



Product Approval
USER: Public User

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OFFICE OF THE
SECRETARY

FL #	FL32029-R2														
Application Type	Revision														
Code Version	2023														
Application Status	Approved														
Comments															
Archived	<input type="checkbox"/>														
Product Manufacturer	American Shutter Systems Association, Inc.														
Address/Phone/Email	4268 Westroads Drive West Palm Beach, FL 33407 (561) 209-8263 bfeeley@easternmetal.com														
Authorized Signature	Bill Feeley lrodriguez@easternmetal.com														
Technical Representative															
Address/Phone/Email															
Quality Assurance Representative															
Address/Phone/Email															
Category	Shutters														
Subcategory	Roll-up														
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer <input type="checkbox"/> Evaluation Report - Hardcopy Received														
Florida Engineer or Architect Name who developed the Evaluation Report	Frank L. Bennardo														
Florida License	PE-46549														
Quality Assurance Entity	National Accreditation and Management Institute														
Quality Assurance Contract Expiration Date	12/31/2024														
Validated By	John Henry Kampmann Jr. <input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received														
Certificate of Independence	FL32029_R2_COI_INDEP.pdf														
Referenced Standard and Year (of Standard)	<table border="0"> <thead> <tr> <th>Standard</th> <th>Year</th> </tr> </thead> <tbody> <tr> <td>ASTM E1886</td> <td>2005</td> </tr> <tr> <td>ASTM E1996</td> <td>2006</td> </tr> <tr> <td>ASTM E330</td> <td>2002</td> </tr> <tr> <td>TAS 201</td> <td>1994</td> </tr> <tr> <td>TAS 202</td> <td>1994</td> </tr> <tr> <td>TAS 203</td> <td>1994</td> </tr> </tbody> </table>	Standard	Year	ASTM E1886	2005	ASTM E1996	2006	ASTM E330	2002	TAS 201	1994	TAS 202	1994	TAS 203	1994
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Equivalence of Product Standards Certified By	Florida Licensed Professional Engineer or Architect FL32029_R2_Equiv_EQUIV.pdf														

Sections from the Code

Product Approval Method Method 1 Option D

Date Submitted 10/13/2023

Date Validated 10/17/2023

Date Pending FBC Approval 10/22/2023

Date Approved 12/13/2023

Summary of Products

FL #	Model, Number or Name	Description
32029.1	40mm Slat Bertha Roll-Up Hurricane Shutter	END RETENTION (ER) AND NON-END RETENTION (NER)
Limits of Use Approved for use in HVHZ: Yes Approved for use outside HVHZ: Yes Impact Resistant: Yes Design Pressure: +120/-120 Other: see installation instructions for span/pressure limitations		Installation Instructions FL32029_R2_II_DWG.pdf Verified By: Frank Bennardo PE46549 Created by Independent Third Party: Yes Evaluation Reports FL32029_R2_AE_EVAL.pdf Created by Independent Third Party: Yes

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[Contact Us](#) :: [2601 Blair Stone Road, Tallahassee FL 32399](#) Phone: 850-487-1824

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Product Approval Accepts:



AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.

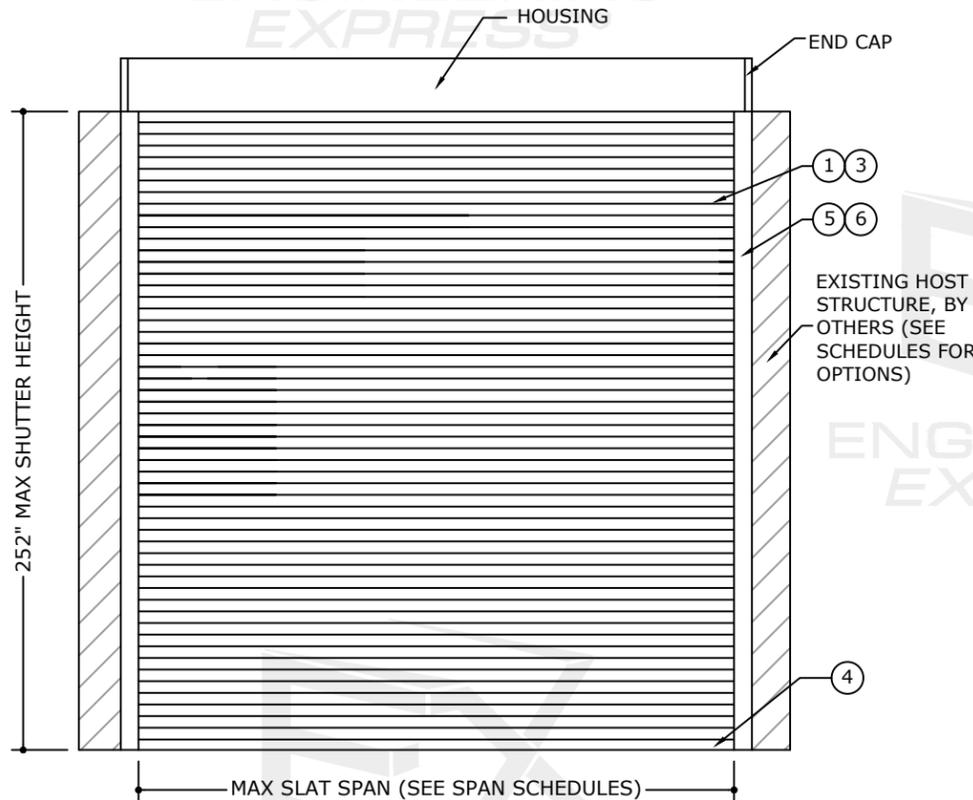
40 mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER
END RETENTION & NON-END RETENTION

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		DOUBLE WALL ER SLATS ①																																																																																																																													
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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

FOR SITE-SPECIFIC DEVIATIONS & MORE INFORMATION ABOUT THIS DOCUMENT OR SCAN THIS QR CODE
VISIT ENGINEERINGEXPRESS.COM/STORE FOR ADDITIONAL PLANS, REPORTS & RESOURCES



GENERAL NOTES:

- THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE SEVENTH EDITION (2023), THE INTERNATIONAL BUILDING CODE (IBC) AND THE INTERNATIONAL RESIDENTIAL CODE (IRC) FOR USE INSIDE AND OUTSIDE OUTSIDE THE HIGH VELOCITY HURRICANE ZONE, PER ASTM E330, E1886, AND E1996 AND TAS 201, 202 & 203 STANDARDS. SEE PRODUCT APPROVAL EVALUATION FOR ADDITIONAL INFORMATION.
- WIND LOAD DURATION FACTOR Cd=1.6 HAS BEEN USED FOR WOOD ANCHOR DESIGN.
- POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED PER SEPARATE ENGINEERING IN ACCORDANCE WITH THE GOVERNING CODE. PRESSURE REQUIREMENTS AS DETERMINED IN ACCORDANCE WITH ASCE 7 AND CHAPTER 1609 OF THE FLORIDA BUILDING CODE SHALL BE LESS THAN OR EQUAL TO THE POSITIVE OR NEGATIVE ASD DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.
- DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.
- THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.
- ROLL-UP MECHANISM AND HOOD ASSEMBLY ARE NOT PART OF THIS APPROVAL.
- THIS DOCUMENT CONTAINS INFORMATION RELEVANT TO THE NECESSARY STRUCTURAL REQUIREMENTS OF THE SYSTEM INSTALLATION. COMPONENTS AND FASTENERS NOT REFERENCED WHICH ARE PART OF THE INTERNAL FABRICATION OF THE SPECIFIED SYSTEMS OR ASSEMBLIES SHALL BE PER MANUFACTURER PUBLISHED SPECIFICATIONS.
- THE STRUCTURAL ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS BY THIS SYSTEM SHALL BE VERIFIED BY OTHERS. THE ARCHITECT/ENGINEER OF RECORD FOR THE PROJECT SUPERSTRUCTURE WITH WHICH THIS DESIGN IS USED SHALL BE RESPONSIBLE FOR THE INTEGRITY OF ALL SUPPORTING SURFACES TO THIS DESIGN WHICH SHALL BE COORDINATED BY THE PERMITTING CONTRACTOR. WOOD BUNKS (BY OTHERS) SHALL BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE EXISTING STRUCTURE.

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.

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(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

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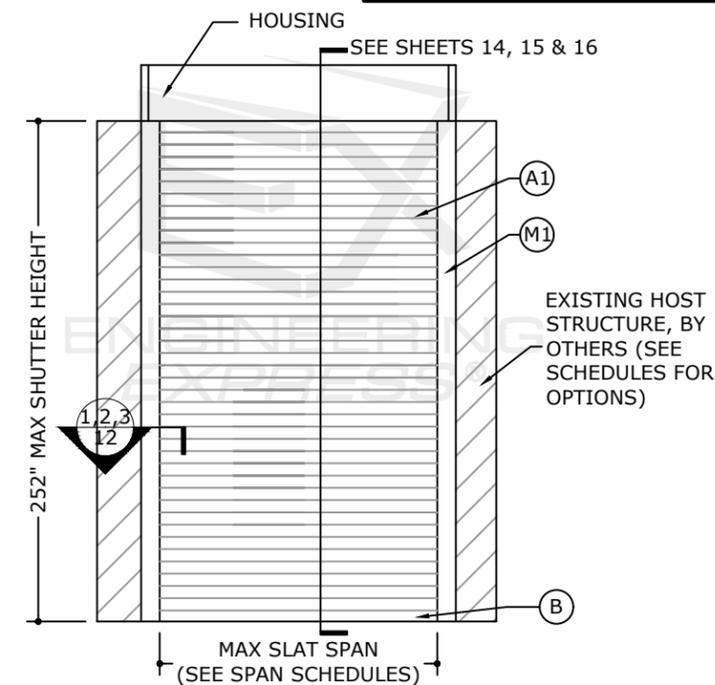
NON-END RETENTION (NER) OPTION

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PE# 0046549 CA# 9885

OCTOBER 9, 2023

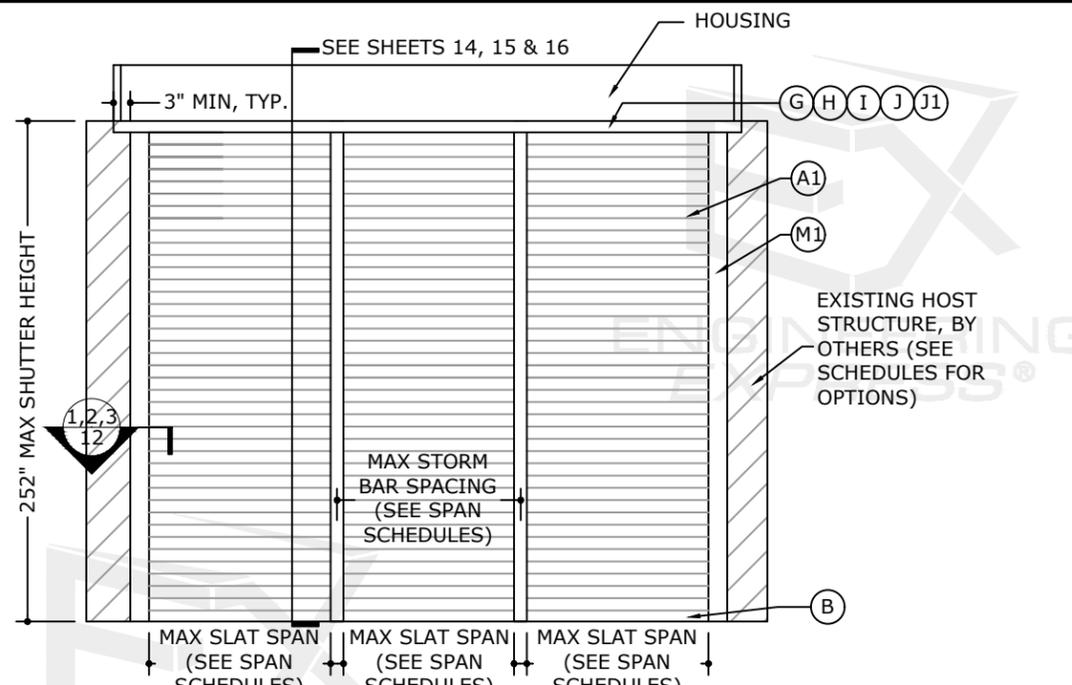
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FRANK L. BENNARDO
LICENSE
No 0046549
STATE OF FLORIDA
PROFESSIONAL ENGINEER
SIGNED: &[Date]



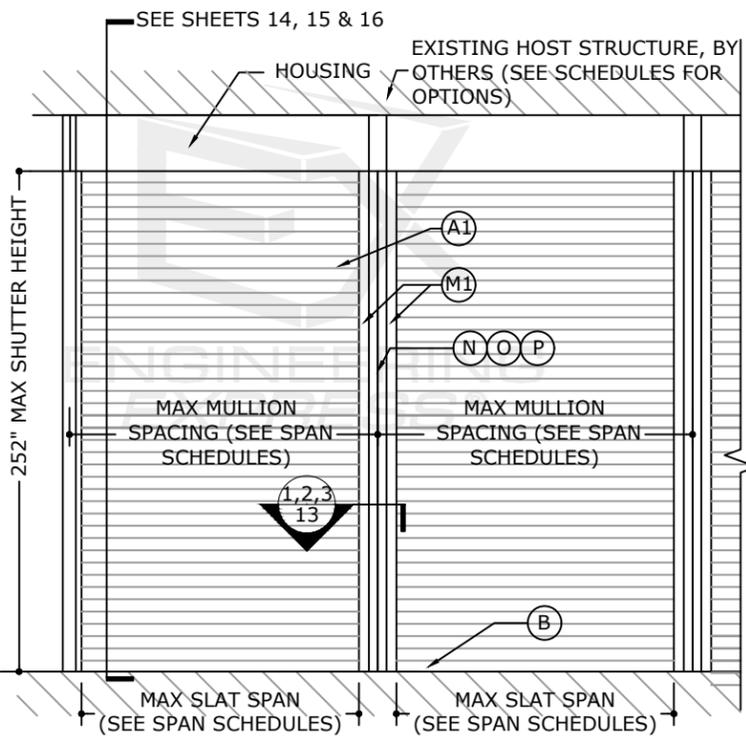
TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITHOUT STORM BARS)

1 N.T.S. EXTERIOR ELEV



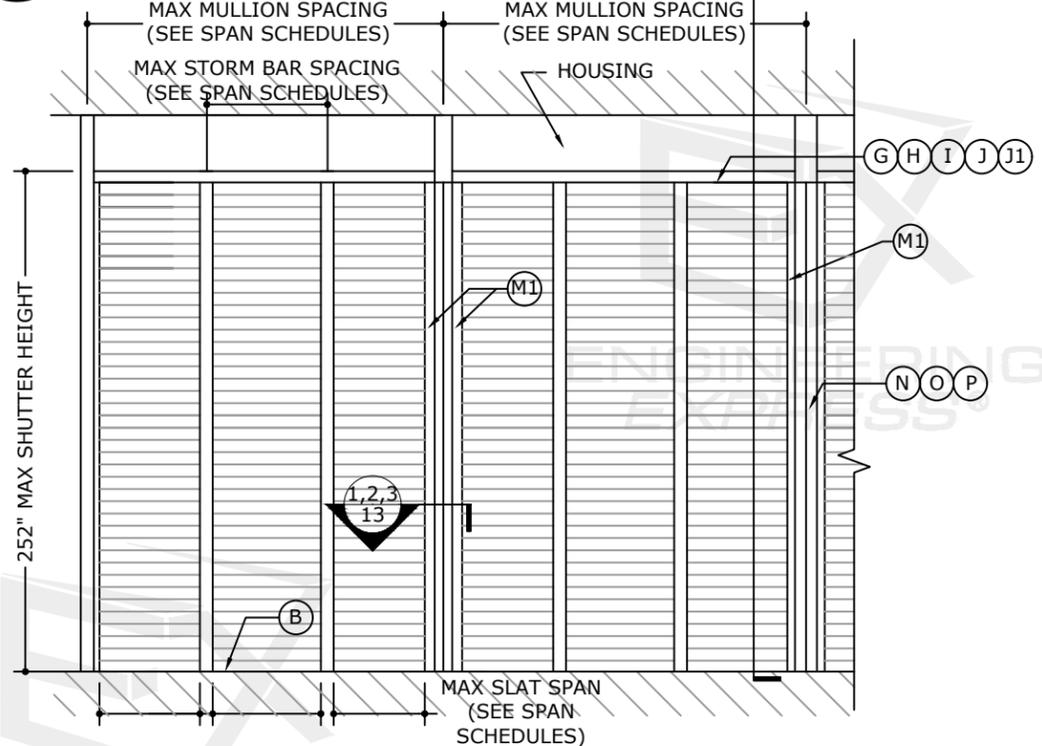
TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITH STORM BARS)

2 N.T.S. EXTERIOR ELEV



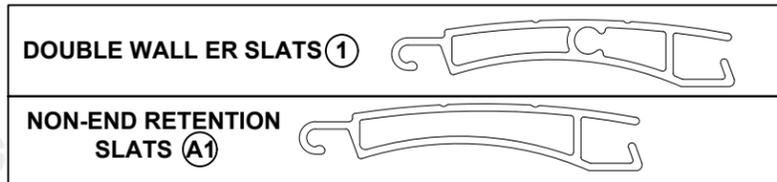
TYPICAL NON-END RETENTION SINGLE SPAN SHUTTER (WITH MULLIONS)

3 N.T.S. EXTERIOR ELEV



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

4 N.T.S. EXTERIOR ELEV



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

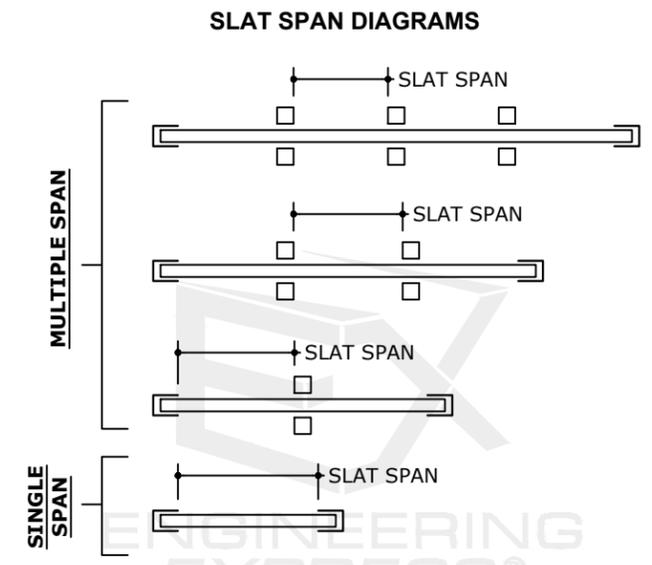
GLASS SEPARATION SCHEDULE	
SLAT SPAN	MAXIMUM SLAT SPAN
UP TO 36 IN	2-1/4 IN
> 36 IN TO 48 IN	2-5/8 IN
> 48 IN TO 50 IN	2-3/4 IN

