



FL

FL 31658.1

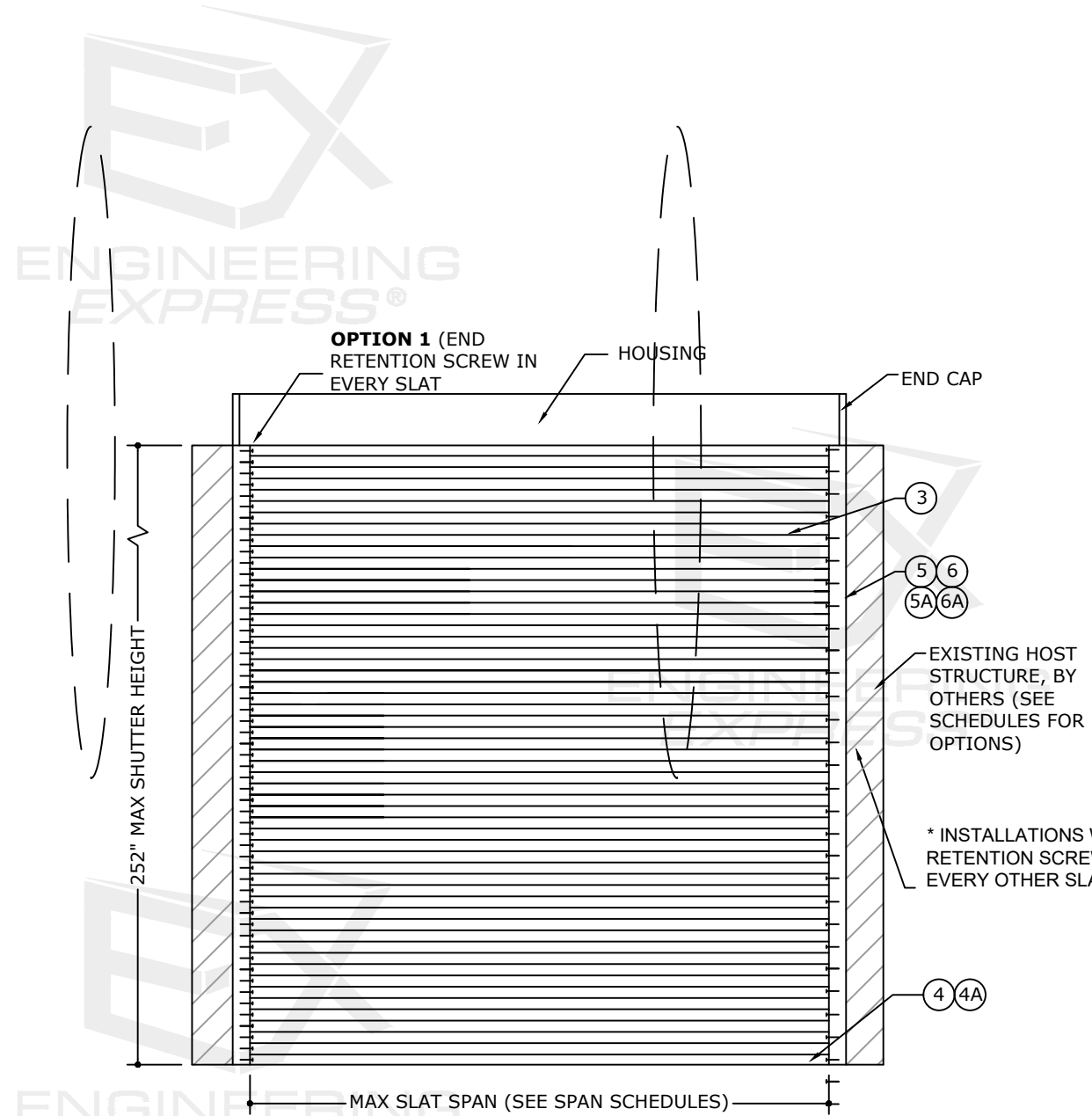
ENGINEERING EXPRESS®
 POSTAL ADDRESS:
 2234 NORTH FEDERAL HWY #7664
 BOCA RATON, FL 33431
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AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
 4268 WESTROADS DR.
 WEST PALM BEACH, FL 33407
 (800) 432-2204
 SINGLE WALL ROLL-UP HURRICANE SHUTTER
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)
 FLORIDA STATEWIDE APPROVAL (FSA FL#31658.1)

REMARKS	DRWN	CHKD	DATE
INT ISSUE	RWN	RWN	02/18/20
REV	RWN	RWN	04/14/21
2023 FCC UPDATE	MRT	RWN	10/03/23

23-65152

SCALE: NTS UNLESS NOTED



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

SINGLE WALL SLATS ③

SLAT SPAN	ALLOWABLE DESIGN PRESSURE	
	OPTION 1	OPTION 2
	END RET. SCREW ① EVERY SLAT	END RET. SCREW ① EVERY OTHER SLAT*
75.0"	± 150.0 PSF	± 150.0 PSF
80.0"	± 143.1 PSF	± 143.1 PSF
83.5"	± 137.0 PSF	± 137.0 PSF
87.0"	± 131.7 PSF	± 131.7 PSF
90.5"	± 127.0 PSF	± 127.0 PSF
94.0"	± 122.7 PSF	± 122.7 PSF
97.5"	± 118.9 PSF	± 118.9 PSF
101.0"	± 115.5 PSF	± 115.0 PSF
104.5"	± 112.3 PSF	± 110.0 PSF
108.0"	± 109.4 PSF	± 105.0 PSF
111.5"	± 106.8 PSF	± 100.0 PSF
115.0"	± 104.3 PSF	± 95.0 PSF
118.5"	± 102.1 PSF	± 90.0 PSF
120.0"	± 100.0 PSF	± 85.0 PSF
134.0"	± 94.4 PSF	± 76.9 PSF
146.0"	± 88.9 PSF	± 68.1 PSF
158.0"	± 83.4 PSF	± 60.3 PSF
170.0"	± 77.9 PSF	± 52.2 PSF
182.0"	± 72.4 PSF	± 45.0 PSF
194.0"	± 66.8 PSF	
206.0"	± 61.3 PSF	
218.0"	± 55.8 PSF	
230.0"	± 50.3 PSF	
241.5"	± 45.0 PSF	

* SEE ELEVATION VIEW ON THIS SHEET FOR ADDITIONAL REQUIREMENTS AS WELL AS PART ① DETAIL IN THIS DRAWING

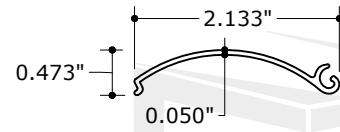
SLAT SPAN	GLASS SEPARATION SCHEDULE	
	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
75.0"	5.8"	5.8"
80.0"	7.0"	5.9"
83.5"	7.0"	6.1"
87.0"	7.0"	6.2"
90.5"	7.0"	6.4"
94.0"	7.0"	6.5"
97.5"	7.0"	6.7"
101.0"	7.0"	6.9"
104.5"	7.0"	7.0"
108.0"	7.2"	7.2"
111.5"	7.5"	7.5"
115.0"	7.7"	7.7"
118.5"	8.0"	8.0"
120.0"	8.3"	8.3"
134.0"	10.5"	8.6"
146.0"	10.5"	8.8"
158.0"	10.5"	9.0"
170.0"	10.5"	9.2"
182.0"	10.5"	9.4"
194.0"	10.5"	9.6"
206.0"	10.5"	9.9"
218.0"	10.5"	10.1"
230.0"	10.5"	10.3"
241.5"	10.5"	10.5"

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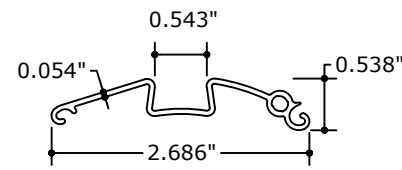




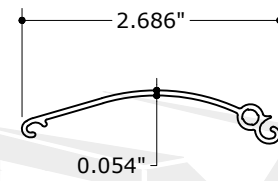
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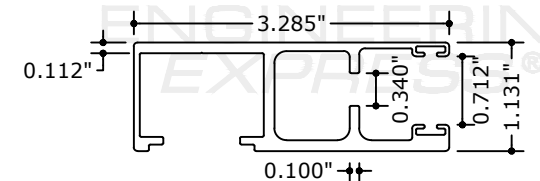
1 **STARTER SLAT**
N.T.S. 6063-T6 ALUM



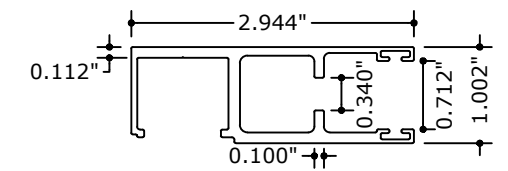
2 **FINGER PULL SLAT**
N.T.S. 6063-T6 ALUM
(1) PER SHUTTER AS APPLICABLE



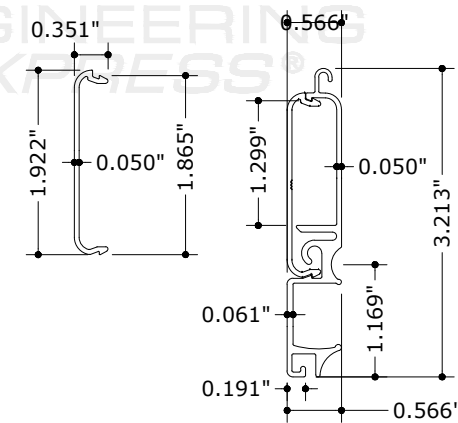
3 **SINGLE WALL SLAT**
N.T.S. 6063-T6 ALUM



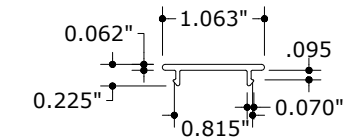
6 **SIDE RAIL TYPE 2**
N.T.S. 6063-T6 ALUM



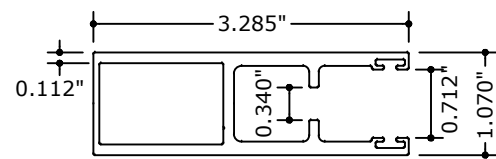
5 **SIDE RAIL TYPE 1**
N.T.S. 6063-T6 ALUM



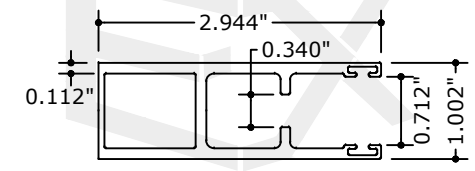
4 **BASE SLAT**
N.T.S. 6063-T6 ALUM
(OPTIONAL COMPONENT)



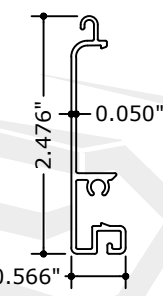
7 **SNAP CAP**
N.T.S. 6063-T6 ALUM



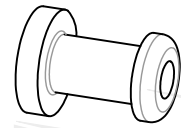
6A **SIDE RAIL TYPE 2 (CLOSED)**
N.T.S. 6063-T6 ALUM



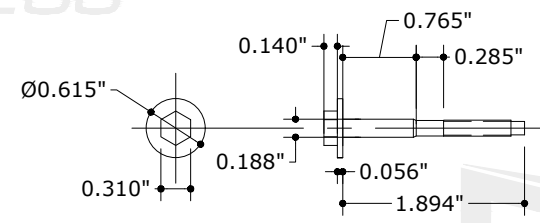
5A **SIDE RAIL TYPE 1 (CLOSED)**
N.T.S. 6063-T6 ALUM



