



**MIAMI-DADE COUNTY**  
**BUILDING CODE COMPLIANCE OFFICE (BCCO)**  
**PRODUCT CONTROL DIVISION**

**MIAMI-DADE COUNTY, FLORIDA**  
**METRO-DADE FLAGLER BUILDING**

**140 WEST FLAGLER STREET, SUITE 1603**  
**MIAMI, FLORIDA 33130-1563**  
**(305) 375-2901 FAX (305) 375-2908**

[www.miamidade.gov](http://www.miamidade.gov)

**NOTICE OF ACCEPTANCE (NOA)**

**Florida Shutters, Inc.**  
**1055 Commerce Avenue**  
**Vero Beach, FL 32960**

**SCOPE:**

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division that this product or material fails to meet the requirements of the applicable building code.

This product is approved as described herein, and has been designed to comply with the High Velocity Hurricane Zone of the Florida Building Code.

**DESCRIPTION: "Impact" Aluminum Bahama Shutter**

**APPROVAL DOCUMENT:** Drawing No. 08-FSH-0002, titled "Impact Aluminum Bahama Shutter", sheets 1 through 9 of 9, prepared by Engineering Express, dated February 24, 2009, last revision dated September 29, 2009, signed and sealed by Frank L. Bennardo, P.E., bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and expiration date by the Miami-Dade County Product Control Division.

**MISSILE IMPACT RATING: Large and Small Missile Impact**

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and the following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

**RENEWAL** of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

**TERMINATION** of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

**ADVERTISEMENT:** The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

**INSPECTION:** A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official.

This NOA **revises & renews NOA #04-0130.03** and consists of this page 1, evidence submitted pages E-1 & E-2 as well as approval document mentioned above.

The submitted documentation was reviewed by **Helmy A. Makar, P.E., M.S.**



*Helmy A. Makar*  
 11/04/2009

**NOA No. 09-0121.13**  
**Expiration Date: 03/08/2014**  
**Approval Date: 11/04/2009**  
**Page 1**

**Florida Shutters, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

- 1. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL #00-0411.08**
  - A. DRAWINGS**
    1. Drawing No. 1001A, titled "Impact Bahama Shutter", prepared by W. W. Schaefer Engineering & Consulting, P.A., dated November 17, 2000, sheets 1 through 10 of 10, signed and sealed by Warren W. Schaefer, P.E.
  - B. TESTS**
    1. Test Report on: 1) Large Missile Impact Test, per PA-201  
2) Cyclic Wind Pressure Test, per PA-203 and  
3) Uniform Static Air Pressure test per PA-202, of Bahama shutters, prepared by Hurricane Test Laboratory Inc., Report No. 0205-1203-99, dated February 28, 2000, signed and sealed by Vinu J. Abraham, P.E.
  - C. CALCULATIONS**
    1. Anchor analysis and calculations dated 03/29/2000, Pages 1 to 14, prepared by W. W. Schaefer Engineering & Consulting, P.A., signed and sealed by Warren W. Schaefer, P.E.
  - D. MATERIAL CERTIFICATION**
    1. Certified Tensile Test Report No. 0AM-142, prepared by QC Metallurgical Inc., dated 03/02/2000, per ASTM E8-93, signed and sealed by Frank Grate, P.E.
- 2. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 04-0130.03**
  - A. DRAWINGS**
    1. Drawing No. 1001A, titled "Impact Bahama Shutters", sheets 1 through 10 of 10, prepared by W. W. Schaefer Engineering & Consulting, P.A., dated November 17, 2000, signed and sealed by Warren W. Schaefer, P.E. on March 18, 2004
  - B. TESTS**
    1. None.
  - C. CALCULATIONS**
    1. None.
  - D. QUALITY ASSURANCE**
    1. By Miami-Dade County Building Code Compliance Office.
  - E. MATERIAL CERTIFICATIONS**
    1. None.



Helmy A. Makar, P.E., M.S.  
Senior Product Control Examiner  
NOA No. 09-0121.13  
Expiration Date: 03/08/2014  
Approval Date: 11/04/2009

**Florida Shutters, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**3. NEW EVIDENCE SUBMITTED**

**A. DRAWINGS**

1. *Drawing No. 08-FSH-0002, titled "Impact Aluminum Bahama Shutter", sheets 1 through 9 of 9, prepared by Engineering Express, dated February 24, 2009, last revision dated September 29, 2009, signed and sealed by Frank L. Bennardo, P.E.*

**B. TESTS**

1. *Test Report on: 1) Large Missile Impact Test, per TAS-201  
2) Cyclic Wind Pressure Test, per TAS-203 and  
3) Uniform Static Air Pressure test per TAS-202, of Bahama shutters,  
prepared by Hurricane Test Laboratory Inc., Report No. 0218-0203-09, dated July 01, 2009, signed and sealed by Vinu J. Abraham, P.E.*

**C. CALCULATIONS**

1. *Comparative analysis and anchor calculations dated 02/24/2009, Pages 1 to 24, prepared by Engineering Express, signed and sealed by Frank L. Bennardo, P.E., on 02/24/2009.*
2. *Revised comparative analysis and anchor calculations dated 09/29/2009, Pages 1 to 8, prepared by Engineering Express, signed and sealed by Frank L. Bennardo, P.E., on 09/29/2009.*

**D. QUALITY ASSURANCE**

1. *By Miami-Dade County Building Code Compliance Office.*

**E. MATERIAL CERTIFICATION**

1. *None.*



Helmy A. Makar, P.E., M.S.  
Senior Product Control Examiner  
NOA No. 09-0121.13  
Expiration Date: 03/08/2014  
Approval Date: 11/04/2009

# IMPACT ALUMINUM BAHAMA SHUTTER

FOR USE WITHIN AND OUTSIDE THE HIGH VELOCITY HURRICAN ZONE (HVHZ)

FRANK L. BENNARDO, P.E.  
# PE0046549

09/29/2009

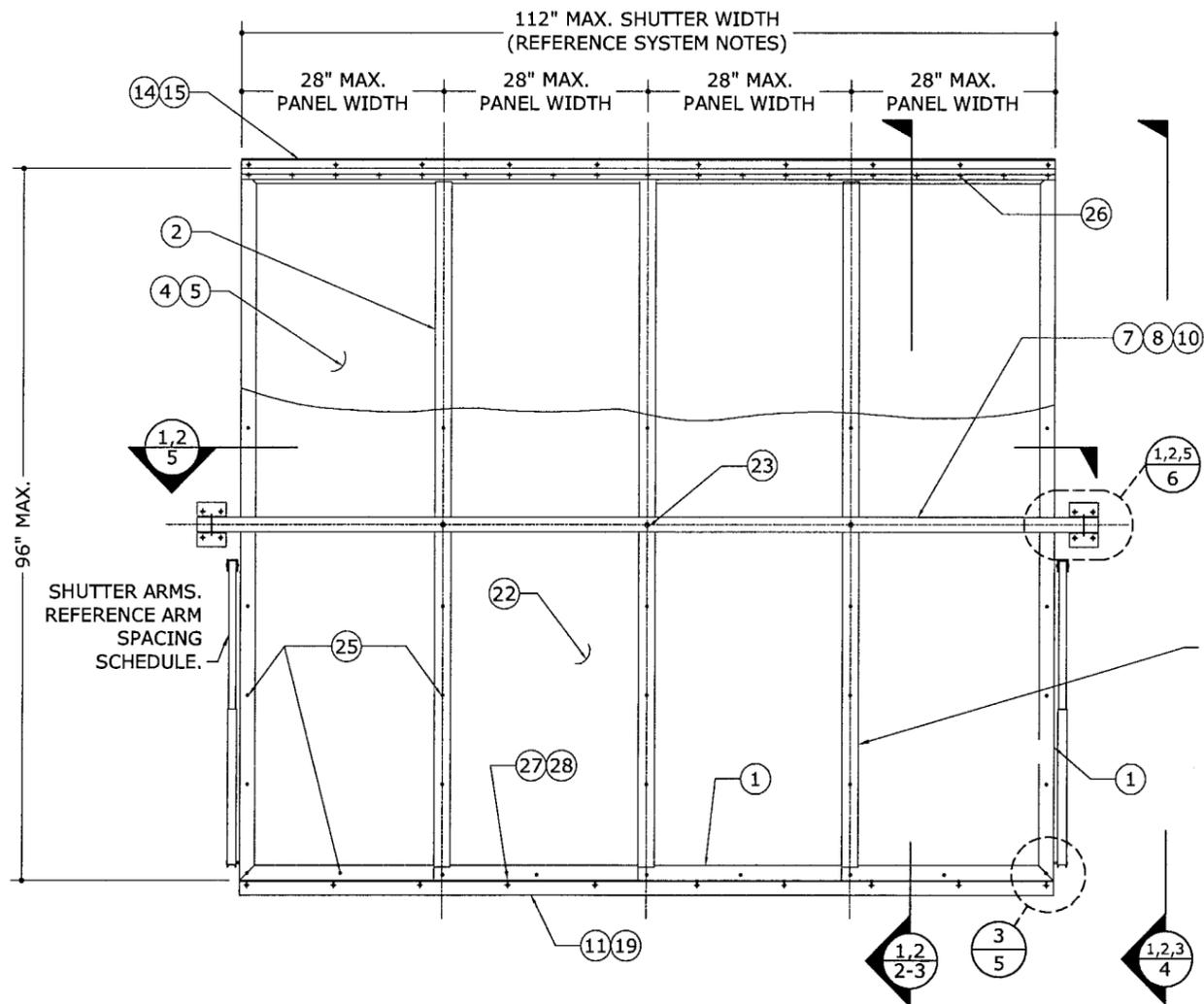
**ENGINEERING EXPRESS**  
160 SW 12th AVENUE, #106  
DEERFIELD BEACH, FL 33442  
PH: (954) 354-0660 FAX: (954) 354-0443  
WWW.ENGEXP.COM  
CERT OF AUTH #9885  
A FRANK L. BENNARDO, P.E., INC. INNOVATION

**FLORIDA SHUTTERS, INC.**  
1055 COMMERCE AVENUE  
VERO BEACH, FL 32960  
(772) 569 - 2200  
"IMPACT" ALUMINUM BAHAMA SHUTTER  
MIAMI-DADE NOTICE OF ACCEPTANCE

DRWN	CHKD	DATE
IRKB	CL	02/24/09
REV PER BCCO COMMENT	KL	09/29/09

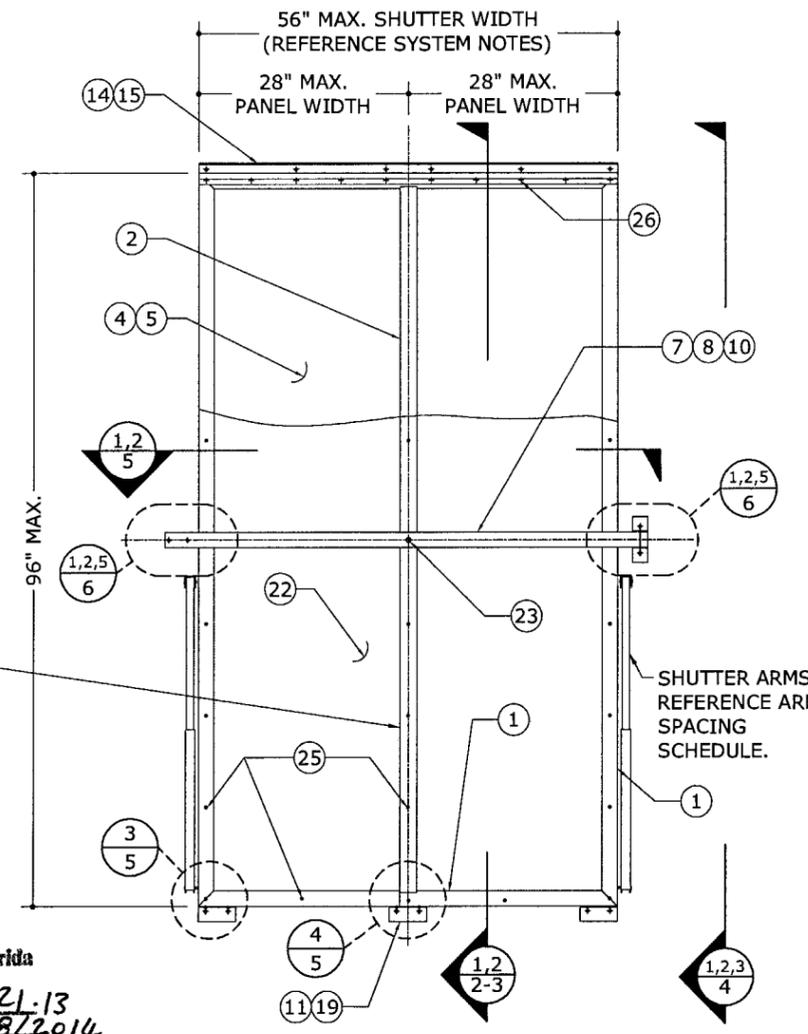
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1



1 **QUAD PANEL SHUTTER**  
1 N.T.S. EXTERIOR ELEV

SHEET SEAMS SHALL BE VERTICAL WITH 2" OVERLAP AT MULLIONS. SHEET MAY SPAN ACROSS MORE THAN ONE MULLION WITHOUT A SEAM.



2 **DOUBLE PANEL SHUTTER**  
1 N.T.S. EXTERIOR ELEV

**PRODUCT REVISED**  
as complying with the Florida Building Code  
Acceptance No 09-0121-13  
Expiration Date 03/08/2014  
By *Helmut H. Meier*  
Miami Dade Product Control Division

**GENERAL NOTES**

1. THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE 2007 EDITION OF THE FLORIDA BUILDING CODE, FOR USE WITHIN AND OUTSIDE THE HIGH VELOCITY HURRICANE ZONE, PER TAS 201 / 202 / 203.
2. 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.
3. POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED BY OTHERS ON A JOB-SPECIFIC BASIS IN ACCORDANCE WITH THE GOVERNING CODE.
4. 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.
5. PERMIT HOLDER SHALL VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS.
6. SHUTTER SIZE SHALL BE RESTRICTED BY THE MAXIMUM DIMENSIONS SHOWN HEREIN.
7. EACH SHUTTER ASSEMBLY SHALL BE PERMANENTLY LABELED WITH THE FOLLOWING:  
FLORIDA SHUTTERS, INC.  
VERO BEACH, FLORIDA  
MIAMI-DADE PRODUCT CONTROL APPROVED
8. ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH A MINIMUM TENSILE YIELD STRENGTH OF 60 KSI. ALL 3/16"Ø OR 1/4"Ø POP RIVETS SHALL BE 5056-H32 ALUMINUM ALLOY OR STRONGER.
9. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.

**SYSTEM NOTES**

1. FOR INSTALLATIONS WITH STORM BARS, ANY NUMBER OF PANELS MAY BE USED, PROVIDED THAT THE OVERALL SHUTTER WIDTH DOES NOT EXCEED 112" MAX AND THE PANEL WIDTHS DO NOT EXCEED 28" MAX.
2. FOR INSTALLATIONS WITHOUT STORM BARS, ANY NUMBER OF PANELS MAY BE USED AND THE SHUTTER MAY BE INSTALLED WITH AN UNLIMITED OVERALL WIDTH, PROVIDED THAT THE PANEL WIDTHS DO NOT EXCEED 28" MAX.

**MAXIMUM ALLOWABLE DESIGN PRESSURES: -80.0 PSF +80.0 PSF**

REFERENCE DESIGN SCHEDULES HEREIN FOR ADDITIONAL LIMITATIONS TO ALLOWABLE DESIGN PRESSURES, AS DETERMINED BY SHUTTER SPAN, STORM BAR CONFIGURATIONS, AND ANCHORAGE.

SHUTTER HEIGHT	MAX ARM SPACING	
	2-PANEL SHUTTERS	3+ PANEL SHUTTERS
0-48"	56"	56"
49"-60"	56"	45"
61"-72"	56"	38"
73"-84"	56"	32"
85"-96"	56"	28"

VALUES IN THIS TABLE ARE BASED ON PRESSURES RESULTING FROM 3-SECOND GUST WIND SPEEDS UP TO 90 MPH

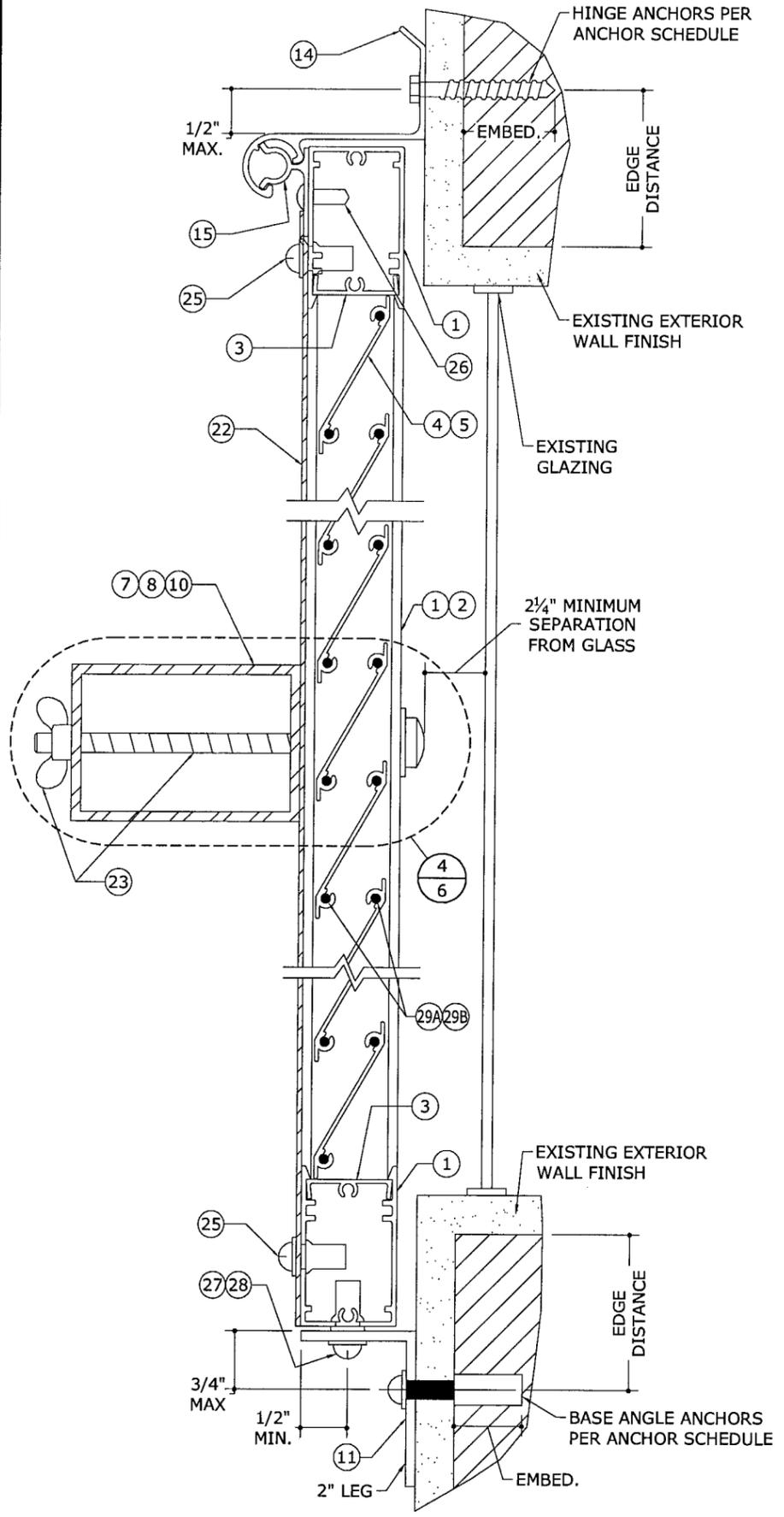
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DRWN	CHKD	DATE
RKB	CL	02/24/09
KL	FLB	09/29/09

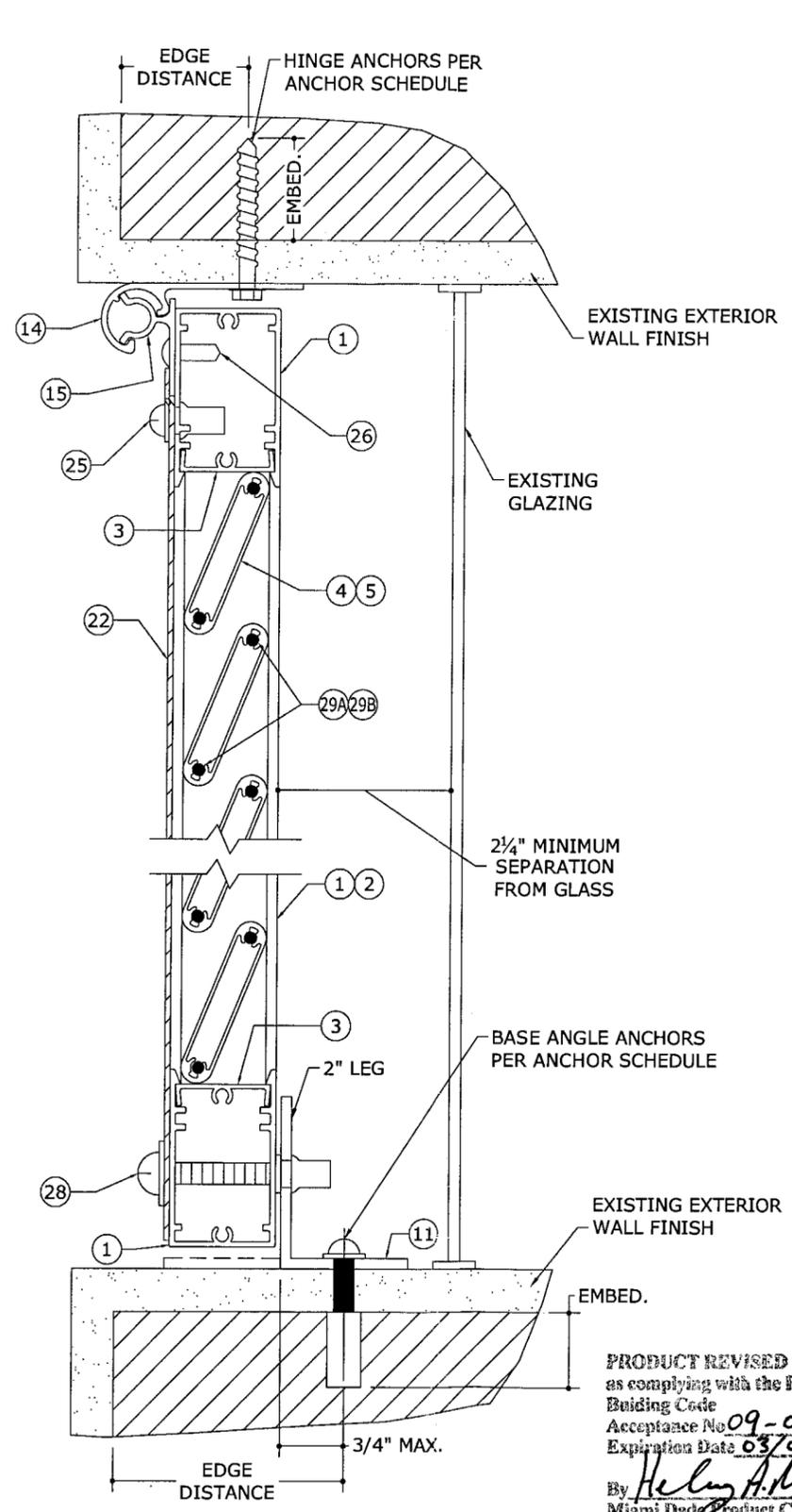
  

REMARKS	INIT	ISSUE	REV PER	BCCO COMMENT

08-FSH-0002  
SCALE: - 03  
PAGE DESCRIPTION:



**1 TYPICAL FACE MOUNT**  
6" = 1'-0" VERT. SECTION



**2 ALTERNATE TRAP MOUNT**  
6" = 1'-0" VERT. SECTION

**ANCHOR SCHEDULE:**

- BASE ANGLE ANCHORS:**
- 1/4"-20 POWERS CALK-INS: **1" MAX FROM ENDS AND 6.5" O.C. MAX** TO MASONRY/CONCRETE WITH 7/8" MIN EMBED, AND 2" MIN EDGE DISTANCE.
  - 1/4" ELCO PANELMATES (MALE OR FEMALE): **1" MAX FROM ENDS AND 6.5" O.C. MAX** TO MASONRY/CONCRETE WITH 1-1/4" MIN EMBED, AND 2" MIN EDGE DISTANCE.
  - 1/4" ELCO PANELMATES (MALE OR FEMALE): **1" MAX FROM ENDS AND 10" O.C. MAX** TO G=0.55 MIN WOOD WITH 1-7/8" MIN THREAD PENETRATION, AND 3/4" MIN EDGE DISTANCE.
- HINGE ANCHORS:**
- 1/4" TAPCONS (ITW): **1" MAX FROM ENDS AND 5" O.C. MAX** THRU WOOD BUCKS OR DIRECTLY INTO MASONRY/CONCRETE WITH 1-1/4" MIN EMBED, AND 2-1/2" MIN EDGE DISTANCE.
  - #12 WOOD SCREWS: **1" MAX FROM ENDS AND 12" O.C. MAX** TO G=0.55 MIN WOOD WITH 1-1/2" MIN THREAD PENETRATION, AND 3/4" MIN EDGE DISTANCE.
- STORM BAR ANCHORS:**
- 1/4"-20 POWERS CALK-IN ANCHORS TO MASONRY/CONCRETE WITH 7/8" MIN EMBED, 2-1/2" MIN SPACING, AND 2 1/2" MIN EDGE DISTANCE.
  - 1/4" ELCO PANELMATES (MALE OR FEMALE) TO MASONRY/CONCRETE WITH 1-1/4" MIN EMBED, 2-1/2" MIN SPACING, AND 2" MIN EDGE DISTANCE.
  - 1/4" ELCO PANELMATES (MALE OR FEMALE) TO G=0.55 MIN WOOD WITH 1-7/8" MIN THREAD PENETRATION, 1-1/2" MIN SPACING, AND 3/4" MIN EDGE DISTANCE.

**ANCHOR NOTES:**

1. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
2. TAPCONS SHALL BE MANUFACTURED BY ITW. "ELCO PANELMATE" ANCHORS FOR USE IN CONCRETE, HOLLOW BLOCK OR WOOD MAY BE MALE OR FEMALE.
3. WHERE ANCHORS FASTEN TO NARROW FACE OF STUD FRAMING, ANCHOR SHALL BE LOCATED IN CENTER OF NOMINAL 2x (MIN) WOOD STUD (i.e. 3/4" EDGE DISTANCE IS ACCEPTABLE FOR ANCHORS TO WOOD FRAMING).
4. WOOD HOST STRUCTURE SHALL BE "SOUTHERN PINE" G=0.55 OR GREATER DENSITY.
5. MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR SCHEDULE. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
6. WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT INTO PLYWOOD.
7. WOOD BUCKS (BY OTHERS) SHALL BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE EXISTING STRUCTURE.
8. MACHINE SCREWS SHALL HAVE MINIMUM OF 1/2" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFER HEAD ("SIDEWALK BOLT") U.N.O.

PRODUCT REVISED  
as complying with the Florida  
Building Code  
Acceptance No. 09-0121.13  
Expiration Date 03/08/2014  
By *Helmy A. M...*  
Miami Dade Product Control  
Division

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FRANK L. BENNARDO, P.E.  
# PE0046549

09/29/2009

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"IMPACT" ALUMINUM BAHAMA SHUTTER  
MIAMI-DADE NOTICE OF ACCEPTANCE

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RKB	CL	02/24/09
REV PER BCCO COMMENT	KL	FLB	09/29/09

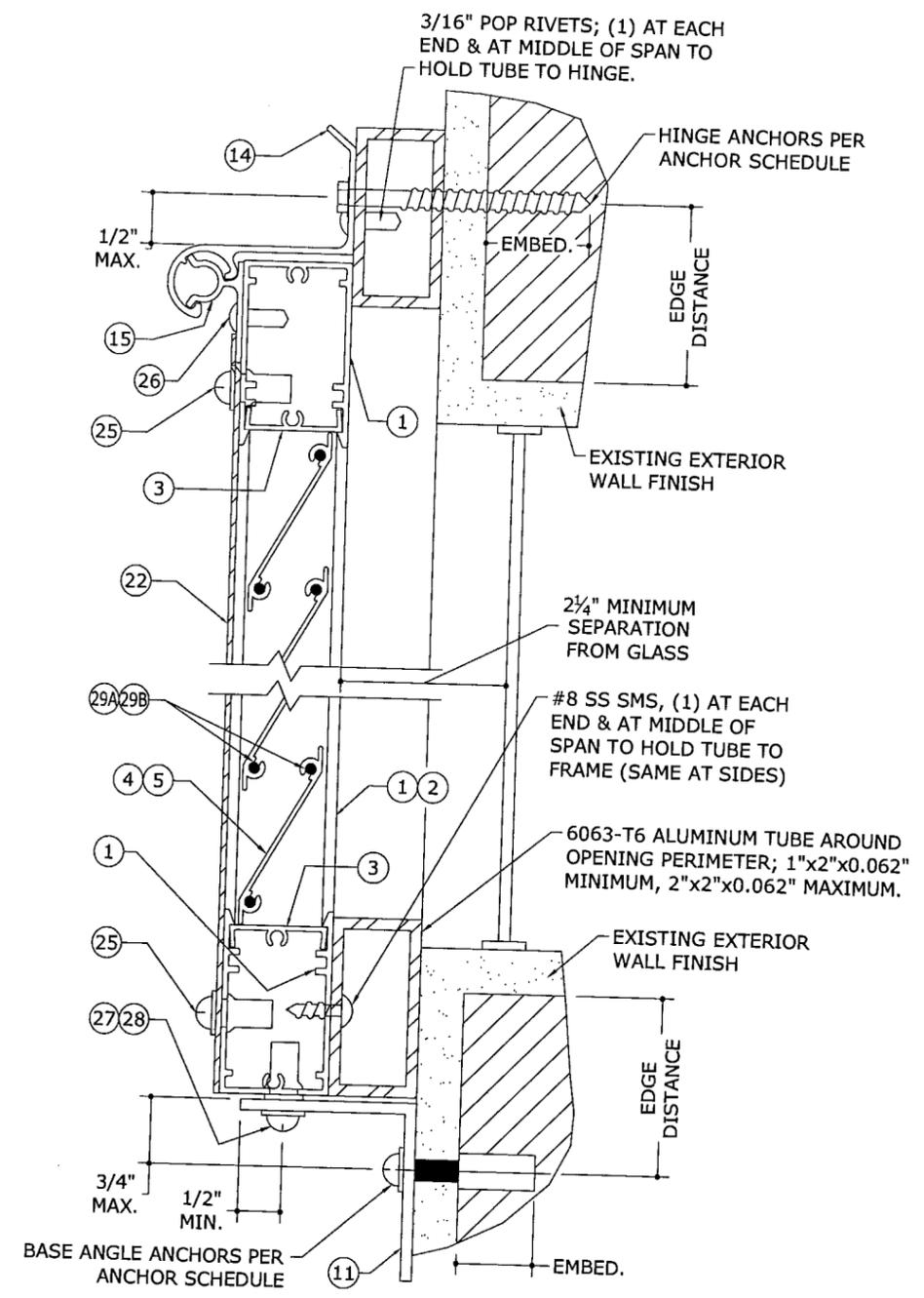


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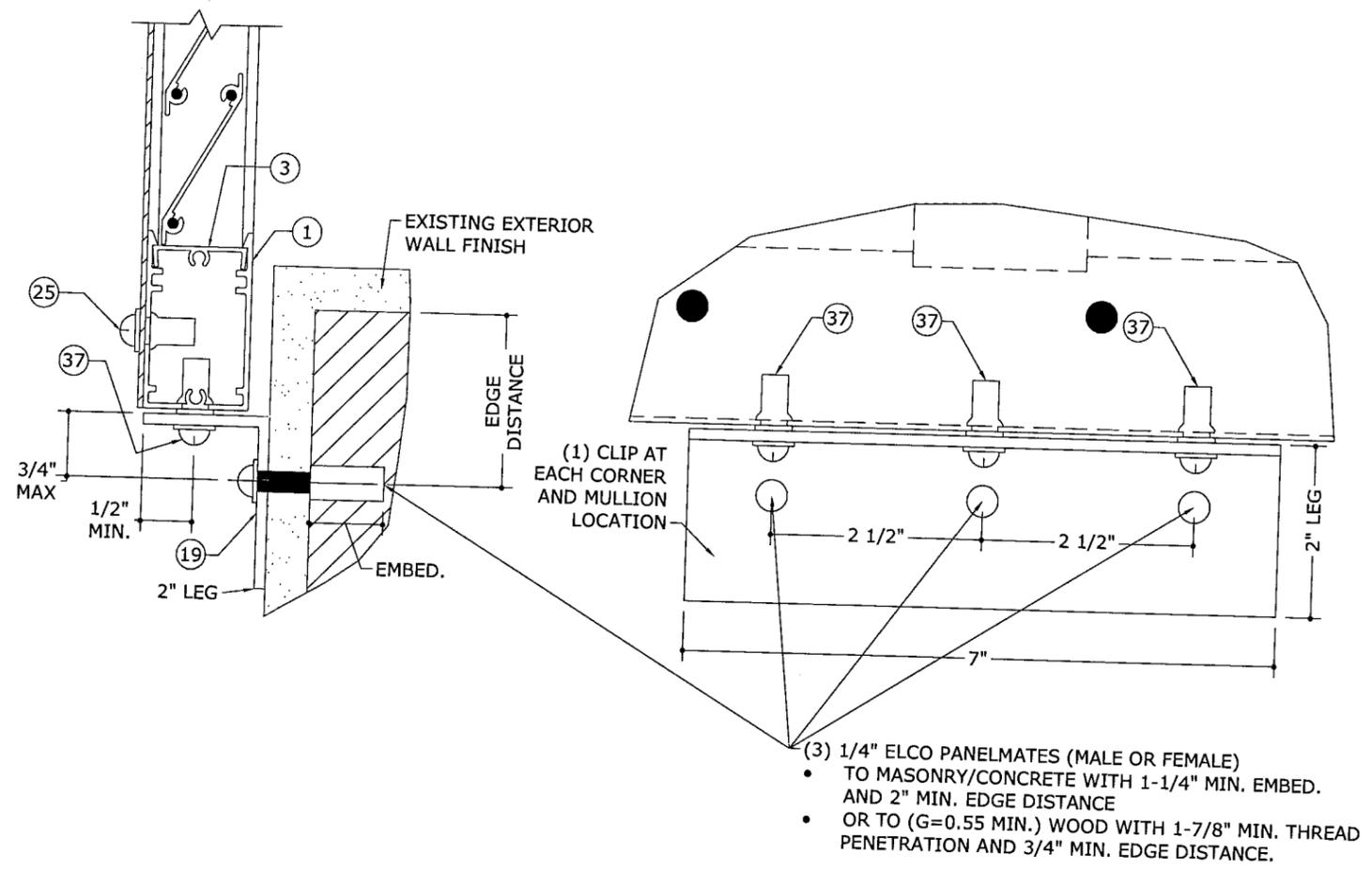
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**1**  
**3** BUILD-OUT WALL MOUNT  
6" = 1'-0" VERT SECTION



**2**  
**3** OPTIONAL BASE CLIP  
6" = 1'-0" EXTERIOR ELEV/VERT SECTION

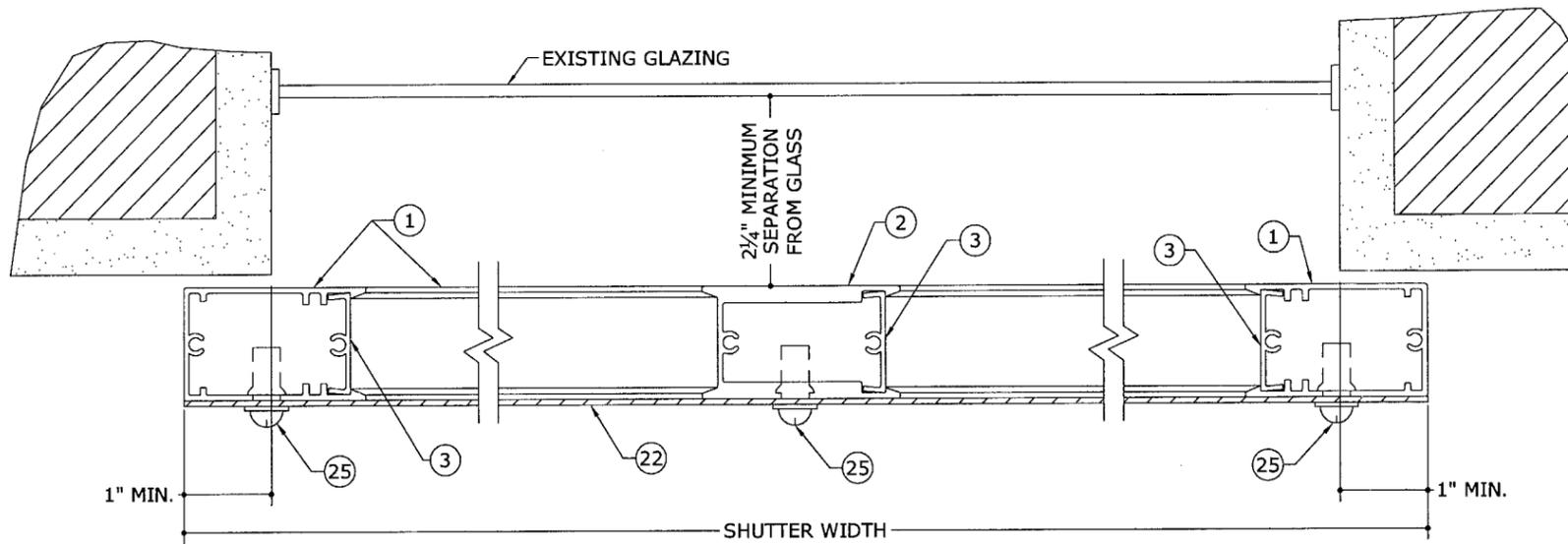
- (3) 1/4" ELCO PANELMATES (MALE OR FEMALE)
- TO MASONRY/CONCRETE WITH 1-1/4" MIN. EMBED. AND 2" MIN. EDGE DISTANCE
  - OR TO (G=0.55 MIN.) WOOD WITH 1-7/8" MIN. THREAD PENETRATION AND 3/4" MIN. EDGE DISTANCE.

PRODUCT REVISED  
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By *Helmy A. Miller*  
Miami Dade Product Control  
Division



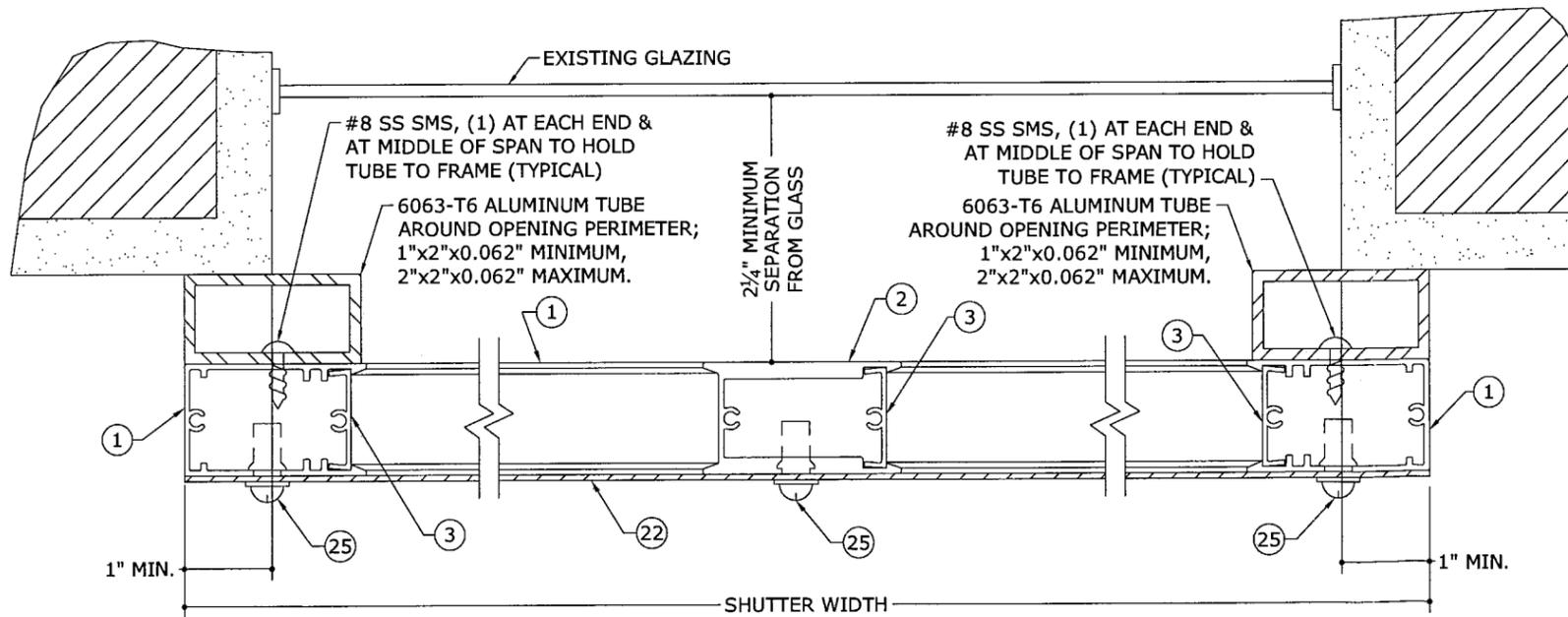
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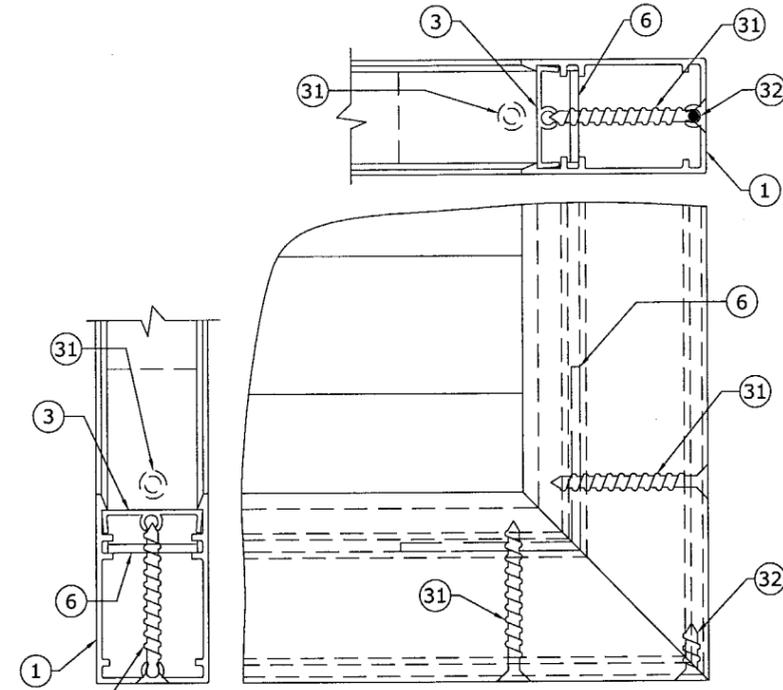
NOTE: STORM BARS NOT SHOWN FOR CLARITY

**1** TYPICAL FACE MOUNT  
5 6" = 1'-0" HORIZ SECTION

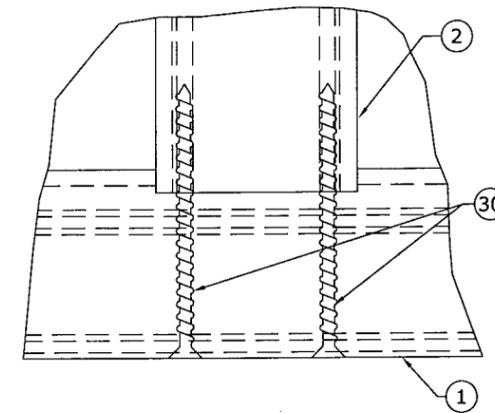


NOTE: STORM BARS NOT SHOWN FOR CLARITY

**2** BUILD-OUT MOUNT  
5 6" = 1'-0" HORIZ SECTION



**3** FRAME CORNER DETAIL  
5 6" = 1'-0" ORTHOGRAPHIC



**4** MULLION CONNECTION  
5 6" = 1'-0" ELEVATION

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Miami Dade Product Control  
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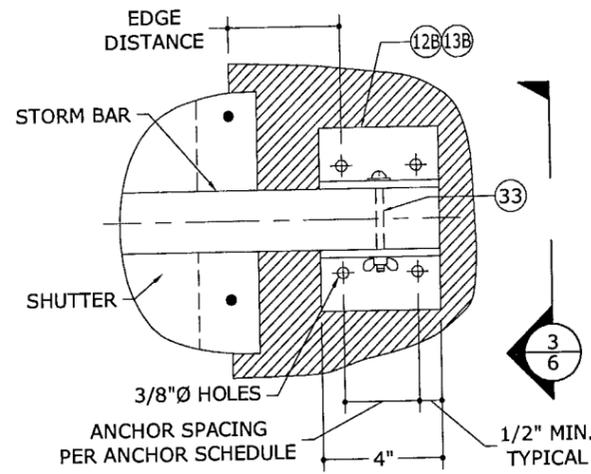
**FLORIDA SHUTTERS, INC.**  
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REMARKS	DRWN	CHKD	DATE
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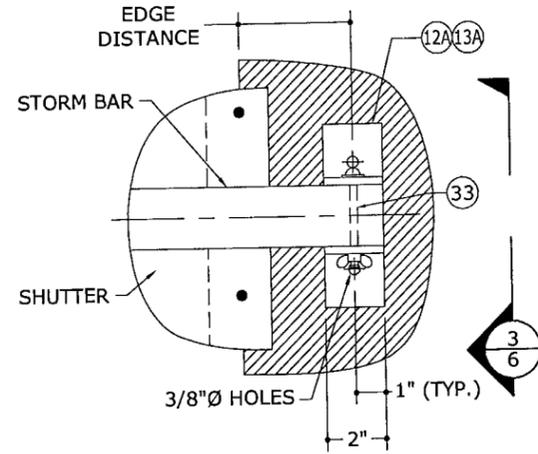
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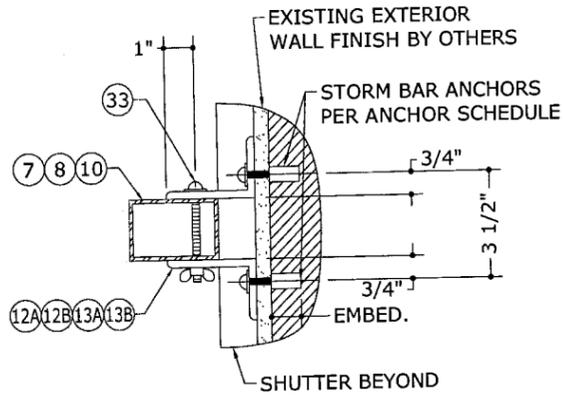
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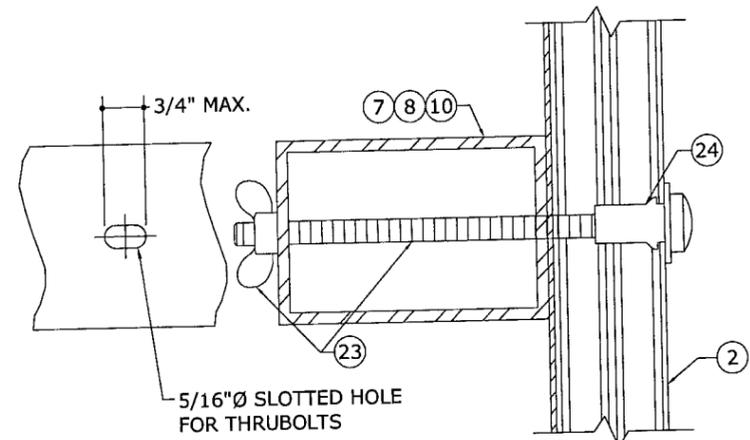
**1**  
**6** 2" = 1'-0" EXTERIOR ELEV



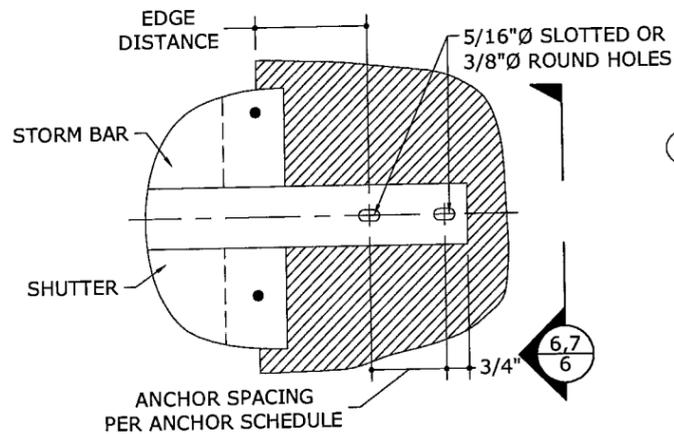
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**6** 2" = 1'-0" EXTERIOR ELEV



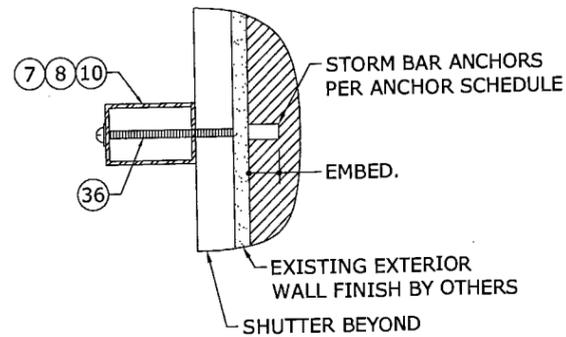
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**6** 2" = 1'-0" VERT SECTION



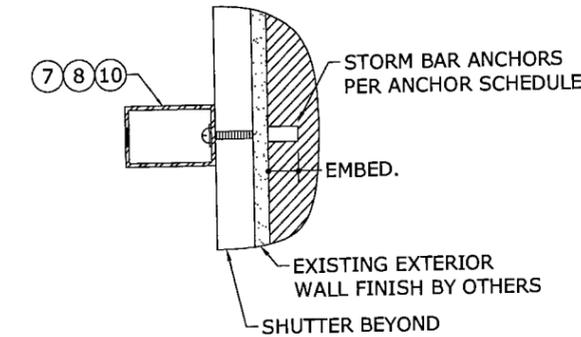
**4**  
**6** 6" = 1'-0" VERT SECTION



**5**  
**6** 2" = 1'-0" EXTERIOR ELEV



**6**  
**6** 2" = 1'-0" VERT SECTION



**7**  
**6** 2" = 1'-0" VERT SECTION

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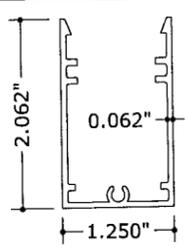
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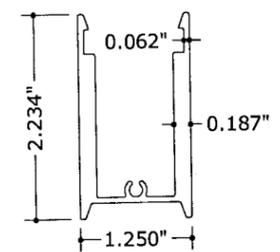
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08-FSH-0002  
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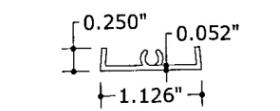
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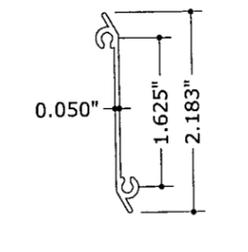
**1** FRAME  
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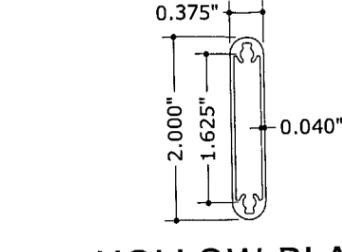
**2** MULLION  
6061-T6 ALUM.



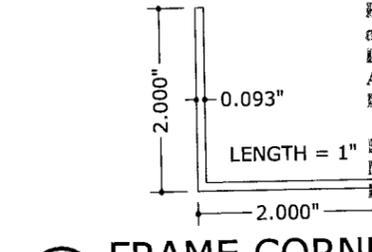
**3** FRAME CAP  
6063-T6 ALUM.



**4** Z-BLADE  
6063-T6 ALUM.

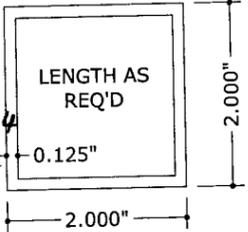


**5** HOLLOW BLADE  
6063-T6 ALUM.

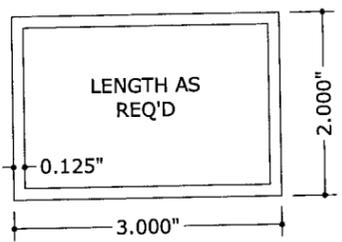


**6** FRAME CORNER KEY  
6063-T5 ALUM.

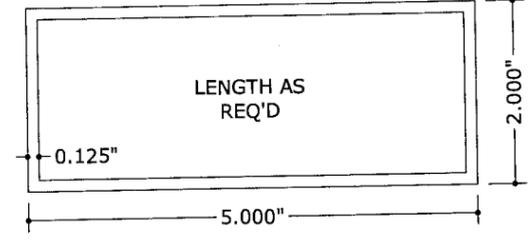
PRODUCT REVISED  
as complying with the Florida  
Building Code  
Acceptance No. 09-0121-13  
Expiration Date 03/08/2014  
By: *Heley A. Allen*  
Miami Data Product Control  
Division



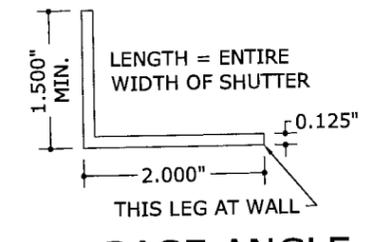
**7** STORM BAR 'A'  
6061-T6 OR 6005-T5 ALUM.



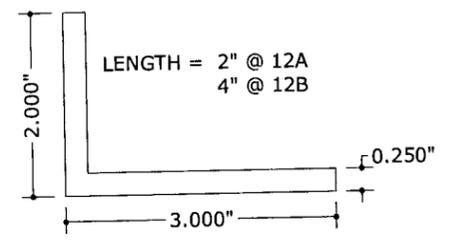
**8** STORM BAR 'B'  
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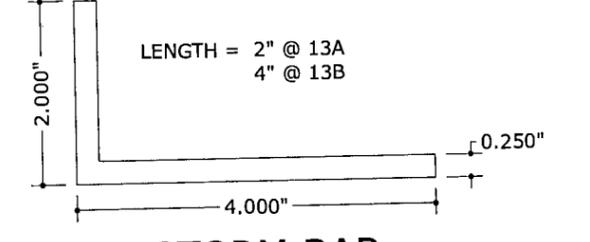
**10** STORM BAR 'C'  
6061-T6 OR 6005-T5 ALUM.



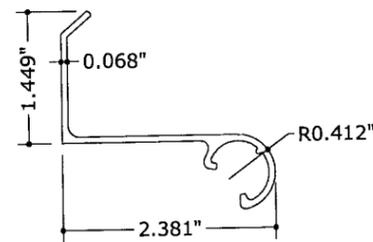
**11** BASE ANGLE  
6063-T5 ALUM.



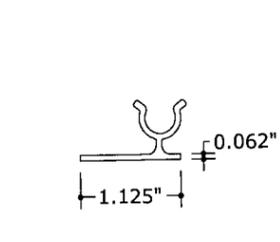
**12A/12B** STORM BAR CONNECTION ANGLE  
6063-T5 ALUM.



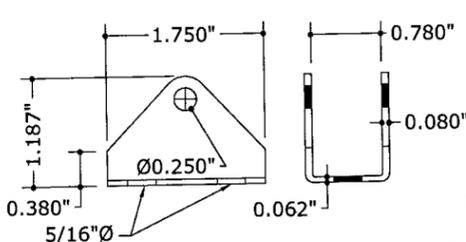
**13A/13B** STORM BAR CONNECTION ANGLE  
6063-T5 ALUM.



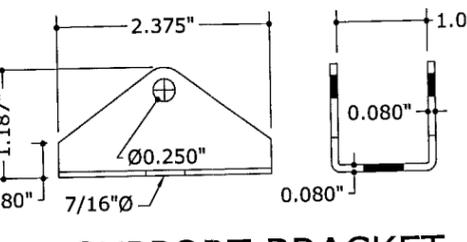
**14** FEMALE HINGE  
6061-T6 ALUM.



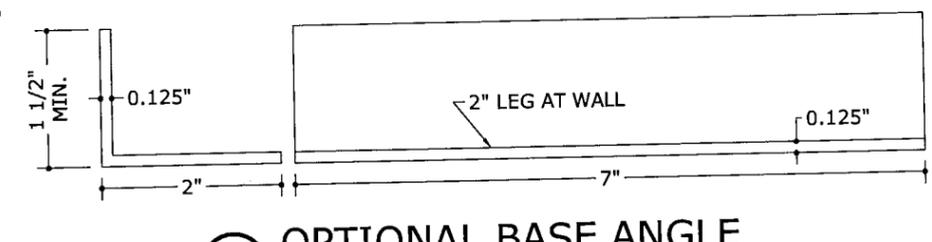
**15** MALE HINGE  
6061-T6 ALUM.



**16** SUPPORT BRACKET  
6063-T6 ALUM.



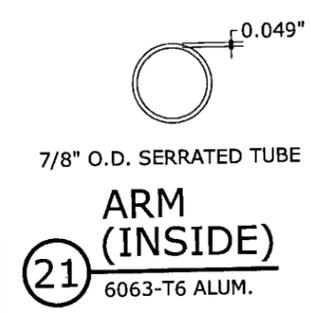
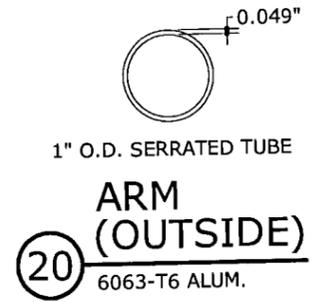
**17** SUPPORT BRACKET  
6063-T6 ALUM.



**19** OPTIONAL BASE ANGLE  
6063-T5 ALUM.

**BILL OF MATERIALS**

NO.	DESCRIPTION	NOTES		
1	SHUTTER FRAME	6063-T6 ALUMINUM	20	OUTER PORTION OF SHUTTER ARM
2	MULLION	6061-T6 ALUMINUM	21	INNER PORTION OF SHUTTER ARM
3	FRAME CAP	6063-T6 ALUMINUM	22	0.050" THICK ALUMINUM HURRICANE SHEET
4	Z-BLADE	6063-T6 ALUMINUM	23	1/4" STL BOLT OR THREADED ROD W/WING NUT
5	HOLLOW BLADE	6063-T6 ALUMINUM	24	1/4" MOLLY JACK NUT OR 6061-T6 RIVNUT
6	L2"x2"x0.093" FRAME CORNER KEY	6063-T5 ALUMINUM; PLACED AT EACH FRAME CORNER	25	1/4-20 S.S. BOLTS & 6061-T6 RIVNUTS
7	L2"x2"x3/8" STORM BAR	6061-T1 OR 6005-T5 ALUMINUM	26	3/16" 5052-ALUMINUM POP RIVETS
8	L3"x2"x3/8" STORM BAR	6061-T1 OR 6005-T5 ALUMINUM	27	3/16" 5052-ALUMINUM POP RIVETS
9	-	-	28	1/4-20 S.S. BOLTS & 6061-T6 RIVNUTS
10	L5"x2"x3/8" STORM BAR	6061-T1 OR 6005-T5 ALUMINUM	29A	NO. 6 x 5/8" S.S. P.H. SMS
11	L2"x1.5"MINx3/8" CONT. BASE ANGLE	6063-T5 ALUMINUM; SECURES SHUTTERS CLOSED	29A	NO. 8 x 5/8" S.S. P.H. SMS
12A	L3"x2"x1/4" STORM BAR END CONNECTOR	6063-T5 ALUMINUM; 2" LONG; USED WITH-OUT BUILD-OUT	30	NO. 8 x 3" S.S. F.H. SMS
12B	L3"x2"x1/4" STORM BAR END CONNECTOR	6063-T5 ALUMINUM; 4" LONG; USED WITH-OUT BUILD-OUT	31	NO. 6 x 1 3/4" S.S. F.H. SMS
13A	L4"x2"x1/4" STORM BAR END CONNECTOR	6063-T5 ALUMINUM; 2" LONG; USED WITH BUILD-OUT	32	NO. 6 x 5/8" S.S. F.H. SMS
13B	L4"x2"x1/4" STORM BAR END CONNECTOR	6063-T5 ALUMINUM; 2" LONG; USED WITH BUILD-OUT	33	1/4"x3"MIN STL. BOLT W/WING NUT
14	FEMALE TOP HINGE	6061-T6 ALUMINUM; FULL WIDTH OF SHUTTER	34A	1/4-20 RAWL CAULK-IN
15	MALE TOP HINGE	6061-T6 ALUMINUM; FULL WIDTH OF SHUTTER	34B	1/4-20 MALE OR FEMALE PANEL MATE
16	SHUTTER ARM SUPPORT BRACKET	6063-T6 ALUMINUM; ARM TO SHUTTER BRACKET	35	1/4" STL BOLT OR THREADED ROD W/WING NUT
17	SHUTTER ARM SUPPORT BRACKET	6063-T6 ALUMINUM; ARM TO WALL BRACKET	36	1/4-20 STEEL BOLT
18	-	-	37	1/4-20 S.S. BOLTS & 6061-T6 RIVNUTS
19	L2"x1.5"MINx3/8" BASE ANGLE (7" LONG)	6063-T6 ALUMINUM; (1) AT EA. VERTICAL SHUTTER MEMBER	-	-

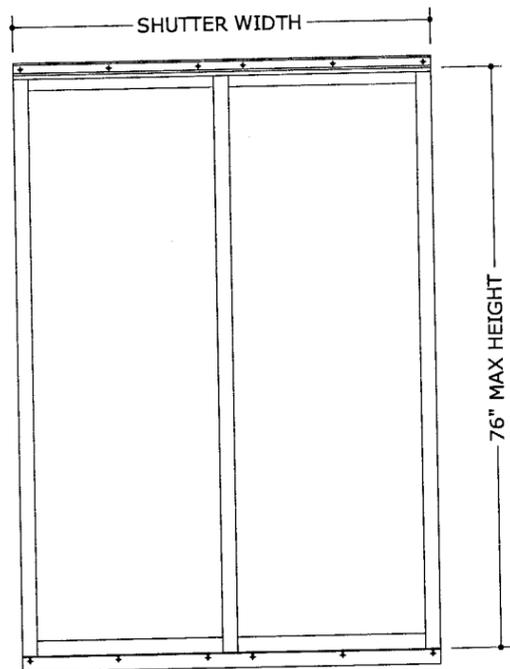


**ENGINEERING EXPRESS**  
160 SW 12th AVENUE, # 106  
DEERFIELD BEACH, FL 33442  
PH: (954) 354-0660 FAX: (954) 354-0443  
WWW.ENGINEERINGEXPRESS.COM  
CERT OF AUTH #9885  
A. FRANK L. BENNARDO, P.E., INC. INNOVATION

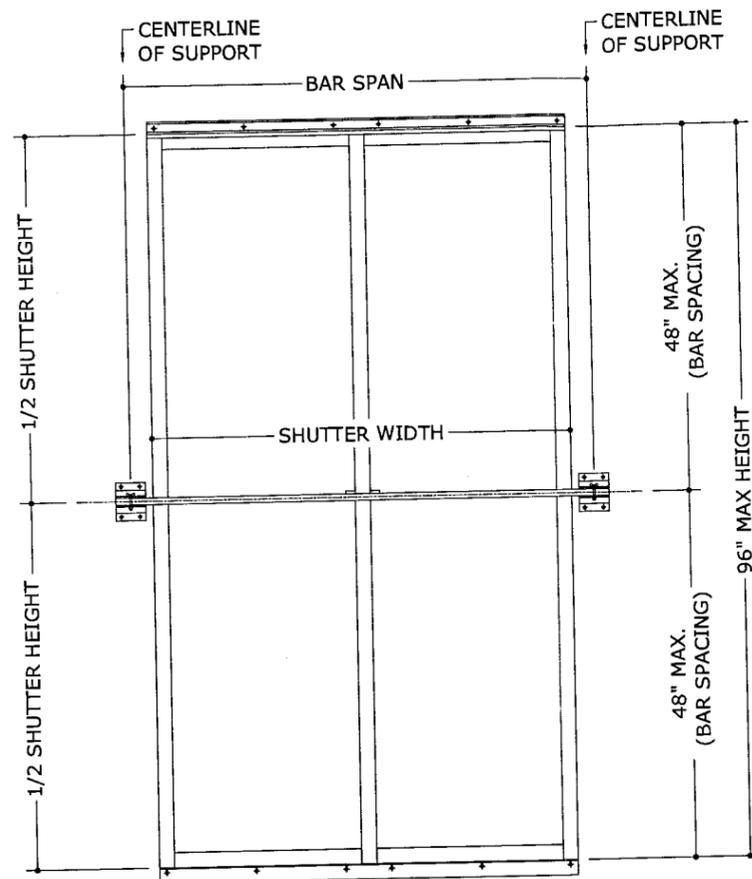
**FLORIDA SHUTTERS, INC.**  
1055 COMMERCE AVENUE  
VERO BEACH, FL 32960  
(772) 569 - 2200  
"IMPACT" ALUMINUM BAHAMA SHUTTER  
MIAMI-DADE NOTICE OF ACCEPTANCE

DRWN	CHKD	DATE
KL	KL	02/24/09
REMARKS	INITIALS	DATE
REV PER BCCO COMMENT	KL	09/29/09

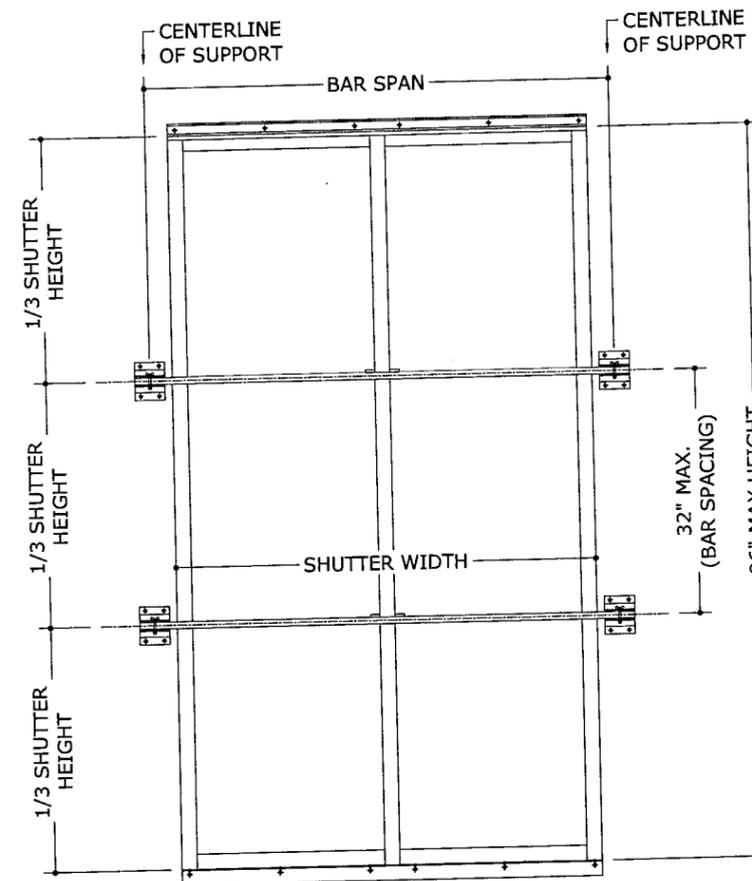
08-FSH-0002  
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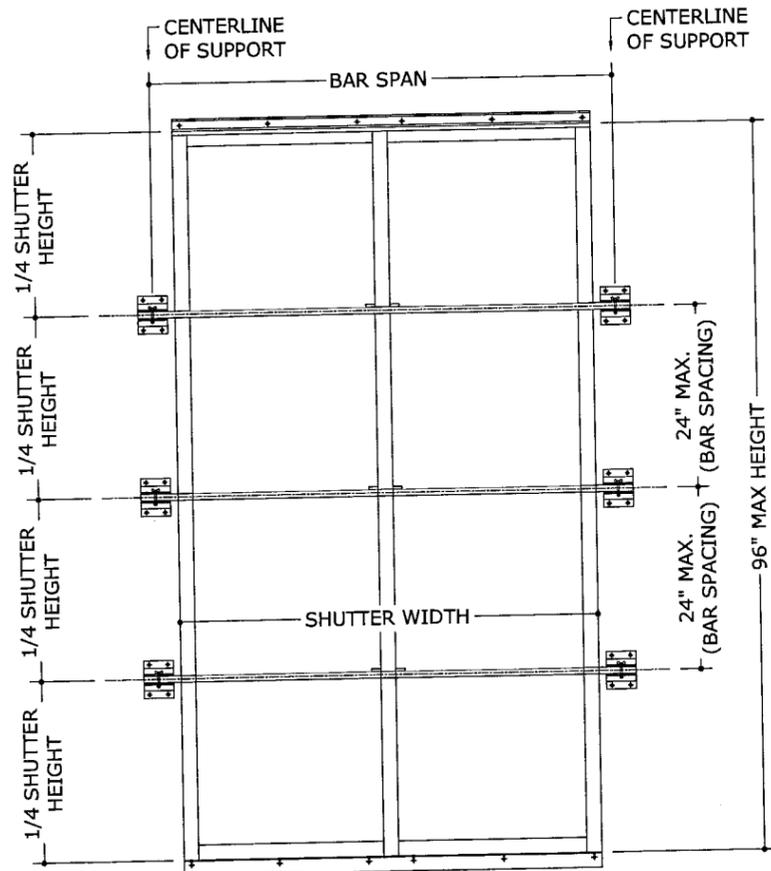
**1**  
**9** **NO BARS**  
1/2" = 1'-0" EXTER ELEV  
(SINGLE SPAN SHUTTER)



**2**  
**9** **ONE BAR**  
1/2" = 1'-0" EXTER ELEV  
(TWO SPAN SHUTTER)



**3**  
**9** **TWO BARS**  
1/2" = 1'-0" EXTER ELEV  
(THREE SPAN SHUTTER)



**4**  
**9** **THREE BARS**  
1/2" = 1'-0" EXTER ELEV  
(FOUR SPAN SHUTTER)

**TABLE 1:**

**ALLOWABLE PRESSURE TABLE FOR SINGLE SPAN SHUTTERS**

SHUTTER HEIGHT	PRESSURE (PSF)	
	POS	NEG
60" & LESS	65	80
62"	60.7	72.1
64"	56.8	66
66"	53.3	60.4
68"	50	55.4
70"	45	50.9
72"	40	46.8
74"	36	43
76"	32	40

**TABLE 1 NOTES:**

1. TABLE 1 SHALL BE USED ONLY FOR SINGLE SPAN SHUTTERS WITHOUT STORM BARS.
2. DESIGN PRESSURES FOR SINGLE SPAN SHUTTERS SHALL NOT EXCEED THE DESIGN PRESSURES INDICATED IN TABLE 1.
3. FOR MULTI-SPAN SHUTTERS WITH STORM BARS, REFERENCE TABLE 2.

**PRODUCT REVISED**  
as complying with the Florida Building Code  
Acceptance No. **09-0121.13**  
Expiration Date **03/08/2014**  
By *Helmut A. Mader*  
Miami Dade Product Control Division

**FLORIDA SHUTTERS, INC.**

1055 COMMERCE AVENUE  
VERO BEACH, FL 32960  
(772) 569 - 2200

"IMPACT" ALUMINUM BAHAMA SHUTTER  
MIAMI-DADE NOTICE OF ACCEPTANCE



160 SW 12th AVENUE, #106  
DEERFIELD BEACH, FL 33442  
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CERT. OF AUTH. #9885  
A FRANK L. BENNARDO, P.E., INC. INNOVATION

09/29/2009

REMARKS	DATE
INIT ISSUE	02/24/09
REV PER BCCO COMMENT	09/29/09

08-FSH-0002

SCALE: 1/8" = 1'-0"  
PAGE DESCRIPTION:

09/29/2009

**TABLE 2: STORM BAR DESIGN SECHDULE**

SHUTTER WIDTH	STORM BAR SPACING	ALLOWABLE STORM BAR DESIGN PRESSURE (PSF)			ALLOWABLE ANCHORAGE DESIGN PRESSURE (PSF)			
		STORM BAR 'A' 2"x2"x0.125"	STORM BAR 'B' 2"x3"x0.125"	STORM BAR 'C' 2"x5"x0.125"	CONN. 'A'		CONN. 'B' & 'C'	
					WOOD	BLOCK/CONCRETE	WOOD	BLOCK/CONCRETE
36"	UP TO 42"	80	80	80	80	80	80	52
	UP TO 48"	73	80	80	80	80	80	45
42"	UP TO 36"	67	80	80	80	80	80	52
	UP TO 42"	57	80	80	80	80	80	44
	UP TO 48"	50	80	80	80	78	80	39
48"	UP TO 30"	58	80	80	80	80	80	55
	UP TO 36"	48	80	80	80	80	80	45
	UP TO 42"	41	80	80	80	78	80	39
54"	UP TO 48"	36	80	80	80	68	80	34
	UP TO 30"	43	80	80	80	80	80	48
	UP TO 36"	36	80	80	80	80	80	40
60"	UP TO 42"	31	80	80	80	69	80	34
	UP TO 48"	-	72	80	80	61	80	30
	UP TO 24"	41	80	80	80	80	80	55
66"	UP TO 30"	33	80	80	80	80	80	44
	UP TO 36"	-	73	80	80	73	80	36
	UP TO 42"	-	63	80	80	62	80	31
72"	UP TO 48"	-	55	80	80	55	80	-
	UP TO 24"	32	80	80	80	80	80	50
	UP TO 30"	-	69	80	80	80	80	40
78"	UP TO 36"	-	57	80	80	66	80	33
	UP TO 42"	-	49	80	80	57	80	-
	UP TO 48"	-	43	80	80	50	74	-
84"	UP TO 24"	-	68	80	80	80	80	45
	UP TO 30"	-	55	80	80	73	80	36
	UP TO 36"	-	45	80	80	61	80	30
90"	UP TO 42"	-	39	80	80	52	78	-
	UP TO 48"	-	34	80	80	45	68	-
	UP TO 24"	-	55	80	80	80	80	42
96"	UP TO 30"	-	44	80	80	67	80	33
	UP TO 36"	-	37	80	80	56	80	-
	UP TO 42"	-	31	80	80	48	72	-
102"	UP TO 48"	-	-	80	80	42	63	-
	UP TO 24"	-	45	80	80	78	80	39
	UP TO 30"	-	36	80	80	62	80	31
108"	UP TO 36"	-	30	80	80	52	78	-
	UP TO 42"	-	-	80	80	44	67	-
	UP TO 48"	-	-	80	80	39	58	-
112"	UP TO 24"	-	37	80	80	73	80	36
	UP TO 30"	-	30	80	80	58	80	-
	UP TO 36"	-	-	80	80	48	73	-
118"	UP TO 42"	-	-	76	80	41	62	-
	UP TO 48"	-	-	67	80	36	54	-

SHUTTER WIDTH	STORM BAR SPACING	ALLOWABLE STORM BAR DESIGN PRESSURE (PSF)			ALLOWABLE ANCHORAGE DESIGN PRESSURE (PSF)			
		STORM BAR 'A' 2"x2"x0.125"	STORM BAR 'B' 2"x3"x0.125"	STORM BAR 'C' 2"x5"x0.125"	CONN. 'A'		CONN. 'B' & 'C'	
					WOOD	BLOCK/CONCRETE	WOOD	BLOCK/CONCRETE
96"	UP TO 24"	-	31	80	80	68	80	34
	UP TO 30"	-	-	80	80	55	80	-
	UP TO 36"	-	-	75	80	45	68	-
	UP TO 42"	-	-	64	80	39	58	-
	UP TO 48"	-	-	56	80	34	51	-
102"	UP TO 24"	-	-	80	80	64	80	32
	UP TO 30"	-	-	76	80	51	77	-
	UP TO 36"	-	-	63	80	43	64	-
	UP TO 42"	-	-	54	80	36	55	-
108"	UP TO 48"	-	-	47	80	32	48	-
	UP TO 24"	-	-	80	80	61	80	30
	UP TO 30"	-	-	65	80	48	73	-
	UP TO 36"	-	-	54	80	40	60	-
112"	UP TO 42"	-	-	46	80	34	52	-
	UP TO 48"	-	-	40	80	30	45	-
	UP TO 24"	-	-	74	80	58	80	-
	UP TO 30"	-	-	59	80	47	70	-
118"	UP TO 36"	-	-	49	80	39	58	-
	UP TO 42"	-	-	42	80	33	50	-
	UP TO 48"	-	-	37	80	-	44	-

TABLE 2 NOTES:

1. TABLE 2 SHALL BE USED ONLY FOR MULTI-SPAN SHUTTERS WITH STORM BARS.
2. DESIGN PRESSURES FOR MULTI-SPAN SHUTTERS SHALL NOT EXCEED THE DESIGN PRESSURES INDICATED IN TABLE 2.
3. FOR SINGLE SPAN SHUTTERS WITH NO STORM BARS, REFERENCE TABLE 1.



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CERT. OF AUTH. #8885  
A. FRANK L. BENNARDO, P.E., INC. INNOVATION

**FLORIDA SHUTTERS, INC.**  
1055 COMMERCE AVENUE  
VERO BEACH, FL 32960  
(772) 569 - 2200

"IMPACT" ALUMINUM BAHAMA SHUTTER  
MIAMI-DADE NOTICE OF ACCEPTANCE

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By Heather A. Maher  
Miami Dade Product Control  
Division

08-FSH-0002  
SCALE: - 03  
PAGE DESCRIPTION:

