



**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**

**NOTICE OF ACCEPTANCE (NOA)**

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

**Rolladen, Inc.**  
**550 Ansin Boulevard**  
**Hallandale, Florida 33009**

**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: Aluminum Accordion Shutter**

**APPROVAL DOCUMENT:** Drawing No. 94-83, titled "ACCA Accordion Shutter Details", sheets 1 through 6 of 6, prepared by Al-Farooq Corporation, dated October 25, 1994, last revision #F dated June 28, 2008, signed and sealed by Humayoun Farooq, P.E. bearing the Miami-Dade County Product Control Revision stamp with the Notice of Acceptance number and the 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 and renews** NOA # **08-0313.08** and consists of this page 1, evidence submitted pages E-1, E-2, E-3 & E-4 as well as approval document mentioned above.

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



*Helmy A. Makar*  
 11/20/2008

NOA No. 08-0908.14  
 Expiration Date: 09/25/2014  
 Approval Date: 11/20/2008  
 Page 1

**Rolladen, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**1. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL #97-0721.03**

**A. DRAWINGS**

1. *Drawing No. 94-83, Rolladen, Inc., "Accordion Shutter Details", Sheets 1 through 4 of 4, prepared Al-Farooq Corporation, dated October 25, 1994, Revision A dated January 26, 1995, signed and sealed by Humayoun Farooq, P.E.*

**B. TESTS**

1. *Test report on Large Missile Impact Test and Cyclic Wind Pressure Test of "A.C.C.A." accordion shutter (95" Span), prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-94-210, dated July 25, 1994, signed and sealed by Hector M. Medina, P.E.*
2. *Test report on Large Missile Impact Test of "Accordion Shutter" (147.25" Span), prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-94-331i, dated October 11, 1994, signed and sealed by Hector M. Medina, P.E.*
3. *Test report on Large Missile Impact & Cyclic Wind Pressure Test of "Accordion Shutter" (98" Span), prepared by Hurricane Engineering & Testing Inc., Report No. HETI-94-351, dated October 24, 1994, signed and sealed by Hector M. Medina, P.E.*
4. *Test report on Uniform Static Air Pressure Test of "A.C.C.A." Accordion Shutter (98" Span), prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-94-200, dated July 19, 1994, signed and sealed by Arshad Vigar, P.E.*
5. *Test report on Uniform Static Air Pressure Test of "Accordion Shutter" (147.25" Span), prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-94-331, dated October 11, 1994, signed and sealed by Hector M. Medina, P.E.*
6. *Test report on Uniform Static Air Pressure Test of "Accordion Shutter" (96" Span), prepared by Hurricane Engineering Inc., Report No. HETI-94-332, dated October 12, 1994, signed and sealed by Hector M. Medina, P.E.*
7. *Test report on Uniform Static Air Pressure Test of "Accordion Shutter" (120" Span), prepared by Hurricane Engineering & Testing Inc., Report No. HETI-94-334, dated October 13, 1994, signed & sealed by Hector Medina, P.E.*
8. *Test report on Uniform Static Air Pressure Test of "Accordion Shutter" (104" Span), prepared by Hurricane Engineering & Testing Inc., Report No. HETI-94-342, dated October 19, 1994, signed and sealed by Hector M. Medina, P.E.*

**C. CALCULATIONS**

1. *Anchor analysis dated November 10, 1994, Sheets A-1 through A-25, prepared by Al-Farooq Corporation, signed and sealed by Humayoun Farooq, P.E.*



Helmy A. Makar, P.E., M.S.

Product Control Examiner

NOA No. 08-0908.14

Expiration Date: 09/25/2014

Approval Date: 11/20/2008

**Rolladen, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**D. MATERIAL CERTIFICATIONS**

1. *Mill Certified Inspection No. 4541, issued by the William L. Bonnell Co., Inc. dated July 18, 1994 with chemical composition and mechanical properties of aluminum alloy extruded part No. Q18735-01.*
2. *Certified Tensile Test Report from independent lab Hurricane Engineering & Testing Inc., Report No. HETI-94-T14, dated August 16, 1994 for aluminum accordion sample.*

**2. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 00-0609.06**

**A. DRAWINGS**

1. *None.*

**B. TESTS**

1. *See original approved file #97-0721.03.*

**C. CALCULATIONS**

1. *See original approved file #97-0721.03.*

**D. MATERIAL CERTIFICATIONS**

1. *See original approved file #97-0721.03.*

**E. STATEMENTS**

1. *Letter by Al-Farooq Corporation, dated March 9, 2000, signed and sealed by Humayoun Farooq, P.E., certifying that he is still in the engineering business.*
2. *Letter by Rolladen, Inc., dated May 22, 2000, signed by Terry D. Low, certifying that no changes or alterations have been made to the Product Approval #94-1201.06.*

**3. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 03-0604.03**

**A. DRAWINGS:**

1. *Drawing No. 94-83, titled "Accordion Shutter Details", sheets 1 through 4 of 4, prepared by Al-Farooq Corporation, dated October 25, 1994, last revision #C dated October 23, 2003, signed and sealed by Humayoun Farooq, P.E.*

**B. TESTS:**

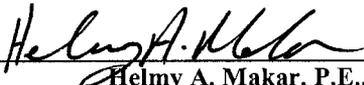
1. *None.*

**C. CALCULATIONS:**

1. *Anchor analysis, 41 pages, dated April 28, 2003, prepared by Al-Farooq Corp., signed and sealed by Humayoun Farooq, P.E.*

**D. QUALITY ASSURANCE**

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



Helmy A. Makar, P.E., M.S.  
Product Control Examiner  
NOA No. 08-0908.14  
Expiration Date: 09/25/2014  
Approval Date: 11/20/2008

**Rolladen, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**E. MATERIAL CERTIFICATION:**

1. *None.*

**4. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL # 06-0213.04**

**A. DRAWINGS:**

1. *Drawing No. 94-83, titled " ACCA Accordion Shutter Details ", sheets 1 through 5 of 5, prepared by Al-Farooq Corporation, dated October 25, 1994, last revision #E dated July 12, 2006, signed and sealed by Humayoun Farooq, P.E.*

**B. TESTS:**

1. *None.*

**C. CALCULATIONS:**

1. *Anchor analysis, 66 pages, dated January 31, 2006, prepared by Al-Farooq Corp., signed and sealed by Humayoun Farooq, P.E.*

**D. QUALITY ASSURANCE**

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

**E. MATERIAL CERTIFICATION:**

1. *None.*

**5. EVIDENCE SUBMITTED UNDER PREVIOUS APPROVAL #08-0313.08**

**A. DRAWINGS:**

1. *None.*

**B. TESTS:**

1. *None.*

**C. CALCULATIONS:**

1. *None.*

**D. QUALITY ASSURANCE**

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

**E. MATERIAL CERTIFICATION:**

1. *None.*



Helmy A. Makar, P.E., M.S.  
Product Control Examiner  
NOA No. 08-0908.14  
Expiration Date: 09/25/2014  
Approval Date: 11/20/2008

**Rolladen, Inc.**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**6. NEW EVIDENCE SUBMITTED**

**A. DRAWINGS:**

1. *Drawing No. 94-83, titled " ACCA Accordion Shutter Details ", sheets 1 through 6 of 6, prepared by Al-Farooq Corporation, dated October 25, 1994, last revision #F dated June 28, 2008, signed and sealed by Humayoun Farooq, P.E.*

**B. TESTS:**

1. *Test report on Uniform Static Air Pressure Test of "A.C.C.A." Accordion Shutter (150" Span), prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-08-2108, dated May 09, 2008, signed and sealed by Candido Font, P.E.*
2. *Test report on Large Missile Impact Test and Cyclic Wind Pressure Test of "A.C.C.A." accordion shutter (150" Span), prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-08-2109, dated April 30, 2008, signed and sealed by Candido Font, P.E.*

**C. CALCULATIONS:**

1. *Anchor analysis, pages A-1 to A-30, AP-1 to AP-17, and C-1 to C-24, dated August 26, 2008, prepared by Al-Farooq Corp., signed and sealed by Humayoun Farooq, P.E.*

**D. QUALITY ASSURANCE**

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

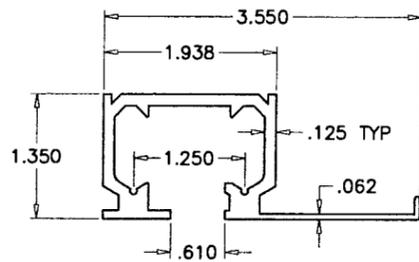
**E. MATERIAL CERTIFICATION:**

1. *Certified Tensile Test Report prepared by Hurricane Engineering & Testing, Inc., Report No. HETI-08-T109, dated May 09, 2008, signed and sealed by Candido Font, P.E.*

