

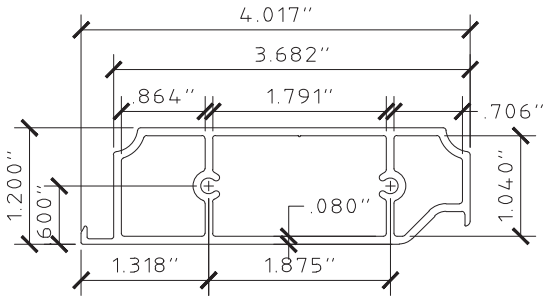
GENERAL NOTES:

1. 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.
2. THIS SYSTEM HAS BEEN TESTED AND EVALUATED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE SEVENTH EDITION (2020), FOR USE 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 WIND WIND ZONE 4 AS DEFINED IN ASTM E1996. SEE EVALUATION REPORT FOR MORE INFORMATION.
3. POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED PER SEPARATE ENGINEERING IN ACCORDANCE WITH THE GOVERNING CODE. PRESSURE REQUIREMENTS SHALL BE LESS THAN OR EQUAL TO THE POSITIVE OR NEGATIVE DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.
4. TESTING WAS CONDUCTED IN ACCORDANCE WITH TAS 201/202/203 AND ASTM E1886/E1996/E330.
5. 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.
6. DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.
7. 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.
8. 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.
9. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE.
10. PERMIT HOLDER SHALL VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS.
11. ANCHORS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
12. USE OF THESE APPROVAL DOCUMENTS SHALL COMPLY WITH CHAPTER 61G15 OF THE FLORIDA ADMINISTRATIVE CODE.
13. 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.
14. ANY MODIFICATIONS OR ADDITIONS TO THESE APPROVAL DOCUMENTS WILL VOID THE APPROVAL DOCUMENTS.
15. EACH SHUTTER ASSEMBLY SHALL BE PERMANENTLY LABELED WITH THE FOLLOWING MINIMUM INFORMATION:

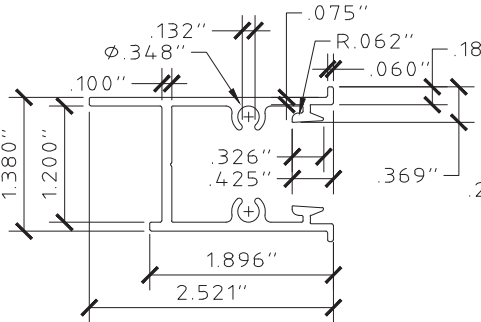
TOWN & COUNTRY INDUSTRIES  
FORT LAUDERDALE, FL  
9 LB MISSILE LEVEL D - ASTM E1886, E1996 & E330  
TAS 201, 202 & 203  
FLORIDA PRODUCT APPROVAL NUMBER
16. ALL EXTRUSIONS SHOWN SHALL BE 6063-T6 ALUMINUM ALLOY, U.O.N., WITH A MINIMUM Fy OF 25 K.S.I.
17. ALL BOLTS AND WASHERS (EXCLUDING INSTALLATION) 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.
18. MAXIMUM ALLOWABLE DESIGN PRESSURE IN CLOSED POSITION PROVIDING WIND LOAD & IMPACT RESISTANCE = **+57.2/-66.2** PSF FOR ALL SHUTTER SYSTEM CONFIGURATIONS SHOWN HEREIN.
19. MAXIMUM ALLOWABLE DESIGN PRESSURE IN OPEN POSITION = +/- 28 PSF.
20. THIS SHUTTER SYSTEM SHALL NOT BE INSTALLED IN ESSENTIAL FACILITIES AS DEFINED IN ASTM E1996.
21. SHUTTER ASSEMBLY MUST BE CLOSED AND SECURED AND SHALL NOT BE LEFT IN THE OPEN POSITION IN THE EVENT OF A WIND STORM EVENT.
22. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED.

COLONIAL SHUTTER

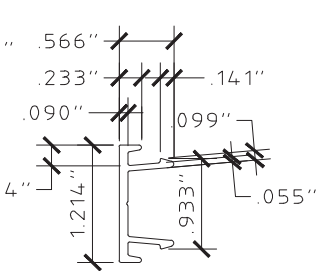
PATENT #8126298



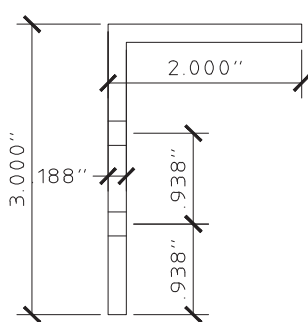
1 MUNTIN  
SCALE: HALF SIZE



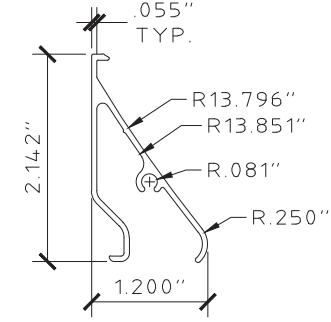
2 JAMB  
SCALE: HALF SIZE



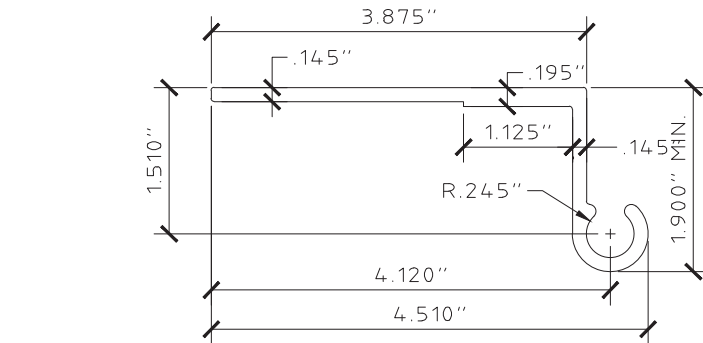
3 JAMB SNAP  
SCALE: HALF SIZE



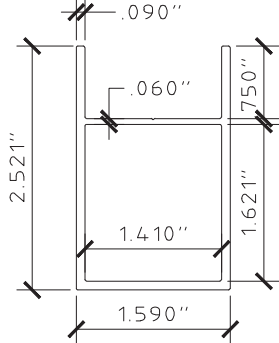
4 4" CENTER CLIP  
SCALE: HALF SIZE



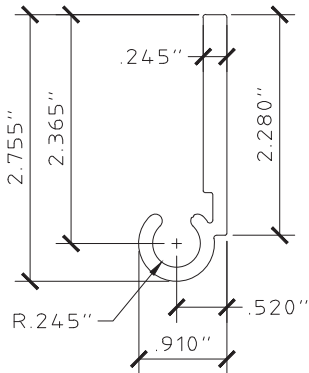
5 COLONIAL BLADE  
SCALE: HALF SIZE



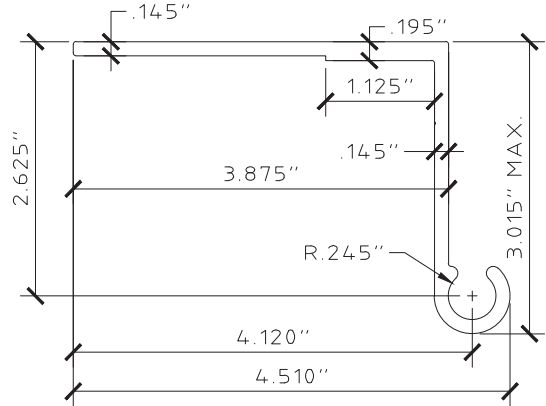
6 WALL HINGE  
SCALE: HALF SIZE



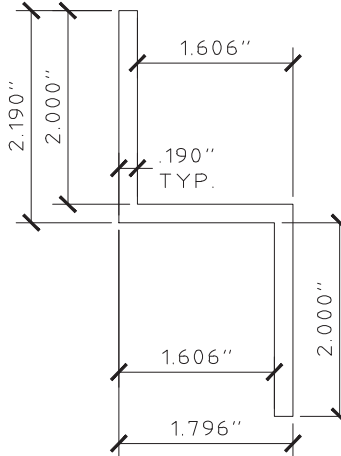
7 HEADER / SILL  
SCALE: HALF SIZE



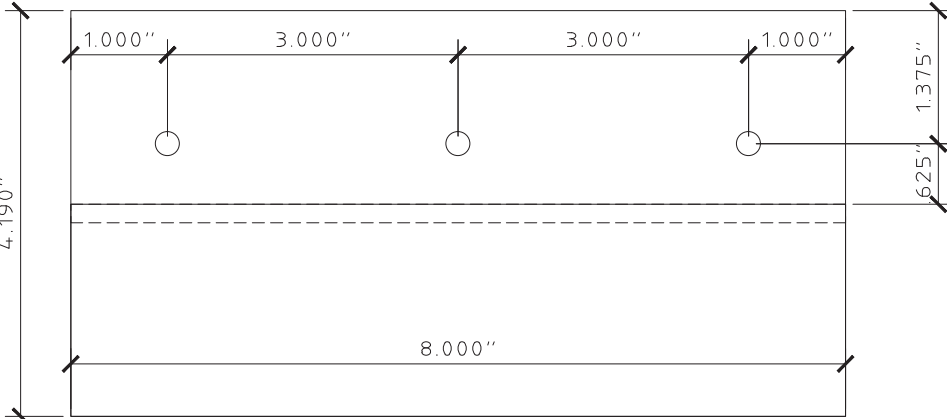
9 FLAT HINGE  
SCALE: HALF SIZE



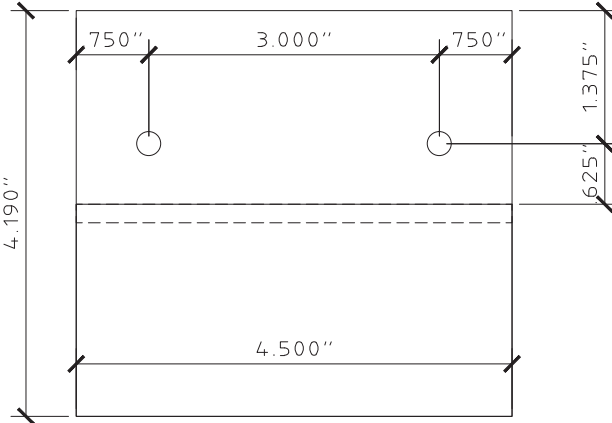
8 BUILD-OUT WALL HINGE  
SCALE: HALF SIZE



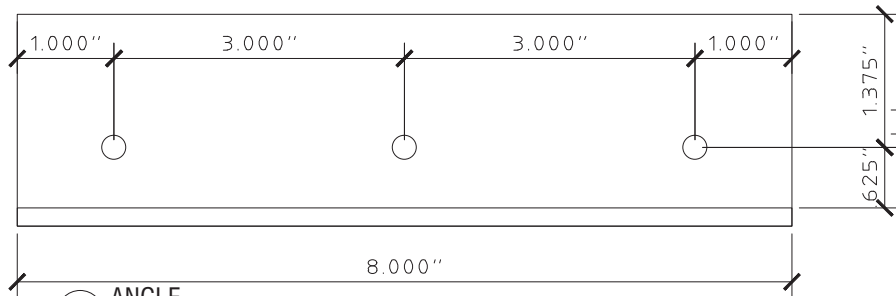
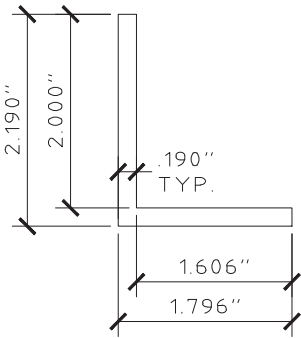
11 ANGLE  
SCALE: HALF SIZE



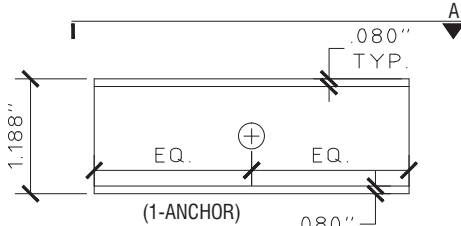
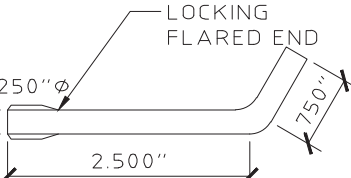
10 "Z" BAR - PROFILE & LAYOUT  
SCALE: HALF SIZE



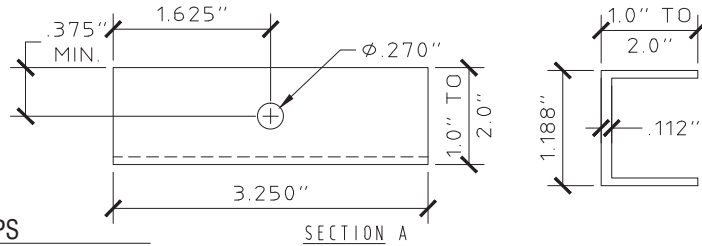
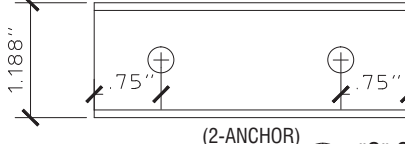
10A 4-1/2" "Z" BAR - PROFILE  
SCALE: HALF SIZE



12 L-PIN - 1/4" Ø  
SCALE: HALF SIZE



13 "C" CLIPS  
SCALE: HALF SIZE



VISIT [ECALC.IO/26168](https://ecalculator.com/26168)

FOR SITE SPECIFIC DEVIATIONS  
& MORE INFORMATION ABOUT THIS DOCUMENT  
OR SCAN THIS QR CODE

VISIT [ENGINEERINGEXPRESS.COM/STORE](https://engineeringexpress.com/store)  
FOR ADDITIONAL PLANS, REPORTS & RESOURCES



FRANK BENNARDO, PE  
PE# 0046549 CA#9885



**ENGINEERING EXPRESS**  
CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

**Town & Country INDUSTRIES**  
Wholesale Aluminum and Building Products  
A Division of AEC Supply Co., Inc.  
400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309  
FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. ANY UNAUTHORIZED REPRODUCTION OR TRANSMISSION OF THIS DOCUMENT IS STRICTLY PROHIBITED AND WILL BE PUNISHED TO THE FULL EXTENT OF THE LAW.

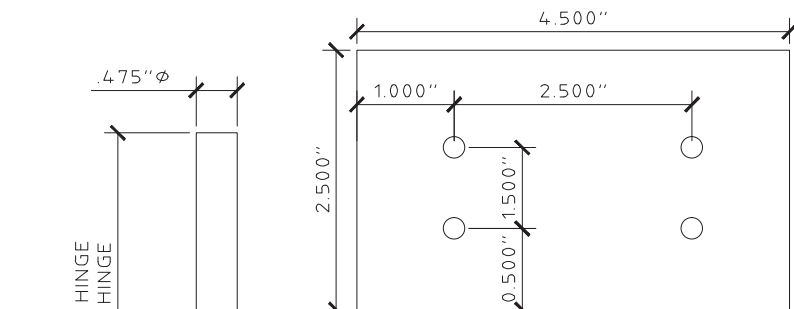
COPYRIGHT FRANK L. BENNARDO P.E.