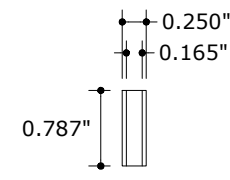
4A **SHORT BASE SLAT**
N.T.S. 6063-T6 ALUM
(OPTIONAL COMPONENT)



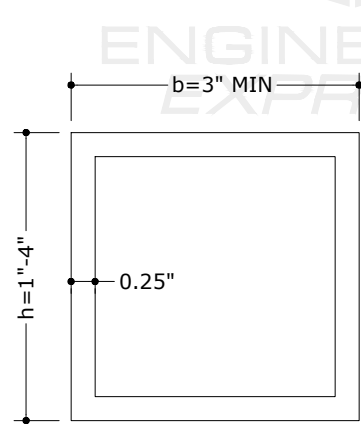
8 **END CAP W/ MONOLITHIC SCREW SLEEVE**
N.T.S. (LEFT SHOWN, RIGHT IS MIRROR)
RIGID NYLON, 76-78 TYPE "O" SHORE HARDNESS



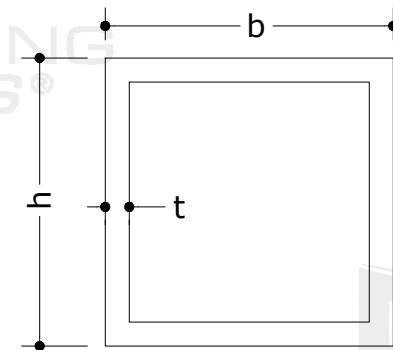
11 **#8-32 410 S.S. SCREW**
#8-32 X 1.894" AISI 410 S.S. SCREW W/ 0.31" DIAM HV MARKED HEAD & T=0.064" X 0.620" DIAM MONOLITHIC WASHER W/ BERTHA H.V. DACROSHIELD COATING SYSTEM AS MANUFACTURED BY APPROVED COATING APPLICATORS REGISTERED WITH AMERICAN SHUTTER SYSTEM ASSOCIATION. **SEE SHEET 1 FOR SCREW REQUIREMENTS, ALWAYS REQUIRED FOR BASE SLAT FOR ALL INSTALLATIONS**



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

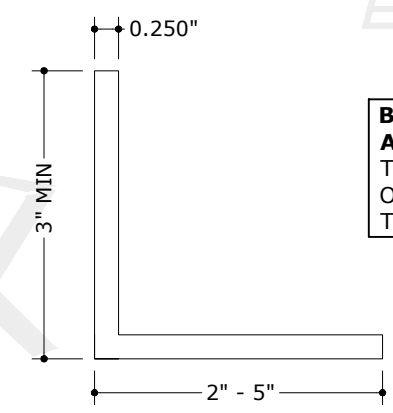


12 **BUILD-OUT MOUNTED TUBES**
N.T.S. 6063-T6



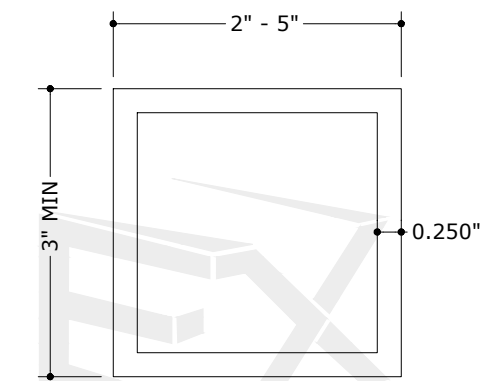
MULLIONS	b	h	t
(24)	4"	6"	0.250"
(25)	4"	8"	0.250"
(26)	4"	4"	0.250"

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



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

BUILD-OUT TUBES AND TRAPPED ANGLE NOTES: FOR 2X ANGLES OR TUBES, THE LONG SIDE OF THE ANGLE OR TUBE SHALL BE FLUSH AGAINST THE HOST WALL



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

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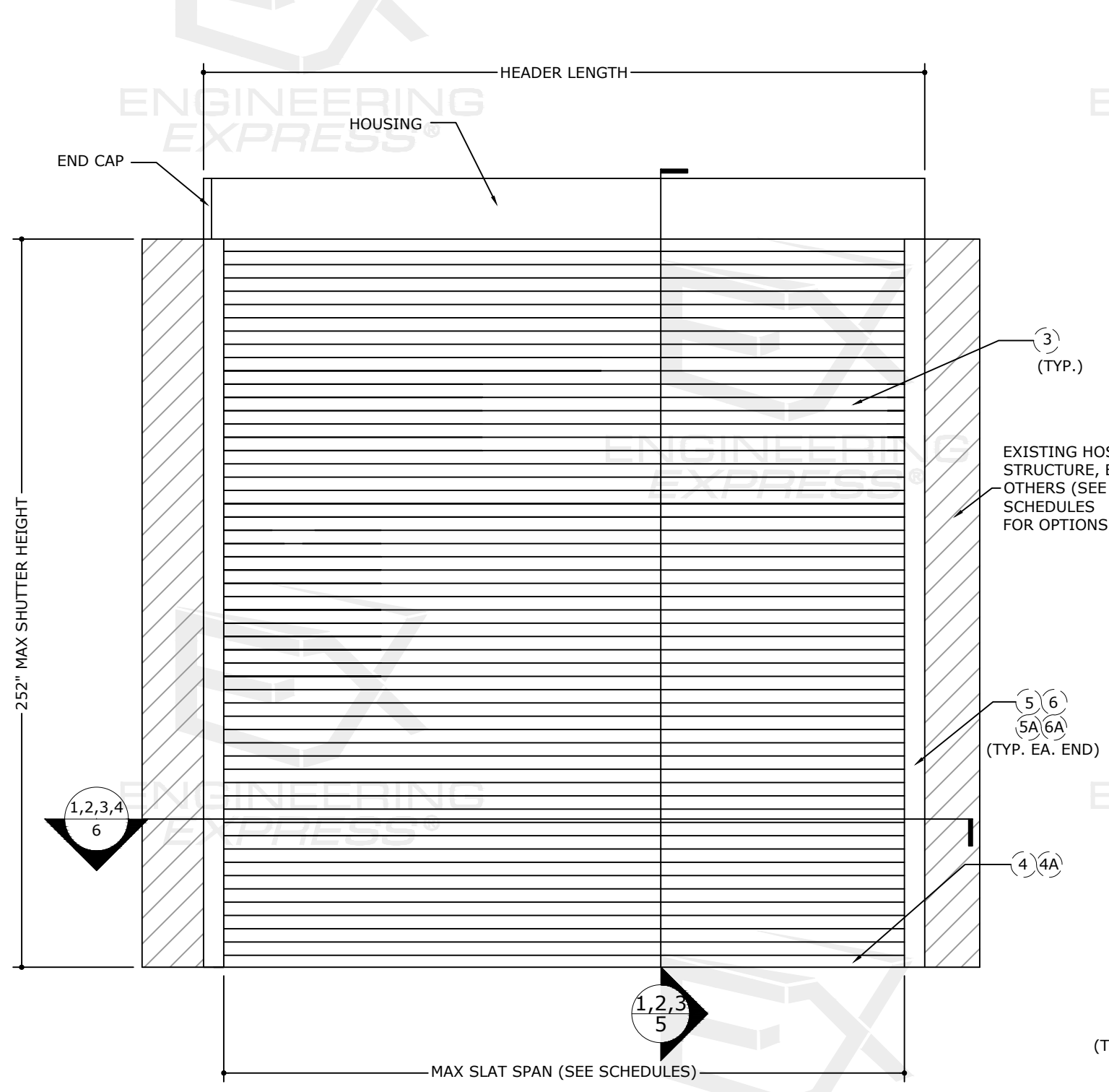
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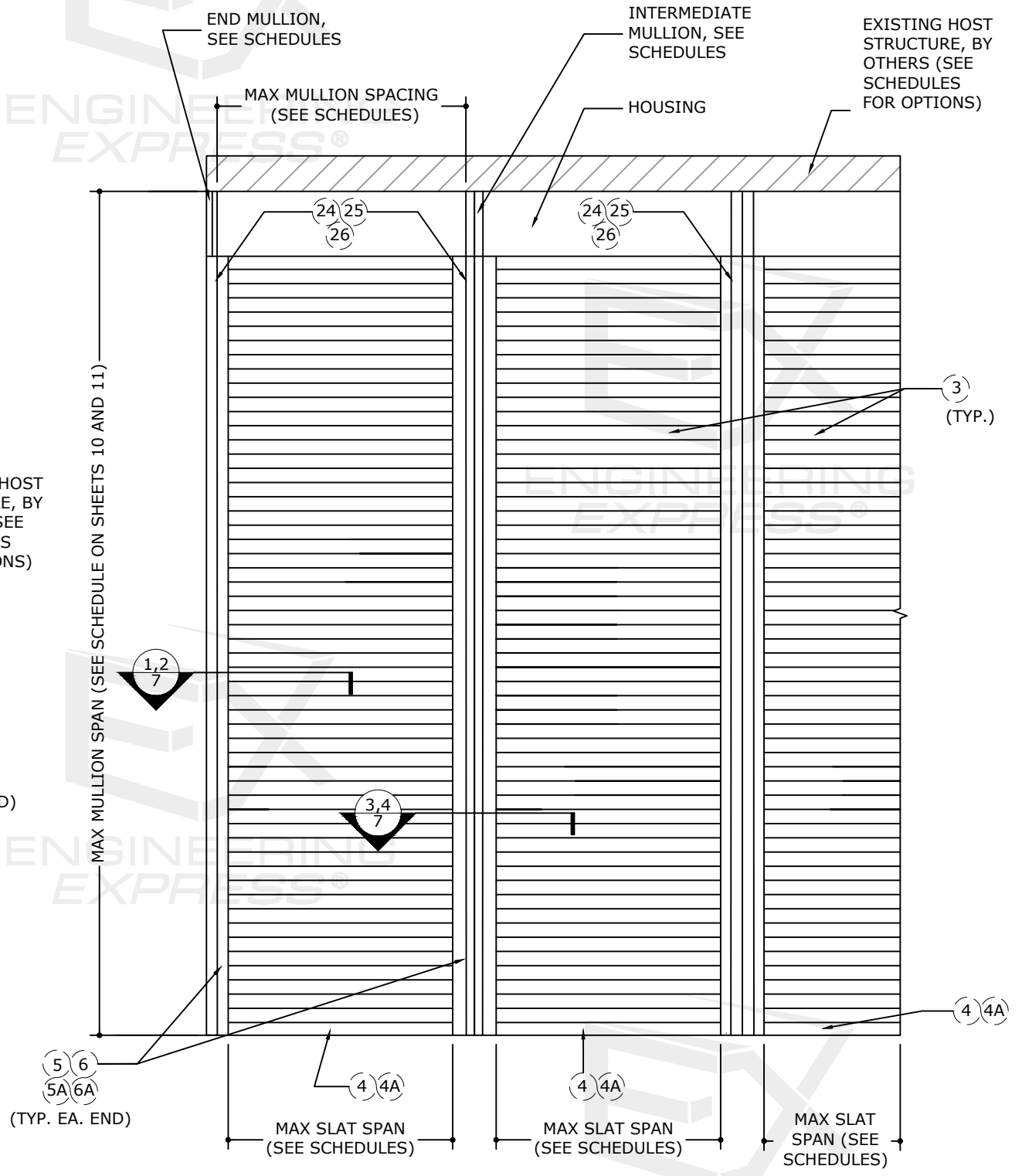
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1
4 N.T.S. **TYPICAL SINGLE UNIT ELEVATION W/O MULLIONS**
EXTERIOR ELEV