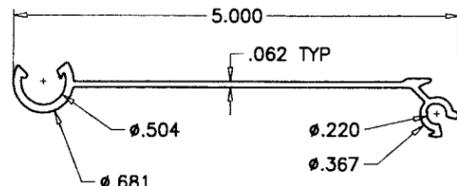


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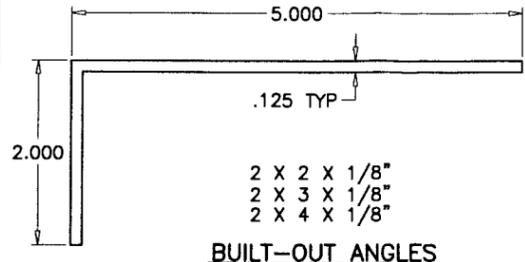
**Helmy A. Makar, P.E., M.S.**  
**Product Control Examiner**  
**NOA No. 08-0908.14**  
**Expiration Date: 09/25/2014**  
**Approval Date: 11/20/2008**



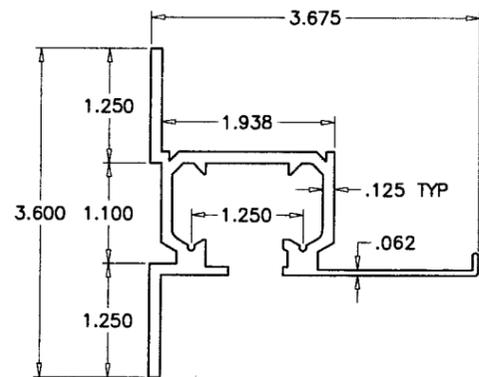
**INSIDE MOUNT HEADER & SILL**  
6063-T6  
RON-90



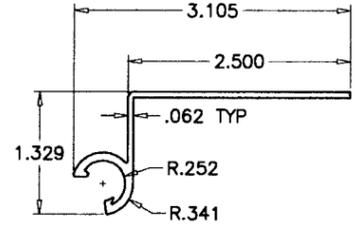
**BLADE**  
6063-T6



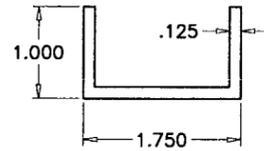
**BUILT-OUT ANGLES**  
6063-T6



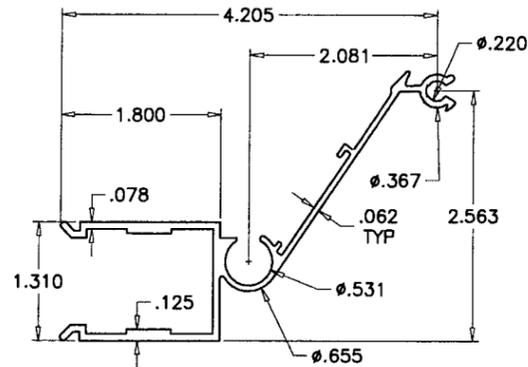
**WALL MOUNT HEADER & SILL**  
6063-T6  
RON-91



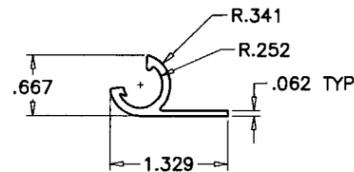
**90° END SLAT**  
6063-T6  
RON-93



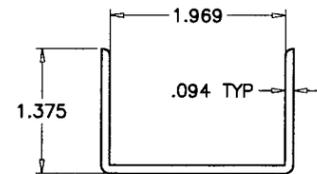
**FLOOR SHOE**  
6063-T6  
RON-1058



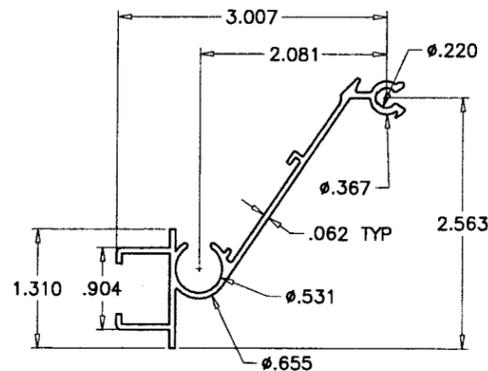
**FEMALE LOCKING SLAT**  
6063-T6  
RON-95



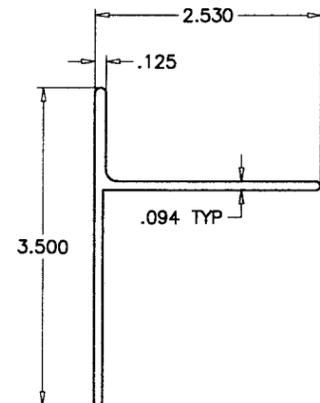
**FLAT END SLAT**  
6063-T6  
RON-94



**BOTTOM TRACK ADAPTER**  
6063-T6  
RON-97



**MALE LOCKING SLAT**  
6063-T6  
RON-96

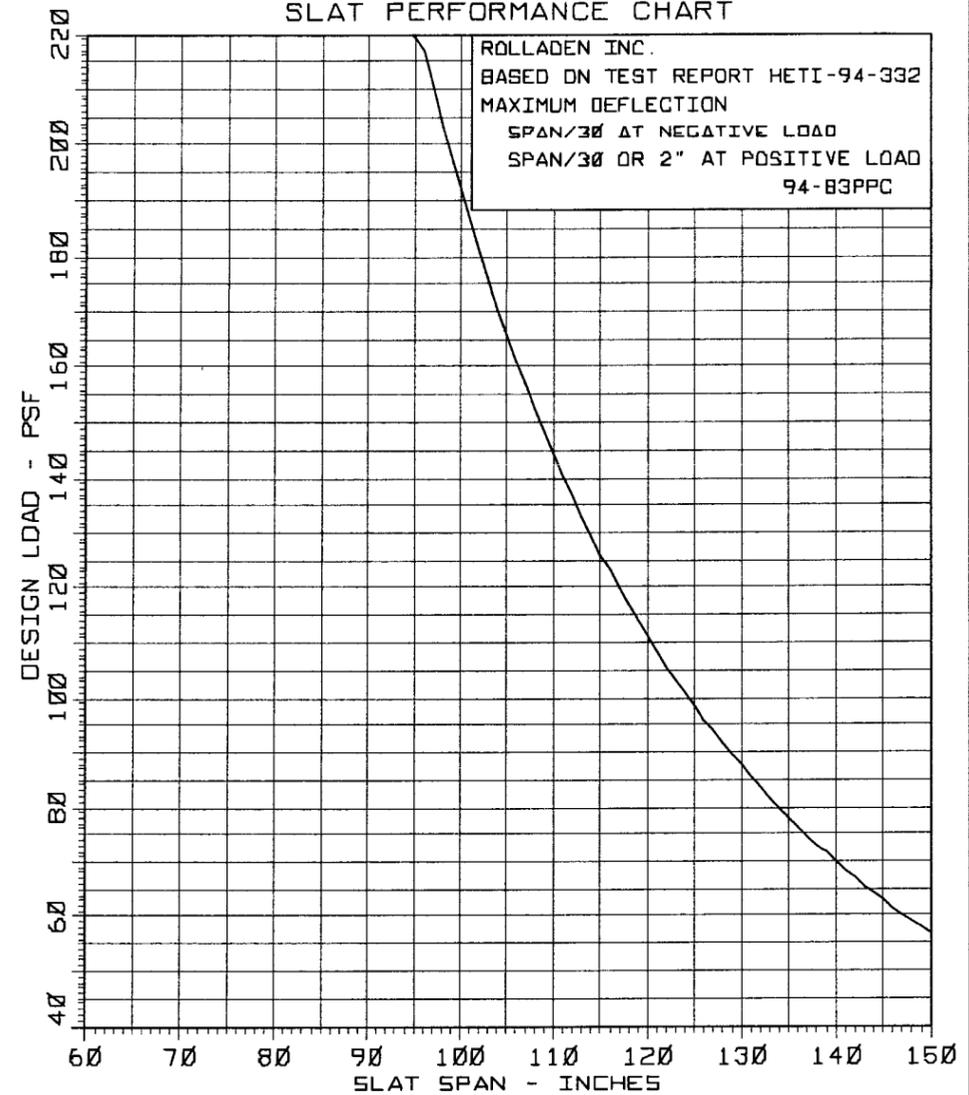


**SILL BOTTOM ANGLE**  
6063-T6  
RON-89

**GENERAL NOTES**

1. THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2004/2007 EDITION INCLUDING HIGH VELOCITY HURRICANE ZONE (HVHZ).
2. DESIGN CRITERIA FOR ALUMINUM, MINIMUM MECHANICAL PROPERTIES, AND SAFETY FACTORS ARE IN ACCORDANCE WITH THE "ALUMINUM CONSTRUCTION MANUAL" LATEST EDITION.
3. ALUMINUM ALLOYS: ALL EXTRUSIONS SHALL BE ALLOY AS SHOWN.
4. STEEL SURFACES TO BE PLACED IN CONTACT WITH ALUMINUM SHALL BE GIVEN ONE COAT OF ZINC CHROMATE PRIMER IN ACCORDANCE WITH FEDERAL SPEC. NO. TTP-645, OR BE GALVANIZED.
5. ANCHORS SHALL BE AS SHOWN ON DETAILS. ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.
6. ALL BOLTS SHALL BE STAINLESS STEEL, ALUMINUM ALLOY 2024-T4 OR 7075-T6, OR PLATED STEEL. WING NUTS TO BE OF ZINC ALLOY.
7. DESIGN CRITERIA FOR SLATS: MAX DEFLECTION  $\leq$  THE LESSER OF L/30 OR 2".
8. ANCHORING OR LOADING CONDITIONS OTHER THAN THOSE SHOWN IN THESE DETAILS ARE NOT PART OF THIS APPROVAL.
9. A LOAD DURATION INCREASE IN ALLOWABLE STRESS IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

**SLAT PERFORMANCE CHART**



USE SLAT PERFORMANCE CHART TO VERIFY SLAT CAPACITY FOR THE REQUIRED DESIGN LOAD FOR THE PARTICULAR LOCATION.

DESIGN LOADS SHALL BE CALCULATED AS PER REQUIREMENTS OF ASCE 7-02/04.

**PRODUCT MARKING**

A LABEL SHALL BE AFFIXED ON LOCKING MEMBER OF UNIT ABOVE LOCK WITH THE FOLLOWING STATEMENT.

ROLLADEN INC., MIAMI, FL.

'MIAMI-DADE COUNTY PRODUCT CONTROL APPROVED'

**PRODUCT REVISED**

as complying with the Florida Building Code  
Acceptance No 08-0908.14  
Expiration Date 09/25/2014

By *He Long A. White*  
Miami Dade Product Control  
Division

Engr: DR. HUMAYOON FAROOQ  
STRUCTURES  
FLA. PE # 16557  
C.A.N. 3538

AUG 26 2008

**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
1235 S.W. 87 AVE  
MIAMI, FLORIDA 33174  
TEL. (305) 264-8100 FAX. (305) 262-6978  
ACCORDION/94-83

ACCA ACCORDION SHUTTER DETAILS  
**ROLLADEN INC.**  
550 ANSIN BLVD.  
HALLANDALE, FL. 33009  
TEL. (954) 757-8591 FAX. (954) 454-1577

no	date	description
B	05.23.03	UPDATED FOR FBC & NOS 97
C	10.23.03	REV. PER BCCO COMMENTS
D	11.05.05	UPDATED FOR 2004 FBC
E	07.12.06	REV. PER BCCO COMMENTS
F	06.28.08	GENERAL REVISION

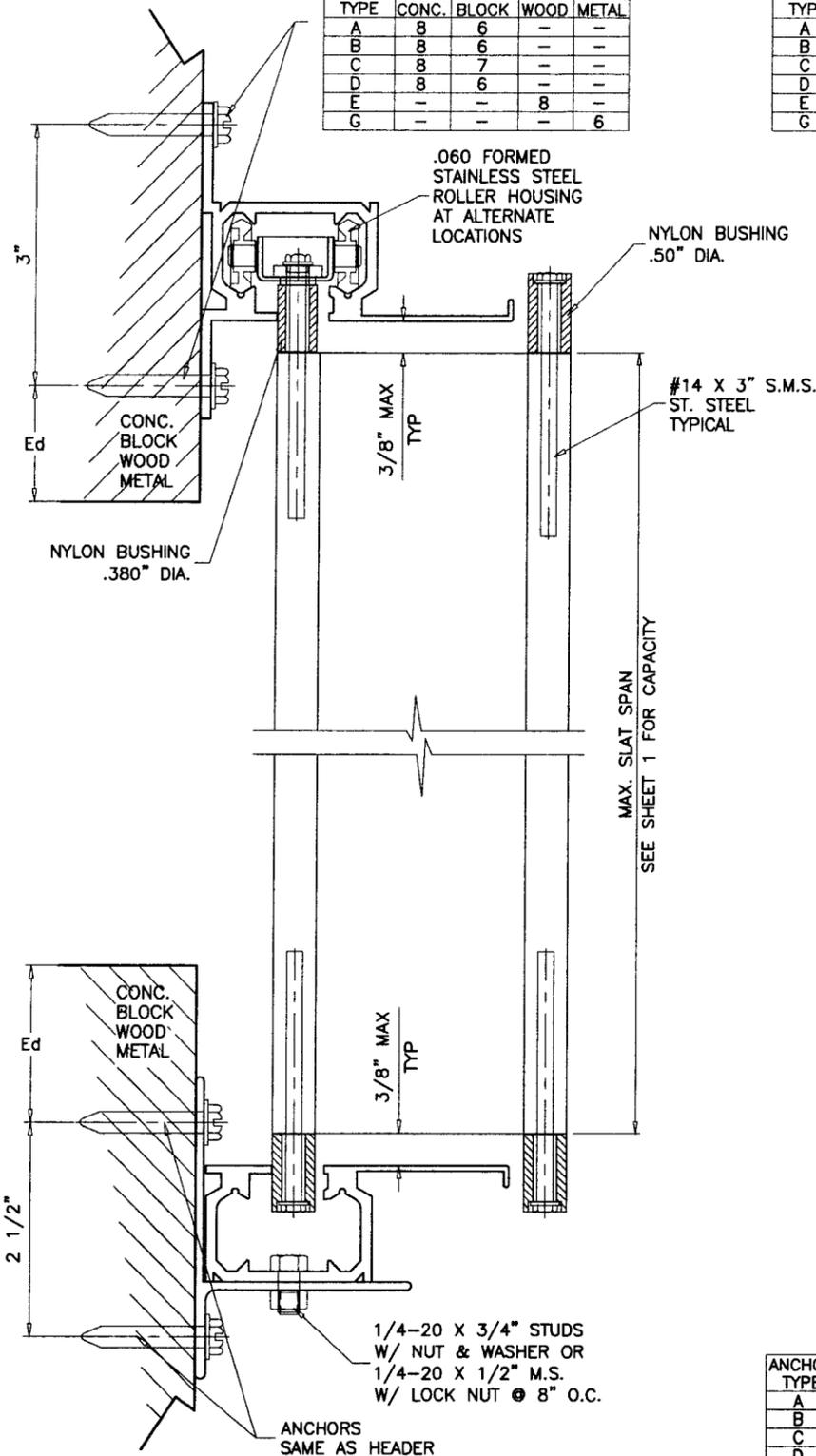
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chk. by:

drawing no.  
**94-83**

sheet 1 of 6

**WALL MOUNTS**

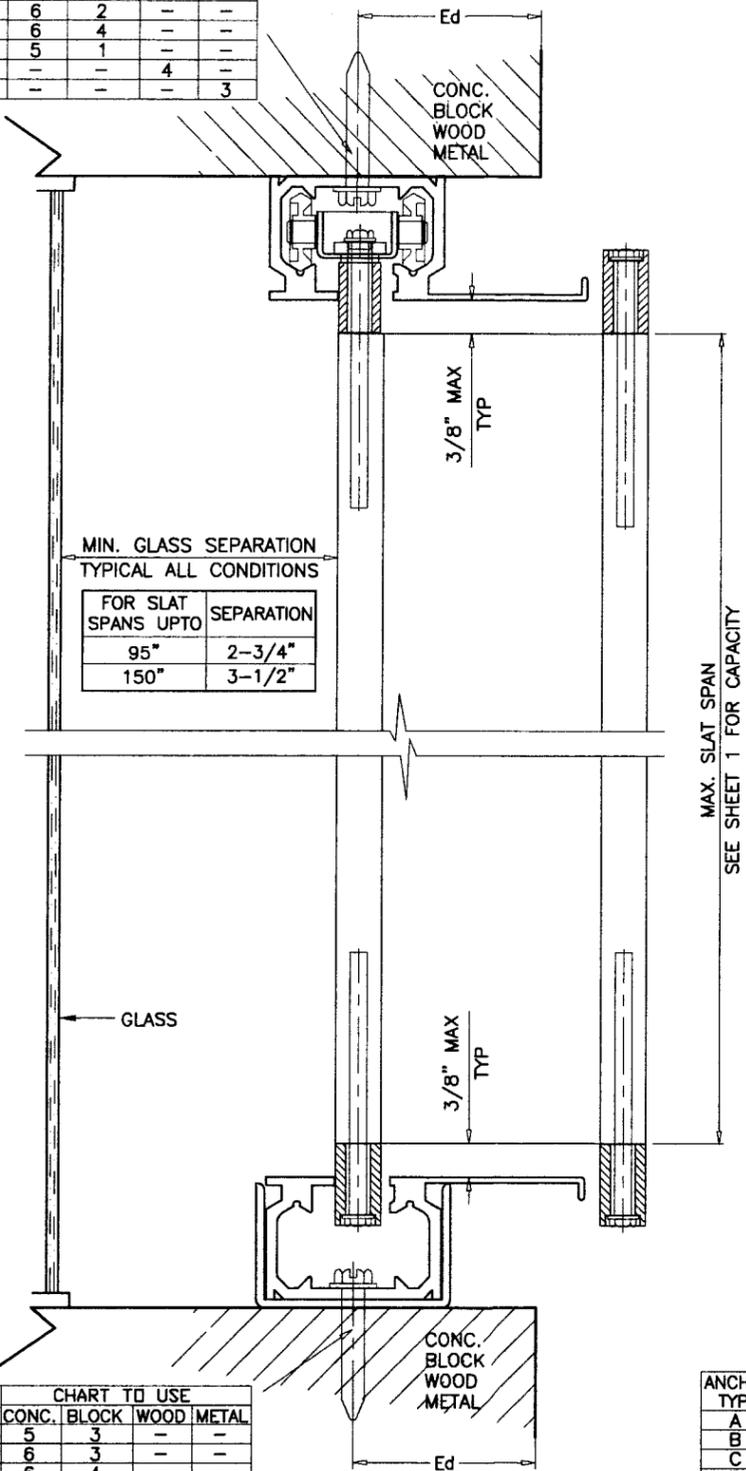
ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	8	6	-	-
B	8	6	-	-
C	8	7	-	-
D	8	6	-	-
E	-	-	8	-
G	-	-	-	6



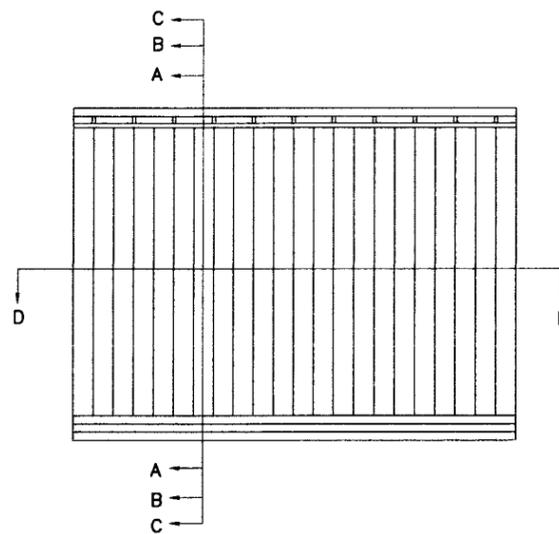
**SECTION A-A**

**INSIDE MOUNTS**

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	5	3	-	-
B	6	2	-	-
C	6	4	-	-
D	5	1	-	-
E	-	-	4	-
G	-	-	-	3



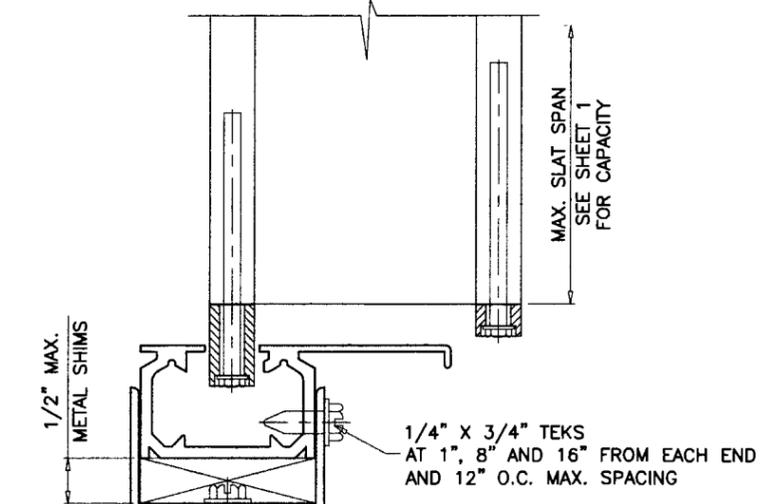
**SECTION B-B**



**TYPICAL ELEVATION**

MIN. GLASS SEPARATION  
TYPICAL ALL CONDITIONS

FOR SLAT SPANS UPTO	SEPARATION
95"	2-3/4"
150"	3-1/2"



**ADJUSTABLE SILL**

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	5	3	-	-
B	6	3	-	-
C	6	4	-	-
D	5	2	-	-
E	-	-	4	-
G	-	-	-	4

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	4	2	-	-
B	5	2	-	-
C	6	3	-	-
D	4	1	-	-
E	-	-	4	-
G	-	-	-	3

ANCHORS: EMBEDMENT & EDGE DISTANCES SHOWN ARE BEYOND THE WALL & FLOOR COVERING (STUCCO, TILES, ETC.)

Ed = TYPICAL EDGE DISTANCE  
CONC. & BLOCK = 12d (12 ANCHOR DIAMETERS)  
WOOD = 5d  
FOR LESSER EDGE DISTANCES SEE SHEET 6 OF 6.

HEADER AND SILL DETAILS CAN BE USED IN ANY COMBINATIONS.

FOR GENERAL NOTES AND EXTRUSION DETAILS SEE SHEET 1.  
FOR WOOD INSTALLATIONS SEE SHEET 5 OF 6.  
FOR ANCHOR CHARTS SEE SHEET 6 OF 6.

Engr: DR. HUMAYOON FAROOQ  
STRUCTURES  
FLA. PE # 16557  
C.A.N. 3538

AUG 26 2008

**af c**  
**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
1235 S.W. 87 AVE  
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ACCORDION/94-83

ACCA ACCORDION SHUTTER DETAILS  
**ROLLADEN INC.**  
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TEL. (954) 757-8591 FAX. (954) 454-1577

revisions:

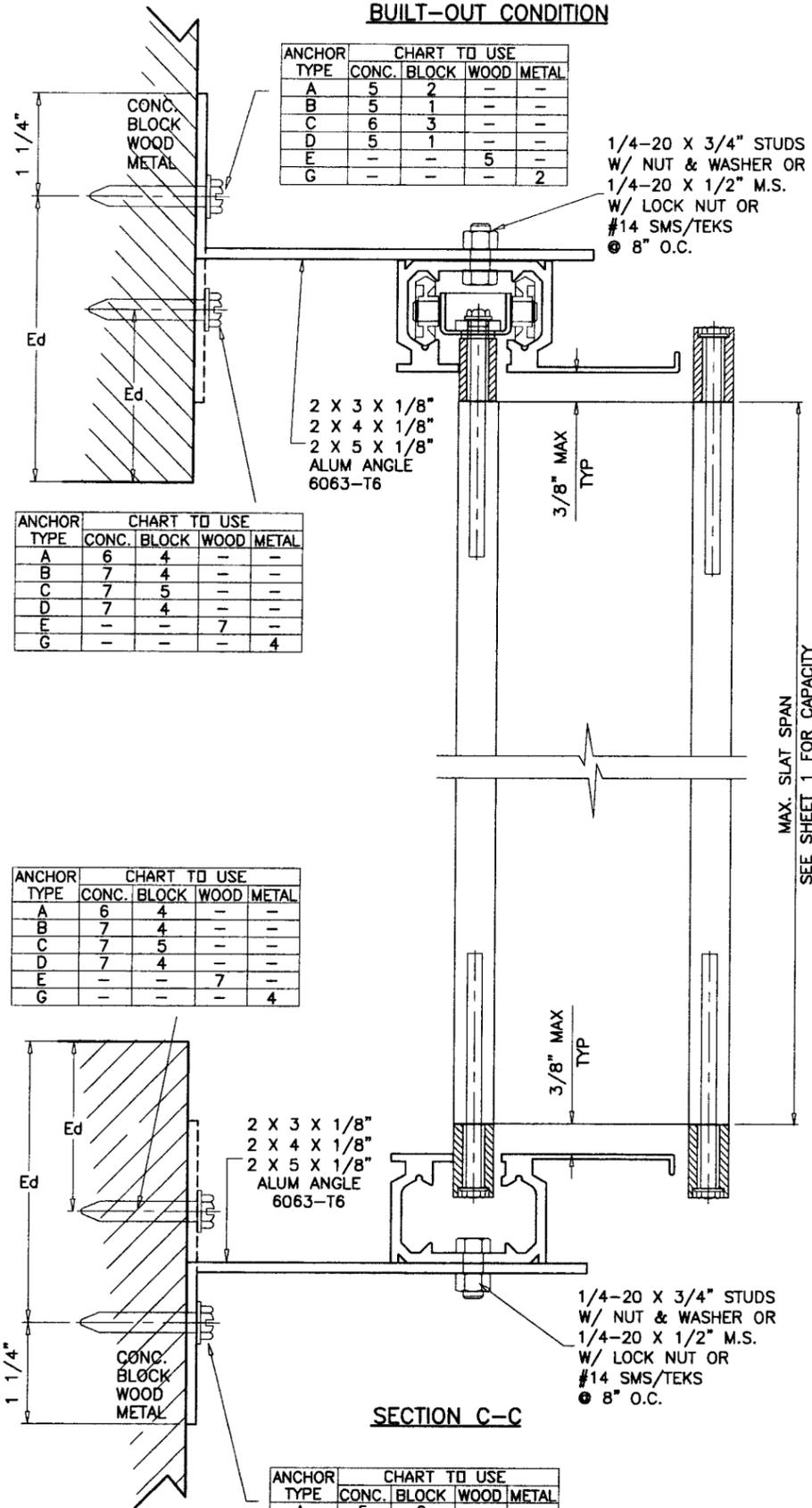
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A	05.23.03	ANCHOR CHARTS REV.
B	10.23.03	NO CHANGE THIS SHEET
C	11.05.05	UPDATED FOR 2004 FBC
D	07.12.06	REV. PER BCCO COMMENTS
F	06.28.08	GENERAL REVISION

