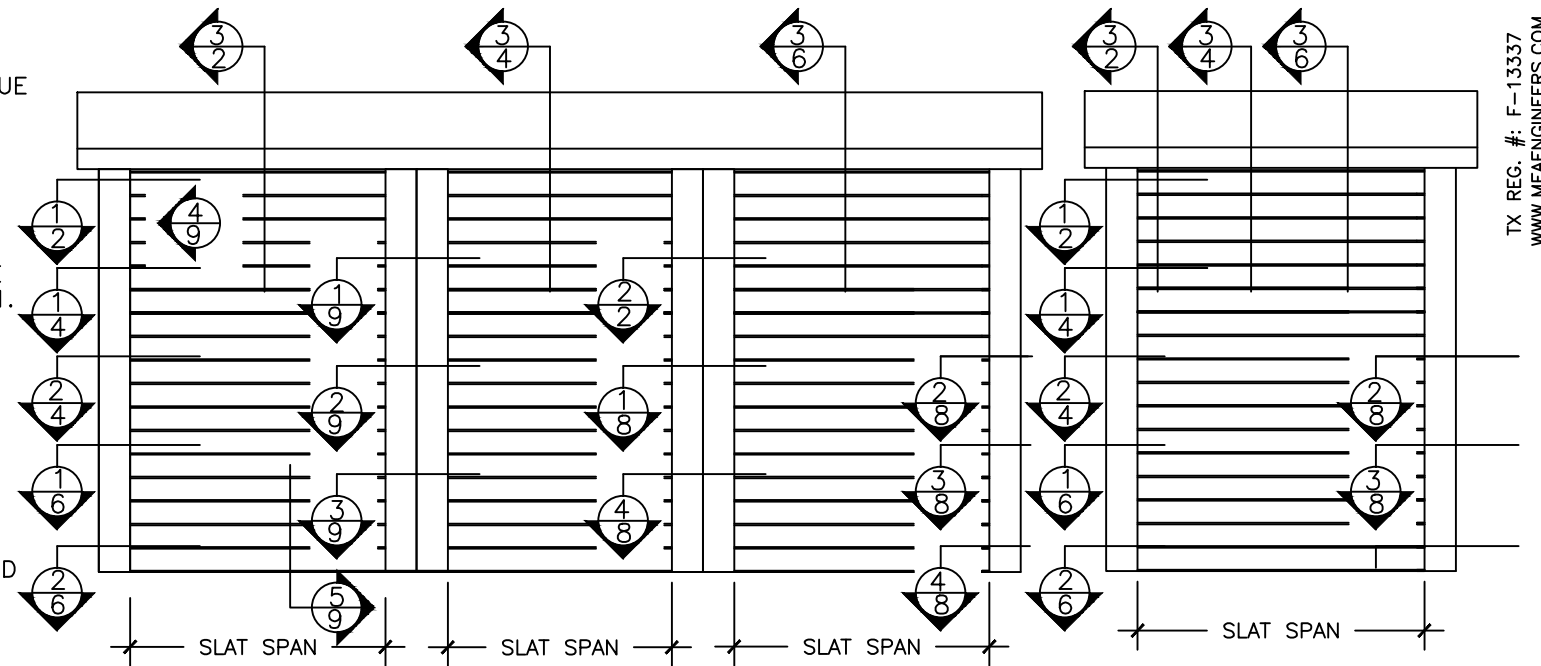


STRUCTURAL NOTES:

- THIS NON POROUS SYSTEM HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING/RESIDENTIAL CODE (IBC). THE ADEQUACY FOR IMPACT, DEFLECTION AND FATIGUE RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE ABOVE REFERENCED CODE, AND ASTM E330-02, ASTM E1886-05 AND ASTM E1996-06. SEE LIST OF REPORTS ON SHEET 1 OF 11.
 - DESIGN PRESSURE REQUIREMENTS OF A SPECIFIC SITE SHALL BE DETERMINED BY OTHERS IN CONFORMANCE TO THE IBC FOR A BASIC WIND SPEED (ALLOWABLE STRESS DESIGN) AS REQUIRED BY THE JURISDICTION WHERE THE SYSTEM WILL BE INSTALLED. ULTIMATE DESIGN LOADS (UD) DETERMINED BY ASCE 7-16 SHALL BE REDUCED TO ALLOWABLE STRESS DESIGN LOADS (ASD) BY MULTIPLYING THE UD BY 0.6. TO COMPARE THEM TO THE ASD PRESSURE RATINGS SHOWN ON SHEETS 3, 5 & 7 OF 11. USE OF DIRECTIONALITY FACTOR $K_d=0.85$ IS ALLOWED.
 - IMPACT AND FATIGUE RESISTANCE HAS BEEN DETERMINED IN ACCORDANCE WITH THE IBC SECTION 1609.2 MISSILE TYPE "D" AS LISTED HEREIN.
 - NO 33-1/3% INCREASE IN ALLOWABLE STRESS INCREASE HAS BEEN USED IN THE DESIGN OF THIS PRODUCT.
 - THIS PRODUCT EVALUATION DOCUMENT (PED) DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. IF SITE CONDITIONS DEVIATE FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS TO BE USED IN CONJUNCTION WITH THIS DOCUMENT.
 - THE CONTRACTOR AND / OR PERMIT HOLDER IS TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION OF THIS SYSTEM, INCLUDING VERIFYING THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND THE NEW SUPERIMPOSED LOADS SHOWN BELOW AND THE SOUNDNESS OF THE STRUCTURE WHERE THE SYSTEM IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE.
 - SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A TEXAS LICENSED ENGINEER OR ARCHITECT WHO WILL BECOME THE ENGINEER OF RECORD (EOR) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE PED. THE ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE PED ENGINEER SHALL SUBMIT TO THIS ENGINEER THE SITE SPECIFIC DRAWINGS FOR REVIEW.
 - THIS PED SHALL BEAR THE DATE AND ORIGINAL SEAL OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT REGARDLESS OF ITS AVAILABILITY FROM THE TEXAS DEPARTMENT OF INSURANCE WEBSITE.
 - AN OPTIONAL UV AND / OR SOLAR EXTERNAL LAYER MAY BE ADDED ONTO THE SYSTEM.
 - LIMITATIONS OF USE:
 THE MAXIMUM SIZE SHALL BE SHOWN ON SHEETS 3, 5 & 7 OF 11.
 MAXIMUM HEIGHT OF ROLL-UP SHALL BE 15'-0".
 - FOR DETERMINING INTERNAL PRESSURE IN THE ABOVE REFERENCED CODES, THIS PRODUCT IS CLASSIFIED AS NON-POROUS WITH A POROSITY OF LESS THAN 10% FOR THE CONDITIONS SHOWN IN THIS PRODUCT EVALUATION DOCUMENT. THIS PRODUCT MUST COMPLETELY COVER AN OPENING IN ALL DIRECTIONS.
 - ALL SCREWS TO BE STAINLESS STEEL 304 OR GALVANIZED A307 STEEL.
 - ALL BOLTS TO BE ASTM A307, GALVANIZED OR 304 SERIES STAINLESS STEEL.
 - SUPPORTBRACKETS AND ANCHORS :
 A. ANCHORS INTO THE SUPPORT SUBSTRUCTURE (WALL, CEILINGS, BEAMS AND FLOORS) SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.
 B. THE ANCHOR SPACING SHOWN ON SHEETS 3, 5, & 7 OF 11 INDICATED FOR 1/4" and 3/8" DIAMETERS REFER TO CENTER OF SUPPORTING BRACKETS.
 C. ANCHOR MINIMUM EMBEDMENT AND EDGE DISTANCES
- | SUBSTRUCTURE | EMBEDMENT | EDGE DISTANCE |
|----------------------------------|------------|--------------------|
| HOLLOW BLOCK | 1-1/4 INCH | 12 D OR PER MANUF. |
| GROUT FILLED OR KSI CONCRETE | 1-3/4 INCH | 12 D OR PER MANUF. |
| 4 KSI CONCRETE OR 2 KSI CONCRETE | 1-3/4 INCH | 12 D OR PER MANUF. |
| WOOD OR TIMBER | 8 D | 3/4 INCH |
- NO EMBEDMENT INTO NON-STRUCTURAL MATERIAL SUCH AS STUCCO, SIDING AND PAVERS SHALL BE INCLUDED AS PART OF THE EMBEDMENT REQUIREMENT.
 - STEEL SURFACES TO BE PLACED IN CONTACT WITH ALUMINUM SHALL BE GIVEN ONE COAT OF ZINC CHROMATE PRIMER IN ACCORDANCE WITH FEDERAL SPEC NO.: TTP-645, OR BE GALVANIZED.
 - MAXIMUM DESIGN PRESSURE VERSUS PANEL SPAN SHOWN ON SHEETS 3, 5 & 7 OF 11.
 - ALL ALUMINUM ALLOYS SHALL BE 6063-T6 OR 6005-T6 U.N.O.
 - ANCHORING OR LOADING CONDITIONS OTHER THAN THOSE SHOWN IN THESE DETAILS ARE NOT PART OF THIS APPROVAL.
 - MANUFACTURER LABEL SHALL BE PLACED ON A READILY AND VISIBLE LOCATION ON THE ROLL-UP. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABEL SHALL READ AS FOLLOWS:
 National Approved Shutter Assn LLC
 8717 NW 117 St; Suite 1
 Hialeah Gardens, FL 33018
 TEXAS DEPARTMENT OF INSURANCE NUMBER: SHU-XXX. OPENING NO.: XX
 - THIS DOCUMENT IN ITS ENTIRETY WILL BE CONSIDERED INVALID IF IT IS ALTERED BY ANY MEANS OR DOES NOT BEAR THE DATE AND ORIGINAL SEAL OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.



TYPICAL MULTIPLE UNIT ELEVATION

INTERMEDIATE MULLION REQUIRED FOR INSTALLATION
SCALE 1:20

TYPICAL SINGLE UNIT ELEV.

SINGLE SPAN UNIT INSTALLATION
SCALE 1:20

LIST OF REPORTS

EVALUATION BASED ON:
 ARCHITECTURAL TESTING INC.

LAB NO.: B4522.01-401-18
 DATED 12/16/2011
 TAS 201, TAS 203 - LARGE MISSILE IMPACT RESISTANCE & CYCLIC LOADING PERFORMANCE
 TAS 202 - UNIFORM STATIC LOADS

LAB NO.: B4519.01-401-18
 DATED 02/02/2012
 TAS 201, TAS 203 - LARGE MISSILE IMPACT RESISTANCE & CYCLIC LOADING PERFORMANCE
 TAS 202 - UNIFORM STATIC LOADS

LAB NO.: B4521.02-401-44
 DATED 02/22/2012
 ASTM E330-02 - UNIFORM STATIC LOADS
 ASTM E1886-05 & ASTM E1996-06 - LARGE MISSILE TYPE "D" IMPACT RESISTANCE & CYCLIC LOADING PERFORMANCE

LAB NO.: B4520.02-401-44
 DATED 02/22/2012
 ASTM E330-02 - UNIFORM STATIC LOADS
 ASTM E1886-05 & ASTM E1996-06 - LARGE MISSILE TYPE "D" IMPACT RESISTANCE & CYCLIC LOADING PERFORMANCE

SPAN SCHEDULE

END RETENTION SHUTTER	
SLAT SPAN	ALLOWABLE DESIGN PRESSURE
84.0"	+/- 120.0 PSF
90.0"	+/- 107.9 PSF
100.0"	+/- 92.6 PSF
110.0"	+/- 81.4 PSF
120.0"	+/- 72.9 PSF
130.0"	+/- 66.2 PSF
140.0"	+/- 60.8 PSF
168.0"	+/- 50.0 PSF
190.0"	+/- 46.6 PSF
200.0"	+/- 45.2 PSF
210.0"	+/- 44.0 PSF
220.0"	+/- 43.0 PSF
230.0"	+/- 42.0 PSF
240.0"	+/- 41.0 PSF
250.0"	+/- 40.2 PSF
252.0"	+/- 40.0 PSF

TX REG. #: F-13337
WWW.MEAENGINEERS.COM

MEA ENGINEERS, INC.
 2352 Apalooosa Circle
 Sarasota, Florida 34240
 (941) 922-3854 CA-6752

REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

Project Name: **National Approved Shutter Assn LLC**
 15701 SW 29th Street, Suite 100
 Miramar, FL 33027
 Phone: (786) 621-6706

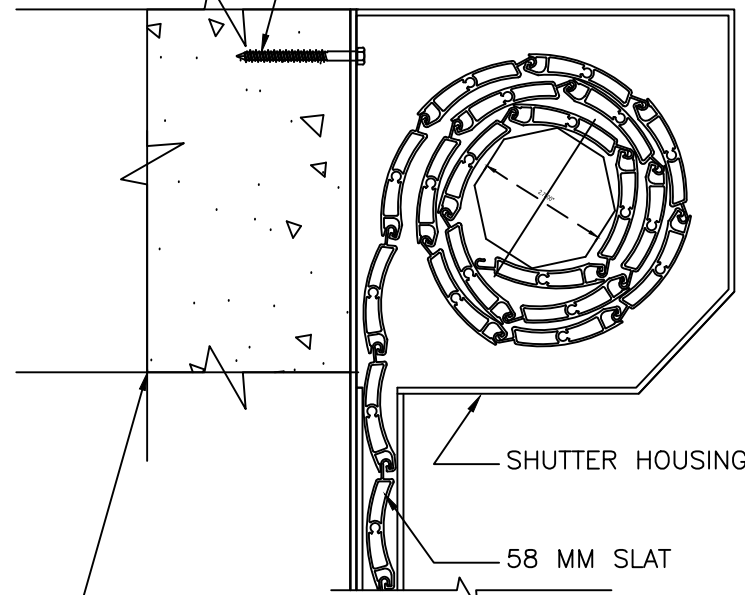
Description: **NAS-Assn 58 MILLIMETER ROLL-UP SHUTTER SYSTEM**

Drawn: JK
 Project #: 21-0501
 Scale: NOTED
 Date: 3/2/21
 Sheet No.: 1 of 11

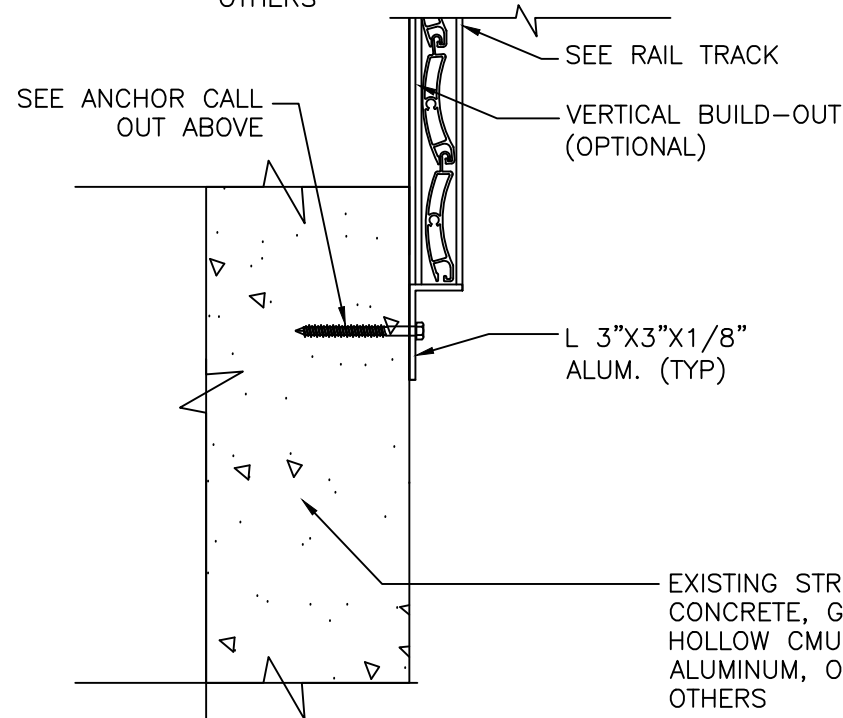
John H. Kampmann Jr., PE
 TX License #: 108168
 DATE:

TEXAS DEPARTMENT OF INSURANCE

MANUFACTURER (IF APPLICABLE), SUBSTRATE STRENGTH/THICKNESS, EMBEDMENT/THREAD PENETRATION, AND EDGE DISTANCE PER TABLES. 3, 5, 7, OF 11:
 IF CONCRETE: 1/4"Ø TAPCON @ 12" O.C.
 IF GROUT FILLED OR HOLLOW CMU: 5/16"Ø TAPCON @ 12" O.C.
 IF WOOD: 1/4"Ø LAG SCREW @ 12" O.C.
 IF ALUMINUM OR STEEL: #14 SMS @ 12" O.C.