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

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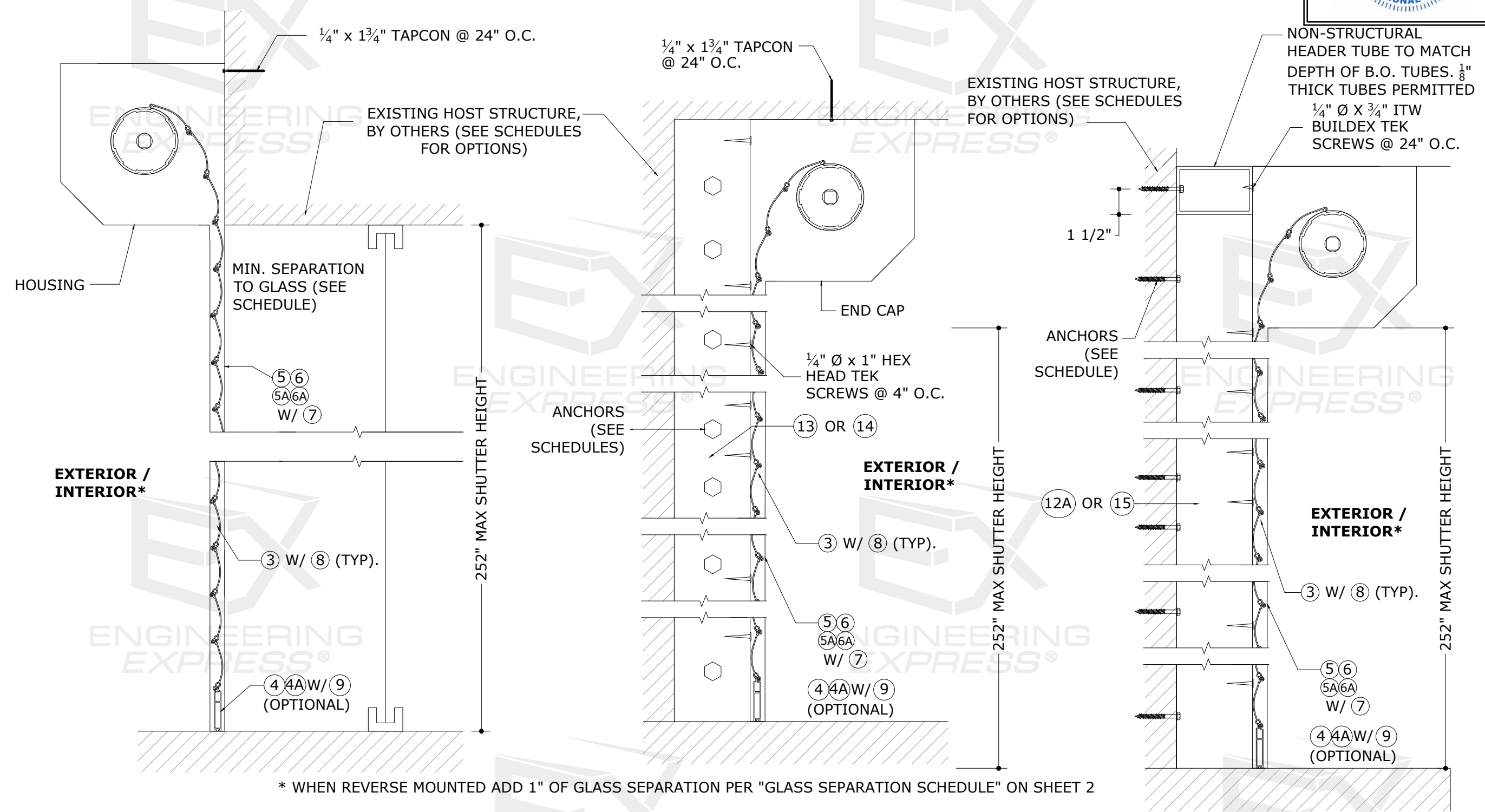
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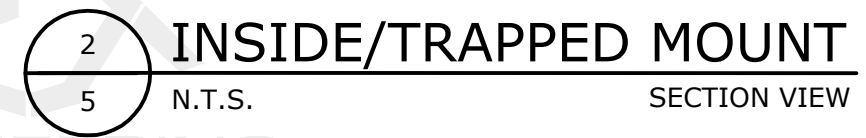


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SHUTTER ATTACHMENT TO HOST



* WHEN REVERSE MOUNTED ADD 1" OF GLASS SEPARATION PER "GLASS SEPARATION SCHEDULE" ON SHEET 2



- 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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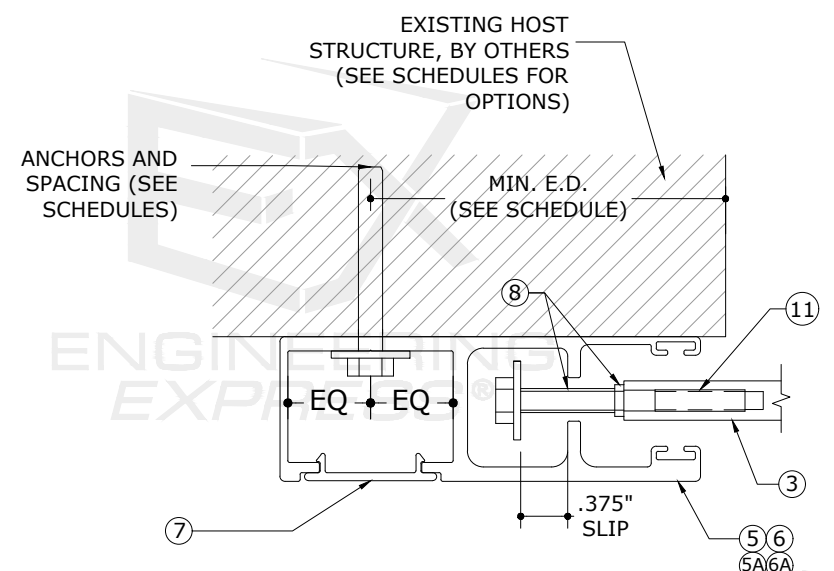
SHUTTER ATTACHMENT TO HOST

RICHARD NEET, P.E.
PE# 86488 CA# 9885

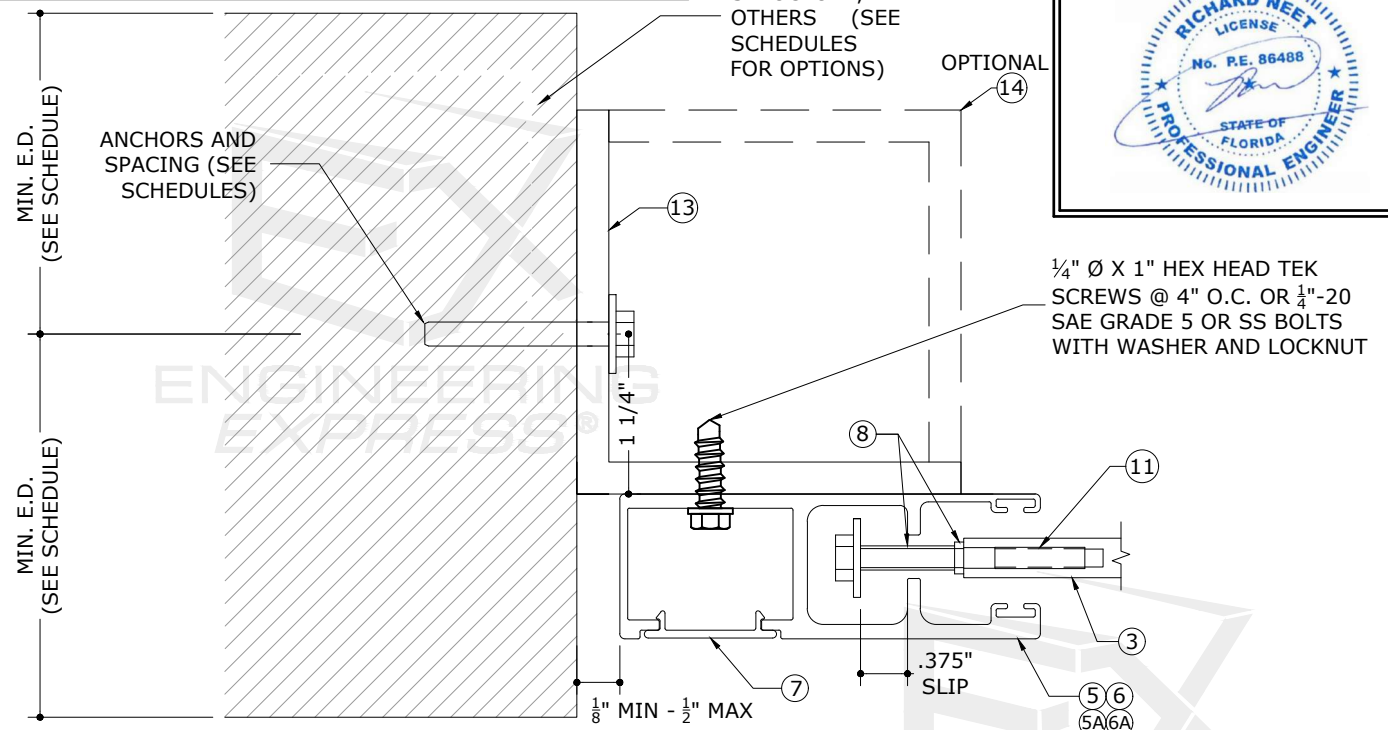
OCTOBER 3, 2023



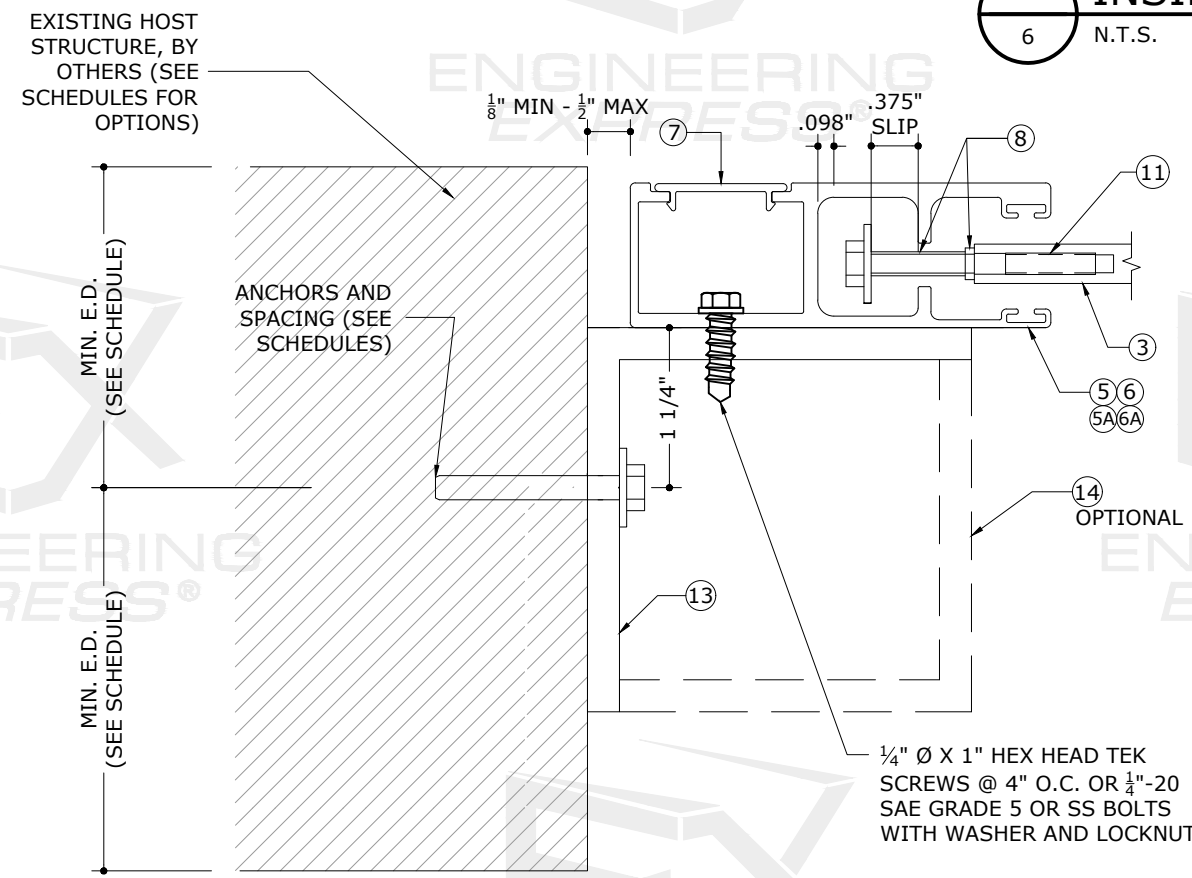
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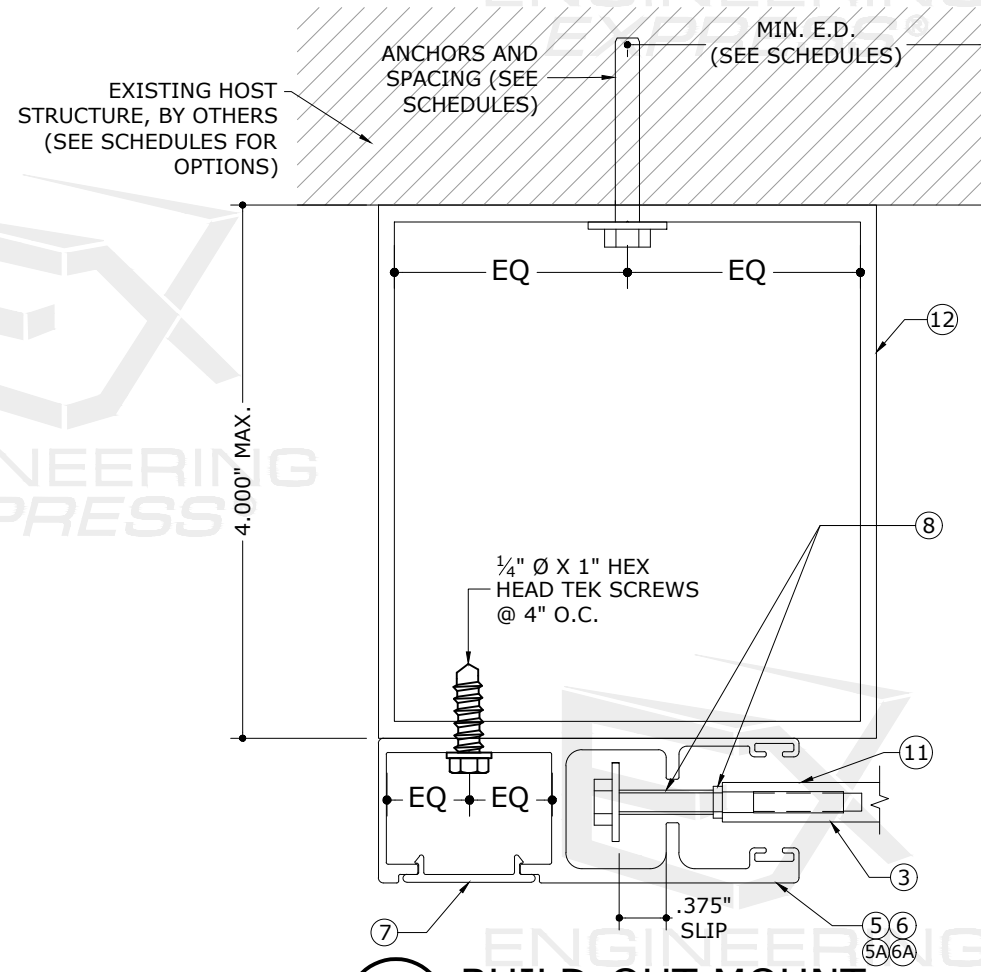
1 WALL MOUNT
6 N.T.S. SECTION VIEW



2 INSIDE/TRAPPED MOUNT
6 N.T.S. SECTION VIEW



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



4 BUILD-OUT MOUNT
6 N.T.S. SECTION VIEW

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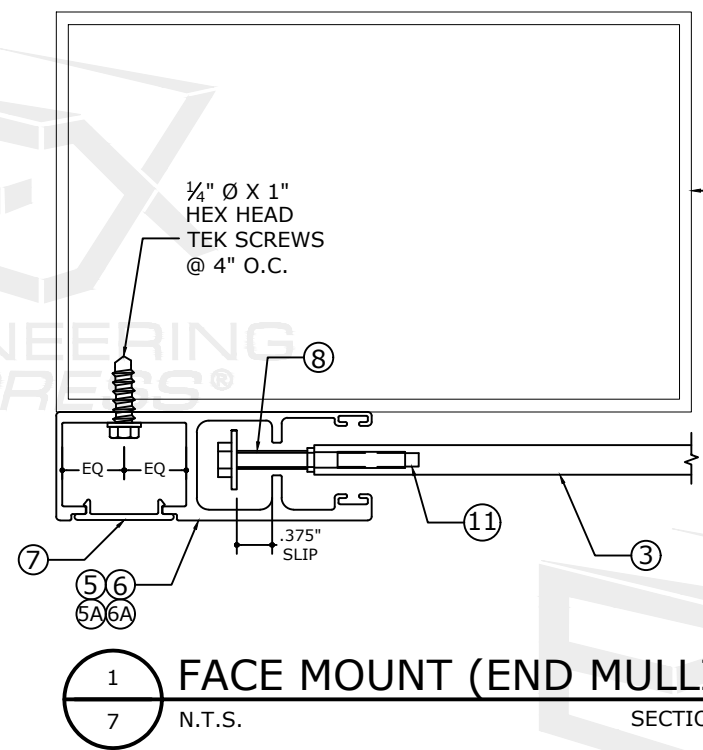
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SHUTTER ATTACHMENT OPTION TO ALUMINUM MULLIONS

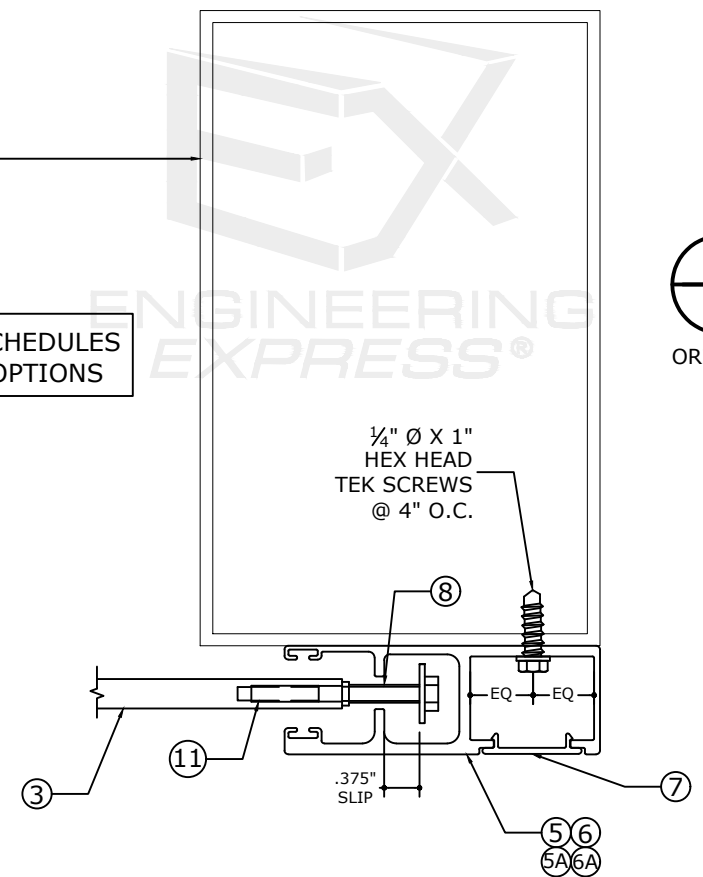
RICHARD NEET, P.E.
PE# 86488 CA# 9885

OCTOBER 3, 2023

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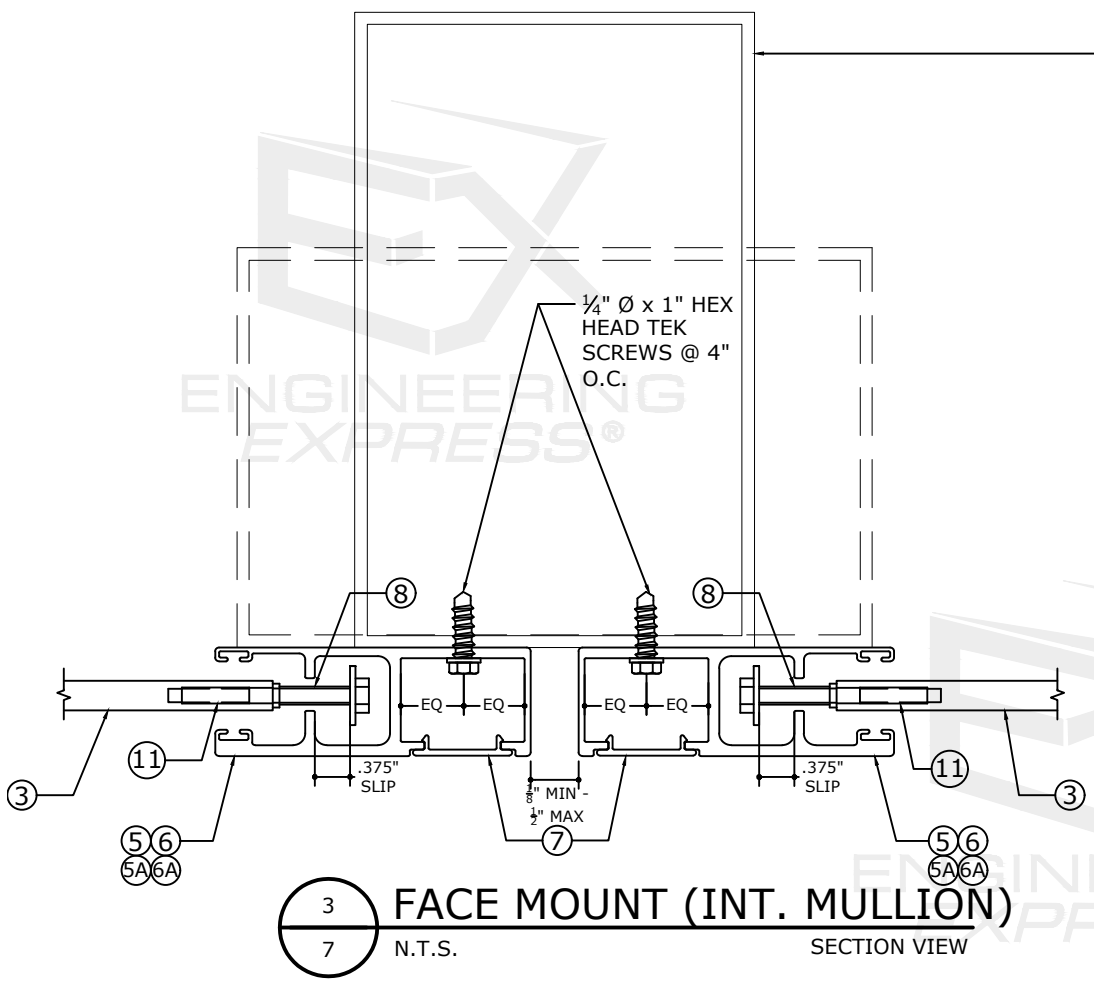


