

TOWN & COUNTRY INDUSTRIES

6.8 STREAMLINE SHUTTER

IMPACT / NON-IMPACT - HVHZ / NON-HVHZ

NON-SITE-SPECIFIC STRUCTURAL PERFORMANCE EVALUATION. A DESIGN PROFESSIONAL SHALL BE RESPONSIBLE FOR CERTIFYING THE APPLICATION OF THIS INFORMATION TO ANY SITE-SPECIFIC LOCATION.

COLBY BENNARDO, P.E.
PE# 95197 CA# 9885

AUGUST 15, 2023

NOTE REGARDING USE OF THIS DOCUMENT & USE OUTSIDE FLORIDA:

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

GENERAL NOTES:

- THIS SYSTEM HAS BEEN TESTED AND EVALUATED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE EIGHTH EDITION (2023), FOR USE WITHIN AND OUTSIDE THE HIGH VELOCITY HURRICANE ZONE, AND THE INTERNATIONAL BUILDING CODE (IBC) AND INTERNATIONAL RESIDENTIAL CODE (IRC). THIS SYSTEM MEETS MISSILE LEVEL "D" AND INCLUDES ESSENTIAL FACILITIES AS DEFINED IN ASTM E1996-09. SEE PRODUCT EVALUATION REPORT FOR MORE INFORMATION.
- POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED PER SEPARATE ENGINEERING IN ACCORDANCE WITH THE GOVERNING CODE. PRESSURE REQUIREMENTS AS DETERMINED IN ACCORDANCE WITH ASCE 7 AND CHAPTER 1609 OF THE FLORIDA BUILDING CODE SHALL BE LESS THAN OR EQUAL TO THE POSITIVE OR NEGATIVE DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.
- TESTING WAS CONDUCTED IN ACCORDANCE WITH TAS 201/202/203 AND ASTM E1886/E1996/E330.
- DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.
- THIS SYSTEM HAS BEEN DESIGNED WITH NO SEPARATION FROM GLAZING REQUIRED WIND ZONES 1-3, IN ACCORDANCE WITH ASTM 1996. IT IS ACCEPTABLE BY CODE UNLESS OPTIONAL CRITERIA IS INDEPENDENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION.
- NO INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THESE PRODUCTS. WIND LOAD DURATION FACTOR Cd = 1.6 WAS USED FOR WOOD ANCHOR DESIGN.
- DETERMINE THE POSITIVE AND NEGATIVE DESIGN LOADS TO USE WHEN REFERENCING THESE DOCUMENTS IN ACCORDANCE WITH THE GOVERNING CODE AND GOVERNING WIND VELOCITY. FOR WIND LOAD CALCULATIONS IN ACCORDANCE WITH ASCE 7, A DIRECTIONALITY FACTOR OF Kd = 0.85 SHALL BE USED. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE.
- THESE INSTALLATION INSTRUCTIONS ARE PART OF A PRODUCT APPROVAL EVALUATION AND SHALL ONLY BE USED IN CONJUNCTION WITH THE EVALUATION REPORT SUBMITTED FOR THE SAME PRODUCT APPROVAL. USE OF THESE APPROVAL DOCUMENTS SHALL COMPLY WITH CHAPTER 61G15-23 OF THE FLORIDA ADMINISTRATIVE CODE.
- THESE APPROVAL DOCUMENTS ARE SUITABLE TO BE APPLIED BY THE CONTRACTOR PROVIDED THE CONTRACTOR DOES NOT DEVIATE FROM THE CONDITIONS DETAILED HEREIN AND THE CONTRACTOR VERIFIES THAT THE EXISTING STRUCTURE DOES NOT DEVIATE IN EITHER FORM OR MATERIAL FROM THE STRUCTURAL SUBSTRATES DETAILED HEREIN.
- ANY MODIFICATIONS OR ADDITIONS TO THESE APPROVAL DOCUMENTS WILL VOID THE APPROVAL DOCUMENTS.
- WHEN THE SITE CONDITIONS DEVIATE FROM THESE APPROVAL DOCUMENTS, THE BUILDING OFFICIAL MAY REQUIRE THAT SITE SPECIFIC DOCUMENTS BE PREPARED, SIGNED, DATED AND SEALED BY A LICENSED ENGINEER OR REGISTERED ARCHITECT, WHICH DETAIL AND JUSTIFY THE DEVIATION, AS A CONDITION TO THE BUILDING OFFICIAL GRANTING HIS/HER APPROVAL.
- EACH SHUTTER ASSEMBLY SHALL BE PERMANENTLY LABELED WITH THE FOLLOWING MINIMUM INFORMATION:
- UNITS SHALL BE LABELED IN ACCORDANCE WITH THE FLORIDA BUILDING COMMISSION AND THE FLORIDA DEPARTMENT OF BUSINESS & PROFESSIONAL REGULATION SPECIFICATION.
- ALL EXTRUSIONS SHOWN SHALL BE 6063-T6 ALUMINUM ALLOY, U.O.N., WITH A MINIMUM Fy OF 25 K.S.I.
- ALL BOLTS AND WASHERS (EXCLUDING INSTALLATION) SHALL BE STAINLESS STEEL WITH A MINIMUM TENSILE STRENGTH OF 60 K.S.I., U.O.N. POP RIVETS SHALL BE 1/4"Ø OR 3/16"Ø 5052 ALUM. ALLOY.
- ALL SHUTTERS SHALL HAVE A LOCKING MECHANISM CONSISTING OF THUMBSCREW, PUSH LOCK OR BOX LOCK AT CENTER OR SIDE CLOSURE.
- TOP AND BOTTOM DETAILS MAY BE INTERCHANGED AS FIELD CONDITIONS REQUIRE.
- FLOOR TRACKS MAY BE REMOVABLE AT NON-STACKING LOCATIONS. USE REMOVABLE ANCHORS.
- MOUNTING EXTRUSIONS MAY BE BENT TO FORM A CURVE WITH A MIN. RADIUS OF 10".
- ALL DIMENSIONS SHOWN INCLUDE POWDER COATING FINISH.
- ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED.
- SHUTTER MAY BE INSTALLED WITH UP TO (2) ADDITIONAL BLADES OF SLACK.
- SEALANT SHALL BE USED ON ANCHORS OR TRACKS WHEREVER WATER SEEPAGE IS POSSIBLE.
- THE ARCHITECT/ENGINEER OF RECORD FOR THE PROJECT SUPERSTRUCTURE WITH WHICH THIS DESIGN IS USED SHALL BE RESPONSIBLE FOR THE INTEGRITY OF ALL SUPPORTING SURFACES TO THIS DESIGN WHICH SHALL BE COORDINATED BY THE PERMITTING CONTRACTOR. WOOD BUCKS (BY OTHERS) SHALL BE ANCHORED PROPERLY TO TRANSFER LOADS TO EXISTING STRUCTURE
- 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.
- THE CONTRACTOR IS RESPONSIBLE TO INSULATE ALL MEMBERS FROM DISSIMILAR MATERIALS TO PREVENT ELECTROLYSIS.
- FASTENERS SHALL BE CADMIUM-PLATED OR OTHERWISE CORROSION-RESISTANT MATERIAL AND SHALL COMPLY WITH "SPECIFICATIONS FOR ALUMINUM STRUCTURES" SECTION J.3.7.2 BY THE ALUMINUM ASSOCIATION INC. AND ANY APPLICABLE FEDERAL, STATE AND OR LOCAL CODES.
- REFER TO FASTENER MANUFACTURER'S PUBLISHED DATA SHEETS AND RECOMMENDATIONS FOR FASTENER INSTALLATION INSTRUCTIONS.
- ENGINEER SEAL AFFIXED HERETO VALIDATE STRUCTURAL DESIGN AS SHOWN ONLY. USE OF THIS SPECIFICATION BY CONTRACTOR, et. al. INDEMNIFIES & SAVES HARMLESS THIS ENGINEER FOR ALL COST & DAMAGES INCLUDING LEGAL FEES & APPELLATE FEES RESULTING FROM MATERIAL FABRICATION, SYSTEM ERECTION, & CONSTRUCTION PRACTICES BEYOND THAT WHICH IS CALLED FOR BY LOCAL, STATE & FEDERAL CODES & FROM DEVIATIONS OF THIS PLAN.
- EXCEPT AS EXPRESSLY PROVIDED HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED.
- PRESSURE VALUES ON THIS APPROVAL ARE (ASD) ALLOWABLE DESIGN PRESSURES.
- ALTERATIONS ADDITIONS OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE THIS CERTIFICATION.
- SAFEGUARDS MUST BE OBSERVED (NOT IN THIS CERTIFICATION).

TABLE 1 NOTES:

- DESIGN PRESSURES SHOWN IN "ACCORDION SHUTTER SPAN SCHEDULE" ABOVE ARE MAXIMUM ALLOWABLE DESIGN PRESSURES AT EACH RESPECTIVE SHUTTER SPAN.
- 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.

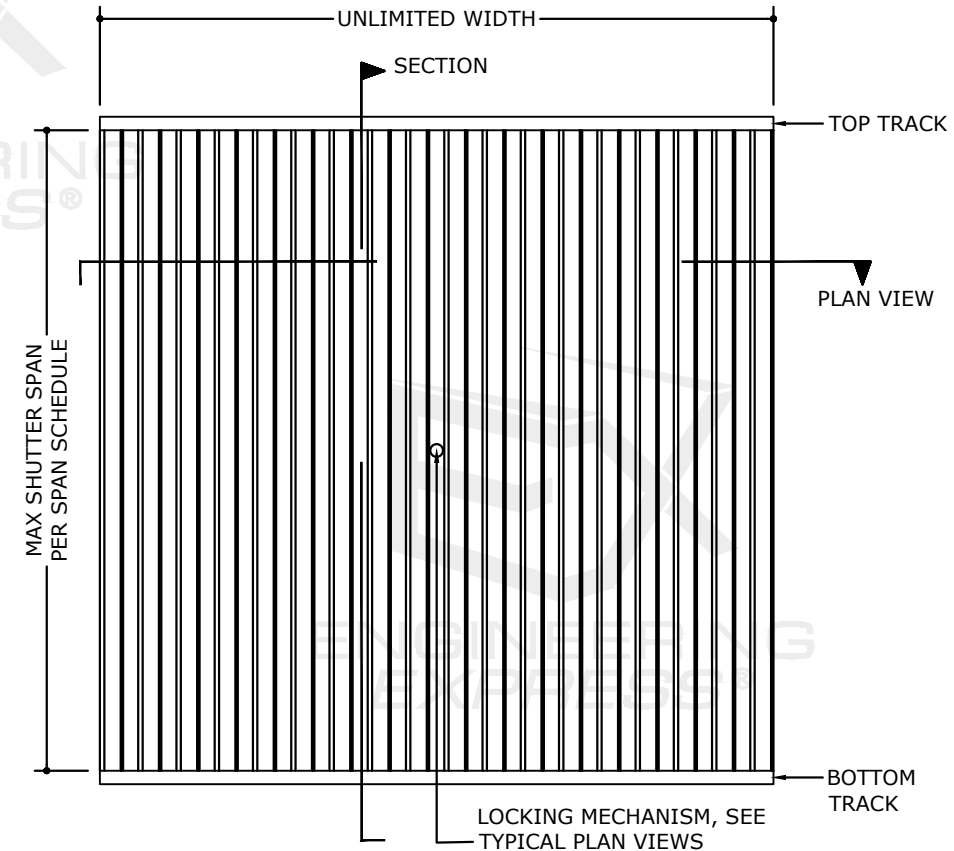
TABLE 1:

ACCORDION SHUTTER SPAN SCHEDULE		
SHUTTER SPAN	POSITIVE DESIGN PRESSURE (PSF)	NEGATIVE DESIGN PRESSURE (PSF)
72"	100	100
99"	70	70
120"	53	53
144"	43	40



TABLE 2:

MINIMUM SEPARATION FROM GLASS				
SHUTTER SPAN	HVHZ		NON-HVHZ	
	SEE NOTE 3		SEE NOTE 3	
	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
72"	2-1/4"	1-5/8"	2-3/8"	1-5/8"
99"	3-1/2"	1-7/8"	3-5/8"	1-7/8"
120"	4-1/8"	2"	4-1/4"	2"
144"	4-7/8"	2"	5"	2"



1 TYPICAL ACCORDION SHUTTER ELEVATION
N.T.S. EXTERIOR ELEV

TABLE 2 NOTES:

- HVHZ: DEFINED AS MIAMI-DADE COUNTY AND BROWARD COUNTY FLORIDA.
- NON-HVHZ: DEFINED AS ALL LOCATIONS OTHER THAN MIAMI-DADE COUNTY AND BROWARD COUNTY FLORIDA.
- SEPARATION FROM GLASS IS NOT REQUIRED FOR INSTALLATIONS IN WIND ZONES 1-3 UNLESS LOCAL MUNICIPALITY HAS ADOPTED ADDITIONAL CRITERIA.**
- INSTALLATIONS IN WIND ZONES 1 THROUGH 4 OUTSIDE OF THE HVHZ WITH SPANS LESS THAN 30" SHALL HAVE 2-7/8" MINIMUM SEPARATION FROM GLASS WHEN ≤ 30' ABOVE GRADE, AND 1-5/8" WHEN > 30' ABOVE GRADE.
- 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.
- SEPARATION FOR GLASS OUTSIDE OF THE HVHZ HAS BEEN DETERMINED IN ACCORDANCE WITH ASTM E1996.

VISIT ECALC.IO/TOWNCOUNTRY

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



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400 WEST MCNAB ROAD, FT. LAUDERDALE, FL 33309
6.8 STREAMLINE SHUTTER
FLORIDA BUILDING CODE EIGHTH EDITION (2023)
FLORIDA STATEWIDE APPROVAL (FSA #13757.2)

REMARKS	DATE	DRWN	CHKD
2020FBC (20-26160)	6/17/20	CCB	RWN
FBC 2023	08/15/23	MLD	CCB

23-61155

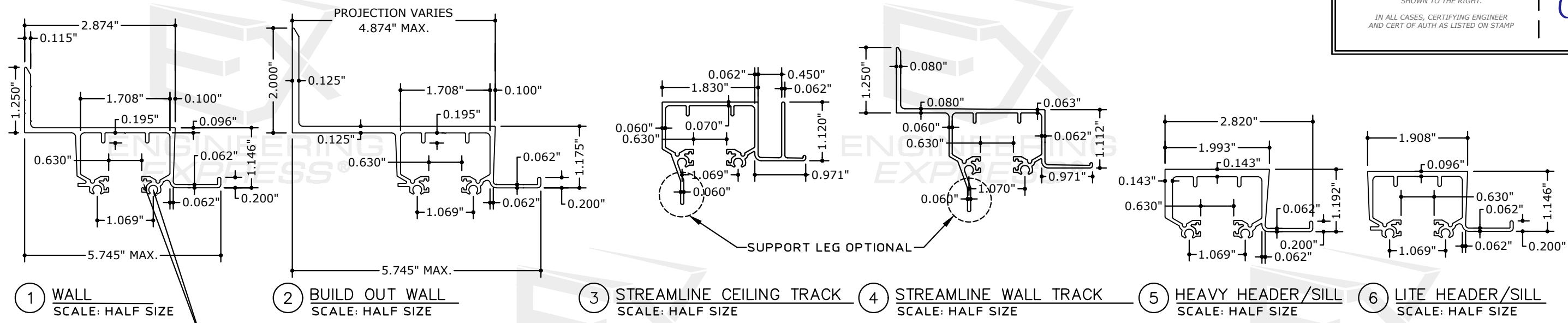
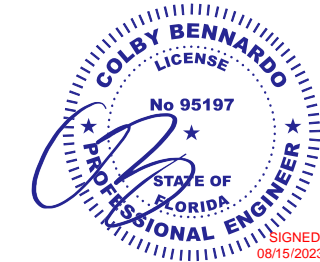
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SPACE RESERVED FOR DIGITAL SEAL
INFORMATION

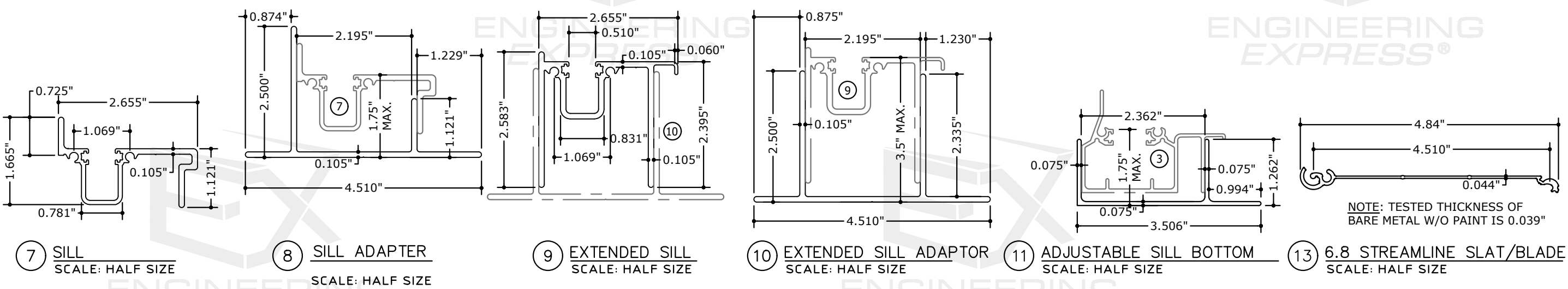
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DATE OF CERTIFICATION SHALL BE
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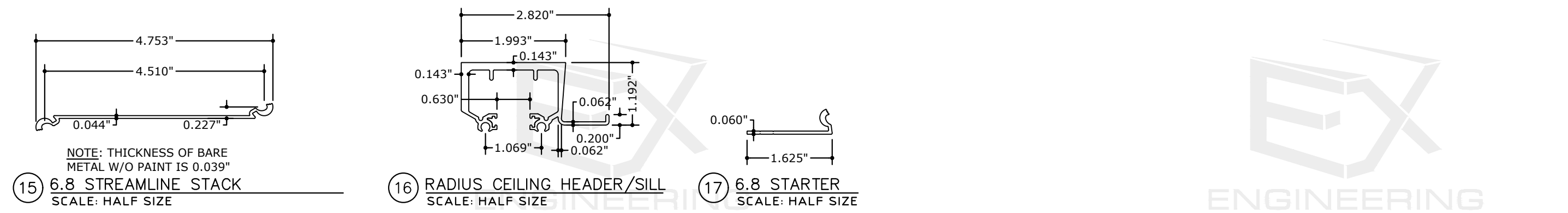
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WHERE SHOWN, SCREW BOSSES
& FELT GROVES ARE OPTIONAL
ON ALL EXTRUSIONS



NOTE: TESTED THICKNESS OF
BARE METAL W/O PAINT IS 0.039"



NOTE: THICKNESS OF BARE
METAL W/O PAINT IS 0.039"

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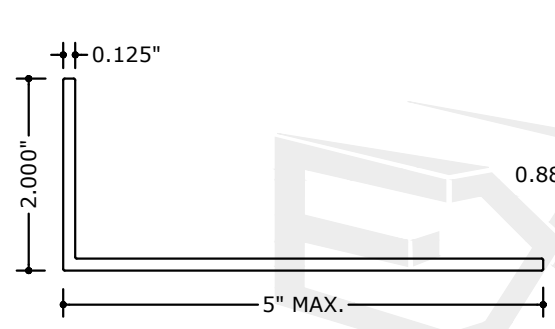
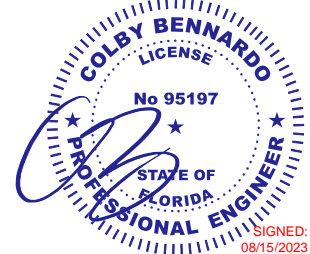
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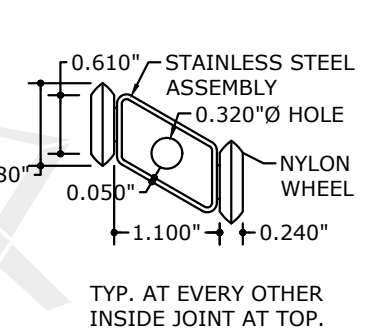
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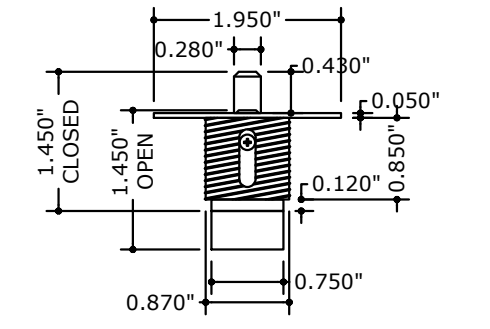
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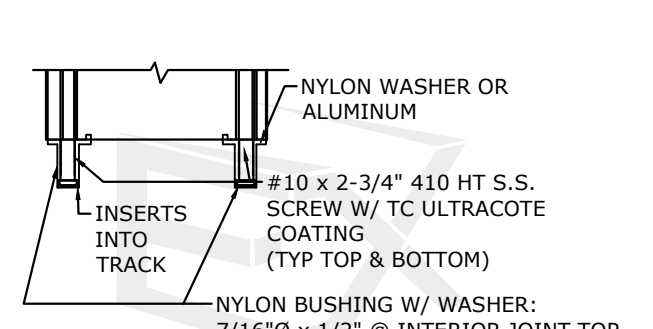
19 ANGLE
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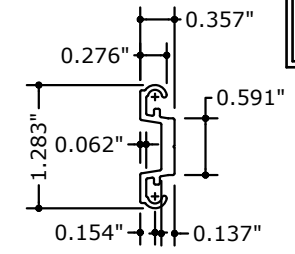
22 ROLLER ASSEMBLY
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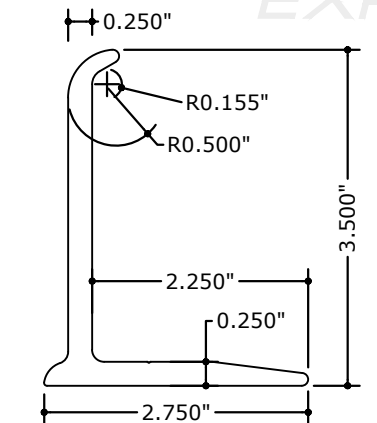
23 BRASS PUSH LOCK
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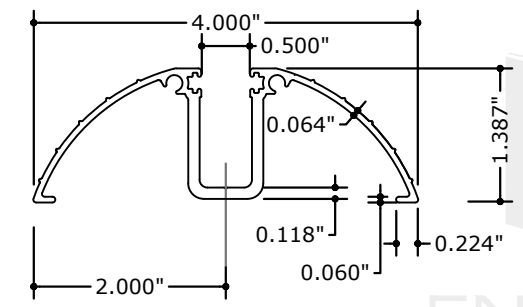
24 BUSHING ASSEMBLY DETAIL
SCALE: HALF SIZE



26 BOX CENTER INSERT
SCALE: HALF SIZE

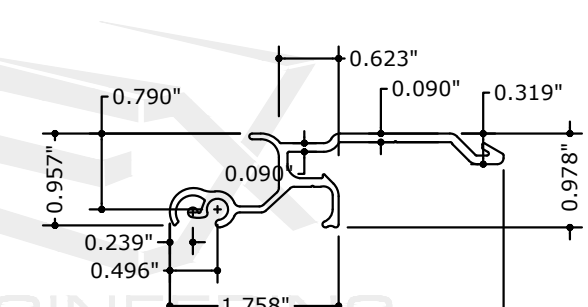


27 RAINGUARD
SCALE: HALF SIZE

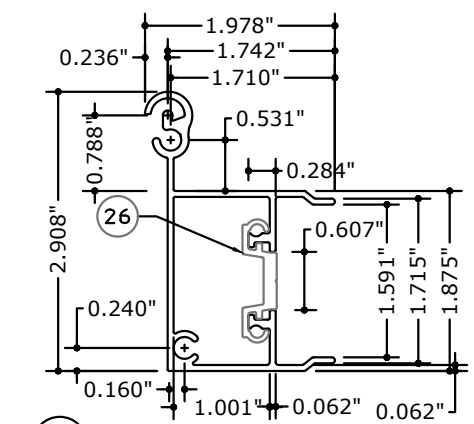


28 DECORATIVE FLOOR TRACK
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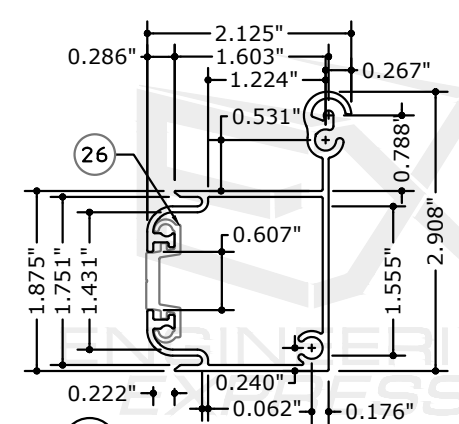
*NOTE: DECORATIVE FLOOR TRACK MAY BE ATTACHED TO ANGLE PER DETAILS Cb/5 OR Ca/6.



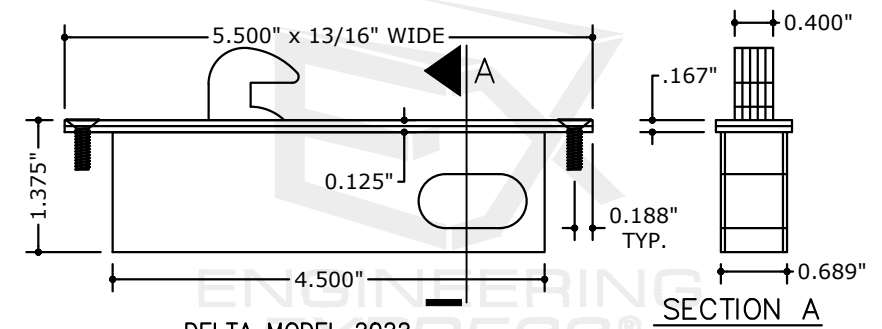
30 UNIMATE LOCK
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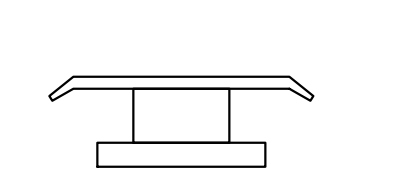
31 MALE BOX CENTER
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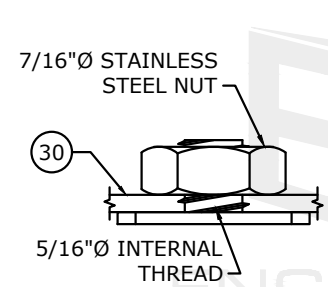
32 FEMALE BOX CENTER
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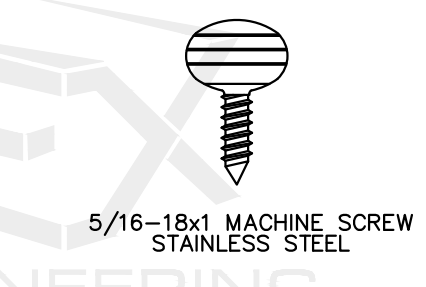
35 BOX LOCK
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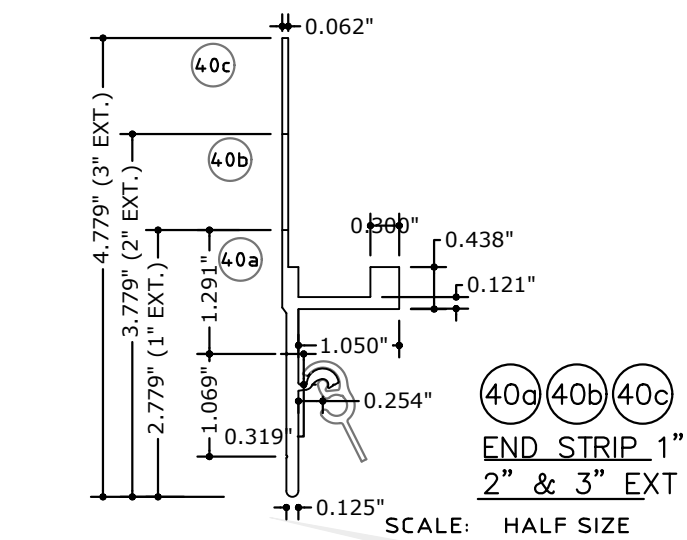
36 T-LOCK ADAPTER (OPTIONAL)
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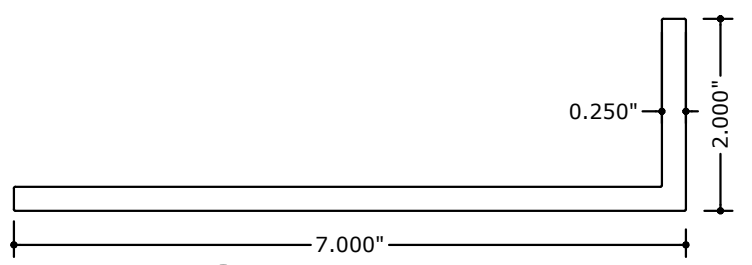
37 T-SCREW INSERT
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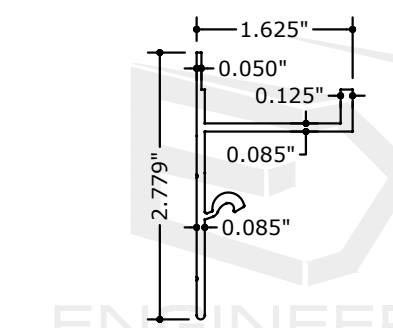
38 THUMB SCREW
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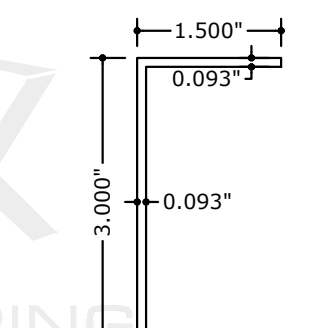
40a 40b 40c
END STRIP 1" 2" & 3" EXT
SCALE: HALF SIZE



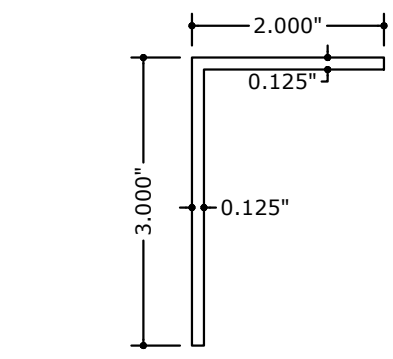
39 2X7 ANGLE
SCALE: HALF SIZE



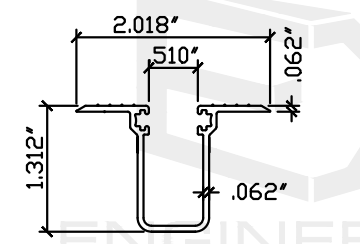
20 ALT. 1" END STRIP
SCALE: HALF SIZE



21 1.5"x3"x0.093" ANGLE
SCALE: HALF SIZE



25 2"x3"x0.125" ANGLE
SCALE: HALF SIZE



20a RECESS SILL
SCALE: HALF SIZE

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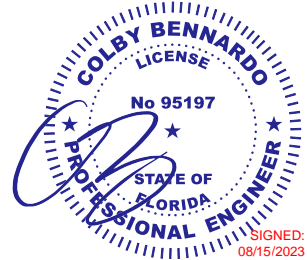
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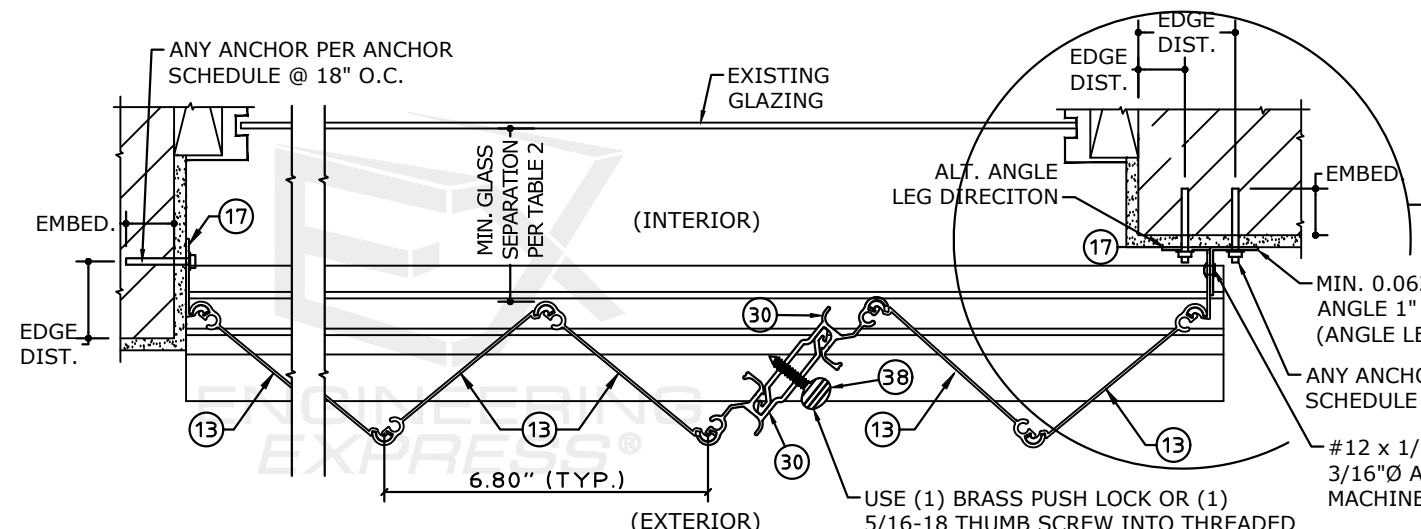
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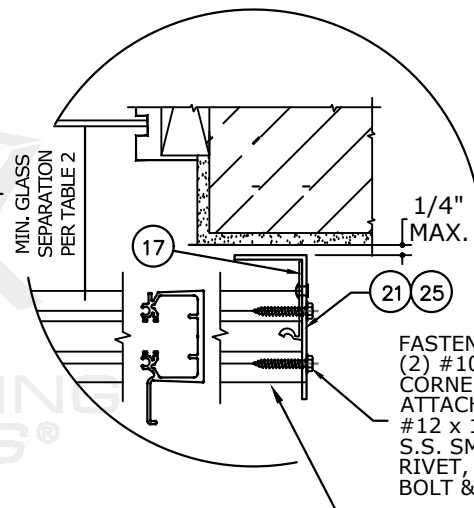
23-61155

SCALE: NTS UNLESS NOTED



TYPICAL PLAN VIEW
SCALE: 3" = 1'-0"

SEE END STRIP SCHEDULE FOR MAX. SPAN WHEN USING 20, 40a, 40b OR 40c, OR 6.8 STARTER WITH 21 OR 25.

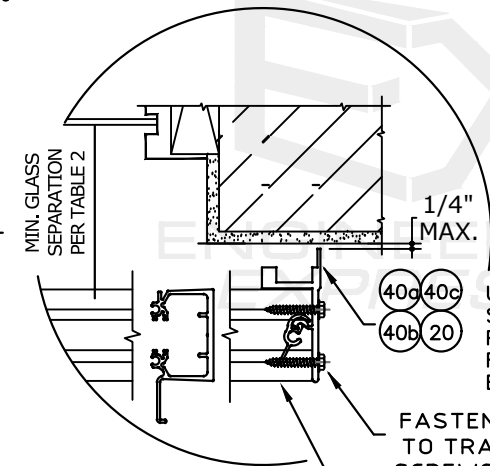


ALTERNATE END STRIP DETAIL WITH 6.8 STARTER AND ANGLE
SCALE: 3" = 1'-0"

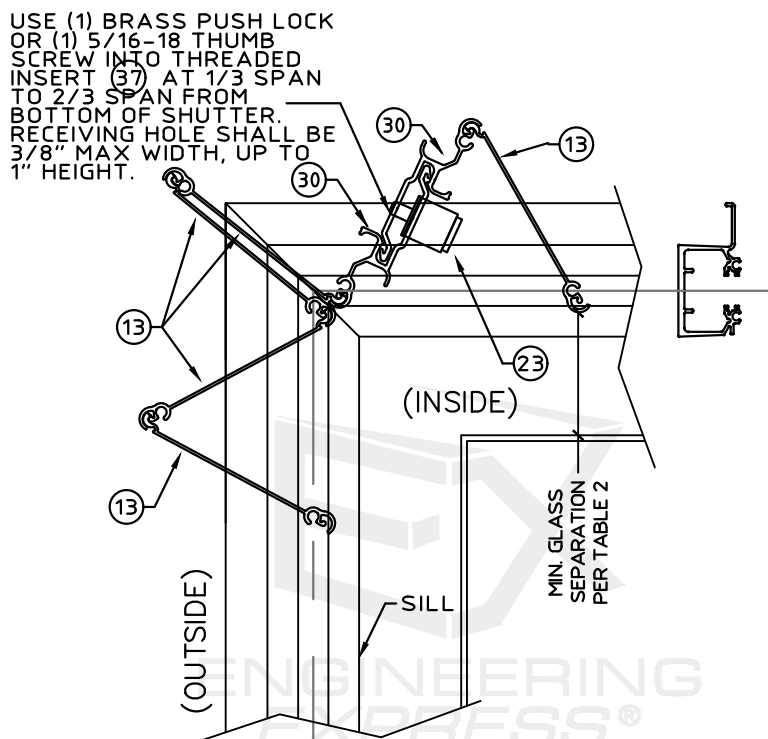
END STRIP SCHEDULE

	PSF	SPAN
1" B/O (2.7") (40c)	62	108"
	72	100"
	82	94"
	112	80"
2" B/O (3.7") (40b)	62	95"
	72	88"
	82	83"
	112	75"
3" B/O (4.7") (40c)	62	86"
	72	79"
	82	74"
	112	65"
ALT. 1" B/O (2.7") (20)	62	110"
	72	102"
	82	95"
	112	81"
1.5"x3" x0.093" (21)	45	93"
	52	87"
	57	83"
	60	81"
2"x3" x0.125" (25)	45	139"
	52	129"
	60	120"
	64	116"
	70	111"
	73	109"

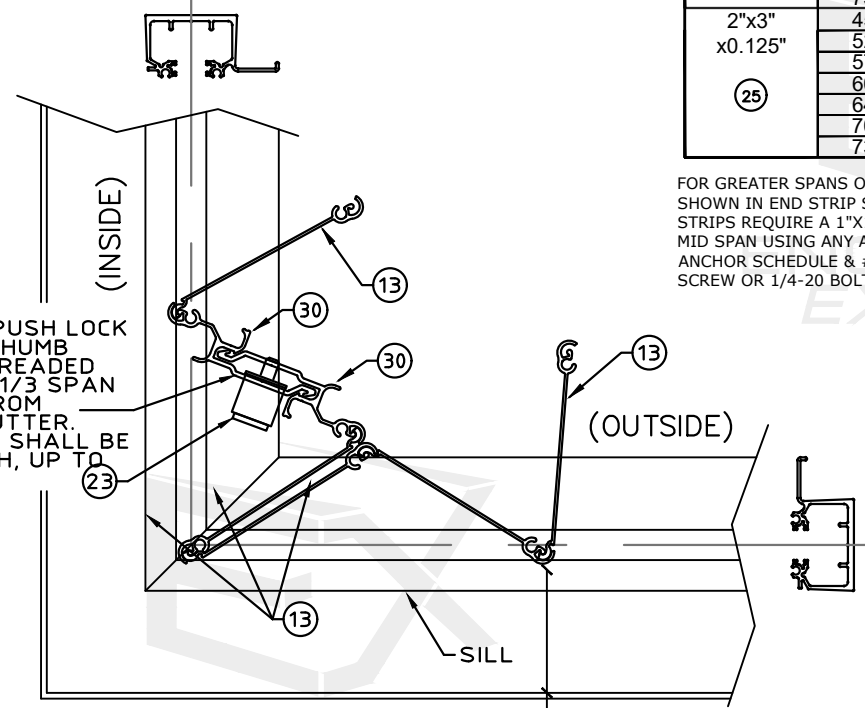
FOR GREATER SPANS OR LOADS THAN SHOWN IN END STRIP SCHEDULE, END STRIPS REQUIRE A 1"x1" .090" CLIP ANGLE MID SPAN USING ANY ANCHOR ON THE ANCHOR SCHEDULE & #14x3/4" TEK SCREW OR 1/4-20 BOLT TO END STRIP.



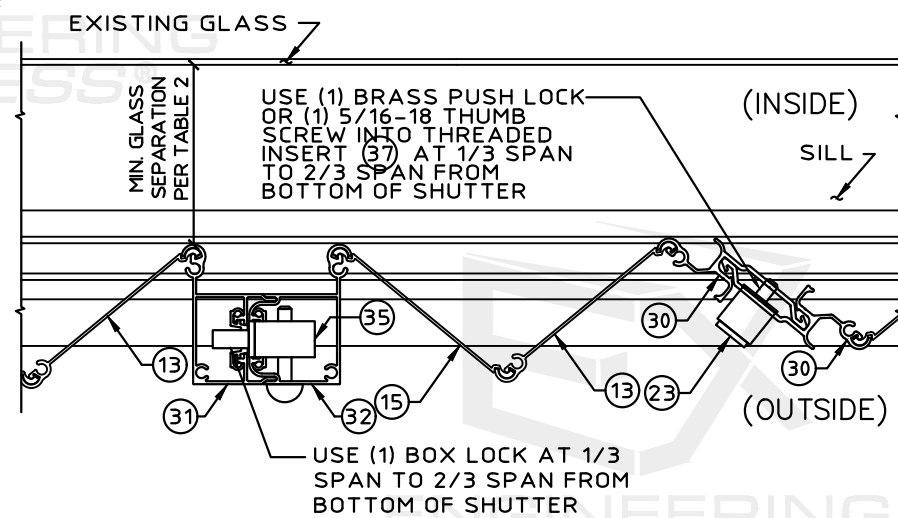
ALTERNATE END STRIP DETAIL
SCALE: 3" = 1'-0"



CC1 TYPICAL OUTSIDE CORNER CLOSURE DETAILS WO/CORNER POST NTS



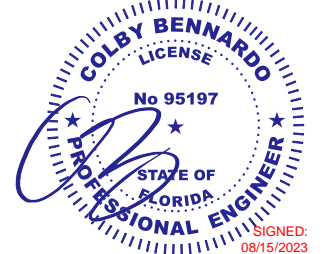
CC2 TYPICAL INSIDE CORNER CLOSURE DETAILS WO/CORNER POST NTS



MULTIPLE SHUTTER ASSEMBLY
SCALE: 3" = 1'-0"

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Wholesale Aluminum and Building Products
A Division of Alcoa Inc.
400 WEST MCNAB ROAD, FT. LAUDERDALE, FL 33309
6.8 STREAMLINE SHUTTER
FLORIDA BUILDING CODE EIGHTH EDITION (2023)
FLORIDA STATEWIDE APPROVAL (FSA #13757.2)

REMARKS	DRWN	CHKD	DATE
2020 FBC (20-26160)	CCB	RWN	6/17/20
FBC 2023	MLD	CCB	08/15/23

23-61155

SCALE: NTS UNLESS NOTED

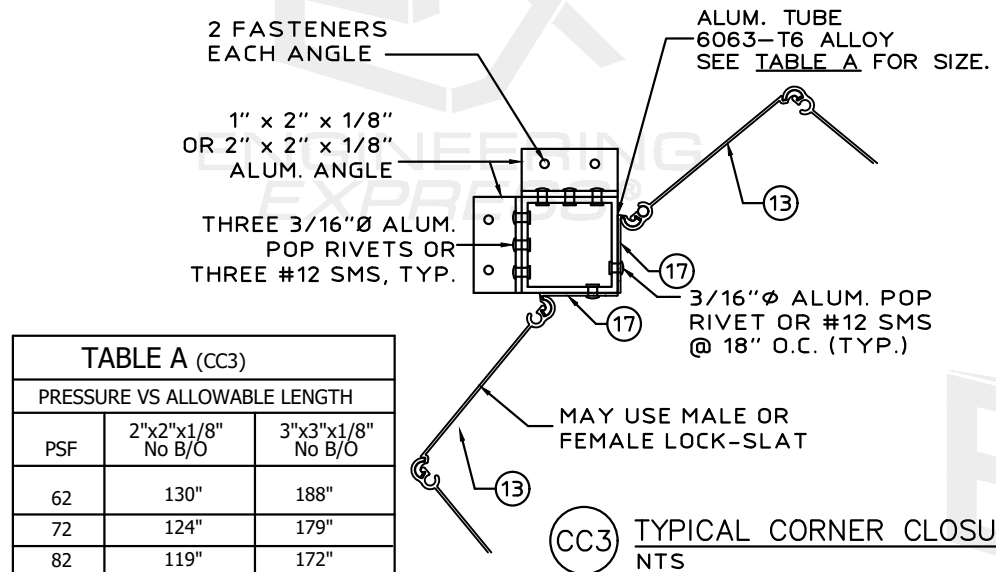
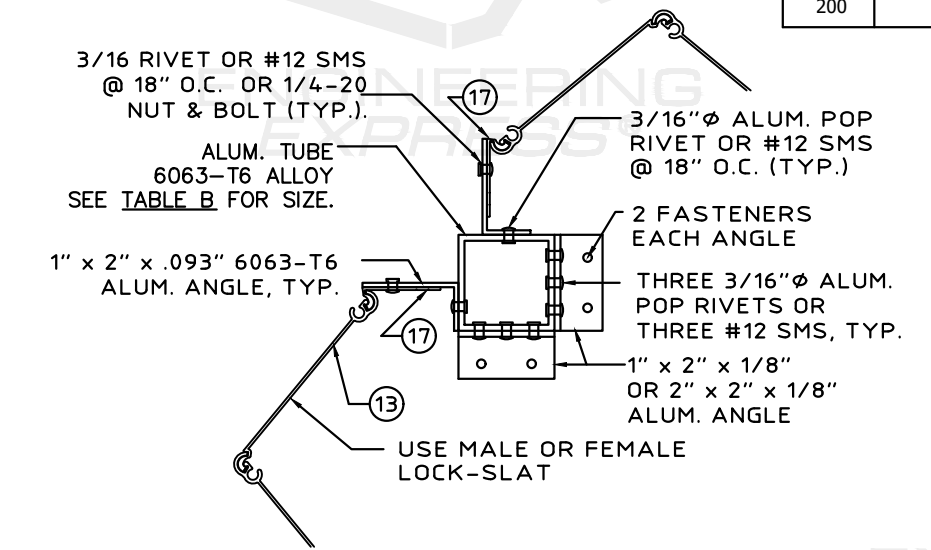


TABLE A (CC3)
PRESSURE VS ALLOWABLE LENGTH

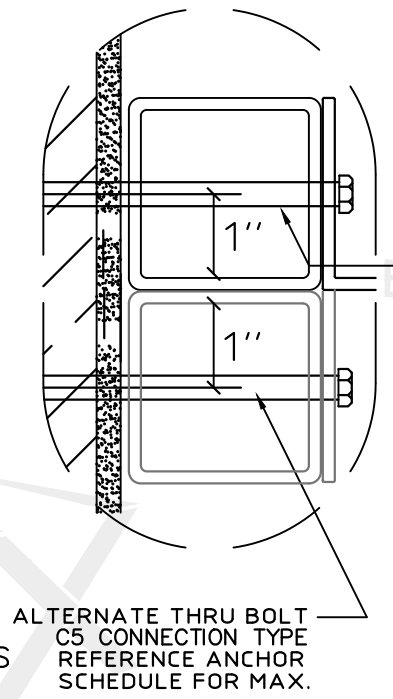
PSF	2"x2"x1/8" No B/O	3"x3"x1/8" No B/O
62	130"	188"
72	124"	179"
82	119"	172"
92	114"	165"
102	110"	160"
120	104"	147"
150	97"	131"
200	88"	114"



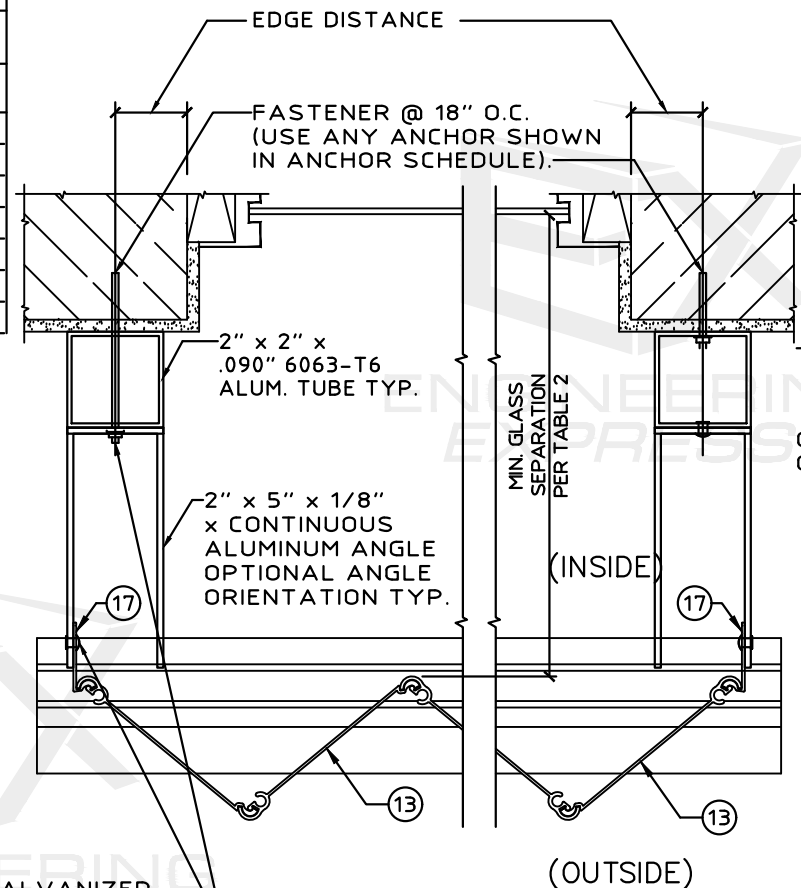
CC4 TYPICAL CORNER CLOSURE DETAILS NTS

TABLE B (CC4)
PRESSURE VS ALLOWABLE LENGTH

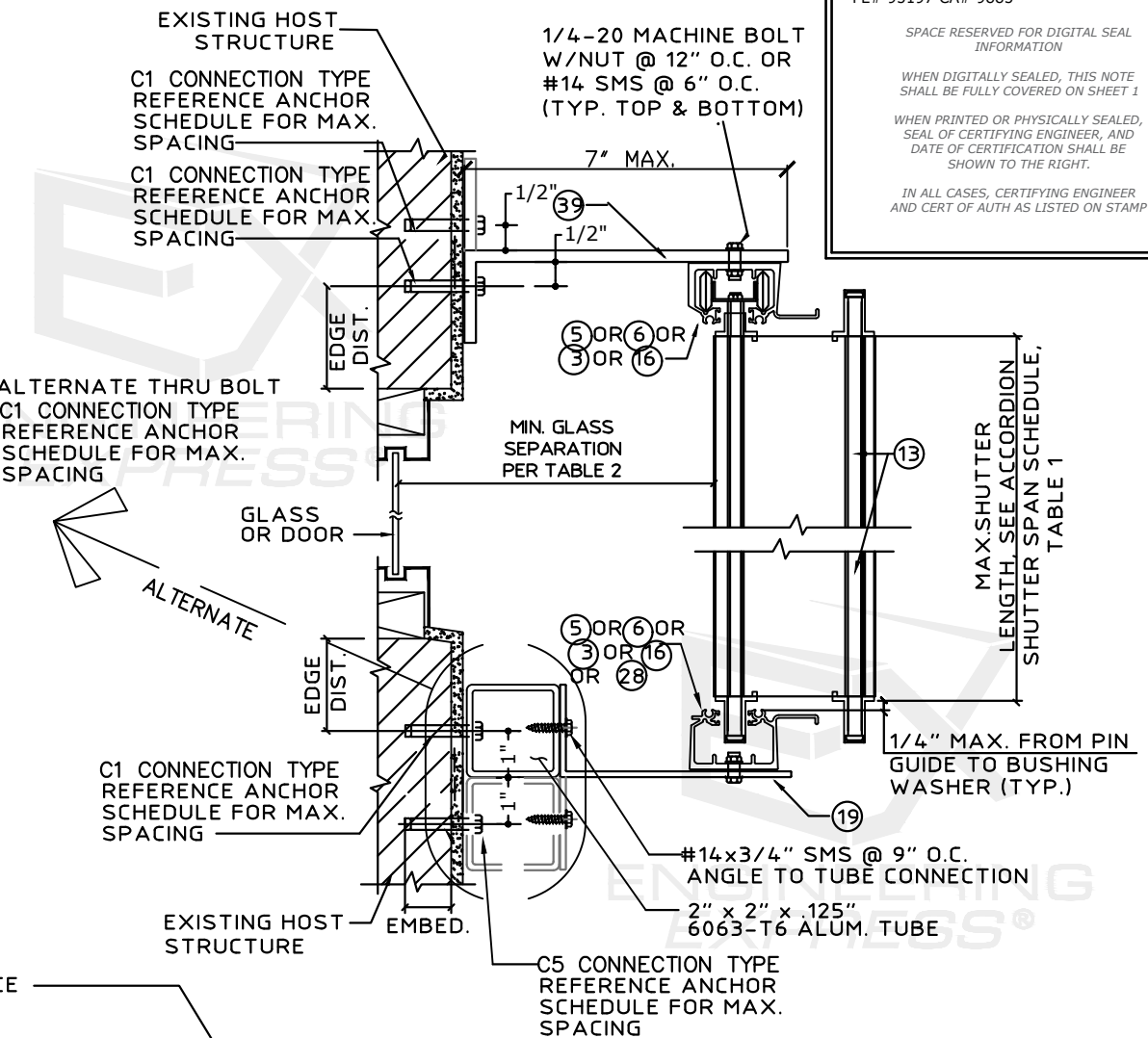
PSF	2"x2"x1/8" WITH B/O	3"x3"x1/8" WITH B/O
62	113"	166"
72	107"	157"
82	101"	147"
92	95"	139"
102	90"	132"
120	83"	122"
150	74"	109"
200	64"	94"



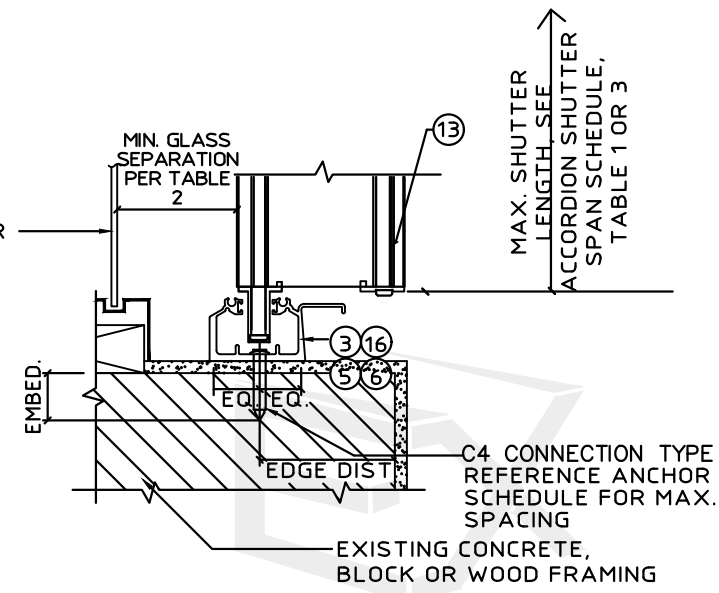
ALTERNATE THRU BOLT C5 CONNECTION TYPE REFERENCE ANCHOR SCHEDULE FOR MAX. SPACING



SIDE CLOSURE OPTIONS
SCALE: 3" = 1'-0"
#12 x 1/2" GALVANIZED OR S.S. SMS, 3/16" ALUM. POP RIVET, OR 1/4-20 MACHINE BOLT & NUT @ 18" O.C.



Cb ALTERNATE BUILD OUT MOUNT SECTION
SCALE: 3" = 1'-0"



Ce INSIDE SILL MOUNT SECTION
SCALE: 3" = 1'-0"

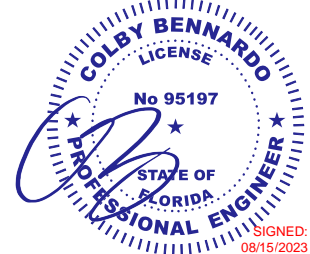
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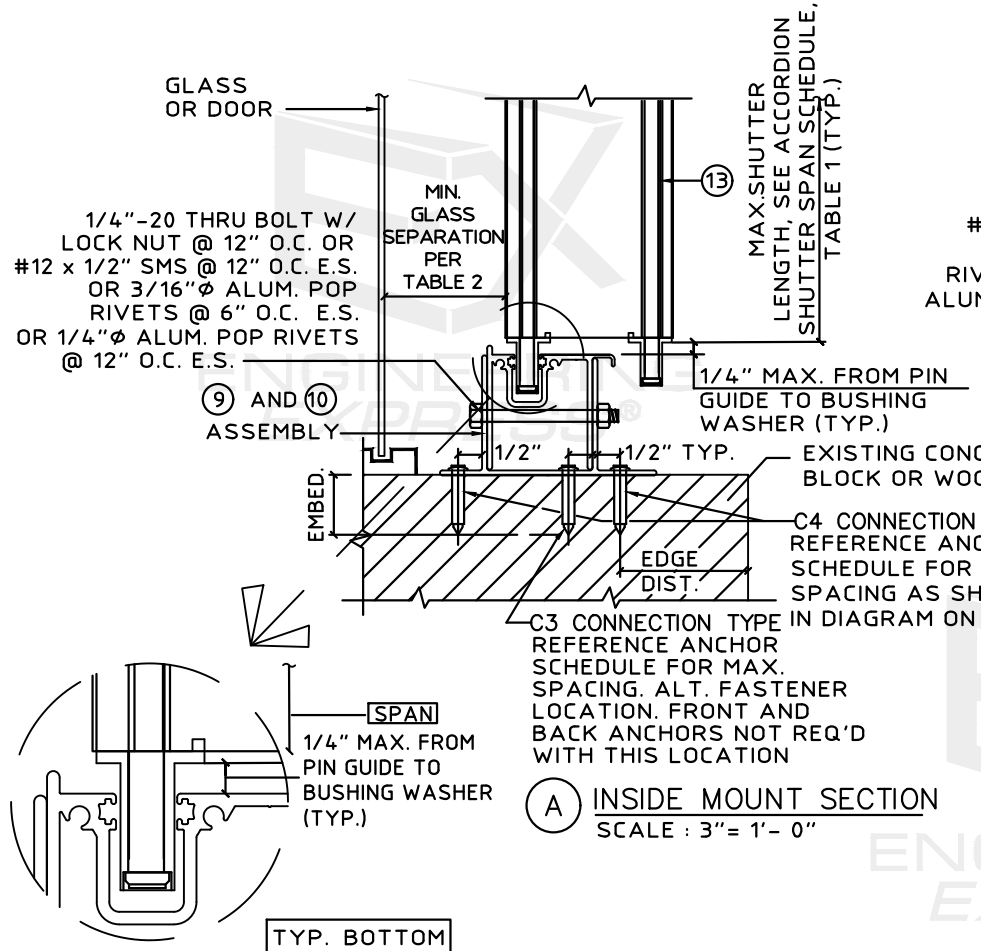
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FLORIDA BUILDING CODE EIGHTH EDITION (2023)
FLORIDA STATEWIDE APPROVAL (FSA #13757.2)

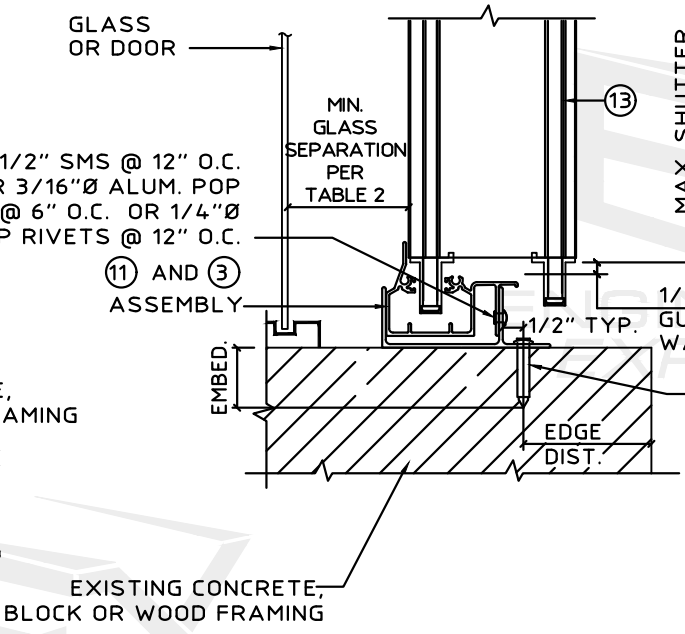
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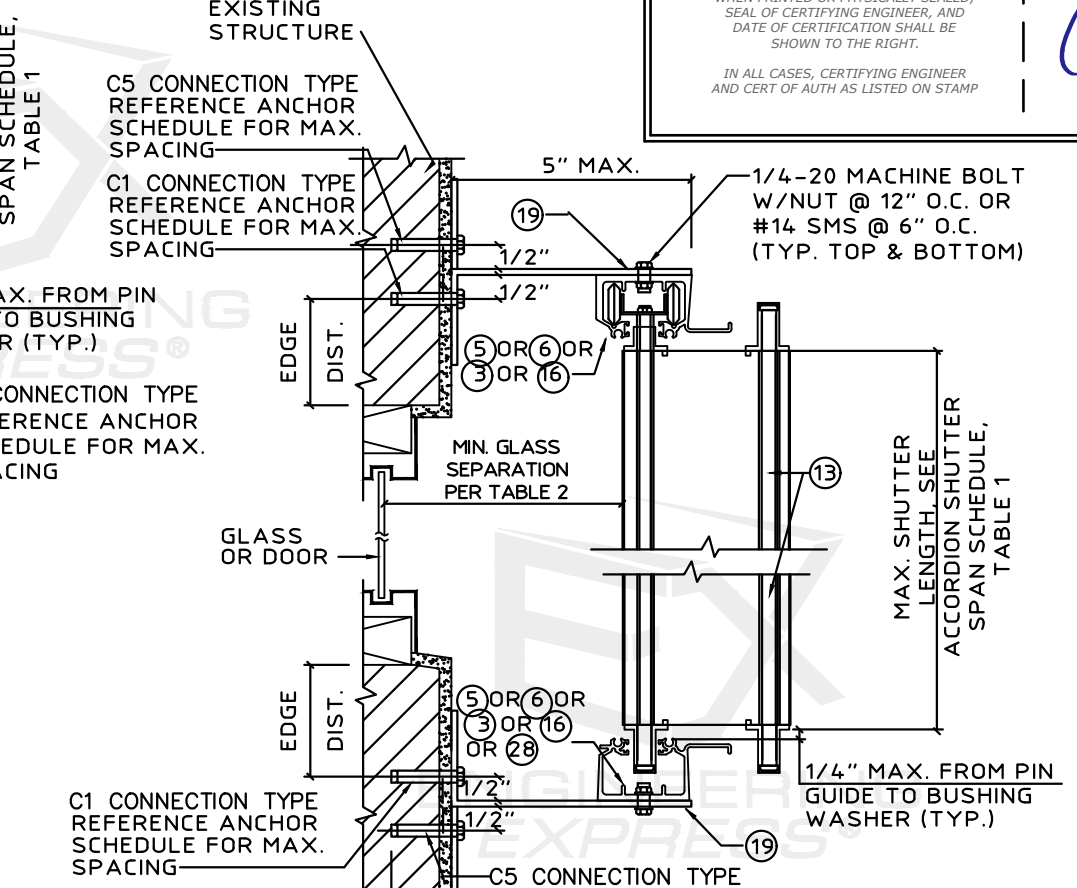
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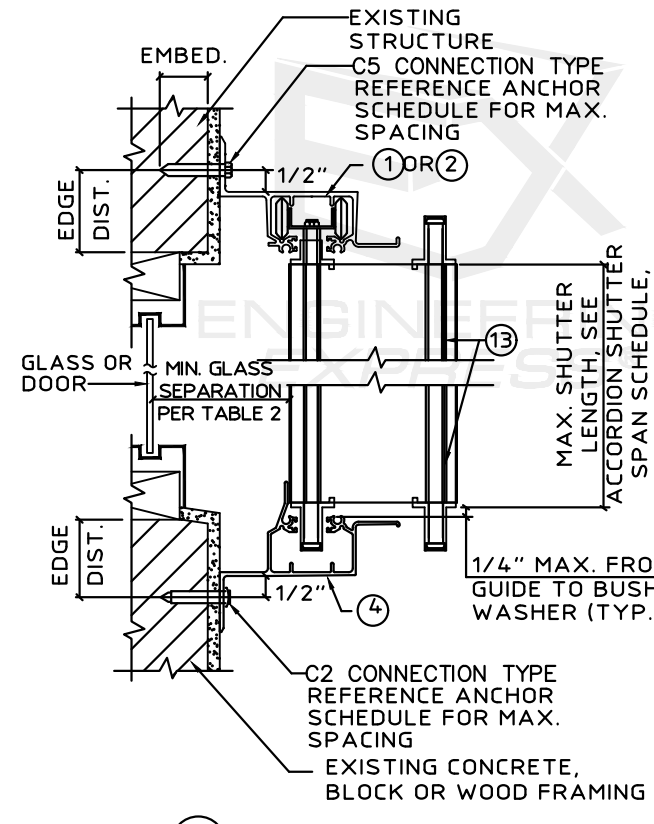
A INSIDE MOUNT SECTION
SCALE: 3" = 1'-0"



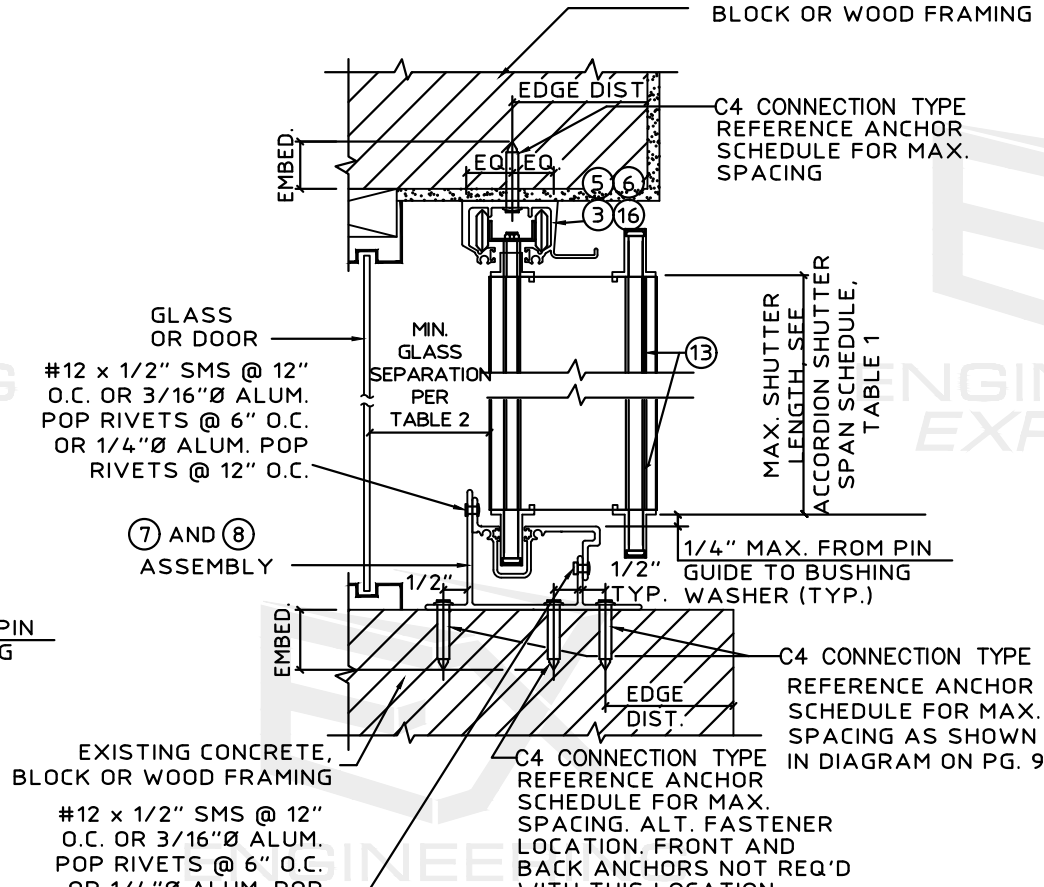
B INSIDE MOUNT SECTION
SCALE: 3" = 1'-0"



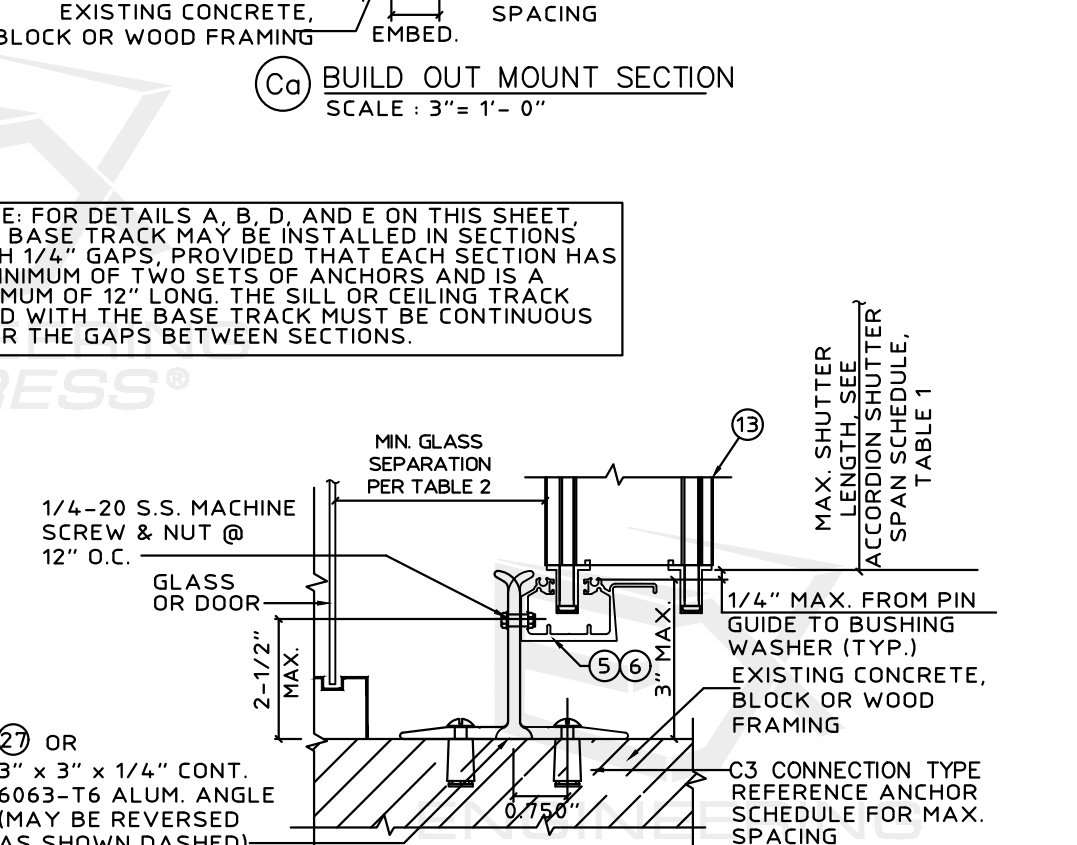
Ca BUILD OUT MOUNT SECTION
SCALE: 3" = 1'-0"



F WALL/BUILD OUT SECTION
SCALE: 3" = 1'-0"



E CEILING / INSIDE MOUNT SECTION
SCALE: 3" = 1'-0"

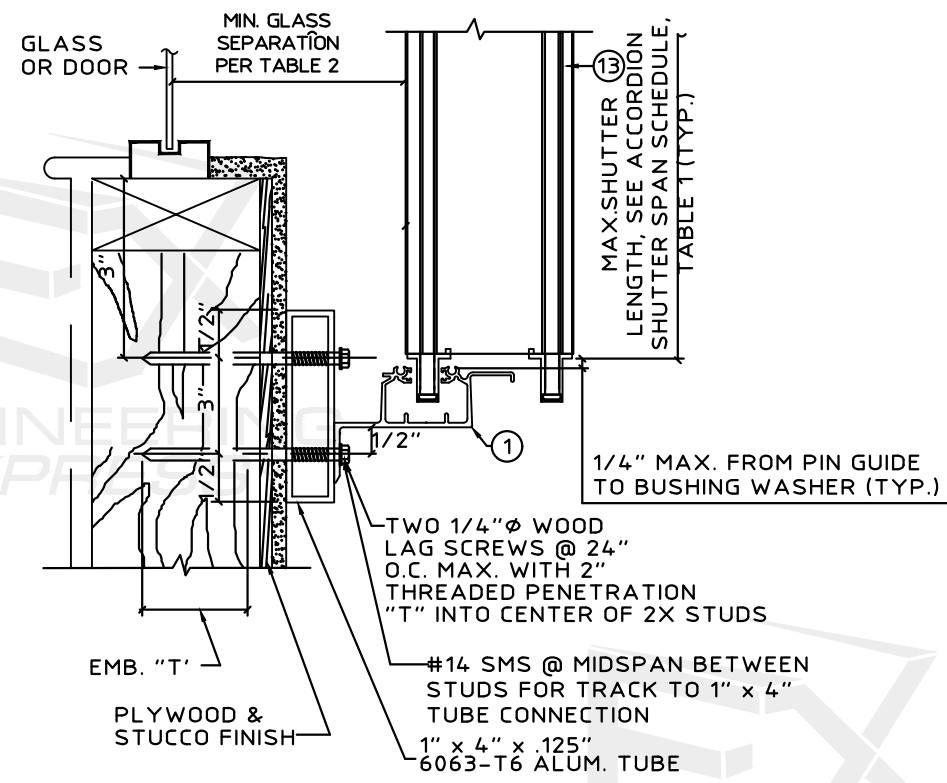
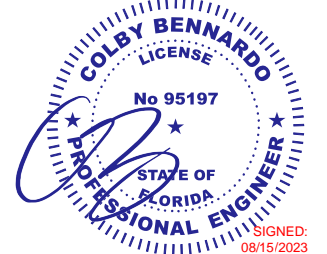


D WALL MOUNT SECTION
SCALE: 3" = 1'-0"

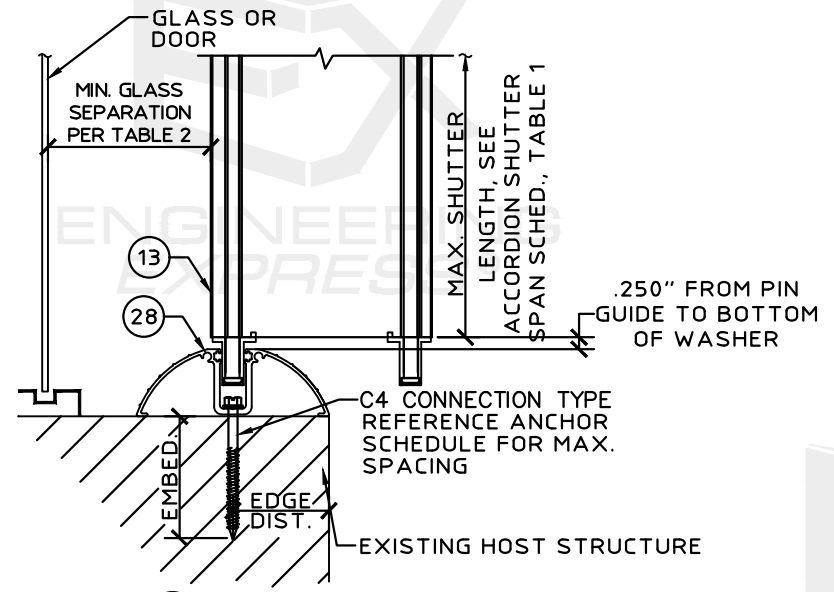
NOTE: FOR DETAILS A, B, D, AND E ON THIS SHEET, THE BASE TRACK MAY BE INSTALLED IN SECTIONS WITH 1/4" GAPS, PROVIDED THAT EACH SECTION HAS A MINIMUM OF TWO SETS OF ANCHORS AND IS A MINIMUM OF 12" LONG. THE SILL OR CEILING TRACK USED WITH THE BASE TRACK MUST BE CONTINUOUS OVER THE GAPS BETWEEN SECTIONS.

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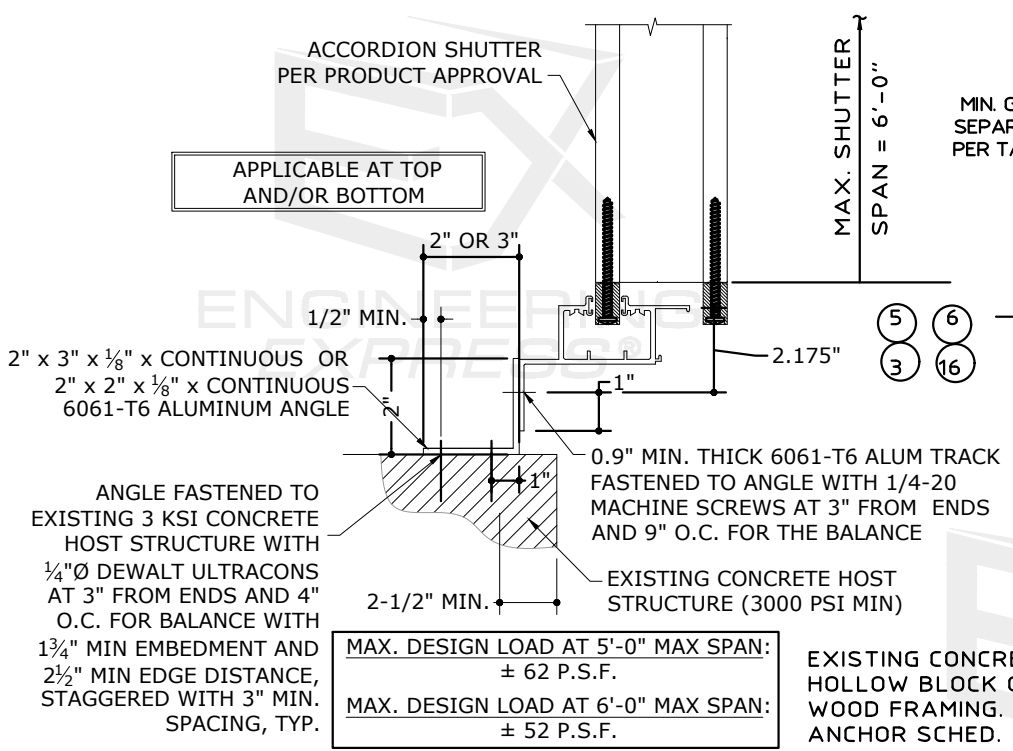
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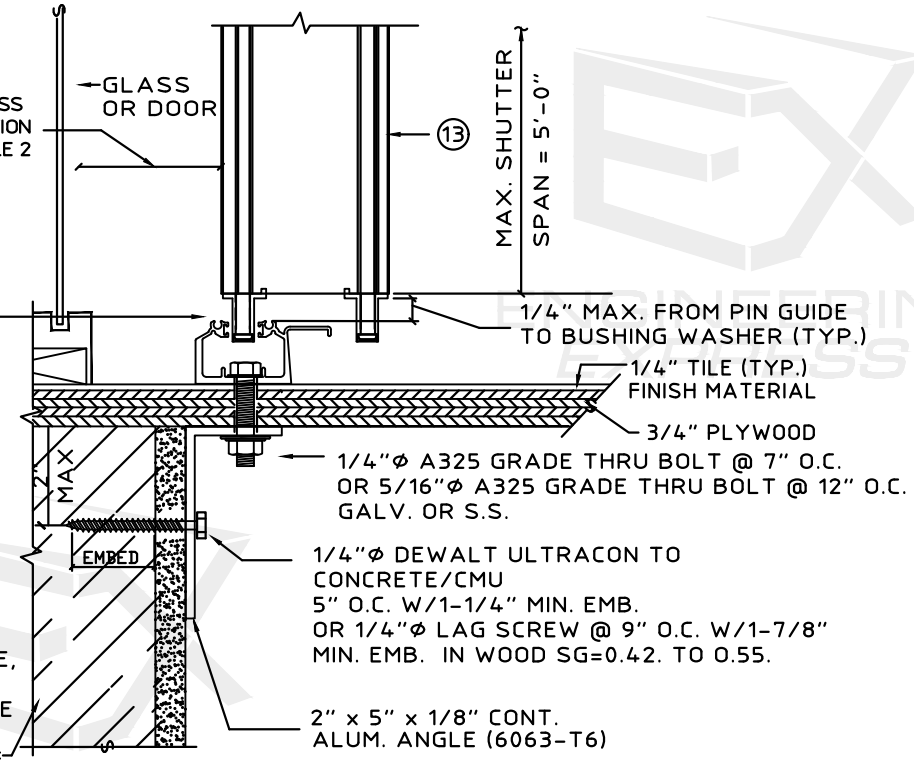
G WALL MOUNT SECTION
SCALE : 3" = 1'- 0"
THIS DETAIL TO BE USED WHEN STUD SPACING EXCEEDS THE MAX. ALLOWABLE ANCHOR SPACING.
THIS DETAIL MAY ALSO BE USED AT TOP



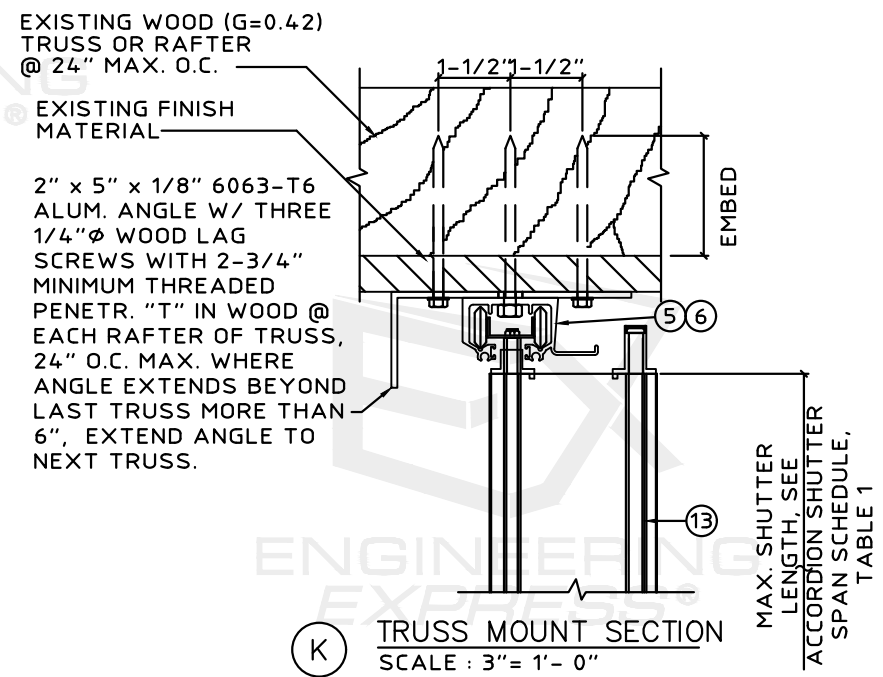
Na DECORATIVE FLOOR TRACK DETAIL
SCALE : 3" = 1'- 0"



Ha BUILDOUT MOUNT
SCALE : NTS
MAX. DESIGN LOAD AT 5'-0" MAX SPAN: ± 62 P.S.F.
MAX. DESIGN LOAD AT 6'-0" MAX SPAN: ± 52 P.S.F.



Hb PASS THRU DETAIL
SCALE : 3" = 1'- 0"
(MAX. DESIGN LOAD ± 72 P.S.F.)



K TRUSS MOUNT SECTION
SCALE : 3" = 1'- 0"

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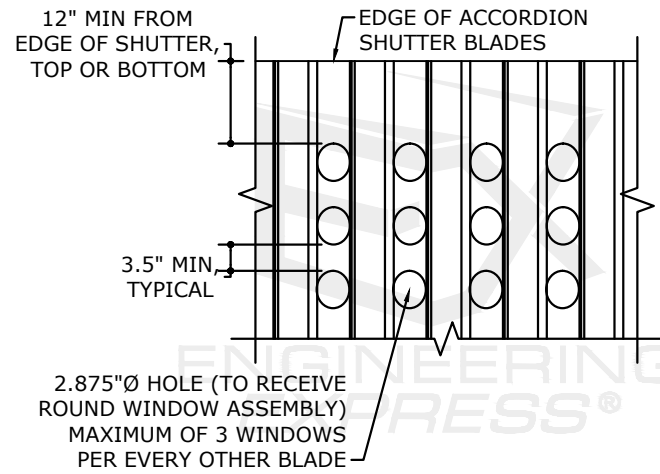
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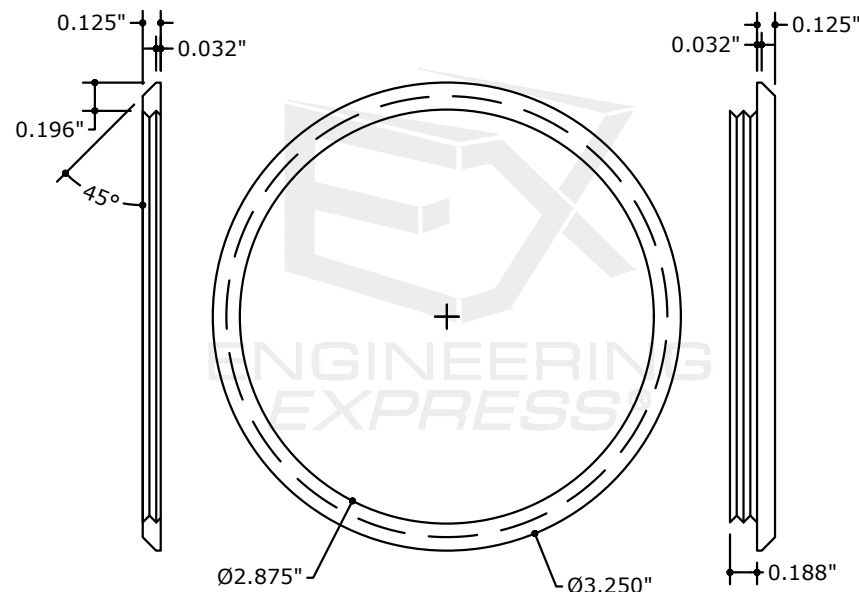
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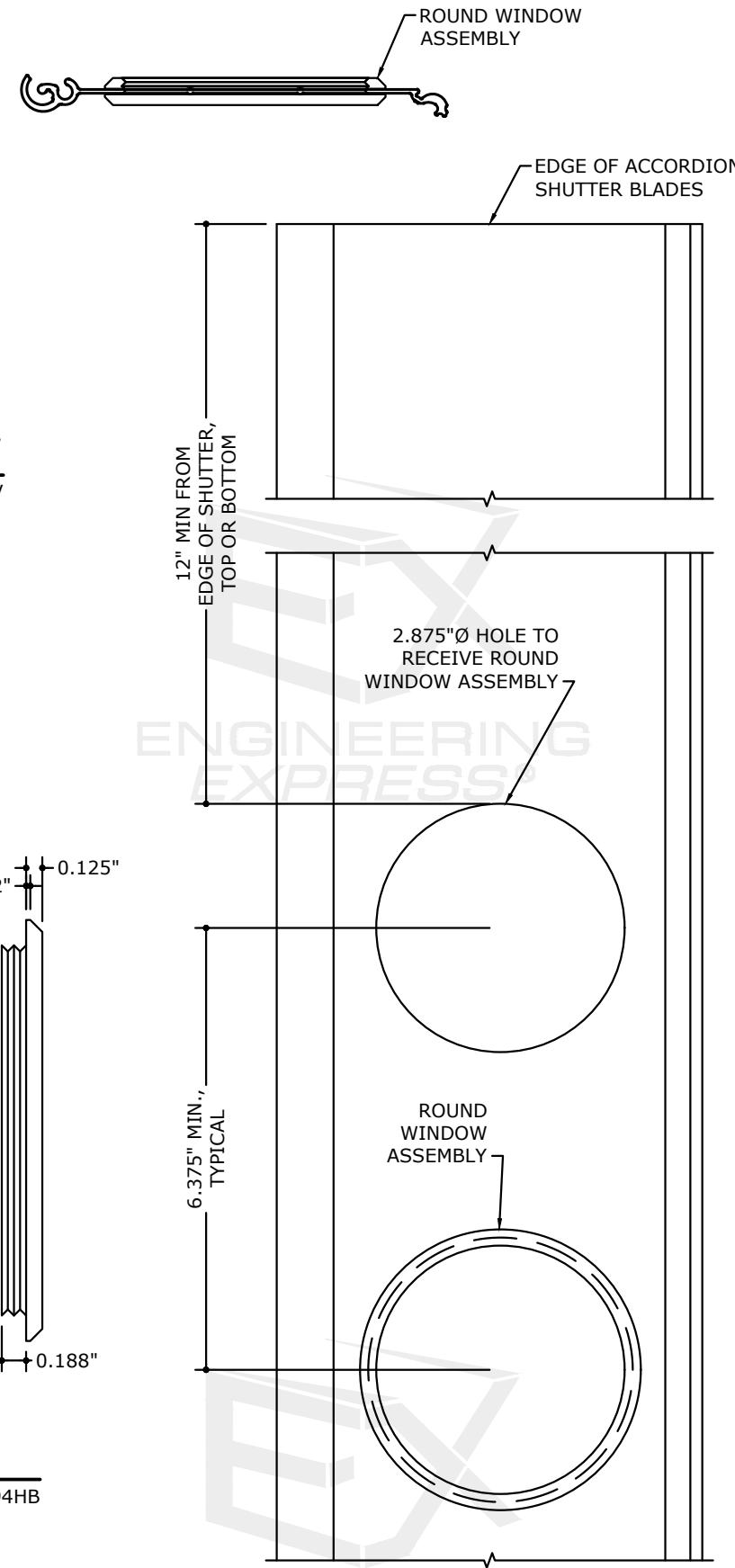
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1 LIGHT-N-VIEW WINDOW
8 N.T.S. EXTERIOR ELEV



29 LIGHT-N-VIEW WINDOW
8 N.T.S. SABIC PLASTICS SLX1431T-UL-94HB



2 BLADE W/ ROUND WINDOW
8 N.T.S. EXTERIOR ELEV

- SPAN TUBE SCHEDULE NOTES:**
1. USE 2"x3"x1/4" OR 2"x5"x1/4" ANGLES FOR 2"x5" & 2"x6" BEAMS.
 2. USE 2"x5"x1/4" ANGLES FOR 2"x8" & 2"x10" BEAMS.
 3. USE BEAM SCHEDULE FOR DETAIL 3/8.
 4. TOP & BOTTOM BEAMS MAY BE USED TOGETHER OR IN COMBINATION WITH OTHER CONNECTION DETAILS. WHERE USED TOGETHER, BEAM MUST BE LIMITED TO TOP BEAM SPANS.
 5. SPAN TUBES MAY BE USED IN A MID-SPAN CONDITION WITH SHUTTERS SPANNING ABOVE AND BELOW THE BEAM. MID-SPAN TUBES SHALL HAVE TOP BEAM LIMITATIONS (INCLUDING SPANS, ANCHORS, ANGLES AND BOLTS), WITH THE SHUTTER SPAN TAKEN AS THE SUM OF THE SPANS ABOVE AND BELOW THE BEAM.
 6. LAP BEAMS ARE NOT ALLOWED.
 7. ALL BEAMS AND ANGLES TO BE 6063-T6 ALUMINUM.

COLBY BENNARD, P.E.
PE# 95197 CA# 9885

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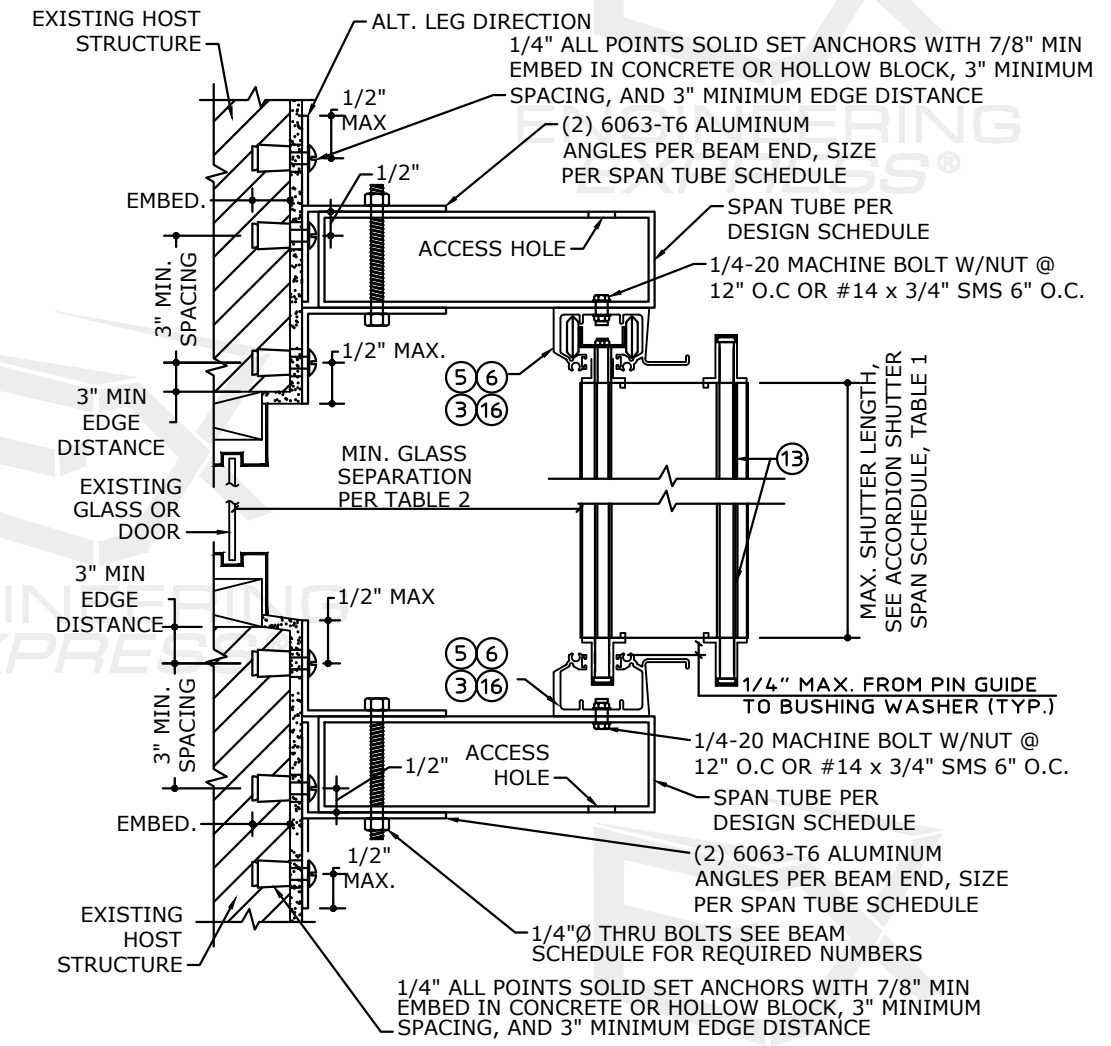
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AUGUST 15, 2023

COLBY BENNARD LICENSE No 95197 STATE OF FLORIDA PROFESSIONAL ENGINEER SIGNED: 08/15/2023

SPAN TUBE SCHEDULE									
TUBE SIZE	SHUTTER SPAN	ALLOWABLE TUBE SPAN		NUMBER OF THRU-BOLTS		NUMBER OF ANCHORS PER ANGLE		MINIMUM ANGLE LENGTH	
		TOP TUBE	BOTTOM TUBE	TOP TUBE	BOTTOM TUBE	TOP TUBE	BOTTOM TUBE	TOP TUBE	BOTTOM TUBE
2"x5"x 0.125"	60"	123.8"	135.2"	2	2	2	3	4"	7"
	96"	101.7"	106.9"	2	2	3	3	7"	7"
	123"	89.9"	94.4"	2	2	3	3	7"	7"
2"x6"x 0.125"	60"	129.1"	157.0"	2	2	2	3	4"	7"
	96"	114.8"	124.1"	2	2	3	3	7"	7"
	123"	102.8"	109.6"	2	2	4	4	10"	10"
2"x8"x 0.125"	60"	138.0"	196.9"	2	2	3	3	7"	7"
	96"	122.7"	155.7"	2	2	3	4	7"	10"
	123"	115.4"	137.5"	2	3	4	5	10"	13"
2"x10"x 0.1875"	60"	158.1"	240.0"	2	2	3	4	7"	10"
	96"	140.6"	229.9"	2	3	4	6	10"	16"
	123"	132.2"	203.1"	3	4	5	7	13"	19"



3 SPAN TUBE SECTION
8 N.T.S. VERT SECTION

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REMARKS	DRWN	CHKD	DATE
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	MLD	CCB	08/15/23

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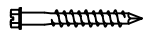


OF 12

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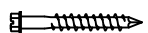

ANCHOR SCHEDULE: HOLLOW CONCRETE BLOCK

HOST STRUCT.	ANCHOR	LOAD (psf)	2" MIN EDGE DISTANCE														
			Spans Up To 6'-0"					Spans Up To 8'-3"					Spans Up To 12'-0"				
			CONN TYPE					CONN TYPE					CONN TYPE				
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5		
HOLLOW BLOCK		43	16.0"	16.0"	7.5"	9.0"	16.0"	15.5"	8.5"	4.5"	6.5"	15.5"	8.5"	4.5"	4.0"	7.0"	
		53	16.0"	10.5"	5.0"	7.0"	16.0"	11.0"	6.0"	3.5"	5.0"	11.0"	7.0"	3.5"	3.5"	5.0"	
		62	14.0"	7.5"	4.0"	6.0"	14.5"	9.0"	4.5"	4.0"	7.0"	7.0"	3.5"	3.5"	3.5"	5.0"	
		70	11.5"	6.0"	3.5"	5.5"	12.5"	7.5"	3.5"	3.5"	5.5"	7.0"	3.5"	3.5"	3.5"	5.0"	
		100	7.0"	3.5"	3.5"	3.5"	5.0"	7.0"	3.5"	3.5"	5.0"	7.0"	3.5"	3.5"	3.5"	5.0"	



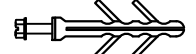
ANCHOR SCHEDULE: WOOD (G=0.55)

HOST STRUCT.	ANCHOR	LOAD (psf)	3/4" MIN EDGE DISTANCE														
			Spans Up To 6'-0"					Spans Up To 8'-3"					Spans Up To 12'-0"				
			CONN TYPE					CONN TYPE					CONN TYPE				
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5		
WOOD (G=0.55)	1/4" LAG SCREW WITH 1-3/4" MIN THREAD PENETRATION 	43	16.0"	16.0"	11.5"	12.5"	16.0"	16.0"	16.0"	7.5"	9.0"	16.0"	16.0"	14.5"	4.5"	6.0"	16.0"
		53	16.0"	16.0"	8.5"	10.0"	16.0"	16.0"	16.0"	6.0"	7.0"	16.0"	16.0"	11.5"	4.0"	5.0"	16.0"
		62	16.0"	16.0"	7.0"	8.5"	16.0"	16.0"	16.0"	5.0"	6.0"	16.0"	16.0"	11.5"	4.0"	5.0"	16.0"
		70	16.0"	16.0"	6.0"	7.5"	16.0"	16.0"	12.5"	4.0"	5.5"	16.0"	16.0"	11.5"	4.0"	5.0"	16.0"
		100	16.0"	11.5"	4.0"	5.0"	16.0"	16.0"	11.5"	4.0"	5.0"	16.0"	16.0"	11.5"	4.0"	5.0"	16.0"
	7/16" WOOD BUSHING WITH 1.13" MIN EMBED & 1/4-20 SS MACHINE SCREW 	43	16.0"	16.0"	8.0"	10.0"	16.0"	15.5"	8.5"	4.5"	7.0"	15.5"	8.5"	4.5"	4.5"	7.0"	
		53	16.0"	10.5"	5.5"	8.0"	16.0"	11.0"	6.0"	3.5"	5.5"	11.0"	7.0"	3.5"	4.0"	5.0"	
		62	14.0"	8.0"	4.5"	6.5"	14.5"	9.0"	4.5"	3.0"	4.5"	7.0"	7.0"	3.5"	4.0"	5.0"	
		70	12.0"	6.0"	3.5"	5.5"	12.5"	7.5"	3.5"	4.0"	5.5"	7.0"	3.5"	4.0"	4.0"	5.0"	
		100	7.0"	3.5"	4.0"	4.0"	5.0"	7.0"	3.5"	4.0"	5.0"	7.0"	3.5"	4.0"	4.0"	5.0"	
	#14 SMS OR #14 WOOD SCREW WITH 1-3/4" MIN THREAD PENETRATION 	43	16.0"	16.0"	12.5"	14.5"	16.0"	16.0"	16.0"	8.0"	10.0"	16.0"	16.0"	11.5"	5.0"	7.0"	16.0"
		53	16.0"	16.0"	9.0"	11.5"	16.0"	16.0"	15.0"	6.0"	8.0"	16.0"	16.0"	9.5"	4.0"	5.5"	13.0"
62		16.0"	16.0"	7.5"	9.5"	16.0"	16.0"	11.5"	5.0"	7.0"	16.0"	16.0"	9.5"	4.0"	5.5"	13.0"	
70		16.0"	16.0"	6.5"	8.5"	16.0"	16.0"	10.0"	4.5"	6.0"	14.0"	16.0"	9.5"	4.0"	5.5"	13.0"	
100		16.0"	9.5"	4.0"	5.5"	13.0"	16.0"	9.5"	4.0"	5.5"	13.0"	16.0"	9.5"	4.0"	5.5"	13.0"	

ANCHOR SCHEDULE: WOOD (G=0.42)

HOST STRUCT.	ANCHOR	LOAD (psf)	3/4" MIN EDGE DISTANCE														
			Spans Up To 6'-0"					Spans Up To 8'-3"					Spans Up To 12'-0"				
			CONN TYPE					CONN TYPE					CONN TYPE				
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5		
WOOD (G=0.42)	1/4" LAG SCREW WITH 1-3/4" MIN THREAD PENETRATION 	43	16.0"	16.0"	9.0"	10.0"	16.0"	16.0"	16.0"	5.5"	7.0"	16.0"	16.0"	9.5"	3.5"	4.5"	15.0"
		53	16.0"	16.0"	6.5"	8.0"	16.0"	16.0"	12.5"	4.5"	5.5"	16.0"	15.0"	7.5"	3.0"	4.0"	11.0"
		62	16.0"	16.0"	5.5"	6.5"	16.0"	16.0"	9.5"	3.5"	5.0"	15.0"	15.0"	7.5"	3.0"	4.0"	11.0"
		70	16.0"	13.5"	4.5"	6.0"	16.0"	16.0"	8.0"	3.0"	4.0"	11.5"	15.0"	7.5"	3.0"	4.0"	11.0"
		100	15.0"	7.5"	3.0"	4.0"	11.0"	15.0"	7.5"	3.0"	4.0"	11.0"	15.0"	7.5"	3.0"	4.0"	11.0"
	#14 SMS OR #14 WOOD SCREW WITH 1-3/4" MIN THREAD PENETRATION 	43	16.0"	16.0"	8.5"	10.5"	16.0"	16.0"	12.5"	5.5"	7.0"	16.0"	13.0"	6.5"	3.5"	5.0"	10.5"
		53	16.0"	16.0"	6.5"	8.0"	16.0"	16.0"	8.5"	4.0"	5.5"	16.0"	10.5"	5.5"	2.5"	4.0"	7.5"
		62	16.0"	11.5"	5.0"	7.0"	16.0"	13.0"	6.5"	3.5"	5.0"	10.5"	10.5"	5.5"	2.5"	4.0"	7.5"
		70	16.0"	9.5"	4.5"	6.0"	16.0"	11.0"	5.5"	3.0"	4.0"	8.0"	10.5"	5.5"	2.5"	4.0"	7.5"
		100	10.5"	5.5"	2.5"	4.0"	7.5"	10.5"	5.5"	2.5"	4.0"	7.5"	10.5"	5.5"	2.5"	4.0"	7.5"

ANCHOR SCHEDULE: GROUT-FILLED CONCRETE BLOCK

HOST STRUCT.	ANCHOR	LOAD (psf)	4" MIN EDGE DISTANCE														
			Spans Up To 6'-0"					Spans Up To 8'-3"					Spans Up To 12'-0"				
			CONN TYPE					CONN TYPE					CONN TYPE				
	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5		
GROUT-FILLED CONCRETE BLOCK	5/16" ITW TAPCON XL W/ 2-1/4" MIN. EMBED 	43	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	15.0"	16.0"	16.0"	16.0"	15.0"	9.0"	14.0"	16.0"	
		53	16.0"	16.0"	16.0"	16.0"	16.0"	16.0"	11.0"	16.0"	16.0"	16.0"	12.0"	7.5"	12.0"	16.0"	
		62	16.0"	16.0"	14.0"	16.0"	16.0"	16.0"	15.0"	9.0"	14.0"	16.0"	16.0"	12.0"	7.5"	12.0"	16.0"
		70	16.0"	16.0"	11.5"	16.0"	16.0"	16.0"	12.5"	8.0"	12.5"	16.0"	16.0"	12.0"	7.5"	12.0"	16.0"
		100	16.0"	12.0"	7.5"	12.0"	16.0"	16.0"	12.0"	7.5"	12.0"	16.0"	16.0"	12.0"	7.5"	12.0"	16.0"
	5/16" DEWALT ULTRAICON W/ 2-1/4" MIN. EMBED 	43	16.0"	16.0"	10.5"	14.0"	16.0"	16.0"	10.5"	6.5"	9.5"	16.0"	11.0"	5.5"	6.5"	9.0"	
		53	16.0"	13.5"	7.5"	11.0"	16.0"	14.0"	7.5"	7.5"	13.5"	9.0"	6.5"	6.5"	6.5"	6.5"	
		62	16.0"	10.0"	6.0"	9.0"	16.0"	11.0"	5.5"	6.5"	9.0"	9.0"	6.5"	6.5"	6.5"	6.5"	
		70	15.0"	8.0"	5.0"	8.0"	15.5"	9.5"	5.5"	5.5"	7.0"	9.0"	6.5"	6.5"	6.5"	6.5"	
		100	9.0"	6.5"	5.5"	5.5"	6.5"	9.0"	5.5"	5.5"	9.0"	9.0"	6.5"	6.5"	6.5"	6.5"	
	#12 SMS W/ 2" EYEWALL ARMOR INSERT W/ 2" EMBED 	2" MIN EDGE DISTANCE															
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5
43		16.0"	16.0"	9.5"	11.5"	16.0"	16.0"	14.0"	6.0"	8.0"	16.0"	14.5"	7.5"	3.5"	5.5"	11.5"	
53		16.0"	16.0"	7.0"	9.0"	16.0"	16.0"	9.5"	4.5"	6.5"	16.0"	11.5"	6.0"	3.0"	4.5"	8.5"	
62		16.0"	13.0"	5.5"	7.5"	16.0"	14.5"	7.5"	3.5"	5.5"	12.0"	11.5"	6.0"	3.0"	4.5"	8.5"	
70		16.0"	10.5"	5.0"	6.5"	16.0"	12.5"	6.5"	3.0"	4.5"	9.0"	11.5"	6.0"	3.0"	4.5"	8.5"	
100	11.5"	6.0"	3.0"	4.5"	8.5"	11.5"	6.0"	3.0"	4.5"	8.5"	11.5"	6.0"	3.0"	4.5"	8.5"		

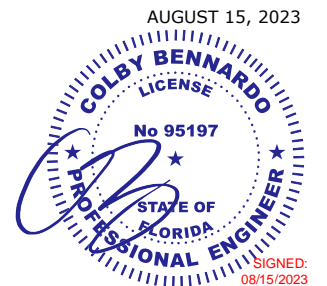
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400 WEST MCNAB ROAD, FT. LAUDERDALE, FL 33309
6.8 STREAMLINE SHUTTER
FLORIDA BUILDING CODE EIGHTH EDITION (2023)
FLORIDA STATEWIDE APPROVAL (FSA FL#13757.2)

REMARKS	DRWN	CHKD	DATE
2020 FBC (20-26160)	CCB	RWN	6/17/20
FBC 2023	MLD	CCB	08/15/23

23-61155

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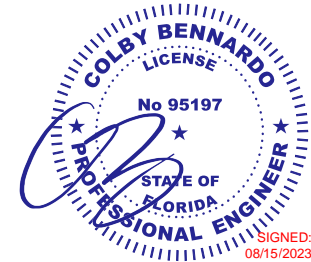
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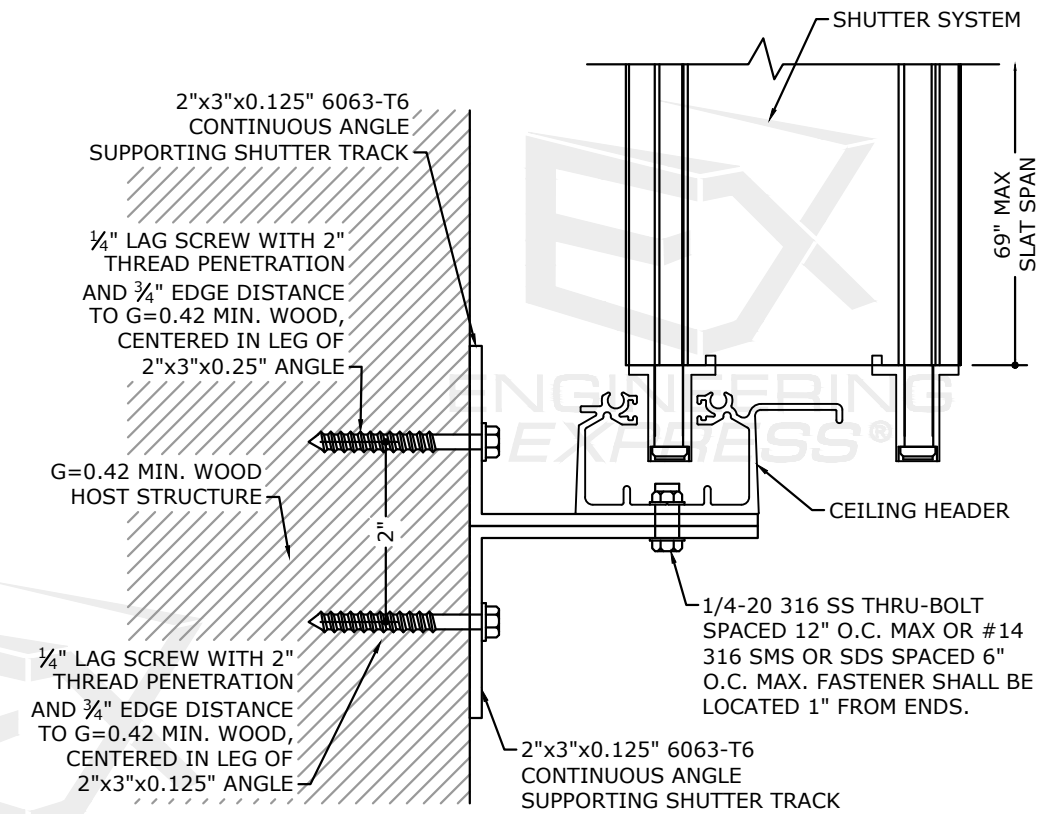
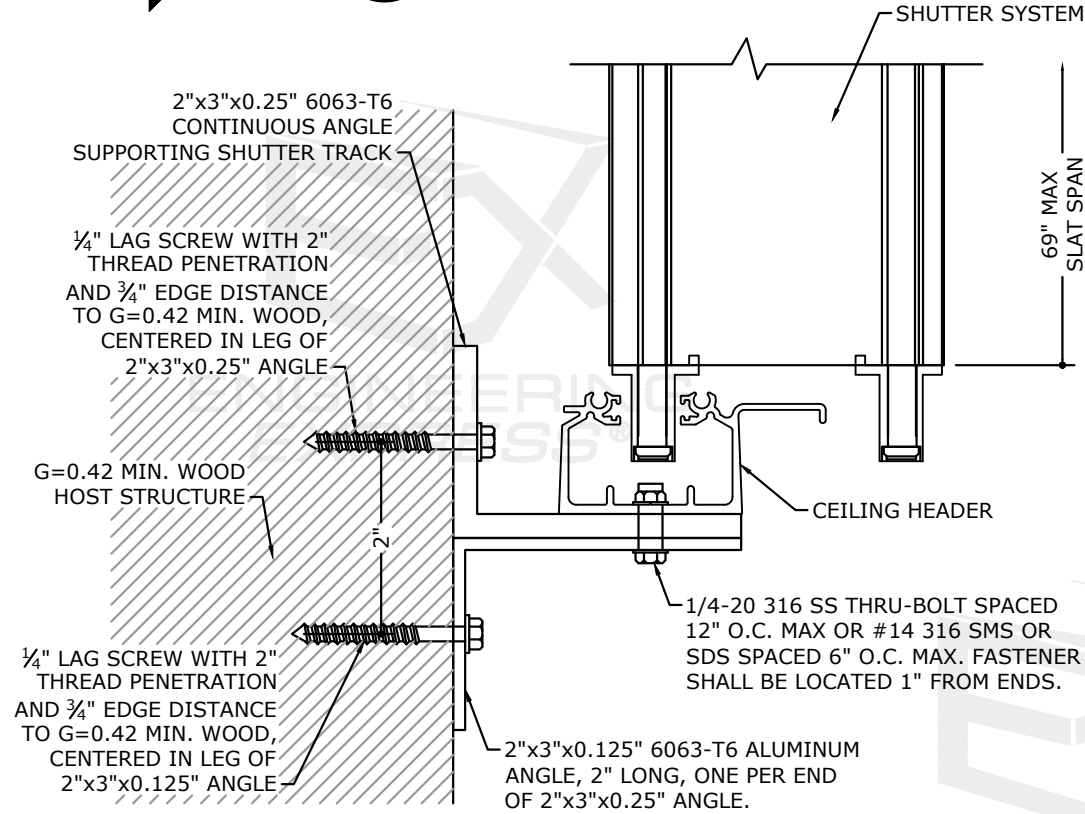
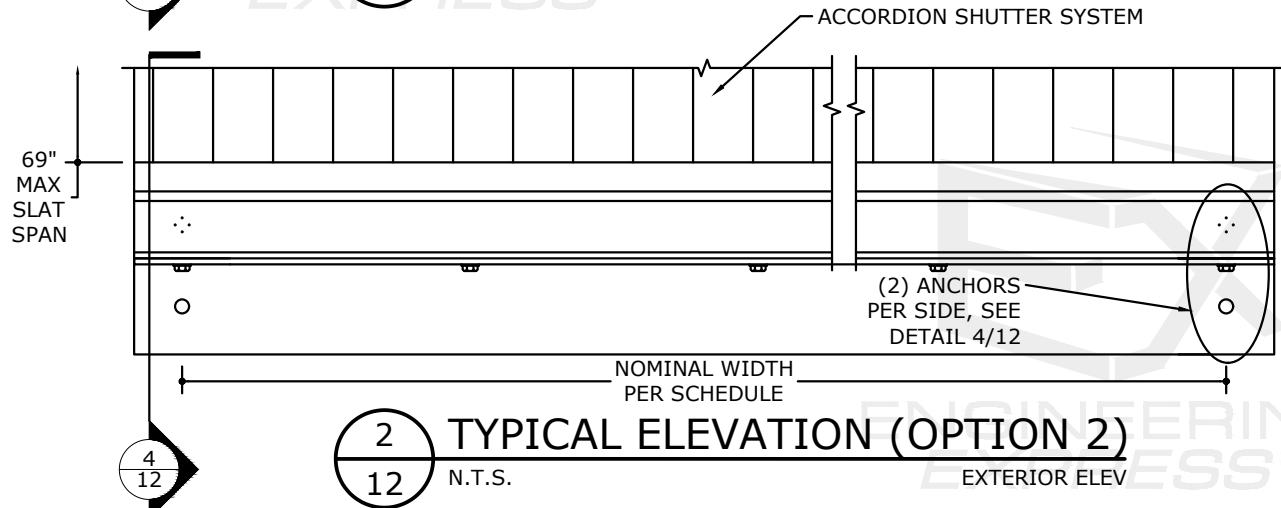
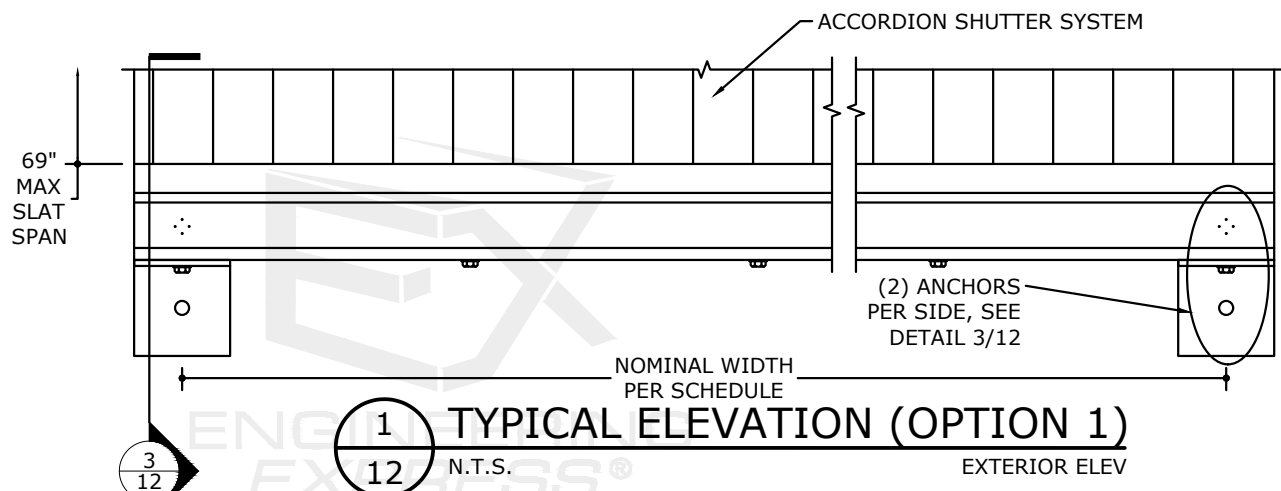


ALTERNATE MOUNTING OPTION

DESIGN SCHEDULES

OPTION 1			OPTION 2		
NOMINAL WIDTH	ALLOWABLE DESIGN PRESSURE		NOMINAL WIDTH	ALLOWABLE DESIGN PRESSURE	
	POSITIVE (+)	NEGATIVE (-)		POSITIVE (+)	NEGATIVE (-)
42"	151 psf	200 psf	42"	80 psf	173 psf
45"	131 psf	200 psf	45"	69 psf	151 psf
48"	116 psf	177 psf	48"	61 psf	132 psf
51"	102 psf	147 psf	51"	54 psf	117 psf
54"	91 psf	124 psf	54"	48 psf	105 psf
57"	82 psf	106 psf	57"	43 psf	94 psf
60"	74 psf	91 psf	60"	39 psf	85 psf
63"	67 psf	78 psf	63"	35 psf	77 psf
66"	61 psf	68 psf	66"	32 psf	70 psf
69"	56 psf	60 psf	69"	30 psf	63 psf
72"	51 psf	52 psf	72"	27 psf	56 psf
75"	46 psf	46 psf	75"	25 psf	49 psf
78"	41 psf	41 psf	78"	23 psf	44 psf
81"	37 psf	37 psf	81"	21 psf	39 psf

NOTE: DESIGN PRESSURES SHOWN IN DESIGN SCHEDULE ARE FOR DETERMINING MAXIMUM ALLOWABLE HORIZONTAL SUPPORT ANGLE SPAN. SHUTTER SPANS AND ALLOWABLE LOADS SHALL NOT EXCEED THOSE PERMITTED IN DESIGN SCHEDULES.



ANCHOR NOTE: 1/4" MILLENNIUM MILLFAST SCREWS W/ T&C ULTRACOTE MAY BE USED IN LIEU OF THE LAG SCREWS CALLED OUT ON THIS SHEET UTILIZING THE SAME CRITERIA.

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