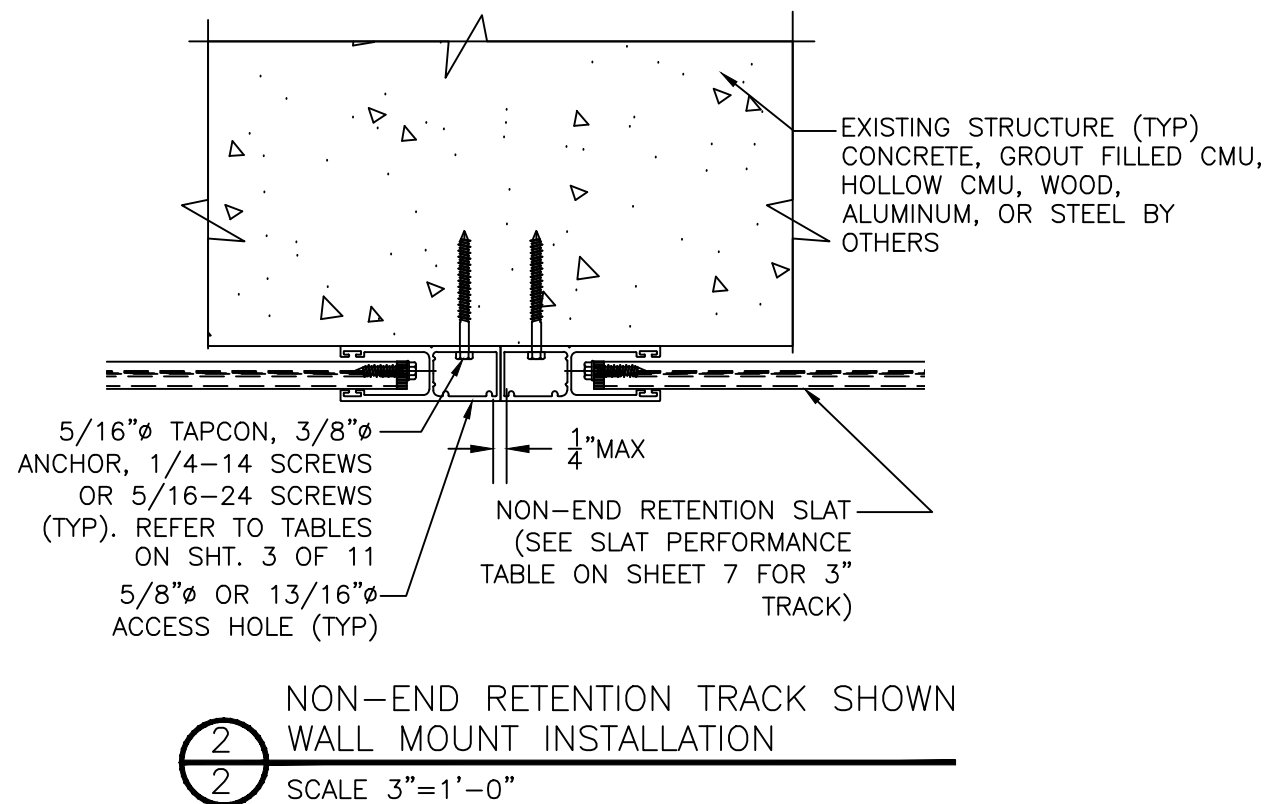
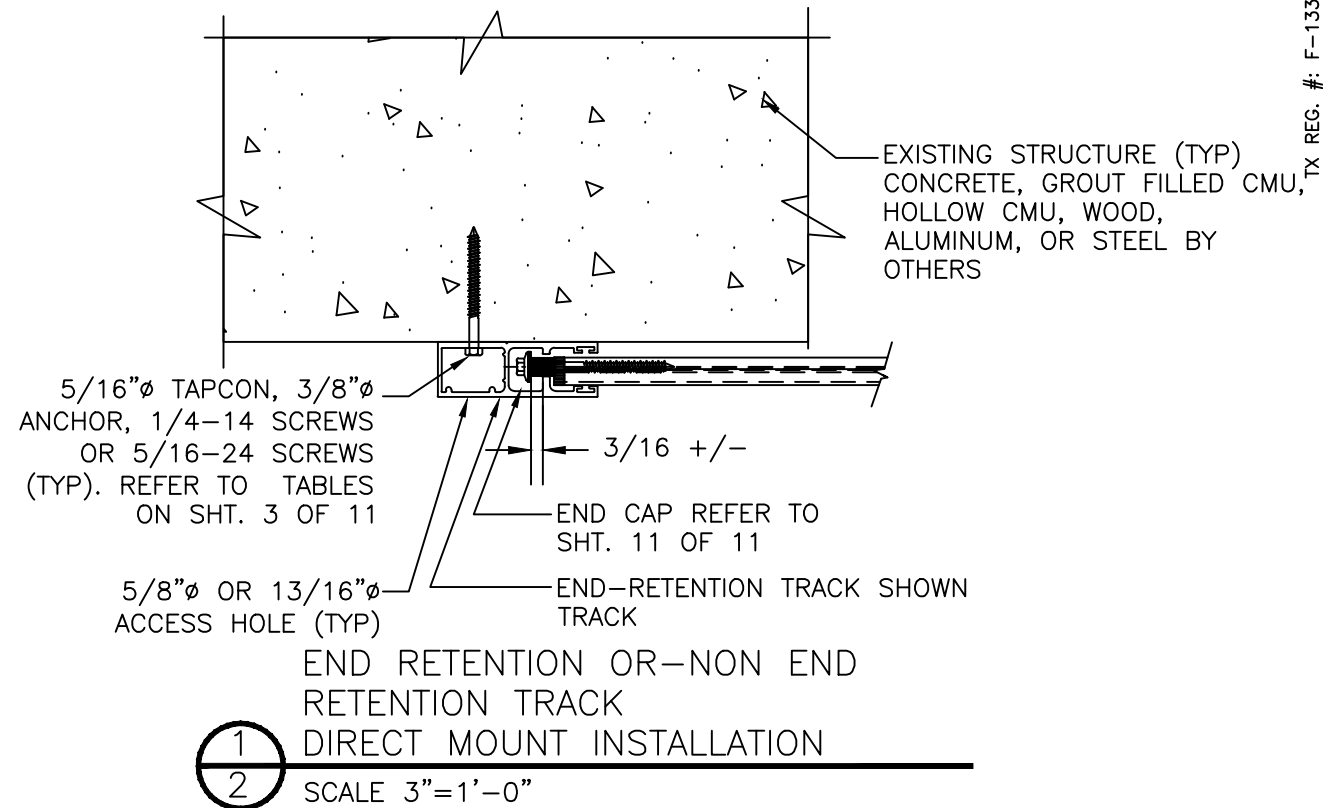


EXISTING STRUCTURE (TYP)
 CONCRETE, GROUT FILLED CMU,
 HOLLOW CMU, WOOD,
 ALUMINUM, OR STEEL BY
 OTHERS



EXISTING STRUCTURE (TYP)
 CONCRETE, GROUT FILLED CMU,
 HOLLOW CMU, WOOD,
 ALUMINUM, OR STEEL BY
 OTHERS

3
 DIRECT MOUNT
 3-1/4" END RETENTION TRACK
 WALL MOUNT INSTALLATION
 SCALE 3"=1'-0"



TX REG. #: F-13337
 WWW.MEAENGINEERS.COM

MEAE
 ENGINEERS, INC.
 2352 Appaloosa Circle
 Sarasota, Florida 34240
 (941) 922-3854 CA-6752

REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

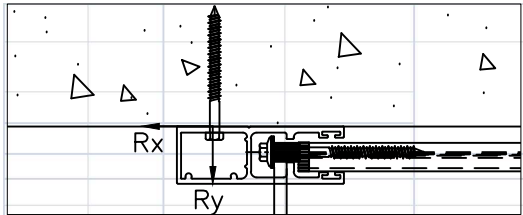
Project Name:
National Approved Shutter Assn LLC
 15701 SW 29th Street, Suite 100
 Miramar, FL 33027
 Phone: (786) 621-6706

DESCRIPTION:
**NAS-Assn 58 MILLIMETER
 ROLL-UP SHUTTER SYSTEM**

Drawn: JK
 Project #: 21-0501
 Scale: NOTED
 Date: 3/2/21
 Sheet No.:
2 of 11

TEXAS DEPARTMENT OF INSURANCE

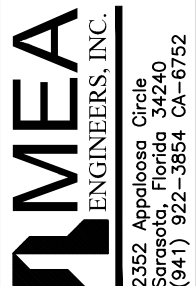
John H. Kampmann Jr., PE
 TX License #: 108168
 DATE:



END RETENTION (WALL MOUNT)

					MAXIMUM SPACING (O.C.)														
SLAT SPAN	DESIGN PRESSURE	Rx	Ry																
				1/4" ELCO ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMEN T; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMEN T; 2.5" MIN. EDGE DISTANCE	5/16" ELCO ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMEN T; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON		1/4" POWERS POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 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 OR A36 STEEL; 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 OR A36 STEEL; 0.625" MIN. EDGE DISTANCE	3/8" POWERS WEDGE BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 4.5" MIN. EDGE DISTANCE	3/8" ELCO CONFLX	
				TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMEN T; 3.125" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	TO G=0.42 MIN WOOD; 2" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	TO 0.125" MIN. 6063-T6 ALUM OR A36 STEEL; 0.5" MIN. EDGE DISTANCE	TO 0.25" MIN. 6063-T6 ALUM OR A36 STEEL; 0.625" MIN. EDGE DISTANCE	TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 4.5" MIN. EDGE DISTANCE	TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 3.75" MIN. EDGE DISTANCE			
7.0 FT	84" +/- 30 PSF	143.1 LB/FT	105.0 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84" +/- 35 PSF	249.4 LB/FT	122.5 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84" +/- 40 PSF	355.5 LB/FT	140.0 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84" +/- 45 PSF	461.4 LB/FT	157.5 LB/FT	8.8"	9.5"	10.0"	10.0"	10.0"	10.0"	8.5"	10.0"	10.0"	7.7"	4.2"	3.6"	4.4"	9.5"	10.0"	10.0"
	84" +/- 50 PSF	567.1 LB/FT	175.0 LB/FT	7.3"	7.9"	10.0"	10.0"	10.0"	10.0"	7.2"	10.0"	9.1"	6.4"	3.5"	3.6"	8.1"	9.0"	10.0"	10.0"
	84" +/- 60 PSF	778.1 LB/FT	210.0 LB/FT	5.5"	5.9"	10.0"	10.0"	9.9"	5.5"	5.9"	7.6"	6.8"	4.8"			6.3"	7.1"	10.0"	10.0"
	84" +/- 70 PSF	988.2 LB/FT	245.0 LB/FT	4.4"	4.7"	8.3"	8.2"	7.9"	4.5"	6.1"	5.5"	3.9"				5.1"	5.9"	10.0"	10.0"
	84" +/- 80 PSF	1197.6 LB/FT	280.0 LB/FT	3.7"	3.9"	6.9"	6.8"	6.6"	3.8"	5.1"	4.6"	3.2"				4.3"	5.0"	10.0"	10.0"
	84" +/- 90 PSF	1406.1 LB/FT	315.0 LB/FT	3.1"	3.4"	5.9"	5.9"	5.6"	3.3"	4.4"	3.9"					3.7"	4.4"	10.0"	10.0"
	84" +/- 100 PSF	1613.7 LB/FT	350.0 LB/FT			5.2"	5.1"	4.9"		3.9"	3.4"					3.3"	3.9"	9.9"	10.0"
84" +/- 110 PSF	1820.4 LB/FT	385.0 LB/FT			4.6"	4.6"	4.4"		3.5"	3.1"						3.5"	8.8"	9.4"	10.0"
84" +/- 120 PSF	2026.1 LB/FT	420.0 LB/FT			4.2"	4.1"	4.0"		3.1"							3.2"	7.9"	8.5"	10.0"
8.0 FT	96" +/- 30 PSF	401.4 LB/FT	120.0 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	9.1"	4.9"	4.2"	5.1"	10.0"	10.0"	10.0"	10.0"
	96" +/- 35 PSF	531.6 LB/FT	140.0 LB/FT	8.1"	8.7"	10.0"	10.0"	10.0"	10.0"	8.2"	10.0"	7.1"	3.7"	3.2"	3.9"	9.3"	10.0"	10.0"	10.0"
	96" +/- 40 PSF	661.9 LB/FT	160.0 LB/FT	6.6"	7.1"	10.0"	10.0"	10.0"	10.0"	6.8"	9.2"	8.2"	5.8"	3.0"	3.2"	7.7"	8.9"	10.0"	10.0"
	96" +/- 45 PSF	792.0 LB/FT	180.0 LB/FT	5.6"	6.0"	10.0"	10.0"	10.0"	10.0"	5.8"	7.8"	6.9"	4.9"			6.6"	7.7"	10.0"	10.0"
	96" +/- 50 PSF	922.2 LB/FT	200.0 LB/FT	4.8"	5.2"	9.1"	9.0"	8.7"	5.0"	6.8"	6.0"	4.2"				5.8"	6.8"	10.0"	10.0"
	96" +/- 60 PSF	1182.5 LB/FT	240.0 LB/FT	3.8"	4.1"	7.2"	7.1"	6.8"	4.0"	5.4"	4.7"	3.3"				4.6"	5.5"	10.0"	10.0"
	96" +/- 70 PSF	1442.8 LB/FT	280.0 LB/FT	3.1"	3.4"	5.9"	5.9"	5.6"	3.3"	4.4"	3.9"					3.8"	4.6"	10.0"	10.0"
96" +/- 80 PSF	1703.0 LB/FT	320.0 LB/FT		3.0"	5.0"	5.0"	4.8"		3.8"	3.3"					3.3"	3.9"	9.6"	10.0"	
10.0 FT	120" +/- 30 PSF	849.8 LB/FT	150.0 LB/FT	5.4"	5.8"	10.0"	10.0"	9.7"	5.8"	7.7"	6.7"	4.8"				6.7"	8.2"	10.0"	10.0"
	120" +/- 35 PSF	1032.0 LB/FT	175.0 LB/FT	4.5"	4.8"	8.4"	8.4"	8.0"	4.8"	6.4"	5.6"	3.9"				5.6"	6.8"	10.0"	10.0"
	120" +/- 40 PSF	1214.2 LB/FT	200.0 LB/FT	3.8"	4.1"	7.2"	7.1"	6.8"	4.1"	5.5"	4.8"	3.4"				4.8"	5.9"	10.0"	10.0"
	120" +/- 45 PSF	1396.3 LB/FT	225.0 LB/FT	3.3"	3.6"	6.3"	6.2"	5.9"	3.6"	4.8"	4.2"					4.2"	5.2"	10.0"	10.0"
	120" +/- 50 PSF	1578.5 LB/FT	250.0 LB/FT	3.0"	3.2"	5.6"	5.5"	5.3"	3.2"	4.2"	3.7"					3.8"	4.6"	10.0"	10.0"
	120" +/- 60 PSF	1942.8 LB/FT	300.0 LB/FT			4.5"	4.5"	4.3"		3.5"	3.0"					3.1"	3.8"	8.5"	9.3"
	120" +/- 70 PSF	2307.0 LB/FT	350.0 LB/FT			3.8"	3.8"	3.6"									3.2"	7.2"	7.9"
120" +/- 80 PSF	2671.2 LB/FT	400.0 LB/FT			3.3"	3.3"	3.1"										6.2"	6.8"	
12.0 FT	144" +/- 30 PSF	1269.0 LB/FT	180.0 LB/FT	3.7"	4.0"	7.0"	7.0"	6.6"	4.1"	5.4"	4.7"	3.3"				4.8"	6.0"	10.0"	10.0"
	144" +/- 35 PSF	1508.7 LB/FT	210.0 LB/FT	3.1"	3.4"	5.9"	5.9"	5.6"	3.5"	4.5"	3.9"					4.1"	5.1"	10.0"	10.0"
	144" +/- 40 PSF	1748.4 LB/FT	240.0 LB/FT		3.0"	5.1"	5.1"	4.8"	3.0"	3.9"	3.4"					3.5"	4.4"	9.6"	10.0"
	144" +/- 45 PSF	1988.0 LB/FT	270.0 LB/FT			4.5"	4.5"	4.3"		3.4"						3.1"	3.9"	8.5"	9.3"
	144" +/- 50 PSF	2227.7 LB/FT	300.0 LB/FT			4.0"	4.0"	3.8"		3.1"							7.5"	8.3"	10.0"
	144" +/- 60 PSF	2706.9 LB/FT	360.0 LB/FT			3.3"	3.3"	3.1"									3.5"	7.5"	8.3"
	144" +/- 70 PSF	3186.1 LB/FT	420.0 LB/FT			3.0"	3.0"											6.2"	6.8"
14.0 FT	168" +/- 30 PSF	1689.0 LB/FT	210.0 LB/FT		3.0"	5.4"	5.3"	5.1"	3.2"	4.1"	3.6"					3.8"	4.8"	10.0"	10.0"
	168" +/- 35 PSF	1991.2 LB/FT	245.0 LB/FT			4.6"	4.5"	4.3"		3.5"	3.0"					3.2"	4.1"	8.5"	9.4"
	168" +/- 40 PSF	2293.3 LB/FT	280.0 LB/FT			4.0"	3.9"	3.7"		3.0"							3.5"	7.4"	8.1"
	168" +/- 45 PSF	2595.5 LB/FT	315.0 LB/FT			3.5"	3.5"	3.3"									3.1"	6.5"	7.2"
	168" +/- 50 PSF	2897.6 LB/FT	350.0 LB/FT			3.1"	3.1"	3.0"										5.9"	6.5"
16.0 FT	192" +/- 20 PSF	1382.2 LB/FT	160.0 LB/FT	3.5"	3.7"	6.6"	6.6"	6.2"	3.9"	5.1"	4.4"	3.1"				4.7"	6.0"	10.0"	10.0"
	192" +/- 25 PSF	1751.5 LB/FT	200.0 LB/FT	3.0"	3.0"	5.2"	5.2"	4.9"	3.1"	4.0"	3.5"					3.7"	4.8"	9.7"	10.0"
	192" +/- 30 PSF	2120.7 LB/FT	240.0 LB/FT			4.3"	4.3"	4.1"		3.3"						3.1"	3.9"	8.0"	8.9"
	192" +/- 35 PSF	2489.9 LB/FT	280.0 LB/FT			3.7"	3.7"	3.5"									3.4"	6.9"	7.6"
	192" +/- 40 PSF	2859.1 LB/FT	320.0 LB/FT			3.2"	3.2"	3.0"										6.0"	6.6"
	192" +/- 45 PSF	3228.2 LB/FT	360.0 LB/FT			3.0"	3.0"											5.3"	5.8"
18.0 FT	216" +/- 20 PSF	1687.9 LB/FT	180.0 LB/FT	3.0"	3.1"	5.5"	5.4"	5.1"	3.3"	4.2"	3.6"					3.9"	5.1"	10.0"	10.0"
	216" +/- 25 PSF	2128.4 LB/FT	225.0 LB/FT			4.3"	4.3"	4.1"		3.3"						3.1"	4.0"	8.0"	8.9"
	216" +/- 30 PSF	2568.8 LB/FT	270.0 LB/FT			3.6"	3.6"	3.4"									3.3"	6.7"	7.4"
	216" +/- 35 PSF	3009.1 LB/FT	315.0 LB/FT			3.1"	3.1"	3.0"										5.7"	6.3"
	216" +/- 40 PSF	3449.3 LB/FT	360.0 LB/FT															5.0"	5.5"
	216" +/- 45 PSF	3889.4 LB/FT	405.0 LB/FT															4.4"	4.9"
21.0 FT	252.0" +/- 20 PSF	2167.0 LB/FT	210.0 LB/FT			4.3"	4.3"	4.0"		3.3"						3.1"	4.1"	8.0"	8.8"
	252.0" +/- 25 PSF	2722.2 LB/FT	262.5 LB/FT			3.4"	3.4"	3.2"										6.3"	7.0"
	252.0" +/- 30 PSF	3277.1 LB/FT	315.0 LB/FT			3.0"	3.0"											5.3"	5.8"
	252.0" +/- 35 PSF	3831.9 LB/FT	367.5 LB/FT															4.5"	5.0"
	252.0" +/- 40 PSF	4386.4 LB/FT	420.0 LB/FT															3.9"	4.4"