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)
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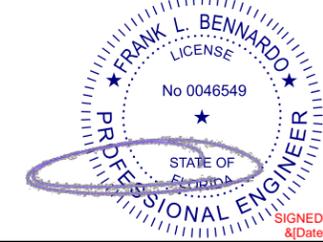
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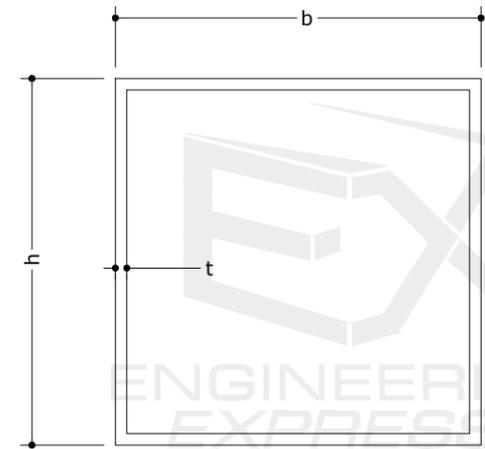
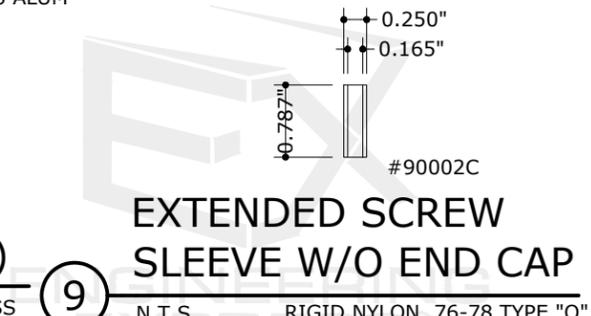
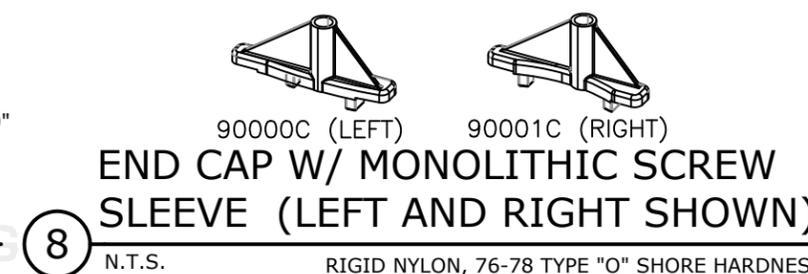
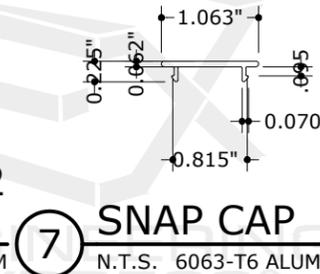
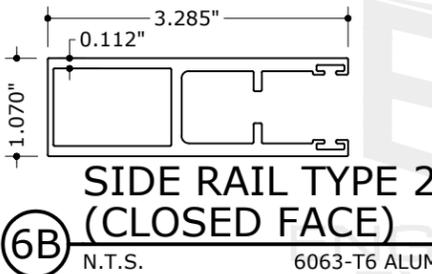
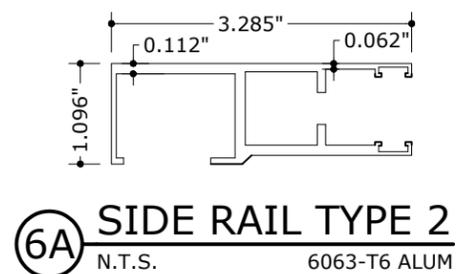
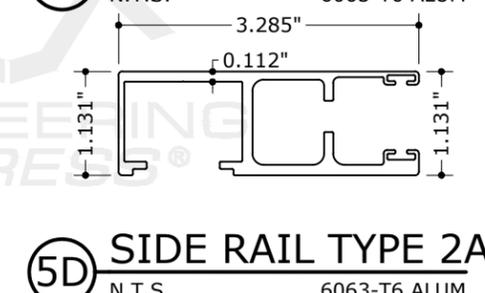
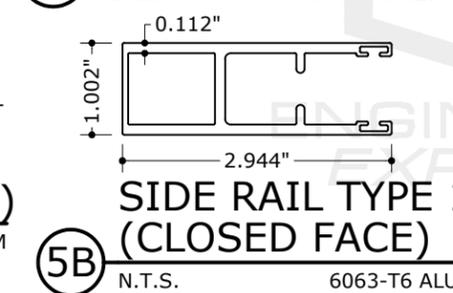
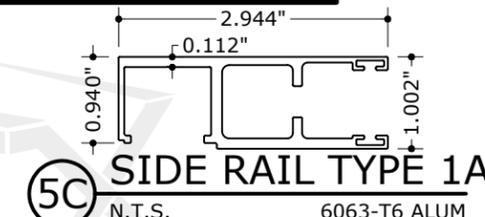
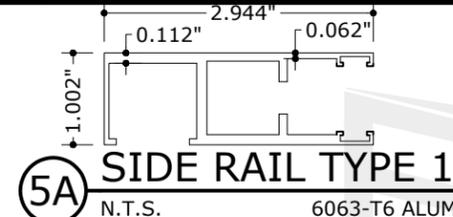
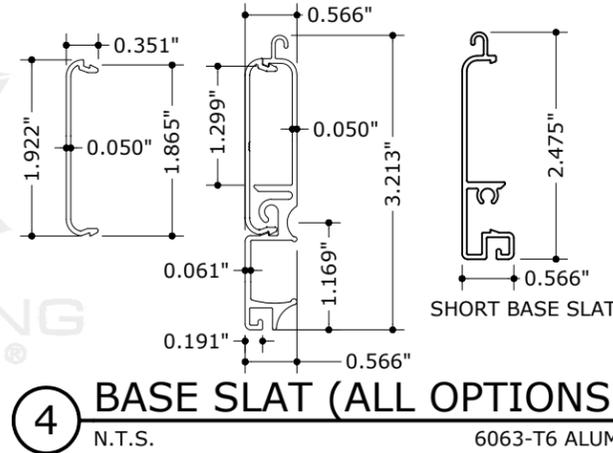
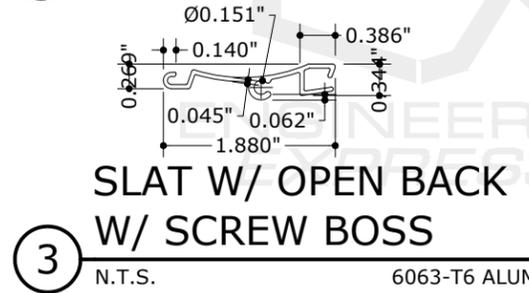
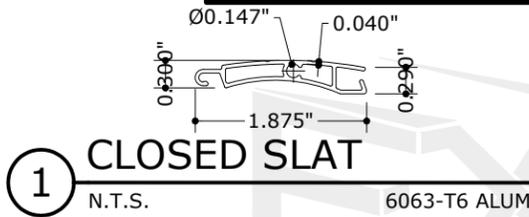
END RETENTION (ER) COMPONENTS

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PE# 0046549 CA# 9885

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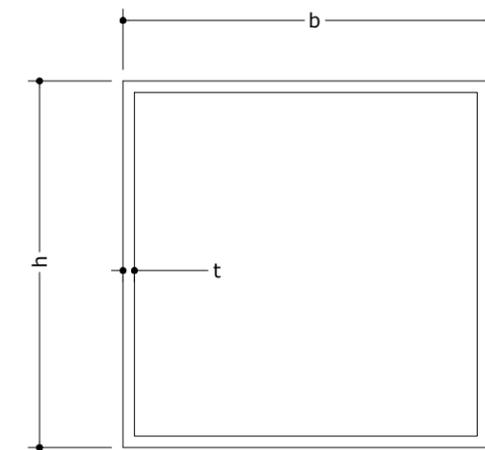
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BUILD-OUT MOUNTED TUBES

N.T.S. 6063-T6

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

N.T.S. 6061-T6 OR 6005-T5

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

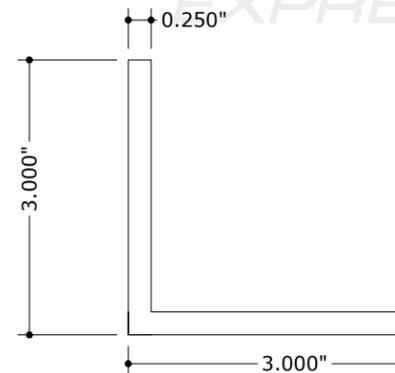
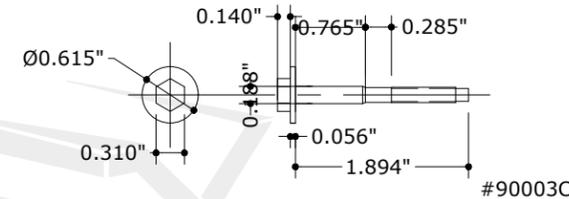


END CAP W/ MONOLITHIC SCREW SLEEVE (LEFT AND RIGHT SHOWN)

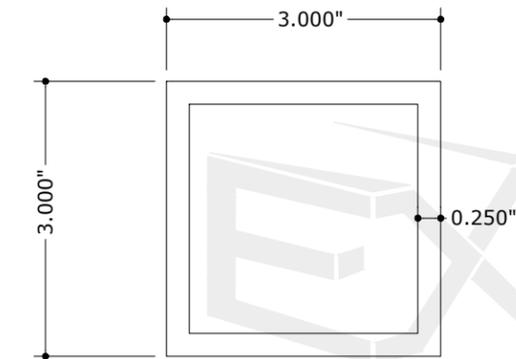
RIGID NYLON, 76-78 TYPE 'O' SHORE HARDNESS

SCREW AT EVERY OTHER SLAT, INCLUDING BASE SLAT FOR Poured CONCRETE, GROUTED BLOCK & WOOD INSTALLATIONS

N.T.S. #8-32 X 1.894" AISI 410 S.S. SCREW W/ 0.31" DIAM HV MARKED HEAD & T=0.064" X 0.620" DIAM MONOLITHIC WASHER W/ BERTHA H.V. DACROSHIELD COASTIN SYSTEM AS MANUFACTURED BY APPROVED COATING APPLICATORS REGISTERED WITH AMERICAN SHUTTER SYSTEM ASSOCIATION



13 N.T.S. 6063-T6 ALUM



14 N.T.S. 6063-T6 ALUM

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40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER
FLORIDA BUILDING CODE EIGHTH EDITION (2023)
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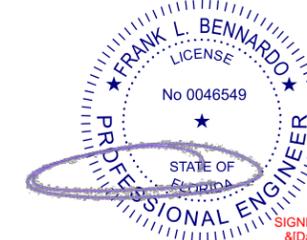
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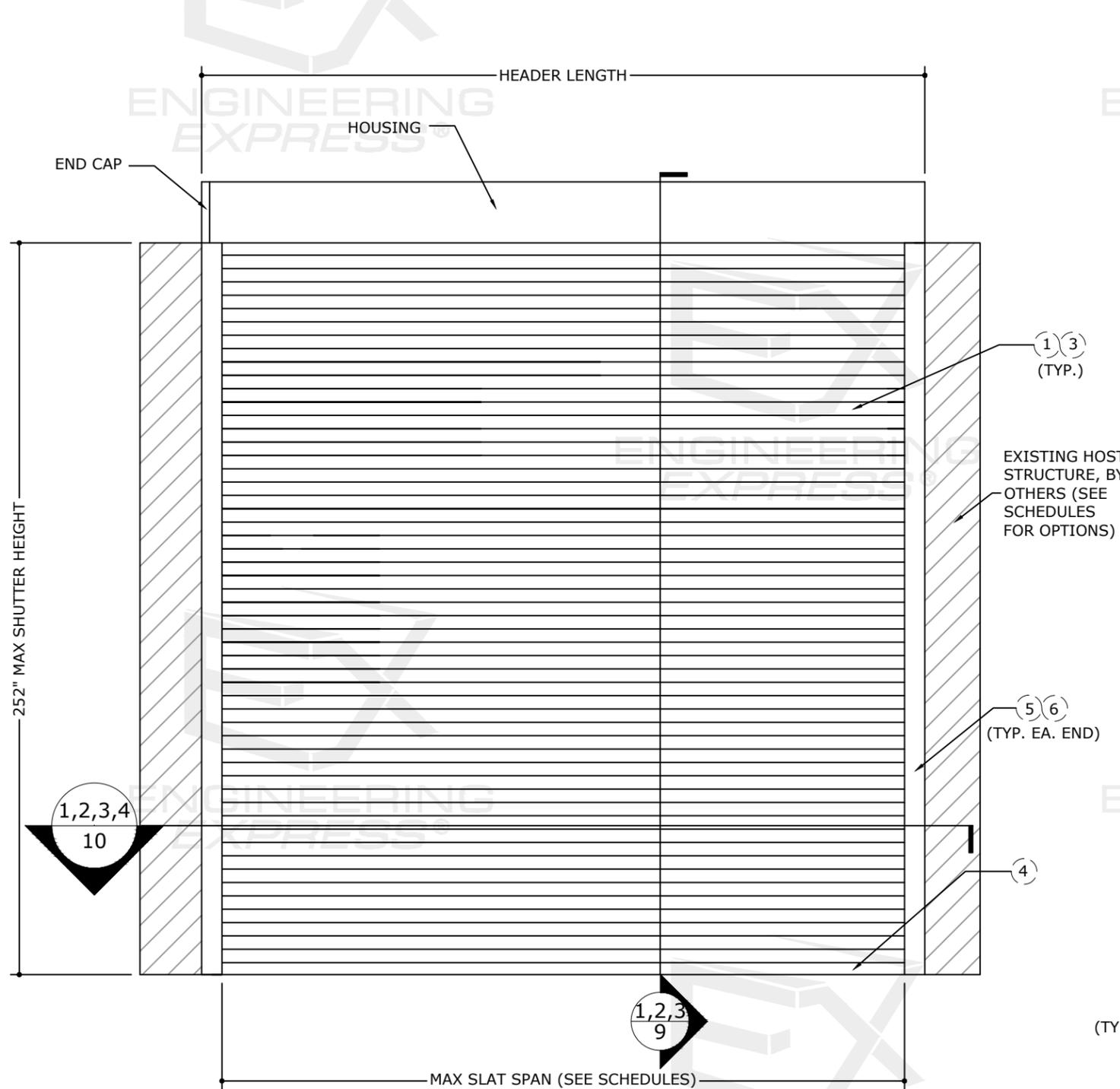
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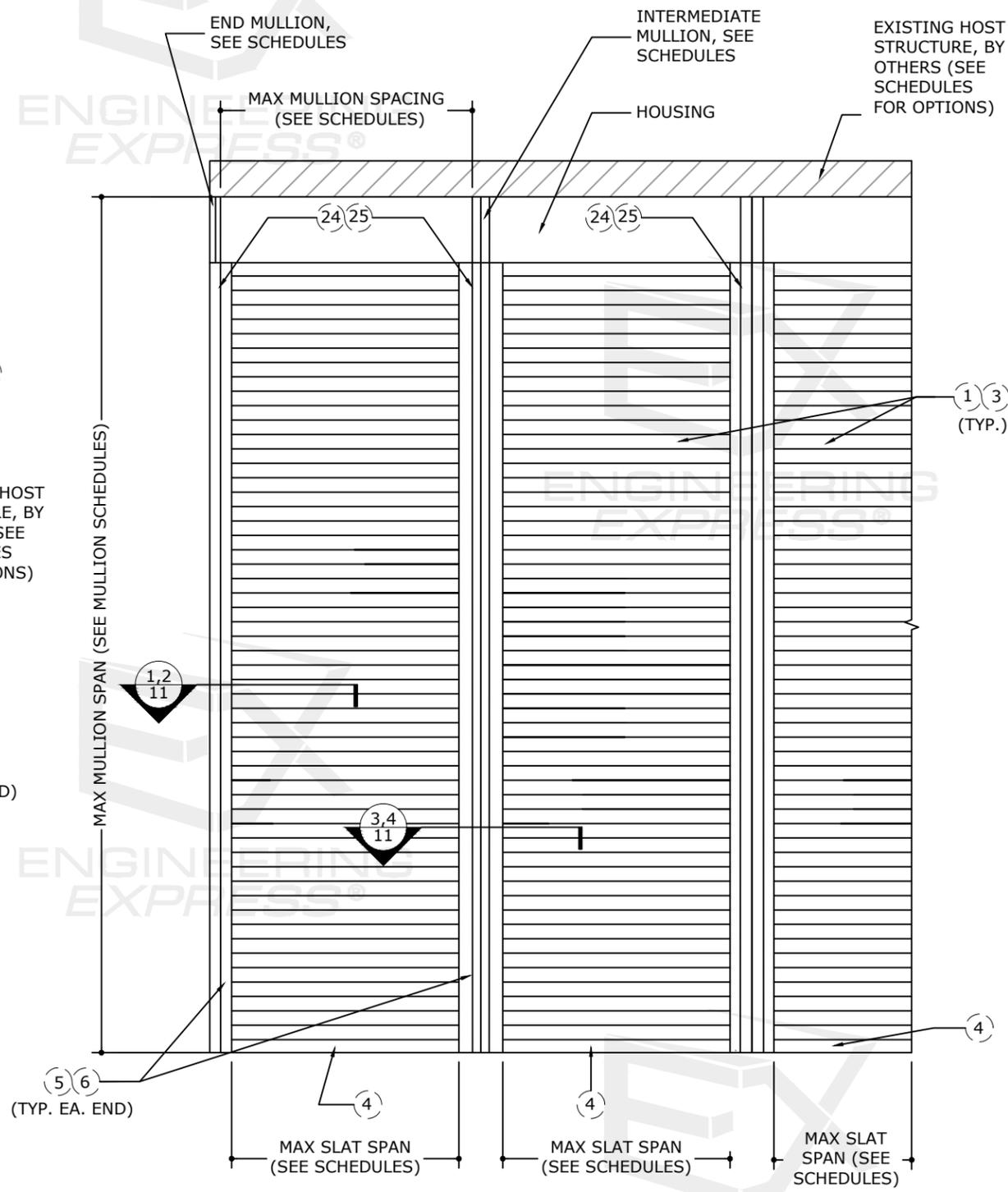
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1
6 TYPICAL SINGLE UNIT ELEVATION W/O MULLIONS
N.T.S. EXTERIOR ELEV



