



**Product Approval**  
User: Public User

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FL #

FL13511-R1

Application Type

Revision

Code Version

2010

Application Status

Approved

Comments

Archived

Product Manufacturer  
Address/Phone/Email

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Category  
Subcategory

Shutters  
Bahama

Compliance Method

Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer  
Evaluation Report - Hardcopy Received

Florida Engineer or Architect Name who developed the Evaluation Report  
Florida License  
Quality Assurance Entity  
Quality Assurance Contract Expiration Date  
Validated By

Frank L. Bannardo, P.E.  
PE-0046549  
National Accreditation and Management Institute  
12/31/2015  
Jesus Gonzalez, P.E.  
Validation Checklist - Hardcopy Received

Certificate of Independence

FL13511\_R1\_COI\_Cert\_Indep.pdf

Referenced Standard and Year (of Standard)

| Standard   | Year |
|------------|------|
| ASTM E1886 | 2005 |
| ASTM E1996 | 2006 |
| ASTM E330  | 2002 |
| TAS 201    | 1994 |
| TAS 202    | 1994 |
| TAS 203    | 1994 |

Equivalence of Product Standards  
Certified By

Sections from the Code

Product Approval Method

Method 1 Option D

Date Submitted  
Date Validated  
Date Pending FBC Approval  
Date Approved

04/24/2012  
02/29/2012  
03/02/2012  
04/03/2012

Summary of Products

| FL #   | Model, Number or Name  | Description  |
|--|------------------------|--|
| 13511.1  | Fulview Bahama Shutter | Impact Bahama Shutter Approved for Use Within & Outside the HVHZ   |
| <b>Limits of Use</b><br>Approved for use in HVHZ: Yes<br>Approved for use outside HVHZ: Yes<br>Impact Resistant: Yes<br>Design Pressure: +78/-95<br>Other: Refer to product approval drawings for limitations. |                        | <b>Installation Instructions</b><br><a href="#">EI13511-RI-IL-Dwg.pdf</a><br>Verified By: Frank L. Bernardo, P.E. PE0046549<br>Created by Independent Third Party: Yes<br><b>Evaluation Reports</b><br><a href="#">EI13511-RI-AE-Eval-Rep.pdf</a><br>Created by Independent Third Party: Yes |

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Product Approval Acceptance:





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

PATENT PENDING

## GENERAL NOTES

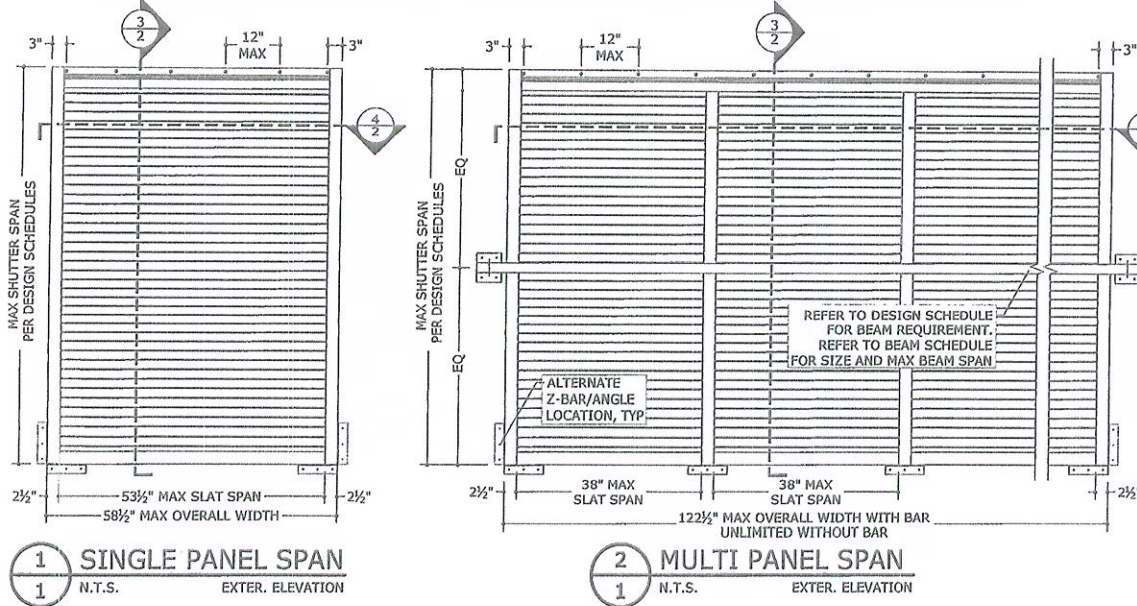
1. THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE, FOR USE WITHIN THE HVHZ AND NON-HVHZ, AS WELL AS THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL RESIDENTIAL CODE.
2. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM. WIND LOAD DURATION FACTOR  $C_d=1.6$  HAS BEEN USED FOR WOOD ANCHOR DESIGN.
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 AS DETERMINED IN ACCORDANCE WITH ASCE 7-10 AND CHAPTER 1609 OF THE 2010 FLORIDA BUILDING CODE SHALL BE LESS THAN OR EQUAL TO THE POSITIVE OR NEGATIVE DESIGN PRESSURE CAPACITY VALUES LISTED HEREIN FOR ANY ASSEMBLY AS SHOWN.
4. DESIGN PRESSURES NOTED HEREIN ARE BASED ON MAXIMUM TESTED PRESSURES DIVIDED BY A 1.5 SAFETY FACTOR.
5. 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.
6. 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.
7. 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.
8. ALL EXTRUSIONS SHALL BE 6063-T6 ALUMINUM ALLOY, UNLESS NOTED OTHERWISE. ALL TOLERANCES SHALL BE IN ACCORDANCE WITH ADM 2005.
9. 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
10. BAHAMA SHUTTERS SHALL BE PERMANENTLY LABELED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE AND CONTAIN AT LEAST THE FOLLOWING:  
CROCI NORTH AMERICA  
FORT MYERS, FL  
ASTM E330, E1886, & E1996 MISSILE LEVEL D  
TAS 201, 202, & 203
11. 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.
12. ALL CONCRETE ANCHORS TO BE INSTALLED TO NON-CRACKED CONCRETE ONLY.
13. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED AS PRESCRIBED IN THE ABOVE-NOTED BUILDING CODE.

### HVHZ (TABLE 1 & 2) NOTES:

1. HIGH VELOCITY HURRICANE ZONE (HVHZ) IS DEFINED AS MIAMI-DADE COUNTY AND BROWARD COUNTY FLORIDA ONLY.
2. TABLE 1 SHALL BE USED FOR INSTALLATIONS IN THE HIGH VELOCITY HURRICANE ZONE (HVHZ) TO DETERMINE THE MAXIMUM ALLOWABLE DESIGN PRESSURE FOR EACH SPAN.
3. FOR SPANS BETWEEN TABULATED VALUES USE NEXT HIGHER SPAN.
4. TABLE 2 SHALL BE USED TO DETERMINE MINIMUM SEPARATION FROM GLASS WITHIN THE HVHZ.

### NON-HVHZ, ASTM WIND ZONE 4 & ESSENTIAL FACILITIES (TABLE 3 & 4) NOTES:

1. NON-HVHZ IS DEFINED AS ALL LOCATIONS OTHER THAN MIAMI-DADE COUNTY AND BROWARD COUNTY FLORIDA.
2. TABLE 2 MAY BE USED FOR INSTALLATIONS OUTSIDE THE HIGH VELOCITY HURRICANE ZONE (HVHZ).
3. FOR SPANS BETWEEN TABULATED VALUES, USE NEXT HIGHER SPAN.
4. FOR INSTALLATIONS OUTSIDE THE HVHZ IN ASTM WIND ZONES 1 THROUGH 3, TABLE 4 IS NOT REQUIRED AND NO MINIMUM SEPARATION FROM THE PROTECTED OPENING IS REQUIRED.
5. TABLE 4 SHALL BE USED TO DETERMINE THE MINIMUM SEPARATION FROM GLASS OUTSIDE THE HVHZ IN WIND ZONE 4.



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

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

TABLE 1

### HVHZ

#### ALLOWABLE DESIGN PRESSURES

| MAX SHUTTER SPAN | CONFIGURATION     |                           |                          |
|------------------|-------------------|---------------------------|--------------------------|
|                  | SINGLE PANEL SPAN | MULTI PANEL SPAN W/O BEAM | MULTI PANEL SPAN 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 | MULTI PANEL SPAN 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 ASTM WIND ZONE 4 OR ESSENTIAL FACILITIES.

TABLE 2

### HVHZ

#### MINIMUM SEPARATION FROM GLASS

| MAX SHUTTER SPAN | DESIGN PRESSURE | CONFIGURATION     |                           |                          |
|------------------|-----------------|-------------------|---------------------------|--------------------------|
|                  |                 | SINGLE PANEL SPAN | MULTI PANEL SPAN W/O BEAM | MULTI PANEL SPAN W/ BEAM |
| 69"              | +56/-73 PSF     | 2 3/4"            | 3"                        | 2 3/4"                   |
| 69"              | +60/-73 PSF     | 2 3/4"            | 3 3/4"                    | 2 3/4"                   |
| 81 5/8"          | +60/-73 PSF     | 2 3/4"            | -                         | 2 3/4"                   |
| 96 3/4"          | +60/-73 PSF     | 2 3/4"            | -                         | 2 3/4"                   |

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

TABLE 4

### NON-HVHZ

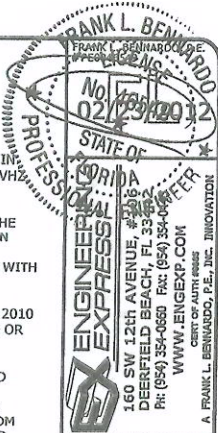
#### WIND ZONE 4 & ESSENTIAL FACILITIES

#### NOT REQUIRED FOR WIND ZONES 1-3

#### MINIMUM SEPARATION FROM GLASS

| MAX SHUTTER SPAN | DESIGN PRESSURE | CONFIGURATION     |                           |                          |
|------------------|-----------------|-------------------|---------------------------|--------------------------|
|                  |                 | SINGLE PANEL SPAN | MULTI PANEL SPAN W/O BEAM | MULTI PANEL SPAN W/ BEAM |
| 69"              | +78/-95 PSF     | 3 3/4"            | 4 3/4"                    | 2 3/4"                   |
| 81 5/8"          | +78/-95 PSF     | 3 3/4"            | -                         | 2 3/4"                   |
| 96 3/4"          | +78/-95 PSF     | 2 3/4"            | -                         | 2 3/4"                   |

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



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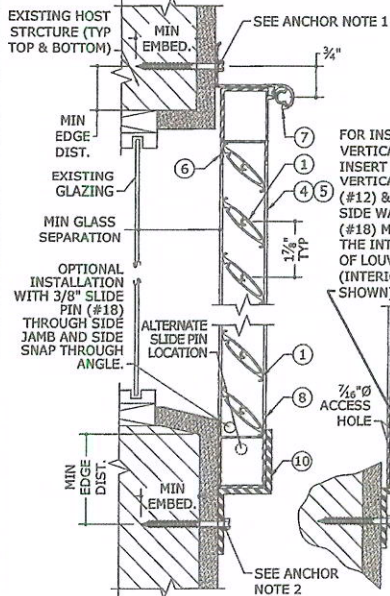
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| 2         | 02/22/12 | FLB | FLB  | 02/22/12 |

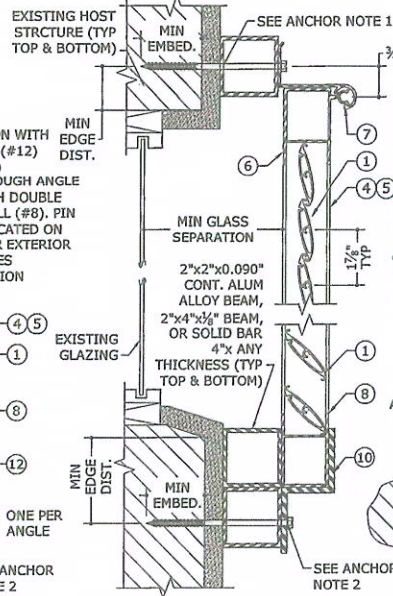
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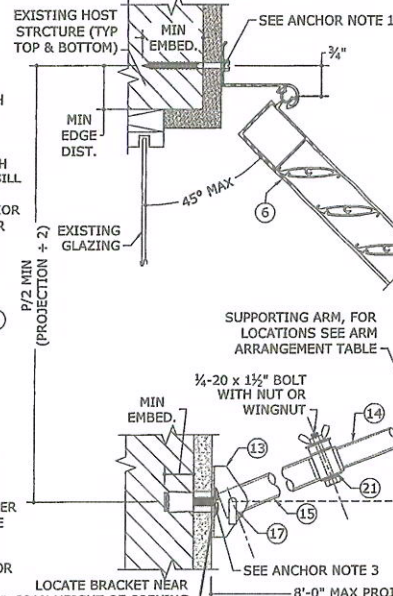




**3a** TYPICAL CLOSED POSITION  
2 N.T.S. VERTICAL SECTION



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

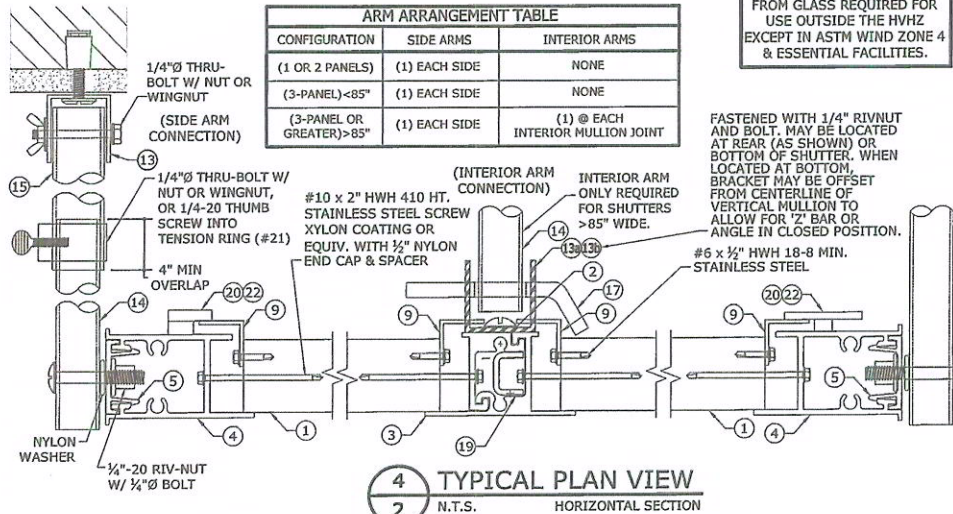


**3c** TYPICAL OPEN POSITION  
2 N.T.S. VERTICAL SECTION

NOTE: SHUTTER MUST BE LOWERED DURING A HURRICANE WARNING. SHUTTER IS NOT DESIGNED TO REMAIN IN THE OPEN POSITION DURING A HURRICANE.

| 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 ASTM WIND ZONE 4 & ESSENTIAL FACILITIES.



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

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

- CONNECTION IN CONCRETE:
  - 1/4" ITW TAPCON WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST. (3.19KSI MIN CONC.)
  - 1/4" ITW TAPCON SG WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST. (3.30KSI MIN CONC.)
  - 1/4" ELCO PANELMATES (MALE/FEMALE) WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST. (3.32KSI MIN CONC.)
  - 1/4"-20 ALL POINTS SOLID SET ANCHOR WITH 7/8" MIN EMBED. AND 2" MIN EDGE DIST. (3.0KSI MIN CONC.)
- CONNECTION IN HOLLOW CONCRETE BLOCK:
  - 1/4" ITW TAPCON WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST., SPACED AT 4" O.C. MAX.
  - 1/4" ITW TAPCON SG WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST.
  - 1/4" ELCO PANELMATES (MALE/FEMALE) WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST., SPACED AT 6 1/2" O.C. MAX.
  - 1/4"-20 ALL POINTS SOLID SET ANCHOR WITH 7/8" MIN EMBED. AND 2" MIN EDGE DIST., SPACED AT 8 7/8" O.C. MAX.
- CONNECTION IN WOOD (G=0.42 MIN):
  - 1/4" LAG SCREW WITH 1 1/2" MIN EMBED. AND 3/4" MIN EDGE DIST.
  - #14 SHEET METAL SCREW WITH 1 1/2" MIN EMBED. AND 3/4" MIN EDGE DIST.
- CONNECTION IN CONCRETE:
  - (1) 1/4" ITW TAPCON WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST. (3.19KSI MIN CONC.)
  - (2) 1/4" ITW TAPCON SG WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST. (3.30KSI MIN CONC.)
  - (4) 1/4" ELCO PANELMATES (MALE/FEMALE) WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST. (3.32KSI MIN CONC.)
  - (4) 1/4"-20 ALL POINTS SOLID SET ANCHOR WITH 7/8" MIN EMBED. AND 2" MIN EDGE DIST. (3.0KSI MIN CONC.)
- CONNECTION IN HOLLOW CONCRETE BLOCK:
  - (14) 1/4" ITW TAPCON WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST.
  - (5) 1/4" ITW TAPCON SG WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST.
  - (2) 1/4" ELCO PANELMATES (MALE/FEMALE) WITH 1 3/4" MIN EMBED. AND 2 1/2" MIN EDGE DIST.
  - (7) 1/4"-20 ALL POINTS SOLID SET ANCHOR WITH 7/8" MIN EMBED. AND 2" MIN EDGE DIST.
- CONNECTION IN WOOD (G=0.42 MIN):
  - (3) 1/4" ELCO PANELMATE (MALE/FEMALE) WITH 1 3/4" MIN EMBED. AND 3/4" MIN EDGE DIST.
  - (3) 1/4" ITW TAPCON SG WITH 1 3/4" MIN EMBED. AND 3/4" MIN EDGE DIST.
  - (3) 1/4" STAINLESS STEEL HANGER BOLT WITH 1 3/4" MIN EMBED. AND 3/4" MIN EDGE DIST.
- CONNECTION IN WOOD (G=0.42 MIN):
  - (1) 1/4" LAG SCREW WITH 1 1/2" MIN EMBED. AND 3/4" MIN EDGE DIST.
  - (1) #14 SHEET METAL SCREW WITH 1 1/2" MIN EMBED. AND 3/4" MIN EDGE DIST.

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AMERICAN SHUTTER PRODUCTS, INC.

NORTH AMERICA

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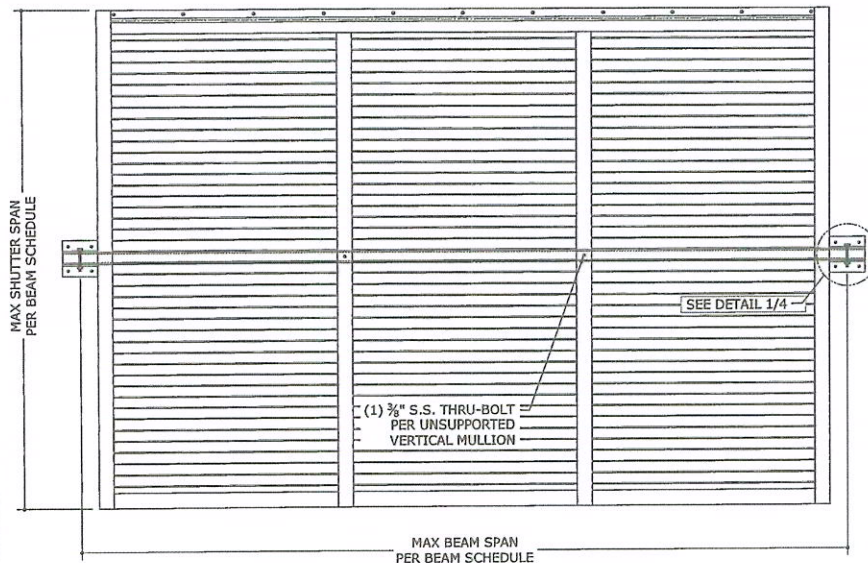
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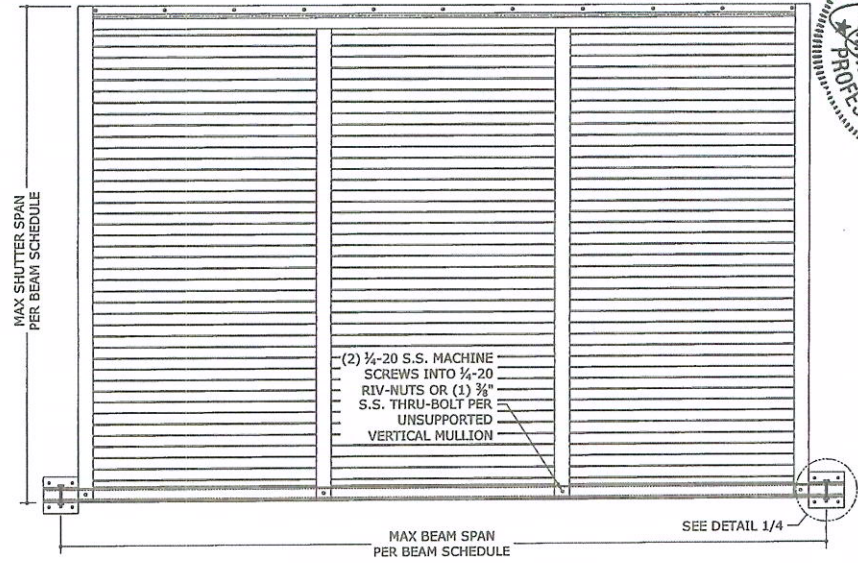
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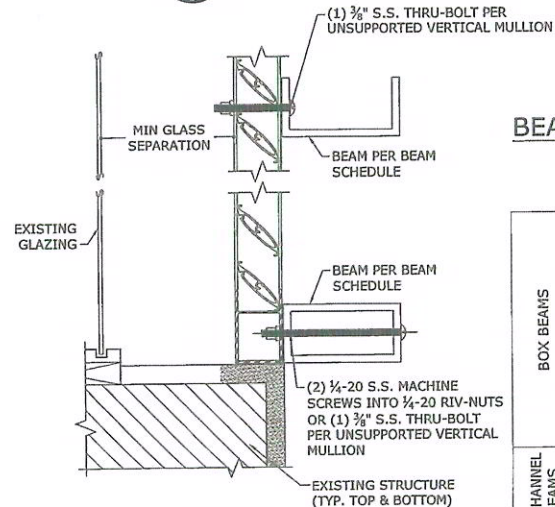




**1 MID-SPAN BEAM (AS REQUIRED)**  
N.T.S. EXTER. ELEVATION



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



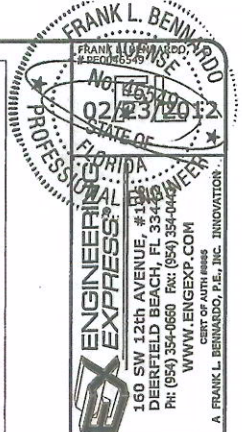
**3 BEAM CONNECTION TO SHUTTER**  
N.T.S. VERTICAL SECTION

**BEAM SCHEDULE:**

|                 | BEAM SIZE         | ALUMINUM ALLOY | SHUTTER SPAN | BEAM SPAN | WALL BRACKET ANCHOR TYPES |              |                   |
|-----------------|-------------------|----------------|--------------|-----------|---------------------------|--------------|-------------------|
|                 |                   |                |              |           | CONCRETE                  | HOLLOW BLOCK | WOOD (G=0.42 MIN) |
| BOX BEAMS       | 2"x3"x1/8"        | 6063-T6        | 8'-0"        | 5'-1"     | A, B, C                   | A, C         | B, C              |
|                 |                   |                | 6'-8"        | 5'-7"     | A, B, C                   | A, C         | B, C              |
|                 |                   |                | 5'-10"       | 5'-11"    | A, B, C                   | A, B, C      | B, C              |
|                 | 2"x4"x1/8"        | 6063-T6        | 8'-0"        | 6'-3"     | A, B, C                   | C            | B, C              |
|                 |                   |                | 6'-8"        | 6'-10"    | A, B, C                   | A, C         | B, C              |
|                 |                   |                | 5'-10"       | 7'-4"     | A, B, C                   | A, C         | B, C              |
|                 | 2"x5"x1/8"        | 6063-T6        | 8'-0"        | 7'-5"     | A, B, C                   | C            | B, C              |
|                 |                   |                | 6'-8"        | 8'-1"     | A, B, C                   | C            | B, C              |
|                 |                   |                | 5'-10"       | 8'-8"     | A, B, C                   | A, C         | B, C              |
|                 | 2"x4"x1/4"        | 6061-T6        | 8'-0"        | 9'-8"     | A, B, C                   |              | B, C              |
|                 |                   |                | 6'-8"        | 10'-7"    | A, B, C                   |              | C                 |
|                 |                   |                | 5'-10"       | 11'-3"    | A, B, C                   | C            | B, C              |
| C-CHANNEL BEAMS | 4"x2"x0.23"x0.15" | 6061-T6        | 6'-8"        | 6'-8"     | A, B, C                   | A, C         | B, C              |
|                 | 6"x2"x0.29"x0.17" | 6061-T6        | 8'-0"        | 7'-1"     | A, B, C                   | A, C         | B, C              |
|                 |                   |                | 8'-0"        | 11'-3"    | A, B, C                   |              | C                 |

**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 1/4" 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 1/4" 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.



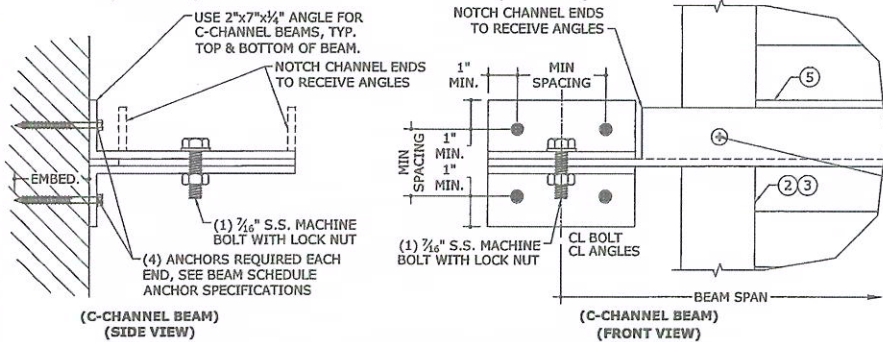
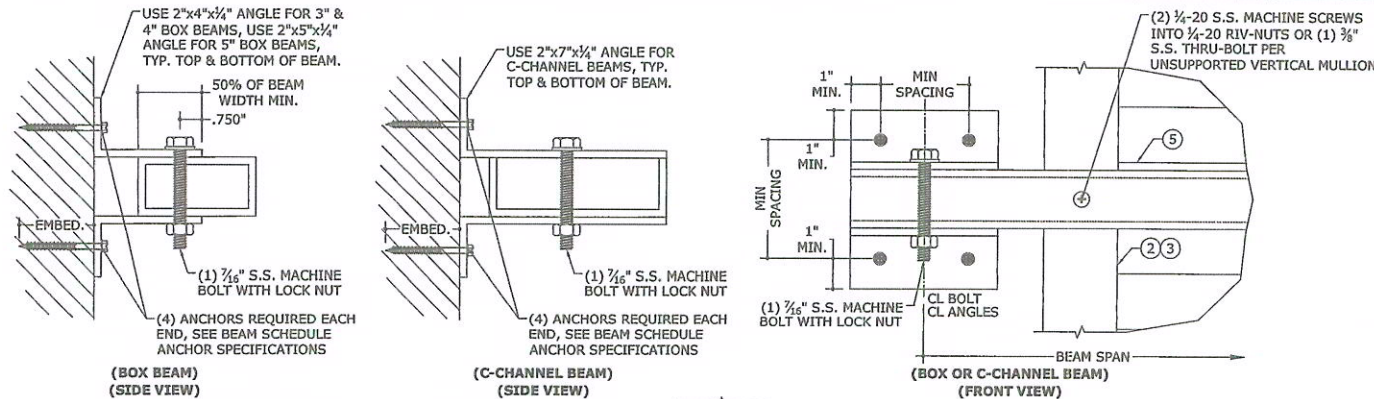
AMERICAN SHUTTER PRODUCTS, INC.  
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|          | 02/23/12 |    |      | 02/23/12 |    |

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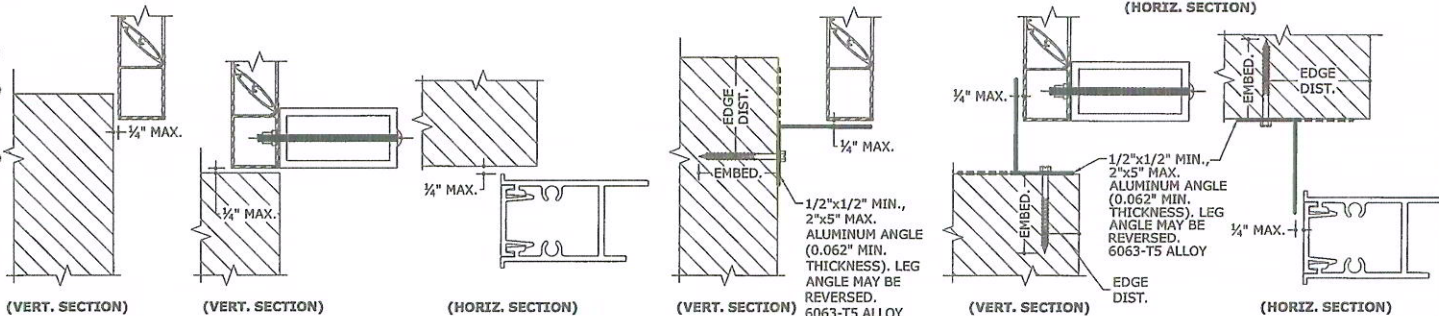




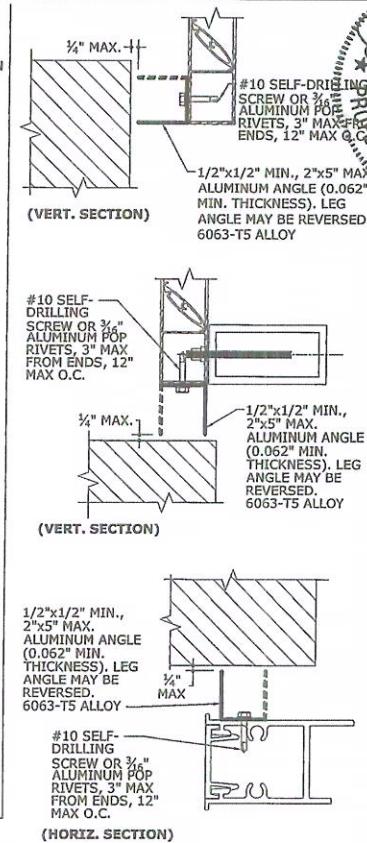
# 1 WALL BRACKET CONNECTION OPTIONS 4 N.T.S. EXTER. ELEVATION

## 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 2 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 3/4" 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 2. 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 4 N.T.S. SECTIONS



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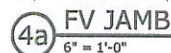
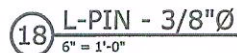


Figure 1: Detail of the test specimen. The diagram shows a cross-section of a rectangular specimen with a central hole of diameter 0.270 inches. The specimen has a total width of 1.000 inch and a thickness of  $t$ . The distance from the center of the hole to the right edge is 0.500 inches. A note indicates that the location of the hole varies for adjustment.



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