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REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

Project Name:
National Approved Shutter Assn LLC
15701 SW 29th Street, Suite 100
Miramar, FL 33027
Phone: (786) 621-6706

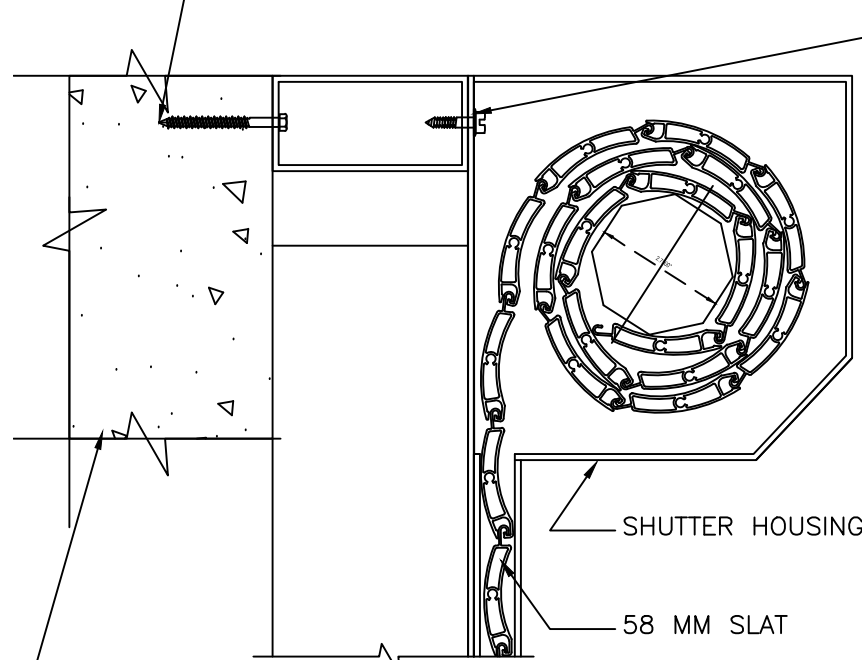
Description:
NAS-Assn 58 MILLIMETER ROLL-UP SHUTTER SYSTEM

Drawn: JK
Project #: 21-0501
Scale: NOTED
Date: 3/2/21
Sheet No.:

TEXAS DEPARTMENT OF INSURANCE

John H. Kampmann Jr., PE
TX License #: 108168
DATE:

MANUFACTURER (IF APPLICABLE), SUBSTRATE STRENGTH/THICKNESS, EMBEDMENT/THREAD PENETRATION, AND EDGE DISTANCE PER TABLES ON SHEETS 3, 5, 7, OF 11:
 IF CONCRETE: 1/4"Ø TAPCON @ 12" O.C.
 IF GROUT FILLED OR HOLLOW CMU: 5/16"Ø TAPCON @ 12" O.C.
 IF WOOD: 1/4"Ø LAG SCREW @ 12" O.C.
 IF ALUMINUM OR STEEL: #14 SMS @ 12" O.C.



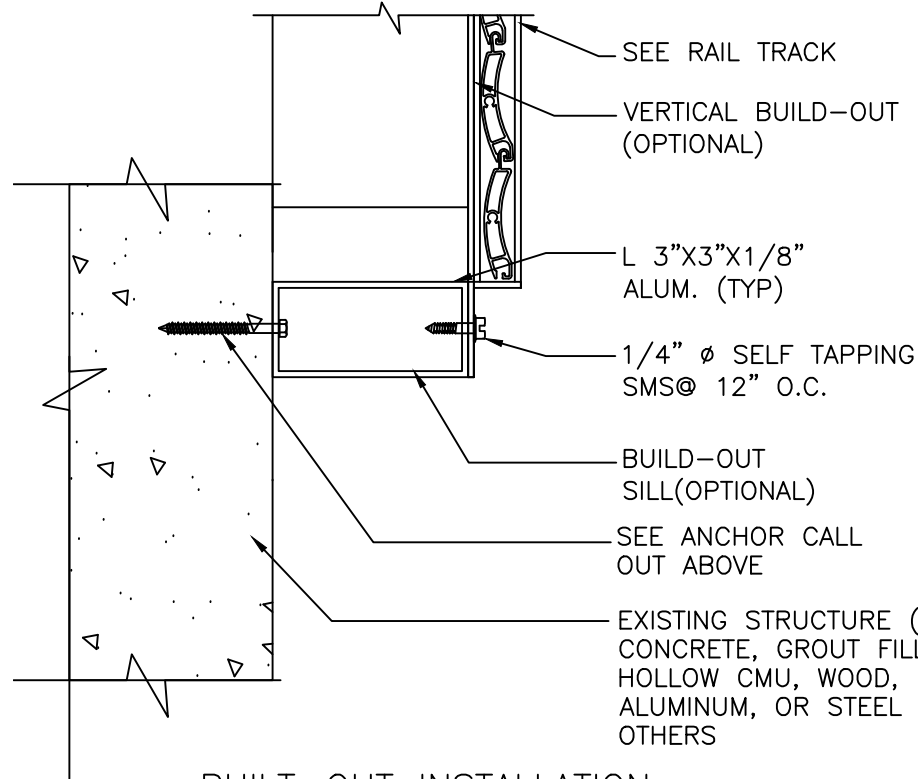
1/4" Ø SELF TAPPING SMS @ 12" O.C.

EXISTING STRUCTURE (TYP) CONCRETE, GROUT FILLED CMU, HOLLOW CMU, WOOD, ALUMINUM, OR STEEL BY OTHERS

NOTE: REFER TO SHT. 11 OF 11 FOR END CAP OPTIONS

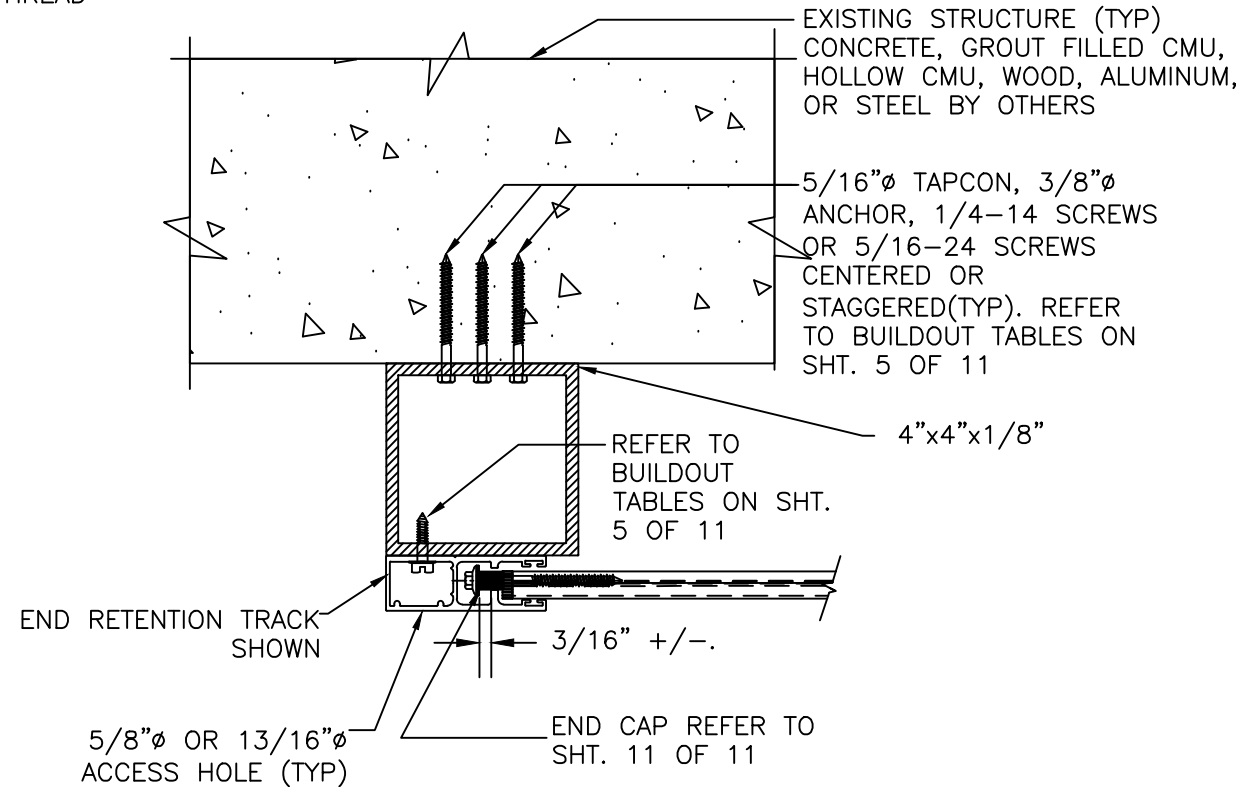
SHUTTER HOUSING

58 MM SLAT



BUILT-OUT INSTALLATION END RETENTION TRACK WALL MOUNT INSTALLATION

3
4
SCALE 3"=1'-0"



EXISTING STRUCTURE (TYP) CONCRETE, GROUT FILLED CMU, HOLLOW CMU, WOOD, ALUMINUM, OR STEEL BY OTHERS

5/16"Ø TAPCON, 3/8"Ø ANCHOR, 1/4-14 SCREWS OR 5/16-24 SCREWS CENTERED OR STAGGERED(TYP). REFER TO BUILDOUT TABLES ON SHT. 5 OF 11

4"x4"x1/8"

