

# AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.

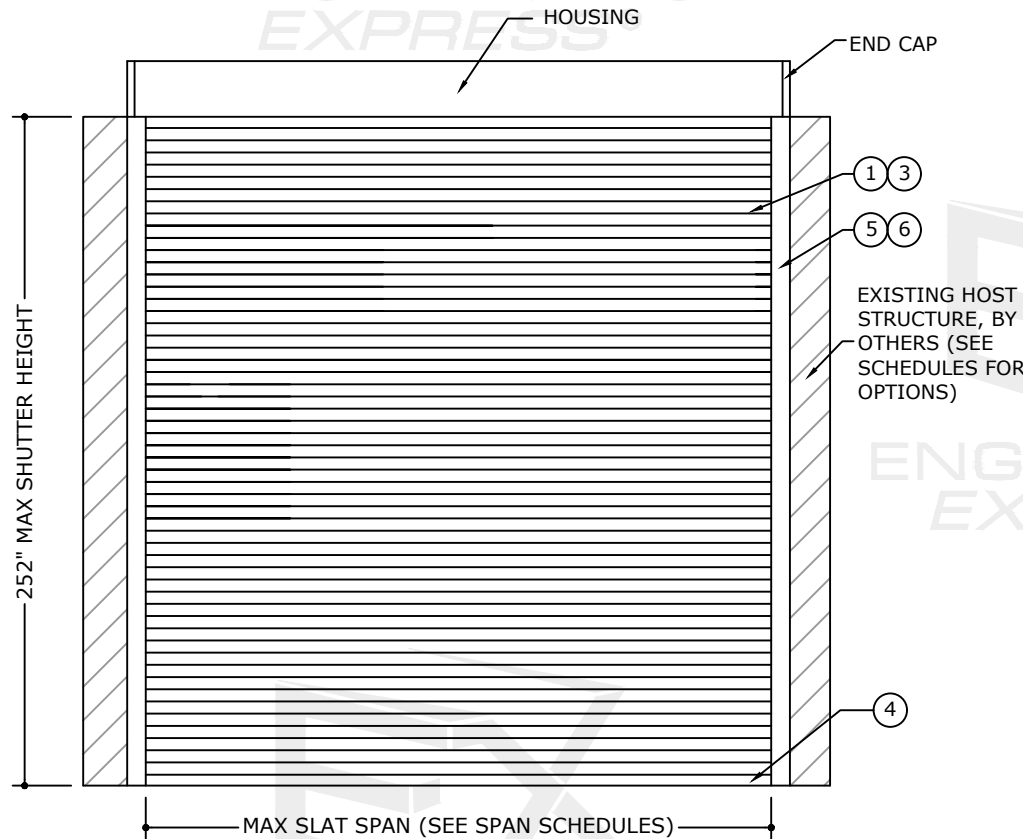
40 mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
END RETENTION & NON-END RETENTION

LARGE MISSILE IMPACT RESISTANT (MISSILE LEVEL D)

VALID FOR USE INSIDE AND OUTSIDE THE HVHZ (SEE LIMITATIONS HEREIN) (SEE LIMITATIONS HEREIN)  
NON-SITE-SPECIFIC STRUCTURAL PERFORMANCE EVALUATION. A DESIGN PROFESSIONAL SHALL BE RESPONSIBLE FOR CERTIFYING THE APPLICATION OF THIS INFORMATION TO ANY SITE-SPECIFIC LOCATION.

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

OCTOBER 9, 2023



1 TYPICAL END RETENTION ROLL-UP SHUTTER  
1 N.T.S. EXTERIOR ELEV  
SEE REMAINING SHEETS FOR COMPLETE ELEVATION OPTIONS

### SINGLE WALL ER SLATS ③

SPAN SCHEDULE	
OPEN SLATS	
SLAT SPAN	ALLOWABLE DESIGN PRESSURE
82.0"	± 80.0 PSF
85.0"	± 75.8 PSF
90.0"	± 69.7 PSF
95.0"	± 64.5 PSF
100.0"	± 60.0 PSF

GLASS SEPARATION SCHEDULE		
OPEN SLATS		
SLAT SPAN	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
82.0"	6.2"	6.2"
85.0"	8.2"	6.3"
90.0"	8.2"	6.5"
95.0"	8.2"	6.7"
100.0"	8.2"	6.9"

#### SPAN SCHEDULE NOTES (OPEN & CLOSED SLATS):

- SLAT SPAN IS DEFINED AS THE DISTANCE BETWEEN RAILS FOR SINGLE SPAN ASSEMBLIES.
- LINEAR INTERPOLATION BETWEEN SHUTTER SPANS IS NOT PERMITTED. FOR SPANS BETWEEN THOSE INDICATED ABOVE, THE DESIGN PRESSURES FOR THE NEXT HIGHER SPAN SHALL BE USED.
- FOR INSTALLATIONS TO WOOD FRAMING HOST, SEE SPAN CHARTS TO WOOD FRAMING (SHEET 7)

#### GLASS SEPARATION NOTES (OPEN & CLOSED SLATS):

- SLAT SPAN IS DEFINED AS THE DISTANCE BETWEEN RAILS FOR SINGLE SPAN ASSEMBLIES
- SEPARATION FROM GLAZING IS REQUIRED **ONLY** IN ASTM ESSENTIAL FACILITIES AND WIND ZONE 4.
- LINEAR INTERPOLATION BETWEEN SHUTTER SPANS IS NOT PERMITTED. FOR SPANS BETWEEN THOSE INDICATED ABOVE, THE SEPARATION FROM GLASS FOR THE NEXT HIGHER SPAN SHALL BE USED.

### DOUBLE WALL ER SLATS ①

SPAN SCHEDULE	
CLOSED SLATS	
SLAT SPAN	ALLOWABLE DESIGN PRESSURE
82.0"	± 120.0 PSF
85.0"	± 116.3 PSF
90.0"	± 110.9 PSF
96.0"	± 105.4 PSF
100.0"	± 102.2 PSF
105.0"	± 98.6 PSF
110.0"	± 95.4 PSF
115.0"	± 92.5 PSF
120.0"	± 89.9 PSF
125.0"	± 87.5 PSF
130.0"	± 85.3 PSF
135.0"	± 83.3 PSF
140.0"	± 81.4 PSF
144.0"	± 80.0 PSF
150.0"	± 75.6 PSF
155.0"	± 72.0 PSF
160.0"	± 68.3 PSF
165.0"	± 64.7 PSF
170.0"	± 61.0 PSF
175.0"	± 57.4 PSF
180.0"	± 53.8 PSF
185.0"	± 50.1 PSF
190.0"	± 46.5 PSF
192.0"	UP TO ± 45.0 PSF

GLASS SEPARATION SCHEDULE		
CLOSED SLATS		
SLAT SPAN	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
82.0"	7.8"	5.7"
85.0"	11.2"	5.8"
90.0"	11.2"	6.0"
96.0"	11.2"	6.2"
100.0"	10.5"	6.3"
105.0"	10.5"	6.5"
110.0"	10.5"	6.7"
115.0"	10.5"	6.9"
120.0"	10.5"	7.0"
125.0"	10.5"	7.2"
130.0"	10.5"	7.4"
135.0"	10.5"	7.6"
140.0"	10.5"	7.7"
144.0"	10.5"	7.9"
150.0"	10.1"	6.6"
155.0"	10.1"	6.7"
160.0"	10.1"	6.8"
165.0"	10.1"	6.9"
170.0"	10.1"	7.0"
175.0"	10.1"	7.1"
180.0"	10.1"	7.2"
185.0"	10.1"	7.3"
190.0"	10.1"	7.4"
192.0"	10.1"	7.4"

### GENERAL NOTES (CONTINUED):

- ALL EXTRUSIONS SHALL BE MINIMUM 6063-T6 ALUMINUM ALLOY, UNLESS NOTED OTHERWISE.
- EACH SHUTTER ASSEMBLY SHALL BEAR A PERMANENT LABEL ON THE BOTTOM OF THE HOOD FACING THE EXTERIOR, OR ANYWHERE ELSE ALLOWED PER SECTION 1709.9 OF THE FBC 2023 WITH THE FOLLOWING MINIMUM INFORMATION:  
**AMERICAN SHUTTER SYSTEMS ASSOC., INC.**  
**WEST PALM BEACH, FL**  
**MISSILE LEVEL D - ASTM E1886, E1996 & E330 - TAS 201, 202 & 203**  
**FLORIDA PRODUCT APPROVAL NUMBER**
- ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH A MINIMUM TENSILE YIELD STRENGTH OF 60 KSI. ALL ALUMINUM 3/16"Ø OR 1/4"Ø POP RIVETS SHALL BE 7075-T6 OR STRONGER. FASTENERS SHALL BE CADMIUM-PLATED OR OTHERWISE CORROSION-RESISTANT MATERIAL AND SHALL COMPLY WITH "SPECIFICATIONS FOR ALUMINUM STRUCTURES" SECTION J.3.7.2 BY THE ALUMINUM ASSOCIATION, INC., & ANY APPLICABLE FEDERAL, STATE, AND/OR LOCAL CODES.
- ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.
- CONCRETE ANCHORS NOTED HEREIN SHALL BE EMBEDDED TO NON-CRACKED CONCRETE ONLY. INSTALL ALL CONCRETE ANCHORS PER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR IS RESPONSIBLE TO INSULATE OR PROTECT ALL MEMBERS FROM DISSIMILAR MATERIALS TO PREVENT ELECTROLYSIS.
- REFER TO FASTENER MANUFACTURER'S PUBLISHED DATA SHEETS AND RECOMMENDATIONS FOR FASTENER INSTALLATION INSTRUCTIONS.
- ENGINEER SEAL AFFIXED HERETO VALIDATE STRUCTURAL DESIGN AS SHOWN ONLY. USE OF THIS SPECIFICATION BY CONTRACTOR, et. al. INDEMNIFIES & SAVES HARMLESS THIS ENGINEER FOR ALL COST & DAMAGES INCLUDING LEGAL FEES & APPELLATE FEES RESULTING FROM MATERIAL FABRICATION, SYSTEM ERECTION, & CONSTRUCTION PRACTICES BEYOND THAT WHICH IS CALLED FOR BY LOCAL, STATE & FEDERAL CODES & FROM DEVIATIONS OF THIS PLAN.
- EXCEPT AS EXPRESSLY PROVIDED HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED.
- PRESSURE VALUES ON THIS APPROVAL ARE (ASD) ALLOWABLE DESIGN PRESSURES.
- ALTERATIONS ADDITIONS OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE THIS CERTIFICATION.

#### NOTE REGARDING USE OF THIS DOCUMENT & USE OUTSIDE FLORIDA:

NON-SITE-SPECIFIC STRUCTURAL PERFORMANCE EVALUATION. THIS PRODUCT EVALUATION IS VALID FOR USE IN **FLORIDA ONLY**. USE OF THIS EVALUATION REQUIRES A REVIEW & CERTIFICATION BY A LOCAL DESIGN PROFESSIONAL WHO SHALL BE RESPONSIBLE FOR THE PROPER ADAPTATION OF THIS GENERAL PERFORMANCE EVALUATION TO ANY SITE-SPECIFIC PROJECT. CONTACT THIS OFFICE AT [ENGINEERINGEXPRESS.COM/QUOTE](http://ENGINEERINGEXPRESS.COM/QUOTE) FOR ASSISTANCE WITH YOUR PROJECT-SPECIFIC NEEDS & FOR ADAPTATION & CERTIFICATION OF THIS DOCUMENT OUTSIDE OF FLORIDA.

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SHEET INDEX	
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24	ER SINGLE WALL SLAT MULLION SCHEDULES
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#### TERMINOLOGY:

THE FOLLOWING ABBREVIATIONS APPEAR IN THIS APPROVAL:  
"ER" FOR "END RETENTION", "NER" FOR "NON-END RETENTION", "INC." FOR "INCORPORATION", "CORP." FOR "CORPORATION", "ALUM" FOR "ALUMINUM", "ASD" FOR "ALLOWABLE STRESS DESIGN", "ASTM" FOR "AMERICAN SOCIETY FOR TESTING AND MATERIALS", "CS" FOR "CARBON STEEL", "CONN" FOR "CONNECTION", "EMBED" FOR "EMBEDMENT", "DIST." FOR "DISTANCE", "GA" FOR "GAUGE", "HVHZ" FOR "HIGH-VELOCITY HURRICANE ZONE", "LB" FOR "POUND", "MAX" FOR "MAXIMUM", "N.T.S." FOR "NOT TO SCALE", "PSF" FOR "POUNDS PER SQUARE FOOT (lb/ft²)", "SPECS" FOR "SPECIFICATIONS", "&" FOR "AND", "MAX" FOR "MAXIMUM", "W/" FOR "WITH", "EXIST" FOR "EXISTING", "STRUCT" FOR "STRUCTURE", "CONC." FOR "CONCRETE". CONTACT ENGINEERING EXPRESS FOR ADDITIONAL ABBREVIATION/TERMINOLOGY CLARIFICATIONS.

#### VISIT [ECALC.IO/EASTERN](http://ECALC.IO/EASTERN)

FOR SITE-SPECIFIC DEVIATIONS & MORE INFORMATION ABOUT THIS DOCUMENT OR SCAN THIS QR CODE

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WEST PALM BEACH, FL 33407  
(800) 432-2204  
40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL #32029.1)

REMARKS	DATE	CHKD	DATE	DRWN	DATE
PREV. SUBMITTAL (20-31262)	09/02/20	RWN		CCB	
2023 FBC UPDATE	10/05/23	RWN		MRT	

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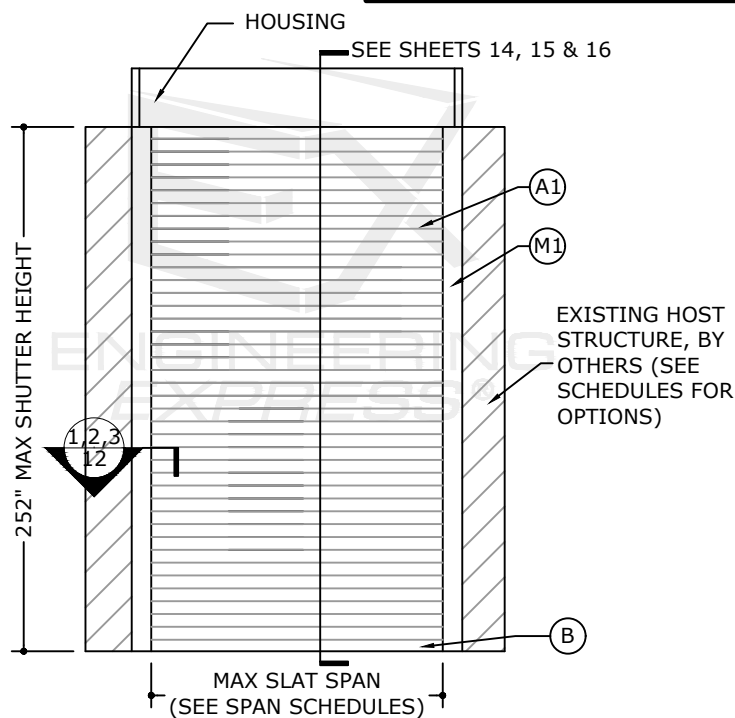
# NON-END RETENTION (NER) OPTION

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OCTOBER 9, 2023

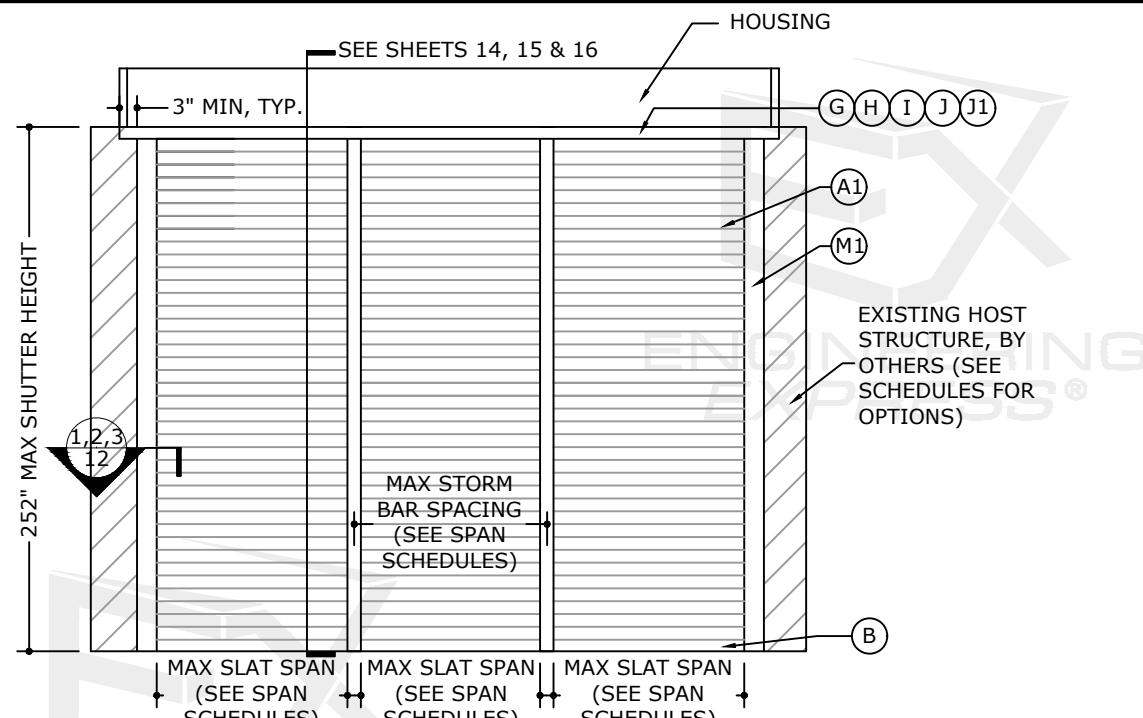
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LICENSE  
No 0046549  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
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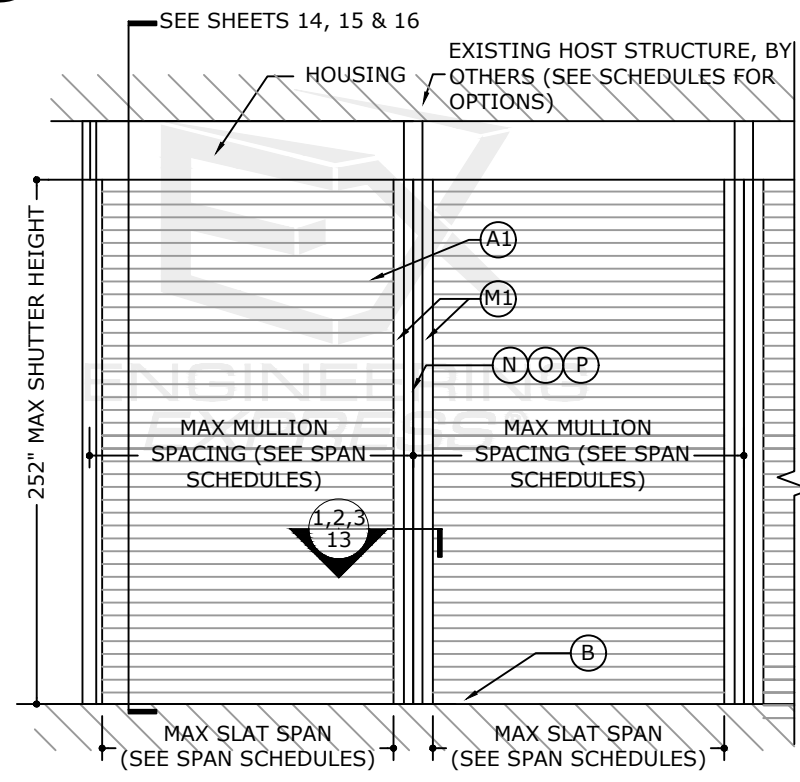
**TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITHOUT STORM BARS)**

1 N.T.S. EXTERIOR ELEV



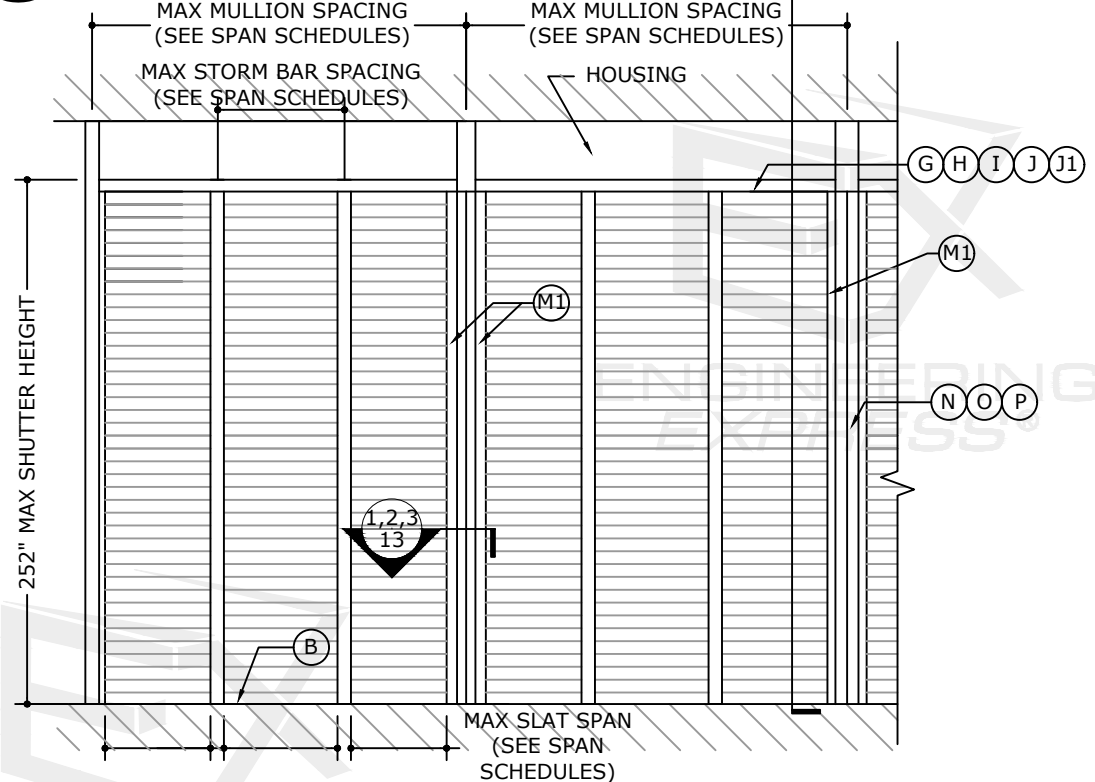
**TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITH STORM BARS)**

2 N.T.S. EXTERIOR ELEV



**TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITH MULLIONS)**

3 N.T.S. EXTERIOR ELEV



**TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITH MULLIONS & STORM BARS)**

4 N.T.S. EXTERIOR ELEV

**DOUBLE WALL ER SLATS ①**

**NON-END RETENTION SLATS ①**

NOTE: PART 1 MAY BE USED IN LIEU OF PART A1 FOR ALL NON-ER SHUTTERS

SPAN SCHEDULE	
ALLOWABLE DESIGN PRESSURE	MAXIMUM SLAT SPAN
40.0 PSF	50 IN
45.0 PSF	48 IN
50.0 PSF	47 IN
55.0 PSF	45 IN
60.0 PSF	44 IN
65.0 PSF	42 IN
70.0 PSF	41 IN
75.0 PSF	39 IN
80.0 PSF	38 IN
85.0 PSF	37 IN
90.0 PSF	36 IN
95.0 PSF	35 IN
100.0 PSF	34 IN

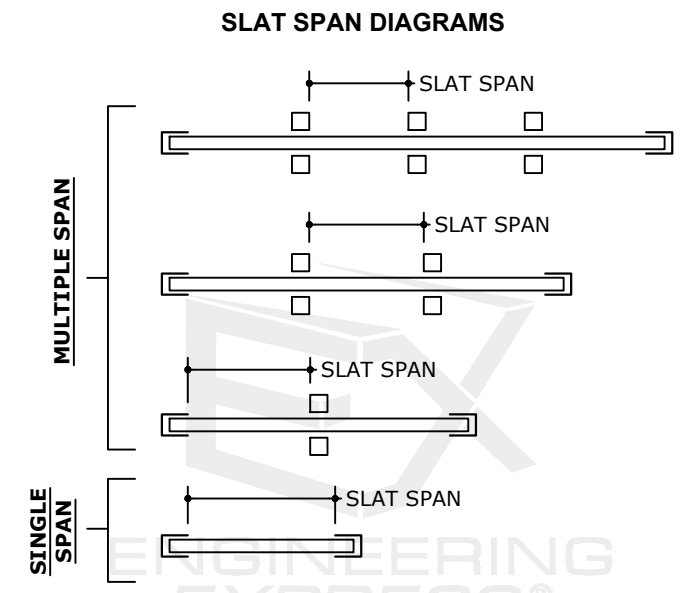
GLASS SEPARATION SCHEDULE	
SLAT SPAN	MAXIMUM SLAT SPAN
UP TO 36 IN	2-1/4 IN
> 36 IN TO 48 IN	2-5/8 IN
> 48 IN TO 50 IN	2-3/4 IN

**SPAN SCHEDULE NOTES (NON-END RETENTION):**

- SLAT SPAN IS DEFINED AS THE DISTANCE BETWEEN RAILS FOR SINGLE SPAN ASSEMBLIES.
- LINEAR INTERPOLATION BETWEEN SHUTTER SPANS IS NOT PERMITTED. FOR SPANS BETWEEN THOSE INDICATED ABOVE, THE DESIGN PRESSURES FOR THE NEXT HIGHER SPAN SHALL BE USED.

**GLASS SEPARATION NOTES (NON-END RETENTION):**

- SLAT SPAN IS DEFINED AS SHOWN IN DIAGRAMS ON THIS SHEET
- SEPARATION FROM GLAZING IS REQUIRED **ONLY** IN ASTM ESSENTIAL FACILITIES AND WIND ZONE 4.
- LINEAR INTERPOLATION BETWEEN SHUTTER SPANS IS NOT PERMITTED. FOR SPANS BETWEEN THOSE INDICATED ABOVE, THE SEPARATION FROM GLASS FOR THE NEXT HIGHER SPAN SHALL BE USED.



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40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

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# END RETENTION (ER) COMPONENTS

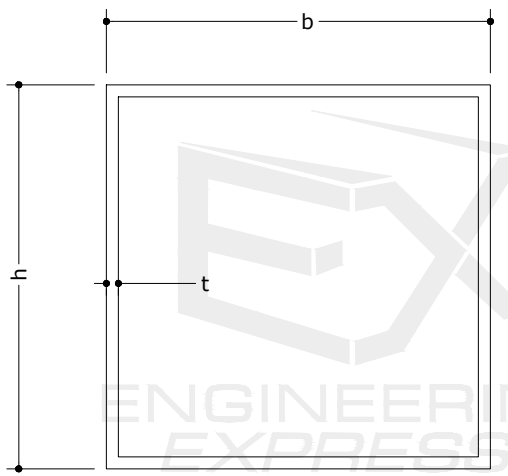
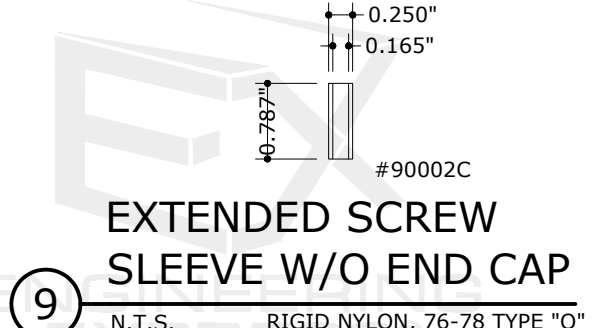
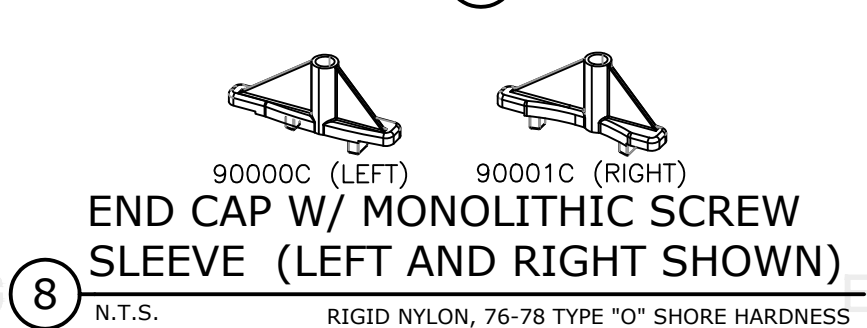
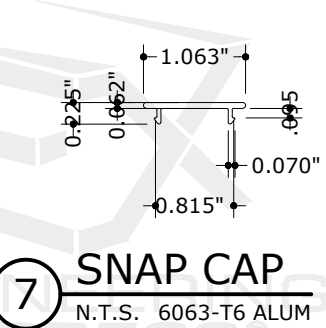
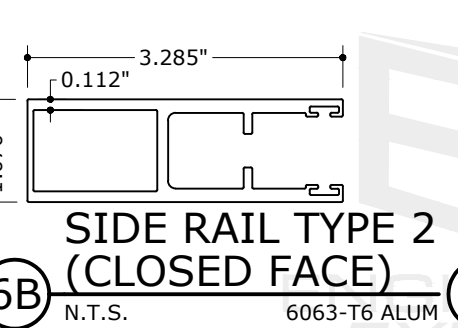
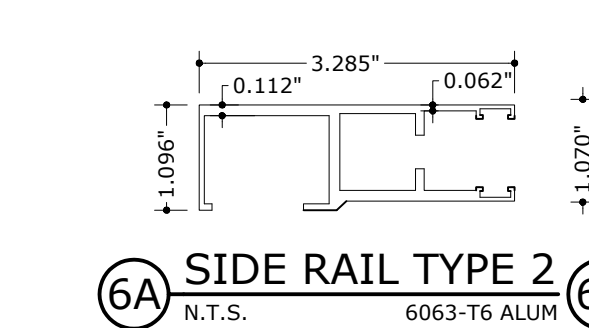
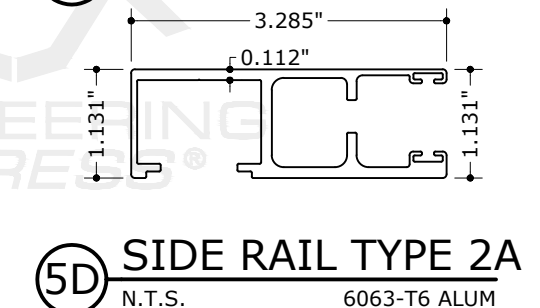
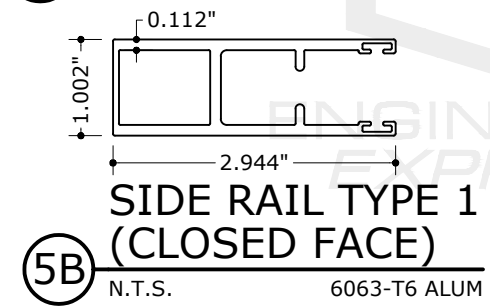
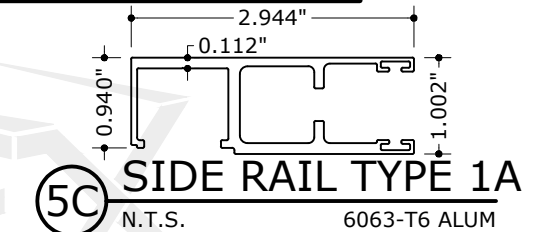
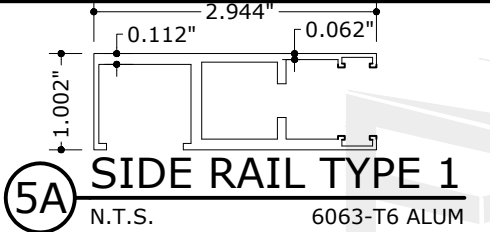
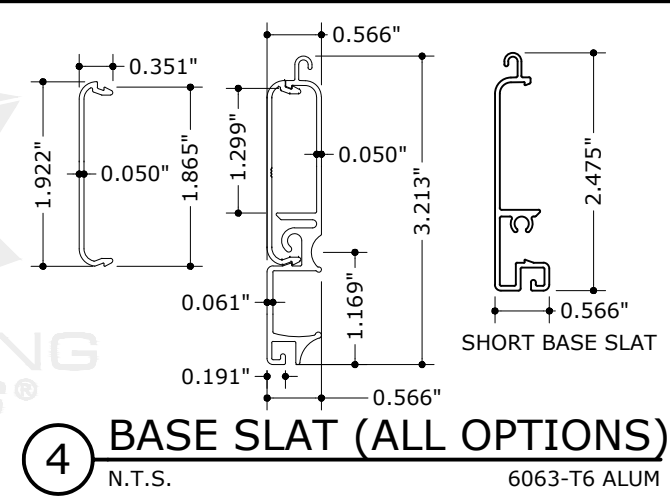
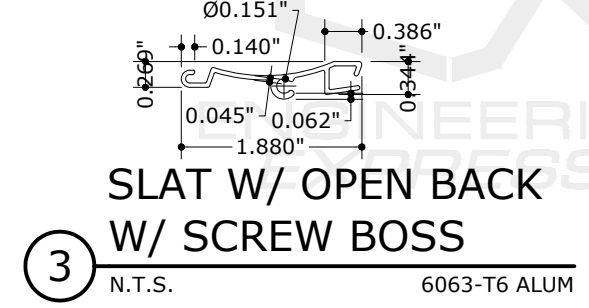
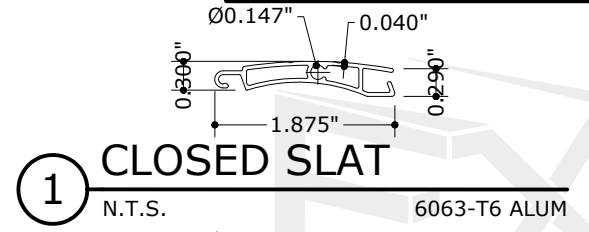
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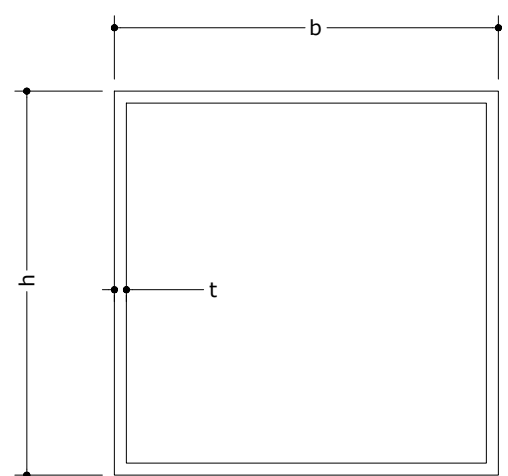
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STATE OF FLORIDA  
PROFESSIONAL ENGINEER

