MIAMI-DADE

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)

**Rolladen, Inc.**
**550 Ansin Blvd.**
**Hallandale, FL 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 Florida Building Code including the High Velocity Hurricane Zone.

**DESCRIPTION: Series "#1116" Extruded Aluminum Roll Shutter**

**APPROVAL DOCUMENT:** Drawing No. 95-12, titled "RollShutter Details", sheets 1 through 21, prepared, signed and sealed by Humayoun Farooq, P.E. on 03/07/08, dated 02/27/95 with last revision on 02/01/06, bearing the Miami-Dade County Product Control Renewal stamp with the Notice of Acceptance number and expiration date by the Miami-Dade County Product Control Division.

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

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and 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 **renews NOA # 06-0213.02** and consists of this page, evidence page E1 and the approval document mentioned above.
The submitted documentation was reviewed by **Mohammed Iqbal Shaikh, P.E.**

MIAMI-DADE COUNTY APPROVED 05/19/08

**Rolladen, Inc.**

## NOTICE OF ACCEPTANCE: EVIDENCE PAGE

**A. DRAWINGS**

1. Drawing prepared by Al-Farooq Corporation, titled "Roll Shutter Details," Drawing No. 95-12, dated 02/27/95, with latest revision on 02/01/06, Sheets 1 through 21 of 21, signed and sealed by H. Farooq, P.E. on 03/07/08

**B. TESTS**

1. Test report on: 1.) Large Missile Impact Test per PA 201-94
   2.) Cyclic Wind Pressure Test per PA 203-94
   of Roll Shutter prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-94-139 & 280**, dated 06/0994 & 08/30/94, signed and sealed by H. M. Medina, P.E.
2. Test report on: 1.) Uniform Static Air Pressure Test per PA 202-94
   of Roll Shutter prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-94-123, 250, 286, 297 & 308,** dated 05/24/94, 08/12/94, 09/06/94, 09/16/94, & 09/22/94 signed and sealed by H. M. Medina, P.E.
3. Test report on: 1 ) Large Missile Impact Test per PA 201
   of Roll Shutter prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-94-325i, 95-461 & 96-524,** dated 10/05/94, 06/22/95 & 01/31/96, signed and sealed by H M Medina, PE.

**C. CALCULATIONS**

1. Calculations for Aluminum Roll Shutter without one-third increase in allowable stresses in aluminum and anchors, prepared by Al-Farooq Corporation with the following sections: Track Connection Calculations T1 to T9, Storm Bars SB-1 to SB-3, SB-10, SB-17, SB-24, SB-43 TO SB-94, Header H-21 to H-40, Mullion M-1 to M-80 & Anchor Data AP-1 to AP-20, signed and sealed by H. Farooq, P.E. on 02/03/06.

**D. QUALITY ASSURANCE.**

1. Building Code Compliance Office

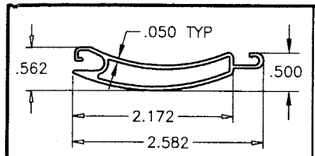
**E STATEMENTS**

1. Letter of Compliance to FBC 2004 Code, by Al- Farooq Corporation, signed and sealed by H. Farooq, PE. on 02/03/2006.

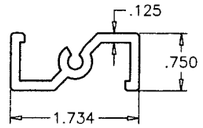
**F OTHER**

1. **NOA # 06-0213.02**

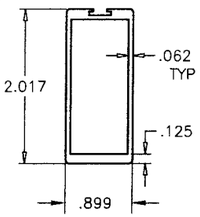
**Mohammed Iqbal Shaikh, P.E.**
**Sr. Building Code Compliance Specialist**
**NOA No 08-0313.07**
**Expiration Date: June 06, 2009**
**Approval Date: June 12, 2008**