REFER TO BUILDOUT TABLES ON SHT. 5 OF 11

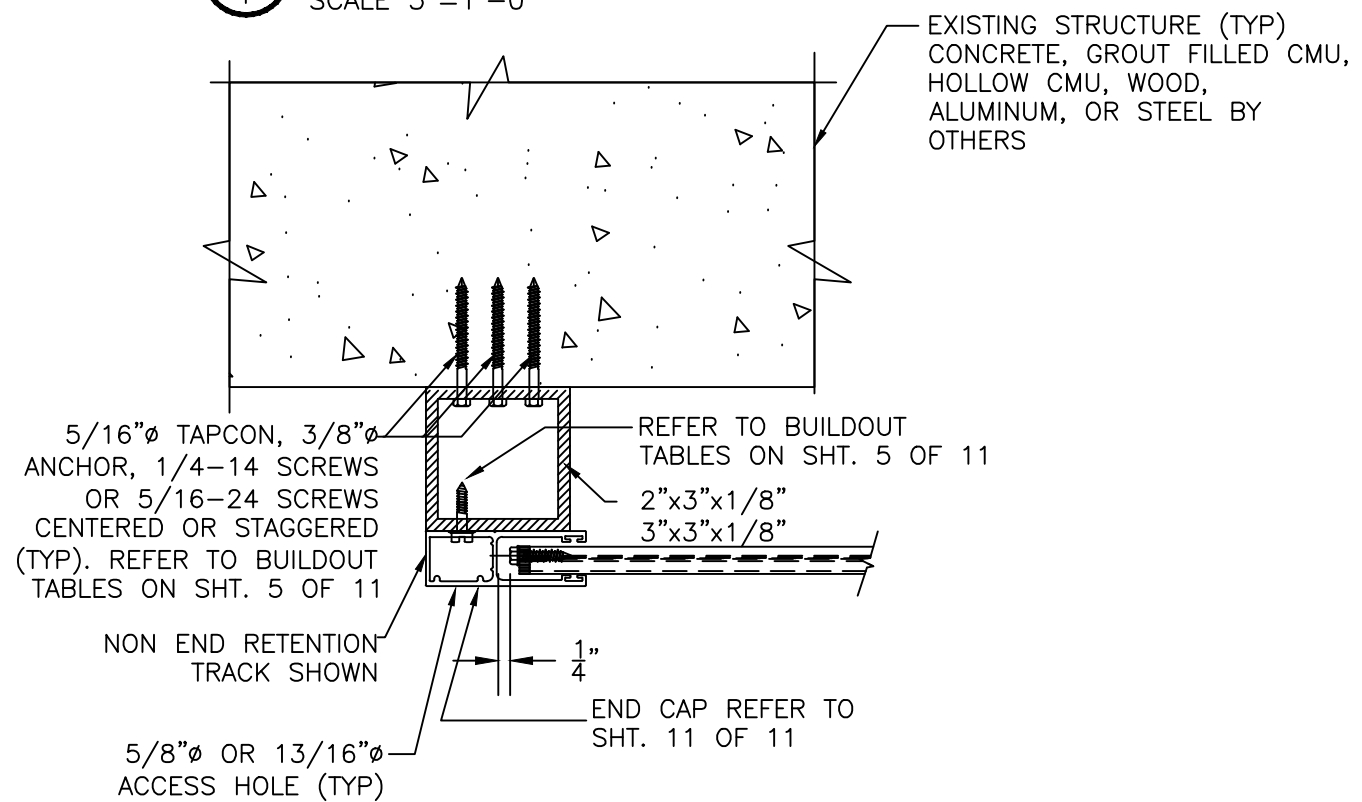
3/16" +/-

5/8"Ø OR 13/16"Ø ACCESS HOLE (TYP)

END CAP REFER TO SHT. 11 OF 11

4" BUILD-OUT INSTALLATION END RETENTION & NON-END RETENTION

1
4
SCALE 3"=1'-0"



EXISTING STRUCTURE (TYP) CONCRETE, GROUT FILLED CMU, HOLLOW CMU, WOOD, ALUMINUM, OR STEEL BY OTHERS

5/16"Ø TAPCON, 3/8"Ø ANCHOR, 1/4-14 SCREWS OR 5/16-24 SCREWS CENTERED OR STAGGERED (TYP). REFER TO BUILDOUT TABLES ON SHT. 5 OF 11

2"x3"x1/8"

3"x3"x1/8"

1/4"

5/8"Ø OR 13/16"Ø ACCESS HOLE (TYP)

END CAP REFER TO SHT. 11 OF 11

2"-3" BUILD-OUT INSTALLATION END RETENTION & NON-END RETENTION

2
4
SCALE 3"=1'-0"

John H. Kampmann Jr., PE
 TX License #: 108168
 DATE:

TX REG. #: F-13337
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MEAE
 ENGINEERS, INC.
 2352 Appaloosa Circle
 Sarasota, Florida 34240
 (941) 922-3854 CA-6752

REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

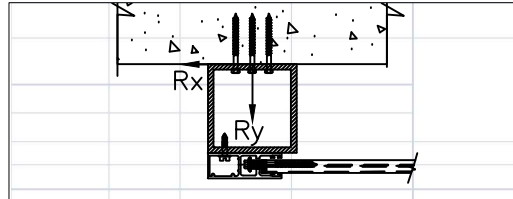
Project Name: National Approved Shutter Assn LLC
 15701 SW 29th Street, Suite 100
 Miramar, FL 33027
 Phone: (786) 621-6706

Description: NAS-Assn 58 MILLIMETER ROLL-UP SHUTTER SYSTEM

Drawn: JK
 Project #: 21-0501
 Scale: NOTED
 Date: 3/2/21
 Sheet No.:

TEXAS DEPARTMENT OF INSURANCE

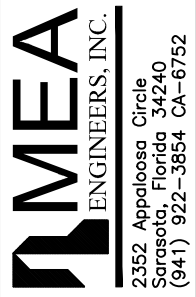
4 of 11



END RETENTION (BUILD-OUT MOUNT)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry	MAXIMUM SPACING (O.C.)															
				1/4" ELCO ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMEN T; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMEN T; 2.5" MIN. EDGE DISTANCE	5/16" ELCO ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMEN T; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON		1/4" POWERS POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 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 OR A36 STEEL; 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 OR A36 STEEL; 0.625" MIN. EDGE DISTANCE	3/8" POWERS WEDGE BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 4.5" MIN. EDGE DISTANCE	3/8" ELCO CONFLEX	
				TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE									TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 3.75" MIN. EDGE DISTANCE	
7.0 FT	84"	+/- 30 PSF	143.1 LB/FT	145.0 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84"	+/- 35 PSF	249.4 LB/FT	194.2 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84"	+/- 40 PSF	355.5 LB/FT	245.2 LB/FT	9.1"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84"	+/- 45 PSF	461.4 LB/FT	298.0 LB/FT	7.2"	7.9"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84"	+/- 50 PSF	567.1 LB/FT	352.4 LB/FT	6.0"	6.5"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"
	84"	+/- 60 PSF	778.1 LB/FT	466.5 LB/FT	4.4"	4.8"	8.2"	8.0"	8.1"	3.8"	5.7"	5.4"	3.8"					10.0"	10.0"
	84"	+/- 70 PSF	988.2 LB/FT	587.4 LB/FT	3.5"	3.8"	6.4"	6.3"	6.4"	3.0"	4.5"	4.2"	3.0"					10.0"	10.0"
	84"	+/- 80 PSF	1197.6 LB/FT	715.0 LB/FT		3.1"	5.3"	5.2"	5.3"		3.7"	3.5"						10.0"	10.0"
	84"	+/- 90 PSF	1406.1 LB/FT	849.3 LB/FT			4.5"	4.4"	4.5"		3.1"							9.2"	9.1"
	84"	+/- 100 PSF	1613.7 LB/FT	990.2 LB/FT			3.9"	3.8"	3.9"									8.0"	7.9"
84"	+/- 110 PSF	1820.4 LB/FT	1137.6 LB/FT			3.4"	3.4"	3.4"									7.0"	6.9"	
84"	+/- 120 PSF	2026.1 LB/FT	1291.5 LB/FT			3.1"	3.0"	3.0"									6.3"	6.2"	
8.0 FT	96"	+/- 30 PSF	401.4 LB/FT	222.8 LB/FT	8.8"	9.5"	10.0"	10.0"	10.0"	7.7"	10.0"	10.0"	7.6"				10.0"	10.0"	10.0"
	96"	+/- 35 PSF	531.6 LB/FT	277.2 LB/FT	6.7"	7.3"	10.0"	10.0"	10.0"	6.0"	7.3"	8.9"	8.3"	6.5"	5.9"		10.0"	10.0"	10.0"
	96"	+/- 40 PSF	661.9 LB/FT	332.0 LB/FT	5.5"	6.0"	10.0"	10.0"	10.0"	4.9"	7.2"	6.7"	4.8"	3.0"	3.0"		10.0"	10.0"	10.0"
	96"	+/- 45 PSF	792.0 LB/FT	387.2 LB/FT	4.6"	5.0"	8.6"	8.4"	8.5"	4.2"	6.1"	5.7"	4.0"				10.0"	10.0"	10.0"
	96"	+/- 50 PSF	922.2 LB/FT	443.0 LB/FT	4.0"	4.3"	7.4"	7.3"	7.3"	3.6"	5.3"	4.9"	3.5"				10.0"	10.0"	10.0"
	96"	+/- 60 PSF	1182.5 LB/FT	555.9 LB/FT	3.1"	3.4"	5.8"	5.7"	5.7"	3.0"	4.2"	3.9"					10.0"	10.0"	10.0"
	96"	+/- 70 PSF	1442.8 LB/FT	670.6 LB/FT		3.0"	4.8"	4.7"	4.7"		3.4"	3.2"					9.6"	9.7"	10.0"
10.0 FT	120"	+/- 30 PSF	849.8 LB/FT	345.9 LB/FT	4.5"	4.9"	8.5"	8.4"	8.3"	4.3"	6.1"	5.6"	4.0"				10.0"	10.0"	10.0"
	120"	+/- 35 PSF	1032.0 LB/FT	414.3 LB/FT	3.8"	4.1"	7.0"	6.9"	6.8"	3.5"	5.1"	4.6"	3.3"				10.0"	10.0"	10.0"
	120"	+/- 40 PSF	1214.2 LB/FT	483.3 LB/FT	3.2"	3.5"	6.0"	5.9"	5.8"	3.0"	4.3"	4.0"	3.0"				10.0"	10.0"	10.0"
	120"	+/- 45 PSF	1396.3 LB/FT	552.7 LB/FT		3.0"	5.2"	5.1"	5.1"		3.8"	3.4"					10.0"	10.0"	10.0"
	120"	+/- 50 PSF	1578.5 LB/FT	622.7 LB/FT			4.6"	4.5"	4.5"		3.3"	3.0"					9.1"	9.4"	10.0"
	120"	+/- 60 PSF	1942.8 LB/FT	764.1 LB/FT			3.8"	3.7"	3.7"								7.4"	7.6"	9.6"
	120"	+/- 70 PSF	2307.0 LB/FT	907.6 LB/FT			3.2"	3.1"	3.1"								6.3"	6.4"	8.1"
	120"	+/- 80 PSF	2671.2 LB/FT	1053.1 LB/FT													5.4"	5.5"	7.0"
12.0 FT	144"	+/- 20 PSF	789.6 LB/FT	284.9 LB/FT	5.1"	5.5"	9.5"	9.3"	9.2"	4.8"	6.9"	6.2"	4.4"				10.0"	10.0"	10.0"
	144"	+/- 25 PSF	1029.3 LB/FT	366.3 LB/FT	3.9"	4.2"	7.3"	7.2"	7.1"	3.7"	5.3"	4.8"	3.4"				10.0"	10.0"	10.0"
	144"	+/- 30 PSF	1269.0 LB/FT	448.4 LB/FT	3.2"	3.4"	5.9"	5.8"	5.7"	3.0"	4.3"	3.9"					10.0"	10.0"	10.0"
	144"	+/- 35 PSF	1508.7 LB/FT	531.1 LB/FT		3.0"	5.0"	4.9"	4.8"		3.6"	3.3"					10.0"	10.0"	10.0"
	144"	+/- 40 PSF	1748.4 LB/FT	614.4 LB/FT			4.3"	4.2"	4.2"		3.1"						8.5"	8.8"	10.0"
	144"	+/- 45 PSF	1988.0 LB/FT	698.4 LB/FT			3.8"	3.7"	3.7"								7.4"	7.7"	9.6"
	144"	+/- 50 PSF	2227.7 LB/FT	783.0 LB/FT			3.4"	3.3"	3.3"								6.6"	6.9"	8.6"
14.0 FT	168"	+/- 20 PSF	1084.6 LB/FT	350.0 LB/FT	3.8"	4.1"	7.1"	7.0"	6.8"	3.7"	5.2"	4.7"	3.3"				10.0"	10.0"	10.0"
	168"	+/- 25 PSF	1386.8 LB/FT	445.3 LB/FT		3.2"	5.6"	5.5"	5.4"		4.1"	3.7"					10.0"	10.0"	10.0"
	168"	+/- 30 PSF	1689.0 LB/FT	541.3 LB/FT			4.6"	4.5"	4.4"		3.3"	3.0"					8.9"	9.3"	10.0"
	168"	+/- 35 PSF	1991.2 LB/FT	638.0 LB/FT			3.9"	3.8"	3.7"								7.6"	7.9"	9.8"
	168"	+/- 40 PSF	2293.3 LB/FT	735.5 LB/FT			3.4"	3.3"	3.2"								6.6"	6.8"	8.5"
	168"	+/- 45 PSF	2595.5 LB/FT	833.7 LB/FT													5.8"	6.0"	7.5"
	168"	+/- 50 PSF	2897.6 LB/FT	932.6 LB/FT													5.2"	5.4"	6.7"
	168"	+/- 55 PSF	3199.7 LB/FT	1032.3 LB/FT													4.7"	4.9"	6.1"
16.0 FT	192"	+/- 20 PSF	1382.2 LB/FT	413.0 LB/FT	3.0"	3.3"	5.7"	5.6"	5.5"		4.2"	3.7"					10.0"	10.0"	10.0"
	192"	+/- 25 PSF	1751.5 LB/FT	523.4 LB/FT			4.5"	4.4"	4.3"		3.3"						8.7"	9.1"	10.0"
	192"	+/- 30 PSF	2120.7 LB/FT	635.0 LB/FT			3.7"	3.6"	3.6"								7.2"	7.5"	9.3"
	192"	+/- 35 PSF	2489.9 LB/FT	747.8 LB/FT			3.1"	3.1"	3.0"								6.1"	6.4"	8.0"
	192"	+/- 40 PSF	2859.1 LB/FT	861.8 LB/FT													5.3"	5.6"	6.9"
	192"	+/- 45 PSF	3228.2 LB/FT	977.0 LB/FT													4.7"	4.9"	6.1"
	192"	+/- 50 PSF	3597.2 LB/FT	1093.4 LB/FT													4.2"	4.4"	5.5"
18.0 FT	216"	+/- 20 PSF	1687.9 LB/FT	476.9 LB/FT			4.7"	4.6"	4.5"		3.5"	3.1"					9.1"	9.6"	10.0"
	216"	+/- 25 PSF	2128.4 LB/FT	604.4 LB/FT			3.7"	3.7"	3.6"								7.2"	7.6"	9.4"
	216"	+/- 30 PSF	2568.8 LB/FT	734.0 LB/FT			3.1"	3.0"									6.0"	6.3"	7.8"
	216"	+/- 35 PSF	3009.1 LB/FT	865.7 LB/FT													5.1"	5.4"	6.6"
	216"	+/- 40 PSF	3449.3 LB/FT	999.4 LB/FT													4.4"	4.7"	5.8"
20.0 FT	240.0"	+/- 20 PSF	2004.4 LB/FT	566.6 LB/FT			4.0"	3.9"	3.8"								7.7"	8.1"	10.0"
	240.0"	+/- 25 PSF	2520.4 LB/FT	727.0 LB/FT			3.1"	3.1"	3.0"								6.1"	6.4"	7.9"
	240.0"	+/- 30 PSF	3036.2 LB/FT	893.8 LB/FT													5.0"	5.3"	6.5"
	240.0"	+/- 35 PSF	3551.8 LB/FT	1067.1 LB/FT													4.3"	4.5"	5.6"
	240.0"	+/- 40 PSF	4067.3 LB/FT	1246.9 LB/FT													3.7"	3.9"	4.8"

TX REG. #: F-13337
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REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

