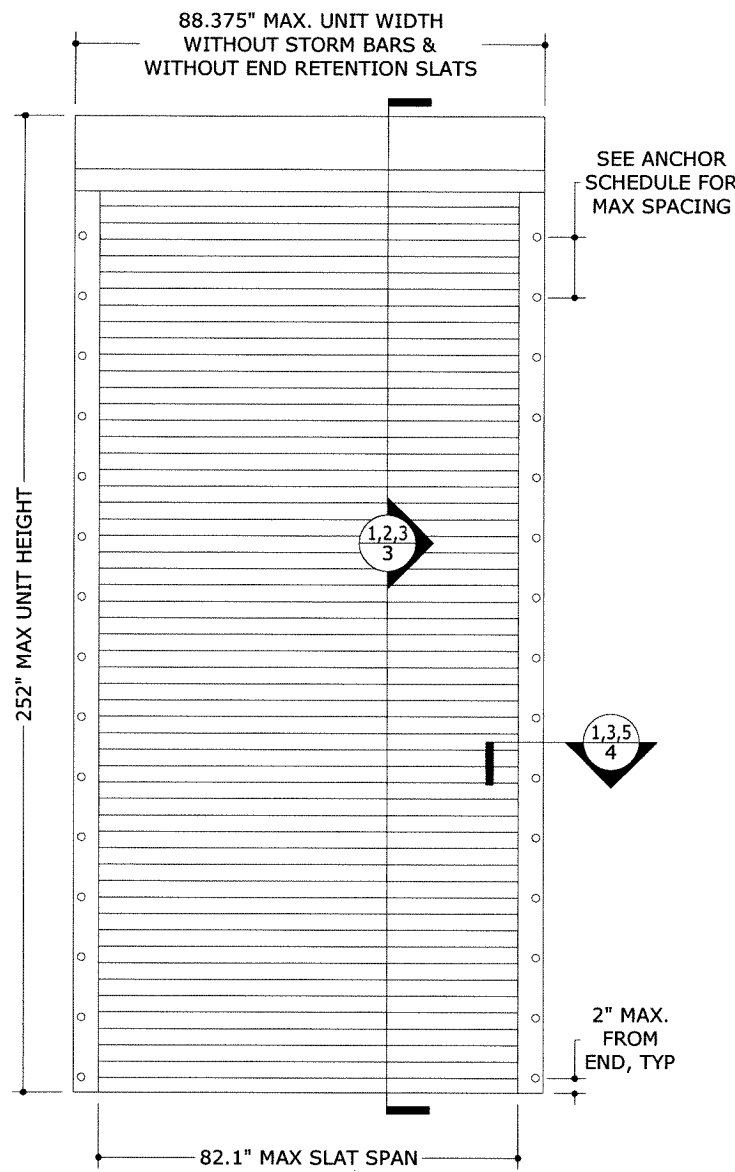


# MAESTROSHIELD ALUMINUM ROLL-UP SHUTTER

## WITH END RETENTION OR NON-END RETENTION SLATS AND RAILS

C:\Users\rickm\Engineering\Express\Production - Documents\Projects\20-24244\_Town & Country - TDI\Updates\WP18 - SHU 214 Maestroshield Roll Down\20-24244\_8a\_a Maestroshield Roll Down (TDI).dwg 11/23/2020 - 12:37pm rickm



**1** NON-END RETENTION SHUTTER W/O STORM BARS  
1 N.T.S. EXTERIOR ELEV

SLAT SPAN	ALLOWABLE DESIGN PRESSURE
47.1"	+/- 120.0 PSF
50.0"	+/- 104.2 PSF
55.0"	+/- 83.1 PSF
60.0"	+/- 67.3 PSF
65.0"	+/- 55.2 PSF
70.0"	+/- 45.7 PSF
75.0"	+/- 38.2 PSF
80.0"	+/- 32.2 PSF
82.1"	+/- 30.0 PSF

SLAT SPAN	ALLOWABLE DESIGN PRESSURE
116.7"	+/- 80.0 PSF
120.0"	+/- 78.2 PSF
130.0"	+/- 73.6 PSF
140.0"	+/- 70.0 PSF
150.0"	+/- 66.9 PSF
160.0"	+/- 64.3 PSF
170.0"	+/- 62.1 PSF
180.0"	+/- 60.1 PSF
190.0"	+/- 58.3 PSF
200.0"	+/- 56.8 PSF
210.0"	+/- 55.3 PSF
220.0"	+/- 54.0 PSF
230.0"	+/- 52.8 PSF
240.0"	+/- 51.7 PSF
250.0"	+/- 50.6 PSF
256.5"	+/- 50.0 PSF

**TABLE 1 & 2 NOTES:**

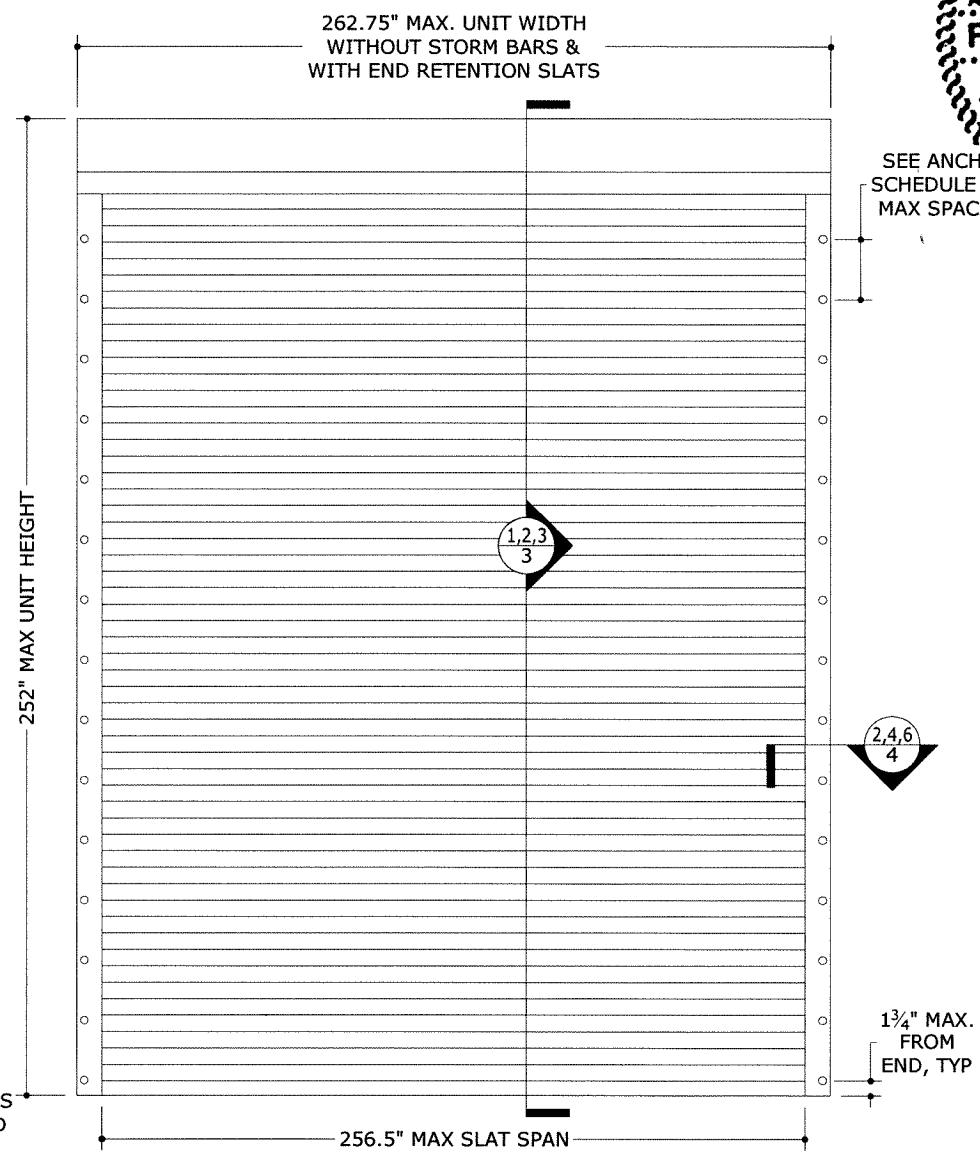
- SLAT SPAN IS DEFINED AS THE DISTANCE BETWEEN RAILS FOR SINGLE SPAN ASSEMBLIES.
- LINEAR INTERPOLATION BETWEEN SHUTTER SPANS IS NOT PERMITTED. FOR SPANS BETWEEN THOSE INDICATED ABOVE, THE DESIGN PRESSURES FOR THE NEXT HIGHER SPAN SHALL BE USED.

SLAT SPAN	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
47.1"	3.1"	2.7"
50.0"	3.1"	2.8"
55.0"	3.1"	3.1"
60.0"	3.5"	3.5"
65.0"	3.8"	3.8"
70.0"	4.2"	4.2"
75.0"	4.6"	4.6"
80.0"	5.0"	5.0"
82.1"	5.1"	5.1"

SLAT SPAN	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
116.7"	15.1"	8.9"
120.0"	20.7"	9.2"
130.0"	20.7"	9.9"
140.0"	20.7"	10.6"
150.0"	20.7"	11.3"
160.0"	20.7"	12.0"
170.0"	20.7"	12.8"
180.0"	20.7"	13.5"
190.0"	20.7"	14.3"
200.0"	20.7"	15.1"
210.0"	20.7"	15.9"
220.0"	20.7"	16.8"
230.0"	20.7"	17.6"
240.0"	20.7"	18.4"
250.0"	20.7"	19.3"
256.5"	20.7"	19.9"

**TABLE 3 & 4 NOTES:**

- SLAT SPAN IS DEFINED AS THE DISTANCE BETWEEN RAILS FOR SINGLE SPAN ASSEMBLIES.
- SEPARATION FROM GLAZING IS NOT REQUIRED IN WIND ZONES 1-3 UNLESS LOCAL MUNICIPALITY ADOPTS ADDITIONAL CRITERIA.
- 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.



**2** END RETENTION SHUTTER W/O STORM BARS  
1 N.T.S. EXTERIOR ELEV

### GENERAL NOTES

- THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (2018) AND THE INTERNATIONAL RESIDENTIAL CODE, PER ASTM E330, E1886, AND E1996 STANDARDS.
- NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM. WIND LOAD DURATION FACTOR  $C_d=1.6$  HAS BEEN USED FOR WOOD ANCHOR DESIGN.
- POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED PER SEPARATE ENGINEERING IN ACCORDANCE WITH THE GOVERNING CODE. PRESSURE REQUIREMENTS AS DETERMINED IN ACCORDANCE WITH ASCE 7 AND CHAPTER 1609 OF THE INTERNATIONAL BUILDING CODE SHALL BE LESS THAN OR EQUAL TO THE POSITIVE OR NEGATIVE DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.
- DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.
- THIS SYSTEM HAS BEEN DESIGNED WITH NO SEPARATION FROM GLAZING REQUIRED FOR WIND ZONES 1-3, IN ACCORDANCE WITH ASTM E1996. IT IS ACCEPTABLE BY CODE UNLESS OPTIONAL CRITERIA IS INDEPENDENTLY ADOPTED BY THE AUTHORITY HAVING JURISDICTION.

- 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. THIS CERTIFICATION IS VALID FOR USE IN CONJUNCTION WITH THE MOST CURRENT OF "ALUMINUM STORM BARS HEADERS AND MULLIONS" DRAWING.
- ROLL-UP MECHANISM AND HOOD ASSEMBLY ARE NOT PART OF THIS APPROVAL.
- THIS DOCUMENT CONTAINS INFORMATION RELEVANT TO THE NECESSARY STRUCTURAL REQUIREMENTS OF THE SYSTEM INSTALLATION. COMPONENTS AND FASTENERS NOT REFERENCED WHICH ARE PART OF THE INTERNAL FABRICATION OF THE SPECIFIED SYSTEMS OR ASSEMBLIES SHALL BE PER MANUFACTURER PUBLISHED SPECIFICATIONS.
- PERMIT HOLDER SHALL VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS. WOOD BUCKS (BY OTHERS) SHALL BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE EXISTING STRUCTURE.
- ALL EXTRUSIONS SHALL BE MINIMUM 6063-T5 ALUMINUM ALLOY, UNLESS NOTED OTHERWISE.

- EACH SHUTTER ASSEMBLY SHALL BEAR A PERMANENT LABEL ON THE BOTTOM OF THE HOOD FACING THE EXTERIOR WITH THE FOLLOWING MINIMUM INFORMATION:  
TOWN & COUNTRY INDUSTRIES  
FORT LAUDERDALE, FL  
9LB MISSILE LEVEL D - ASTM E1886, E1996 & E330  
TDI EVALUATED
- ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH A MINIMUM TENSILE YIELD STRENGTH OF 60 KSI. ALL ALUMINUM 3/16"Ø OR 1/4"Ø POP RIVETS SHALL BE 7075-T6 OR STRONGER.
- ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.

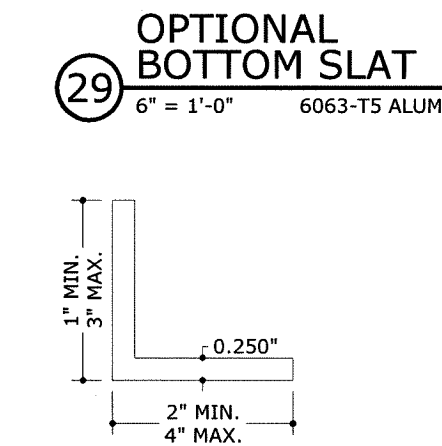
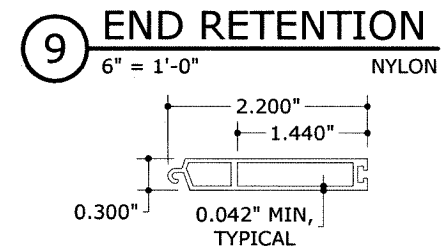
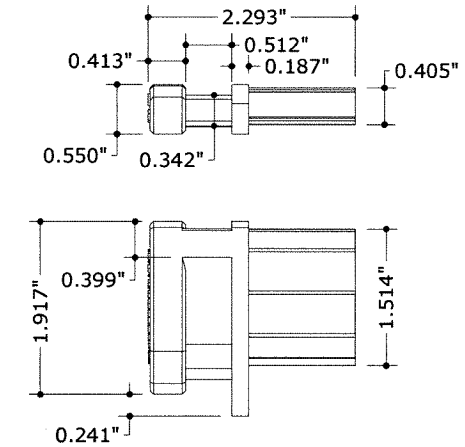
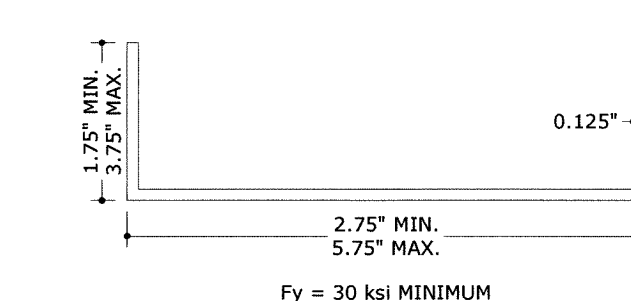
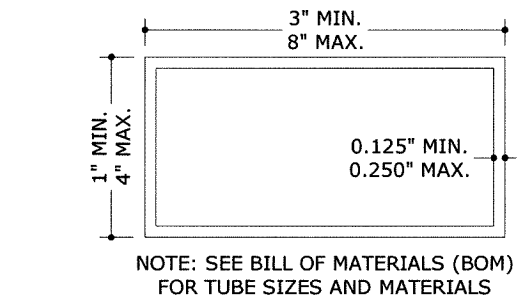
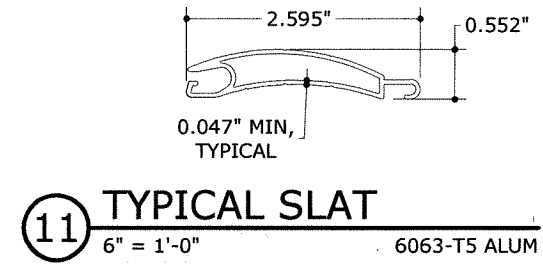
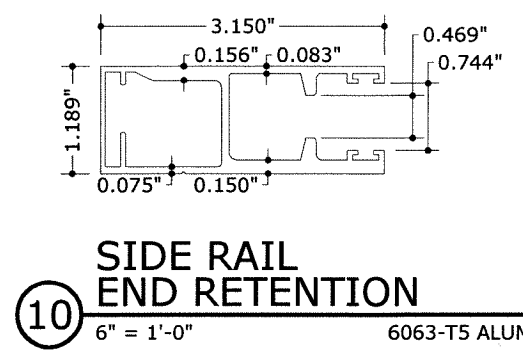
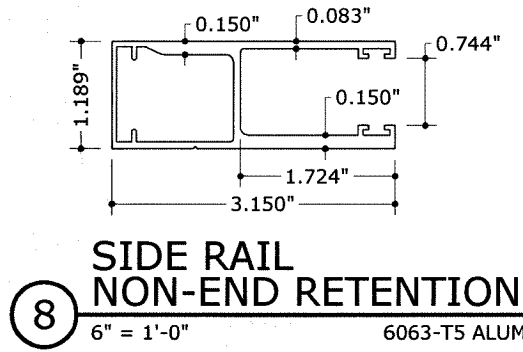
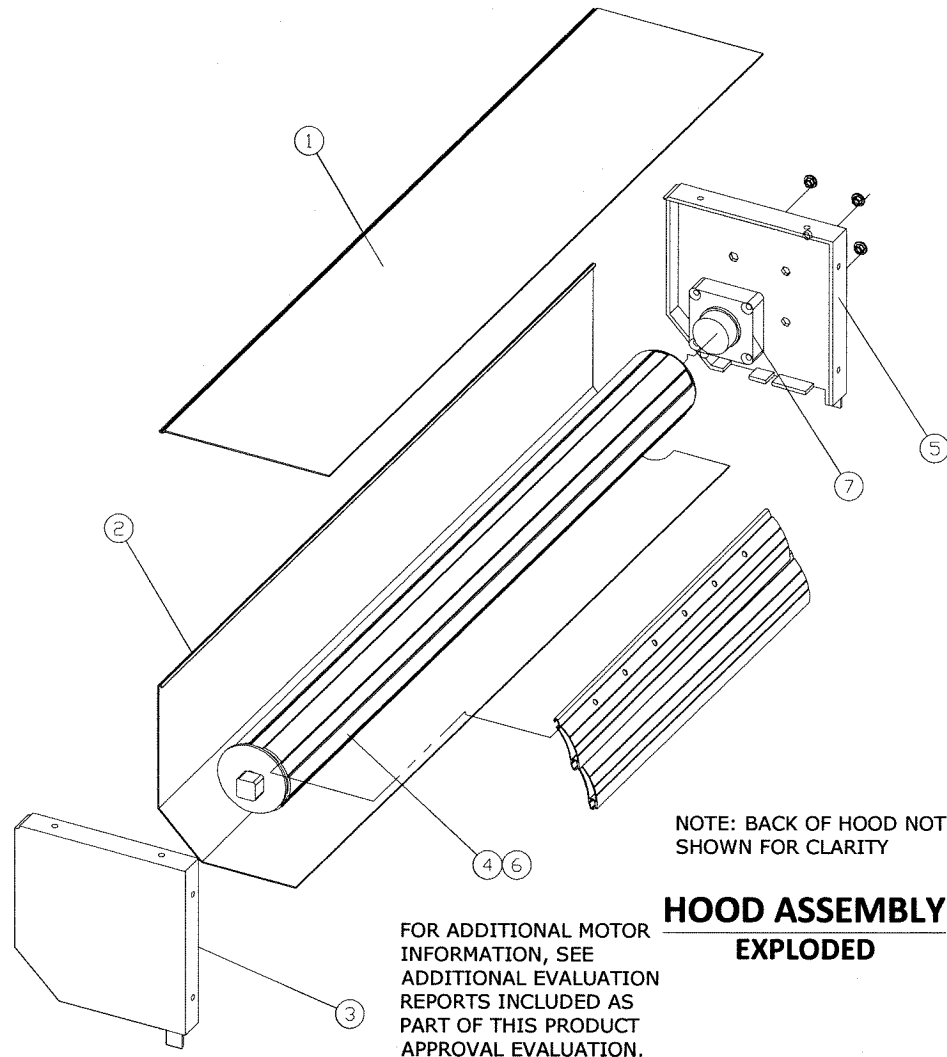
STATE OF FLORIDA  
11/23/2020  
FRANK L. BENNARDI  
96069  
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**Town & Country**  
INDUSTRIES  
Wholesale Aluminum and Building Products  
A Division of PAC Supply Co., Inc.  
400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