1 FACE MOUNT (END MULLION)
7 N.T.S. SECTION VIEW

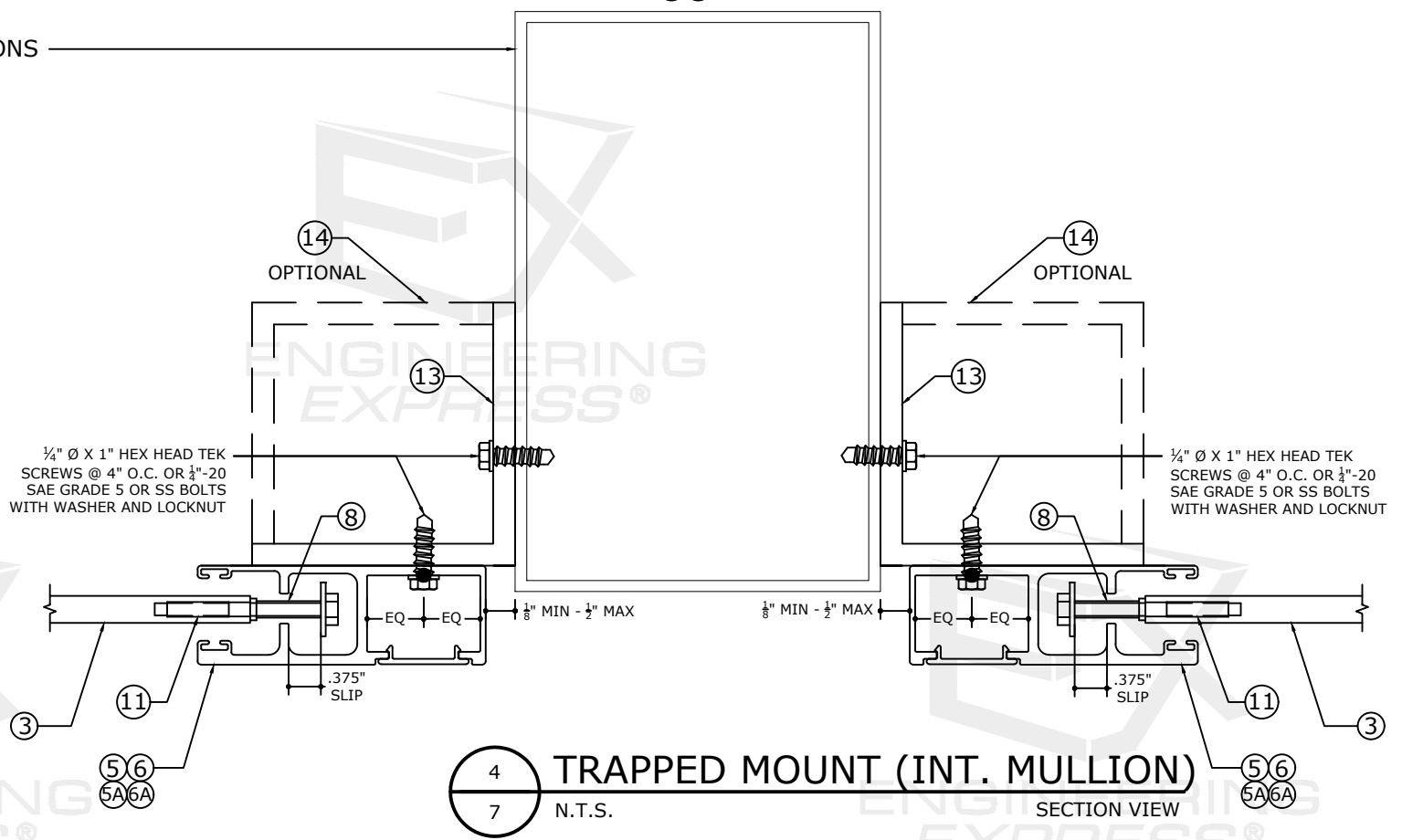


2 FACE MOUNT (END MULLION)
7 N.T.S. SECTION VIEW
ORIENTATION #2 FACE MOUNT END MULLION

SEE MULLION SCHEDULES FOR MULLION OPTIONS



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



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

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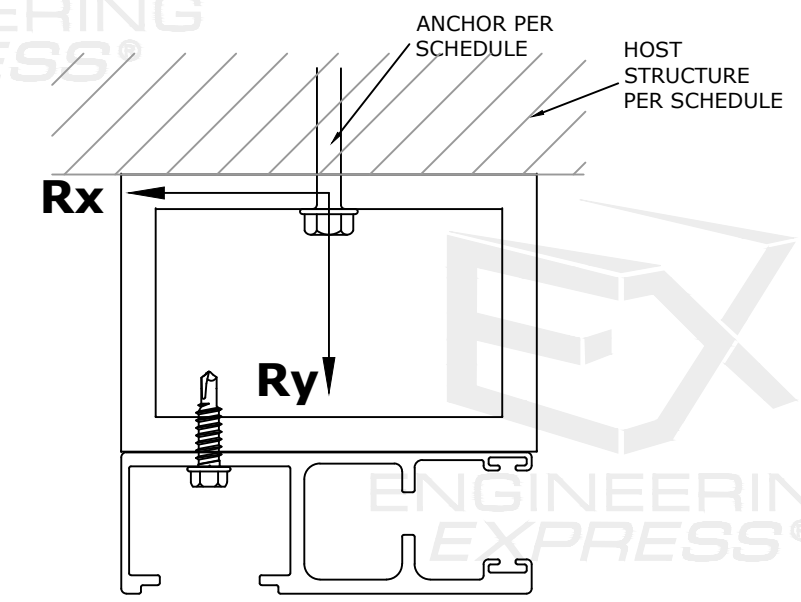


OPTION 1 ANCHOR SCHEDULE: BUILD-OUT MOUNT

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)																
				1/4" DEWALT ULTRACON TO 3000 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" HILLMAN GROUP (ALL POINTS) SCREW TO 3000 CONCRETE; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" HILLMAN GROUP (ALL POINTS) SCREW TO GROUT-FILLED BLOCK; 2.25" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" DEWALT ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMENT; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON TO 3000 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	1/4" DEWALT POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMENT; 3" MIN. EDGE DISTANCE	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/DEWALT CONFLX 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
76.5"	+/- 40 PSF	225.4 LB/FT	127.5 LB/FT	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 68 PSF	623.6 LB/FT	215.2 LB/FT	5.25"	5.75"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 95 PSF	1021.3 LB/FT	302.8 LB/FT	3.25"	3.50"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 123 PSF	1418.6 LB/FT	390.5 LB/FT	2.25"	2.50"	4.75"	3.75"	4.50"	4.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"
108"	+/- 40 PSF	796.9 LB/FT	180.0 LB/FT	4.50"	4.75"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 57 PSF	1219.4 LB/FT	258.1 LB/FT	2.75"	3.00"	5.75"	4.50"	5.50"	5.50"	4.25"	4.25"	4.25"	4.25"	4.25"	4.25"	4.25"	4.25"	4.25"	4.25"	4.25"
	+/- 75 PSF	1641.3 LB/FT	336.2 LB/FT	2.00"	2.00"	4.25"	3.50"	4.25"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"	4.00"
	+/- 92 PSF	2062.6 LB/FT	414.4 LB/FT	3.50"	3.75"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
120"	+/- 40 PSF	998.5 LB/FT	200.0 LB/FT	3.50"	3.75"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 55 PSF	1426.2 LB/FT	275.0 LB/FT	2.50"	2.75"	5.00"	4.00"	4.75"	4.75"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"	3.50"
	+/- 70 PSF	1853.3 LB/FT	350.0 LB/FT	3.75"	3.75"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 85 PSF	2279.7 LB/FT	425.0 LB/FT	3.00"	3.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
146"	+/- 40 PSF	1436.7 LB/FT	243.3 LB/FT	2.50"	2.75"	5.00"	4.00"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
	+/- 52 PSF	1903.7 LB/FT	317.7 LB/FT	3.75"	3.75"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 64 PSF	2369.7 LB/FT	392.1 LB/FT	3.00"	3.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 77 PSF	2834.6 LB/FT	466.5 LB/FT	2.00"	2.00"	4.00"	3.75"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
170"	+/- 40 PSF	1850.9 LB/FT	283.3 LB/FT	2.00"	2.00"	4.00"	3.75"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
	+/- 49 PSF	2301.8 LB/FT	350.4 LB/FT	3.00"	3.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 59 PSF	2750.7 LB/FT	417.5 LB/FT	2.75"	2.75"	5.00"	4.00"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
	+/- 68 PSF	3197.6 LB/FT	484.5 LB/FT	2.00"	2.00"	4.00"	3.75"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
206"	+/- 35 PSF	2212.8 LB/FT	300.4 LB/FT	3.25"	3.25"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 42 PSF	2638.2 LB/FT	356.9 LB/FT	3.00"	3.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 48 PSF	3063.5 LB/FT	413.4 LB/FT	2.75"	2.75"	5.00"	4.00"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
	+/- 55 PSF	3488.8 LB/FT	469.9 LB/FT	2.25"	2.25"	4.00"	3.75"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
241.5"	+/- 30 PSF	2427.4 LB/FT	301.9 LB/FT	3.00"	3.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 34 PSF	2735.3 LB/FT	339.6 LB/FT	3.00"	3.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"	6.00"
	+/- 38 PSF	3043.3 LB/FT	377.3 LB/FT	2.75"	2.75"	5.00"	4.00"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"
	+/- 45 PSF	3659.1 LB/FT	452.8 LB/FT	2.50"	2.50"	4.00"	3.75"	4.75"	4.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"	3.75"

ANCHOR NOTES: SEE SHEET 8 FOR ANCHOR NOTES.

BUILD-OUT MOUNT DIRECTIVE



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 FLORIDA BUILDING CODE EIGHTH EDITION (2023)
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REMARKS	DRWN	CHKD	DATE
INT ISSUE	RWN	RWN	02/18/20
REV	RWN	RWN	04/14/21
2023 FCC UPDATE	MRT	RWN	10/03/23

23-65152

SCALE: NTS UNLESS NOTED

INTERMEDIATE MULLION SCHEDULES

RICHARD NEET, P.E.
PE# 86488 CA# 9885

OCTOBER 3, 2023



FL

MULLION SCHEDULE: INTERMEDIATE MULLIONS											
		4"x6"x0.25" ALUM TUBE		6"x4"x0.25" ALUM TUBE		4"x8"x0.25" ALUM TUBE		8"x4"x0.25" ALUM TUBE		4"x4"x0.25" ALUM TUBE	
SLAT SPAN	DESIGN PRESSURE	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt	MAX MULLION LENGTH	END REACTION Rt
77"	+/- 40 PSF	144.0"	1530.0 LB	144.0"	1530.0 LB	144.0"	1530.0 LB	144.0"	1530.0 LB	139.0"	1476.8 LB
	+/- 68 PSF	144.0"	2581.9 LB	130.6"	2341.1 LB	144.0"	2581.9 LB	142.0"	2545.2 LB	116.7"	2093.3 LB
	+/- 95 PSF	144.0"	3633.8 LB	116.5"	2940.1 LB	144.0"	3633.8 LB	126.7"	3196.5 LB	104.2"	2628.9 LB
	+/- 123 PSF	132.6"	4314.8 LB	107.0"	3483.1 LB	144.0"	4685.6 LB	116.4"	3786.9 LB	95.7"	3114.5 LB
	+/- 150 PSF	123.7"	4929.7 LB	100.1"	3986.6 LB	138.9"	5534.0 LB	108.8"	4334.3 LB	89.5"	3564.7 LB
108"	+/- 40 PSF	144.0"	2160.0 LB	138.6"	2078.6 LB	144.0"	2160.0 LB	144.0"	2160.0 LB	123.9"	1858.5 LB
	+/- 57 PSF	144.0"	3139.2 LB	122.3"	2666.9 LB	144.0"	3139.2 LB	133.0"	2899.5 LB	109.4"	2384.6 LB
	+/- 75 PSF	136.5"	4069.4 LB	110.2"	3285.1 LB	144.0"	4291.7 LB	119.8"	3571.5 LB	98.6"	2937.3 LB
	+/- 92 PSF	125.9"	4787.6 LB	101.6"	3864.8 LB	142.2"	5406.7 LB	110.5"	4201.9 LB	90.9"	3455.8 LB
	+/- 109 PSF	114.5"	5324.7 LB	95.0"	4418.2 LB	128.6"	5977.4 LB	103.3"	4803.5 LB	85.0"	3950.5 LB
146"	+/- 40 PSF	144.0"	3331.5 LB	119.9"	2774.7 LB	144.0"	3331.5 LB	130.4"	3016.7 LB	107.2"	2481.0 LB
	+/- 52 PSF	134.0"	4226.7 LB	108.2"	3412.1 LB	144.0"	4543.0 LB	117.6"	3709.6 LB	96.7"	3050.9 LB
	+/- 64 PSF	122.9"	4962.8 LB	99.6"	4022.4 LB	138.0"	5571.2 LB	108.3"	4373.2 LB	89.1"	3596.7 LB
	+/- 77 PSF	110.9"	5502.0 LB	93.0"	4615.4 LB	124.4"	6176.4 LB	101.1"	5017.9 LB	83.1"	4126.9 LB
	+/- 89 PSF	101.4"	6013.9 LB	87.6"	5196.7 LB	113.9"	6751.1 LB	95.3"	5649.9 LB	76.2"	4516.9 LB
170"	+/- 40 PSF	134.6"	4188.1 LB	108.7"	3380.9 LB	144.0"	4480.9 LB	118.1"	3675.8 LB	97.2"	3023.1 LB
	+/- 49 PSF	122.7"	4971.4 LB	99.5"	4031.7 LB	137.7"	5580.8 LB	108.2"	4383.3 LB	89.0"	3605.0 LB
	+/- 59 PSF	109.8"	5555.6 LB	92.4"	4675.5 LB	123.2"	6236.7 LB	100.5"	5083.3 LB	82.5"	4172.7 LB
	+/- 68 PSF	99.7"	6117.6 LB	86.6"	5316.6 LB	111.9"	6867.6 LB	94.2"	5780.2 LB	74.9"	4594.8 LB
	+/- 78 PSF	91.5"	6662.8 LB	81.3"	5918.7 LB	102.8"	7479.5 LB	89.0"	6477.0 LB	68.8"	5004.3 LB
206"	+/- 35 PSF	140.5"	3843.8 LB	113.4"	3102.9 LB	144.0"	3939.8 LB	123.3"	3373.5 LB	101.4"	2774.5 LB
	+/- 42 PSF	132.5"	4322.9 LB	106.9"	3489.7 LB	144.0"	4698.8 LB	116.3"	3794.0 LB	95.6"	3120.3 LB
	+/- 48 PSF	126.0"	4777.0 LB	101.7"	3856.3 LB	142.4"	5397.7 LB	110.6"	4192.6 LB	91.0"	3448.1 LB
	+/- 55 PSF	118.8"	5132.2 LB	97.4"	4206.5 LB	133.4"	5761.3 LB	105.9"	4573.4 LB	87.1"	3761.3 LB
	+/- 61 PSF	112.2"	5437.1 LB	93.7"	4543.0 LB	125.9"	6103.6 LB	101.9"	4939.2 LB	83.8"	4062.1 LB
242"	+/- 30 PSF	140.0"	3873.5 LB	113.0"	3126.9 LB	144.0"	3985.5 LB	122.8"	3399.6 LB	101.0"	2796.0 LB
	+/- 34 PSF	134.5"	4194.8 LB	108.6"	3386.3 LB	144.0"	4491.6 LB	118.0"	3681.6 LB	97.1"	3027.9 LB
	+/- 38 PSF	129.8"	4504.3 LB	104.8"	3636.1 LB	144.0"	4997.7 LB	113.9"	3953.2 LB	93.7"	3251.3 LB
	+/- 41 PSF	125.7"	4803.5 LB	101.5"	3877.7 LB	141.8"	5420.1 LB	110.3"	4215.9 LB	90.7"	3467.3 LB
	+/- 45 PSF	120.9"	5045.5 LB	98.5"	4112.0 LB	135.7"	5664.0 LB	107.1"	4470.6 LB	88.1"	3676.8 LB

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 2/4.
- "END MULLIONS" ARE AS DEFINED IN ELEVATION 2/4
- 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 (+/- 12") ON ADJACENT SIDES OF MULLION. OTHERWISE, USE "END MULLION" TABLES.

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 SINGLE WALL ROLL-UP HURRICANE SHUTTER
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)
 FLORIDA STATEWIDE APPROVAL (FSA FL#31658.1)

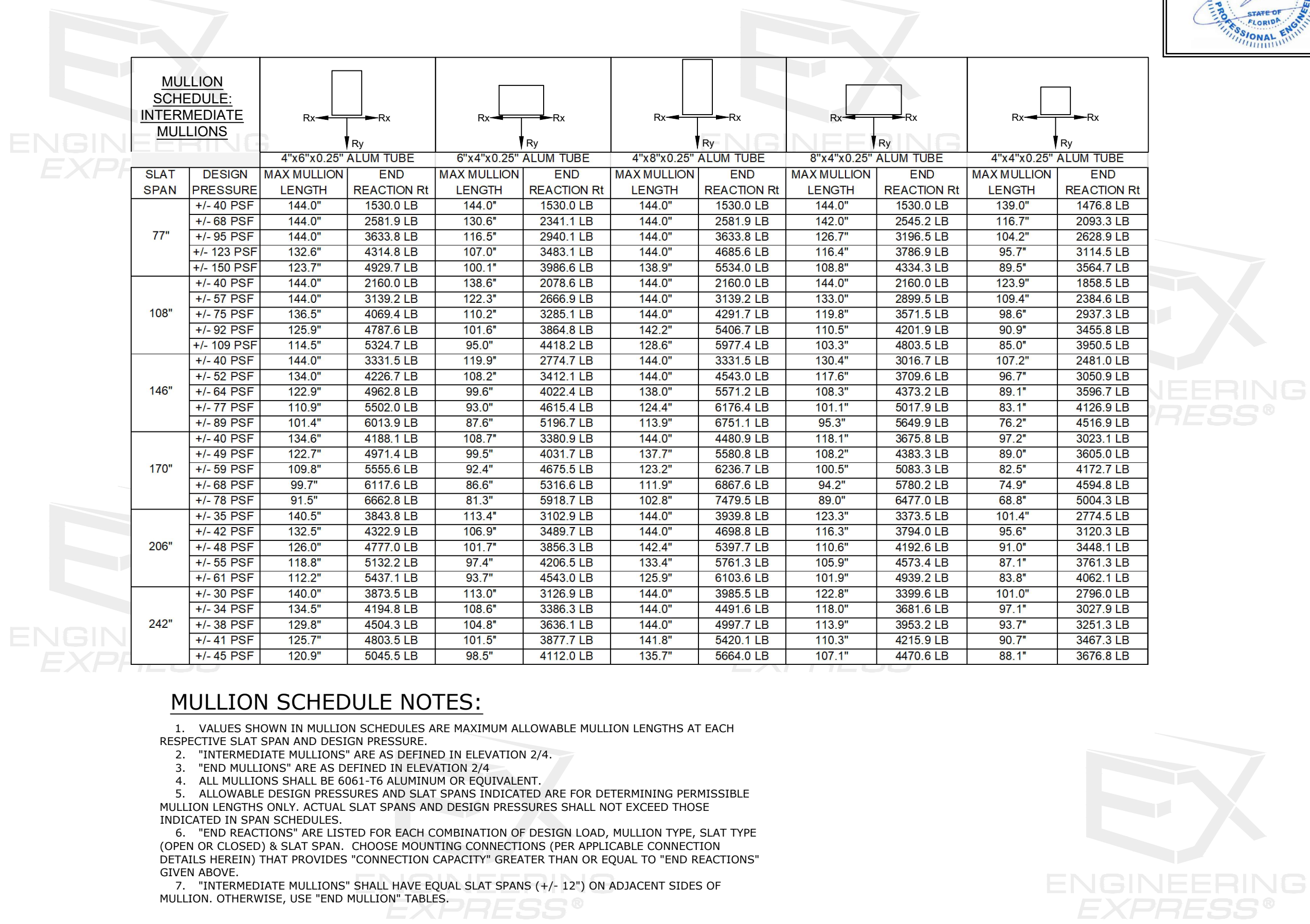
REMARKS	DRWN	CHKD	DATE
INT ISSUE	RWN	RWN	02/18/20
REV	RWN	RWN	04/14/21
2023 FCC UPDATE	MRT	RWN	10/03/23

23-65152

SCALE: NTS UNLESS NOTED

14 OF 17

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END MULLION SCHEDULES

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AMERICAN SHUTTER SYSTEMS ASSOCIATION, INC.
 4268 WESTROADS DR.
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SINGLE WALL ROLL-UP HURRICANE SHUTTER
 FLORIDA BUILDING CODE EIGHTH EDITION (2023)
 FLORIDA STATEWIDE APPROVAL (FSA FL#31658.1)

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				4"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	MAX MULLION LENGTH	END REACTION Rv	END REACTION Rt	END REACTION Rsum
77"	+/- 40 PSF	144.0"	1352.6 LB	765.0 LB	1553.9 LB	144.0"	1352.6 LB	765.0 LB	1553.9 LB	144.0"	1352.6 LB	765.0 LB	1553.9 LB	144.0"	1352.6 LB	765.0 LB	1553.9 LB	144.0"	1352.6 LB	765.0 LB	1553.9 LB
	+/- 68 PSF	120.7"	3135.0 LB	1081.7 LB	3316.4 LB	115.4"	2997.8 LB	1034.4 LB	3171.3 LB	136.5"	3546.5 LB	1223.7 LB	3751.7 LB	125.4"	3259.3 LB	1124.6 LB	3447.8 LB	99.2"	2578.0 LB	889.5 LB	2727.2 LB
	+/- 95 PSF	95.7"	4073.9 LB	1208.0 LB	4249.2 LB	97.9"	4165.3 LB	1235.1 LB	4344.6 LB	108.3"	4609.7 LB	1366.8 LB	4808.1 LB	106.4"	4528.6 LB	1342.8 LB	4723.5 LB	79.0"	3360.5 LB	996.4 LB	3505.1 LB
	+/- 123 PSF	81.8"	4834.4 LB	1330.7 LB	5014.2 LB	87.5"	5169.9 LB	1423.0 LB	5362.1 LB	92.6"	5470.7 LB	1505.9 LB	5674.2 LB	95.4"	5637.7 LB	1551.8 LB	5847.4 LB	67.6"	3993.4 LB	1099.2 LB	4141.9 LB
	+/- 150 PSF	72.6"	5490.2 LB	1445.9 LB	5677.4 LB	77.8"	5881.5 LB	1549.0 LB	6082.0 LB	82.1"	6213.3 LB	1636.4 LB	6425.2 LB	87.5"	6618.5 LB	1743.1 LB	6844.2 LB	60.0"	4538.8 LB	1195.4 LB	4693.6 LB
108"	+/- 40 PSF	110.9"	3682.8 LB	831.9 LB	3775.6 LB	106.3"	3530.4 LB	797.4 LB	3619.3 LB	125.6"	4168.7 LB	941.6 LB	4273.7 LB	115.6"	3838.3 LB	867.0 LB	3935.0 LB	91.9"	3052.7 LB	689.6 LB	3129.7 LB
	+/- 57 PSF	90.0"	4573.0 LB	981.1 LB	4677.1 LB	92.3"	4688.0 LB	1005.7 LB	4794.6 LB	101.9"	5176.7 LB	1110.6 LB	5294.5 LB	100.3"	5096.8 LB	1093.5 LB	5212.8 LB	74.7"	3793.9 LB	813.9 LB	3880.2 LB
	+/- 75 PSF	77.5"	5299.5 LB	1154.8 LB	5423.8 LB	83.6"	5714.9 LB	1245.3 LB	5849.1 LB	87.7"	5999.0 LB	1307.2 LB	6139.7 LB	90.9"	6213.4 LB	1353.9 LB	6359.2 LB	64.3"	4395.4 LB	957.8 LB	4498.6 LB
	+/- 92 PSF	69.0"	5934.1 LB	1313.0 LB	6077.6 LB	74.5"	6398.2 LB	1415.7 LB	6553.0 LB	78.2"	6717.2 LB	1486.3 LB	6879.7 LB	83.8"	7197.9 LB	1592.7 LB	7372.0 LB	57.3"	4920.6 LB	1088.8 LB	5039.6 LB
	+/- 109 PSF	62.9"	6503.9 LB	1461.0 LB	6665.9 LB	67.7"	7008.8 LB	1574.4 LB	7183.5 LB	71.2"	7362.0 LB	1653.8 LB	7545.5 LB	76.2"	7884.9 LB	1771.2 LB	8081.4 LB	52.1"	5391.7 LB	1211.2 LB	5526.0 LB
146"	+/- 40 PSF	83.5"	4999.9 LB	966.2 LB	5092.4 LB	87.4"	5229.5 LB	1010.6 LB	5326.3 LB	94.6"	5660.6 LB	1093.9 LB	5765.3 LB	95.0"	5685.6 LB	1098.7 LB	5790.8 LB	69.4"	4154.6 LB	802.8 LB	4231.5 LB
	+/- 52 PSF	72.4"	5744.4 LB	1142.4 LB	5856.9 LB	78.4"	6216.2 LB	1236.2 LB	6338.0 LB	82.0"	6503.3 LB	1293.3 LB	6630.7 LB	86.5"	6859.2 LB	1364.1 LB	6993.5 LB	60.2"	4771.3 LB	948.8 LB	4864.7 LB
	+/- 64 PSF	64.8"	6396.8 LB	1308.1 LB	6529.2 LB	70.0"	6915.8 LB	1414.2 LB	7058.9 LB	73.3"	7241.6 LB	1480.8 LB	7391.5 LB	78.8"	7779.1 LB	1590.7 LB	7940.1 LB	53.8"	5310.8 LB	1086.0 LB	5420.7 LB
	+/- 77 PSF	59.1"	6982.8 LB	1467.2 LB	7135.3 LB	63.9"	7542.5 LB	1584.8 LB	7707.2 LB	66.9"	7904.8 LB	1660.9 LB	8077.4 LB	71.8"	8484.4 LB	1782.7 LB	8669.6 LB	49.1"	5795.0 LB	1217.6 LB	5921.5 LB
	+/- 89 PSF	54.7"	7518.1 LB	1621.9 LB	7691.1 LB	59.0"	8113.3 LB	1750.3 LB	8300.0 LB	61.9"	8510.5 LB	1836.0 LB	8706.3 LB	66.4"	9126.9 LB	1969.0 LB	9336.9 LB	45.4"	6236.6 LB	1345.5 LB	6380.1 LB
170"	+/- 40 PSF	73.4"	5658.7 LB	1141.6 LB	5772.7 LB	79.4"	6120.5 LB	1234.8 LB	6243.8 LB	83.1"	6406.1 LB	1292.4 LB	6535.2 LB	87.3"	6731.8 LB	1358.1 LB	6867.4 LB	60.9"	4699.0 LB	948.0 LB	4793.7 LB
	+/- 49 PSF	65.6"	6290.0 LB	1328.8 LB	6428.8 LB	70.8"	6792.8 LB	1435.0 LB	6942.8 LB	74.2"	7120.4 LB	1504.2 LB	7277.6 LB	79.7"	7641.2 LB	1614.2 LB	7809.8 LB	54.4"	5219.5 LB	1102.6 LB	5334.7 LB
	+/- 59 PSF	59.8"	6854.0 LB	1513.1 LB	7019.1 LB	64.5"	7390.7 LB	1631.6 LB	7568.7 LB	67.7"	7758.5 LB	1712.8 LB	7945.4 LB	72.5"	8314.3 LB	1835.5 LB	8514.5 LB	49.6"	5683.6 LB	1254.7 LB	5820.4 LB
	+/- 68 PSF	55.3"	7366.4 LB	1696.3 LB	7559.1 LB	59.5"	7931.2 LB	1826.4 LB	8138.8 LB	62.6"	8338.0 LB	1920.1 LB	8556.3 LB	67.0"	8923.0 LB	2054.8 LB	9156.6 LB	45.8"	6104.2 LB	1405.7 LB	6263.9 LB
	+/- 78 PSF	51.6"	7837.2 LB	1879.3 LB	8059.3 LB	55.5"	8425.7 LB	2020.4 LB	8664.5 LB	58.4"	8870.5 LB	2127.1 LB	9121.9 LB	62.5"	9480.0 LB	2273.2 LB	9748.7 LB	42.8"	6489.8 LB	1556.2 LB	6673.8 LB
206"	+/- 35 PSF	68.4"	6302.8 LB	935.1 LB	6371.8 LB	74.6"	6880.1 LB	1020.8 LB	6955.4 LB	77.4"	7137.6 LB	1059.0 LB	7215.8 LB	82.2"	7583.0 LB	1125.1 LB	7666.0 LB	57.0"	5256.0 LB	779.8 LB	5313.5 LB
	+/- 42 PSF	62.6"	6881.8 LB	1021.4 LB	6957.2 LB	68.3"	7512.0 LB	1115.0 LB	7594.3 LB	70.9"	7793.3 LB	1156.7 LB	7878.7 LB	76.8"	8445.9 LB	1253.6 LB	8538.4 LB	52.2"	5738.8 LB	851.8 LB	5801.6 LB
	+/- 48 PSF	58.1"	7415.6 LB	1101.1 LB	7496.9 LB	63.4"	8094.7 LB	1201.9 LB	8183.4 LB	65.8"	8397.9 LB	1246.9 LB	8489.9 LB	71.3"	9101.0 LB	1351.3 LB	9200.7 LB	48.4"	6183.9 LB	918.2 LB	6251.7 LB
	+/- 55 PSF	54.4"	7913.5 LB	1175.5 LB	8000.3 LB	59.4"	8638.1 LB	1283.1 LB	8732.9 LB	61.6"	8961.7 LB	1331.2 LB	9060.0 LB	66.8"	9711.9 LB	1442.6 LB	9818.5 LB	45.4"	6599.1 LB	980.2 LB	6671.5 LB
	+/- 61 PSF	51.4"	8381.8 LB	1245.5 LB	8473.8 LB	56.1"	9149.2 LB	1359.5 LB	9249.6 LB	58.2"	9492.0 LB	1410.5 LB	9596.2 LB	63.1"	10286.5 LB	1528.5 LB	10399.5 LB	42.9"	6989.6 LB	1038.6 LB	7066.3 LB
242"	+/- 30 PSF	65.5"	6628.4 LB	906.9 LB	6690.1 LB	71.7"	7250.7 LB	992.1 LB	7318.3 LB	74.2"	7506.9 LB	1027.1 LB	7576.8 LB	79.7"	8065.6 LB	1103.6 LB	8140.7 LB	54.7"	5532.8 LB	757.0 LB	5584.3 LB
	+/- 34 PSF	61.7"	7036.2 LB	962.8 LB	7101.8 LB	67.5"	7696.8 LB	1053.2 LB	7768.6 LB	69.9"	7968.8 LB	1090.4 LB	8043.0 LB	75.9"	8652.8 LB	1184.0 LB	8733.4 LB	51.5"	5873.2 LB	803.7 LB	5927.9 LB
	+/- 38 PSF	58.5"	7421.7 LB	1015.7 LB	7490.8 LB	64.0"	8118.5 LB	1111.0 LB	8194.1 LB	66.3"	8405.3 LB	1150.3 LB	8483.6 LB	72.0"	9126.7 LB	1249.0 LB	9211.8 LB	48.9"	6194.9 LB	847.8 LB	6252.7 LB
	+/- 41 PSF	55.8"	7788.0 LB	1065.9 LB	7860.6 LB	61.0"	8519.2 LB	1166.0 LB	8598.6 LB	63.2"	8820.2 LB	1207.2 LB	8902.5 LB	68.6"	9577.3 LB	1310.8 LB	9666.6 LB	46.6"	6500.7 LB	889.7 LB	6561.3 LB
	+/- 45 PSF	53.4"	8137.9 LB	1113.9 LB	8213.8 LB	58.4"	8901.9 LB	1218.5 LB	8984.9 LB	60.5"	9216.5 LB	1261.5 LB	9302.5 LB	65.6"	10007.5 LB	1369.8 LB	10100.8 LB	44.6"	6792.8 LB	929.8 LB	6856.1 LB

MULLION SCHEDULE NOTES:
SEE SHEET 14 FOR MULLION SCHEDULE NOTES.

REMARKS	DRWN	CHKD	DATE
INT ISSUE	RWN	RWN	02/18/20
REV	RWN	RWN	04/14/21
2023 FCC UPDATE	MRT	RWN	10/03/23

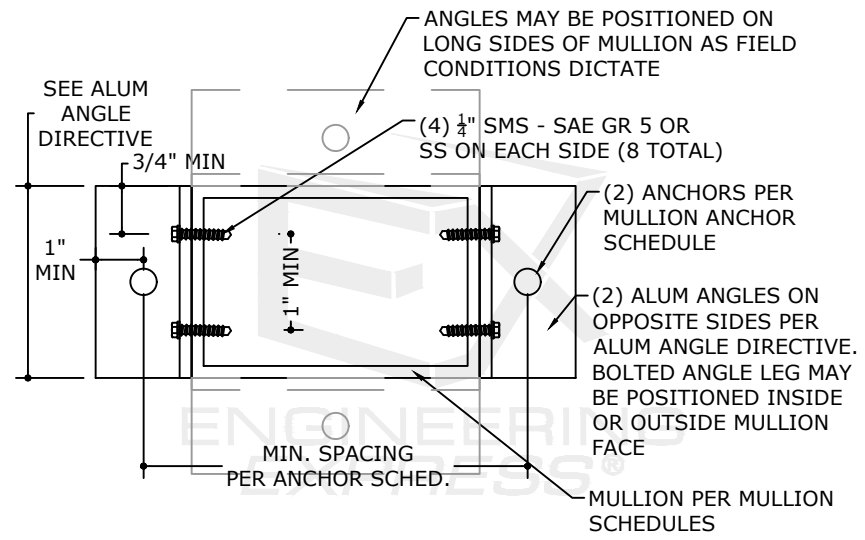
23-65152

SCALE: NTS UNLESS NOTED

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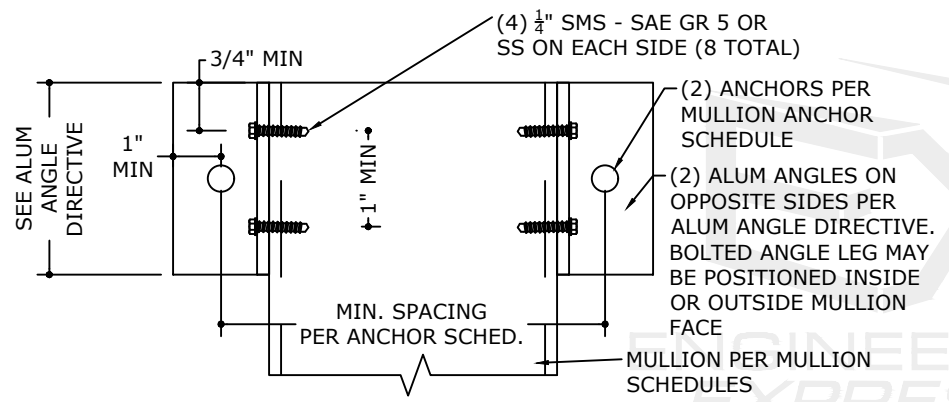


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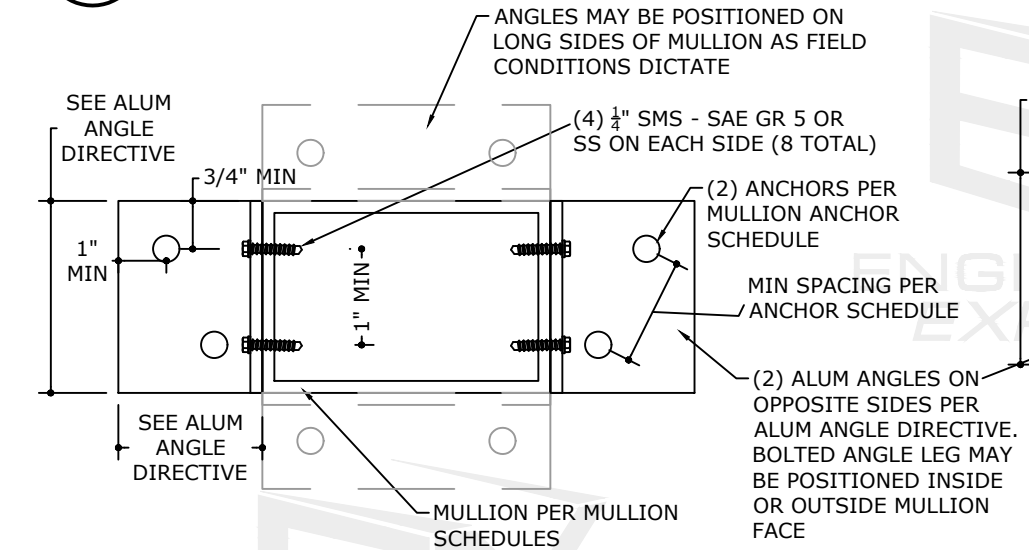
1A TRAPPED MOUNT OPTION 1

17 N.T.S.



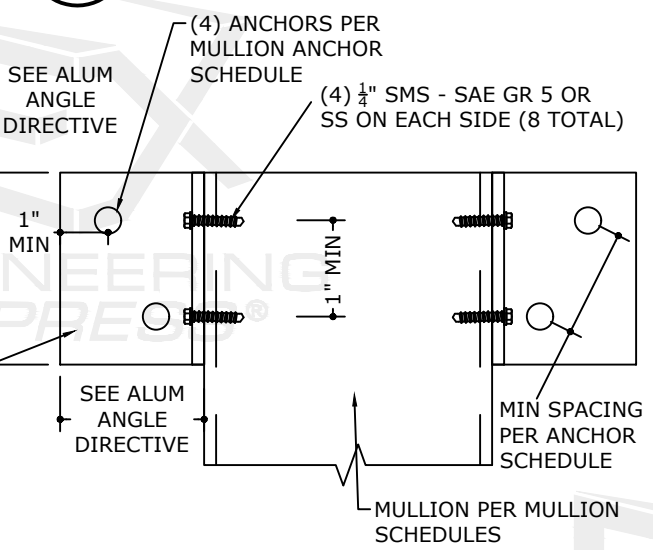
1B FACE MOUNT OPTION 1

17 N.T.S.



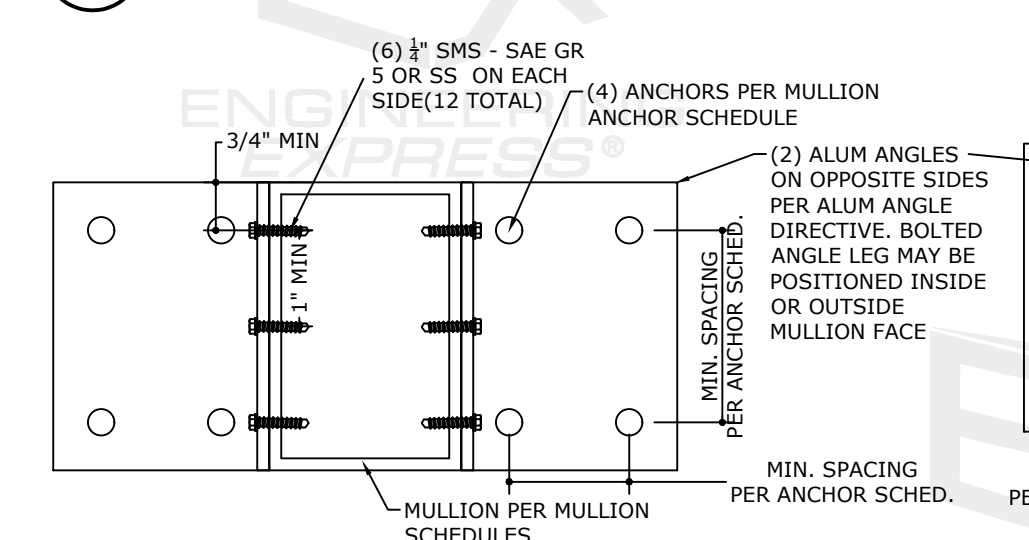
2A TRAPPED MOUNT OPTION 2

17 N.T.S.



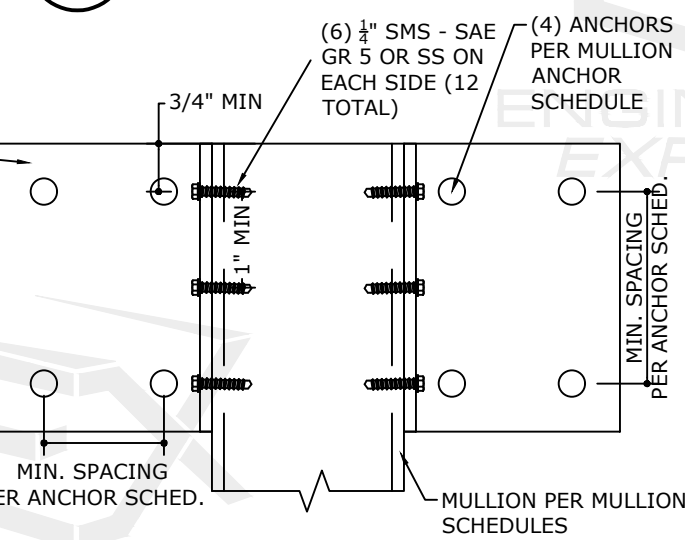
2B FACE MOUNT OPTION 2

17 N.T.S.



3A TRAPPED MOUNT OPTION 3

17 N.T.S.



3B FACE MOUNT OPTION 3

17 N.T.S.

MULLION ANCHOR SCHEDULE

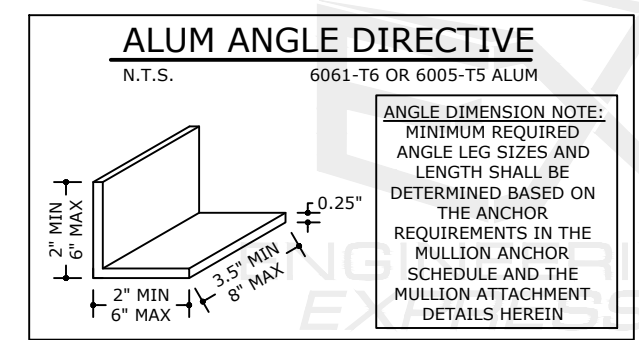
ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	CONNECTION CAPACITY	
				Tcap	Vcap
1/2" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2-1/2" EMBED TO 3KSI MIN. CONCRETE	6"	4.5"	1A/13, 1B/13	Tcap	3660 LB
	4.0"	4.5"	2A/13, 2B/13	Tcap	6442 LB
			Vcap	4106 LB	
3/8" DEWALT SCREW BOLTS (OR EQUIV.) W/ 2" EMBED TO 3KSI MIN. CONCRETE	4.0"	4.5"	3A/13, 3B/13	Tcap	12883 LB
			Vcap	8213 LB	
	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	7622 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	3906 LB
			Vcap	2467 LB	
	3.0"	4.5"	3A/13, 3B/13	Tcap	7812 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
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
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 1/2" 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

ALTERNATE ANCHOR NOTE:

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



FL 31658.1

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 FLORIDA BUILDING CODE EIGHTH EDITION (2023)
 FLORIDA STATEWIDE APPROVAL (FSA FL#31658.1)

REMARKS	DRWN	CHKD	DATE
INT.ISSUE	RWN	RWN	02/18/20
REV	RWN	RWN	04/14/21
2023 FCC UPDATE	MRT	RWN	10/03/23

23-65152

SCALE: NTS UNLESS NOTED