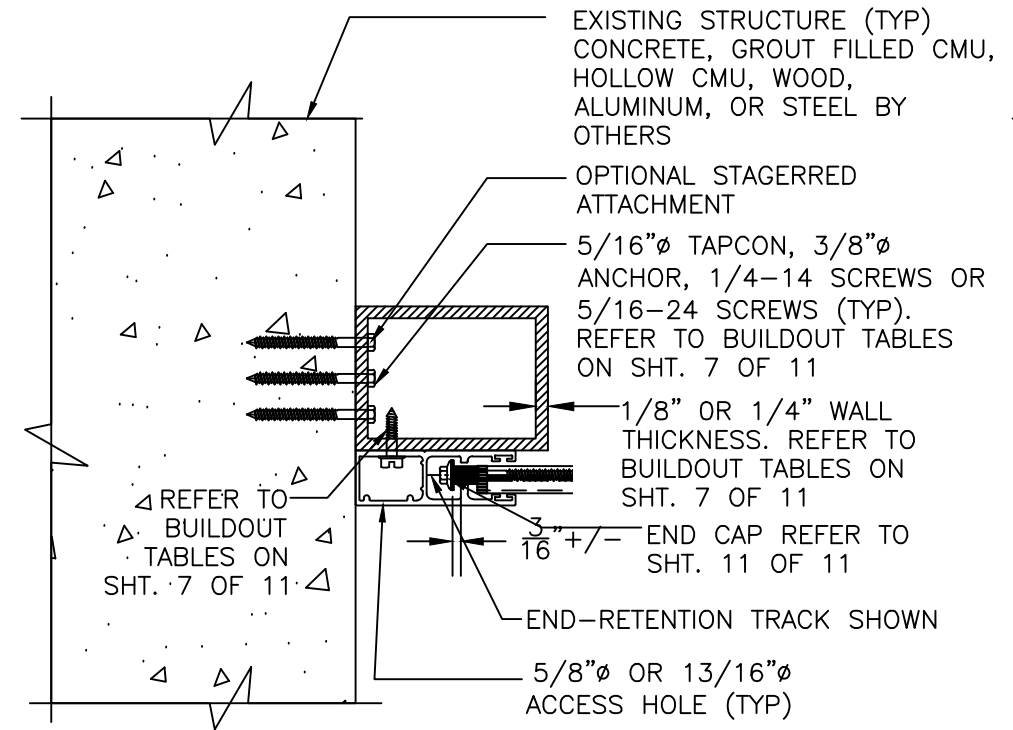
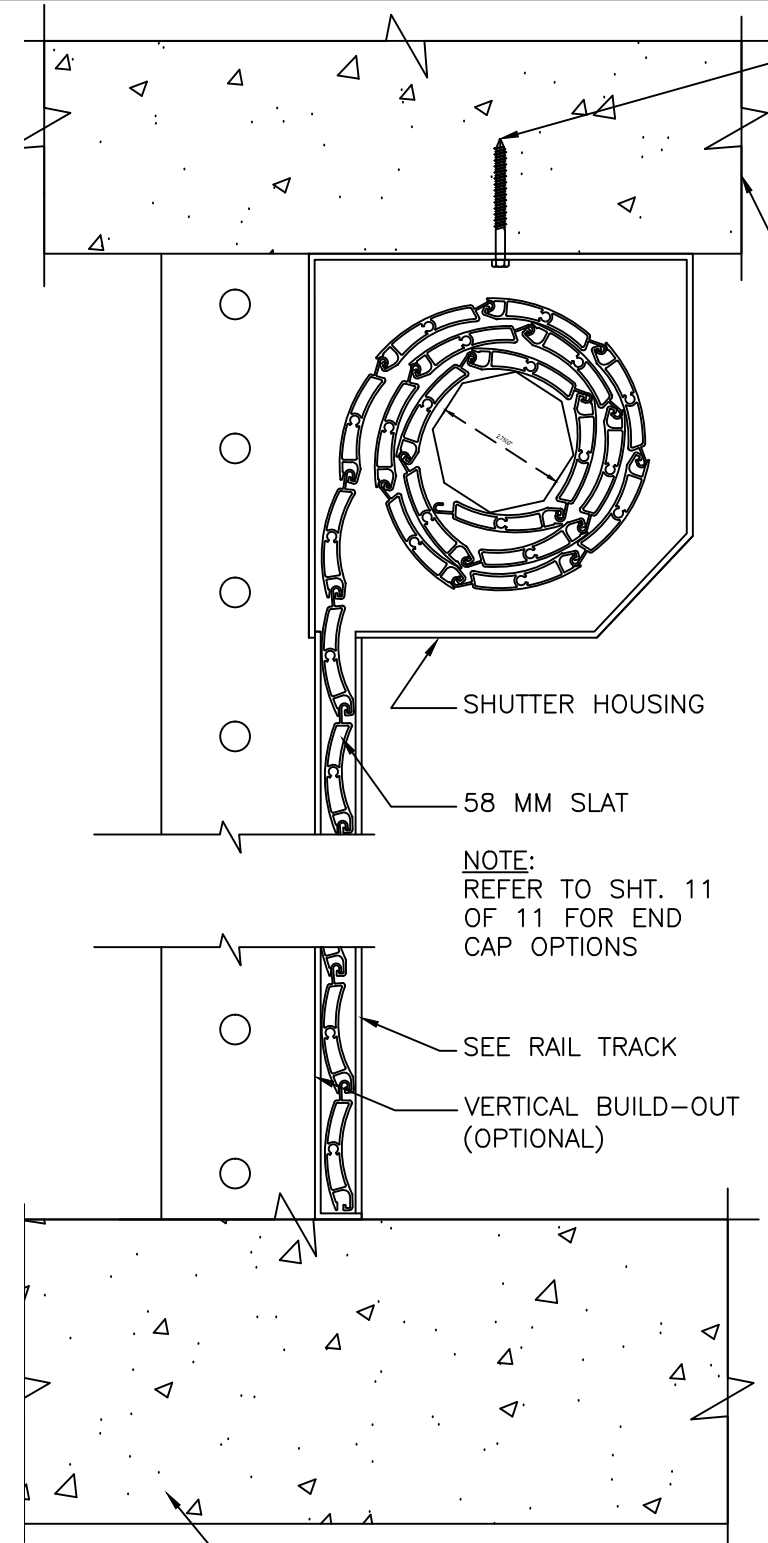
Project Name:
National Approved Shutter Assn LLC
15701 SW 29th Street, Suite 100
Miramar, FL 33027
Phone: (766) 621-6706

Description:
NAS-Assn 58 MILLIMETER ROLL-UP SHUTTER SYSTEM

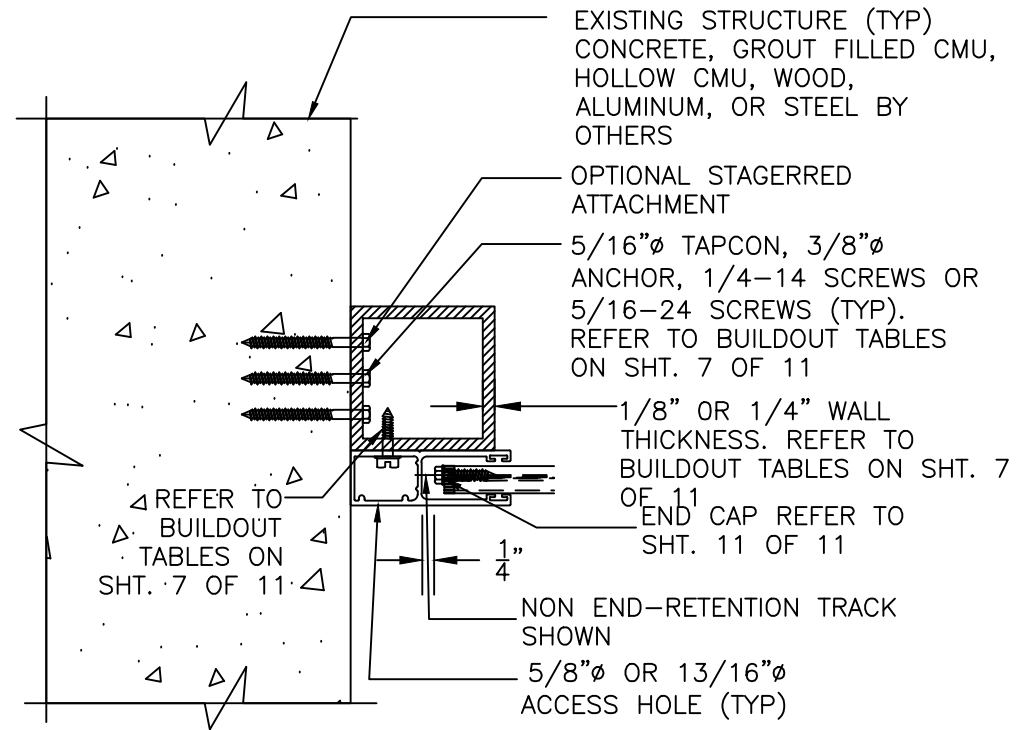
Drawn: JK
Project #: 21-0501
Scale: NOTED
Date: 3/2/21
Sheet No.:

TEXAS DEPARTMENT OF INSURANCE

John H. Kampmann Jr., PE
TX License #: 108168
DATE:

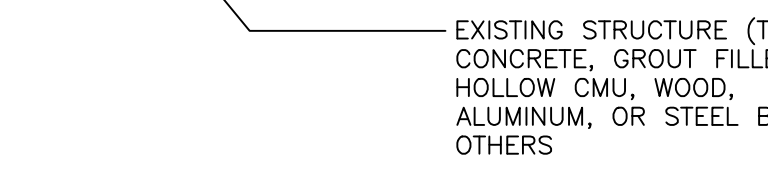


① 2", 3" OR 4" BUILD-OUT TRAPPED
 INSTALLATION END RETENTION &
 NON-END RETENTION
 ⑥ SCALE 3"=1'-0"



② 3" OR 2" BUILD-OUT TRAPPED
 INSTALLATION END RETENTION &
 NON-END RETENTION
 ⑥ SCALE 3"=1'-0"

NOTE: SEE BUILD-OUT TABLE
 CORRESPONDING TO THE
 BUILD-OUT WIDTH AGAINST THE
 EXISTING STRUCTURE



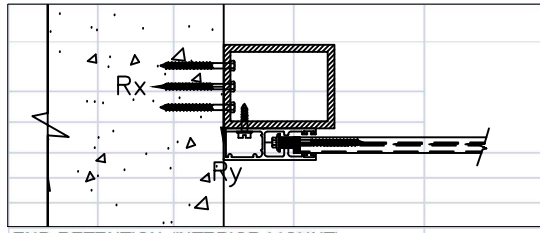
③ 3/8" ANGLE TRAPPED INSTALLATION
 END RETENTION &
 NON-END RETENTION
 ⑥ SCALE 3"=1'-0"

REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

Project Name:
National Approved Shutter Assn LLC
 15701 SW 29th Street, Suite 100
 Miramar, FL 33027
 Phone: (786) 621-6706

DESCRIPTION:
**NAS-Assn 58 MILLIMETER
 ROLL-UP SHUTTER SYSTEM**

Drawn:	JK
Project #:	21-0501
Scale:	NOTED
Date:	3/2/21
Sheet No.:	

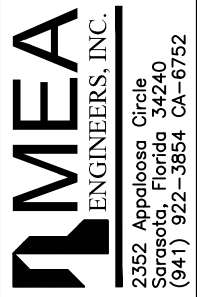


END RETENTION (INTERIOR MOUNT)

SLAT SPAN	DESIGN PRESSURE	Rx	Ry
7.0 FT	84" +/- 30 PSF	229.2 LB/FT	129.0 LB/FT
	84" +/- 35 PSF	359.8 LB/FT	165.5 LB/FT
	84" +/- 40 PSF	491.0 LB/FT	203.1 LB/FT
	84" +/- 45 PSF	622.7 LB/FT	241.8 LB/FT
	84" +/- 50 PSF	754.9 LB/FT	281.4 LB/FT
	84" +/- 60 PSF	1020.8 LB/FT	363.9 LB/FT
	84" +/- 70 PSF	1288.6 LB/FT	450.4 LB/FT
	84" +/- 80 PSF	1558.4 LB/FT	540.9 LB/FT
	84" +/- 90 PSF	1830.0 LB/FT	635.5 LB/FT
	84" +/- 100 PSF	2103.3 LB/FT	734.0 LB/FT
8.0 FT	96" +/- 30 PSF	522.6 LB/FT	181.7 LB/FT
	96" +/- 35 PSF	679.9 LB/FT	222.3 LB/FT
	96" +/- 40 PSF	837.4 LB/FT	263.2 LB/FT
	96" +/- 45 PSF	995.0 LB/FT	304.3 LB/FT
	96" +/- 50 PSF	1152.8 LB/FT	345.7 LB/FT
	96" +/- 60 PSF	1469.0 LB/FT	429.5 LB/FT
	96" +/- 70 PSF	1785.9 LB/FT	514.3 LB/FT
	96" +/- 80 PSF	2103.4 LB/FT	600.3 LB/FT
10.0 FT	120" +/- 30 PSF	1028.2 LB/FT	267.5 LB/FT
	120" +/- 35 PSF	1244.5 LB/FT	318.6 LB/FT
	120" +/- 40 PSF	1460.9 LB/FT	369.9 LB/FT
	120" +/- 45 PSF	1677.5 LB/FT	421.6 LB/FT
	120" +/- 50 PSF	1894.4 LB/FT	473.6 LB/FT
	120" +/- 60 PSF	2328.6 LB/FT	578.4 LB/FT
	120" +/- 70 PSF	2763.6 LB/FT	684.5 LB/FT
	120" +/- 80 PSF	3198.6 LB/FT	790.6 LB/FT
12.0 FT	144" +/- 30 PSF	1496.5 LB/FT	341.0 LB/FT
	144" +/- 35 PSF	1777.3 LB/FT	402.6 LB/FT
	144" +/- 40 PSF	2058.3 LB/FT	464.6 LB/FT
	144" +/- 45 PSF	2339.6 LB/FT	527.0 LB/FT
	144" +/- 50 PSF	2621.1 LB/FT	589.8 LB/FT
14.0 FT	168" +/- 30 PSF	1961.6 LB/FT	408.7 LB/FT
	168" +/- 35 PSF	2311.8 LB/FT	480.7 LB/FT
	168" +/- 40 PSF	2662.3 LB/FT	553.2 LB/FT
	168" +/- 45 PSF	3013.1 LB/FT	626.1 LB/FT
	168" +/- 50 PSF	3364.2 LB/FT	699.5 LB/FT
16.0 FT	192" +/- 30 PSF	2438.9 LB/FT	477.0 LB/FT
	192" +/- 35 PSF	2863.9 LB/FT	560.7 LB/FT
	192" +/- 40 PSF	3289.3 LB/FT	645.0 LB/FT
18.0 FT	216" +/- 20 PSF	1926.7 LB/FT	358.1 LB/FT
	216" +/- 25 PSF	2430.3 LB/FT	452.6 LB/FT
	216" +/- 30 PSF	2934.6 LB/FT	548.4 LB/FT
	216" +/- 35 PSF	3439.6 LB/FT	645.3 LB/FT
	216" +/- 40 PSF	3945.3 LB/FT	743.5 LB/FT
20.0 FT	240.0" +/- 20 PSF	2284.5 LB/FT	419.9 LB/FT
	240.0" +/- 25 PSF	2878.0 LB/FT	536.1 LB/FT
	240.0" +/- 30 PSF	3473.9 LB/FT	656.2 LB/FT
	240.0" +/- 35 PSF	4072.2 LB/FT	780.2 LB/FT
	240.0" +/- 40 PSF	4673.0 LB/FT	908.0 LB/FT

MAXIMUM SPACING (O.C.)																						
		1/4" ELCO ULTRACON TO 2700 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMEN T; 2.5" MIN. EDGE DISTANCE	1/4" SS ITW TAPCON TO 3192 PSI MIN. CONCRETE; 1.75" MIN. EMBEDMEN T; 2.5" MIN. EDGE DISTANCE	5/16" ELCO ULTRACON TO 3500 PSI MIN. CONCRETE; 2" MIN. EMBEDMEN T; 3.125" MIN. EDGE DISTANCE	5/16" ITW TAPCON			1/4" POWERS POWER-BOLT TO 3000 PSI MIN. CONCRETE; 2.5" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	1/4" ALL-POINTS SOLID-SET		1/4" LAG SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	5/16" LAG SCREW TO G=0.42 MIN WOOD; 2" MIN. EMBEDMEN T; 0.75" MIN. EDGE DISTANCE	#14 WOOD SCREW TO G=0.55 MIN WOOD; 1.5" MIN. EMBEDMEN T; 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 OR A36 STEEL; 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 OR A36 STEEL; 0.625" MIN. EDGE DISTANCE	3/8" POWERS WEDGE BOLT TO 3000 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 4.5" MIN. EDGE DISTANCE	3/8" ELCO CONFLX					
				TO 2899 PSI MIN. CONCRETE; 2.25" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO GROUT-FILLED CONCRETE BLOCK; 2.25" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE	TO HOLLOW CONCRETE BLOCK; 1.75" MIN. EMBEDMEN T; 4" MIN. EDGE DISTANCE		TO 3000 PSI MIN. CONCRETE; 0.875" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE	TO HOLLOW BLOCK; 0.875" MIN. EMBEDMEN T; 3" MIN. EDGE DISTANCE							TO 1819 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 3.75" MIN. EDGE DISTANCE	TO 4510 PSI MIN. CONCRETE; 3.5" MIN. EMBEDMEN T; 3.75" MIN. EDGE DISTANCE					
7.0 FT	84"	+/- 30 PSF	229.2 LB/FT	129.0 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"		
7.0 FT	84"	+/- 35 PSF	359.8 LB/FT	165.5 LB/FT	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"	10.0"		
7.0 FT	84"	+/- 40 PSF	491.0 LB/FT	203.1 LB/FT	8.1"	9.0"	10.0"	10.0"	10.0"	10.0"	5.4"	9.2"	9.5"	6.8"	6.2"	5.7"	5.9"	5.5"	4.9"	10.0"		
7.0 FT	84"	+/- 45 PSF	622.7 LB/FT	241.8 LB/FT	6.5"	7.3"	10.0"	10.0"	10.0"	10.0"	4.3"	7.3"	7.6"	5.5"	5.1"	4.7"	4.8"	4.3"	3.8"	10.0"		
7.0 FT	84"	+/- 50 PSF	754.9 LB/FT	281.4 LB/FT	5.4"	6.1"	9.7"	9.3"	10.0"	10.0"	3.5"	6.1"	6.4"	4.6"	4.3"	4.0"	4.0"	3.6"	3.2"	10.0"		
7.0 FT	84"	+/- 60 PSF	1020.8 LB/FT	363.9 LB/FT	4.0"	4.6"	7.3"	7.0"	7.8"			4.5"	4.8"	3.4"	3.3"	3.0"	3.0"			10.0"		
7.0 FT	84"	+/- 70 PSF	1288.6 LB/FT	450.4 LB/FT	3.2"	3.6"	5.8"	5.5"	6.2"			3.6"	3.8"							10.0"		
7.0 FT	84"	+/- 80 PSF	1558.4 LB/FT	540.9 LB/FT		3.0"	4.8"	4.6"	5.1"			3.0"	3.1"							10.0"		
7.0 FT	84"	+/- 90 PSF	1830.0 LB/FT	635.5 LB/FT			4.1"	3.9"	4.4"											9.6"		
7.0 FT	84"	+/- 100 PSF	2103.3 LB/FT	734.0 LB/FT			3.6"	3.4"	3.8"											8.4"		
7.0 FT	84"	+/- 110 PSF	2378.4 LB/FT	836.5 LB/FT			3.1"	3.0"	3.3"											7.4"		
8.0 FT	96"	+/- 30 PSF	522.6 LB/FT	181.7 LB/FT	8.0"	9.0"	10.0"	10.0"	10.0"	5.2"	8.9"	9.4"	6.7"	6.5"	6.0"	6.0"	5.2"	4.6"		10.0"		
	96"	+/- 35 PSF	679.9 LB/FT	222.3 LB/FT	6.2"	7.0"	10.0"	10.0"	10.0"	4.0"	6.9"	7.3"	5.3"	5.1"	4.8"	4.8"	4.1"	3.6"		10.0"		
	96"	+/- 40 PSF	837.4 LB/FT	263.2 LB/FT	5.1"	5.7"	9.2"	8.7"	9.8"	3.3"	5.7"	6.0"	4.3"	4.3"	4.0"	3.9"	3.3"			10.0"		
	96"	+/- 45 PSF	995.0 LB/FT	304.3 LB/FT	4.3"	4.9"	7.4"	7.4"	8.3"	3.0"	4.8"	5.1"	3.7"	3.6"	3.4"	3.4"					10.0"	
	96"	+/- 50 PSF	1152.8 LB/FT	345.7 LB/FT	3.7"	4.2"	6.7"	6.4"	7.2"		4.2"	4.4"	3.2"	3.2"							10.0"	
	96"	+/- 60 PSF	1469.0 LB/FT	429.5 LB/FT	3.0"	3.3"	5.3"	5.1"	5.7"		3.3"	3.5"									10.0"	
	96"	+/- 70 PSF	1785.9 LB/FT	514.3 LB/FT			4.4"	4.2"	4.7"												10.0"	
	96"	+/- 80 PSF	2103.4 LB/FT	600.3 LB/FT			3.7"	3.6"	4.0"												8.9"	
10.0 FT	120"	+/- 30 PSF	1028.2 LB/FT	267.5 LB/FT	4.3"	4.9"	7.8"	7.4"	8.4"			4.8"	5.1"	3.7"	3.8"	3.6"	3.5"			10.0"		
	120"	+/- 35 PSF	1244.5 LB/FT	318.6 LB/FT	3.6"	4.1"	6.4"	6.1"	6.9"			4.0"	4.2"	3.0"	3.2"					10.0"		
	120"	+/- 40 PSF	1460.9 LB/FT	369.9 LB/FT	3.1"	3.5"	5.5"	5.2"	5.9"			3.4"	3.6"							10.0"		
	120"	+/- 45 PSF	1677.5 LB/FT	421.6 LB/FT		3.0"	4.8"	4.6"	5.2"			3.0"	3.1"								10.0"	
	120"	+/- 50 PSF	1894.4 LB/FT	473.6 LB/FT			4.3"	4.1"	4.6"												10.0"	
	120"	+/- 60 PSF	2328.6 LB/FT	578.4 LB/FT			3.5"	3.3"	3.7"												8.4"	
	120"	+/- 70 PSF	2763.6 LB/FT	684.5 LB/FT			3.0"	3.0"	3.2"												7.1"	
	120"	+/- 80 PSF	3198.6 LB/FT	790.6 LB/FT			3.1"	3.0"	3.2"												7.1"	
12.0 FT	144"	+/- 30 PSF	1496.5 LB/FT	341.0 LB/FT	3.1"	3.5"	5.5"	5.2"	5.9"			3.3"	3.6"							10.0"		
	144"	+/- 35 PSF	1777.3 LB/FT	402.6 LB/FT		3.0"	4.6"	4.4"	5.0"				3.0"								10.0"	
	144"	+/- 40 PSF	2058.3 LB/FT	464.6 LB/FT			4.0"	3.8"	4.3"												9.7"	
	144"	+/- 45 PSF	2339.6 LB/FT	527.0 LB/FT			3.5"	3.3"	3.8"												8.5"	
	144"	+/- 50 PSF	2621.1 LB/FT	589.8 LB/FT			3.1"	3.0"	3.4"												7.6"	
14.0 FT	168"	+/- 30 PSF	1961.6 LB/FT	408.7 LB/FT			4.2"	4.0"	4.6"												10.0"	
	168"	+/- 35 PSF	2311.8 LB/FT	480.7 LB/FT			3.6"	3.4"	3.9"												8.8"	
	168"	+/- 40 PSF	2662.3 LB/FT	553.2 LB/FT			3.1"	3.0"	3.4"												7.7"	
	168"	+/- 45 PSF	3013.1 LB/FT	626.1 LB/FT					3.0"												6.8"	
	168"	+/- 50 PSF	3364.2 LB/FT	699.5 LB/FT																	6.1"	
16.0 FT	192"	+/- 30 PSF	2438.9 LB/FT	477.0 LB/FT			3.5"	3.3"	3.8"												8.5"	
	192"	+/- 35 PSF	2863.9 LB/FT	560.7 LB/FT			3.0"	3.0"	3.2"												7.2"	
	192"	+/- 40 PSF	3289.3 LB/FT	645.0 LB/FT																	6.3"	
18.0 FT	216"	+/- 20 PSF	1926.7 LB/FT	358.1 LB/FT			4.4"	4.2"	4.8"												10.0"	
	216"	+/- 25 PSF	2430.3 LB/FT	452.6 LB/FT			3.5"	3.3"	3.8"												8.6"	
	216"	+/- 30 PSF	2934.6 LB/FT	548.4 LB/FT			3.0"	3.0"	3.1"												7.1"	
	216"	+/- 35 PSF	3439.6 LB/FT	645.3 LB/FT																		6.1"
	216"	+/- 40 PSF	3945.3 LB/FT	743.5 LB/FT																		5.3"
20.0 FT	240.0"	+/- 20 PSF	2284.5 LB/FT	419.9 LB/FT			3.7"	3.5"	4.1"												9.2"	
	240.0"	+/- 25 PSF	2878.0 LB/FT	536.1 LB/FT			3.0"	3.0"	3.2"												7.3"	
	240.0"	+/- 30 PSF	3473.9 LB/FT	656.2 LB/FT																	6.0"	
	240.0"	+/- 35 PSF	4072.2 LB/FT	780.2 LB/FT																	5.1"	
	240.0"	+/- 40 PSF	4673.0 LB/FT	908.0 LB/FT																	4.4"	

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DESCRIPTION	XX/XX/XX - RESERVED.
REV.	1

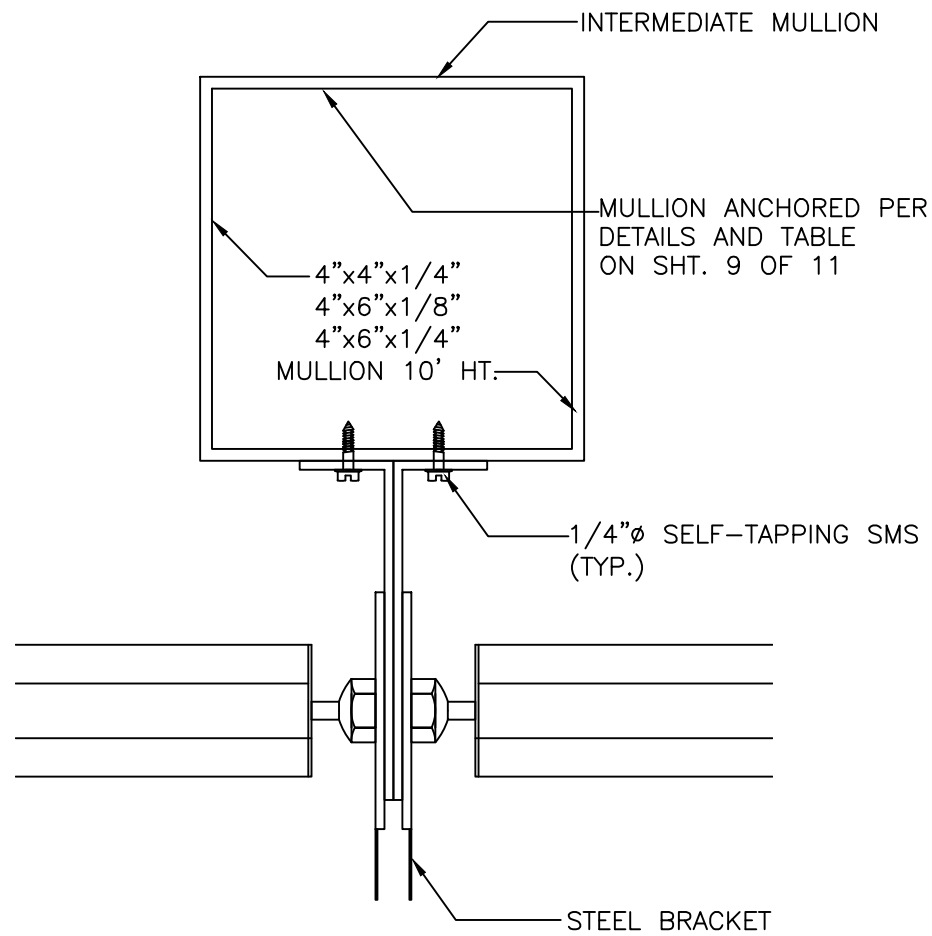
Project Name:
National Approved Shutter Assn LLC
15701 SW 29th Street, Suite 100
Miramar, FL 33027
Phone: (786) 621-6706

Description:
NAS-Assn 58 MILLIMETER ROLL-UP SHUTTER SYSTEM

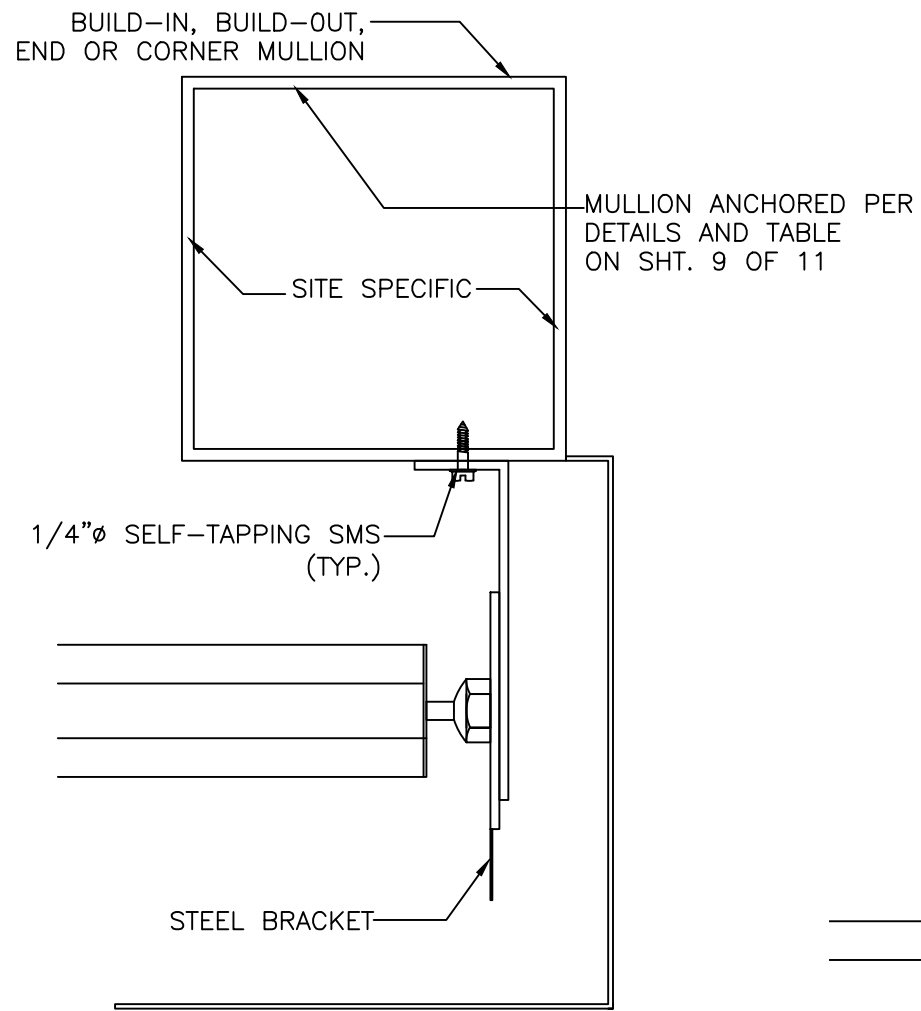
Drawn:	JK
Project #:	21-0501
Scale:	NOTED
Date:	3/2/21
Sheet No.:	