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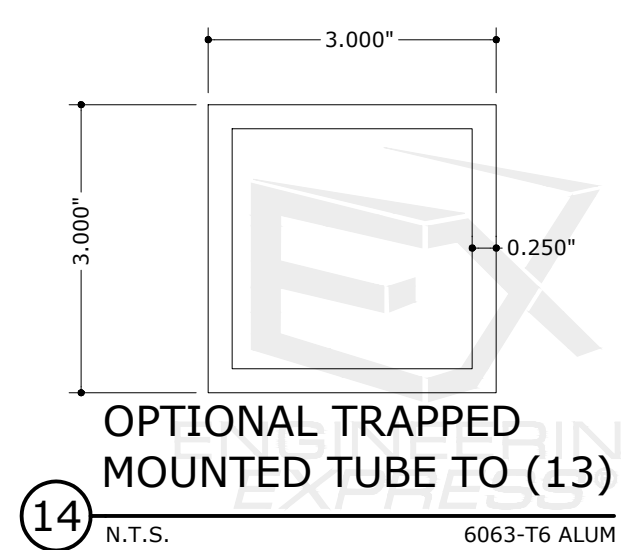
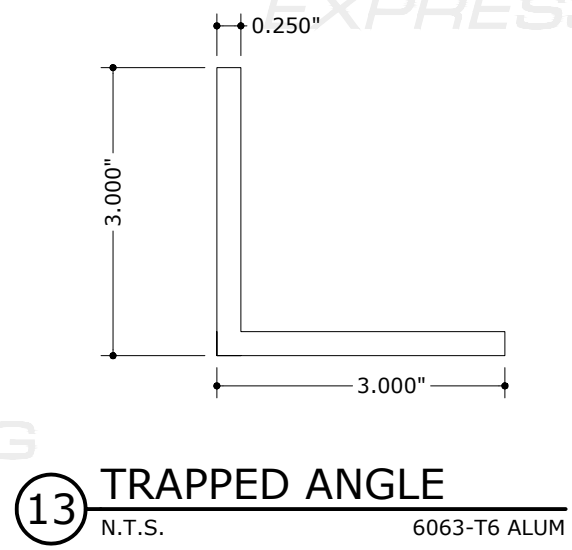
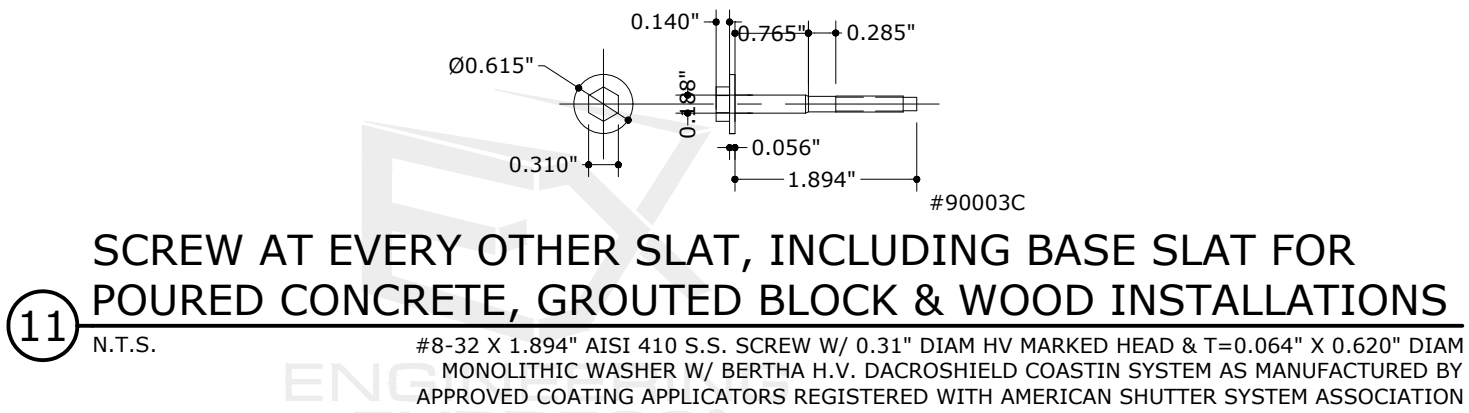
## BUILD-OUT MOUNTED TUBES

B.O TUBES	b	h	t
12 WOOD	3"	2" MAX.	0.125"
12A CONC./BLOCK	3"	4" MAX.	0.125"
15 CONC./BLOCK	4"	4" MAX.	0.250"



## MULLIONS

MULLIONS	b	h	t
24	4"	6"	0.250"
25	4"	8"	0.250"



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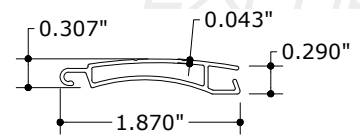
# NON-END RETENTION (NER) COMPONENTS

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PE# 0046549 CA# 9885

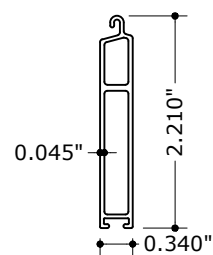
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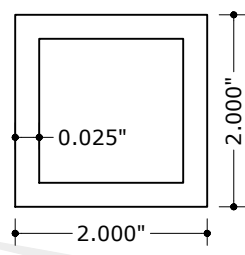
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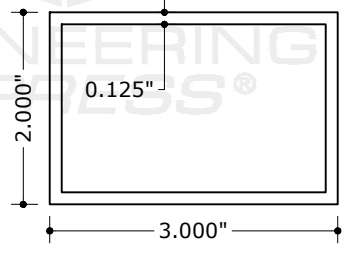
**(A1)** NER TYPE 2 SLAT  
N.T.S. 6063-T6 ALUM



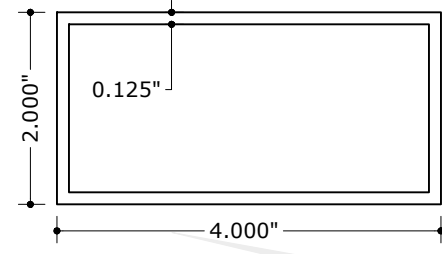
**(B)** NER BOTTOM SLAT  
N.T.S. 6063-T6 ALUM



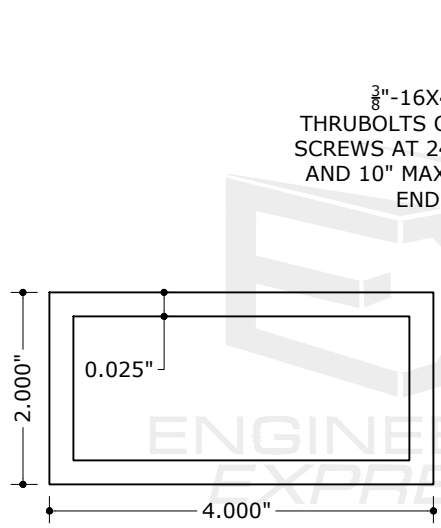
**(C)** NER TYPE 1 STORM BAR  
N.T.S. 6063-T6 ALUM



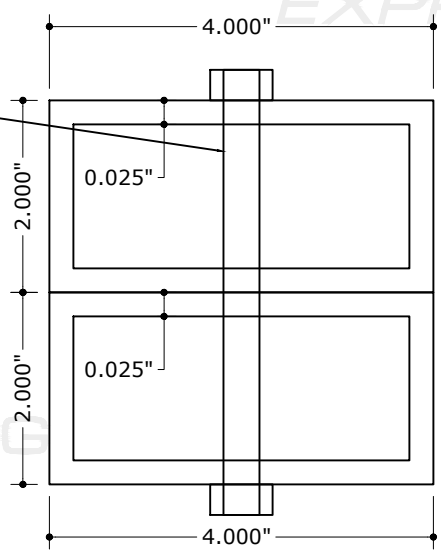
**(D)** NER TYPE 2 STORM BAR  
N.T.S. 6063-T6 ALUM



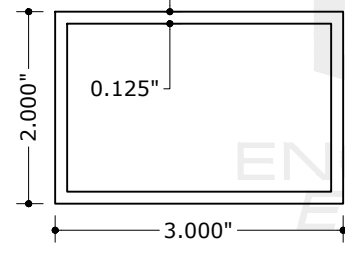
**(E)** NER TYPE 3 STORM BAR  
N.T.S. 6063-T6 ALUM



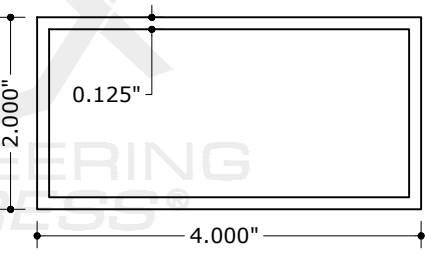
**(F)** NER TYPE 4 STORM BAR  
N.T.S. 6063-T6 ALUM



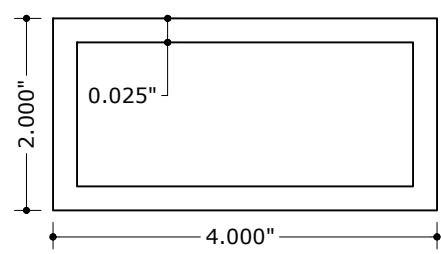
**(F1)** NER TYPE 5 STORM BAR  
N.T.S. 6063-T6 ALUM



**(G)** NER HEADER TYPE 1  
N.T.S. 6063-T6 ALUM



**(H)** NER HEADER TYPE 2  
N.T.S. 6063-T6 ALUM



**(I)** NER HEADER TYPE 3  
N.T.S. 6063-T6 ALUM

$\frac{3}{8}$ "-16X4  $\frac{1}{2}$ " SS  
THRU BOLTS OR CAP  
SCREWS AT 24" O.C.  
AND 10" MAX FROM  
ENDS, TYP.

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40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWN	09/02/20
2023 FBC UPDATE	MRT	RWN	10/05/23

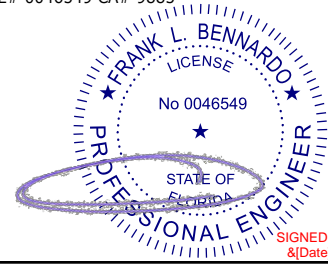
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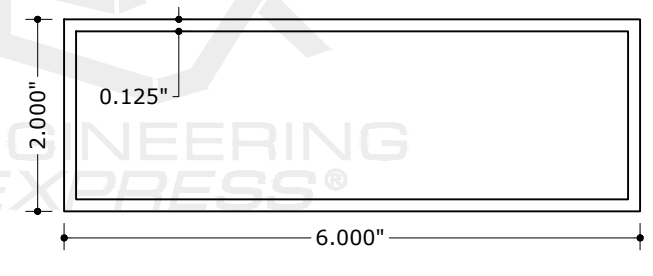
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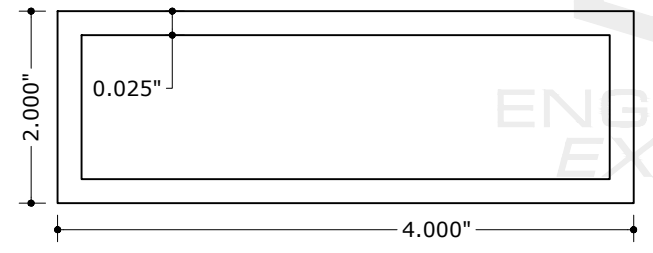


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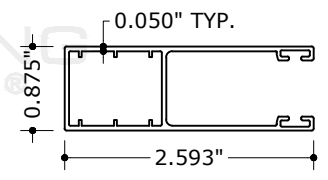
# NON-END RETENTION (NER) COMPONENTS (CONT'D)



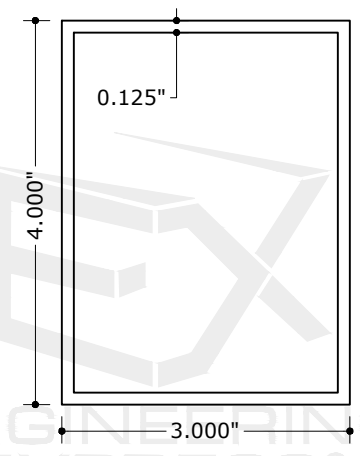
**J** NER HEADER TYPE 4  
N.T.S. 6063-T6 ALUM



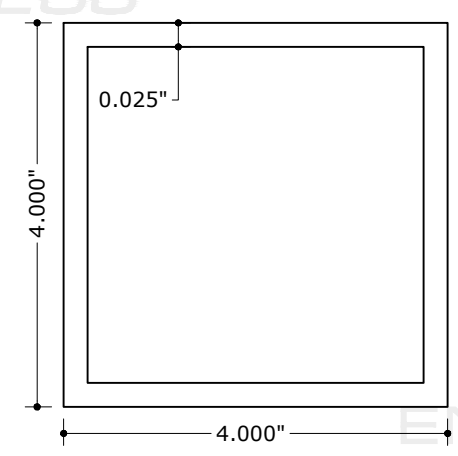
**J1** NER HEADER TYPE 5  
N.T.S. 6063-T6 ALUM



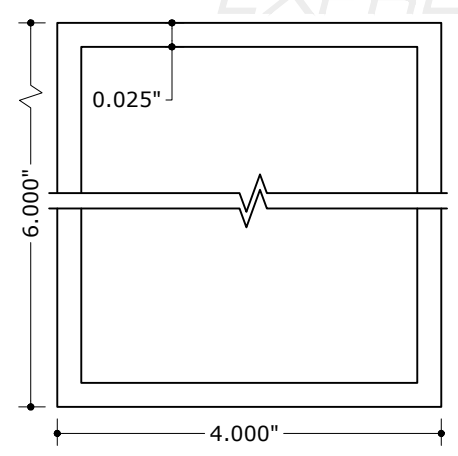
**M1** NER TYPE 5 SIDE RAIL  
N.T.S. 6063-T6 ALUM



**N** NER TYPE 1 MULLION  
N.T.S. 6063-T6 ALUM



**O** NER TYPE 2 MULLION  
N.T.S. 6063-T6 ALUM



**P** NER TYPE 3 MULLION  
N.T.S. 6063-T6 ALUM

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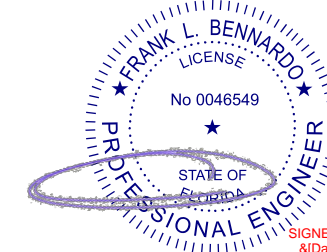
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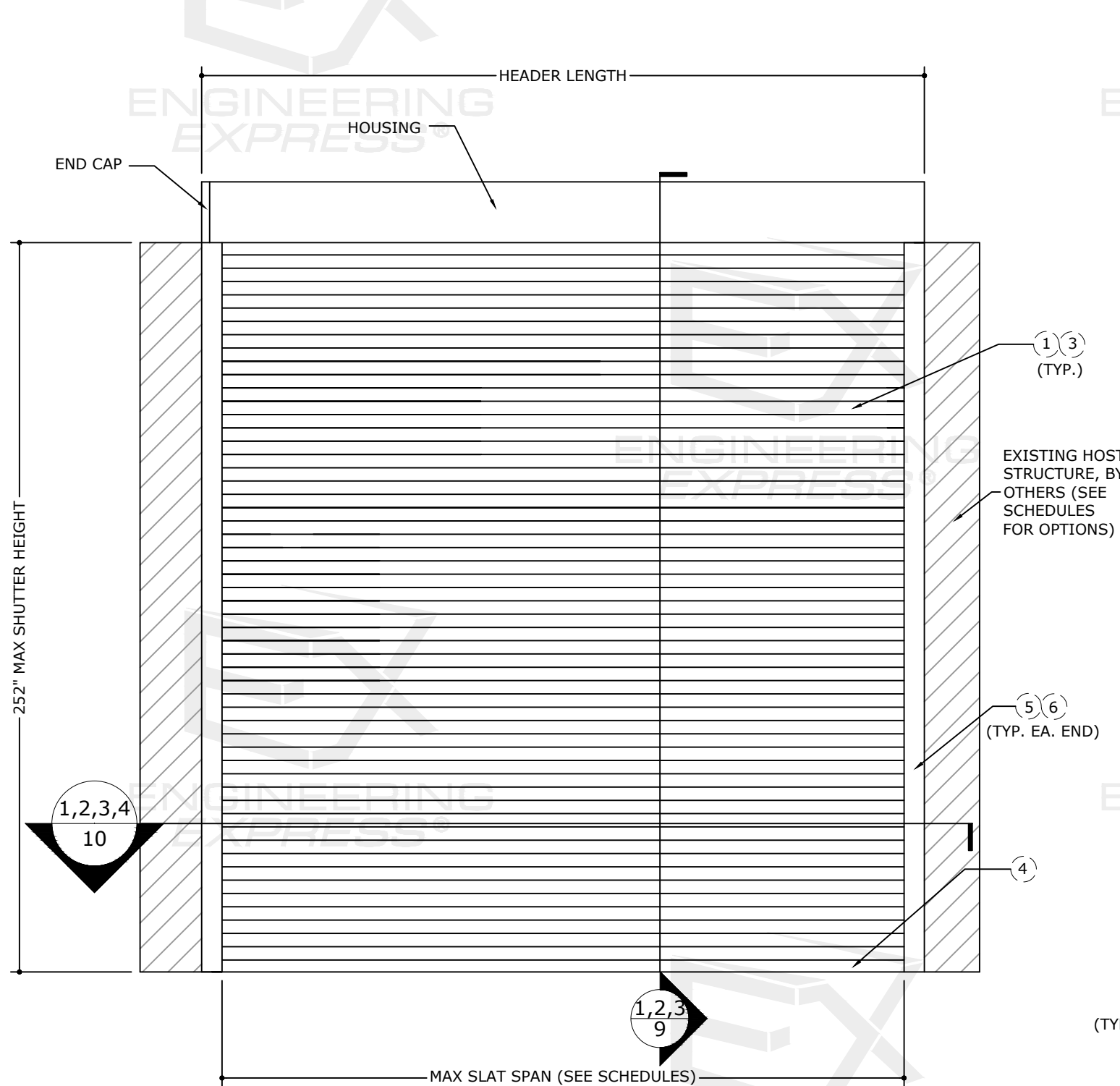
# END RETENTION (ER)

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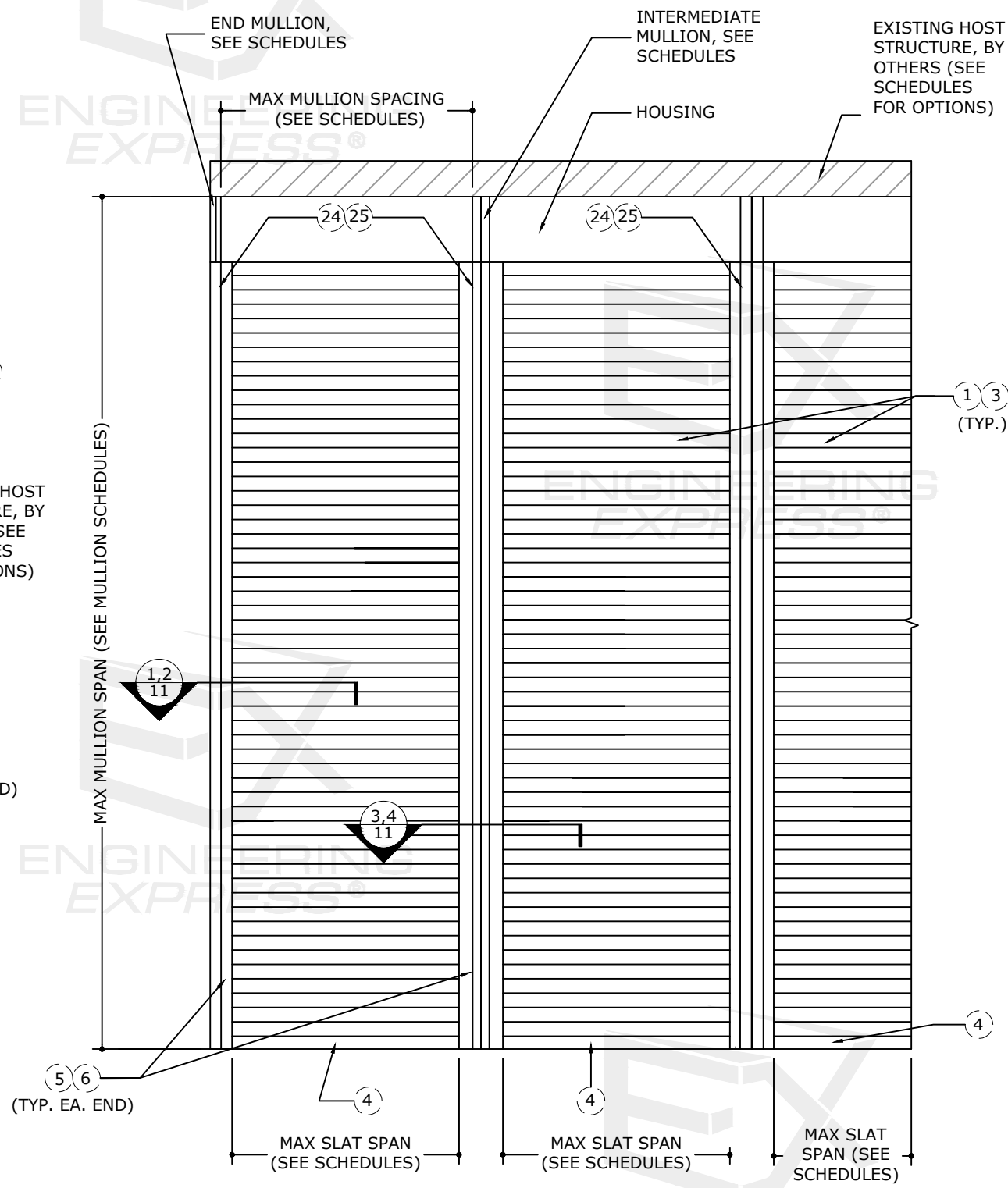
OCTOBER 9, 2023



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**1**  
TYPICAL SINGLE UNIT  
ELEVATION W/O MULLIONS  
N.T.S. EXTERIOR ELEV



**2**  
TYPICAL CONSECUTIVE SINGLE  
UNIT ELEVATION WITH MULLIONS  
N.T.S. EXTERIOR ELEV

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FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

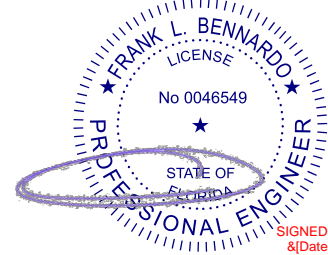
REMARKS	DRWN	CHKD	DATE
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2023 FCC UPDATE	MRT	RWV	10/05/23

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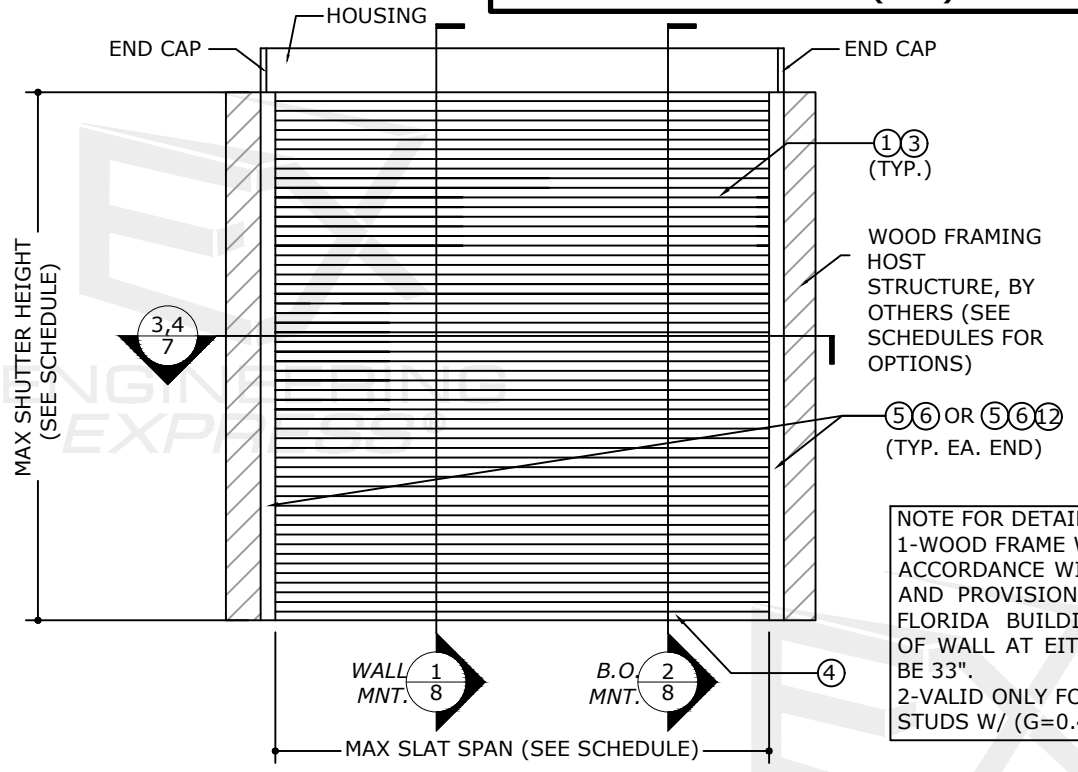
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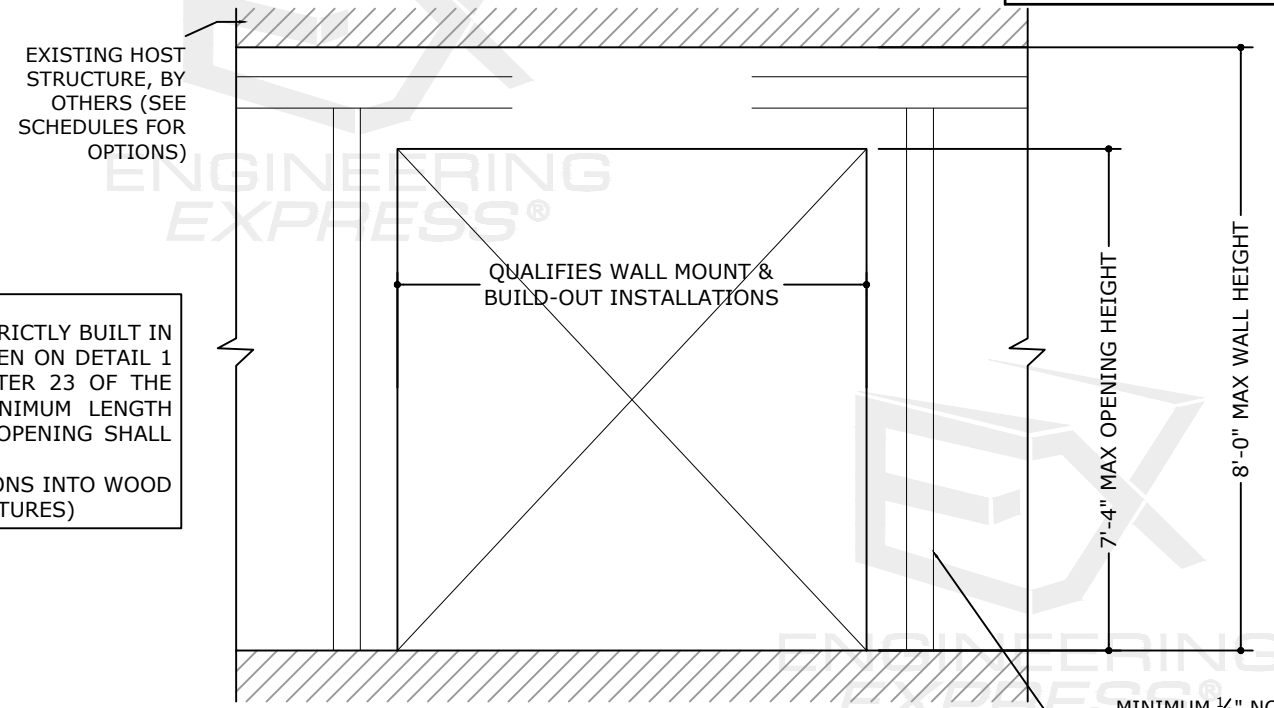


# END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO WOOD FRAMING



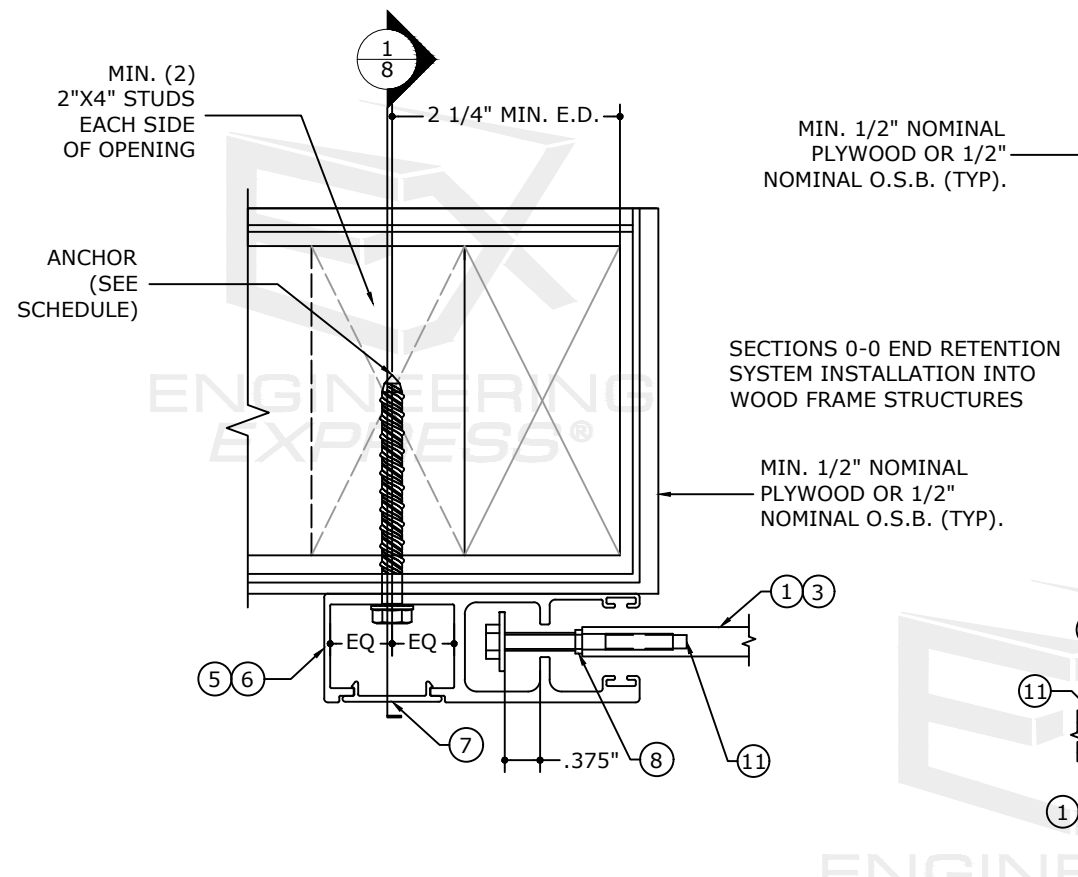
**NOTE FOR DETAIL 2:**  
1-WOOD FRAME WALL TO BE STRICTLY BUILT IN ACCORDANCE WITH SPECS GIVEN ON DETAIL 1 AND PROVISIONS FROM CHAPTER 23 OF THE FLORIDA BUILDING CODE. MINIMUM LENGTH OF WALL AT EITHER SIDE OF OPENING SHALL BE 33".  
2-VALID ONLY FOR INSTALLATIONS INTO WOOD STUDS W/ (G=0.46 MIN. STRUCTURES)

**1**  
**7** N.T.S. EXTERIOR ELEV



**2**  
**7** N.T.S. EXTERIOR ELEV

MINIMUM 1/2" NOMINAL PLYWOOD OR 1/2" NOMINAL O.S.B., AND (2) 2"X4" WOOD STUDS (TYP. EA. SIDE)



**3**  
**7** N.T.S. EXTERIOR ELEV

**4**  
**7** N.T.S. EXTERIOR ELEV

## SLAT SPAN SCHEDULE TO WOOD FRAMING

MAX A.S.D. DESIGN PRESSURE (PSF)	MAX. SLAT #1 SPAN (CLOSED)	MAX. SLAT #3 SPAN (OPEN)
+/- 30.0	144"	100"
+/- 40.0	120"	100"
+/- 45.0	108"	100"
+/- 55.0	96"	100"

### WOOD FRAMING SPAN SCHEDULE NOTES (OPEN & CLOSED SLATS):

- SLAT SPAN IS DEFINED AS THE DISTANCE BETWEEN RAILS FOR SINGLE SPAN ASSEMBLIES.
- LINEAR INTERPOLATION BETWEEN SHUTTER SPANS IS NOT PERMITTED. FOR SPANS BETWEEN THOSE INDICATED ABOVE, THE DESIGN PRESSURES FOR THE NEXT HIGHER SPAN SHALL BE USED.
- GLASS SEPARATION (IF REQUIRED BY LOCAL JURISDICTION) SHALL BE DETERMINED FROM THE GLASS SEPARATIONS SCHEDULES ON SHEET 1, OTHERWISE USE GLASS SEPARATION = 1.0" MIN..

1/4" Ø X 1" HEX HEAD TEK SCREWS @ 4" O.C.