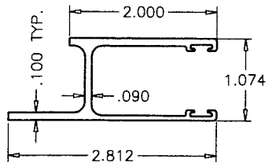

RON-3 SLAT



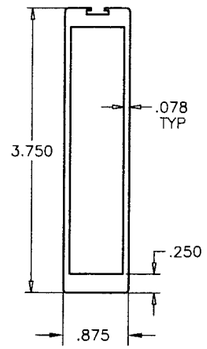

RON-23 INSERT



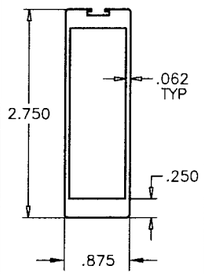

RON-24 STORM BAR



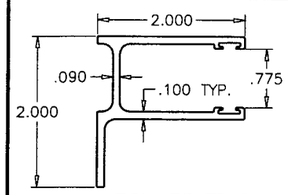

RON-72 TRACK



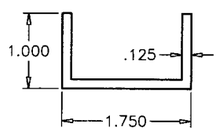

RON-56 STORM BAR



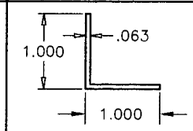

RON-57 STORM BAR



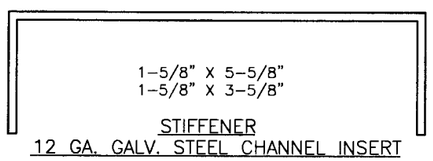

RON-73 TRACK



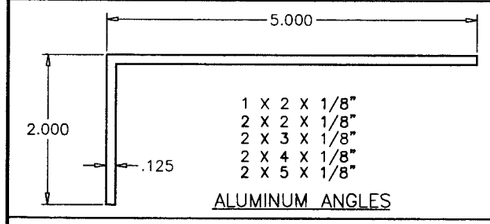

FLOOR SHOE



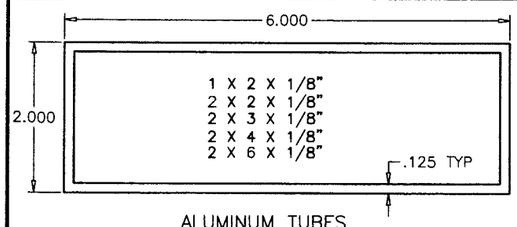

1 x 1 x 1/16"
ALUMINUM ANGLE



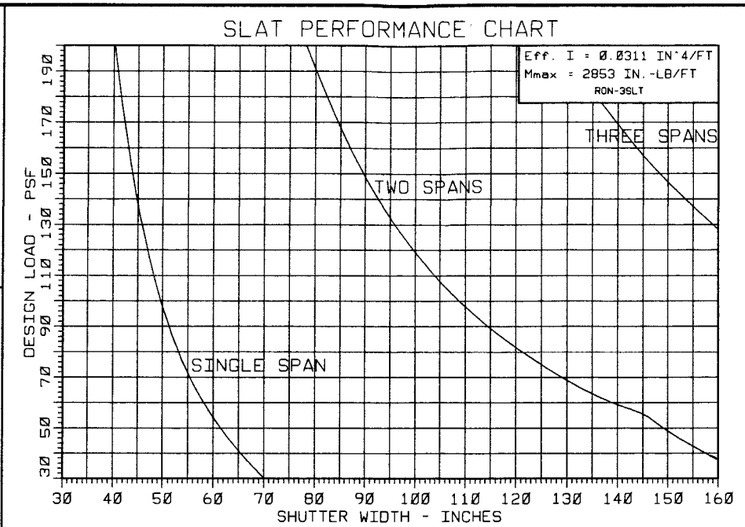

STIFFENER
12 GA. GALV. STEEL CHANNEL INSERT

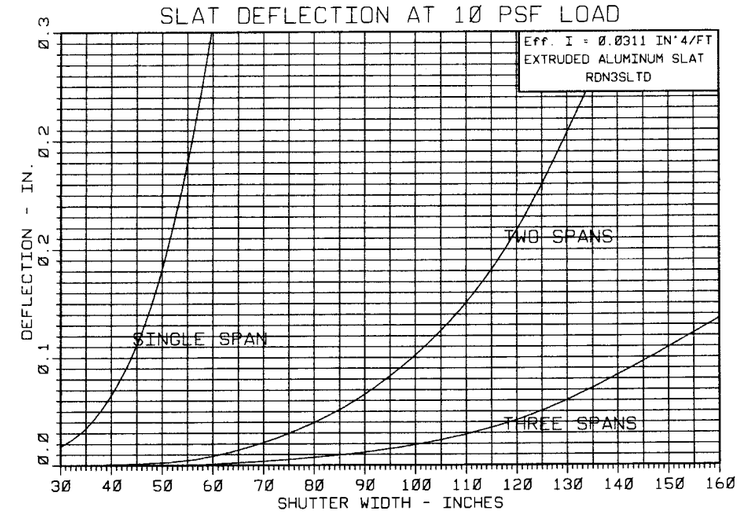



ALUMINUM ANGLES



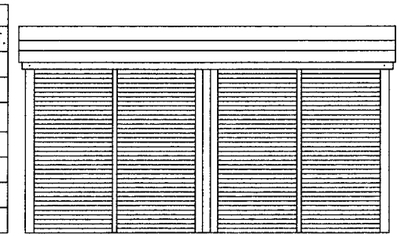

ALUMINUM TUBES



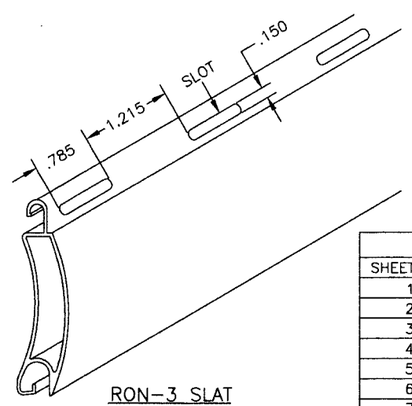

USE SLAT PERFORMANCE CHART TO VERIFY SLAT CAPACITY FOR THE REQUIRED DESIGN LOAD FOR THE PARTICULAR LOCATION.

| BOX DIMENSIONS | |
|---|---|
| SHUTTER HT. | HOOD HT. |
| 48" | 8" |
| 73" | 9" |
| 95" | 10" |
| 119" | 11" |
| 148" | 12" |
| 181" | 13" |
| 216" | 14" |



TYPICAL ELEVATION

| DESCRIPTION | PART # |
|---|---|
| SLAT RON-3 | #1116 |