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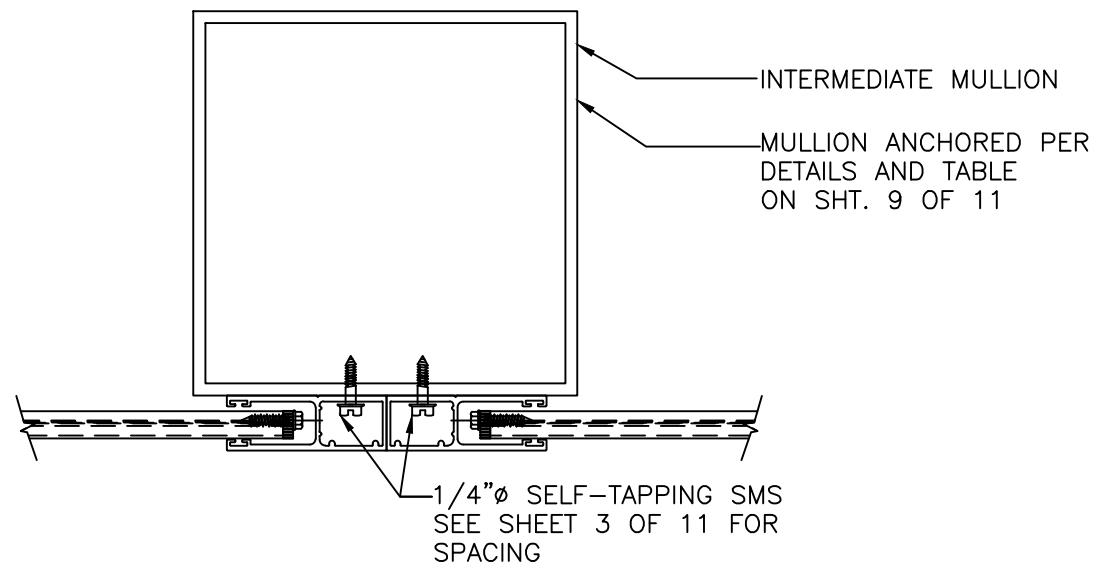
John H. Kampmann Jr., PE
TX License #: 108168
DATE:



1
8 MOUNTING BRACKET INSTALLATION
END RETENTION & NON-END RETENTION INSTALLATION
SCALE 3"=1'-0"

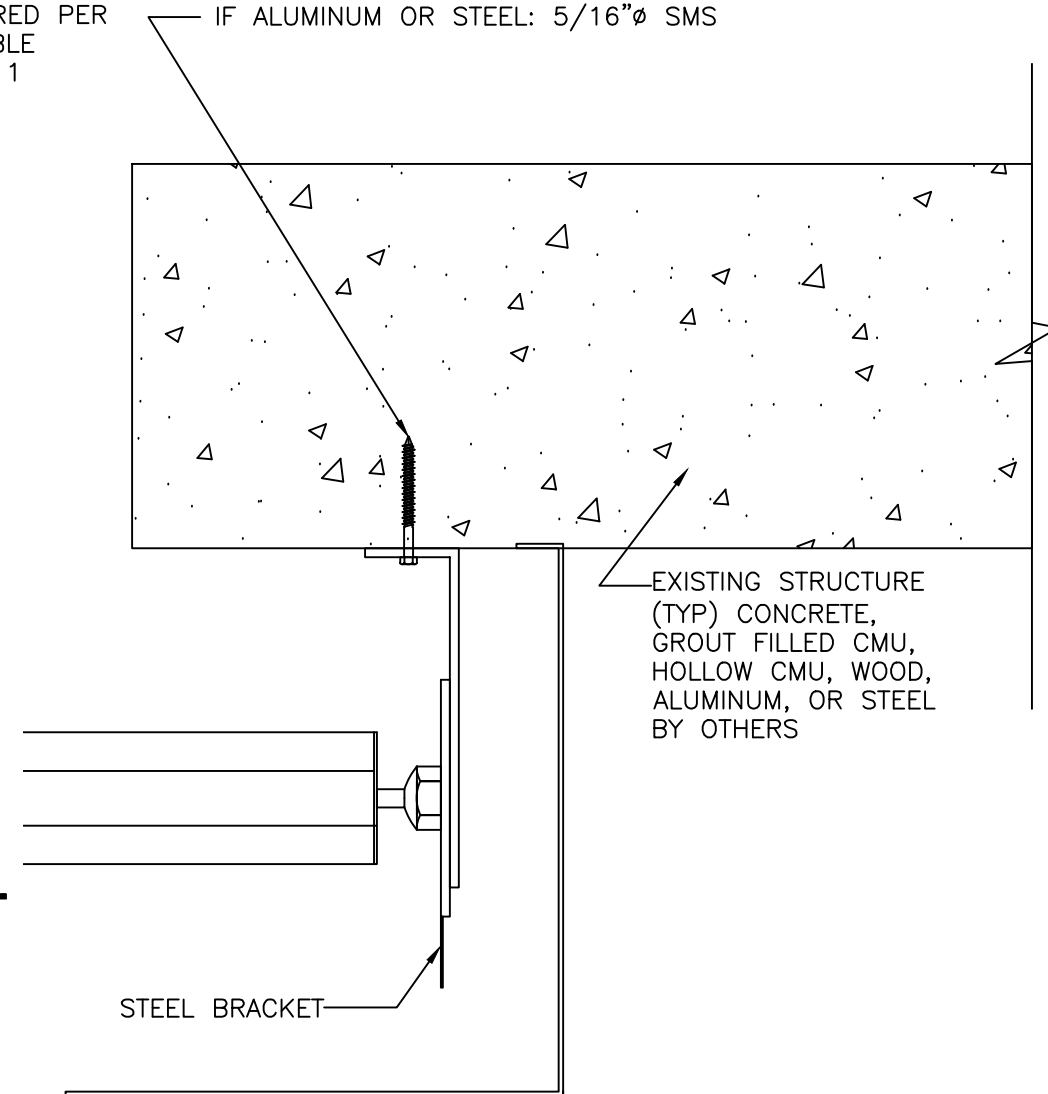


2
8 MOUNTING BRACKET INSTALLATION
END RETENTION & NON-END RETENTION INSTALLATION
SCALE 3"=1'-0"



4
8 MOUNTING BRACKET INSTALLATION
END RETENTION & NON-END RETENTION INSTALLATION
SCALE 3"=1'-0"

MANUFACTURER (IF APPLICABLE), SUBSTRATE STRENGTH/THICKNESS, EMBEDMENT/THREAD PENETRATION, AND EDGE DISTANCE PER TABLES ON SHEETS 3, 5, 7, OF 11:
IF CONCRETE: 5/16"Ø ULTRACON/TAPCON
IF GROUT FILLED OR HOLLOW CMU: 5/16"Ø TAPCON
IF WOOD: 5/16"Ø LAG SCREW
IF ALUMINUM OR STEEL: 5/16"Ø SMS



3
8 MOUNTING BRACKET INSTALLATION
END RETENTION & NON-END RETENTION INSTALLATION
SCALE 3"=1'-0"

TEXAS DEPARTMENT OF INSURANCE

Drawn: UK
Project #: 21-0501
Scale: NOTED
Date: 3/2/21
Sheet No.:

8 of 11

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DATE:

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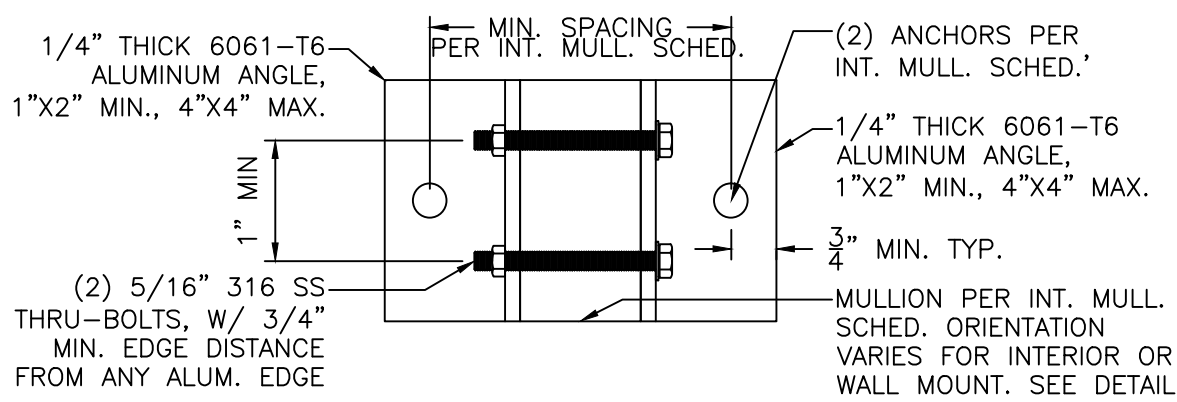
MEAE
ENGINEERS, INC.
2352 Appaloosa Circle
Sarasota, Florida 34240
(941) 922-3854 CA-6752

DESCRIPTION
XX/XX/XX - RESERVED.

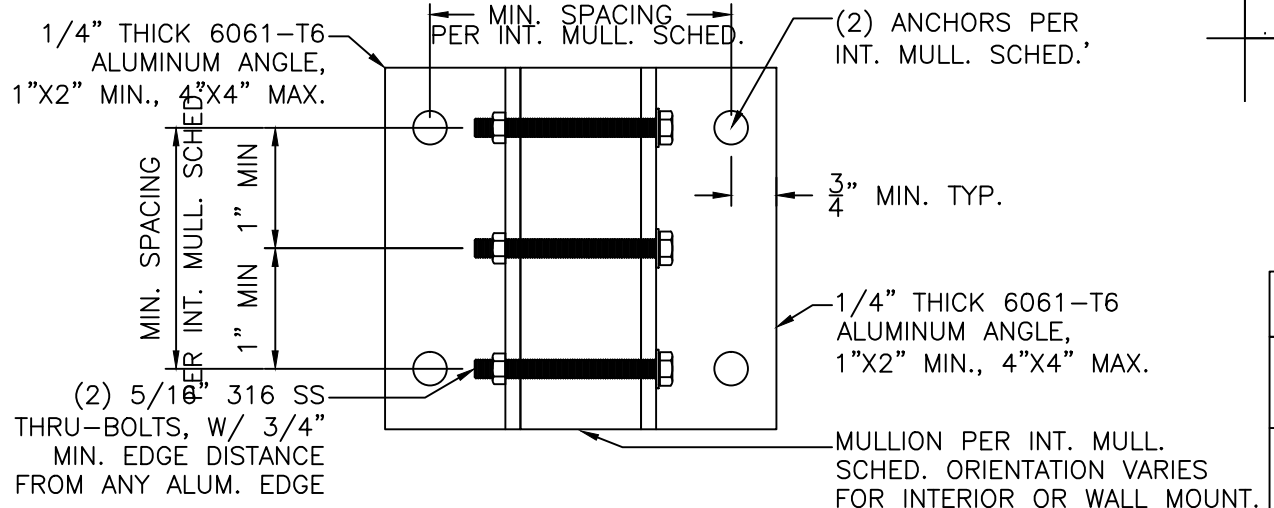
REV. 1

Project Name:
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15701 SW 29th Street, Suite 100
Miramar, FL 33027
Phone: (786) 621-6706

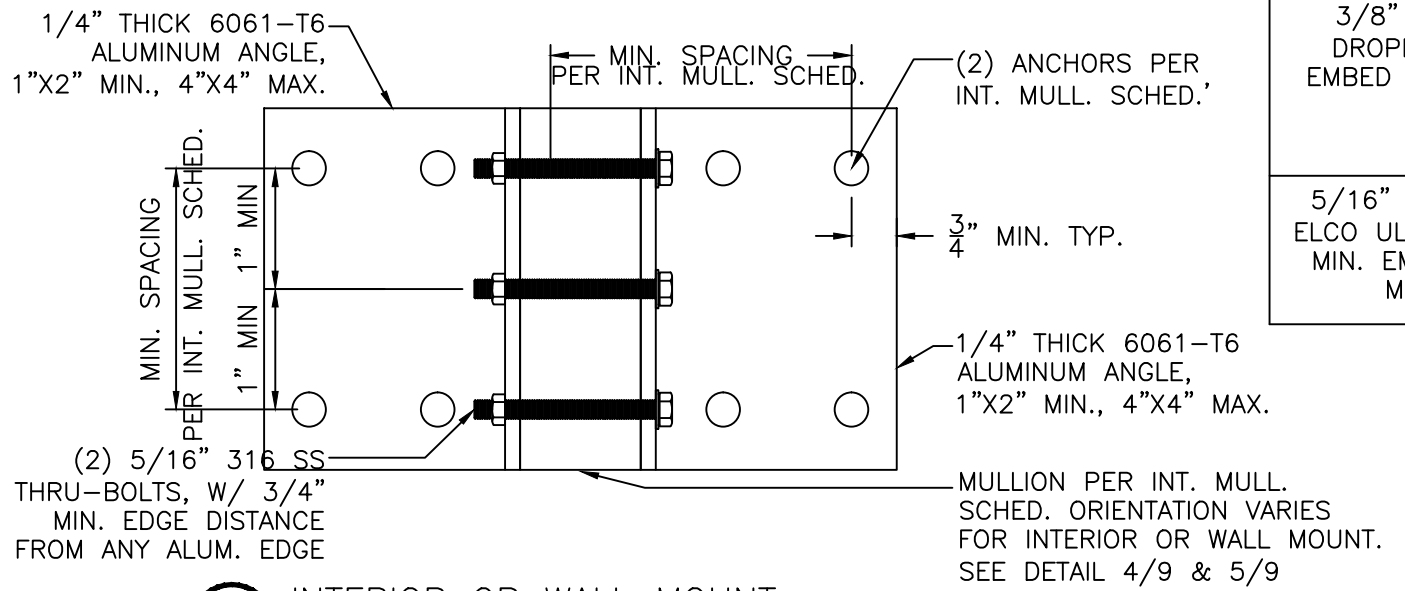
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**NAS-Assn 58 MILLIMETER
ROLL-UP SHUTTER SYSTEM**



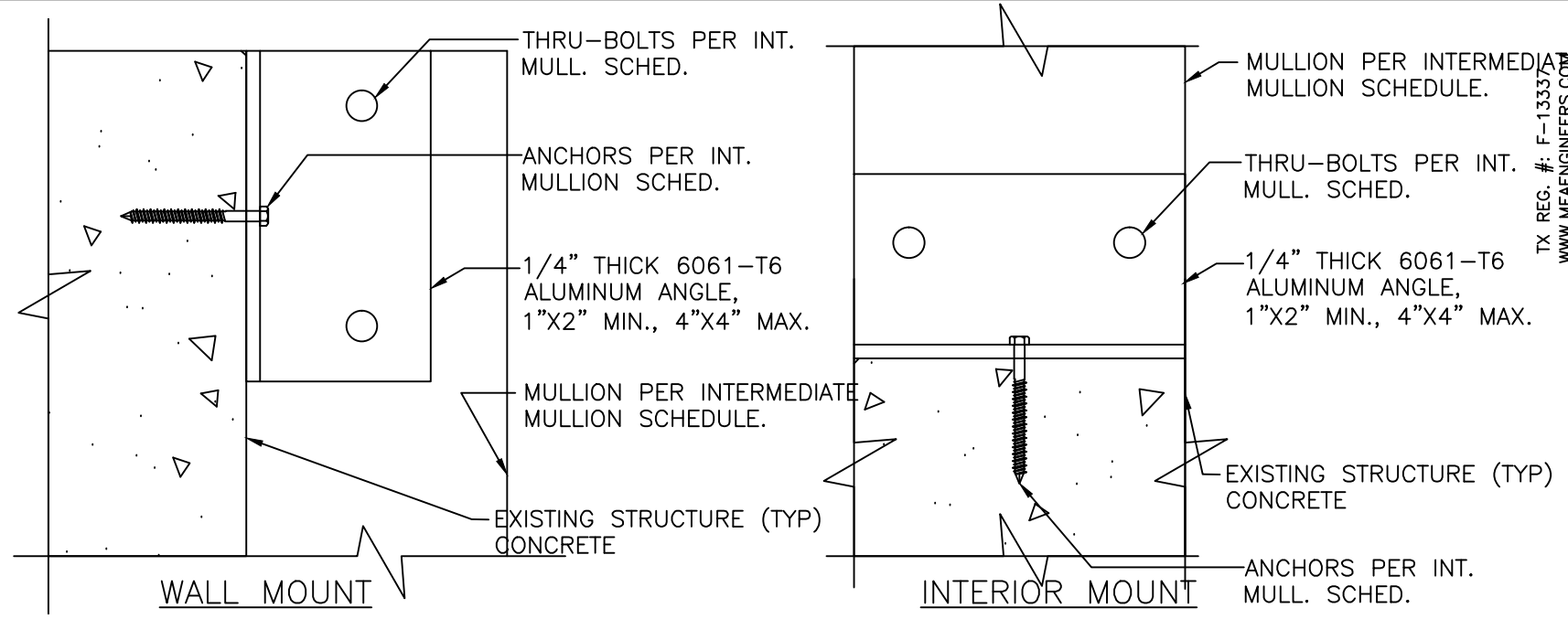
1 INTERIOR OR WALL MOUNT
9 END RETENTION & NON-END RETENTION INSTALLATION N.T.S.