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40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL #32029.1)

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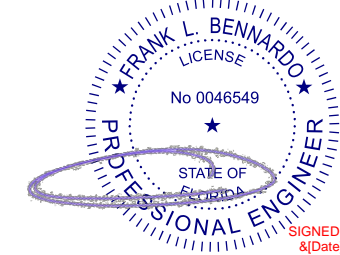
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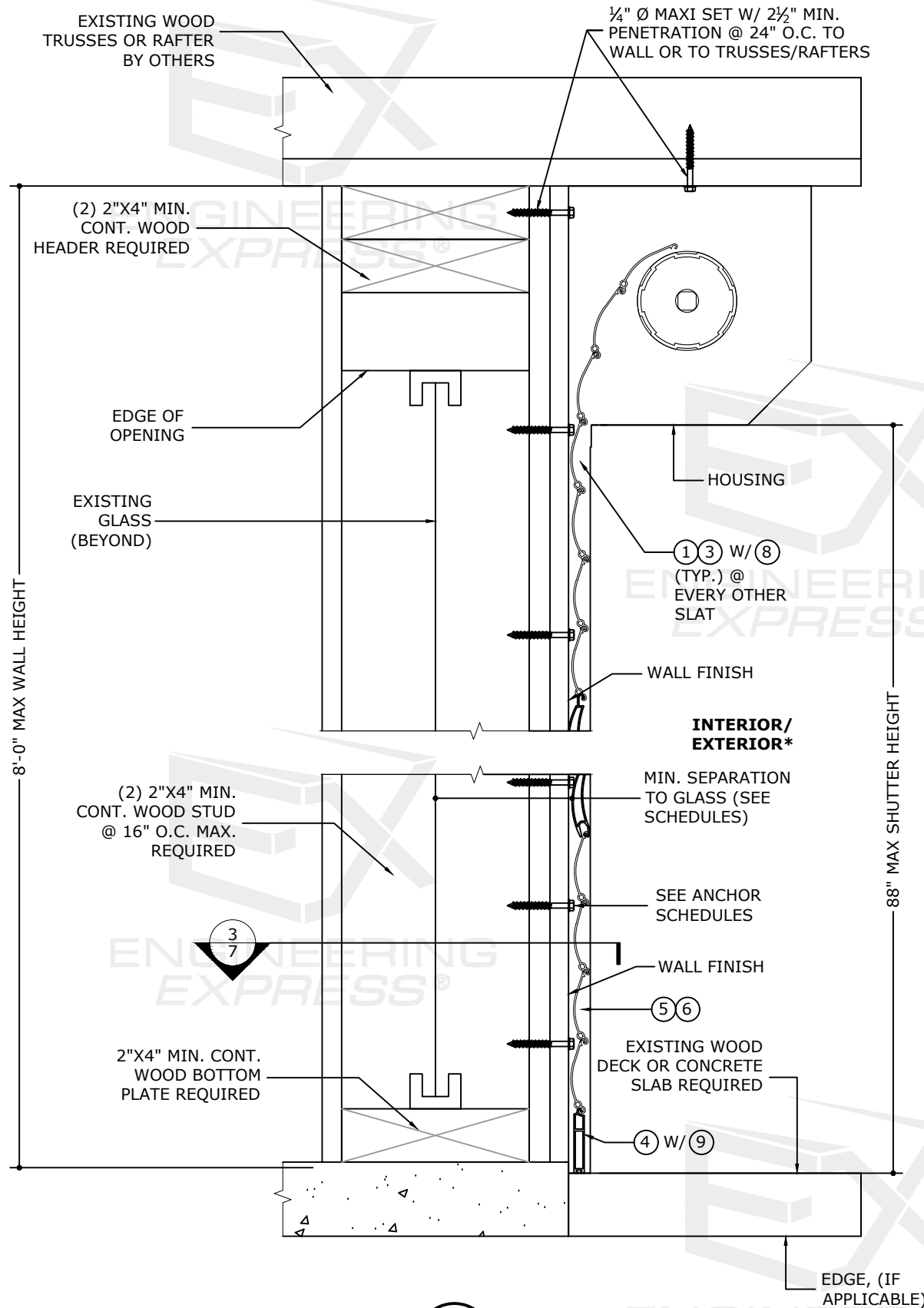
# END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO WOOD FRAMING

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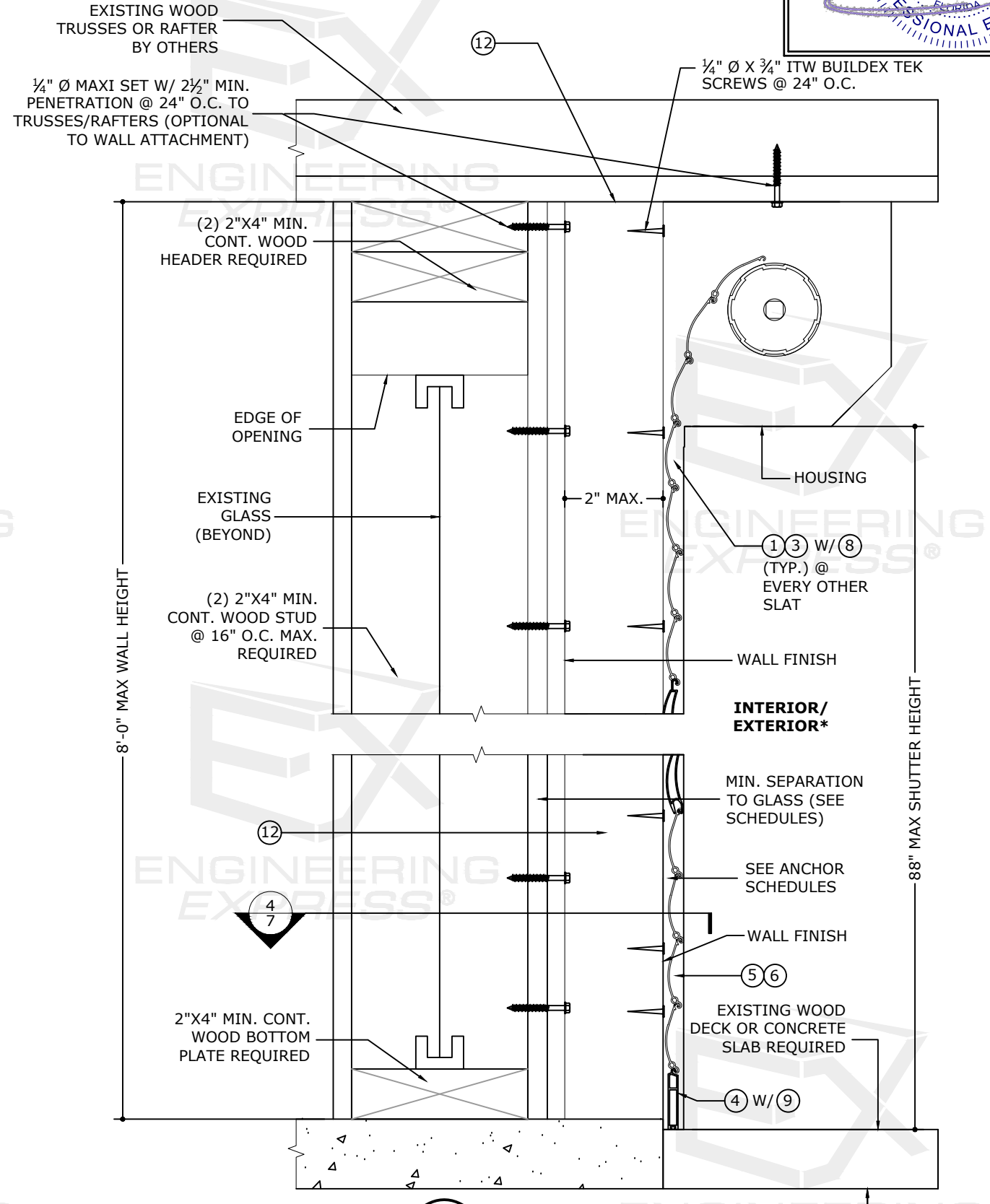
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1 WALL MOUNT  
8 N.T.S. SECTION VIEW



2 BUILD-OUT MOUNT  
8 N.T.S. SECTION VIEW

\* WHEN REVERSE MOUNTED ADD 1" OF GLASS SEPARATION PER "GLASS SEPARATION SCHEDULE" ON SHEET 1

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FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
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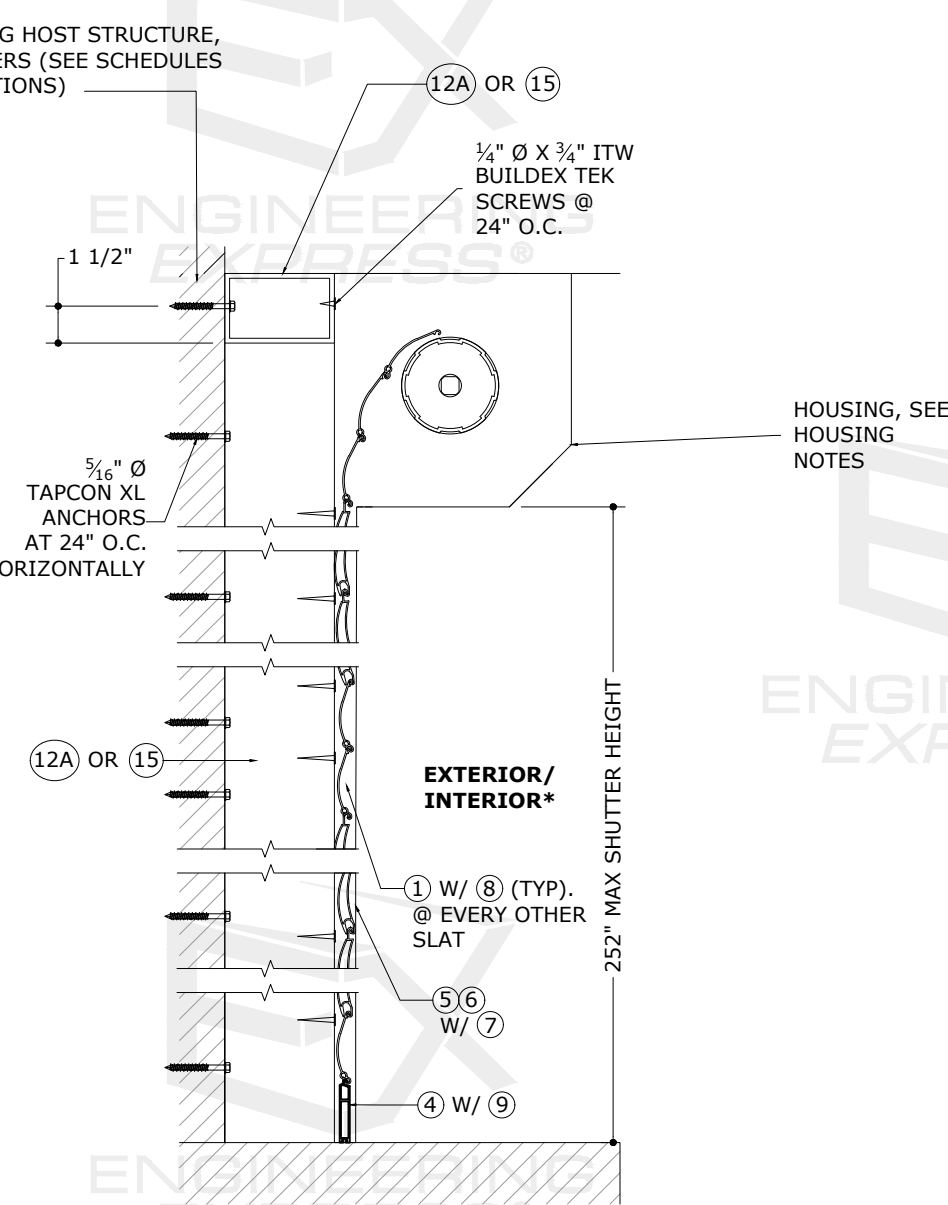
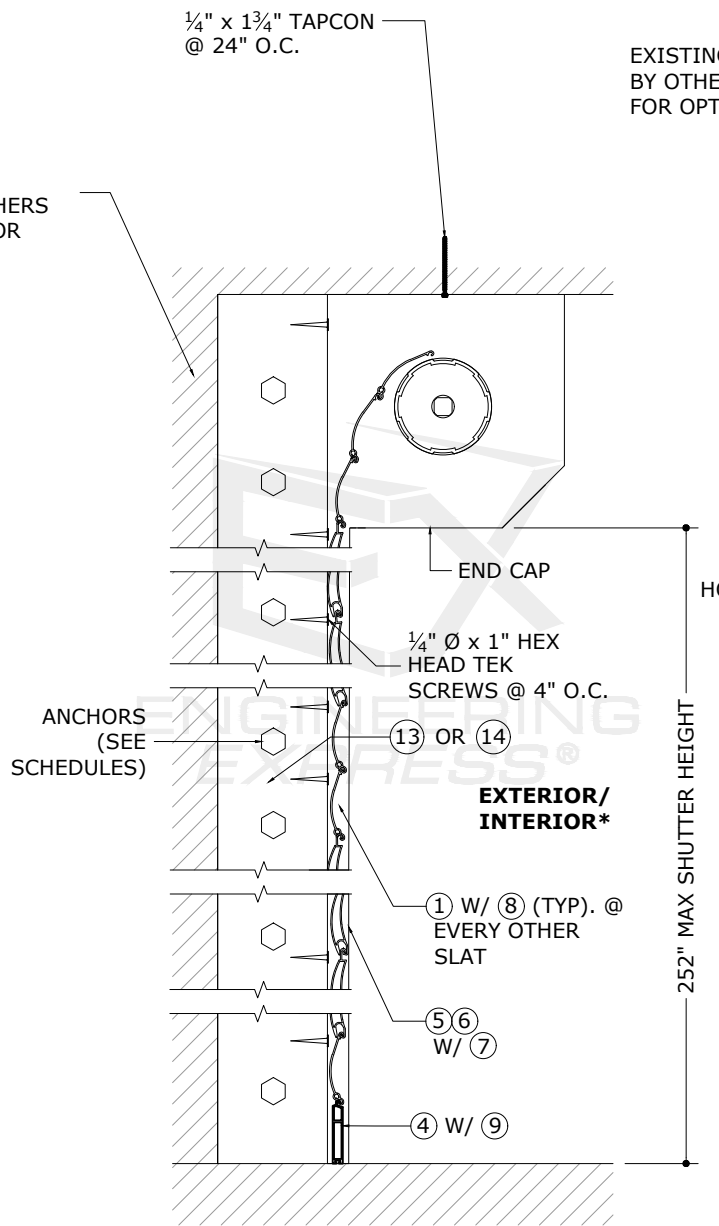
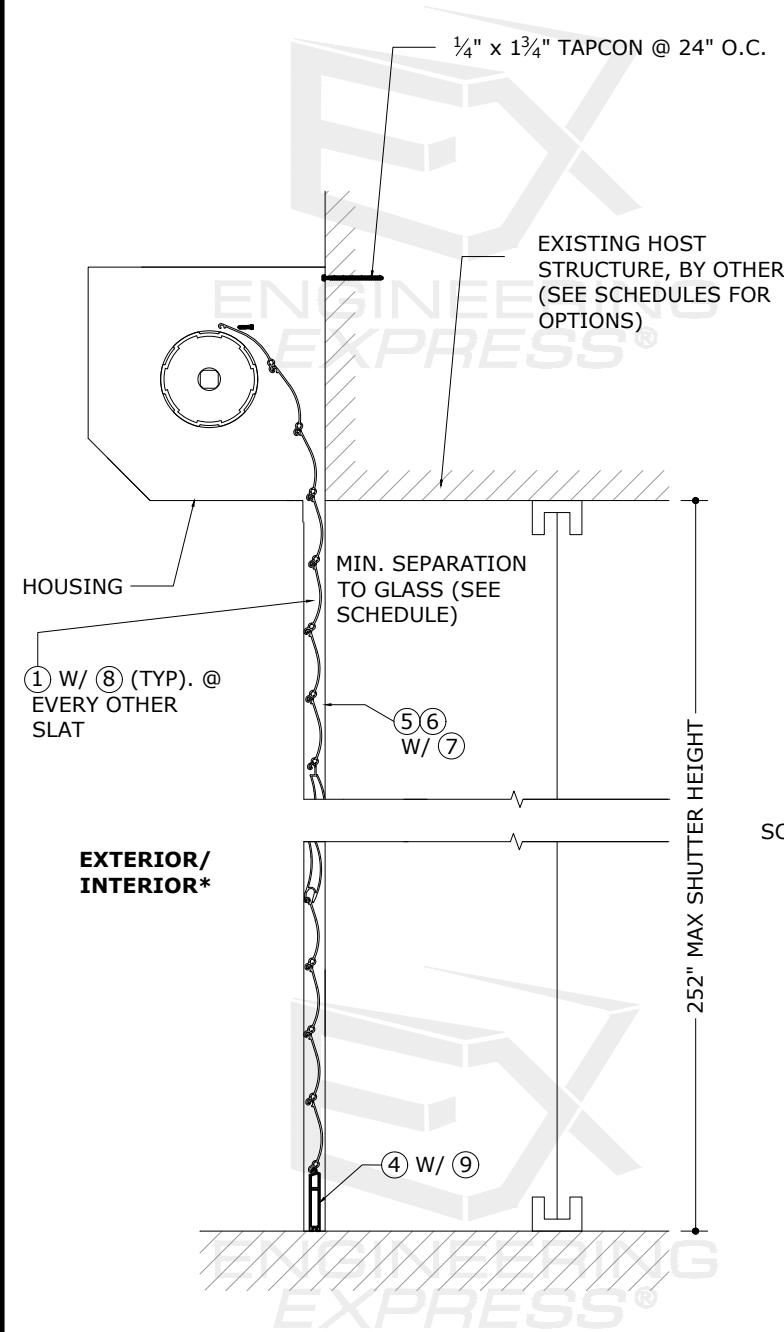
FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

OCTOBER 9, 2023

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FRANK L. BENNARDO  
LICENSE  
No 0046549  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
SIGNED: &[Date]

**END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO CONCRETE, CMU, ALUMINUM OR WOOD**



\* WHEN REVERSE MOUNTED ADD 1" OF GLASS SEPARATION PER "GLASS SEPARATION SCHEDULE" ON SHEET 1

**1** WALL MOUNT  
9 N.T.S. SECTION VIEW

**2** INSIDE/TRAPPED MOUNT  
9 N.T.S. SECTION VIEW

**3** BUILD-OUT MOUNT  
9 N.T.S. SECTION VIEW

- HOUSING NOTES:**
- HOUSING (0.040" THICK ALUM, 3105-H14 MIN)
  - END CAP (CAST ALUM, SHALL BE CAPABLE OF SUPPORTING SLAT AND LIFT MECHANISM WEIGHT)
  - 3/16" ALUM POP RIVETS (6 TOTAL PER SIDE CAP, 2 AT TO, 2 AT REAR, 2 AT BOTTOM)
  - HOOD HAS BEEN TESTED FOR IMPACT / CYCLING AND MAY BE INSTALLED WITHIN OPENING

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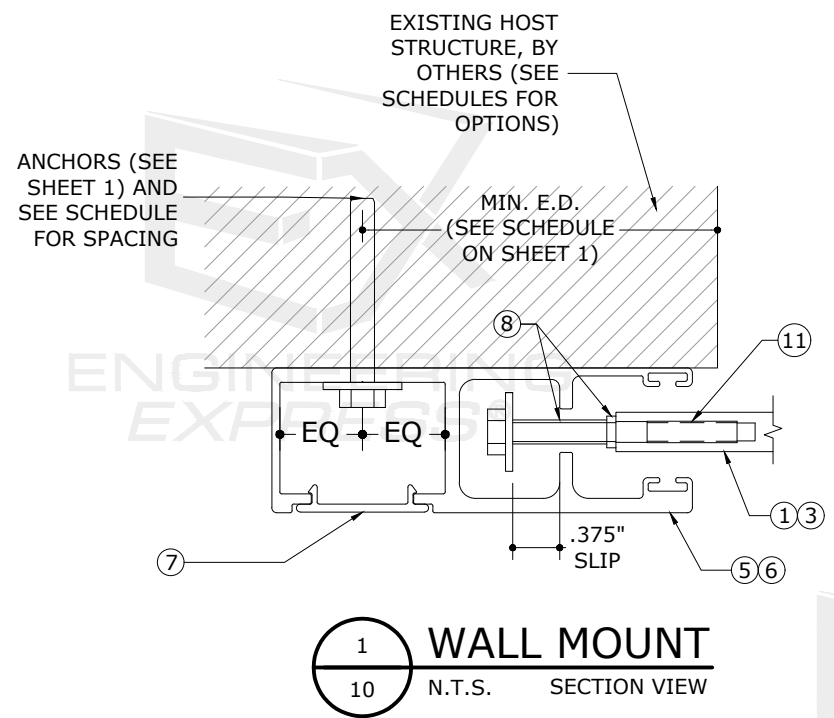
# END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO CONCRETE, CMU, STEEL, ALUMINUM OR WOOD

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PE# 0046549 CA# 9885

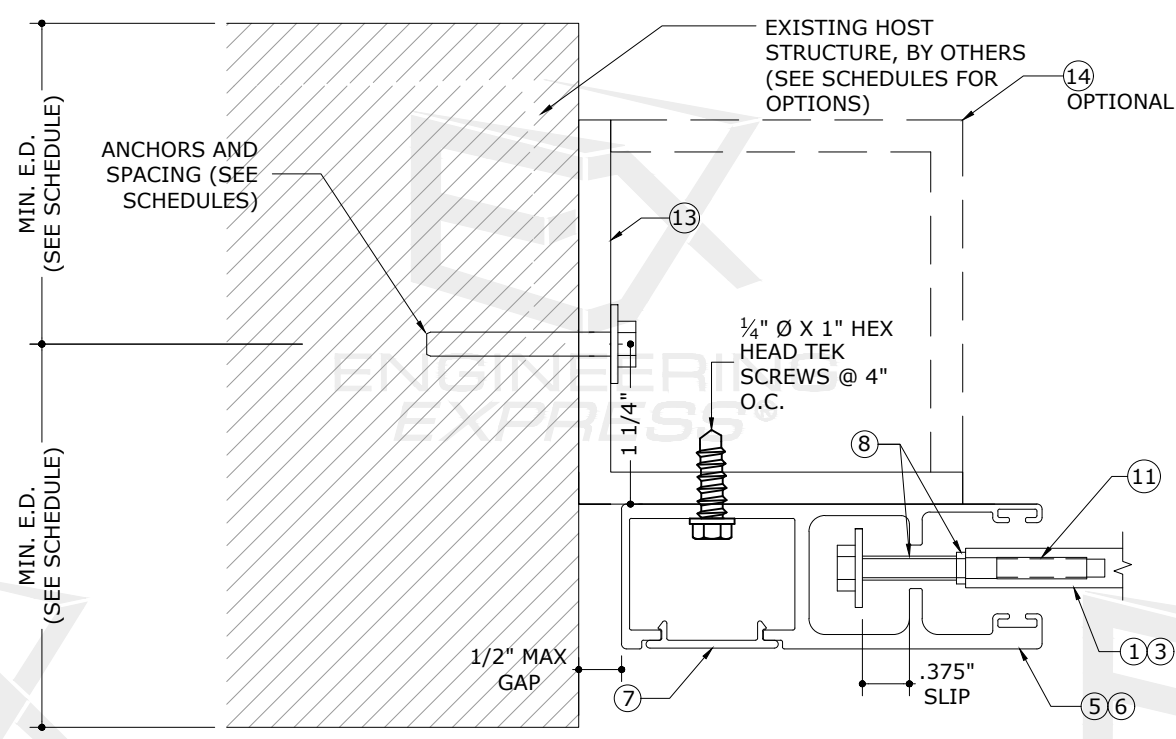
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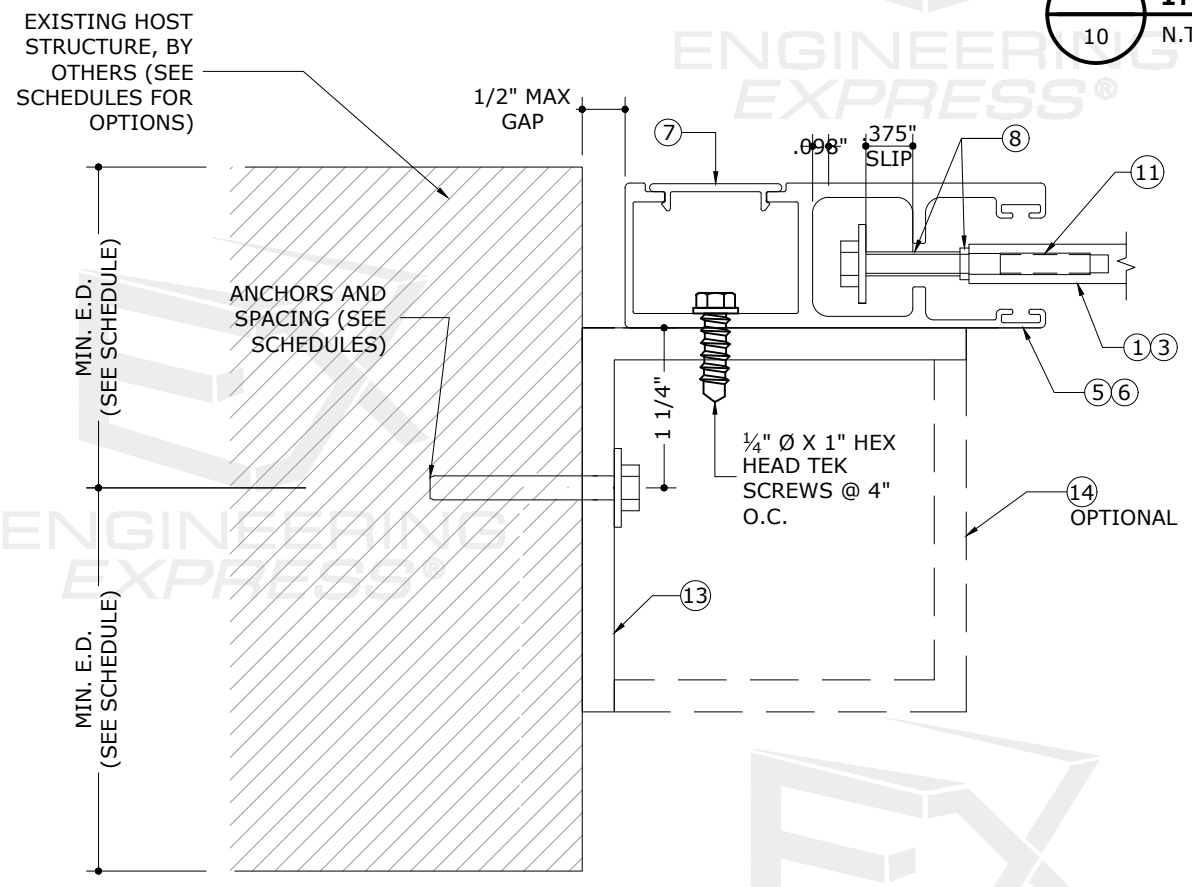
SIGNED: &[Date]



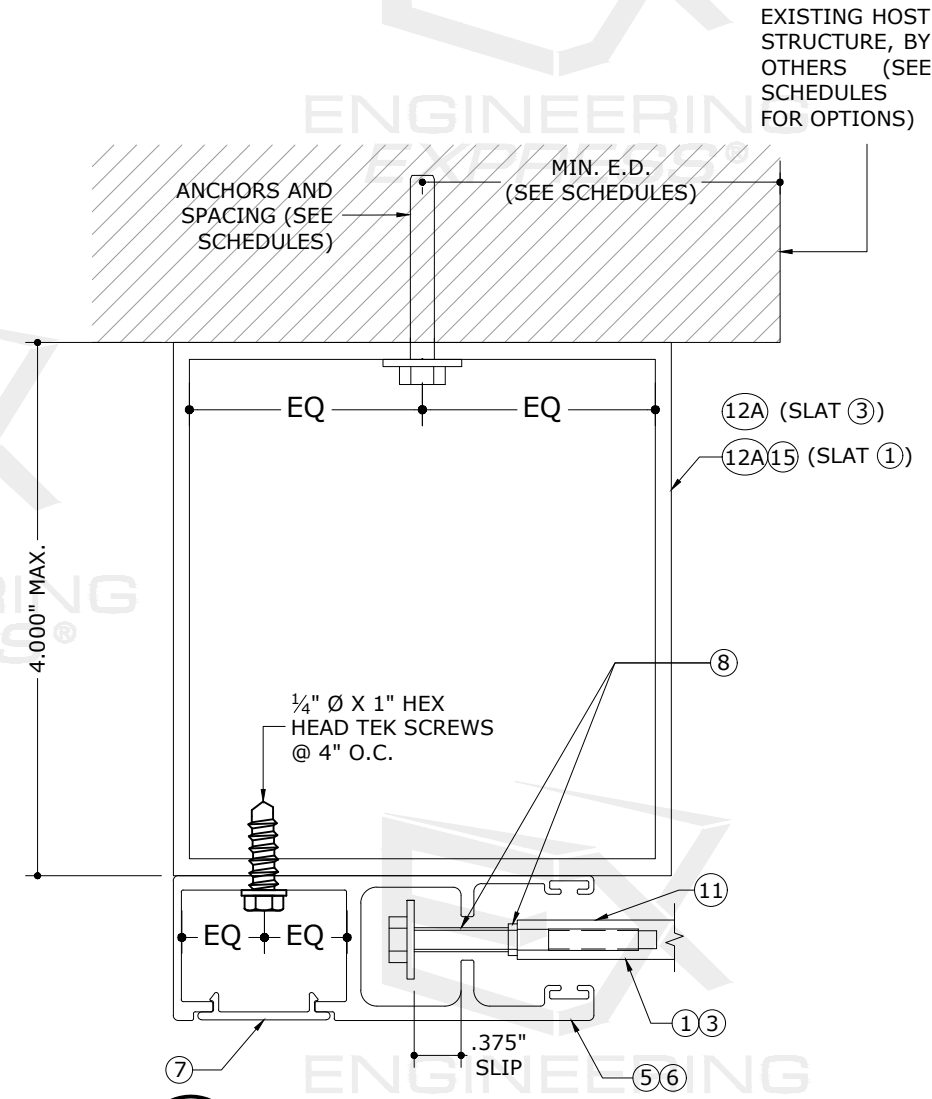
**1 WALL MOUNT**  
10 N.T.S. SECTION VIEW



**2 INSIDE/TRAPPED MOUNT**  
10 N.T.S. SECTION VIEW



**3 INSIDE/TRAPPED MOUNT (REVERSED)**  
10 N.T.S. SECTION VIEW



**4 BUILD-OUT MOUNT**  
10 N.T.S. SECTION VIEW

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FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
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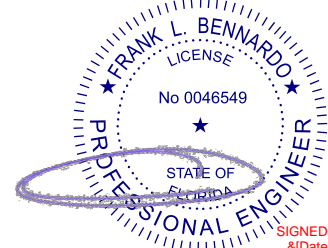
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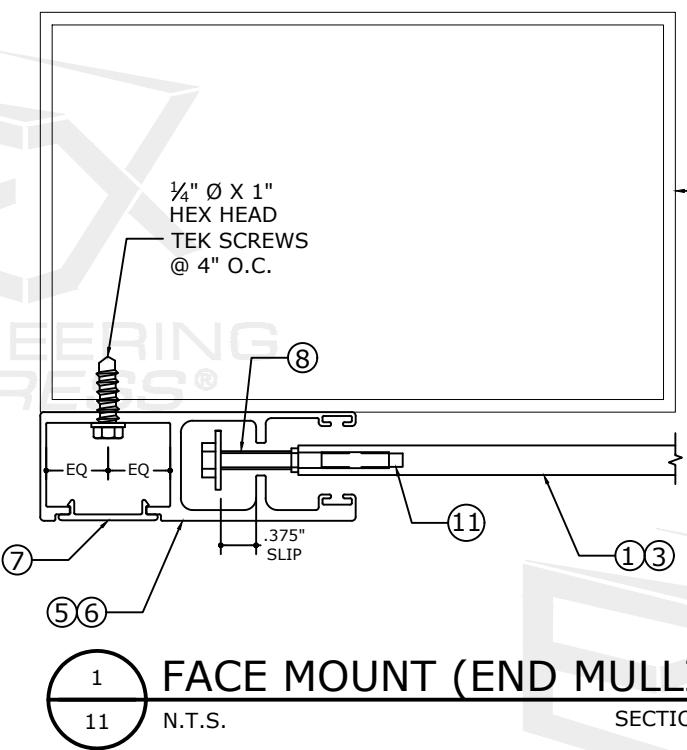
# END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO ALUMINUM MULLIONS

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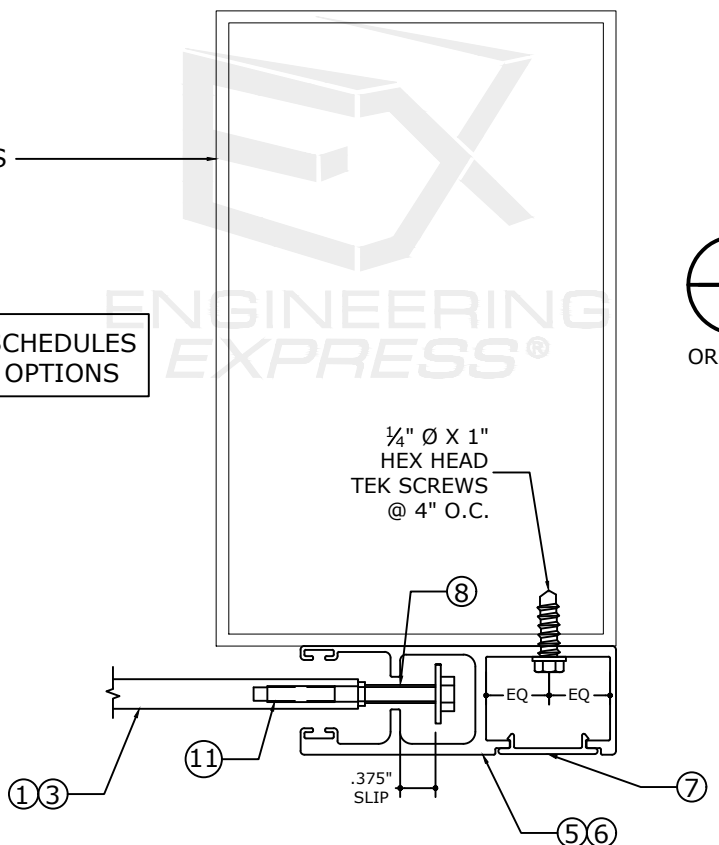