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

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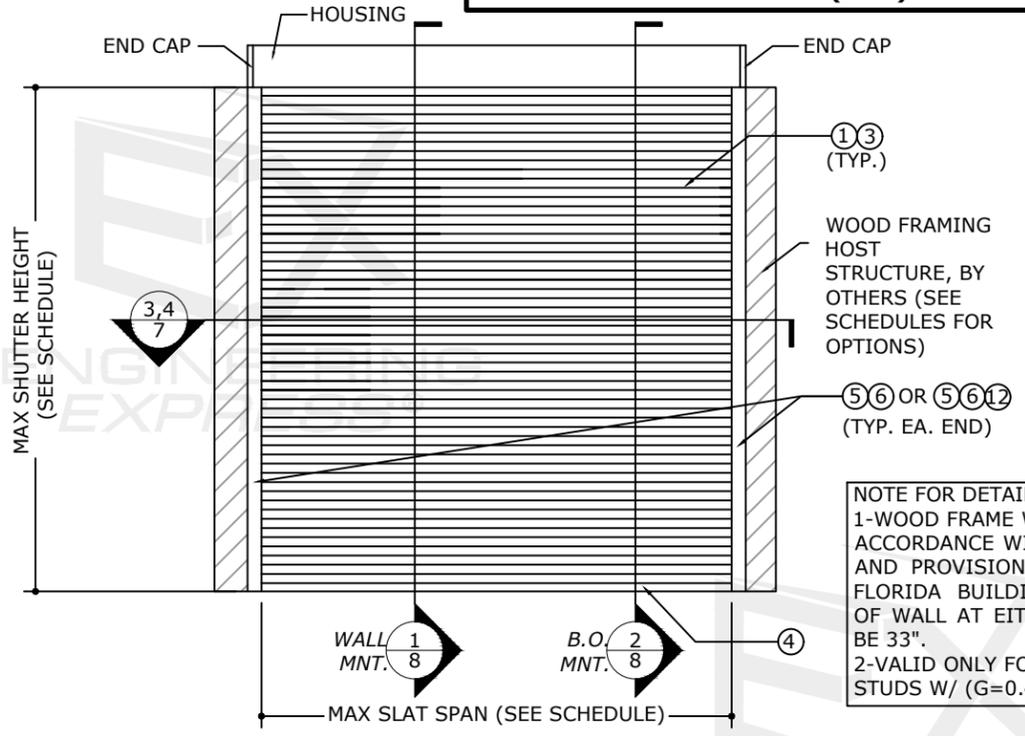
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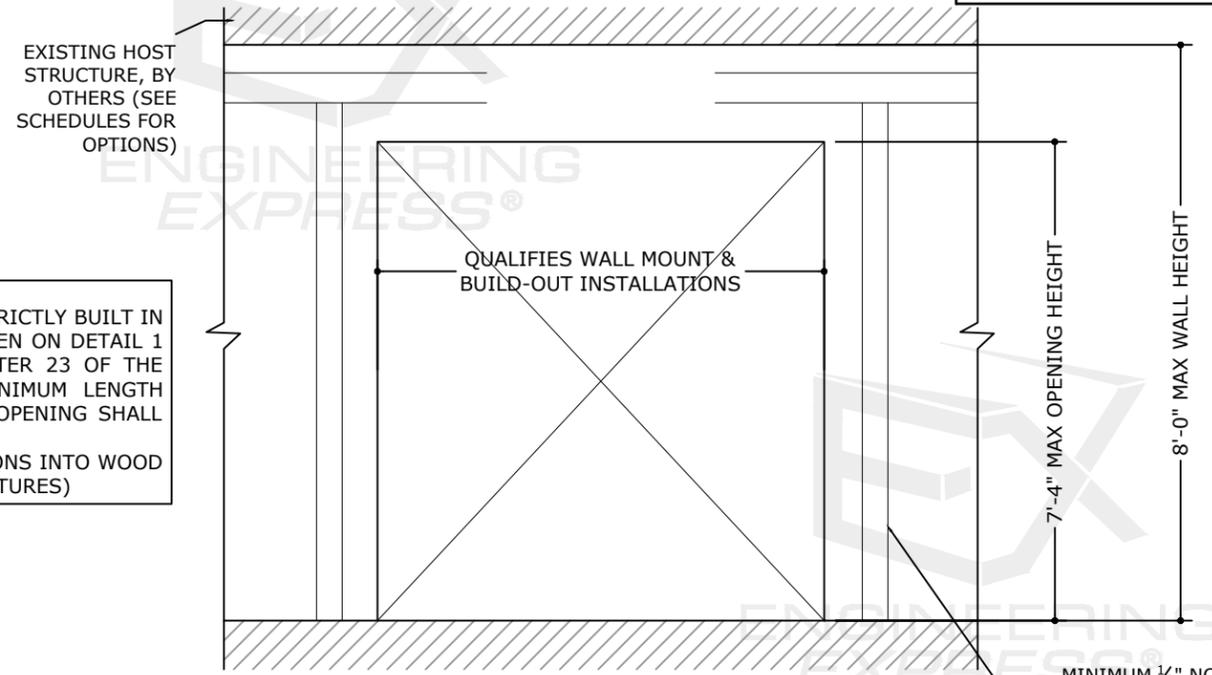


END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO WOOD FRAMING



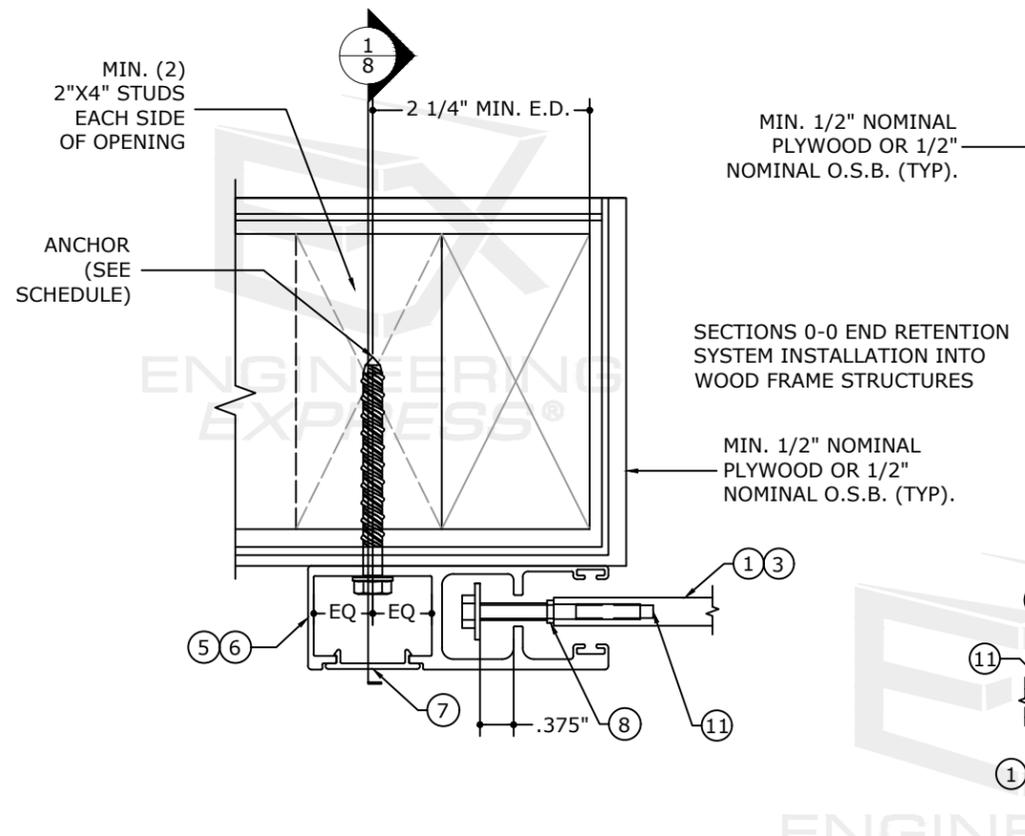
NOTE FOR DETAIL 2:
1-WOOD FRAME WALL TO BE STRICTLY BUILT IN ACCORDANCE WITH SPECS GIVEN ON DETAIL 1 AND PROVISIONS FROM CHAPTER 23 OF THE FLORIDA BUILDING CODE. MINIMUM LENGTH OF WALL AT EITHER SIDE OF OPENING SHALL BE 33".
2-VALID ONLY FOR INSTALLATIONS INTO WOOD STUDS W/ (G=0.46 MIN. STRUCTURES)

1
7 N.T.S. EXTERIOR ELEV

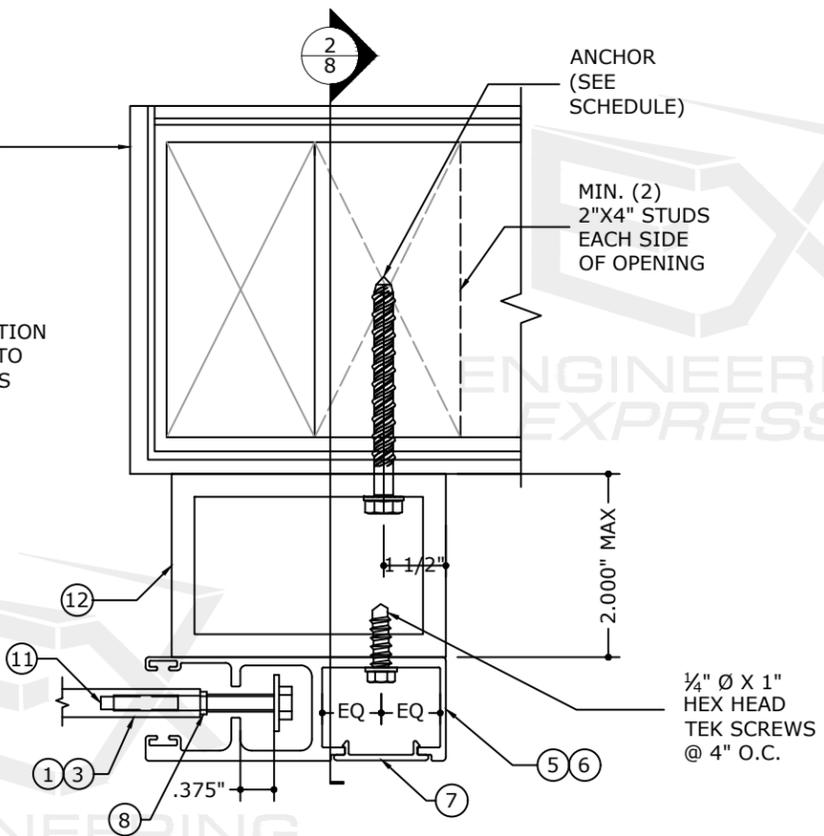


2
7 N.T.S. EXTERIOR ELEV

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..

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REV	RWN	10/05/23
MRT		

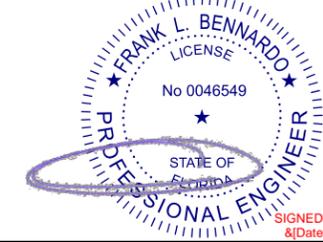
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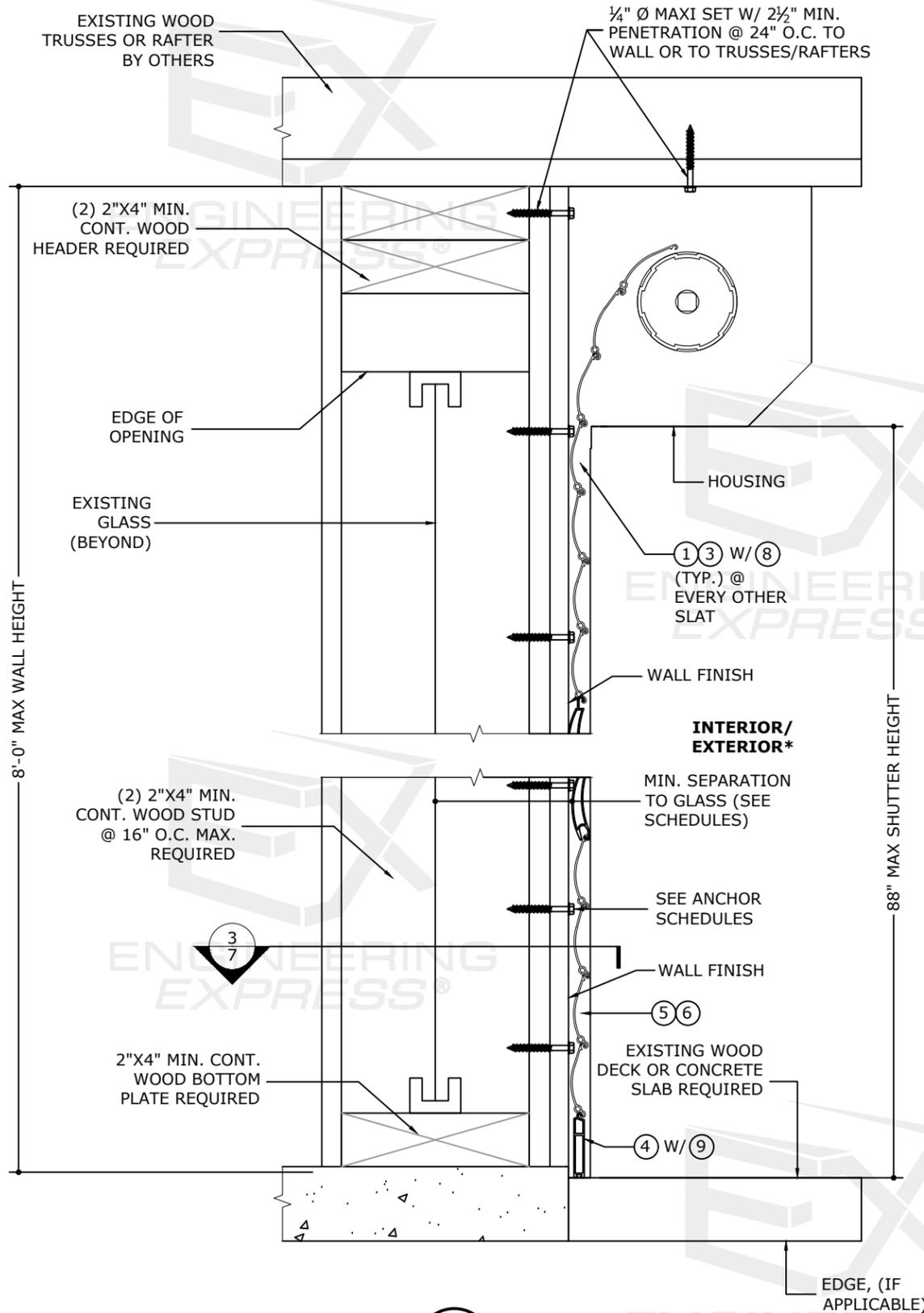
END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO WOOD FRAMING

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

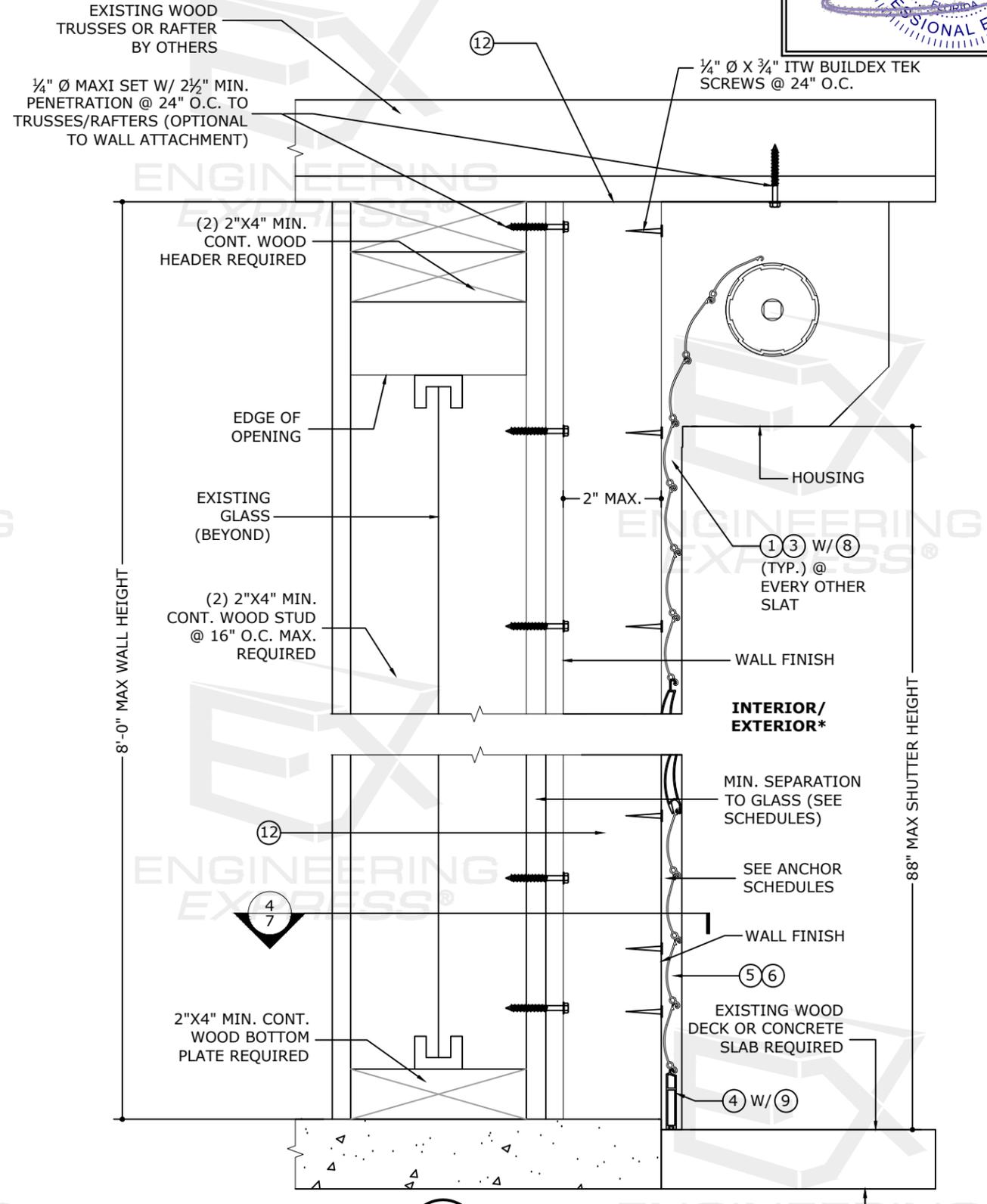
OCTOBER 9, 2023



FL



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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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	RWV	09/02/20
2023 FBC UPDATE	MRT	RWV	10/05/23

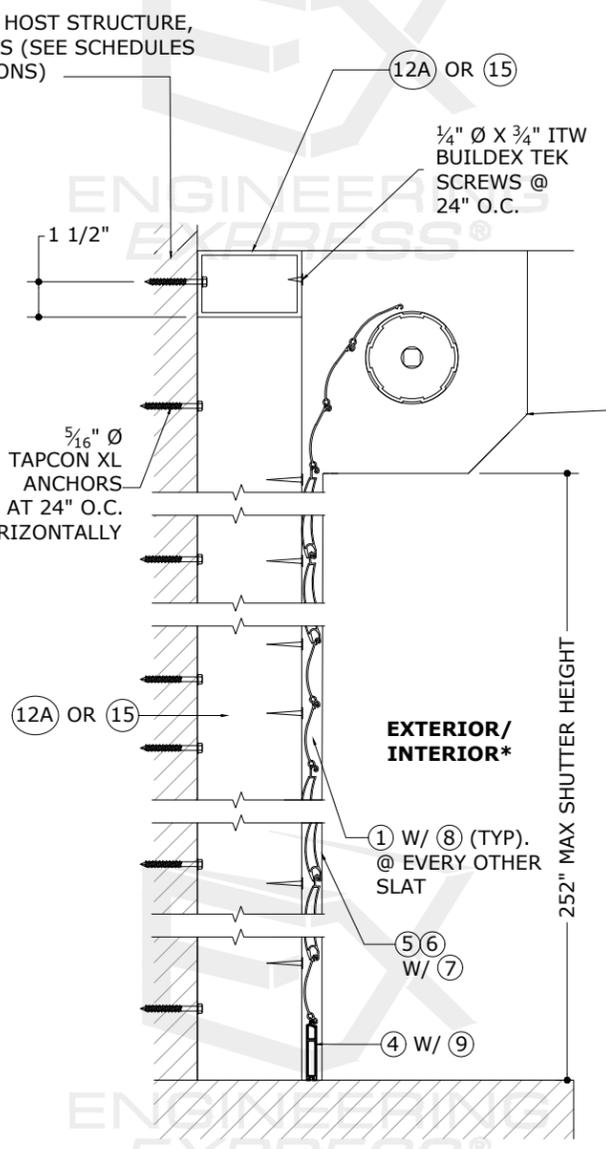
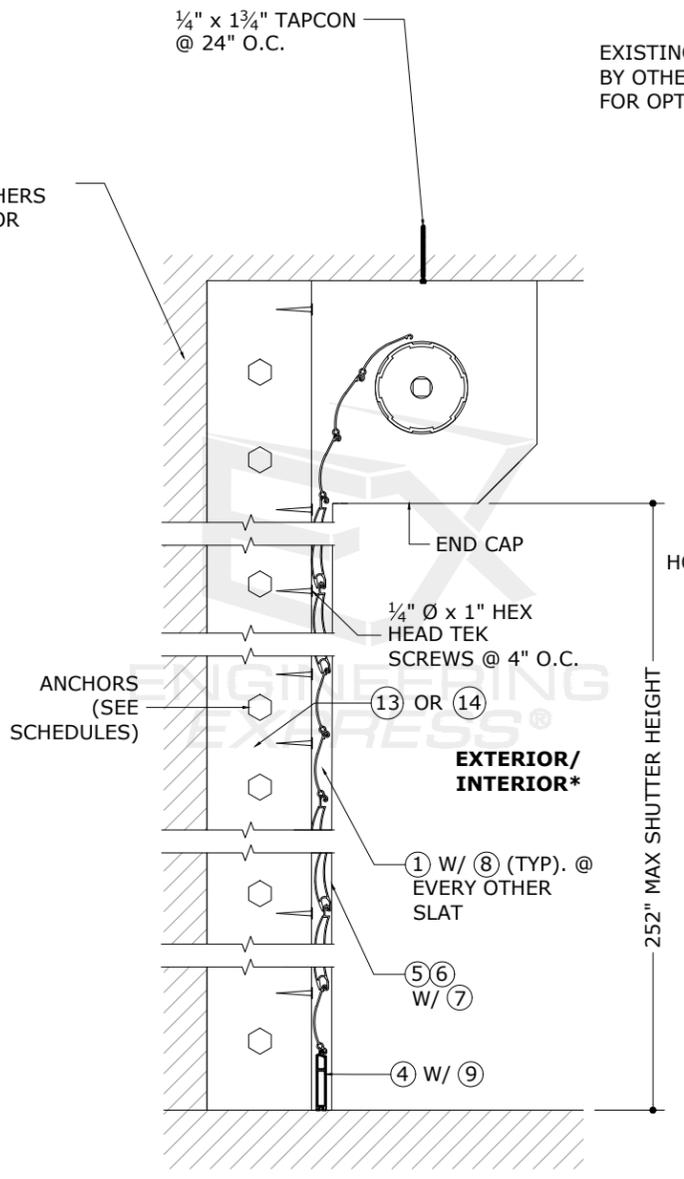
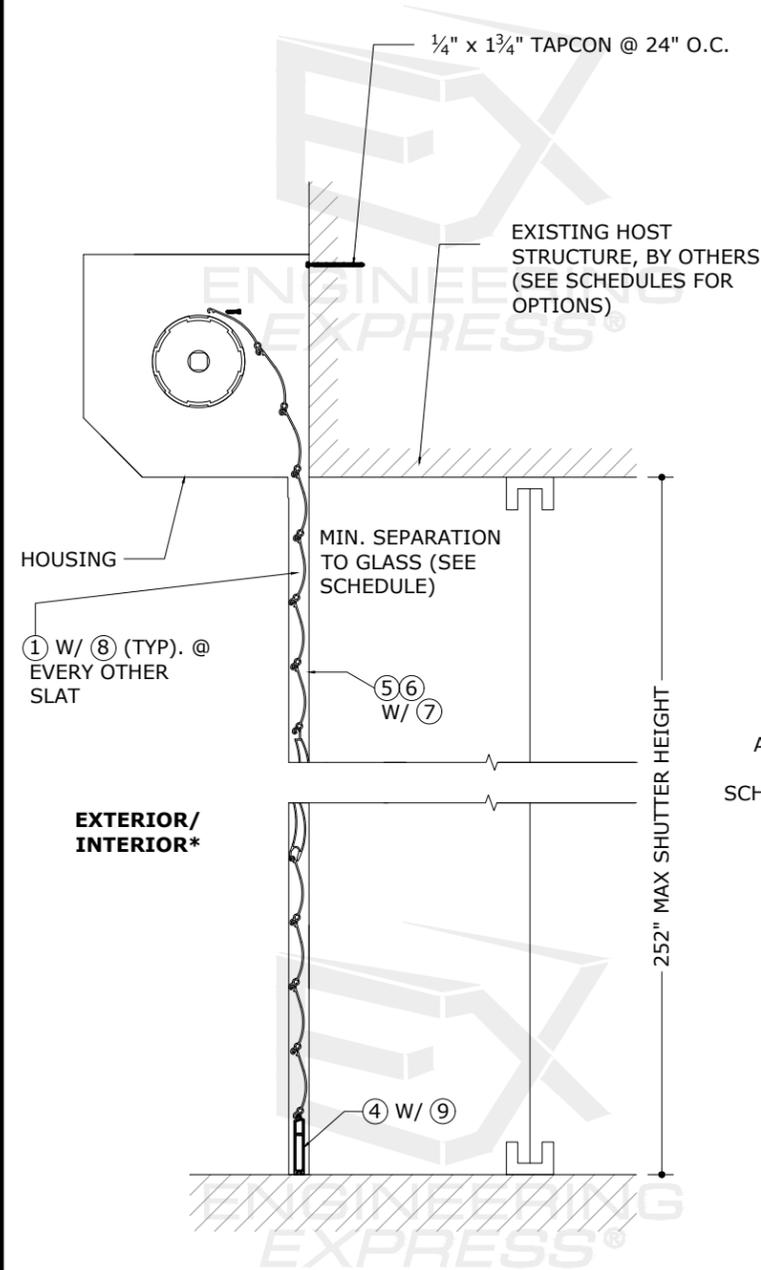
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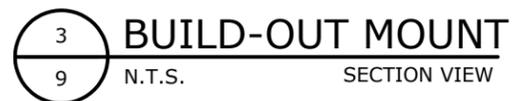
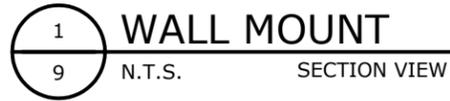


FL

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



HOUSING NOTES:

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

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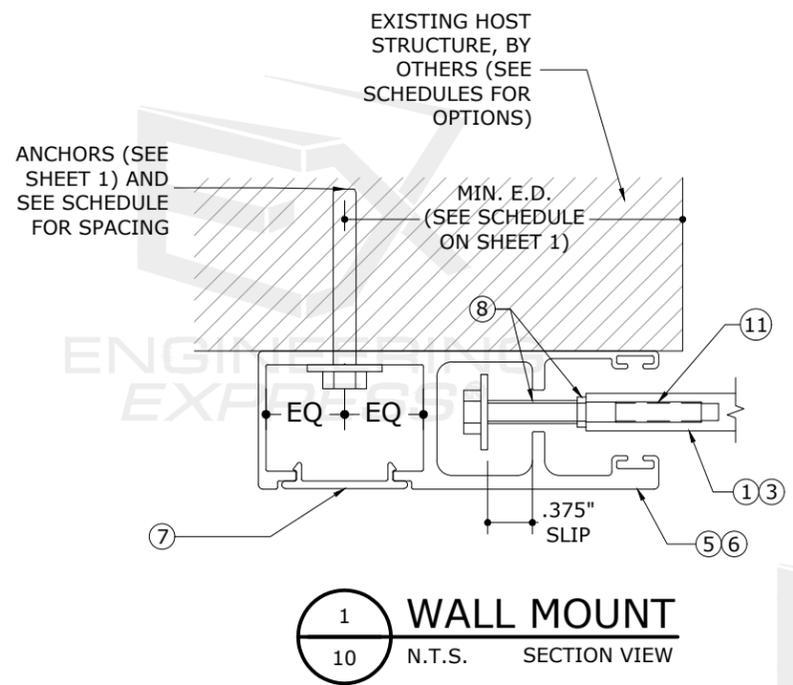
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END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO CONCRETE, CMU, STEEL, ALUMINUM OR WOOD

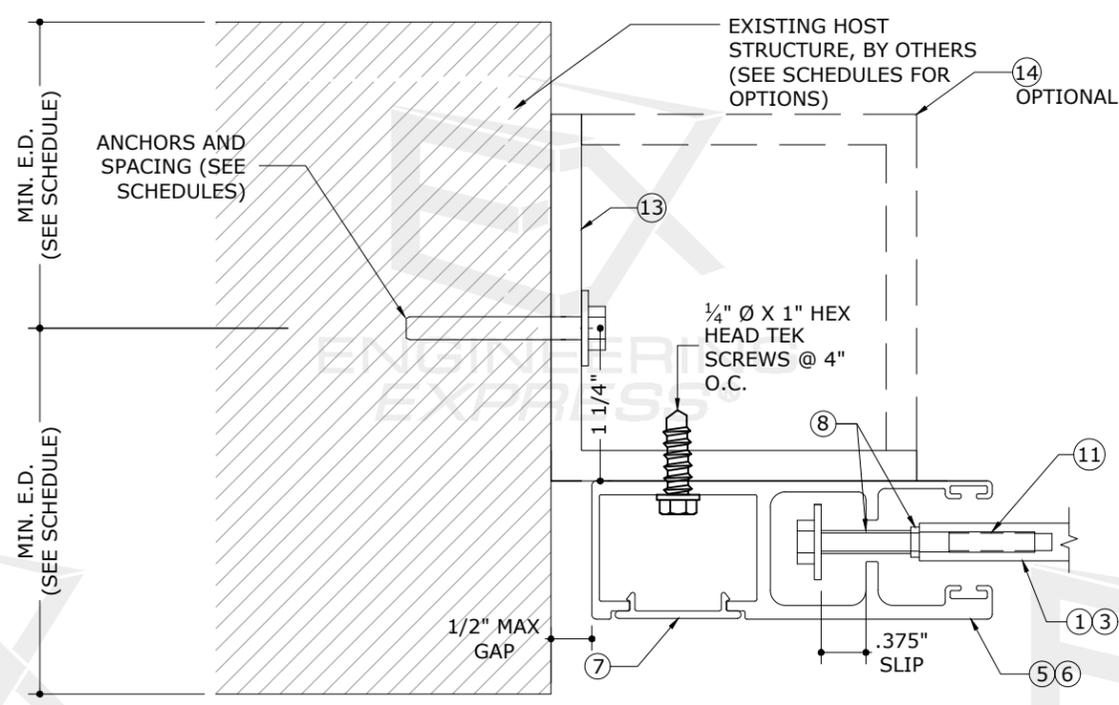
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PE# 0046549 CA# 9885

OCTOBER 9, 2023

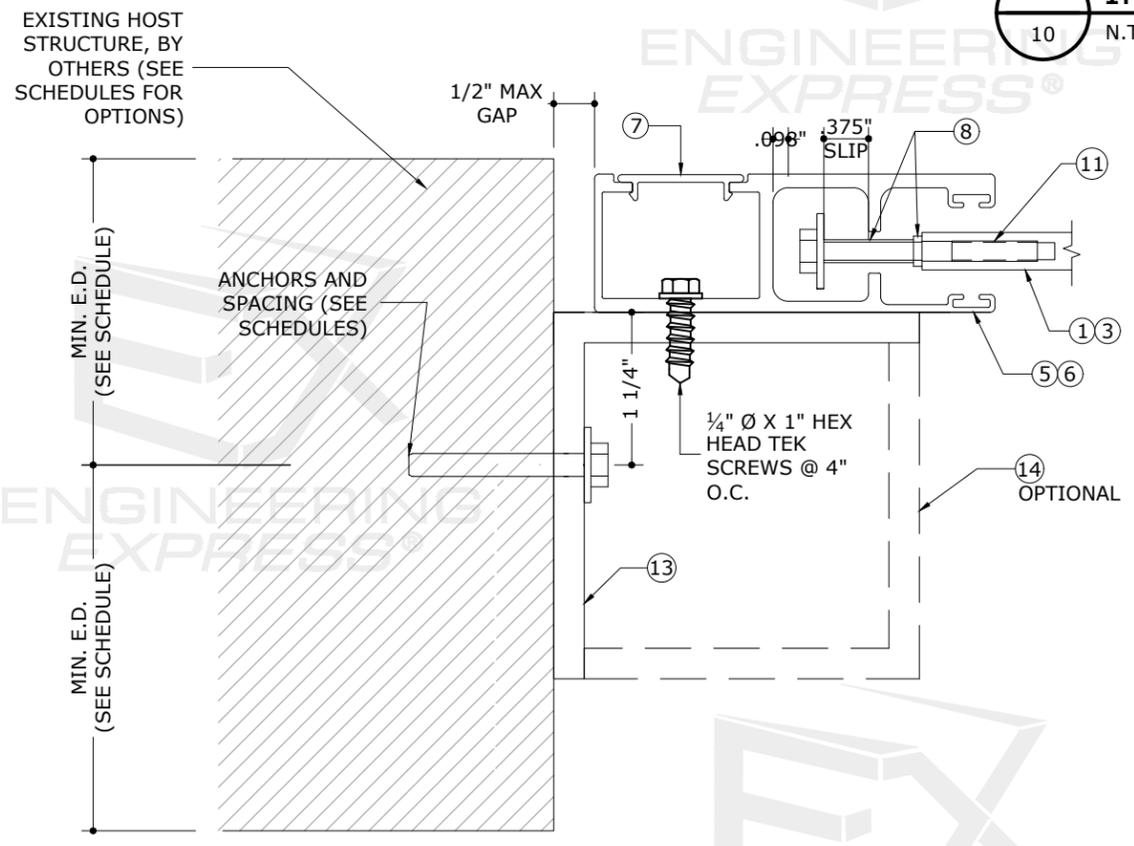
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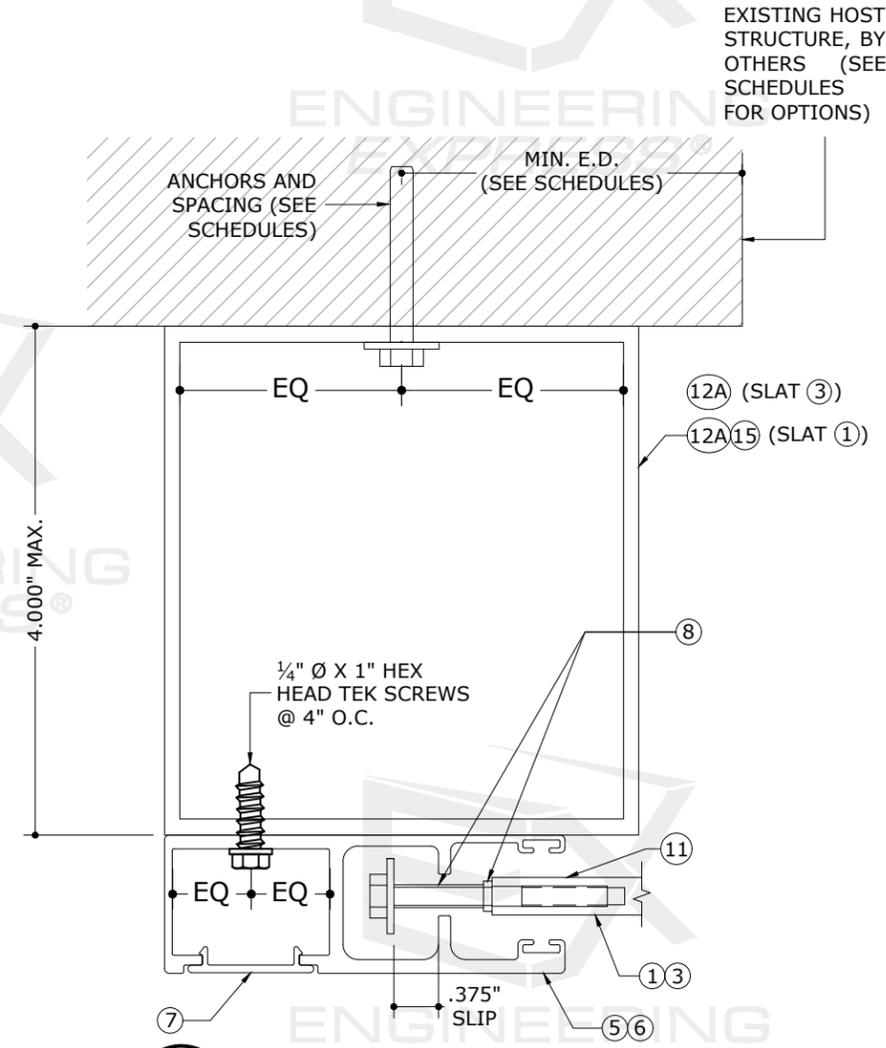
1 WALL MOUNT
10 N.T.S. SECTION VIEW



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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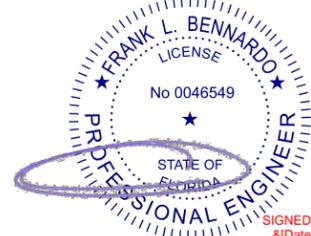
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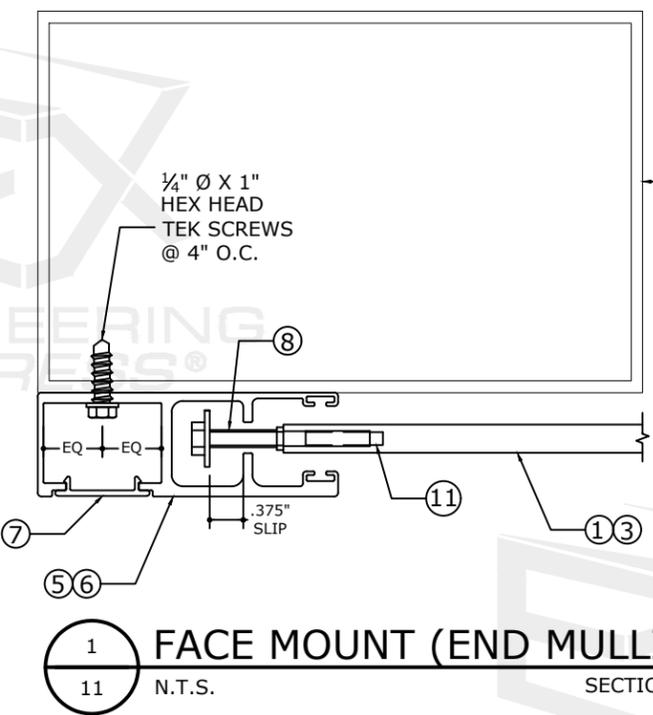
END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO ALUMINUM MULLIONS

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PE# 0046549 CA# 9885

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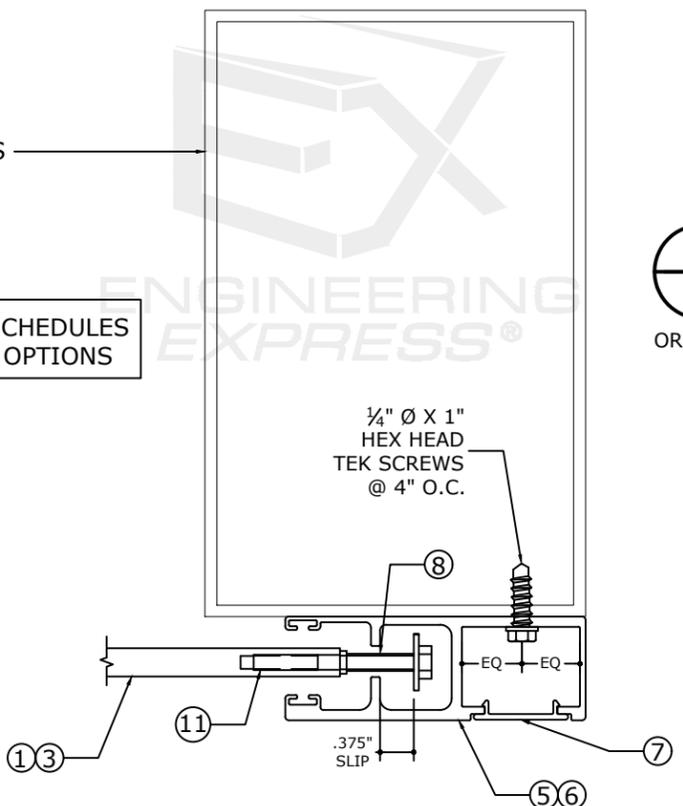


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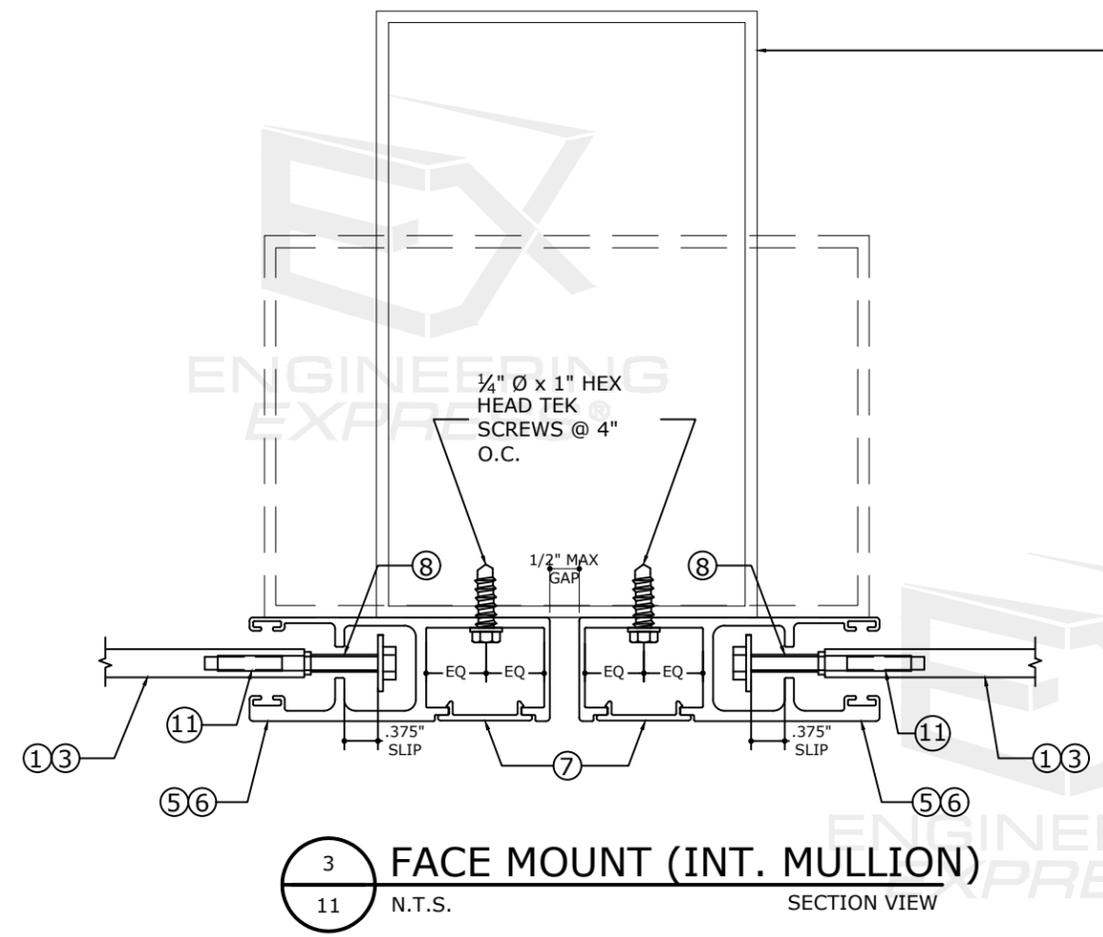


1 FACE MOUNT (END MULLION)
11 N.T.S. SECTION VIEW

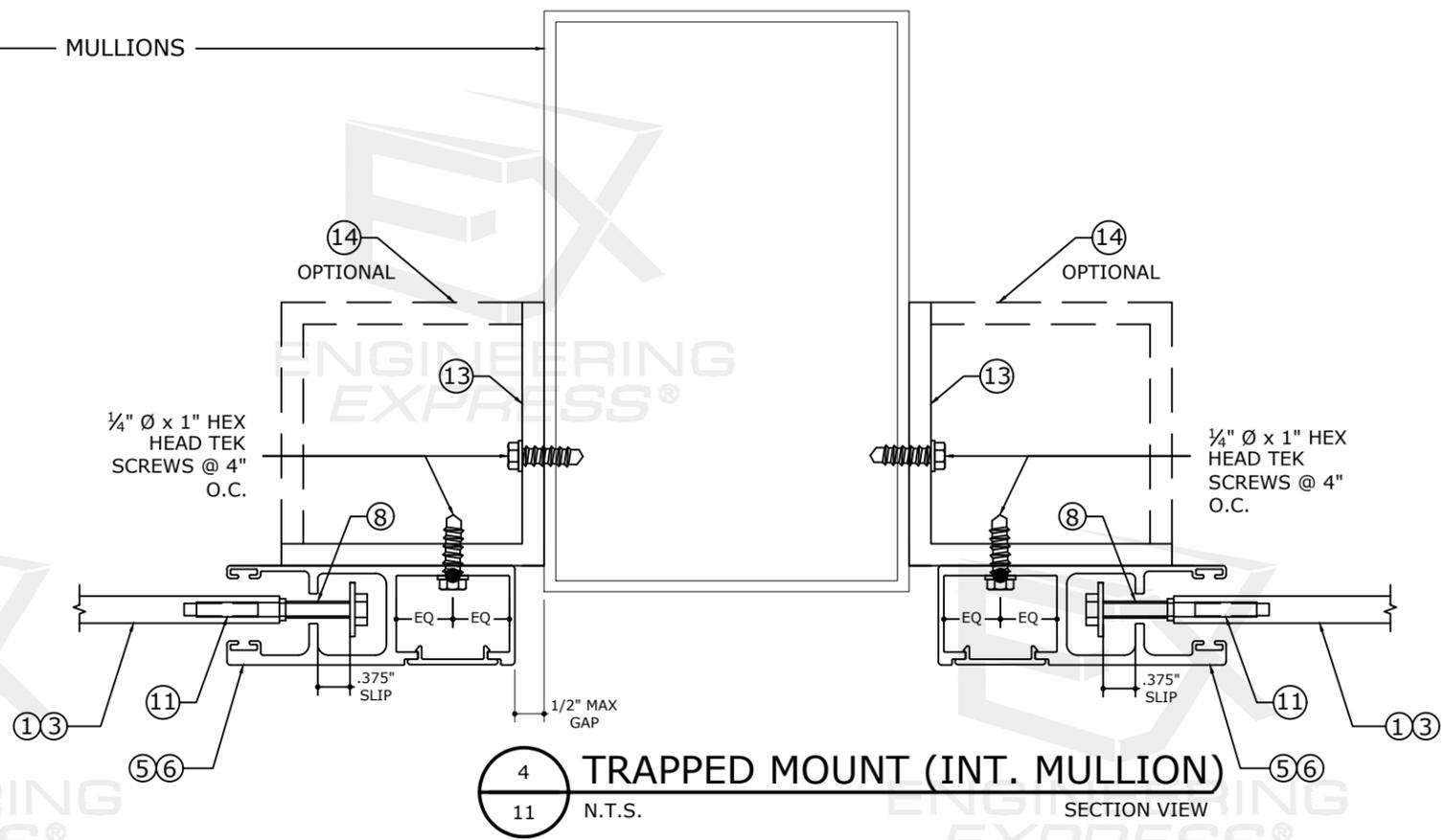
SEE MULLION SCHEDULES FOR MULLION OPTIONS



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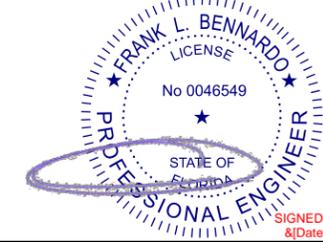
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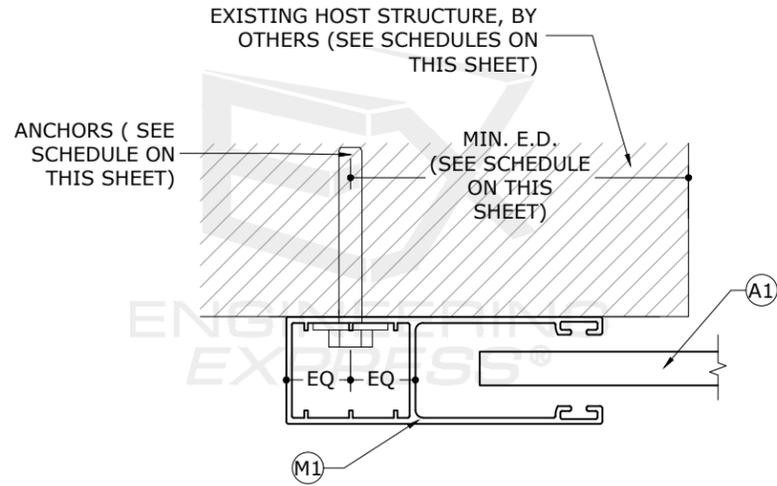
NON-END RETENTION (NER) SHUTTER ATTACHMENT TO HOST STRUCTURE

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

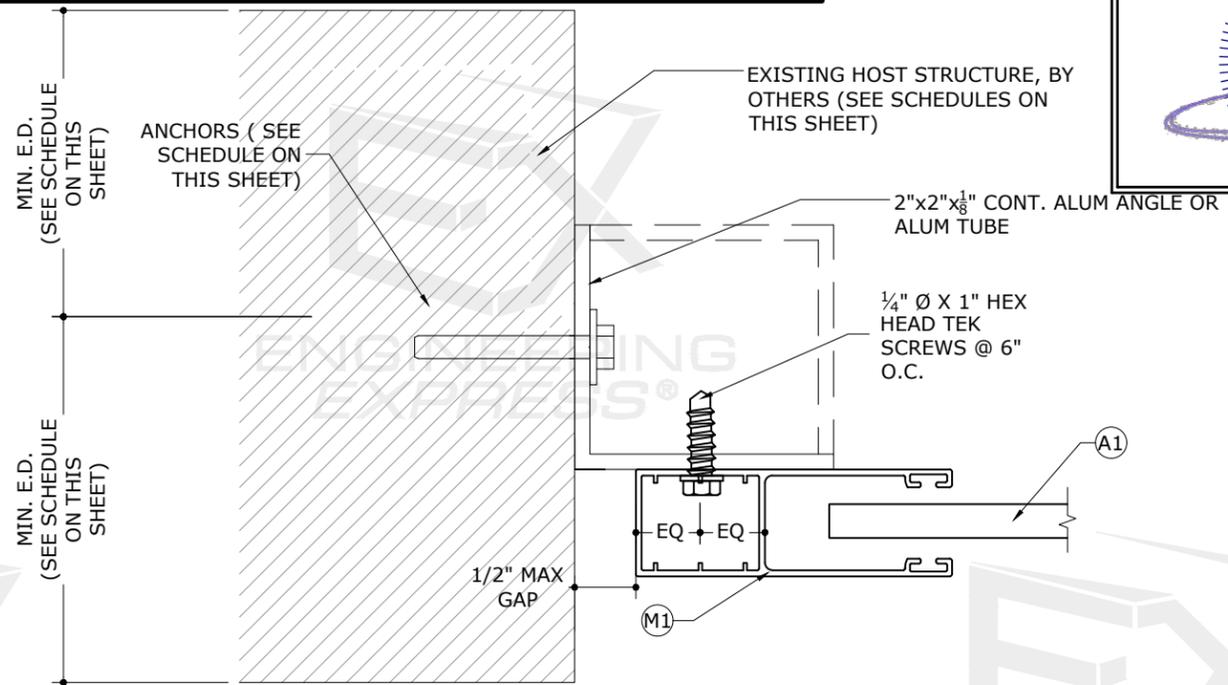
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1 WALL MOUNT
12 N.T.S. SECTION VIEW

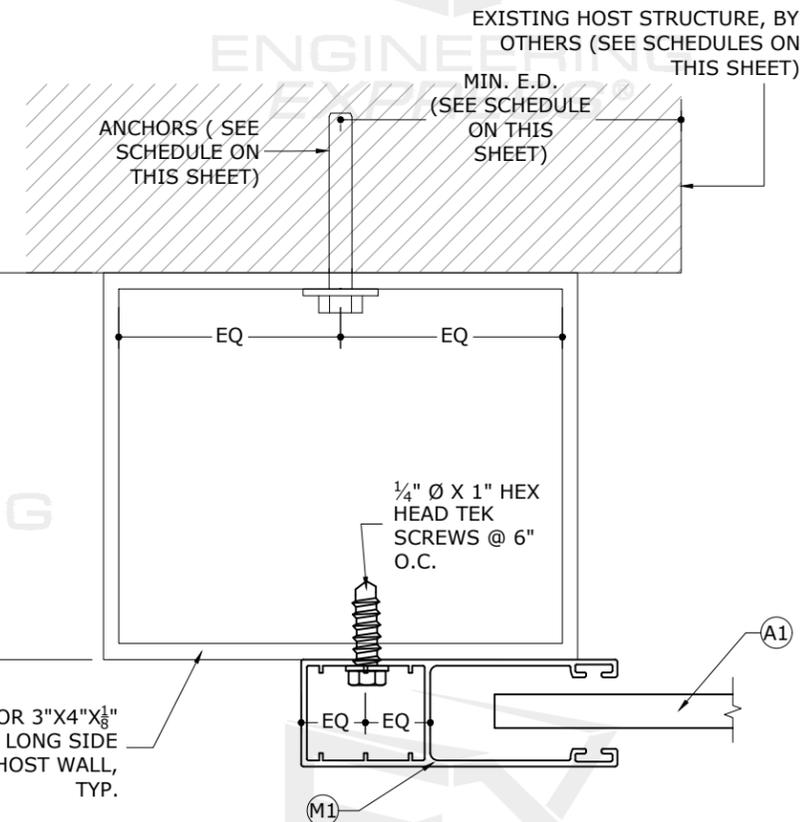


2 INSIDE/TRAPPED MOUNT
12 N.T.S. SECTION VIEW
*ATTACHMENT MAY BE REVERSED AS FIELD CONDITIONS DICTATE

ANCHOR TYPE 1	1/4" ITW TAPCON 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	1/4" ELCO/DEWALT ULTRACON 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	1/4" LAG OR WOOD SCREW 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

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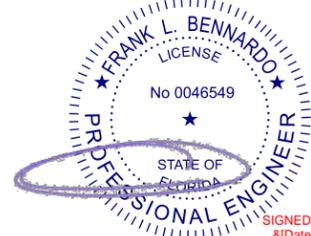
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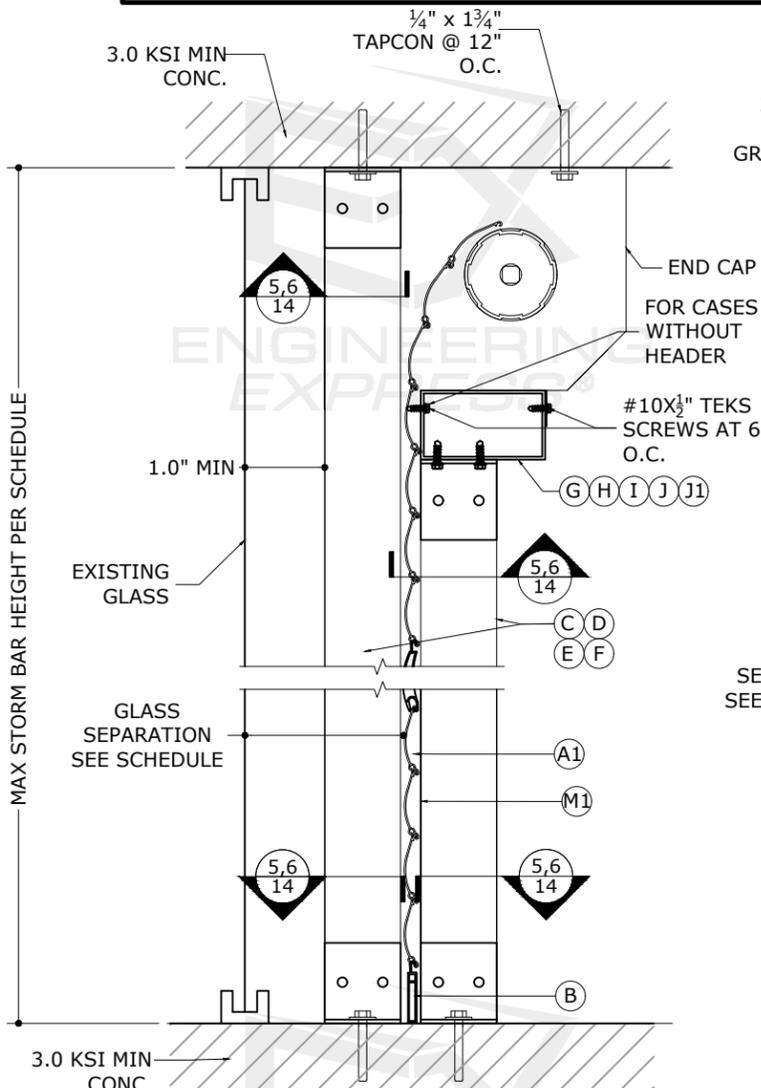
NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE

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PE# 0046549 CA# 9885

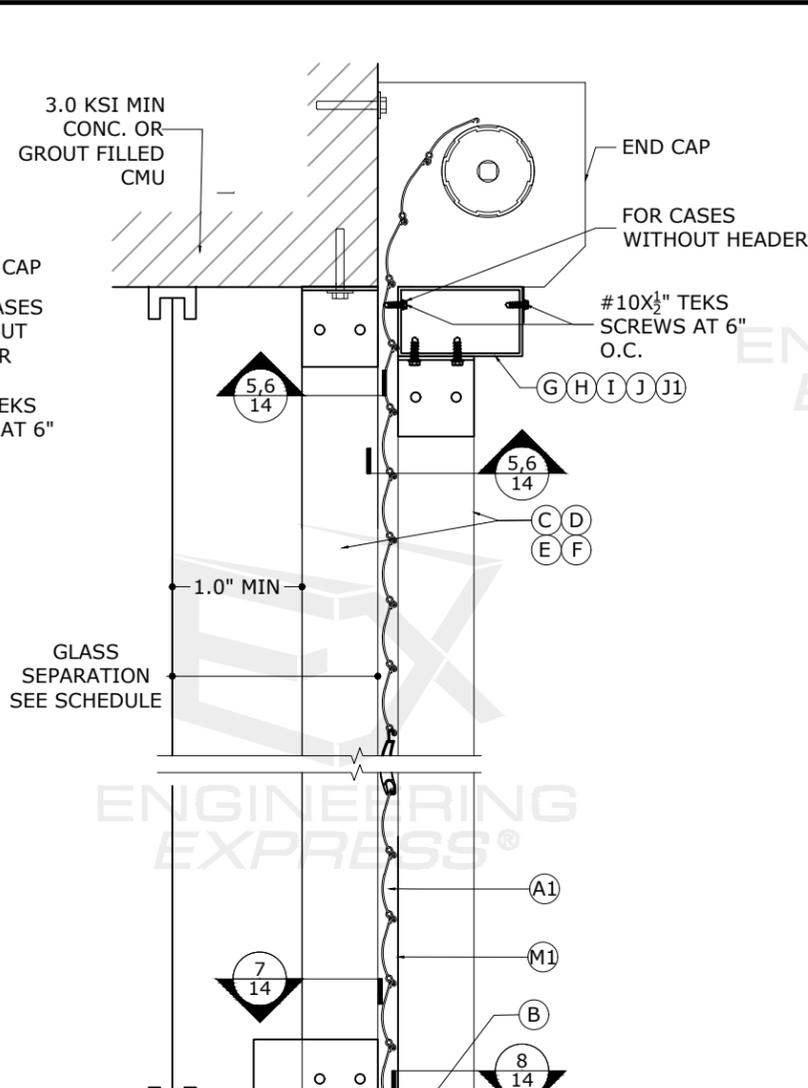
OCTOBER 9, 2023



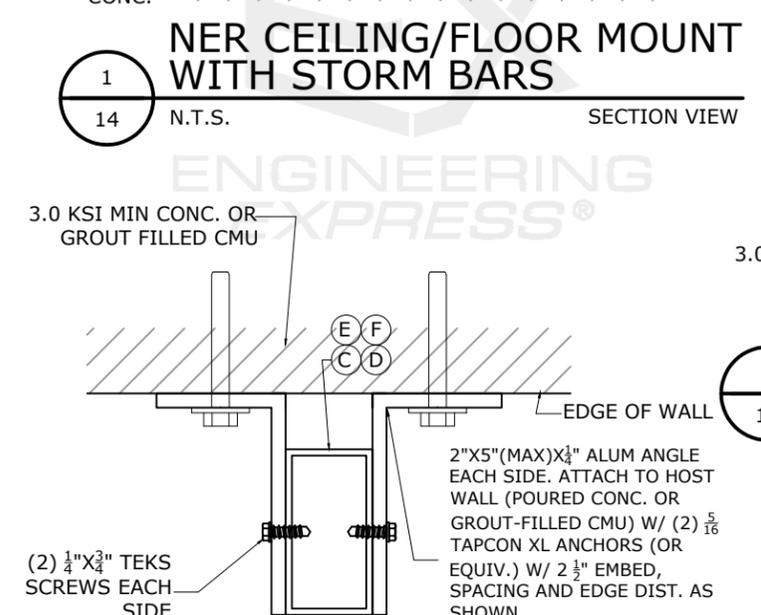
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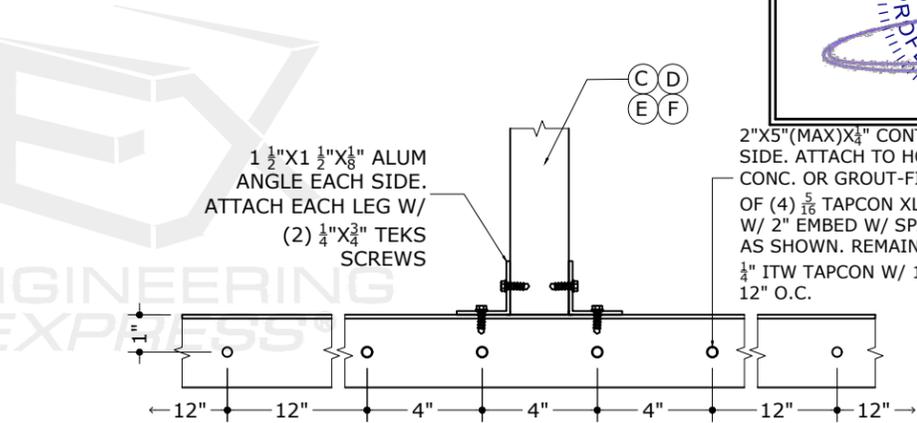
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14 N.T.S. SECTION VIEW



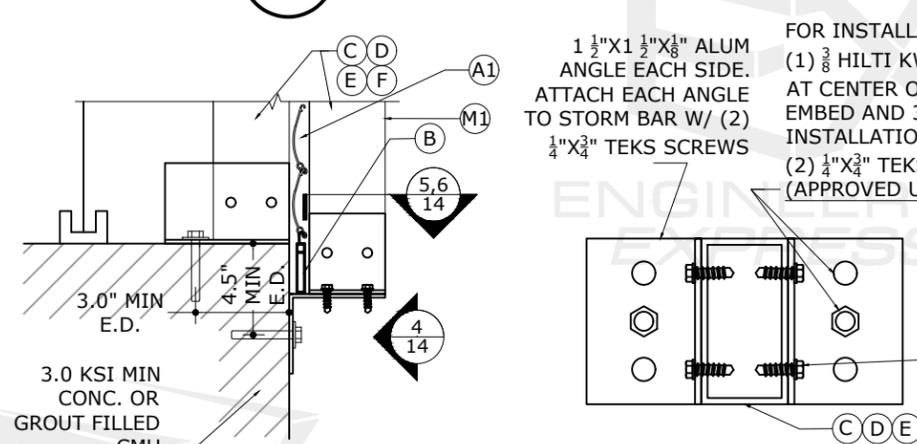
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14 N.T.S. SECTION VIEW



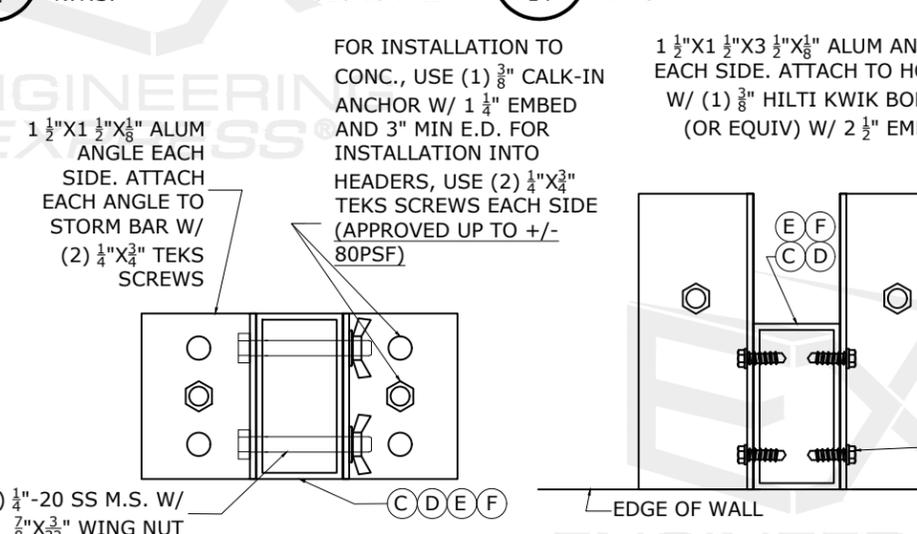
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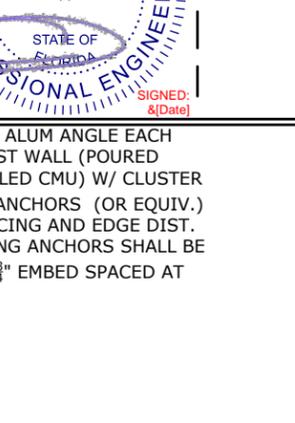
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14 N.T.S. SECTION VIEW



5
14 N.T.S. SECTION VIEW



6
14 N.T.S. SECTION VIEW



7
14 N.T.S. SECTION VIEW

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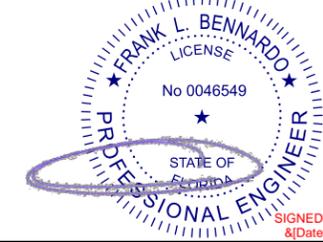
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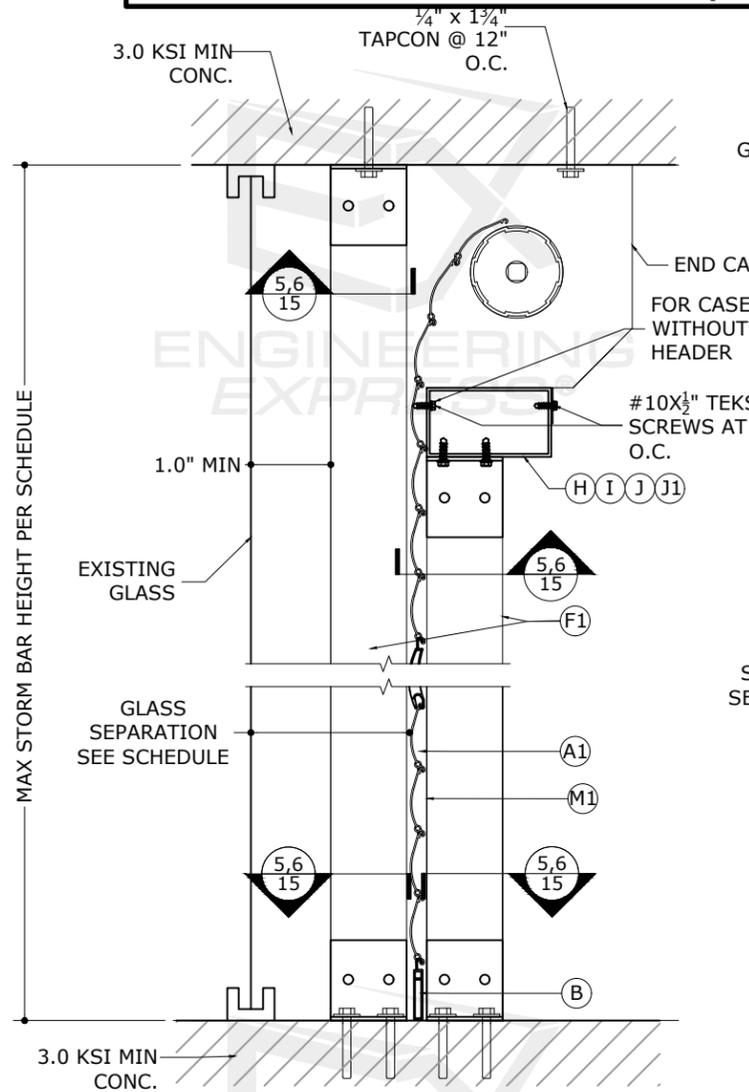
NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE (CONT'D)

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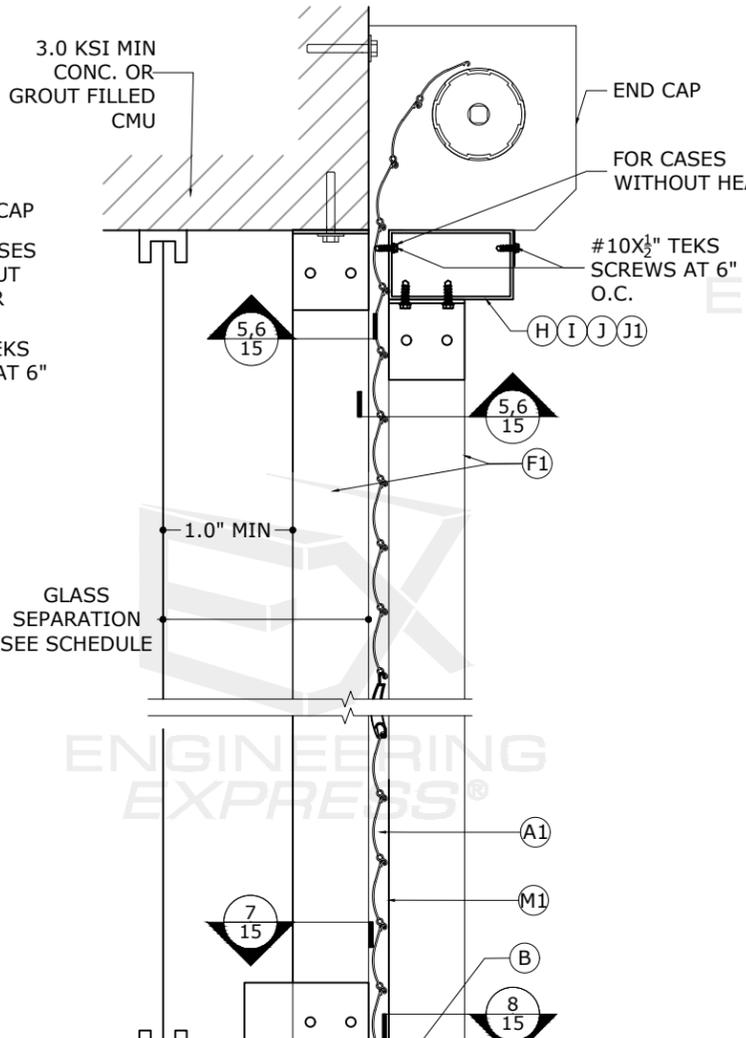
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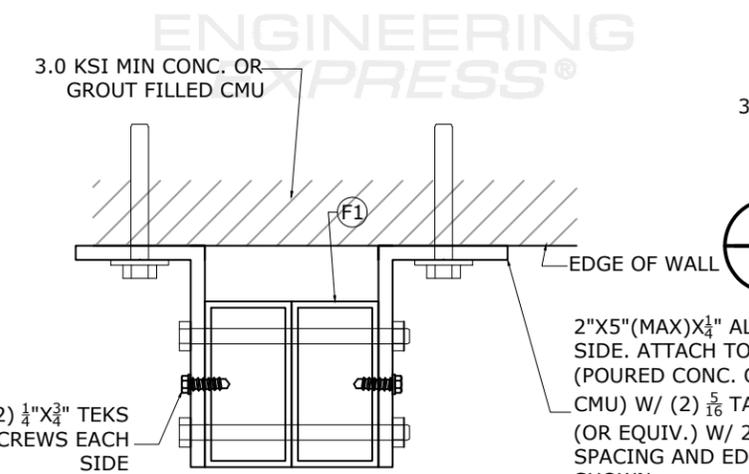
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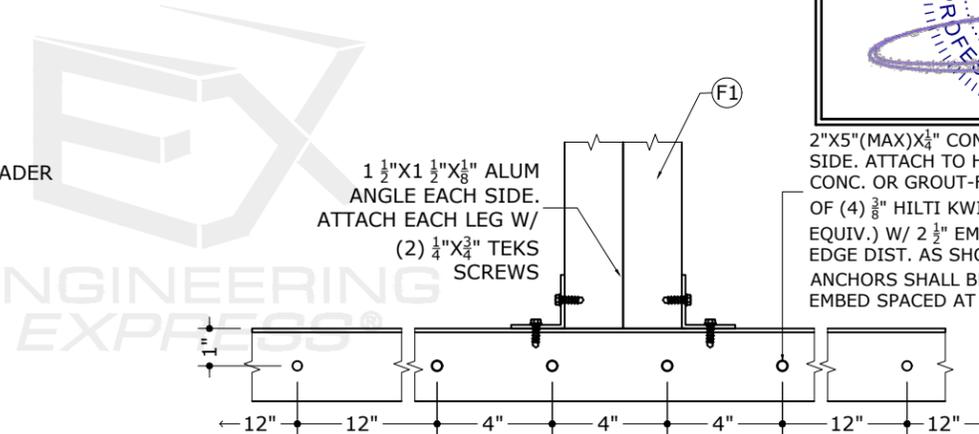
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15 N.T.S. SECTION VIEW
NER CEILING/FLOOR MOUNT WITH STORM BARS



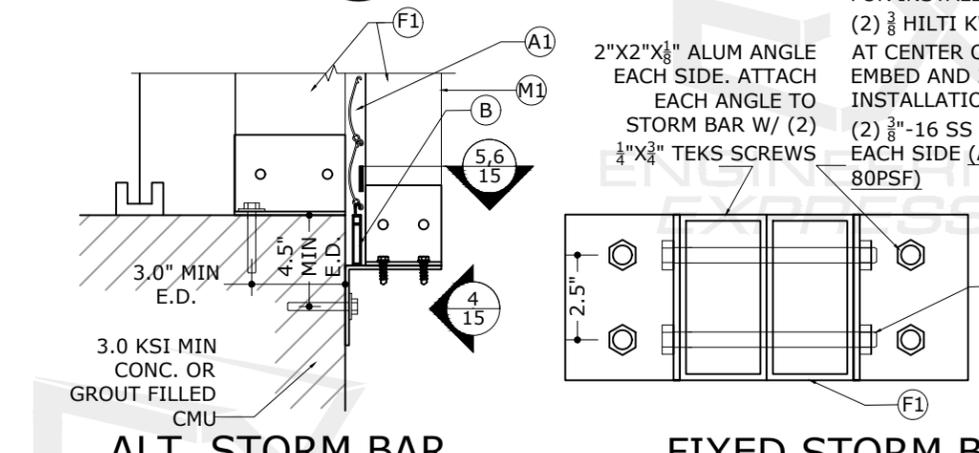
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15 N.T.S. SECTION VIEW
NER WALL MOUNT WITH STORM BARS



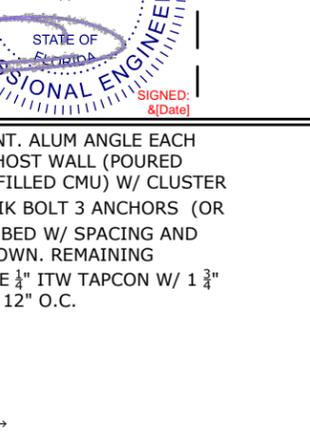
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15 N.T.S. SECTION VIEW
FIXED STORM BAR ATTACHMENT TO WALL



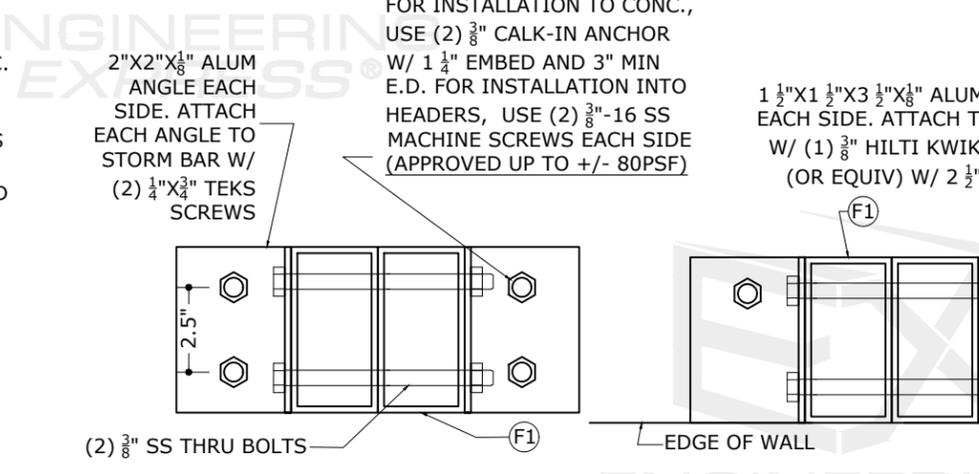
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ALT. STORM BAR WALL MOUNT CONN.



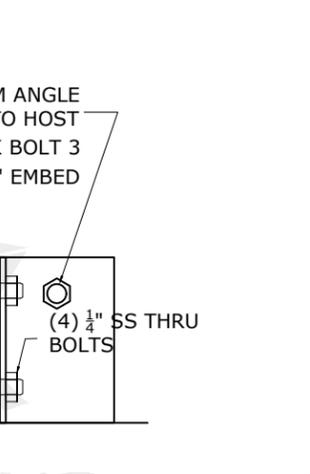
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15 N.T.S. SECTION VIEW
ALT. STORM BAR WALL MOUNT CONN.



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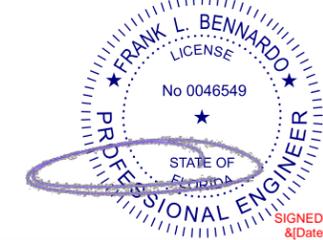
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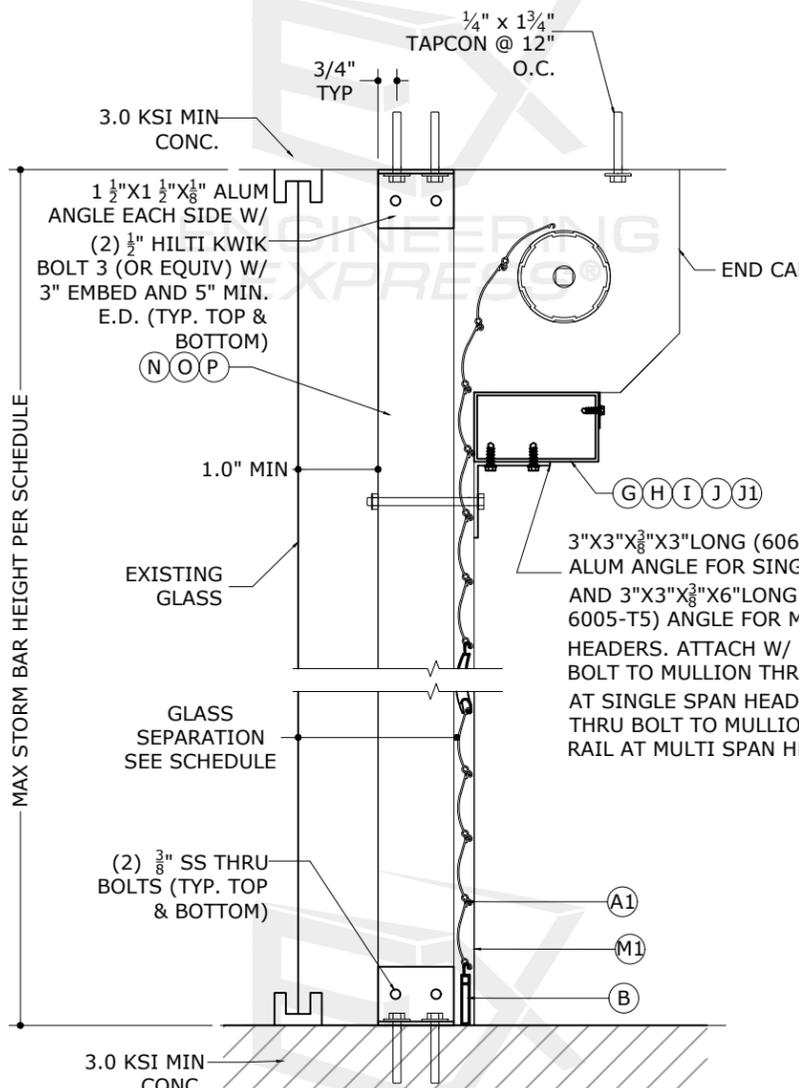
NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE (CONT'D)

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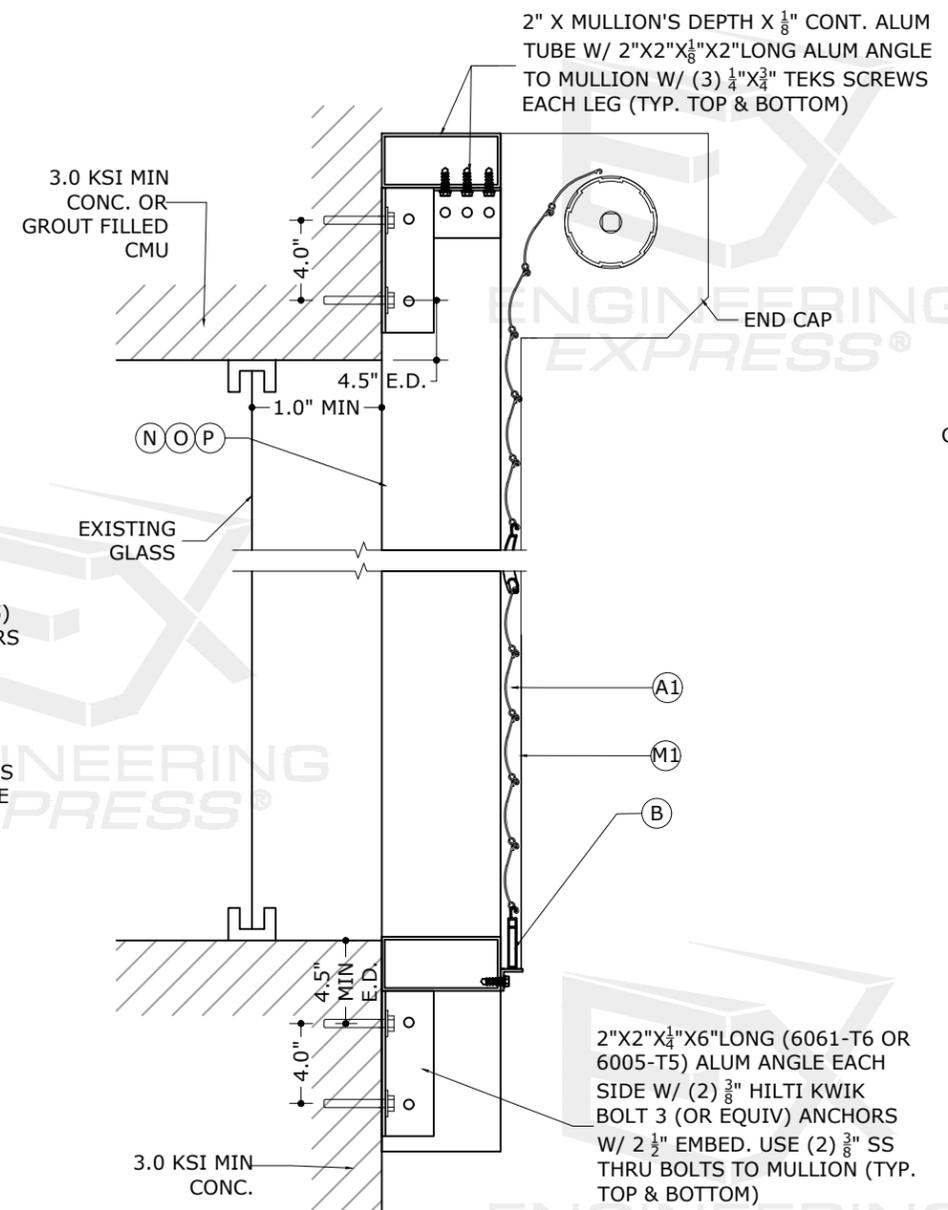
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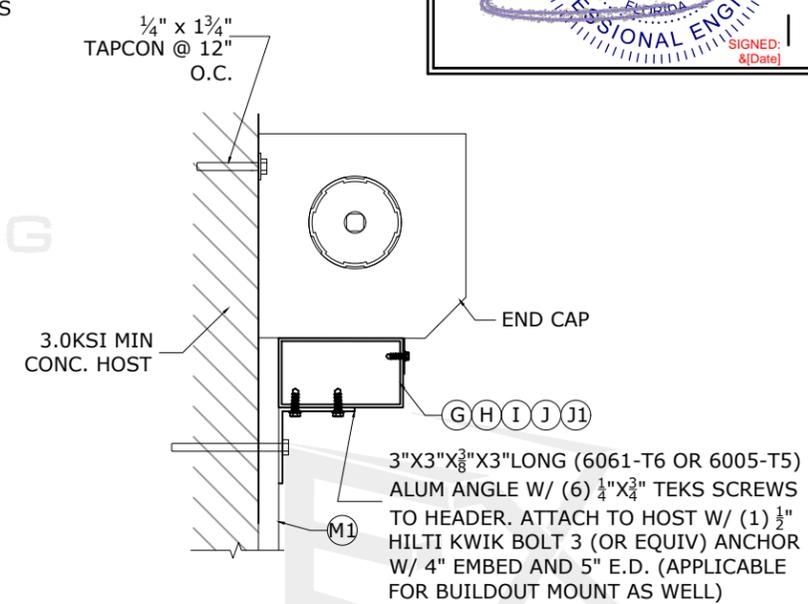
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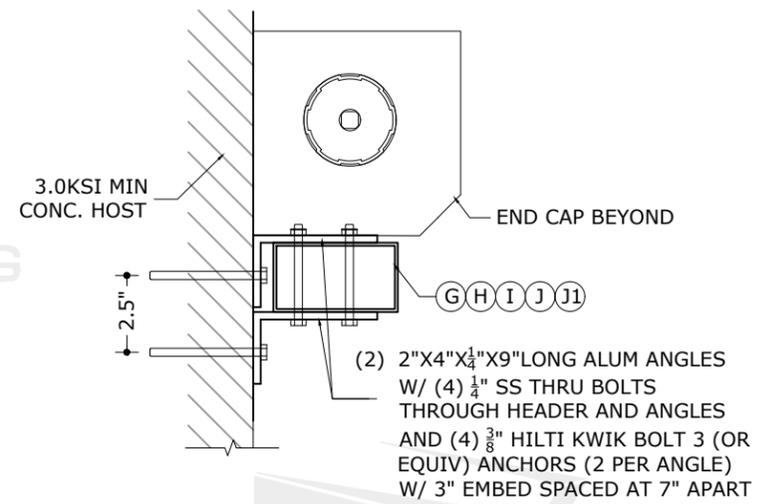
1
16 N.T.S. SECTION VIEW
NER CEILING/FLOOR MOUNT WITH MULLIONS



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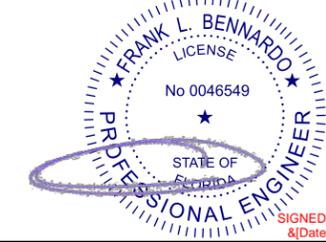
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NON-END RETENTION (NER) SHUTTER STORM BAR, HEADER & MULLION SCHEDULES

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"

FL 32029.1

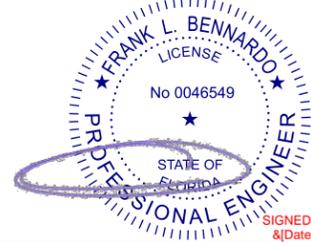
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 FLORIDA STATEWIDE APPROVAL (FSA FL#32029.1)

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 (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"

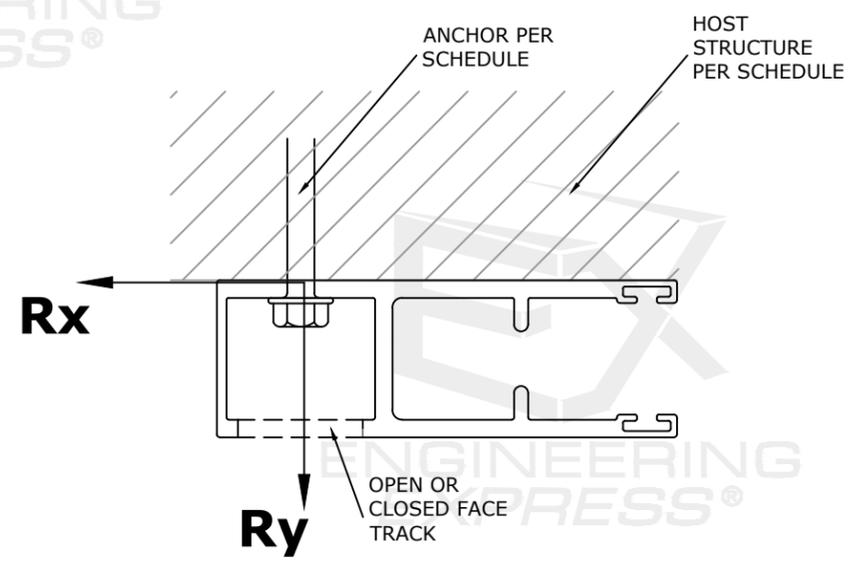
ANCHOR NOTES:

- 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



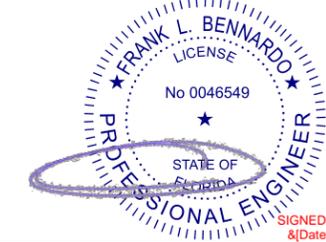
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 FLORIDA STATEWIDE APPROVAL (FSA FL #32029.1)

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

23-65182

SCALE: NTS UNLESS NOTED

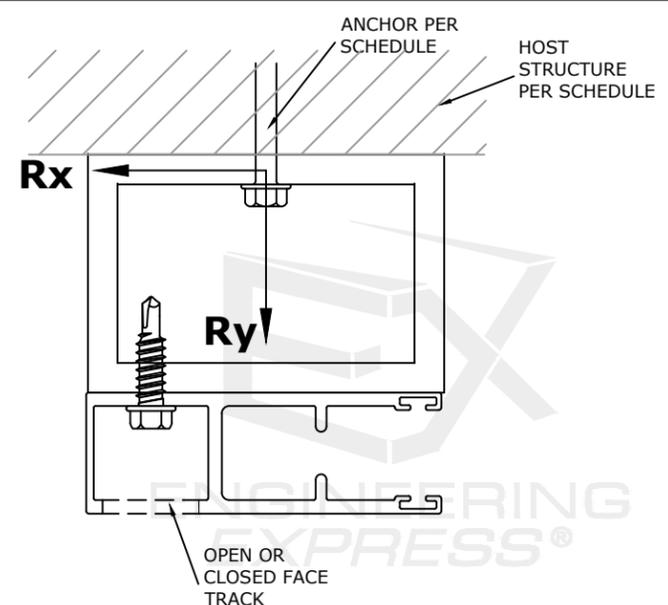


ANCHOR SCHEDULE: END RETENTION (ER) BUILD-OUT MOUNT (SINGLE WALL SLATS)

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"	6.0"	4.0"	3.0"	2.75"	3.25"	5.5"	5.5"	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"	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"	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"	4.0"	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"	3.75"	2.75"	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"	3.25"	2.5"	2.0"	4.5"	4.75"	6.0"	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"	4.25"	3.0"	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"	3.75"	2.75"	2.75"	5.25"	5.25"	6.0"	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"	5.9"	3.25"	2.5"	4.5"	4.75"	6.0"	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"	6.0"	4.5"	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"	4.0"	3.0"	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"	6.0"	3.5"	2.5"	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"	5.75"	3.25"	2.25"	4.5"	4.75"	6.0"	6.0"	6.0"	6.0"

