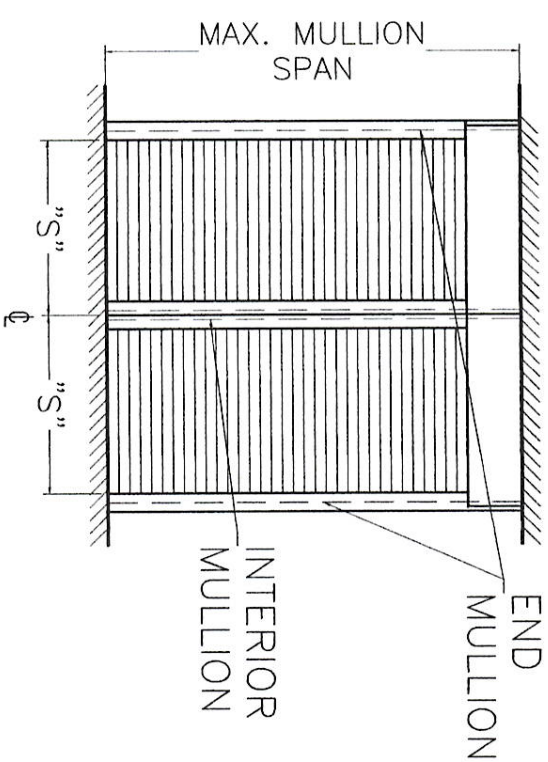
REV. NO. 1
DESCRIPTION
DATE 08/16/17
REV. NO. 2
DESCRIPTION
DATE

SHEET 28 OF 29

MULLION SCHEDULE FOR END RETENTION SYSTEM W/ SLAT③

SCHEDULE 1b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)										
FLOOR TO CEILING (TRAPPED) MOUNTING										
MAX. SPAN (ft.) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (psf).										
AND FOR 8'-0" (CASES Ia & II) MAX. MULLION SPACING (ft.) *										
INSTALLATION CASES	A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft.)							
			24 4"x6"x1/4" MULLION		25 4"x8"x1/4" MULLION					
			ORIENTATION #1	ORIENTATION #2	ORIENTATION #1	ORIENTATION #1	ORIENTATION #1	ORIENTATION #2		
			() END	() INTERIOR	() END	() INTERIOR	() INTERIOR	() INTERIOR	() INTERIOR	
CASE Ia	30.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
	35.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
	40.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
	45.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
	50.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
	55.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
CASE II	60.0	8'-0"	-	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	
	65.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	70.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	75.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	80.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	80.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	

SCHEDULE 2b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)										
WALL MOUNTED										
MAX SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (psf), AND FOR 8'-0" (CASE II) MAX MULLION SPACING (ft) *										
INSTALLATION CASES	A.S.D. DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPACING (ft)*	MAXIMUM MULLION SPAN (ft)							
			24 4"x6"x1/4" MULLION				25 4"x8"x1/4" MULLION			
			ORIENTATION #1 (□) END	ORIENTATION #2 (□) INTERIOR	ORIENTATION #1 (□) END	ORIENTATION #1 (□) INTERIOR	ORIENTATION #1 (□) INTERIOR	ORIENTATION #2 (□) INTERIOR		
CASE II¹	30.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	35.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	40.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	45.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	50.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	55.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	60.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	65.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
	70.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	
75.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"		
80.0	8'-0"	-	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"	9' - 0"		



MULLION SPACING: "S"

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

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

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

MULLION SPACING: "S"

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

40mm ER SLAT BERTHA ROLL-UP

HURRICANE SHUTTER

L.C.

DRAWN BY:

08/18/17

DATE

AMERICAN SHUTTER SYSTEMS ASSOC., INC.

4288 WESTROADS DRIVE

WEST PALM BEACH, FL 33407

PHONE: (877)999-2772 FAX: (561)209-8380

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 15-050	08/18/17	3		
2			4		

17-226

DRAWING No

SHEET 29 OF 29