

# COLONIAL SHUTTER (HVHZ)

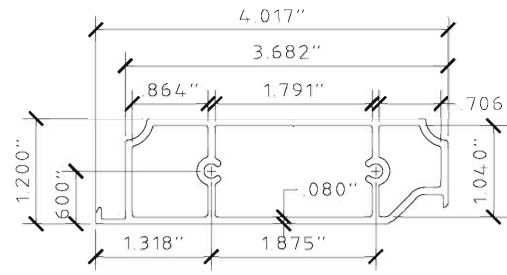
PATENT #8126298

## GENERAL NOTES:

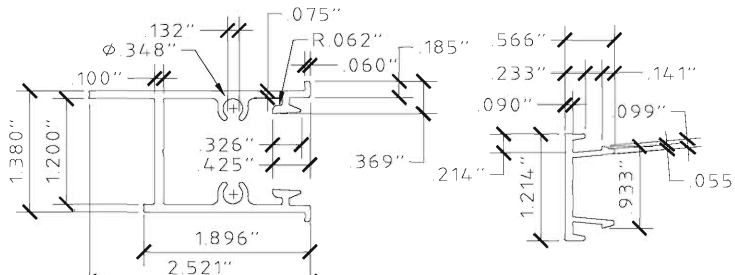
1. THESE INSTALLATION INSTRUCTIONS ARE PART OF A PRODUCT APPROVAL EVALUATION AND SHALL ONLY BE USED IN CONJUNCTION WITH THE EVALUATION REPORT SUBMITTED FOR THE SAME PRODUCT APPROVAL.
2. THIS SYSTEM HAS BEEN TESTED AND EVALUATED AS A LEVEL D LARGE MISSILE IMPACT PROTECTIVE SYSTEM IN ACCORDANCE WITH THE FLORIDA BUILDING CODE SEVENTH EDITION (2020), FOR USE INSIDE THE HIGH VELOCITY HURRICANE ZONE, AND THE INTERNATIONAL BUILDING CODE (IBC) AND INTERNATIONAL RESIDENTIAL CODE (IRC). SEE EVALUATION 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. SEE EVALUATION REPORT FOR MORE INFORMATION.
5. DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.
6. 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.
7. 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.
8. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE.
9. PERMIT HOLDER SHALL VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS.
10. ANCHORS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
11. USE OF THESE APPROVAL DOCUMENTS SHALL COMPLY WITH CHAPTER 61G15-23 OF THE FLORIDA ADMINISTRATIVE CODE.
12. 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.
13. ANY MODIFICATIONS OR ADDITIONS TO THESE APPROVAL DOCUMENTS WILL VOID THE APPROVAL DOCUMENTS.
14. 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

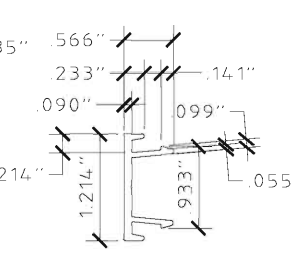
15. ALL EXTRUSIONS SHOWN SHALL BE 6063-T6 ALUMINUM ALLOY, U.O.N., WITH A MINIMUM Fy OF 25 K.S.I.
16. ALL BOLTS AND WASHERS (EXCLUDING INSTALLATION) SHALL BE STAINLESS STEEL WITH A MINIMUM TENSILE STRENGTH OF 60 K.S.I., U.O.N. POP RIVETS SHALL BE 1/4"Ø OR 3/16"Ø 5052 ALUM. ALLOY.
17. MAXIMUM ALLOWABLE DESIGN PRESSURE IN CLOSED POSITION PROVIDING WIND LOAD & IMPACT RESISTANCE = **+69.3/-79.5 PSF** FOR ALL NON-SLIDING PANEL WITH TRACK CONFIGURATIONS. MAXIMUM ALLOWABLE DESIGN PRESSURE IN CLOSED POSITION FOR ALL SLIDING PANEL TRACK CONFIGURATIONS = **+57.2/-66.2 PSF**.
18. MAXIMUM ALLOWABLE DESIGN PRESSURE IN OPEN POSITION = +/- 28 PSF
19. SHUTTER ASSEMBLY MUST BE CLOSED AND SECURED AND SHALL NOT BE LEFT IN THE OPEN POSITION IN THE EVENT OF A WIND STORM EVENT.
20. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED.



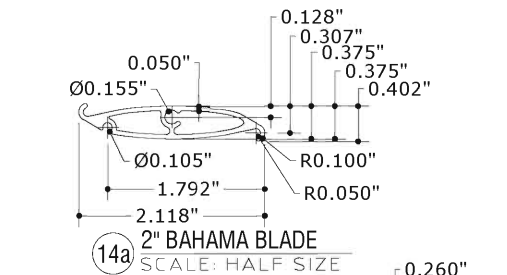
1 MUNTIN  
SCALE: HALF SIZE



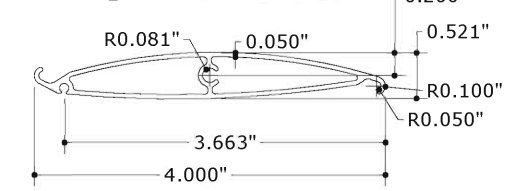
2 JAMB  
SCALE: HALF SIZE



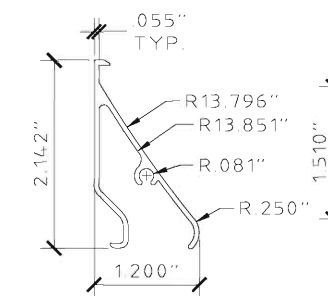
3 JAMB SNAP  
SCALE: HALF SIZE



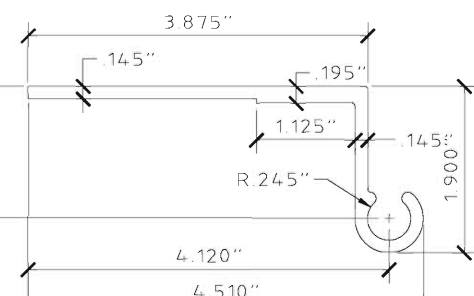
14a 2" BAHAMA BLADE  
SCALE: HALF SIZE



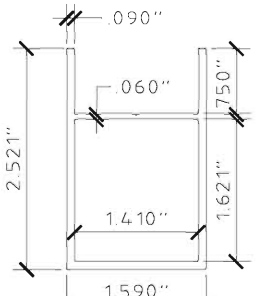
14b 4" BAHAMA BLADE  
SCALE: HALF SIZE



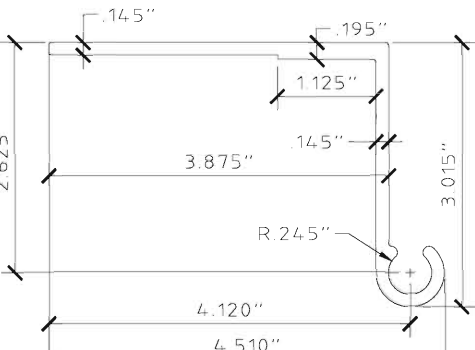
5 COLONIAL BLADE  
SCALE: HALF SIZE



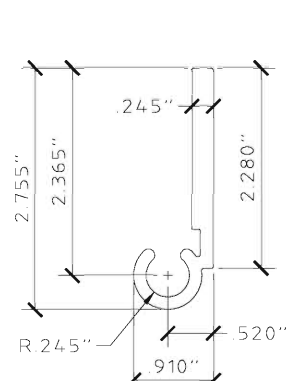
6 WALL HINGE  
SCALE: HALF SIZE



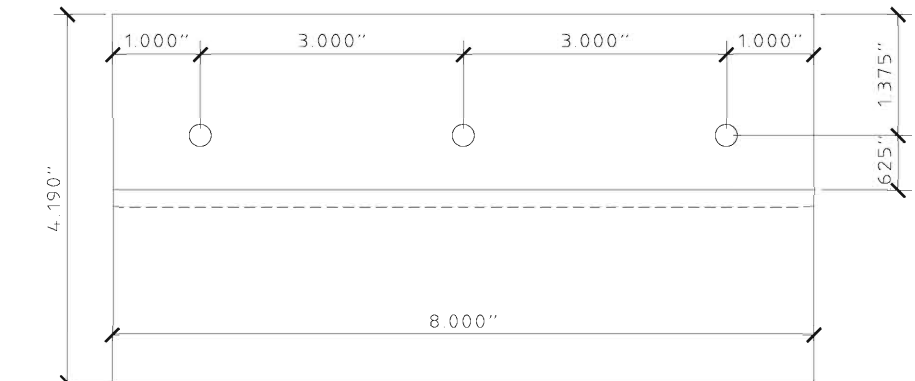
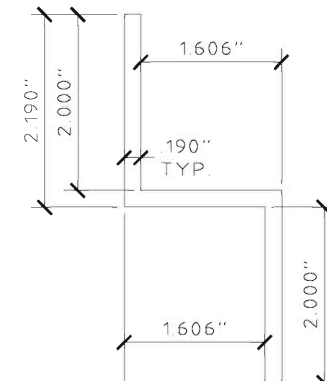
7 HEADER / SILL  
SCALE: HALF SIZE



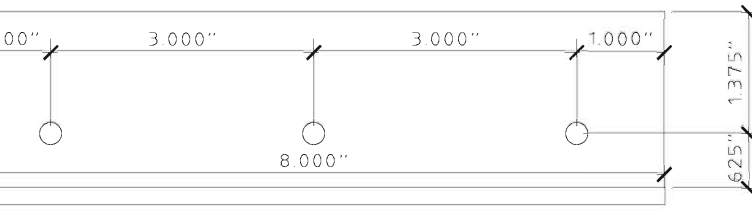
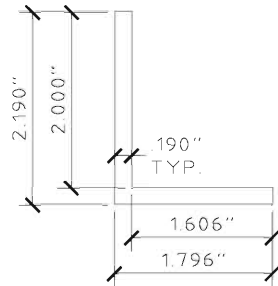
8 BUILD-OUT WALL HINGE  
SCALE: HALF SIZE



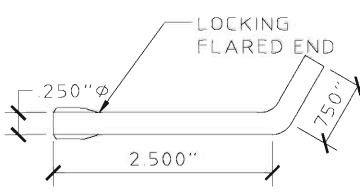
9 FLAT HINGE  
SCALE: HALF SIZE



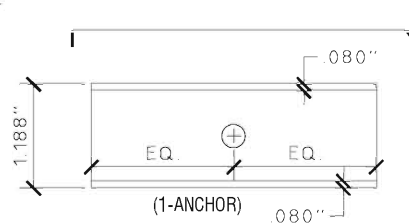
10 "Z" BAR - PROFILE & LAYOUT  
SCALE: HALF SIZE



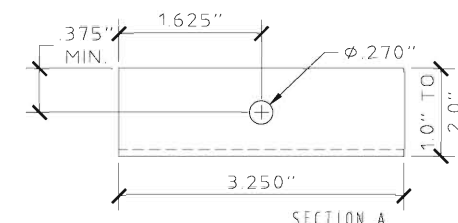
11 ANGLE  
SCALE: HALF SIZE



12 L-PIN - 1/4" Ø  
SCALE: HALF SIZE



13 "C" CLIPS  
SCALE: HALF SIZE



VISIT [ECALC.IO/26193](http://ECALC.IO/26193)  
FOR SITE SPECIFIC DEVIATIONS  
& MORE INFORMATION ABOUT THIS DOCUMENT  
OR SCAN THIS QR CODE  
VISIT [ENGINEERINGEXPRESS.COM/STORE](http://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  
FL16219.2

DRWN	CHKD	DATE
KL	FLB	12/20/12
RWN	TSB	4/16/15
RWN	FLB	9/28/16
RWN	FLB	8/07/17
CCB	RWN	7/01/20

REMARKS  
INIT ISSUE  
2014 FBC  
REV - ADD 4" BLADE  
2017 FBC  
2020 FBC

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, 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.

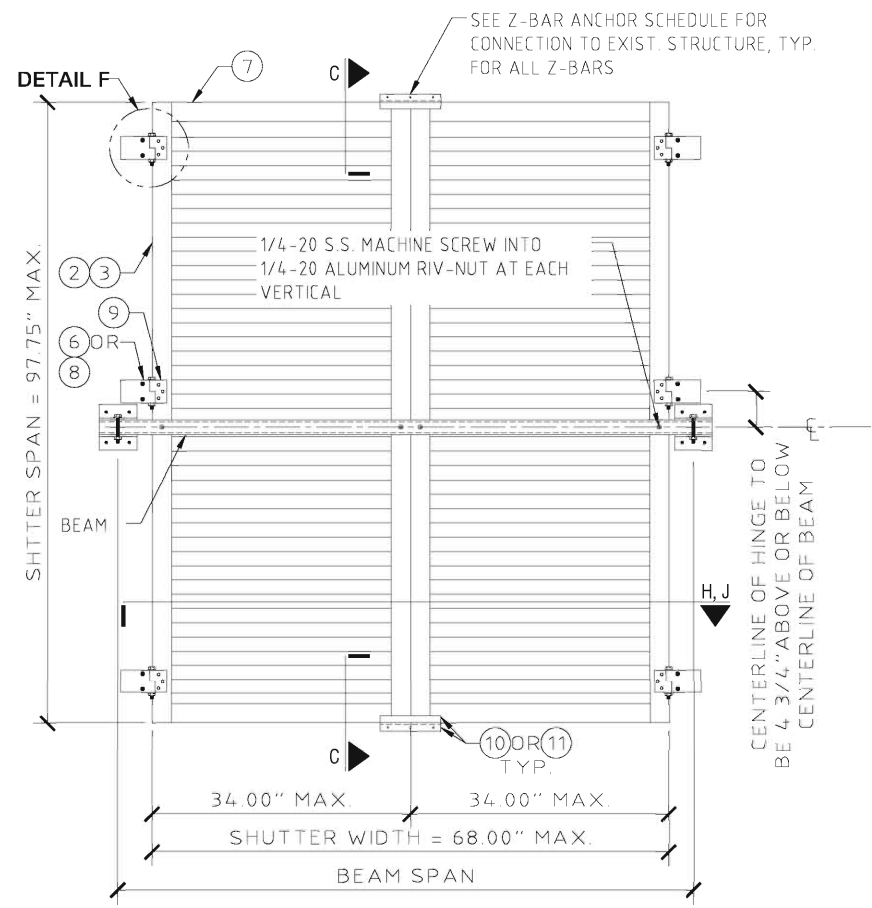
COPYRIGHT FRANK L. BENNARDO P.E.

20-26193

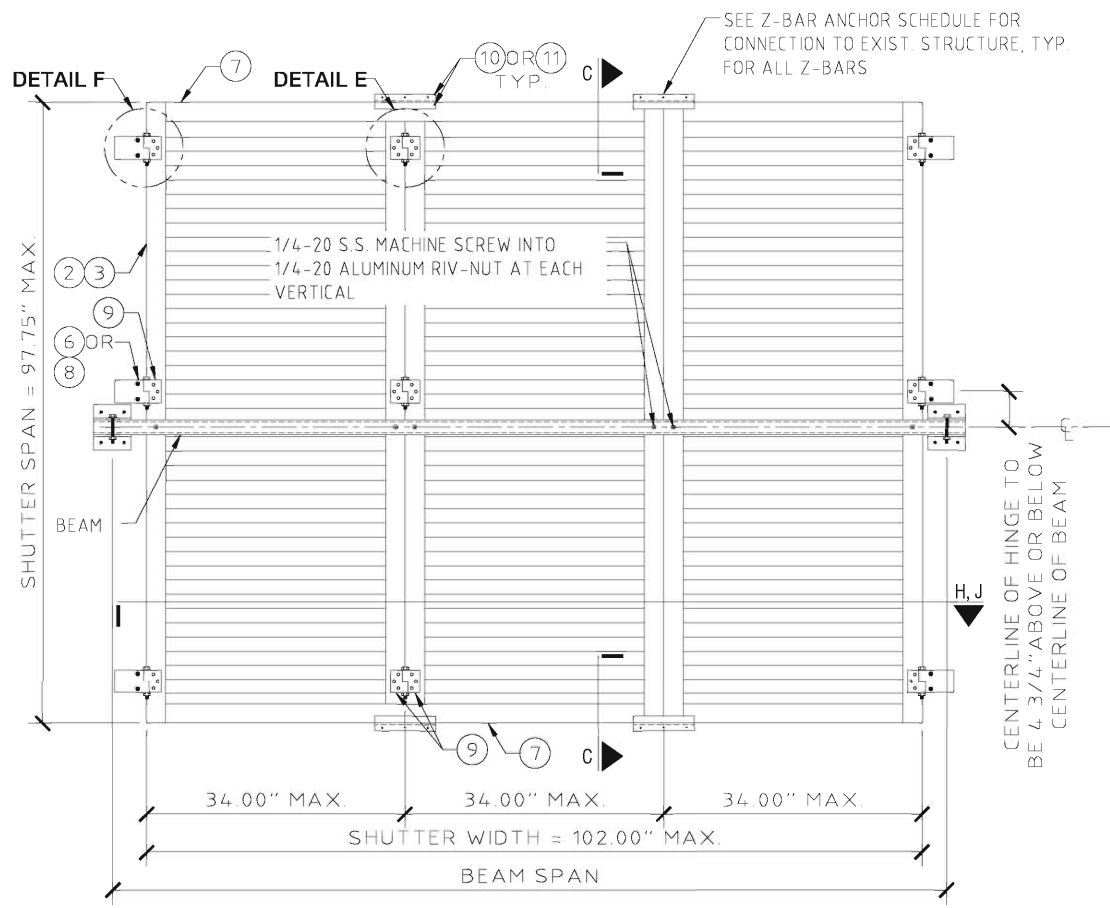
SCALE: -  
PAGE DESCRIPTION: -

OF 7  
1

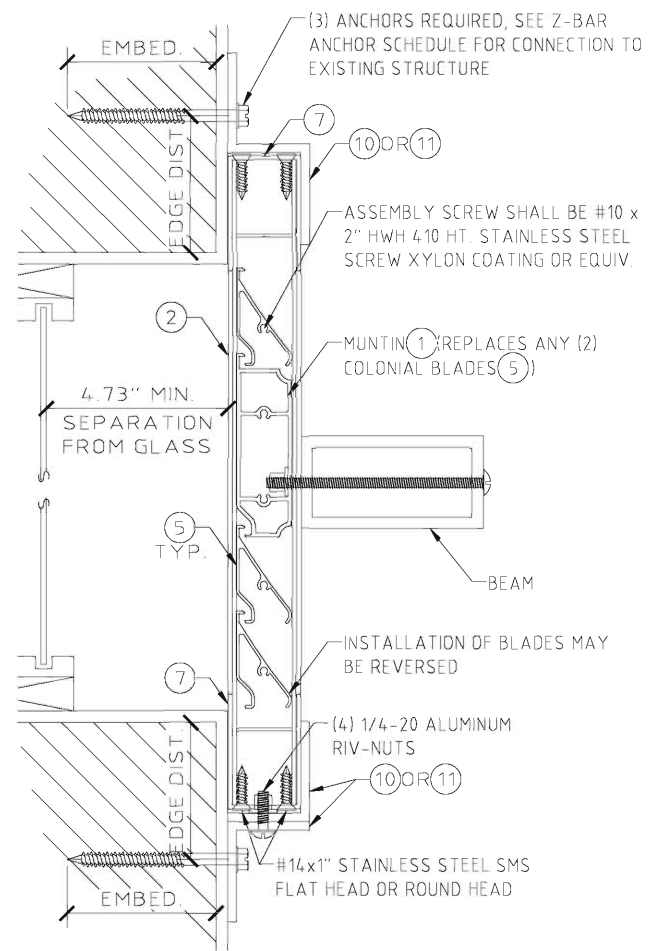
# COLONIAL SHUTTER (HVHZ ONLY)



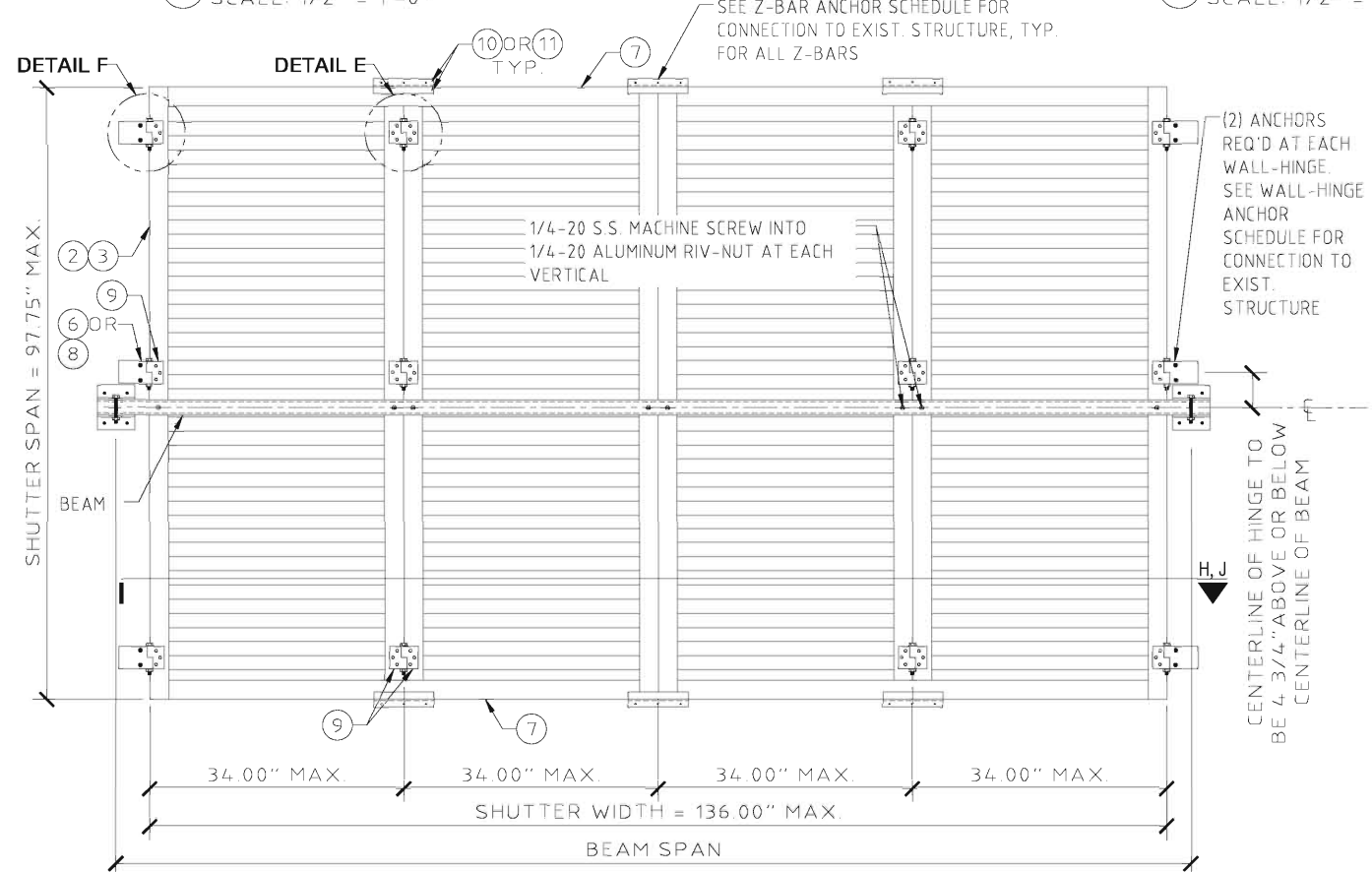
**A** TYPICAL ELEVATION 2 PANEL  
SCALE: 1/2" = 1'-0"



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



**C** TYPICAL PANEL SECTION  
SCALE: 3" = 1'-0"



**D** TYPICAL ELEVATION 4 PANELS MAX.  
SCALE: 1/2" = 1'-0"

## BEAM SCHEDULE

BEAM SIZE	ALUMINUM ALLOY	SHUTTER SPAN	BEAM SPAN (+/- 79.5 PSF MAX)	WALL BRACKET ANCHOR TYPES (+69.3/-79.5 PSF MAX)		
				CONCRETE	HOLLOW BLOCK	WOOD (G=0.42 MIN)
2"x3"x1/8"	6063-T6	8'-1.75"	5' 6"	A,B,C,D,E	A,C,E	B,C
		6'-8"	6' 1"	A,B,C,D,E	A,B,C,E	B,C
		5'-10"	6' 6"	A,B,C,D,E	A,B,C,E	B,C
2"x4"x1/8"	6063-T6	8'-1.75"	6' 9"	A,B,C,D,E	A,C	B,C
		6'-8"	7' 5"	A,B,C,D,E	A,C	B,C
		5'-10"	8' 0"	A,B,C,D,E	A,C	B,C
2"x5"x1/8"	6063-T6	8'-1.75"	8' 0"	A,B,C,D,E	A,C	
		6'-8"	8' 10"	A,B,C,D,E	A,C	B,C
		5'-10"	9' 5"	A,B,C,D,E	A,C	B,C
2"x4"x1/4"	6061-T6	8'-1.75"	10' 5"	A,B,C,D,E		
		6'-8"	11' 6"	A,B,C,D,E	A,C	
		5'-10"	12' 4"	A,B,C,D,E	A,C	

- TYPE A:** 1/4-20 ALL POINT SOLID SET ANCHORS:
  - IN CONCRETE (3.35KSI MIN) WITH 7/8" MIN EMBED., 3" MIN EDGE DIST. AND 3" MIN SPACING
  - IN HOLLOW CONCRETE BLOCK WITH 7/8" MIN EMBED., 3" MIN EDGE DIST. AND 3" MIN SPACING
- TYPE B:** 1/4" EYEWALL ARMOR MALE/FEMALE BOLT OR 1/4-20 DEWALT PANELMATES (MALE/FEMALE):
  - IN CONCRETE (3.35KSI MIN) WITH 1 3/4" MIN EMBED., 2 1/2" MIN EDGE DIST. AND 3" MIN SPACING
  - IN HOLLOW CONCRETE BLOCK WITH 1 1/4" MIN EMBED., 2" MIN EDGE DIST. AND 3" MIN SPACING
  - IN WOOD (G=0.42 MIN) WITH 1 1/2" MIN EMBED., 3/4" MIN EDGE DIST. AND 1 1/2" MIN SPACING
- TYPE C:** 1/4" ITW TAPCON SG:
  - IN CONCRETE (3.35KSI MIN) WITH 1 3/4" MIN EMBED., 2 1/2" MIN EDGE DIST. AND 3" MIN SPACING
  - IN HOLLOW CONCRETE BLOCK WITH 1 1/4" MIN EMBED., 2" MIN EDGE DIST. AND 3" MIN SPACING
  - IN WOOD (G=0.42 MIN) WITH 1 7/8" MIN EMBED., 3/4" MIN EDGE DIST. AND 1 1/2" MIN SPACING
- TYPE D:** 1/4" MILLENIUM MILLFAST (W/ T&C ULTRACOTE):
  - IN CONCRETE (3.275KSI MIN) WITH 1 3/4" EMBED., 2 1/2" EDGE DIST., AND 4" MIN SPACING
  - IN HOLLOW CONCRETE BLOCK WITH 1 1/4" EMBED., 2 1/2" MIN EDGE DIST. AND 4" MIN SPACING
- TYPE E:** #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT:
  - IN CONCRETE (2KSI MIN) WITH 2" EMBED, 2" EDGE DIST. AND 3" MIN SPACING
  - IN HOLLOW CONCRETE BLOCK WITH 1 1/4" EMBED, 2" EDGE DIST. AND 3" MIN SPACING

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

FL16219.2

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	CCB	RWN	7/01/20

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, 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.

**20-26193**

SCALE: -

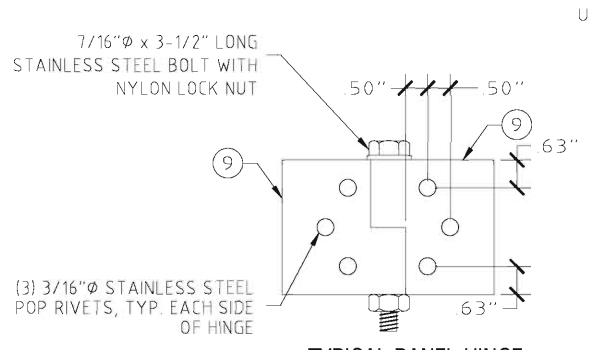
PAGE DESCRIPTION: -

2 OF 7

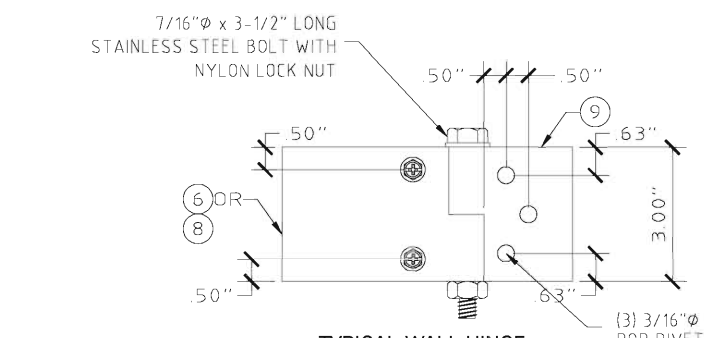
08/11/2020 - 10:01pm rickn C:\Users\rickn\Engineering\Express\Production - Documents\Projects\20-26193 - FL16219.2 - FullView Colonial Shutter Hybrid (HVHZ Only)\WP12020 FBC\20-26193d - FL16219.2 - DWG.dwg



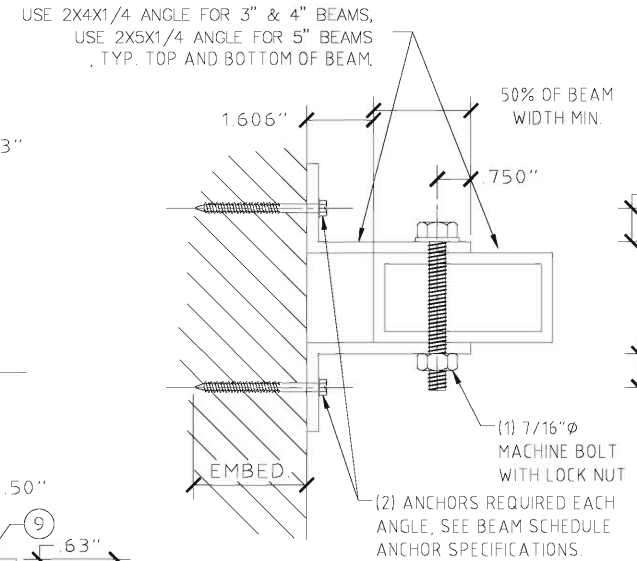
**ENGINEERING EXPRESS**  
CORPORATE OFFICE:  
160 SW 12th AVE, SUITE 106  
DEERFIELD BEACH, FL 33442  
(954) 354-0660 | (866) 396-9999  
TEAM@ENGINEERINGEXPRESS.COM  
ENGINEERINGEXPRESS.COM



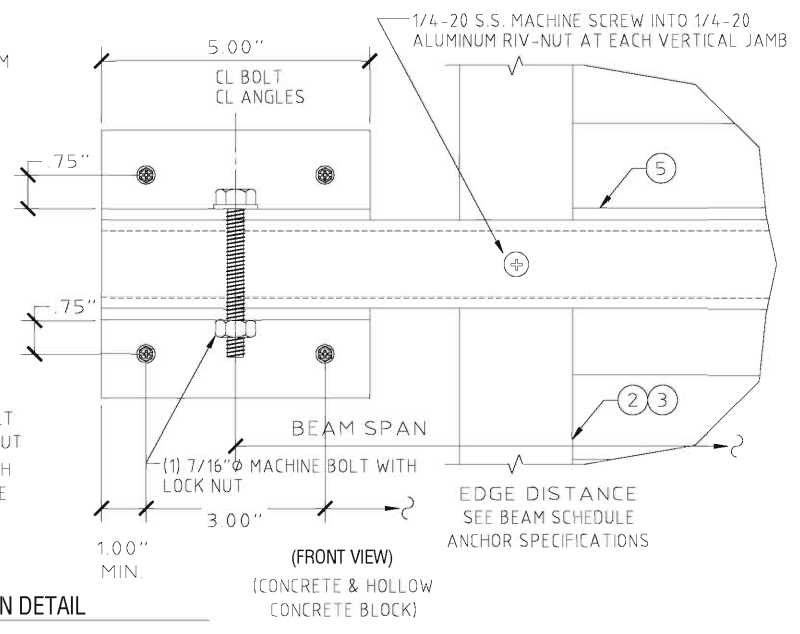
**E TYPICAL PANEL HINGE**  
SCALE: 3" = 1'-0"



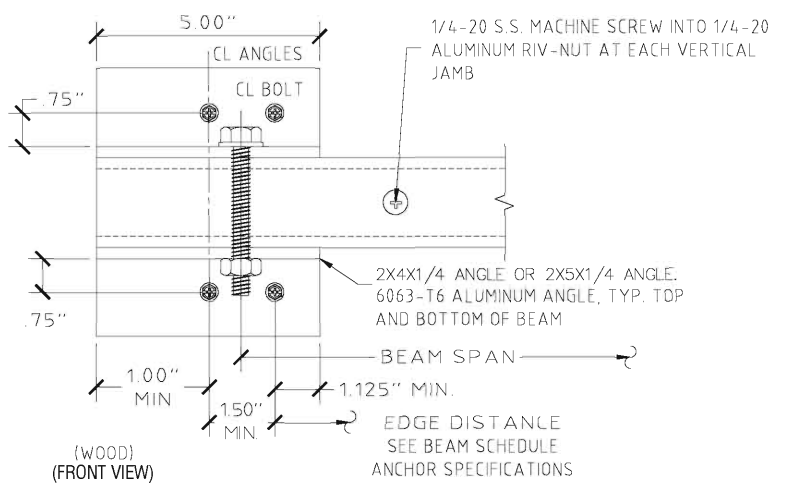
**F TYPICAL WALL HINGE**  
SCALE: 3" = 1'-0"



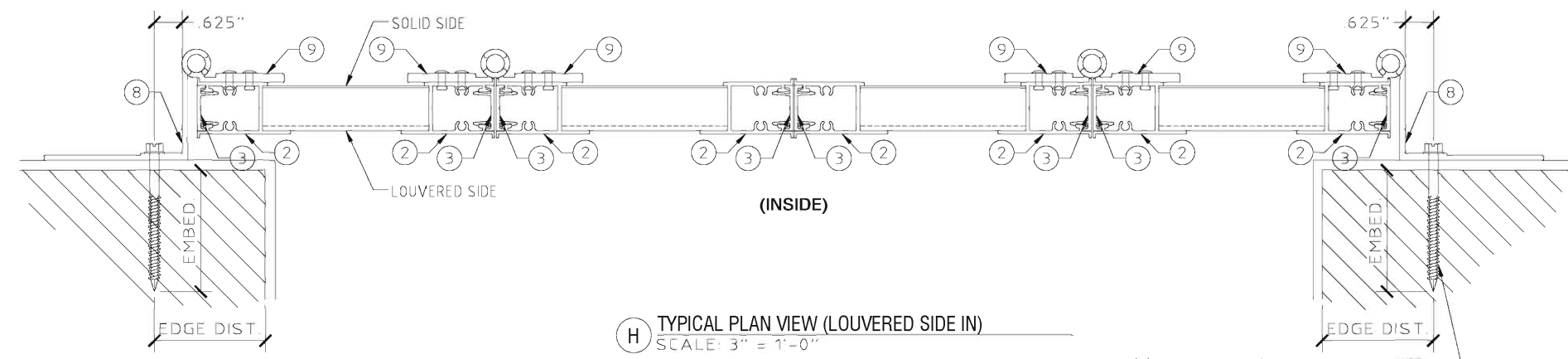
**G TYPICAL WALL BRACKET CONNECTION DETAIL**  
SCALE: 3" = 1'-0"



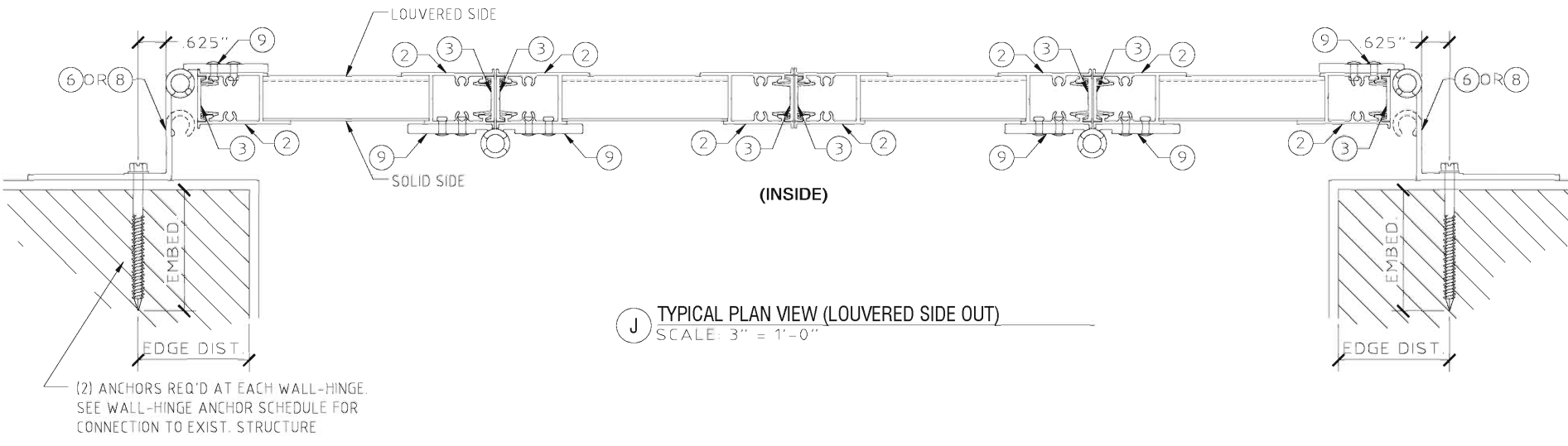
**H TYPICAL PLAN VIEW (LOUVERED SIDE IN)**  
SCALE: 3" = 1'-0"



**I TYPICAL PLAN VIEW (LOUVERED SIDE OUT)**  
SCALE: 3" = 1'-0"



**J TYPICAL PLAN VIEW (LOUVERED SIDE OUT)**  
SCALE: 3" = 1'-0"



**K TYPICAL PLAN VIEW (LOUVERED SIDE OUT)**  
SCALE: 3" = 1'-0"

**Z-BAR ANCHOR SCHEDULE**

MANUF.	DIAMETER	DESCRIPTION	MIN. EDGE DISTANCE	MIN. EMBED.	MIN. SPACING
<b>CONCRETE (MIN. f<sub>c</sub> = 3350 PSI)</b>					
DEWALT	1/4 IN.	STAINLESS STEEL PANELMATE	2.50 IN	2.00 IN	3.00 IN
DEWALT	1/4 IN.	MALE PANELMATE (or P..PRO)	2.50 IN	2.00 IN	3.00 IN
DEWALT	1/4 IN.	FEMALE PANELMATE	2.50 IN	1.75 IN	3.00 IN
EYEWALL ARMOR	1/4 IN.	MALE/FEMALE BOLT	2.50 IN	1.75 IN	3.00 IN
ITW	1/4 IN.	TAPCON SG	2.50 IN	1.75 IN	3.00 IN
ALL-POINTS	1/4 IN.	SOLID-SET ANCHOR	2.00 IN	0.875 IN	3.00 IN
MILLENIUM	1/4 IN.	MILLFAST	2.50 IN	1.75 IN	3.00 IN
<b>HOLLOW CONCRETE BLOCK</b>					
DEWALT	1/4 IN.	STAINLESS STEEL PANELMATE	2.00 IN	1.25 IN	3.00 IN
DEWALT	1/4 IN.	MALE PANELMATE (or P..PRO)	2.00 IN	1.25 IN	3.00 IN
DEWALT	1/4 IN.	FEMALE PANELMATE	2.00 IN	1.25 IN	3.00 IN
EYEWALL ARMOR	1/4 IN.	MALE/FEMALE BOLT	2.50 IN	1.25 IN	3.00 IN
ITW	1/4 IN.	TAPCON SG	2.50 IN	1.25 IN	3.00 IN
ALL-POINTS	1/4 IN.	SOLID-SET ANCHOR	2.50 IN	0.875 IN	3.00 IN
MILLENIUM	1/4 IN.	MILLFAST	2.50 IN	1.25 IN	3.00 IN
<b>WOOD (SOUTHERN YELLOW PINE, G=0.54)</b>					
DEWALT	1/4 IN.	STAINLESS STEEL PANELMATE	0.75 IN	1.875 IN	3.00 IN
DEWALT	1/4 IN.	MALE PANELMATE (or P..PRO)	0.75 IN	1.875 IN	3.00 IN
DEWALT	1/4 IN.	FEMALE PANELMATE	0.75 IN	1.875 IN	3.00 IN
EYEWALL ARMOR	1/4 IN.	MALE/FEMALE BOLT	0.75 IN	1.50 IN	3.00 IN
ITW	1/4 IN.	TAPCON SG	0.75 IN	1.50 IN	3.00 IN
	1/4 IN.	S.S. HANGER BOLT	0.75 IN	1.25 IN	1.50 IN
<b>WOOD (SPRUCE-PINE-FIR (SPF), G=0.42)</b>					
	1/4 IN.	S.S. HANGER BOLT	0.75 IN	1.25 IN	1.50 IN

**WALL-HINGE ANCHOR SCHEDULE**

MANUF.	DIAMETER	DESCRIPTION	MIN. EDGE DISTANCE	MIN. EMBED.	MIN. SPACING
<b>CONCRETE (MIN. f<sub>c</sub> = 3192 PSI)</b>					
ITW	1/4 IN.	SS TAPCON	2.50 IN	1.00 IN	2.00 IN
ITW	5/16 IN.	TAPCON XL	2.1875 IN	1.75 IN	2.00 IN
<b>HOLLOW CONCRETE BLOCK</b>					
DEWALT	1/4 IN.	ULTRACON	2.50 IN	1.25 IN	2.00 IN
ITW	5/16 IN.	TAPCON XL	2.1875 IN	1.75 IN	2.00 IN
<b>WOOD (G=0.42 MIN)</b>					
	#14	SMS OR WOOD SCREW	0.75 IN	1.50 IN	1.50 IN
	1/4 IN.	LAG SCREW	0.75 IN	1.25 IN	1.50 IN

**Town & Country INDUSTRIES**  
Wholesale Aluminum and Building Products  
A Division of AEC Supply Co., Inc.  
400 WEST MCNAB ROAD  
FT. LAUDERDALE, FL 33309  
FL16219.2

DRWN	CHKD	DATE
KL	FLB	12/20/12
	TSB	4/16/15
	RWN	9/28/16
	FLB	8/07/17
	RWN	7/01/20

REMARKS:  
2014 FBC  
REV - ADD 4" BLADE  
2017 FBC  
2020 FBC

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.

**20-26193**  
SCALE: -  
PAGE DESCRIPTION: -

C:\Users\rickn\Engineering\Express\Production - Documents\Projects\20-26193 - FL16219.2 - FullView Colonial Shutter Hybrid (HVHZ Only)\WP12020\FBC20-26193d - FL16219.2 - DWG.dwg  
08/11/2020 - 10:01pm rickn



**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  
FL16219.2

DRWN	CHKD	DATE
KL	FLB	12/20/12
RWN	TSB	4/16/15
RWN	FLB	9/28/16
RWN	FLB	8/07/17
CCB	RWN	7/01/20

REMARKS  
INIT ISSUE  
2014 FBC  
REV - ADD 4" BLADE  
2017 FBC  
2020 FBC

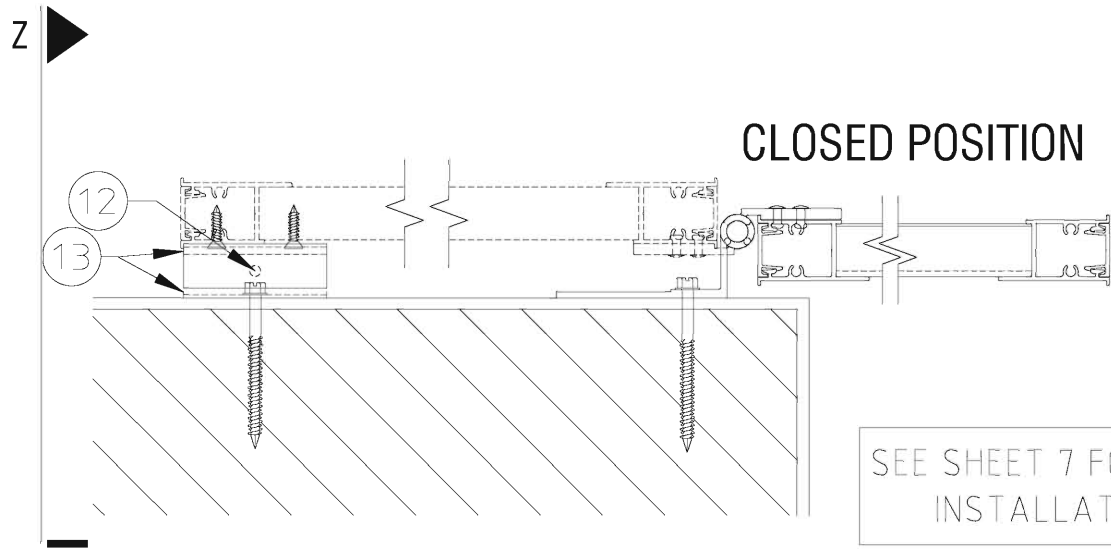
THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. \*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

COPYRIGHT FRANK L. BENNARDO P.E.

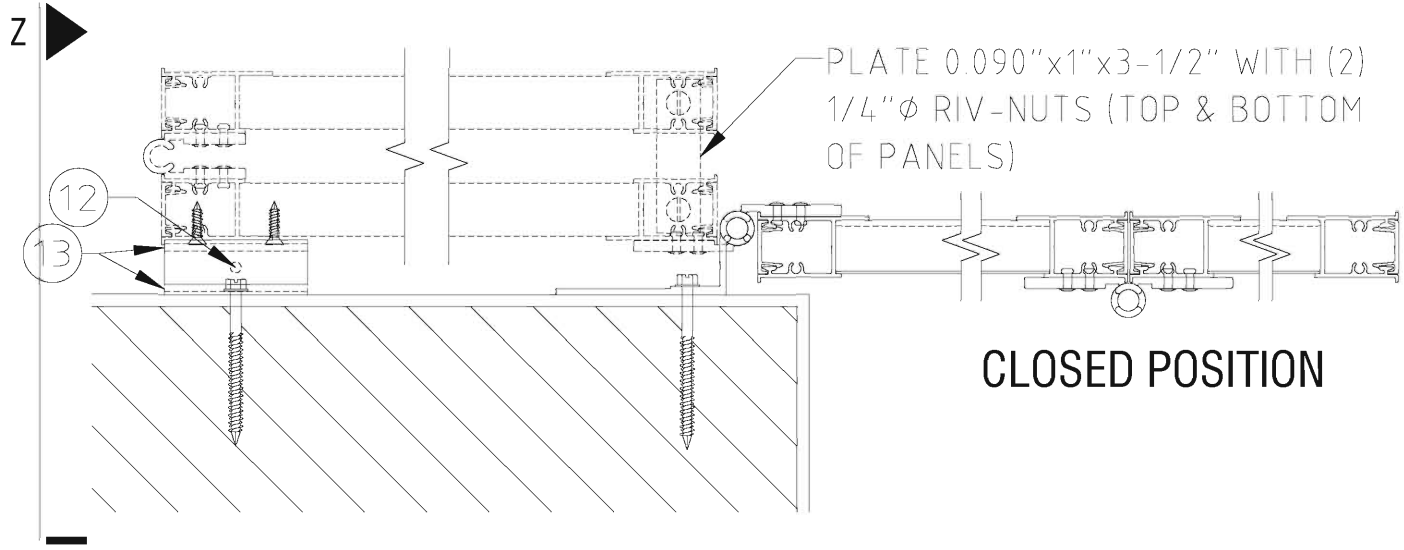
20-26193

SCALE: -  
PAGE DESCRIPTION: -

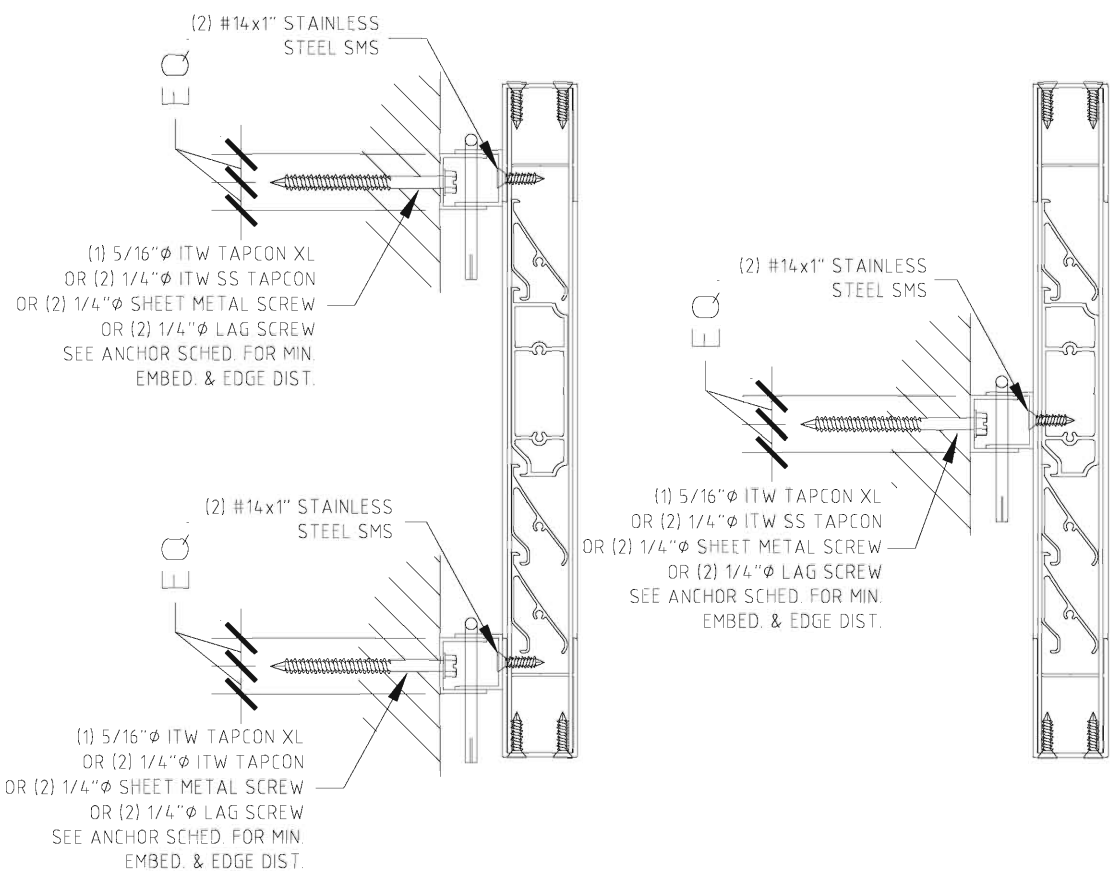
4 OF 7



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



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



(HINGES NOT SHOWN FOR CLARITY)

(DOUBLE "C" CLIP)

(SINGLE "C" CLIP)

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

**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.

**T OPEN POSITION LOCK**  
SCALE: 3" = 1'-0"

C:\Users\rickn\Engineering\Express\Production - Documents\Projects\20-26193 - FL16219.2 - FullView Colonial Shutter Hybrid (HVHZ Only)\WP12020 FBC\20-26193d - FL16219.2 - DWG.dwg  
08/11/2020 - 10:01pm rickn



**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  
FL16219.2

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	CCB	RWN	7/01/20

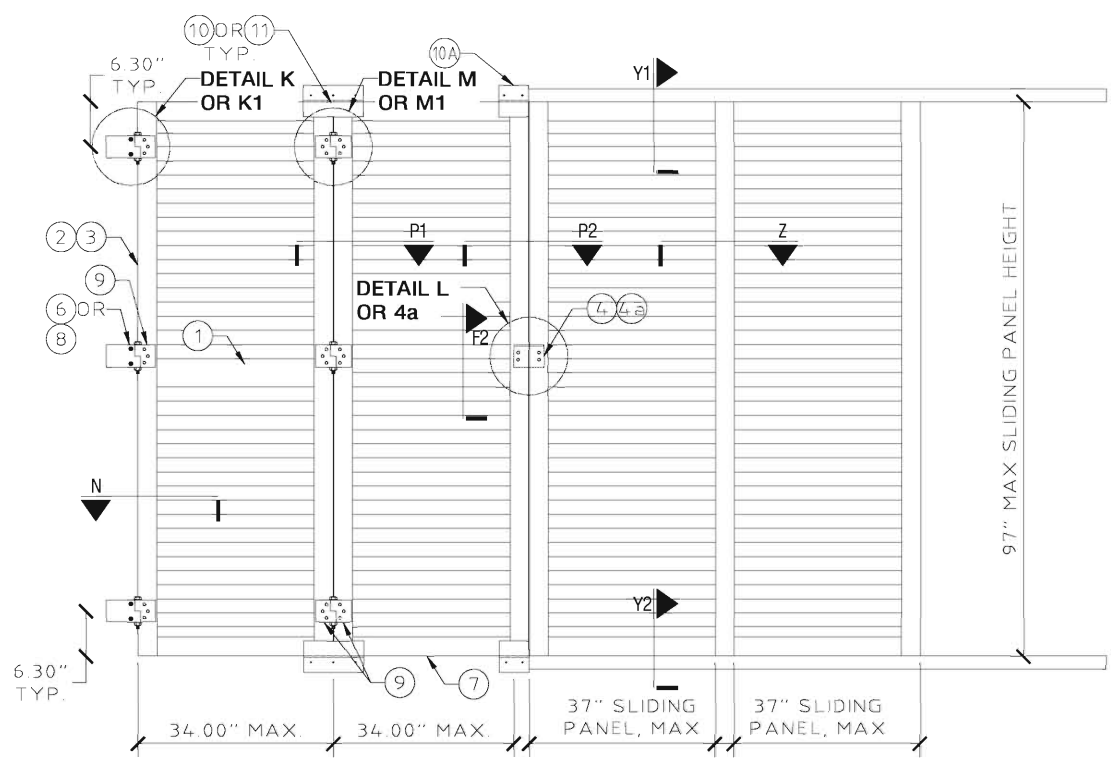
THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF FRANK L. BENNARDO, P.E. \*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

COPYRIGHT FRANK L. BENNARDO P.E.

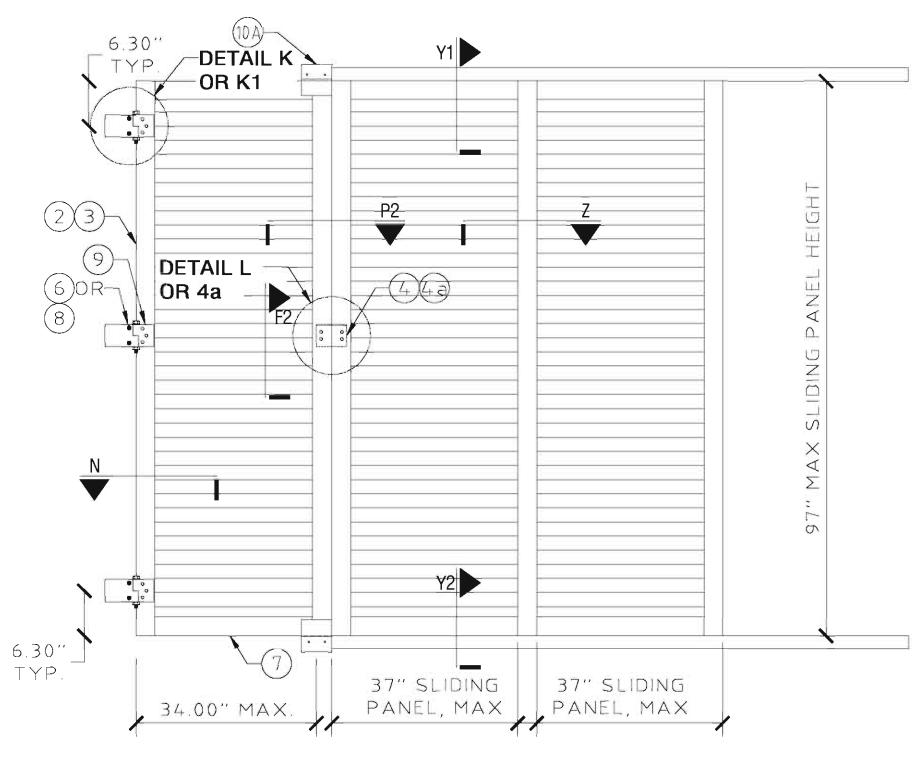
**20-26193**

SCALE: -  
PAGE DESCRIPTION: -

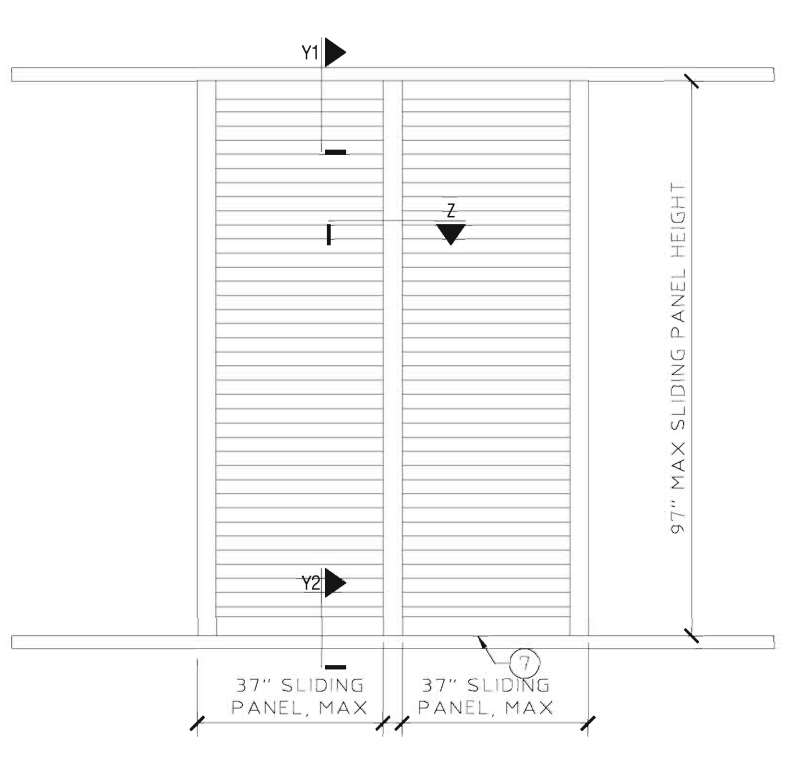
5 OF 7



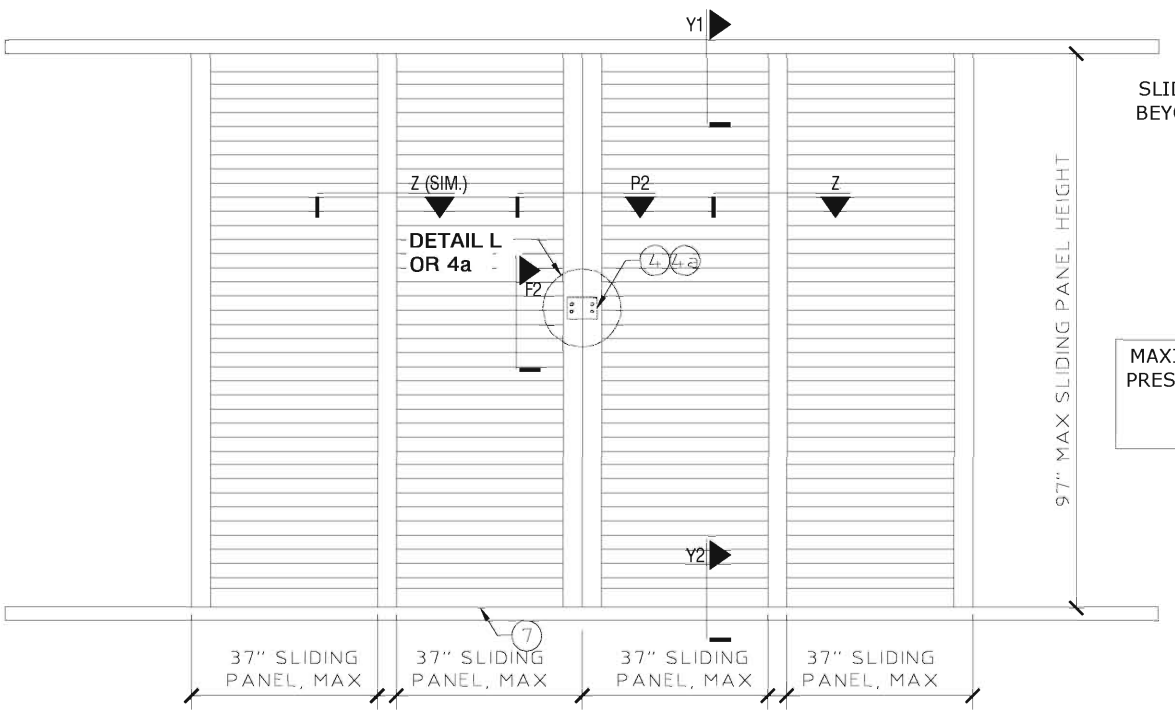
**X1** ELEVATION: 2 HINGED AND 2 SLIDING PANELS  
SCALE: N.T.S.



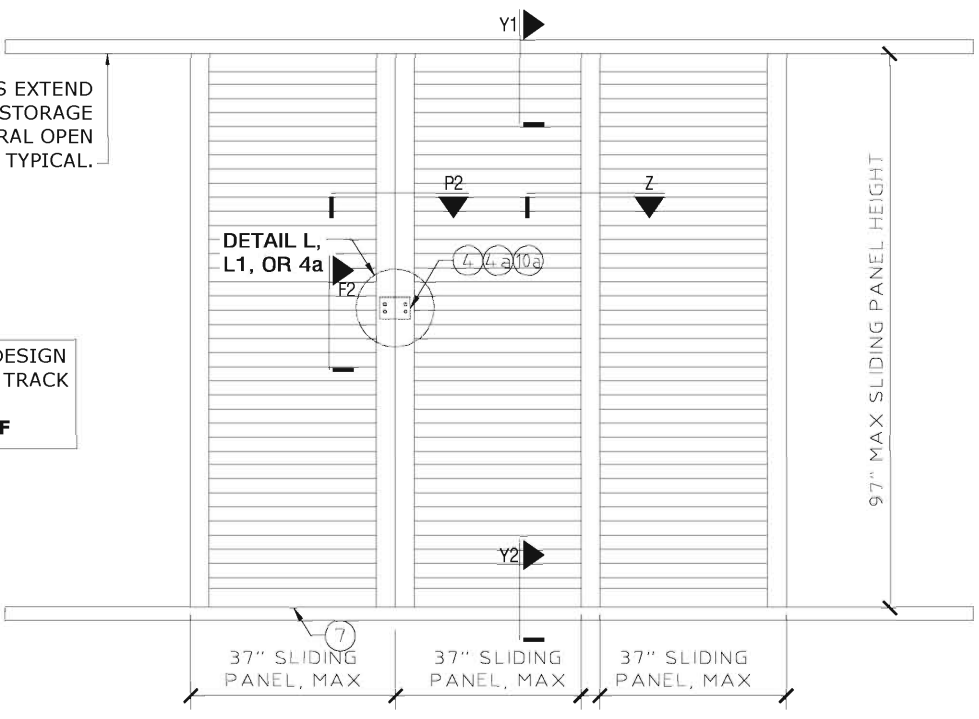
**X2** ELEVATION: 1 HINGED AND 2 SLIDING PANELS  
SCALE: N.T.S.



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



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



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

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

MAXIMUM ALLOWABLE DESIGN PRESSURE FOR SLIDING TRACK OPTION:  
**+57.2 / -66.2 PSF**

NOTE: SLIDING PANEL CONSTRUCTION SAME AS HINGED PANELS.

C:\Users\rickn\Engineering Express\Production - Documents\Projects\20-26193 - FL16219.2 - FullView Colonial Shutter Hybrid (HVHZ Only)\WP12020 FBC\20-26193d - FL16219.2 - DWG.dwg  
08/11/2020 - 10:01pm rickn



**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  
FL16219.2

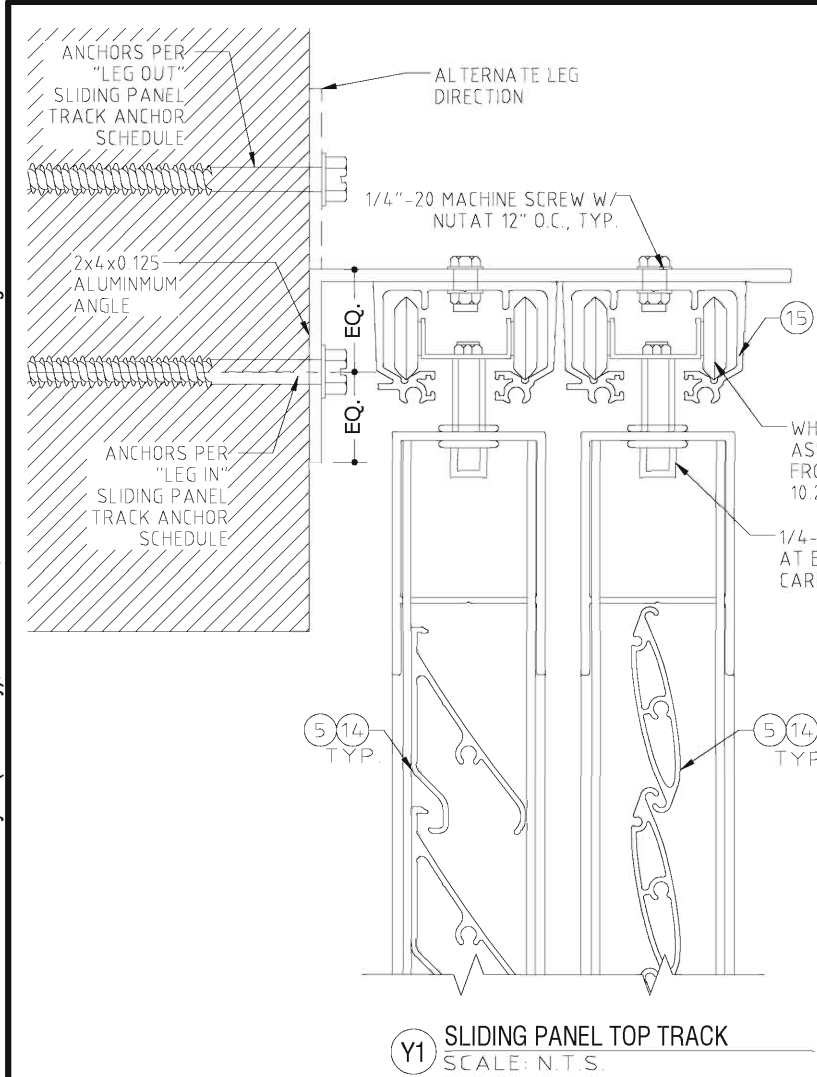
REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	12/20/12
2014 FBC	RWN	TSB	4/16/15
REV - ADD 4" BLADE	RWN	FLB	9/28/16
2017 FBC	RWN	FLB	8/07/17
2020 FBC	CCB	RWN	7/01/20

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BENNARDO, P.E. AND SHALL NOT BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, 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.

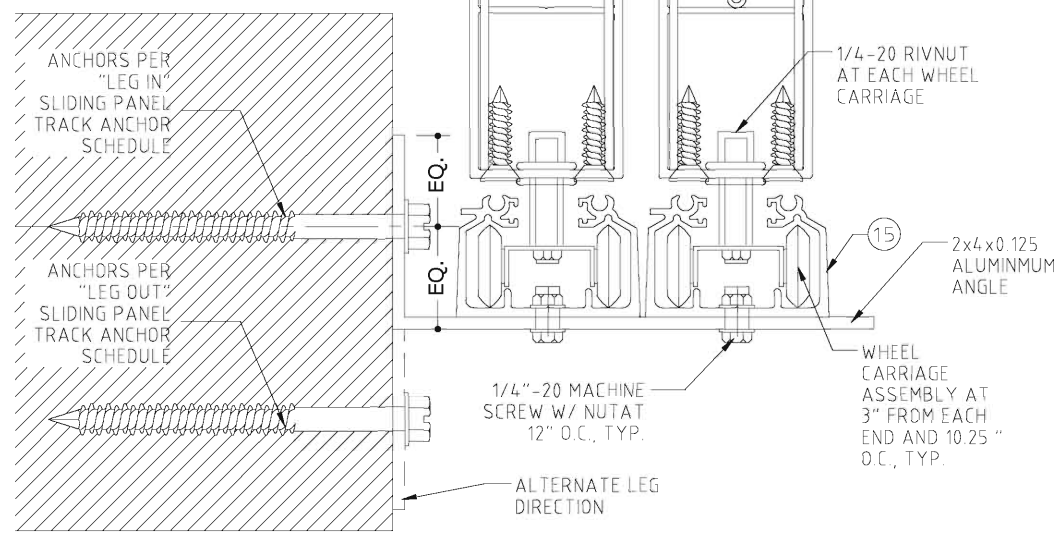
**20-26193**

SCALE: -  
PAGE DESCRIPTION: -

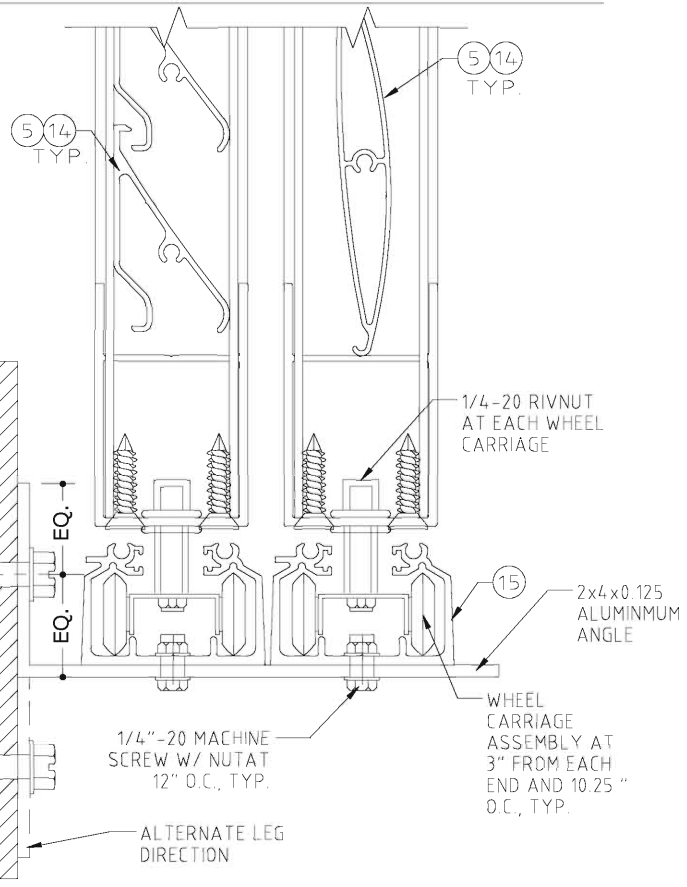


**Y1** SLIDING PANEL TOP TRACK  
SCALE: N.T.S.

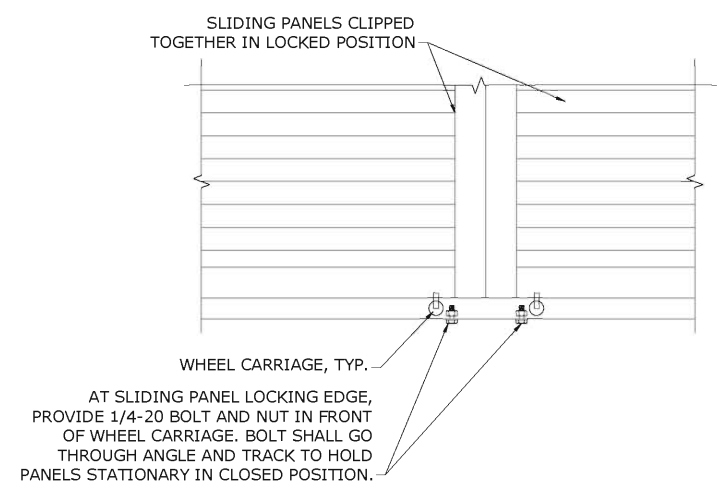
**MAXIMUM ALLOWABLE DESIGN PRESSURE FOR SLIDING TRACK OPTION:  
+57.2 / -66.2 PSF**



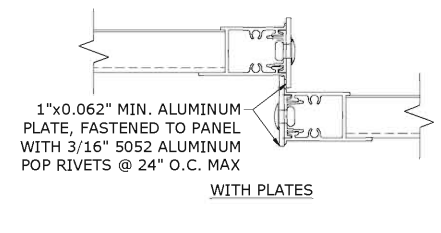
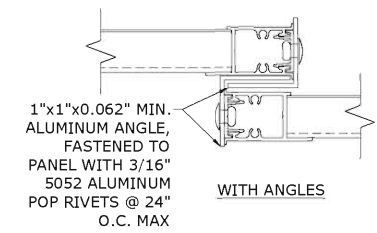
**Y2** SLIDING PANEL BOTTOM TRACK  
SCALE: N.T.S.



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



**ZZ** WHEEL CARRIAGE STOPS FOR SLIDING PANELS  
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" MILLENIUM 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" MILLENIUM 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.  
\*MILLENIUM MILLFAST SCREWS SHALL HAVE T&C ULTRACOTE

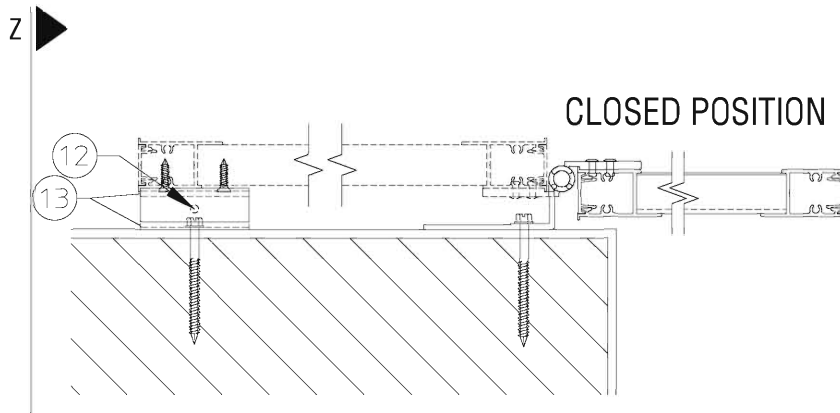
**"LEG OUT" SLIDING PANEL TRACK ANCHOR SCHEDULE:**

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" MILLENIUM 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" MILLENIUM 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.

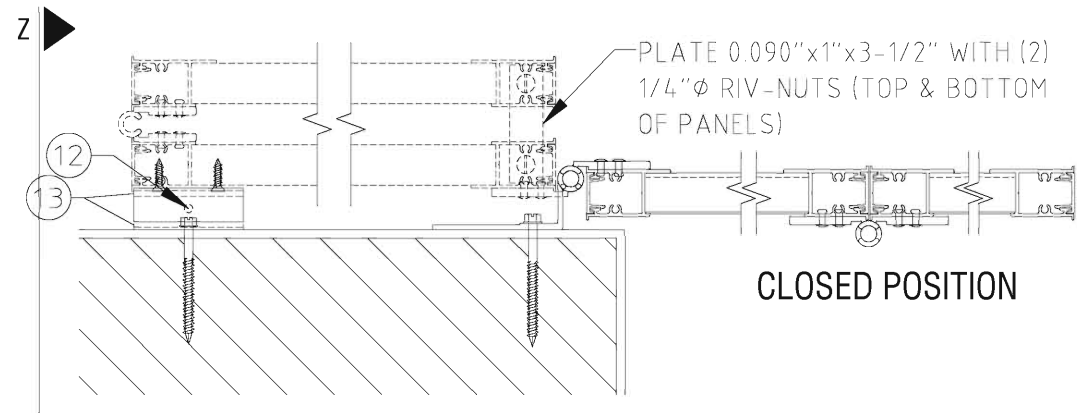
**NOTES:** TABLE PROVIDES MAXIMUM ANCHOR SPACING FOR INDICATED ANCHOR TYPES AND SLIDING PANEL VERTICAL SPANS FOR ALTERNATE "LEG OUT" CONDITION. ANCHORS SHALL BE LOCATED 2" MAX FROM TRACK ENDS.  
\*MILLENIUM MILLFAST SCREWS SHALL HAVE T&C ULTRACOTE

C:\Users\rickn\Engineering\Express\Production - Documents\Projects\20-26193 - FL16219.2 - FullView Colonial Shutter Hybrid (HVHZ Only)\WP12020\FBC20-26193d - FL16219.2 - DWG.dwg

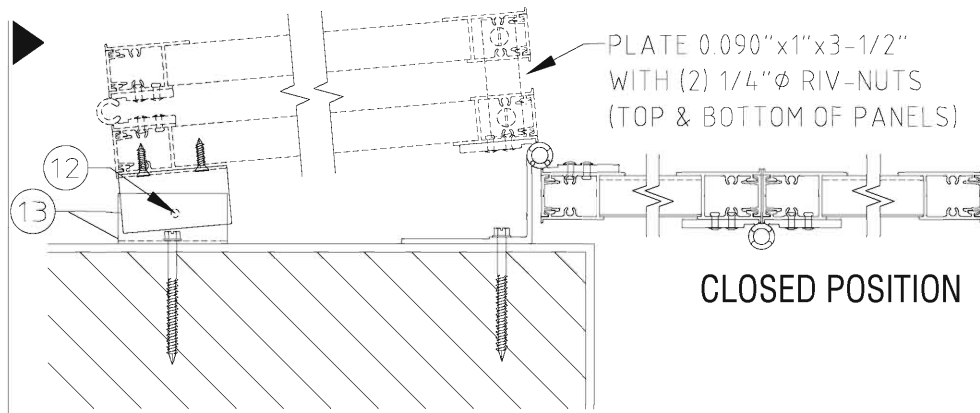
08/11/2020 - 10:01pm rickn



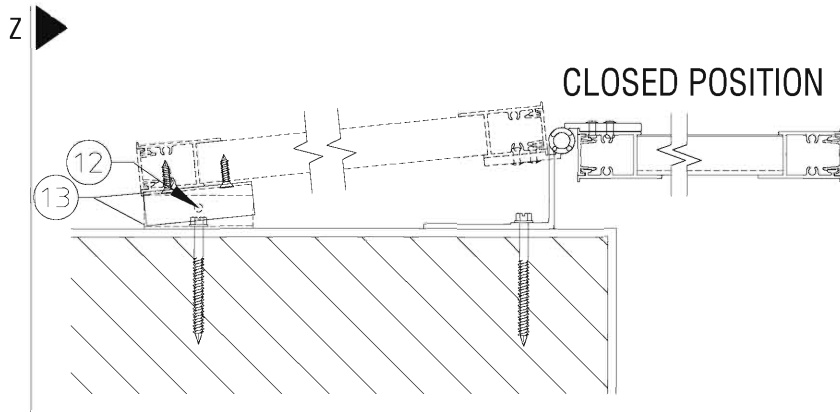
**R** PLAN VIEW 1  
SCALE: 1-1/2" = 1'-0"



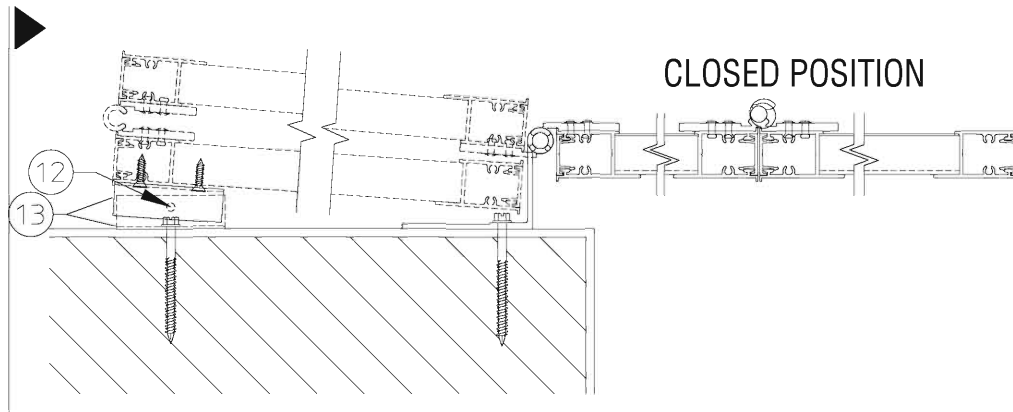
**S** PLAN VIEW 2  
SCALE: 1-1/2" = 1'-0"



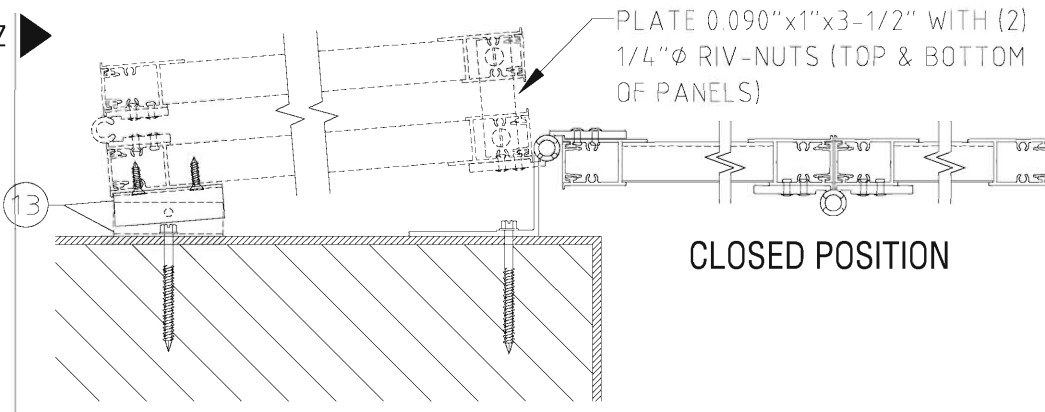
**T** PLAN VIEW 3  
SCALE: 1-1/2" = 1'-0"



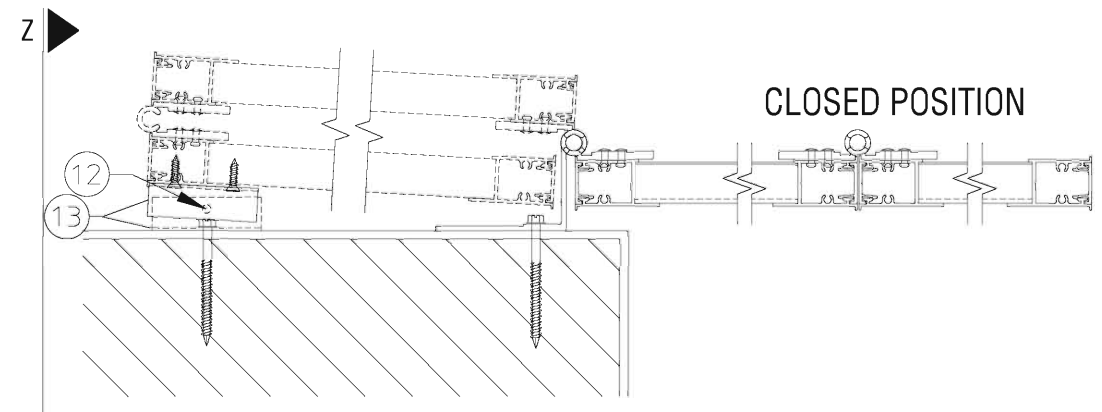
**U** PLAN VIEW 4  
SCALE: 1-1/2" = 1'-0"



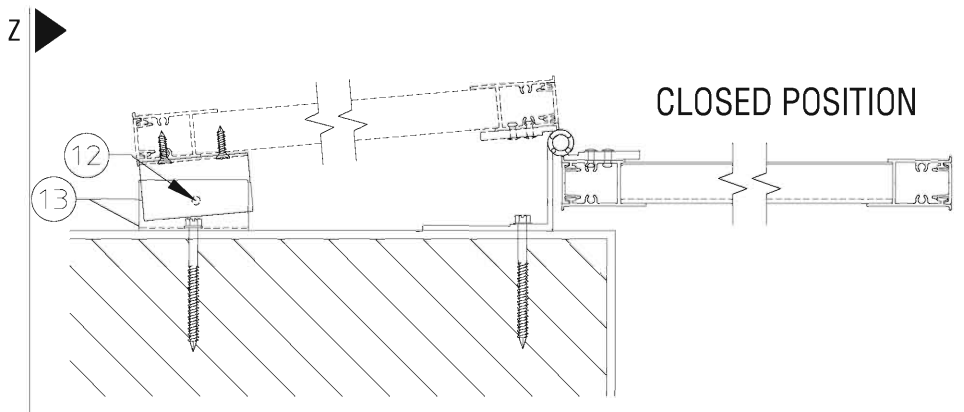
**V** PLAN VIEW 5  
SCALE: 1-1/2" = 1'-0"



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



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



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

FL16219.2

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	CCB	RWN	7/01/20

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.

**20-26193**

SCALE: -

PAGE DESCRIPTION: -

7 OF 7