date: 10-25-94  
scale: 1/2" = 1"  
dr. by: HAMID  
chk. by:

drawing no.  
**94-83**  
sheet 2 of 6

**PRODUCT REVISED**  
as complying with the Florida Building Code  
Acceptance No 08-0908.14  
Expiration Date 09/25/2014  
By Heung A. Han  
Miami Dade Product Control Division

BUILT-OUT CONDITION



ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	5	2	-	-
B	5	1	-	-
C	6	3	-	-
D	5	1	-	-
E	-	-	5	-
G	-	-	-	2

1/4-20 X 3/4" STUDS  
W/ NUT & WASHER OR  
1/4-20 X 1/2" M.S.  
W/ LOCK NUT OR  
#14 SMS/TEKS  
@ 8" O.C.

2 X 3 X 1/8"  
2 X 4 X 1/8"  
2 X 5 X 1/8"  
ALUM ANGLE  
6063-T6

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	6	4	-	-
B	7	4	-	-
C	7	5	-	-
D	7	4	-	-
E	-	-	7	-
G	-	-	-	4

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	6	4	-	-
B	7	4	-	-
C	7	5	-	-
D	7	4	-	-
E	-	-	7	-
G	-	-	-	4

2 X 3 X 1/8"  
2 X 4 X 1/8"  
2 X 5 X 1/8"  
ALUM ANGLE  
6063-T6

SECTION C-C

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	5	2	-	-
B	5	1	-	-
C	6	3	-	-
D	5	1	-	-
E	-	-	5	-
G	-	-	-	2

1/4-20 X 3/4" STUDS  
W/ NUT & WASHER OR  
1/4-20 X 1/2" M.S.  
W/ LOCK NUT OR  
#14 SMS/TEKS  
@ 8" O.C.

MAX. SLAT SPAN  
SEE SHEET 1 FOR CAPACITY

**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
Acceptance No. 08-0908.14  
Expiration Date 09/25/2014  
By *Helmy A. Helmy*  
Miami Dade Product Control  
Division

Engr: DR. HUMAYOON FAROOQ  
STRUCTURES  
FLA. PE # 16557  
C.A.N. 3538

AUG 26 2008

afc

**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
1235 S.W. 87 AVE  
MIAMI, FLORIDA 33174  
TEL. (305) 264-8100 FAX. (305) 262-6978

ACCORDION/94-83

ACCA ACCORDION SHUTTER DETAILS

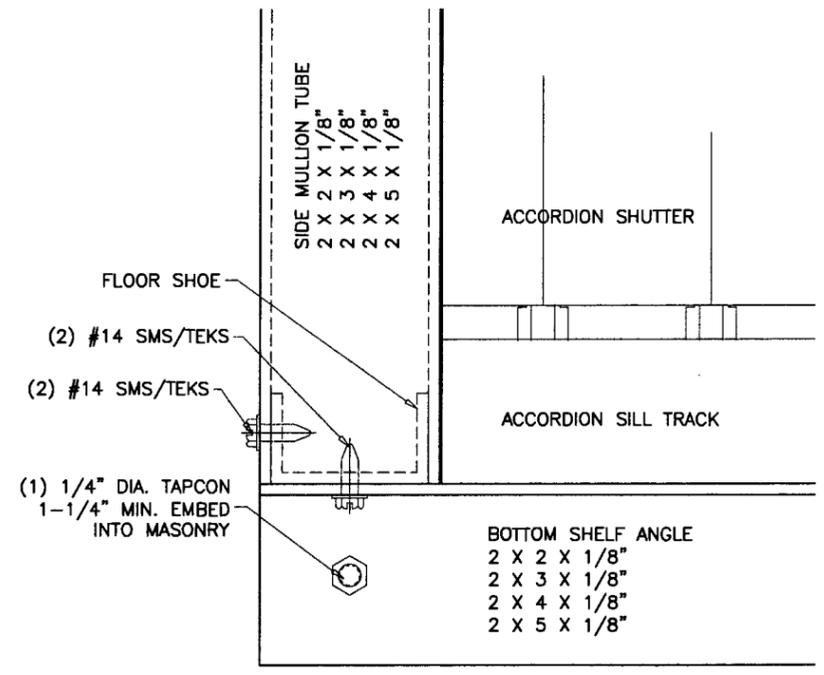
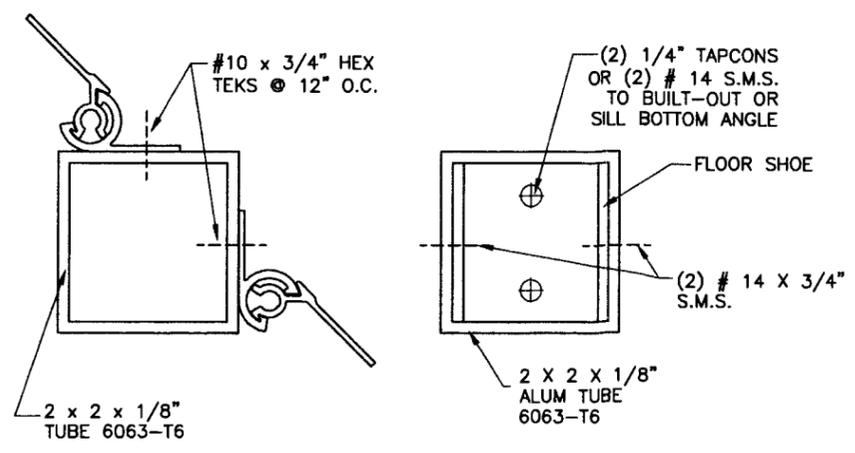
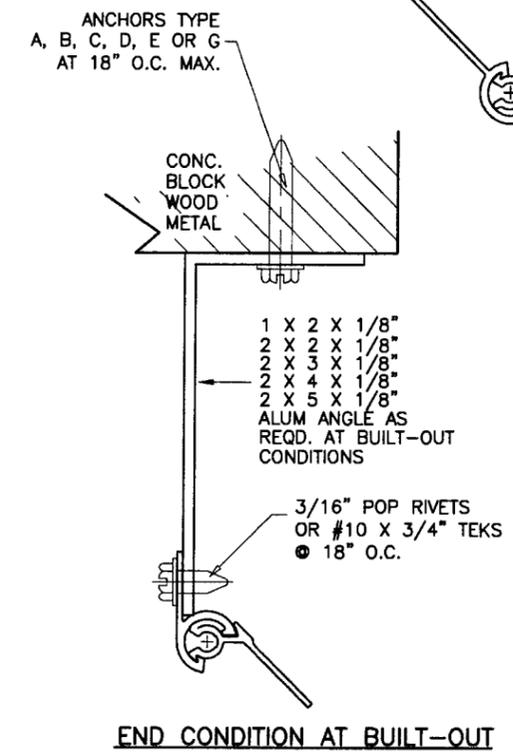
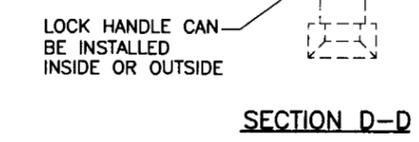
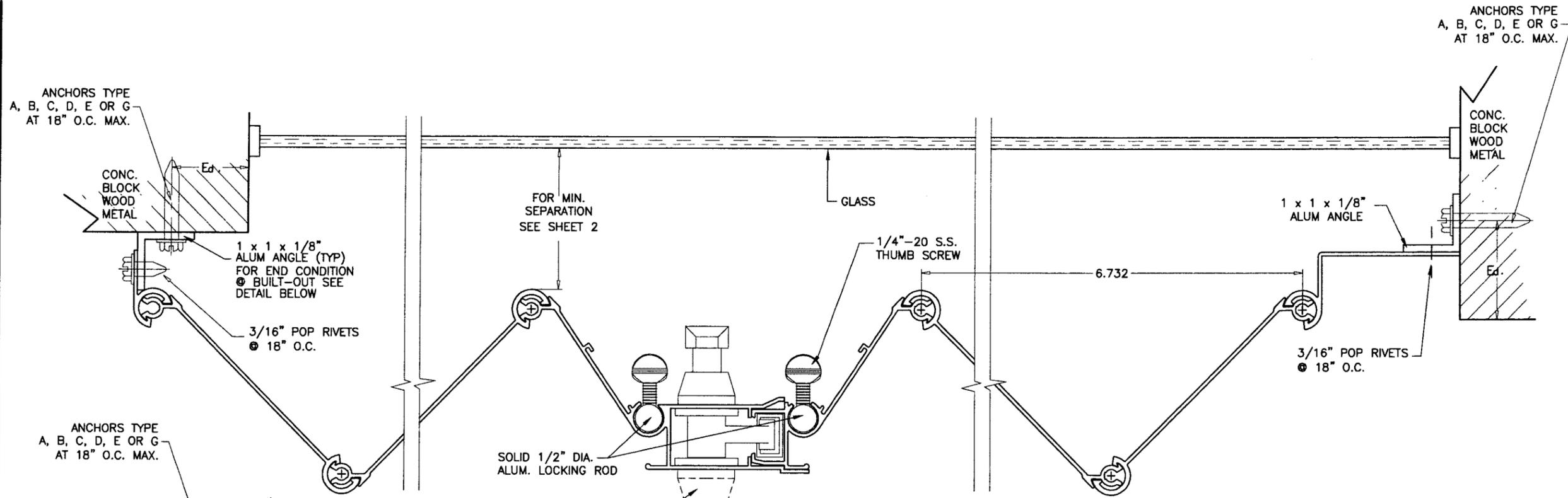
**ROLLADEN INC.**  
550 ANSIN BLVD.  
HALLANDALE, FL. 33009  
TEL. (954) 757-8591 FAX. (954) 454-1577

revisions:	
no	description

date: 10-25-94  
scale: 1/2" = 1"  
dr. by: HAMID  
chk. by:

drawing no.  
**94-83**

sheet 3 of 6



Engr: DR. HUMAYOON FAROOQ  
STRUCTURES  
FLA. PE # 16557  
C.A.N. 3538

AUG 26 2008

**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
Acceptance No 08-0908.14  
Expiration Date 09/25/2014

By *Heung A. Nam*  
Miami Dade Product Control  
Division

**af c**

**AL-FAROOQ CORPORATION**  
ENGINEERS & PRODUCT DEVELOPMENT  
1235 S.W. 87 AVE  
MIAMI, FLORIDA 33174  
TEL. (305) 264-8100 FAX. (305) 262-6978

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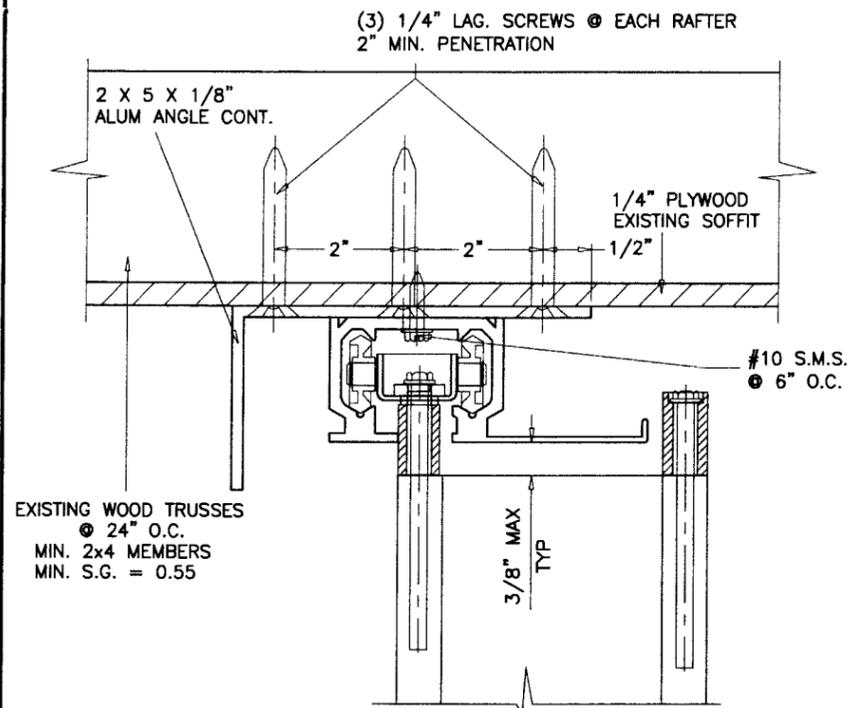
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no	date	by	description
B	05.23.03		ANCHOR CHARTS REV.
C	10.23.03		NO CHANGE THIS SHEET
D	11.05.05		UPDATED FOR 2004 FBC
E	07.12.06		NO CHANGE THIS SHEET
F	06.28.08		GENERAL REVISION

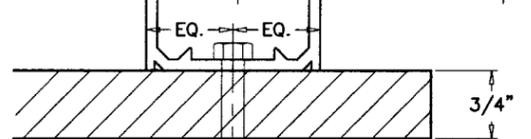
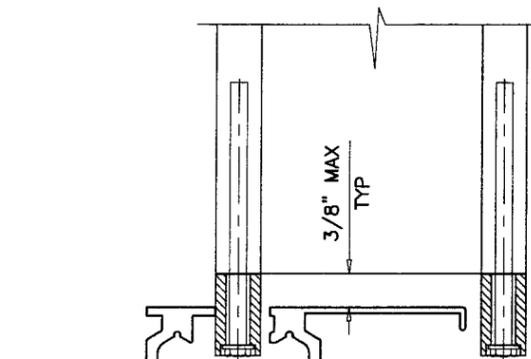
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sheet 4 of 6



**HEADER CONNECTION TO WOOD TRUSSES**

FOR SHUTTER HEIGHT OF 108" MAX. DESIGN LOAD = 68 PSF  
 FOR SHUTTER HEIGHT OF 96" MAX. DESIGN LOAD = 76 PSF  
 FOR SHUTTER HEIGHT OF 84" MAX. DESIGN LOAD = 87 PSF  
 FOR SHUTTER HEIGHT OF 72" MAX. DESIGN LOAD = 102 PSF



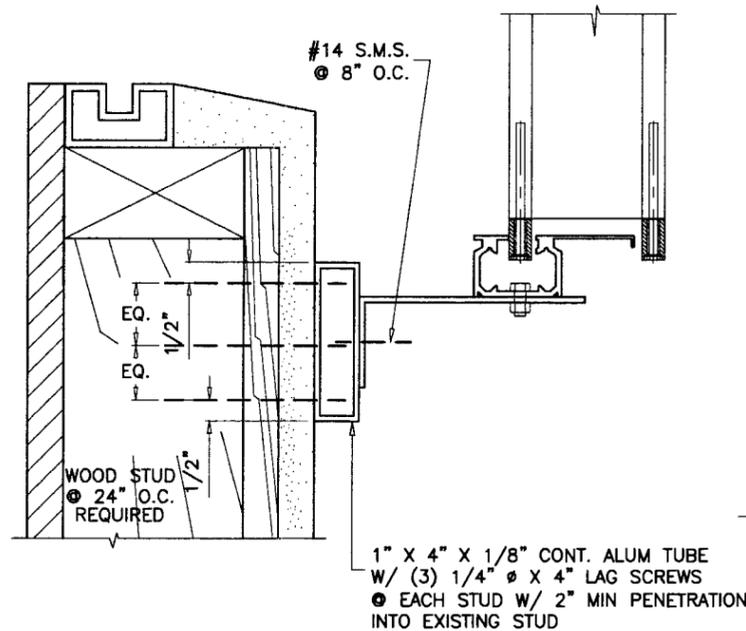
2 x 3 x 1/8"  
 2 x 4 x 1/8"  
 2 x 5 x 1/8" ALUM. ANGLES

1/4" THRU BOLT W/ WASHER & NUT  
 AT 6-3/8" O.C. FOR LOADS UPTO 45 PSF  
 AT 5-1/4" O.C. FOR LOADS UPTO 55 PSF  
 AT 4-5/8" O.C. FOR LOADS UPTO 62 PSF

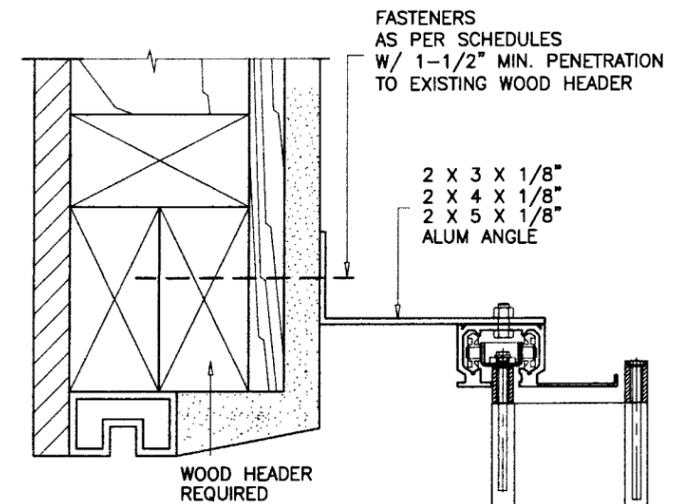
ANCHOR TYPE	ANCHOR SPACING INCHES					
	UPTO 45 PSF		UPTO 55 PSF		UPTO 62 PSF	
	CONC.	BLK. WOODMETAL	CONC.	BLK. WOODMETAL	CONC.	BLK. WOODMETAL
A	10.6	5.3	8.7	4.4	7.7	3.9
B	12	5.2	10.5	4.3	9.3	3.8
C	12	7	11.3	5.7	10	5.1
E	-	12	-	12	-	11
G	-	-	7.3	-	6	5.3

**COUNTER TOP CONDITION**

(PASS THRU WINDOW)  
 MAX SHUTTER HEIGHT = 6 FT.  
 MAX. DESIGN LOAD = 70 PSF

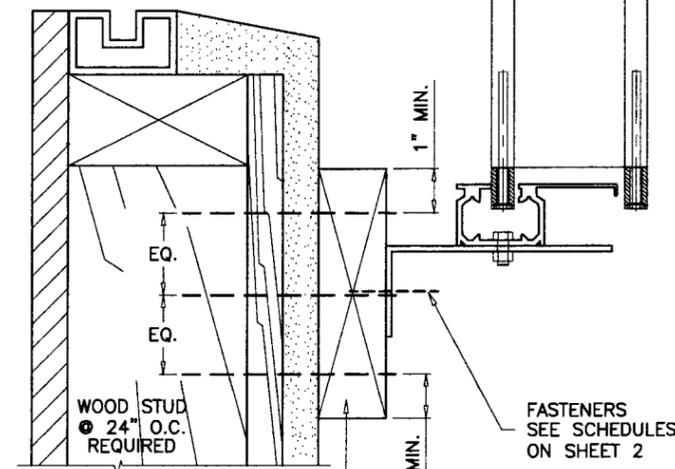


FOR SHUTTER HEIGHT OF 120" MAX. DESIGN LOAD = 72 PSF  
 FOR SHUTTER HEIGHT OF 108" MAX. DESIGN LOAD = 80 PSF  
 FOR SHUTTER HEIGHT OF 96" MAX. DESIGN LOAD = 90 PSF  
 FOR SHUTTER HEIGHT OF 84" MAX. DESIGN LOAD = 103 PSF



WOOD HEADER REQUIRED

ANGLE CAN BE INSTALLED WITH ANGLE LEG IN UPWARD OR DOWNWARD DIRECTIONS TYP. AT HEAD & SILL



WOOD STUD @ 24" O.C. REQUIRED

2" X 6" CONT.  
 W/ (3) 1/4" Ø X 4" LAG SCREWS  
 @ EACH STUD W/ 2" MIN PENETRATION INTO EXISTING STUD

FOR SHUTTER HEIGHT OF 120" MAX. DESIGN LOAD = 83 PSF  
 FOR SHUTTER HEIGHT OF 108" MAX. DESIGN LOAD = 92 PSF  
 FOR SHUTTER HEIGHT OF 96" MAX. DESIGN LOAD = 104 PSF  
 FOR SHUTTER HEIGHT OF 84" MAX. DESIGN LOAD = 119 PSF

**INSTALLATION DETAIL ON EXISTING WOOD BUCKS** SCALE: 1/4"=1"

ABOVE DETAILS SHOWS CONNECTION OF 2X6 BUCK & 1X4 ALUM TUBE TO WOOD STUDS TO PROVIDE A CONTINUOUS SURFACE FOR SHUTTER INSTALLATION.

FOR INSTALLATION DETAILS OF HEADER/SILL TO CONTINUOUS WOOD MEMBERS SEE SHEETS 2 & 3.

Engr: DR. HUMAYOUN FAROOQ  
 STRUCTURES  
 FLA. PE # 16557  
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By: *Hamid*  
 Miami Dade Product Control Division

**af c**  
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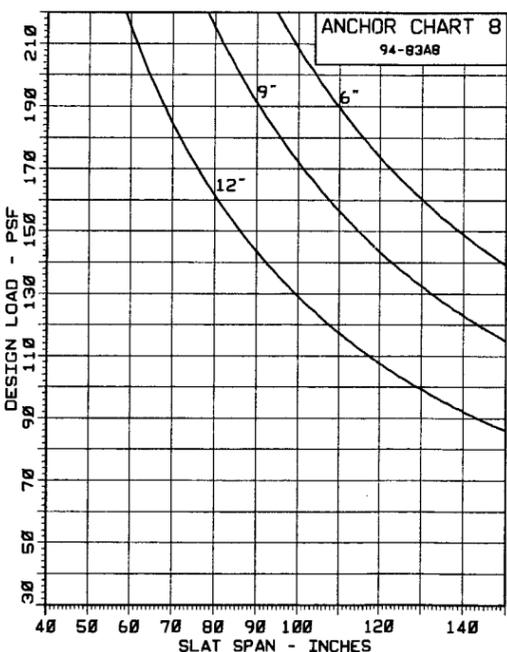
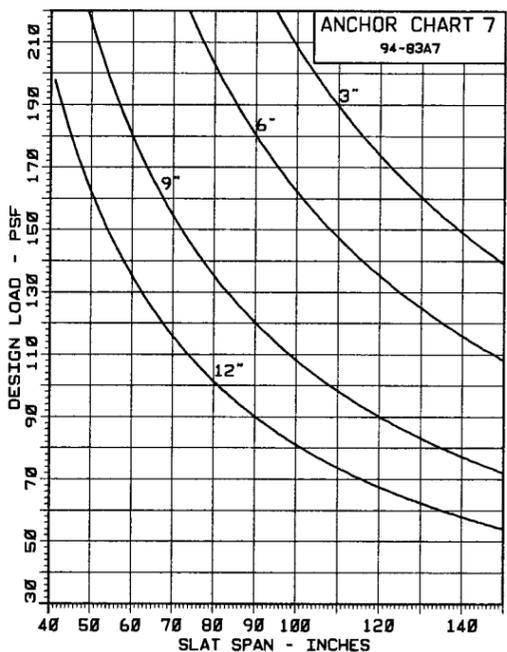
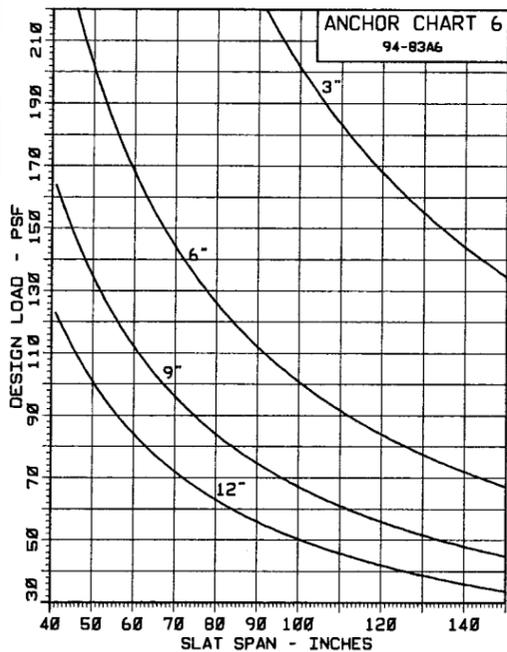
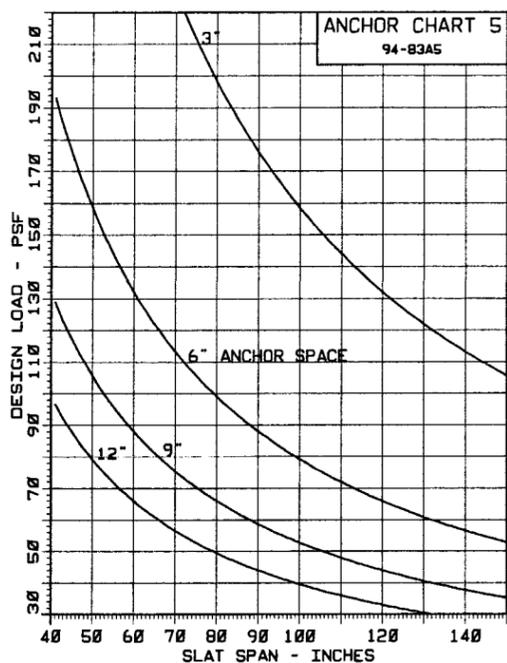
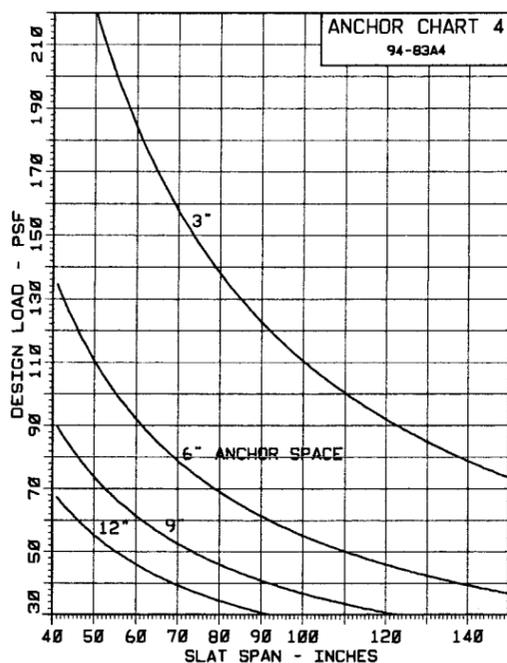
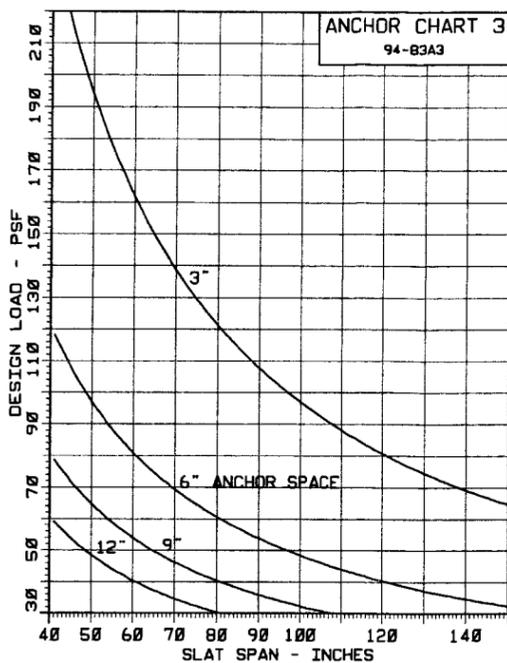
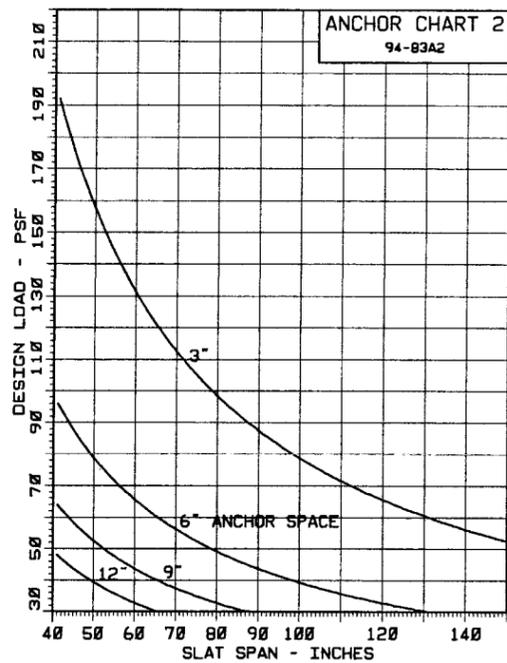
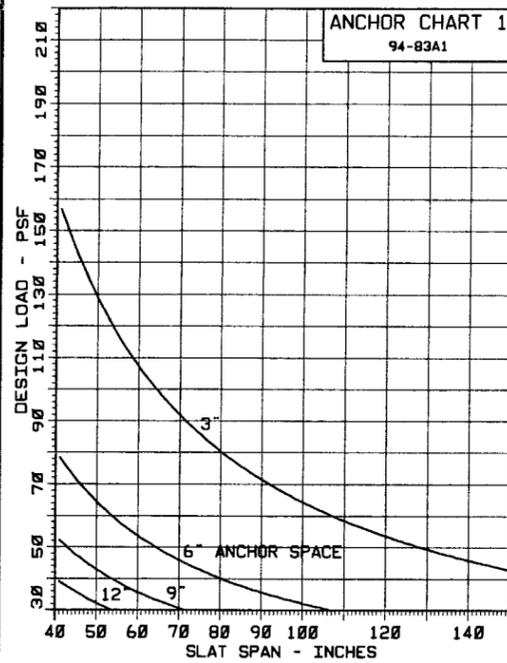
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 chk. by:

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**94-83**  
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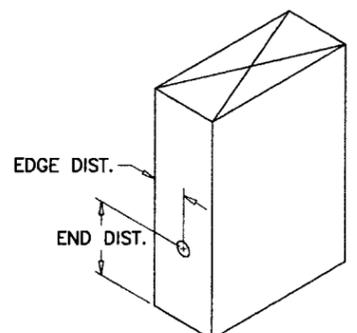
**FASTENER SPACING IN MASONRY**

CHARTS ARE BASED ON TYPICAL EDGE DISTANCE = 12d.  
FOR LESSER EDGE DISTANCE DECREASE SPACING BY  
MULTIPLYING WITH THE FACTOR BELOW

EDGE DIST.	12d=3"	10d=2-1/2"	8d=2"	6d=1-1/2"	5d=1-1/4"
FACTOR	1.00	0.86	0.71	0.57	0.50

EXAMPLE: FOR 3" EDGE DIST. SPACING = 12" O.C. (FROM CHART)  
FOR 2" EDGE DIST. SPACING = 12 X .71 = 8.5 O.C.

TYPICAL EDGE DISTANCE IN WOOD = 3/4"  
TYPICAL END DISTANCE IN WOOD = 1"  
NO REDUCTION FACTOR IS REQUIRED



USE CHARTS 1 THRU 8 TO VERIFY ANCHOR REQUIREMENTS AND STRESS LIMITATIONS OF LOAD/SPAN COMBINATIONS FOR HEADER AND SILL.

Engr. DR. HUMAYOUN FAROOQ  
STRUCTURES  
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By: *Helmy A. Helmy*  
Miami Dade Product Control  
Division

- TYPICAL ANCHORS:**
- ANCHOR (A) = 1/4" DIA. ULTRACON (BY ELCO)  
1-3/4" EMBEDMENT INTO 3000 PSI CONC.  
1-1/4" EMBEDMENT INTO C-90 BLOCK
  - ANCHOR (B) = 1/4" DIA. KWIKCON II (BY HILTI)  
1-3/4" EMBEDMENT INTO 3000 PSI CONC.  
1-1/4" EMBEDMENT INTO C-90 BLOCK
  - ANCHOR (C) = 5/16" DIA. ULTRACON (BY ELCO)  
1-3/4" EMBEDMENT INTO 3000 PSI CONC.  
1-1/4" EMBEDMENT INTO C-90 BLOCK
  - ANCHOR (D) = 1/4" RAWL CALK-IN  
TOTAL ANCHOR BODY INTO 3000 PSI CONC.  
OR C-90 BLOCK
  - ANCHOR (E) = 1/4" DIA. LAG SCREWS  
1-1/2" MIN PENETRATION INTO WOOD(S.G.=0.55)
  - ANCHOR (G) = 1/4" DIA. KWIK-FLEX SELF DRILLING SCREWS  
INTO METAL STRUCTURES  
(STEEL OR ALUMINUM 1/8" MIN. THICK.)

NOTE: ANCHORS EMBEDMENT SHOWN IS BEYOND WALL & FLOOR COVERINGS (STUCCO, TILES, ETC.)

**afc**  
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