



[DCA HOME](#) | [ABOUT DCA](#) | [DCA PROGRAMS](#) | [CONTACT DCA](#)

[BCIS Home](#) | [Log In](#) | [User Registration](#) | [Hot Topics](#) | [Submit Surcharge](#) | [Stats & Facts](#) | [Publications](#) | [FBC Staff](#) | [BCIS Site Map](#) | [Links](#) | [Search](#)



## Product Approval

USER: Public User

[Product Approval Menu](#) > [Product or Application Search](#) > [Application List](#) > **Application Detail**

- ▶ COMMUNITY PLANNING
- ▶ HOUSING & COMMUNITY DEVELOPMENT
- ▶ EMERGENCY MANAGEMENT
- ▶ OFFICE OF THE SECRETARY

<p>FL #</p> <p>Application Type</p> <p>Code Version</p> <p>Application Status</p> <p>Comments</p> <p>Archived</p>	<p>FL13578</p> <p>New</p> <p>2007</p> <p>Approved</p> <p><input type="checkbox"/></p>						
<p>Product Manufacturer</p> <p>Address/Phone/Email</p>	<p>All American Shutters and Glass</p> <p>1638 Donna Road</p> <p>West Palm Beach, FL 33409</p> <p>(561) 712-9882</p> <p>Don@allamericanshutters.com</p>						
<p>Authorized Signature</p>	<p>Frank Bennardo</p> <p>frank@engexp.com</p>						
<p>Technical Representative</p> <p>Address/Phone/Email</p>							
<p>Quality Assurance Representative</p> <p>Address/Phone/Email</p>							
<p>Category</p> <p>Subcategory</p>	<p>Shutters</p> <p>Storm Panels</p>						
<p>Compliance Method</p>	<p>Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer</p> <p><input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received</p>						
<p>Florida Engineer or Architect Name who developed the Evaluation Report</p> <p>Florida License</p> <p>Quality Assurance Entity</p> <p>Quality Assurance Contract Expiration Date</p> <p>Validated By</p>	<p>Frank L. Bennardo, P.E.</p> <p>PE-0046549</p> <p>National Accreditation and Management Institute</p> <p>12/31/2012</p> <p>Stephen R. Walsh P.E.</p> <p><input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received</p>						
<p>Certificate of Independence</p>	<p><a href="#">FL13578_RO_COI_Cert_Indep.pdf</a></p>						
<p>Referenced Standard and Year (of Standard)</p>	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Standard</u></th> <th style="text-align: left;"><u>Year</u></th> </tr> </thead> <tbody> <tr> <td>ASTM E330</td> <td>1990</td> </tr> <tr> <td>SBCCI SSTD 12</td> <td>1999</td> </tr> </tbody> </table>	<u>Standard</u>	<u>Year</u>	ASTM E330	1990	SBCCI SSTD 12	1999
<u>Standard</u>	<u>Year</u>						
ASTM E330	1990						
SBCCI SSTD 12	1999						
<p>Equivalence of Product Standards Certified By</p>	<p>Florida Licensed Professional Engineer or Architect</p> <p><a href="#">FL13578_RO_Equiv_Equiv_Std.pdf</a></p>						
<p>Sections from the Code</p>							



March 3, 2010

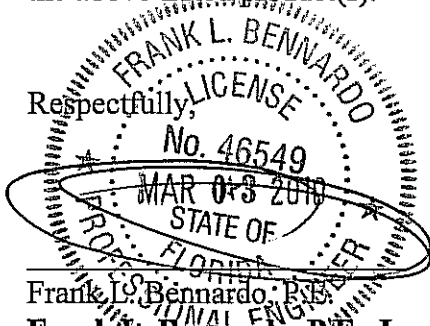
Florida Department of Community Affairs  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399

Regarding: All American Shutters and Glass  
22ga & 24ga Storm Panels  
Project #10-AAS-0001

To Whom It May Concern:

Please be advised that the below-signed engineer does not have nor will acquire a financial interest in the company manufacturing or distributing the product(s) for which an evaluation report or validation certification has been prepared, as referenced above. This engineer is not owned, operated, nor controlled by the manufacturer or distributor noted above and does not have any financial interest in any other entity involved in the approval process of the above-noted product(s).

Respectfully,



Frank L. Bennardo, P.E.  
**Frank L. Bennardo, P.E., Inc.**  
FL PE 0046549  
Cert of Auth #9885

March 3, 2010

Florida Department of Community Affairs  
2555 Shumard Oak Boulevard  
Tallahassee, FL 32399

Regarding: All American Shutters and Glass  
22ga, 24ga Steel Panels  
FLB #10-AAS-0001

To Whom It May Concern:

This office has reviewed test reports showing structural performance of the above-noted product. These test reports pertain to testing performed in accordance with ASTM E330-90 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference. This standard is equivalent to ASTM E330-02 which has been adopted in the 2007 Florida Building Code, for the purpose of determining structural performance of this product.

Respectfully,  
  
Frank L. Bennardo, P.E.  
**Frank L. Bennardo, P.E., Inc.**  
FL PE 0046549  
Cert of Auth #9885

## Product Evaluation Report

March 3, 2010

Application Number: \_\_\_\_\_  
FLB Project Number: 10-AAS-0001

Product Manufacturer: All American Shutters and Glass  
Manufacturer Address: 1540 Donna Road  
West Palm Beach, FL 33409

Product Name & Description: 22ga & 24ga Galvanized Steel Storm Panels

### Scope of Evaluation:

This Product Evaluation Report is being issued in accordance with the requirements of the Florida Department of Community Affairs (Florida Building Commission) Rule Chapter 9B-72.070, F.A.C., for statewide acceptance per Method 1(d). All products listed above have been tested and/or evaluated as summarized herein to show compliance with the 2007 Florida Building Code and are, for the purpose intended, at least equivalent to that required by the Code. Re-evaluation of this product shall be required following pertinent Florida Building Code modifications or revisions.

### Substantiating Data:

- **PRODUCT EVALUATION DOCUMENTS**

FLB drawing #10-AAS-0001 titled "22ga & 24ga Galvanized Steel Storm Panels", sheets 1-7, prepared by Engineering Express, signed & sealed by Frank L. Bennardo, P.E. is an integral part of this Evaluation Report.

- **TEST REPORTS**

Uniform static structural performance has been tested in accordance with ASTM E330-90 test standards per test report(s) #02-001, #02-002, & #03-001 by Construction Testing Corporation (CTC).

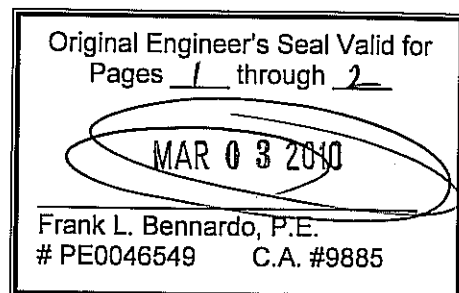
Large missile impact resistance and cyclic loading performance have been tested in accordance with SSTD 12-99 test standards per test report(s) #02-001, #02-002, & #03-001 by Construction Testing Corporation (CTC).

Metal tensile capacity has been determined in accordance with ASTM E8 test standard per test report #0127H, #0198H, & #0053J by Certified Testing Laboratories (CTL).

- **STRUCTURAL ENGINEERING CALCULATIONS**

Structural engineering calculations have been prepared which evaluate the product based on comparative and/or rational analysis to qualify the following design criteria:

1. Maximum Allowable Spans
2. Minimum Allowable Spans



3. Minimum Glass Separation
4. Anchor Spacing

No 33% increase in allowable stress has been used in the design of this product.

### ***Impact Resistance:***

Large Impact Resistance has been demonstrated as evidenced in previously listed test reports, and is accounted for in the engineering design of this product.

### ***Wind Load Resistance***

This product has been designed to resist wind loads as indicated in the span schedule(s) on the respective Product Evaluation Document (i.e. engineering drawing).

### ***Installation***

This product shall be installed in strict compliance with its respective Product Evaluation Document (i.e. engineering drawing), along with all components noted therein.

Product components shall be of the material specified in that product's respective Product Evaluation Document (i.e. engineering drawing).

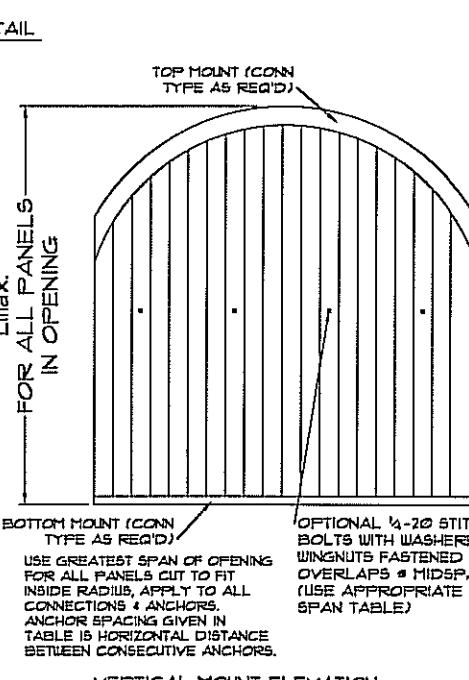
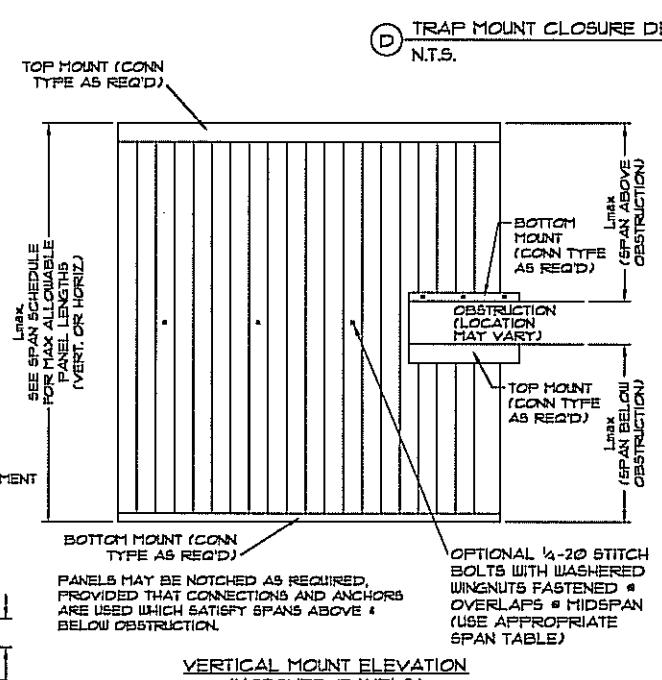
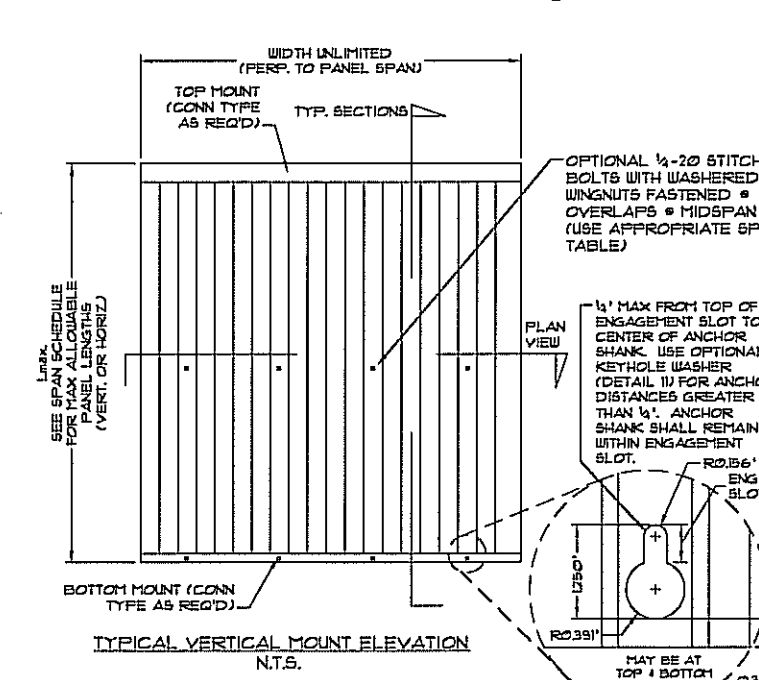
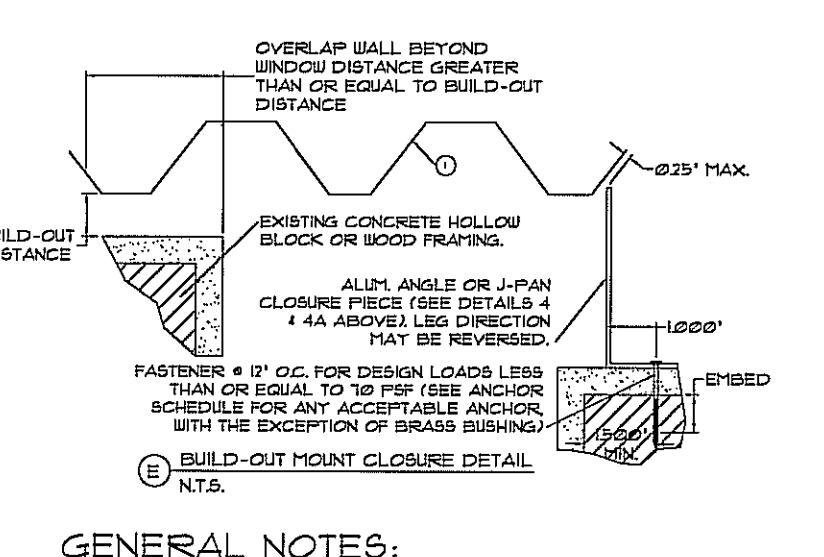
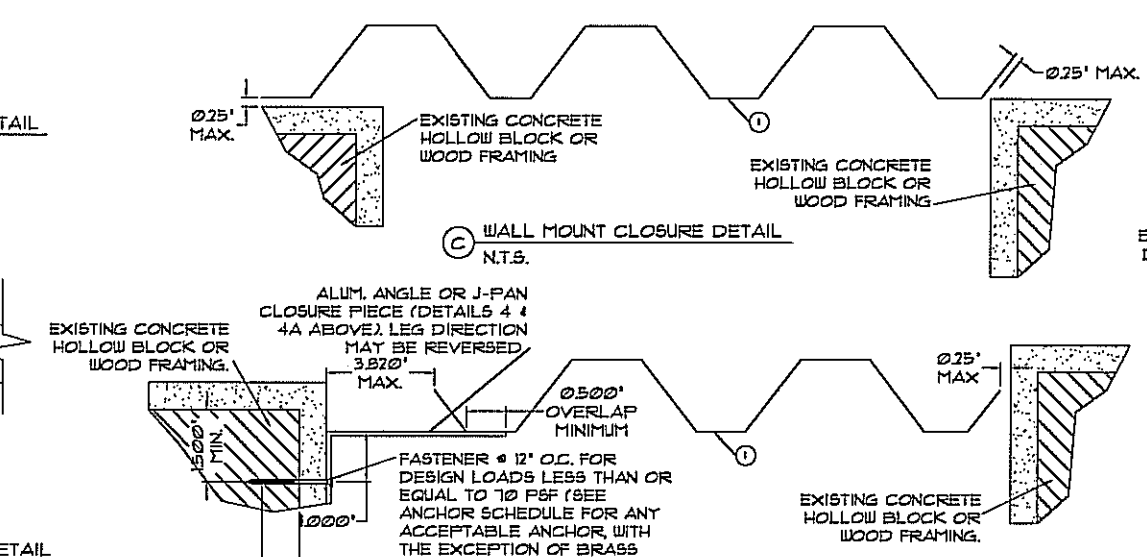
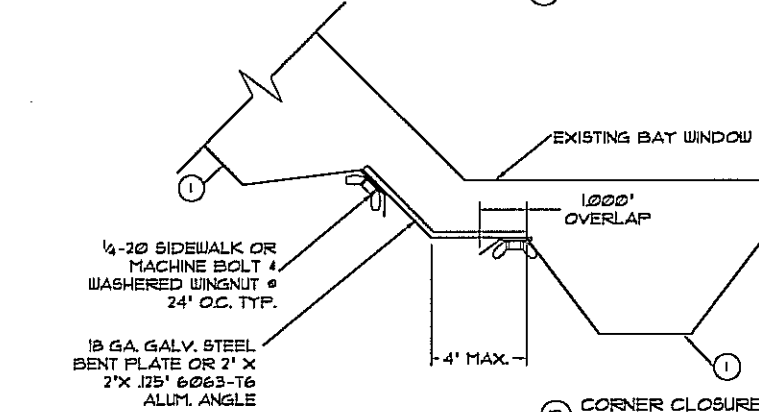
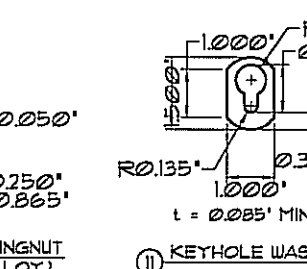
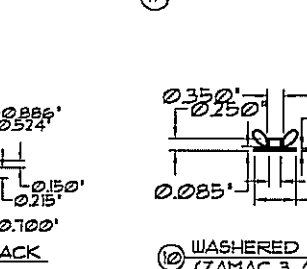
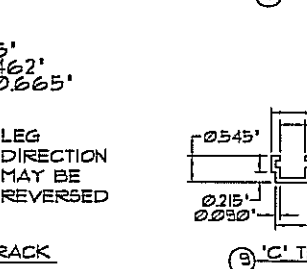
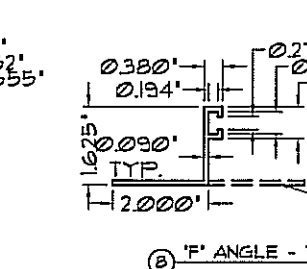
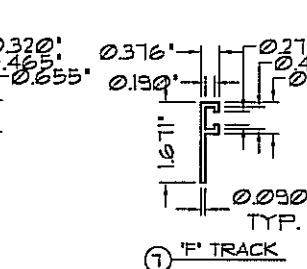
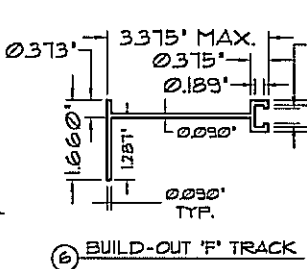
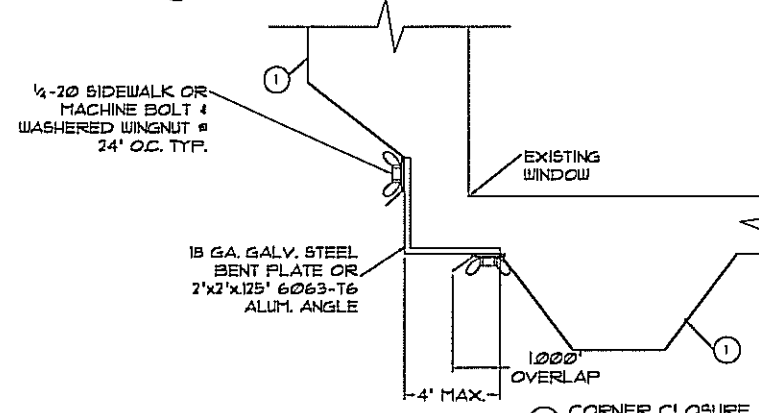
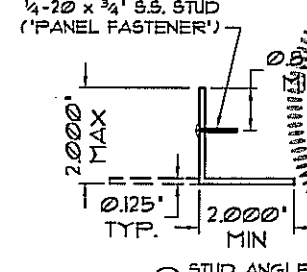
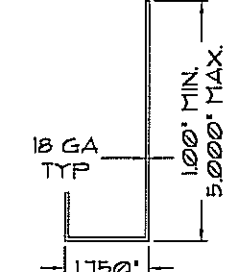
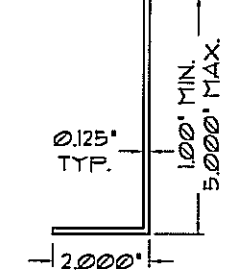
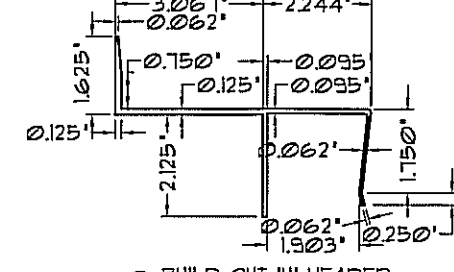
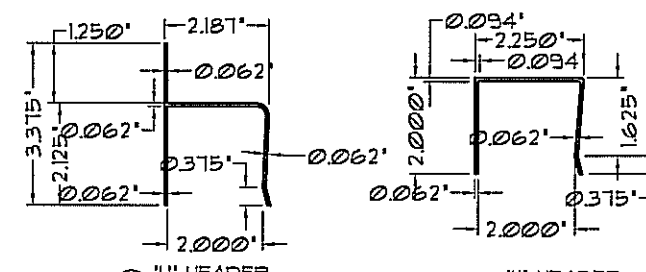
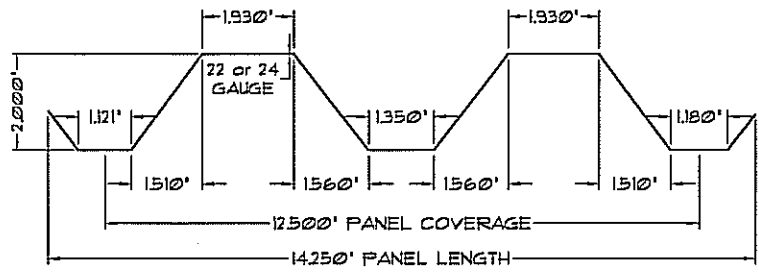
### ***Limitations & Conditions of Use:***

Use of this product shall be in strict accordance with the respective Product Evaluation Document (i.e. engineering drawing) as noted herein.

All supporting host structures shall be designed to resist all superimposed loads and shall be of a material listed in this product's respective anchor schedule. Host structure conditions which are not accounted for in this product's respective anchor schedule shall be designed for on a site-specific basis by a registered professional engineer.

All components which are permanently installed shall be protected against corrosion, contamination, and other such damage at all times.

This product has NOT been designed for use within the High Velocity Hurricane Zone (HVHZ).



**GENERAL NOTES:**

- THIS SHUTTER SYSTEM HAS BEEN DESIGNED AND TESTED AS A LARGE MISSILE IMPACT PROTECTIVE SYSTEM IN ACCORDANCE WITH THE 2001 FLORIDA BUILDING CODE PER THE SSTD 12-93 TEST STANDARD.
- NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS PRODUCT.
- POSITIVE AND NEGATIVE DESIGN PRESSURES TO BE USED WITH THESE DRAWINGS SHALL BE DETERMINED BY OTHERS FOR SPECIFIC JOBS IN ACCORDANCE WITH THE GOVERNING CODE.
- THE SHUTTER SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. IF SITE CONDITIONS DEVIATE FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS TO BE USED IN CONJUNCTION WITH THIS DOCUMENT.
- PERMIT HOLDER SHALL VERIFY THE ADEQUACY OF THE EXISTING HOST STRUCTURE TO WITHSTAND NEW SUPERIMPOSED LOADS.
- STORM PANELS SHALL BE 22 OR 24 GA STEEL (BARE METAL THICKNESS  $t=0.0233'$  OR  $t=0.0244'$ , RESPECTIVELY) CONFORMING TO ASTM A653, STRUCTURAL QUALITY, G90 GALV. COATING WITH A MIN.  $F_y=96$  KSI (22 ga) OR G60 GALV. COATING WITH A MIN.  $F_y=56.3$  KSI (24 ga). ALL EXTRUSIONS SHALL BE 6063-T6 ALUMINUM ALLOY, UON.
- PRODUCT MARKINGS SHALL BE PLACED ON OUTSIDE OF STORM PANEL WITH AT LEAST ONE MARKING EVERY THREE FEET AND SHALL BE PERMANENTLY LABELED WITH AT A MINIMUM THE FOLLOWING INFORMATION:  
ALL AMERICAN SHUTTERS AND GLASS  
WEST PALM BEACH, FL  
ASTM E330, SBCCI SSTD 12  
FLORIDA PRODUCT APPROVAL NUMBER
- STORM PANELS HAVE BEEN DESIGNED AND TESTED TO THE MAXIMUM SPANS AND LOADS SHOWN ON THESE DRAWINGS. REFERENCE CONSTRUCTION TESTING CORPORATION (CTC) OF MIAMI, FL, TEST REPORTS No. 02-001, 02-002 & 03-001. REFERENCE ALSO CERTIFIED TESTING LABORATORIES (CTL) OF ORLANDO, FL TEST TENSILE TEST RESULTS No. 0127H, 0198H, & 0053J FOR METAL THICKNESSES AND YIELD STRESSES.
- TOP & BOTTOM DETAILS SHOWN MAY BE INTERCHANGED AS FIELD CONDITIONS DICTATE. PANELS MAY BE MOUNTED HORIZONTALLY WHERE APPLICABLE.
- ALL BOLTS & WASHERS SHALL BE ZINC COATED, GALVANIZED OR STAINLESS STEEL WITH A MINIMUM TENSILE STRENGTH OF 60 KSI.

FRANK L. BERNARDO, P.E.  
#PE0046549

03/03/2010

No. 46549

ENGINEERING EXPRESS

160 SW 12th AVENUE, #206  
DEERFIELD BEACH, FL 33442  
PH: (954) 354-0660 FAX: (954) 354-0443  
WWW.ENGP.COM

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

**ALL AMERICAN SHUTTERS AND GLASS**

1540 DONNA ROAD  
WEST PALM BEACH, FL 33409  
(561) 712-9882

22ga & 24ga GALVANIZED STEEL  
STORM PANELS  
FLORIDA STATEWIDE APPROVAL

DRWN	CHKD	DATE
KL	FLB	03/03/10

REMARKS

INIT ISSUE

COPYRIGHT FRANK L. BERNARDO P.E.

10-AAS-0001

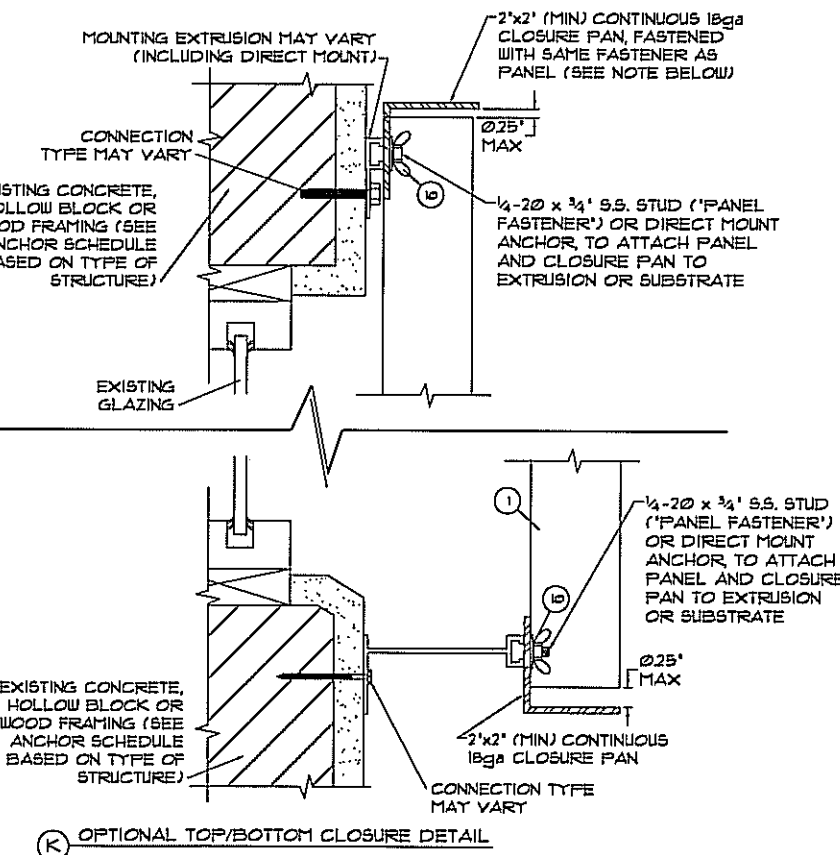
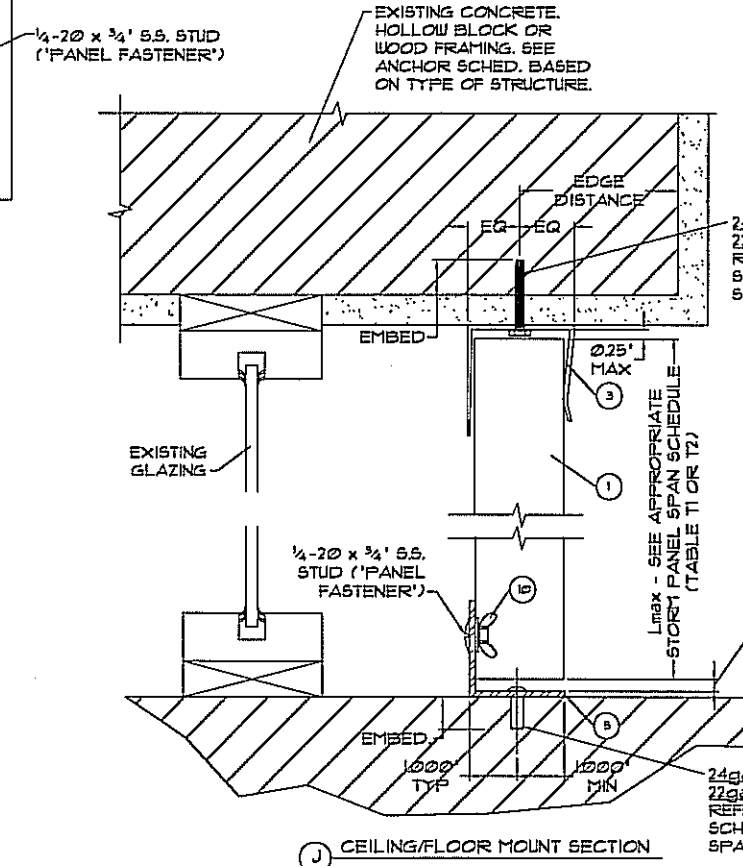
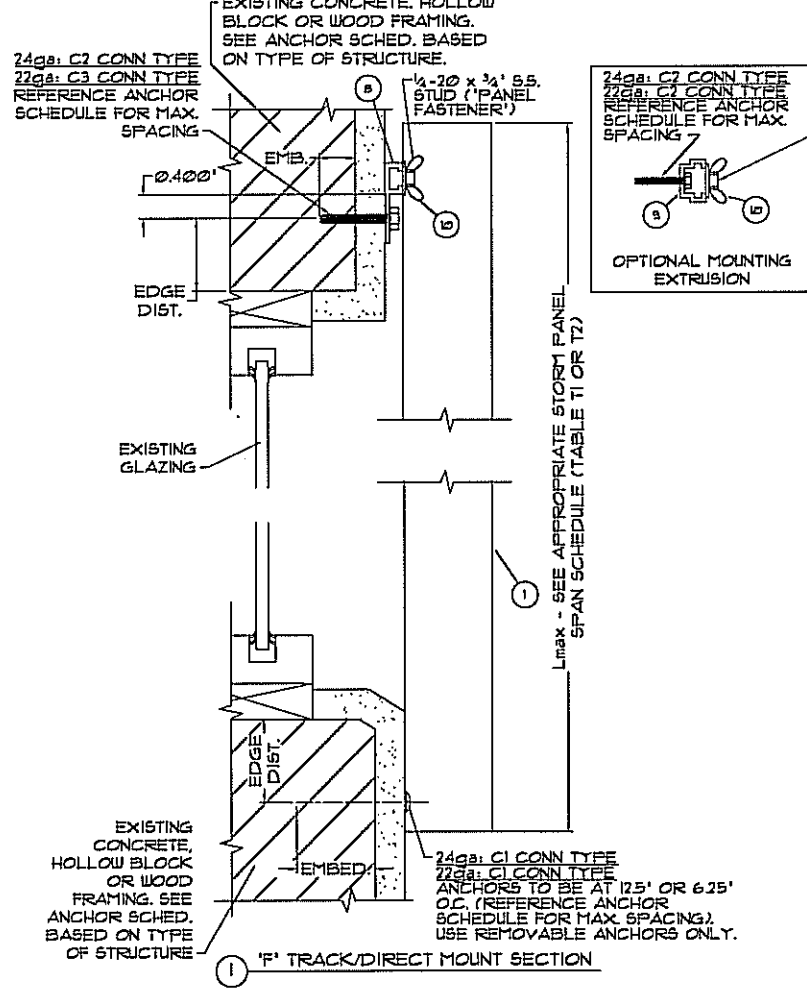
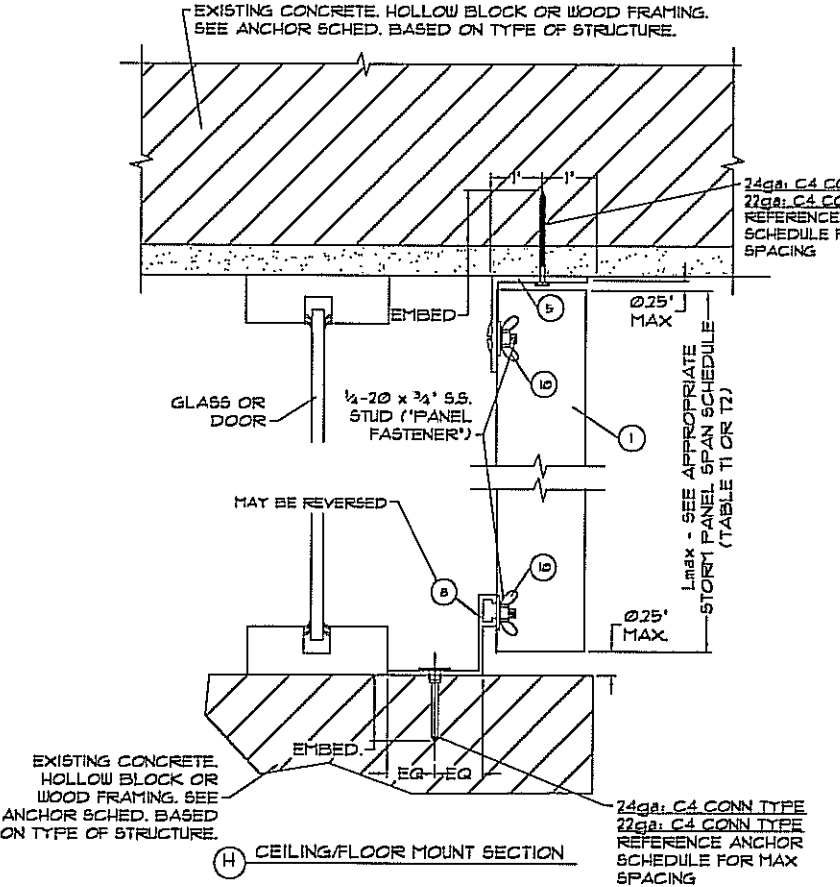
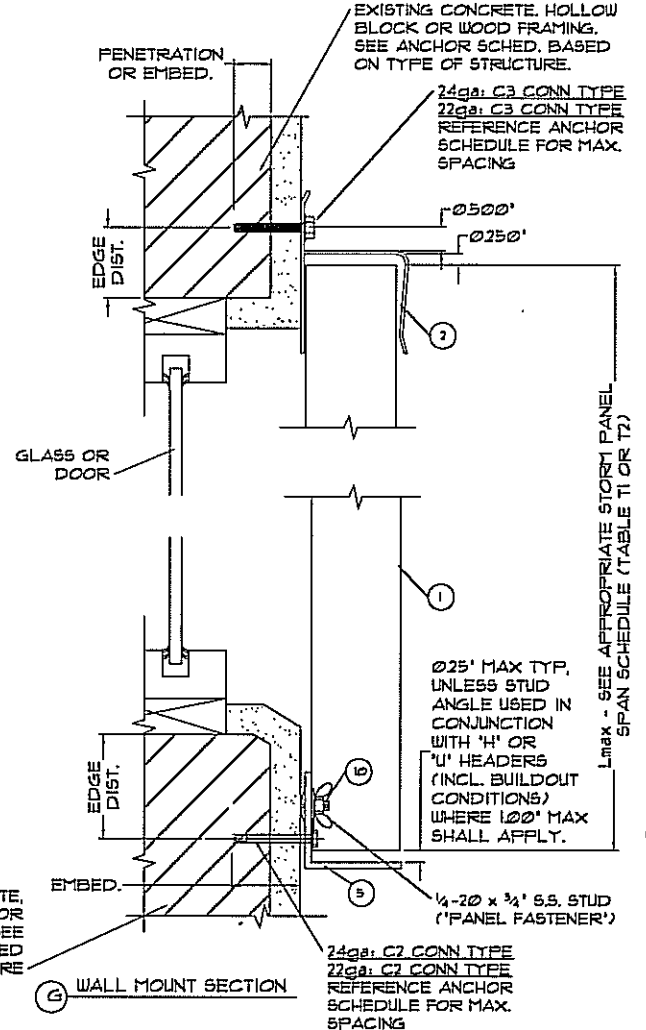
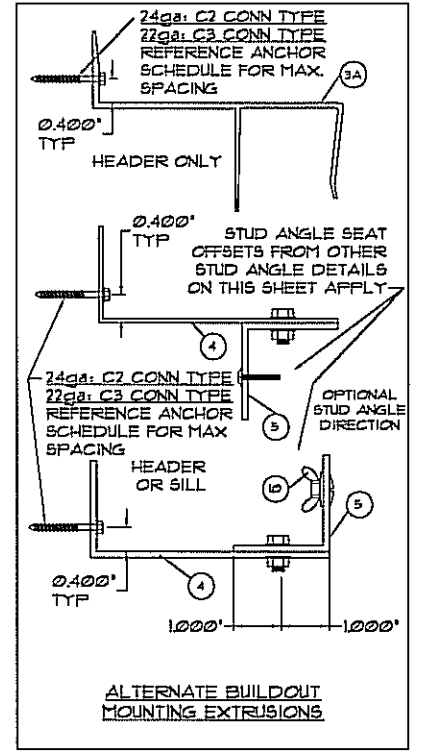
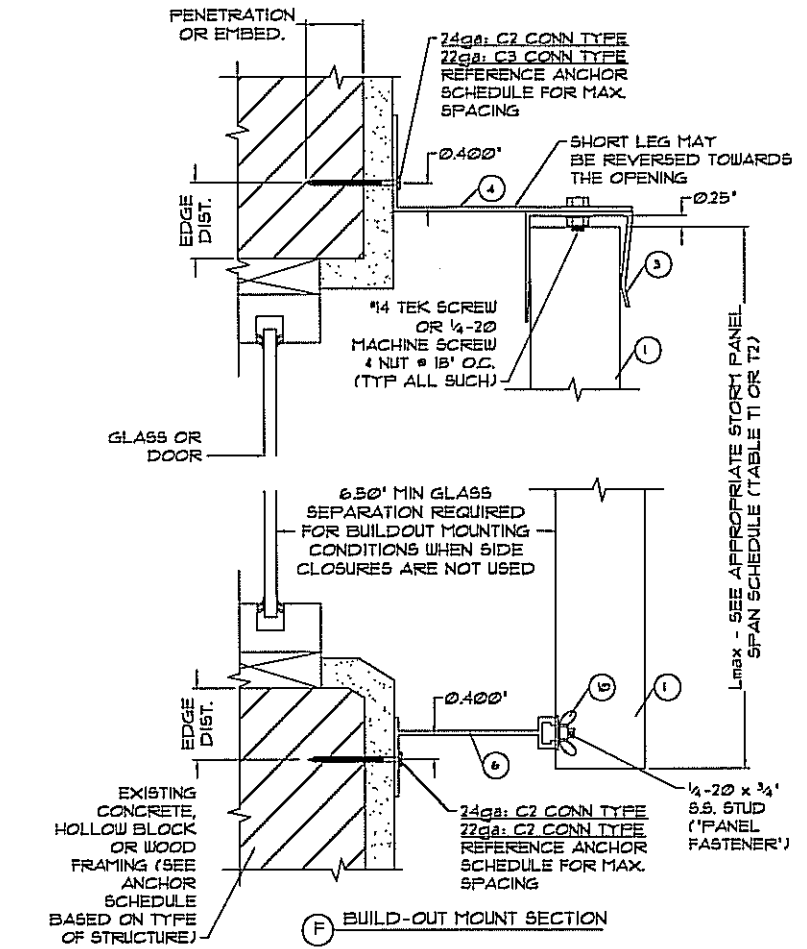
SCALE: 1/8" = 1'-0"

PAGE DESCRIPTION:

OF 7

1

03/03/2010 - 12:37pm kelblh F:\01 Project Files\All American Shutters (AAS)\2010\10-AAS-0001 #F\_L\_393 FSA Name Change\10-AAS-0001\_01a 22\_24ga Panels (FSA).dwg



FRANK L. BENNARDO, P.E.  
#PE0046549

03/03/2010  
No. 46549

**ENGINEERING EXPRESS**

160 SW 12th Avenue, Suite 106  
Deerfield Beach, FL 33442  
Ph: (954) 354-0660 Fax: (954) 354-0443  
WWW.ENGEXP.COM

CERT OF AUTH #885  
A. FRANK L. BENNARDO, P.E., INC. INNOVATION

**ALL AMERICAN SHUTTERS AND GLASS**

1540 DONNA ROAD  
WEST PALM BEACH, FL 33409  
(561) 712-9882

22ga & 24ga GALVANIZED STEEL  
STORM PANELS  
FLORIDA STATEWIDE APPROVAL

DATE	DRWN	CHKD	FLB	FLB
03/03/10	KL			

REMARKS  
INIT ISSUE

COPYRIGHT FRANK L. BENNARDO, P.E.

10-AAS-0001

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

PAGE DESCRIPTION:

OF 7

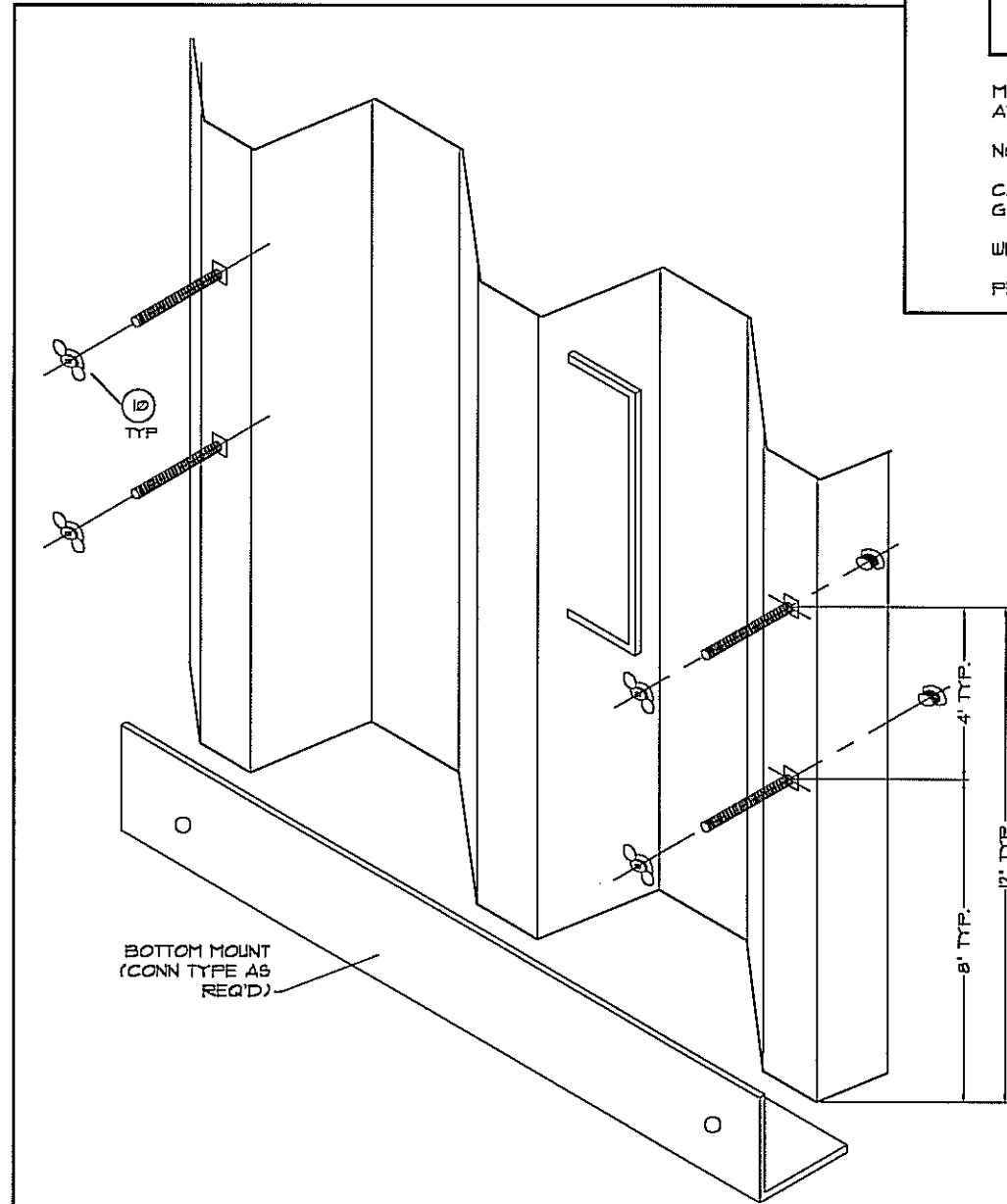
2

**T1** MAXIMUM ALLOWABLE SPAN SCHEDULE  
(24 GAUGE PANELS)

Load W (psf)	Panel Fasteners @ 6.25" O.C.	Panel Fasteners @ 12.5" O.C.
	Allowable Span L <sub>MAX</sub>	Allowable Span L <sub>MAX</sub>
30	12' - 0"	10' - 2"
33	11' - 6"	9' - 8"
35	11' - 2"	9' - 5"
40	10' - 5"	8' - 10"
41	10' - 3"	8' - 8"
45	9' - 10"	8' - 0"
48	9' - 6"	7' - 6"
50	9' - 4"	7' - 2"
52	9' - 2"	6' - 11"
55	8' - 11"	6' - 6"
60	8' - 6"	6' - 0"
65	8' - 2"	5' - 6"
70	7' - 10"	5' - 1"
75	7' - 7"	4' - 9"
80	7' - 4"	4' - 6"
90	6' - 11"	4' - 0"
100	6' - 7"	3' - 7"
110	6' - 3"	3' - 3"
120	6' - 0"	3' - 0"
130	5' - 6"	2' - 9"

**SPAN SCHEDULE NOTES:**

1. ENTER SPAN SCHEDULES WITH NEGATIVE DESIGN LOAD & PANEL FASTENER SPACING TO DETERMINE MAXIMUM ALLOWABLE STORM PANEL SPAN. SCHEDULE IS ACCEPTABLE FOR USE WITH POSITIVE LOADS LESS THAN OR EQUAL TO NEGATIVE DESIGN LOADS.
2. 'PANEL FASTENERS' ARE STUDS USED IN CONJUNCTION WITH ALL MOUNTING EXTRUSIONS ('F'-TRACK, STUDDED ANGLE, ETC.). USE 6.25" O.C. PANEL FASTENER SPACING TABLE VALUES FOR ALL 'H'- AND 'U'-HEADERS (INCLUDING BUILDOUT CONDITIONS).
3. LINEAR INTERPOLATION BETWEEN LOADS IS ACCEPTABLE, OTHERWISE USE NEXT HIGHER LOAD.

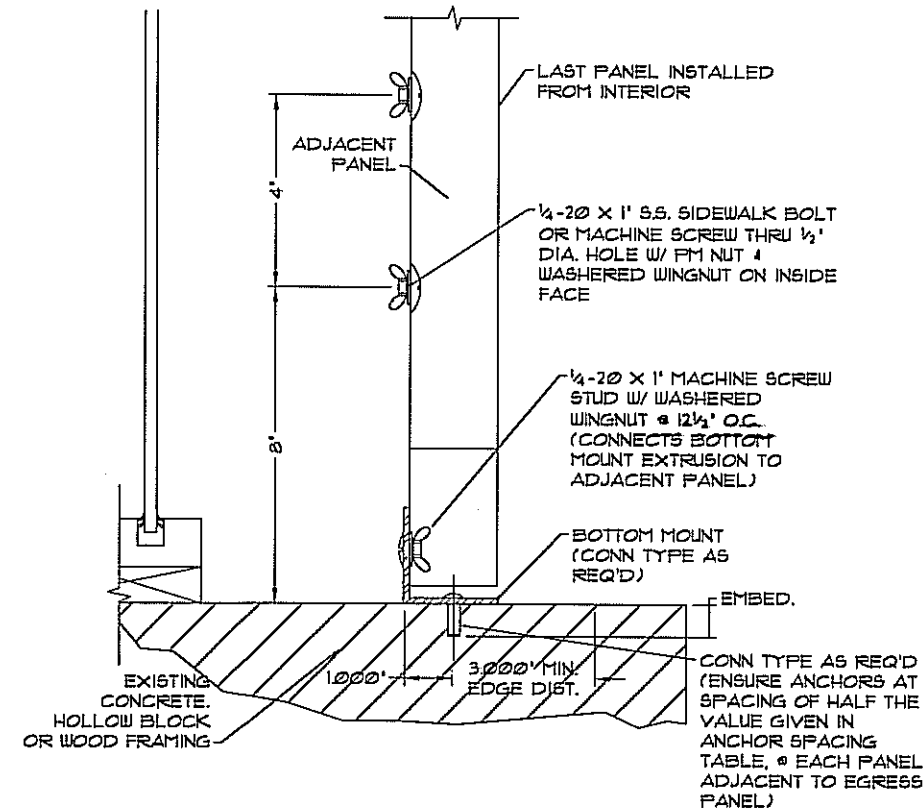


**L** OPTIONAL INTERIOR FASTENING DETAIL  
N.T.S.

**T3** MINIMUM ALLOWABLE SPAN SCHEDULE  
(ALL PANELS)

	TOP MOUNT												
	"H" Header	Buildout "U" Header	2x5 & "U" Header	2x5 & Stud Angle	Buildout "F" Track	"F" Track	Stud Angle (Wall Mount)	Direct Mount	"U" Header	"F" Angle Track	Stud Angle (Sill Mount)	"C" Track	
<b>BOTTOM MOUNT</b>	"H" Header	0"	0"	0"	23"	24"	25"	22"	24"	0"	24"	23"	26"
	Buildout "U" Header	0"	0"	0"	23"	24"	25"	22"	24"	0"	24"	23"	26"
	2x5 & "U" Header	0"	0"	0"	23"	24"	25"	22"	24"	0"	24"	23"	26"
	2x5 & Stud Angle	23"	23"	23"	11"	30"	31"	11"	30"	23"	30"	11"	33"
	Buildout "F" Track	24"	24"	24"	30"	48"	50"	29"	48"	24"	48"	30"	53"
	"F" Track	25"	25"	25"	31"	50"	52"	30"	50"	25"	50"	31"	55"
	Stud Angle (Wall Mount)	22"	22"	22"	11"	29"	30"	11"	29"	22"	29"	11"	31"
	Direct Mount	24"	24"	24"	30"	48"	50"	29"	48"	24"	48"	30"	53"
	"U" Header	0"	0"	0"	23"	24"	25"	22"	24"	0"	24"	23"	26"
	"F" Angle Track	24"	24"	24"	30"	48"	50"	29"	48"	24"	48"	30"	53"
	Stud Angle (Sill Mount)	23"	23"	23"	11"	30"	31"	11"	30"	23"	30"	11"	33"
	"C" Track	26"	26"	26"	33"	53"	55"	31"	53"	26"	53"	33"	58"

1. SPANS SHOWN HERE ARE MINIMUM ALLOWABLE SPANS BASED ON ANY COMBINATION OF MOUNTING CONDITIONS AT TOP OR BOTTOM. PANEL LENGTHS LESS THAN THOSE NOTED IN TABLE ABOVE ARE NOT ACCEPTABLE.
2. NO SEPARATION FROM GLASS IS REQUIRED WHEN PANEL LENGTH IS GREATER THAN THAT NOTED FOR RESPECTIVE MOUNTING COMBINATION ABOVE.
3. SIDE CLOSURES REQUIRED FOR ALL BUILDOUT MOUNTS IN TABLE ABOVE. WHERE SIDE CLOSURES ARE NOT USED WITH BUILDOUT MOUNTING CONDITIONS, REQUIRED SEPARATION FROM GLASS SHALL BE PER DETAIL 'F'.
4. TABLE APPLIES TO BOTH 22ga (WITH OR WITHOUT STITCH BOLTS) AND 24ga PANELS, & BOTH WITH PANEL FASTENERS @ 12.5' OR 6.25' O.C.
5. PANELS MAY SPAN 36' MINIMUM USING ONE (1) OF THE OPTIONAL TOP OR BOTTOM CLOSURES PER OPENING (PER DETAIL 'K'), USING ANY MOUNTING CONDITION SHOWN IN THESE DRAWINGS.



**M** OPTIONAL EGRESS PANEL DETAIL  
INTERIOR FASTENING

**T2** MAXIMUM ALLOWABLE SPAN SCHEDULE  
(22 GAUGE PANELS)

Load W (psf)	Panel Fasteners @ 6.25" O.C.	Panel Fasteners @ 12.5" O.C.	
	Allowable Span No Stitch Bolts L <sub>MAX</sub> (ft)	Allowable Span No Stitch Bolts L <sub>MAX</sub> (ft)	Allowable Span With Stitch Bolts L <sub>MAX</sub> (ft)
30	12' - 8"	12' - 8"	12' - 8"
33	12' - 8"	12' - 6"	12' - 8"
35	12' - 8"	12' - 2"	12' - 8"
40	12' - 8"	11' - 4"	12' - 2"
41	12' - 8"	11' - 3"	12' - 1"
45	12' - 8"	10' - 9"	11' - 6"
48	12' - 4"	10' - 4"	11' - 2"
50	12' - 1"	10' - 2"	10' - 11"
52	11' - 10"	10' - 0"	10' - 8"
55	11' - 7"	9' - 8"	10' - 5"
60	11' - 1"	9' - 3"	9' - 11"
65	10' - 7"	8' - 11"	9' - 7"
70	10' - 3"	8' - 7"	9' - 0"
75	9' - 11"	8' - 0"	8' - 4"
80	9' - 7"	7' - 6"	7' - 10"
90	9' - 0"	6' - 8"	7' - 0"
100	8' - 7"	6' - 0"	6' - 3"
110	8' - 2"	5' - 5"	5' - 8"
120	7' - 10"	5' - 0"	5' - 3"
130	7' - 6"	4' - 7"	4' - 10"
140	7' - 3"	4' - 3"	4' - 6"
150	7' - 0"	4' - 0"	4' - 2"
160	6' - 9"	3' - 9"	3' - 11"
170	6' - 7"	3' - 6"	3' - 8"
180	6' - 4"	3' - 4"	3' - 6"
190	6' - 2"	3' - 1"	3' - 3"
200	6' - 0"	3' - 0"	3' - 1"

FRANK L. BENNARDO, P.E.  
#10046549  
03/03/2010  
PROFES  
ENGINEERING EXPRESS  
160 SW 12th AVENUE, #106  
DEERFIELD BEACH, FL 33442  
PH: (954) 354-0660 FAX: (954) 354-0643  
WWW.ENGINEERINGEXPRESS.COM  
CERT. OF AUTH. #8885  
A FRANK L. BENNARDO, P.E., INC. INNOVATION

**ALL AMERICAN SHUTTERS AND GLASS**  
1540 DONNA ROAD  
WEST PALM BEACH, FL 33409  
(561) 712-9882  
22ga & 24ga GALVANIZED STEEL  
STORM PANELS  
FLORIDA STATEWIDE APPROVAL

DRWN/CHKD	DATE	INIT	ISSUE
KL	03/03/10		

REMARKS

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, DELETIONS, OR OMISSIONS TO THIS DOCUMENT ARE NOT PERMITTED AND WILL VOID OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.  
**10-AAS-0001**  
SCALE: 1 OF 1  
PAGE DESCRIPTION:  
7

F:\01 Project Files\All American Shutters (AAS)\2010\10-AAS-0001\F1393 FSA Name Change\10-AAS-0001\_01a 22.24ga Panels (FSA).dwg

**T4 ANCHOR SPACING TABLE**

(24 GAUGE PANELS TO CONC/CBS,  
WITH PANEL FASTENERS @ 12.5" O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	2.5" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
CONCRETE	3/16" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC)	33	12.5"	16.0"	12.8"	10.8"	12.5"	16.0"	8.9"	7.5"	12.5"	16.0"	7.9"	6.7"
		41	12.5"	16.0"	10.3"	8.7"	12.5"	16.0"	7.1"	6.0"	12.5"	16.0"	7.1"	6.0"
		48	12.5"	16.0"	8.8"	7.4"	12.5"	16.0"	7.0"	5.9"	12.5"	16.0"	7.0"	5.9"
		52	12.5"	16.0"	8.1"	6.9"	12.5"	16.0"	7.0"	5.9"	12.5"	16.0"	7.0"	5.9"
	1/4" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	13.9"	12.5"	16.0"	13.6"	11.1"
		41	12.5"	16.0"	16.0"	13.8"	12.5"	16.0"	13.5"	11.0"	12.5"	16.0"	13.5"	11.0"
		48	12.5"	16.0"	15.6"	12.8"	12.5"	16.0"	13.5"	11.0"	12.5"	16.0"	13.5"	11.0"
		52	12.5"	16.0"	13.5"	11.0"	12.5"	16.0"	13.5"	11.0"	12.5"	16.0"	13.5"	11.0"
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN 3000 PSI CONC)	33	12.5"	16.0"	16.0"	13.0"	12.5"	16.0"	11.1"	9.0"	12.5"	16.0"	9.9"	8.0"
		41	12.5"	16.0"	12.9"	10.5"	12.5"	16.0"	8.9"	7.3"	12.5"	16.0"	8.9"	7.2"
		48	12.5"	16.0"	11.0"	9.0"	12.5"	16.0"	8.8"	7.2"	12.5"	16.0"	8.8"	7.2"
		52	12.5"	16.0"	10.2"	8.3"	12.5"	16.0"	8.8"	7.2"	12.5"	16.0"	8.8"	7.2"
1/4"x7/8" EMBED ALL-POINTS SOLID-SET (MIN 3000 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	15.7"	13.4"	12.5"	16.0"	14.0"	11.9"	
	41	12.5"	16.0"	16.0"	15.6"	12.5"	16.0"	12.6"	10.8"	12.5"	16.0"	12.5"	10.7"	
	48	12.5"	16.0"	15.6"	13.3"	12.5"	16.0"	12.5"	10.6"	12.5"	16.0"	12.5"	10.6"	
	52	12.5"	16.0"	14.4"	12.3"	12.5"	16.0"	12.5"	10.6"	12.5"	16.0"	12.5"	10.6"	
1/4" x 1-3/4" EMBED ELCO PANELMATE (MIN 3350 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	14.2"	12.5"	16.0"	16.0"	12.6"	
	41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	15.7"	11.4"	12.5"	16.0"	15.6"	11.3"	
	48	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	15.5"	11.2"	12.5"	16.0"	15.5"	11.2"	
	52	12.5"	16.0"	16.0"	13.0"	12.5"	16.0"	15.5"	11.2"	12.5"	16.0"	15.5"	11.2"	

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	2.5" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
HOLLOW CONC BLOCK	3/16" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU)	33	12.5"	16.0"	10.3"	8.3"	12.5"	16.0"	7.1"	5.7"	12.5"	16.0"	6.4"	5.1"
		41	12.5"	16.0"	8.3"	6.6"	12.5"	14.9"	5.7"	4.6"	12.5"	14.8"	5.7"	4.6"
		48	12.5"	16.0"	7.1"	5.7"	12.5"	14.7"	5.7"	4.5"	12.5"	14.7"	5.7"	4.5"
		52	12.5"	16.0"	6.5"	5.2"	12.5"	14.7"	5.7"	4.5"	12.5"	14.7"	5.7"	4.5"
	1/4" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU)	33	12.5"	16.0"	15.8"	13.3"	12.5"	16.0"	10.9"	9.2"	12.5"	16.0"	9.7"	8.2"
		41	12.5"	16.0"	12.7"	10.7"	12.5"	16.0"	8.8"	7.4"	12.5"	16.0"	8.7"	7.3"
		48	12.5"	16.0"	10.8"	9.1"	12.5"	16.0"	8.7"	7.3"	12.5"	16.0"	8.7"	7.3"
		52	12.5"	16.0"	10.0"	8.4"	12.5"	16.0"	8.7"	7.3"	12.5"	16.0"	8.7"	7.3"
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN GRADE N, TYPE 1 CMU)	33	12.5"	12.7"	4.9"	5.3"	6.25"	8.8"	3.4"	3.7"	6.25"	7.8"	3.0"	3.3"
		41	6.25"	10.2"	3.9"	4.3"	6.25"	7.1"			6.25"	7.0"		
		48	6.25"	8.8"	3.4"	3.6"	6.25"	7.0"			6.25"	7.0"		
		52	6.25"	8.1"	3.1"	3.4"	6.25"	7.0"			6.25"	7.0"		
1/4" x 7/8" EMBED ALL-POINTS SOLID-SET (MIN 1800 PSI CMU)	33	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	12.2"	9.8"	12.5"	16.0"	10.8"	8.7"	
	41	12.5"	16.0"	14.1"	11.4"	12.5"	16.0"	9.8"	7.9"	12.5"	16.0"	9.7"	7.8"	
	48	12.5"	16.0"	12.1"	9.7"	12.5"	16.0"	9.6"	7.8"	12.5"	16.0"	9.6"	7.8"	
	52	12.5"	16.0"	11.1"	9.0"	12.5"	16.0"	9.6"	7.8"	12.5"	16.0"	9.6"	7.8"	
1/4" x 1-1/4" EMBED ELCO PANELMATE (MIN 2000 PSI CMU)	33	12.5"	16.0"	8.0"	7.4"	12.5"	14.4"	5.6"	5.1"	12.5"	12.9"	4.9"	4.6"	
	41	12.5"	16.0"	6.5"	6.0"	6.25"	11.6"	4.5"	4.1"	6.25"	11.5"	4.4"	4.1"	
	48	12.5"	14.3"	5.5"	5.1"	6.25"	11.4"	4.4"	4.1"	6.25"	11.4"	4.4"	4.1"	
	52	12.5"	13.2"	5.1"	4.7"	6.25"	11.4"	4.4"	4.1"	6.25"	11.4"	4.4"	4.1"	

**T5 ANCHOR SPACING TABLE**

(24 GAUGE PANELS TO WOOD, WITH  
PANEL FASTENERS @ 12.5" O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	3/4" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
WOOD	1/4" x 2" EMBED LAG SCREW	33	12.5"	16.0"	16.0"	10.9"	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	16.0"	6.7"
		41	12.5"	16.0"	16.0"	8.8"	12.5"	16.0"	15.0"	6.1"	12.5"	16.0"	14.8"	6.0"
		48	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	14.7"	6.0"	12.5"	16.0"	14.7"	6.0"
		52	12.5"	16.0"	16.0"	6.9"	12.5"	16.0"	14.7"	6.0"	12.5"	16.0"	14.7"	6.0"
	#14 x 1 1/2" EMBED WOOD SCREW	33	12.5"	16.0"	16.0"	10.1"	12.5"	16.0"	12.1"	7.0"	12.5"	16.0"	10.8"	6.2"
		41	12.5"	16.0"	14.1"	8.1"	12.5"	16.0"	9.7"	5.6"	12.5"	16.0"	9.7"	5.6"
		48	12.5"	16.0"	12.0"	7.0"	12.5"	16.0"	9.6"	5.6"	12.5"	16.0"	9.6"	5.6"
		52	12.5"	16.0"	11.1"	6.4"	12.5"	16.0"	9.6"	5.6"	12.5"	16.0"	9.6"	5.6"
	1/4" x 1-1/4" EMBED TAP GRIP "CFAS"	33	12.5"	16.0"	16.0"		12.5"	16.0"	11.5"		12.5"	16.0"	10.2"	
		41	12.5"	16.0"	13.3"		12.5"	16.0"	9.2"		12.5"	16.0"	9.2"	
		48	12.5"	16.0"	11.4"		12.5"	16.0"	9.1"		12.5"	16.0"	9.1"	
		52	12.5"	16.0"	10.5"		12.5"	16.0"	9.1"		12.5"	16.0"	9.1"	
7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	33	12.5"	16.0"	8.6"	7.3"	12.5"	15.5"	6.0"	5.1"	12.5"	13.8"	5.3"	4.5"	
	41	12.5"	16.0"	7.0"	5.9"	12.5"	12.5"	4.8"	4.1"	6.25"	12.4"	4.8"	4.1"	
	48	12.5"	15.4"	5.9"	5.0"	6.25"	12.3"	4.7"	4.0"	6.25"	12.3"	4.7"	4.0"	
	52	12.5"	14.2"	5.5"	4.7"	6.25"	12.3"	4.7"	4.0"	6.25"	12.3"	4.7"	4.0"	

**ANCHOR NOTES:**

- SPANS AND LOADS SHOWN HERE ARE FOR DETERMINING ANCHOR SPACING ONLY. ALLOWABLE STORM PANEL SPANS FOR SPECIFIC LOADS MUST BE LIMITED TO THOSE SHOWN IN ANCHOR TABLE (THIS PAGE).
- ENTER ANCHOR SCHEDULE BASED ON PANEL FASTENER SPACING, THE EXISTING STRUCTURE MATERIAL, & ANCHOR TYPE. SELECT DESIGN LOAD GREATER THAN OR EQUAL TO NEGATIVE DESIGN LOAD ON SHUTTER AND SELECT SPAN GREATER THAN OR EQUAL TO SHUTTER SPAN.
- SELECT CONNECTION TYPE BASED ON APPROPRIATE MOUNTING CONDITION (SEE MOUNTING DETAILS ON SHEET 2 FOR IDENTIFICATION OF CONNECTION TYPE).
- "PANEL FASTENERS" ARE STUDS USED IN CONJUNCTION WITH ALL MOUNTING EXTRUSIONS ("F"-TRACK, STUDDER ANGLE, ETC.). USE 6.25" O.C. PANEL FASTENER SPACING TABLE VALUES FOR ALL "H"- AND "U"-HEADERS (INCLUDING BUILDOUT CONDITIONS).
- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
- WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT PLYWOOD. FASTENING TO PLYWOOD IS ACCEPTABLE ONLY FOR SIDE CLOSURE PIECES.
- WHERE LAG SCREWS FASTEN TO NARROW FACE OF STUD FRAMING, FASTENER SHALL BE LOCATED IN CENTER OF NOMINAL 2" x 4" (MIN.) WOOD STUD (3/4" EDGE DISTANCE IS ACCEPTABLE FOR WOOD FRAMING). WOOD STUD SHALL BE "SOUTHERN PINE" G=0.55 OR GREATER DENSITY. LAG SCREW SHALL HAVE PHILLIPS PAN HEAD OR HEX HEAD.
- REMOVABLE ANCHORS ARE: POWERS CALK-IN, ELCO PANELMATE, & BRASS BUSHING.
- 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.
- MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO OR OTHER WALL FINISHES.
- ☒ DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE USES.
- \* DESIGNATES REMOVABLE ANCHORS, WHICH ARE REQUIRED FOR USE WITH DIRECT MOUNTING CONDITIONS.

FRANK L. BENNARDO, P.E.  
#PE0046549

03/03/2010  
No. 40549

ENGINEERING EXPRESS

160 SW 12th AVENUE, #106  
DEERFIELD BEACH, FL 33442  
PH: (954) 354-0660 FAX: (954) 354-0443  
WWW.ENGP.COM

CERT. OF AUTH. #9895  
A FRANK L. BENNARDO, P.E., INC. INNOVATION

**ALL AMERICAN SHUTTERS AND GLASS**  
1540 DONNA ROAD  
WEST PALM BEACH, FL 33409  
(561) 712-9882

22ga & 24ga GALVANIZED STEEL  
STORM PANELS  
FLORIDA STATEWIDE APPROVAL

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	KL	FLB	03/03/10

THIS DOCUMENT IS THE PROPERTY OF ENGINEERING EXPRESS. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. NO PART OF THIS DOCUMENT IS TO BE REPRODUCED, COPIED, 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 ENGINEERING EXPRESS. ANY UNAUTHORIZED USE OF THIS DOCUMENT IS NOT PERMITTED AND WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

COPYRIGHT FRANK L. BENNARDO P.E.

10-AAS-0001

SCALE: 1 OF 7

PAGE DESCRIPTION:

4

F:\01 Project Files\All American Shutters (AAS)\2010\10-AAS-0001\_HFL393 FSA Name Change\10-AAS-0001\_01a 22-24ga Panels (FSA).dwg

03/03/2010 - 12:37pm kalih

**T6 ANCHOR SPACING TABLE**  
 (24 GAUGE PANELS TO CONC/CBS,  
 WITH PANEL FASTENERS @ 6.25' O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	2.5" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
CONCRETE	3/16" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC) 	33	12.5"	16.0"	12.8"	10.8"	12.5"	16.0"	8.9"	7.5"	12.5"	16.0"	6.7"	5.6"
		41	12.5"	16.0"	10.3"	8.7"	12.5"	16.0"	7.1"	6.0"	12.5"	15.6"	6.0"	5.1"
		48	12.5"	16.0"	8.8"	7.4"	12.5"	15.9"	6.1"	5.1"	12.5"	14.4"	5.5"	4.7"
		52	12.5"	16.0"	8.1"	6.9"	12.5"	14.6"	5.6"	4.7"	12.5"	13.8"	5.3"	4.5"
		70	12.5"	15.7"	6.0"	5.1"	####	11.9"	4.6"	3.9"	####	11.9"	4.6"	3.9"
	1/4" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC) 	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	13.9"	12.5"	16.0"	12.8"	10.5"
		41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	13.7"	11.2"	12.5"	16.0"	11.5"	9.4"
		48	12.5"	16.0"	16.0"	13.8"	12.5"	16.0"	11.7"	9.6"	12.5"	16.0"	10.6"	8.7"
		52	12.5"	16.0"	15.6"	12.8"	12.5"	16.0"	10.8"	8.8"	12.5"	16.0"	10.2"	8.3"
		70	12.5"	16.0"	11.6"	9.5"	12.5"	16.0"	8.8"	7.2"	12.5"	16.0"	8.8"	7.2"
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN 3000 PSI CONC) 	33	12.5"	16.0"	16.0"	13.0"	12.5"	16.0"	11.1"	9.0"	12.5"	16.0"	8.3"	6.8"
		41	12.5"	16.0"	12.9"	10.5"	12.5"	16.0"	8.9"	7.3"	12.5"	16.0"	7.5"	6.1"
		48	12.5"	16.0"	11.0"	9.0"	12.5"	16.0"	7.6"	6.2"	12.5"	16.0"	6.9"	5.6"
		52	12.5"	16.0"	10.2"	8.3"	12.5"	16.0"	7.0"	5.7"	12.5"	16.0"	6.6"	5.4"
		70	12.5"	16.0"	7.5"	6.1"	12.5"	14.9"	5.7"	4.7"	12.5"	14.9"	5.7"	4.7"
	1/4"x7/8" EMBED ALL-POINTS SOLID-SET (MIN 3000 PSI CONC) 	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	15.7"	13.4"	12.5"	16.0"	11.8"	10.1"
		41	12.5"	16.0"	16.0"	15.6"	12.5"	16.0"	12.6"	10.8"	12.5"	16.0"	10.6"	9.1"
		48	12.5"	16.0"	15.6"	13.3"	12.5"	16.0"	10.8"	9.2"	12.5"	16.0"	9.8"	8.4"
		52	12.5"	16.0"	14.4"	12.3"	12.5"	16.0"	10.0"	8.5"	12.5"	16.0"	9.4"	8.0"
		70	12.5"	16.0"	10.7"	9.1"	12.5"	16.0"	8.1"	6.9"	12.5"	16.0"	8.1"	6.9"
1/4" x 1-3/4" EMBED ELCO PANELMATE (MIN 3350 PSI CONC) 	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	14.2"	12.5"	16.0"	14.7"	10.7"	
	41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	15.7"	11.4"	12.5"	16.0"	13.2"	9.6"	
	48	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	13.4"	9.7"	12.5"	16.0"	12.2"	8.8"	
	52	12.5"	16.0"	16.0"	13.0"	12.5"	16.0"	12.4"	9.0"	12.5"	16.0"	11.7"	8.5"	
	70	12.5"	16.0"	13.3"	9.7"	12.5"	16.0"	10.1"	7.3"	12.5"	16.0"	10.1"	7.3"	

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	2.5" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
HOLLOW CONC BLOCK	3/16" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU) 	33	12.5"	16.0"	10.3"	8.3"	12.5"	16.0"	7.1"	5.7"	12.5"	14.0"	5.4"	4.3"
		41	12.5"	16.0"	8.3"	6.6"	12.5"	14.9"	5.7"	4.6"	12.5"	12.5"	4.8"	3.9"
		48	12.5"	16.0"	7.1"	5.7"	12.5"	12.8"	4.9"	3.9"	6.25"	11.6"	4.5"	3.6"
		52	12.5"	16.0"	6.5"	5.2"	6.25"	11.8"	4.5"	3.6"	6.25"	11.1"	4.3"	3.4"
		70	12.5"	12.6"	4.9"	3.9"	6.25"	9.6"	3.7"	6.25"	9.6"	3.7"	6.25"	9.6"
	1/4" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU) 	33	12.5"	16.0"	15.8"	13.3"	12.5"	16.0"	10.9"	9.2"	12.5"	16.0"	8.2"	6.9"
		41	12.5"	16.0"	12.7"	10.7"	12.5"	16.0"	8.8"	7.4"	12.5"	16.0"	7.4"	6.2"
		48	12.5"	16.0"	10.8"	9.1"	12.5"	16.0"	7.5"	6.3"	12.5"	16.0"	6.8"	5.7"
		52	12.5"	16.0"	10.0"	8.4"	12.5"	16.0"	6.9"	5.8"	12.5"	16.0"	6.5"	5.5"
		70	12.5"	16.0"	7.4"	6.3"	12.5"	14.7"	5.6"	4.7"	12.5"	14.7"	5.6"	4.7"
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN GRADE N, TYPE 1 CMU) 	33	12.5"	12.7"	4.9"	5.3"	6.25"	8.8"	3.4"	3.7"	6.25"	6.6"		
		41	6.25"	10.2"	3.9"	4.3"	6.25"	7.1"				5.9"		
		48	6.25"	8.8"	3.4"	3.6"		6.1"				5.5"		
		52	6.25"	8.1"	3.1"	3.4"		5.6"				5.3"		
		70		6.0"				4.6"				4.6"		
	1/4" x 7/8" EMBED ALL-POINTS SOLID-SET (MIN 1800 PSI CMU) 	33	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	12.2"	9.8"	12.5"	16.0"	9.2"	7.4"
		41	12.5"	16.0"	14.1"	11.4"	12.5"	16.0"	9.8"	7.9"	12.5"	16.0"	8.2"	6.6"
		48	12.5"	16.0"	12.1"	9.7"	12.5"	16.0"	8.4"	6.7"	12.5"	16.0"	7.6"	6.1"
		52	12.5"	16.0"	11.1"	9.0"	12.5"	16.0"	7.7"	6.2"	12.5"	16.0"	7.3"	5.9"
		70	12.5"	16.0"	8.3"	6.7"	12.5"	16.0"	6.3"	5.1"	12.5"	16.0"	6.3"	5.1"
1/4" x 1-1/4" EMBED ELCO PANELMATE (MIN 2000 PSI CMU) 	33	12.5"	16.0"	8.0"	7.4"	12.5"	14.4"	5.6"	5.1"	6.25"	10.9"	4.2"	3.9"	
	41	12.5"	16.0"	6.5"	6.0"	6.25"	11.6"	4.5"	4.1"	6.25"	9.7"	3.8"	3.5"	
	48	12.5"	14.3"	5.5"	5.1"	6.25"	9.9"	3.8"	3.5"	6.25"	9.0"	3.5"	3.2"	
	52	12.5"	13.2"	5.1"	4.7"	6.25"	9.2"	3.5"	3.3"	6.25"	8.7"	3.3"	3.1"	
	70	6.25"	9.8"	3.8"	3.5"	6.25"	7.5"			6.25"	7.5"			

**T7 ANCHOR SPACING TABLE**  
 (24 GAUGE PANELS TO WOOD, WITH  
 PANEL FASTENERS @ 6.25' O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	3/4" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
WOOD	1/4" x 2" EMBED LAG SCREW 	33	12.5"	16.0"	16.0"	10.9"	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	14.0"	5.7"
		41	12.5"	16.0"	16.0"	8.8"	12.5"	16.0"	16.0"	6.1"	12.5"	16.0"	12.5"	5.1"
		48	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	12.8"	5.2"	12.5"	16.0"	11.6"	4.7"
		52	12.5"	16.0"	16.0"	6.9"	12.5"	16.0"	11.8"	4.8"	12.5"	16.0"	11.1"	4.5"
		70	12.5"	16.0"	12.7"	5.1"	12.5"	16.0"	9.6"	3.9"	12.5"	16.0"	9.6"	3.9"
	#14 x 1 1/2" EMBED WOOD SCREW 	33	12.5"	16.0"	16.0"	10.1"	12.5"	16.0"	12.1"	7.0"	12.5"	16.0"	9.1"	5.3"
		41	12.5"	16.0"	14.1"	8.1"	12.5"	16.0"	9.7"	5.6"	12.5"	16.0"	8.2"	4.7"
		48	12.5"	16.0"	12.0"	7.0"	12.5"	16.0"	8.3"	4.8"	12.5"	16.0"	7.5"	4.4"
		52	12.5"	16.0"	11.1"	6.4"	12.5"	16.0"	7.7"	4.4"	12.5"	16.0"	7.3"	4.2"
		70	12.5"	16.0"	8.2"	4.8"	12.5"	16.0"	6.2"	3.6"	12.5"	16.0"	6.2"	3.6"
	1/4" x 1-1/4" EMBED TAP GRIP "CFAS" 	33	12.5"	16.0"	16.0"		12.5"	16.0"	11.5"		12.5"	16.0"	8.6"	
		41	12.5"	16.0"	13.3"		12.5"	16.0"	9.2"		12.5"	16.0"	7.7"	
		48	12.5"	16.0"	11.4"		12.5"	16.0"	7.9"		12.5"	16.0"	7.2"	
		52	12.5"	16.0"	10.5"		12.5"	16.0"	7.3"		12.5"	16.0"	6.9"	
		70	12.5"	16.0"	7.8"		12.5"	15.4"	5.9"		12.5"	15.4"	5.9"	
	7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING 	33	12.5"	16.0"	8.6"	7.3"	12.5"	15.5"	6.0"	5.1"	6.25"	11.7"	4.5"	3.8"
		41	12.5"	16.0"	7.0"	5.9"	12.5"	12.5"	4.8"	4.1"	6.25"	10.5"	4.0"	3.4"
		48	12.5"	15.4"	5.9"	5.0"	6.25"	10.7"	4.1"	3.5"	6.25"	9.7"	3.7"	3.2"
		52	12.5"	14.2"	5.5"	4.7"	6.25"	9.9"	3.8"	3.2"	6.25"	9.3"	3.6"	3.0"
		70	6.25"	10.6"	4.1"	3.5"	6.25"	8.0"	3.1"		6.25"	8.0"	3.1"	

**ANCHOR NOTES:**

- SPANS AND LOADS SHOWN HERE ARE FOR DETERMINING ANCHOR SPACING ONLY. ALLOWABLE STORM PANEL SPANS FOR SPECIFIC LOADS MUST BE LIMITED TO THOSE SHOWN IN ANCHOR TABLE (THIS PAGE).
- ENTER ANCHOR SCHEDULE BASED ON PANEL FASTENER SPACING, THE EXISTING STRUCTURE MATERIAL, & ANCHOR TYPE. SELECT DESIGN LOAD GREATER THAN OR EQUAL TO NEGATIVE DESIGN LOAD ON SHUTTER AND SELECT SPAN GREATER THAN OR EQUAL TO SHUTTER SPAN.
- SELECT CONNECTION TYPE BASED ON APPROPRIATE MOUNTING CONDITION (SEE MOUNTING DETAILS ON SHEET 2 FOR IDENTIFICATION OF CONNECTION TYPE).
- 'PANEL FASTENERS' ARE STUDS USED IN CONJUNCTION WITH ALL MOUNTING EXTRUSIONS ('F'-TRACK, STUDDER ANGLE, ETC.). USE 6.25" O.C. PANEL FASTENER SPACING TABLE VALUES FOR ALL 'H'- AND 'U'-HEADERS (INCLUDING BUILDOUT CONDITIONS).
- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
- WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT PLYWOOD. FASTENING TO PLYWOOD IS ACCEPTABLE ONLY FOR SIDE CLOSURE PIECES.
- WHERE LAG SCREWS FASTEN TO NARROW FACE OF STUD FRAMING, FASTENER SHALL BE LOCATED IN CENTER OF NOMINAL 2' X 4' (MIN.) WOOD STUD (3/4" EDGE DISTANCE IS ACCEPTABLE FOR WOOD FRAMING). WOOD STUD SHALL BE 'SOUTHERN PINE' G=0.55 OR GREATER DENSITY. LAG SCREW SHALL HAVE PHILLIPS PAN HEAD OR HEX HEAD.
- REMOVABLE ANCHORS ARE: POWERS CALK-IN, ELCO PANELMATE, & BRASS BUSHING.
- 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) UNO.
- MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO OR OTHER WALL FINISHES.
- ☒ DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE USES.
- \* DESIGNATES REMOVABLE ANCHORS, WHICH ARE REQUIRED FOR USE WITH DIRECT MOUNTING CONDITIONS.

FRANK L. BENNARDO, P.E.  
 #PE0046549  
 03/03/2010  
 No. 46549  
 PROFESSIONAL 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 101

**ALL AMERICAN SHUTTERS AND GLASS**  
 1540 DONNA ROAD  
 WEST PALM BEACH, FL 33409  
 (561) 712-9882  
 229a & 249a GALVANIZED STEEL  
 STORM PANELS  
 FLORIDA STATEWIDE APPROVAL

REMARKS	DATE	DRWN	CHKD	INIT	ISSUE
	03/03/10	KL	FLB		

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. ALTERNATIONS, ADDITIONS, DELETIONS, OR OTHER MODIFICATIONS TO THIS DOCUMENT ARE NOT PERMITTED AND WILL VOID OUR CERTIFICATION.

COPYRIGHT FRANK L. BENNARDO P.E.  
**10-AAS-0001**  
 SCALE: 1 OF 1  
 PAGE DESCRIPTION:  
 5

F:\01 Project Files\All American Shutters (AAS)\2010\10-AAS-0001 #FL393 FSA Name Change\10-AAS-0001\_01a 22.24ga Panels (FSA).dwg  
 03/03/2010 - 12:37pm  
 keith

**T8 ANCHOR SPACING TABLE**

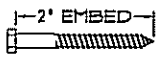

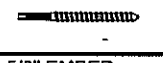

(ALL 22 GAUGE PANELS TO CONC/CBS, WITH PANEL FASTENERS @ 12.5' O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	2.5" EDGE DISTANCE													
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"					
			CONN TYPE				CONN TYPE				CONN TYPE					
				C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4	
CONCRETE	3/16" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC)	33	12.5"	16.0"	12.1"	10.8"	12.5"	16.0"	8.4"	7.5"	12.5"	15.8"	5.7"	5.1"		
		41	12.5"	16.0"	9.7"	8.7"	12.5"	16.0"	6.7"	6.0"	12.5"	13.3"	4.8"	4.3"		
		48	12.5"	16.0"	8.3"	7.4"	12.5"	15.9"	5.8"	5.1"	6.25"	12.3"	4.5"	4.0"		
		52	12.5"	16.0"	7.7"	6.9"	12.5"	14.6"	5.3"	4.7"	6.25"	11.8"	4.3"	3.8"		
		70	12.5"	15.7"	5.7"	5.1"	6.25"	10.9"	3.9"	3.5"	6.25"	10.5"	3.8"	3.4"		
	1/4" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	13.9"	12.5"	16.0"	11.0"	9.5"		
		41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	12.9"	11.2"	12.5"	16.0"	9.2"	8.0"		
		48	12.5"	16.0"	15.9"	13.8"	12.5"	16.0"	11.0"	9.6"	12.5"	16.0"	8.5"	7.4"		
		52	12.5"	16.0"	14.7"	12.8"	12.5"	16.0"	10.2"	8.8"	12.5"	16.0"	8.2"	7.1"		
		70	12.5"	16.0"	10.9"	9.5"	12.5"	16.0"	7.5"	6.6"	12.5"	16.0"	7.3"	6.3"		
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN 3000 PSI CONC)	33	12.5"	16.0"	15.1"	13.0"	12.5"	16.0"	10.4"	9.0"	12.5"	16.0"	7.1"	6.2"		
		41	12.5"	16.0"	12.1"	10.5"	12.5"	16.0"	8.4"	7.3"	12.5"	16.0"	6.0"	5.2"		
48		12.5"	16.0"	10.4"	9.0"	12.5"	16.0"	7.2"	6.2"	12.5"	15.4"	5.6"	4.8"			
52		12.5"	16.0"	9.6"	8.3"	12.5"	16.0"	6.6"	5.7"	12.5"	14.8"	5.4"	4.6"			
70		12.5"	16.0"	7.1"	6.1"	12.5"	13.6"	4.9"	4.3"	12.5"	13.1"	4.7"	4.1"			
1/4"x7/8" EMBED ALL-POINTS SOLID-SET (MIN 3000 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	14.8"	13.4"	12.5"	16.0"	10.1"	9.2"			
	41	12.5"	16.0"	16.0"	15.6"	12.5"	16.0"	11.9"	10.8"	12.5"	16.0"	8.5"	7.7"			
	48	12.5"	16.0"	14.7"	13.3"	12.5"	16.0"	10.2"	9.2"	12.5"	16.0"	7.9"	7.2"			
	52	12.5"	16.0"	13.6"	12.3"	12.5"	16.0"	9.4"	8.5"	12.5"	16.0"	7.6"	6.9"			
	70	12.5"	16.0"	10.1"	9.1"	12.5"	16.0"	7.0"	6.3"	12.5"	16.0"	6.7"	6.1"			
1/4" x 2" EMBED ELCO PANELMATE (MIN 3350 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	14.2"	12.5"	16.0"	12.6"	9.7"			
	41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	14.8"	11.4"	12.5"	16.0"	10.6"	8.2"			
	48	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	12.6"	9.7"	12.5"	16.0"	9.8"	7.6"			
	52	12.5"	16.0"	16.0"	13.0"	12.5"	16.0"	11.6"	9.0"	12.5"	16.0"	9.4"	7.3"			
	70	12.5"	16.0"	12.5"	9.7"	12.5"	16.0"	8.6"	6.7"	12.5"	16.0"	8.3"	6.4"			

HOLLOW CONC BLOCK	3/16" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU)	33	12.5"	16.0"	9.7"	8.3"	12.5"	16.0"	6.7"	5.7"	12.5"	12.7"	4.6"	3.9"		
		41	12.5"	16.0"	7.8"	6.6"	12.5"	14.9"	5.4"	4.6"	6.25"	10.7"	3.9"	3.3"		
		48	12.5"	16.0"	6.7"	5.7"	12.5"	12.8"	4.6"	3.9"	6.25"	9.9"	3.6"	3.0"		
		52	12.5"	16.0"	6.2"	5.2"	6.25"	11.8"	4.3"	3.6"	6.25"	9.5"	3.4"			
		70	12.5"	12.6"	4.6"	3.9"	6.25"	8.7"	3.2"		6.25"	8.4"	3.0"			
	1/4" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU)	33	12.5"	16.0"	14.9"	13.3"	12.5"	16.0"	10.3"	9.2"	12.5"	16.0"	7.0"	6.3"		
		41	12.5"	16.0"	12.0"	10.7"	12.5"	16.0"	8.3"	7.4"	12.5"	16.0"	5.9"	5.3"		
		48	12.5"	16.0"	10.2"	9.1"	12.5"	16.0"	7.1"	6.3"	12.5"	15.1"	5.5"	4.9"		
		52	12.5"	16.0"	9.4"	8.4"	12.5"	16.0"	6.5"	5.8"	12.5"	14.5"	5.3"	4.7"		
		70	12.5"	16.0"	7.0"	6.3"	12.5"	13.4"	4.8"	4.3"	12.5"	12.9"	4.7"	4.2"		
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN GRADE N, TYPE 1 CMU)	33	12.5"	12.7"	4.6"	5.3"	6.25"	8.8"	3.2"	3.7"		6.0"				
		41	6.25"	10.2"	3.7"	4.3"	6.25"	7.1"				5.1"				
48		6.25"	8.8"	3.2"	3.6"		6.1"				4.7"					
52		6.25"	8.1"		3.4"		5.6"				4.5"					
70			6.0"				4.2"				4.0"					
1/4" x 7/8" EMBED ALL-POINTS SOLID-SET (MIN 1800 PSI CMU)	33	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	11.5"	9.8"	12.5"	16.0"	7.8"	6.7"			
	41	12.5"	16.0"	13.3"	11.4"	12.5"	16.0"	9.2"	7.9"	12.5"	16.0"	6.6"	5.6"			
	48	12.5"	16.0"	11.4"	9.7"	12.5"	16.0"	7.9"	6.7"	12.5"	16.0"	6.1"	5.2"			
	52	12.5"	16.0"	10.5"	9.0"	12.5"	16.0"	7.3"	6.2"	12.5"	16.0"	5.9"	5.0"			
	70	12.5"	16.0"	7.8"	6.7"	12.5"	14.9"	5.4"	4.6"	12.5"	14.3"	5.2"	4.4"			
1/4" x 1-1/4" EMBED ELCO PANELMATE (MIN 2000 PSI CMU)	33	12.5"	16.0"	7.6"	7.4"	12.5"	14.4"	5.2"	5.1"	6.25"	9.9"	3.6"	3.5"			
	41	12.5"	16.0"	6.1"	6.0"	6.25"	11.6"	4.2"	4.1"	6.25"	8.3"	3.0"				
	48	12.5"	14.3"	5.2"	5.1"	6.25"	9.9"	3.6"	3.5"	6.25"	7.7"					
	52	12.5"	13.2"	4.8"	4.7"	6.25"	9.2"	3.3"	3.3"	6.25"	7.4"					
	70	6.25"	9.8"	3.6"	3.5"	6.25"	6.8"			6.25"	6.5"					

**T9 ANCHOR SPACING TABLE**

(ALL 22 GAUGE PANELS TO WOOD, WITH PANEL FASTENERS @ 12.5' O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	3/4" EDGE DISTANCE													
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"					
			CONN TYPE				CONN TYPE				CONN TYPE					
				C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4	
WOOD	1/4" x 2" EMBED LAG SCREW 	33	12.5"	16.0"	16.0"	10.9"	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	12.0"	5.2"		
		41	12.5"	16.0"	16.0"	8.8"	12.5"	16.0"	14.1"	6.1"	12.5"	16.0"	10.1"	4.4"		
		48	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	12.0"	5.2"	12.5"	16.0"	9.3"	4.0"		
		52	12.5"	16.0"	16.0"	6.9"	12.5"	16.0"	11.1"	4.8"	12.5"	16.0"	9.0"	3.9"		
		70	12.5"	16.0"	11.9"	5.1"	12.5"	16.0"	8.3"	3.6"	12.5"	16.0"	7.9"	3.4"		
	#14 x 1-1/2" EMBED WOOD SCREW 	33	12.5"	16.0"	16.0"	10.1"	12.5"	16.0"	11.4"	7.0"	12.5"	16.0"	7.8"	4.8"		
		41	12.5"	16.0"	13.2"	8.1"	12.5"	16.0"	9.2"	5.6"	12.5"	16.0"	6.6"	4.0"		
		48	12.5"	16.0"	11.3"	7.0"	12.5"	16.0"	7.8"	4.8"	12.5"	16.0"	6.1"	3.7"		
		52	12.5"	16.0"	10.4"	6.4"	12.5"	16.0"	7.2"	4.4"	12.5"	16.0"	5.8"	3.6"		
		70	12.5"	16.0"	7.8"	4.8"	12.5"	14.8"	5.4"	3.3"	12.5"	14.2"	5.2"	3.2"		
	1/4" x 1-1/4" EMBED TAP GRIP "CFAS" 	33	12.5"	16.0"	15.6"		12.5"	16.0"	10.8"		12.5"	16.0"	7.4"			
		41	12.5"	16.0"	12.6"		12.5"	16.0"	8.7"		12.5"	16.0"	6.2"			
48		12.5"	16.0"	10.7"		12.5"	16.0"	7.4"		12.5"	15.9"	5.8"				
52		12.5"	16.0"	9.9"		12.5"	16.0"	6.9"		12.5"	15.3"	5.5"				
70		12.5"	16.0"	7.4"		12.5"	14.0"	5.1"		12.5"	13.5"	4.9"				
7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING 	33	12.5"	16.0"	8.1"	7.3"	12.5"	15.5"	5.6"	5.1"	10.6"	10.6"	3.9"	3.5"			
	41	12.5"	16.0"	6.6"	5.9"	12.5"	12.5"	4.5"	4.1"	9.0"	9.0"	3.3"				
	48	12.5"	15.4"	5.6"	5.0"	10.7"	10.7"	3.9"	3.5"	8.3"	8.3"	3.0"				
	52	12.5"	14.2"	5.2"	4.7"	9.9"	9.9"	3.6"	3.2"	8.0"	8.0"					
	70	10.6"	10.6"	3.8"	3.5"	7.3"	7.3"			7.0"	7.0"					

**ANCHOR NOTES:**

- SPANS AND LOADS SHOWN HERE ARE FOR DETERMINING ANCHOR SPACING ONLY. ALLOWABLE STORM PANEL SPANS FOR SPECIFIC LOADS MUST BE LIMITED TO THOSE SHOWN IN ANCHOR TABLE (THIS PAGE).
- ENTER ANCHOR SCHEDULE BASED ON PANEL FASTENER SPACING, THE EXISTING STRUCTURE MATERIAL, & ANCHOR TYPE. SELECT DESIGN LOAD GREATER THAN OR EQUAL TO NEGATIVE DESIGN LOAD ON SHUTTER AND SELECT SPAN GREATER THAN OR EQUAL TO SHUTTER SPAN.
- SELECT CONNECTION TYPE BASED ON APPROPRIATE MOUNTING CONDITION (SEE MOUNTING DETAILS ON SHEET 2 FOR IDENTIFICATION OF CONNECTION TYPE).
- 'PANEL FASTENERS' ARE STUDS USED IN CONJUNCTION WITH ALL MOUNTING EXTRUSIONS ('F'-TRACK, STUDDER ANGLE, ETC.). USE 6.25' O.C. PANEL FASTENER SPACING TABLE VALUES FOR ALL 'H'- AND 'U'-HEADERS (INCLUDING BUILDOUT CONDITIONS).
- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
- WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT PLYWOOD. FASTENING TO PLYWOOD IS ACCEPTABLE ONLY FOR SIDE CLOSURE PIECES.
- WHERE LAG SCREWS FASTEN TO NARROW FACE OF STUD FRAMING, FASTENER SHALL BE LOCATED IN CENTER OF NOMINAL 2' x 4' (MIN) WOOD STUD (3/4" EDGE DISTANCE IS ACCEPTABLE FOR WOOD FRAMING). WOOD STUD SHALL BE 'SOUTHERN PINE' G=0.55 OR GREATER DENSITY. LAG SCREW SHALL HAVE PHILLIPS PAN HEAD OR HEX HEAD.
- REMOVABLE ANCHORS ARE: POWERS CALK-IN, ELCO PANELMATE, & BRASS BUSHING.
- MACHINE SCREWS SHALL HAVE MINIMUM OF 1/2" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFFER HEAD (SIDEWALK BOLT) UNO.
- MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO OR OTHER WALL FINISHES.
- ☑ DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE USES.
- \* DESIGNATES REMOVABLE ANCHORS, WHICH ARE REQUIRED FOR USE WITH DIRECT MOUNTING CONDITIONS.

FRANK L. BERNARDO, P.E.  
#PE0046549

03/03/2010

No. 45549

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. #9888

A FRANK L. BERNARDO, P.E., INC. INNOVATION

ALL AMERICAN SHUTTERS AND GLASS

1540 DONNA ROAD  
WEST PALM BEACH, FL 33409  
(561) 712-9882

229a & 249a GALVANIZED STEEL  
STORM PANELS  
FLORIDA STATEWIDE APPROVAL

REMARKS	DATE	DRWN	CHKD	INIT	ISSUE
	03/03/10	KL			

THIS DOCUMENT IS THE PROPERTY OF FRANK L. BERNARDO, P.E. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. ANY REPRODUCTION OR TRANSM

**T10 ANCHOR SPACING TABLE**

(ALL 22 GAUGE PANELS TO CONC/CBS, WITH PANEL FASTENERS @ 6.25' O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	2.5" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
CONCRETE	3/16" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC)	33	12.5"	16.0"	12.1"	10.8"	12.5"	16.0"	8.4"	7.5"	12.5"	15.8"	5.7"	5.1"
		41	12.5"	16.0"	9.7"	8.7"	12.5"	16.0"	6.7"	6.0"	12.5"	12.7"	4.6"	4.1"
		48	12.5"	16.0"	8.3"	7.4"	12.5"	15.9"	5.8"	5.1"	6.25"	10.9"	3.9"	3.5"
		52	12.5"	16.0"	7.7"	6.9"	12.5"	14.6"	5.3"	4.7"	6.25"	10.0"	3.6"	3.2"
	1/4" x 1-3/4" EMBED ELCO TAPCON (MIN 3350 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	13.9"	12.5"	16.0"	11.0"	9.5"
		41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	12.9"	11.2"	12.5"	16.0"	8.8"	7.7"
		48	12.5"	16.0"	15.9"	13.8"	12.5"	16.0"	11.0"	9.6"	12.5"	16.0"	7.5"	6.5"
		52	12.5"	16.0"	14.7"	12.8"	12.5"	16.0"	10.2"	8.8"	12.5"	16.0"	6.9"	6.0"
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN 3000 PSI CONC)	33	12.5"	16.0"	15.1"	13.0"	12.5"	16.0"	10.4"	9.0"	12.5"	16.0"	7.1"	6.2"
		41	12.5"	16.0"	12.1"	10.5"	12.5"	16.0"	8.4"	7.3"	12.5"	15.9"	5.7"	5.0"
		48	12.5"	16.0"	10.4"	9.0"	12.5"	16.0"	7.2"	6.2"	12.5"	13.5"	4.9"	4.2"
		52	12.5"	16.0"	9.6"	8.3"	12.5"	16.0"	6.6"	5.7"	12.5"	12.5"	4.5"	3.9"
1/4" x 7/8" EMBED ALL-POINTS SOLID-SET (MIN 3000 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	14.8"	13.4"	12.5"	16.0"	10.1"	9.2"	
	41	12.5"	16.0"	16.0"	15.6"	12.5"	16.0"	11.9"	10.8"	12.5"	16.0"	8.1"	7.4"	
	48	12.5"	16.0"	14.7"	13.3"	12.5"	16.0"	10.2"	9.2"	12.5"	16.0"	7.0"	6.3"	
	52	12.5"	16.0"	13.6"	12.3"	12.5"	16.0"	9.4"	8.5"	12.5"	16.0"	6.4"	5.8"	
1/4" x 2" EMBED ELCO PANELMATE (MIN 3350 PSI CONC)	33	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	16.0"	14.2"	12.5"	16.0"	12.6"	9.7"	
	41	12.5"	16.0"	16.0"	16.0"	12.5"	16.0"	14.8"	11.4"	12.5"	16.0"	10.1"	7.8"	
	48	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	12.6"	9.7"	12.5"	16.0"	8.6"	6.7"	
	52	12.5"	16.0"	16.0"	13.0"	12.5"	16.0"	11.6"	9.0"	12.5"	16.0"	8.0"	6.2"	

HOLLOW CONC BLOCK	3/16" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU)	33	12.5"	16.0"	9.7"	8.3"	12.5"	16.0"	6.7"	5.7"	12.5"	12.7"	4.6"	3.9"
		41	12.5"	16.0"	7.8"	6.6"	12.5"	14.9"	5.4"	4.6"	6.25"	10.2"	3.7"	3.1"
		48	12.5"	16.0"	6.7"	5.7"	12.5"	12.8"	4.6"	3.9"	6.25"	8.7"	3.2"	
		52	12.5"	16.0"	6.2"	5.2"	6.25"	11.8"	4.3"	3.6"	6.25"	8.1"		
	1/4" x 1-1/4" EMBED ELCO TAPCON (MIN 2000 PSI CMU)	33	12.5"	16.0"	14.9"	13.3"	12.5"	16.0"	10.3"	9.2"	12.5"	16.0"	7.0"	6.3"
		41	12.5"	16.0"	12.0"	10.7"	12.5"	16.0"	8.3"	7.4"	12.5"	15.6"	5.7"	5.1"
		48	12.5"	16.0"	10.2"	9.1"	12.5"	16.0"	7.1"	6.3"	12.5"	13.3"	4.8"	4.3"
		52	12.5"	16.0"	9.4"	8.4"	12.5"	16.0"	6.5"	5.8"	6.25"	12.3"	4.5"	4.0"
	1/4" x 7/8" EMBED POWERS CALK-IN (MIN GRADE N, TYPE 1 CMU)	33	12.5"	12.7"	4.6"	5.3"	6.25"	8.8"	3.2"	3.7"			6.0"	
		41	6.25"	10.2"	3.7"	4.3"	6.25"	7.1"					4.9"	
		48	6.25"	8.8"	3.2"	3.6"		6.1"					4.1"	
		52	6.25"	8.1"		3.4"		5.6"					3.8"	
1/4" x 7/8" EMBED ALL-POINTS SOLID-SET (MIN 1800 PSI CMU)	33	12.5"	16.0"	16.0"	14.1"	12.5"	16.0"	11.5"	9.8"	12.5"	16.0"	7.8"	6.7"	
	41	12.5"	16.0"	13.3"	11.4"	12.5"	16.0"	9.2"	7.9"	12.5"	16.0"	6.3"	5.4"	
	48	12.5"	16.0"	11.4"	9.7"	12.5"	16.0"	7.9"	6.7"	12.5"	14.9"	5.4"	4.6"	
	52	12.5"	16.0"	10.5"	9.0"	12.5"	16.0"	7.3"	6.2"	12.5"	13.7"	5.0"	4.2"	
1/4" x 1-1/4" EMBED ELCO PANELMATE (MIN 2000 PSI CMU)	33	12.5"	16.0"	7.6"	7.4"	12.5"	14.4"	5.2"	5.1"	6.25"	9.9"	3.6"	3.5"	
	41	12.5"	16.0"	6.1"	6.0"	6.25"	11.6"	4.2"	4.1"	6.25"	7.9"			
	48	12.5"	14.3"	5.2"	5.1"	6.25"	9.9"	3.6"	3.5"	6.25"	6.8"			
	52	12.5"	13.2"	4.8"	4.7"	6.25"	9.2"	3.3"	3.3"	6.25"	6.3"			

**T11 ANCHOR SPACING TABLE**

(ALL 22 GAUGE PANELS TO WOOD, WITH PANEL FASTENERS @ 6.25' O.C.)

EXIST. STRUCT.	ANCHOR TYPE	LOAD (psf)	3/4" EDGE DISTANCE											
			SPAN UP TO 6'-0"				SPAN UP TO 8'-8"				SPAN UP TO 12'-8"			
			CONN TYPE				CONN TYPE				CONN TYPE			
			C1	C2	C3	C4	C1	C2	C3	C4	C1	C2	C3	C4
WOOD	1/4" x 2" EMBED LAG SCREW	33	12.5"	16.0"	16.0"	10.9"	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	12.0"	5.2"
		41	12.5"	16.0"	16.0"	8.8"	12.5"	16.0"	14.1"	6.1"	12.5"	16.0"	9.6"	4.2"
	2" EMBED #14 x 1-1/2" EMBED WOOD SCREW	48	12.5"	16.0"	16.0"	7.5"	12.5"	16.0"	12.0"	5.2"	12.5"	16.0"	8.2"	3.6"
		52	12.5"	16.0"	16.0"	6.9"	12.5"	16.0"	11.1"	4.8"	12.5"	16.0"	7.6"	3.3"
	1/4" x 1-1/4" EMBED TAP GRIP "CFAS"	70	12.5"	16.0"	11.9"	5.1"	12.5"	16.0"	8.3"	3.6"	12.5"	15.6"	5.6"	
		33	12.5"	16.0"	16.0"	10.1"	12.5"	16.0"	11.4"	7.0"	12.5"	16.0"	7.8"	4.8"
	7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	41	12.5"	16.0"	13.2"	8.1"	12.5"	16.0"	9.2"	5.6"	12.5"	16.0"	6.3"	3.9"
		48	12.5"	16.0"	11.3"	7.0"	12.5"	16.0"	7.8"	4.8"	12.5"	14.8"	5.4"	3.3"
	* 1/4" x 1-1/4" EMBED TAP GRIP "CFAS"	52	12.5"	16.0"	10.4"	6.4"	12.5"	16.0"	7.2"	4.4"	12.5"	13.6"	4.9"	3.0"
		70	12.5"	16.0"	7.8"	4.8"	12.5"	14.8"	5.4"	3.3"	10.1"	10.1"	3.7"	
	* 7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	33	12.5"	16.0"	15.6"		12.5"	16.0"	10.8"		12.5"	16.0"	7.4"	
		41	12.5"	16.0"	12.6"		12.5"	16.0"	8.7"		12.5"	16.0"	5.9"	
* 7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	48	12.5"	16.0"	10.7"		12.5"	16.0"	7.4"		12.5"	14.0"	5.1"		
	52	12.5"	16.0"	9.9"		12.5"	16.0"	6.9"		12.5"	12.9"	4.7"		
* 7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	70	12.5"	16.0"	7.4"		12.5"	14.0"	5.1"		9.6"	9.6"	3.5"		
	33	12.5"	16.0"	8.1"	7.3"	12.5"	15.5"	5.6"	5.1"	10.6"	10.6"	3.9"	3.5"	
* 7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	41	12.5"	16.0"	6.6"	5.9"	12.5"	12.5"	4.5"	4.1"	8.6"	8.6"	3.1"		
	48	12.5"	15.4"	5.6"	5.0"	10.7"	10.7"	3.9"	3.5"	7.3"	7.3"			
* 7/16" x 5/8" EMBED ALL POINTS BRASS WOOD BUSHING	52	12.5"	14.2"	5.2"	4.7"	9.9"	9.9"	3.6"	3.2"	6.7"	6.7"			
	70	10.6"	10.6"	3.8"	3.5"	7.3"	7.3"			5.0"	5.0"			

**ANCHOR NOTES:**

- SPANS AND LOADS SHOWN HERE ARE FOR DETERMINING ANCHOR SPACING ONLY. ALLOWABLE STORM PANEL SPANS FOR SPECIFIC LOADS MUST BE LIMITED TO THOSE SHOWN IN ANCHOR TABLE (THIS PAGE).
- ENTER ANCHOR SCHEDULE BASED ON PANEL FASTENER SPACING, THE EXISTING STRUCTURE MATERIAL, & ANCHOR TYPE. SELECT DESIGN LOAD GREATER THAN OR EQUAL TO NEGATIVE DESIGN LOAD ON SHUTTER AND SELECT SPAN GREATER THAN OR EQUAL TO SHUTTER SPAN.
- SELECT CONNECTION TYPE BASED ON APPROPRIATE MOUNTING CONDITION (SEE MOUNTING DETAILS ON SHEET 2 FOR IDENTIFICATION OF CONNECTION TYPE).
- "PANEL FASTENERS" ARE STUDS USED IN CONJUNCTION WITH ALL MOUNTING EXTRUSIONS ("P"-TRACK, STUDDING ANGLE, ETC.). USE 6.25" O.C. PANEL FASTENER SPACING TABLE VALUES FOR ALL "H"- AND "U"-HEADERS (INCLUDING BUILDOUT CONDITIONS).
- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
- WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT PLYWOOD. FASTENING TO PLYWOOD IS ACCEPTABLE ONLY FOR SIDE CLOSURE PIECES.
- WHERE LAG SCREWS FASTEN TO NARROW FACE OF STUD FRAMING, FASTENER SHALL BE LOCATED IN CENTER OF NOMINAL 2" x 4" (MIN) WOOD STUD (3/4" EDGE DISTANCE IS ACCEPTABLE FOR WOOD FRAMING). WOOD STUD SHALL BE "SOUTHERN PINE" G=0.55 OR GREATER DENSITY. LAG SCREW SHALL HAVE PHILLIPS PAN HEAD OR HEX HEAD.
- REMOVABLE ANCHORS ARE: POWERS CALK-IN, ELCO PANELMATE, & BRASS BUSHING.
- 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) UNO.
- MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO OR OTHER WALL FINISHES.
- DESIGNATES ANCHOR CONDITIONS WHICH ARE NOT ACCEPTABLE USES.
- \* DESIGNATES REMOVABLE ANCHORS, WHICH ARE REQUIRED FOR USE WITH DIRECT MOUNTING CONDITIONS.

FRANK L. BENNARDO, P.E.  
#PE0045549  
03/03/2010  
No. 46549  
PROFESSIONAL ENGINEER  
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

ALL AMERICAN SHUTTERS AND GLASS  
1540 DONNA ROAD  
WEST PALM BEACH, FL 33409  
(561) 712-9882  
229a & 249a GALVANIZED STEEL  
STORM PANELS  
FLORIDA STATEWIDE APPROVAL

REMARKS	DATE	DRWN	CHKD	INIT	ISSUE
	03/03/10	KL	FLB		

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. ALL RIGHTS ARE RESERVED AND WILL BE ENFORCED.

COPYRIGHT FRANK L. BENNARDO P.E.  
10-AAS-0001  
SCALE: 1/8" = 1'-0"  
PAGE DESCRIPTION:  
7

F:\01 Project Files\All American Shutters (AAS)\2010\10-AAS-0001 #FL393 FSA Name Change\10-AAS-0001\_01a 22-24ga Panels (FSA).dwg  
03/03/2010 - 12:37pm  
kelih