DRWN	CHKD	DATE
KL	FLB	11/03/20
KL	FLB	2/14/21
RWN	CSL	4/08/15
RWN	FLB	8/07/17
CCB	RWN	6/30/20

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PAGE DESCRIPTION:

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BILL OF MATERIALS		
ITEM #	DESCRIPTION	MATERIAL
1	HOOD TOP	6063-T5 ALUM
2	HOOD FACE	6063-T5 ALUM
3	SIDE CAP, RIGHT	6063-T5 ALUM
4	MOTOR TUBE, 86mm DIAMETER, 3mm THICK	6063-T5 ALUM
5	SIDE CAP, LEFT	6063-T5 ALUM
6	IDLE BEARING	
7	MANUAL GEAR OR ELECTRONIC MOTOR	
8	SIDE RAIL, NON-END RETENTION	6063-T5 ALUM
9	END RETENTION GUIDE	NYLON
10	SIDE RAIL, END RETENTION	6063-T5 ALUM
11	TYPICAL SLAT	6063-T5 ALUM
12	1"x3"x0.125" TUBE	6063-T6 ALUM
13	2"x3"x0.125" TUBE	6063-T6 ALUM
14	2"x4"x0.125" TUBE	6063-T6 ALUM
15	2"x5"x0.125" TUBE	6063-T6 ALUM
16	2"x3"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
17	2"x4"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
18	2"x5"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
19	2"x6"x0.125" TUBE	6063-T6 ALUM
20	2"x6"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
21	3"x3"x0.125" TUBE	6063-T6 ALUM
22	3"x3"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
23	4"x4"x0.125" TUBE	6063-T6 ALUM
24	4"x4"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
25	4"x6"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
26	4"x8"x0.25" TUBE	6061-T6 OR 6005-T5 ALUM
27	STEEL REINFORCEMENT (Fy = 30 ksi MIN.)	A36 OR STAINLESS STEEL
28	ALUMINUM ANGLE	6061-T6 OR 6005-T5 ALUM
29	OPTIONAL BOTTOM SLAT	6063-T5 ALUM

FRANK BENNARDO, PE  
PE# 96064 CA# F-11383

STATE OF TEXAS  
7/23/2020

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Wholesale Aluminum and Building Products  
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400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

DRWN	CHKD	DATE
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REMARKS  
INIT ISSUE  
2010 FBC  
2014 FBC  
2017 FBC  
2018 IBC

20-24244.8a

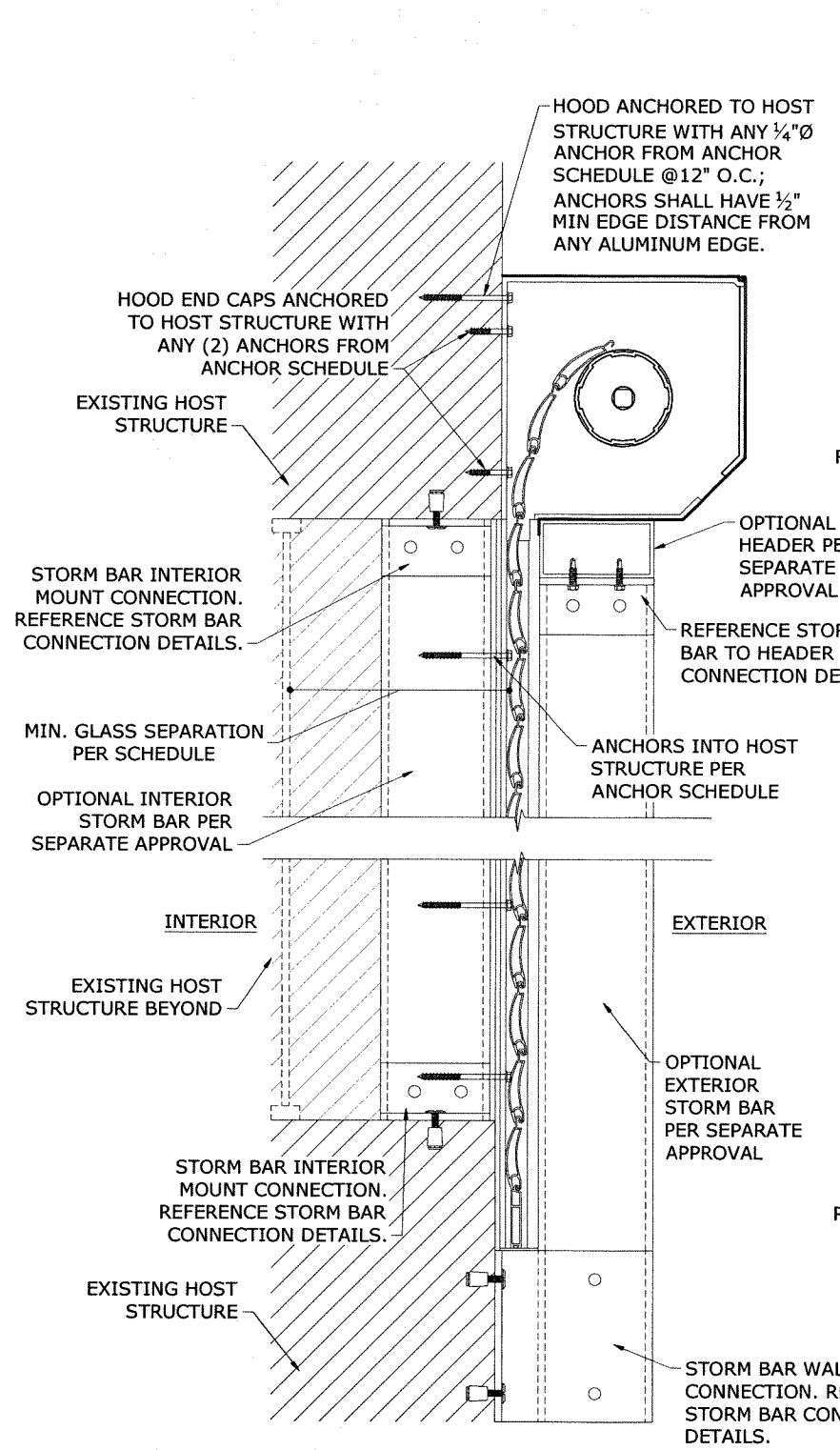
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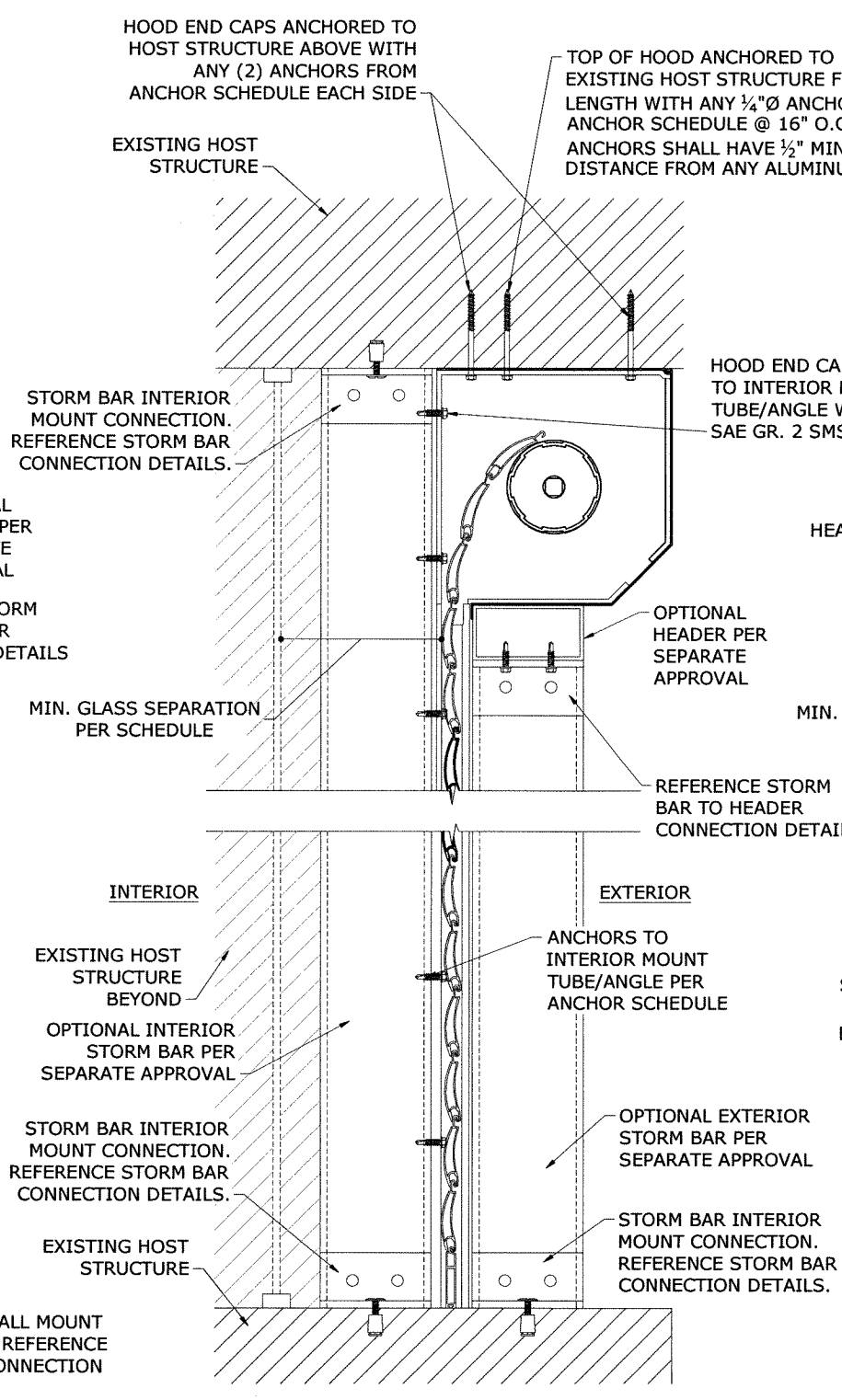
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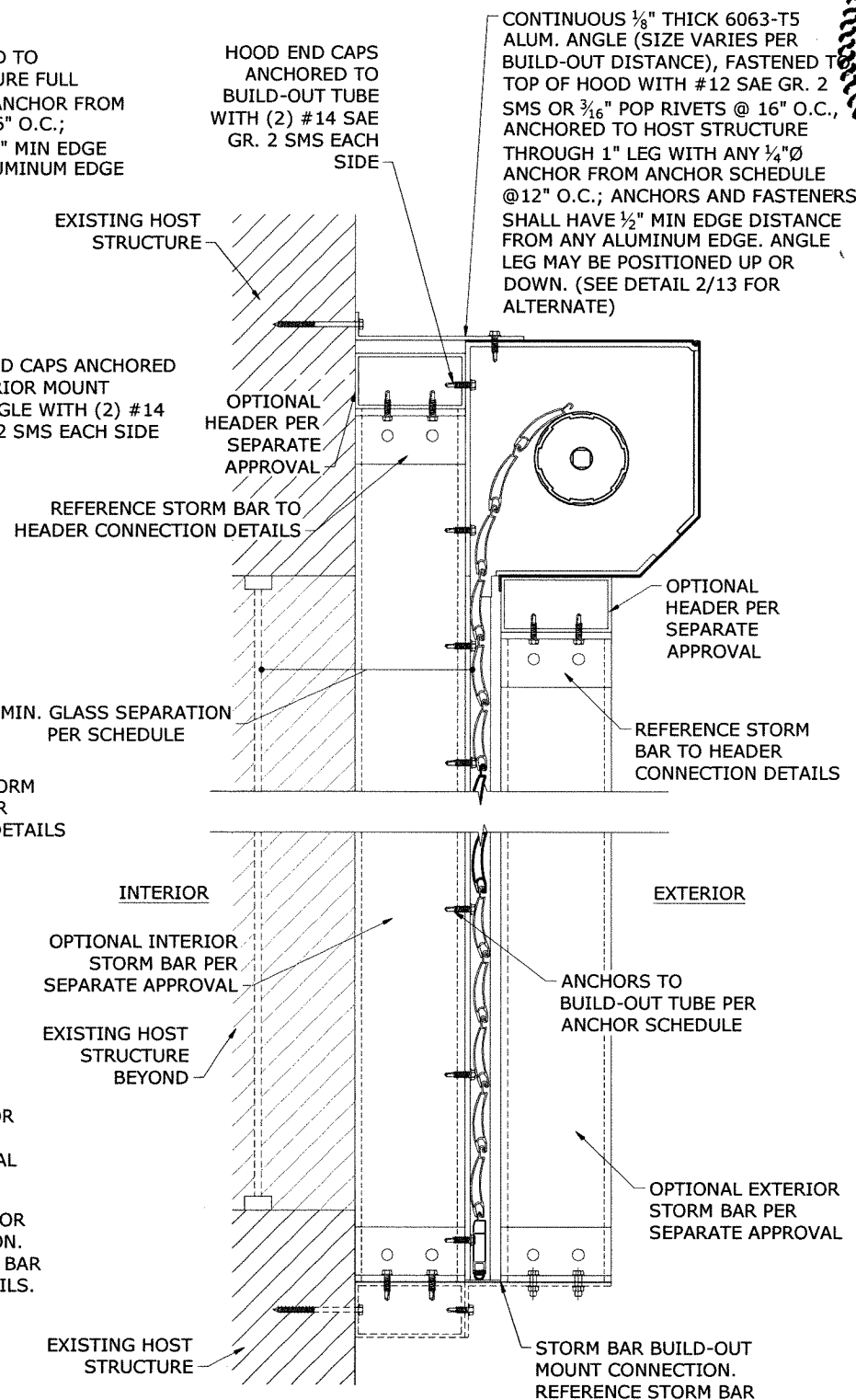
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 11/23/2020 - 12:37pm rickn



