



**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

**Alutech United, Inc.
P. O. Box 329
Selbyville, DE 19975**

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: "Piranha" Aluminum Accordion Shutter

APPROVAL DOCUMENT: Drawing No. 09-06, titled "Piranha Aluminum Accordion Shutter", sheets 1 through 7 of 7, prepared by Al-Farooq Corporation, dated August 25, 2009, last revision "A" dated May 18, 2010, signed and sealed by Javad Ahmad, P.E., bearing the Miami-Dade County Product Control Approval stamp with the Notice of Acceptance number and the approval date by the Miami-Dade County Product Control Division.

MISSILE IMPACT RATING: Large and Small Missile Impact Resistant

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 consists of this page 1, evidence submitted page E-1 as well as approval document mentioned above. The submitted documentation was reviewed by **Helmy A. Makar, P.E., M.S.**



Helmy A. Makar
06/30/2010

**NOA No. 09-1015.06
Expiration Date: 06/30/2015
Approval Date: 06/30/2010**

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. 09-06, titled "Piranha Aluminum Accordion Shutter", sheets 1 through 7 of 7, prepared by Al-Farooq Corporation, dated August 25, 2009, last revision "A" dated May 18, 2010, signed and sealed by Javad Ahmad, P.E.

B. TESTS

1. Test report on Large Missile Impact Test, Uniform Static Air Pressure Test and Cyclic Wind Pressure Test of Accordion Shutter System, prepared by Fenestration Testing Laboratory, Inc., Report No. 5874, dated February 27, 2009, signed and sealed by Carlos S. Rionda, P.E.

C. CALCULATIONS

1. Comparative analysis and anchor calculation, dated September 28, 2009, Sheets A-1 through A-30, AP-1 through AP-17, & C-1 through C-24, prepared by Al-Farooq Corporation, signed and sealed by Arshad Viqar, P.E.

D. QUALITY ASSURANCE

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

E. MATERIAL CERTIFICATIONS

1. Test Report marked-up drawings and die drawings from Fenestration Testing Laboratory, Inc., Report No. 5874, dated February 27, 2009, signed and sealed by Carlos S. Rionda, P.E.

F. STATEMENTS

1. Statement letter of conformance by Al-Farooq Corporation, dated September 28, 2009, signed and sealed by Arshad Viqar, P.E.

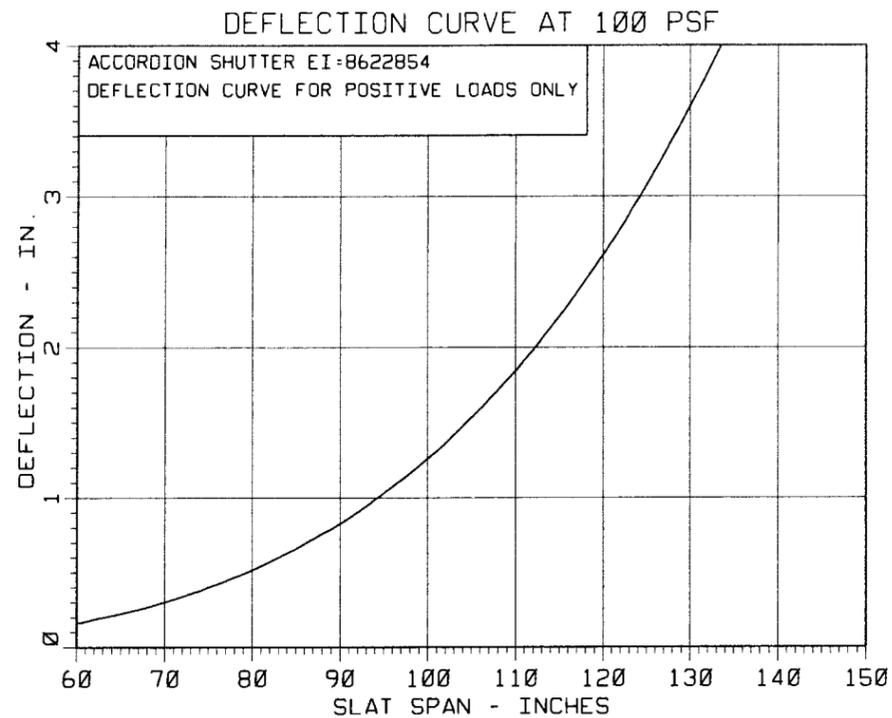


**Helmy A. Makar, P.E., M.S.
Senior Product Control Examiner**

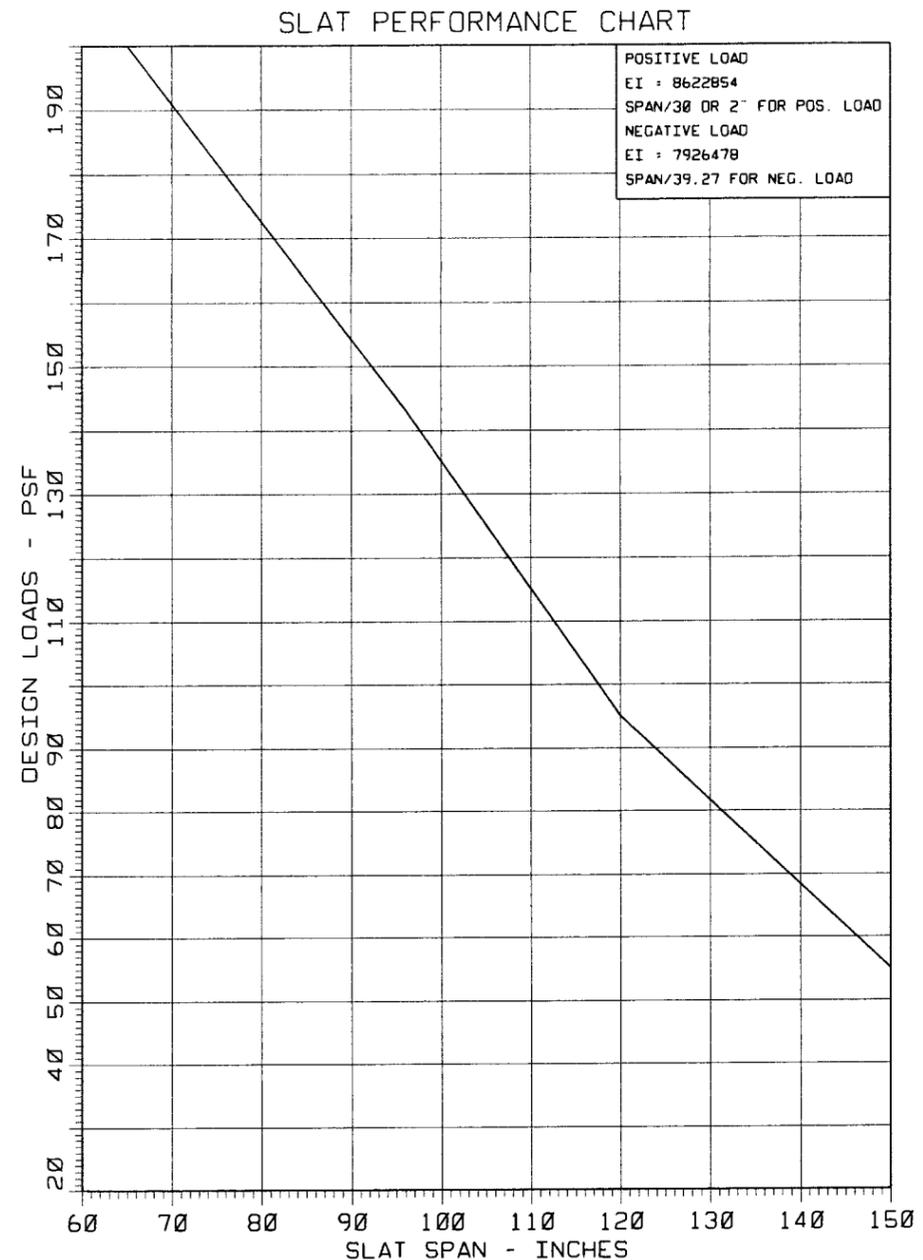
NOA No. 09-1015.06

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MINIMUM SEPARATION FROM GLASS							
SEPARATION REQD. DUE TO WIND LOAD		SEPARATION REQD. DUE TO LARGE MISSILE IMPACT					
SHUTTER SPAN = H =	IN.	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: center;">FOR SLAT SPANS UPTO</th> <th style="text-align: center;">SEPARATION</th> </tr> <tr> <td style="text-align: center;">150"</td> <td style="text-align: center;">3-1/2"</td> </tr> </table>		FOR SLAT SPANS UPTO	SEPARATION	150"	3-1/2"
FOR SLAT SPANS UPTO	SEPARATION						
150"	3-1/2"						
DESIGN LOAD = Pd =	PSF						
FACTOR = K = Pd/100 =	IN.						
READING FROM SPAN D. CURVE = D =	IN.						
DEFLECTION AT Pd = K*D =	IN.						
MIN. SEPARATION REQD. = K*D+1" =		IN.					
FOR INSTALLATIONS UPTO 30' OF GRADE USE MAXIMUM OF WIND LOAD OR IMPACT LOAD REQUIREMENTS SHOWN ABOVE. FOR INSTALLATIONS ABOVE 30' OF GRADE IGNORE LARGE MISSILE IMPACT REQUIREMENT. NOTE: NO PART OF SHUTTER SHALL BE UNDER 30' ABOVE GRADE TO WAIVE LARGE MISSILE IMPACT REQUIREMENT.							



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 7-05.

GENERAL NOTES

1. THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 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 ≤ 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 IS USED IN DESIGN OF ANCHORS INTO WOOD ONLY.

PRODUCT MARKING

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

**ALUTECH UNITED INC. SELBYVILLE, DE.
'MIAMI-DADE COUNTY PRODUCT CONTROL APPROVED'**

FOR INSTALLATION DETAILS SEE SHEETS 3 THRU 6.

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 20362
C.A.N. 03508

MAY 20 2010

JA

Approved as complying with the Florida Building Code
 Date 06/30/2010
 NOA# 09-1615-06
 Miami Dade Product Control
 Division
 By *[Signature]*

a f c

AL-FAROOQ CORPORATION
 ENGINEERS & PRODUCT DEVELOPMENT
 1235 S.W. 87 AVE
 MIAMI, FLORIDA 33174
 TEL. (305) 264-8100 FAX. (305) 262-6978
 ACCORDION/09-06AUI

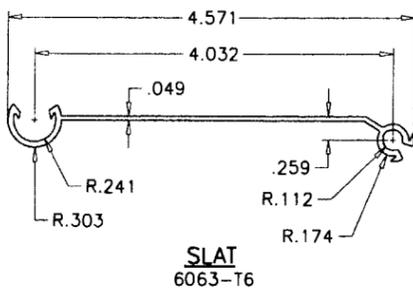
'PIRANHA' ALUMINUM ACCORDION SHUTTER
ALUTECH UNITED INC.
 15 DIXON STREET
 SELBYVILLE, DE. 19975
 TEL. (800) 233-1144 FAX. (302) 436-5100

revisions:	no.	date	by	description
	A	05.18.10		REV. PER BCCO COMMENTS

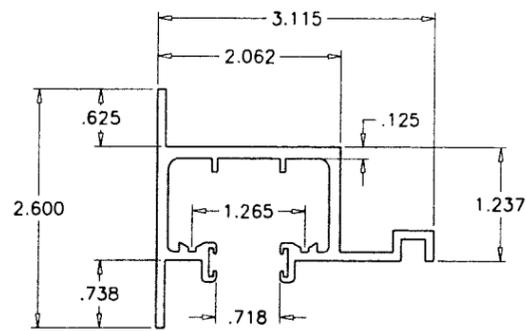
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 scale: 1/2" = 1"
 dr. by: HAMID
 chk. by:

drawing no.
09-06

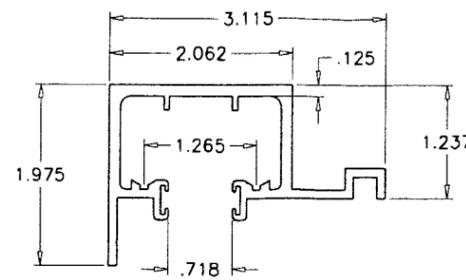
sheet 1 of 7



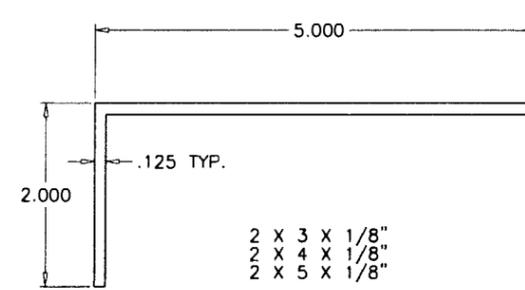
SLAT
6063-T6



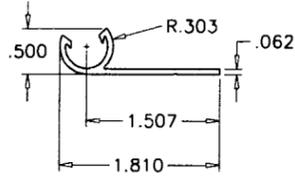
WALL HEADER
6063-T6



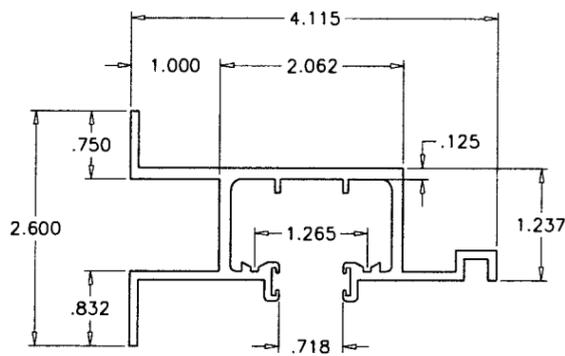
CEILING HEADER
6063-T6



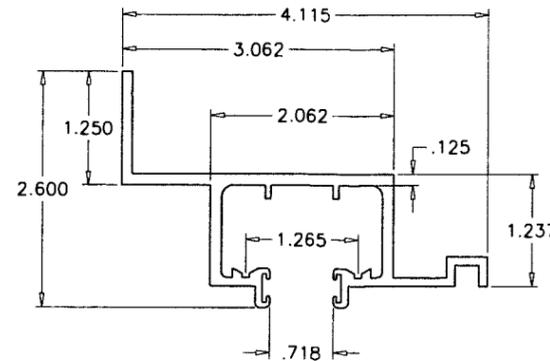
BUILT-OUT ANGLES
6063-T6



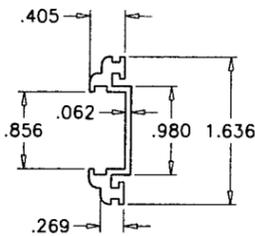
FEMALE END SLAT
6063-T6



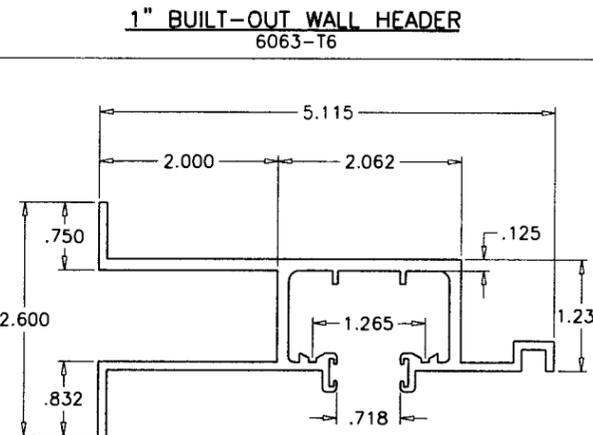
1" BUILT-OUT WALL HEADER
6063-T6



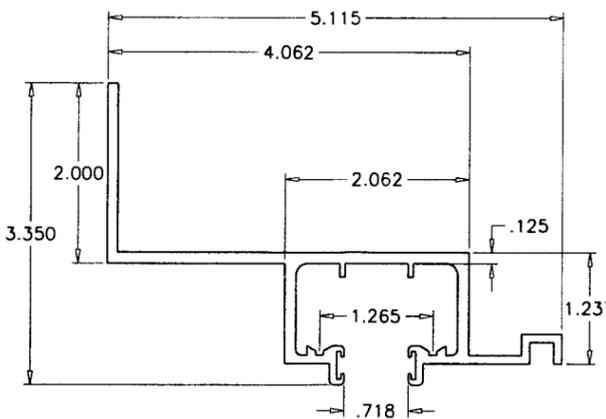
ALT. 1" BUILT-OUT WALL HEADER
6063-T6



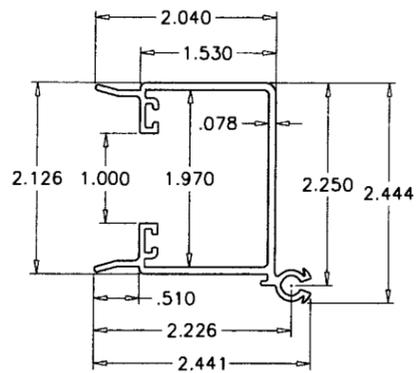
LOCKING SLAT INSERT
6063-T6



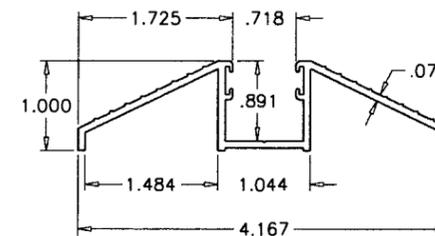
2" BUILT-OUT WALL HEADER
6063-T6



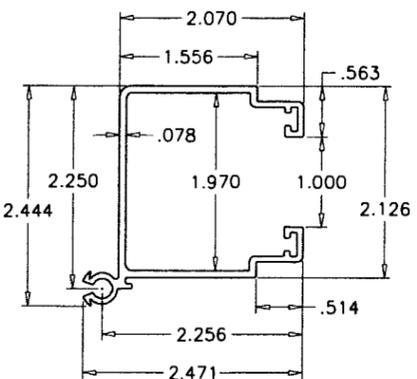
ALT. 2" BUILT-OUT WALL HEADER
6063-T6



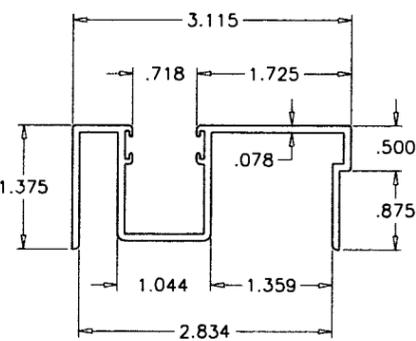
FEMALE LOCKING SLAT
6063-T6



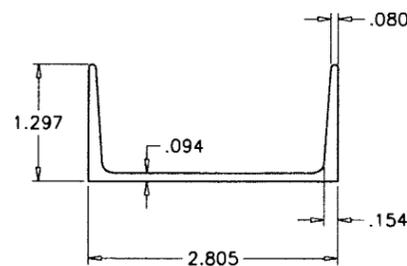
THRESHOLD TRACK
6063-T6



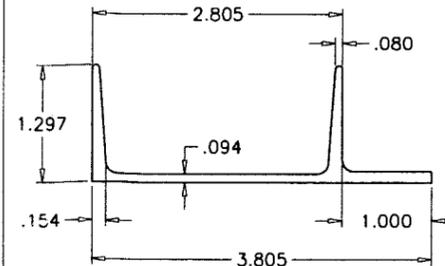
MALE LOCKING SLAT
6063-T6



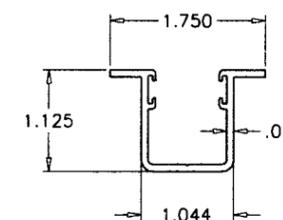
BOTTOM SILL TRACK
6063-T6



BOTTOM TRACK ADAPTER
6063-T6



ALT. BOTTOM TRACK ADAPTER
6063-T6



EMBEDDED TRACK
6063-T6

Approved as complying with the
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Date 06/30/2010
NOA# 09-1015-06
Miami Dade Product Control
Division
By Helmy A. Matar

af c
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revisions:	no	date	by	description
	A	05.18.10		REV. PER BCCO COMMENTS

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538
May 25 2010

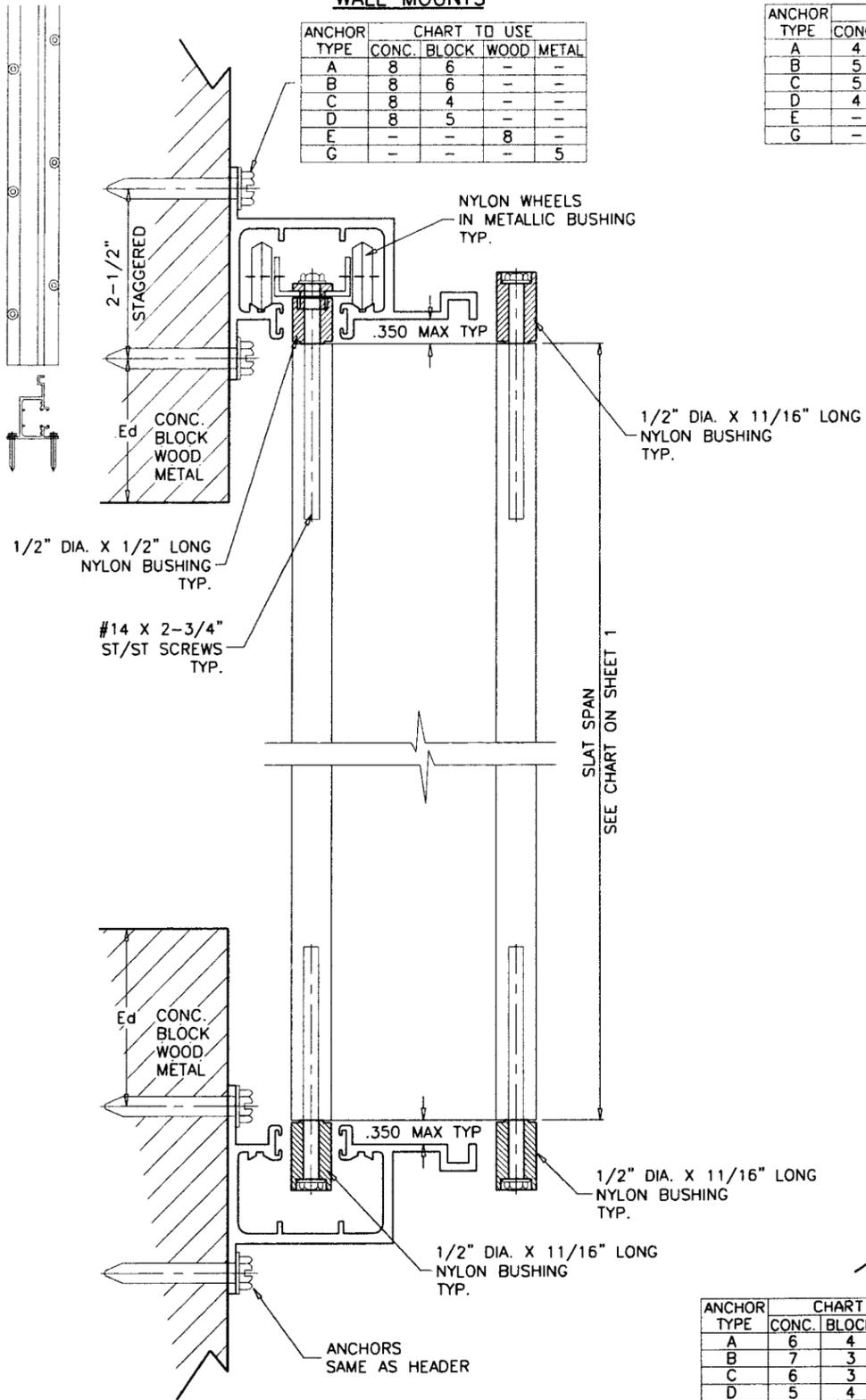
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dr. by: HAMID
chk. by:
drawing no.
09-06
sheet 2 of 7

WALL MOUNTS

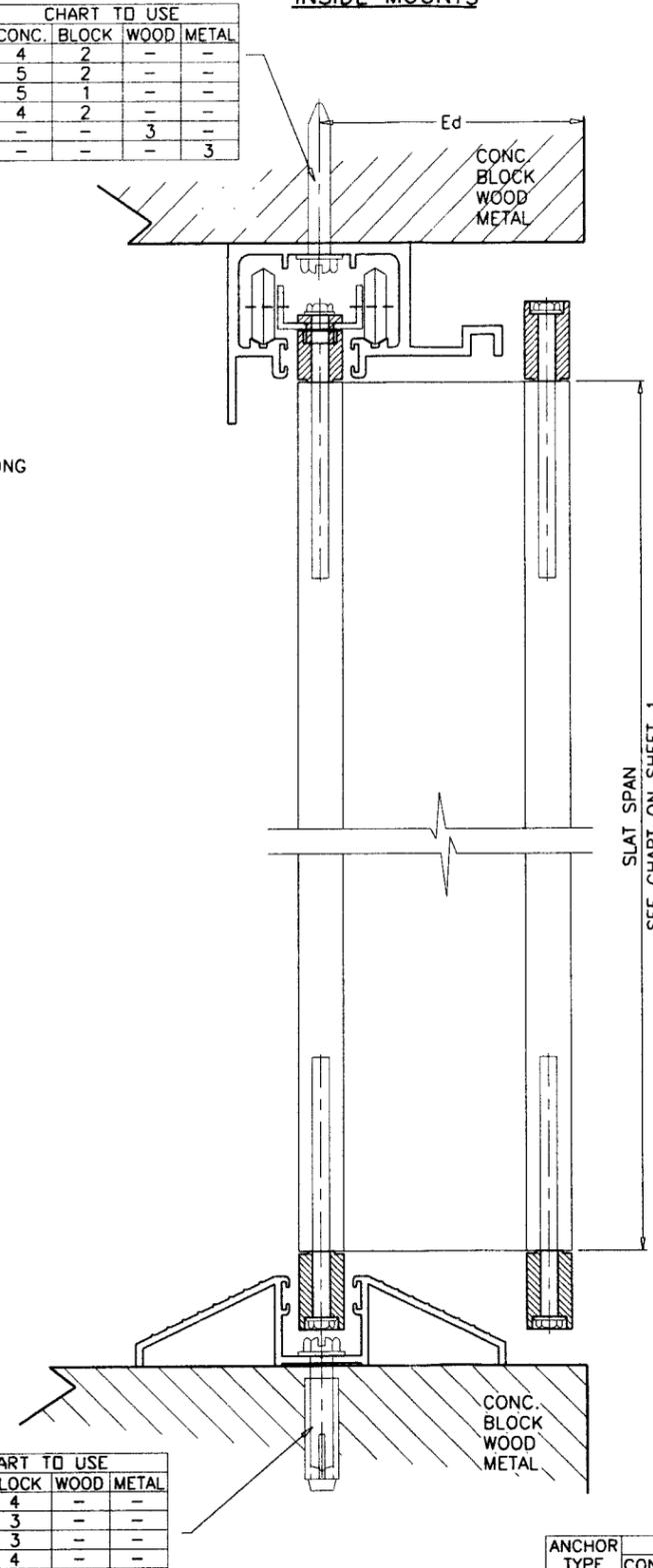
ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	8	6	-	-
B	8	6	-	-
C	8	4	-	-
D	8	5	-	-
E	-	-	8	-
G	-	-	-	5

INSIDE MOUNTS

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



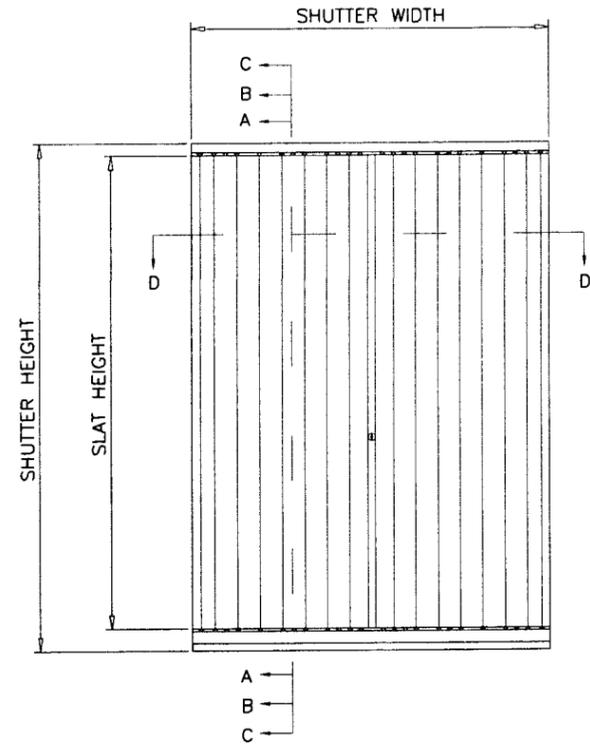
SECTION A-A



SECTION B-B

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	6	4	-	-
B	7	3	-	-
C	6	3	-	-
D	5	4	-	-
E	-	-	4	-
G	-	-	-	5

ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	7	5	-	-
B	8	4	-	-
C	8	5	-	-
D	7	5	-	-
E	-	-	5	-
G	-	-	-	7



TYPICAL ELEVATION

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 7 OF 7.

HEADER AND SILL DETAILS CAN BE USED IN ANY COMBINATIONS.

Approved as complying with the Florida Building Code
Date 06/30/2010
NOA# 09-1015-06
Miami Dade Product Control
Division
By *Heather A. Blaker*

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538
JA
MAY 25 2010

AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
1235 S.W. 87 AVE
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ACCORDION/09-06AUI

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revisions:	no	date	by	description
	A	10.18.10		NO CHANGE THIS SHEET

date: 08-25-09
scale: 1/2" = 1"
dr. by: HAMID
chk. by:

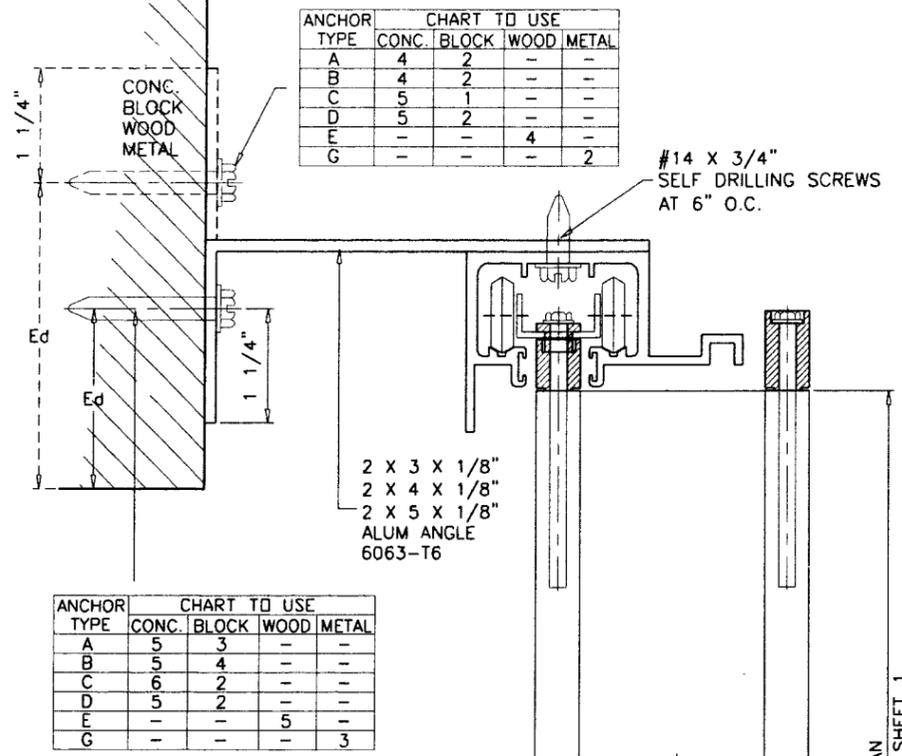
drawing no.
09-06
sheet 3 of 7

FOR GENERAL NOTES AND EXTRUSION DETAILS SEE SHEETS 1 & 2.
FOR WOOD INSTALLATIONS SEE SHEET 6.

BUILT-OUT CONDITION

BUILT-OUT HEADER

ALT. BUILT-OUT HEADER

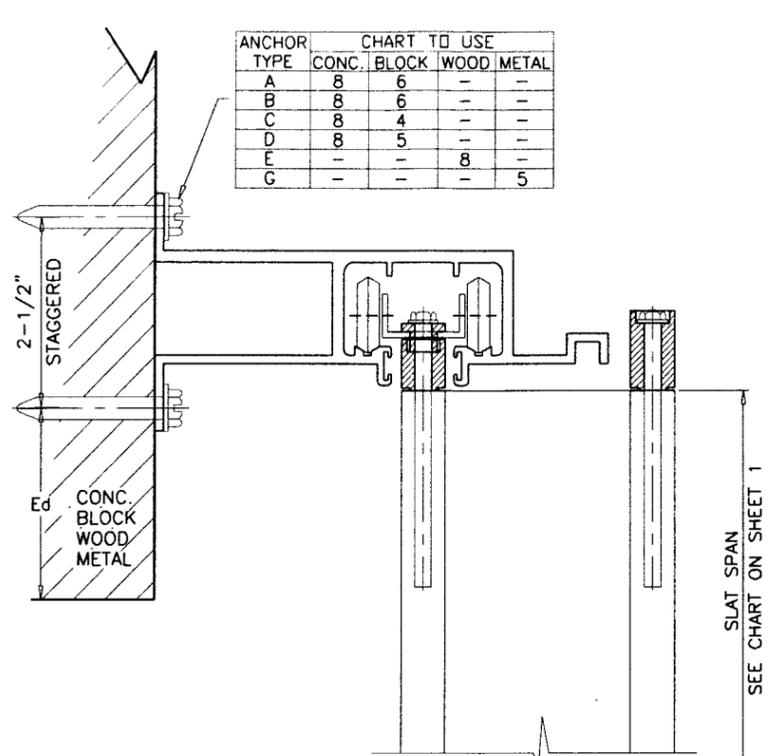


ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	4	2	-	-
B	4	2	-	-
C	5	1	-	-
D	5	2	-	-
E	-	-	4	-
G	-	-	-	2

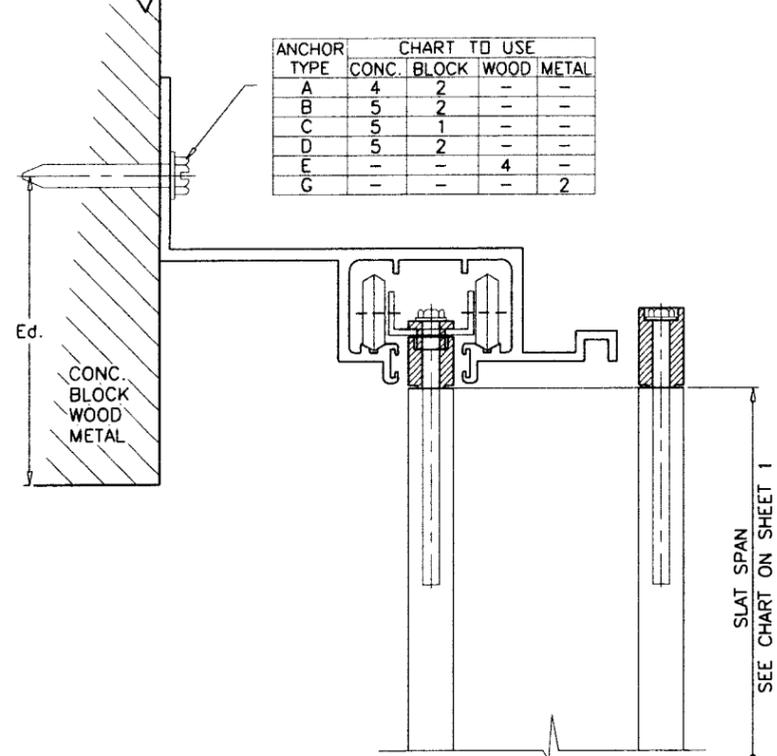
#14 X 3/4" SELF DRILLING SCREWS AT 6" O.C.

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	5	3	-	-
B	5	4	-	-
C	6	2	-	-
D	5	2	-	-
F	-	-	5	-
G	-	-	-	3

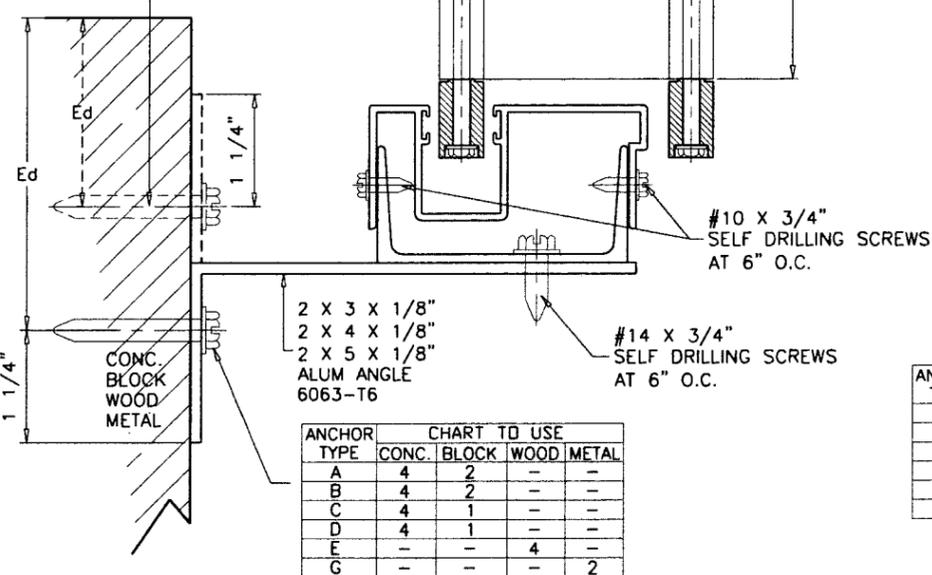


ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	8	6	-	-
B	8	6	-	-
C	8	4	-	-
D	8	5	-	-
F	-	-	8	-
G	-	-	-	5



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

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

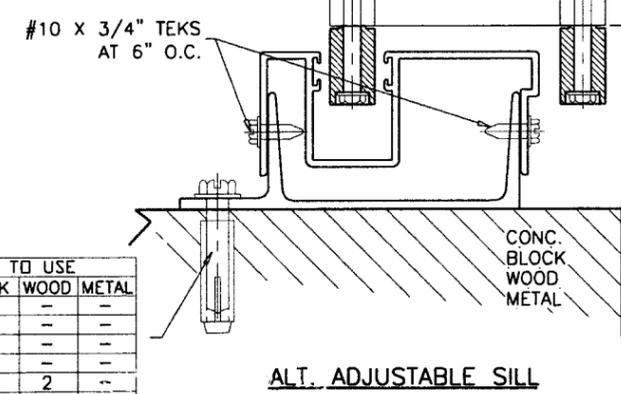


ANCHOR TYPE	CHART TO USE			
	CONC.	BLOCK	WOOD	METAL
A	4	2	-	-
B	4	2	-	-
C	4	1	-	-
D	4	1	-	-
E	-	-	4	-
G	-	-	-	2

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

ADJUSTABLE SILL

HEADER AND SILL DETAILS CAN BE USED IN ANY COMBINATIONS.



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

ALT. ADJUSTABLE SILL

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538

JA
MAY 25 2010

Approved as complying with the Florida Building Code
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Miami Dade Product Control
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TEL. (305) 264-8100 FAX. (305) 262-6978
a f c
ACCORDION/09-06AUJ

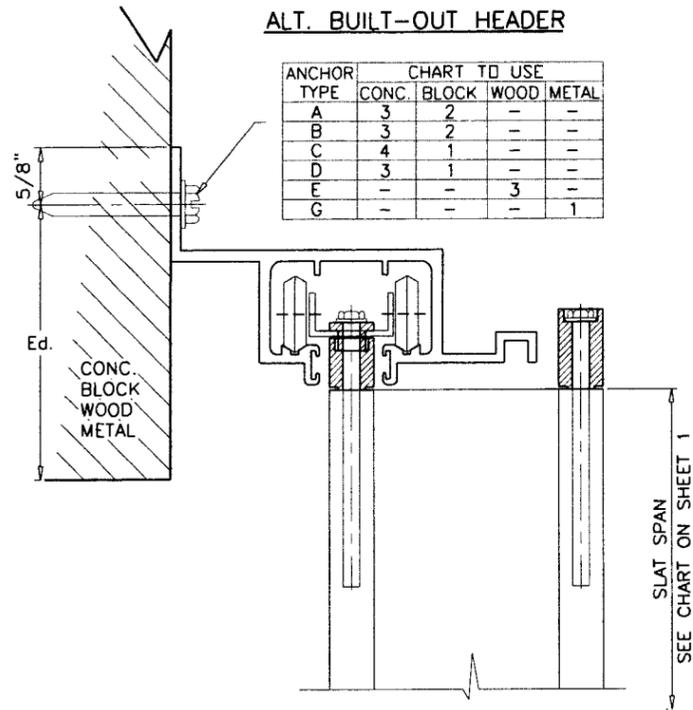
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no	date	description
A	05.18.10	NO CHANGE THIS SHEET

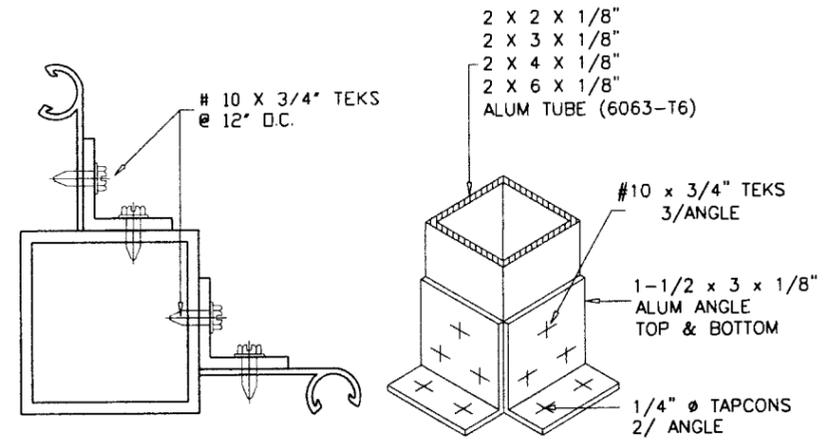
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scale: 1/2" = 1"
dr. by: HAMID
chk. by:
drawing no. 09-06
sheet 4 of 7

ALT. BUILT-OUT HEADER

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

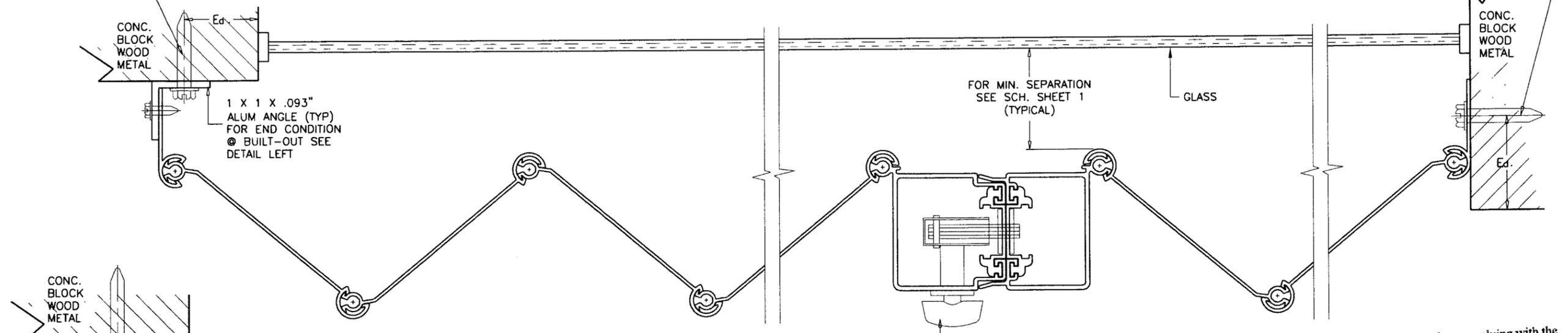


SLAT SPAN
SEE CHART ON SHEET 1



FIXED CORNER DETAIL

ANCHORS TYPE
A, B, C, D, E OR G
AT 16" O.C. MAX.



1 X 1 X .093"
ALUM ANGLE (TYP)
FOR END CONDITION
● BUILT-OUT SEE
DETAIL LEFT

CONC.
BLOCK
WOOD
METAL

- 1 X 2 X .093"
 - 1-1/2 X 2 X .093"
 - 2 X 2 X .093"
 - 2 X 3 X .093"
 - 2 X 4 X .093"
 - 2 X 5 X .093"
- ALUM ANGLE AS
REQD. AT BUILT-OUT
CONDITIONS

10 X 3/4" TEKS
@ 12" O.C.

END CONDITION AT BUILT-OUT

LOCK HANDLE CAN
BE INSTALLED
INSIDE OR OUTSIDE

SECTION D-D

Approved as complying with the
Florida Building Code
Date 06/30/2010
NOA# 09-1015-06
Miami Dade Product Control
Division
By Heung A. Moh

Engr: JAVAD AHMAD
CIVIL
FLA. PE # 70592
C.A.N. 3538

[Signature]
MAY 25 2010

af c
AL-FAROOQ CORPORATION
ENGINEERS & PRODUCT DEVELOPMENT
12335 S.W. 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978
ACCORDION/09-06AUI

'PIRANHA' ALUMINUM ACCORDION SHUTTER
ALUTECH UNITED INC.
15 DIXON STREET
SELBYVILLE, DE. 19975
TEL. (800) 233-1144 FAX. (302) 436-5100

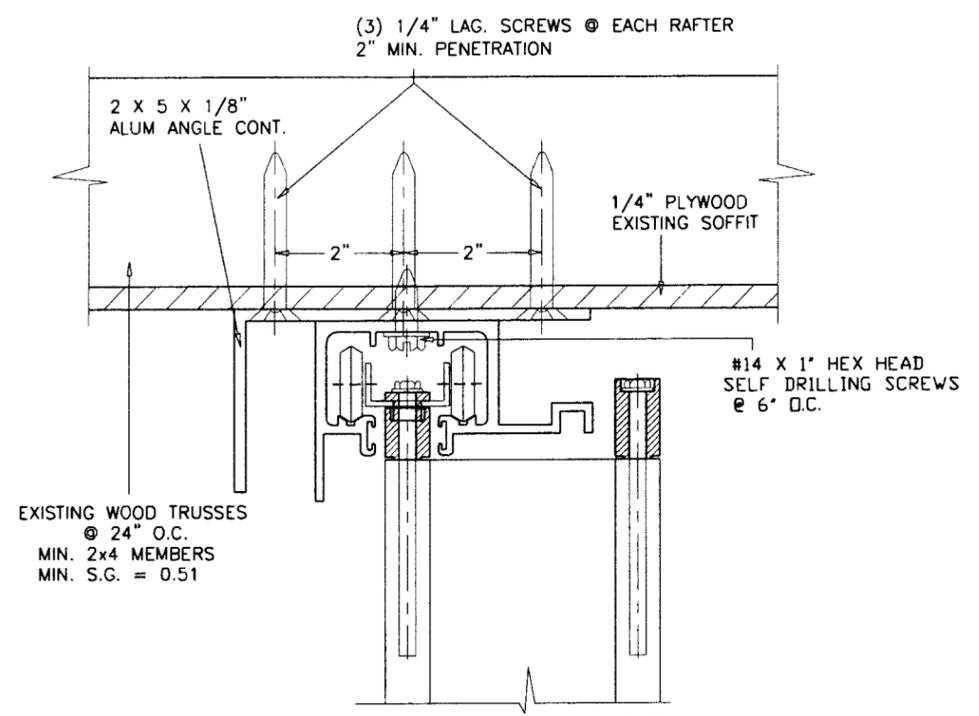
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dr. by: HAMID
chk. by:

drawing no.
09-06
sheet 5 of 7

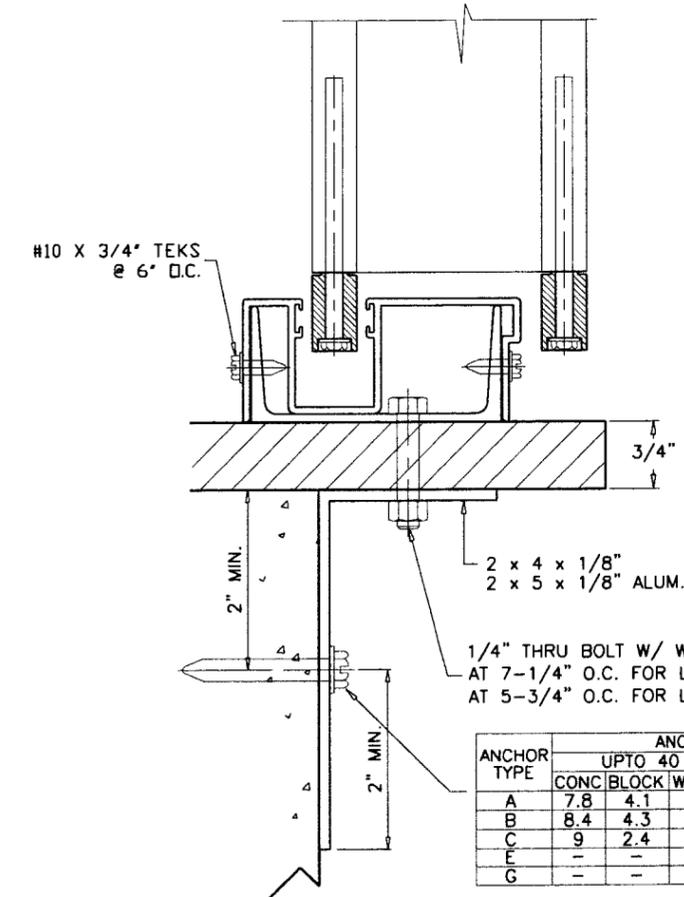
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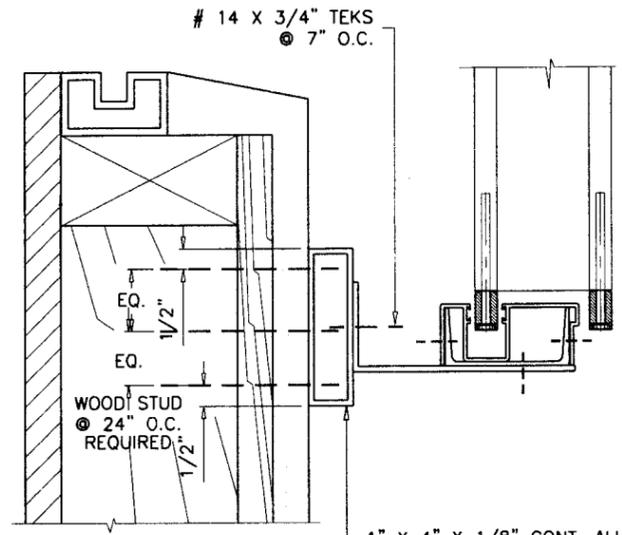
HEADER CONNECTION TO WOOD TRUSSES

FOR SHUTTER HEIGHT OF 72" MAX. DESIGN LOAD = 88 PSF
 FOR SHUTTER HEIGHT OF 84" MAX. DESIGN LOAD = 75 PSF
 FOR SHUTTER HEIGHT OF 96" MAX. DESIGN LOAD = 66 PSF
 FOR SHUTTER HEIGHT OF 108" MAX. DESIGN LOAD = 58 PSF



COUNTER TOP CONDITION
 (PASS THRU WINDOW)
 MAX SHUTTER HEIGHT = 6 FT.

ANCHOR TYPE	ANCHOR SPACING INCHES							
	UPTO 40 PSF			UPTO 50 PSF				
	CONC	BLOCK	WOOD	WOOD	CONC	BLOCK	WOOD	WOOD
A	7.8	4.1	-	-	6.2	3.3	-	-
B	8.4	4.3	-	-	6.7	3.4	-	-
C	9	2.4	-	-	7.2	-	-	-
E	-	-	9	-	-	-	9	-
G	-	-	-	7.8	-	-	-	6.3



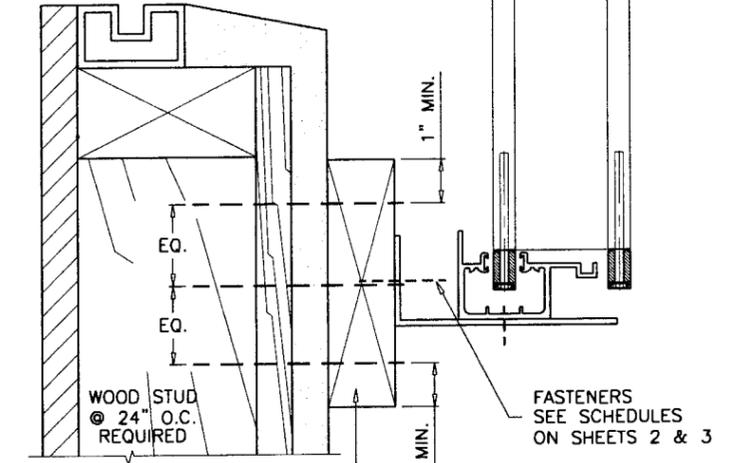
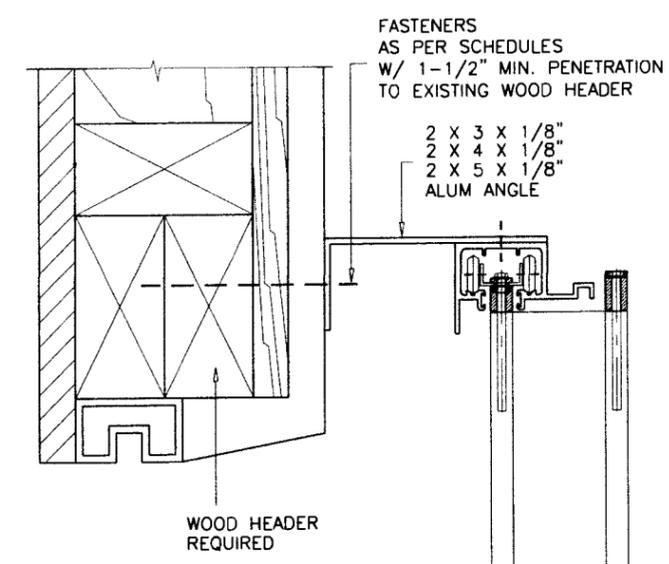
1" X 4" X 1/8" CONT. ALUM TUBE
 W/ (3) 1/4" Ø X 4" LAG SCREWS
 ● EACH STUD W/ 2" MIN PENETRATION INTO EXISTING STUD

FOR SHUTTER HEIGHT OF 84" MAX. DESIGN LOAD = 80 PSF
 FOR SHUTTER HEIGHT OF 96" MAX. DESIGN LOAD = 70 PSF
 FOR SHUTTER HEIGHT OF 108" MAX. DESIGN LOAD = 62 PSF
 FOR SHUTTER HEIGHT OF 120" MAX. DESIGN LOAD = 56 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.

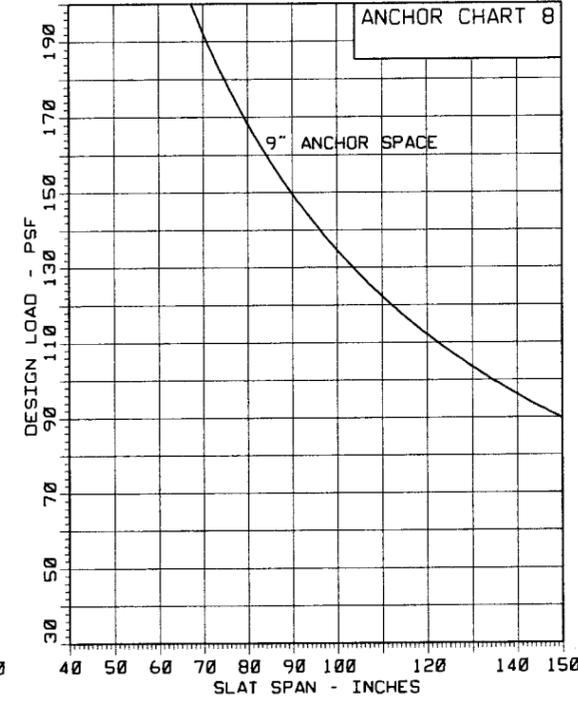
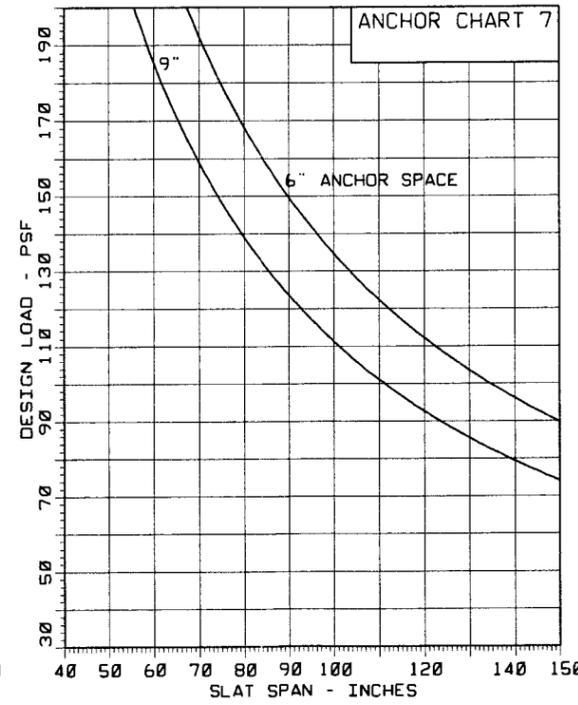
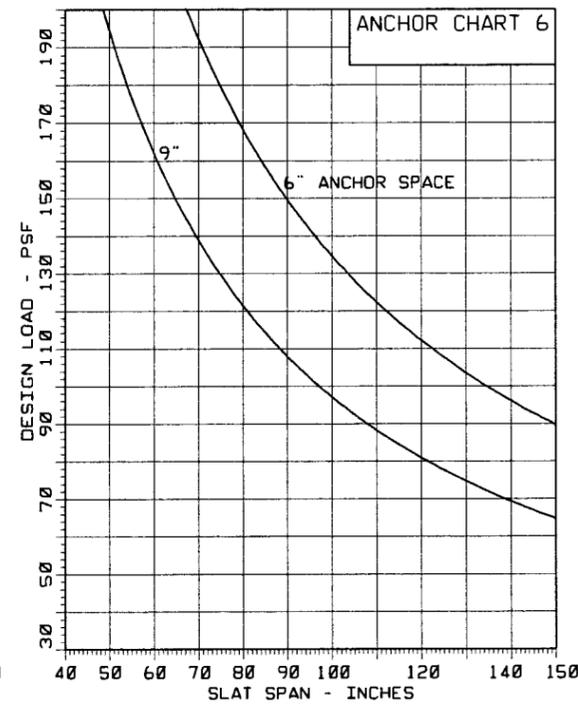
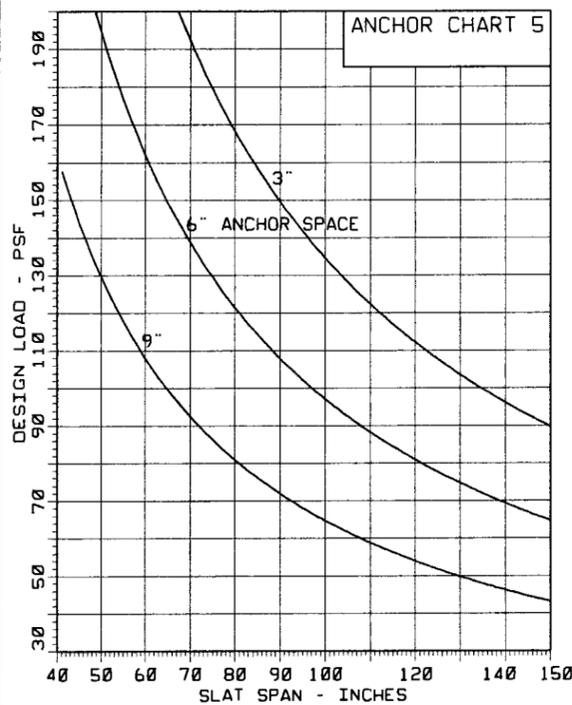
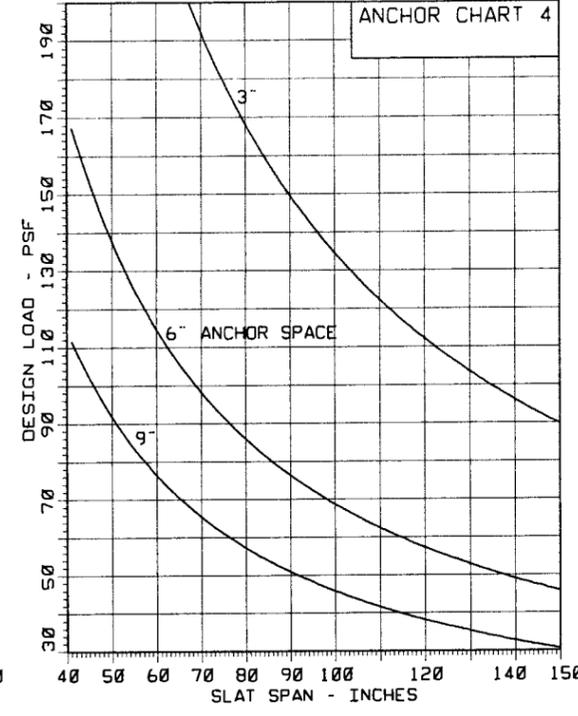
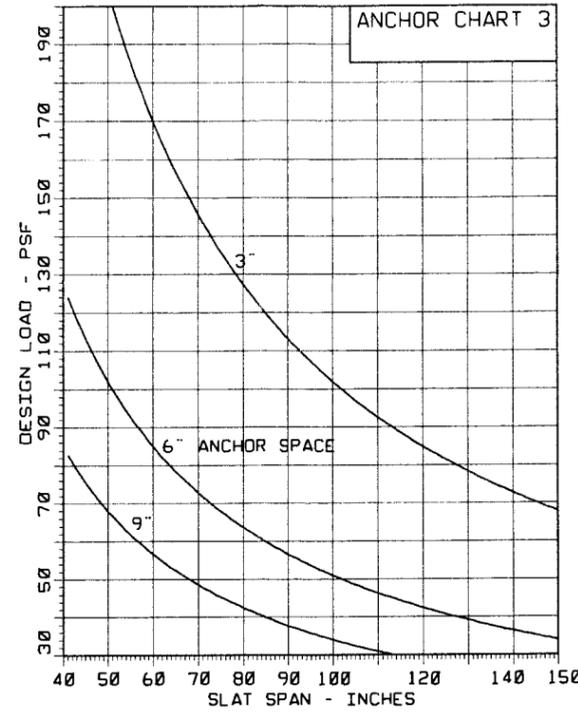
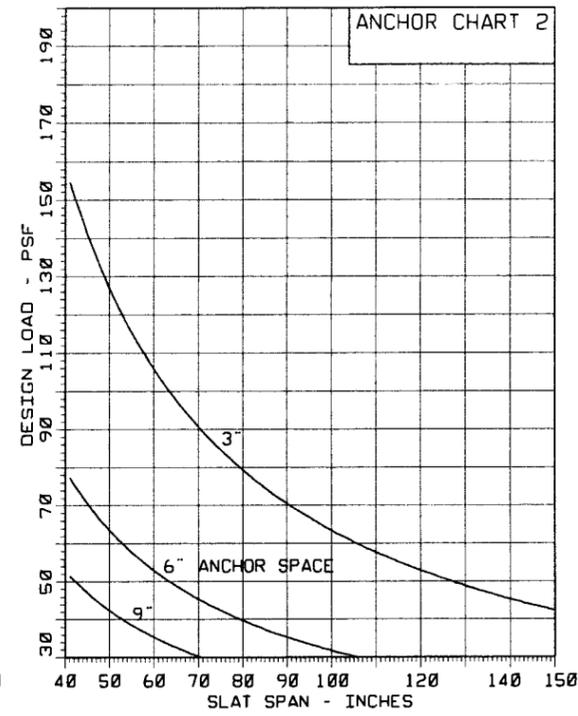
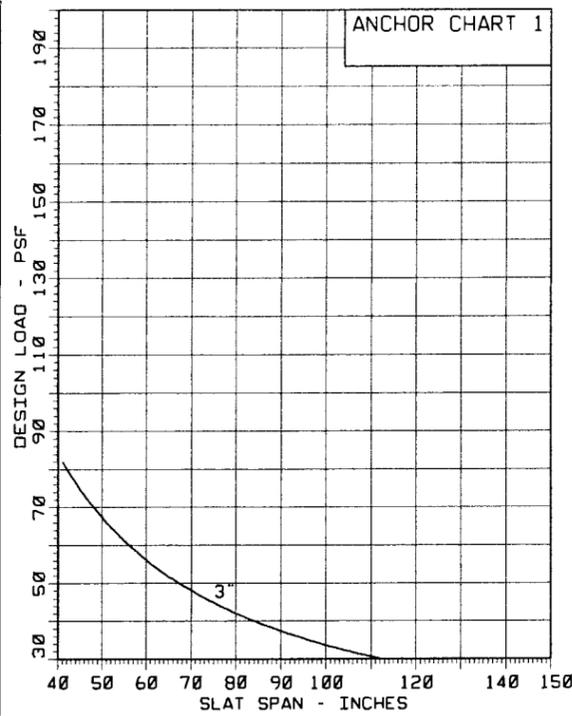
FOR INSTALLATION DETAILS OF HEADER/SILL TO CONTINUOUS WOOD MEMBERS SEE SHEETS 3 THRU 4.



FASTENERS SEE SCHEDULES ON SHEETS 2 & 3

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 MAY 25 2010



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) = 5/16" DIA. ULTRACON (BY ELCO)
 1-3/4" EMBEDMENT INTO 3000 PSI CONC.
 1-1/4" EMBEDMENT INTO C-90 BLOCK
- ANCHOR (C) = 1/4" DIA. TAPCON (BY ITW)
 1-3/4" EMBEDMENT INTO 3000 PSI CONC.
 1-1/4" EMBEDMENT INTO C-90 BLOCK

- ANCHOR (D) = 1/4" RAWL CALK-IN (BY POWERS)
 TOTAL ANCHOR BODY INTO 3000 PSI CONC.
 OR C-90 BLOCK
 2" MIN. EDGE DIST.
- 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.)

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

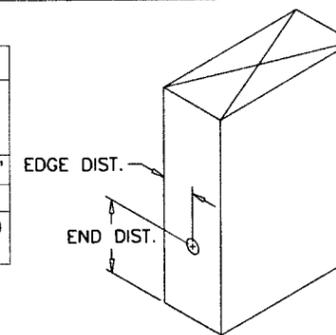
FASTENER SPACING IN MASONRY

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



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sheet 7 of 7