20-26168

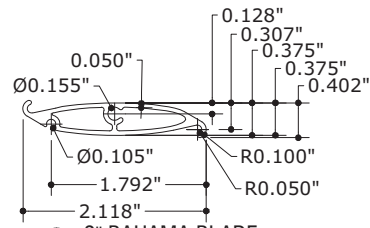
SCALE: -  
PAGE DESCRIPTION:

C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP\2020 FBC\20-26168d - FL16219.1 - DWG.dwg

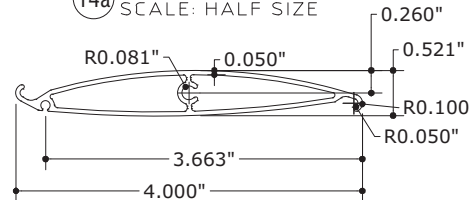
08/11/2020 - 9:58pm rickn



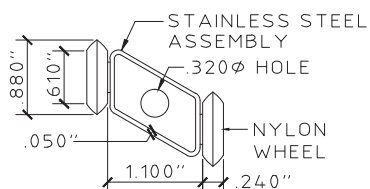
4a ALT. CENTER CLIP (1/8" THICK)  
SCALE: HALF SIZE



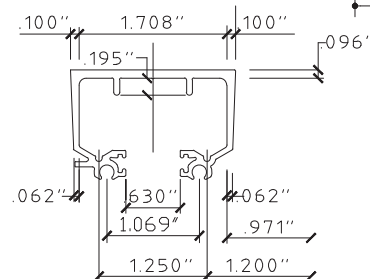
14a 2" BAHAMA BLADE  
SCALE: HALF SIZE



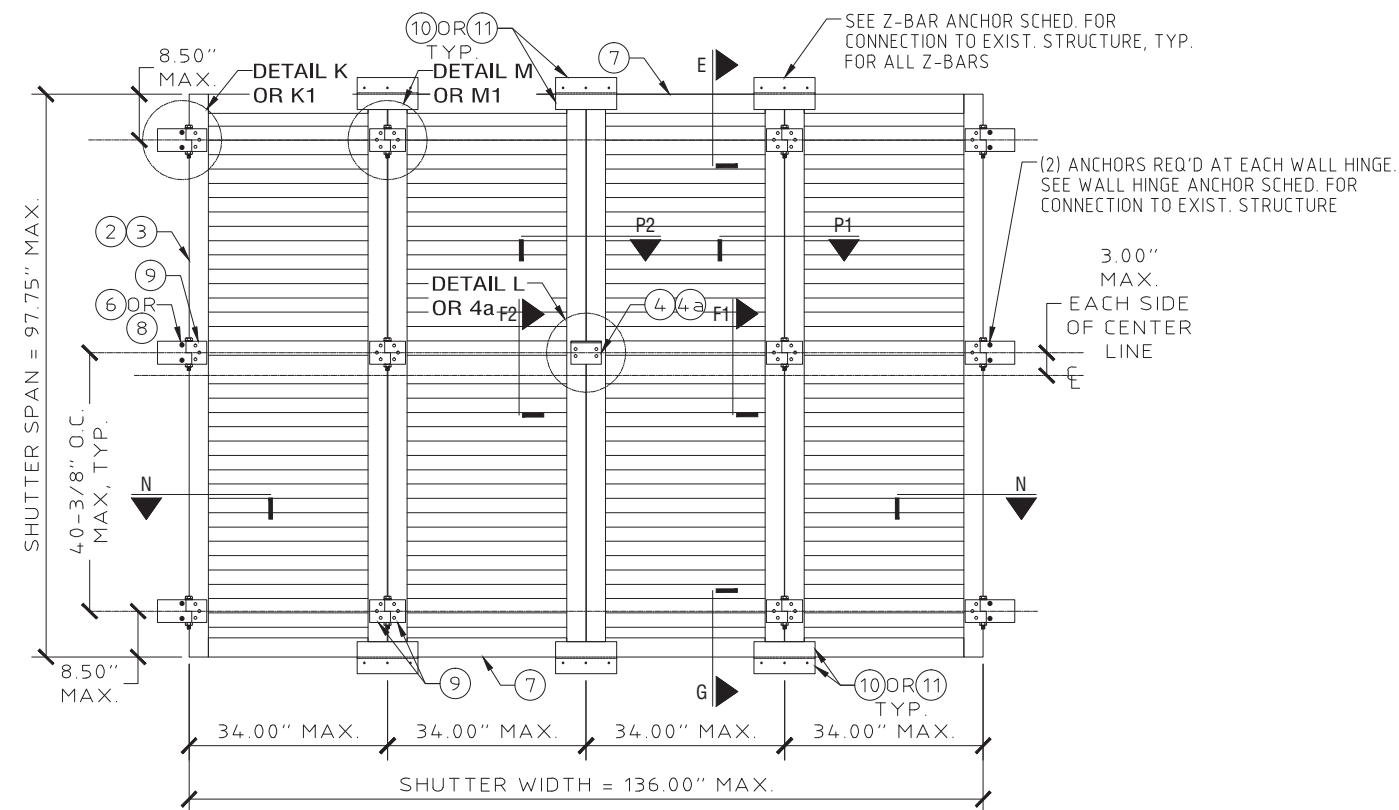
14b 4" BAHAMA BLADE  
SCALE: HALF SIZE



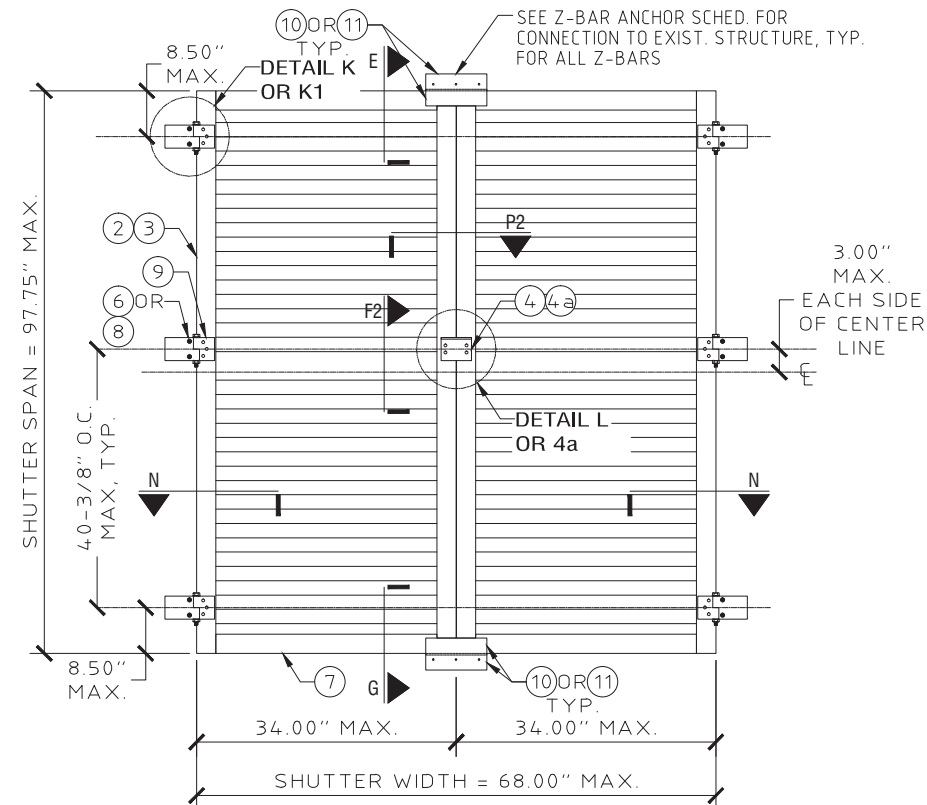
22 ROLLER ASSEMBLY  
SCALE: HALF SIZE



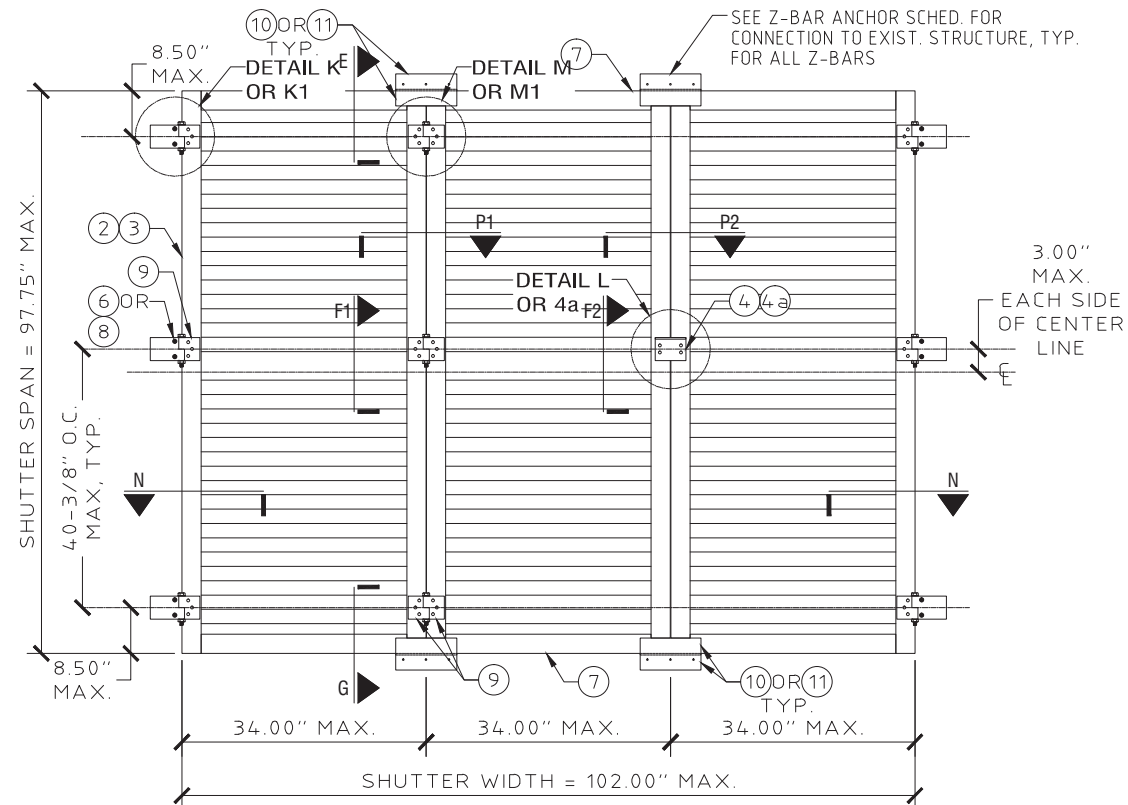
15 PANEL TRACK  
SCALE: HALF SIZE



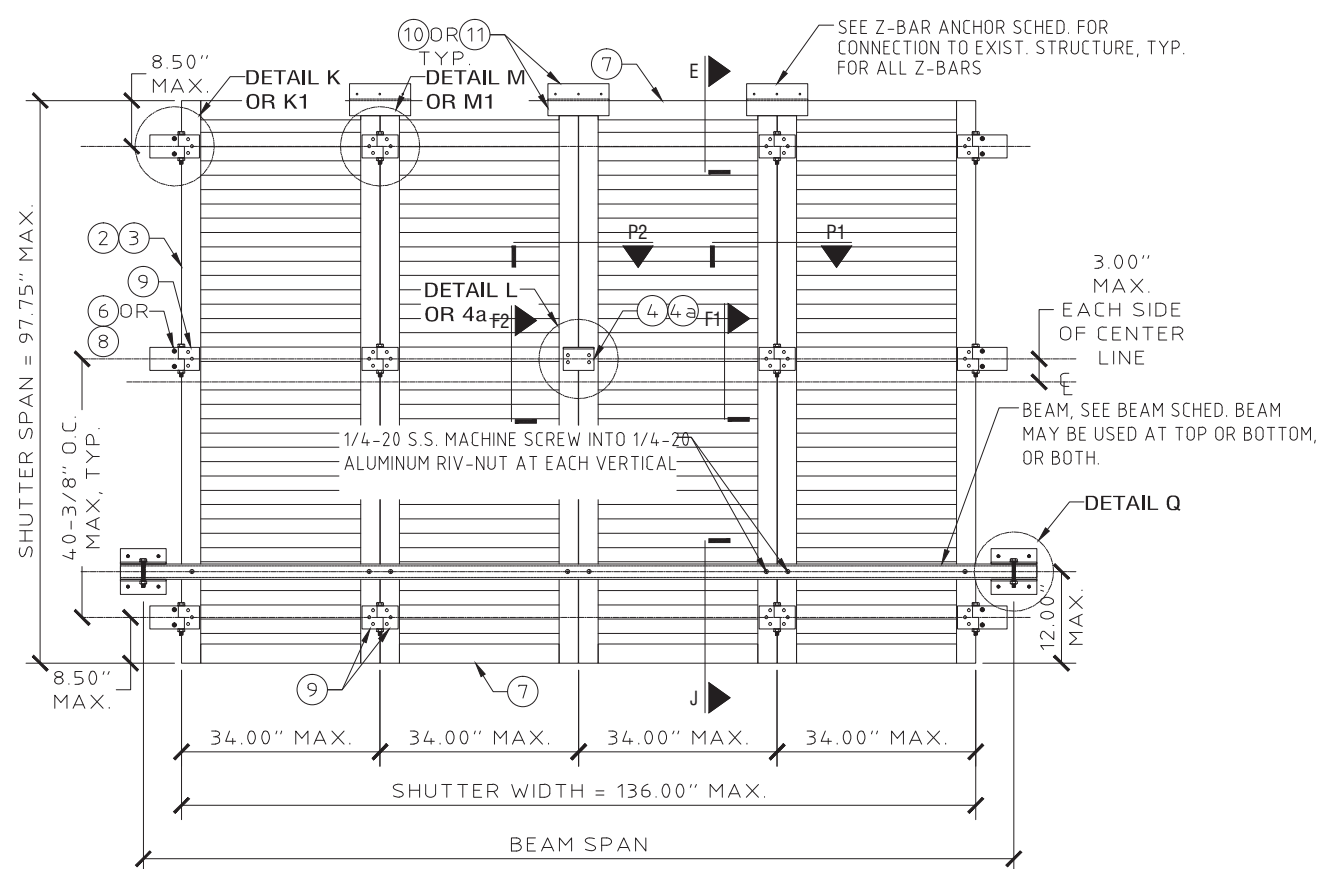
C TYPICAL ELEVATION 4 PANELS  
SCALE: 1/2" = 1'-0"



A TYPICAL ELEVATION 2 PANELS  
SCALE: 1/2" = 1'-0"



B TYPICAL ELEVATION 3 PANELS  
SCALE: 1/2" = 1'-0"



D TYPICAL ELEVATION WITH BEAM (2, 3, OR 4 PANELS)  
SCALE: 1/2" = 1'-0"

## COLONIAL SHUTTER

FRANK BENNARDO, PE  
PE# 0046549 CA#9885



CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

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

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

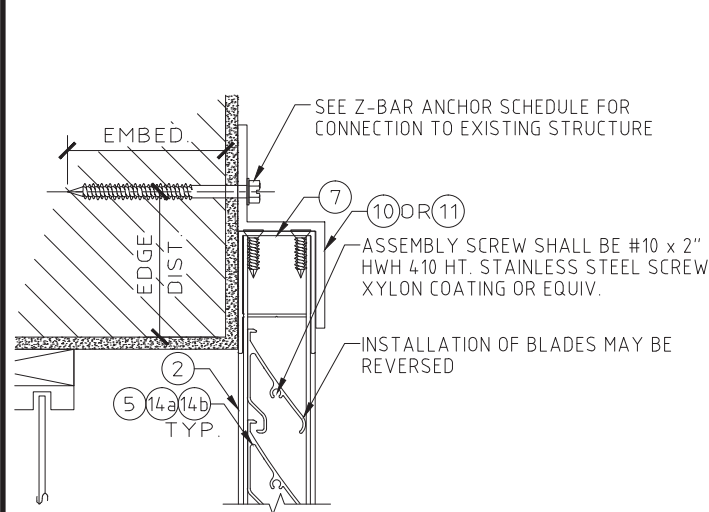
THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. \* ALTERATIONS, ADDITIONS, HIGHLIGHTS OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

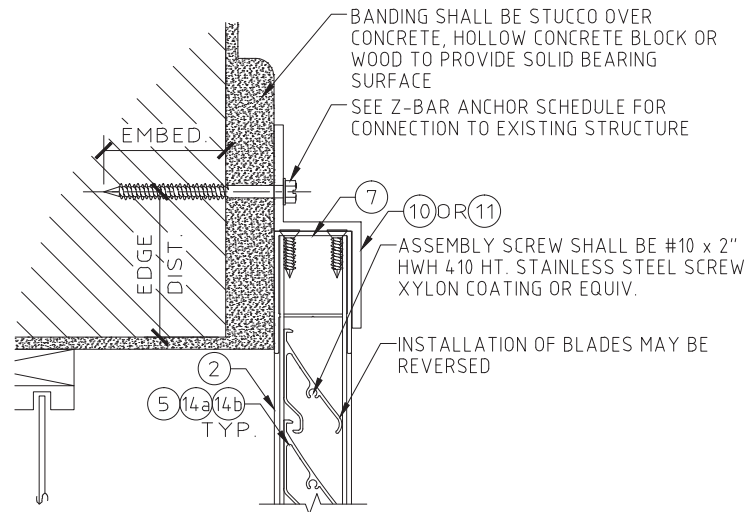
20-26168

SCALE: -  
PAGE DESCRIPTION: -

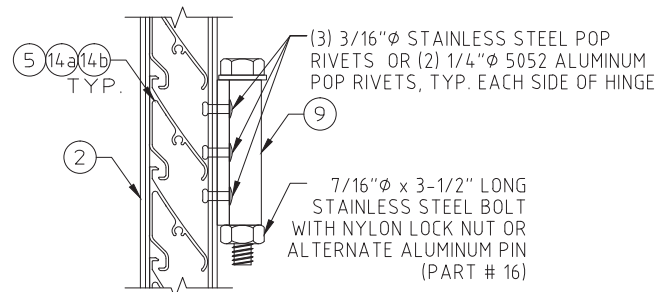
C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP1\2020 FBC\20-26168d - FL16219.1 - DWG.dwg  
08/11/2020 - 9:58pm  
rickn



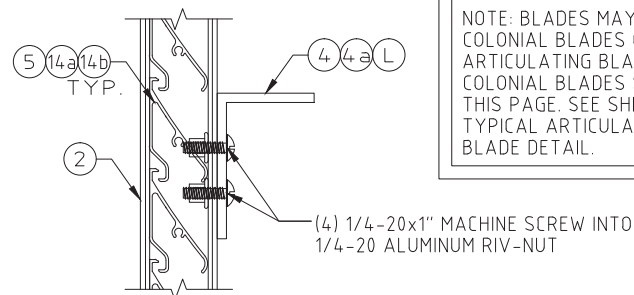
E1 TYPICAL TOP WALL MOUNT  
SCALE: 3" = 1'-0"



E2 ALTERNATE TOP WALL MOUNT  
SCALE: 3" = 1'-0"

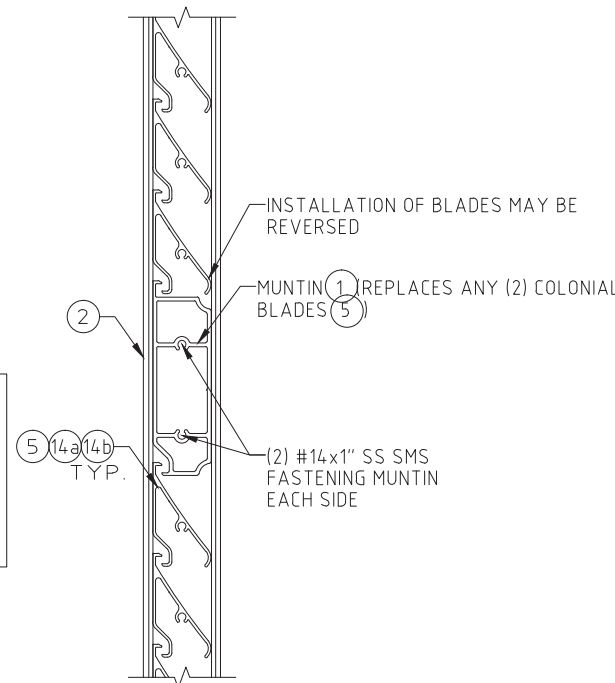


F1 TYPICAL PANEL HINGE CONNECTION  
SCALE: 3" = 1'-0"

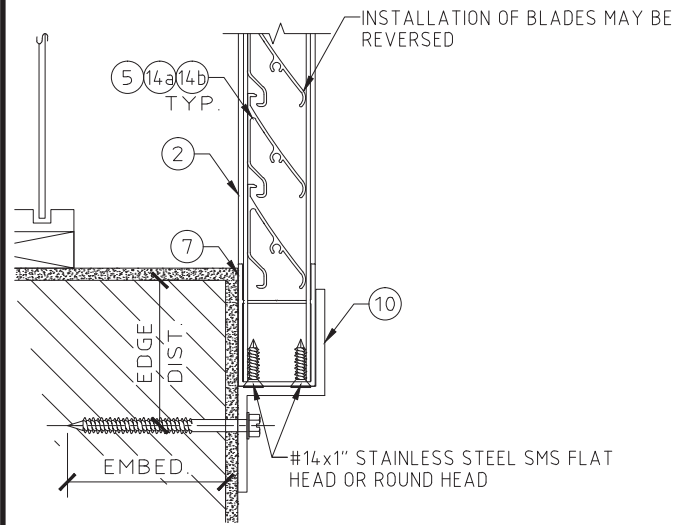


F2 TYPICAL CENTER CLIP CONNECTION  
SCALE: 3" = 1'-0"

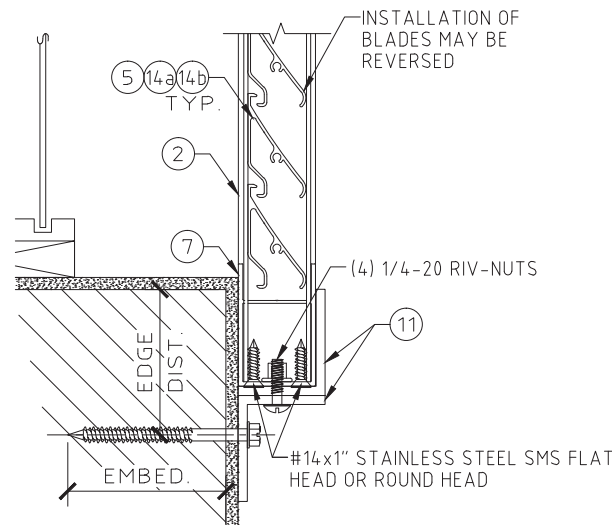
NOTE: BLADES MAY BE COLONIAL BLADES OR ARTICULATING BLADES. COLONIAL BLADES SHOWN ON THIS PAGE. SEE SHEET 4 FOR TYPICAL ARTICULATING BLADE DETAIL.



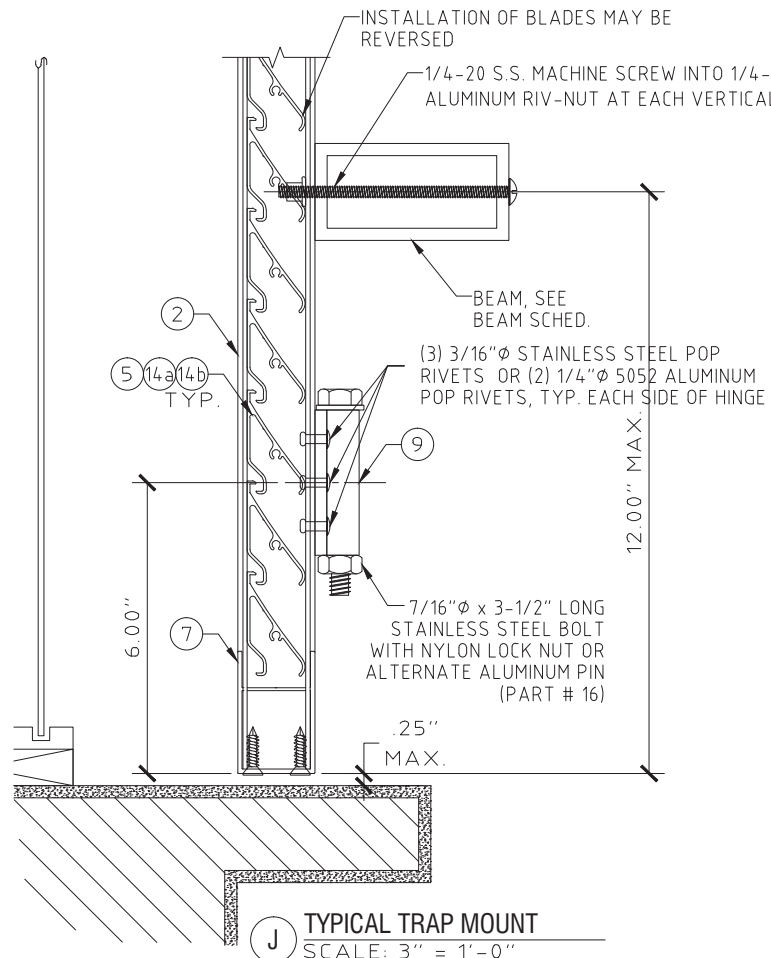
H ALTERNATE BLADE  
SCALE: 3" = 1'-0"



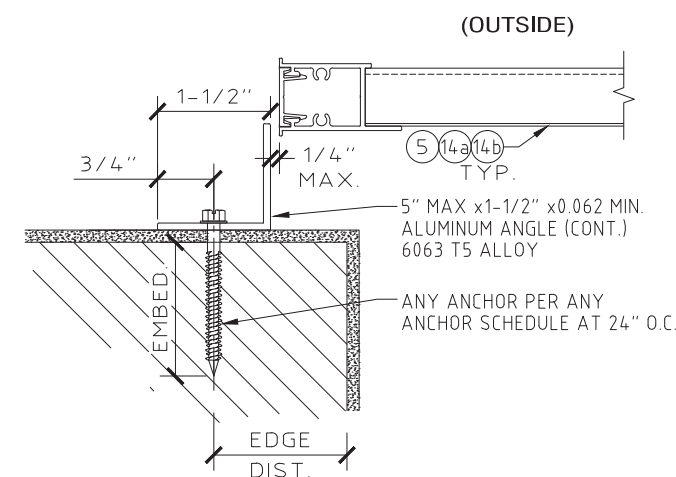
G1 TYPICAL BOTTOM WALL MOUNT  
SCALE: 3" = 1'-0"



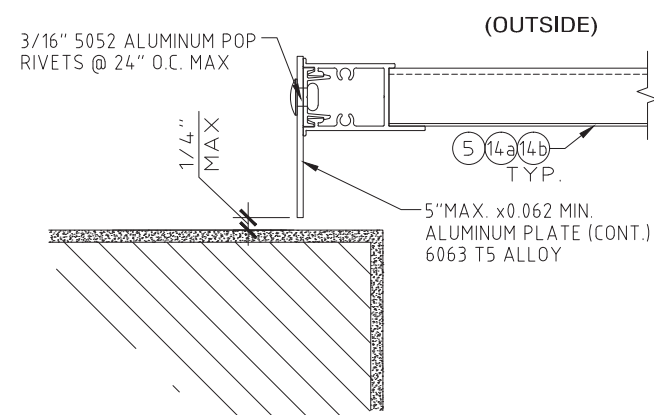
G2 ALTERNATE WALL MOUNT  
SCALE: 3" = 1'-0"



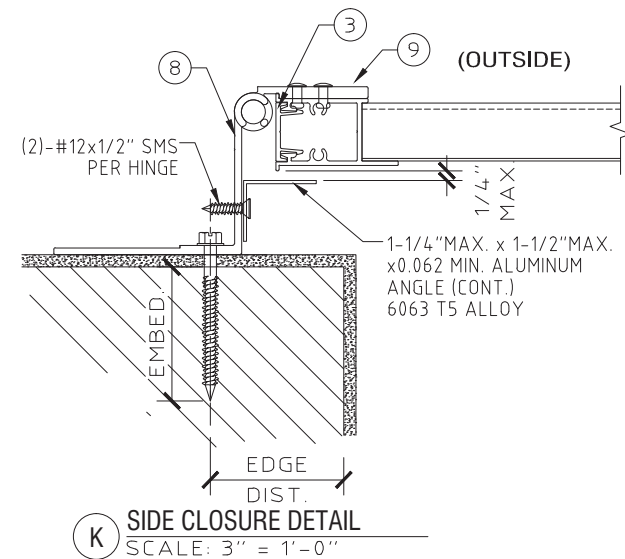
J TYPICAL TRAP MOUNT  
SCALE: 3" = 1'-0"



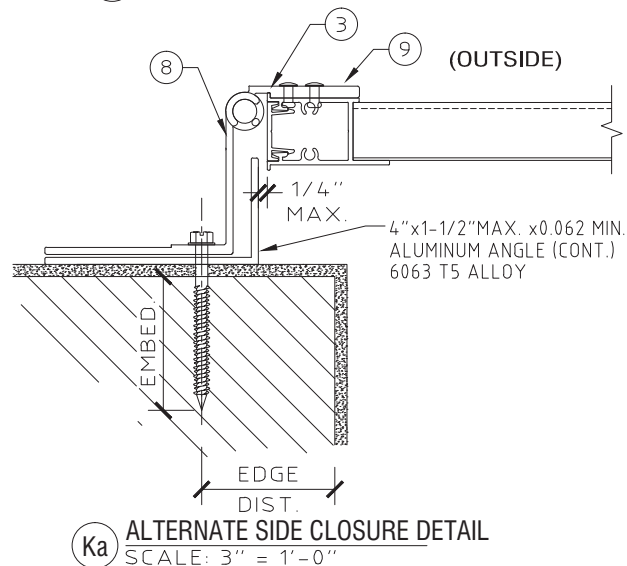
Kb SLIDING PANEL SIDE CLOSURE DETAIL  
N.T.S.



Kc SLIDING PANEL SIDE ALTERNATE CLOSURE DETAIL  
N.T.S.

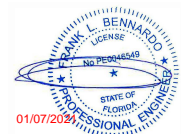


K SIDE CLOSURE DETAIL  
SCALE: 3" = 1'-0"



Ka ALTERNATE SIDE CLOSURE DETAIL  
SCALE: 3" = 1'-0"

FRANK BENNARDO, PE  
PE# 0046549 CA#9885



ENGINEERING  
EXPRESS

CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

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

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309  
FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. ANY ALTERATIONS, ADDITIONS, HIGHLIGHTING OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

20-26168

SCALE: -  
PAGE DESCRIPTION: -



C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP\2020 FBC\20-26168d - FL16219.1 - DWG.dwg  
08/11/2020 - 9:58pm  
rickn

WALL HINGE ANCHOR  
SCHEDULE:

TO 3192 PSI MIN. CONCRETE:

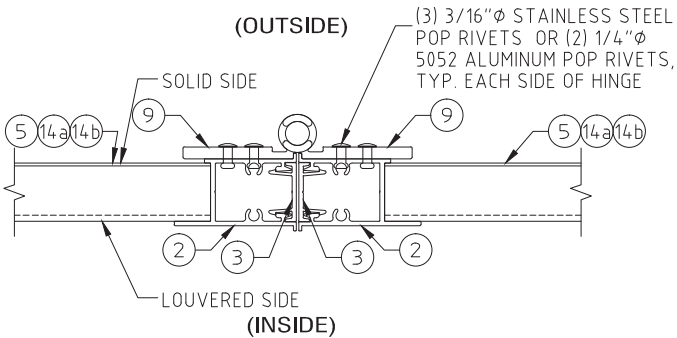
- 1/4" ITW SS TAPCON W/ 1 3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.
- 5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.

TO GROUT-FILLED CONCRETE BLOCK:

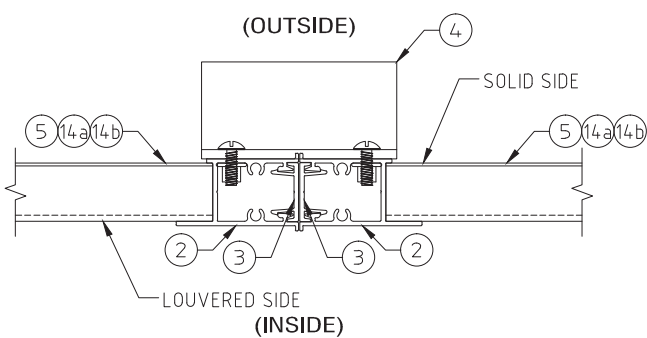
- 1/4" DEWALT ULTRA CON W/ 2-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.
- 5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 4" MIN. EDGE DISTANCE.

TO G=0.42 MIN. WOOD HOST STRUCTURE:

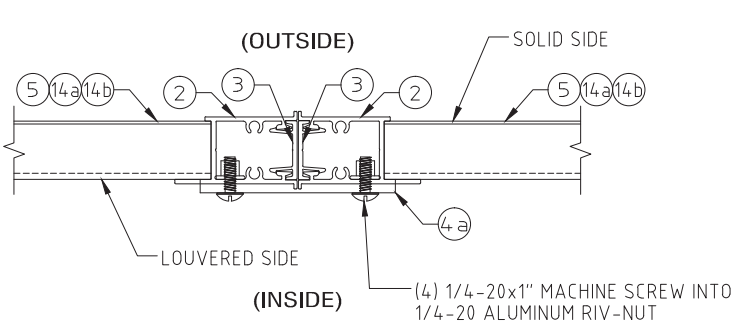
- 1/4" LAG SCREWS WITH 1-1/2" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.
- #14 WOOD SCREW OR SMS W/ 1-1/2" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.



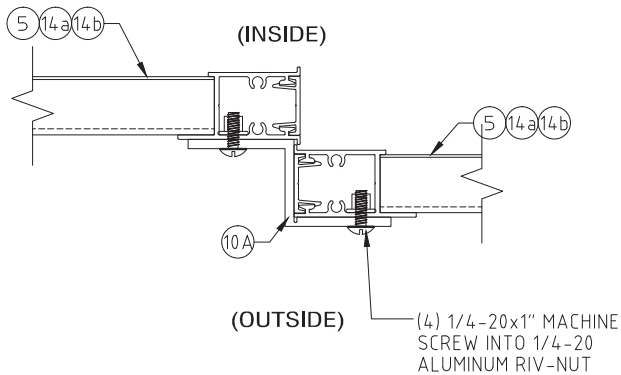
P1 TYPICAL PANEL HINGE CONNECTION  
SCALE: 3" = 1'-0"



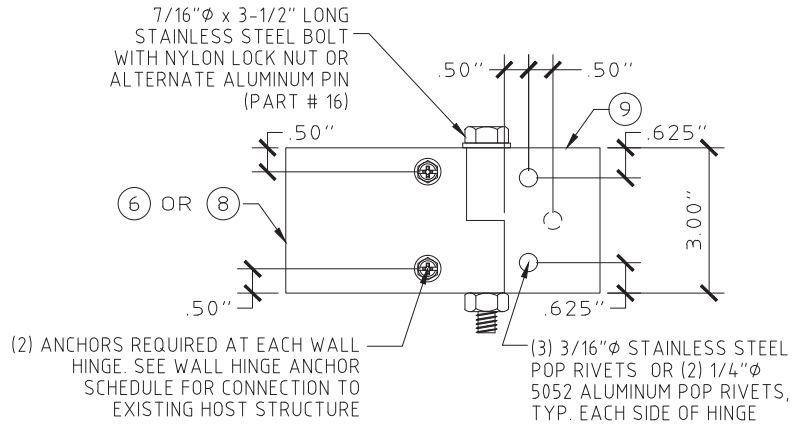
P2 TYPICAL CENTER CLIP CONNECTION  
SCALE: 3" = 1'-0"



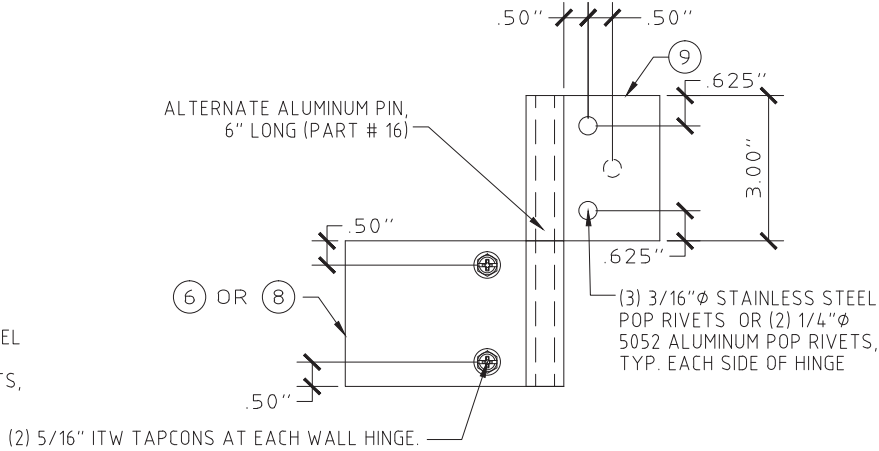
P2 ALTERNATE CENTER CLIP CONNECTION  
SCALE: 3" = 1'-0"



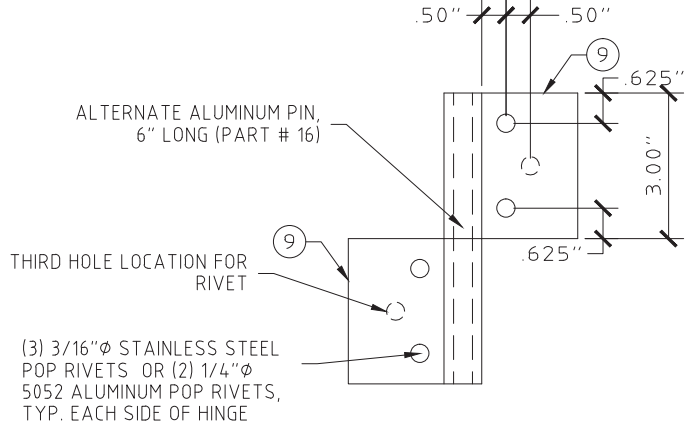
L1 SLIDING PANEL OFFSET CLIP  
N.T.S.



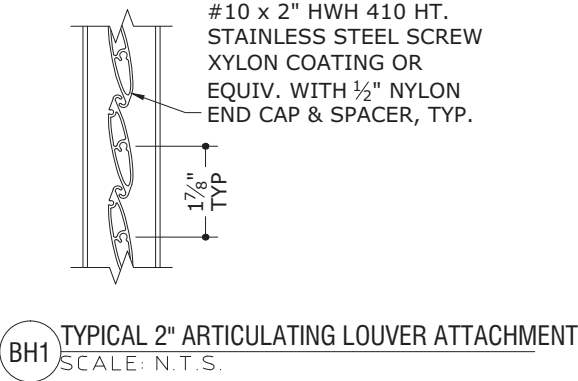
K TYPICAL WALL HINGE  
SCALE: 3" = 1'-0"



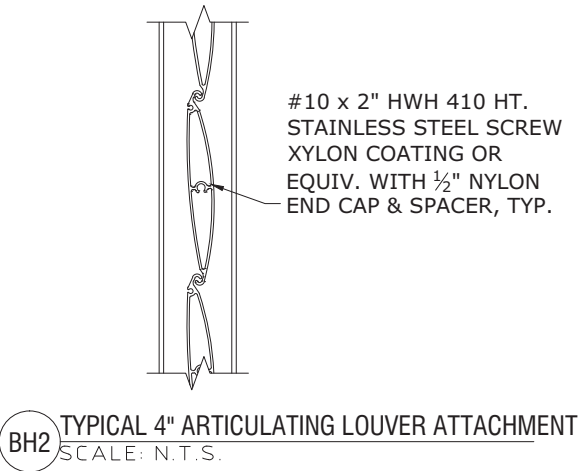
K1 ALTERNATE STACKED WALL HINGE  
SCALE: 3" = 1'-0"



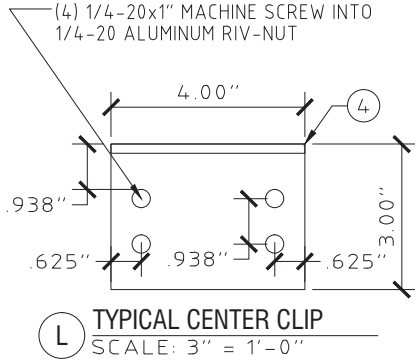
M1 ALTERNATE STACKED PANEL HINGE  
SCALE: 3" = 1'-0"



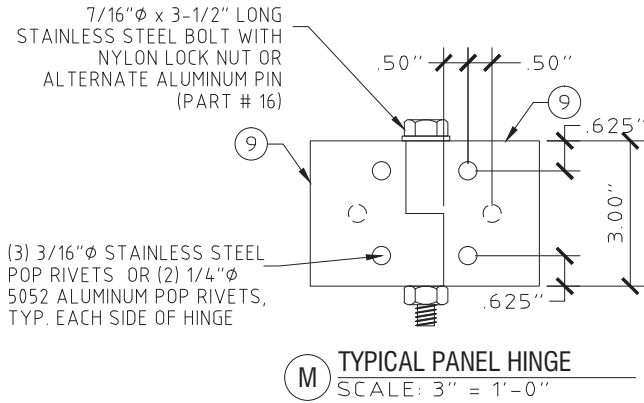
BH1 TYPICAL 2" ARTICULATING LOUVER ATTACHMENT  
SCALE: N.T.S.



BH2 TYPICAL 4" ARTICULATING LOUVER ATTACHMENT  
SCALE: N.T.S.



L TYPICAL CENTER CLIP  
SCALE: 3" = 1'-0"



M TYPICAL PANEL HINGE  
SCALE: 3" = 1'-0"

FRANK BENNARDO, PE  
PE# 0046549 CA#9885



ENGINEERING  
EXPRESS

CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

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

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309  
FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

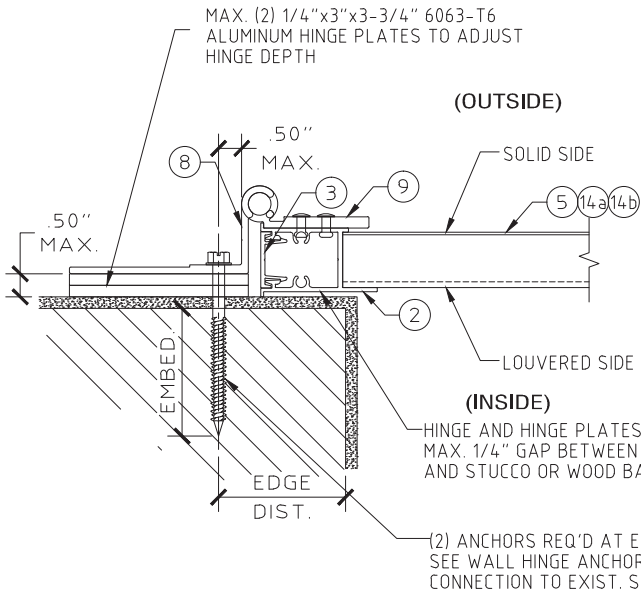
THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. ANY ALTERATIONS, ADDITIONS, HIGHLIGHTING, OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

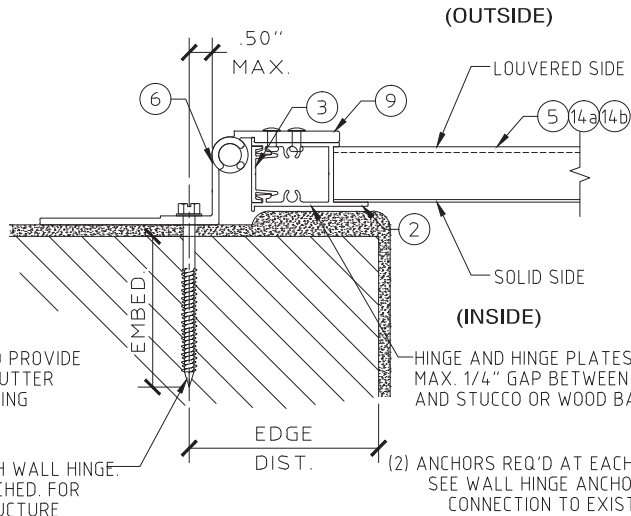
20-26168

SCALE: -  
PAGE DESCRIPTION: -

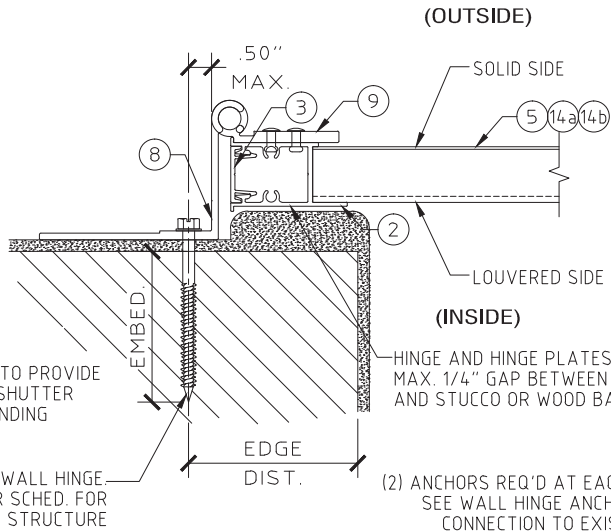
C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP\2020 FBC\20-26168d - FL16219.1 - DWG.dwg 08/11/2020 - 9:58pm rickn



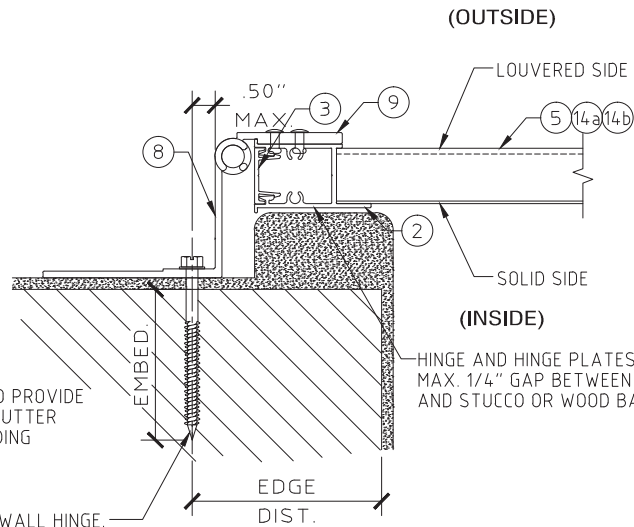
N1 TYPICAL WALL HINGE CONNECTION  
SCALE: 3" = 1'-0"



N2 ALTERNATE WALL HINGE CONNECTION  
SCALE: 3" = 1'-0"



N3 ALTERNATE WALL HINGE CONNECTION  
SCALE: 3" = 1'-0"



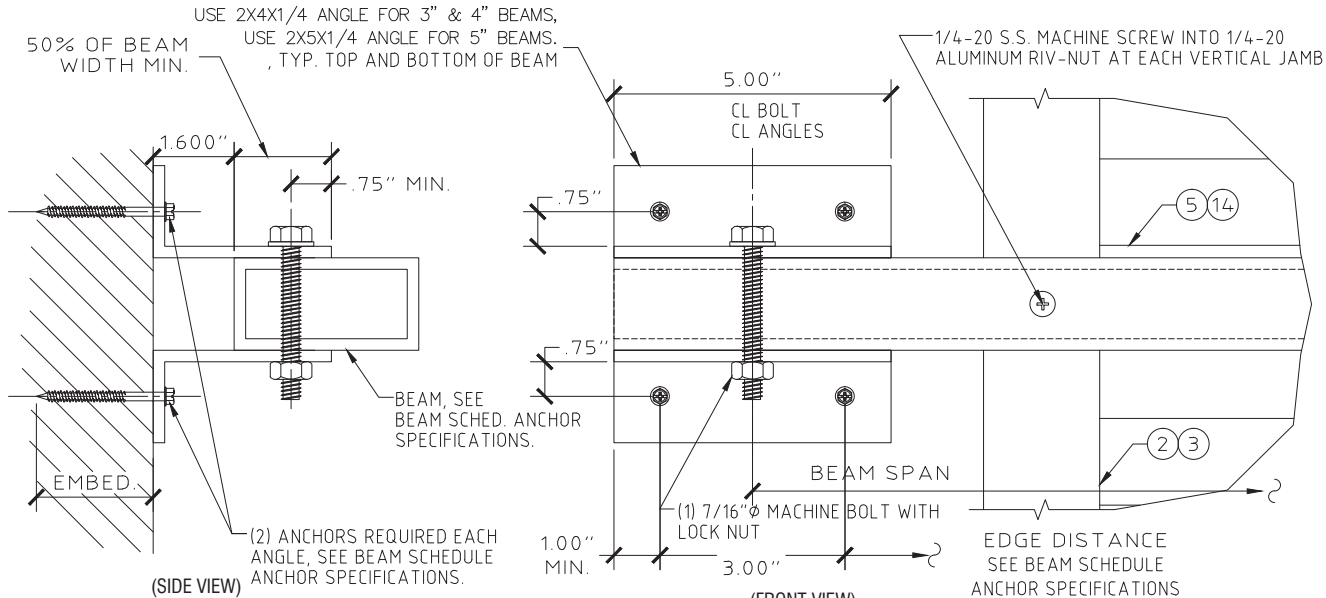
N4 ALTERNATE WALL HINGE CONNECTION  
SCALE: 3" = 1'-0"

## BEAM SCHEDULE

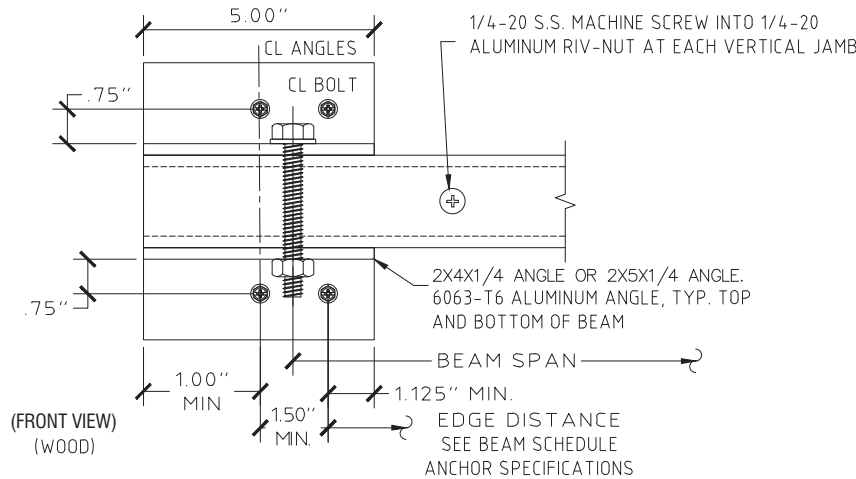
BEAM SIZE	SHUTTER SPAN	BEAM SPAN	WALL BRACKET ANCHOR TYPES		
			CONCRETE (3323 PSI MIN)	HOLLOW CONCRETE BLOCK	WOOD (G=0.42 MIN.)
2"x3"x1/8" (6063-T6)	8'-1.75"	6'-0"	A, B, C	A, B, C	B, C
	6'-8"	6'-8"	A, B, C	A, B, C	B, C
	5'-10"	7'-0"	A, B, C	A, B, C	B, C
2"x4"x1/8" (6063-T6)	8'-1.75"	7'-5"	A, B, C	A, C	B, C
	6'-8"	8'-1"	A, B, C	A, C	B, C
	5'-10"	8'-6"	A, B, C	A, B, C	B, C
2"x5"x1/8" (6063-T6)	8'-1.75"	8'-8"	A, B, C	A, C	B, C
	6'-8"	9'-5"	A, B, C	A, C	B, C
	5'-10"	9'-11"	A, B, C	A, C	B, C
2"x4"x1/4" (6061-T6)	8'-1.75"	11'-3"	A, B, C	C	B, C
	6'-8"	12'-2"	A, B, C	C	B, C
	5'-10"	12'-6"	A, B, C	A, C	B, C

### ANCHOR TYPES FOR USE WITH BEAM SCHEDULE, (4) ANCHORS PER BEAM END

- A. 1/4" ALL POINTS SOLID-SET ANCHORS  
FOR CONCRETE: 7/8" MIN. EMBEDMENT, 3" MIN. EDGE DISTANCE, AND 3" MIN. SPACING.  
FOR HOLLOW CONCRETE BLOCK: 7/8" MIN. EMBEDMENT, 3" MIN. EDGE DISTANCE, AND 3" MIN. SPACING.
- B. 1/4" EYEWALL ARMOR MALE BOLT OR DEWALT MALE/FEMALE PANELMATE  
FOR CONCRETE: 2" MIN. EMBEDMENT, 3" MIN. EDGE DISTANCE, AND 3" MIN. SPACING.  
FOR HOLLOW CONCRETE BLOCK: 1-1/4" MIN. EMBEDMENT, 3" MIN. EDGE DISTANCE, AND 3" MIN. SPACING.  
FOR WOOD: 1-7/8" MIN. EMBEDMENT. 3/4" MIN. EDGE DISTANCE, 1.5" MIN. SPACING.
- C. 1/4" ITW TAPCON SG  
FOR CONCRETE: 1-3/4" MIN. EMBEDMENT, 2-1/2" MIN. EDGE DISTANCE, 3" MIN. SPACING.  
FOR HOLLOW CONCRETE BLOCK: 1-1/4" MIN. EMBEDMENT, 2-1/2" MIN. EDGE DISTANCE, 3" MIN. SPACING.  
FOR WOOD: 1-1/2" MIN. EMBEDMENT, 3/4" MIN. EDGE DISTANCE, 1.5" MIN. SPACING.



Q TYPICAL WALL BRACKET CONNECTION DETAIL  
SCALE: 3" = 1'-0"



FRANK BENNARDO, PE  
PE# 0046549 CA#9885



**ENGINEERING EXPRESS**

CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

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

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. ANY ALTERATIONS, ADDITIONS, HIGHLIGHTING, OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

20-26168

SCALE: -  
PAGE DESCRIPTION: -

5



CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

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

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309  
FL16219.1

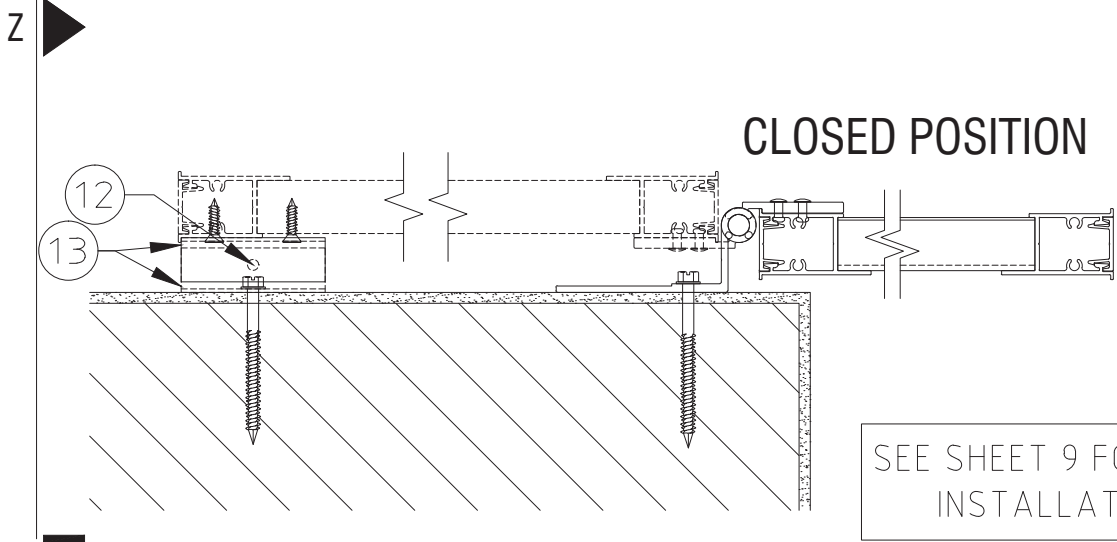
REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. ANY UNAUTHORIZED REPRODUCTION OR TRANSMISSION OF THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

20-26168

SCALE: -  
PAGE DESCRIPTION: -



SEE SHEET 9 FOR ALL PLAN VIEW  
INSTALLATION POSITIONS

**R** PLAN VIEW 1  
SCALE: 1-1/2" = 1'-0"

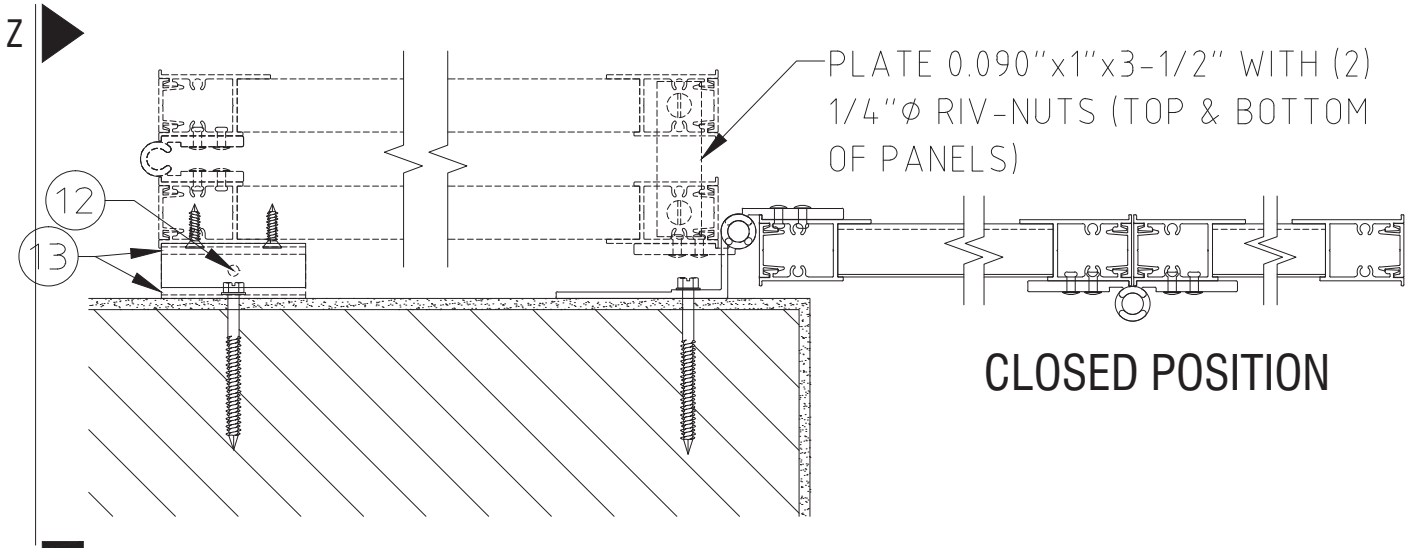


PLATE 0.090"x1"x3-1/2" WITH (2)  
1/4"Ø RIV-NUTS (TOP & BOTTOM  
OF PANELS)

CLOSED POSITION

**S** PLAN VIEW 2  
SCALE: 1-1/2" = 1'-0"

**Z-BAR ANCHOR SCHEDULE:**

**TO 3350 PSI MIN. CONCRETE:**

- 1/4" EYEWALL ARMOR MALE BOLT OR DEWALT MALE/FEMALE PANELMATE W/ 2" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.
- 1/4" ITW TAPCON SG W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.
- 1/4" ALL-POINTS SOLID SET W/ 7/8" MIN. EMBEDMENT AND 2" MIN. EDGE DISTANCE.

**TO HOLLOW CONCRETE BLOCK:**

- 1/4" EYEWALL ARMOR MALE BOLT OR DEWALT MALE/FEMALE PANELMATE W/ 1-1/4" MIN. EMBEDMENT AND 2" MIN. EDGE DISTANCE.
- 1/4" ITW TAPCON SG W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.
- 1/4" ALL-POINTS SOLID SET W/ 7/8" MIN. EMBEDMENT AND 2" MIN. EDGE DISTANCE

**TO G=0.42 MIN. WOOD HOST STRUCTURE:**

- 1/4" HANGER BOLT WITH 1-1/2" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.
- 1/4" EYEWALL ARMOR MALE BOLT OR DEWALT MALE/FEMALE PANELMATE W/ 1-7/8" MIN. EMBEDMENT AND 3/4" MIN. EDGE DISTANCE.
- 1/4" ITW TAPCON SG W/ 1-1/2" MIN. EMBEDMENT AND 3/4" MIN. EDGE DISTANCE.

**NOTE:** USE (3) ANCHORS PER 8" Z BAR AND (2) PER 4.5" Z BAR

**OPEN POSITION LOCK ANCHOR SCHEDULE:**

**WITH "C" CLIPS OR DOUBLE "C" CLIPS:**

**TO 2899 PSI MIN. CONCRETE:**

- (1) 5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 2" MIN. EDGE DISTANCE.

**TO 3192 PSI MIN. CONCRETE:**

- (2) 1/4" ITW SS TAPCON W/ 1-3/4" MIN. EMBEDMENT AND 1" MIN. EDGE DISTANCE.

**TO HOLLOW CONCRETE BLOCK:**

- (1) 5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 4" MIN. EDGE DISTANCE.

**TO G=0.42 MIN. WOOD HOST STRUCTURE:**

- (2) 1/4" WOOD SCREWS OR SHEET METAL SCREWS W/ 1-3/4" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.
- (2) 1/4" LAG SCREWS W/ 1-1/2" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.

**WITH BULLET CLIPS:**

**TO 3192 PSI MIN. CONCRETE:**

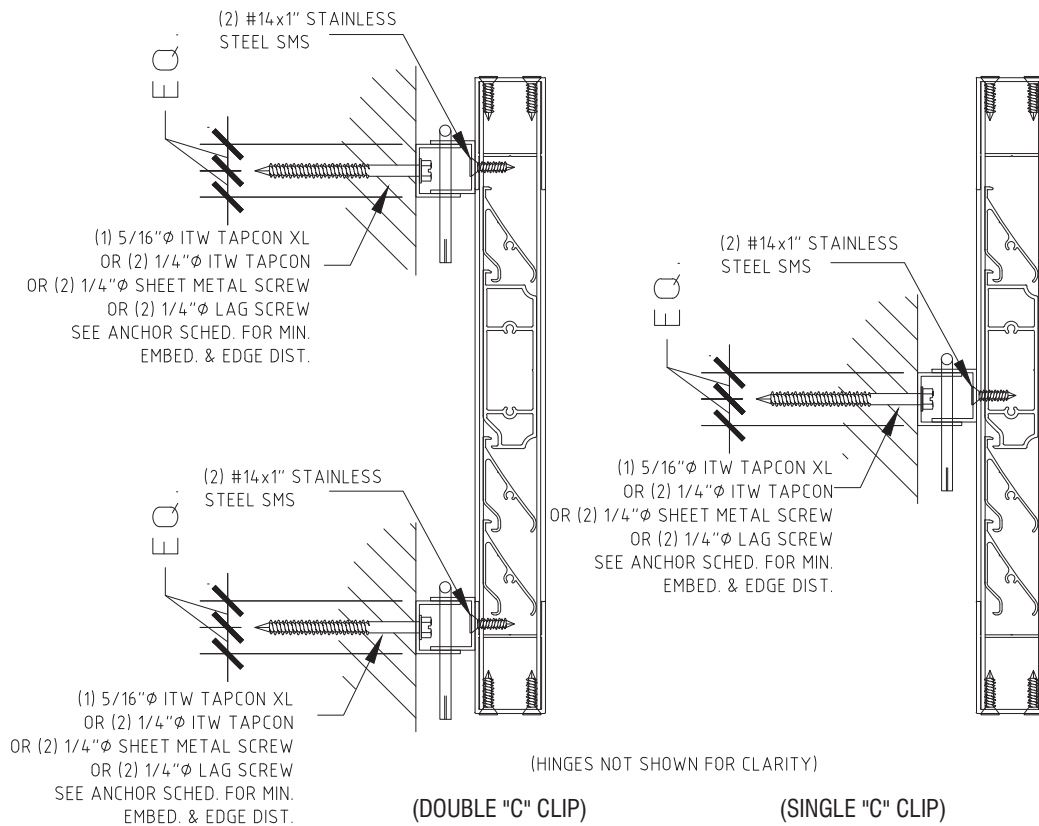
- (1) 1/4" ITW SS TAPCON W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE.

**TO HOLLOW CONCRETE BLOCK:**

- (1) 5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 4" MIN. EDGE DISTANCE.

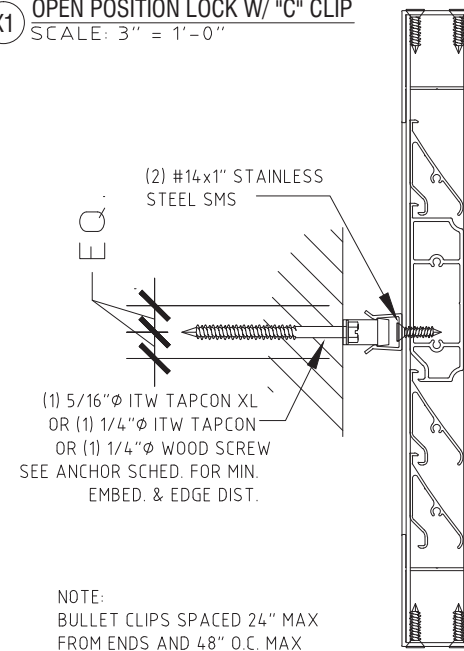
**TO G=0.42 MIN. WOOD HOST STRUCTURE:**

- (1) 1/4" WOOD SCREWS OR SHEET METAL SCREWS W/ 1-3/4" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.



NOTE:  
CLIPS REQ'D TOP & BOTTOM FOR SPANS > 69". ONE CLIP REQ'D AT MID-SPAN (±3") FOR SPANS ≤ 69".

**X1** OPEN POSITION LOCK W/ "C" CLIP  
SCALE: 3" = 1'-0"



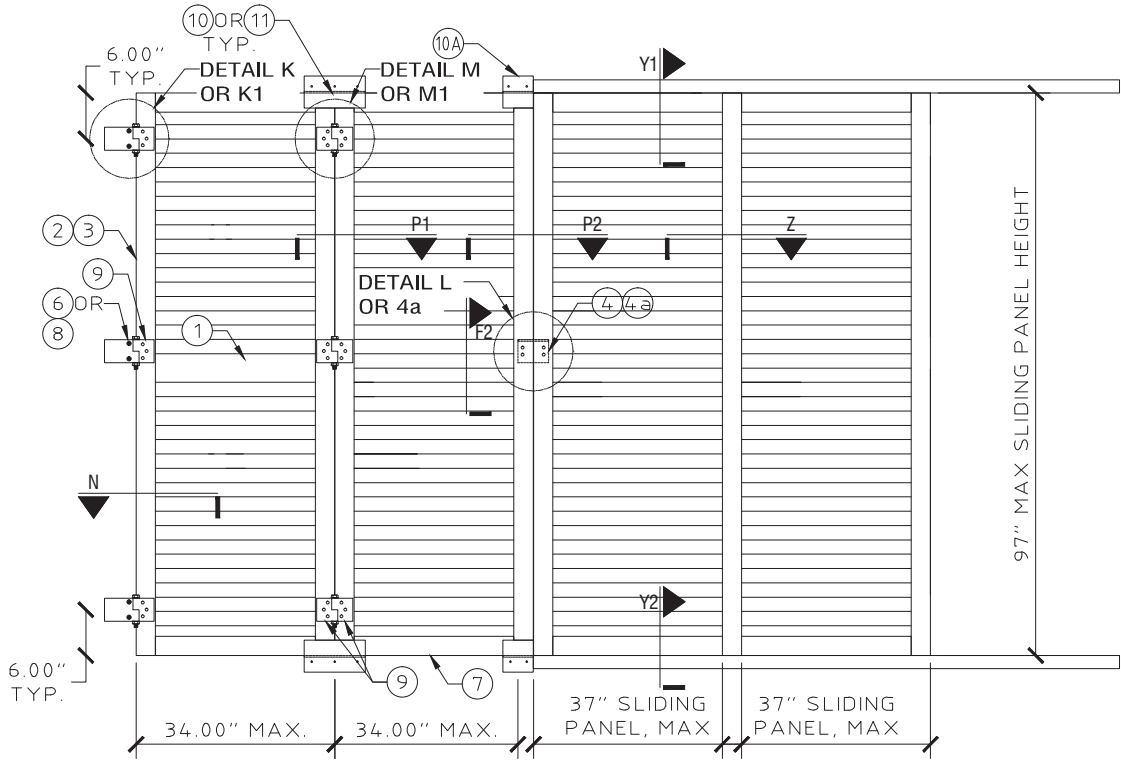
**X2** OPEN POSITION LOCK W/ BULLET CLIP  
SCALE: 3" = 1'-0"



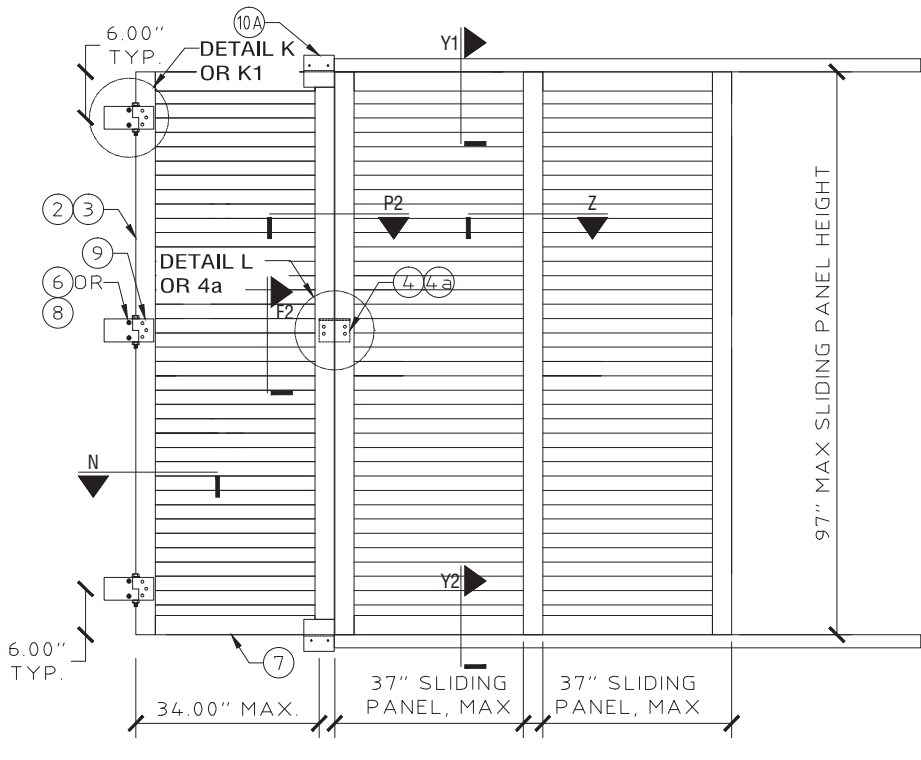
C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP1\2020 FBC\20-26168d - FL16219.1 - DWG.dwg

08/11/2020 - 9:58pm

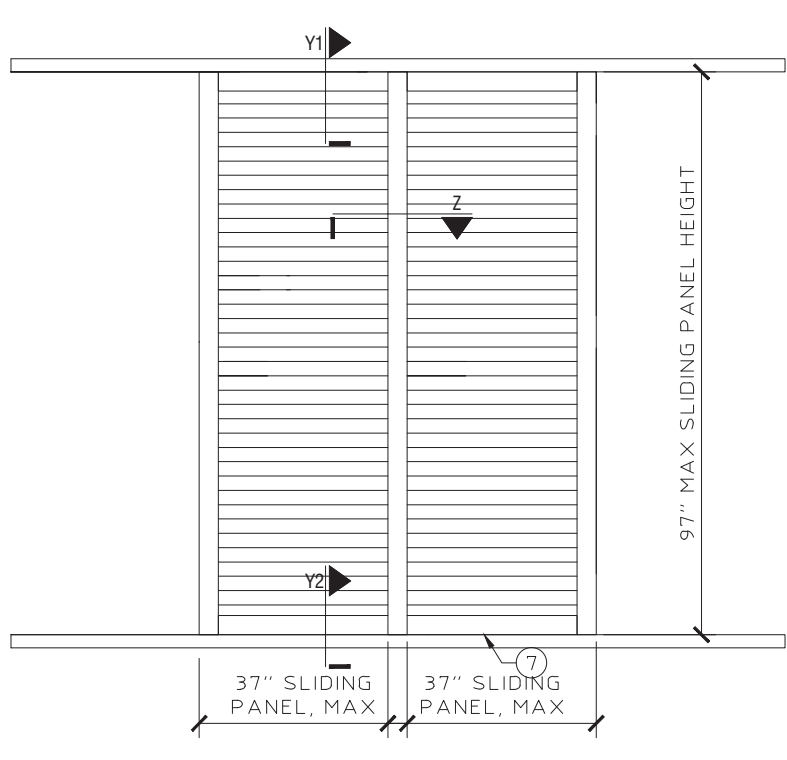
rickn



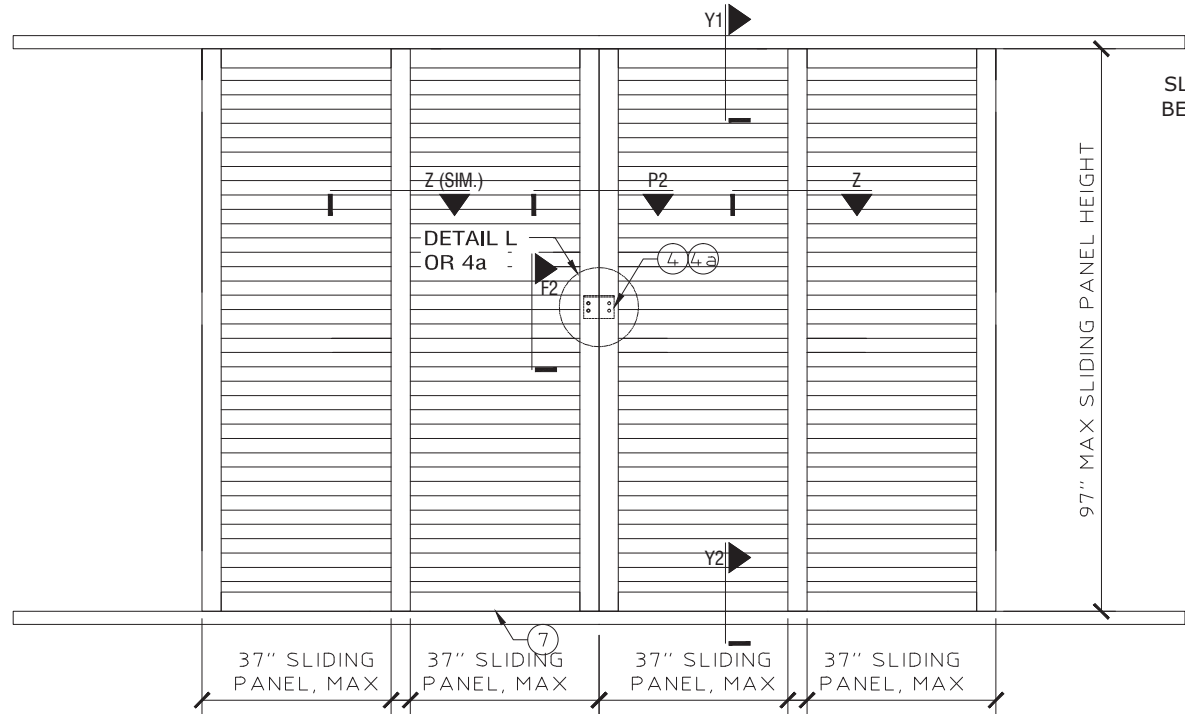
X1 ELEVATION: 2 HINGED AND 2 SLIDING PANELS  
SCALE: N.T.S.



X2 ELEVATION: 1 HINGED AND 2 SLIDING PANELS  
SCALE: N.T.S.

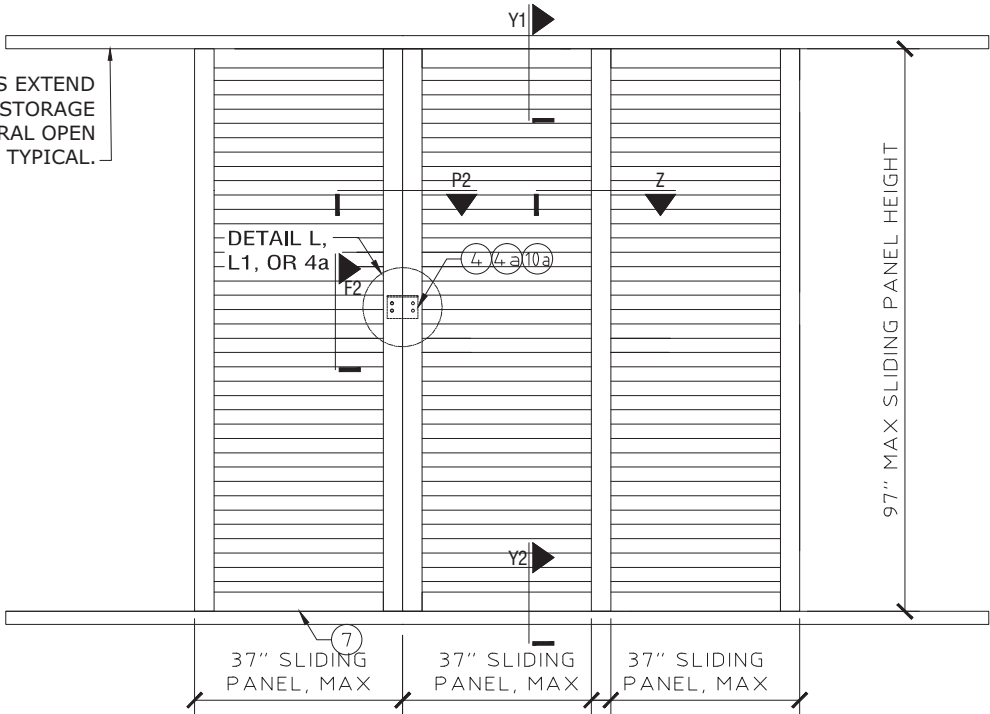


X5 ELEVATION: 2 SLIDING PANELS  
SCALE: N.T.S.



X3 ELEVATION: 4 SLIDING PANELS  
SCALE: N.T.S.

SLIDING PANEL TRACKS EXTEND  
BEYOND FOR SHUTTER STORAGE  
IN NON-STRUCTURAL OPEN  
POSITION, TYPICAL.



X4 ELEVATION: 3 SLIDING PANELS  
SCALE: N.T.S.

NOTE: SLIDING PANEL  
CONSTRUCTION SAME AS  
HINGED PANELS.

FRANK BENNARDO, PE  
PE# 0046549 CA#9885

FRANK L. BENNARDO  
LICENSE  
NO. 0046549  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
01/07/2021

ENGINEERING  
EXPRESS

CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

Town & Country  
INDUSTRIES

Wholesale Aluminum and Building Products  
A Division of AEC Supply Co., Inc.

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT. ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. \* ALTERATIONS, ADDITIONS, HIGHLIGHTING OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

20-26168

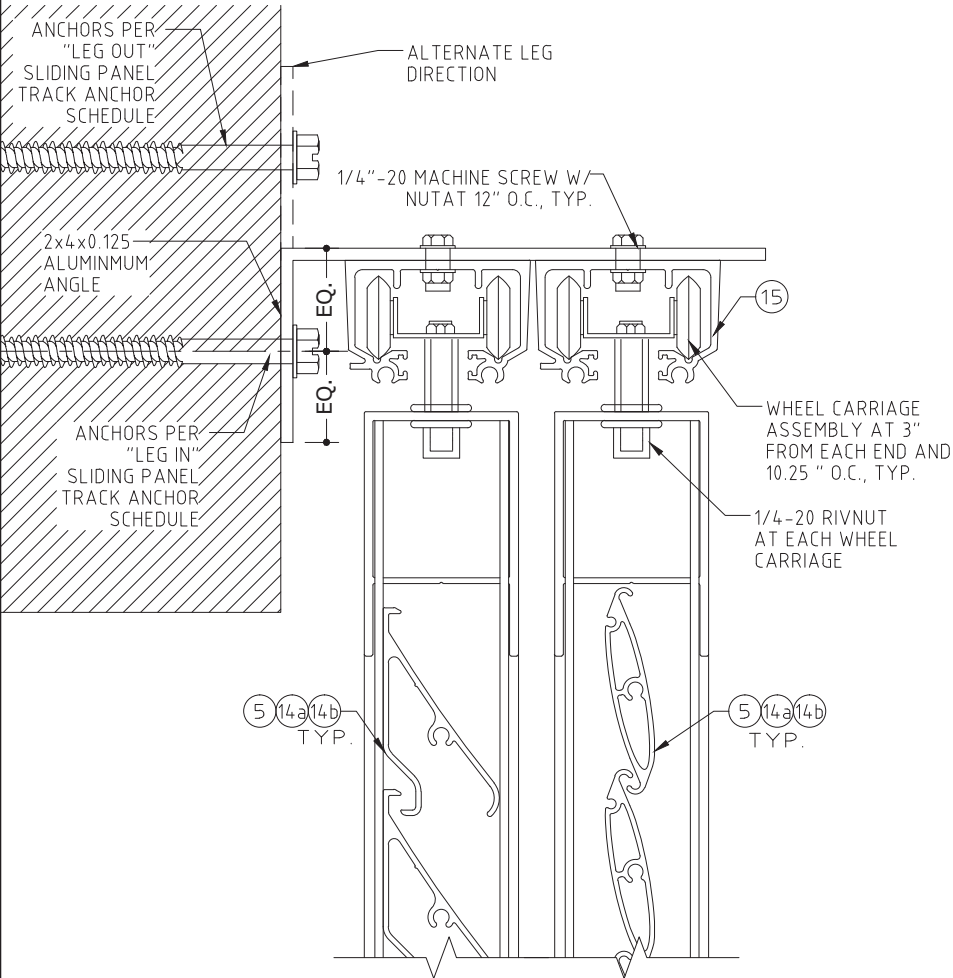
SCALE: -

PAGE DESCRIPTION: -

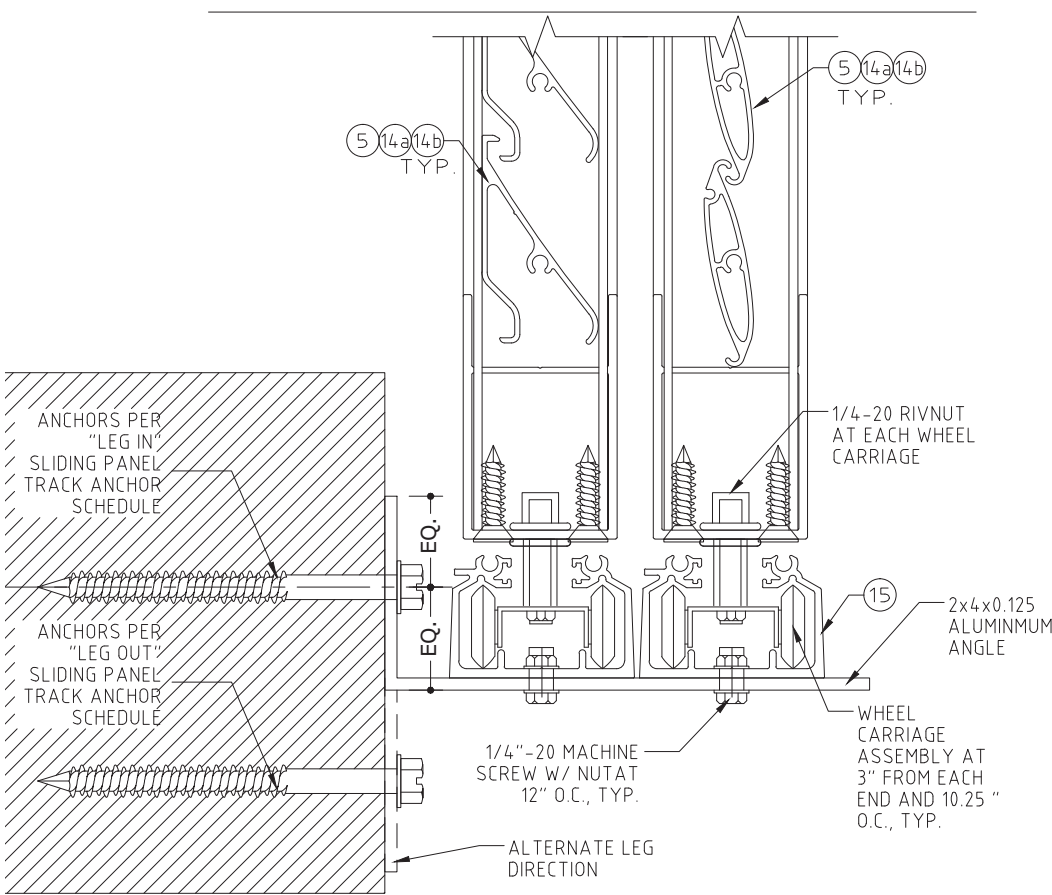
7

OF 9

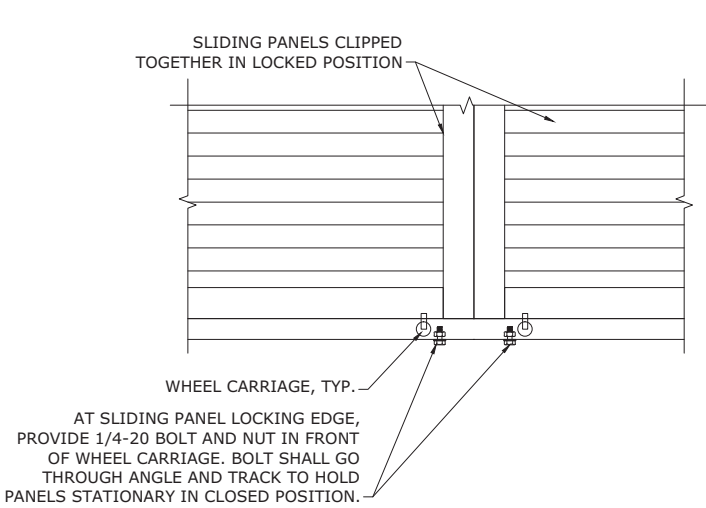
C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP\2020 FBC\20-26168d - FL16219.1 - DWG.dwg  
08/11/2020 - 9:58pm  
rickn



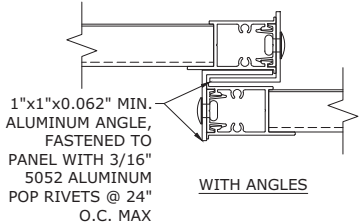
Y1 SLIDING PANEL TOP TRACK  
SCALE: N.T.S.



Y2 SLIDING PANEL BOTTOM TRACK  
SCALE: N.T.S.



ZZ WHEEL CARRIAGE STOPS FOR SLIDING PANELS  
SCALE: N.T.S.



Z SLIDING PANEL INTERLOCK  
SCALE: N.T.S.

### "LEG IN" SLIDING PANEL TRACK ANCHOR SCHEDULE:

HOST STRUCTURE	ANCHOR	SLIDING PANEL VERTICAL SPAN					
		36"	48"	60"	72"	84"	97"
CONCRETE (3192 PSI MIN.)	1/4" ITW SS TAPCONS W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.
	1/4" DEWALT ULTRACON W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.
CONCRETE (3500 PSI MIN.)	1/4" MILLENNIUM MILLFAST W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.
HOLLOW CONCRETE BLOCK	1/4" MILLENNIUM MILLFAST W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	13" O.C.	11" O.C.	9" O.C.	8" O.C.	7" O.C.
	1/4" ITW SS TAPCONS W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	15" O.C.	12" O.C.	9" O.C.	8" O.C.	7" O.C.	6" O.C.
	1/4" DEWALT ULTRACON W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	13" O.C.	10" O.C.	8" O.C.	7" O.C.	6" O.C.
	5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 4" MIN. EDGE DISTANCE.	16" O.C.	16" O.C.	15" O.C.	13" O.C.	11" O.C.	9" O.C.
	5/16" DEWALT ULTRACON W/ 1-1/4" MIN. EMBEDMENT AND 3-1/8" MIN. EDGE DISTANCE	16" O.C.	16" O.C.	16" O.C.	14" O.C.	12" O.C.	10" O.C.
WOOD (G=0.42 MIN.)	1/4" LAG SCREW W/ 1-1/2" MIN. EMBEDMENT AND 3/4" MIN. EDGE DISTANCE	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.	16" O.C.
	#14 SMS OR WOOD SCREW W/ 1-1/2" MIN. EMBEDMENT AND 3/4" MIN. EDGE DISTANCE.	16" O.C.	16" O.C.	16" O.C.	16" O.C.	15" O.C.	13" O.C.

**NOTES:** TABLE PROVIDES MAXIMUM ANCHOR SPACING FOR INDICATED ANCHOR TYPES AND SLIDING PANEL VERTICAL SPANS FOR "LEG IN" CONDITION. ANCHORS SHALL BE LOCATED 2" MAX FROM TRACK ENDS.  
\*ALL MILLENNIUM MILLFAST SCREWS SHALL HAVE T&C ULTRACOTE

### "LEG OUT" SLIDING PANEL TRACK ANCHOR SCHEDULE:

HOST STRUCTURE	ANCHOR	SLIDING PANEL VERTICAL SPAN					
		36"	48"	60"	72"	84"	97"
CONCRETE (3192 PSI MIN.)	1/4" ITW SS TAPCONS W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	13" O.C.	10" O.C.	9" O.C.	7" O.C.	6" O.C.
	1/4" DEWALT ULTRACON W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	16" O.C.	13" O.C.	11" O.C.	9" O.C.	8" O.C.
CONCRETE (3500 PSI MIN.)	1/4" MILLENNIUM MILLFAST W/ 1-3/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	16" O.C.	13" O.C.	10" O.C.	9" O.C.	7" O.C.	6" O.C.
HOLLOW CONCRETE BLOCK	1/4" MILLENNIUM MILLFAST W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	7" O.C.	5" O.C.	4" O.C.			
	1/4" ITW SS TAPCONS W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	6" O.C.	4" O.C.	4" O.C.	3" O.C.	3" O.C.	
	1/4" DEWALT ULTRACON W/ 1-1/4" MIN. EMBEDMENT AND 2-1/2" MIN. EDGE DISTANCE	6" O.C.	5" O.C.	4" O.C.	3" O.C.	3" O.C.	
	5/16" ITW TAPCON XL W/ 1-3/4" MIN. EMBEDMENT AND 4" MIN. EDGE DISTANCE.	10" O.C.	7" O.C.	6" O.C.	5" O.C.	4" O.C.	4" O.C.
	5/16" DEWALT ULTRACON W/ 1-1/4" MIN. EMBEDMENT AND 3-1/8" MIN. EDGE DISTANCE	10" O.C.	8" O.C.	6" O.C.			
WOOD (G=0.42 MIN.)	1/4" LAG SCREW W/ 1-1/2" MIN. EMBEDMENT AND 3/4" MIN. EDGE DISTANCE	16" O.C.	14" O.C.	11" O.C.	10" O.C.	8" O.C.	7" O.C.
	#14 SMS OR WOOD SCREW W/ 1-1/2" MIN. EMBEDMENT AND 3/4" MIN. EDGE DISTANCE.	13" O.C.	10" O.C.	8" O.C.	7" O.C.	6" O.C.	5" O.C.

**NOTES:** TABLE PROVIDES MAXIMUM ANCHOR SPACING FOR INDICATED ANCHOR TYPES AND SLIDING PANEL VERTICAL SPANS FOR ALTERNATE "LEG OUT" CONDITION. ANCHORS SHALL BE LOCATED 2" MAX FROM TRACK ENDS.  
\*ALL MILLENNIUM MILLFAST SCREWS SHALL HAVE T&C ULTRACOTE

FRANK BENNARDO, PE  
PE# 0046549 CA#9885

FRANK L. BENNARDO  
LICENSE  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
01/07/2021

ENGINEERING  
EXPRESS®

CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

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

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT. ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. ANY ALTERATIONS, ADDITIONS, HIGHLIGHTS OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

20-26168

SCALE: -

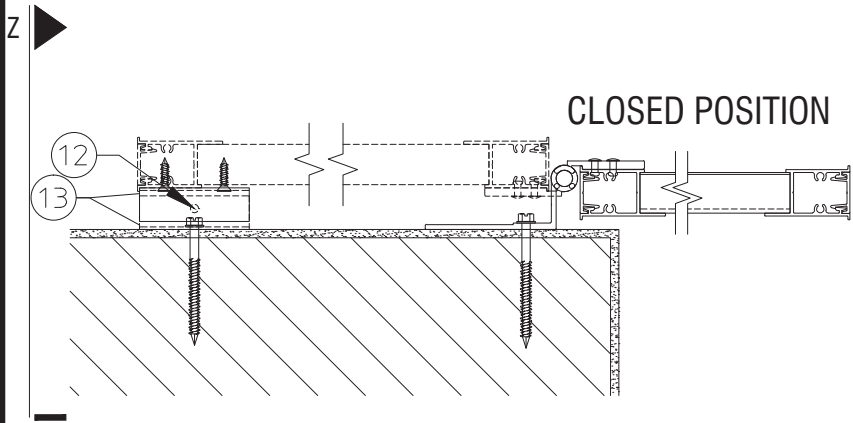
PAGE DESCRIPTION:

8

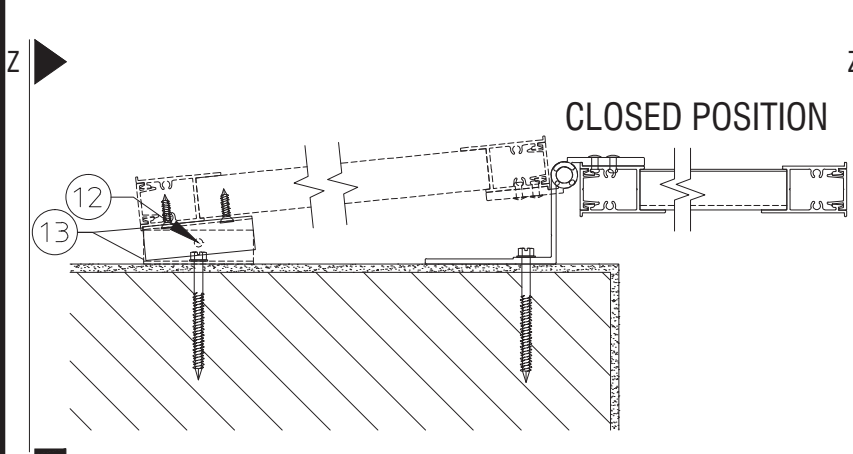
OF 8



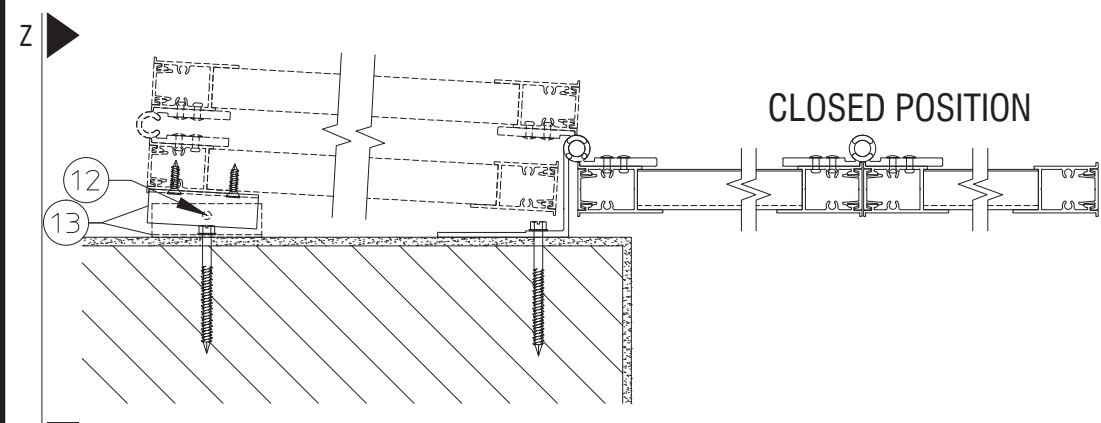
C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26168 - FL16219.1 - FullView Colonial Shutter Hybrid\WP\2020 FBC\20-26168d - FL16219.1 - DWG.dwg 08/11/2020 - 9:58pm rickn



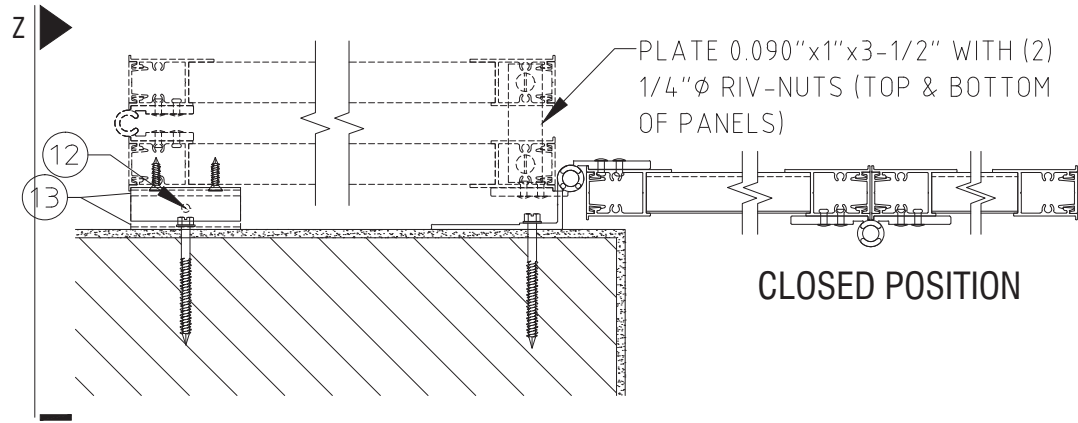
R PLAN VIEW 1  
SCALE: 1-1/2" = 1'-0"



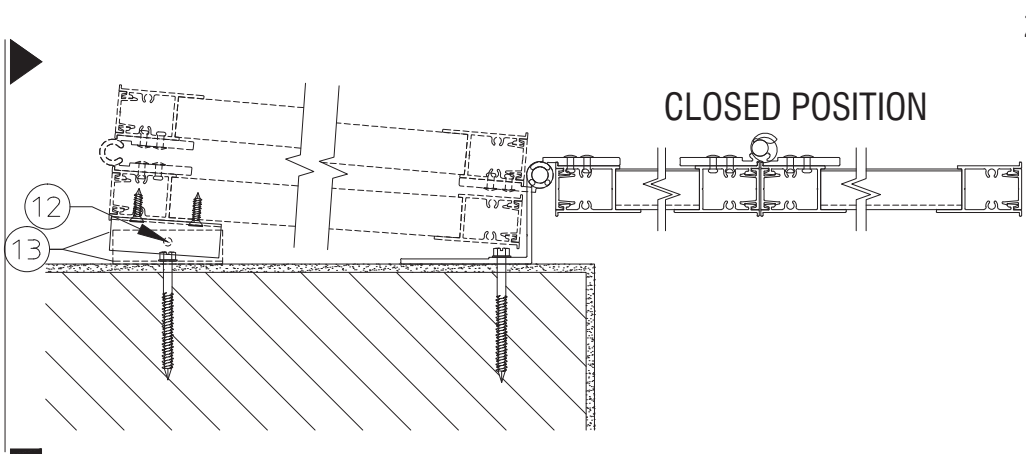
U PLAN VIEW 4  
SCALE: 1-1/2" = 1'-0"



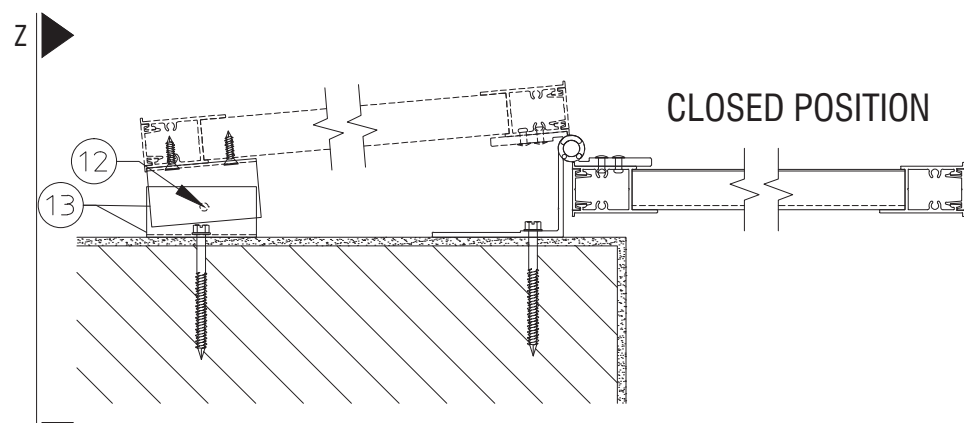
W PLAN VIEW 7  
SCALE: 1-1/2" = 1'-0"



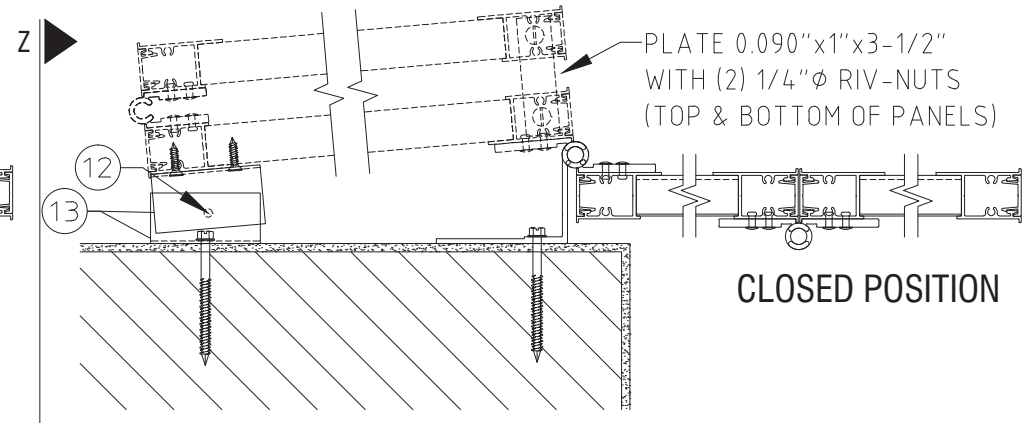
S PLAN VIEW 2  
SCALE: 1-1/2" = 1'-0"



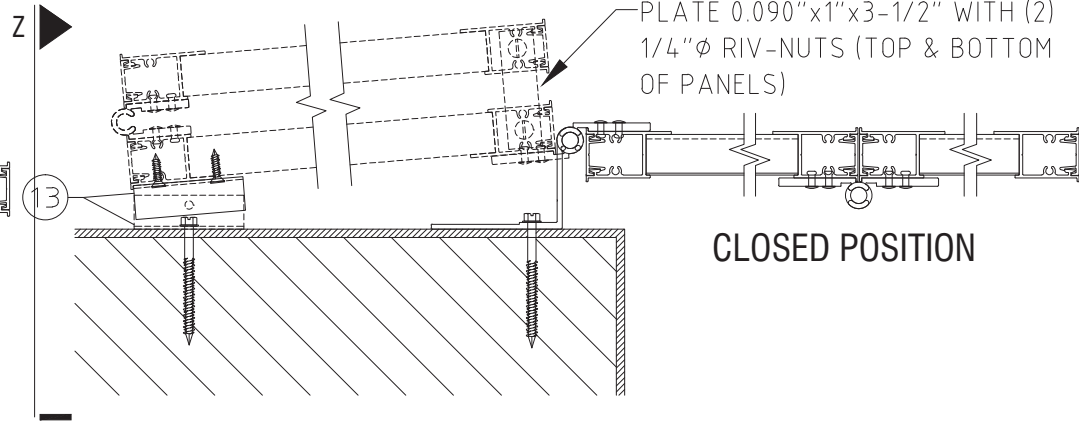
V PLAN VIEW 5  
SCALE: 1-1/2" = 1'-0"



X PLAN VIEW 6  
SCALE: 1-1/2" = 1'-0"



T PLAN VIEW 3  
SCALE: 1-1/2" = 1'-0"



Y PLAN VIEW 8  
SCALE: 1-1/2" = 1'-0"

FRANK BENNARDO, PE  
PE# 0046549 CA#9885

FRANK L. BENNARDO  
LICENSE  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER  
01/07/2021

ENGINEERING EXPRESS®

CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM

Town & Country  
INDUSTRIES

Wholesale Aluminum and Building Products  
A Division of AEC Supply Co., Inc.

400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309

FL16219.1

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CB	RWN	6/24/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. \* ALTERATIONS, ADDITIONS, HIGHLIGHTS, OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.

20-26168

SCALE: -

PAGE DESCRIPTION:

9

OF 9