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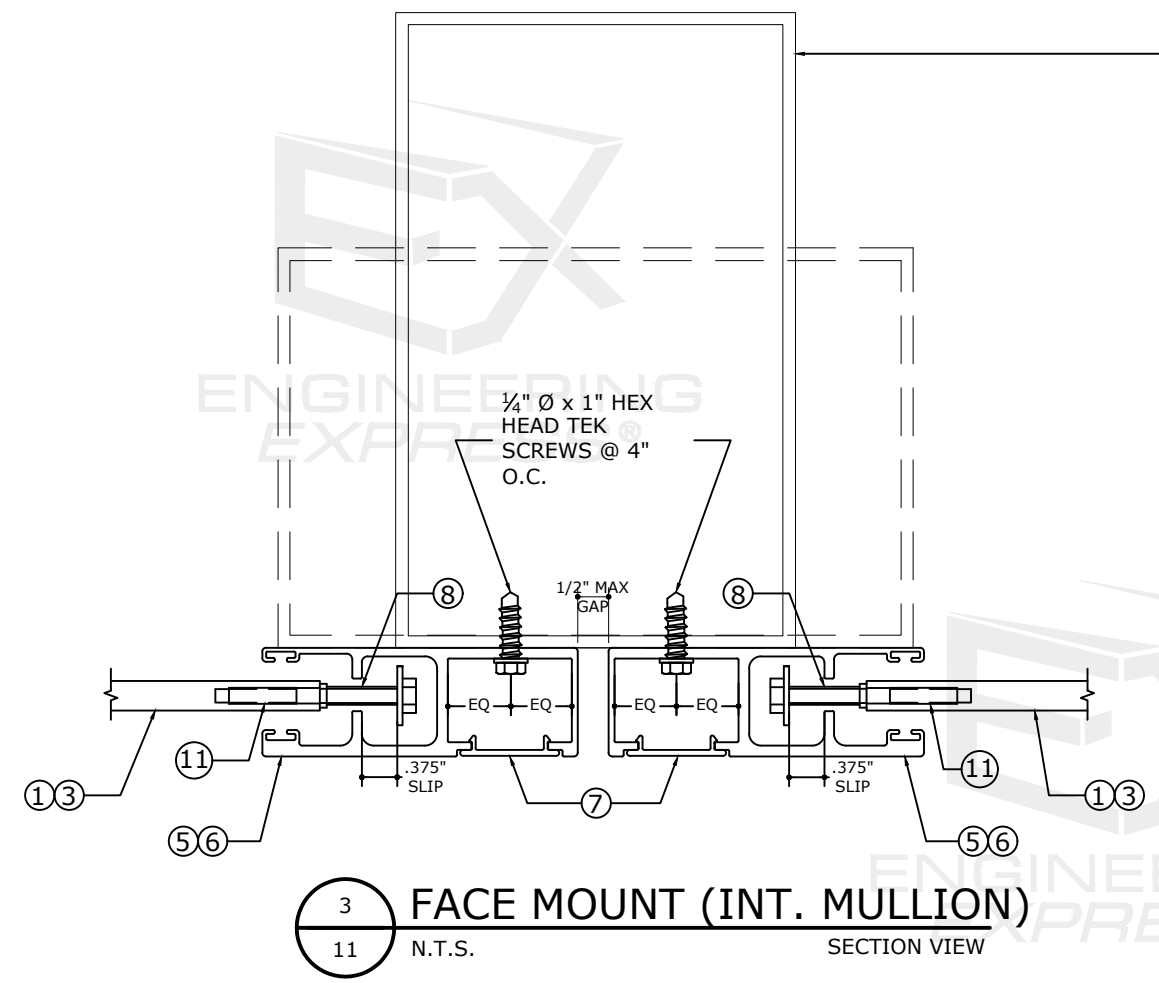


**1** FACE MOUNT (END MULLION)  
11 N.T.S. SECTION VIEW

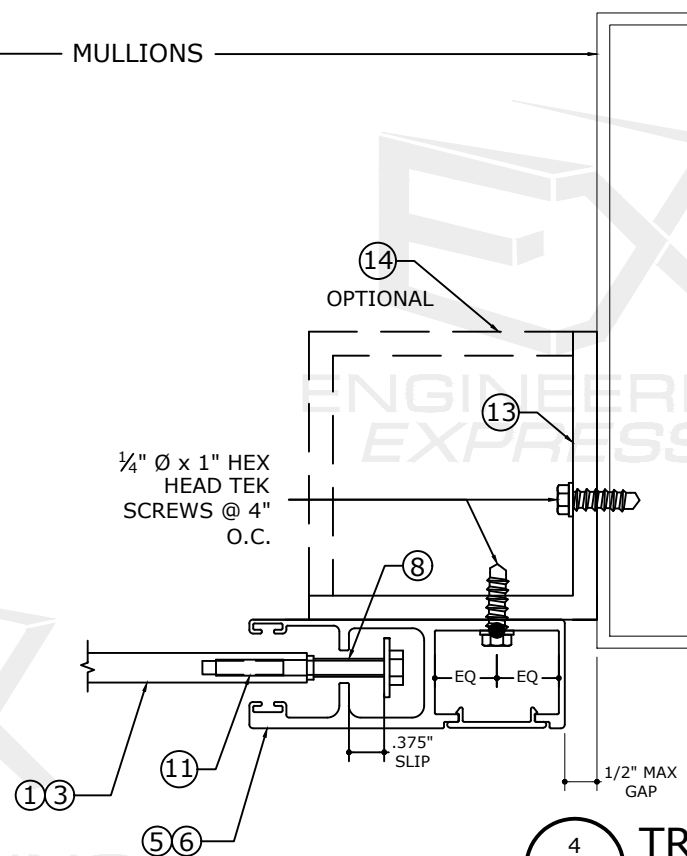
SEE MULLION SCHEDULES FOR MULLION OPTIONS



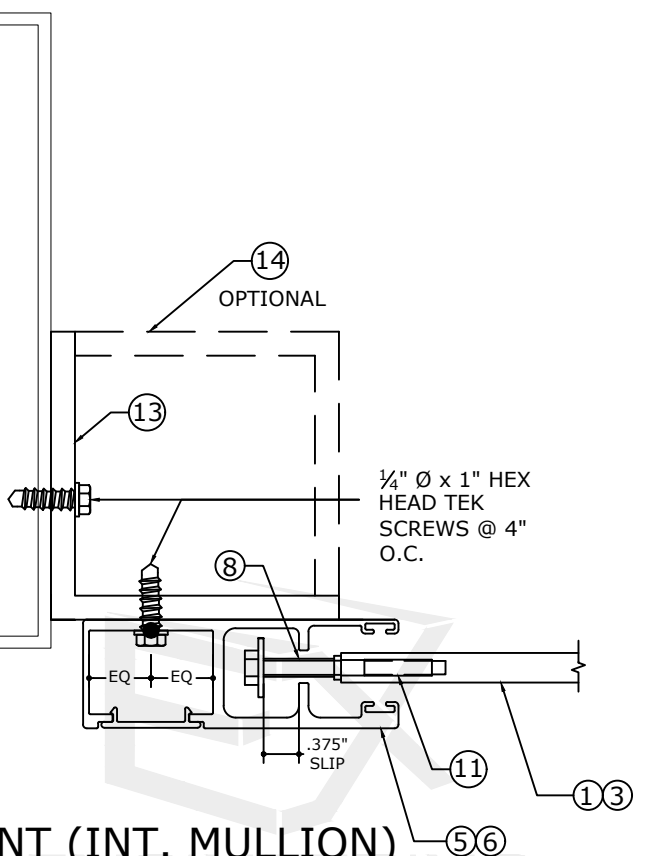
**2** FACE MOUNT (END MULLION)  
11 N.T.S. SECTION VIEW  
ORIENTATION #2 FACE MOUNT END MULLION



**3** FACE MOUNT (INT. MULLION)  
11 N.T.S. SECTION VIEW



**4** TRAPPED MOUNT (INT. MULLION)  
11 N.T.S. SECTION VIEW



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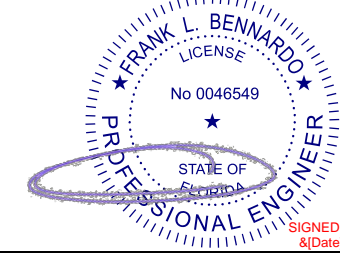
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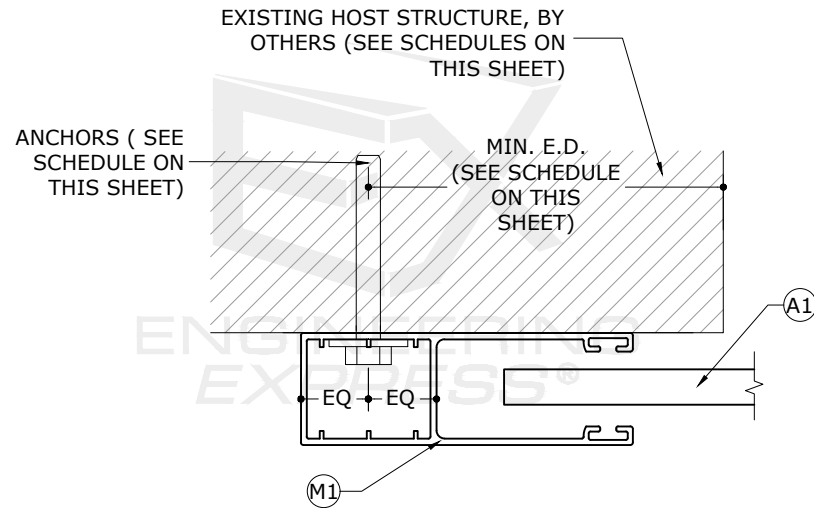
# NON-END RETENTION (NER) SHUTTER ATTACHMENT TO HOST STRUCTURE

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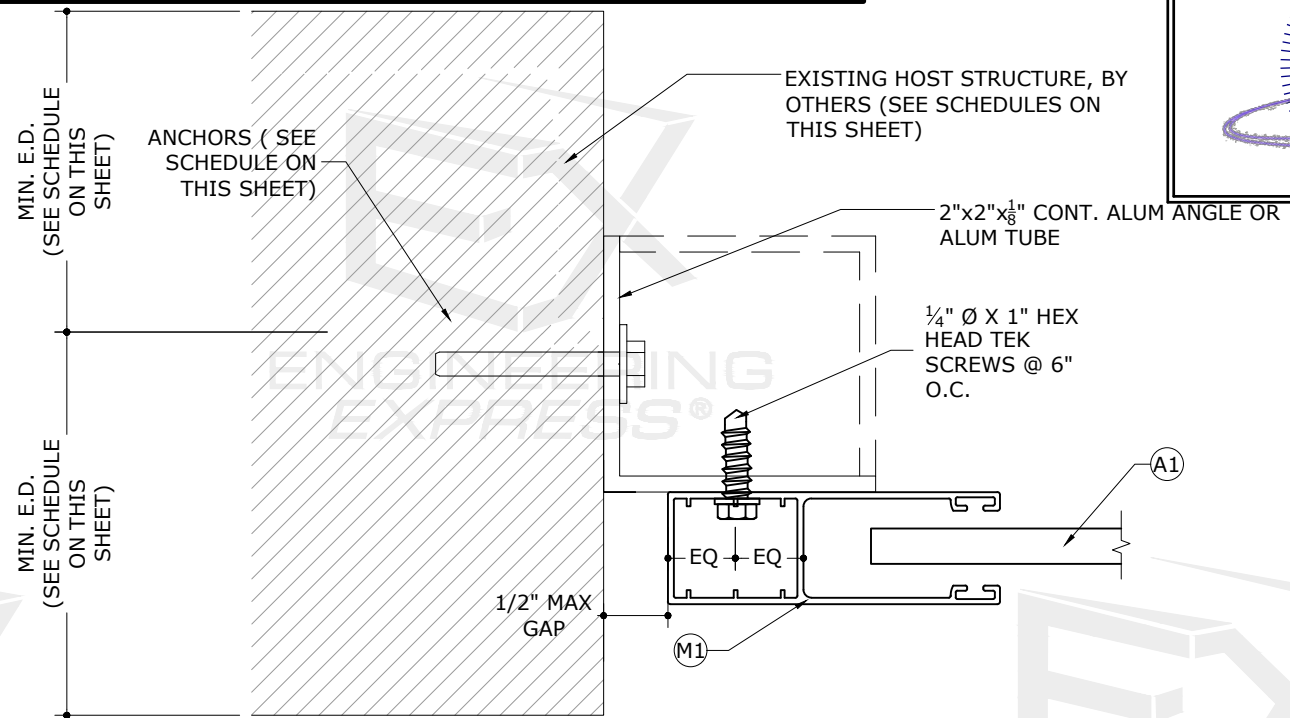
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**1 WALL MOUNT**  
12 N.T.S. SECTION VIEW

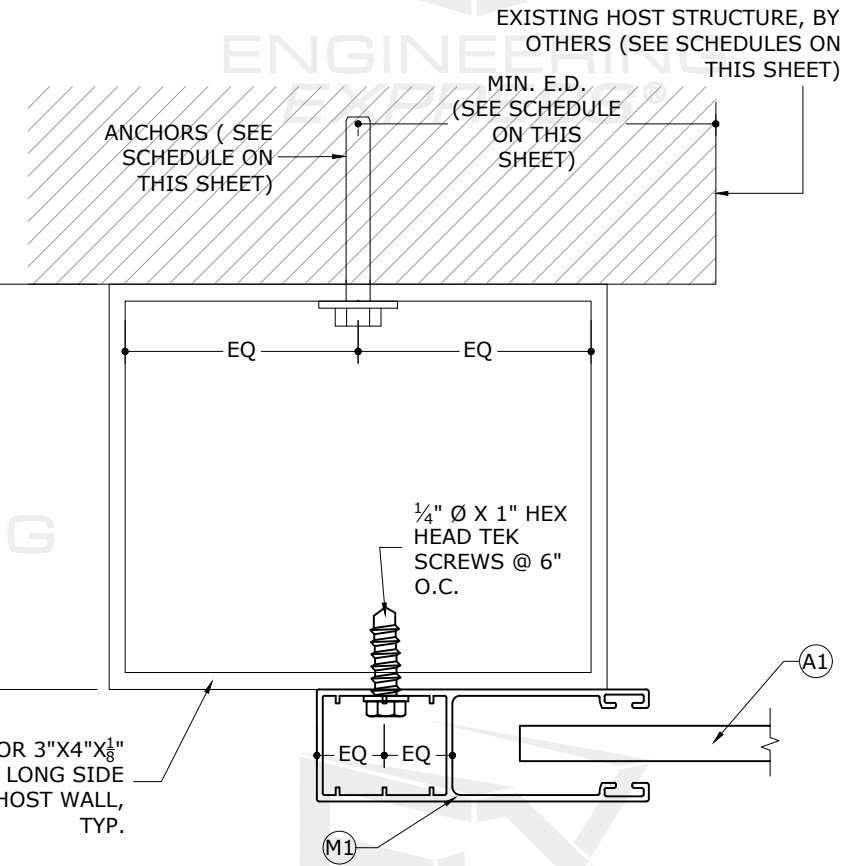


**2 INSIDE/TRAPPED MOUNT**  
12 N.T.S. SECTION VIEW  
\*ATTACHMENT MAY BE REVERSED AS FIELD CONDITIONS DICTATE

ANCHOR TYPE 1	<b>1/4" ITW TAPCON</b> TO CONC: 1-3/4" EMBED., 2-1/2" MIN E.D. TO GROUT-FILLED BLOCK: 1-3/4" EMBED., 2-1/2" MIN E.D. TO HOLLOW BLOCK: 1-1/4" EMBED., 2-1/2" MIN E.D. TO WOOD: 1-1/2" THREAD PENETRATION, 3/4" MIN E.D.
ANCHOR TYPE 2	<b>1/4" ELCO/DEWALT ULTRACON</b> TO CONC: 1-3/4" EMBED., 2-1/2" MIN E.D. TO GROUT-FILLED BLOCK: 1-3/4" EMBED., 2-1/2" MIN E.D. TO HOLLOW BLOCK: 1-1/4" EMBED., 2-1/2" MIN E.D. TO WOOD: 1-1/2" THREAD PENETRATION, 3/4" MIN E.D.
ANCHOR TYPE 3	<b>1/4" LAG OR WOOD SCREW</b> TO WOOD: 1-1/2" THREAD PENETRATION, 3/4" MIN E.D.

ANCHOR SPACING SCHEDULE (UP TO +/- 68PSF)			
HOST SUBSTRATE	ANCHOR TYPE		
	1	2	3
3.0 KSI MIN. CONCRETE	6"	6"	N/A
GROUT-FILLED CMU BLOCK	6"	6"	N/A
HOLLOW CMU BLOCK	5"	5"	N/A
WOOD (G = 0.55 MIN.)	4-1/4"	4-1/4"	4-1/4"

ANCHOR SPACING SCHEDULE (> +/- 68PSF TO +/- 100PSF)			
HOST SUBSTRATE	ANCHOR TYPE		
	1	2	3
3.0 KSI MIN. CONCRETE	6"	6"	N/A
GROUT-FILLED CMU BLOCK	5"	5"	N/A
HOLLOW CMU BLOCK	4"	4"	N/A
WOOD (G = 0.55 MIN.)	4-1/4"	4-1/4"	4-1/4"



## ALTERNATE ANCHOR NOTE:

FOR ALL 1/4" AND 5/16" DIAMETER ANCHOR OPTIONS LISTED IN THE ANCHOR SCHEDULES, AN EQUIVALENT DIAMETER HILLMAN/ALL-POINTS SOLID-SET ANCHOR (CARBON OR STAINLESS STEEL) MAY BE USED IN LIEU OF THE OPTION(S) LISTED SO LONG AS THE LISTED MINIMUM EMBEDMENT, EDGE DISTANCE AND SPACING ARE ACHIEVED.

**3 BUILD-OUT MOUNT**  
12 N.T.S. SECTION VIEW

FL 32029.1

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WEST PALM BEACH, FL 33407  
(800) 432-2204  
40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

REMARKS	DRWN	CHKD	DATE
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2023 FCC UPDATE	MRT	RWV	10/05/23

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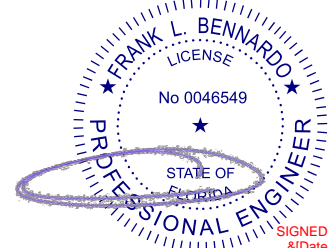




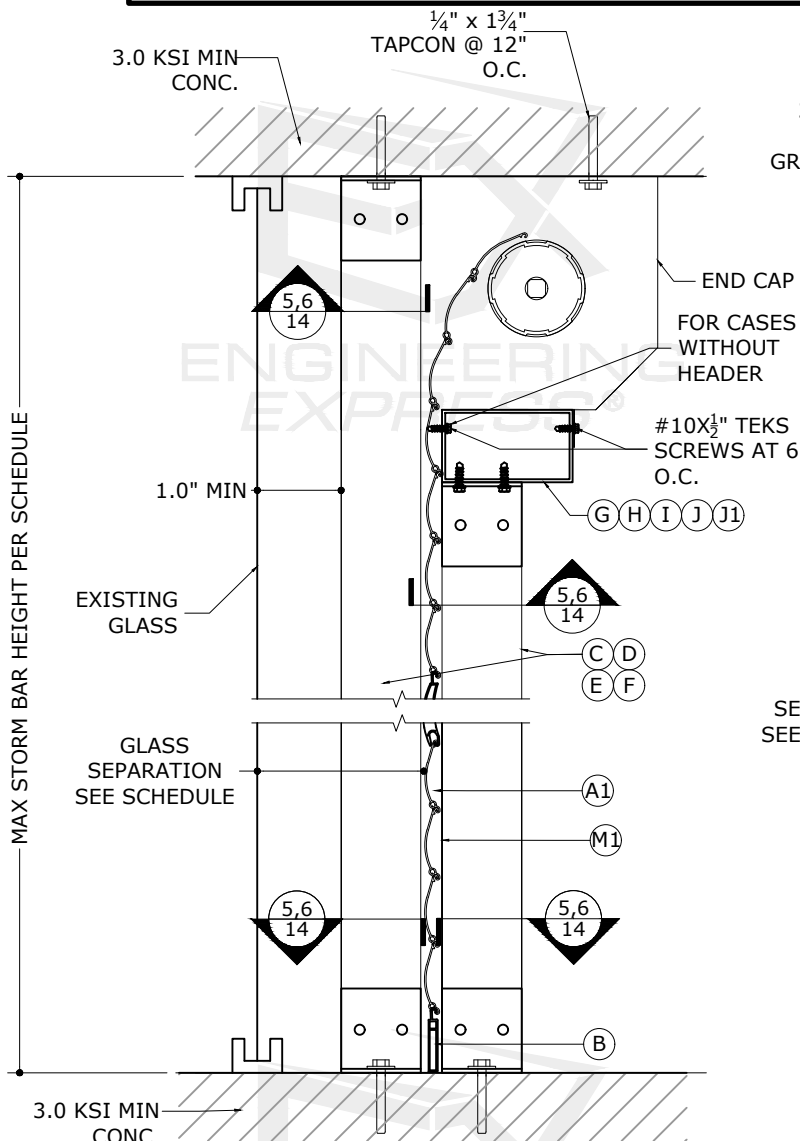
# NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

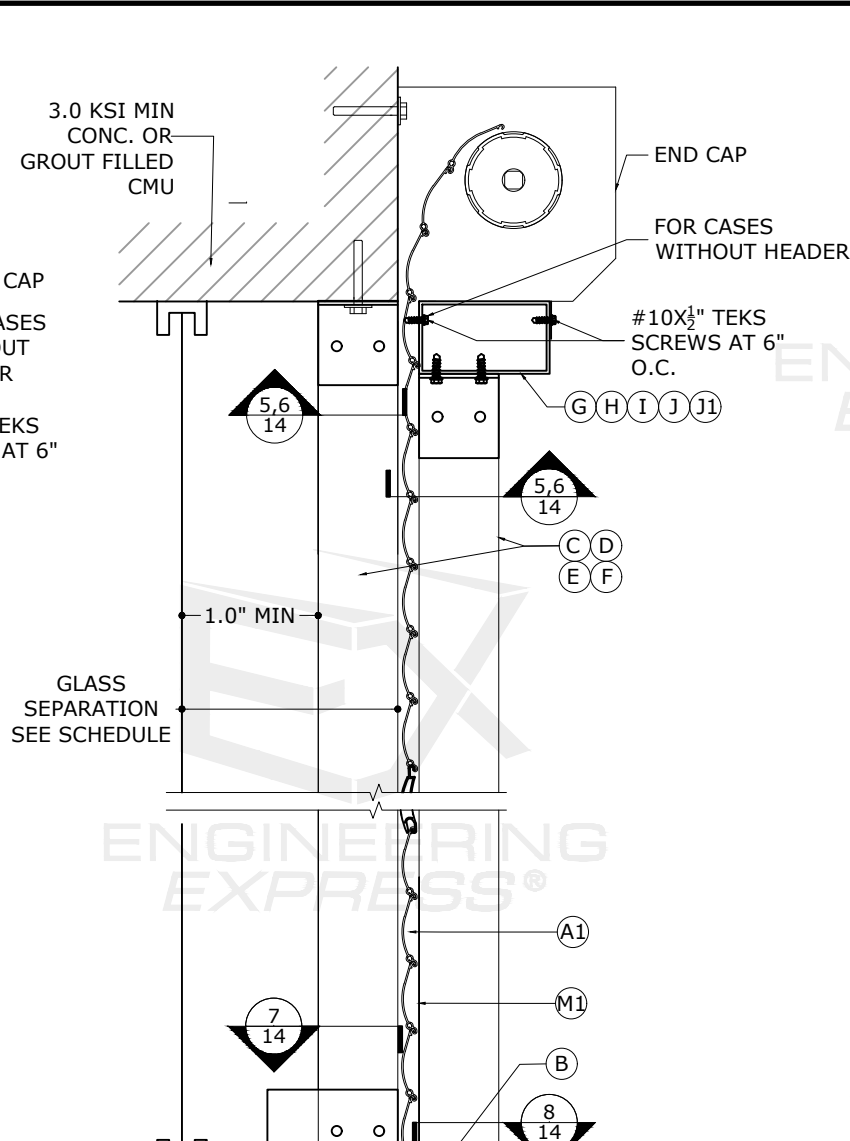
OCTOBER 9, 2023



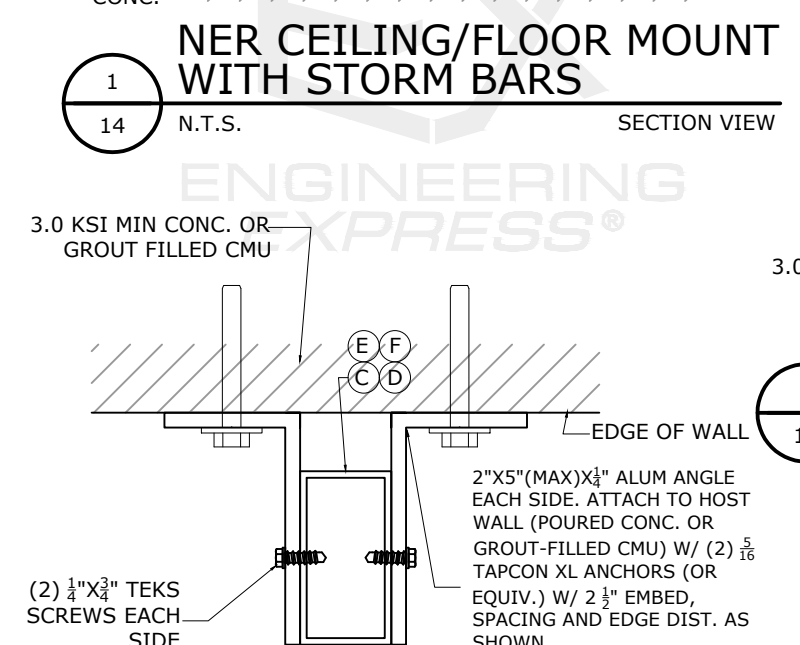
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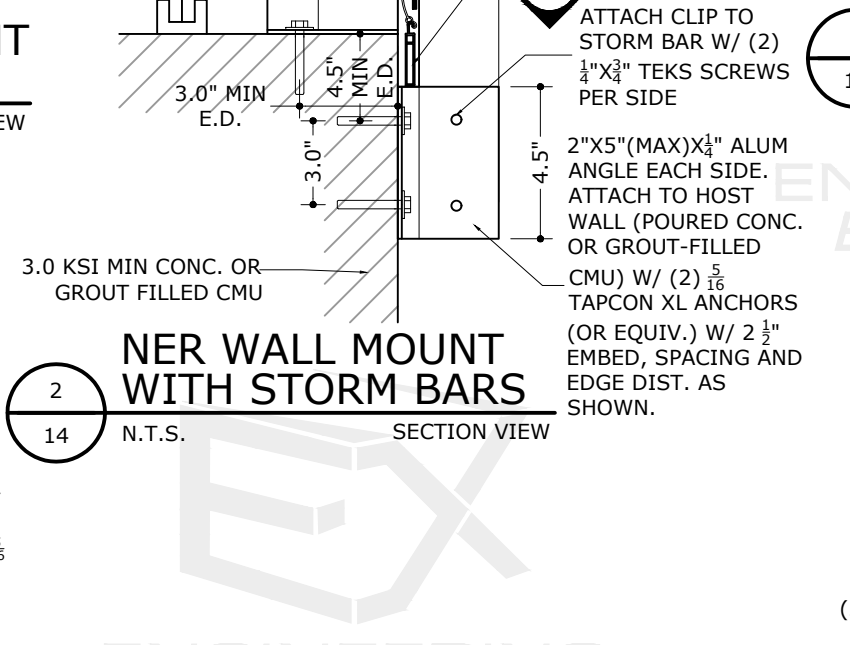
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14 N.T.S. SECTION VIEW



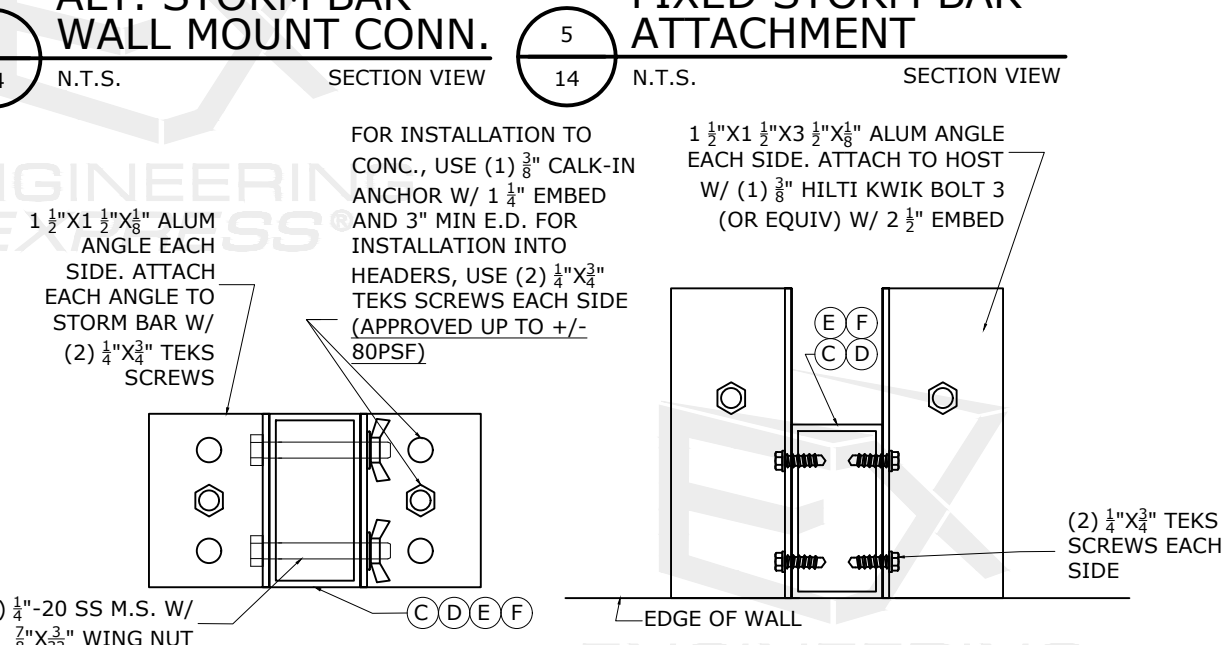
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14 N.T.S. SECTION VIEW



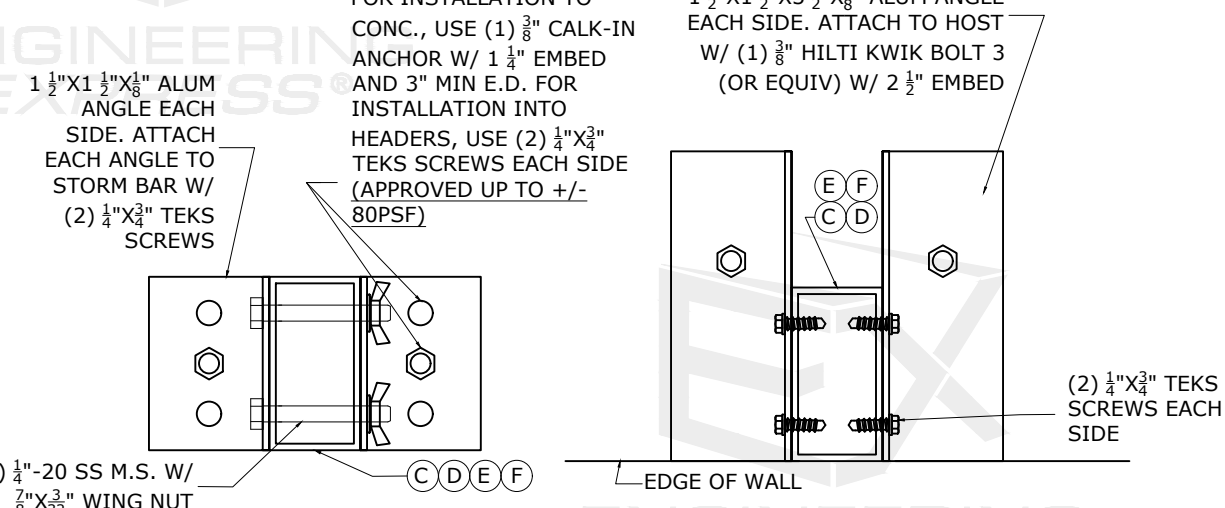
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14 N.T.S. SECTION VIEW



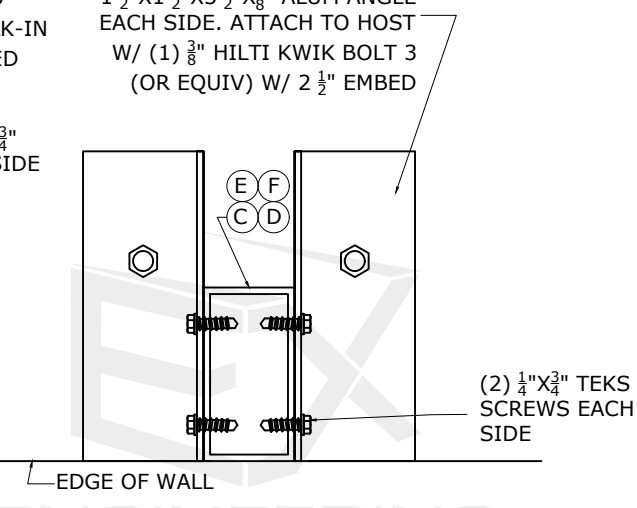
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14 N.T.S. SECTION VIEW



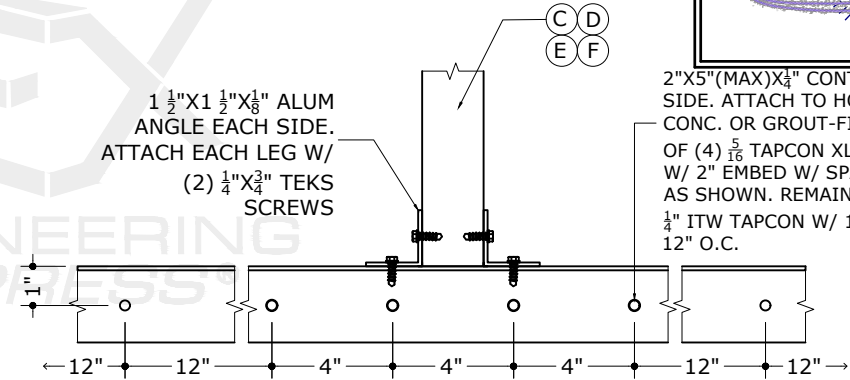
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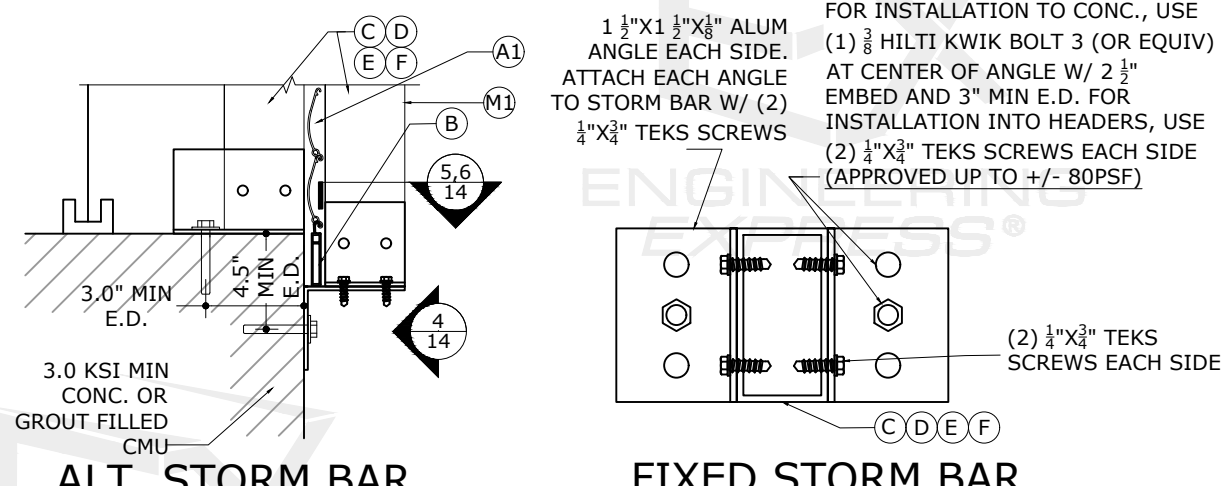
**6**  
14 N.T.S. SECTION VIEW



**7**  
14 N.T.S. SECTION VIEW



**4**  
14 N.T.S. SECTION VIEW



**5**  
14 N.T.S. SECTION VIEW

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40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
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2023 FBC UPDATE	MRT	RWV	10/05/23

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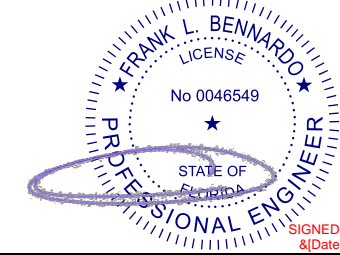
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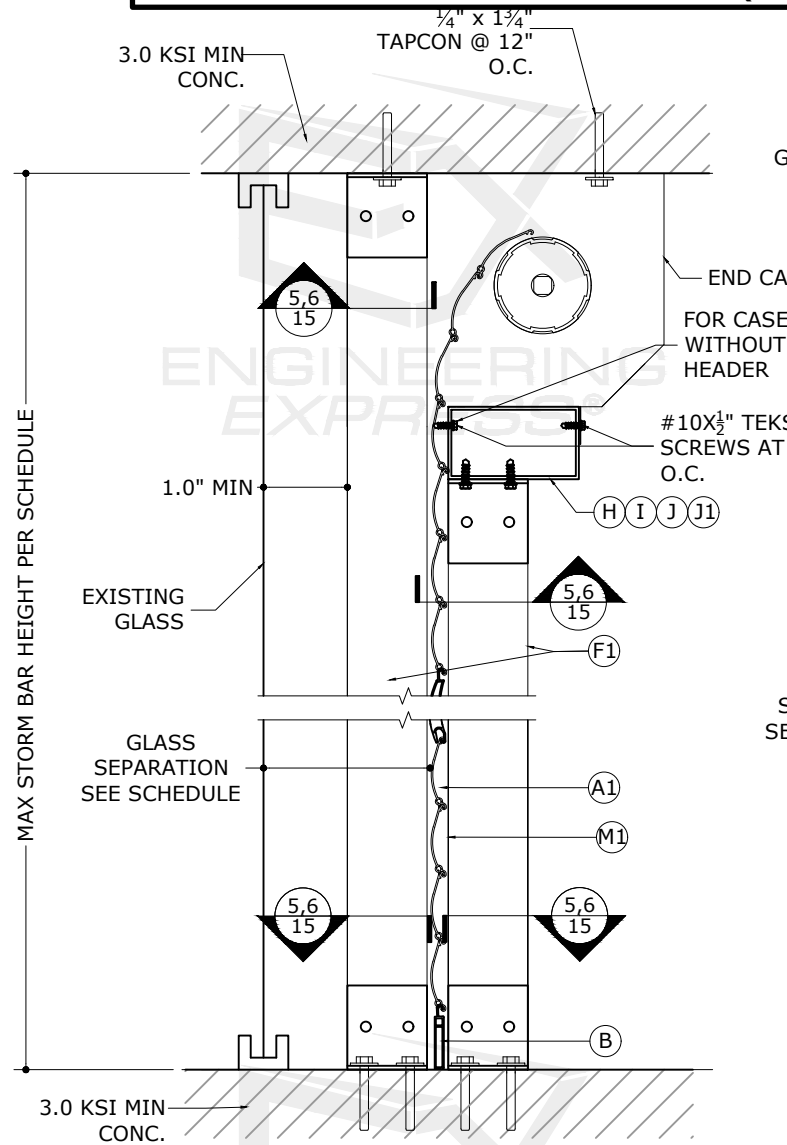
# NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE (CONT'D)

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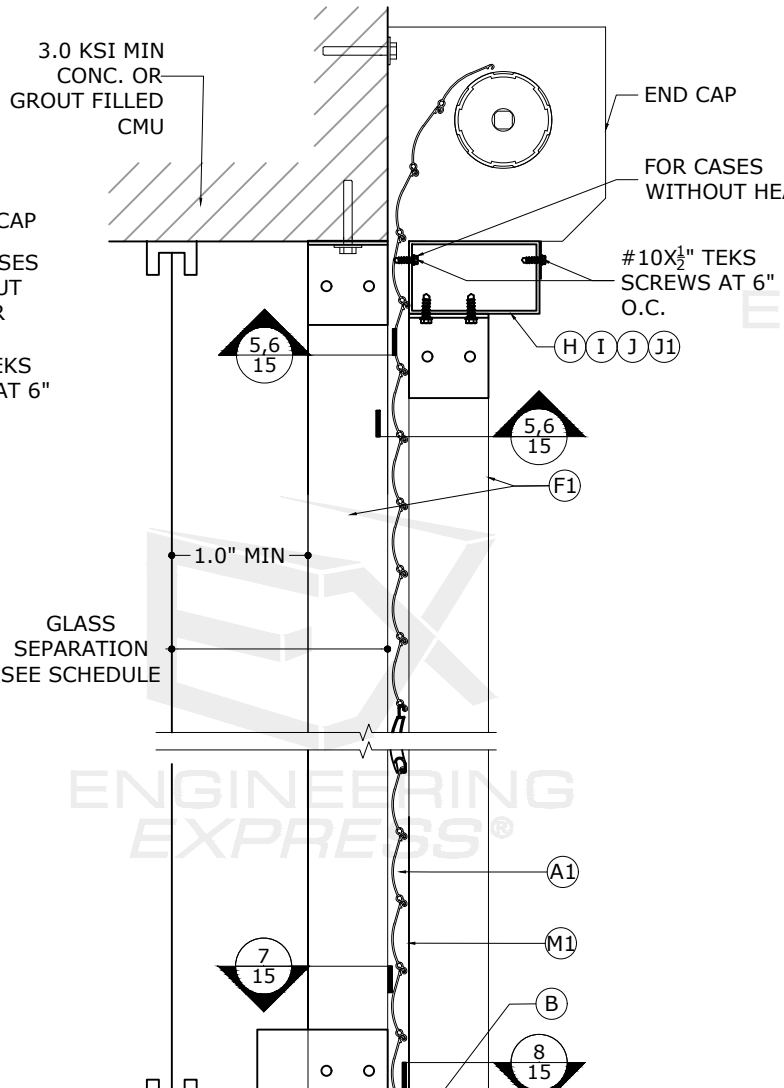


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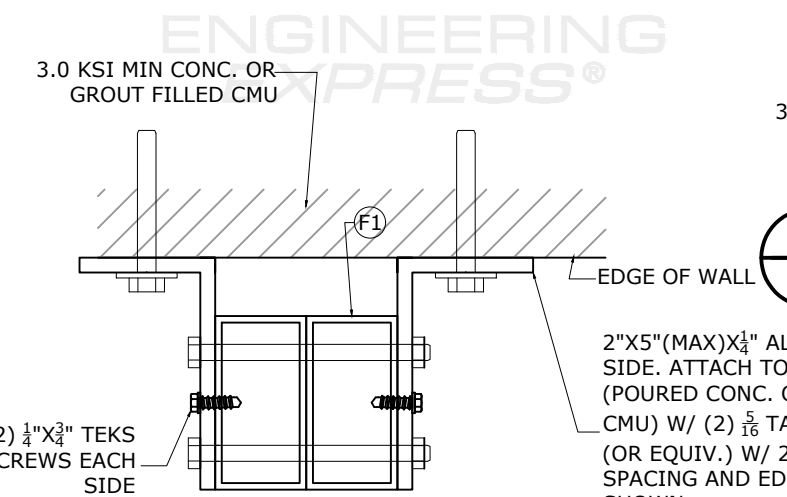
**1**  
15 N.T.S. SECTION VIEW

**NER CEILING/FLOOR MOUNT WITH STORM BARS**



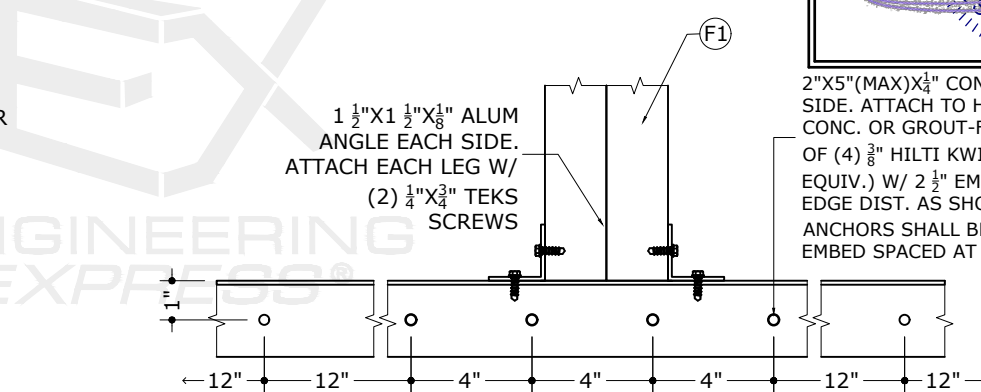
**2**  
15 N.T.S. SECTION VIEW

**NER WALL MOUNT WITH STORM BARS**



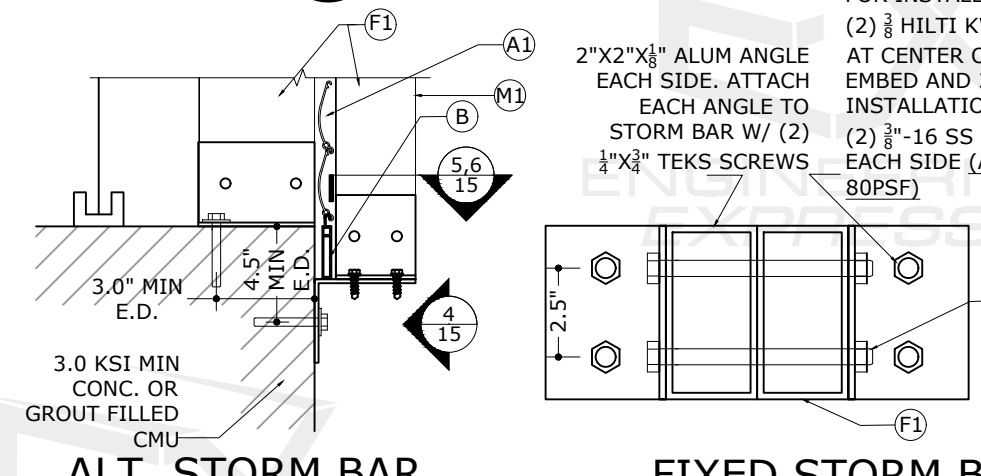
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15 N.T.S. SECTION VIEW

**FIXED STORM BAR ATTACHMENT TO WALL**



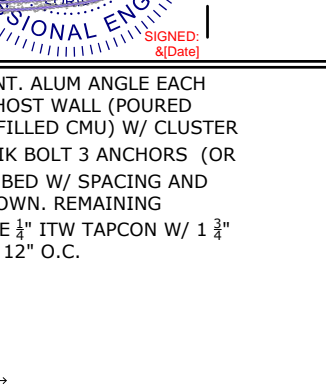
**4**  
15 N.T.S. SECTION VIEW

**ALT. STORM BAR WALL MOUNT CONN.**



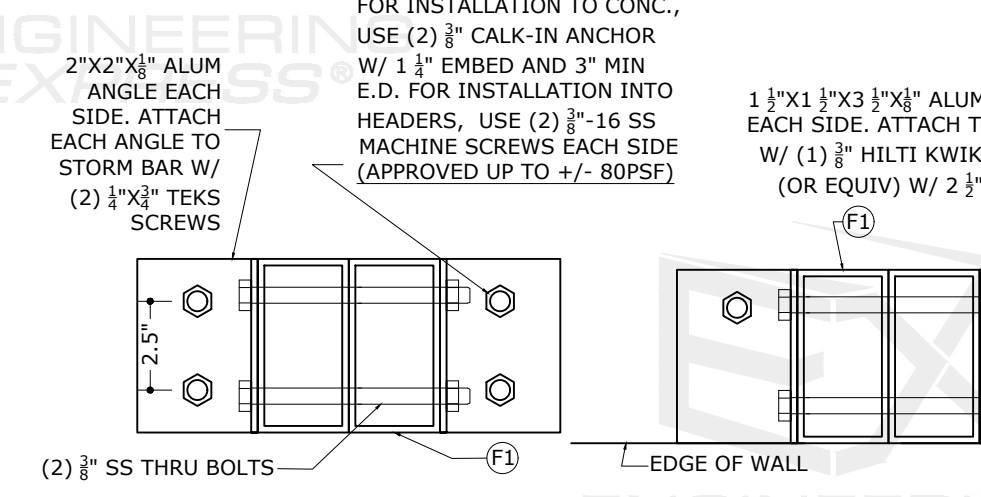
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15 N.T.S. SECTION VIEW

**ALT. STORM BAR WALL MOUNT CONN.**



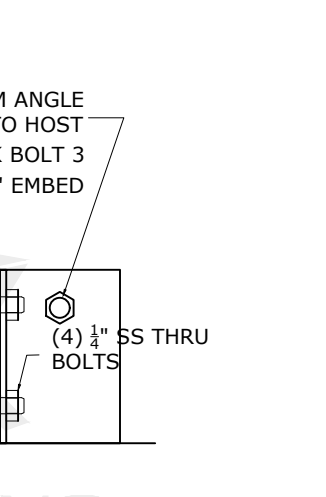
**5**  
15 N.T.S. SECTION VIEW

**FIXED STORM BAR ATTACHMENT**



**6**  
15 N.T.S. SECTION VIEW

**REMOVABLE STORM BAR ATTACHMENT**



**7**  
15 N.T.S. SECTION VIEW

**FIXED STORM BAR ATTACHMENT**

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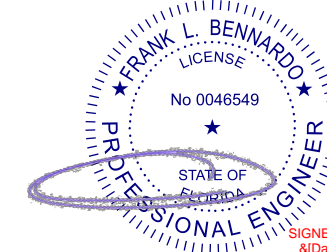
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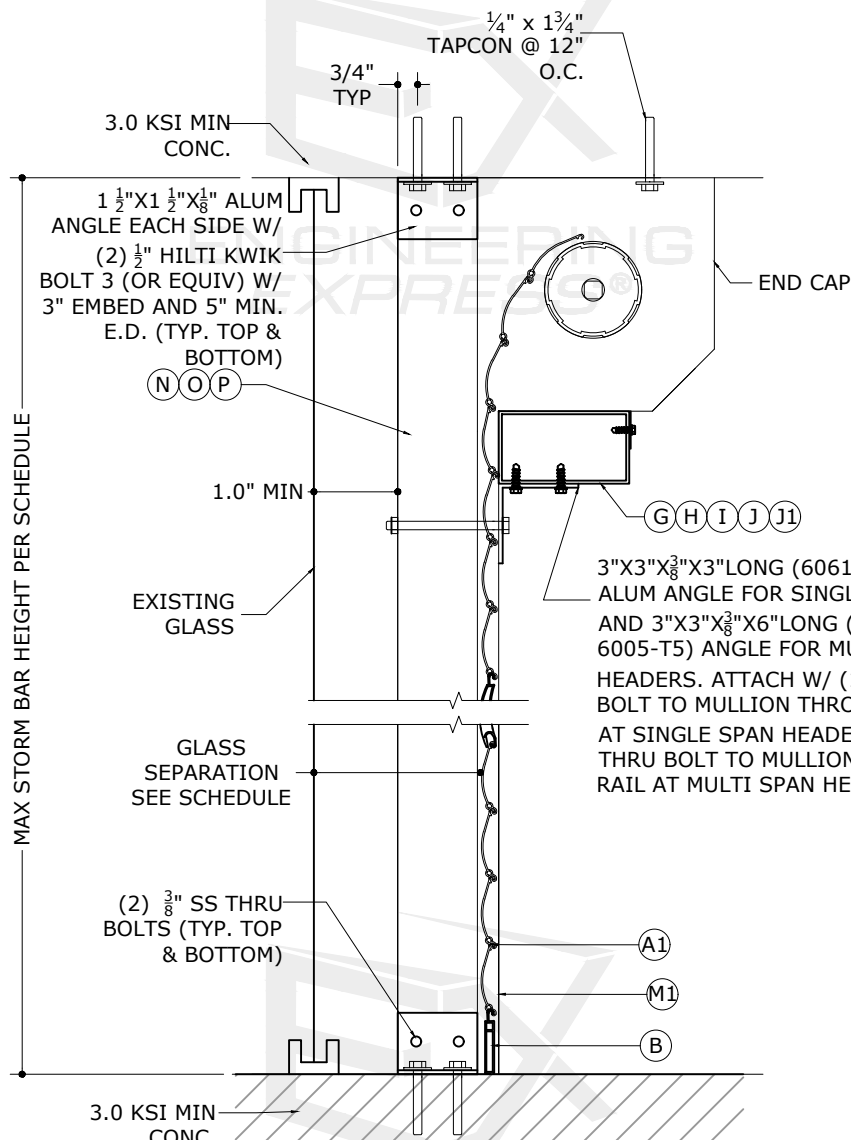
# NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE (CONT'D)

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PE# 0046549 CA# 9885

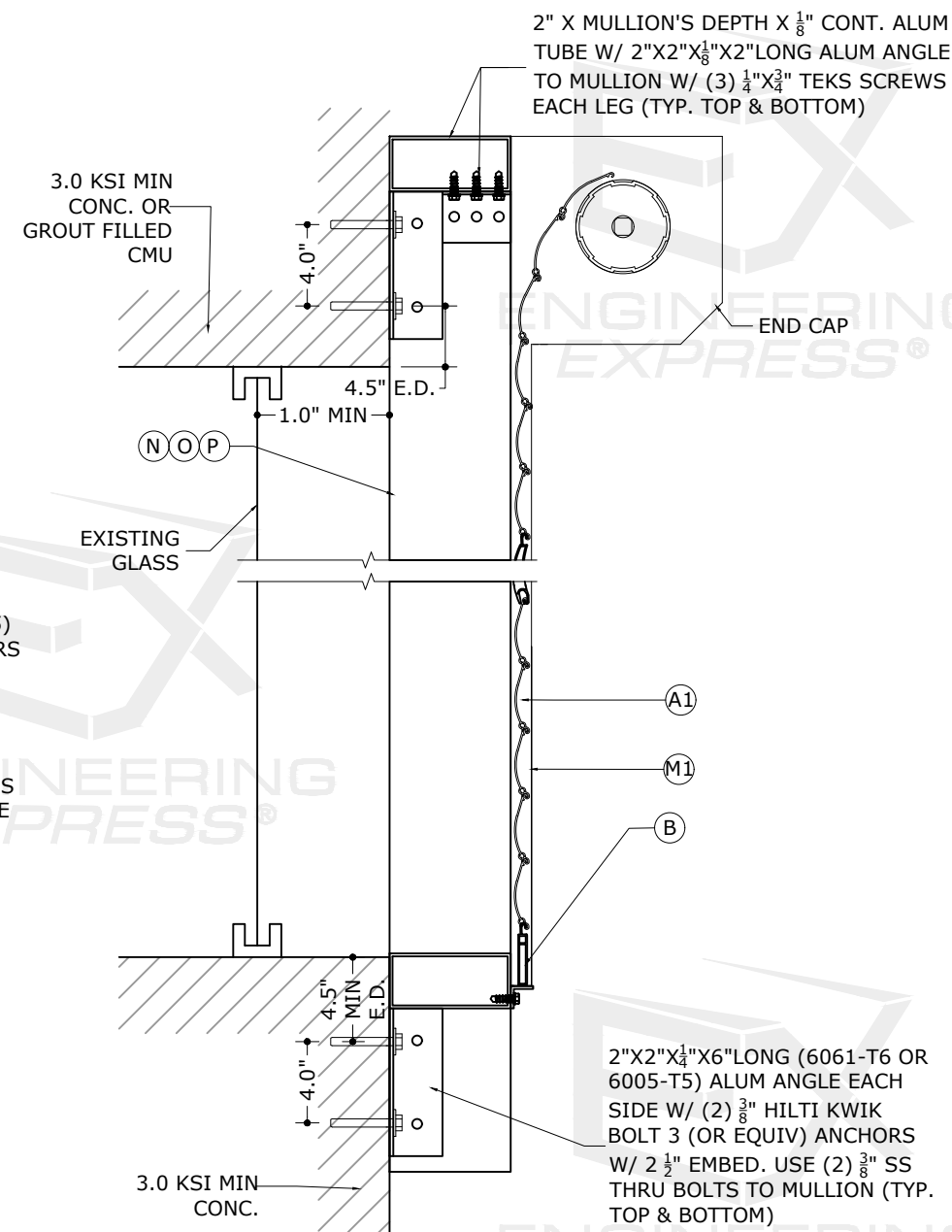
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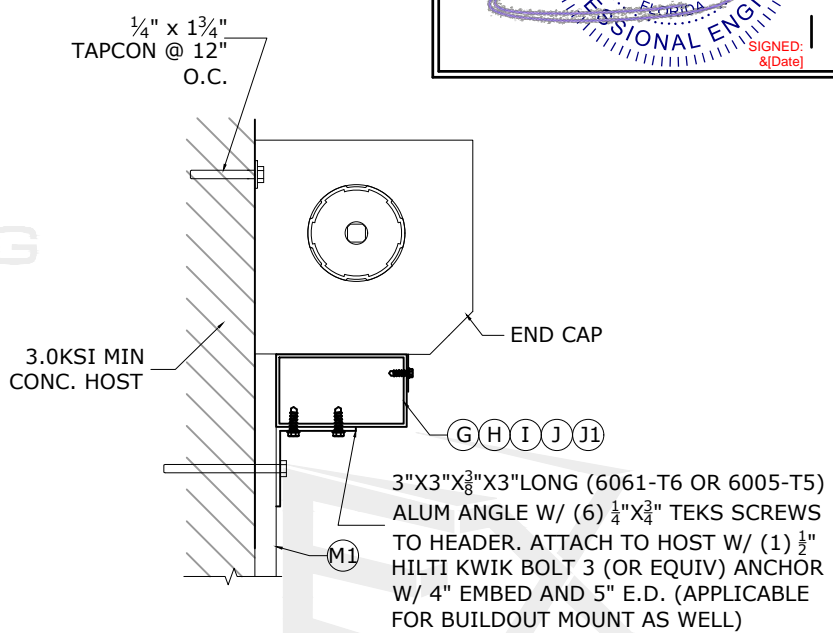
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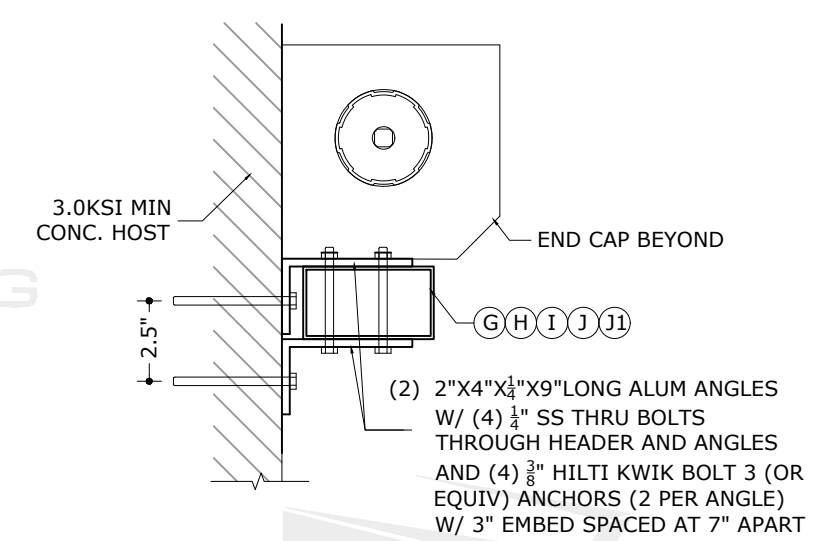
**1**  
16 N.T.S. SECTION VIEW  
NER CEILING/FLOOR MOUNT WITH MULLIONS



**2**  
16 N.T.S. SECTION VIEW  
NER WALL MOUNT WITH MULLIONS



**2**  
16 N.T.S. SECTION VIEW  
NER WALL MOUNT ALTERNATE OPTION 1  
\*FOR NON MULTI SPAN HEADERS



**3**  
16 N.T.S. SECTION VIEW  
NER HEADER END MOUNT FOR MULTI SPAN HEADERS

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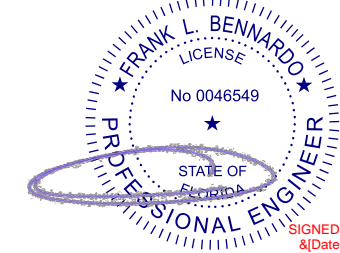




# NON-END RETENTION (NER) SHUTTER STORM BAR, HEADER & MULLION SCHEDULES

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

OCTOBER 9, 2023



FL

## STORM BAR SPAN SCHEDULE

Maximm Design Pressure Rating	TYPE 1 STORM BAR (C) 2" x 2" x 1/4"			TYPE 2 STORM BAR (D) 2" x 3" x 1/8"			TYPE 3 STORM BAR (E) 2" x 4" x 1/8"			TYPE 4 STORM BAR (F) 2" x 4" x .250"			TYPE 5 STORM BAR (F1) (2) 2" x 4" x .250"		
	* STORM BAR SPACING			* STORM BAR SPACING			* STORM BAR SPACING			* STORM BAR SPACING			* STORM BAR SPACING		
	<36"	36" - 48"	48" - 62"	<36"	36" - 48"	48" - 62"	<36"	36" - 48"	48" - 62"	<36"	36" - 48"	48" - 62"	<36"	36" - 48"	48" - 62"
40 psf OR LESS	91"	85"	81"	96"	93"	83"	120"	114"	102"	142"	132"	125"	169"	157"	149"
45 psf	89"	83"	76"	96"	88"	79"	119"	107"	96"	138"	128"	121"	164"	153"	144"
50 psf	87"	81"	72"	96"	84"	75"	117"	102"	91"	134"	125"	118"	160"	149"	141"
55 psf	84"	77"	69"	92"	80"	66"	112"	97"	87"	131"	122"	115"	156"	145"	137"
60 psf	83"	74"	66"	88"	76"	68"	107"	93"	83"	128"	119"	110"	153"	142"	134"
65 psf	81"	71"	64"	85"	73"	65"	103"	89"	80"	126"	117"	106"	150"	139"	132"
70 psf	79"	68"	61"	82"	71"	63"	99"	86"	77"	124"	114"	102"	147"	137"	129"
75 psf	76"	66"	59"	79"	68"	61"	96"	83"	74"	121"	110"	99"	144"	134"	127"
80 psf	74"	64"	57"	76"	66"	59"	96"	81"	72"	119"	107"	95"	142"	132"	125"
85 psf	72"	62"	56"	74"	64"	57"	90"	78"	70"	118"	103"	93"	140"	130"	123"
90 psf	70"	60"	54"	72"	62"	56"	88"	76"	68"	116"	101"	90"	138"	128"	121"
95 psf	68"	59"	53"	70"	61"	54"	85"	74"	66"	113"	98"	88"	136"	127"	120"
100 psf	66"	57"	51"	68"	59"	53"	83"	72"	64"	110"	95"	85"	134"	125"	118"

NOTE: STORM BAR SPACING SHALL NOT EXCEED MAXIMUM SLAT SPAN PER SLAT SPAN SCHEDULE

## HEADER SPAN SCHEDULE

Maximm A.S.D. Design Pressure Rating (p.s.f.)	TYPE 1 HEADER (G) 2" x 3" x 1/8"		TYPE 2 HEADER (H) 2" x 4" x 1/8"			TYPE 3 HEADER (I) 2" x 4" x 1/4"					TYPE 4 HEADER (J) 2" x 6" x 1/8"					TYPE 5 HEADER (J1) 2" x 6" x 1/4"				
	STORM BAR HEIGHT		STORM BAR HEIGHT			STORM BAR HEIGHT					STORM BAR HEIGHT					STORM BAR HEIGHT				
	<60"	60" - 84"	<60"	60" - 96"	96" - 120"	<72"	72" - 96"	96" - 120"	120" - 144"	144" - 168"	<72"	72" - 96"	96" - 120"	120" - 144"	144" - 168"	<72"	72" - 96"	96" - 120"	120" - 144"	144" - 168"
40 psf OR LESS	119"	100"	146"	116"	104"	178"	154"	138"	126"	117"	181"	157"	140"	128"	119"	292"	207"	185"	169"	156"
45 psf	112"	95"	138"	109"	98"	168"	146"	130"	119"	110"	171"	148"	132"	121"	112"	225"	195"	174"	159"	147"
50 psf	106"	90"	131"	104"	93"	160"	138"	124"	113"	104"	162"	140"	126"	115"	106"	213"	185"	165"	151"	140"
55 psf	101"	86"	125"	99"	88"	152"	132"	118"	108"	100"	155"	134"	120"	109"	101"	204"	176"	158"	144"	133"
60 psf	97"	82"	120"	95"	85"	146"	126"	113"	115"	95"	148"	128"	115"	105"	97"	195"	169"	151"	138"	128"
65 psf	93"	79"	115"	91"	81"	140"	121"	108"	99"	92"	142"	123"	110"	101"	93"	187"	162"	145"	132"	123"
70 psf	90"	76"	111"	88"	78"	135"	117"	104"	95"	88"	137"	119"	106"	97"	90"	180"	156"	140"	128"	118"
75 psf	87"	73"	107"	85"	76"	130"	113"	101"	92"	85"	132"	115"	103"	94"	87"	174"	151"	135"	123"	114"
80 psf	84"	71"	104"	82"	73"	136"	109"	98"	89"	83"	128"	111"	99"	91"	84"	169"	146"	131"	119"	110"
85 psf	81"	69"	101"	79"	71"	132"	106"	95"	87"	80"	124"	108"	96"	88"	81"	164"	142"	127"	116"	107"
90 psf	79"	67"	98"	77"	69"	119"	103"	92"	84"	78"	121"	105"	94"	85"	79"	159"	138"	123"	113"	104"
95 psf	77"	65"	95"	75"	67"	116"	100"	90"	82"	76"	118"	102"	91"	83"	77"	155"	134"	120"	110"	101"
100 psf	75"	63"	93"	73"	66"	113"	98"	87"	80"	74"	115"	89"	89"	81"	75"	151"	131"	117"	107"	99"

## MULLION SPAN SCHEDULE

Maximm A.S.D. Design Pressure Rating (p.s.f.)	TYPE 1 MULLION (N) 3" x 4" x 1/8"				TYPE 2 MULLION (O) 4" x 4" x 1/4"				TYPE 3 MULLION (P) 4" x 6" x 1/4"					
	MULLION SPACING				MULLION SPACING				MULLION SPACING					
	48"	48" - 60"	60" - 72"	72" - 96"	48"	48" - 60"	60" - 72"	72" - 96"	48"	48" - 60"	60" - 72"	72" - 96"	96" - 120"	120" - 144"
40 OR LESS	108"	100"	94"	98"	141"	131"	123"	129"	196"	182"	171"	178"	166"	156"
45 psf	104"	96"	91"	94"	136"	126"	119"	124"	188"	175"	164"	172"	159"	150"
50 psf	100"	93"	87"	91"	131"	122"	115"	120"	182"	169"	159"	166"	154"	145"
55 psf	97"	90"	85"	88"	127"	118"	111"	116"	176"	163"	154"	160"	149"	140"
60 psf	94"	87"	82"	86"	123"	115"	108"	113"	171"	159"	149"	156"	146"	136"
65 psf	92"	85"	80"	84"	120"	112"	105"	110"	167"	155"	146"	152"	141"	133"
70 psf	89"	83"	78"	82"	117"	109"	102"	107"	163"	151"	142"	148"	137"	129"
75 psf	87"	81"	76"	80"	115"	106"	100"	104"	159"	147"	139"	145"	134"	126"
80 psf	86"	79"	75"	78"	112"	104"	98"	102"	155"	144"	136"	142"	131"	124"
85 psf	84"	78"	73"	76"	110"	102"	96"	100"	152"	141"	133"	139"	129"	121"
90 psf	82"	76"	72"	75"	108"	100"	94"	98"	149"	139"	131"	136"	126"	119"
95 psf	81"	75"	70"	74"	106"	98"	93"	97"	147"	136"	128"	134"	124"	117"
100 psf	79"	74"	69"	72"	104"	97"	91"	95"	144"	134"	126"	131"	122"	115"

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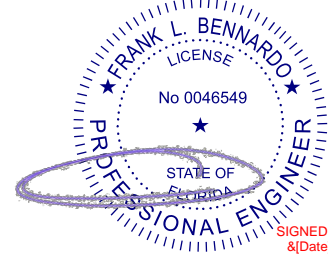
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# ANCHOR SCHEDULE: END RETENTION (ER) WALL MOUNT (SINGLE WALL SLATS)

FL 32029.1

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																	
				1/4" DEWALT OR DEWALT ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	5/16" DEWALT OR DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON			1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 410 SS SMS W/ FULL THREAD PENETRATION OR 1/4-20 410 SS THRU-BOLT TO 0.125" MIN. 6063-T6 ALUM; 0.5" MIN. EDGE DISTANCE	5/16" 410 SS SMS W/ FULL THREAD PENETRATION OR 5/16-18 410 SS THRU-BOLT TO 0.25" MIN. 6063-T6 ALUM; 0.625" MIN. EDGE DISTANCE	3/8" DEWALT SCREW BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 4.5" MIN. EDGE DISTANCE	3/8" DEWALT OR DEWALT CONFLX		
				TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE		TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE										TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	
82"	+/- 40 PSF	351.0 LB/FT	136.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 50 PSF	463.2 LB/FT	170.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	575.2 LB/FT	205.0 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 70 PSF	687.1 LB/FT	239.2 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
85"	+/- 40 PSF	382.8 LB/FT	141.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 49 PSF	488.8 LB/FT	173.4 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 58 PSF	594.7 LB/FT	205.1 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 67 PSF	700.5 LB/FT	236.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
90"	+/- 40 PSF	435.4 LB/FT	150.0 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 47 PSF	531.2 LB/FT	177.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 55 PSF	626.9 LB/FT	205.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 62 PSF	722.5 LB/FT	233.5 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
95"	+/- 40 PSF	487.7 LB/FT	158.3 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 46 PSF	573.3 LB/FT	182.6 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 52 PSF	658.9 LB/FT	206.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 58 PSF	744.4 LB/FT	231.1 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
100"	+/- 40 PSF	539.8 LB/FT	166.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 45 PSF	615.3 LB/FT	187.5 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 50 PSF	690.8 LB/FT	208.3 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 55 PSF	766.1 LB/FT	229.2 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"

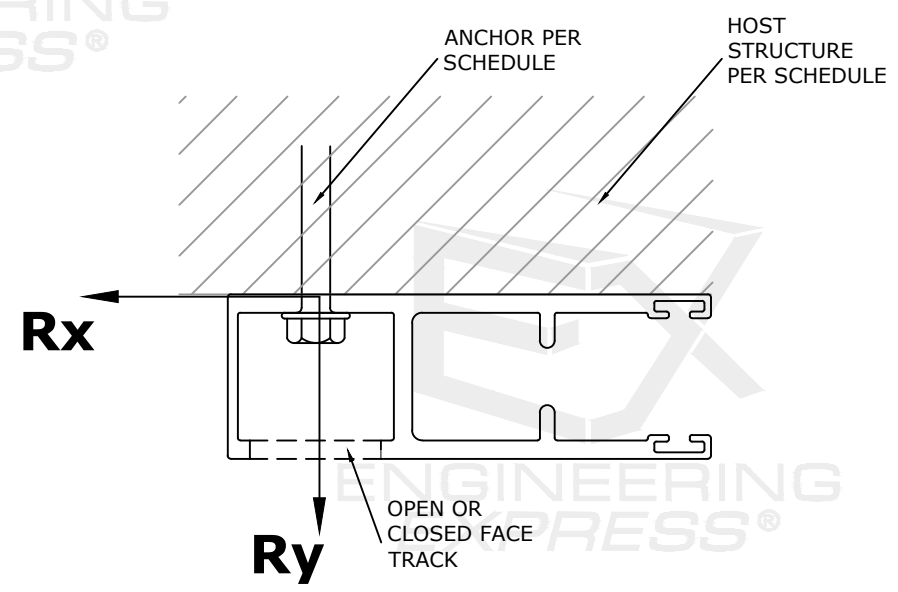
## ANCHOR NOTES:

- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
- WHERE ANCHORS FASTEN TO NARROW FACE OF STUD FRAMING, ANCHOR SHALL BE LOCATED IN CENTER OF NOMINAL 2x (MIN) WOOD STUD (i.e. 3/4" EDGE DISTANCE IS ACCEPTABLE FOR ANCHORS TO WOOD FRAMING).
- MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR SCHEDULE. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
- ANCHOR SCHEDULE APPLIES TO ALL PRODUCTS CERTIFIED HEREIN, BUT ONLY PROVIDES MAXIMUM ALLOWABLE ANCHOR SPACING. MAXIMUM ALLOWABLE SPANS AND PRESSURES INDICATED IN SPAN SCHEDULE SHALL APPLY.
- WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT INTO PLYWOOD.
- WOOD BUCKS (BY OTHERS) SHALL BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE EXISTING STRUCTURE.
- MACHINE SCREWS SHALL HAVE MINIMUM OF 1/2" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFER HEAD ("SIDEWALK BOLT") U.N.O.
- SHEET METAL SCREWS SHALL BE INSTALLED WITH FULL ENGAGEMENT OF THREADS INTO METAL HOST STRUCTURE.
- DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE FOR USE.
- ANCHORS TO GROUT-FILLED BLOCK SHALL PENETRATE THROUGH FACE SHELL INTO GROUTED CELL.

## ALTERNATE ANCHOR NOTE:

FOR ALL 1/4" AND 5/16" DIAMETER ANCHOR OPTIONS LISTED IN THE ANCHOR SCHEDULES, AN EQUIVALENT DIAMETER HILLMAN/ALL-POINTS SOLID-SET ANCHOR (CARBON OR STAINLESS STEEL) MAY BE USED IN LIEU OF THE OPTION(S) LISTED SO LONG AS THE LISTED MINIMUM EMBEDMENT, EDGE DISTANCE AND SPACING ARE ACHIEVED.

## WALL MOUNT DIRECTIVE



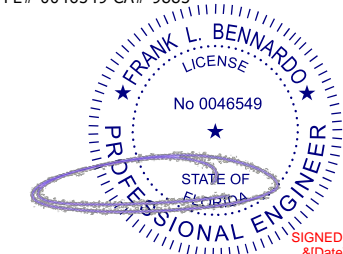
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 FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
 FLORIDA STATEWIDE APPROVAL (FSA FL #32029.1)

REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWV	09/02/20
2023 FBC UPDATE	MRT	RWV	10/05/23

23-65182

SCALE: NTS UNLESS NOTED

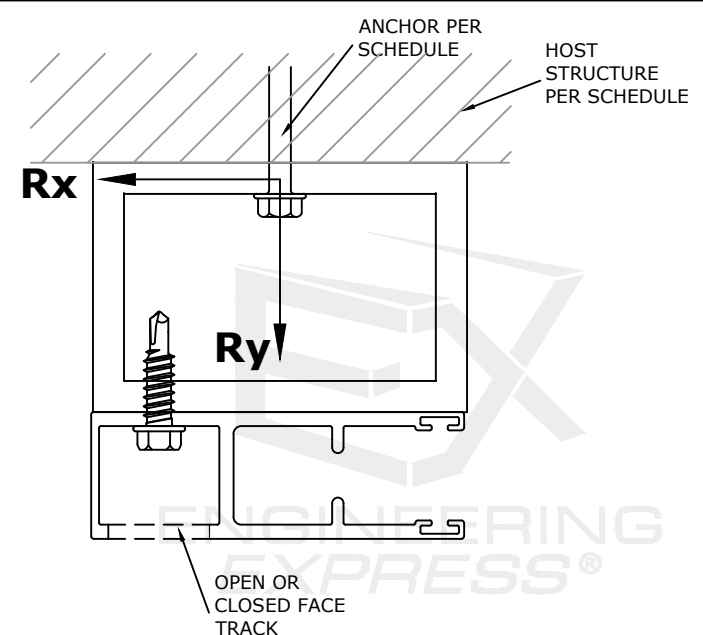


# ANCHOR SCHEDULE: END RETENTION (ER) BUILD-OUT MOUNT (SINGLE WALL SLATS)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																
				1/4" DEWALT OR DEWALT ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	5/16" DEWALT OR DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON			1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 410 SS SMS W/ FULL THREAD PENETRATION OR 1/4-20 410 SS THRU-BOLT TO 0.125" MIN. 6063-T6 ALUM; 0.5" MIN. EDGE DISTANCE	5/16" 410 SS SMS W/ FULL THREAD PENETRATION OR 5/16-18 410 SS THRU-BOLT TO 0.25" MIN. 6063-T6 ALUM; 0.625" MIN. EDGE DISTANCE	3/8" DEWALT SCREW BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 4.5" MIN. EDGE DISTANCE	3/8" DEWALT OR DEWALT CONFLX	
							TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE		TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE							TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE
82"	+/- 40 PSF	351.0 LB/FT	227.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.0"	4.5"	5.25"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 50 PSF	463.2 LB/FT	284.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.0"	3.75"	3.25"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 60 PSF	575.2 LB/FT	341.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.0"	3.0"	2.75"	3.25"	5.5"	5.5"	6.0"	6.0"	6.0"	6.0"	
	+/- 70 PSF	687.1 LB/FT	398.7 LB/FT	5.0"	5.5"	6.0"	6.0"	6.0"	6.0"	3.5"	2.5"	2.25"	2.5"	4.75"	4.75"	6.0"	6.0"	6.0"	6.0"	
85"	+/- 40 PSF	382.8 LB/FT	236.2 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.5"	4.0"	4.75"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 49 PSF	488.8 LB/FT	289.0 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	6.0"	3.5"	3.25"	3.75"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 58 PSF	594.7 LB/FT	341.9 LB/FT	5.75"	6.0"	6.0"	6.0"	6.0"	6.0"	4.0"	6.0"	3.0"	2.5"	3.0"	5.5"	5.5"	6.0"	6.0"	6.0"	
	+/- 67 PSF	700.5 LB/FT	394.7 LB/FT	5.0"	5.25"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	2.5"	2.25"	2.5"	4.75"	4.75"	6.0"	6.0"	6.0"	
90"	+/- 40 PSF	435.4 LB/FT	250.1 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.5"	4.0"	3.5"	4.25"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 47 PSF	531.2 LB/FT	296.5 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.6"	6.0"	3.75"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 55 PSF	626.9 LB/FT	342.9 LB/FT	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	4.0"	6.0"	2.75"	2.5"	3.0"	5.25"	5.5"	6.0"	6.0"	6.0"	
	+/- 62 PSF	722.5 LB/FT	389.3 LB/FT	4.75"	5.25"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	2.5"	2.0"	2.5"	4.5"	4.75"	6.0"	6.0"	6.0"	
95"	+/- 40 PSF	487.7 LB/FT	263.9 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.0"	3.75"	3.25"	3.75"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 46 PSF	573.3 LB/FT	304.3 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.25"	6.0"	3.0"	2.75"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 52 PSF	658.9 LB/FT	344.8 LB/FT	5.25"	5.75"	6.0"	6.0"	6.0"	6.0"	3.75"	6.0"	2.75"	2.25"	2.75"	5.25"	5.25"	6.0"	6.0"	6.0"	
	+/- 58 PSF	744.4 LB/FT	385.2 LB/FT	4.75"	5.25"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	2.5"	2.0"	2.5"	4.5"	4.75"	6.0"	6.0"	6.0"	
100"	+/- 40 PSF	539.8 LB/FT	277.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	6.0"	3.5"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 45 PSF	615.3 LB/FT	312.6 LB/FT	5.75"	6.0"	6.0"	6.0"	6.0"	6.0"	4.0"	6.0"	3.0"	2.5"	3.0"	5.75"	6.0"	6.0"	6.0"	6.0"	
	+/- 50 PSF	690.8 LB/FT	347.3 LB/FT	5.25"	5.5"	6.0"	6.0"	6.0"	6.0"	3.75"	6.0"	2.5"	2.25"	2.75"	5.0"	5.25"	6.0"	6.0"	6.0"	
	+/- 55 PSF	766.1 LB/FT	382.0 LB/FT	4.75"	5.0"	6.0"	6.0"	6.0"	6.0"	3.25"	6.0"	2.25"	2.0"	2.5"	4.5"	4.75"	6.0"	6.0"	6.0"	

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

## BUILD-OUT MOUNT DIRECTIVE



FL 32029.1

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 FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
 FLORIDA STATEWIDE APPROVAL (FSA FL #32029.1)

REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWN	09/02/20
2023 FBC UPDATE	MRT	RWN	10/05/23

23-65182

SCALE: NTS UNLESS NOTED

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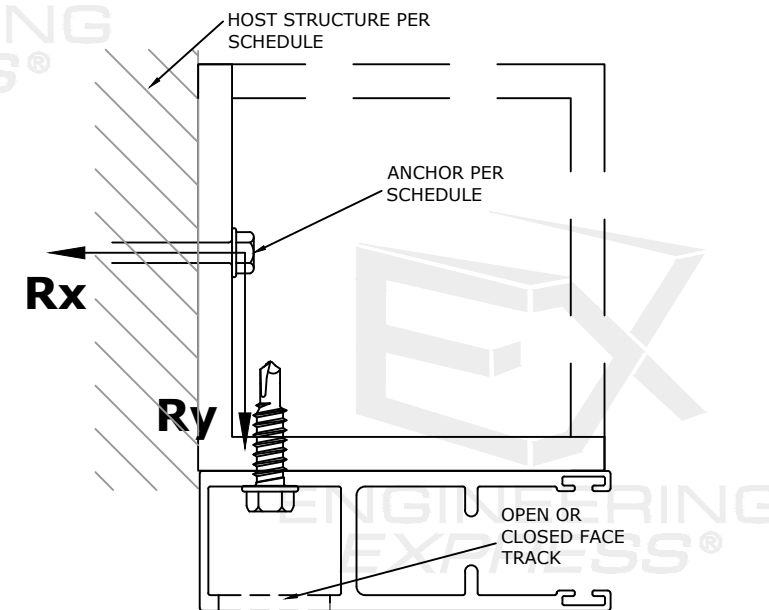


# ANCHOR SCHEDULE: END RETENTION (ER) INTERIOR MOUNT (SINGLE WALL SLATS)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																		
				1/4" DEWALT OR DEWALT ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	5/16" DEWALT OR DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON			1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 410 SS SMS W/ FULL THREAD PENETRATION OR 1/4-20 410 SS THRU-BOLT TO 0.125" MIN. 6063-T6 ALUM; 0.5" MIN. EDGE DISTANCE	5/16" 410 SS SMS W/ FULL THREAD PENETRATION OR 5/16-18 410 SS THRU-BOLT TO 0.25" MIN. 6063-T6 ALUM; 0.625" MIN. EDGE DISTANCE	3/8" DEWALT SCREW BOLT TO 3000 PSI MIN. CONCRETE; 4.5" MIN. EMBEDMENT; 4.5" MIN. EDGE DISTANCE	3/8" DEWALT OR DEWALT CONFLX			
							TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE		TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE							TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE		
82"	+/- 40 PSF	442.1 LB/FT	136.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.25"	3.75"	4.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 50 PSF	577.1 LB/FT	170.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	5.75"	6.0"	6.0"	5.0"	3.25"	2.75"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 60 PSF	712.0 LB/FT	205.0 LB/FT	5.75"	6.0"	6.0"	6.0"	6.0"	4.5"	6.0"	6.0"	4.0"	2.75"	2.25"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 70 PSF	846.7 LB/FT	239.2 LB/FT	5.0"	5.25"	6.0"	6.0"	6.0"	6.0"	4.0"	6.0"	6.0"	3.5"	2.25"	2.0"	2.5"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 80 PSF	981.2 LB/FT	273.3 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	5.25"	3.0"	2.0"	2.0"	2.0"	4.75"	5.5"	6.0"	6.0"	6.0"	6.0"
85"	+/- 40 PSF	477.3 LB/FT	141.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.0"	3.5"	4.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 49 PSF	604.5 LB/FT	173.4 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	3.25"	2.75"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 58 PSF	731.5 LB/FT	205.1 LB/FT	5.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.0"	2.5"	2.25"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 67 PSF	858.4 LB/FT	236.8 LB/FT	4.75"	5.25"	6.0"	6.0"	6.0"	6.0"	4.0"	6.0"	6.0"	3.5"	2.25"	2.25"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 76 PSF	985.2 LB/FT	268.5 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	5.25"	3.0"	2.0"	2.0"	2.0"	4.75"	5.5"	6.0"	6.0"	6.0"	6.0"
90"	+/- 40 PSF	535.5 LB/FT	150.0 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.5"	3.5"	3.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 47 PSF	649.9 LB/FT	177.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.5"	3.0"	2.5"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 55 PSF	764.1 LB/FT	205.7 LB/FT	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	4.5"	6.0"	6.0"	3.75"	2.5"	2.0"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 62 PSF	878.3 LB/FT	233.5 LB/FT	4.75"	5.0"	6.0"	6.0"	6.0"	6.0"	3.75"	6.0"	6.0"	3.25"	2.25"	2.25"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 70 PSF	992.3 LB/FT	261.4 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	5.25"	3.0"	2.0"	2.0"	5.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
95"	+/- 40 PSF	593.3 LB/FT	158.3 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.0"	3.25"	2.75"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 46 PSF	695.1 LB/FT	182.6 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.25"	2.75"	2.5"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 52 PSF	796.8 LB/FT	206.8 LB/FT	5.25"	5.75"	6.0"	6.0"	6.0"	6.0"	4.25"	6.0"	6.0"	3.75"	2.5"	2.0"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 58 PSF	898.5 LB/FT	231.1 LB/FT	4.75"	5.0"	6.0"	6.0"	6.0"	6.0"	3.75"	6.0"	6.0"	3.25"	2.0"	2.25"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 64 PSF	1000.0 LB/FT	255.3 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	5.25"	3.0"	2.0"	2.0"	5.0"	5.5"	6.0"	6.0"	6.0"	6.0"	
100"	+/- 40 PSF	651.0 LB/FT	166.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.5"	3.0"	2.5"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 45 PSF	740.4 LB/FT	187.5 LB/FT	5.75"	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	6.0"	6.0"	4.0"	2.5"	2.25"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 50 PSF	829.7 LB/FT	208.3 LB/FT	5.0"	5.5"	6.0"	6.0"	6.0"	6.0"	4.25"	6.0"	6.0"	3.5"	2.25"	2.0"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 55 PSF	919.0 LB/FT	229.2 LB/FT	4.5"	5.0"	6.0"	6.0"	6.0"	6.0"	3.75"	6.0"	5.75"	3.25"	2.0"	2.0"	2.25"	5.5"	6.0"	6.0"	6.0"	6.0"	
	+/- 60 PSF	1008.1 LB/FT	250.0 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	3.5"	6.0"	5.25"	3.0"	2.0"	2.0"	2.25"	5.0"	6.0"	6.0"	6.0"	6.0"	

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

## INTERIOR MOUNT DIRECTIVE



FL 32029.1

**ENGINEERING EXPRESS**  
 POSTAL ADDRESS:  
 2234 NORTH FEDERAL HWY #7664  
 BOCA RATON, FL 33431  
 ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.  
 4268 WESTROADS DR.  
 WEST PALM BEACH, FL 33407  
 (800) 432-2204  
 40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
 FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWN	09/02/20
2023 FBC UPDATE	MRT	RWN	10/05/23

23-65182

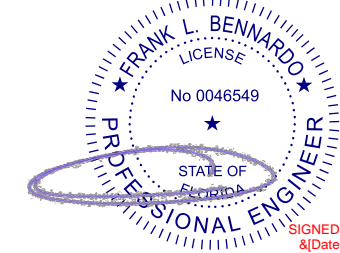
SCALE: NTS UNLESS NOTED



# ANCHOR SCHEDULE: END RETENTION (ER) WALL MOUNT (DOUBLE WALL SLATS)

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

OCTOBER 9, 2023

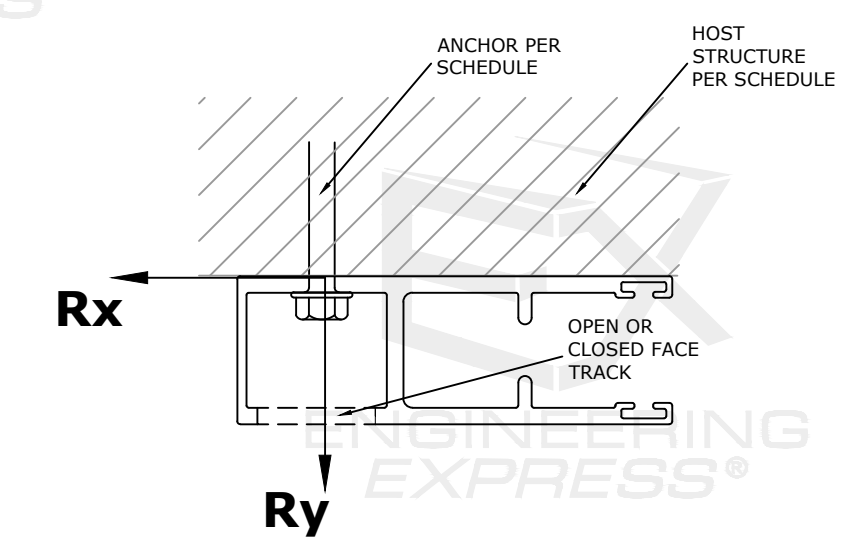


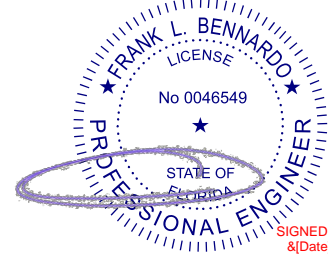
## MAXIMUM SPACING (O.C.)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	1/4" DEWALT OR DEWALT ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE		1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE		5/16" DEWALT OR DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE			5/16" ITW TAPCON			1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE		1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE		5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE		#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE		#14 410 SS SMS W/ FULL THREAD PENETRATION OR 1/4-20 410 SS THRU-BOLT TO 0.125" MIN. 6063-T6 ALUM; 0.5" MIN. EDGE DISTANCE		5/16" 410 SS SMS W/ FULL THREAD PENETRATION OR 5/16-18 410 SS THRU-BOLT TO 0.25" MIN. 6063-T6 ALUM; 0.625" MIN. EDGE DISTANCE		3/8" DEWALT SCREW BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 4.5" MIN. EDGE DISTANCE		3/8" DEWALT OR DEWALT CONFLX								
				TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE																										
82"	+/- 40 PSF	315.5 LB/FT	136.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"			
	+/- 60 PSF	539.4 LB/FT	205.0 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"			
	+/- 80 PSF	762.5 LB/FT	273.3 LB/FT	5.0"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"		
	+/- 100 PSF	984.8 LB/FT	341.7 LB/FT	4.0"	4.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 120 PSF	1206.2 LB/FT	410.0 LB/FT	3.25"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
100"	+/- 40 PSF	516.3 LB/FT	166.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 56 PSF	751.2 LB/FT	231.5 LB/FT	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 71 PSF	985.5 LB/FT	296.3 LB/FT	4.0"	4.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 87 PSF	1219.0 LB/FT	361.1 LB/FT	3.25"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 102 PSF	1451.9 LB/FT	425.9 LB/FT	2.75"	3.0"	5.25"	5.25"	4.0"	2.25"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
120"	+/- 40 PSF	735.9 LB/FT	200.0 LB/FT	5.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 52 PSF	983.9 LB/FT	262.4 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 65 PSF	1231.4 LB/FT	324.7 LB/FT	3.5"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 77 PSF	1478.2 LB/FT	387.1 LB/FT	2.75"	3.0"	5.5"	5.25"	4.0"	2.25"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 90 PSF	1724.4 LB/FT	449.5 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	2.0"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
144"	+/- 40 PSF	1007.7 LB/FT	240.0 LB/FT	4.25"	4.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 50 PSF	1269.4 LB/FT	300.0 LB/FT	3.25"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 60 PSF	1530.5 LB/FT	360.0 LB/FT	2.75"	3.0"	5.25"	5.25"	4.0"	2.25"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 70 PSF	1791.0 LB/FT	420.0 LB/FT	2.25"	2.5"	4.5"	4.5"	3.5"	2.0"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 80 PSF	2051.0 LB/FT	480.0 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	2.0"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
160"	+/- 35 PSF	1046.5 LB/FT	233.3 LB/FT	4.0"	4.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 43 PSF	1304.2 LB/FT	288.9 LB/FT	3.25"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 52 PSF	1561.8 LB/FT	344.4 LB/FT	2.75"	3.0"	5.25"	5.25"	4.0"	2.25"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	1819.5 LB/FT	400.0 LB/FT	2.25"	2.5"	4.5"	4.5"	3.5"	2.0"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 68 PSF	2077.1 LB/FT	455.6 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	2.0"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
192"	+/- 30 PSF	1196.0 LB/FT	240.0 LB/FT	3.75"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 34 PSF	1348.6 LB/FT	270.0 LB/FT	3.25"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 38 PSF	1501.2 LB/FT	300.0 LB/FT	3.0"	3.0"	5.5"	5.5"	4.25"	2.5"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 41 PSF	1653.8 LB/FT	330.0 LB/FT	2.5"	2.75"	5.0"	5.0"	3.75"	2.25"	3.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 45 PSF	1806.4 LB/FT	360.0 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	2.0"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

## WALL MOUNT DIRECTIVE



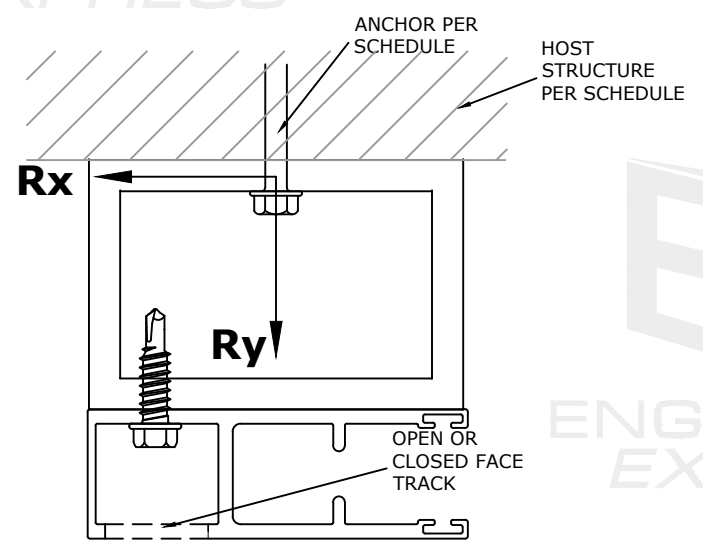


# ANCHOR SCHEDULE: END RETENTION (ER) BUILD-OUT MOUNT (DOUBLE WALL SLATS)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																		
				1/4" DEWALT OR DEWALT ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	5/16" DEWALT OR DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON		1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 410 SS SMS W/ FULL THREAD PENETRATION OR 1/4-20 410 SS THRU-BOLT TO 0.125" MIN. 6063-T6 ALUM; 0.5" MIN. EDGE DISTANCE	5/16" 410 SS SMS W/ FULL THREAD PENETRATION OR 5/16-18 410 SS THRU-BOLT TO 0.25" MIN. 6063-T6 ALUM; 0.625" MIN. EDGE DISTANCE	3/8" DEWALT SCREW BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 4.5" MIN. EDGE DISTANCE	3/8" DEWALT OR DEWALT CONFLX				
							TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE		TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE							TO HOLLOW BLOCK; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE		
82"	+/- 40 PSF	315.5 LB/FT	227.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.5"	4.75"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"		
	+/- 60 PSF	539.4 LB/FT	341.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.25"	3.25"	4.25"	5.5"	5.75"	6.0"	6.0"	6.0"	6.0"		
	+/- 80 PSF	762.5 LB/FT	455.6 LB/FT	4.5"	4.75"	6.0"	6.0"	6.0"	3.0"	5.75"	5.5"	3.0"	2.25"	2.0"	2.5"	4.0"	4.25"	6.0"	6.0"	6.0"	6.0"	
	+/- 100 PSF	984.8 LB/FT	569.6 LB/FT	3.5"	3.75"	6.0"	6.0"	5.0"	2.5"	4.5"	4.25"	2.25"	2.25"	2.0"	2.5"	3.25"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 120 PSF	1206.2 LB/FT	683.5 LB/FT	2.75"	3.0"	5.25"	5.25"	4.0"	2.0"	3.75"	3.5"	2.0"	2.0"	2.0"	2.5"	2.75"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"
100"	+/- 40 PSF	516.3 LB/FT	277.8 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	6.0"	6.0"	4.75"	3.5"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 56 PSF	751.2 LB/FT	385.9 LB/FT	4.75"	5.0"	6.0"	6.0"	6.0"	3.25"	6.0"	5.75"	3.25"	2.5"	2.0"	2.5"	4.5"	4.75"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 71 PSF	985.5 LB/FT	493.9 LB/FT	3.5"	4.0"	6.0"	6.0"	5.25"	2.5"	4.75"	4.5"	2.5"	2.5"	2.0"	3.5"	3.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 87 PSF	1219.0 LB/FT	601.9 LB/FT	3.0"	3.25"	5.5"	5.5"	4.25"	2.0"	4.0"	3.5"	3.0"	2.0"	2.0"	3.0"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 102 PSF	1451.9 LB/FT	709.9 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	2.0"	3.25"	3.0"	2.0"	2.0"	2.0"	2.5"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
120"	+/- 40 PSF	735.9 LB/FT	333.4 LB/FT	5.0"	5.5"	6.0"	6.0"	6.0"	3.5"	6.0"	6.0"	3.5"	2.5"	2.0"	2.5"	5.0"	5.25"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 52 PSF	983.9 LB/FT	437.4 LB/FT	3.75"	4.0"	6.0"	6.0"	5.5"	2.75"	5.0"	4.5"	2.5"	2.5"	2.0"	3.75"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 65 PSF	1231.4 LB/FT	541.3 LB/FT	3.0"	3.25"	5.5"	5.5"	4.5"	2.25"	4.0"	3.75"	2.0"	2.0"	2.0"	3.0"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 77 PSF	1478.2 LB/FT	645.3 LB/FT	2.5"	2.75"	4.75"	4.5"	3.5"	2.0"	3.25"	3.0"	2.0"	2.0"	2.0"	2.5"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 90 PSF	1724.4 LB/FT	749.3 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	2.0"	2.75"	2.5"	2.0"	2.0"	2.0"	2.0"	2.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
144"	+/- 40 PSF	1007.7 LB/FT	400.1 LB/FT	3.75"	4.0"	6.0"	6.0"	5.5"	2.75"	5.0"	4.75"	2.5"	2.5"	2.0"	4.0"	4.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 50 PSF	1269.4 LB/FT	500.1 LB/FT	3.0"	3.25"	5.5"	5.5"	4.5"	2.25"	4.0"	3.75"	2.0"	2.0"	2.0"	3.0"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	1530.5 LB/FT	600.1 LB/FT	2.5"	2.75"	4.75"	4.5"	3.5"	2.0"	3.25"	3.0"	2.0"	2.0"	2.0"	2.5"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 70 PSF	1791.0 LB/FT	700.1 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	2.0"	2.75"	2.5"	2.0"	2.0"	2.0"	2.25"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 80 PSF	2051.0 LB/FT	800.2 LB/FT	2.0"	2.0"	3.5"	3.5"	2.75"	2.0"	2.5"	2.25"	2.0"	2.0"	2.0"	2.0"	2.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
160"	+/- 35 PSF	1046.5 LB/FT	389.0 LB/FT	3.75"	4.0"	6.0"	6.0"	5.5"	2.75"	5.0"	4.5"	2.5"	2.5"	2.0"	4.0"	4.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 43 PSF	1304.2 LB/FT	481.6 LB/FT	3.0"	3.25"	5.5"	5.5"	4.25"	2.25"	4.0"	3.75"	2.0"	2.0"	2.0"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 52 PSF	1561.8 LB/FT	574.2 LB/FT	2.5"	2.75"	4.75"	4.5"	3.5"	2.0"	3.25"	3.0"	2.0"	2.0"	2.0"	2.5"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	1819.5 LB/FT	666.8 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	2.0"	3.0"	2.5"	2.0"	2.0"	2.0"	2.25"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 68 PSF	2077.1 LB/FT	759.4 LB/FT	2.0"	2.0"	3.5"	3.5"	2.75"	2.0"	2.5"	2.25"	2.0"	2.0"	2.0"	2.0"	2.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
192"	+/- 30 PSF	1196.0 LB/FT	400.1 LB/FT	3.25"	3.5"	6.0"	6.0"	4.75"	2.5"	4.5"	4.0"	2.25"	2.25"	2.0"	3.5"	4.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 34 PSF	1348.6 LB/FT	450.1 LB/FT	3.0"	3.25"	5.5"	5.5"	4.25"	2.25"	4.0"	3.5"	2.0"	2.0"	2.0"	3.25"	3.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 38 PSF	1501.2 LB/FT	500.1 LB/FT	2.5"	2.75"	5.0"	5.0"	3.75"	2.0"	3.5"	3.25"	2.0"	2.0"	2.0"	3.0"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 41 PSF	1653.8 LB/FT	550.1 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	2.0"	3.25"	3.0"	2.0"	2.0"	2.0"	2.5"	2.75"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 45 PSF	1806.4 LB/FT	600.1 LB/FT	2.25"	2.25"	4.0"	4.0"	3.25"	2.0"	3.0"	2.75"	2.0"	2.0"	2.0"	2.5"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

## BUILD-OUT MOUNT DIRECTIVE



FL 32029.1

**EX ENGINEERING EXPRESS**  
 POSTAL ADDRESS:  
 2234 NORTH FEDERAL HWY #7664  
 BOCA RATON, FL 33431  
 ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.  
 4268 WESTROADS DR.  
 WEST PALM BEACH, FL 33407  
 (800) 432-2204  
 40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
 FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWN	09/02/20
2023 FCC UPDATE	MRT	RWN	10/05/23

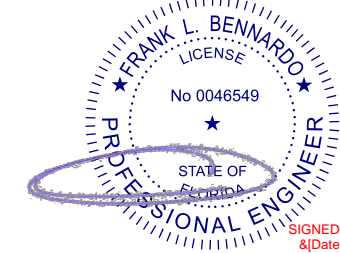
23-65182

SCALE: NTS UNLESS NOTED

# ANCHOR SCHEDULE: END RETENTION (ER) INTERIOR MOUNT (DOUBLE WALL SLATS)

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

OCTOBER 9, 2023



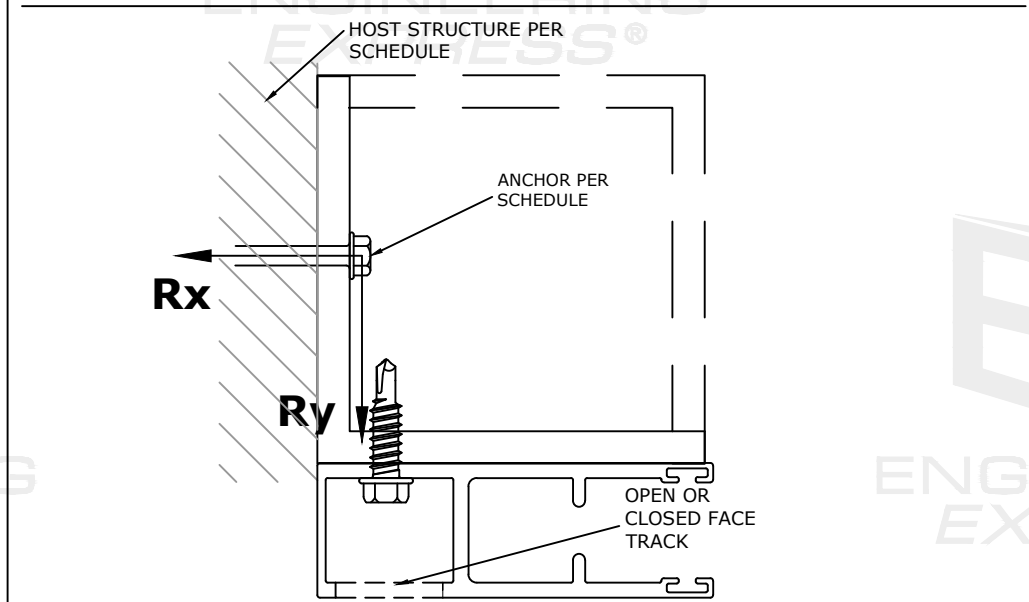
FL

## MAXIMUM SPACING (O.C.)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	1/4" DEWALT OR DEWALT ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMENT; 2.5" MIN. EDGE DISTANCE	5/16" DEWALT OR DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON			1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMENT; 0.75" MIN. EDGE DISTANCE	#14 410 SS SMS W/ FULL THREAD PENETRATION OR 1/4-20 410 SS THRU-BOLT TO 0.125" MIN. 6063-T6 ALUM; 0.5" MIN. EDGE DISTANCE	5/16" 410 SS SMS W/ FULL THREAD PENETRATION OR 5/16-18 410 SS THRU-BOLT TO 0.25" MIN. 6063-T6 ALUM; 0.625" MIN. EDGE DISTANCE	3/8" DEWALT SCREW BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 4.5" MIN. EDGE DISTANCE	3/8" DEWALT OR DEWALT CONFLX	
							TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMENT; 4" MIN. EDGE DISTANCE		TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE							TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMENT; 3.75" MIN. EDGE DISTANCE
82"	+/- 40 PSF	406.7 LB/FT	136.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	4.0"	5.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	676.2 LB/FT	205.0 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	6.0"	6.0"	2.75"	2.5"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 80 PSF	944.8 LB/FT	273.3 LB/FT	4.25"	4.75"	6.0"	6.0"	6.0"	3.5"	6.0"	5.5"	2.0"	2.0"	2.0"	5.0"	5.5"	6.0"	6.0"	6.0"	6.0"
	+/- 100 PSF	1212.7 LB/FT	341.7 LB/FT	3.5"	3.75"	6.0"	6.0"	5.0"	2.75"	4.75"	4.25"	2.25"	2.25"	2.25"	4.0"	4.5"	6.0"	6.0"	6.0"	6.0"
100"	+/- 40 PSF	627.5 LB/FT	166.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	5.5"	6.0"	6.0"	3.0"	2.5"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 56 PSF	905.6 LB/FT	231.5 LB/FT	4.75"	5.0"	6.0"	6.0"	6.0"	3.75"	6.0"	5.75"	3.25"	2.0"	2.25"	5.5"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 71 PSF	1183.1 LB/FT	296.3 LB/FT	3.5"	3.75"	6.0"	6.0"	5.25"	3.0"	5.0"	4.5"	2.5"	2.25"	2.25"	4.25"	4.75"	6.0"	6.0"	6.0"	6.0"
	+/- 87 PSF	1459.9 LB/FT	361.1 LB/FT	3.0"	3.0"	5.5"	5.5"	4.25"	2.25"	4.0"	3.5"	2.0"	2.0"	2.0"	3.5"	4.0"	6.0"	6.0"	6.0"	6.0"
120"	+/- 40 PSF	1735.9 LB/FT	425.9 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	2.0"	3.5"	3.0"	3.5"	3.5"	2.25"	2.75"	3.25"	6.0"	6.0"	6.0"	6.0"
	+/- 40 PSF	869.3 LB/FT	200.0 LB/FT	5.0"	5.25"	6.0"	6.0"	6.0"	4.0"	6.0"	6.0"	6.0"	3.5"	2.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 52 PSF	1158.9 LB/FT	262.4 LB/FT	3.75"	4.0"	6.0"	6.0"	5.5"	3.0"	5.25"	4.5"	2.5"	2.5"	2.25"	4.5"	5.25"	6.0"	6.0"	6.0"	6.0"
	+/- 65 PSF	1448.0 LB/FT	324.7 LB/FT	3.0"	3.25"	5.5"	5.5"	4.25"	2.5"	4.25"	3.75"	2.0"	2.0"	2.0"	3.5"	4.0"	6.0"	6.0"	6.0"	6.0"
144"	+/- 40 PSF	1736.4 LB/FT	387.1 LB/FT	2.5"	2.5"	4.75"	4.5"	3.5"	2.0"	3.5"	3.0"	3.5"	3.5"	3.0"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"
	+/- 90 PSF	2024.2 LB/FT	449.5 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	3.0"	2.5"	2.5"	2.5"	2.5"	2.5"	3.0"	3.0"	6.0"	6.0"	6.0"
	+/- 40 PSF	1167.8 LB/FT	240.0 LB/FT	3.75"	4.0"	6.0"	6.0"	5.5"	3.0"	5.25"	4.75"	2.5"	2.5"	2.5"	4.5"	5.5"	6.0"	6.0"	6.0"	6.0"
	+/- 50 PSF	1469.5 LB/FT	300.0 LB/FT	3.0"	3.25"	5.75"	5.5"	4.25"	2.5"	4.25"	3.75"	2.0"	2.0"	2.0"	3.5"	4.25"	6.0"	6.0"	6.0"	6.0"
160"	+/- 60 PSF	1770.6 LB/FT	360.0 LB/FT	2.5"	2.5"	4.75"	4.5"	3.5"	2.0"	3.5"	3.0"	3.5"	3.5"	3.0"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"
	+/- 70 PSF	2071.2 LB/FT	420.0 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	3.0"	2.5"	2.5"	2.5"	2.5"	2.5"	3.0"	3.0"	6.0"	6.0"	6.0"
	+/- 80 PSF	2371.2 LB/FT	480.0 LB/FT	2.0"	2.0"	3.5"	3.5"	2.5"	2.5"	2.5"	2.25"	2.25"	2.25"	2.25"	2.25"	2.5"	2.5"	6.0"	6.0"	6.0"
	+/- 35 PSF	1202.2 LB/FT	233.3 LB/FT	3.75"	4.0"	6.0"	6.0"	5.25"	3.0"	5.25"	4.5"	2.5"	2.5"	2.5"	4.5"	5.5"	6.0"	6.0"	6.0"	6.0"
192"	+/- 43 PSF	1496.9 LB/FT	288.9 LB/FT	3.0"	3.0"	5.5"	5.5"	4.25"	2.5"	4.25"	3.75"	2.0"	2.0"	2.0"	3.5"	4.25"	6.0"	6.0"	6.0"	6.0"
	+/- 52 PSF	1791.6 LB/FT	344.4 LB/FT	2.5"	2.5"	4.75"	4.5"	3.5"	2.0"	3.5"	3.0"	3.0"	3.0"	3.0"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	2086.3 LB/FT	400.0 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	3.0"	2.5"	2.5"	2.5"	2.5"	2.5"	3.0"	6.0"	6.0"	6.0"	6.0"
	+/- 68 PSF	2381.0 LB/FT	455.6 LB/FT	2.0"	2.0"	3.5"	3.5"	2.5"	2.5"	2.5"	2.25"	2.25"	2.25"	2.25"	2.25"	2.75"	6.0"	6.0"	6.0"	6.0"
192"	+/- 30 PSF	1356.1 LB/FT	240.0 LB/FT	3.25"	3.5"	6.0"	6.0"	4.75"	2.75"	4.75"	4.0"	2.25"	2.25"	2.25"	4.0"	5.0"	6.0"	6.0"	6.0"	6.0"
	+/- 34 PSF	1528.7 LB/FT	270.0 LB/FT	3.0"	3.0"	5.5"	5.5"	4.25"	2.5"	4.25"	3.5"	2.0"	2.0"	2.0"	3.5"	4.5"	6.0"	6.0"	6.0"	6.0"
	+/- 38 PSF	1701.3 LB/FT	300.0 LB/FT	2.5"	2.75"	5.0"	5.0"	3.75"	2.25"	3.75"	3.25"	2.25"	2.25"	2.25"	3.25"	4.0"	6.0"	6.0"	6.0"	6.0"
	+/- 41 PSF	1873.9 LB/FT	330.0 LB/FT	2.25"	2.5"	4.5"	4.5"	3.5"	2.0"	3.5"	3.0"	3.0"	3.0"	3.0"	3.0"	3.5"	6.0"	6.0"	6.0"	6.0"
+/- 45 PSF	2046.5 LB/FT	360.0 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	3.0"	2.75"	2.75"	2.75"	2.75"	2.75"	3.25"	6.0"	6.0"	6.0"	6.0"	

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

## INTERIOR MOUNT DIRECTIVE



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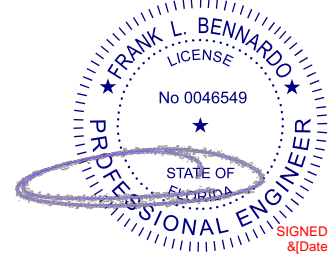
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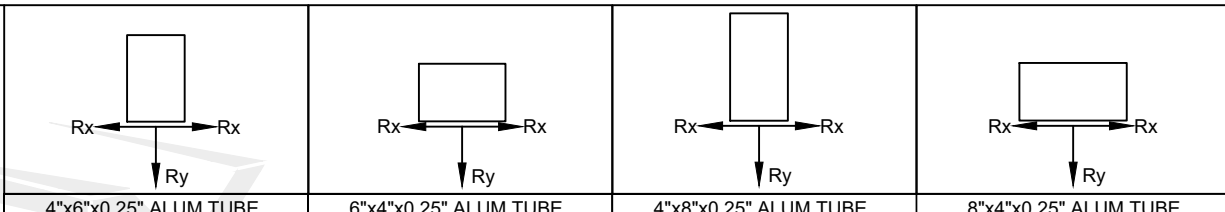
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2023 FBC UPDATE	MRT	RWV	10/05/23

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**MULLION SCHEDULE: INTERMEDIATE MULLIONS**



SLAT SPAN	DESIGN PRESSURE	4"x6"x0.25" ALUM TUBE		6"x4"x0.25" ALUM TUBE		4"x8"x0.25" ALUM TUBE		8"x4"x0.25" ALUM TUBE	
		MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt
82"	+/- 40 PSF	144.0"	1640.0 LB	144.0"	1640.0 LB	144.0"	1640.0 LB	144.0"	1640.0 LB
	+/- 50 PSF	144.0"	2050.0 LB	141.0"	2007.4 LB	144.0"	2050.0 LB	144.0"	2050.0 LB
	+/- 60 PSF	144.0"	2460.0 LB	132.7"	2266.8 LB	144.0"	2460.0 LB	144.0"	2460.0 LB
	+/- 70 PSF	144.0"	2870.0 LB	126.0"	2512.2 LB	144.0"	2870.0 LB	137.0"	2731.2 LB
85"	+/- 40 PSF	144.0"	1700.0 LB	144.0"	1700.0 LB	144.0"	1700.0 LB	144.0"	1700.0 LB
	+/- 49 PSF	144.0"	2080.5 LB	140.3"	2027.2 LB	144.0"	2080.5 LB	144.0"	2080.5 LB
	+/- 58 PSF	144.0"	2461.0 LB	132.7"	2267.4 LB	144.0"	2461.0 LB	144.0"	2461.0 LB
	+/- 67 PSF	144.0"	2841.4 LB	126.5"	2495.5 LB	144.0"	2841.4 LB	137.5"	2713.1 LB
90"	+/- 40 PSF	144.0"	1800.0 LB	144.0"	1800.0 LB	144.0"	1800.0 LB	144.0"	1800.0 LB
	+/- 47 PSF	144.0"	2134.2 LB	139.1"	2062.0 LB	144.0"	2134.2 LB	144.0"	2134.2 LB
	+/- 55 PSF	144.0"	2468.4 LB	132.5"	2271.9 LB	144.0"	2468.4 LB	144.0"	2468.4 LB
	+/- 62 PSF	144.0"	2802.5 LB	127.0"	2472.6 LB	144.0"	2802.5 LB	138.1"	2688.3 LB
95"	+/- 40 PSF	144.0"	1900.0 LB	144.0"	1900.0 LB	144.0"	1900.0 LB	144.0"	1900.0 LB
	+/- 46 PSF	144.0"	2190.9 LB	137.9"	2098.3 LB	144.0"	2190.9 LB	144.0"	2190.9 LB
	+/- 52 PSF	144.0"	2481.7 LB	132.3"	2280.1 LB	144.0"	2481.7 LB	143.8"	2479.0 LB
	+/- 58 PSF	144.0"	2772.6 LB	127.5"	2455.0 LB	144.0"	2772.6 LB	138.6"	2669.1 LB
100"	+/- 40 PSF	144.0"	2000.0 LB	142.2"	1974.6 LB	144.0"	2000.0 LB	144.0"	2000.0 LB
	+/- 45 PSF	144.0"	2250.0 LB	136.7"	2135.9 LB	144.0"	2250.0 LB	144.0"	2250.0 LB
	+/- 50 PSF	144.0"	2500.0 LB	132.0"	2291.3 LB	144.0"	2500.0 LB	143.5"	2491.1 LB
	+/- 55 PSF	144.0"	2750.0 LB	127.9"	2441.6 LB	144.0"	2750.0 LB	139.0"	2654.6 LB

**END RETENTION (ER) SINGLE WALL SLAT MULLION SCHEDULES**

**MULLION SCHEDULE NOTES:**

- VALUES SHOWN IN MULLION SCHEDULES ARE MAXIMUM ALLOWABLE MULLION LENGTHS AT EACH RESPECTIVE SLAT SPAN AND DESIGN PRESSURE.
- "INTERMEDIATE MULLIONS" ARE AS DEFINED IN ELEVATION 2/3.
- "END MULLIONS" ARE AS DEFINED IN ELEVATION 2/3
- ALL MULLIONS SHALL BE 6061-T6 ALUMINUM OR EQUIVALENT.
- ALLOWABLE DESIGN PRESSURES AND SLAT SPANS INDICATED ARE FOR DETERMINING PERMISSIBLE MULLION LENGTHS ONLY. ACTUAL SLAT SPANS AND DESIGN PRESSURES SHALL NOT EXCEED THOSE INDICATED IN SPAN SCHEDULES.
- "END REACTIONS" ARE LISTED FOR EACH COMBINATION OF DESIGN LOAD, MULLION TYPE, SLAT TYPE (OPEN OR CLOSED) & SLAT SPAN. CHOOSE MOUNTING CONNECTIONS (PER APPLICABLE CONNECTION DETAILS HEREIN) THAT PROVIDES "CONNECTION CAPACITY" GREATER THAN OR EQUAL TO "END REACTIONS" GIVEN ABOVE.
- "INTERMEDIATE MULLIONS" SHALL HAVE EQUAL SLAT SPANS ON ADJACENT SIDES OF MULLION. OTHERWISE, USE "END MULLION" TABLES.

**MULLION SCHEDULE: END MULLIONS**



SLAT SPAN	DESIGN PRESSURE	4"x6"x0.25" ALUM TUBE				6"x4"x0.25" ALUM TUBE				4"x8"x0.25" ALUM TUBE				8"x4"x0.25" ALUM TUBE			
		MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum
82"	+/- 40 PSF	144.0"	2105.9 LB	820.0 LB	2259.9 LB	139.7"	2043.7 LB	795.8 LB	2193.2 LB	144.0"	2105.9 LB	820.0 LB	2259.9 LB	144.0"	2105.9 LB	820.0 LB	2259.9 LB
	+/- 50 PSF	139.0"	2682.2 LB	989.3 LB	2858.9 LB	127.4"	2458.8 LB	906.9 LB	2620.7 LB	144.0"	2779.0 LB	1025.0 LB	2962.0 LB	138.5"	2673.2 LB	986.0 LB	2849.2 LB
	+/- 60 PSF	125.2"	3000.6 LB	1069.4 LB	3185.4 LB	118.5"	2840.9 LB	1012.4 LB	3015.9 LB	141.6"	3394.2 LB	1209.6 LB	3603.3 LB	128.9"	3088.6 LB	1100.7 LB	3278.9 LB
	+/- 70 PSF	114.8"	3287.9 LB	1144.4 LB	3481.4 LB	111.7"	3198.3 LB	1113.2 LB	3386.5 LB	129.9"	3719.3 LB	1294.6 LB	3938.2 LB	121.5"	3477.2 LB	1210.3 LB	3681.8 LB
85"	+/- 40 PSF	144.0"	2297.0 LB	850.0 LB	2449.3 LB	135.8"	2165.6 LB	801.3 LB	2309.1 LB	144.0"	2297.0 LB	850.0 LB	2449.3 LB	144.0"	2297.0 LB	850.0 LB	2449.3 LB
	+/- 49 PSF	135.9"	2767.6 LB	981.6 LB	2936.5 LB	125.1"	2548.8 LB	904.0 LB	2704.4 LB	144.0"	2933.1 LB	1040.2 LB	3112.1 LB	136.0"	2771.1 LB	982.8 LB	2940.2 LB
	+/- 58 PSF	123.6"	3061.9 LB	1055.9 LB	3238.9 LB	117.2"	2904.7 LB	1001.6 LB	3072.6 LB	139.8"	3463.8 LB	1194.4 LB	3663.9 LB	127.4"	3158.0 LB	1089.0 LB	3340.5 LB
	+/- 67 PSF	114.1"	3330.0 LB	1125.7 LB	3515.1 LB	111.0"	3239.6 LB	1095.1 LB	3419.6 LB	129.1"	3767.2 LB	1273.5 LB	3976.6 LB	120.7"	3522.1 LB	1190.6 LB	3717.9 LB
90"	+/- 40 PSF	144.0"	2612.6 LB	900.0 LB	2763.3 LB	130.1"	2359.6 LB	812.8 LB	2495.7 LB	144.0"	2612.6 LB	900.0 LB	2763.3 LB	141.4"	2565.4 LB	883.7 LB	2713.3 LB
	+/- 47 PSF	131.1"	2902.9 LB	971.9 LB	3061.3 LB	121.7"	2694.1 LB	901.9 LB	2841.1 LB	144.0"	3187.4 LB	1067.1 LB	3361.3 LB	132.3"	2929.1 LB	980.6 LB	3088.9 LB
	+/- 55 PSF	121.0"	3160.2 LB	1036.9 LB	3295.9 LB	115.2"	3008.6 LB	987.1 LB	3166.4 LB	136.9"	3575.2 LB	1173.0 LB	3762.7 LB	125.2"	3271.0 LB	1073.2 LB	3442.6 LB
	+/- 62 PSF	112.9"	3397.7 LB	1098.3 LB	3570.8 LB	109.9"	3307.1 LB	1069.0 LB	3475.6 LB	127.7"	3844.0 LB	1242.6 LB	4039.8 LB	119.4"	3595.5 LB	1162.2 LB	3778.7 LB
95"	+/- 40 PSF	137.3"	2790.2 LB	905.9 LB	2933.6 LB	125.2"	2544.8 LB	826.2 LB	2675.6 LB	144.0"	2926.1 LB	950.0 LB	3076.5 LB	136.2"	2766.7 LB	898.3 LB	2908.9 LB
	+/- 46 PSF	126.9"	3031.3 LB	965.3 LB	3181.3 LB	118.7"	2834.7 LB	902.7 LB	2974.9 LB	143.6"	3429.5 LB	1092.1 LB	3599.2 LB	129.0"	3081.9 LB	981.4 LB	3234.3 LB
	+/- 52 PSF	118.5"	3254.3 LB	1021.4 LB	3410.8 LB	113.3"	3110.1 LB	976.2 LB	3259.7 LB	134.1"	3681.9 LB	1155.7 LB	3859.0 LB	123.2"	3381.3 LB	1061.3 LB	3544.0 LB
	+/- 58 PSF	111.6"	3462.7 LB	1074.8 LB	3625.7 LB	108.8"	3373.5 LB	1047.1 LB	3532.3 LB	126.3"	3917.8 LB	1216.1 LB	4102.2 LB	118.3"	3667.7 LB	1138.5 LB	3840.3 LB
100"	+/- 40 PSF	131.2"	2950.4 LB	910.9 LB	3087.9 LB	121.1"	2723.1 LB	840.7 LB	2850.0 LB	144.0"	3239.0 LB	1000.0 LB	3389.9 LB	131.6"	2960.6 LB	914.0 LB	3098.5 LB
	+/- 45 PSF	123.0"	3154.0 LB	961.1 LB	3297.2 LB	115.9"	2971.5 LB	905.4 LB	3106.4 LB	139.2"	3568.7 LB	1087.4 LB	3730.7 LB	126.0"	3230.6 LB	984.4 LB	3377.3 LB
	+/- 50 PSF	116.2"	3345.1 LB	1008.9 LB	3493.9 LB	111.5"	3209.6 LB	968.0 LB	3352.4 LB	131.5"	3784.9 LB	1141.5 LB	3953.3 LB	121.2"	3489.5 LB	1052.4 LB	3644.7 LB
	+/- 55 PSF	110.4"	3525.6 LB	1054.6 LB	3679.9 LB	107.7"	3438.9 LB	1028.7 LB	3589.5 LB	125.0"	3989.2 LB	1193.3 LB	4163.8 LB	117.1"	3738.8 LB	1118.4 LB	3902.5 LB

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 40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
 FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWN	09/02/20
2023 FBC UPDATE	MRT	RWN	10/05/23

23-65182

SCALE: NTS UNLESS NOTED



# END RETENTION (ER) DOUBLE WALL SLAT MULLION SCHEDULES

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

OCTOBER 9, 2023

**FL**

MULLION SCHEDULE: INTERMEDIATE MULLIONS									
		4"x6"x0.25" ALUM TUBE		6"x4"x0.25" ALUM TUBE		4"x8"x0.25" ALUM TUBE		8"x4"x0.25" ALUM TUBE	
SLAT SPAN	DESIGN PRESSURE	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt
82"	+/- 40 PSF	144.0"	1640.0 LB	144.0"	1640.0 LB	144.0"	1640.0 LB	144.0"	1640.0 LB
	+/- 60 PSF	144.0"	2460.0 LB	132.7"	2266.8 LB	144.0"	2460.0 LB	144.0"	2460.0 LB
	+/- 80 PSF	144.0"	3280.0 LB	120.6"	2746.0 LB	144.0"	3280.0 LB	131.1"	2985.5 LB
	+/- 100 PSF	138.6"	3947.3 LB	111.9"	3186.5 LB	144.0"	4100.0 LB	121.7"	3464.4 LB
	+/- 120 PSF	130.5"	4457.5 LB	105.3"	3598.3 LB	144.0"	4920.0 LB	114.5"	3912.2 LB
100"	+/- 40 PSF	144.0"	2000.0 LB	142.2"	1974.6 LB	144.0"	2000.0 LB	144.0"	2000.0 LB
	+/- 56 PSF	144.0"	2777.6 LB	127.4"	2458.0 LB	144.0"	2777.6 LB	138.5"	2672.3 LB
	+/- 71 PSF	144.0"	3555.3 LB	117.4"	2897.6 LB	144.0"	3555.3 LB	127.6"	3150.3 LB
	+/- 87 PSF	136.1"	4095.4 LB	109.9"	3306.1 LB	144.0"	4332.9 LB	119.5"	3594.4 LB
	+/- 102 PSF	128.8"	4571.8 LB	104.0"	3690.7 LB	144.0"	5110.6 LB	113.1"	4012.5 LB
120"	+/- 40 PSF	144.0"	2400.0 LB	133.8"	2229.8 LB	144.0"	2400.0 LB	144.0"	2400.0 LB
	+/- 52 PSF	144.0"	3148.4 LB	122.2"	2672.1 LB	144.0"	3148.4 LB	132.9"	2905.2 LB
	+/- 65 PSF	141.0"	3815.8 LB	113.8"	3080.4 LB	144.0"	3896.9 LB	123.8"	3349.0 LB
	+/- 77 PSF	133.0"	4290.0 LB	107.4"	3463.1 LB	144.0"	4645.3 LB	116.7"	3765.2 LB
	+/- 90 PSF	126.5"	4739.2 LB	102.1"	3825.8 LB	143.2"	5365.6 LB	111.0"	4159.4 LB
144"	+/- 40 PSF	144.0"	2880.0 LB	125.9"	2518.0 LB	144.0"	2880.0 LB	136.9"	2737.6 LB
	+/- 50 PSF	144.0"	3600.0 LB	116.9"	2921.9 LB	144.0"	3600.0 LB	127.1"	3176.7 LB
	+/- 60 PSF	136.2"	4087.3 LB	110.0"	3299.5 LB	144.0"	4320.0 LB	119.6"	3587.3 LB
	+/- 70 PSF	129.4"	4529.6 LB	104.5"	3656.6 LB	144.0"	5040.0 LB	113.6"	3975.5 LB
	+/- 80 PSF	123.5"	4939.3 LB	99.9"	3997.1 LB	138.6"	5544.8 LB	108.6"	4345.6 LB
160"	+/- 35 PSF	144.0"	2800.0 LB	127.1"	2471.1 LB	144.0"	2800.0 LB	138.2"	2686.7 LB
	+/- 43 PSF	144.0"	3466.7 LB	118.4"	2849.3 LB	144.0"	3466.7 LB	128.7"	3097.8 LB
	+/- 52 PSF	138.3"	3968.7 LB	111.6"	3203.8 LB	144.0"	4133.3 LB	121.3"	3483.2 LB
	+/- 60 PSF	131.5"	4384.7 LB	106.2"	3539.6 LB	144.0"	4800.0 LB	115.4"	3848.3 LB
	+/- 68 PSF	126.0"	4781.8 LB	101.7"	3860.2 LB	142.3"	5401.8 LB	110.6"	4196.8 LB
192"	+/- 30 PSF	144.0"	2880.0 LB	125.9"	2518.0 LB	144.0"	2880.0 LB	136.9"	2737.6 LB
	+/- 34 PSF	144.0"	3240.0 LB	121.1"	2723.7 LB	144.0"	3240.0 LB	131.6"	2961.2 LB
	+/- 38 PSF	144.0"	3600.0 LB	116.9"	2921.9 LB	144.0"	3600.0 LB	127.1"	3176.7 LB
	+/- 41 PSF	140.3"	3856.9 LB	113.2"	3113.5 LB	144.0"	3960.0 LB	123.1"	3385.1 LB
	+/- 45 PSF	136.2"	4087.3 LB	110.0"	3299.5 LB	144.0"	4320.0 LB	119.6"	3587.3 LB

MULLION SCHEDULE NOTES:  
SEE SHEET 24 FOR MULLION SCHEDULE NOTES.