1  
 3  
 WALL MOUNT (SHOWN W/ OPTIONAL STORM BARS)  
 N.T.S. VERT SECTION



2  
 3  
 INTERIOR MOUNT (SHOWN W/ OPTIONAL STORM BARS)  
 N.T.S. VERT SECTION



3  
 3  
 BUILD-OUT MOUNT (SHOWN W/ OPTIONAL STORM BARS)  
 N.T.S. VERT SECTION

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 STATE OF TEXAS  
 11/23/2020  
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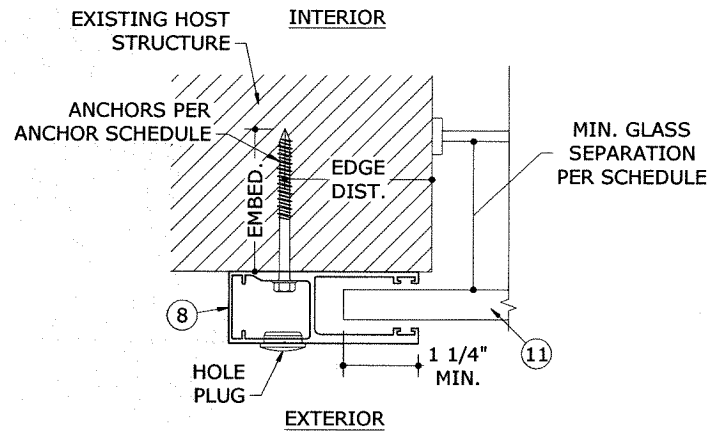
**Town & Country**  
 INDUSTRIES  
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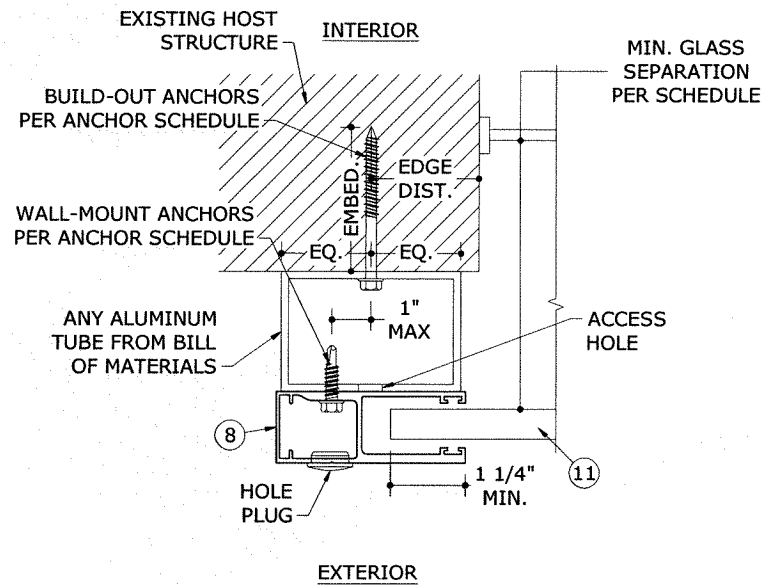
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 2014 FBC  
 2017 FBC  
 2018 IBC

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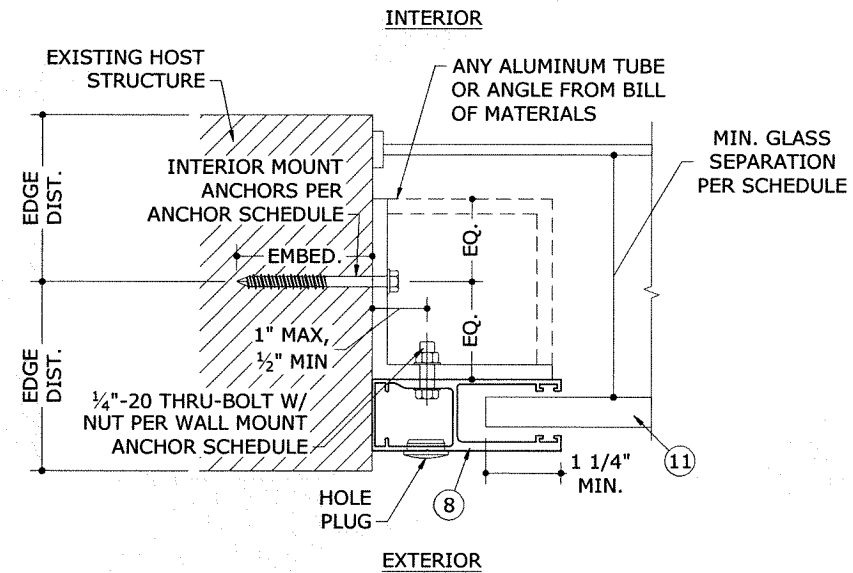
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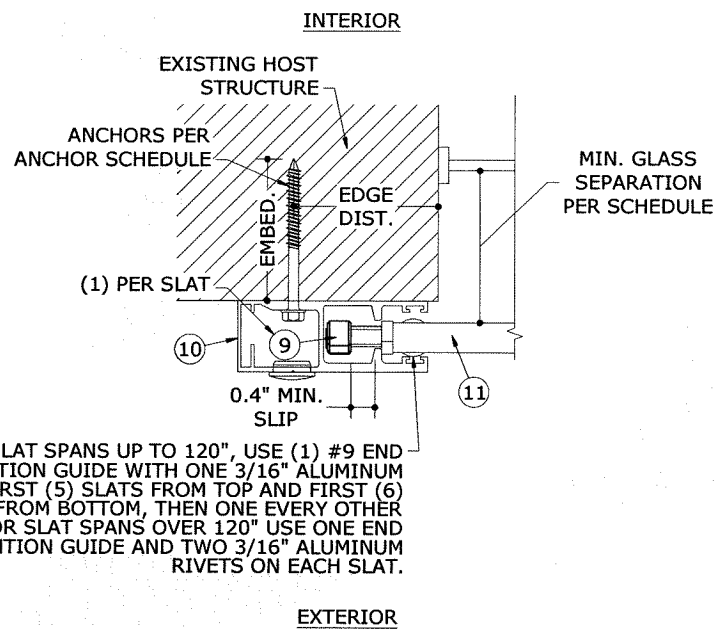
**1**  
**NON-END RETENTION**  
**TYPICAL WALL MOUNT**  
4 N.T.S. HORIZ SECTION



**3**  
**NON-END RETENTION**  
**TYP. BUILD-OUT MOUNT**  
4 N.T.S. HORIZ SECTION

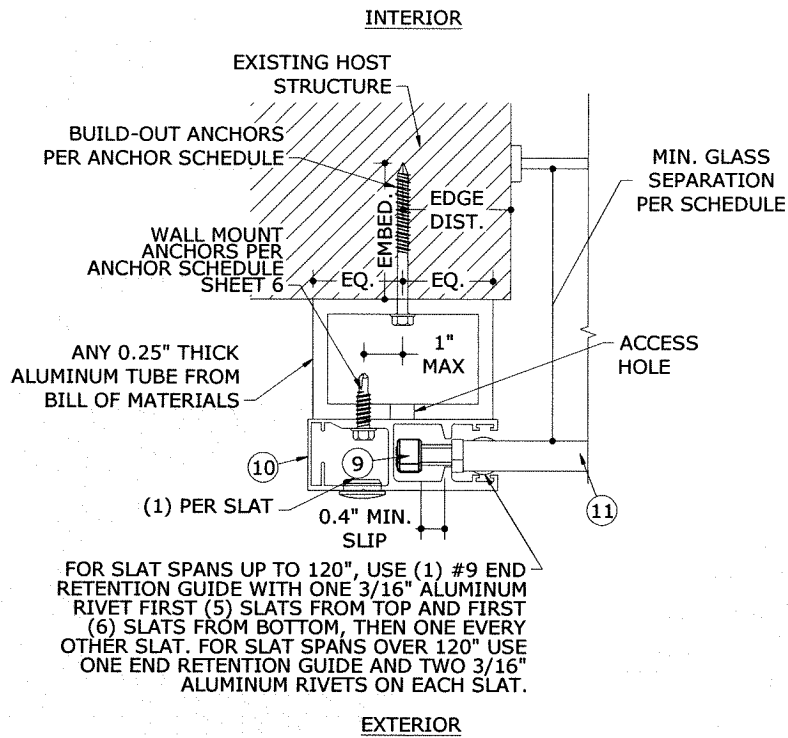


**5**  
**NON-END RETENTION**  
**TYP. INTERIOR MOUNT**  
4 N.T.S. HORIZ SECTION



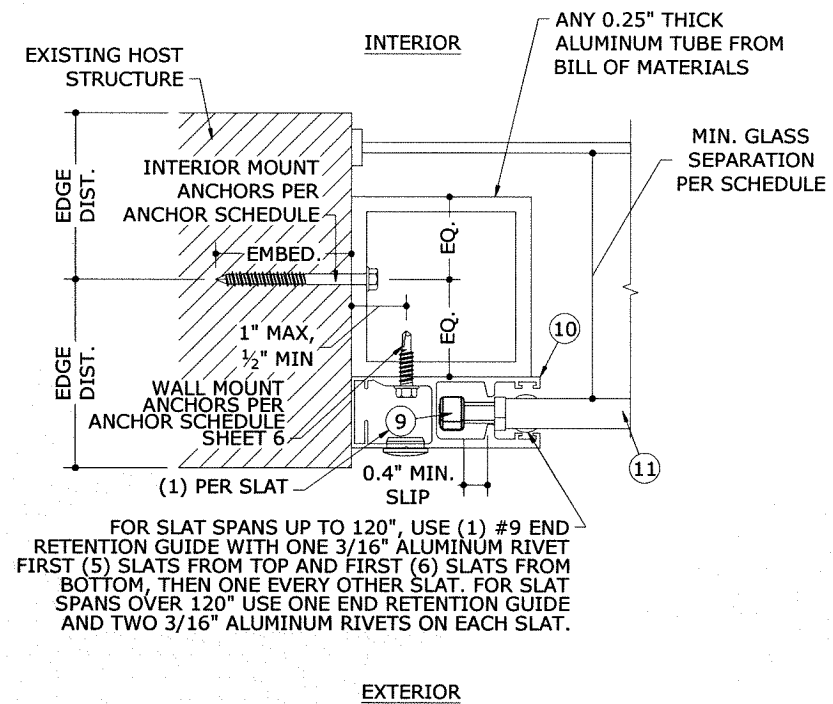
FOR SLAT SPANS UP TO 120", USE (1) #9 END RETENTION GUIDE WITH ONE 3/16" ALUMINUM RIVET FIRST (5) SLATS FROM TOP AND FIRST (6) SLATS FROM BOTTOM, THEN ONE EVERY OTHER SLAT. FOR SLAT SPANS OVER 120" USE ONE END RETENTION GUIDE AND TWO 3/16" ALUMINUM RIVETS ON EACH SLAT.

**2**  
**END RETENTION**  
**TYPICAL WALL MOUNT**  
4 N.T.S. HORIZ SECTION



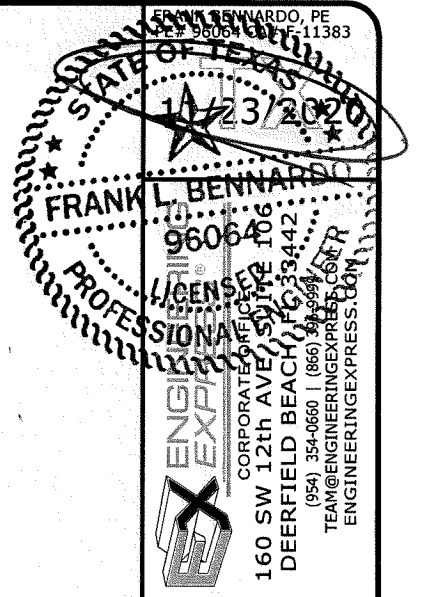
FOR SLAT SPANS UP TO 120", USE (1) #9 END RETENTION GUIDE WITH ONE 3/16" ALUMINUM RIVET FIRST (5) SLATS FROM TOP AND FIRST (6) SLATS FROM BOTTOM, THEN ONE EVERY OTHER SLAT. FOR SLAT SPANS OVER 120" USE ONE END RETENTION GUIDE AND TWO 3/16" ALUMINUM RIVETS ON EACH SLAT.

**4**  
**END RETENTION**  
**TYP. BUILD-OUT MOUNT**  
4 N.T.S. HORIZ SECTION



FOR SLAT SPANS UP TO 120", USE (1) #9 END RETENTION GUIDE WITH ONE 3/16" ALUMINUM RIVET FIRST (5) SLATS FROM TOP AND FIRST (6) SLATS FROM BOTTOM, THEN ONE EVERY OTHER SLAT. FOR SLAT SPANS OVER 120" USE ONE END RETENTION GUIDE AND TWO 3/16" ALUMINUM RIVETS ON EACH SLAT.

**6**  
**END RETENTION**  
**TYP. INTERIOR MOUNT**  
4 N.T.S. HORIZ SECTION



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RWN	FLB	8/07/17
CCB	RWN	6/30/20

REMARKS
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## ANCHOR SCHEDULE: NON-END RETENTION WALL MOUNT

ANCHOR	SUBSTRATE	MINIMUM EMBEDMENT	MINIMUM EDGE DISTANCE	MAXIMUM SPACING (O.C.)
1/4" DEWALT ULTRACON	2700 PSI MIN. CONCRETE	1.75"	2.5"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	2.5"	6.0"
1/4" ITW SS TAPCON	3192 PSI MIN. CONCRETE	1.75"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	2.5"	5.7"
5/16" DEWALT ULTRACON	3500 PSI MIN. CONCRETE	2.0"	3.125"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	3.125"	6.0"
5/16" ITW TAPCON	2899 PSI MIN. CONCRETE	2.25"	3.125"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	4.0"	6.0"
	HOLLOW CONCRETE BLOCK	1.75"	4.0"	6.0"
1/4" DEWALT POWER-BOLT	3000 PSI MIN. CONCRETE	2.5"	3.0"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.5"	5.25"	6.0"
	HOLLOW CONCRETE BLOCK	1.5"	12.0"	6.0"
1/4" ALL-POINTS SOLID-SET	3000 PSI MIN. CONCRETE	0.875"	3.0"	6.0"
	HOLLOW CONCRETE BLOCK	0.875"	3.0"	6.0"
	1/4" LAG SCREW	G=0.42 MIN. WOOD	1.5"	0.75"
#14 WOOD SCREW	G=0.42 MIN. WOOD	1.5"	0.75"	6.0"
#14 410 SS SMS (OR 1/4-20 410 SS THRU-BOLT)	1/8" THICK MIN. 6063-T6 ALUMINUM	FULL THREAD PENETRATION	0.5"	6.0"
	3000 PSI MIN. CONCRETE	3.5"	4.5"	6.0"
3/8" DEWALT SCREW BOLT	GROUT-FILLED CONCRETE BLOCK*	2.5"	12.0"	6.0"
	1819 PSI MIN. CONCRETE	3.5"	3.75"	6.0"
3/8" DEWALT CONFLX	4510 PSI MIN. CONCRETE	3.5"	3.75"	6.0"
	3000 PSI MIN. CONCRETE	1.75"	3.0"	6.0"
1/4" DEWALT 304 SS TAPPER	3000 PSI MIN. CONCRETE	1.75"	3.0"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	3.0"	5.3"

## ANCHOR SCHEDULE: NON-END RETENTION INTERIOR MOUNT

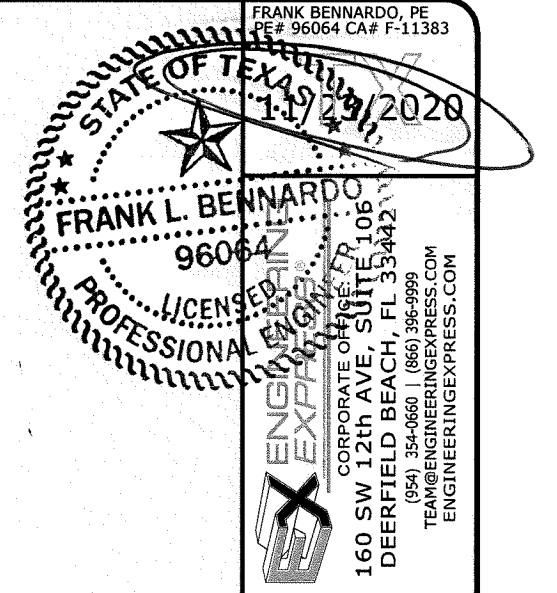
ANCHOR	SUBSTRATE	MINIMUM EMBEDMENT	MINIMUM EDGE DISTANCE	MAXIMUM SPACING (O.C.)
1/4" DEWALT ULTRACON	2700 PSI MIN. CONCRETE	1.75"	2.5"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	2.5"	5.5"
1/4" ITW SS TAPCON	3192 PSI MIN. CONCRETE	1.75"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	2.5"	4.6"
5/16" DEWALT ULTRACON	3500 PSI MIN. CONCRETE	2.0"	3.125"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	3.125"	6.0"
5/16" ITW TAPCON	2899 PSI MIN. CONCRETE	2.25"	3.125"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	4.0"	6.0"
	HOLLOW CONCRETE BLOCK	1.75"	4.0"	6.0"
1/4" DEWALT POWER-BOLT	3000 PSI MIN. CONCRETE	2.5"	3.0"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.5"	5.25"	6.0"
	HOLLOW CONCRETE BLOCK	1.5"	12.0"	6.0"
1/4" ALL-POINTS SOLID-SET	3000 PSI MIN. CONCRETE	0.875"	3.0"	6.0"
	HOLLOW CONCRETE BLOCK	0.875"	3.0"	6.0"
1/4" LAG SCREW	G=0.42 MIN. WOOD	1.5"	0.75"	5.2"
#14 WOOD SCREW	G=0.42 MIN. WOOD	1.5"	0.75"	5.0"
#14 410 SS SMS (OR 1/4-20 410 SS THRU-BOLT)	1/8" THICK MIN. 6063-T6 ALUMINUM	FULL THREAD PENETRATION	0.5"	6.0"
	3000 PSI MIN. CONCRETE	3.5"	4.5"	6.0"
3/8" DEWALT SCREW BOLT	GROUT-FILLED CONCRETE BLOCK*	2.5"	12.0"	6.0"
	1819 PSI MIN. CONCRETE	3.5"	3.75"	6.0"
3/8" DEWALT CONFLX	4510 PSI MIN. CONCRETE	3.5"	3.75"	6.0"
	3000 PSI MIN. CONCRETE	1.75"	3.0"	6.0"
1/4" DEWALT 304 SS TAPPER	3000 PSI MIN. CONCRETE	1.75"	3.0"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	3.0"	4.3"

## ANCHOR NOTES:

- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
- WHERE ANCHORS FASTEN TO NARROW FACE OF STUD FRAMING, ANCHOR SHALL BE LOCATED IN CENTER OF NOMINAL 2x (MIN) WOOD STUD (i.e. 3/4" EDGE DISTANCE IS ACCEPTABLE FOR ANCHORS TO WOOD FRAMING).
- MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR SCHEDULE. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
- ANCHOR SCHEDULE APPLIES TO ALL PRODUCTS CERTIFIED HEREIN, BUT ONLY PROVIDES MAXIMUM ALLOWABLE ANCHOR SPACING. MAXIMUM ALLOWABLE SPANS AND PRESSURES INDICATED IN SPAN SCHEDULE SHALL APPLY.
- WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT INTO PLYWOOD.
- WOOD BUCKS (BY OTHERS) SHALL BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE EXISTING STRUCTURE.
- MACHINE SCREWS SHALL HAVE MINIMUM OF 1/2" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFER HEAD ("SIDEWALK BOLT") U.N.O.
- SHEET METAL SCREWS SHALL BE INSTALLED WITH FULL ENGAGEMENT OF THREADS INTO METAL HOST STRUCTURE.
- DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE FOR USE.
- \* ANCHOR SHALL PENETRATE THROUGH FACE SHELL INTO GROUTED CELL.