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

BUILD-OUT 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

c:\users\milton\engineering express\production - documents\projects\23-65182 2023 product fbc update fl32029\work\2023 fbc\drawings & cad\23-65182a - cad.dwg 10/9/2023 10:02 AM MILTON

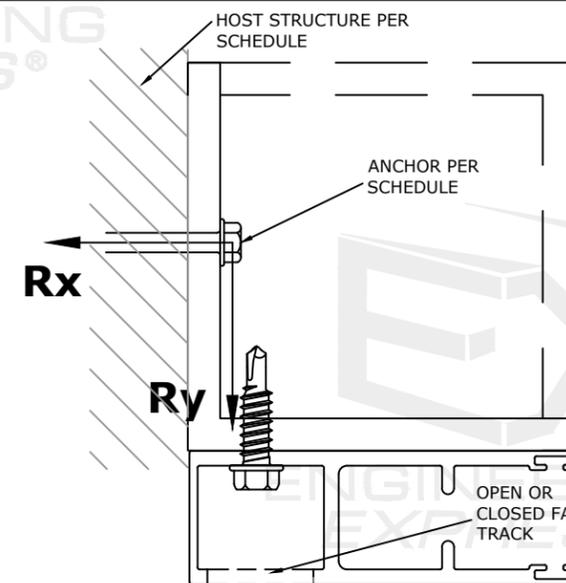


ANCHOR SCHEDULE: END RETENTION (ER) INTERIOR MOUNT (SINGLE WALL SLATS)

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"	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"	5.5"	6.0"	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"	5.0"	5.75"	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

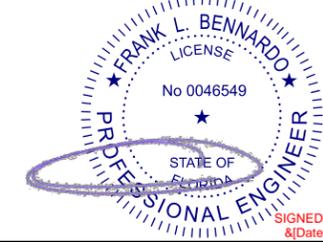
23-65182

SCALE: NTS UNLESS NOTED

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

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

OCTOBER 9, 2023



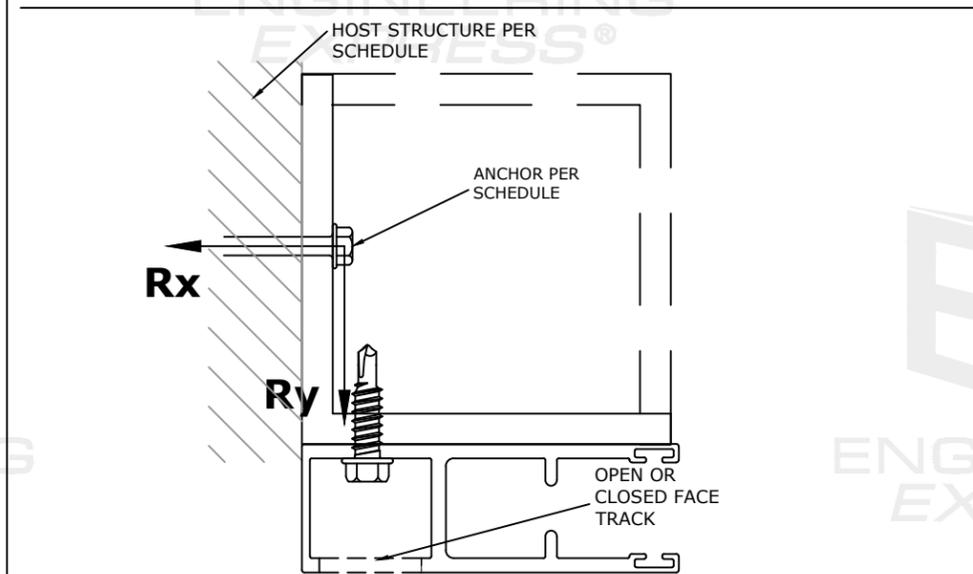
FL

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"	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"	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"	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"	6.0"
100"	+/- 120 PSF	1479.7 LB/FT	410.0 LB/FT	2.75"	3.0"	5.25"	5.25"	4.0"	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"
	+/- 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"	4.75"	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"	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"	2.5"	2.5"	4.25"	4.75"	6.0"	6.0"	6.0"	6.0"	6.0"
120"	+/- 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"	6.0"
	+/- 102 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"	2.0"	2.0"	2.0"	2.75"	3.25"	6.0"	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"	3.5"	2.25"	2.25"	6.0"	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"	2.5"	4.5"	5.25"	6.0"	6.0"	6.0"	6.0"	6.0"
144"	+/- 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"	6.0"
	+/- 77 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"	2.0"	2.0"	2.0"	3.0"	3.5"	6.0"	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"	2.0"	3.0"	2.5"	2.0"	2.0"	2.0"	2.5"	3.0"	6.0"	6.0"	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"	6.0"
160"	+/- 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"	6.0"
	+/- 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"	2.0"	2.0"	2.0"	3.0"	3.5"	6.0"	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"	2.0"	3.0"	2.5"	2.0"	2.0"	2.0"	2.5"	3.0"	6.0"	6.0"	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"	2.0"	2.5"	2.25"	2.25"	2.25"	2.25"	2.25"	2.5"	6.0"	6.0"	6.0"	6.0"	6.0"
192"	+/- 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"	6.0"
	+/- 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"	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"	2.0"	2.0"	2.0"	3.0"	3.5"	6.0"	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"	2.0"	3.0"	2.5"	2.5"	2.5"	2.5"	2.5"	3.0"	6.0"	6.0"	6.0"	6.0"	6.0"
192"	+/- 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"	6.0"
	+/- 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"	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"	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"	6.0"
192"	+/- 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"	2.0"	2.0"	2.0"	3.0"	3.5"	6.0"	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"	2.0"	3.0"	2.75"	2.75"	2.75"	2.75"	2.75"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

INTERIOR MOUNT DIRECTIVE



FL 32029.1

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

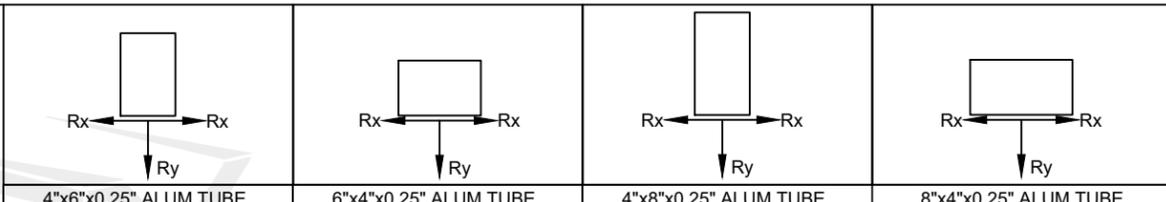
23-65182

SCALE: NTS UNLESS NOTED

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MULLION SCHEDULE: INTERMEDIATE MULLIONS



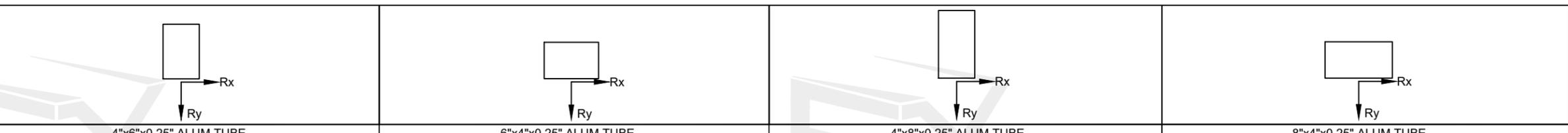
SLAT SPAN	DESIGN PRESSURE	4"x6"x0.25" ALUM TUBE		6"x4"x0.25" ALUM TUBE		4"x8"x0.25" ALUM TUBE		8"x4"x0.25" ALUM TUBE	
		MAX MULLION LENGTH	END REACTION Rt						
82"	+/- 40 PSF	144.0"	1640.0 LB						
	+/- 50 PSF	144.0"	2050.0 LB	141.0"	2007.4 LB	144.0"	2050.0 LB	144.0"	2050.0 LB
	+/- 60 PSF	144.0"	2460.0 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						
	+/- 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						
	+/- 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						
	+/- 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
+/- 60 PSF	144.0"	3000.0 LB	124.2"	2587.5 LB	144.0"	3000.0 LB	135.0"	2813.1 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
+/- 60 PSF	105.5"	3697.1 LB	1098.5 LB	3856.8 LB	104.4"	3660.6 LB	1087.7 LB	3818.8 LB	119.3"	4183.2 LB	1243.0 LB	4364.0 LB	113.5"	3979.9 LB	1182.5 LB	4151.8 LB	

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

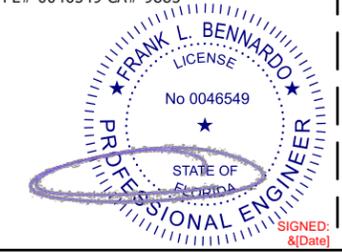
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END RETENTION (ER) DOUBLE WALL SLAT MULLION SCHEDULES



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MULLION SCHEDULE: END 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 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
	+/- 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.

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

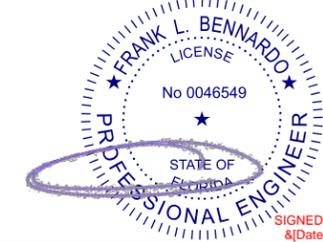
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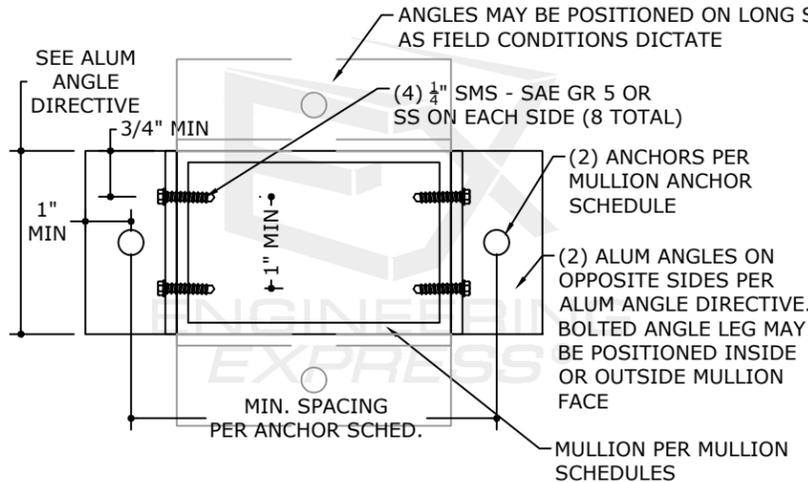
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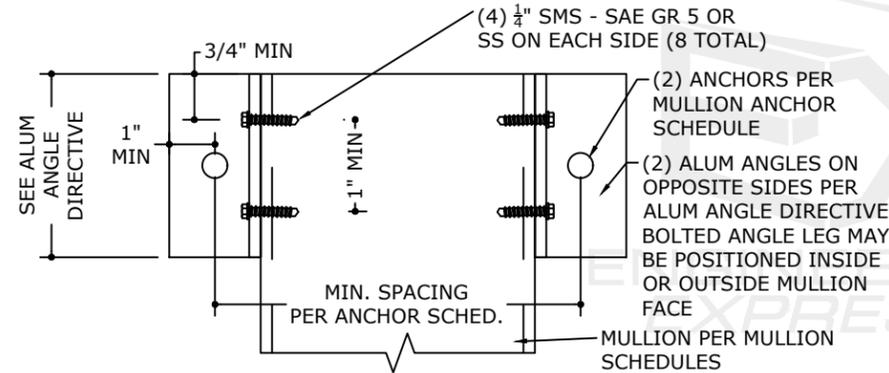
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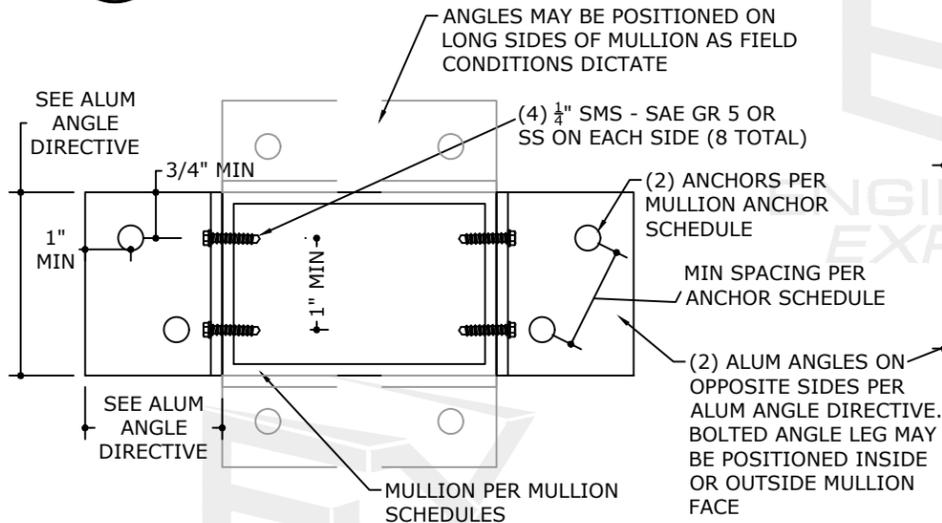
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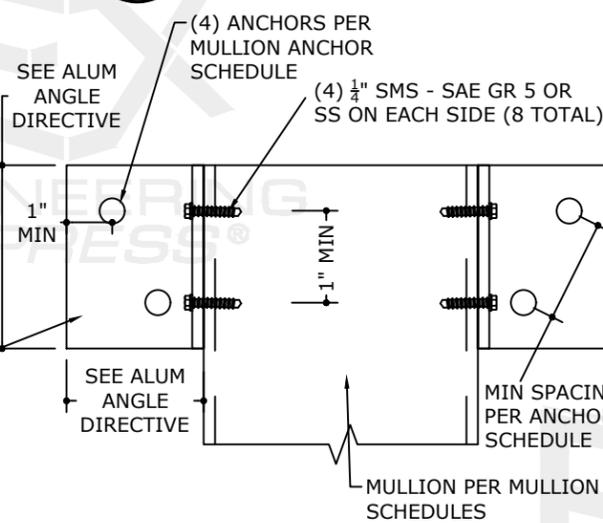
1A TRAPPED MOUNT OPTION 1
28 N.T.S.



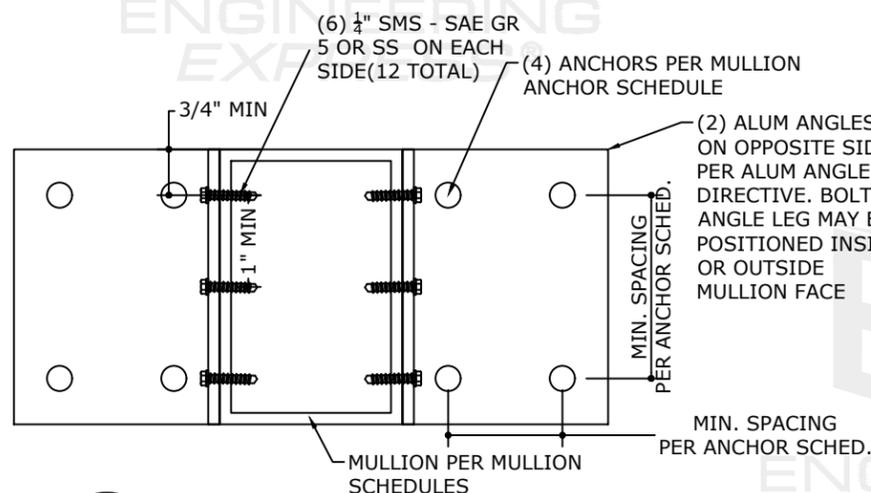
1B FACE MOUNT OPTION 1
28 N.T.S.



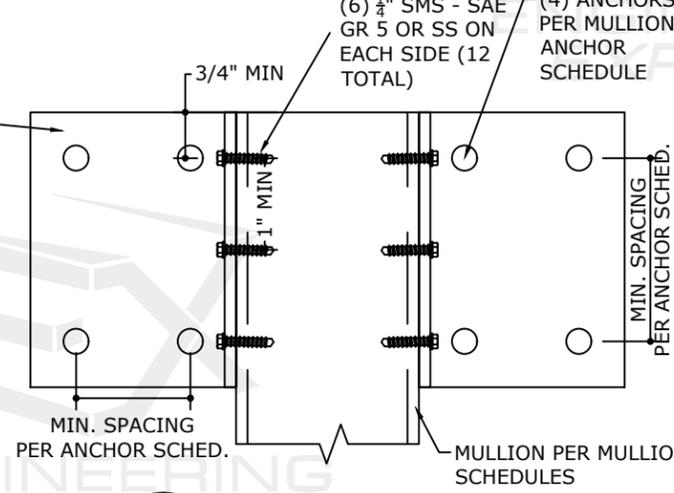
2A TRAPPED MOUNT OPTION 2
28 N.T.S.



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

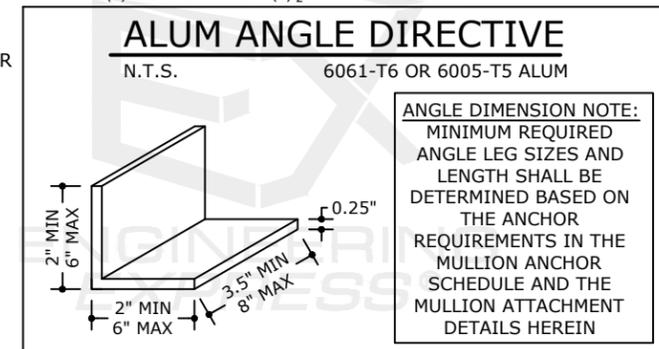
ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	CONNECTION CAPACITY	
				Tcap	Vcap
1/2" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2-1/2" EMBED TO 3KSI MIN. CONCRETE	6"	4.5"	1A/13, 1B/13	Tcap	3660 LB
	4.0"	4.5"	2A/13, 2B/13	Vcap	2249 LB
				Tcap	6442 LB
3/8" DEWALT SCREW BOLTS (OR EQUIV.) 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	2.0"	1.25"	1A/13, 1B/13	Vcap	604 LB
	5.0"	3.125"	1A/13, 1B/13	Tcap	3930 LB
				Vcap	906 LB
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK	3.75"	3.125"	2A/13, 2B/13	Tcap	1670 LB
	3.75"	3.125"	3A/13, 3B/13	Vcap	1700 LB
				Tcap	1820 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	2840 LB
	5.0"	2.5"	2A/13, 2B/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"	1A/13, 1B/13	Tcap	580 LB
	5.0"	2.5"	2A/13, 2B/13	Vcap	750 LB
				Tcap	1160 LB
5.0"	2.5"	3A/13, 3B/13	Vcap	1500 LB	
			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.



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

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