FL 32029.1

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**AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.**  
 4268 WESTROADS DR.  
 WEST PALM BEACH, FL 33407  
 (800) 432-2204

40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
 FLORIDA STATEWIDE APPROVAL (FSA FL #32029.1)

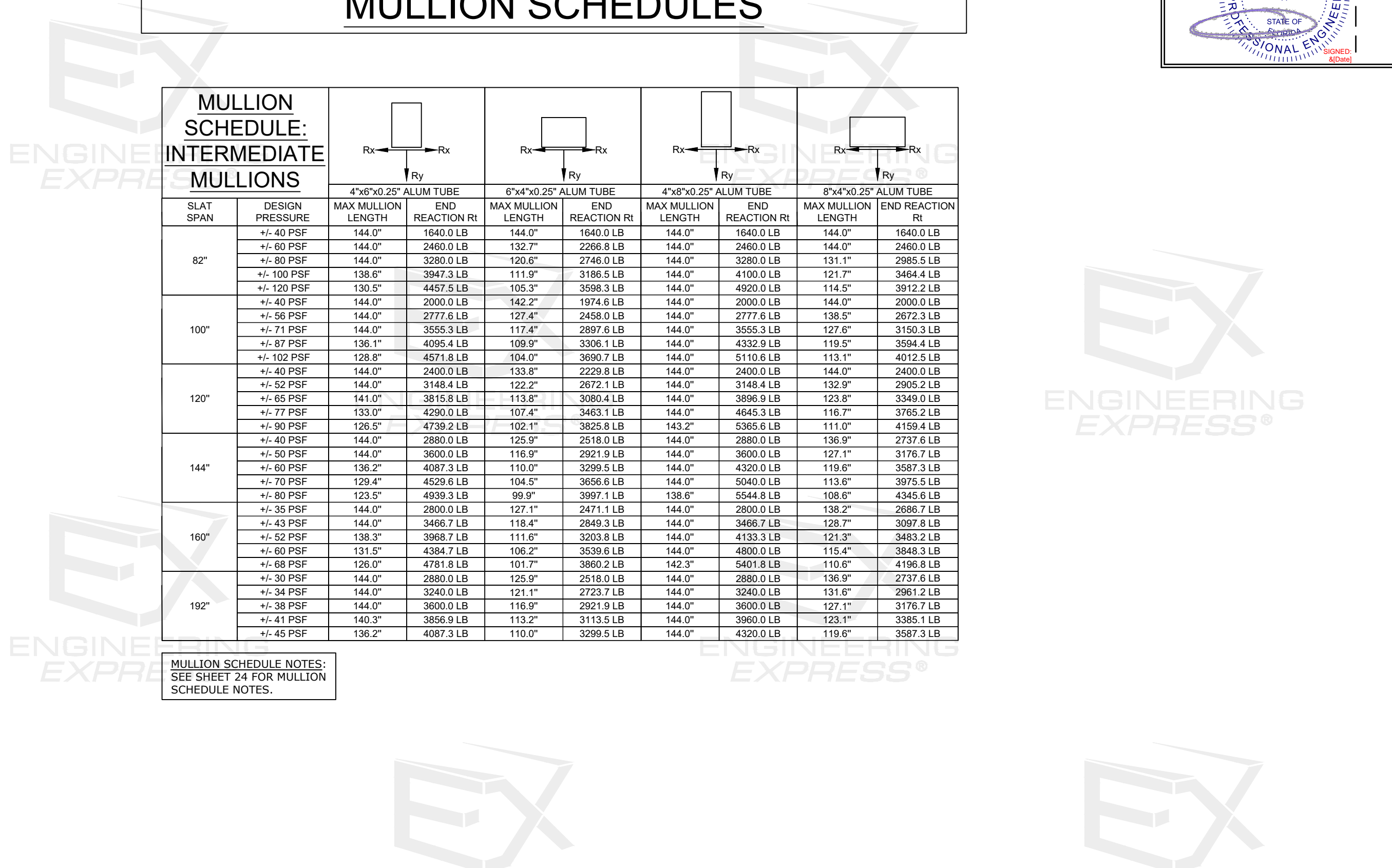
REMARKS	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	CCB	RWN	09/02/20
2023 FBC UPDATE	MRT	RWN	10/05/23

23-65182

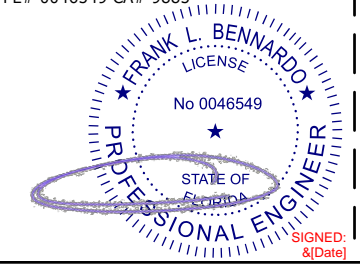
SCALE: NTS UNLESS NOTED

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# END RETENTION (ER) DOUBLE WALL SLAT MULLION SCHEDULES



FL 32029.1

**MULLION SCHEDULE:  
END MULLIONS**

SLAT SPAN	DESIGN PRESSURE	4"x6"x0.25" ALUM TUBE				6"x4"x0.25" ALUM TUBE				4"x8"x0.25" ALUM TUBE				8"x4"x0.25" ALUM TUBE			
		MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum
82"	+/- 40 PSF	144.0"	1893.0 LB	820.0 LB	2063.0 LB	144.0"	1893.0 LB	820.0 LB	2063.0 LB	144.0"	1893.0 LB	820.0 LB	2063.0 LB	144.0"	1893.0 LB	820.0 LB	2063.0 LB
	+/- 60 PSF	128.3"	2884.8 LB	1096.3 LB	3086.1 LB	121.1"	2721.7 LB	1034.4 LB	2911.7 LB	144.0"	3236.5 LB	1230.0 LB	3462.4 LB	131.7"	2959.1 LB	1124.6 LB	3165.6 LB
	+/- 80 PSF	108.7"	3452.5 LB	1237.6 LB	3667.7 LB	107.9"	3428.2 LB	1228.9 LB	3641.8 LB	122.9"	3905.4 LB	1399.9 LB	4148.7 LB	117.3"	3727.2 LB	1336.0 LB	3959.4 LB
	+/- 100 PSF	96.0"	3937.6 LB	1366.1 LB	4167.8 LB	99.1"	4065.7 LB	1410.5 LB	4303.4 LB	108.6"	4454.3 LB	1545.4 LB	4714.8 LB	107.7"	4420.2 LB	1533.5 LB	4678.7 LB
100"	+/- 120 PSF	86.9"	4367.4 LB	1484.5 LB	4612.8 LB	92.1"	4628.8 LB	1573.3 LB	4888.9 LB	98.3"	4940.7 LB	1679.3 LB	5218.3 LB	100.7"	5060.2 LB	1719.9 LB	5344.5 LB
	+/- 40 PSF	133.5"	2872.7 LB	927.3 LB	3018.6 LB	122.9"	2643.5 LB	853.3 LB	2777.8 LB	144.0"	3097.9 LB	1000.0 LB	3255.3 LB	133.6"	2874.0 LB	927.7 LB	3020.0 LB
	+/- 56 PSF	111.2"	3481.2 LB	1072.6 LB	3642.7 LB	108.4"	3394.3 LB	1045.8 LB	3551.7 LB	125.8"	3938.8 LB	1213.6 LB	4121.5 LB	117.9"	3690.3 LB	1137.0 LB	3861.5 LB
	+/- 71 PSF	97.3"	3996.7 LB	1201.6 LB	4173.4 LB	99.1"	4067.5 LB	1222.8 LB	4247.3 LB	110.1"	4522.2 LB	1359.5 LB	4722.1 LB	107.7"	4422.2 LB	1329.5 LB	4617.7 LB
120"	+/- 87 PSF	87.6"	4451.4 LB	1318.5 LB	4642.6 LB	92.3"	4687.1 LB	1388.3 LB	4888.4 LB	99.2"	5036.8 LB	1491.9 LB	5253.1 LB	100.3"	5095.9 LB	1509.4 LB	5314.7 LB
	+/- 102 PSF	80.4"	4862.4 LB	1426.3 LB	5067.3 LB	85.7"	5186.3 LB	1521.3 LB	5404.9 LB	90.9"	5501.9 LB	1613.9 LB	5733.8 LB	94.6"	5725.7 LB	1679.5 LB	5966.9 LB
	+/- 40 PSF	113.7"	3486.0 LB	947.4 LB	3612.4 LB	109.2"	3348.0 LB	909.9 LB	3469.4 LB	128.7"	3944.9 LB	1072.1 LB	4088.0 LB	118.7"	3640.0 LB	989.2 LB	3772.0 LB
	+/- 52 PSF	98.5"	4037.6 LB	1076.6 LB	4178.6 LB	99.1"	4063.3 LB	1083.5 LB	4205.2 LB	111.5"	4569.2 LB	1218.4 LB	4728.9 LB	107.8"	4417.6 LB	1178.0 LB	4572.0 LB
144"	+/- 65 PSF	88.1"	4521.1 LB	1192.3 LB	4675.6 LB	92.0"	4718.7 LB	1244.4 LB	4880.0 LB	99.7"	5116.5 LB	1349.3 LB	5291.4 LB	100.0"	5130.2 LB	1352.9 LB	5305.6 LB
	+/- 77 PSF	80.5"	4956.5 LB	1298.0 LB	5123.6 LB	86.2"	5310.8 LB	1390.8 LB	5489.9 LB	91.1"	5609.3 LB	1469.0 LB	5798.5 LB	94.1"	5794.6 LB	1517.5 LB	5990.0 LB
	+/- 90 PSF	74.5"	5355.4 LB	1396.0 LB	5534.4 LB	79.9"	5739.4 LB	1496.1 LB	5931.2 LB	84.4"	6060.9 LB	1579.9 LB	6263.4 LB	89.4"	6421.3 LB	1673.8 LB	6635.9 LB
	+/- 40 PSF	98.2"	4124.5 LB	982.3 LB	4239.9 LB	98.3"	4128.4 LB	983.2 LB	4243.9 LB	111.2"	4668.3 LB	1111.8 LB	4798.9 LB	106.9"	4488.5 LB	1069.0 LB	4614.0 LB
160"	+/- 50 PSF	87.6"	4631.9 LB	1094.7 LB	4759.5 LB	91.0"	4815.2 LB	1138.0 LB	4947.9 LB	99.1"	5242.7 LB	1239.1 LB	5387.1 LB	99.0"	5235.2 LB	1237.3 LB	5379.4 LB
	+/- 60 PSF	79.8"	5087.9 LB	1196.8 LB	5226.8 LB	85.5"	5454.8 LB	1283.1 LB	5603.7 LB	90.3"	5758.9 LB	1354.6 LB	5916.1 LB	93.0"	5930.5 LB	1395.0 LB	6092.4 LB
	+/- 70 PSF	73.8"	5505.3 LB	1291.0 LB	5654.7 LB	79.4"	5923.6 LB	1389.1 LB	6084.3 LB	83.5"	6231.4 LB	1461.3 LB	6400.4 LB	88.3"	6585.8 LB	1544.4 LB	6764.5 LB
	+/- 80 PSF	68.9"	5892.3 LB	1379.0 LB	6051.5 LB	74.2"	6340.4 LB	1483.8 LB	6511.7 LB	78.0"	6669.4 LB	1560.8 LB	6849.6 LB	83.5"	7133.5 LB	1669.4 LB	7326.2 LB
192"	+/- 35 PSF	96.9"	4224.6 LB	941.9 LB	4328.3 LB	97.1"	4233.8 LB	944.0 LB	4337.7 LB	109.7"	4782.0 LB	1066.2 LB	4899.5 LB	105.6"	4603.0 LB	1026.3 LB	4716.0 LB
	+/- 43 PSF	86.8"	4718.3 LB	1045.2 LB	4832.7 LB	90.2"	4902.9 LB	1086.0 LB	5021.7 LB	98.3"	5341.0 LB	1183.1 LB	5470.4 LB	98.1"	5330.5 LB	1180.8 LB	5459.7 LB
	+/- 52 PSF	79.4"	5165.1 LB	1139.1 LB	5289.2 LB	85.0"	5529.0 LB	1219.4 LB	5661.9 LB	89.8"	5846.7 LB	1289.4 LB	5987.2 LB	92.4"	6011.2 LB	1325.7 LB	6155.7 LB
	+/- 60 PSF	73.6"	5576.1 LB	1225.9 LB	5709.3 LB	79.3"	6013.6 LB	1322.1 LB	6157.2 LB	83.3"	6312.0 LB	1387.7 LB	6462.8 LB	87.8"	6655.3 LB	1463.1 LB	6814.3 LB
192"	+/- 68 PSF	68.9"	5958.9 LB	1306.9 LB	6100.5 LB	74.3"	6426.9 LB	1409.6 LB	6579.7 LB	77.9"	6745.3 LB	1479.4 LB	6905.7 LB	83.5"	7230.0 LB	1585.7 LB	7401.9 LB
	+/- 30 PSF	91.3"	4550.4 LB	913.1 LB	4641.1 LB	92.9"	4627.9 LB	928.7 LB	4720.1 LB	103.4"	5151.5 LB	1033.7 LB	5254.2 LB	101.0"	5031.5 LB	1009.7 LB	5131.8 LB
	+/- 34 PSF	86.0"	4832.7 LB	967.5 LB	4928.6 LB	89.2"	5013.6 LB	1003.8 LB	5113.1 LB	97.4"	5471.1 LB	1095.4 LB	5579.7 LB	97.0"	5450.8 LB	1091.3 LB	5559.0 LB
	+/- 38 PSF	81.5"	5099.4 LB	1019.1 LB	5200.3 LB	86.1"	5385.0 LB	1076.1 LB	5491.5 LB	92.3"	5773.1 LB	1153.7 LB	5887.2 LB	93.6"	5854.6 LB	1170.0 LB	5970.4 LB
192"	+/- 41 PSF	77.7"	5352.9 LB	1068.1 LB	5458.4 LB	83.4"	5744.0 LB	1146.2 LB	5857.3 LB	87.9"	6060.0 LB	1209.2 LB	6179.5 LB	90.6"	6245.0 LB	1246.1 LB	6368.1 LB
	+/- 45 PSF	74.3"	5594.9 LB	1115.0 LB	5704.9 LB	80.4"	6054.0 LB	1206.5 LB	6173.0 LB	84.2"	6334.0 LB	1262.3 LB	6458.6 LB	88.0"	6623.4 LB	1320.0 LB	6753.7 LB

MULLION SCHEDULE NOTES:  
SEE SHEET 24 FOR MULLION SCHEDULE NOTES.

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4268 WESTROADS DR.  
WEST PALM BEACH, FL 33407  
(800) 432-2204  
40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER  
FLORIDA BUILDING CODE EIGHTH EDITION (2023)  
FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

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2023 FBC UPDATE	MRT	RWN	10/05/23

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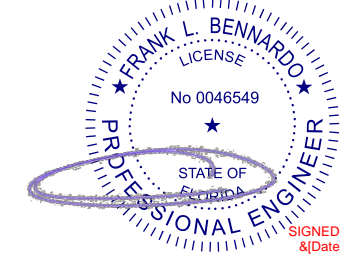
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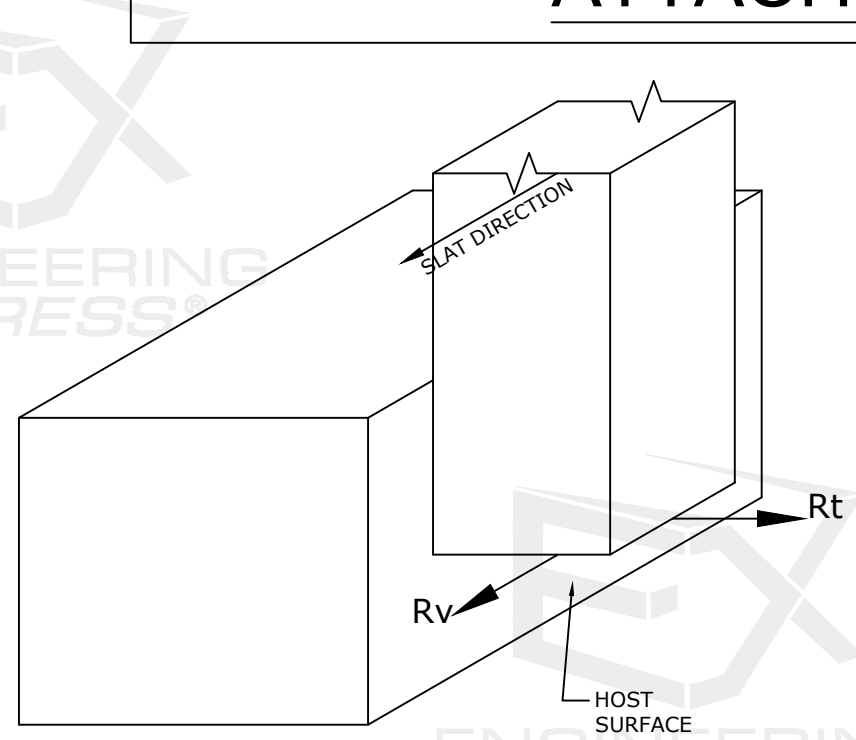
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FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

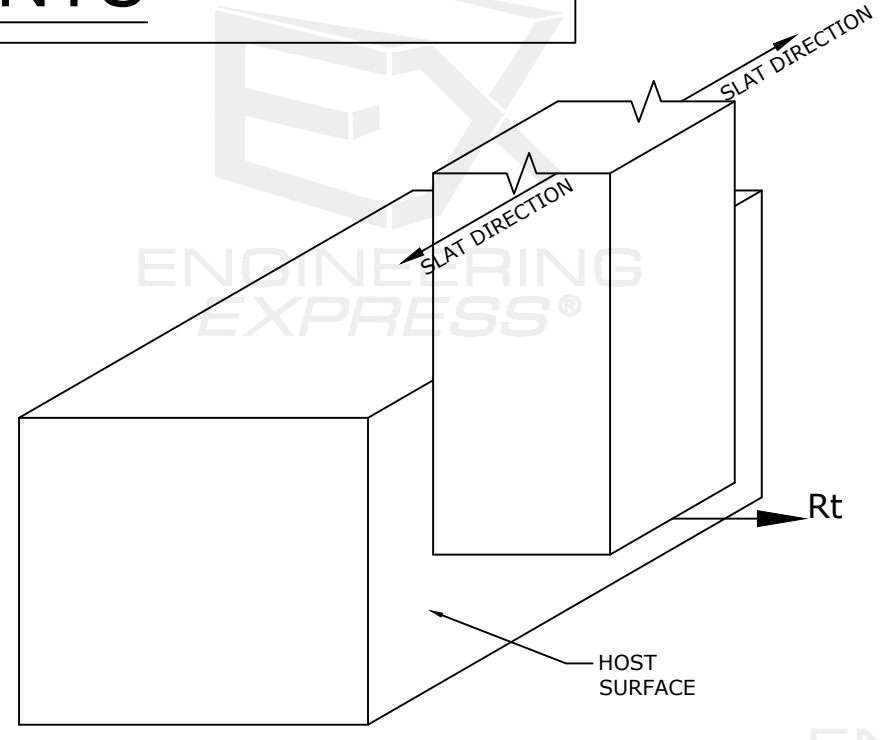
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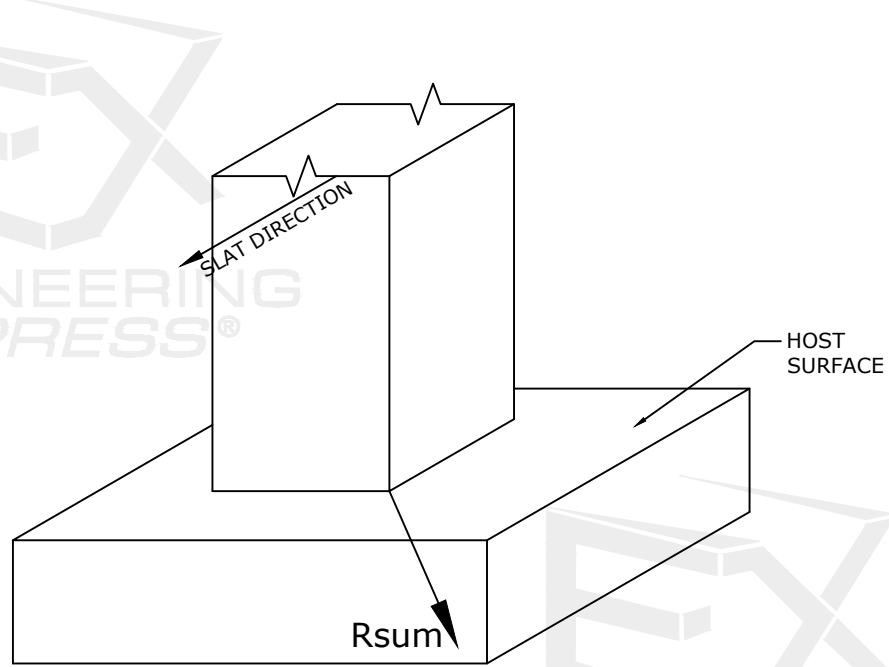
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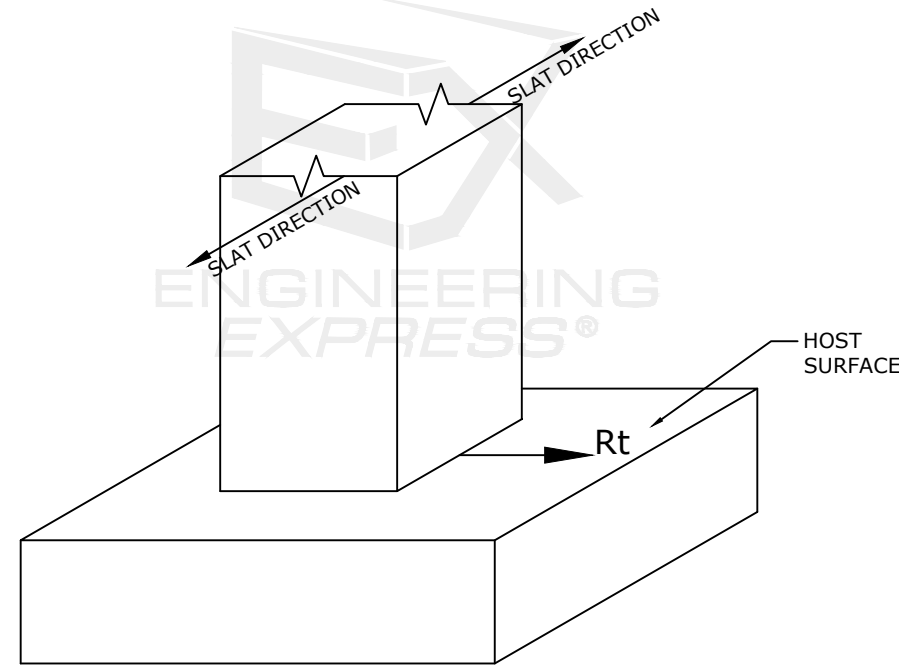
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27 N.T.S. ISOMETRIC



2 INTERIOR MULLION "FACE MOUNT" DIAGRAM  
27 N.T.S. ISOMETRIC



3 END MULLION "TRAPPED MOUNT" DIAGRAM  
27 N.T.S. ISOMETRIC



4 INTERIOR MULLION "TRAPPED MOUNT" DIAGRAM  
27 N.T.S. ISOMETRIC

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23-65182

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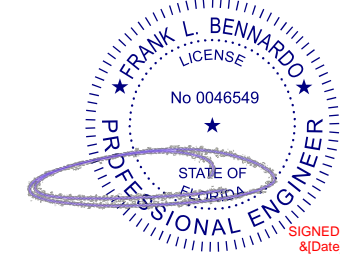
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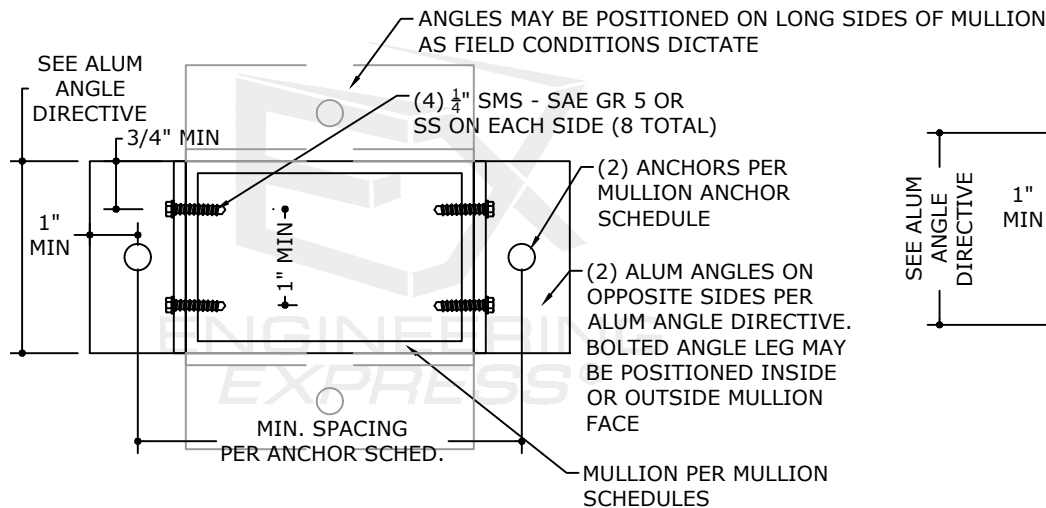
# END RETENTION (ER) MULLION END ATTACHMENTS

FRANK BENNARDO, P.E.  
PE# 0046549 CA# 9885

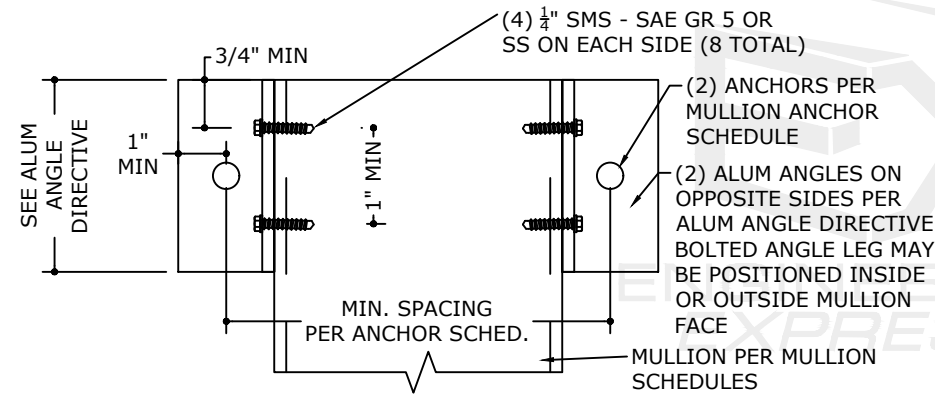
OCTOBER 9, 2023



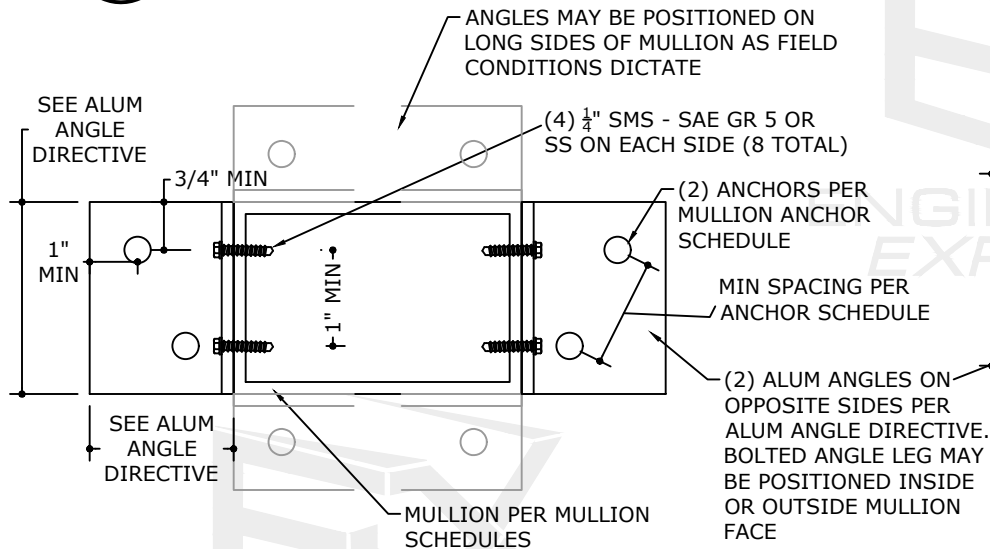
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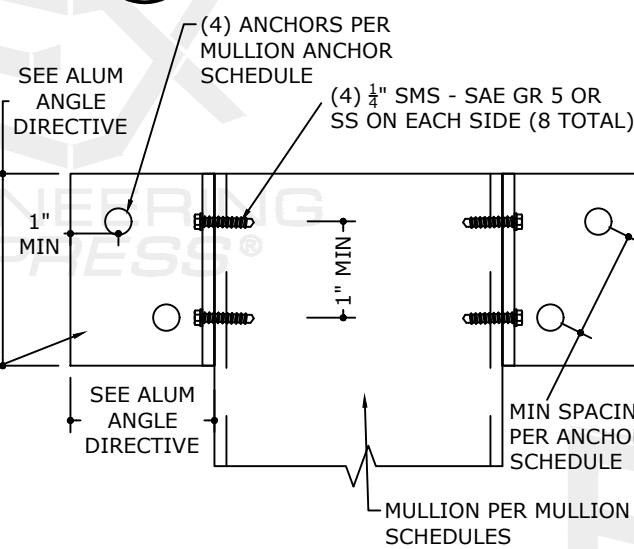
**1A TRAPPED MOUNT OPTION 1**  
28 N.T.S.



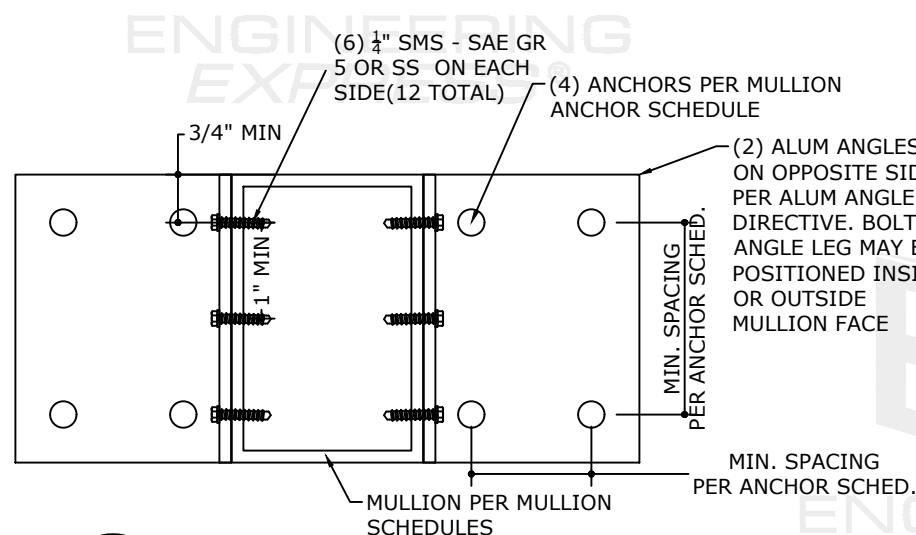
**1B FACE MOUNT OPTION 1**  
28 N.T.S.



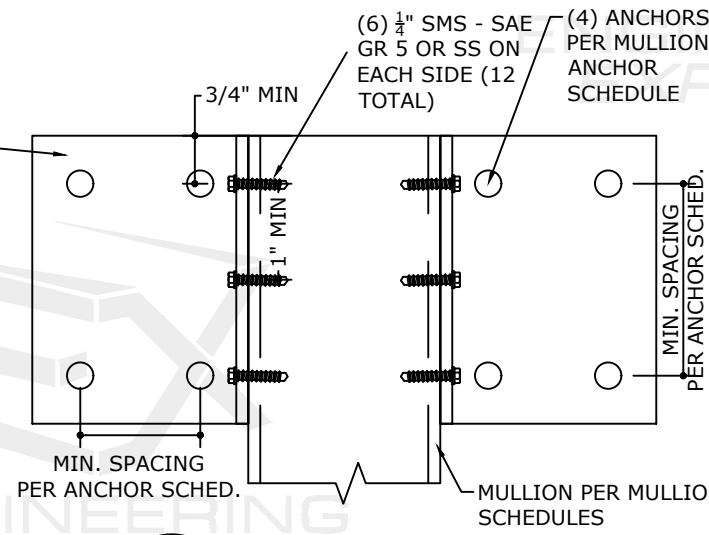
**2A TRAPPED MOUNT OPTION 2**  
28 N.T.S.



**2B FACE MOUNT OPTION 2**  
28 N.T.S.



**3A TRAPPED MOUNT OPTION 3**  
28 N.T.S.



**3B FACE MOUNT OPTION 3**  
28 N.T.S.

## MULLION ANCHOR SCHEDULE

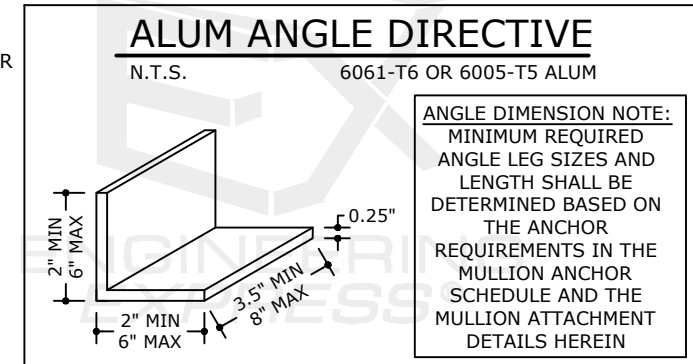
ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	CONNECTION CAPACITY	
				Tcap	Vcap
1/2" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2-1/2" EMBED TO 3KSI MIN. CONCRETE	6"	4.5"	1A/13, 1B/13	Tcap	3660 LB
	4.0"	4.5"	2A/13, 2B/13	Vcap	2249 LB
			Tcap	6442 LB	
3/8" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2" EMBED TO 3KSI MIN. CONCRETE	4.0"	4.5"	3A/13, 3B/13	Vcap	4106 LB
	6.0"	2.5"	1A/13, 1B/13	Tcap	12883 LB
			Vcap	8213 LB	
3/8" DEWALT SCREW BOLTS (OR EQUIV.) W/ 3-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK*	3.0"	2.5"	2A/13, 2B/13	Tcap	1905 LB
	3.0"	2.5"	3A/13, 3B/13	Vcap	1007 LB
			Tcap	3801 LB	
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	6.0"	4.5"	1A/13, 1B/13	Vcap	1700 LB
	3.0"	4.5"	2A/13, 2B/13	Tcap	7622 LB
			Vcap	3399 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2" EMBED TO 3.5KSI MIN CONCRETE	6.0"	4.5"	1A/13, 1B/13	Tcap	1953 LB
	3.0"	4.5"	2A/13, 2B/13	Vcap	1233 LB
			Tcap	3906 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	3.0"	4.5"	3A/13, 3B/13	Vcap	2467 LB
	2.0"	1.25"	1A/13, 1B/13	Tcap	7812 LB
			Vcap	4934 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2" EMBED TO 3.5KSI MIN CONCRETE	2.0"	1.25"	2A/13, 2B/13	Tcap	1310 LB
	2.0"	1.25"	3A/13, 3B/13	Vcap	302 LB
			Tcap	2620 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	5.0"	3.125"	1A/13, 1B/13	Vcap	604 LB
	3.75"	3.125"	2A/13, 2B/13	Tcap	3930 LB
			Vcap	906 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	5.0"	2.5"	1A/13, 1B/13	Tcap	1670 LB
	5.0"	2.5"	2A/13, 2B/13	Vcap	1700 LB
			Tcap	1820 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	3.75"	3.125"	3A/13, 3B/13	Vcap	2840 LB
	5.0"	2.5"	1A/13, 1B/13	Tcap	3640 LB
			Vcap	5680 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	5.0"	2.5"	2A/13, 2B/13	Tcap	580 LB
	5.0"	2.5"	3A/13, 3B/13	Vcap	750 LB
			Tcap	1160 LB	
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	5.0"	2.5"	1A/13, 1B/13	Vcap	1500 LB
	5.0"	2.5"	2A/13, 2B/13	Tcap	2320 LB
			Vcap	3000 LB	

### MULLION ANCHOR SCHEDULE NOTES:

- FOR "TRAPPED MOUNT" CONDITIONS WITH END MULLIONS, 'Rsum' VALUES IN MULLION SCHEDULE SHALL NOT EXCEED MAX 'Vcap' VALUES NOTED IN THIS SCHEDULE.
- FOR "FACE MOUNT" CONDITIONS WITH END MULLIONS, **Rv/Vcap + Rt/Tcap SHALL BE LESS THAN OR EQUAL TO 1.0**, WHERE 'Rv' AND 'Rt' ARE PER MULLION SCHEDULES, AND 'Tcap' AND 'Vcap' ARE PER THIS SCHEDULE.
- FOR "TRAPPED MOUNT" CONDITIONS WITH INTERMEDIATE MULLIONS, 'Rt' VALUES IN MULLION SCHEDULES SHALL NOT EXCEED 'Vcap' VALUES NOTED IN THIS SCHEDULE.
- FOR "FACE MOUNT" CONDITIONS WITH INTERMEDIATE MULLIONS, 'Rt' VALUES IN MULLION SCHEDULES SHALL NOT EXCEED 'Tcap' VALUES NOTED IN THIS SCHEDULE.
- \* ANCHORS SHALL PENETRATE THROUGH FACE SHELL INTO GROUTED CELL.
- ALTERNATE ANCHORS AND OR END CONNECTION CONFIGURATIONS MAY BE DESIGNED/CERTIFIED ON A SITE SPECIFIC BASIS BASED ON THE END LOADINGS LISTED IN THE MULLION SCHEDULES.
- 1/2" UNC THRU BOLTS MAY BE USED IN LIEU OF 1/4" SMS PER THE FOLLOWING DIRECTIVE
  - (4) SMS PER SIDE = (2) 1/2" UNC THRU BOLTS / (6) SMS PER SIDE = (3) 1/2" UNC THRU BOLTS

### ALTERNATE ANCHOR NOTE:

FOR ALL 1/4" AND 5/16" DIAMETER ANCHOR OPTIONS LISTED IN THE ANCHOR SCHEDULES, AN EQUIVALENT DIAMETER HILLMAN/ALL-POINTS SOLID-SET ANCHOR (CARBON OR STAINLESS STEEL) MAY BE USED IN LIEU OF THE OPTION(S) LISTED SO LONG AS THE LISTED MINIMUM EMBEDMENT, EDGE DISTANCE AND SPACING ARE ACHIEVED.



FL 32029.1

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REMARKS	DATE	DRWN	CHKD	DATE
PREV. SUBMITTAL (20-31262)	09/02/20	CCB	RWN	10/05/23
2023 FBC UPDATE		MRT	RWN	

23-65182

SCALE: NTS UNLESS NOTED

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