2 INTERIOR OR WALL MOUNT
9 END RETENTION & NON-END RETENTION INSTALLATION N.T.S.



3 INTERIOR OR WALL MOUNT
9 END RETENTION & NON-END RETENTION INSTALLATION N.T.S.



4 MOUNTING CONDITIONS VERTICAL SECTIONS
9 END RETENTION & NON-END RETENTION INSTALLATION N.T.S.

INTERMEDIATE MULLION SCHED. W/ EQUAL SPANS BOTH SIDES								
ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	MIN. MULLION SIZE	MAX. SLAT SPAN	MAX. MULLION HT.	MAX. DP	E.R. OR NON E.R
3/8" POWERS WEDGE BOLTS W/ 3-1/2" EMBED TO 3000P SI MIN CONCRETE	4.5"	4.5"	1/9	3X3.25	96"	60"	60	E.R.
			2/9	4X6X.25	180"	90"	60	E.R.
	2.5"	4.5"	3/9	4X8X.25	240"	90"	40	E.R.
3/8" POWERS STEEL DROPIN W/ 1-9/16" EMBED TO 3000 PSI MIN CONCRETE	4.5"	5.25"	1/9	3X3.25	84"	90"	120	NON E.R.
			2/9	4X6X.25	144"	90"	120	E.R.
	2.5"	5.25"	3/9	4X6X.25	168"	90"	60	E.R.
5/16" ITW TAPCON XL OR ELCO ULTRACON W/ 2-1/4" MIN. EMBED TO 3500 PS1 MIN. CONCRETE	5.0"	3.125"	1/9	3X3.25	84"	90"	120	NON E.R.
			2/9	3X3.25	96"	60"	60	E.R.

TX REG. #: F-1333
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 ENGINEERS, INC.
 2352 Apalooosa Circle
 Sarasota, Florida 34240
 (941) 922-3854 CA-6752

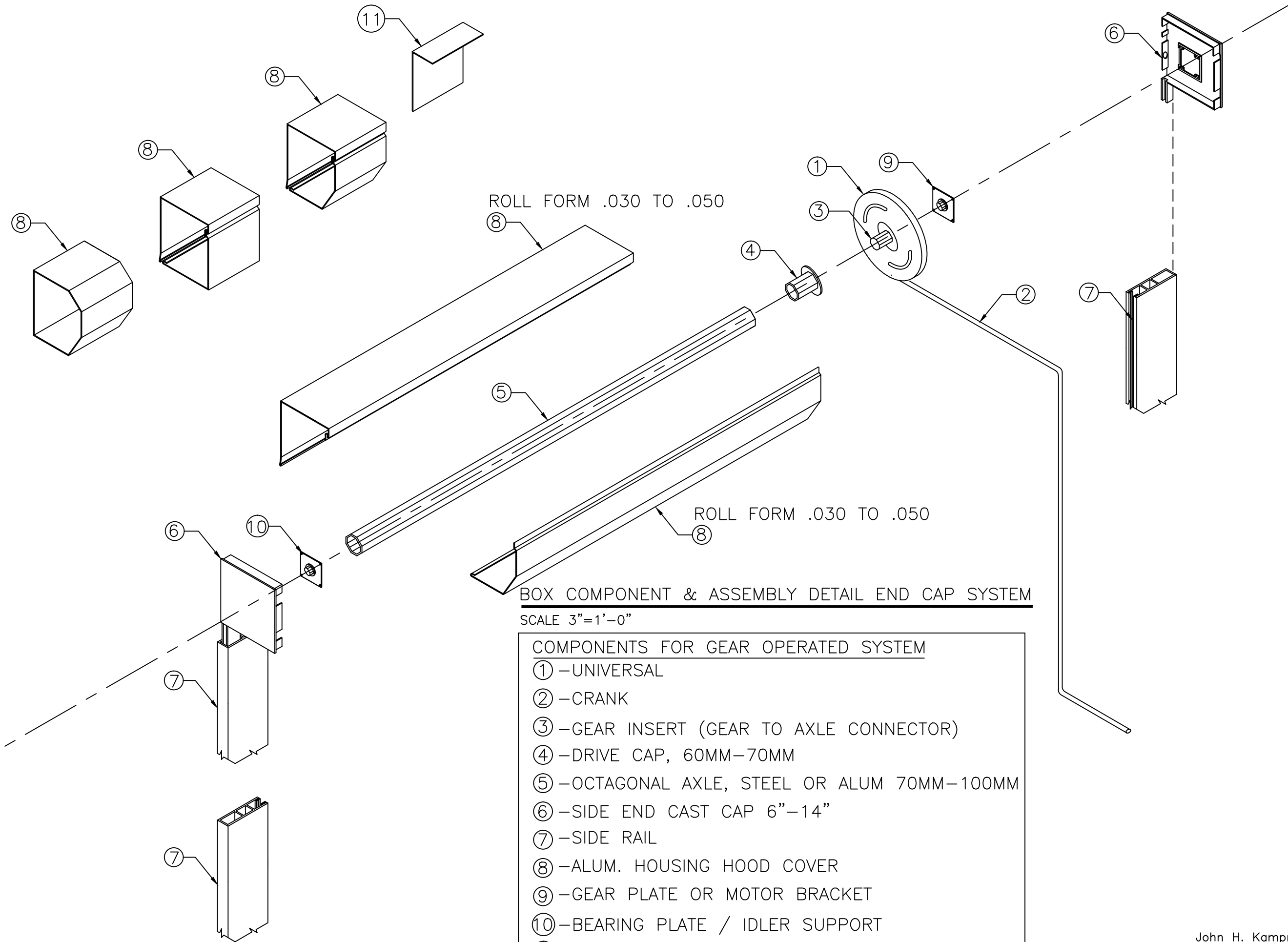
DESCRIPTION
 XX/XX/XX - RESERVED.
 REV. 1

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TEXAS DEPARTMENT OF INSURANCE

John H. Kampmann Jr., PE
 TX License #: 108168
 DATE:



BOX COMPONENT & ASSEMBLY DETAIL END CAP SYSTEM
 SCALE 3"=1'-0"

COMPONENTS FOR GEAR OPERATED SYSTEM

- ① - UNIVERSAL
- ② - CRANK
- ③ - GEAR INSERT (GEAR TO AXLE CONNECTOR)
- ④ - DRIVE CAP, 60MM-70MM
- ⑤ - OCTAGONAL AXLE, STEEL OR ALUM 70MM-100MM
- ⑥ - SIDE END CAST CAP 6"-14"
- ⑦ - SIDE RAIL
- ⑧ - ALUM. HOUSING HOOD COVER
- ⑨ - GEAR PLATE OR MOTOR BRACKET
- ⑩ - BEARING PLATE / IDLER SUPPORT
- ⑪ - STEEL BRACKET

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 ROLL-UP SHUTTER SYSTEM**

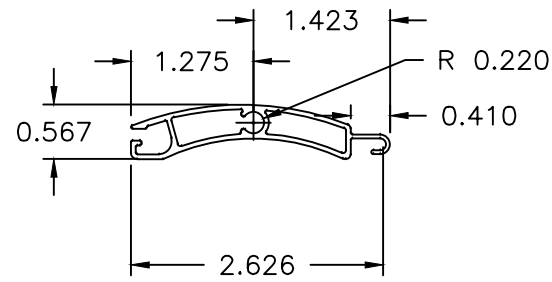
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REV. 1
 DESCRIPTION
 XX/XX/XX - RESERVED.

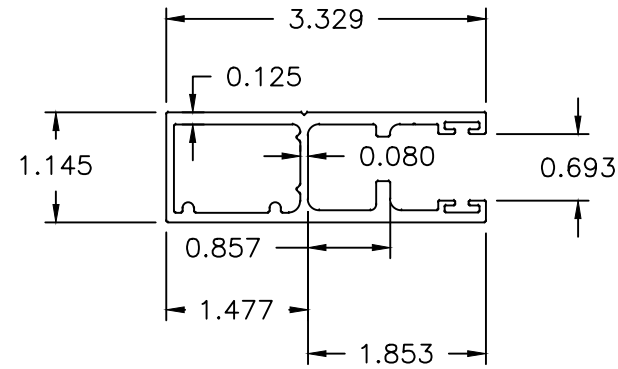
TX REG. #: F-13337
 WWW.MEAENGINEERS.COM

MEAE
 ENGINEERS, INC.
 2352 Appaloosa Circle
 Sarasota, Florida 34240
 (941) 922-3854 CA-6752

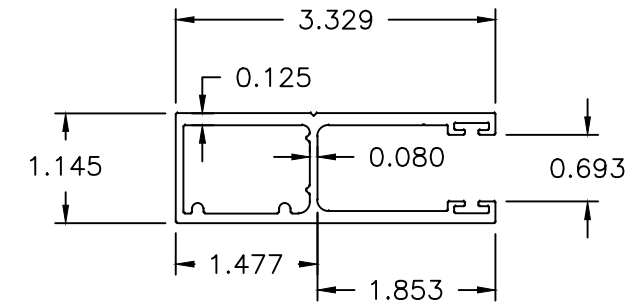
John H. Kampmann Jr., PE
 TX License #: 108168
 DATE:



58MM SLAT
SCALE 1:2



58MM SIDE RAIL W/ RETENTION LEGS
SCALE 1:2



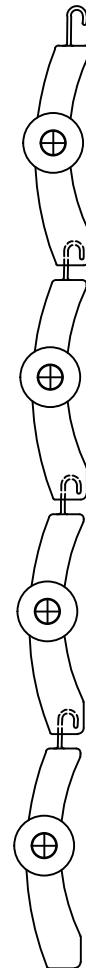
58MM SIDE RAIL W/O RETENTION LEGS
SCALE 1:2



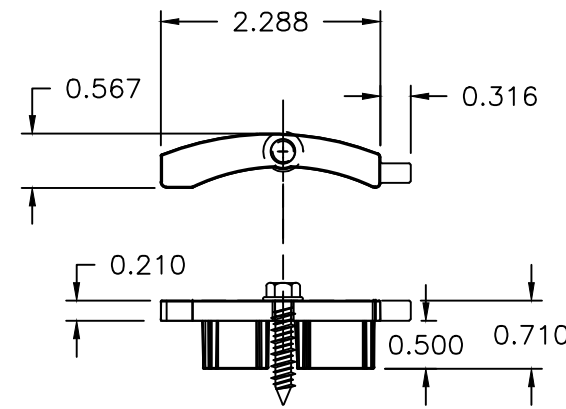
DETAIL-1
SCALE 1:2
2' TO 7'
NON-END RETENTION



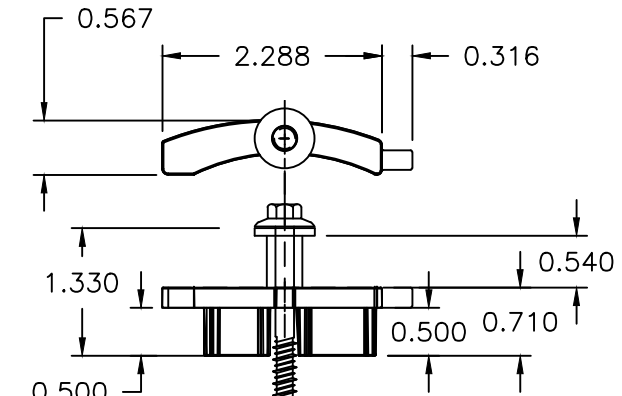
DETAIL-2
SCALE 1:2
2' TO 14'
END RETENTION



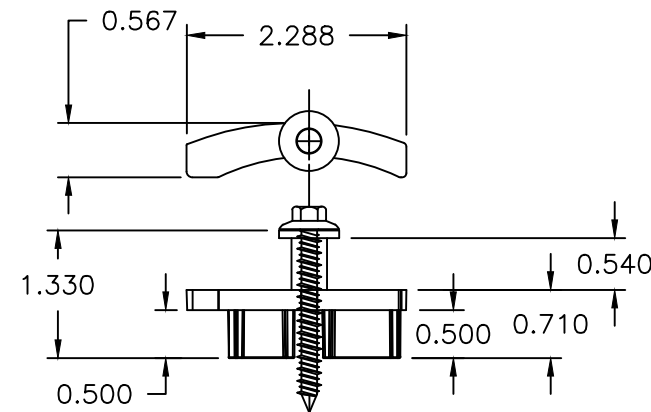
DETAIL-3
SCALE 1:2
14' TO 21'
END RETENTION



1 END CAP & TIP W/OUT BUSHING
SCALE 1:2 SEE DETAIL-1 ON THIS SHT.

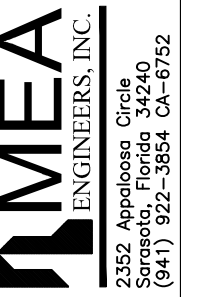


2 END CAP & TIP W/ BUSHING
SCALE 1:2 SEE DETAIL-2 ON THIS SHEET



3 END CAP W/ BUSHING
SCALE 1:2 SEE DETAIL-3 ON THIS SHEET

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REV.	DESCRIPTION
1	XX/XX/XX - RESERVED.

Project Name:
National Approved Shutter Assn LLC
15701 SW 29th Street, Suite 100
Miramar, FL 33027
Phone: (786) 621-6706

Description:
**NAS-Assn 58 MILLIMETER
ROLL-UP SHUTTER SYSTEM**

Drawn:	JK
Project #:	21-0501
Scale:	NOTED
Date:	3/2/21
Sheet No.:	

TEXAS DEPARTMENT OF INSURANCE

John H. Kampmann Jr., PE
TX License #: 108168
DATE: