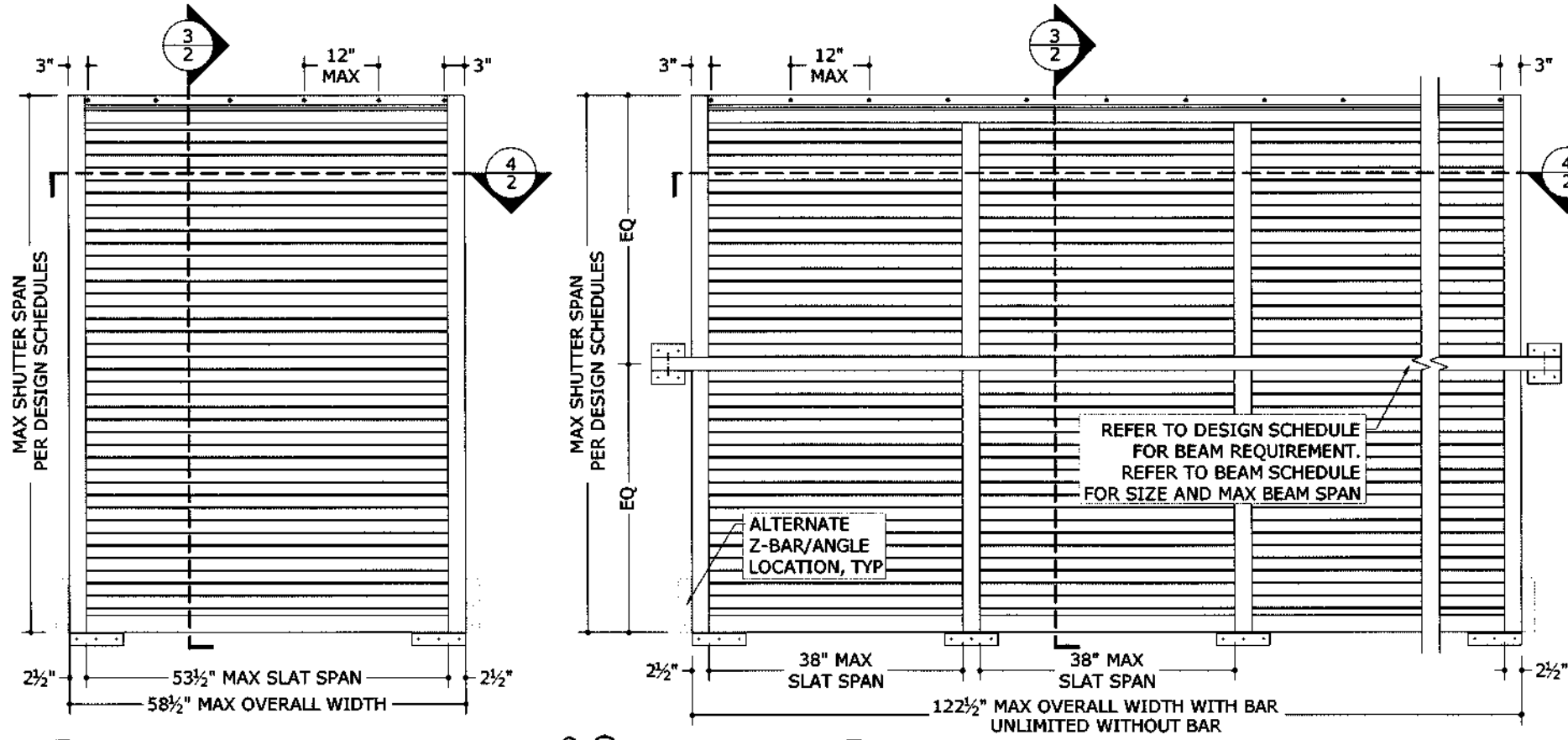


# FULLVIEW BAHAMA SHUTTER (HVHZ AND NON-HVHZ COMPLIANT)

PATENT #8126298



**1 SINGLE PANEL SPAN**  
1 N.T.S. EXTER. ELEVATION

**2 MULTI PANEL SPAN**  
1 N.T.S. EXTER. ELEVATION



## GENERAL NOTES

- THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE SIXTH EDITION (2017), FOR USE WITHIN THE HVHZ AND NON-HVHZ, AS WELL AS THE INTERNATIONAL BUILDING CODE (IBC) AND INTERNATIONAL RESIDENTIAL CODE (IRC). SEE PRODUCT EVALUATION REPORT FOR ADDITIONAL INFORMATION.
  - NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM. WIND LOAD DURATION FACTOR Cd=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 7-10 AND CHAPTER 1609 OF THE FLORIDA BUILDING CODE SIXTH EDITION (2017) 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 ALL WIND ZONES, IN ACCORDANCE WITH ASTM 1996-09. 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.
  - 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.
  - SHUTTER MAY BE INSTALLED AS SINGLE PANEL OR AS MULTI-PANEL SPANS TO UNLIMITED WIDTH, SEE DETAIL 1/2 & 3/4 FOR MAXIMUM SLAT SPANS.
  - ALL EXTRUSIONS SHALL BE 6063-T6 ALUMINUM ALLOY, UNLESS NOTED OTHERWISE. ALL TOLERANCES SHALL BE IN ACCORDANCE WITH ADM 2015.
  - THIS SYSTEM MUST BE CLOSED AND LOCKED FOR WIND AND IMPACT PROTECTION. THIS SYSTEM HAS BEEN DESIGNED FOR A WIND PRESSURE OF 18 PSF IN THE OPEN POSITION. A PERMANENT LABEL MUST BE ADHERED TO THE UNDERSIDE OF EACH BAHAMA SHUTTER CONTAINING THE FOLLOWING:  
**SHUTTER AND LOUVERS TO BE CLOSED AND LOCKED WHEN HURRICANE WARNINGS ARE ISSUED**
  - BAHAMA SHUTTERS SHALL BE PERMANENTLY LABELED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE AND CONTAIN AT LEAST THE FOLLOWING:  
**TOWN & COUNTRY INDUSTRIES  
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ASTM E330, E1886, & E1996 MISSILE LEVEL D  
TAS 201, 202, & 203  
FLORIDA PRODUCT APPROVAL NUMBER**
  - ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, STAINLESS STEEL, OR 2024-T6 ALUMINUM ALLOY WITH A MINIMUM TENSILE YIELD STRENGTH OF 33 KSI.
  - ALL CONCRETE ANCHORS TO BE INSTALLED TO NON-CRACKED CONCRETE ONLY.
  - ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.
- HVHZ (TABLE 1 & 2) NOTES:**
- HIGH VELOCITY HURRICANE ZONE (HVHZ) IS DEFINED AS MIAMI-DADE COUNTY AND BROWARD COUNTY FLORIDA ONLY.
  - TABLE 1 SHALL BE USED FOR INSTALLATIONS IN THE HIGH VELOCITY HURRICANE ZONE (HVHZ) TO DETERMINE THE MAXIMUM ALLOWABLE DESIGN PRESSURE FOR EACH SPAN.
  - FOR SPANS BETWEEN TABULATED VALUES USE NEXT HIGHER SPAN.
  - TABLE 2 SHALL BE USED TO DETERMINE MINIMUM SEPARATION FROM GLASS WITH IN THE HVHZ.
- NON-HVHZ AND ESSENTIAL FACILITIES (TABLE 3 & 4) NOTES:**
- NON-HVHZ IS DEFINED AS ALL LOCATIONS OTHER THAN MIAMI-DADE COUNTY AND BROWARD COUNTY FLORIDA.
  - TABLE 2 MAY BE USED FOR INSTALLATIONS OUTSIDE THE HIGH VELOCITY HURRICANE ZONE (HVHZ).
  - FOR SPANS BETWEEN TABULATED VALUES, USE NEXT HIGHER SPAN.
  - FOR INSTALLATIONS OUTSIDE THE HVHZ IN ASTM WIND ZONES 1 THROUGH 4, TABLE 4 IS NOT REQUIRED AND NO MINIMUM SEPARATION FROM THE PROTECTED OPENING IS REQUIRED.

TABLE 1 HVHZ			
ALLOWABLE DESIGN PRESSURES			
MAX SHUTTER SPAN	CONFIGURATION		
	SINGLE PANEL SPAN	MULTI PANEL SPAN	
		W/O BEAM	W/ BEAM
69"	+60/-73 PSF	+60/-73 PSF*	+60/-73 PSF*
81 5/8"	+60/-73 PSF	-	+60/-73 PSF*
96 3/4"	+60/-73 PSF*	-	+60/-73 PSF*

\*NOTE: LIMITED TO A MAX SLAT SPAN OF 38"

TABLE 3 NON-HVHZ			
ALLOWABLE DESIGN PRESSURES			
MAX SHUTTER SPAN	CONFIGURATION		
	SINGLE PANEL SPAN	MULTI PANEL SPAN	
		W/O BEAM	W/ BEAM
69"	+78/-95 PSF	+78/-95 PSF*	+78/-95 PSF*
81 5/8"	+78/-95 PSF	+50/-50 PSF†*	+78/-95 PSF*
96 3/4"	+78/-95 PSF*	+50/-50 PSF†*	+78/-95 PSF*

\*NOTE: LIMITED TO A MAX SLAT SPAN OF 38"

†NOTE: NOT APPROVED FOR USE IN ESSENTIAL FACILITIES.

TABLE 2 HVHZ				
MINIMUM SEPARATION FROM GLASS				
MAX SHUTTER SPAN	DESIGN PRESSURE	CONFIGURATION		
		SINGLE PANEL SPAN	MULTI PANEL SPAN	
		W/O BEAM	W/ BEAM	
69"	+56/-73 PSF	2 3/8"	3"	2 3/8"
69"	+60/-73 PSF	2 3/8"	3 1/4"	2 3/8"
81 5/8"	+60/-73 PSF	2 3/8"	-	2 3/8"
96 3/4"	+60/-73 PSF	2 3/8"*	-	2 3/8"

\*NOTE: LIMITED TO A MAX SLAT SPAN OF 38"

TABLE 4 NON-HVHZ ESSENTIAL FACILITIES NOT REQUIRED FOR WIND ZONES 1-4				
MINIMUM SEPARATION FROM GLASS				
MAX SHUTTER SPAN	DESIGN PRESSURE	CONFIGURATION		
		SINGLE PANEL SPAN	MULTI PANEL SPAN	
		W/O BEAM	W/ BEAM	
69"	+78/-95 PSF	3 7/8"	4 3/8"	2 7/8"
81 5/8"	+78/-95 PSF	3 7/8"	-	2 7/8"
96 3/4"	+78/-95 PSF	2 7/8"*	-	2 7/8"

\*NOTE: LIMITED TO A MAX SLAT SPAN OF 38"

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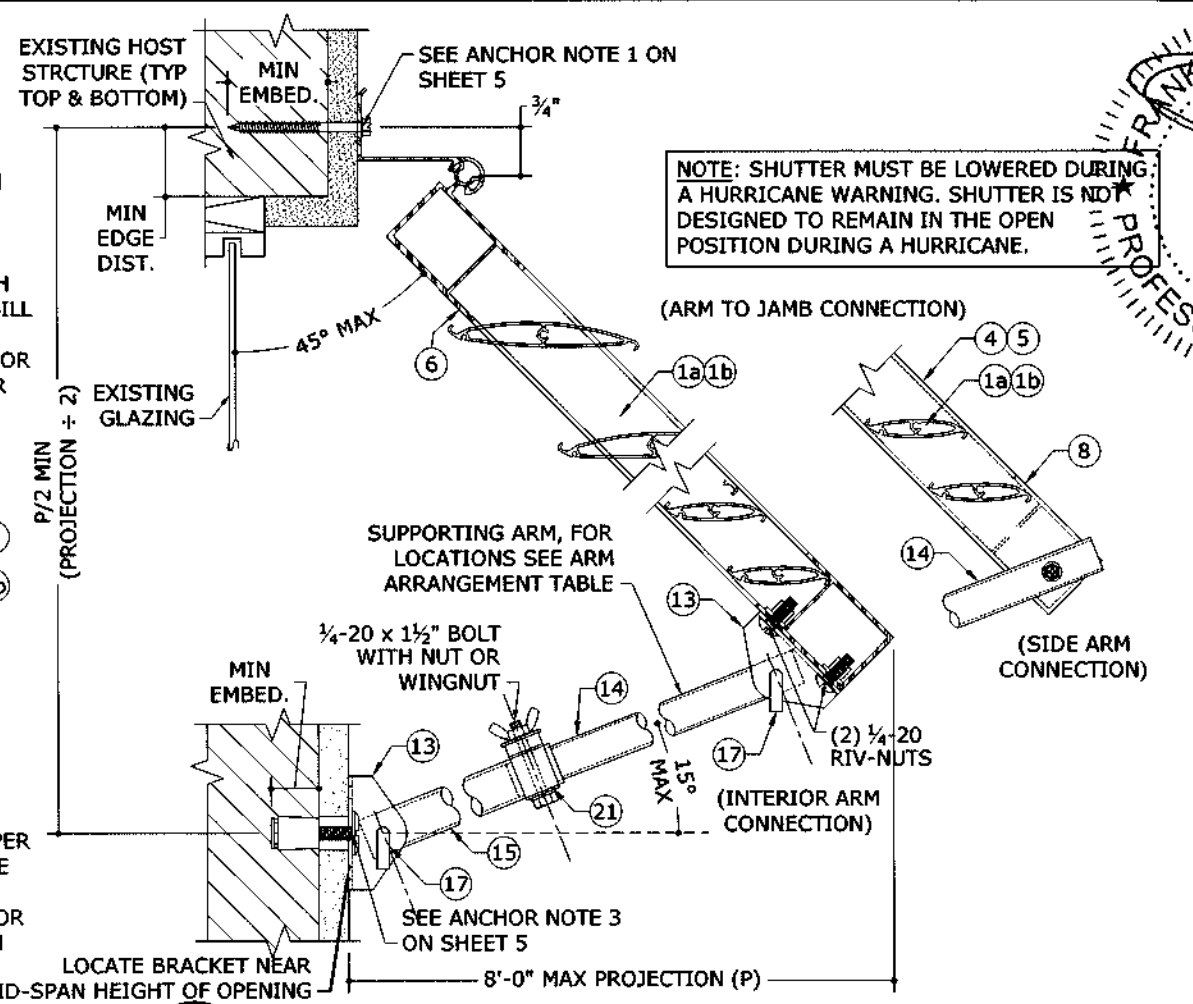
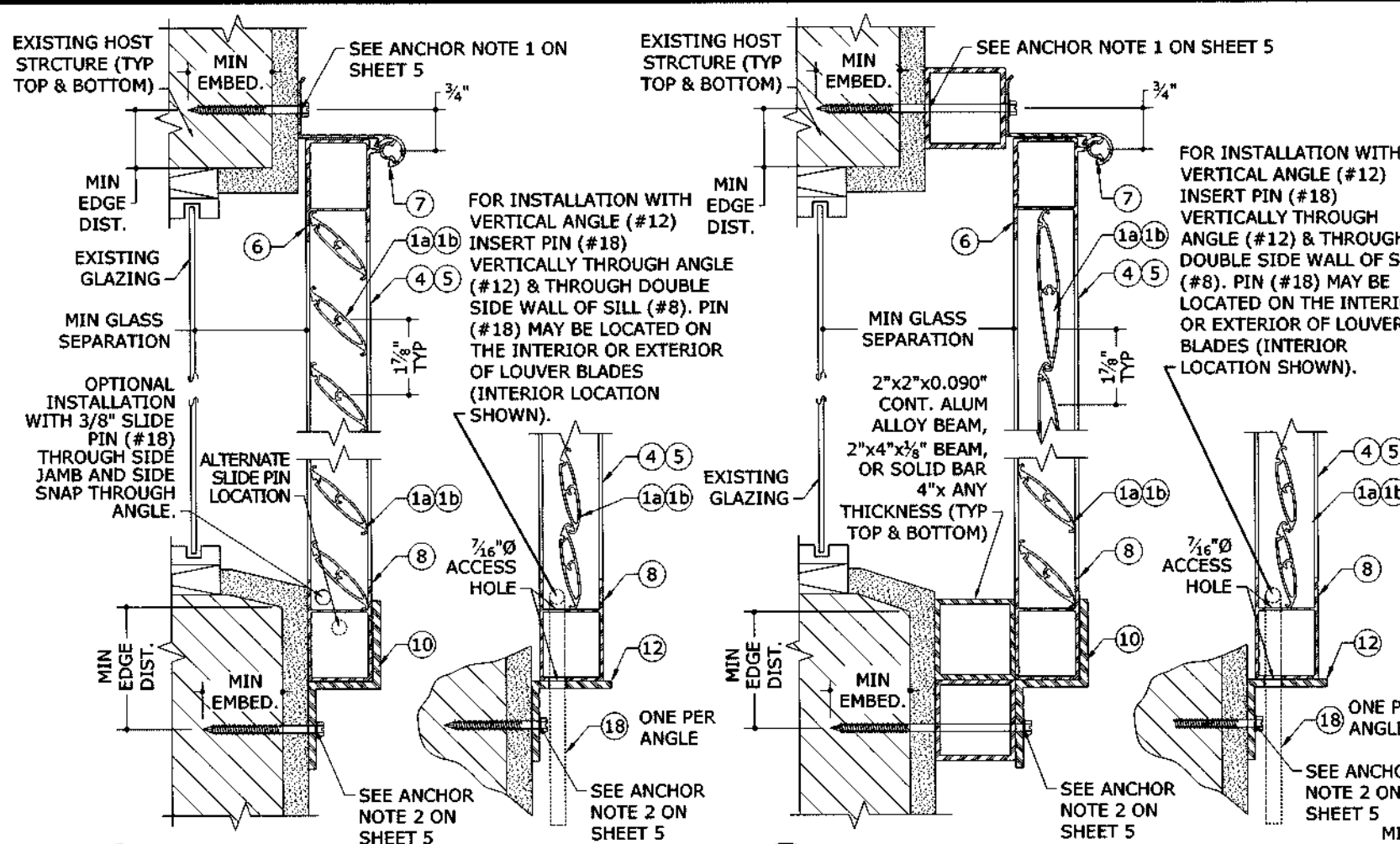
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FLORIDA PRODUCT APPROVAL #13434.1

DATE	ISSUE	REVISION	BY	DATE
12/15/09	FLB	02/25/10	FLB	
08/04/10	FLB	08/04/10	CSL	
04/07/15	RWN	04/07/15	RWN	
10/04/16	RWN	10/04/16	RWN	
06/02/17	RWN	06/02/17	RWN	

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PAGE DESCRIPTION:  
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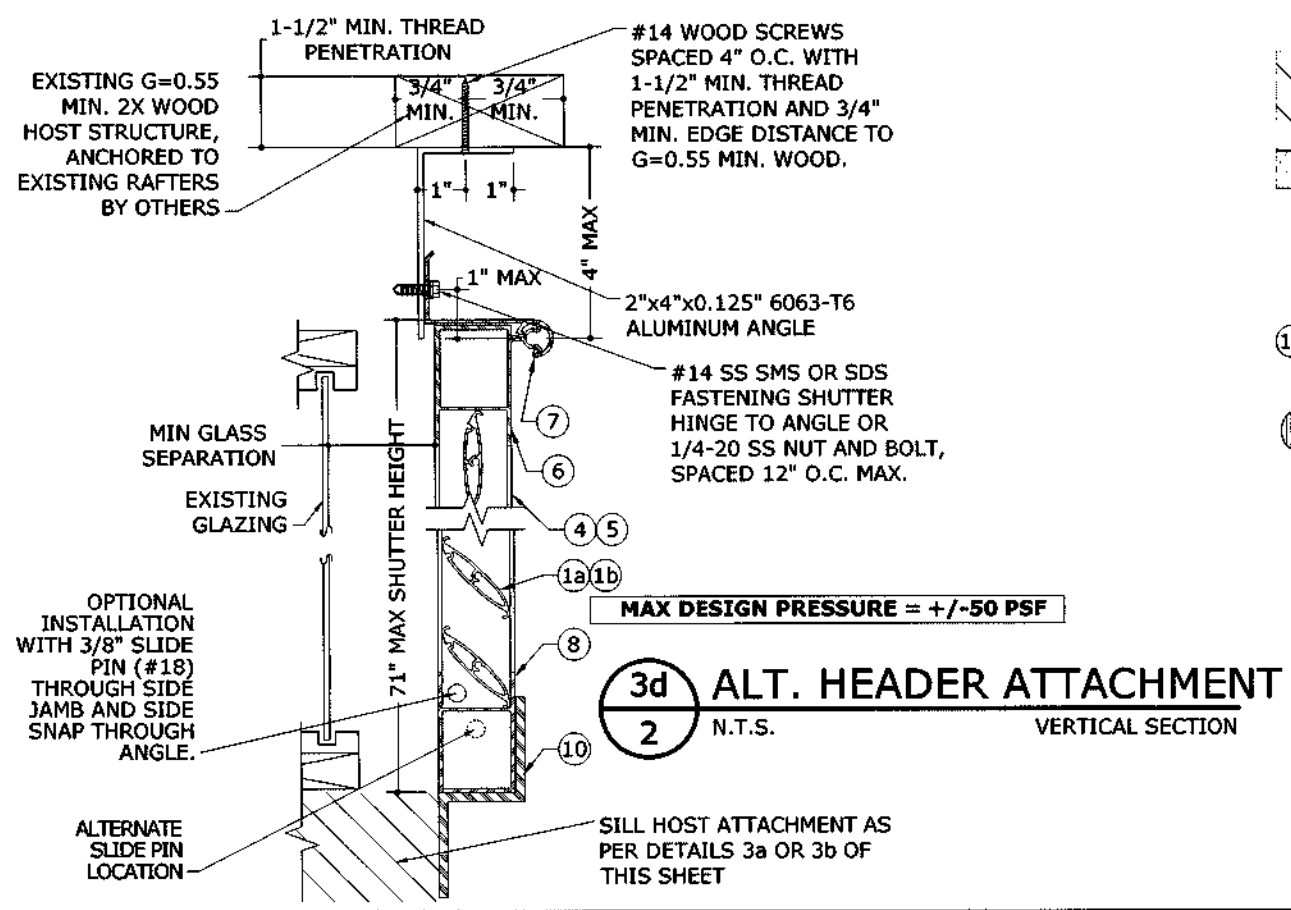
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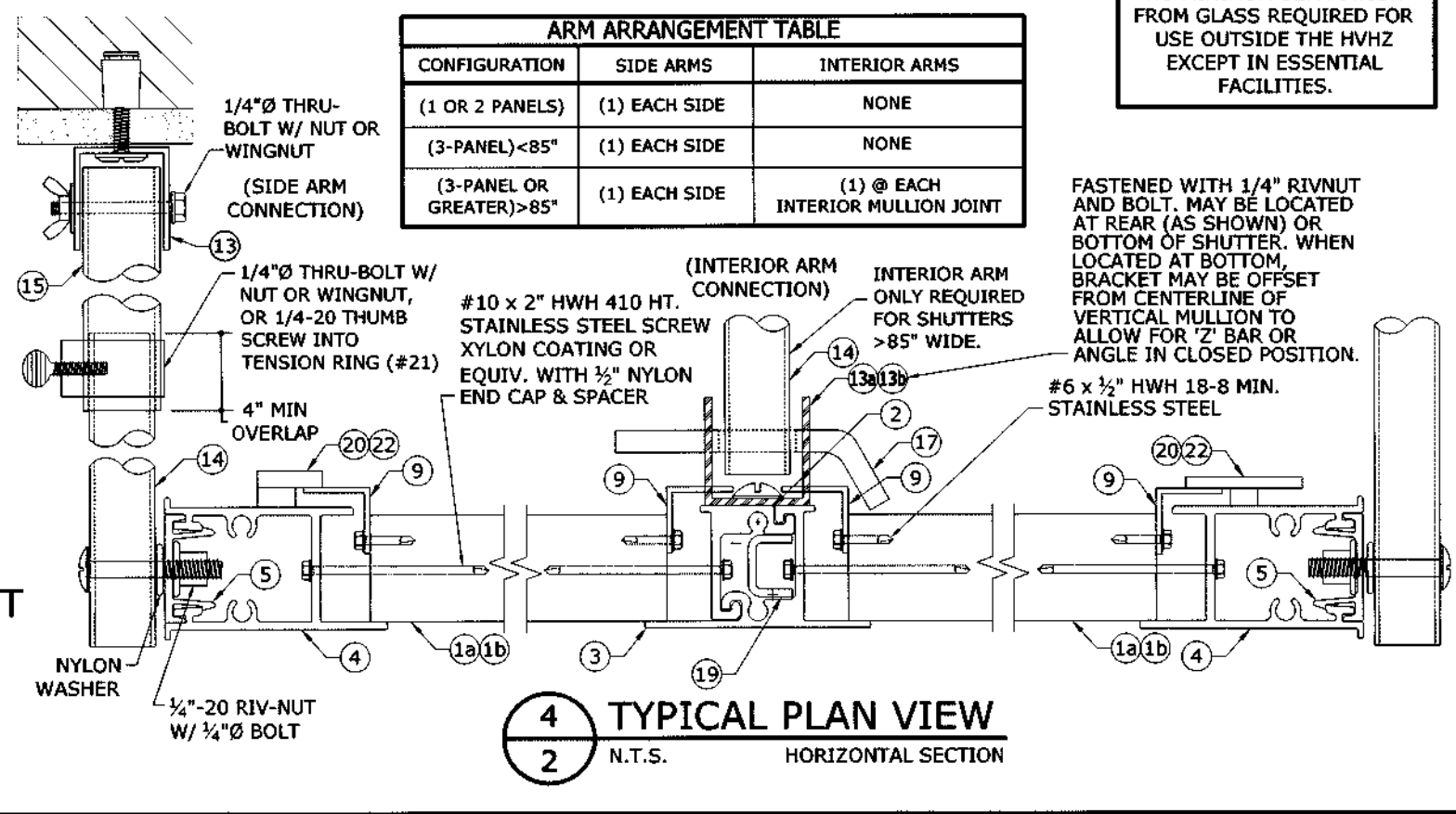
**3a** TYPICAL CLOSED POSITION  
2 N.T.S. VERTICAL SECTION

**3b** BUILD-OUT CLOSED POSITION  
2 N.T.S. VERTICAL SECTION

**3c** TYPICAL OPEN POSITION  
2 N.T.S. VERTICAL SECTION



**3d** ALT. HEADER ATTACHMENT  
2 N.T.S. VERTICAL SECTION



**4** TYPICAL PLAN VIEW  
2 N.T.S. HORIZONTAL SECTION

ARM ARRANGEMENT TABLE		
CONFIGURATION	SIDE ARMS	INTERIOR ARMS
(1 OR 2 PANELS)	(1) EACH SIDE	NONE
(3-PANEL) < 85"	(1) EACH SIDE	NONE
(3-PANEL OR GREATER) > 85"	(1) EACH SIDE	(1) @ EACH INTERIOR MULLION JOINT

NO MINIMUM SEPARATION FROM GLASS REQUIRED FOR USE OUTSIDE THE HVHZ EXCEPT IN ESSENTIAL FACILITIES.

FASTENED WITH 1/4" RIVNUT AND BOLT. MAY BE LOCATED AT REAR (AS SHOWN) OR BOTTOM OF SHUTTER. WHEN LOCATED AT BOTTOM, BRACKET MAY BE OFFSET FROM CENTERLINE OF VERTICAL MULLION TO ALLOW FOR 'Z' BAR OR ANGLE IN CLOSED POSITION.

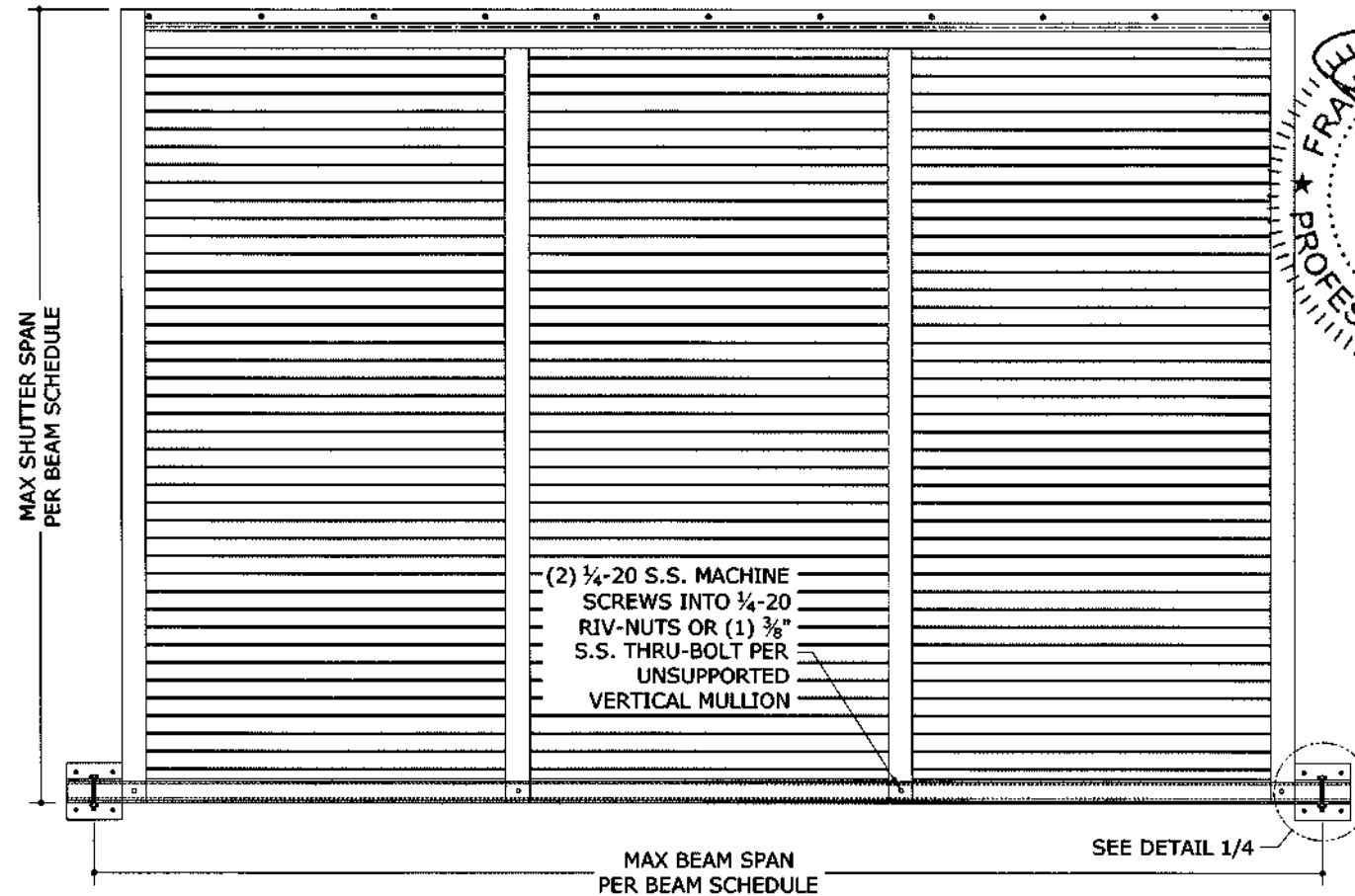
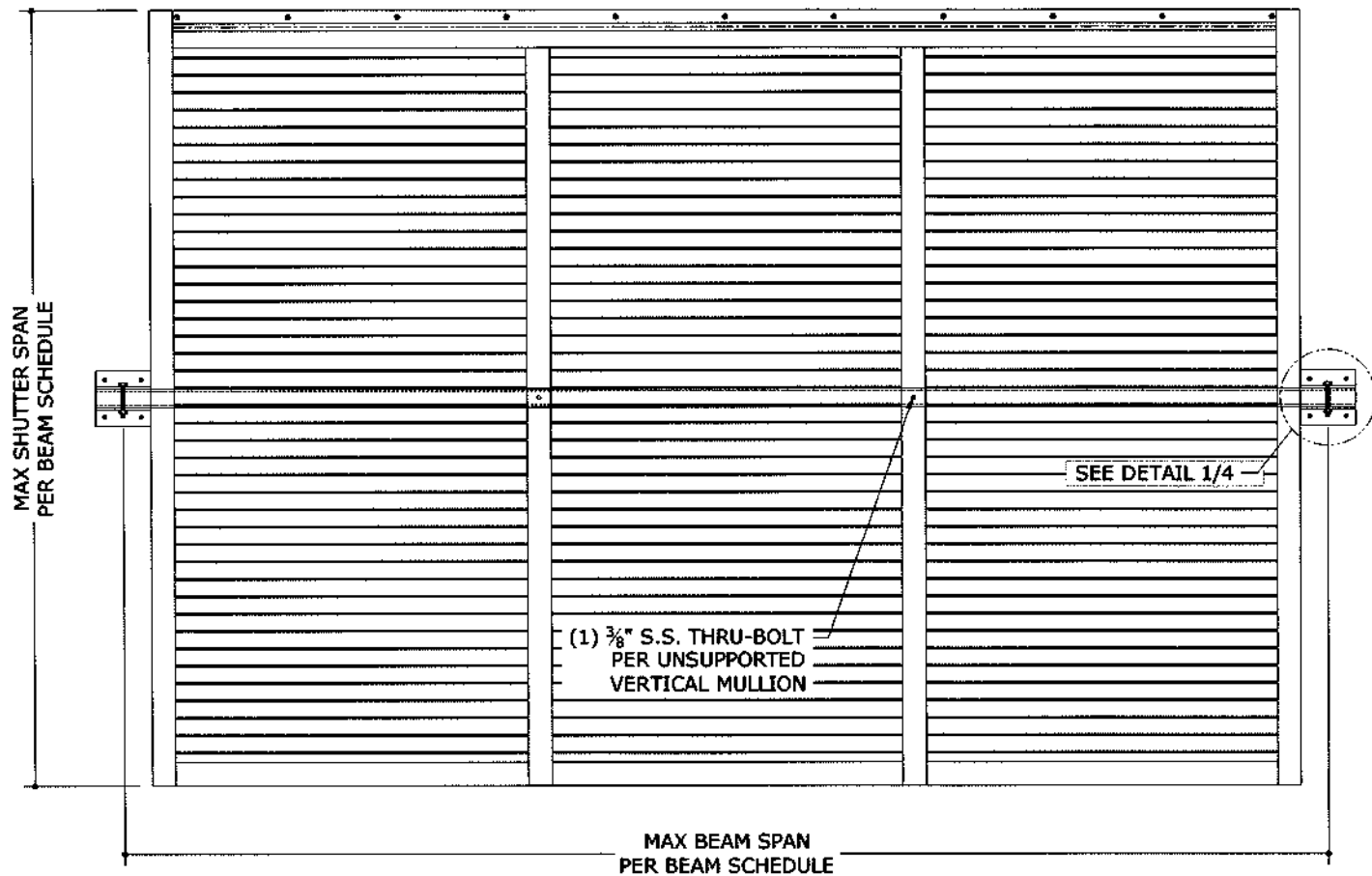
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REVISIONS	DATE	BY	DESCRIPTION
INIT ISSUE (08-10-0005)	12/15/09	FLB	
CLIENT COMMENTS CLOSURE	02/26/10	FLB	
REV. PER ADDL TESTING	08/04/10	FLB	
2010 FBC	12/18/11	CSL	
REV (2014 FBC)	04/07/15	RWN	
REV (ADD 4' BLADE)	10/04/16	RWN	
REV (2017 FBC)	08/02/17	RWN	

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**1** MID-SPAN BEAM (AS REQUIRED)  
**3** N.T.S. EXTER. ELEVATION

**2** BOTTOM BEAM (OPTIONAL)  
**3** N.T.S. EXTER. ELEVATION

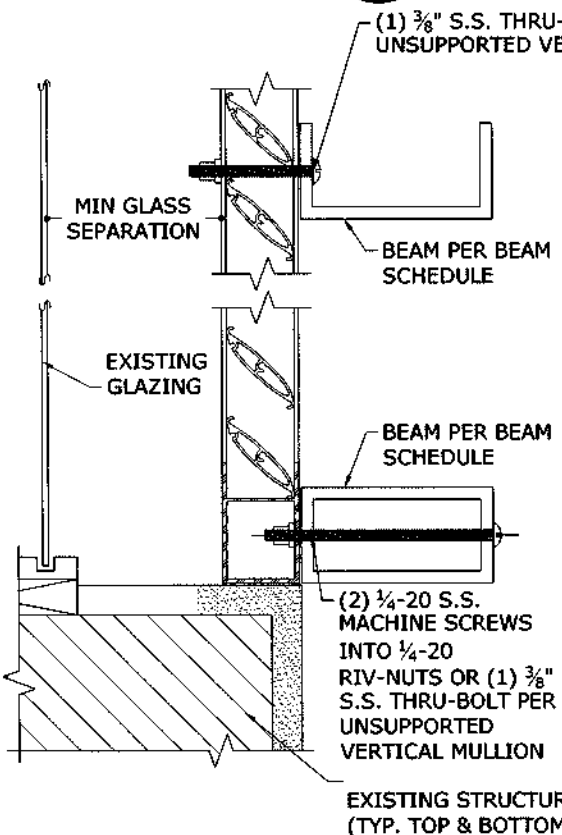
**WALL BRACKET ANCHORS TYPES:**

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

**BEAM SCHEDULE:**

BEAM SIZE	ALUMINUM ALLOY	SHUTTER SPAN	BEAM SPAN (+/- 40 PSF MAX)	BEAM SPAN (+/- 50 PSF MAX)	BEAM SPAN (+/- 60 PSF MAX)	BEAM SPAN (+/- 95 PSF MAX)	WALL BRACKET ANCHOR TYPES (+/-95 PSF MAX)			WALL BRACKET ANCHOR TYPES (+/-50 PSF MAX)		
							CONCRETE	HOLLOW BLOCK	WOOD (G=0.42 MIN)	CONCRETE	HOLLOW BLOCK	WOOD (G=0.42 MIN)
2"x3"x1/8"	6063-T6	8'-0"	7'-9"	7'-0"	6'-4"	5'-1"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,B,C,E	B,C
		6'-8"	8'-7"	7'-8"	7'-0"	5'-7"	A,B,C,D,E	A,C,E	B,C	A,B,C,D,E	A,B,C,E	B,C
		5'-10"	9'-2"	8'-2"	7'-6"	5'-11"	A,B,C,D,E	A,B,C,E	B,C	A,B,C,D,E	A,B,C,D,E	B,C
2"x4"x1/8"	6063-T6	8'-0"	9'-7"	8'-7"	7'-10"	6'-3"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,C,E	B,C
		6'-8"	10'-6"	9'-5"	8'-7"	6'-10"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,B,C,E	B,C
		5'-10"	11'-3"	10'-1"	9'-2"	7'-4"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,B,C,E	B,C
2"x5"x1/8"	6063-T6	8'-0"	11'-5"	10'-2"	9'-4"	7'-5"	A,B,C,D,E	A,C		A,B,C,D,E	A,C	B,C
		6'-8"	12'-6"	11'-2"	10'-2"	8'-1"	A,B,C,D,E	A,C		A,B,C,D,E	A,C	B,C
		5'-10"	13'-4"	11'-11"	10'-11"	8'-8"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,C,E	B,C
2"x4"x1/4"	6061-T6	8'-0"	14'-10"	13'-3"	12'-2"	9'-8"	A,B,C			A,B,C,D,E	A,C	
		6'-8"	16'-3"	14'-7"	13'-3"	10'-7"	A,B,C,D,E			A,B,C,D,E	A,C	
		5'-10"	17'-5"	15'-7"	14'-2"	11'-3"	A,B,C,D,E	A		A,B,C,D,E	A,C	B,C
4"x2"x0.23"x0.15"	6063-T6	8'-0"	9'-4"	8'-4"	7'-9"	6'-1"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,B,C,E	B,C
		6'-8"	10'-3"	9'-2"	8'-4"	6'-8"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,B,C,E	B,C
		5'-10"	10'-11"	9'-9"	8'-11"	7'-1"	A,B,C,D,E	A,C	B,C	A,B,C,D,E	A,B,C,E	B,C
6"x2"x0.29"x0.17"	6061-T6	8'-0"	17'-3"	15'-6"	14'-1"	11'-3"	A,B,C			A,B,C,D,E	A,C	

\*MILLENNIUM MILLFAST ANCHORS MUST BE SPACED AT 4" O.C. MINIMUM



**3** BEAM CONNECTION TO SHUTTER  
**3** N.T.S. VERTICAL SECTION

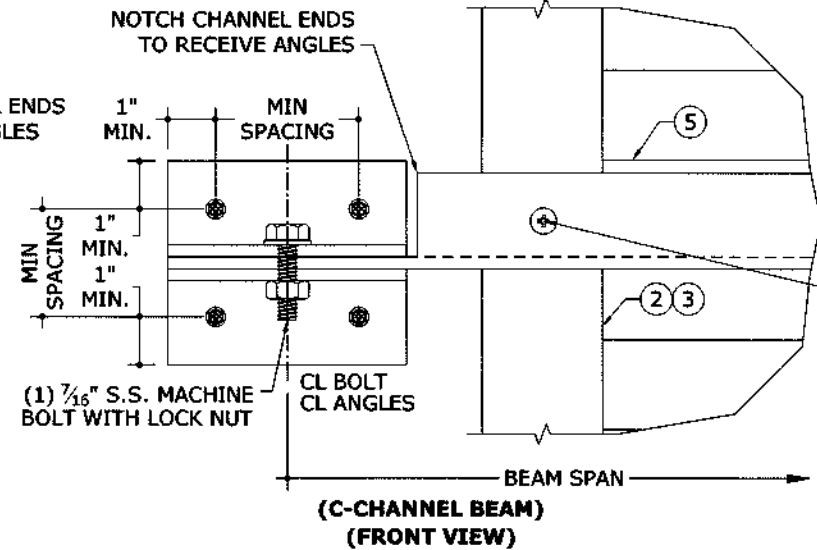
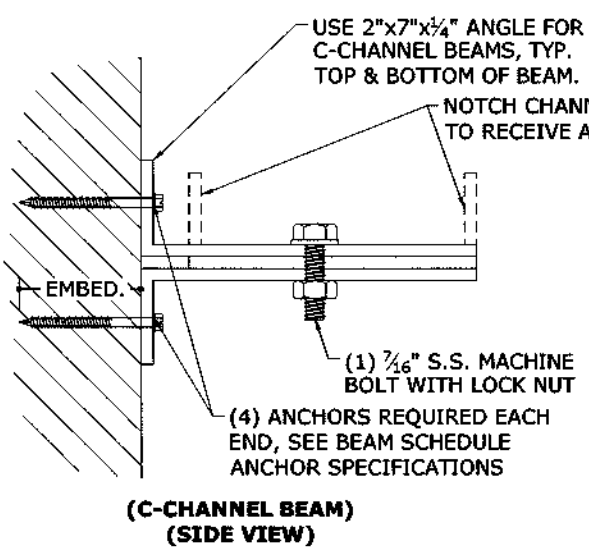
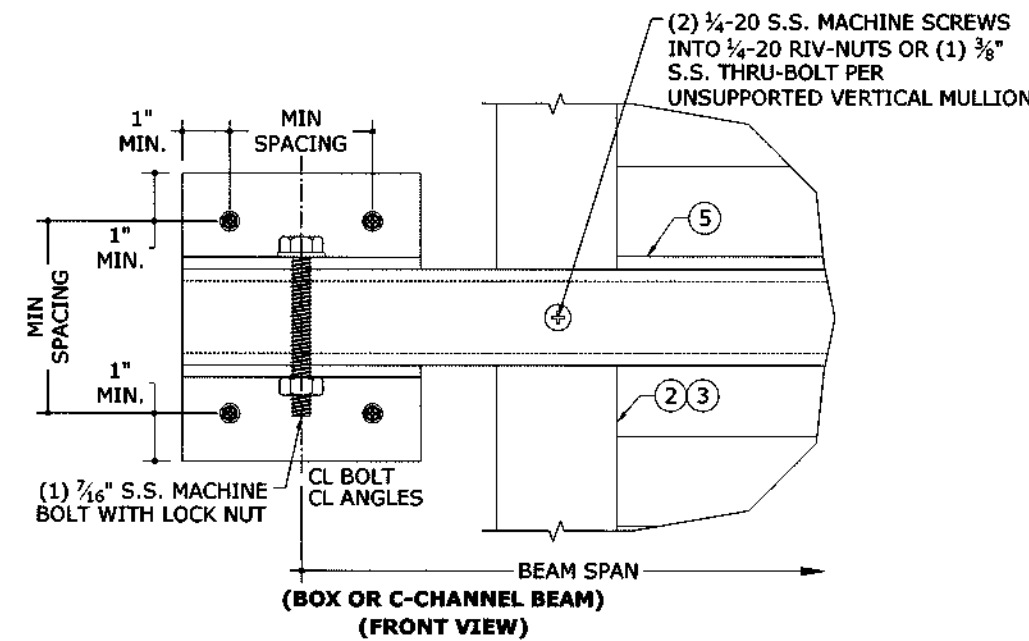
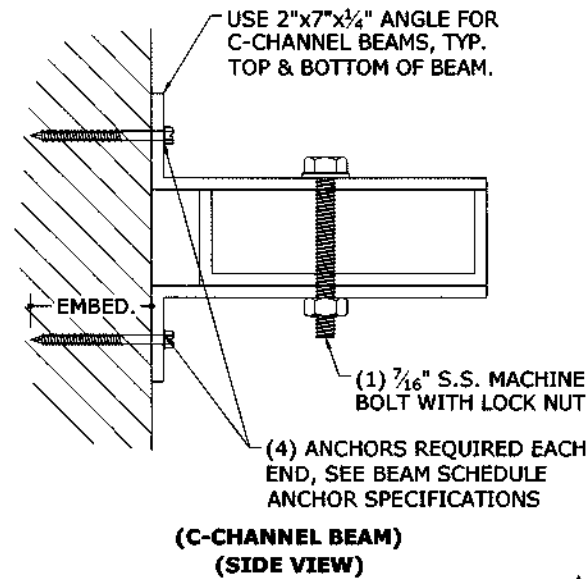
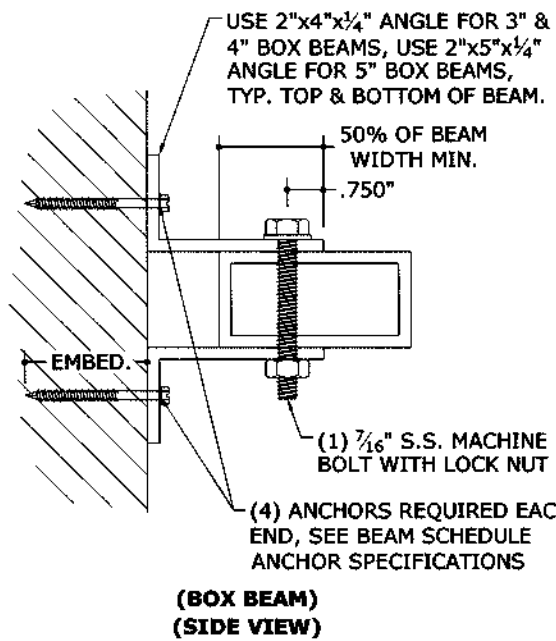
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REVISIONS	DATE	BY	CHKD	DESCRIPTION
INIT ISSUE (09-TOM-0009)	12/15/09	FLB	FLB	
CLIENT COMMENTS/REVISE	02/25/10	FLB	FLB	
REV. PER ADDL TESTING	06/04/10	KL	FLB	
2010 FBC	12/16/11	CSL	KL	
REV (2014 FBC)	04/07/15	RWN	CSL	
REV (ADD 4" BLADE)	10/04/16	RWN	FLB	
REV (2017 FBC)	06/02/17	RWN	FLB	

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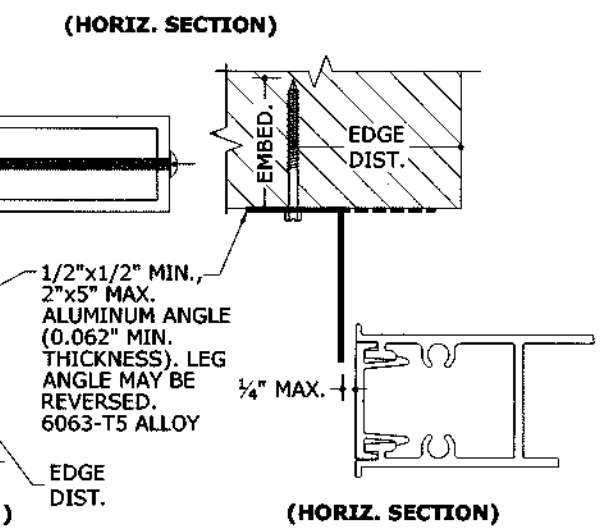
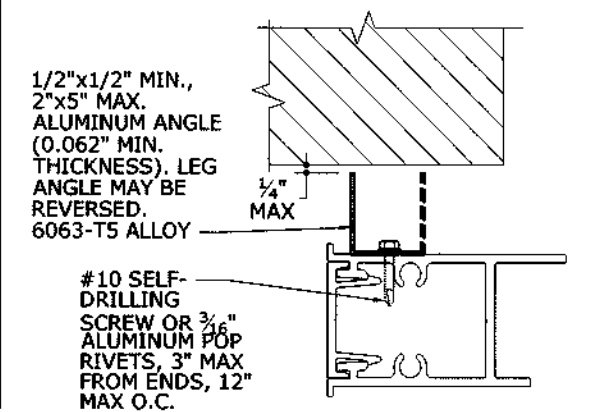
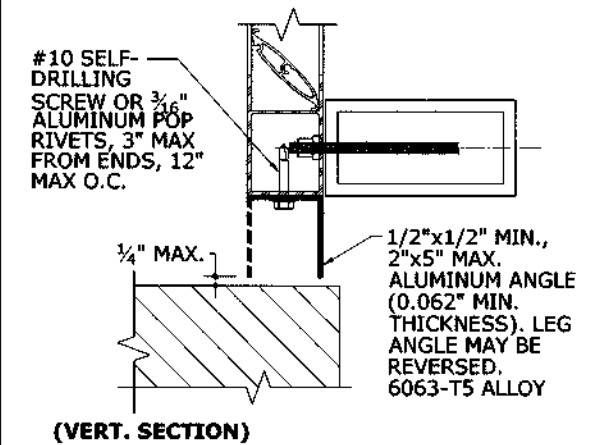
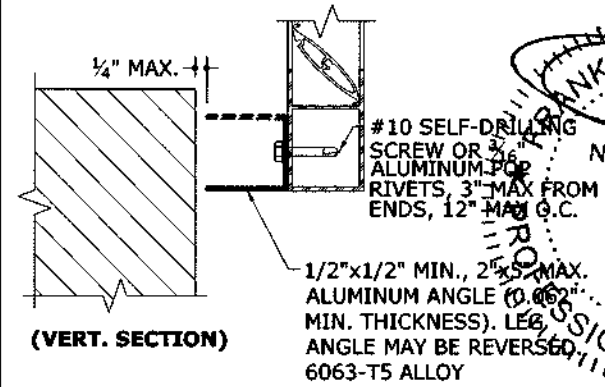
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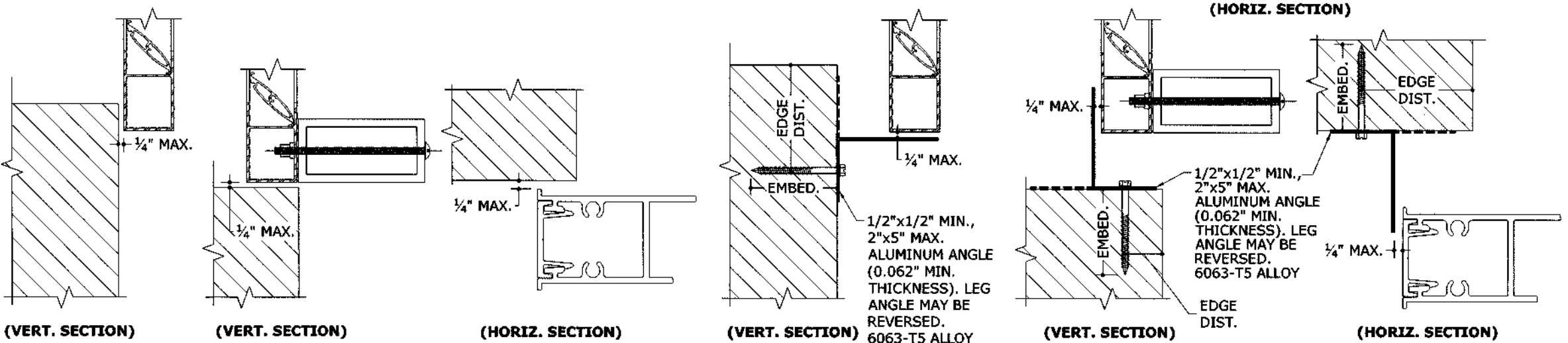
NOTE: 3" MIN SPACING FOR ANCHORS INTO CONCRETE/HOLLOW BLOCK HOST STRUCTURE. 1" MIN SPACING FOR ANCHORS INTO WOOD HOST STRUCTURE

(2) 1/4"-20 S.S. MACHINE SCREWS INTO 1/4"-20 RIV-NUTS OR (1) 3/8" S.S. THRU-BOLT PER UNSUPPORTED VERTICAL MULLION

**1 WALL BRACKET CONNECTION OPTIONS**  
N.T.S. EXTER. ELEVATION



- SIDE CLOSURE NOTES**
- FOR INSTALLATIONS WITHIN THE HVHZ, IN LIEU OF SIDE CLOSURE ANGLE, SHUTTER MAY OVERLAP OPENING BY 1.5 X SHUTTER BUILD OUT DISTANCE.
  - ANCHORS MAY BE ANY ANCHOR FROM ANCHOR NOTE 1, ON SHEET 5, INSTALLED 3" MAX FROM EACH END, AND 12" O.C. MAX, OR 1/4" ITW TAPCONS WITH 1 1/2" MIN EDGE DISTANCE AND FULL THREAD ENGAGEMENT TO 3/8" MIN PLYWOOD INSTALLED 3" MAX FROM EACH END AND 7" O.C. MAX.
  - ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
  - ALL CONCRETE ANCHORS SHALL BE INSTALLED TO NON-CRACKED CONCRETE ONLY.
  - MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR NOTE 1 ON SHEET 5. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
  - WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT INTO PLYWOOD.



**2 SIDE CLOSURE DETAILS**  
N.T.S. SECTIONS

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Wholesale Aluminum and Building Products  
A Division of ABC Supply Co., Inc.  
400 WEST MCNAB ROAD FT. LAUDERDALE, FL 33309  
FLORIDA PRODUCT APPROVAL #13434.1

REVISIONS	DATE	BY	CHKD	DATE
INIT ISSUE (98-TOM-0009)	12/15/09	FLB	FLB	12/15/09
CLIENT COMMENTS/CLOSURE	02/25/10	FLB	FLB	02/25/10
REV. PER ADD. TESTING	08/04/10	KL	KL	08/04/10
REV 2010 FBC	12/16/11	CSL	CSL	12/16/11
REV (2014 FBC)	04/07/15	RWN	FLB	04/07/15
REV (ADD 4' BLADE)	10/04/16	RWN	FLB	10/04/16
REV (2017 FBC)	06/02/17	RWN	FLB	06/02/17

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SCALE:  
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08/09/2017 - 9:35am zackr V:\Projects\15-2342 Fullview Bahama Shutter - FSA - Update FL13434.1 for 2014 Florida Bldg C-Project\WP2017 FBC Update\15-2342-Dwg-FL13434.1.dwg

V:\projects\15-2342 Fullview Bahama Shutter - FSA - Update FL13434.1 for 2014 Florida Bldg C-Project\WP2017 FBC Update\15-2342-Dwg-FL13434.1.dwg  
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08/09/2017 - 9:35pm

**ANCHOR NOTE 1: UNLESS NOTED OTHERWISE BELOW, ANCHORS AT 3" FROM ENDS AND 12" O.C. MAX (CHOOSE ONE FROM BELOW)**

- CONNECTION IN CONCRETE:
  - ¼" ITW TAPCON WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.19KSI MIN CONC.)
  - ¼" ITW TAPCON SG WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.30KSI MIN CONC.)
  - ¼" ELCO PANELMATES (MALE/FEMALE) WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.32KSI MIN CONC.)
  - ¼"-20 ALL POINTS SOLID SET ANCHOR WITH ¾" MIN EMBED. AND 2" MIN EDGE DIST. (3.0KSI MIN CONC.)
  - ¼" MILLENIUM MILLFAST WITH 1¾" EMBED AND 2½" EDGE DIST. (3.275KSI MIN)
  - #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT W/ 2" EMBED AND 2" EDGE DIST (2 KSI MIN)
- CONNECTION IN HOLLOW CONCRETE BLOCK:
  - ¼" ITW TAPCON WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST., SPACED AT 4" O.C. MAX.
  - ¼" ITW TAPCON SG WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST.
  - ¼" ELCO PANELMATES (MALE/FEMALE) WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST., SPACED AT 6½" O.C. MAX.
  - ¼"-20 ALL POINTS SOLID SET ANCHOR WITH ¾" MIN EMBED. AND 2" MIN EDGE DIST., SPACED AT 8⅞" O.C. MAX.
  - ¼" MILLENIUM MILLFAST WITH 1¾" EMBED AND 2½" EDGE DIST., SPACED AT 4½" O.C. MAX
  - #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT W/ 1¾" EMBED AND 2" EDGE DIST., SPACED AT 7" O.C. MAX
- CONNECTION IN WOOD (G=0.42 MIN):
  - ¼" LAG SCREW WITH 1½" MIN EMBED. AND ¾" MIN EDGE DIST.
  - #14 SHEET METAL SCREW WITH 1½" MIN EMBED. AND ¾" MIN EDGE DIST.

**ANCHOR NOTE 2: CHOOSE ONE ANCHOR TYPE FROM BELOW, INSTALL QTY SHOWN**

- CONNECTION IN CONCRETE:
  - (2) ¼" ITW TAPCON WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.19KSI MIN CONC.)
  - (2) ¼" ITW TAPCON SG WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.30KSI MIN CONC.)
  - (2) ¼" ELCO PANELMATES (MALE/FEMALE) WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.32KSI MIN CONC.)
  - (2) ¼"-20 ALL POINTS SOLID SET ANCHOR WITH ¾" MIN EMBED. AND 2" MIN EDGE DIST. (3.0KSI MIN CONC.)
  - (2) ¼" MILLENIUM MILLFAST WITH 1¾" EMBED AND 2½" EDGE DIST. (3.275KSI MIN)
  - (2) #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT W/ 2" EMBED AND 2" EDGE DIST (2 KSI MIN)

*NOTE: ALL 69" MAXIMUM SHUTTER SPAN INSTALLATIONS WITH MULTI-PANEL SPANS WITHOUT STORM BARS AT -95PSF REQUIRE A QUANTITY OF (3) ANCHORS FROM THE OPTIONS ABOVE*
- CONNECTION IN WOOD (G=0.42 MIN):
  - (3) ¼" ELCO PANELMATE (MALE/FEMALE) WITH 1⅞" MIN EMBED. AND ¾" MIN EDGE DIST.
  - (3) ¼" ITW TAPCON SG WITH 1⅞" MIN EMBED. AND ¾" MIN EDGE DIST.
  - (2) ¼" STAINLESS STEEL HANGER BOLT WITH 1¼" MIN EMBED. AND ¾" MIN EDGE DIST.

*NOTE: ALL 69" MAXIMUM SHUTTER SPAN INSTALLATIONS WITH MULTI-PANEL SPANS WITHOUT STORM BARS AT -95PSF REQUIRE A QUANTITY OF (3) ANCHORS FROM THE OPTIONS ABOVE*
- CONNECTION IN HOLLOW CONCRETE BLOCK\*\*:
- SEE ANCHOR SCHEDULE BELOW FOR APPLICABILITY OF ANCHORS TO BE INSTALLED. EACH HOLLOW CONCRETE BLOCK ANCHOR IS CLASSIFIED WITH A LETTER AS SHOWN BELOW ACCOMPANIED BY A NUMBER INDICATING THE QUANTITY OF ANCHORS REQUIRED FOR INSTALLATION. THE DESIGN TABLE ILLUSTRATED BELOW APPLIES TO HOLLOW CONCRETE BLOCK ANCHORS ONLY.
  - TYPE (w) : ¼" ITW TAPCON WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST.
  - TYPE (x) : ¼" ITW TAPCON SG WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST.
  - TYPE (y) : ¼" ELCO PANELMATES (MALE/FEMALE) WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST.
  - TYPE (z) : ¼"-20 ALL POINTS SOLID SET ANCHOR WITH ¾" MIN EMBED. AND 2" MIN EDGE DIST.
  - TYPE (u) : ¼" MILLENIUM MILLFAST WITH 1¾" EMBED AND 2½" EDGE DIST.
  - TYPE (v) : #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT W/ 1¾" EMBED AND 2" EDGE DIST

MAX (-) PRESSURE	69" MAXIMUM SHUTTER SPAN			81-5/8" MAXIMUM SHUTTER SPAN			96-3/4" MAXIMUM SHUTTER SPAN		
	SINGLE PANEL SPAN	MULTI-PANEL SPAN		SINGLE PANEL	MULTI-PANEL SPAN		SINGLE PANEL	MULTI-PANEL SPAN	
		W/O BAR	W/BAR		W/O BAR	W/BAR		W/O BAR	W/BAR
-50 PSF	(w3) (x2) (y2) (z2) (u3) (v2)	(x2) (y3) (z2) (v2)	(w2) (x2) (y2) (z2) (u2) (v2)	(x2) (y2) (z2) (u3) (v2)	(x2) (y3) (z2) (v3)	(w3) (x2) (y2) (z2) (u2) (v2)	(w3) (x2) (y2) (z2) (u3) (v2)	(x2) (z3) (v3)	(w3) (x2) (y2) (z2) (u3) (v2)
-60 PSF	(x2) (y3) (z2) (u3) (v2)	(x2) (y3) (z2) (v3)	(w3) (x2) (y2) (z2) (u2) (v2)	(x2) (y3) (z2) (v3)	N/A	(w3) (x2) (y2) (z2) (u3) (v2)	(w3) (x2) (y2) (z2) (u3) (v2)	N/A	(w3) (x2) (y2) (z2) (u3) (v2)
-70 PSF	(x2) (y3) (z2) (v3)	(x2) (z3) (v3)	(w3) (x2) (y2) (z2) (u3) (v2)	(x2) (y3) (z3) (v3)	N/A	(w3) (x2) (y2) (z2) (u3) (v2)	(x2) (y3) (z2) (v2)	N/A	(x2) (y3) (z2) (v2)
-95 PSF	(x2) (z3) (v3)	(x3)	(x2) (y3) (z2) (u3) (v2)	(x3) (z3)	N/A	(x2) (y3) (z2) (v3)	(x2) (y3) (z3) (v3)	N/A	(x2) (y3) (z3) (v3)

\*\*HOLLOW BLOCK ANCHOR SCHEDULE KEY: w3 = ANCHOR TYPE "w" WITH "3" ANCHORS.

**ANCHOR NOTE 3: CHOOSE ONE ANCHOR TYPE FROM BELOW, INSTALL QTY SHOWN**

- CONNECTION IN CONCRETE:
  - (1) ¼" ITW TAPCON WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.19KSI MIN CONC.)
  - (1) ¼" ITW TAPCON SG WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST. (3.30KSI MIN CONC.)
  - (1) ¼"-20 ALL POINTS SOLID SET ANCHOR WITH ¾" MIN EMBED. AND 3" MIN EDGE DIST. (3.0KSI MIN CONC.)
  - (1) ¼" MILLENIUM MILLFAST WITH 1¾" EMBED AND 2½" EDGE DIST. (3.275KSI MIN)
  - (1) #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT W/ 2" EMBED AND 2" EDGE DIST (2 KSI MIN)
- CONNECTION IN HOLLOW CONCRETE BLOCK:
  - (2) ¼" ELCO ULTRACONS WITH 1¾" MIN EMBED. AND 2½" MIN EDGE DIST.
  - (2) ¼"-20 ALL POINTS SOLID SET ANCHOR WITH ¾" MIN EMBED. AND 3" MIN EDGE DIST.
  - (2) ¼" MILLENIUM MILLFAST WITH 1¾" EMBED AND 2½" EDGE DIST. (3.275KSI MIN)
  - (2) #12 SMS W/ 2" EYEWALL ARMOR NYLON INSERT W/ 2" EMBED AND 2" EDGE DIST (2 KSI MIN)
- CONNECTION IN WOOD (G=0.42 MIN):
  - (1) ¼" LAG SCREW WITH 1½" MIN EMBED. AND ¾" MIN EDGE DIST.
  - (1) #14 SHEET METAL SCREW WITH 1½" MIN EMBED. AND ¾" MIN EDGE DIST.

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FLORIDA PRODUCT APPROVAL #13434.1

REVISION	DATE	DESCRIPTION
DRWN	12/15/09	INITIALS
CHKD	02/25/10	FLB
INT ISSUE	06/04/10	FLB
CLIENT COMMENTS/CORRECTIONS	12/16/11	CSL
REV PER ADDL TESTING	04/07/15	RWN
REV (2014 FBC)	10/04/16	RWN
REV (ADD. 4" BLADE)	08/02/17	RWN

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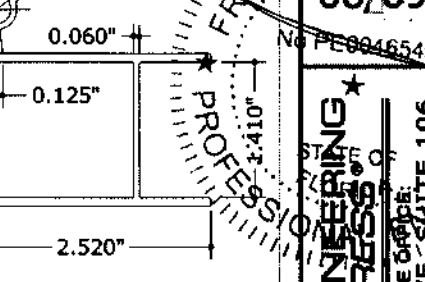
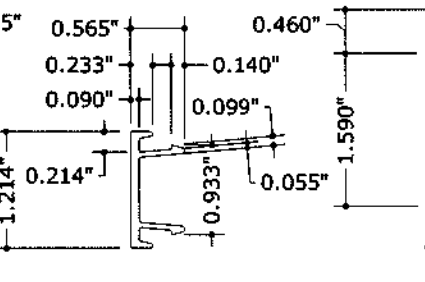
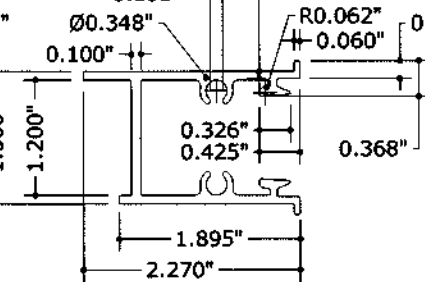
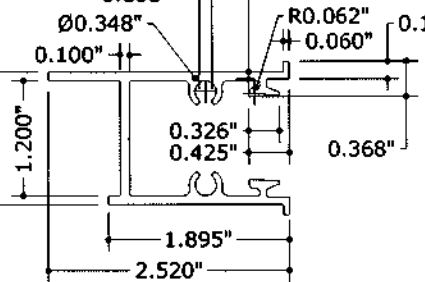
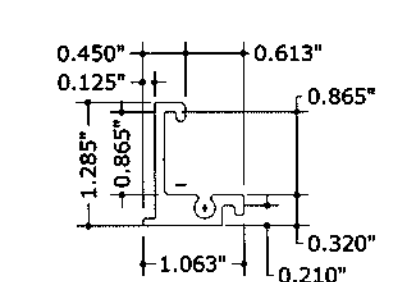
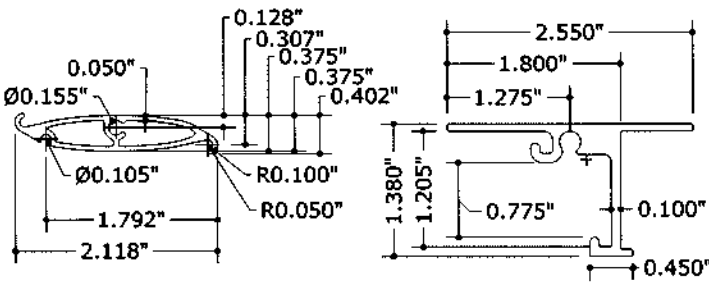
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**EXTRUSIONS**



**1a 2" BLADE**  
6" = 1'-0"

**2 FEMALE MULLION**  
6" = 1'-0"

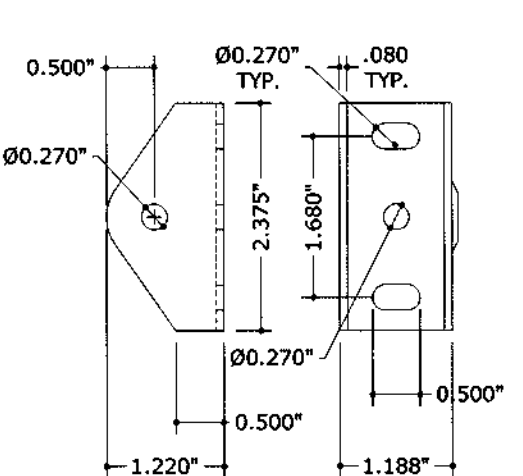
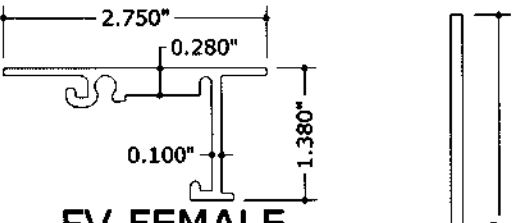
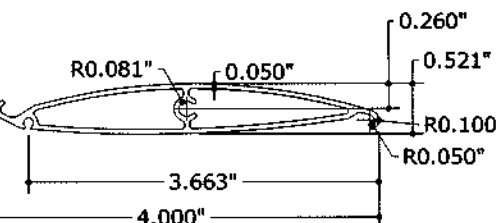
**3 MALE MULLION**  
6" = 1'-0"

**4 JAMB**  
6" = 1'-0"

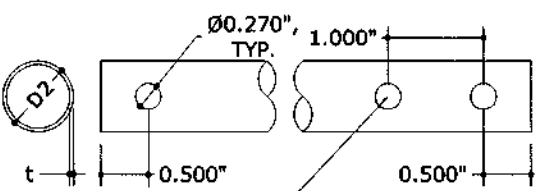
**4a FV JAMB**  
6" = 1'-0"

**5 JAMB SNAP**  
6" = 1'-0"

**6 HEADER**  
6" = 1'-0"



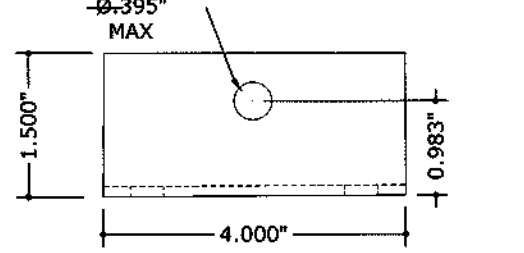
PIPE (ARM) SCHEDULE					
OUTER TUBE			INNER TUBE		
OUTSIDE DIAM.	INSIDE DIAM.	WALL	OUTSIDE DIAM.	INSIDE DIAM.	WALL
1.000"	0.900"	0.050"	0.875"	0.775"	0.050"



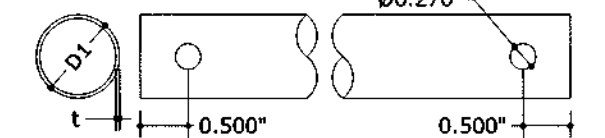
**1b 4" BLADE**  
6" = 1'-0"

**2a FV FEMALE MULLION**  
6" = 1'-0"

**13a L CAMEL BACK HINGE**  
6" = 1'-0"



**14 ALUMINUM PIPE (INNER)**  
6" = 1'-0"



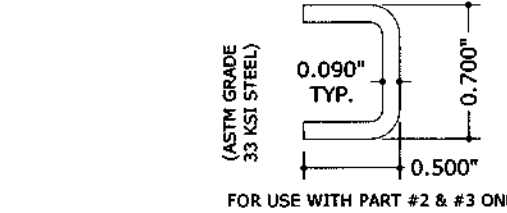
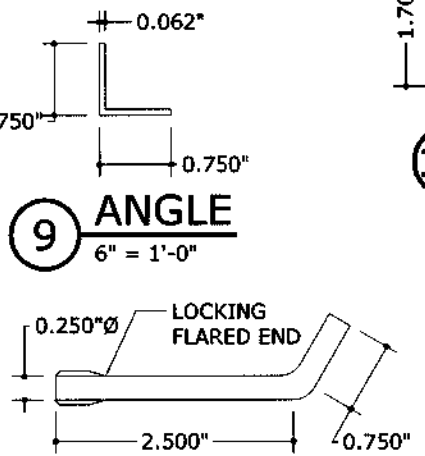
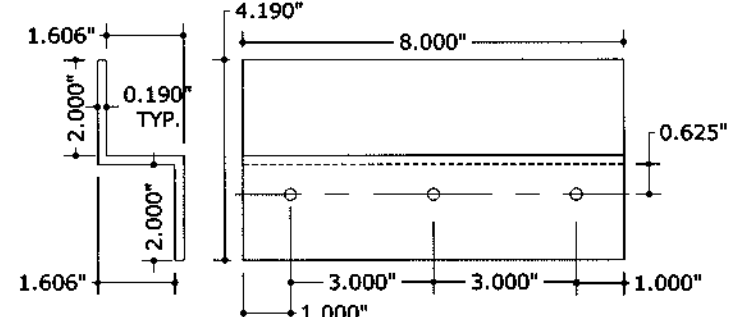
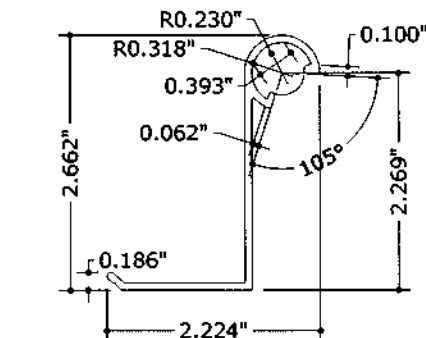
**15 ALUMINUM PIPE (OUTER)**  
6" = 1'-0"

**3a FV MALE MULLION**  
6" = 1'-0"

**11 ANGLE**

**9 ANGLE**  
6" = 1'-0"

**13b "U" WALL BRACKET**



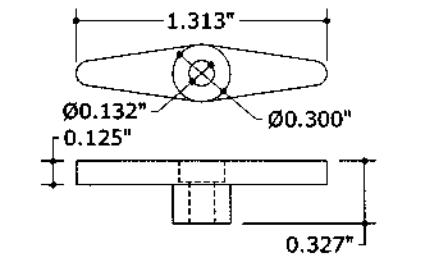
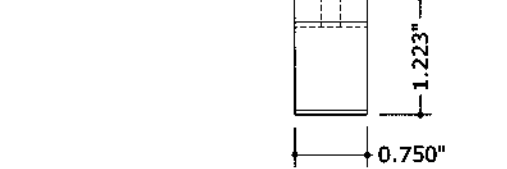
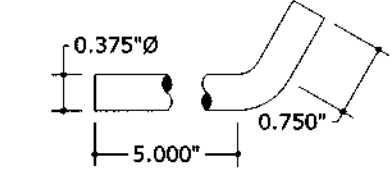
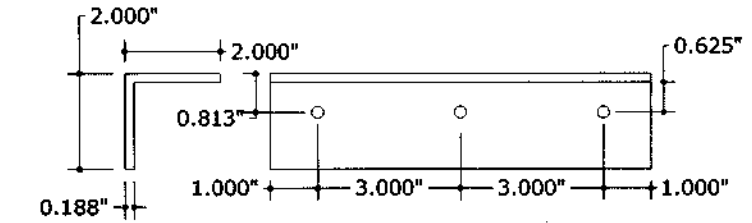
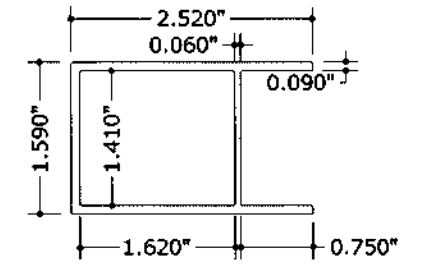
**7 HEADER HINGE**  
6" = 1'-0"

**10 "Z" BAR - PROFILE & LAYOUT**  
3" = 1'-0"

**17 L-PIN - 1/4"Ø**  
6" = 1'-0"

**19 GALV. STEEL BENT PLATE INSERT FOR MULLION**  
6" = 1'-0"

**20 TAB STOP**  
6" = 1'-0"



**8 SILL**  
6" = 1'-0"

**12 ANGLE - PROFILE & LAYOUT**  
3" = 1'-0"

**18 L-PIN - 3/8"Ø**  
6" = 1'-0"

**21 TENSION RING**  
6" = 1'-0"

**22 ALT. TAB STOP**  
6" = 1'-0"

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1	12/16/09	FLB	FLB	INIT ISSUE (09-TOM-0003)
2	02/25/10	FLB	FLB	CLIENT COMMENTS/CLOSURE
3	06/04/10	FLB	FLB	REV PER ADD. TESTING
4	12/16/11	CSL	CSL	REV (2014 FBC)
5	04/07/15	RWN	RWN	REV (ADD. 4" BLADE)
6	10/04/16	RWN	RWN	REV (2017 FBC)
7	09/02/17	RWN	RWN	REV (2017 FBC)

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