## ANCHOR SCHEDULE: NON-END RETENTION BUILD-OUT MOUNT

ANCHOR	SUBSTRATE	MINIMUM EMBEDMENT	MINIMUM EDGE DISTANCE	MAXIMUM SPACING (O.C.)
1/4" DEWALT ULTRACON	2700 PSI MIN. CONCRETE	1.75"	2.5"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	2.5"	
1/4" ITW SS TAPCON	3192 PSI MIN. CONCRETE	1.75"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	2.5"	3.4"
5/16" DEWALT ULTRACON	3500 PSI MIN. CONCRETE	2.0"	3.125"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	2.5"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	3.125"	6.0"
5/16" ITW TAPCON	2899 PSI MIN. CONCRETE	2.25"	3.125"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.25"	4.0"	6.0"
	HOLLOW CONCRETE BLOCK	1.75"	4.0"	5.6"
1/4" DEWALT POWER-BOLT	3000 PSI MIN. CONCRETE	2.5"	3.0"	6.0"
	GROUT-FILLED CONCRETE BLOCK	2.5"	5.25"	6.0"
	HOLLOW CONCRETE BLOCK	1.5"	12.0"	6.0"
1/4" ALL-POINTS SOLID-SET	3000 PSI MIN. CONCRETE	0.875"	3.0"	6.0"
	HOLLOW CONCRETE BLOCK	0.875"	3.0"	6.0"
1/4" LAG SCREW	G=0.42 MIN. WOOD	1.5"	0.75"	6.0"
#14 WOOD SCREW	G=0.42 MIN. WOOD	1.5"	0.75"	6.0"
#14 410 SS SMS (OR 1/4-20 410 SS THRU-BOLT)	1/8" THICK MIN. 6063-T6 ALUMINUM	FULL THREAD PENETRATION	0.5"	6.0"
	3000 PSI MIN. CONCRETE	3.5"	4.5"	6.0"
3/8" DEWALT SCREW BOLT	GROUT-FILLED CONCRETE BLOCK*	2.5"	12.0"	6.0"
	1819 PSI MIN. CONCRETE	3.5"	3.75"	6.0"
3/8" DEWALT CONFLX	4510 PSI MIN. CONCRETE	3.5"	3.75"	6.0"
	3000 PSI MIN. CONCRETE	1.75"	3.0"	6.0"
1/4" DEWALT 304 SS TAPPER	3000 PSI MIN. CONCRETE	1.75"	3.0"	6.0"
	HOLLOW CONCRETE BLOCK	1.25"	3.0"	



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REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	11/03/10
2010 FBC	KL	FLB	2/14/12
2014 FBC	RWN	CSL	4/08/15
2017 FBC	RWN	FLB	8/07/17
2018 FBC	CCB	RWN	6/30/20

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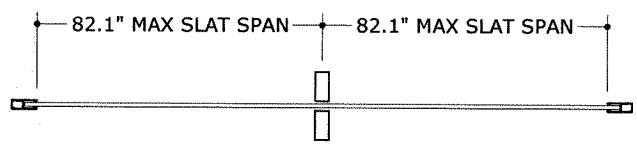
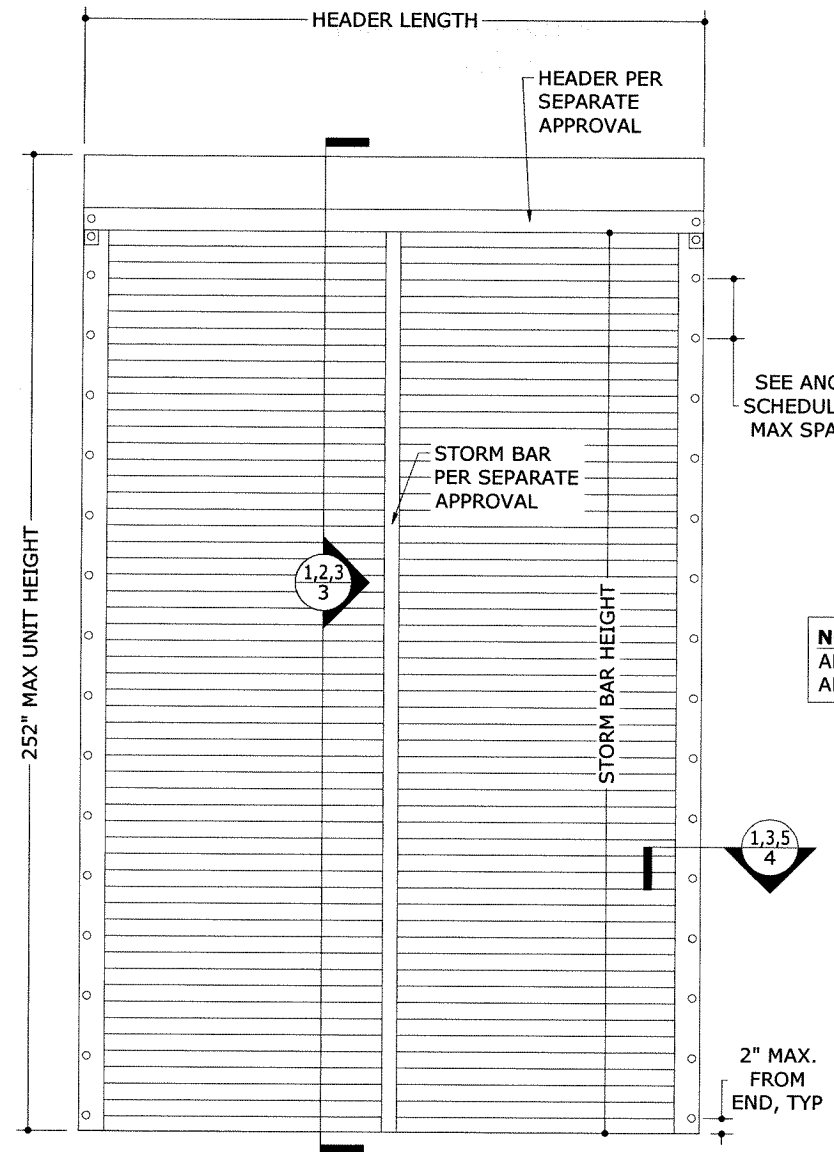






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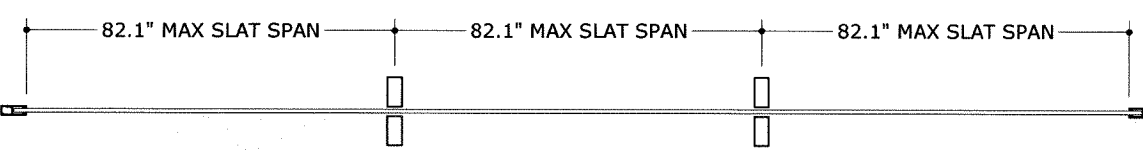
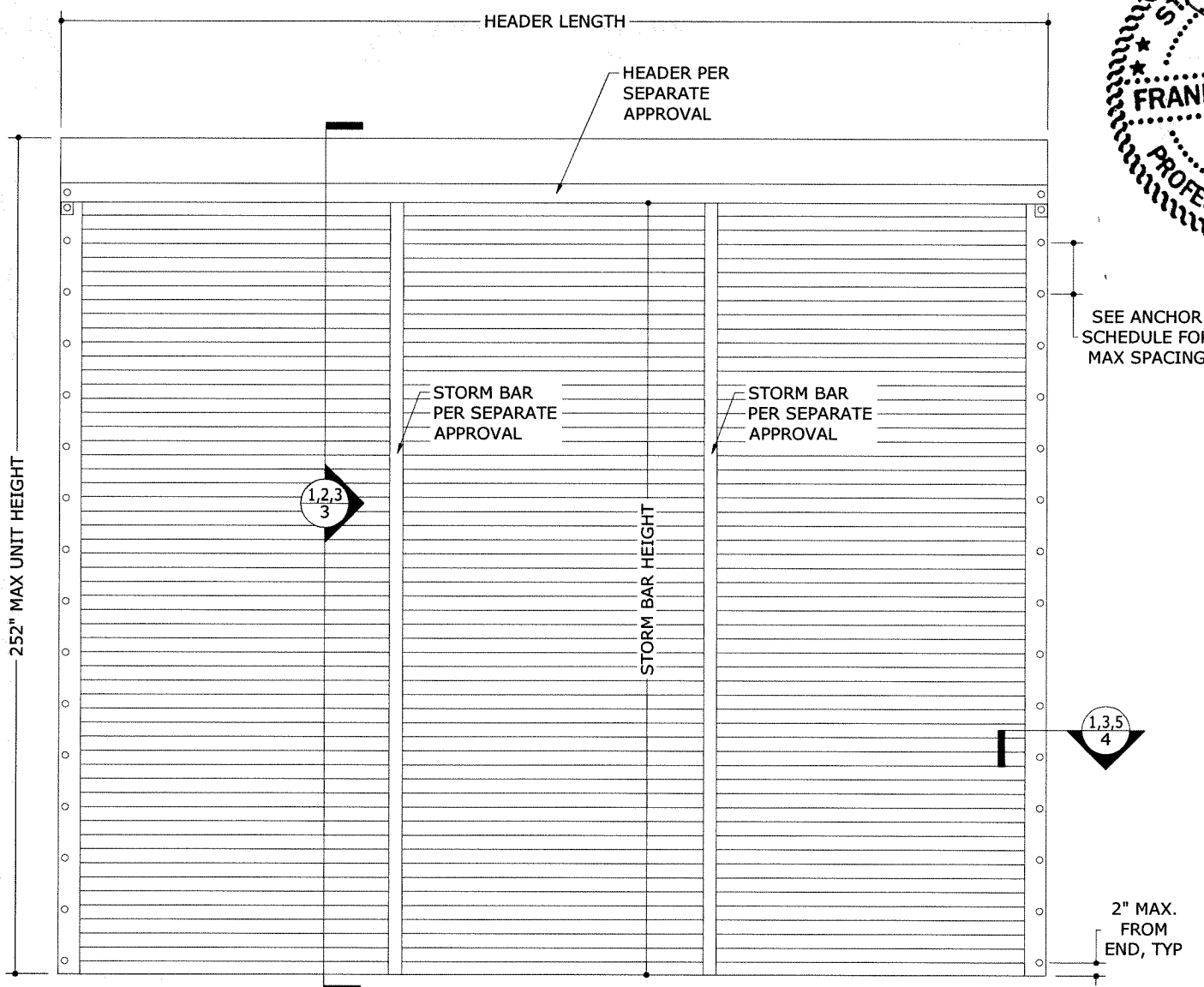
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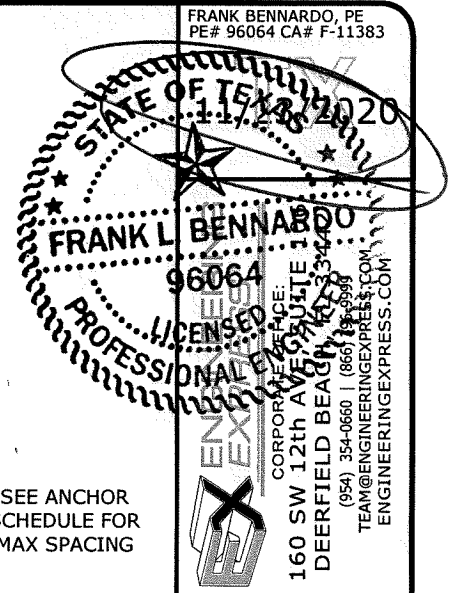
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**9** NON-END RETENTION SHUTTER WITH STORM BARS (DOUBLE-SPAN)  
N.T.S. EXTERIOR ELEV

**NOTE:** SEE SEPARATE APPROVAL FOR STORM BAR AND HEADER LIMITATIONS.

TABLE 5	
NON-END RETENTION WITH INTERIOR AND EXTERIOR STORM BARS	
SLAT SPAN	ALLOWABLE DESIGN PRESSURE
47.1"	+/- 120.0 PSF
50.0"	+/- 104.2 PSF
55.0"	+/- 82.0 PSF
60.0"	+/- 60.3 PSF
65.0"	+/- 45.5 PSF
70.0"	+/- 34.3 PSF
75.0"	+/- 26.3 PSF
80.0"	+/- 20.5 PSF
82.1"	+/- 18.6 PSF



**2**  
**9** NON-END RETENTION SHUTTER WITH STORM BARS (TRIPLE-SPAN)  
N.T.S. EXTERIOR ELEV



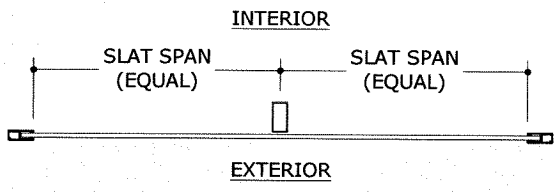
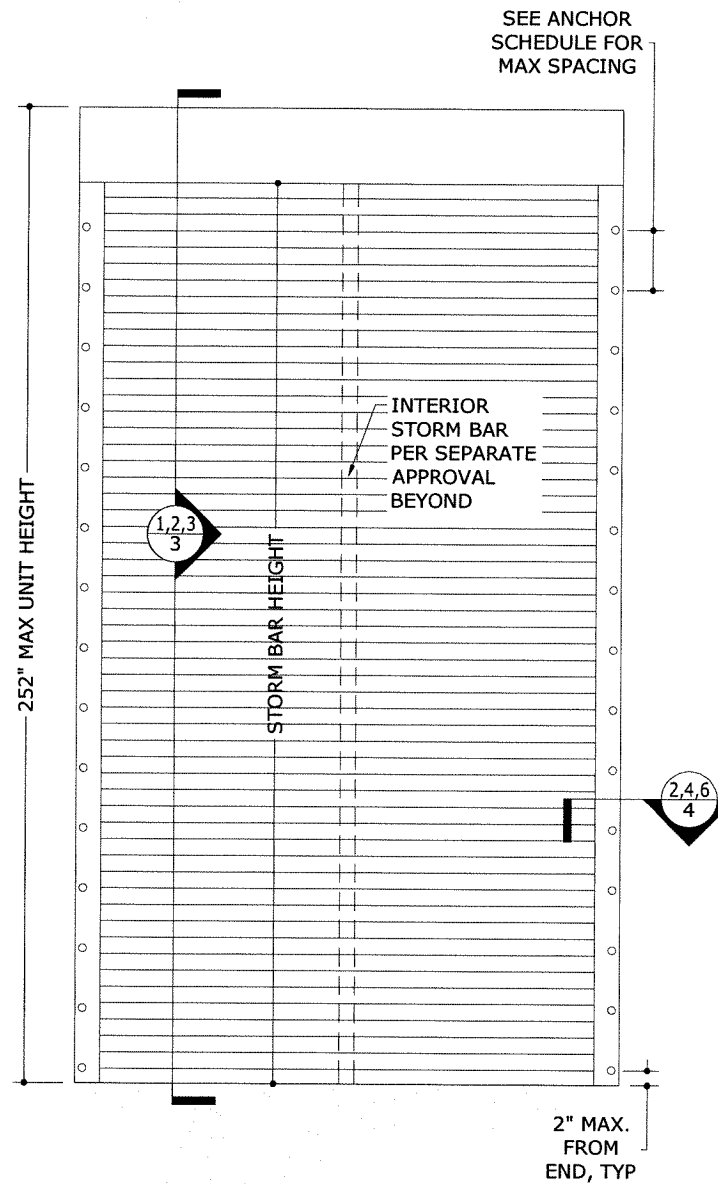
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RWN	CSL	4/08/15
RWN	FLB	8/07/17
CCB	RWN	6/30/20

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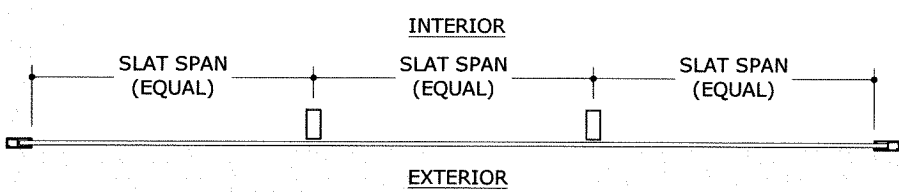
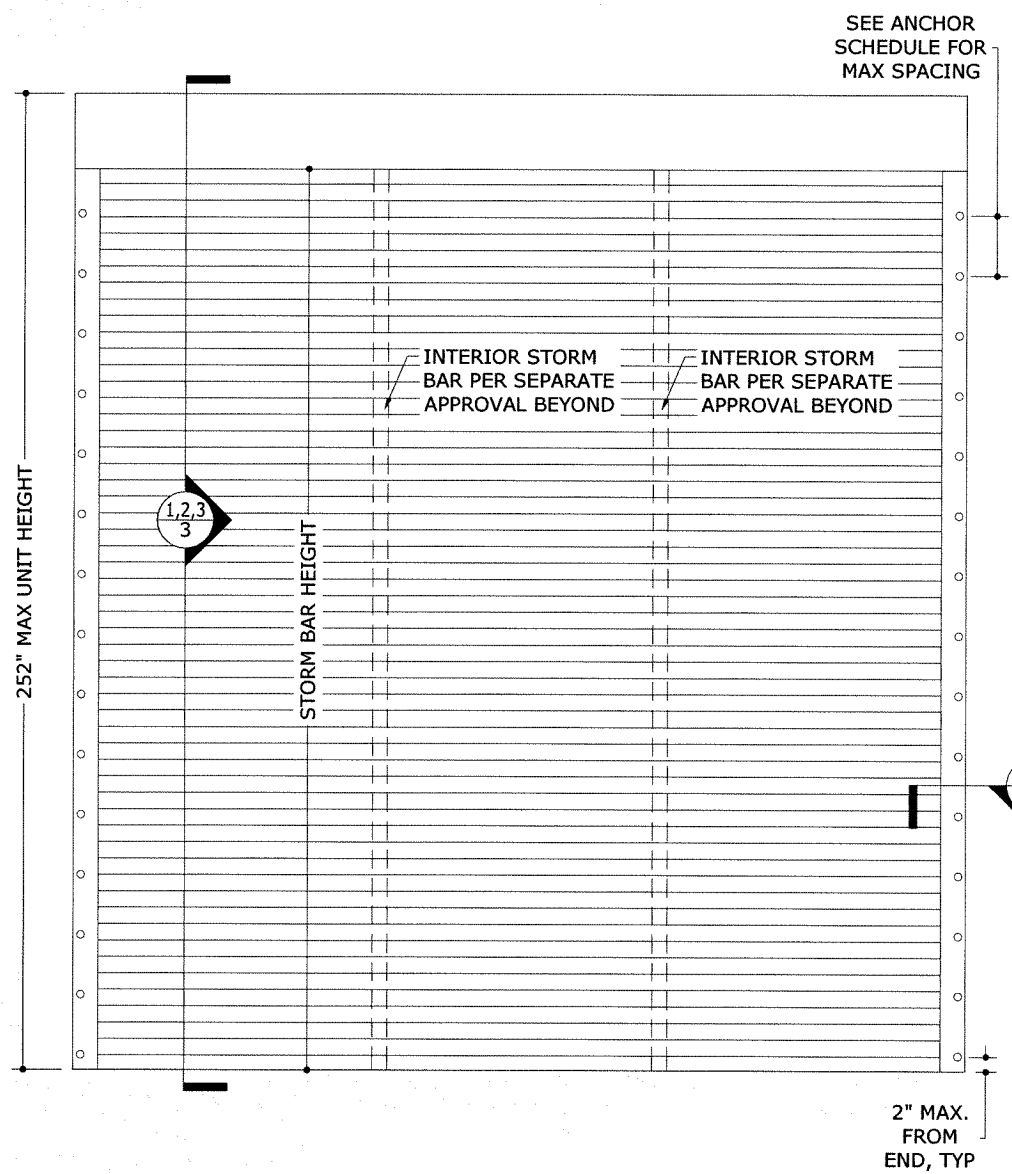


**1**  
**10** N.T.S. **END RETENTION SHUTTER WITH INTERIOR STORM BARS (DOUBLE-SPAN)** EXTERIOR ELEV

**TABLE 6**  
MINIMUM GLAZING SEPARATION  
END-RETENTION SHUTTER WITH INTERIOR STORM BARS

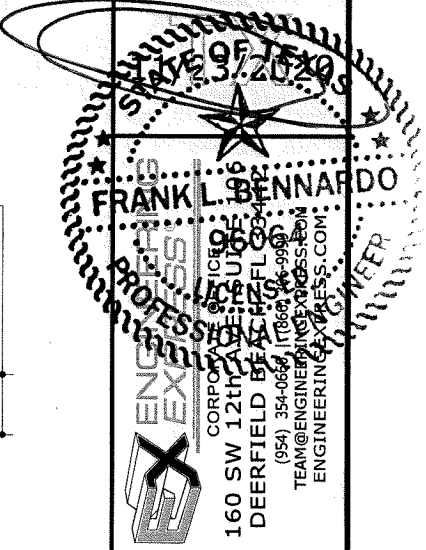
SLAT SPAN	SPAN TYPE	POSITIVE DESIGN PRESSURE	INSTALLATIONS ≤ 30' ABOVE GRADE	INSTALLATIONS > 30' ABOVE GRADE
48.5"	DOUBLE SPAN	+ 30 PSF	3.7"	3.7"
		+ 40 PSF	3.7"	3.7"
		+ 50 PSF	3.7"	3.7"
		+ 60 PSF	3.7"	3.7"
		+ 70 PSF	3.7"	3.7"
55.0"	DOUBLE SPAN	+ 30 PSF	3.9"	3.9"
		+ 40 PSF	3.9"	3.9"
		+ 50 PSF	3.9"	3.9"
		+ 60 PSF	3.9"	3.9"
		+ 70 PSF	3.9"	3.9"
73.0"	DOUBLE SPAN	+ 30 PSF	4.6"	4.3"
		+ 40 PSF	4.6"	4.3"
		+ 50 PSF	4.6"	4.4"
		+ 60 PSF	4.6"	4.6"
		+ 70 PSF	4.7"	4.7"
48.7"	TRIPLE SPAN	+ 30 PSF	3.2"	3.2"
		+ 40 PSF	3.2"	3.2"
		+ 50 PSF	3.2"	3.2"
		+ 60 PSF	3.2"	3.2"
		+ 70 PSF	3.2"	3.2"
64.7"	TRIPLE SPAN	+ 30 PSF	3.8"	3.5"
		+ 40 PSF	3.8"	3.5"
		+ 50 PSF	3.8"	3.5"
		+ 60 PSF	3.8"	3.7"
		+ 70 PSF	3.8"	3.8"

- TABLE 6 NOTES:**
- SLAT SPAN IS DEFINED 1/10 AND 2/10
  - SEPARATION FROM GLAZING IS NOT REQUIRED UNLESS LOCAL MUNICIPALITY ADOPTS ADDITIONAL CRITERIA.
  - 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.



**2**  
**10** N.T.S. **END RETENTION SHUTTER WITH INTERIOR STORM BARS (TRIPLE-SPAN)** EXTERIOR ELEV

FRANK BENNARDO, PE  
PE# 96064 CA# F-11383



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CCB	RWN	6/30/20

REMARKS  
INIT ISSUE  
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2014 FBC  
2017 FBC  
2018 FBC

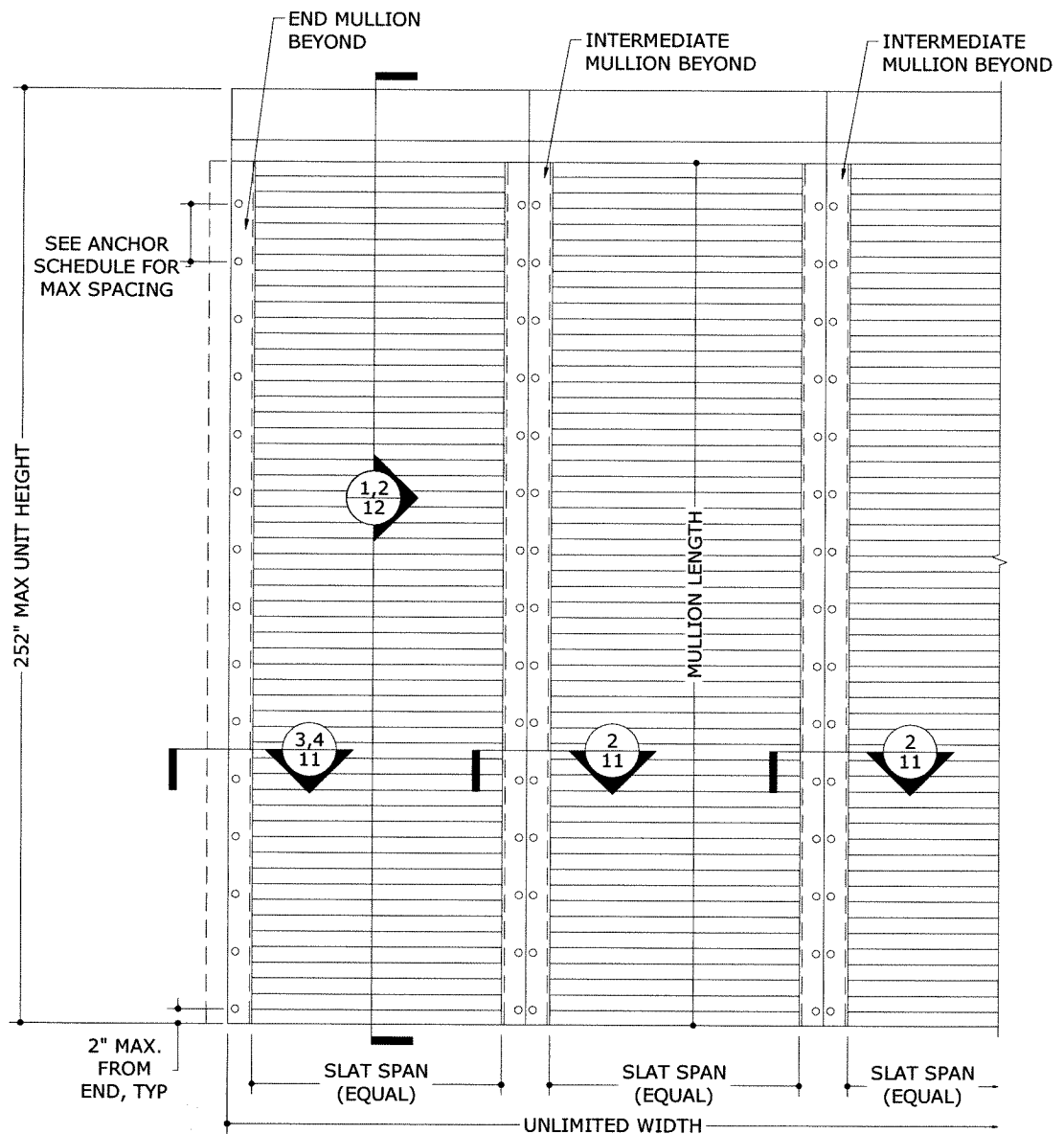
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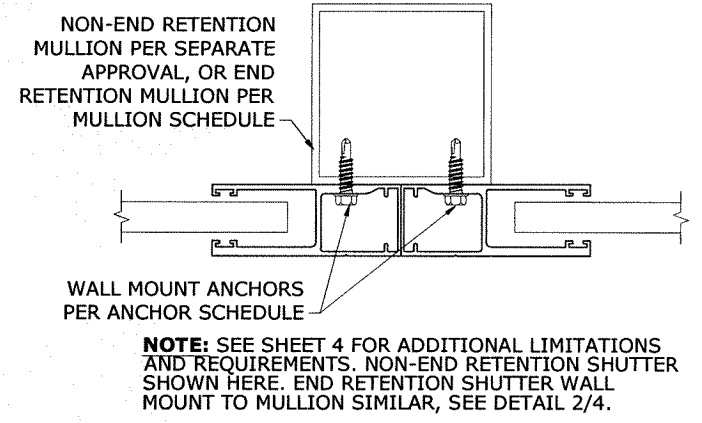
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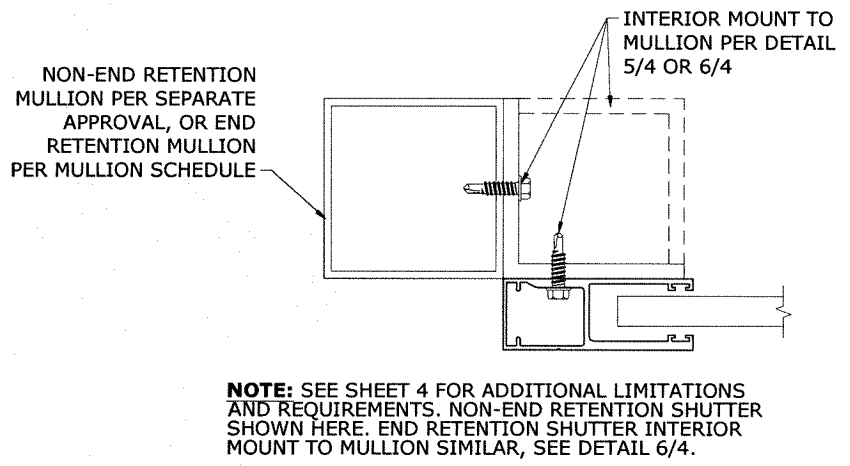


**1**  
11 N.T.S. **TYPICAL SHUTTER WITH MULLIONS**  
EXTERIOR ELEV

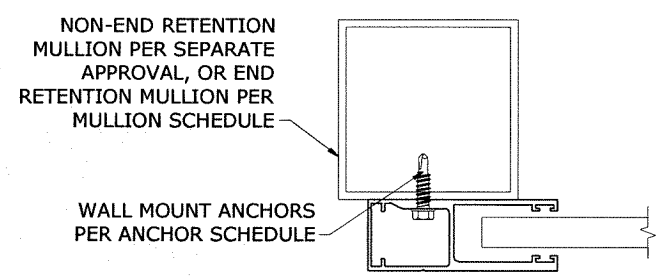
**NOTE:** NON-END RETENTION MULLIONS PER SEPARATE APPROVAL. END RETENTION MULLIONS PER MULLION SCHEDULES.



**2**  
11 N.T.S. **WALL MOUNT TO INTERMEDIATE MULLION**  
HORIZ SECTION



**3**  
11 N.T.S. **INTERIOR MOUNT TO END MULLION**  
HORIZ SECTION



**4**  
11 N.T.S. **WALL MOUNT TO END MULLION**  
HORIZ SECTION

FRANK BENNARDO, PE  
PE # 96064 CA# F-11383

STATE OF TEXAS  
11/23/2020

FRANK L. BENNARDO  
96064  
LICENSED PROFESSIONAL ENGINEER

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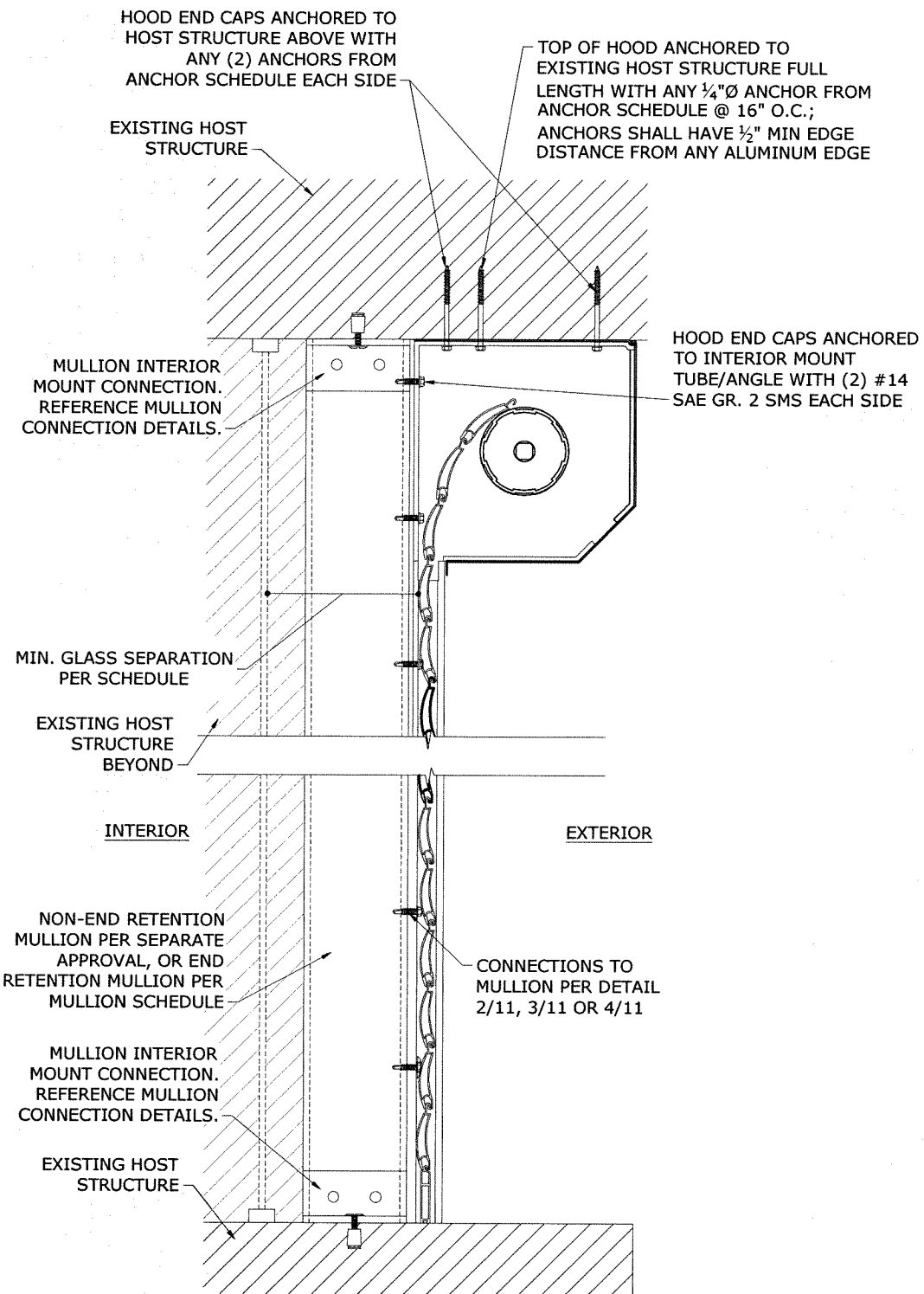
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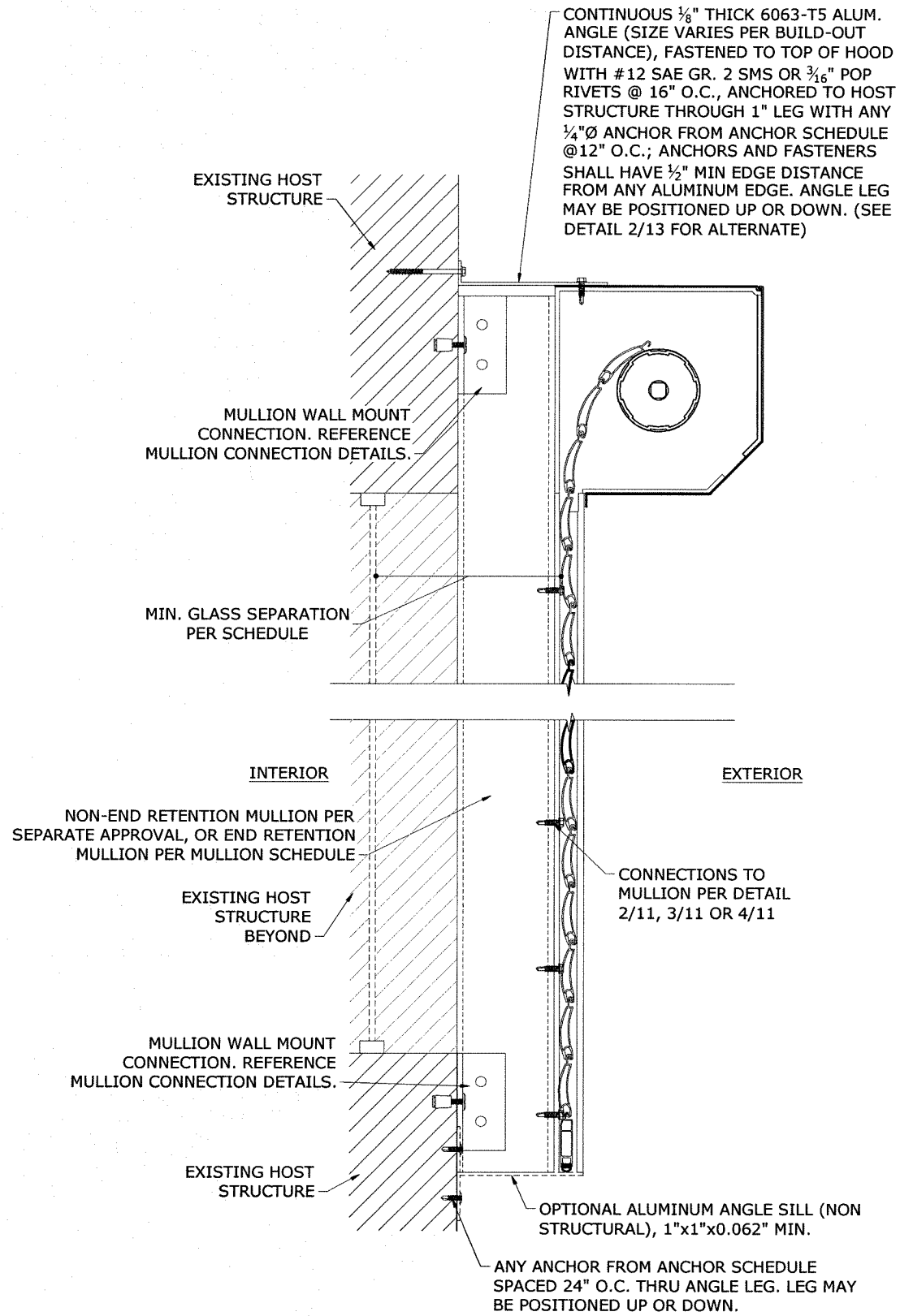
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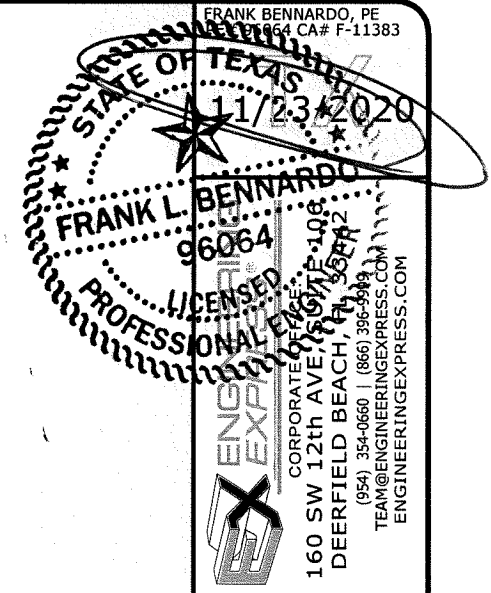
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**1** MULLION INTERIOR MOUNT  
12 N.T.S. VERT SECTION



**2** MULLION WALL MOUNT  
12 N.T.S. VERT SECTION



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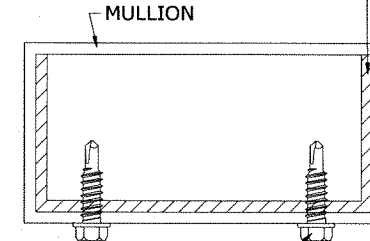
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# END RETENTION MULLION SCHEDULE: INTERMEDIATE MULLIONS

SLAT SPAN	DESIGN PRESSURE	3"x3"x0.125" W/ 2.75"x2.75"x1/8" STEEL REINF.*		3"x3"x0.25"		4"x4"x0.125" W/ 3.75"x3.75"x1/8" STEEL REINF.*		4"x4"x0.25"		4"x6"x0.25"		4"x8"x0.25"	
		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	MAX MULLION LENGTH	END REACTION Rt
120"	+/- 30 PSF	102.3"	1123.3 LB	110.9"	1217.0 LB	120.0"	1317.4 LB	120.0"	1317.4 LB	120.0"	1317.4 LB	120.0"	1317.4 LB
	+/- 35 PSF	93.1"	1356.4 LB	100.9"	1469.5 LB	120.0"	1747.9 LB	120.0"	1747.9 LB	120.0"	1747.9 LB	120.0"	1747.9 LB
	+/- 40 PSF	86.0"	1589.4 LB	93.2"	1722.0 LB	116.1"	2144.8 LB	120.0"	2217.3 LB	120.0"	2217.3 LB	120.0"	2217.3 LB
	+/- 45 PSF	80.3"	1823.5 LB	87.0"	1975.6 LB	108.4"	2460.7 LB	112.6"	2556.8 LB	120.0"	2724.7 LB	120.0"	2724.7 LB
	+/- 60 PSF	68.1"	2534.2 LB	73.8"	2745.6 LB	91.9"	3419.7 LB	95.5"	3553.3 LB	120.0"	4464.1 LB	120.0"	4464.1 LB
	+/- 70 PSF	62.5"	3015.4 LB	67.7"	3266.9 LB	84.3"	4067.3 LB	87.6"	4228.0 LB	117.9"	5690.6 LB	120.0"	5794.0 LB
140"	+/- 30 PSF	90.1"	1449.4 LB	97.6"	1570.4 LB	120.0"	1930.9 LB	120.0"	1930.9 LB	120.0"	1930.9 LB	120.0"	1930.9 LB
	+/- 35 PSF	83.1"	1704.8 LB	90.0"	1847.0 LB	112.1"	2300.5 LB	116.5"	2390.4 LB	120.0"	2463.0 LB	120.0"	2463.0 LB
	+/- 40 PSF	77.4"	1961.1 LB	83.9"	2124.7 LB	104.5"	2646.3 LB	108.6"	2749.7 LB	120.0"	3038.8 LB	120.0"	3038.8 LB
	+/- 45 PSF	72.8"	2218.9 LB	78.9"	2403.9 LB	98.2"	2994.2 LB	102.1"	3111.1 LB	120.0"	3657.3 LB	120.0"	3657.3 LB
	+/- 50 PSF	68.9"	2478.4 LB	74.6"	2685.2 LB	93.0"	3344.4 LB	96.6"	3475.1 LB	120.0"	4317.4 LB	120.0"	4317.4 LB
	+/- 70 PSF	56.0"	3435.0 LB	62.5"	3830.1 LB	74.8"	4583.2 LB	80.9"	4956.8 LB	108.8"	6671.4 LB	120.0"	7354.9 LB
160"	+/- 30 PSF	82.7"	1719.4 LB	89.6"	1862.8 LB	111.6"	2320.1 LB	116.0"	2410.7 LB	120.0"	2494.6 LB	120.0"	2494.6 LB
	+/- 35 PSF	76.6"	2003.2 LB	83.0"	2170.3 LB	103.4"	2703.2 LB	107.4"	2808.8 LB	120.0"	3137.3 LB	120.0"	3137.3 LB
	+/- 40 PSF	71.7"	2288.9 LB	77.7"	2479.8 LB	96.7"	3088.6 LB	100.5"	3209.3 LB	120.0"	3831.7 LB	120.0"	3831.7 LB
	+/- 45 PSF	67.6"	2576.7 LB	73.2"	2791.6 LB	91.2"	3477.0 LB	94.7"	3612.8 LB	120.0"	4576.7 LB	120.0"	4576.7 LB
	+/- 50 PSF	64.0"	2866.9 LB	69.4"	3106.0 LB	86.4"	3868.6 LB	89.8"	4019.8 LB	120.0"	5371.3 LB	120.0"	5371.3 LB
	+/- 70 PSF	57.0"	3376.1 LB	63.2"	3742.7 LB	76.1"	4504.6 LB	81.8"	4843.7 LB	110.1"	6519.2 LB	120.0"	7104.7 LB
180"	+/- 30 PSF	77.4"	1964.2 LB	83.8"	2128.0 LB	104.4"	2650.5 LB	108.5"	2754.0 LB	120.0"	3046.0 LB	120.0"	3046.0 LB
	+/- 35 PSF	71.8"	2280.1 LB	77.8"	2470.3 LB	96.9"	3076.8 LB	100.7"	3196.9 LB	120.0"	3809.6 LB	120.0"	3809.6 LB
	+/- 40 PSF	67.3"	2598.6 LB	72.9"	2815.4 LB	90.8"	3506.6 LB	94.3"	3643.6 LB	120.0"	4635.3 LB	120.0"	4635.3 LB
	+/- 45 PSF	63.5"	2920.2 LB	68.8"	3163.8 LB	85.6"	3940.5 LB	89.0"	4094.5 LB	119.8"	5510.8 LB	120.0"	5521.7 LB
	+/- 50 PSF	59.8"	3221.2 LB	65.2"	3515.5 LB	79.7"	4297.9 LB	84.4"	4549.7 LB	113.6"	6123.5 LB	120.0"	6467.7 LB
	+/- 70 PSF	52.0"	3699.9 LB	59.5"	4228.8 LB	69.4"	4936.6 LB	77.0"	5472.7 LB	103.6"	7365.9 LB	120.0"	8532.7 LB
200"	+/- 30 PSF	73.2"	2197.5 LB	79.3"	2380.8 LB	98.7"	2965.3 LB	102.6"	3081.1 LB	120.0"	3604.5 LB	120.0"	3604.5 LB
	+/- 35 PSF	67.9"	2547.9 LB	73.6"	2760.4 LB	91.7"	3438.2 LB	95.3"	3572.5 LB	120.0"	4500.3 LB	120.0"	4500.3 LB
	+/- 40 PSF	63.7"	2902.0 LB	69.0"	3144.1 LB	85.9"	3916.1 LB	89.3"	4069.0 LB	120.0"	5470.4 LB	120.0"	5470.4 LB
	+/- 45 PSF	59.6"	3232.5 LB	65.1"	3532.0 LB	79.5"	4313.1 LB	84.2"	4571.0 LB	113.3"	6152.3 LB	120.0"	6513.3 LB
	+/- 50 PSF	55.0"	3498.1 LB	61.7"	3924.1 LB	73.4"	4667.4 LB	79.9"	5078.5 LB	107.5"	6835.3 LB	120.0"	7627.5 LB
	+/- 70 PSF	47.9"	4017.9 LB	54.9"	4602.9 LB	63.9"	5361.0 LB	72.8"	6108.9 LB	98.0"	8222.1 LB	120.0"	10062.9 LB
220"	+/- 30 PSF	69.6"	2426.0 LB	75.4"	2628.4 LB	94.0"	3273.7 LB	97.6"	3401.6 LB	120.0"	4181.2 LB	120.0"	4181.2 LB
	+/- 35 PSF	64.7"	2813.1 LB	70.1"	3047.8 LB	87.3"	3796.1 LB	90.7"	3944.4 LB	120.0"	5220.9 LB	120.0"	5220.9 LB
	+/- 40 PSF	60.3"	3191.5 LB	65.6"	3472.4 LB	80.5"	4258.4 LB	84.9"	4493.9 LB	114.3"	6048.5 LB	120.0"	6349.1 LB
	+/- 45 PSF	55.3"	3483.5 LB	61.9"	3902.3 LB	73.7"	4647.9 LB	80.1"	5050.3 LB	107.8"	6797.3 LB	120.0"	7564.0 LB
	+/- 50 PSF	51.1"	3770.9 LB	58.5"	4319.9 LB	68.1"	5031.4 LB	76.0"	5613.3 LB	102.3"	7555.1 LB	120.0"	8863.5 LB
	+/- 70 PSF	44.4"	4334.0 LB	50.9"	4965.0 LB	59.3"	5782.7 LB	68.3"	6665.7 LB	91.3"	8910.0 LB	112.3"	10961.1 LB
240"	+/- 30 PSF	66.6"	2653.5 LB	72.1"	2874.9 LB	89.8"	3580.7 LB	93.3"	3720.6 LB	120.0"	4783.0 LB	120.0"	4783.0 LB
	+/- 35 PSF	61.8"	3079.3 LB	67.0"	3336.1 LB	82.9"	4132.4 LB	86.7"	4317.5 LB	116.6"	5811.0 LB	120.0"	5979.0 LB
	+/- 40 PSF	56.3"	3417.4 LB	62.7"	3803.8 LB	75.2"	4559.7 LB	81.2"	4922.8 LB	109.2"	6625.8 LB	120.0"	7279.5 LB
	+/- 45 PSF	51.6"	3732.1 LB	59.1"	4275.5 LB	68.8"	4979.7 LB	76.5"	5536.5 LB	103.0"	7451.7 LB	120.0"	8682.2 LB
	+/- 50 PSF	47.6"	4042.0 LB	54.6"	4630.6 LB	63.5"	5393.3 LB	72.6"	6158.0 LB	97.7"	8288.3 LB	120.0"	10184.6 LB
	+/- 70 PSF	40.4"	4740.0 LB	47.1"	5388.5 LB	54.4"	6397.4 LB	63.9"	8041.8 LB	81.2"	11188.8 LB	120.0"	14188.8 LB
250"	+/- 30 PSF	65.5"	2740.0 LB	71.0"	2968.5 LB	88.4"	3697.4 LB	91.9"	3841.8 LB	120.0"	5018.6 LB	120.0"	5018.6 LB
	+/- 35 PSF	60.7"	3171.7 LB	65.9"	3443.7 LB	81.0"	4231.9 LB	85.3"	4456.7 LB	114.8"	5998.4 LB	120.0"	6270.5 LB
	+/- 40 PSF	55.0"	3499.1 LB	61.7"	3925.7 LB	73.4"	4668.8 LB	79.9"	5080.5 LB	107.5"	6838.0 LB	120.0"	7632.0 LB
	+/- 45 PSF	50.4"	3821.0 LB	57.7"	4377.3 LB	67.2"	5098.3 LB	75.3"	5713.0 LB	101.4"	7689.3 LB	120.0"	9100.7 LB
+/- 50 PSF	46.5"	4138.2 LB	53.3"	4740.6 LB	62.1"	5521.4 LB	71.4"	6353.8 LB	95.6"	8507.3 LB	117.7"	10465.8 LB	

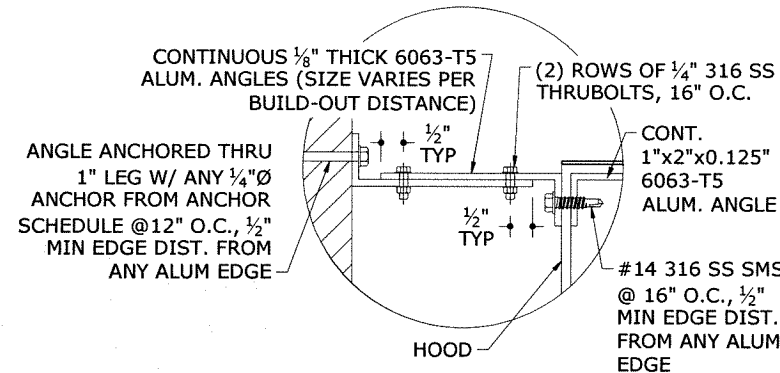
**\*NOTE:** STEEL REINFORCEMENT LENGTH SHALL BE A MINIMUM OF 90% THE MULLION LENGTH, LOCATED AT THE CENTER OF THE MULLION AND FASTENED IN PLACE WITH #14 316 STAINLESS STEEL SMS OR SDS AT 12" O.C. MAX STAGGERED ALONG THE FULL REINFORCEMENT LENGTH. (REFERENCE STEEL REINFORCEMENT DETAIL 1/13)

STEEL REINFORCEMENT, 90% OF THE MULLION LENGTH, MINIMUM. LOCATED AT CENTER OF MULLION.



#14 316 SS SMS OR SDS AT 12" O.C. MAX STAGGERED FOR FULL LENGTH OF REINFORCEMENT

1 TYPICAL REINFORCEMENT SECTION



2 ALTERNATE BUILD-OUT HOOD CONNECTION SECTION

## END RETENTION MULLION SCHEDULE NOTES:

- PRESSURES SHOWN IN "END RETENTION MULLION SCHEDULE" ARE MAXIMUM ALLOWABLE MULLION LENGTHS AT EACH RESPECTIVE SLAT SPAN AND DESIGN PRESSURE.
- "END RETENTION MULLION SCHEDULES" ARE APPLICABLE TO ALL END RETENTION MULLIONS.
- "INTERMEDIATE MULLIONS" ARE AS DEFINED IN ELEVATION 1/11.
- SEE BILL OF MATERIALS FOR MULLION AND REINFORCEMENT MATERIALS.
- 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 SPAN. CHOOSE MOUNTING CONNECTIONS (PER APPLICABLE CONNECTION DETAILS HEREIN) THAT PROVIDES "CONNECTION CAPACITY" GREATER THAN OR EQUAL TO "END REACTIONS" GIVEN ABOVE.
- THIS SCHEDULE MAY BE USED FOR ALL MOUNTING CONDITIONS LISTED HEREIN.
- DENOTES CONDITIONS NOT APPROVED FOR USE.

FRANK BENNARDO, PE  
# 96064 CA# F-11383  
11/23/2020  
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400 WEST MCNAB ROAD  
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DRWN	CHKD	DATE
KL	FLB	11/03/10
KL	FLB	2/14/12
RW	CSL	4/08/15
RW	FLB	8/07/17
CCB	RWN	6/30/20

REMARKS  
INIT ISSUE  
2010 FBC  
2014 FBC  
2017 FBC  
2018 BC

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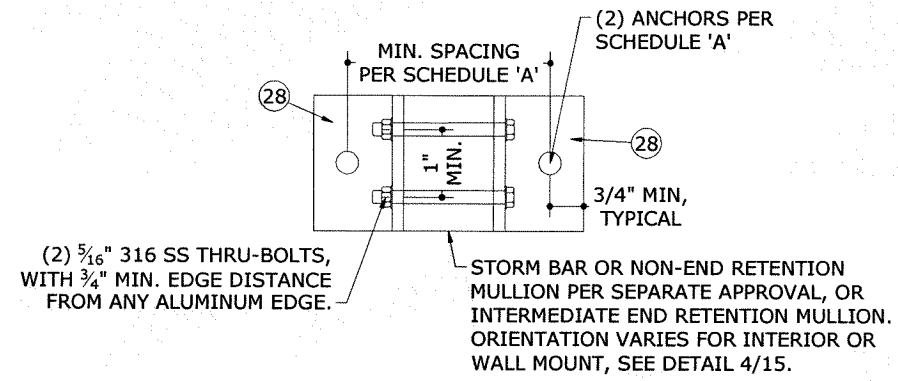
# STORM BAR, NON-END RETENTION MULLION, AND INTERMEDIATE END RETENTION MULLION CONNECTION DETAILS

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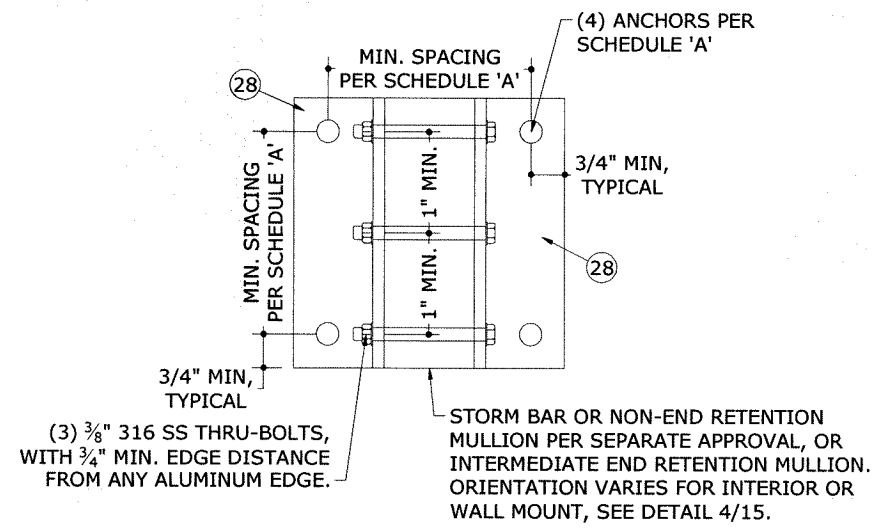
FRANK BENNARDO, PE  
PE # 96064 CA# F-11383

STATE OF TEXAS  
2/23/2020

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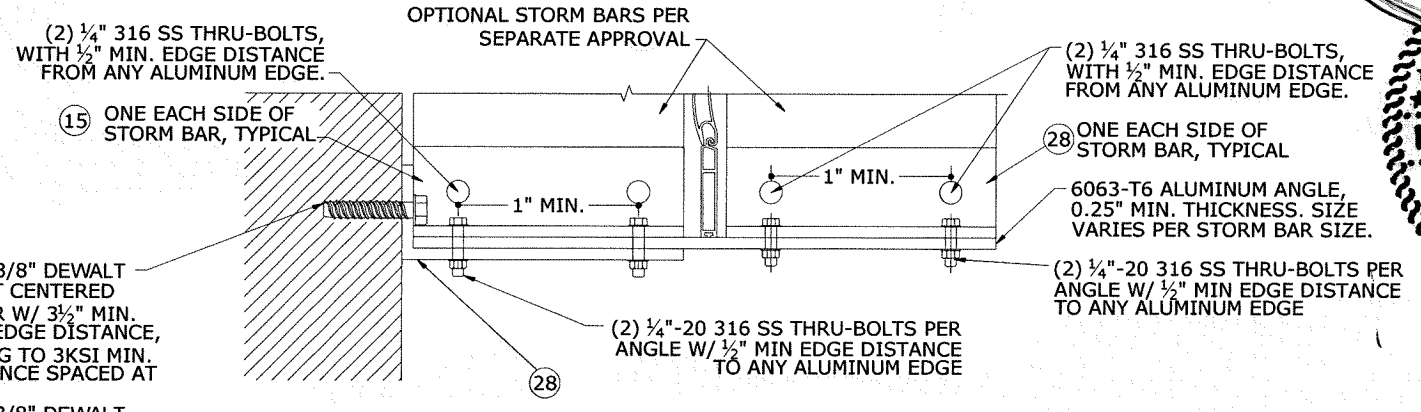


**1** INTERIOR OR WALL MOUNT  
15 N.T.S.



**2** INTERIOR OR WALL MOUNT  
15 N.T.S.

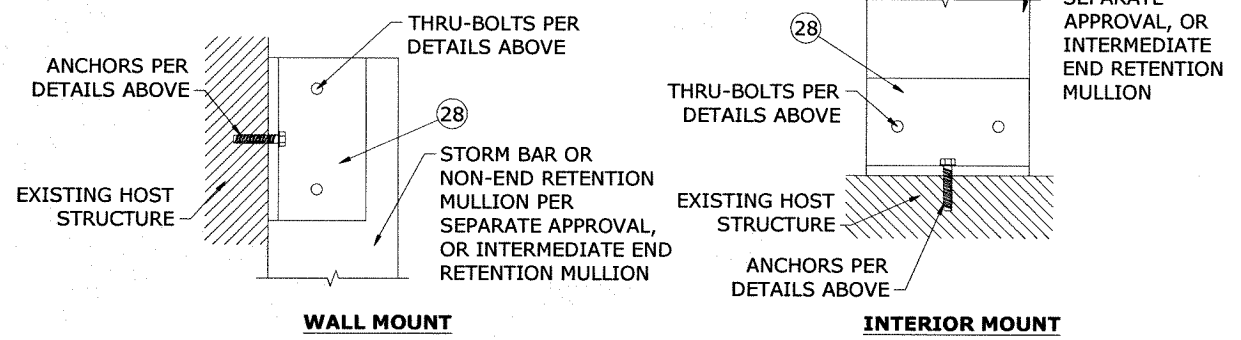
- CLUSTER OF (4) 3/8" DEWALT SCREW BOLTS AT CENTERED EACH STORM BAR W/ 3 1/2" MIN. EMBED, 3" MIN. EDGE DISTANCE, AND 4 1/2" SPACING TO 3KSI MIN. CONCRETE. BALANCE SPACED AT 18" O.C. MAX
- CLUSTER OF (3) 3/8" DEWALT SCREW BOLTS AT CENTERED EACH STORM BAR W/ 3 1/2" MIN. EMBED, 12" MIN. EDGE DISTANCE, AND 6" SPACING TO GROUT-FILLED CONCRETE BLOCK\*. BALANCE SPACED AT 18" O.C. MAX
- CLUSTER OF (4) 5/16" LAG SCREWS AT CENTERED EACH STORM BAR W/ 2" MIN. THREAD PENETRATION, 1-1/4" MIN. EDGE DISTANCE, AND 2" SPACING TO G=0.42 MIN. WOOD. BALANCE SPACED AT 18" O.C. MAX



**3** STORM BAR BUILD-OUT MOUNT  
15 N.T.S.

CONNECTION CAPACITY: 2276 LB

VERT SECTION



**4** MOUNTING CONDITIONS  
15 N.T.S.

## SCHEDULE 'A'

ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	MOUNTING CONDITION	CONNECTION CAPACITY
3/8" DEWALT SCREW BOLTS W/ 3-1/2" EMBED TO 3KSI MIN. CONCRETE	4.5"	4.5"	1/13	WALL MOUNT	4332 LB
				INTERIOR MOUNT	3065 LB
3/8" POWERS STEEL DROPIN W/ 1-9/16" EMBED TO 3KSI MIN. CONCRETE	4.5"	5.25"	1/13	WALL MOUNT	8820 LB
				INTERIOR MOUNT	6130 LB
3/8" DEWALT SCREW BOLTS W/ 3-1/2" EMBED TO GROUT-FILLED CONCRETE BLOCK*	6.0"	12.0"	1/13	WALL MOUNT	1590 LB
				INTERIOR MOUNT	2290 LB
5/16" ITW TAPCON XL OR DEWALT ULTRACON W/ 2-1/4" MIN. EMBED TO 3.5KSI MIN. CONCRETE	5.0"	3.125"	2/13	WALL MOUNT	3180 LB
				INTERIOR MOUNT	4580 LB
5/16" ITW TAPCON XL OR DEWALT ULTRACON W/ 2-1/4" MIN. EMBED TO GROUT-FILLED CONCRETE BLOCK	5.0"	3.125"	1/13	WALL MOUNT	2580 LB
				INTERIOR MOUNT	2200 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	2/13	WALL MOUNT	5160 LB
				INTERIOR MOUNT	4400 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	1/13	WALL MOUNT	1576 LB
				INTERIOR MOUNT	1702 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	2/13	WALL MOUNT	3152 LB
				INTERIOR MOUNT	3404 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	1/13	WALL MOUNT	584 LB
				INTERIOR MOUNT	744 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	2/13	WALL MOUNT	1168 LB
				INTERIOR MOUNT	1488 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	1/13	WALL MOUNT	1310 LB
				INTERIOR MOUNT	302 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	2/13	WALL MOUNT	2620 LB
				INTERIOR MOUNT	604 LB

## ANCHOR NOTES:

1. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
2. MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR SCHEDULE. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
3. ANCHOR SCHEDULE APPLIES TO ALL PRODUCTS CERTIFIED HEREIN.
4. WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT INTO PLYWOOD.
5. MACHINE SCREWS SHALL HAVE MINIMUM OF 5/8" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFER HEAD ("SIDEWALK BOLT") U.N.O.
6. \* ANCHOR SHALL PENETRATE THROUGH FACE SHELL INTO GROUTED CELL.

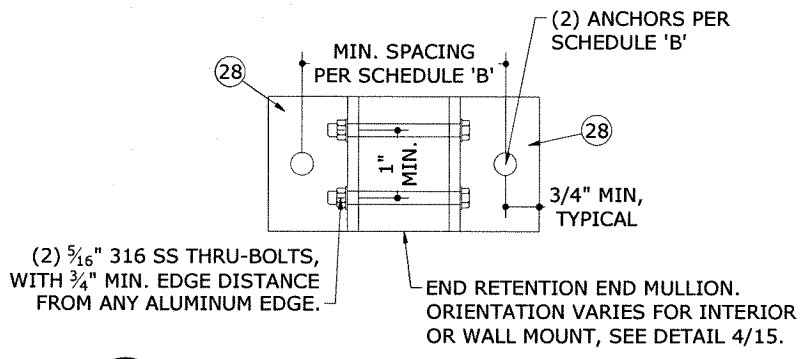
**Town & Country**  
INDUSTRIES  
Wholesale Aluminum and Building Products  
A Division of ABC Supply Co., Inc.

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

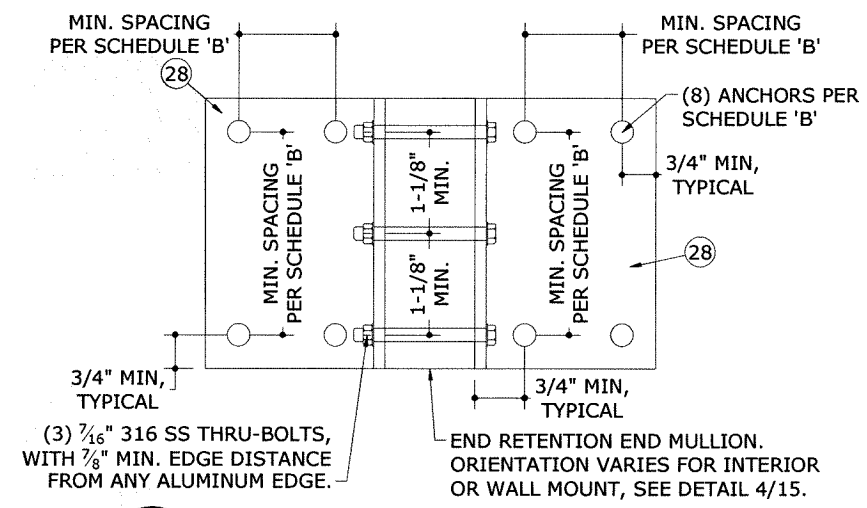
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KL	FLB	11/03/10
KL	FLB	2/14/12
RWN	CSL	4/08/15
RWN	FLB	8/07/17
CCB	RWN	6/30/20

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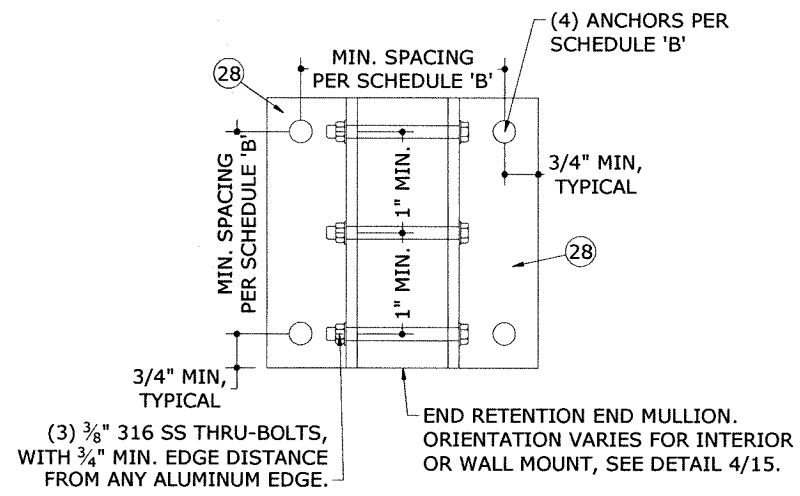
# END RETENTION END MULLION CONNECTION DETAILS



**1**  
**16** INTERIOR OR WALL MOUNT  
N.T.S.



**3**  
**16** INTERIOR OR WALL MOUNT  
N.T.S.



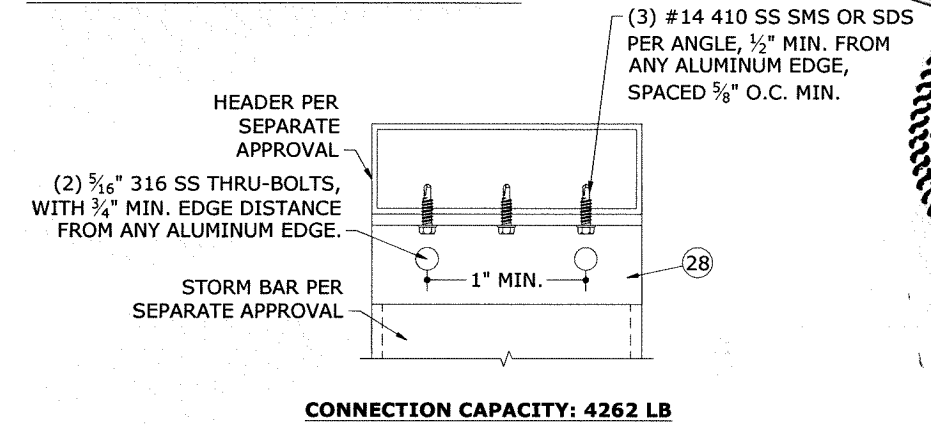
**2**  
**16** INTERIOR OR WALL MOUNT  
N.T.S.

## SCHEDULE 'B'

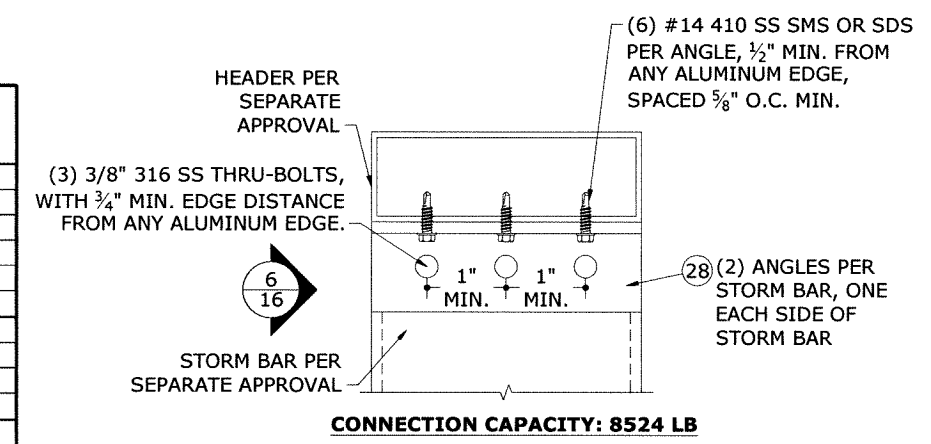
ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	CONNECTION DETAIL	CONNECTION CAPACITY	
				Tcap	Vcap
3/8" DEWALT SCREW BOLTS W/ 3-1/2" EMBED TO 3KSI MIN. CONCRETE	4.5"	4.5"	1/16	4410 LB	3065 LB
			2/16	8820 LB	6130 LB
	2.5"	4.5"	3/16	11819 LB	10176 LB
			3/16	1590 LB	2290 LB
3/8" DEWALT STEEL DROPIN W/ 1-9/16" EMBED TO 3KSI MIN. CONCRETE	4.5"	5.25"	1/16	2290 LB	3180 LB
			2/16	4580 LB	3689 LB
	2.5"	5.25"	3/16	3689 LB	5313 LB
			3/16	2580 LB	2200 LB
3/8" DEWALT SCREW BOLTS W/ 3-1/2" EMBED TO GROUT-FILLED CONCRETE BLOCK*	6.0"	12.0"	1/16	2580 LB	2200 LB
			2/16	5160 LB	4400 LB
	5.0"	3.125"	1/16	1576 LB	1702 LB
			2/16	3152 LB	3404 LB
5/16" ITW TAPCON XL OR DEWALT ULTRACON W/ 2-1/4" MIN. EMBED TO 3.5KSI MIN. CONCRETE	5.0"	3.125"	1/16	584 LB	744 LB
			2/16	1168 LB	1488 LB
	2.0"	1.25"	1/16	1310 LB	302 LB
			2/16	2620 LB	604 LB

- SCHEDULE 'B' NOTES:**
- FOR INTERIOR MOUNT CONDITIONS WITH END RETENTION END MULLIONS, 'Rsum' VALUES IN MULLION SCHEDULE SHALL NOT EXCEED MAX 'Vcap' VALUES NOTED IN SCHEDULE 'B'.
  - FOR WALL MOUNT CONDITIONS WITH END RETENTION END MULLIONS,  $R_v/V_{cap} + R_t/T_{cap}$  SHALL BE LESS THAN OR EQUAL TO 1.0, WHERE 'Rv' AND 'Rt' ARE PER MULLION SCHEDULES, AND 'Tcap' AND 'Vcap' ARE PER SCHEDULE 'B'.
  - \* ANCHOR SHALL PENETRATE THROUGH FACE SHELL INTO GROUTED CELL.

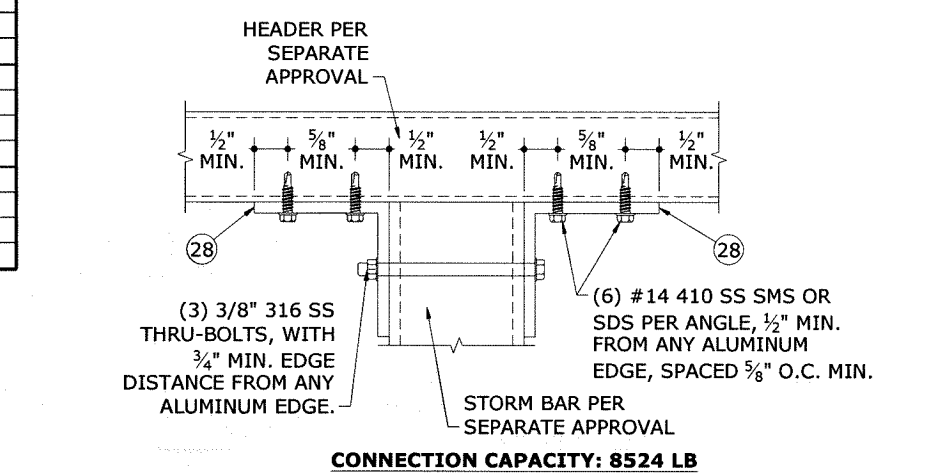
# STORM BAR TO HEADER CONNECTION DETAILS



**4**  
**16** STORM BAR TO HEADER  
N.T.S. VERT SECTION

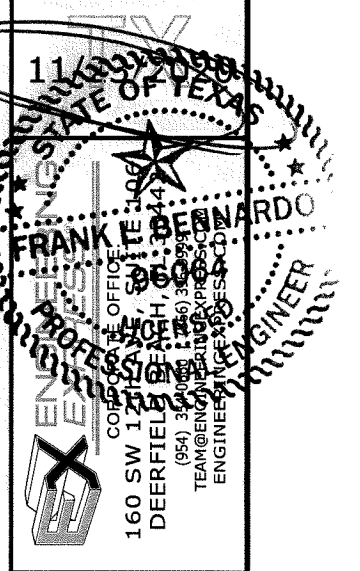


**5**  
**16** STORM BAR TO HEADER  
N.T.S. VERT SECTION



**6**  
**16** STORM BAR TO HEADER  
N.T.S. VERT SECTION

FRANK BENNARDO, PE  
PE# 96064 CA# F-11383



**Town & Country INDUSTRIES**  
Wholesale Aluminum and Building Products  
A Division of ABC Supply Co., Inc.  
400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

DRWN	CHKD	DATE
KL	FLB	11/03/10
KL	FLB	2/14/12
RWN	CSL	4/08/15
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CCB	RWN	6/30/20

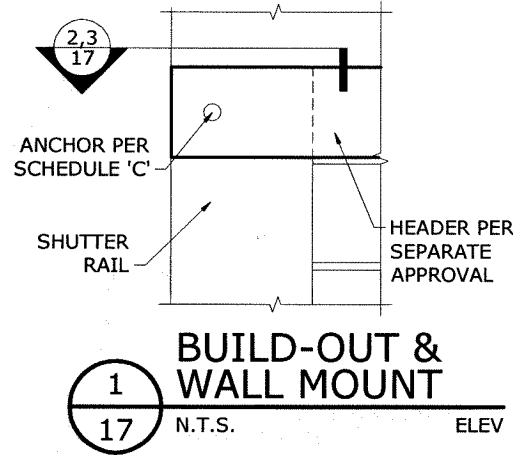
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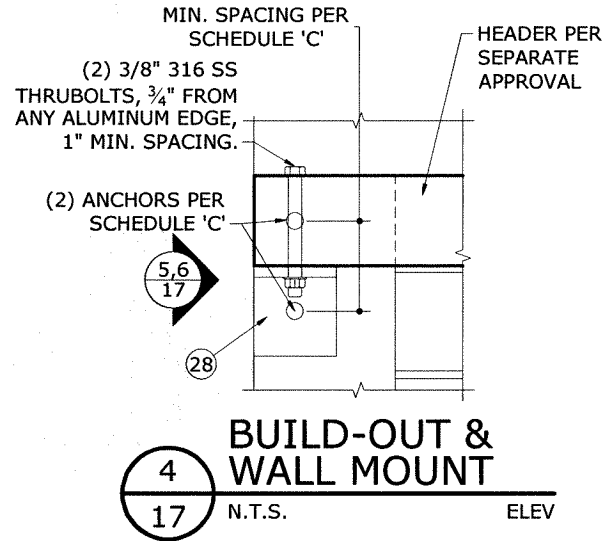


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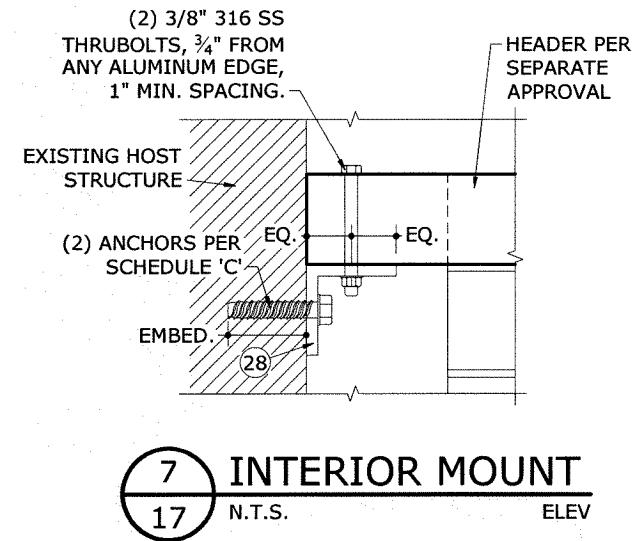
# HEADER CONNECTION DETAILS



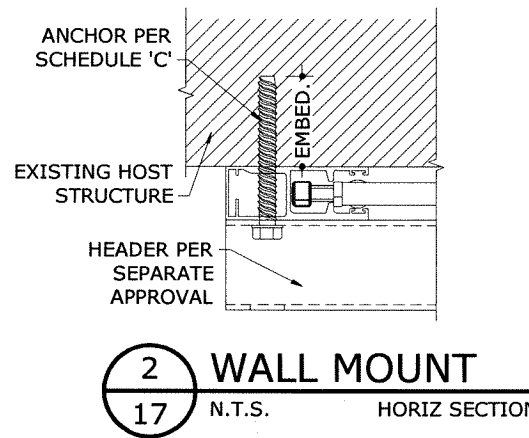
**1**  
17 N.T.S. ELEV



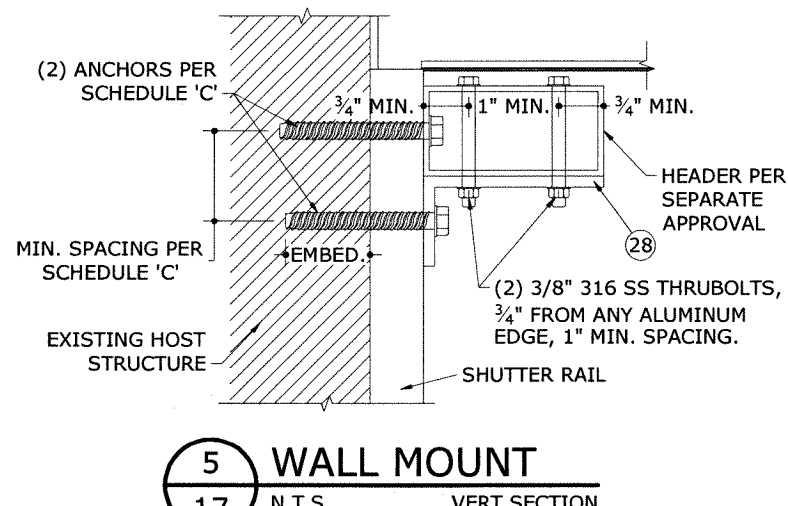
**4**  
17 N.T.S. ELEV



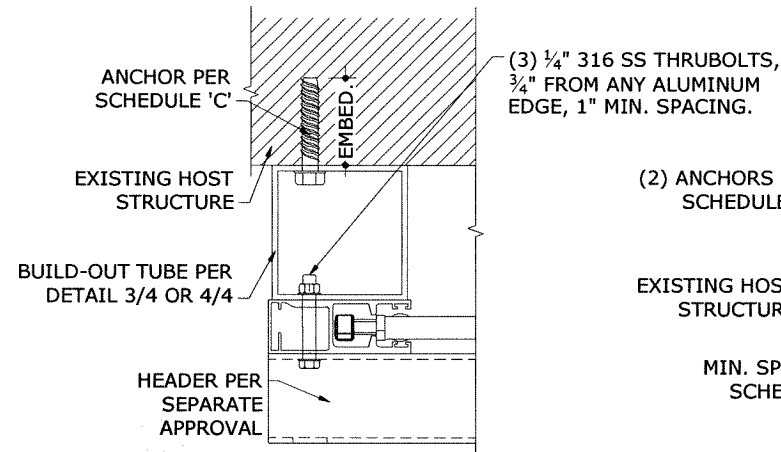
**7**  
17 N.T.S. ELEV



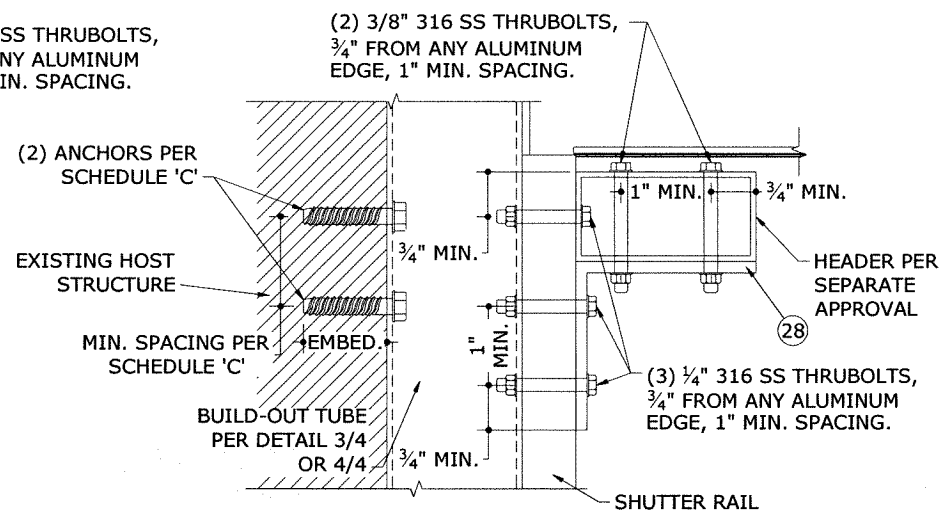
**2**  
17 N.T.S. HORIZ SECTION



**5**  
17 N.T.S. VERT SECTION



**3**  
17 N.T.S. HORIZ SECTION



**6**  
17 N.T.S. VERT SECTION

## SCHEDULE 'C'

ANCHOR TYPE	MINIMUM SPACING	MINIMUM EDGE DISTANCE	MOUNTING CONDITION	NUMBER OF ANCHORS	CONNECTION CAPACITY
3/8" DEWALT SCREW BOLTS W/ 3-1/2" EMBED TO 3KSI MIN. CONCRETE	4.5"	4.5"	BUILD-OUT OR WALL MOUNT	1	2205 LB
			INTERIOR MOUNT	2	3093 LB
	2.5"	4.5"	BUILD-OUT OR WALL MOUNT	1	1533 LB
			INTERIOR MOUNT	2	3065 LB
3/8" DEWALT SCREW BOLTS W/ 3-1/2" EMBED TO GROUT-FILLED CONCRETE BLOCK*	6.0"	12.0"	BUILD-OUT OR WALL MOUNT	1	1477 LB
			INTERIOR MOUNT	2	2955 LB
	2.5"	4.5"	BUILD-OUT OR WALL MOUNT	1	1272 LB
			INTERIOR MOUNT	2	2544 LB
3/8" DEWALT STEEL DROPIN W/ 1-9/16" EMBED TO 3KSI MIN. CONCRETE	4.5"	5.25"	BUILD-OUT OR WALL MOUNT	1	1290 LB
			INTERIOR MOUNT	2	2580 LB
	2.5"	5.25"	BUILD-OUT OR WALL MOUNT	1	1100 LB
			INTERIOR MOUNT	2	2200 LB
5/16" ITW TAPCON XL OR DEWALT ULTRACON W/ 2-1/4" MIN. EMBED TO 3.5KSI MIN. CONCRETE	5.0"	4.0"	BUILD-OUT OR WALL MOUNT	1	795 LB
			INTERIOR MOUNT	2	1590 LB
	5.0"	4.0"	BUILD-OUT OR WALL MOUNT	1	461 LB
			INTERIOR MOUNT	2	922 LB
5/16" ITW TAPCON XL OR DEWALT ULTRACON W/ 2-1/4" MIN. EMBED TO GROUT-FILLED CONCRETE BLOCK	5.0"	3.125"	BUILD-OUT OR WALL MOUNT	1	864 LB
			INTERIOR MOUNT	2	1328 LB
	5.0"	3.125"	BUILD-OUT OR WALL MOUNT	1	788 LB
			INTERIOR MOUNT	2	1576 LB
5/16" LAG SCREW W/ 2" MIN. THREAD PENETRATION TO G=0.42 MIN WOOD	2.0"	1.25"	BUILD-OUT OR WALL MOUNT	1	851 LB
			INTERIOR MOUNT	2	1702 LB
	2.0"	1.25"	BUILD-OUT OR WALL MOUNT	1	292 LB
			INTERIOR MOUNT	2	584 LB
2.0"	1.25"	BUILD-OUT OR WALL MOUNT	1	372 LB	
		INTERIOR MOUNT	2	744 LB	
2.0"	1.25"	BUILD-OUT OR WALL MOUNT	1	655 LB	
		INTERIOR MOUNT	2	1311 LB	
2.0"	1.25"	BUILD-OUT OR WALL MOUNT	1	151 LB	
		INTERIOR MOUNT	2	301 LB	

- NOTES:**  
 1. ALL ANCHORS SHALL BE 3/4" MINIMUM FROM ANY ALUMINUM EDGE.  
 2. \* ANCHOR SHALL PENETRATE THROUGH FACE SHELL INTO GROUTED CELL

FRANK BENNARDO, PE  
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 11/19/2020  
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 Wholesale Aluminum and Building Products  
 A Division of ABC Supply Co., Inc.  
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 FT. LAUDERDALE, FL 33309

DRWN	CHKD	DATE
KL	FLB	11/03/20
KL	FLB	2/14/21
RWN	CSL	4/08/15
RWN	FLB	8/07/17
CCB	RWN	6/30/20

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SCALE: -  
 PAGE DESCRIPTION: