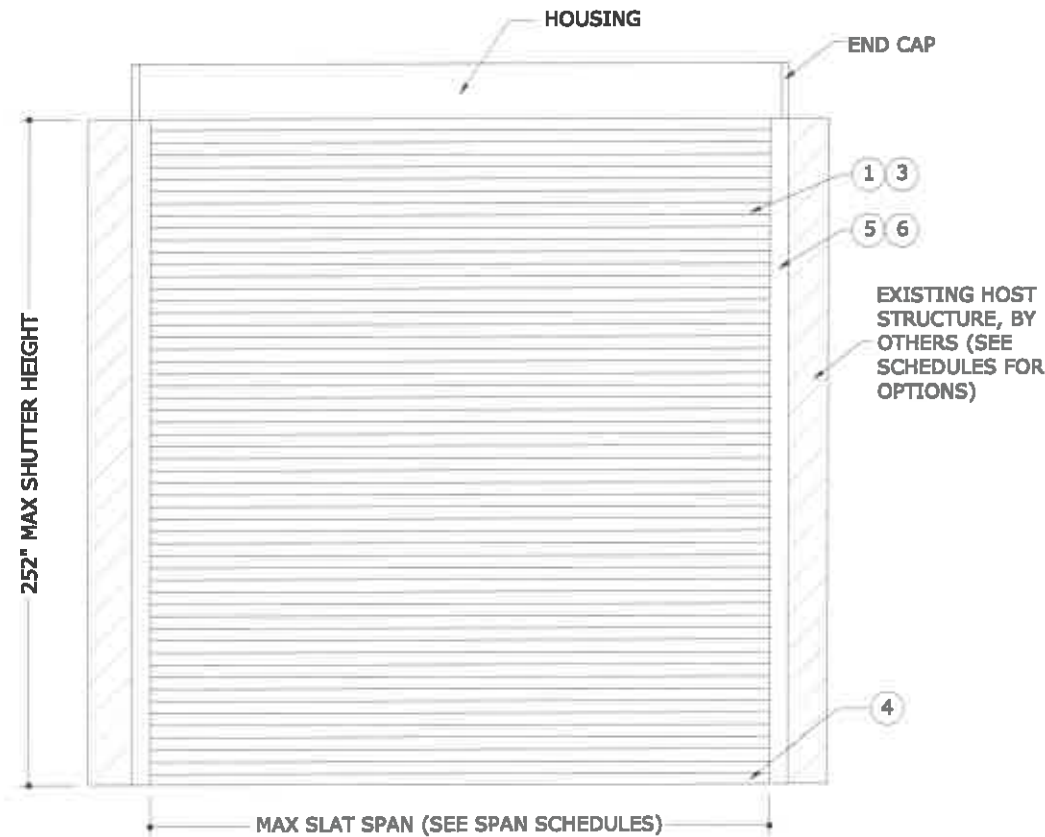


40mm SLAT BERTHA ROLL-UP HURRICANE SHUTTER

END RETENTION (ER) AND NON-END RETENTION (NER)



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"	8.2"	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"

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
98.0"	± 105.4 PSF
100.0"	± 102.2 PSF
105.0"	± 98.8 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"	± 78.6 PSF
155.0"	± 77.2 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"	± 48.5 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"
98.0"	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"	6.8"
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"

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.

GENERAL NOTES

1. THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE (IBC) AND THE INTERNATIONAL RESIDENTIAL CODE (IRC) FOR USE WITHIN THE STATE OF TEXAS PER TEXAS DEPARTMENT OF INSURANCE REQUIREMENTS. THIS PRODUCT HAS BEEN TESTED IN ACCORDANCE WITH ASTM E330, E1886, AND E1996 AND TAS 201, 202 & 203 STANDARDS.
2. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM. WIND LOAD DURATION FACTOR Cd=1.6 HAS BEEN USED FOR WOOD ANCHOR DESIGN.
3. 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 INTERNATIONAL 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.
4. DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.

5. 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.
6. ROLL-UP MECHANISM AND HOOD ASSEMBLY ARE NOT PART OF THIS APPROVAL.
7. 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.
8. THE STRUCTURAL ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS BY THIS SYSTEM SHALL BE VERIFIED BY OTHERS.

9. ALL EXTRUSIONS SHALL BE MINIMUM 6063-T6 ALUMINUM ALLOY, UNLESS NOTED OTHERWISE.
10. EACH SHUTTER ASSEMBLY SHALL BEAR A PERMANENT LABEL ON THE BOTTOM OF THE HOOD FACING THE EXTERIOR, OR ANYWHERE ELSE ALLOWED PER IBC 2018 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 TDI EVALUATED
11. 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.
12. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.



FRANK L. BENNARDO
96064
CORPORATE OFFICE
160 SW 12th AVE, SUITE 106
DEERFIELD BEACH, FL 33442
P. (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

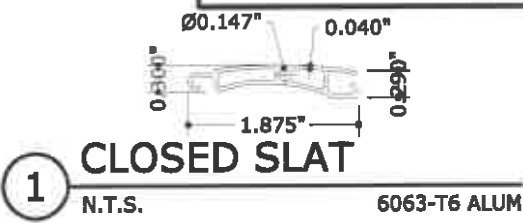
AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

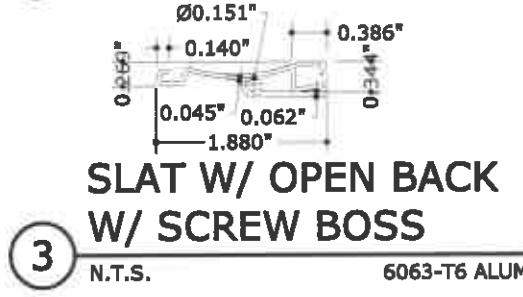
DATE	DATE	DATE	DATE
1/15/2020	1/15/2020	1/15/2020	1/15/2020
1/15/2020	1/15/2020	1/15/2020	1/15/2020

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1 OF 28

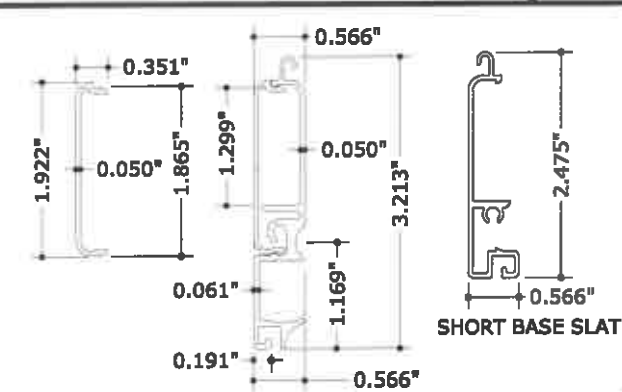
END RETENTION (ER) COMPONENTS



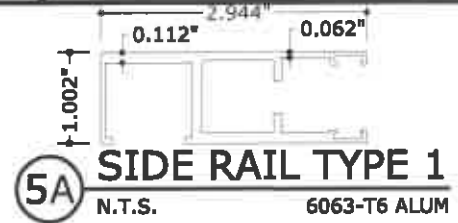
1 CLOSED SLAT
N.T.S. 6063-T6 ALUM



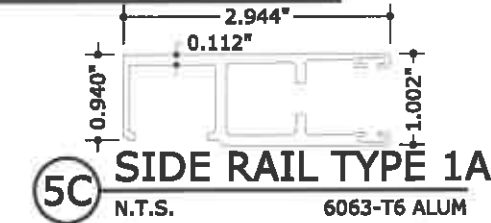
3 SLAT W/ OPEN BACK W/ SCREW BOSS
N.T.S. 6063-T6 ALUM



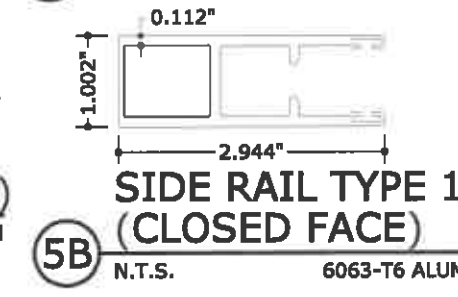
4 BASE SLAT (ALL OPTIONS)
N.T.S. 6063-T6 ALUM



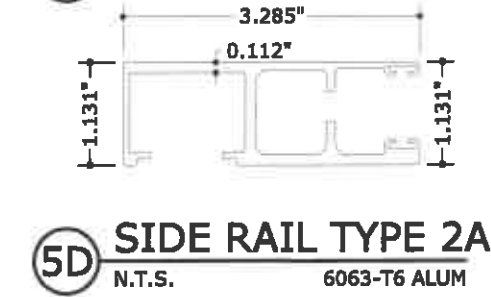
5A SIDE RAIL TYPE 1
N.T.S. 6063-T6 ALUM



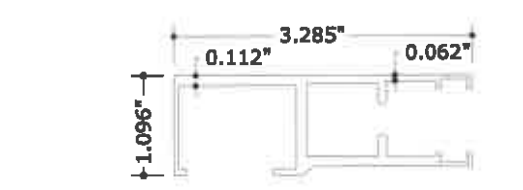
5C SIDE RAIL TYPE 1A
N.T.S. 6063-T6 ALUM



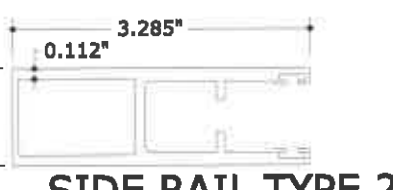
5B SIDE RAIL TYPE 1 (CLOSED FACE)
N.T.S. 6063-T6 ALUM



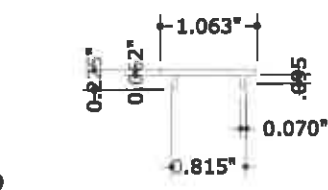
5D SIDE RAIL TYPE 2A
N.T.S. 6063-T6 ALUM



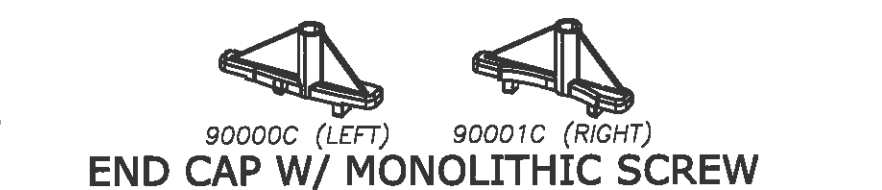
6A SIDE RAIL TYPE 2
N.T.S. 6063-T6 ALUM



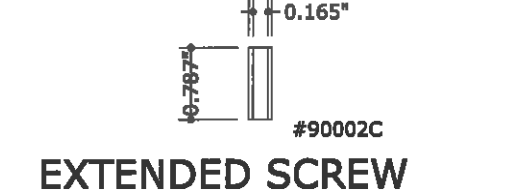
6B SIDE RAIL TYPE 2 (CLOSED FACE)
N.T.S. 6063-T6 ALUM



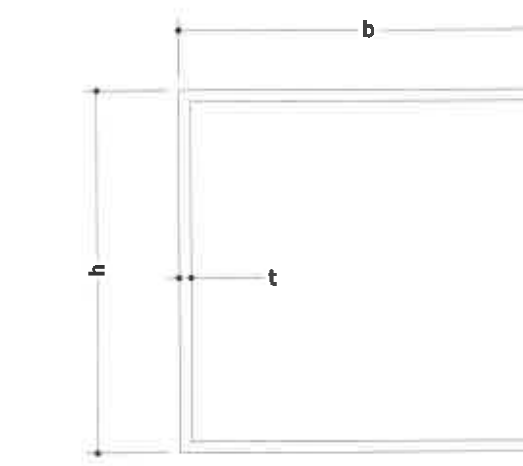
7 SNAP CAP
N.T.S. 6063-T6 ALUM



8 END CAP W/ MONOLITHIC SCREW SLEEVE (LEFT AND RIGHT SHOWN)
N.T.S. RIGID NYLON, 76-78 TYPE "O" SHORE HARDNESS



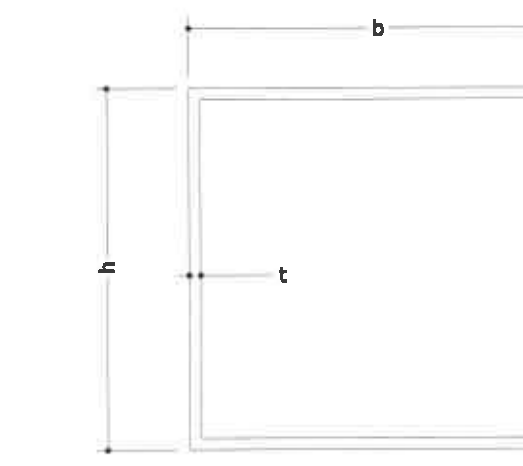
9 EXTENDED SCREW SLEEVE W/O END CAP
N.T.S. RIGID NYLON, 76-78 TYPE "O" SHORE HARDNESS



BUILD-OUT MOUNTED TUBES

N.T.S. 6063-T6

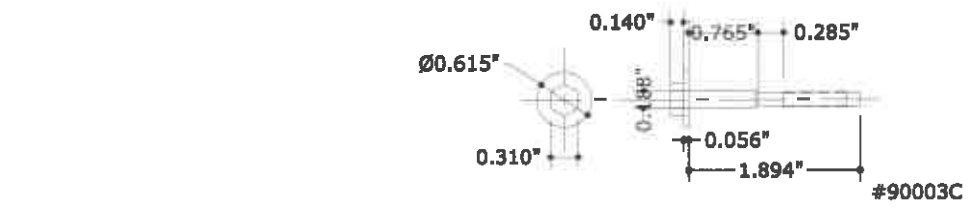
B.O TUBES		b	h	t
12	WOOD	3"	2" MAX.	0.125"
12A	CONC./BLOCK	3"	4" MAX.	0.125"
15	CONC./BLOCK	4"	4" MAX.	0.250"



MULLIONS

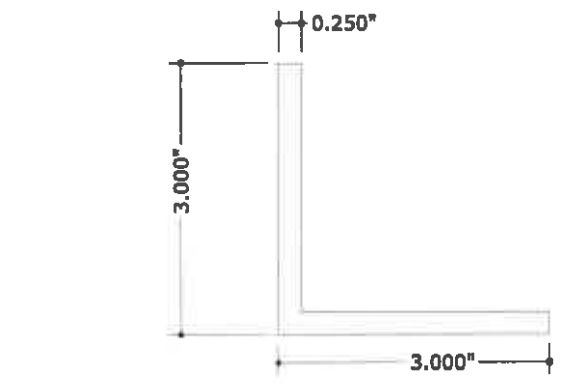
N.T.S. 6061-T6 OR 6005-T5

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

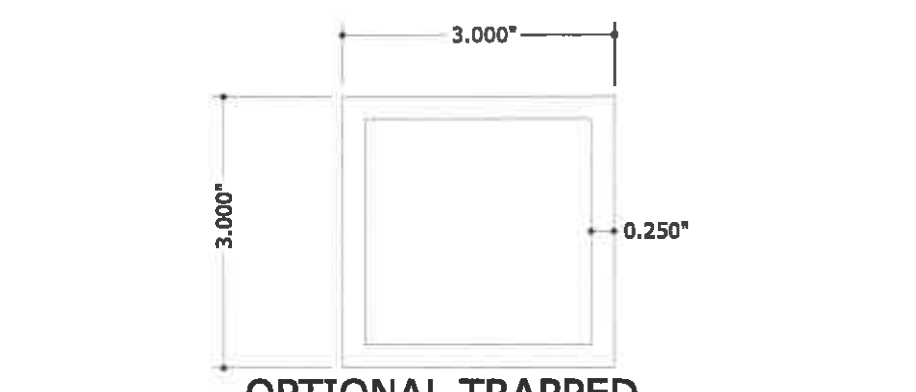


11 SCREW AT EVERY OTHER SLAT, INCLUDING BASE SLAT FOR POURED CONCRETE, GROUTED BLOCK & WOOD INSTALLATIONS

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 TRAPPED ANGLE
N.T.S. 6063-T6 ALUM



14 OPTIONAL TRAPPED MOUNTED TUBE TO (13)
N.T.S. 6063-T6 ALUM



FRANK BENNARDO, P.E.
160 SW 12th AVE, SUITE 6
DEERFIELD BEACH, FL 33442
P: (561) 354-0660
E: FRANK@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407
40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

REMARKS	DATE
INIT ISSUE	1/8/2020
CHKD	1/8/2020
DRWN	1/8/2020
RWN	1/8/2020
RWN	1/8/2020
RWN	1/8/2020
RWN	1/8/2020

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04/27/2020 - 11:24am ridn C:\Users\rican\OneDrive\Engineering\Express\Production - Documental\Projects\19-18642 ASSA & EMS - 40mm ER Slat Bertha Roll Up Hurricane Shutter SHU-217\WPYTDI Submittal\19-18642b 40mm ER-NER Roll Shutter.dwg

NON-END RETENTION (NER) COMPONENTS



FRANK BERNARDO, P.E.
 04/27/2020

FRANK L. BERNARDO
 96065
 LICENSED PROFESSIONAL ENGINEER
 ENGINEERING EXPRESS
 CORPORATE OFFICE:
 160 SW 12th AVE, SUITE 1000
 DEERFIELD BEACH, FL 33442
 P: (561) 354-0660
 T: (561) 354-0660
 E: FRANK@ENGINEERINGEXPRESS.COM
 WWW.ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
 4268 West Roads Dr.
 West Palm Beach, FL 33407
 40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
 TEXAS DEPARTMENT OF INSURANCE

REMARKS	DATE
INIT ISSUE	1/10/2020
TD	4-27-2020

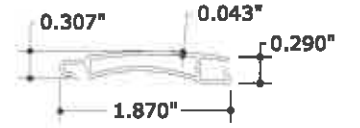
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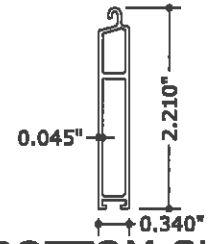
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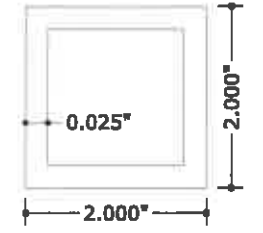
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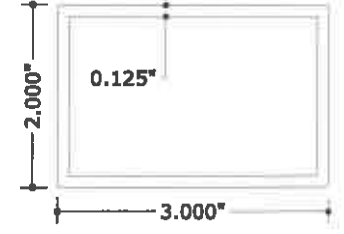
A1 NER TYPE 2 SLAT
 N.T.S. 6063-T6 ALUM



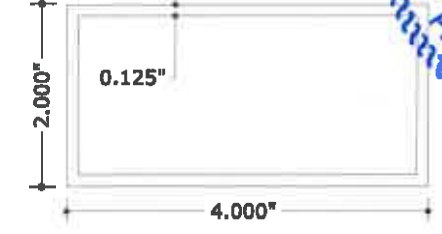
B NER BOTTOM SLAT
 N.T.S. 6063-T6 ALUM



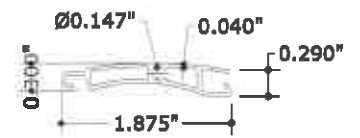
C NER TYPE 1 STORM BAR
 N.T.S. 6063-T6 ALUM



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

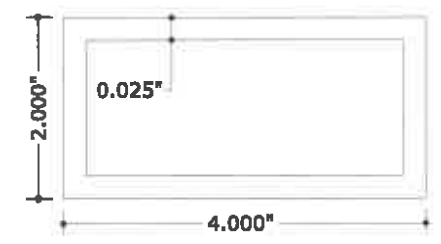


E NER TYPE 3 STORM BAR
 N.T.S. 6063-T6 ALUM

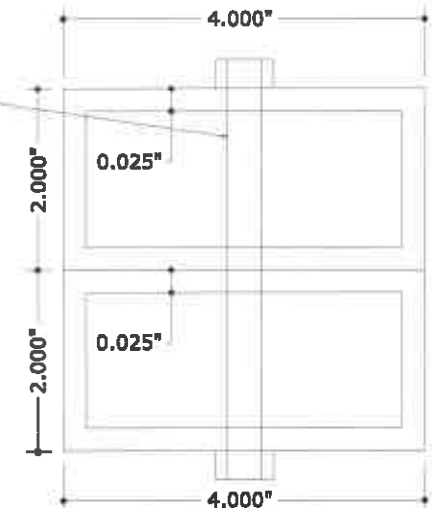


1 CLOSED SLAT
 N.T.S. 6063-T6 ALUM

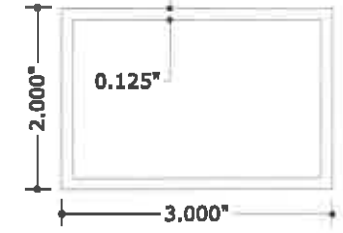
3/8"-16X4 1/2" SS
 THRU BOLTS OR CAP
 SCREWS AT 24" O.C.
 AND 10" MAX FROM
 ENDS, TYP.



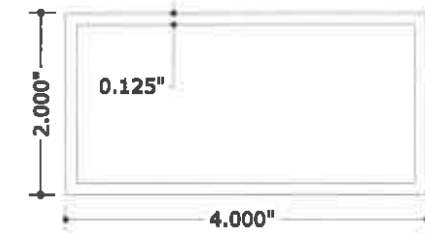
F NER TYPE 4 STORM BAR
 N.T.S. 6063-T6 ALUM



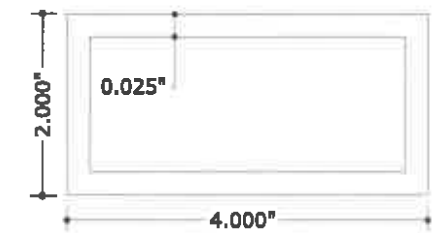
F1 NER TYPE 5 STORM BAR
 N.T.S. 6063-T6 ALUM



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

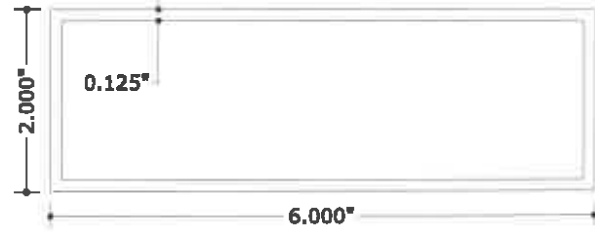


H NER HEADER TYPE 2
 N.T.S. 6063-T6 ALUM



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

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



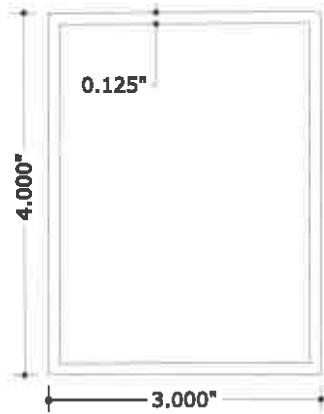
J NER HEADER TYPE 4
N.T.S. 6063-T6 ALUM



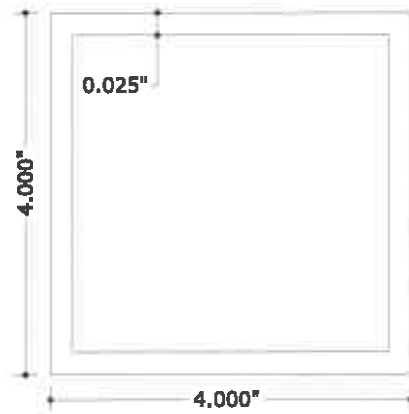
J1 NER HEADER TYPE 5
N.T.S. 6063-T6 ALUM



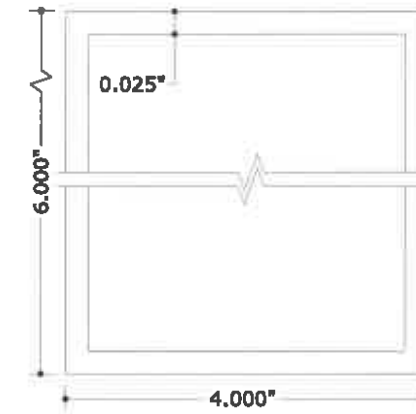
M1 NER TYPE 5 SIDE RAIL
N.T.S. 6063-T6 ALUM



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



ENGINEERING EXPRESS
CORPORATE OFFICE:
160 SW 12th AVE, SUITE 106
DEERFIELD BEACH, FL 33442
P: (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC
4268 West Roads Dr.
West Palm Beach, FL 33407
40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

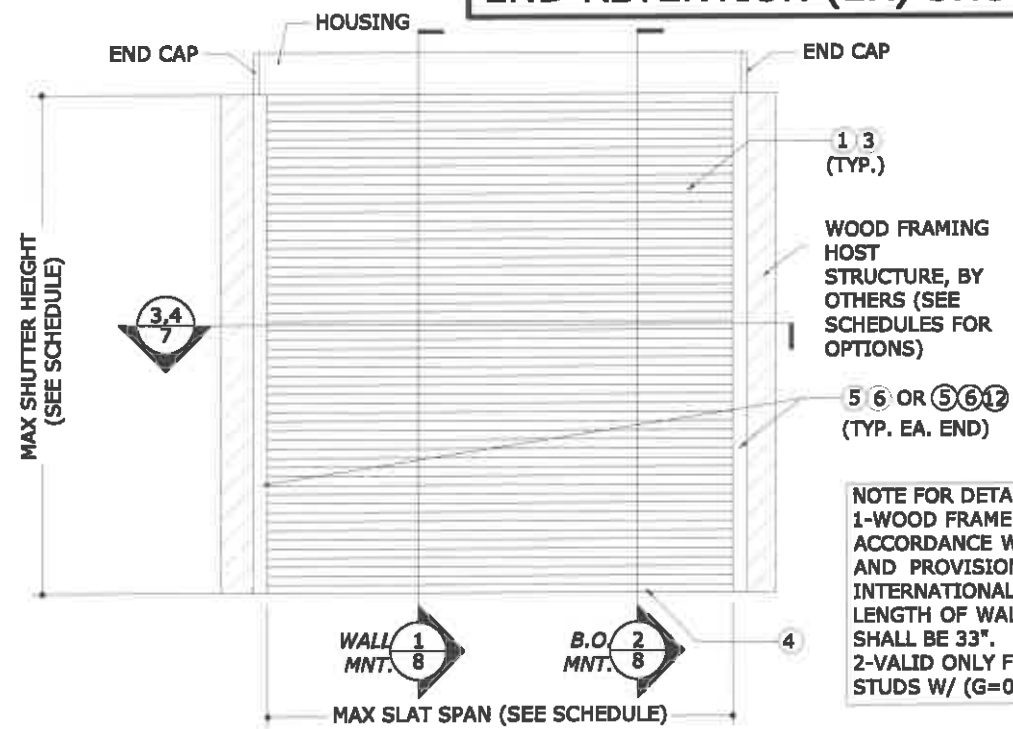
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TRD	4-27-2020	RWN	RWN

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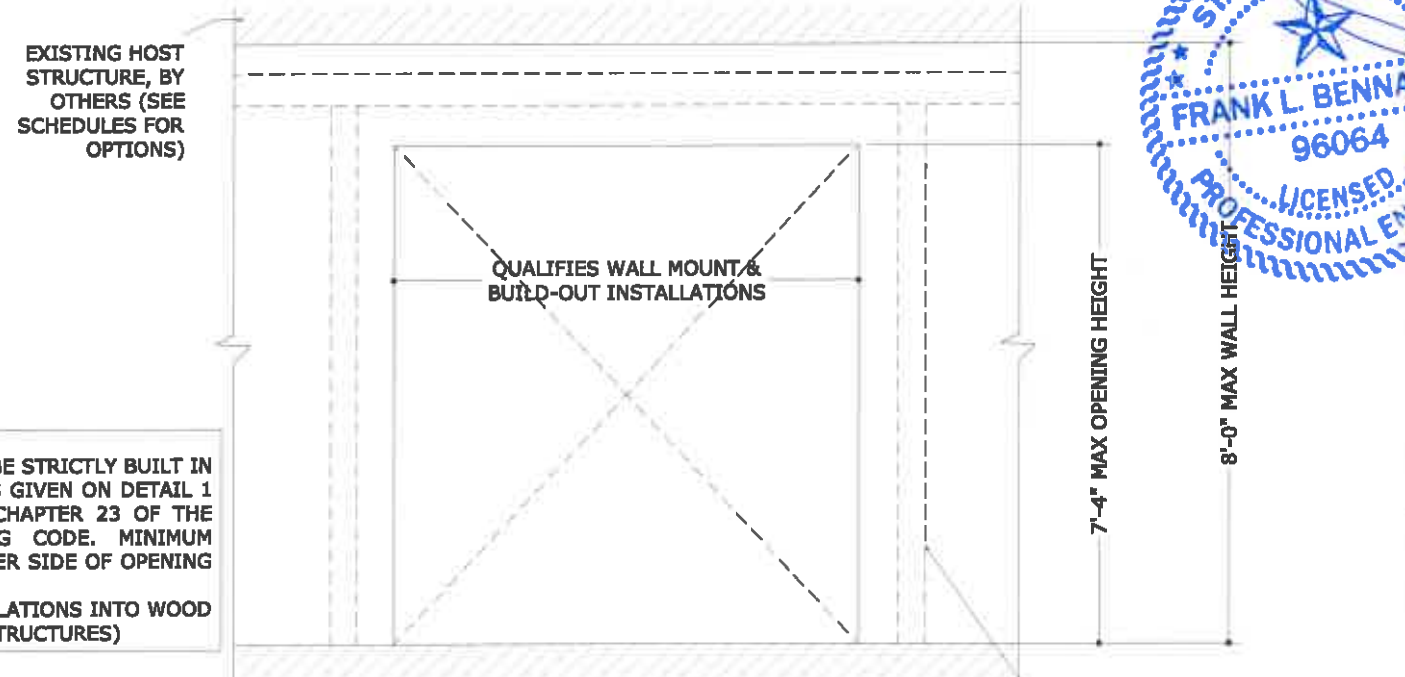
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END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO WOOD FRAMING



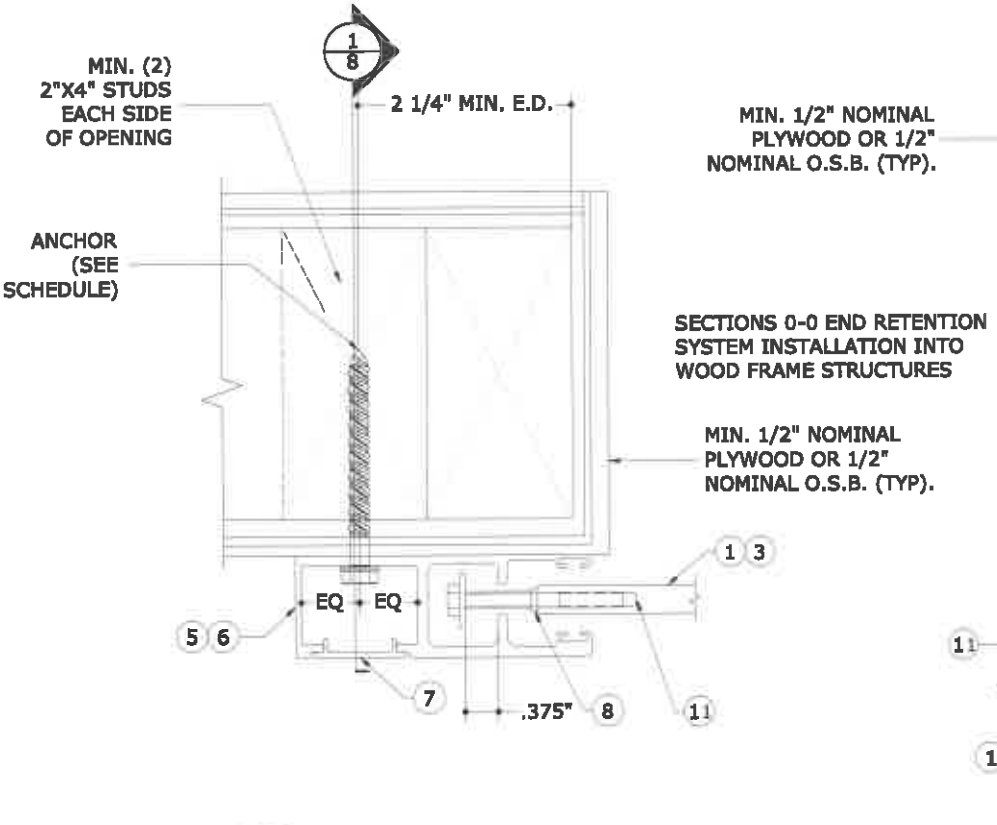
1
7 N.T.S. EXTERIOR ELEV

TYPICAL SINGLE UNIT ELEVATION TO WOOD FRAMING



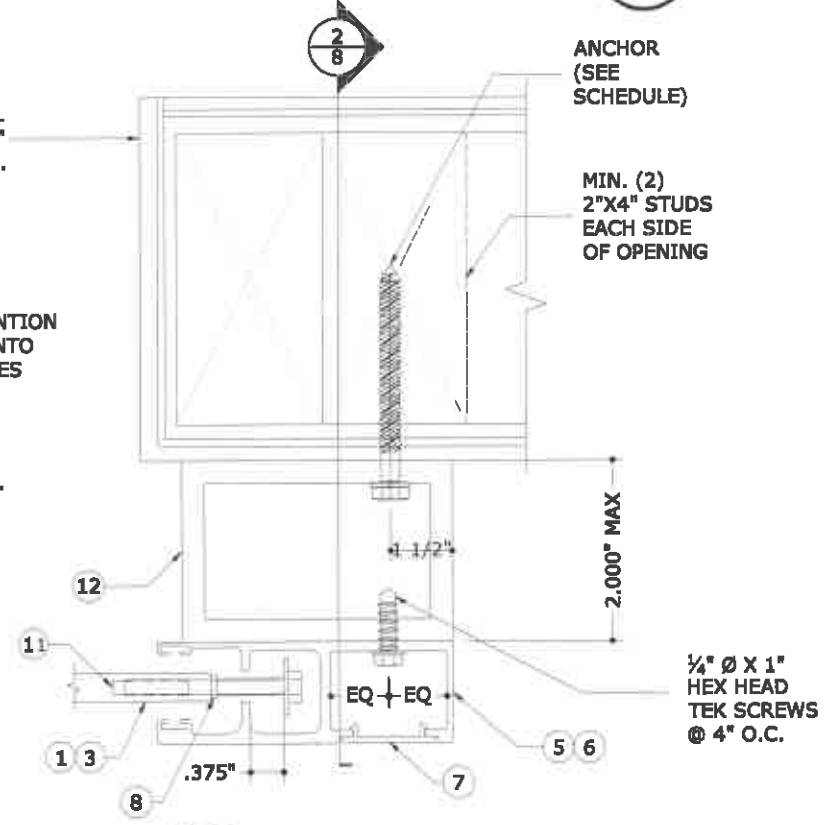
2
7 N.T.S. EXTERIOR ELEV

EXISTING BUILDING WOOD FRAMING



3
7 N.T.S. EXTERIOR ELEV

WALL MOUNT



4
7 N.T.S. EXTERIOR ELEV

BUILD-OUT MOUNT

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 INTERNATIONAL 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)

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..



FRANK BENNARDO, P.E.
 License No. 96064
 04/27/2020
FRANK L. BENNARDO
 96064
 LICENSED PROFESSIONAL ENGINEER
ENGINEERING EXPRESS
 CORPORATE OFFICE:
 160 SW 12th AVE, SUITE 106
 DEERFIELD BEACH, FL 33442
 P: (954) 354-0660
 TEAM@ENGINEERINGEXPRESS.COM
 ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
 4268 West Roads Dr.
 West Palm Beach, FL 33407

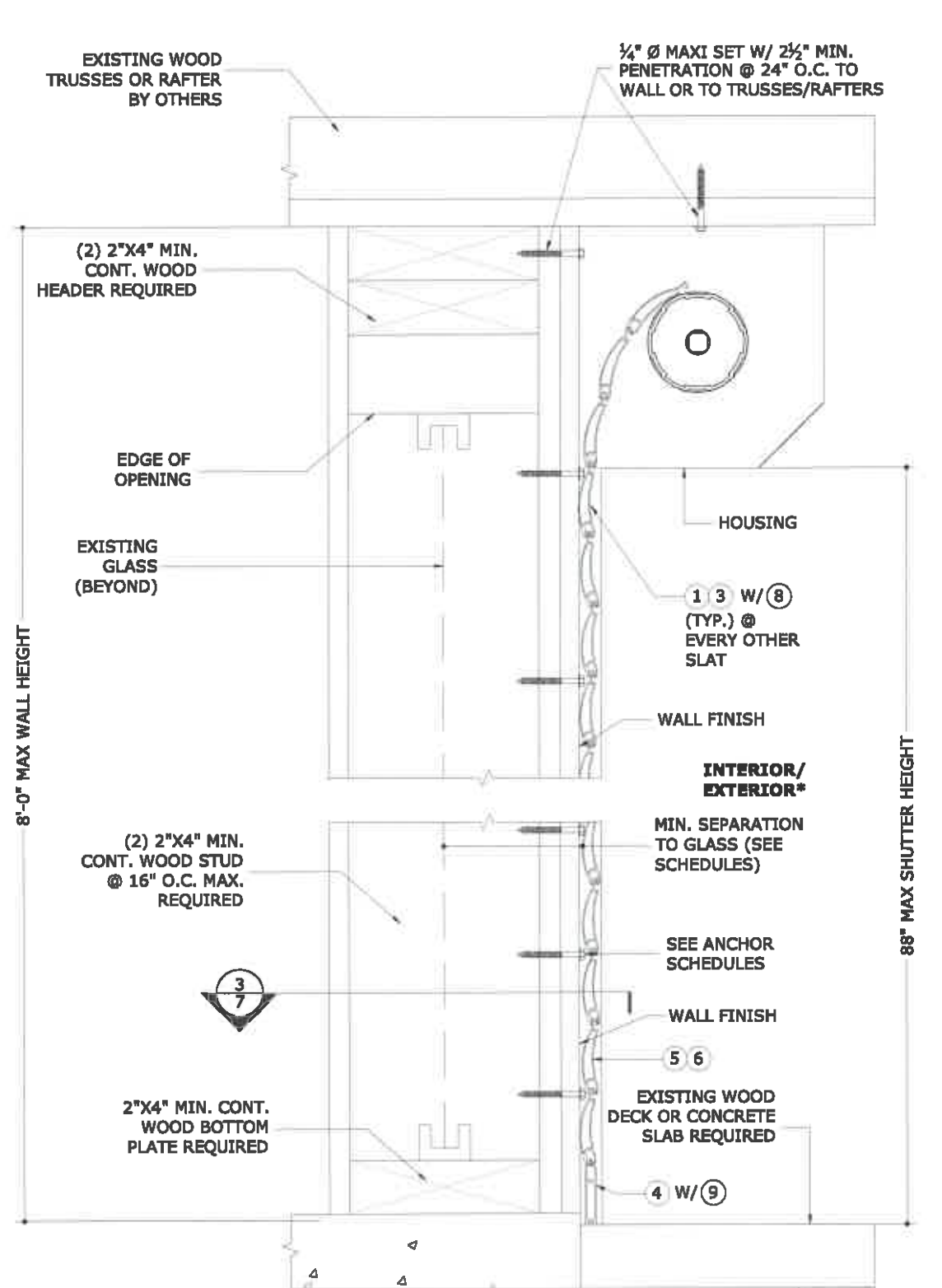
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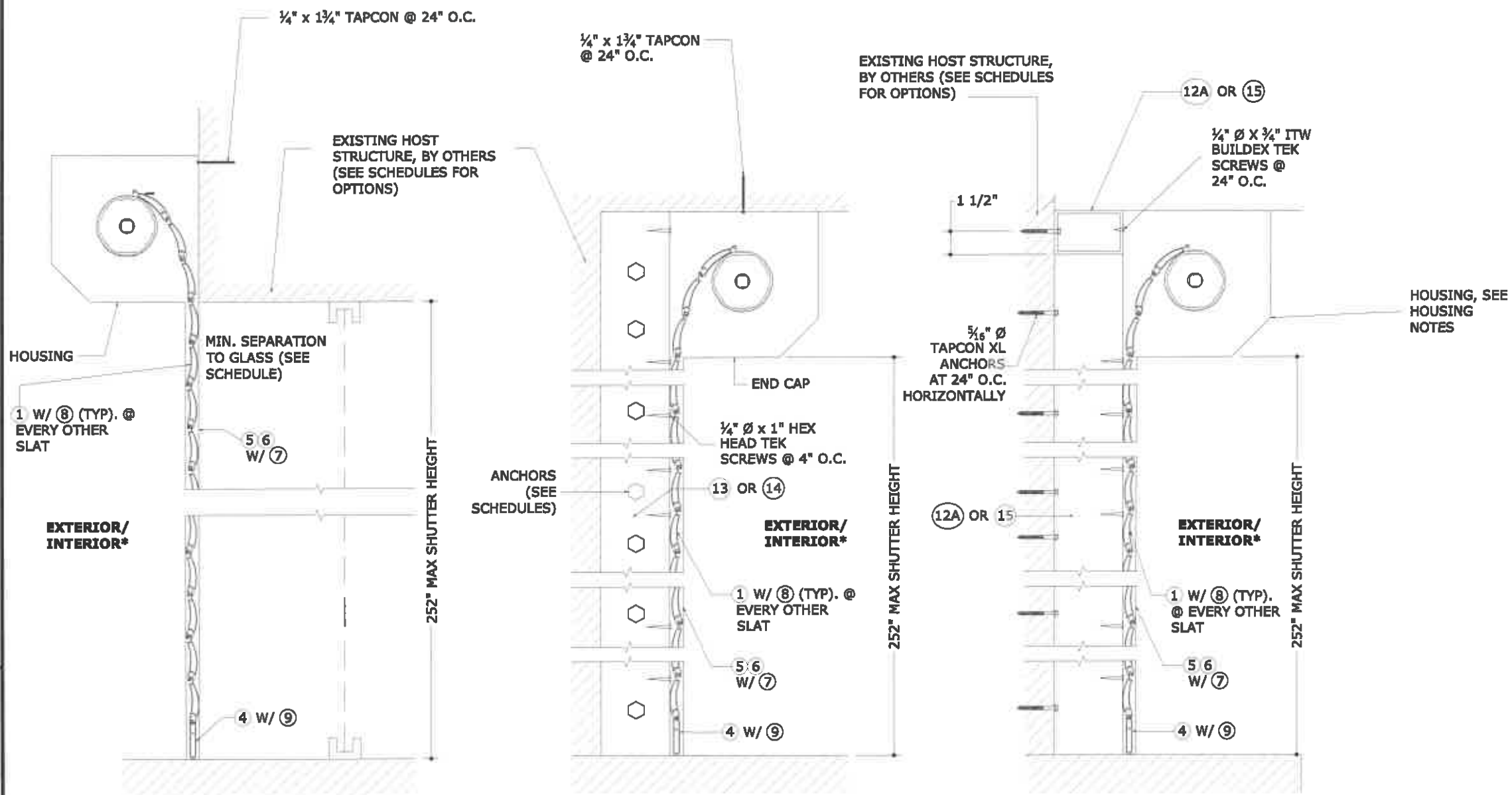
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END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO WOOD FRAMING



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



ENGINEERING EXPRESS
CORPORATE OFFICE
160 SW 12th AVE, SUITE 100
DEERFIELD BEACH, FL 33442
P: (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC
4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER

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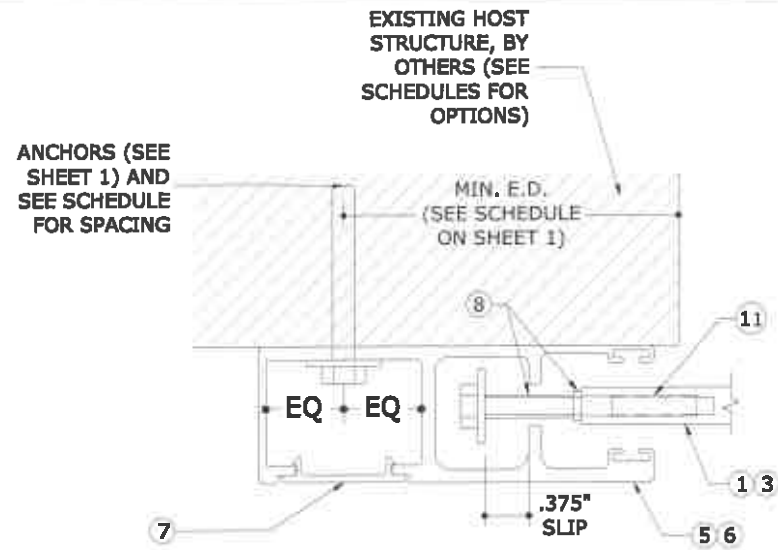
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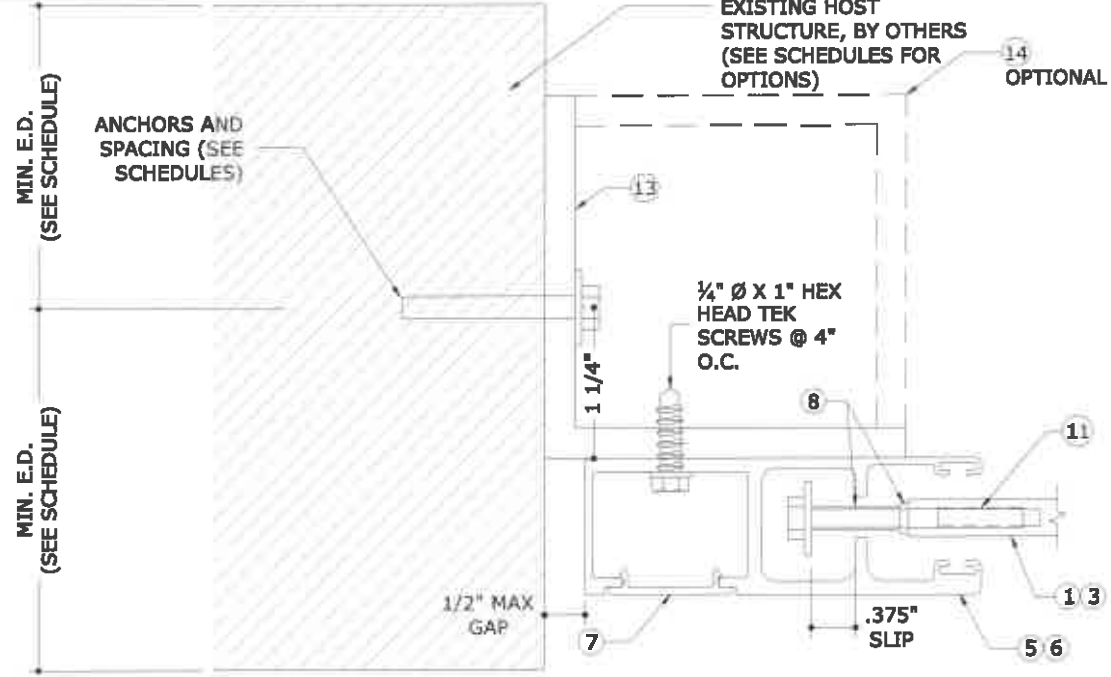
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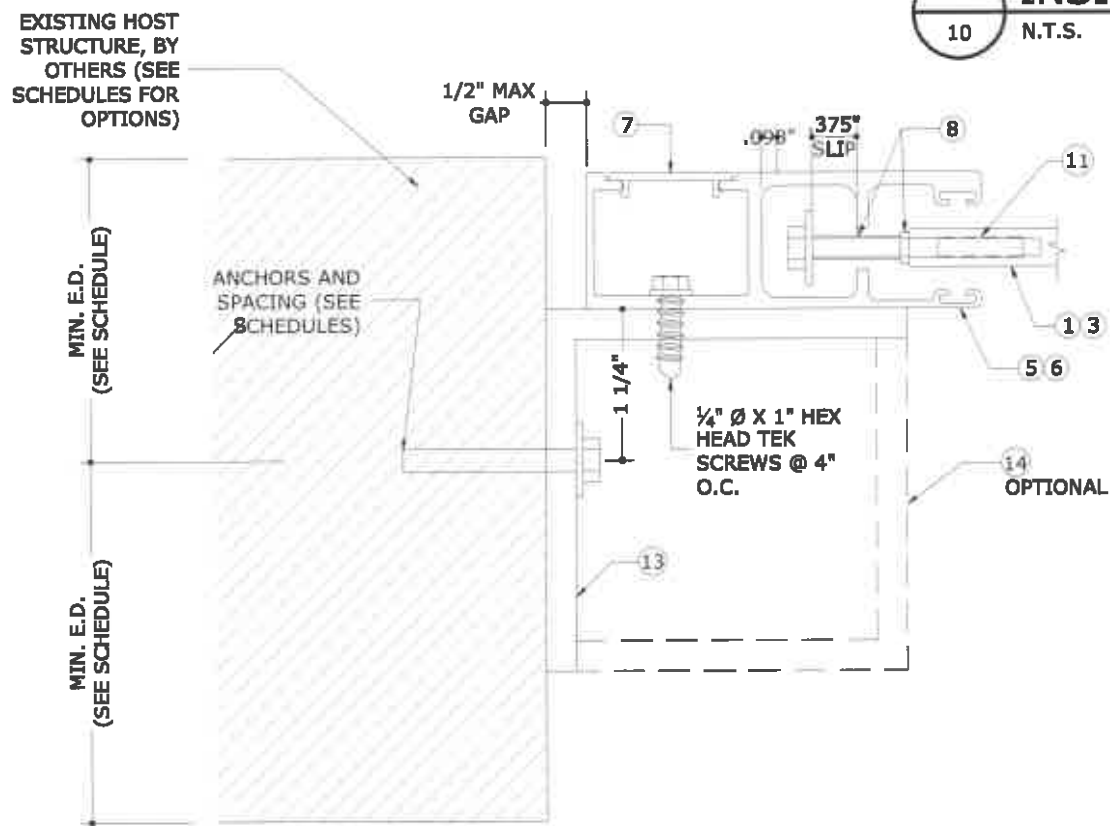
END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO CONCRETE, CMU, STEEL, ALUMINUM OR WOOD



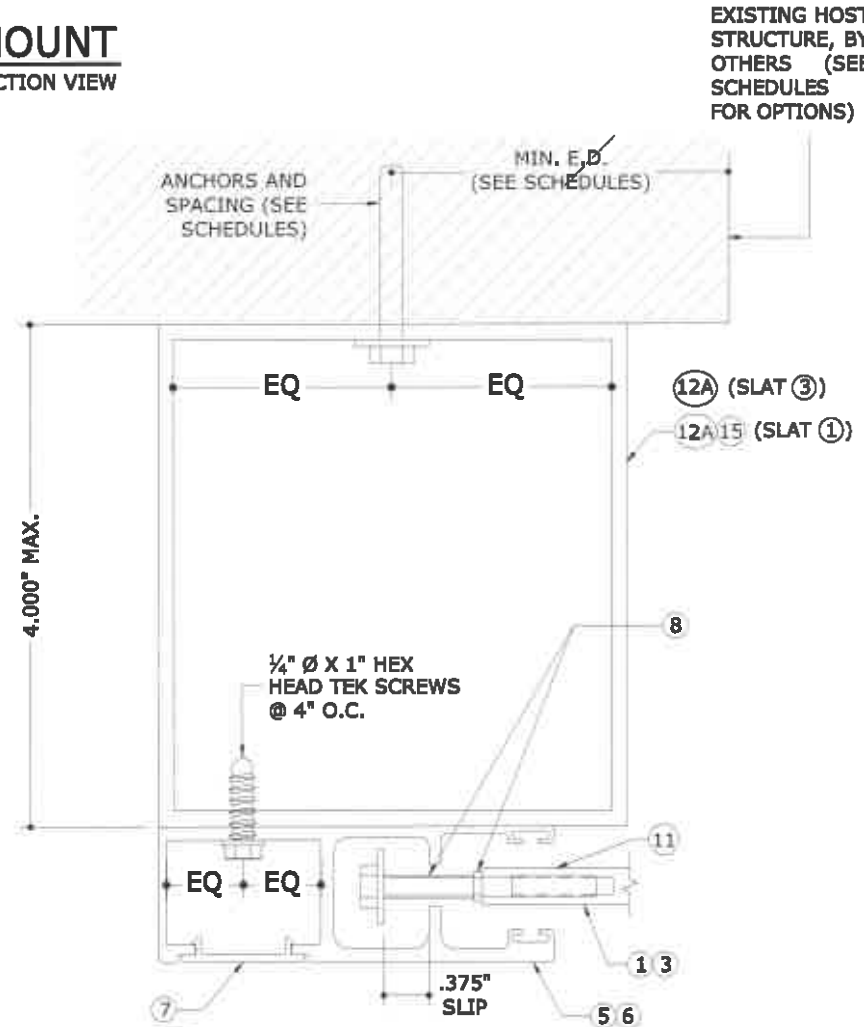
1 WALL MOUNT
10 N.T.S. SECTION VIEW



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



FRANK BENNARDO, P.E.
96064
04/27/2020
CORPORATE OFFICE:
160 SW 12th AVE, SUITE 106
DEERFIELD BEACH, FL 33442
P: (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC
4268 West Roads Dr.
West Palm Beach, FL 33407
40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
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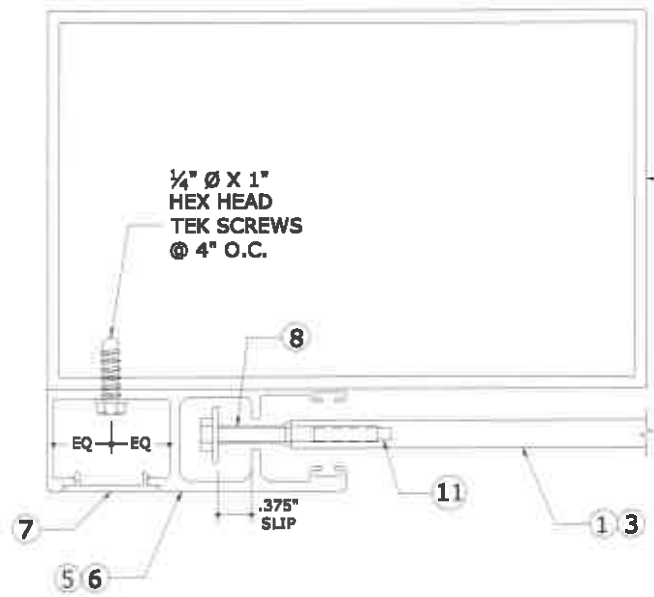
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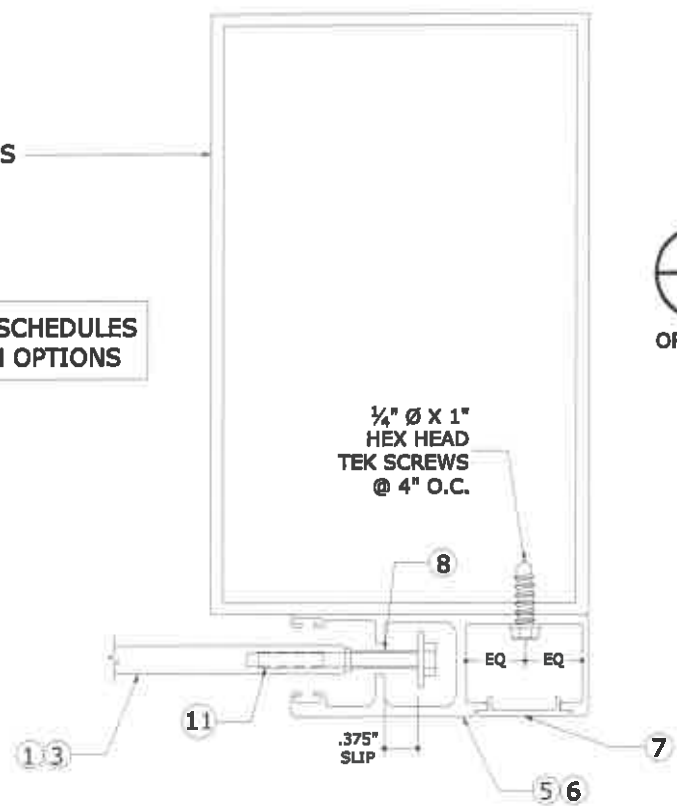
10 OF 20

END RETENTION (ER) SHUTTER ATTACHMENT OPTION TO ALUMINUM MULLIONS

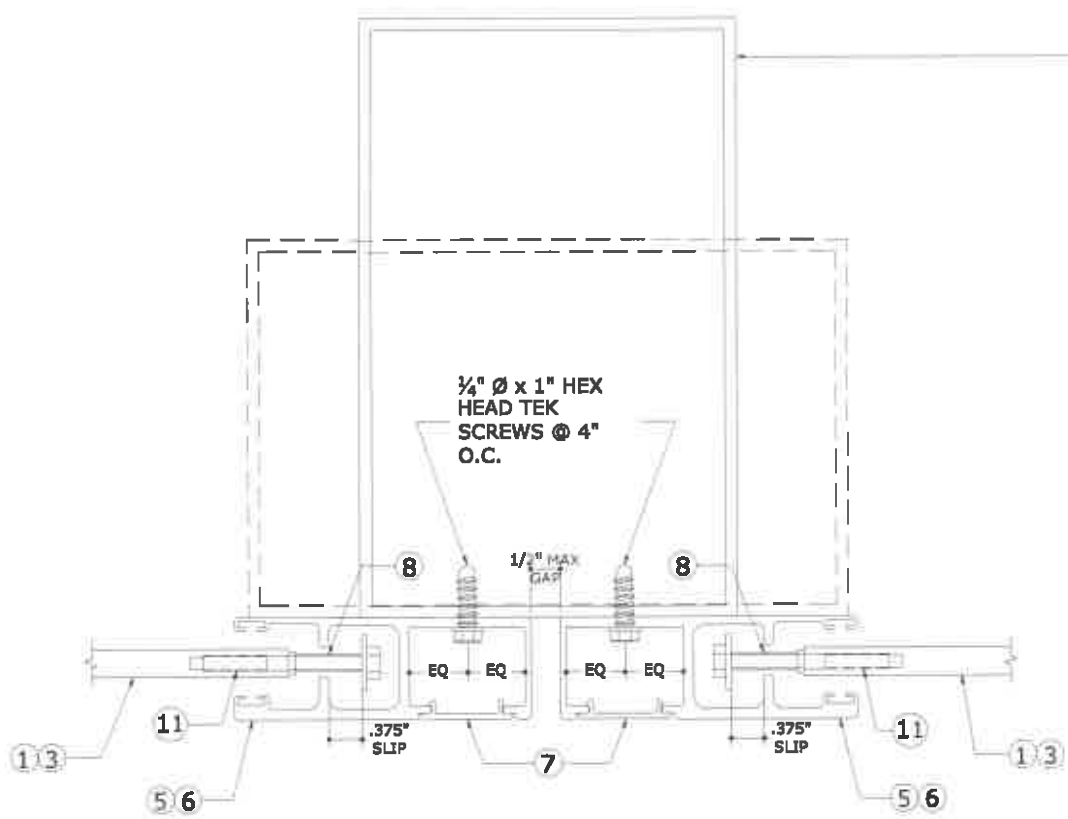


1 FACE MOUNT (END MULLION)
11 N.T.S. SECTION VIEW

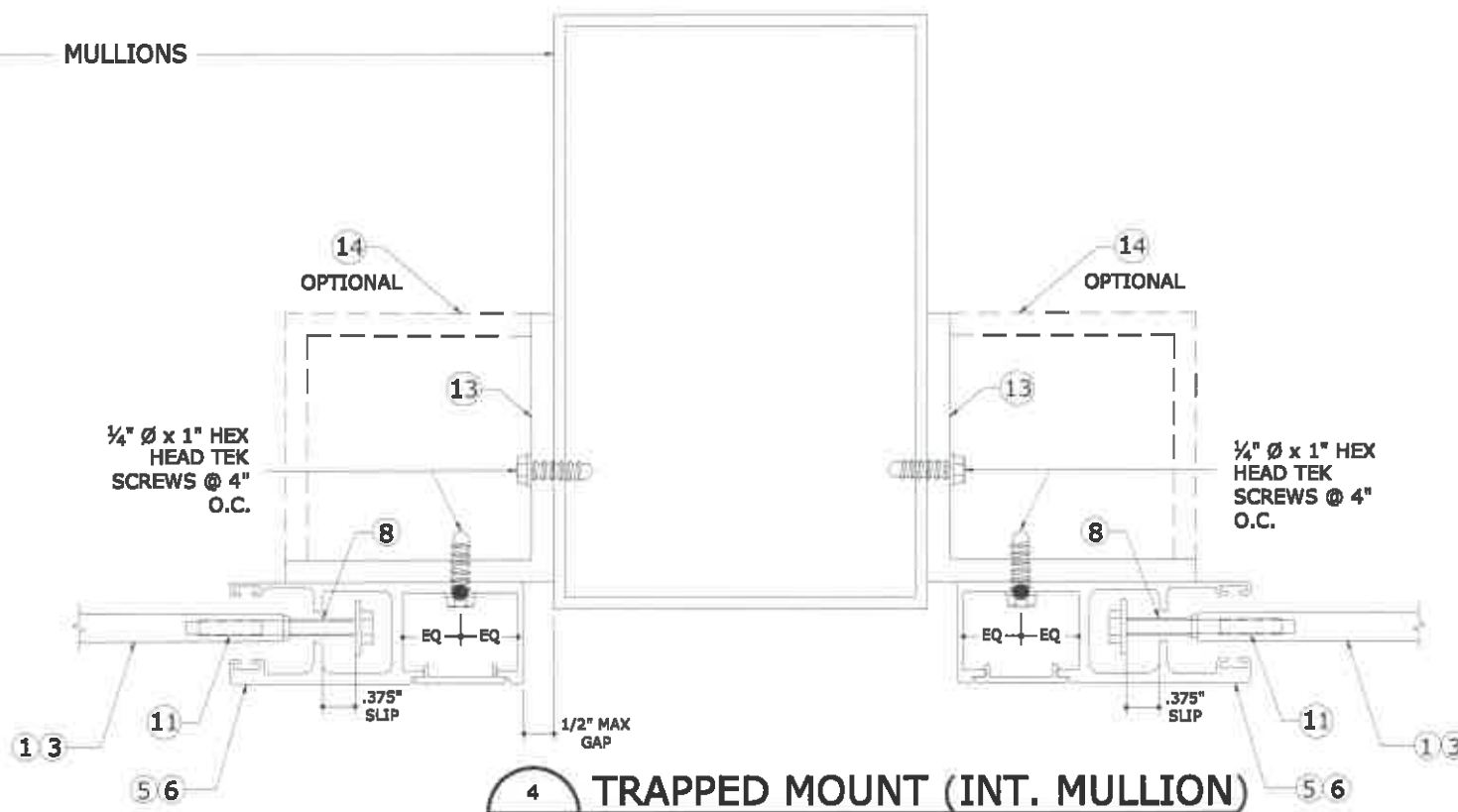
SEE MULLION SCHEDULES FOR MULLION OPTIONS



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



ENGINEERING EXPRESS
CORPORATE OFFICE:
160 SW 12th AVE, SUITE 106
DEERFIELD BEACH, FL 33442
P. (561) 354-8660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
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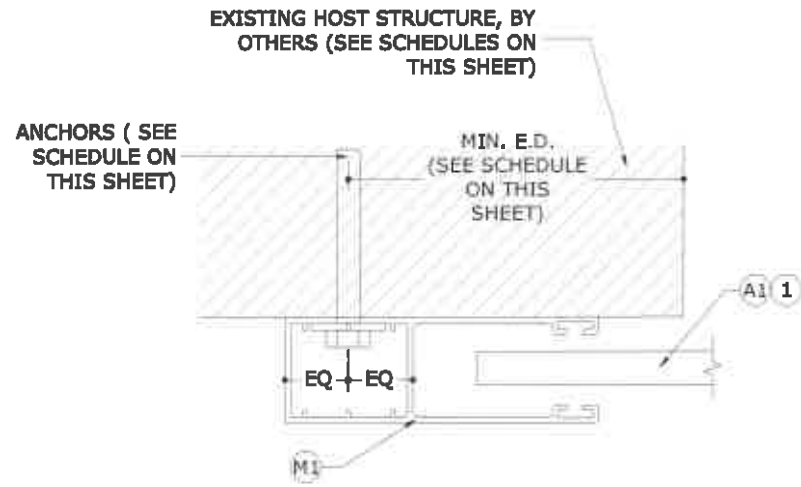
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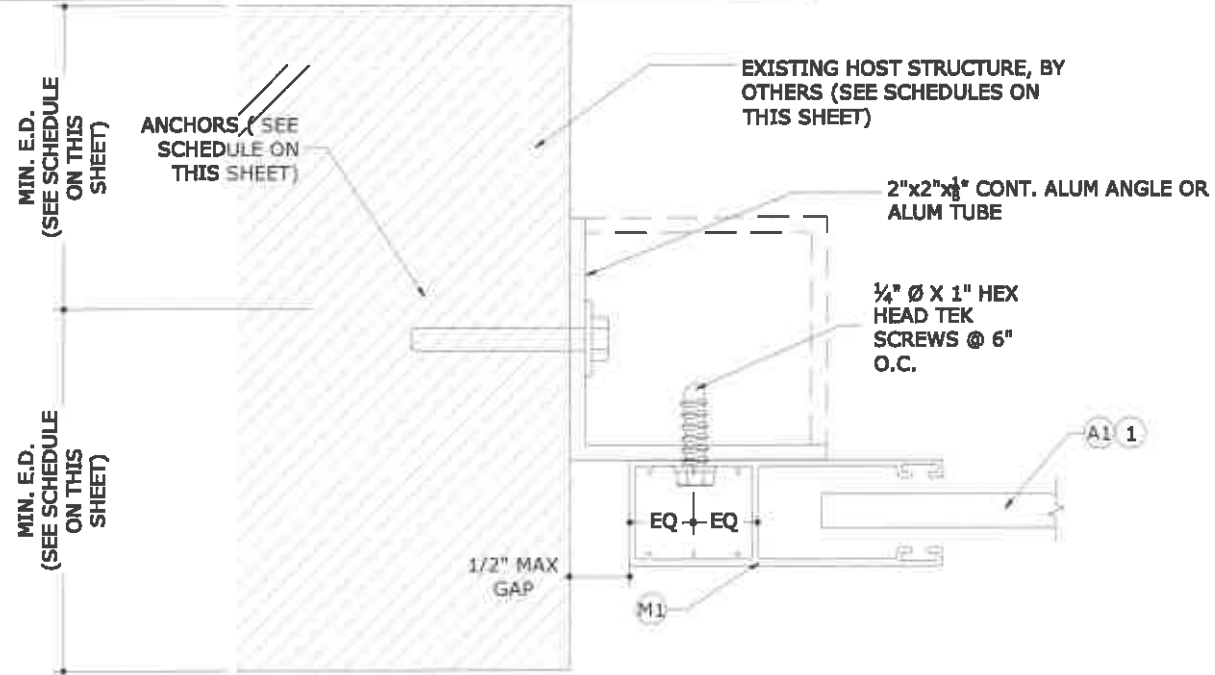
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11 OF 28

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



1 WALL MOUNT
N.T.S. SECTION VIEW

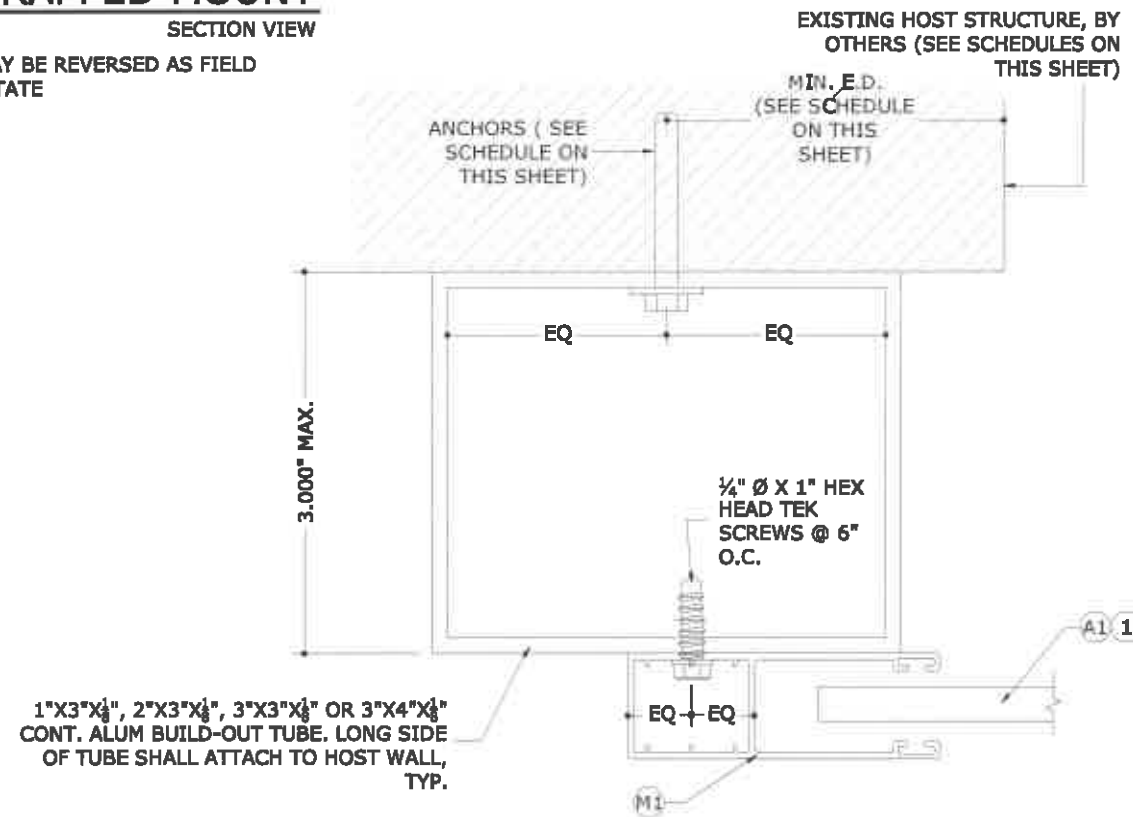


2 INSIDE/TRAPPED MOUNT
N.T.S. SECTION VIEW
*ATTACHMENT MAY BE REVERSED AS FIELD CONDITIONS DICTATE

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"



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



ENGINEERING EXPRESS
CORPORATE OFFICE:
160 SW 12th AVE, SUITE 106
DEERFIELD BEACH, FL 33442
P: (561) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC
4268 West Roads Dr.
West Palm Beach, FL 33407
40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
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RWN	RWN	4-30-2018

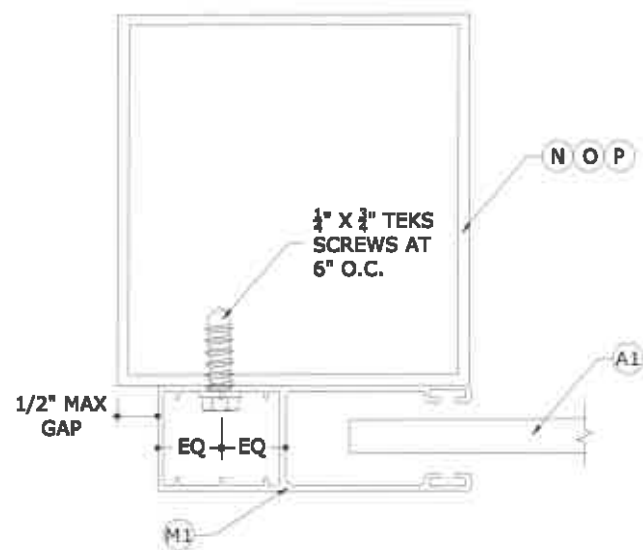
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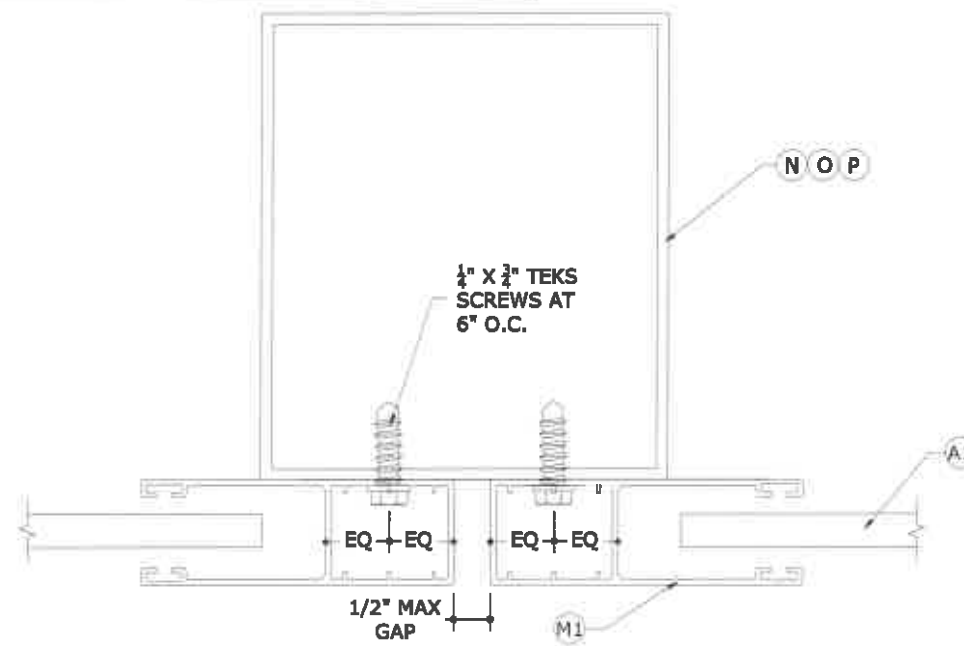
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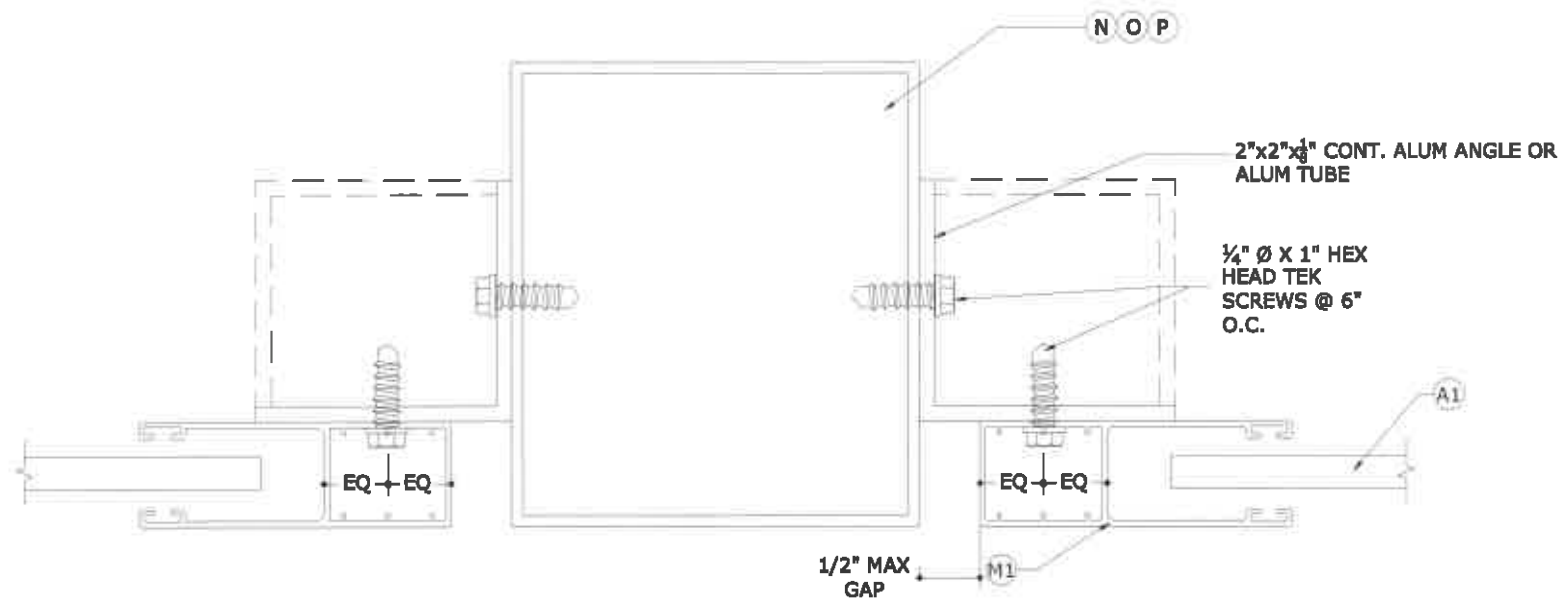
NON-END RETENTION (NER) SHUTTER ATTACHMENT TO MULLIONS



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



2 FACE MOUNT (INT. MULLION)
13 N.T.S. SECTION VIEW



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



ENGINEERING EXPRESS
CORPORATE OFFICE
160 SW 12th AVE, SUITE 6
DEERFIELD BEACH, FL 33441
P: (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC

4268 West Roads Dr.
West Palm Beach, FL 33407

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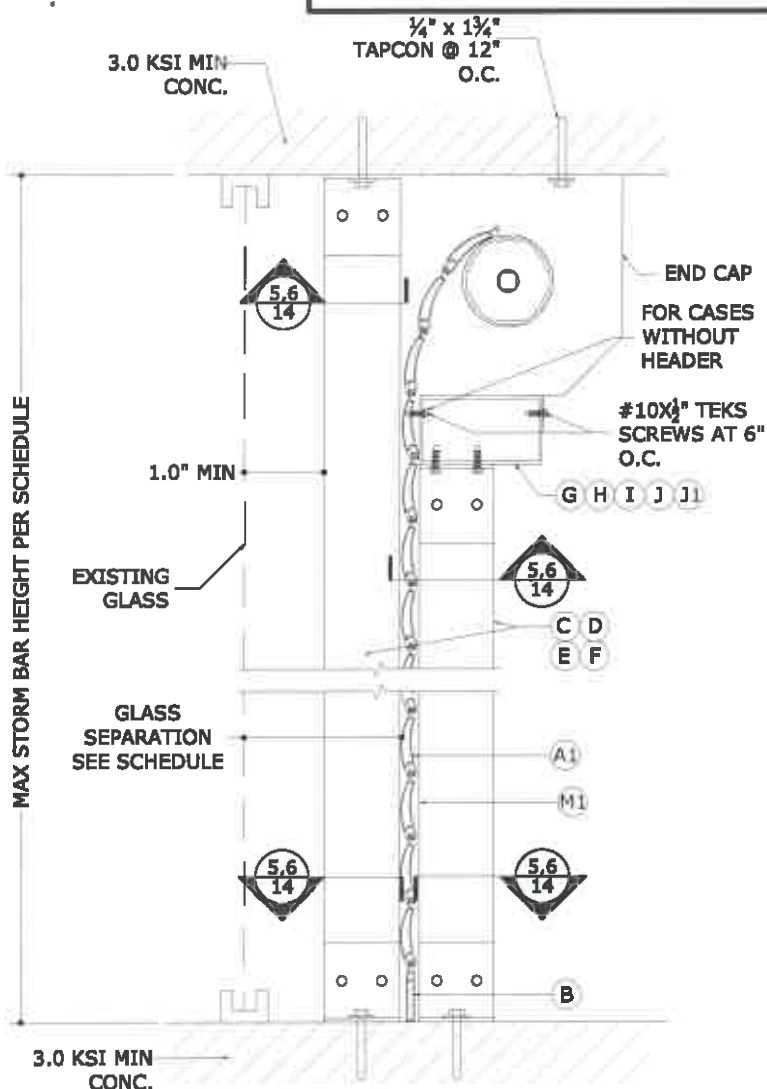
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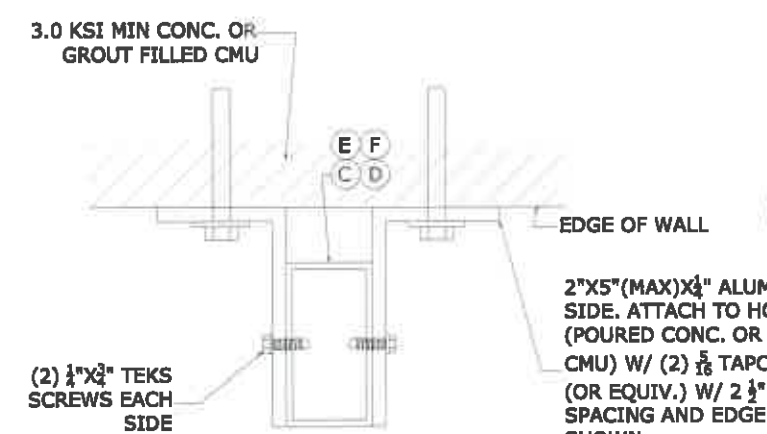
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NON-END RETENTION (NER) SHUTTER ATTACHMENT OPTION TO HOST STRUCTURE

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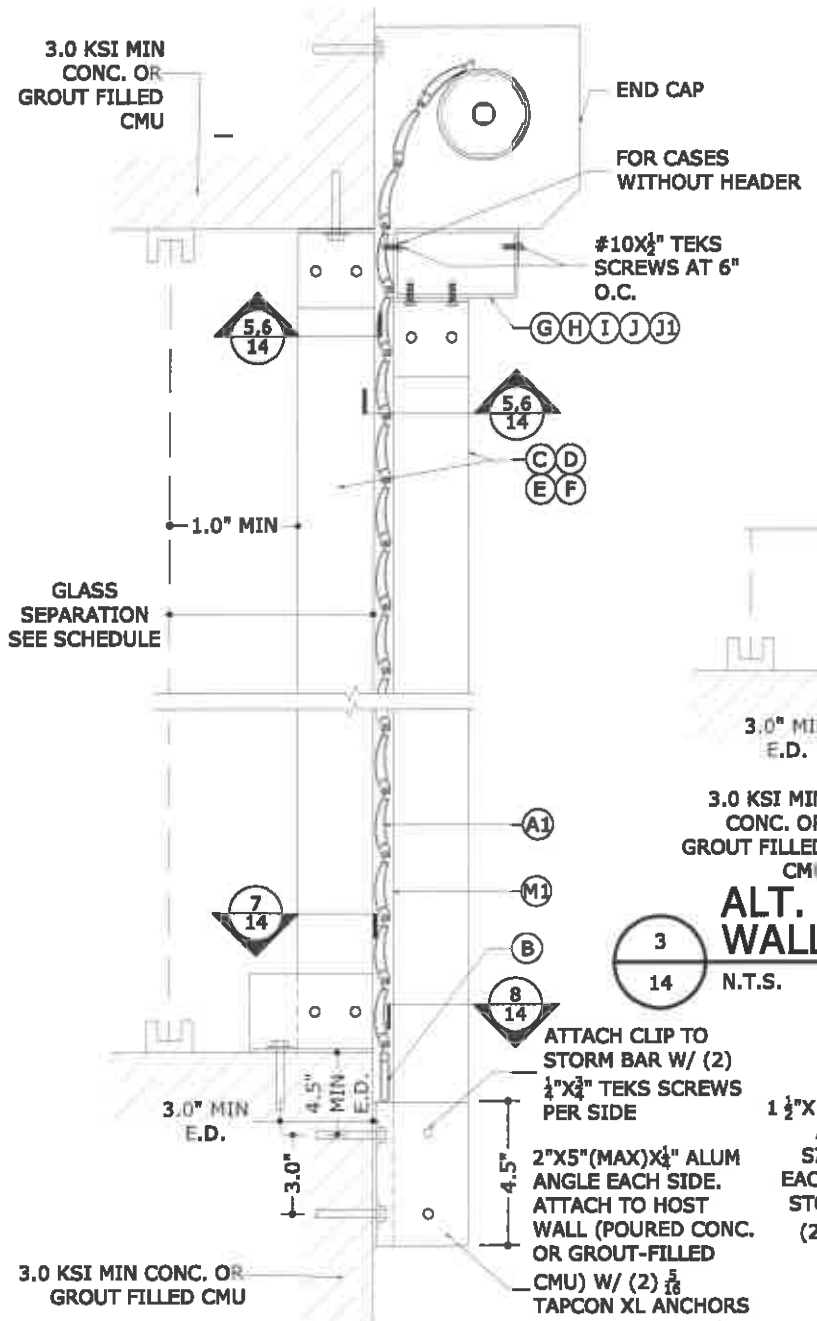
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14 N.T.S. SECTION VIEW
NER CEILING/FLOOR MOUNT WITH STORM BARS



2
14 N.T.S. SECTION VIEW
NER WALL MOUNT WITH STORM BARS



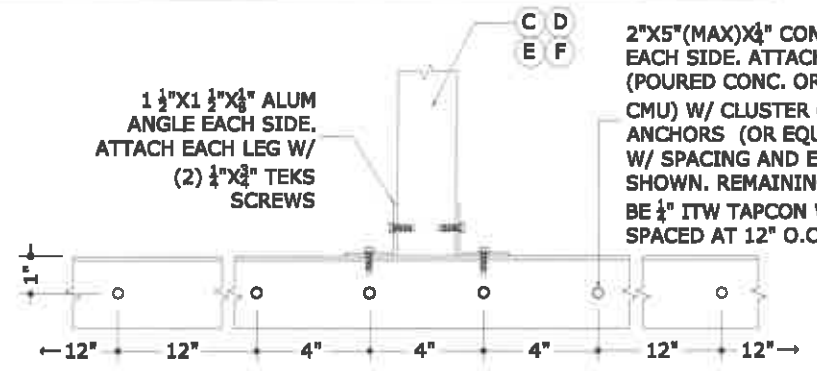
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14 N.T.S. SECTION VIEW
FIXED STORM BAR ATTACHMENT TO WALL



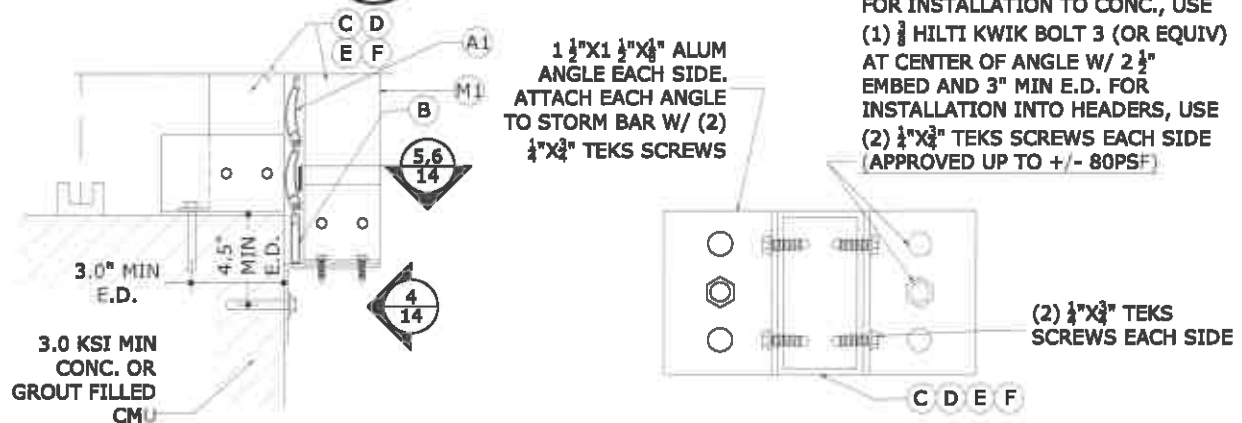
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14 N.T.S. SECTION VIEW
ALT. STORM BAR WALL MOUNT CONN.



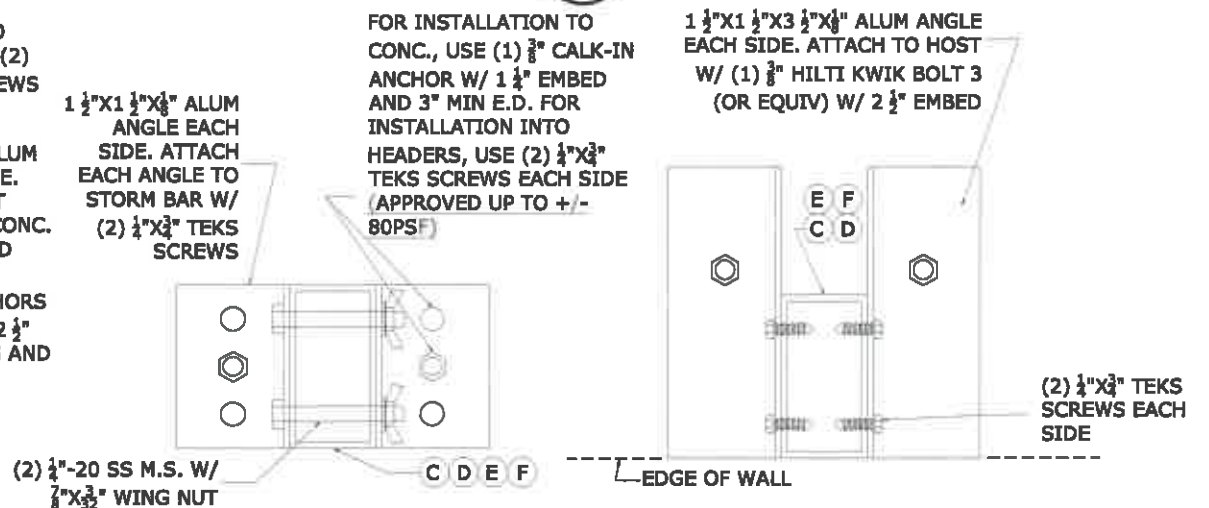
5
14 N.T.S. SECTION VIEW
ALT. STORM BAR WALL MOUNT CONN.



6
14 N.T.S. SECTION VIEW
ALT. STORM BAR WALL MOUNT CONN.



7
14 N.T.S. SECTION VIEW
FIXED STORM BAR ATTACHMENT



8
14 N.T.S. SECTION VIEW
REMOVABLE STORM BAR ATTACHMENT



9
14 N.T.S. SECTION VIEW
FIXED STORM BAR ATTACHMENT

FRANK BERNARDO, P.E.
19-18642 ASSA & EMS
04/27/2020
FRANK BERNARDO
CORPORATE OFFICE: SUITE 106
160 SW 12th Ave, Deerfield Beach, FL 33442
TELEPHONE: 561-241-1111
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERING EXPRESS, INC.

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC
4268 West Roads Dr.
West Palm Beach, FL 33407
40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

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RWN	RWN	4/20/2020

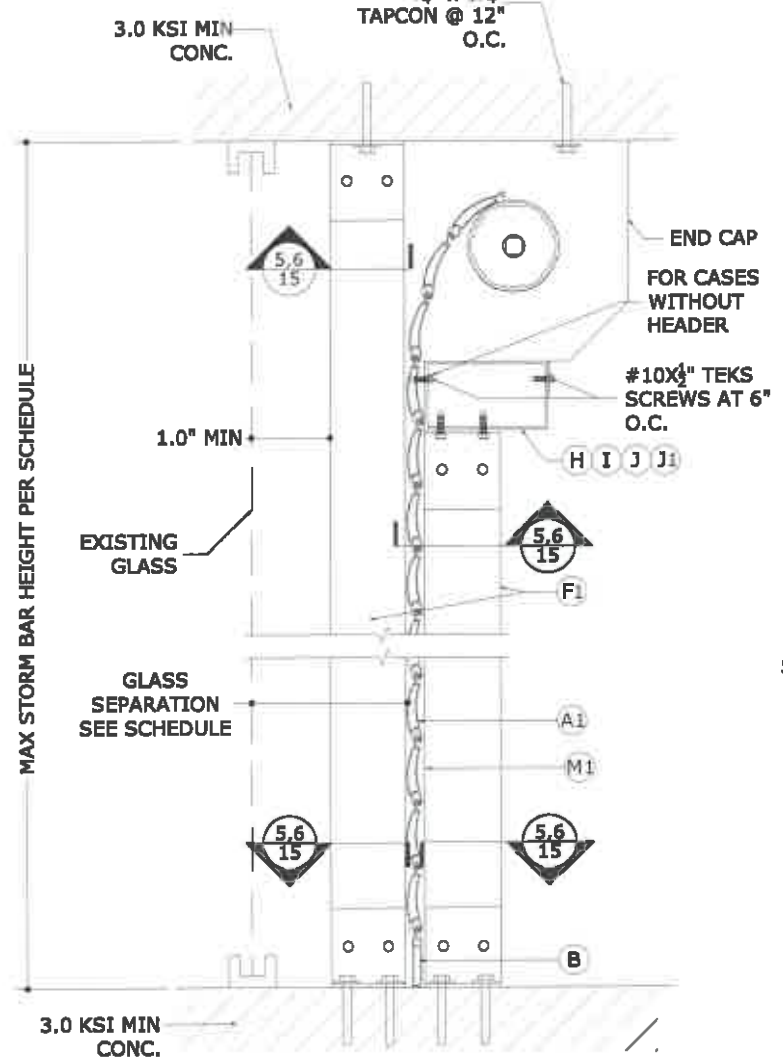
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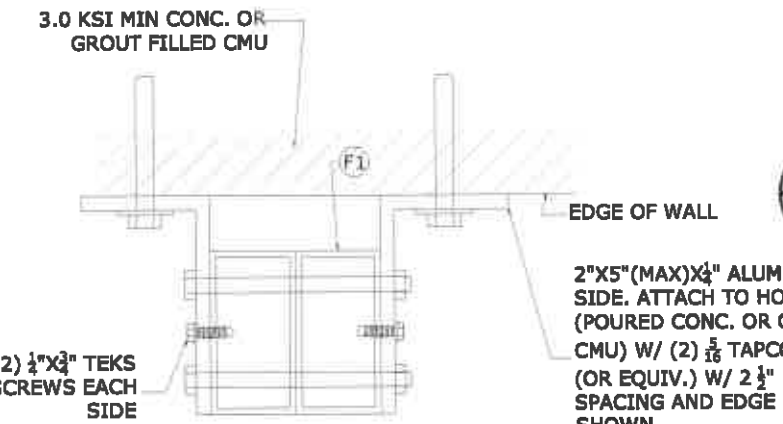
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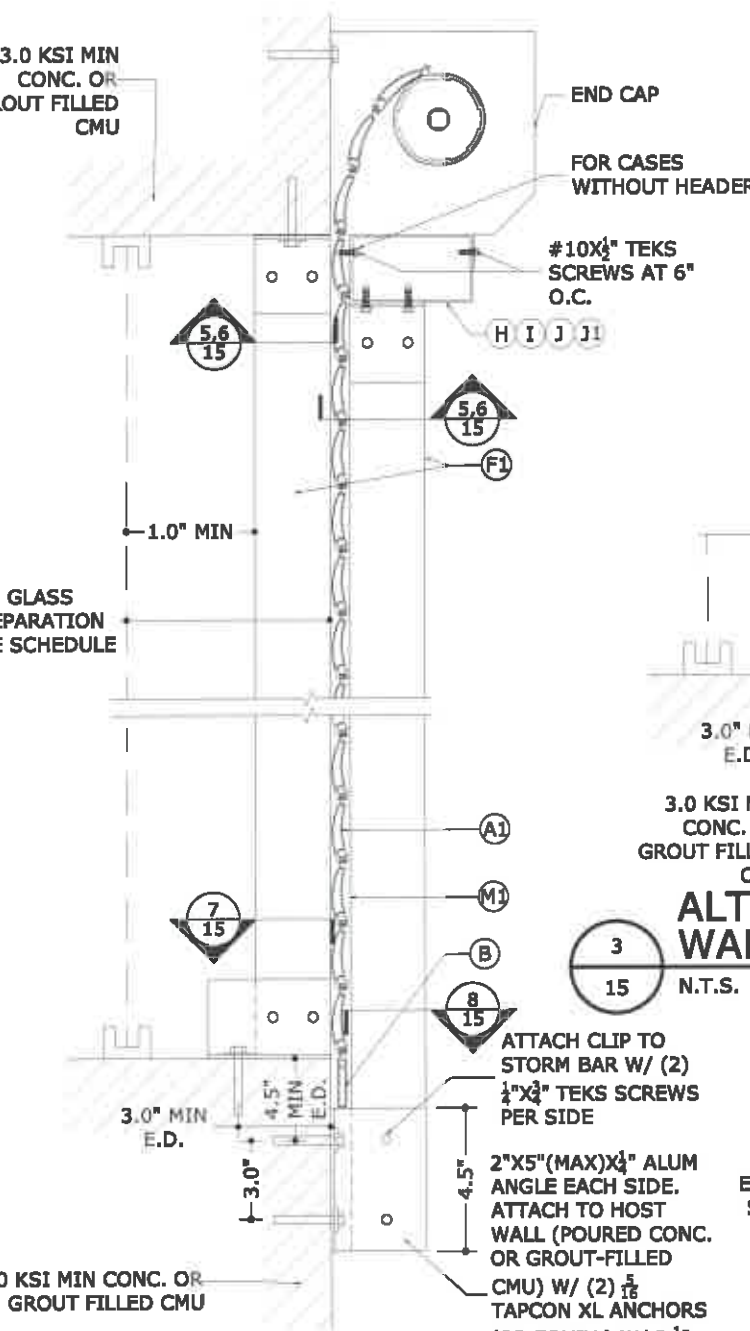
1
15 N.T.S. SECTION VIEW
NER CEILING/FLOOR MOUNT WITH STORM BARS



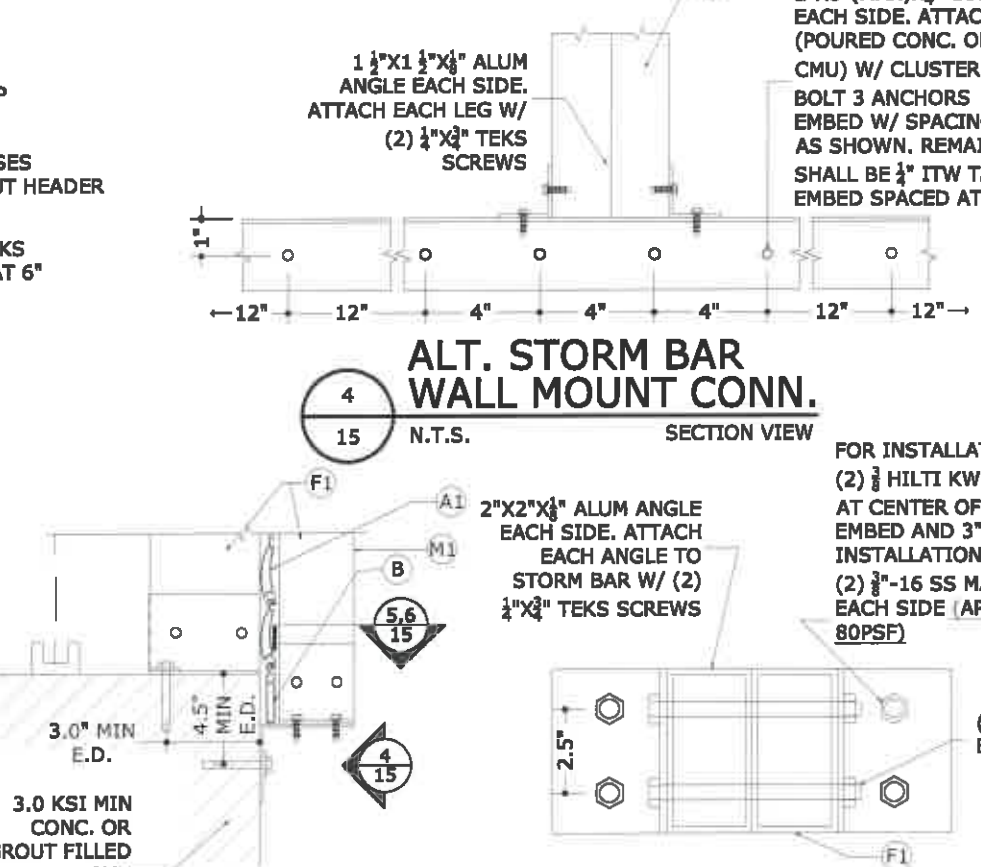
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NER WALL MOUNT WITH STORM BARS



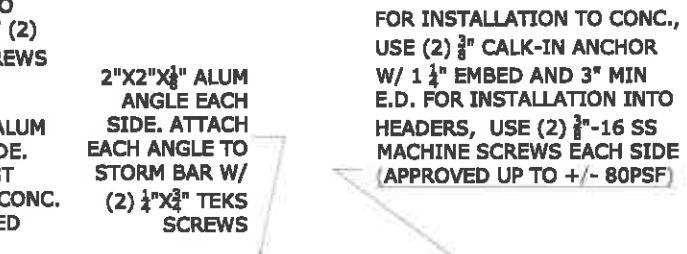
8
15 N.T.S. SECTION VIEW
FIXED STORM BAR ATTACHMENT TO WALL



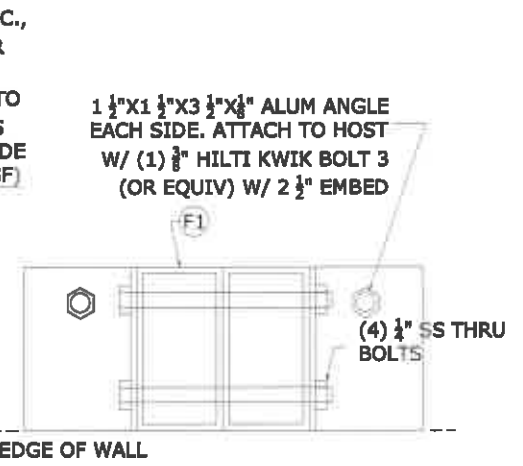
2
15 N.T.S. SECTION VIEW
NER WALL MOUNT WITH STORM BARS



4
15 N.T.S. SECTION VIEW
ALT. STORM BAR WALL MOUNT CONN.



6
15 N.T.S. SECTION VIEW
REMOVABLE STORM BAR ATTACHMENT



7
15 N.T.S. SECTION VIEW
FIXED STORM BAR ATTACHMENT

FRANK BENNARDO, P.E.
PE# 96064 CA# 19111

04-27-2020

STATE OF TEXAS

ENGINEERING EXPRESS, INC.

CORPORATE OFFICE
160 SW 12th Street, Suite 304
Deerfield Beach, FL 33442
P: 561-241-1111
TEAM@ENGINEERINGEXPRESS.COM
ENGINEER/REGISTERED PROFESSIONAL ENGINEER

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.

4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER

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

STORM BAR SPAN SCHEDULE

Max/mm 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"	108"	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

Max/mm 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

Max/mm 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"	88"	141"	131"	123"	129"	196"	182"	171"	178"	166"	156"
45 psf	104"	96"	91"	84"	136"	126"	119"	124"	188"	175"	164"	172"	159"	150"
50 psf	100"	93"	87"	81"	131"	122"	115"	120"	182"	169"	159"	166"	154"	145"
55 psf	97"	90"	85"	78"	127"	118"	111"	116"	176"	163"	154"	160"	149"	140"
60 psf	94"	87"	82"	76"	123"	115"	108"	113"	171"	159"	149"	156"	146"	136"
65 psf	92"	85"	80"	74"	120"	112"	105"	110"	167"	155"	146"	152"	141"	133"
70 psf	89"	83"	78"	72"	117"	109"	102"	107"	163"	151"	142"	148"	137"	129"
75 psf	87"	81"	76"	70"	115"	106"	100"	104"	159"	147"	139"	145"	134"	126"
80 psf	86"	79"	75"	69"	112"	104"	98"	102"	155"	144"	136"	142"	131"	124"
85 psf	84"	78"	73"	67"	110"	102"	96"	100"	152"	141"	133"	139"	129"	121"
90 psf	82"	76"	72"	66"	108"	100"	94"	98"	149"	139"	131"	136"	126"	119"
95 psf	81"	75"	70"	64"	106"	98"	93"	97"	147"	136"	128"	134"	124"	117"
100 psf	79"	74"	69"	62"	104"	97"	91"	95"	144"	134"	126"	131"	122"	115"

FRANK BENNARDO, P.E.
REG. 96064 CAL. REG. 1989

04/27/2020

STATE OF TEXAS

FRANK L. BENNARDO
96064

LICENSED PROFESSIONAL ENGINEER

CORPORATE OFFICE
160 SW 12th AVE, SUITE 405
DEERFIELD BEACH, FL 33442
P: (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

REMARKS	DRWN	CHKD	DATE
INT ISSUE	RWN	RWN	1/10/2020
TDI	RWN	RWN	4-20-2020

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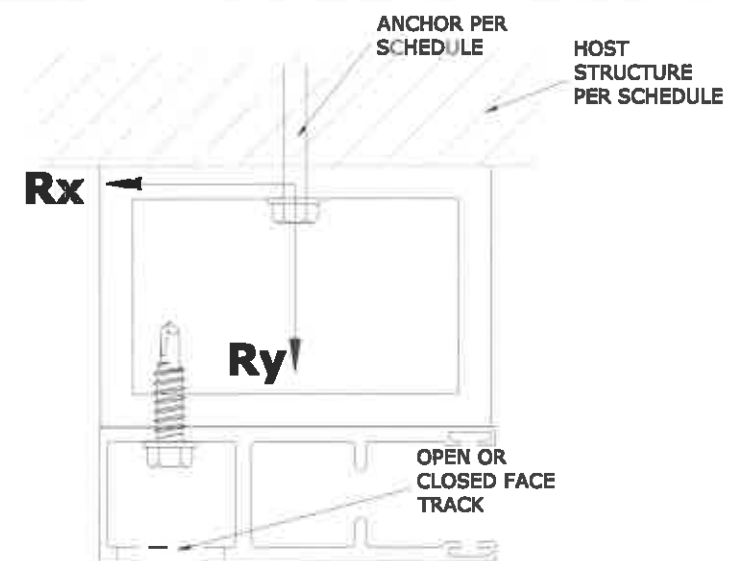
ANCHOR SCHEDULE: END RETENTION (ER) BUILD-OUT MOUNT (DOUBLE WALL SLATS)

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SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																
				1/4" ELCO 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" ELCO 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" ELCO OR DEWALT CONFLX	
							TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	ROUT-FILLED TO 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 1818 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"	6.0"	6.0"	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"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	
	+/- 80 PSF	782.5 LB/FT	455.6 LB/FT	4.5"	4.75"	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"	
	+/- 100 PSF	984.8 LB/FT	569.8 LB/FT	3.5"	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"	
	+/- 120 PSF	1208.2 LB/FT	683.5 LB/FT	2.75"	3.0"	5.25"	5.25"	4.0"	2.0"	3.75"	3.5"	2.0"				2.75"	2.75"	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"	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	385.9 LB/FT	4.75"	5.0"	6.0"	6.0"	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	493.9 LB/FT	3.5"	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"	
	+/- 87 PSF	1218.0 LB/FT	601.9 LB/FT	3.0"	3.25"	5.5"	5.5"	4.25"	2.0"	4.0"	3.5"	2.0"				3.0"	3.0"	6.0"	6.0"	
	+/- 102 PSF	1451.9 LB/FT	709.9 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	3.0"	3.25"	3.0"					3.0"	2.5"	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"	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	437.4 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"	
	+/- 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"				3.0"	3.25"	6.0"	6.0"	
	+/- 77 PSF	1478.2 LB/FT	645.3 LB/FT	2.5"	2.75"	4.75"	4.5"	3.5"	3.0"	3.25"	3.0"					2.5"	2.75"	6.0"	6.0"	
	+/- 90 PSF	1724.4 LB/FT	749.3 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	2.75"	2.5"					2.0"	2.25"	6.0"	6.0"	
144"	+/- 40 PSF	1007.7 LB/FT	400.1 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"	
	+/- 50 PSF	1289.4 LB/FT	500.1 LB/FT	3.0"	3.25"	5.5"	5.5"	4.5"	2.25"	4.0"	3.75"	2.0"				3.0"	3.25"	6.0"	6.0"	
	+/- 60 PSF	1530.5 LB/FT	600.1 LB/FT	2.5"	2.75"	4.75"	4.5"	3.5"	3.0"	3.25"	3.0"					2.5"	2.75"	6.0"	6.0"	
	+/- 70 PSF	1791.0 LB/FT	700.1 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	2.75"	2.5"					2.25"	2.5"	6.0"	6.0"	
	+/- 80 PSF	2051.0 LB/FT	800.2 LB/FT		2.0"	3.5"	3.5"	2.75"	2.5"	2.25"	2.25"					2.0"	2.0"	6.0"	6.0"	
180"	+/- 35 PSF	1046.5 LB/FT	389.0 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"	
	+/- 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"				3.0"	3.5"	6.0"	6.0"	
	+/- 52 PSF	1561.8 LB/FT	574.2 LB/FT	2.5"	2.75"	4.75"	4.5"	3.5"	3.0"	3.25"	3.0"					2.5"	2.75"	6.0"	6.0"	
	+/- 60 PSF	1819.5 LB/FT	688.8 LB/FT	2.0"	2.25"	4.0"	4.0"	3.0"	3.0"	2.75"	2.5"					2.25"	2.5"	6.0"	6.0"	
	+/- 66 PSF	2077.1 LB/FT	798.4 LB/FT		2.0"	3.5"	3.5"	2.75"	2.5"	2.25"	2.25"					2.0"	2.0"	6.0"	6.0"	
192"	+/- 30 PSF	1198.0 LB/FT	400.1 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"	
	+/- 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"				3.25"	3.5"	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"					3.0"	3.0"	6.0"	6.0"	
	+/- 41 PSF	1653.8 LB/FT	550.1 LB/FT	2.5"	2.5"	4.5"	4.5"	3.5"	3.0"	3.25"	3.0"					2.5"	2.75"	6.0"	6.0"	
	+/- 45 PSF	1806.4 LB/FT	600.1 LB/FT	2.25"	2.25"	4.0"	4.0"	3.25"	3.0"	3.0"	2.75"					2.5"	2.5"	6.0"	6.0"	

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

BUILD-OUT MOUNT DIRECTIVE



FRANK BENNARDO, P.E.
PE # 95064



AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC
4268 West Roads Dr.
West Palm Beach, FL 33407

160 SW 12th Ave
Deerfield Beach, FL 33442
P: (954) 357-1111
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

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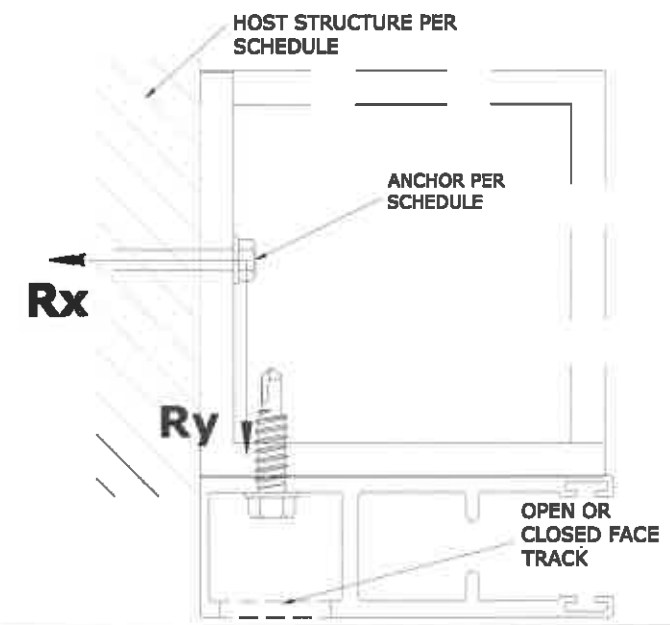
ANCHOR SCHEDULE: END RETENTION (ER) INTERIOR MOUNT (DOUBLE WALL SLATS)

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SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																
				1/4" ELCO 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" ELCO 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" ELCO 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"	6.0"	6.0"	6.0"	4.25"	2.75"	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"	6.0"	6.0"	6.0"	3.5"	3.0"	2.0"	6.0"	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"				4.0"	4.5"	6.0"	6.0"	6.0"
100"	+/- 40 PSF	827.5 LB/FT	166.7 LB/FT	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	4.75"	3.0"	2.5"	3.25"	6.0"	6.0"	6.0"	6.0"	6.0"
	+/- 60 PSF	905.8 LB/FT	231.5 LB/FT	4.75"	5.0"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	5.75"	3.25"	2.0"	2.25"	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"				4.25"	4.75"	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"				3.5"	4.0"	6.0"	6.0"	6.0"
120"	+/- 40 PSF	889.3 LB/FT	200.0 LB/FT	5.0"	5.25"	6.0"	6.0"	6.0"	6.0"	6.0"	6.0"	3.5"	2.25"	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"				4.5"	5.25"	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"				3.5"	4.0"	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"	2.5"				3.0"	3.5"	6.0"	6.0"	6.0"
144"	+/- 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"				4.5"	5.5"	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"				3.5"	4.25"	6.0"	6.0"	6.0"
	+/- 60 PSF	1770.8 LB/FT	360.0 LB/FT	2.5"	2.5"	4.75"	4.5"	3.5"	2.0"	3.5"	3.0"	2.5"				3.0"	3.5"	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"	2.5"				2.5"	3.0"	6.0"	6.0"	6.0"
160"	+/- 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"				4.5"	5.5"	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"				3.5"	4.25"	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"	2.5"				3.0"	3.5"	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"	3.0"	6.0"	6.0"	6.0"
192"	+/- 68 PSF	2381.0 LB/FT	455.8 LB/FT		2.0"	3.5"	3.5"	2.5"		2.5"	2.25"				2.25"	2.75"	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"				4.0"	5.0"	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"				3.5"	4.5"	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"					3.25"	4.0"	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"	3.5"	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"	2.75"					2.75"	3.25"	6.0"	6.0"	6.0"	

ANCHOR NOTES: SEE SHEET 18 FOR ANCHOR NOTES.

INTERIOR MOUNT DIRECTIVE



FRANK BERNARDO, P.E.
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF TEXAS
 No. 047272020
 FRANK L. BERNARDO
 PROFESSIONAL ENGINEER
 ENGINEERING EXPRESS, INC.
 CORPORATE OFFICE: 9010
 160 SW 12th Ave, SUITE 314
 DEERFIELD BEACH, FL 33442
 P: (561) 394-6660
 TEAM@ENGINEERINGEXPRESS.COM
 ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
 4268 West Roads Dr.
 West Palm Beach, FL 33407
 40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
 TEXAS DEPARTMENT OF INSURANCE

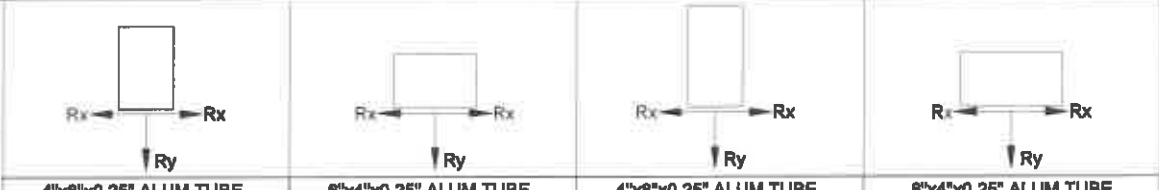
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04/27/2020 - 11:25am rldn C:\Users\rlc\OneDrive\Engineering\Express\Production - Documental\Project\19-18642 ASSA & EMS - 40mm ER Slat Bertha Roll Up Hurricane Shutter SHU-217WPTDI Submittal19-18642b 40mm ER-NER Roll Shutter.dwg

MULLION SCHEDULE: INTERMEDIATE MULLIONS



SLAT SPAN	DESIGN PRESSURE	4"x8"x0.25" ALUM TUBE		6"x4"x0.25" ALUM TUBE		4"x8"x0.25" ALUM TUBE		6"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"	2480.0 LB	132.7"	2266.8 LB	144.0"	2480.0 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
	+/- 80 PSF	144.0"	3280.0 LB	120.8"	2746.0 LB	144.0"	3280.0 LB	131.1"	2865.5 LB
85"	+/- 40 PSF	144.0"	1700.0 LB	144.0"	1700.0 LB	144.0"	1700.0 LB	144.0"	1700.0 LB
	+/- 48 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
	+/- 78 PSF	144.0"	3221.9 LB	121.3"	2713.5 LB	144.0"	3221.9 LB	131.9"	2850.2 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	138.1"	2062.0 LB	144.0"	2134.2 LB	144.0"	2134.2 LB
	+/- 55 PSF	144.0"	2488.4 LB	132.5"	2271.9 LB	144.0"	2488.4 LB	144.0"	2488.4 LB
	+/- 62 PSF	144.0"	2802.5 LB	127.0"	2472.8 LB	144.0"	2802.5 LB	138.1"	2688.3 LB
	+/- 70 PSF	144.0"	3136.7 LB	122.4"	2685.5 LB	144.0"	3136.7 LB	133.0"	2897.9 LB
95"	+/- 40 PSF	144.0"	1900.0 LB	144.0"	1900.0 LB	144.0"	1900.0 LB	144.0"	1900.0 LB
	+/- 48 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	138.8"	2669.1 LB
	+/- 64 PSF	144.0"	3063.5 LB	123.3"	2623.8 LB	144.0"	3063.5 LB	134.1"	2852.7 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.



ENGINEERING EXPRESS
 CORPORATE OFFICE:
 160 SW 12th AVE, SUITE 106
 DEERFIELD BEACH, FL 33442
 P: (561) 354-0660
 TEAM@ENGINEERINGEXPRESS.COM
 ENGINEERINGEXPRESS.COM

MULLION SCHEDULE: END MULLIONS



SLAT SPAN	DESIGN PRESSURE	4"x8"x0.25" ALUM TUBE			6"x4"x0.25" ALUM TUBE			4"x8"x0.25" ALUM TUBE			6"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	908.9 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	141.8"	3394.2 LB	1209.6 LB	3603.3 LB	128.9"	3088.8 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
	+/- 80 PSF	108.7"	3551.8 LB	1215.2 LB	3753.9 LB	108.2"	3536.3 LB	1209.9 LB	3737.6 LB	120.7"	4017.9 LB	1374.7 LB	4246.6 LB	115.5"	3844.7 LB	1315.4 LB	4063.5 LB
85"	+/- 40 PSF	144.0"	2267.0 LB	850.0 LB	2449.3 LB	135.8"	2185.6 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
	+/- 48 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	982.6 LB	2940.2 LB
	+/- 58 PSF	123.6"	3081.9 LB	1055.9 LB	3238.9 LB	117.2"	2804.7 LB	1001.8 LB	3072.6 LB	139.8"	3483.8 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"	3239.8 LB	1095.1 LB	3419.6 LB	129.1"	3767.2 LB	1273.5 LB	3978.6 LB	120.7"	3522.1 LB	1190.6 LB	3717.9 LB
	+/- 78 PSF	108.5"	3577.8 LB	1191.7 LB	3771.0 LB	105.9"	3557.5 LB	1185.0 LB	3749.7 LB	120.5"	4047.6 LB	1348.2 LB	4286.2 LB	115.2"	3867.8 LB	1288.3 LB	4076.7 LB
90"	+/- 40 PSF	144.0"	2612.6 LB	900.0 LB	2763.3 LB	130.1"	2359.8 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"	2802.9 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	3325.9 LB	115.2"	3008.8 LB	987.1 LB	3186.4 LB	138.9"	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
	+/- 70 PSF	106.2"	3619.4 LB	1156.6 LB	3799.7 LB	105.4"	3592.4 LB	1148.0 LB	3771.3 LB	120.1"	4094.9 LB	1308.6 LB	4298.9 LB	114.6"	3905.7 LB	1248.1 LB	4100.2 LB
95"	+/- 40 PSF	137.3"	2790.2 LB	905.9 LB	2933.6 LB	125.2"	2544.8 LB	826.2 LB	2875.6 LB	144.0"	2926.1 LB	950.0 LB	3076.5 LB	136.2"	2766.7 LB	898.3 LB	2908.9 LB
	+/- 48 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	111.8"	3482.7 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	1139.5 LB	3840.3 LB
	+/- 64 PSF	105.8"	3659.0 LB	1125.8 LB	3828.3 LB	104.9"	3626.7 LB	1115.9 LB	3794.5 LB	119.8"	4140.0 LB	1273.8 LB	4331.5 LB	114.1"	3943.0 LB	1213.2 LB	4125.4 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"	2980.8 LB	914.0 LB	3088.5 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"	3588.7 LB	1087.4 LB	3730.7 LB	126.0"	3230.8 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	1054.8 LB	3679.9 LB	107.7"	3438.9 LB	1026.7 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	3858.8 LB	104.4"	3680.6 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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 4268 West Roads Dr.
 West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER

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24

END RETENTION (ER) DOUBLE WALL SLAT MULLION SCHEDULES

MULLION SCHEDULE: INTERMEDIATE MULLIONS		4"x8"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
	+/- 60 PSF	144.0"	2480.0 LB	132.7"	2288.8 LB	144.0"	2480.0 LB	144.0"	2480.0 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"	3484.4 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"	1874.6 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"	2897.8 LB	144.0"	3555.3 LB	127.6"	3150.3 LB
	+/- 87 PSF	136.1"	4095.4 LB	108.9"	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"	2872.1 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"	5365.8 LB	111.0"	4159.4 LB
144"	+/- 40 PSF	144.0"	2880.0 LB	125.9"	2518.0 LB	144.0"	2880.0 LB	138.9"	2737.8 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	138.2"	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"	3656.8 LB	144.0"	5040.0 LB	113.6"	3975.5 LB
	+/- 80 PSF	123.5"	4939.3 LB	99.9"	3997.1 LB	138.8"	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"	3087.8 LB
	+/- 52 PSF	138.3"	3968.7 LB	111.8"	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"	4186.8 LB
192"	+/- 30 PSF	144.0"	2880.0 LB	125.9"	2518.0 LB	144.0"	2880.0 LB	138.9"	2737.8 LB
	+/- 34 PSF	144.0"	3240.0 LB	121.1"	2723.7 LB	144.0"	3240.0 LB	131.6"	2981.2 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"	3858.9 LB	113.2"	3113.5 LB	144.0"	3960.0 LB	123.1"	3385.1 LB
	+/- 45 PSF	136.2"	4067.3 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.



FRANK BENNARDO, P.E.
96084
04/27/2020
LICENSED PROFESSIONAL ENGINEER
CORPORATE OFFICE:
160 SW 12th AVE, SUITE 106
DEERFIELD BEACH, FL 33442
P: (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

REV	DATE	BY	CHKD
1	10/20/2020	RWN	RWN
2	11/30/2020	RWN	RWN

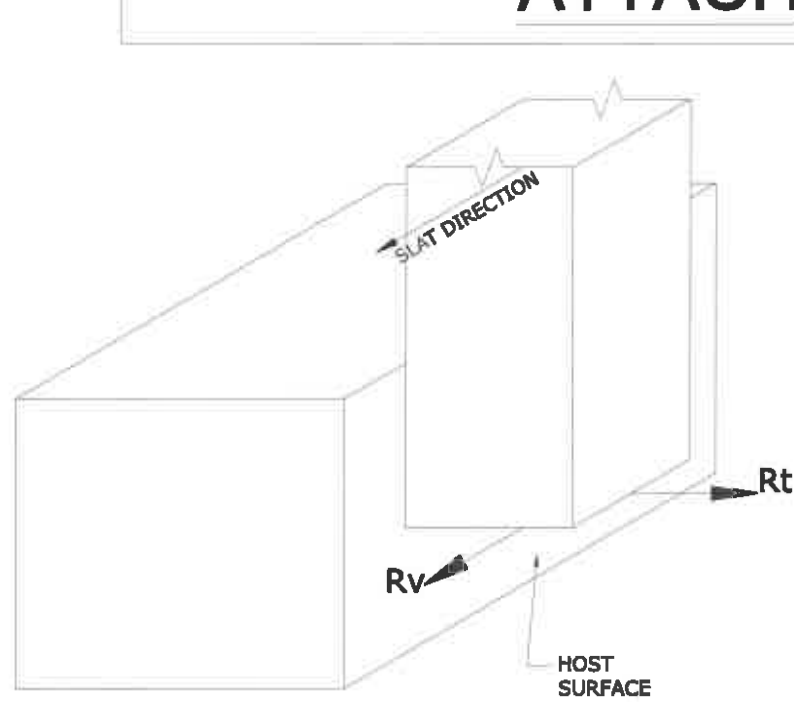
REMARKS:
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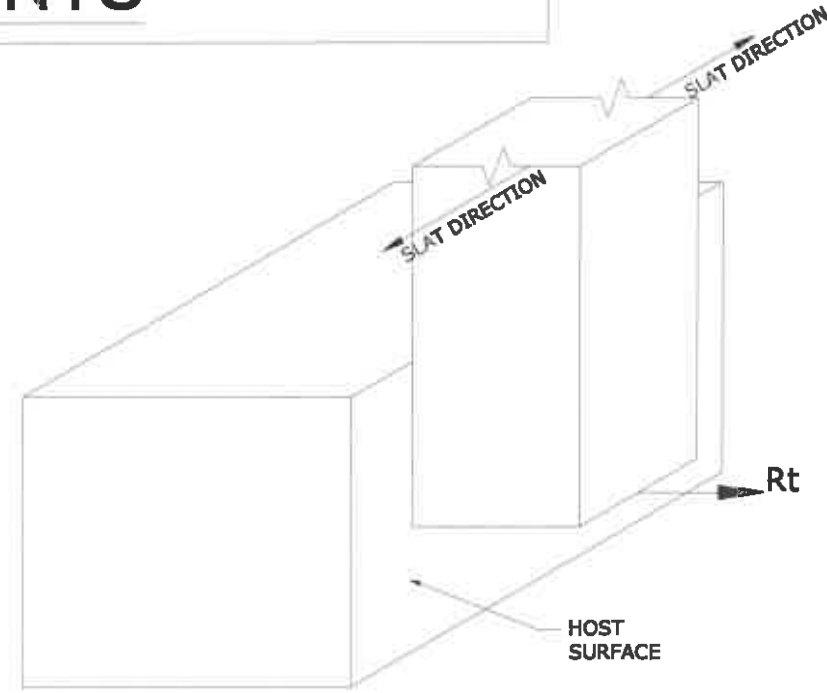
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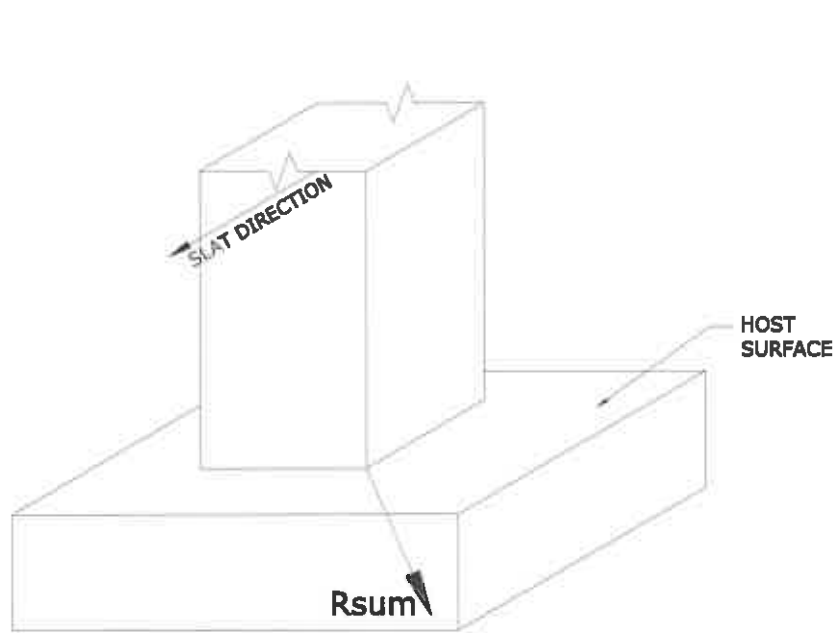
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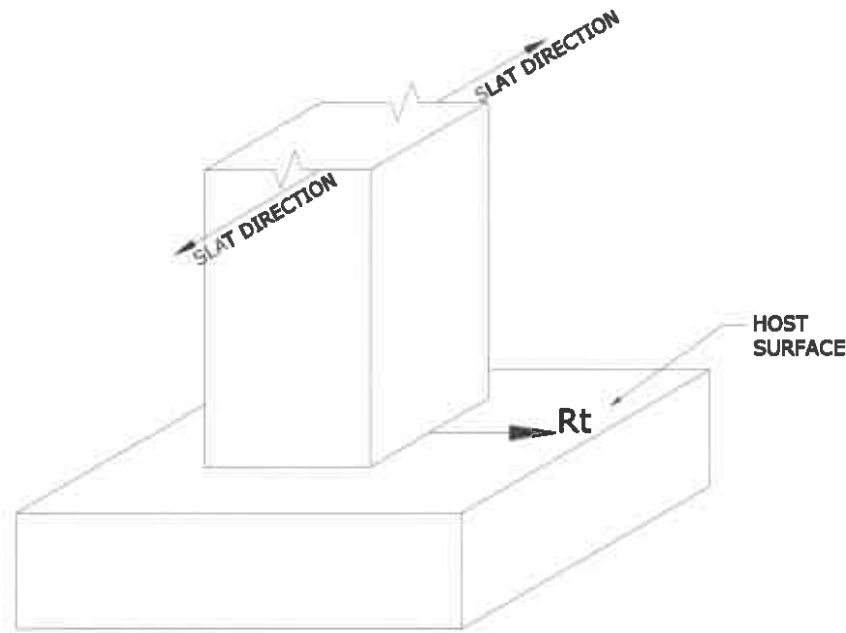
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FRANK BENNARDO, P.E.
CORPORATE OFFICE
160 SW 12th AVE, SUITE 105
DEERFIELD BEACH, FL 33442
P. (954) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407

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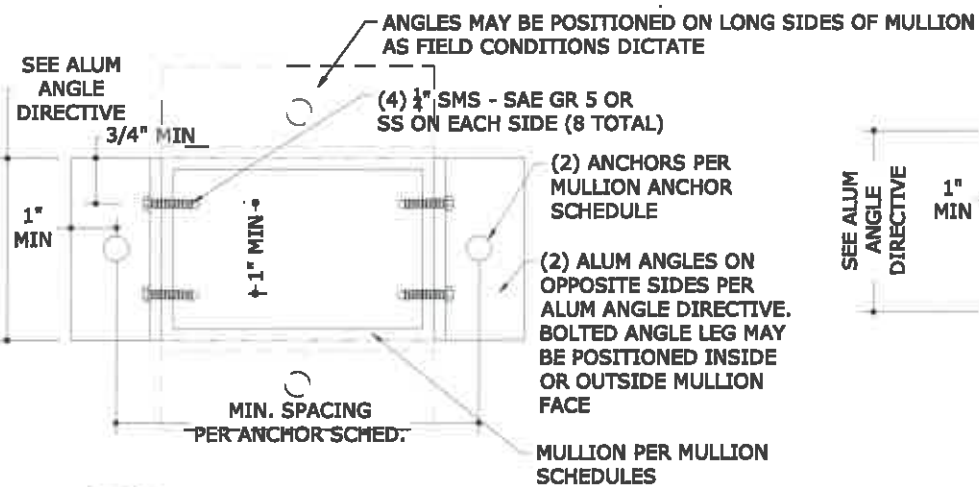
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	RWN	RWN	4/20/2020

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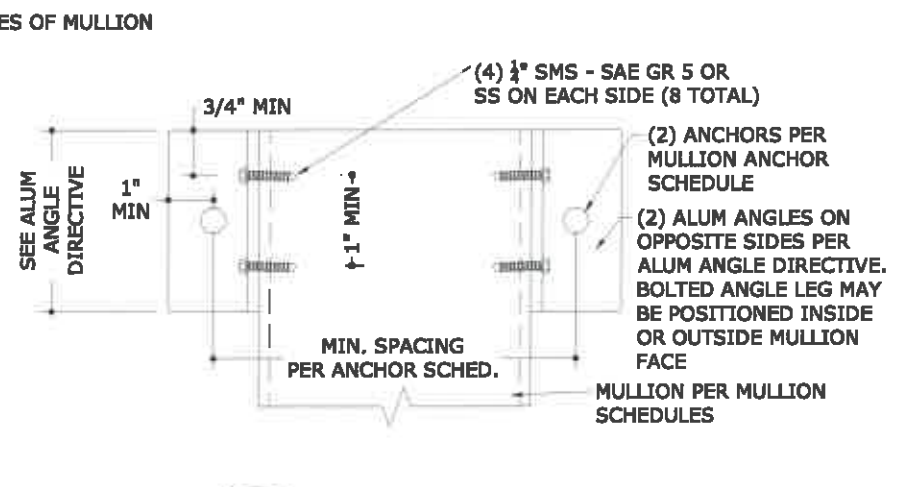
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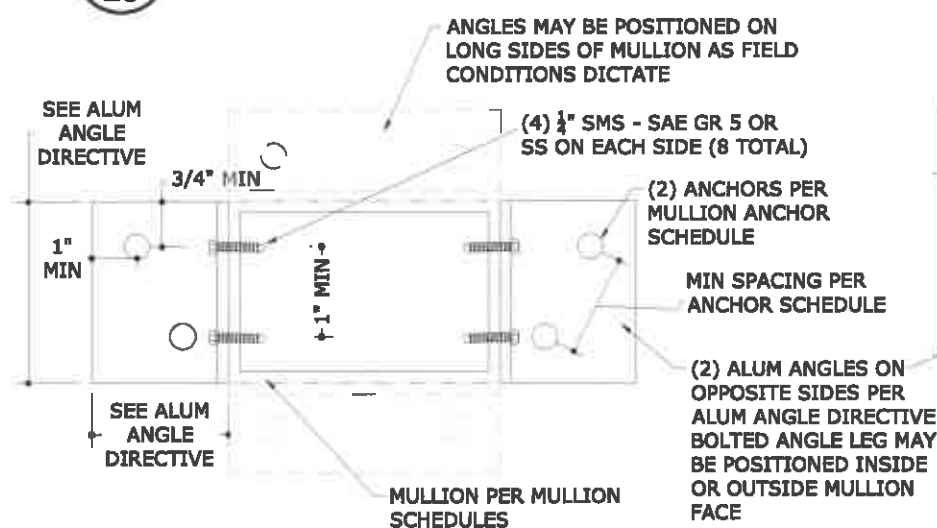
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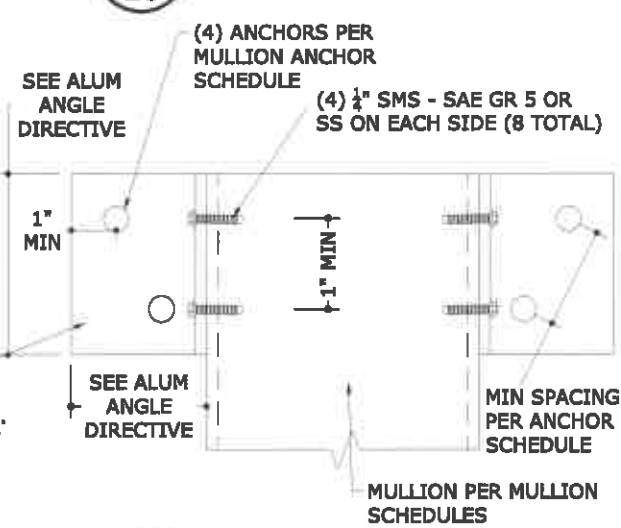
1A TRAPPED MOUNT OPTION 1
28 N.T.S.



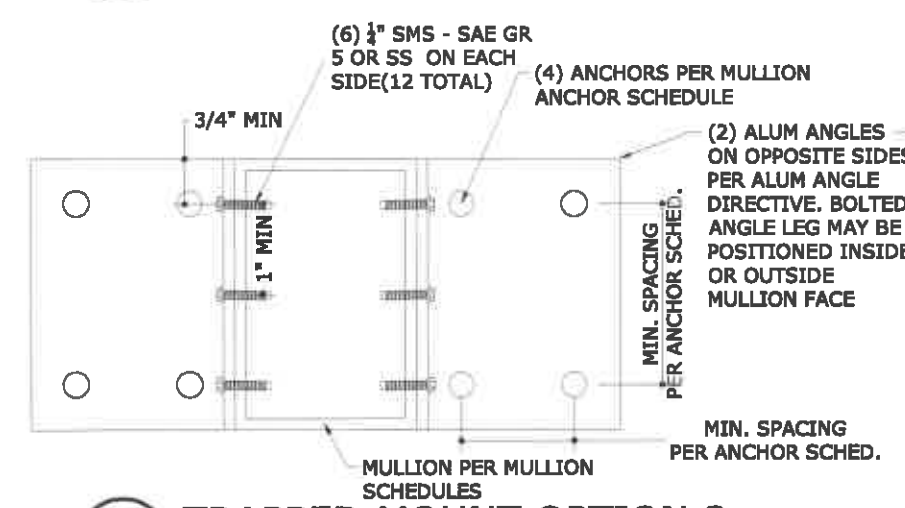
1B FACE MOUNT OPTION 1
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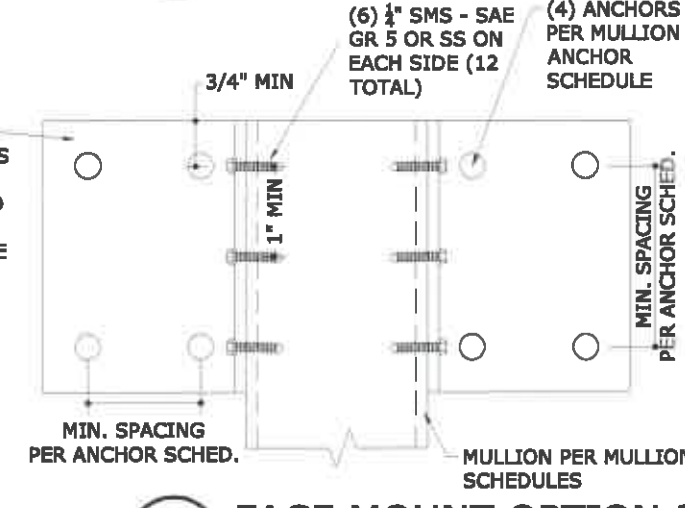
2A TRAPPED MOUNT OPTION 2
28 N.T.S.



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



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

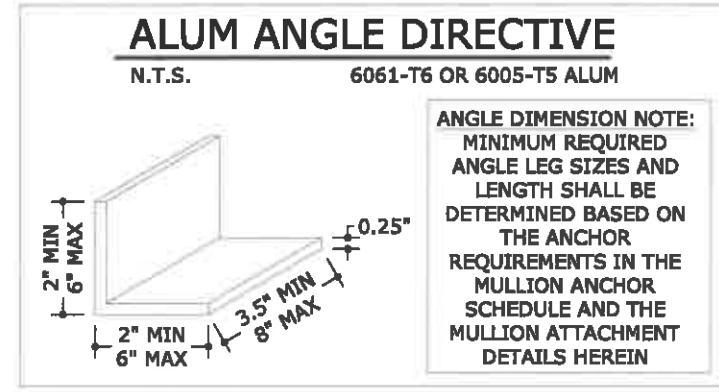


3B FACE MOUNT OPTION 3
28 N.T.S.

MULLION ANCHOR SCHEDULE

ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	CONNECTION
1/2" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2-1/2" EMBED TO 3KSI MIN. CONCRETE	6"	4.5"	1A/13, 1B/13	Tcap 560 LB Vcap 2249 LB
	4.0"	4.5"	2A/13, 2B/13	Tcap 6439 LB Vcap 2613 LB
	4.0"	4.5"	3A/13, 3B/13	Tcap 7143 LB Vcap 8213 LB
3/8" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2" EMBED TO 3KSI MIN. CONCRETE	6.0"	2.5"	1A/13, 1B/13	Tcap 1905 LB Vcap 1007 LB
	3.0"	2.5"	2A/13, 2B/13	Tcap 3801 LB Vcap 1700 LB
	3.0"	2.5"	3A/13, 3B/13	Tcap 7822 LB Vcap 3399 LB
3/8" DEWALT SCREW BOLTS (OR EQUIV.) W/ 3-1/4" EMBED TO GROUT-FILLED CONCRETE BLOCK*	6.0"	4.5"	1A/13, 1B/13	Tcap 1953 LB Vcap 1233 LB
	3.0"	4.5"	2A/13, 2B/13	Tcap 3906 LB Vcap 2467 LB
	3.0"	4.5"	3A/13, 3B/13	Tcap 7812 LB Vcap 4934 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	1A/13, 1B/13	Tcap 1310 LB Vcap 302 LB
	2.0"	1.25"	2A/13, 2B/13	Tcap 2620 LB Vcap 604 LB
	2.0"	1.25"	3A/13, 3B/13	Tcap 3930 LB Vcap 906 LB
5/16" DEWALT ULTRACON (OR EQUIV.) W/ 2" EMBED TO 3.5KSI MIN CONCRETE	5.0"	3.125"	1A/13, 1B/13	Tcap 1670 LB Vcap 1700 LB
	3.75"	3.125"	2A/13, 2B/13	Tcap 1820 LB Vcap 2840 LB
	3.75"	3.125"	3A/13, 3B/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 Vcap 750 LB
	5.0"	2.5"	2A/13, 2B/13	Tcap 1160 LB Vcap 1500 LB
	5.0"	2.5"	3A/13, 3B/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, 'Rv' 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 LEIU OF 1/2" 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



ENGINE EXPRES
CORPORATE OFFICE:
160 SW 12th AVE, SUITE 100
DEERFIELD BEACH, FL 33442
P: (561) 354-0660
TEAM@ENGINEERINGEXPRESS.COM
ENGINEERINGEXPRESS.COM

AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
4268 West Roads Dr.
West Palm Beach, FL 33407

40mm ER & NON-ER SLAT BERTHA ROLL-UP HURRICANE SHUTTER
TEXAS DEPARTMENT OF INSURANCE

DATE	DATE
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