| TRACK RON-72 | #1071 |
| TRACK RON-73 | #1070 |
| 1x2x1/8" TUBE | #1019 |
| 2x2x1/8" TUBE | #1022 |
| 2x3x1/8" TUBE | #1024 |
| 2x4x1/8" TUBE | #1023 |
| 2x6x1/8" TUBE | #1026 |
| 1x1x1/16" ANGLE | #1031 |
| 1x2x1/8" ANGLE | #1029 |
| 2x2x1/8" ANGLE | #1051 |
| 2x3x1/8" ANGLE | #5012 |
| 2x4x1/8" ANGLE | #5013 |
| 2x5x1/8" ANGLE | #5014 |
| 1x1-3/4X1/8" CHANNEL | #1058 |
| RON-24 STORM BAR | #1047 |
| RON-57 STORM BAR | #1043 |
| RON-56 STORM BAR | #1044 |
| RON-23 ALUM INSERT | #1046 |




RON-3 SLAT

| INDEX OF DRAWING | |
|---|---|
| SHEET NO. | DESCRIPTION |
| 1 | EXTRUSIONS DETAILS, NOTES, SLAT GRAPHS |
| 2 | SINGLE SPAN DETAILS |
| 3 | ANCHOR GRAPHS |
| 4 | MULTIPLE SPAN INSTALLATION DETAIL |
| 5 | HEADER/MULLION CONNECTION DETAILS |
| 6 | STORM BAR ANCHOR DETAILS |
| 7 | MULLION & BOX ANCHOR DETAILS |
| 8 THRU 13 | POST (MULLION) LOADING CHARTS |
| 14 & 15 | TOP SUPPORT LOADING CHARTS |
| 16 THRU 20 | STORM BAR LOADING CHARTS |
| 21 | CALC. SHEET FOR OVERALL DEFLECTION |

FOR OVERALL DEFLECTION CALCULATION USE SHEET 21 OF 21.

FOR INSTALLATION DETAILS SEE SHEETS 2 THRU 7.
FOR COMPONENT SIZES/SPANS/DESIGN LOAD RATING SEE SHEET 8 THRU 20.

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

## GENERAL NOTES

1. THIS PRODUCT HAS BEEN DESIGNED AND TESTED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2004 EDITION INCLUDING HIGH VELOCITY HURRICANE ZONE.
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 6063-T6, OR AS NOTED.
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 LISTED, SPACED AS SHOWN ON DETAILS. ANCHOR EMBEDMENT TO BASE MATERIAL SHALL BE BEYOND WALL DRESSING OR STUCCO.
6. ALL BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL OR ALUMINUM ALLOY 2024-T4 OR 7075-T6, OR PLATED STEEL.
7. SHUTTERS MAY BE MOTOR, TAPE PULLEY, OR GEAR DRIVEN.
8. DESIGN CRITERIA: FOR MULTIPLE SPANS THE COMBINED MAX DEFLECTION OF HEADER, STORM BARS AND SLATS $\leq$ L/30 OR 2". FOR MULLIONS MAX DEFLECTION $\leq$ L/180.
9. ANCHORING OR LOADING CONDITIONS OTHER THAN THOSE SHOWN IN THESE DETAILS ARE NOT PART OF THIS APPROVAL.
10. A LOAD DURATION INCREASE IN ALLOWABLE STRESS IS USED IN DESIGN OF WOOD ANCHORS ONLY.
11. THE ROLL-UP MECHANISM NOT PART OF THIS APPROVAL, BUT SHALL BE CERTIFIED BY AN INDEPENDENT TESTING AGENCY.

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

## PRODUCT MARKING

A LABEL SHALL BE AFFIXED ON UNIT AT RIGHT BOTTOM OF BOX WITH THE FOLLOWING STATEMENT:

#1116 EXTRUDED ALUMINUM ROLLING SHUTTER
"DADE COUNTY PRODUCT CONTROL APPROVED"
MANUFACTURED BY ROLLADEN, INC.

Engr: Dr. HUMAYOUN FARCOQ
STRUCTURES
FLA. PE # 16557
C.A.N. 3538

MAR 07 2008

Florida
08-03-13-07
06/06/09
Miami Dade Product Control Division


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978


ROLLUP\95-12RI

RollShutter Details

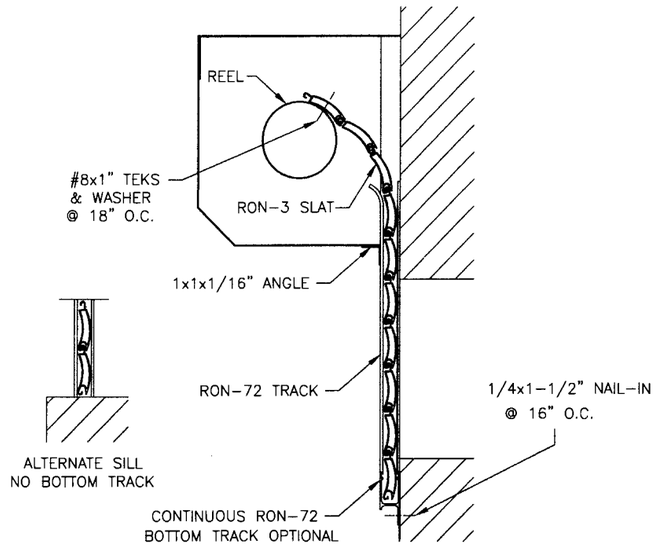

ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591


revisions:

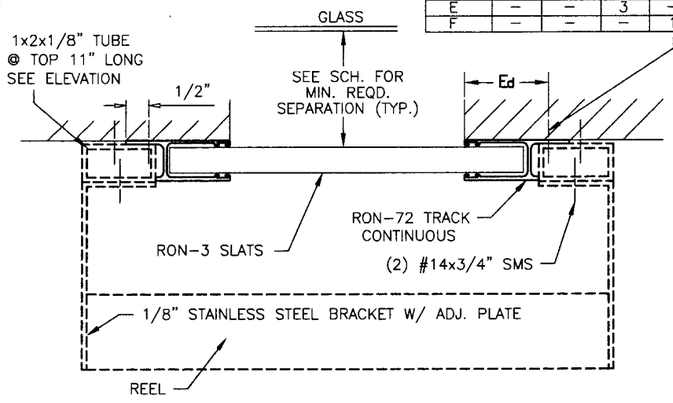
| no | date | by | description |
|---|---|---|---|
| A | 8.22.95 | | SHEET 3 REV. |
| B | 4.17.96 | | DEFL. REV. |
| C | 5.15.03 | | UPDATED FOR FBC&NDS 97 |
| D | 5.17.04 | | REV. PER BCCO COMMENTS |
| E | 02.01.06 | | UPDATED FOR 2004 FBC |

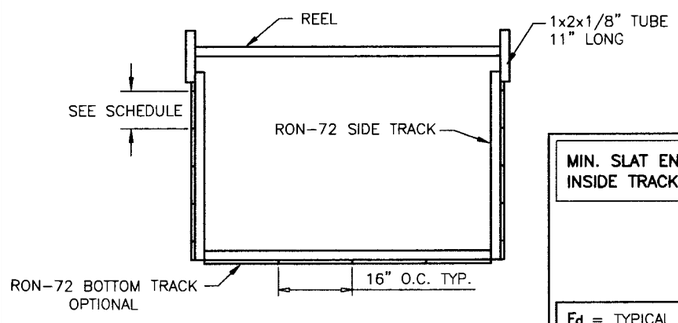
date: 02-27-95
scale: 1/2" = 1"
dr. by: HAMID
chk. by:

drawing no.
95-12



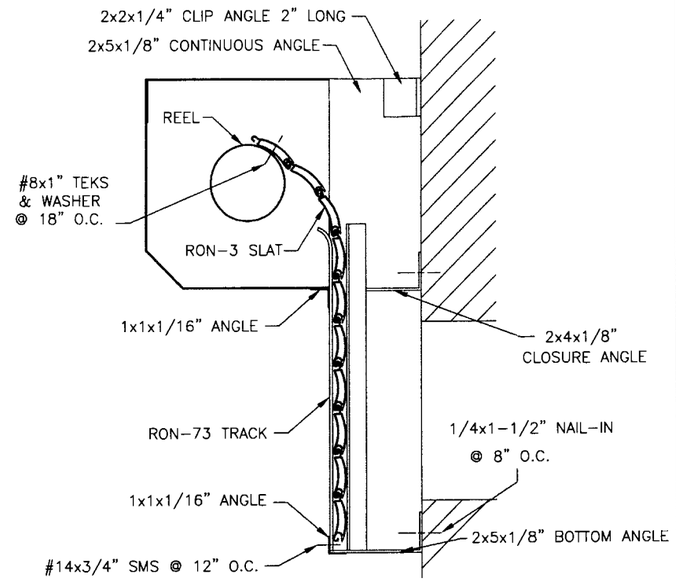

| ANCHOR TYPE | CHART TO USE | | | |
|---|---|---|---|---|
| | CONC. | BLOCK | WOOD | METAL |
| A | 2 | 1 | – | – |
| B | 1 | – | – | – |
| C | 1 | 1 | – | – |
| D | 3 | 1 | – | – |
| E | – | – | 3 | – |
| F | – | – | – | 1 |



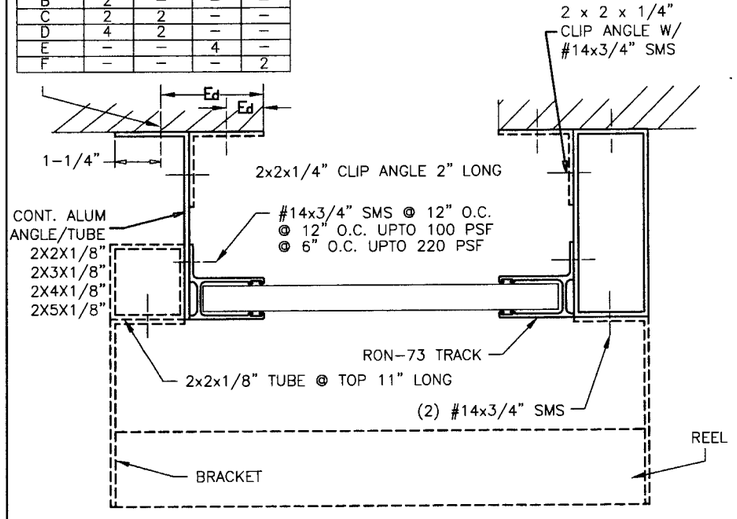




ELEVATION

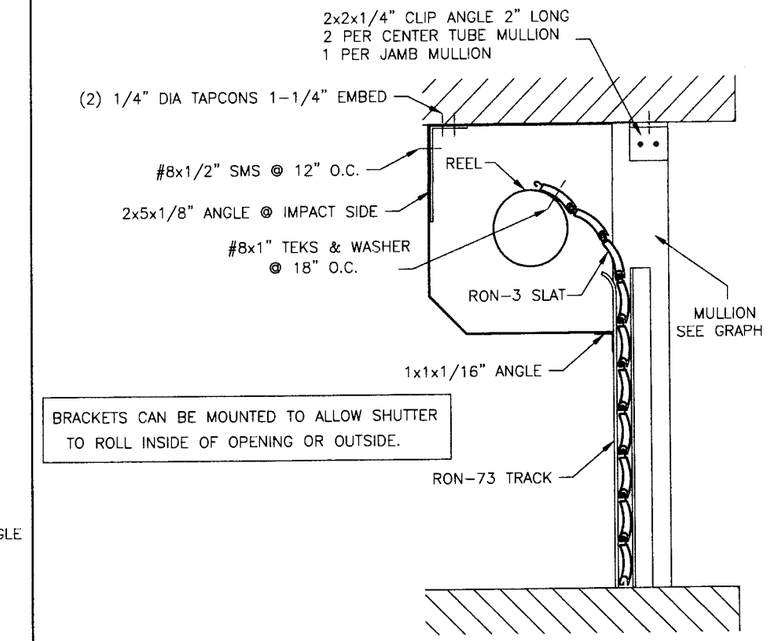
SINGLE SPAN TRACK ON WALL



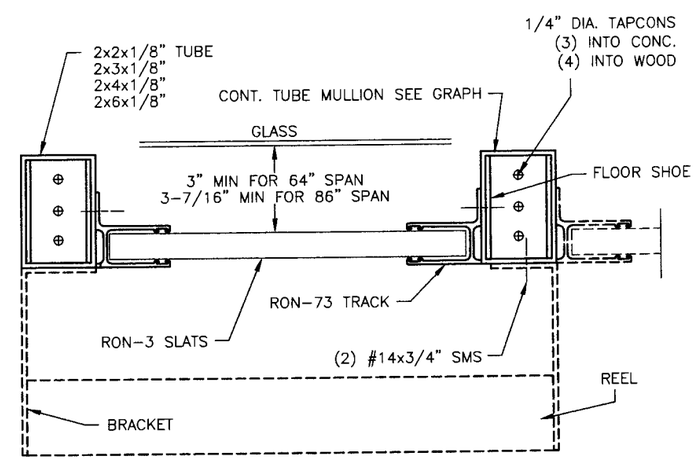

| ANCHOR TYPE | CHART TO USE | | | |
|---|---|---|---|---|
| | CONC. | BLOCK | WOOD | METAL |
| A | 4 | 2 | – | – |
| B | 2 | – | – | – |
| C | 2 | 2 | – | – |
| D | 4 | 2 | – | – |
| E | – | – | 4 | – |
| F | – | – | – | 2 |




SINGLE SPAN WITH BUILT OUT




BRACKETS CAN BE MOUNTED TO ALLOW SHUTTER TO ROLL INSIDE OF OPENING OR OUTSIDE.




SINGLE SPAN SPLIT SHUTTER W/ MULLION

**MIN. SLAT ENGAGEMENT INSIDE TRACKS = 1-1/2" TYP.**

Ed = TYPICAL EDGE DISTANCE
CONC. & BLOCK = 12d (12 ANCHOR DIAMETERS)
WOOD = 5d
FOR LESSER EDGE DISTANCES SEE SHEET 3 OF 21.

| MINIMUM SEPARATION REQD. FROM GLASS | | |
|---|---|---|
| FOR INSTALLATIONS ABOVE 30 FT. OF GRADE DUE TO WIND LOAD | FOR INSTALLATIONS UPTO 30 FT. OF GRADE DUE TO LARGE MISSILE IMPACT | |
| | SHUTTER WIDTH UPTO | SEPARATION |
| OVERALL DEFLECTION + 1" | 56" | 3-11/32" |
| | 69" | 4" |
| | 90" | 4-1/4" |

FOR OVERALL DEFLECTION CALCULATION REFER TO SHEET 21 OF 21.
NOTE: NO PART OF SHUTTER SHALL BE UNDER 30' ABOVE GRADE TO WAIVE LARGE MISSILE IMPACT REQUIREMENT.

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

MAR 07 2008

PRODUCT RENEWED
as complying with the Florida Building Code
Acceptance No 08-0313.07
Expiration Date 06/06/09
By
Miami Dade Product Control Division


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978


ROLLUP\95-12RI

RollShutter Details

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revisions:

| no | date | by | description |
|---|---|---|---|
| A | 8.22.95 | | SHEET 3 REV. |
| B | 4.17.96 | | DEFL. REV. |
| C | 5.15.03 | | ANCHOR CHARTS REV. |
| D | 5.17.04 | | NO CHANGE THIS SHEET |
| E | 02.01.06 | | UPDATED FOR 2004 FBC |

date: 02-27-95
scale: 1/2" = 1"
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drawing no.
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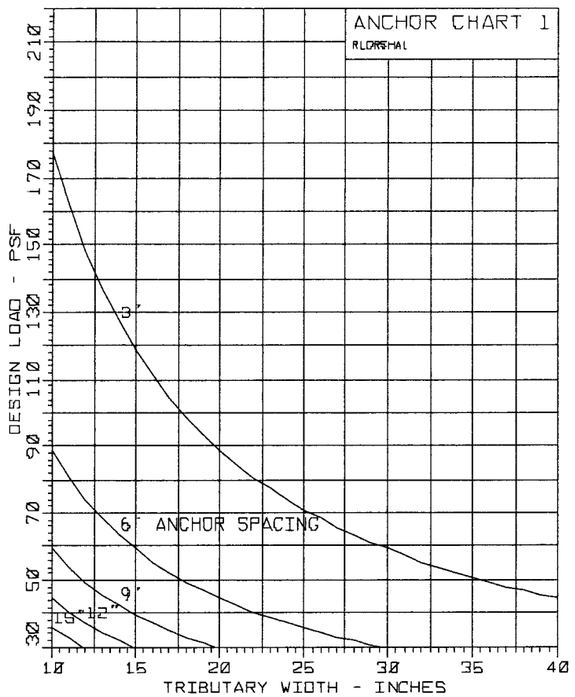
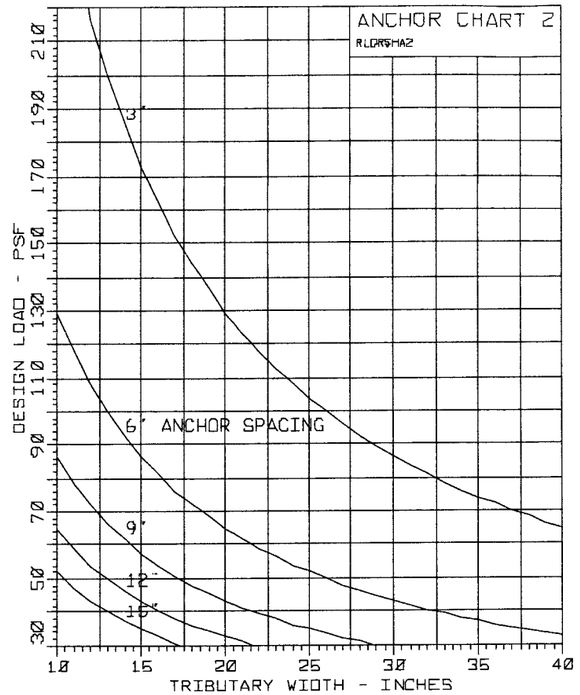


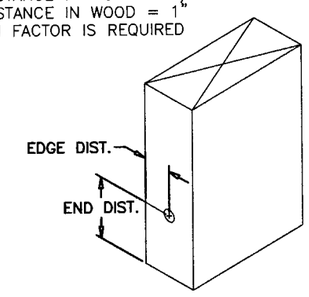



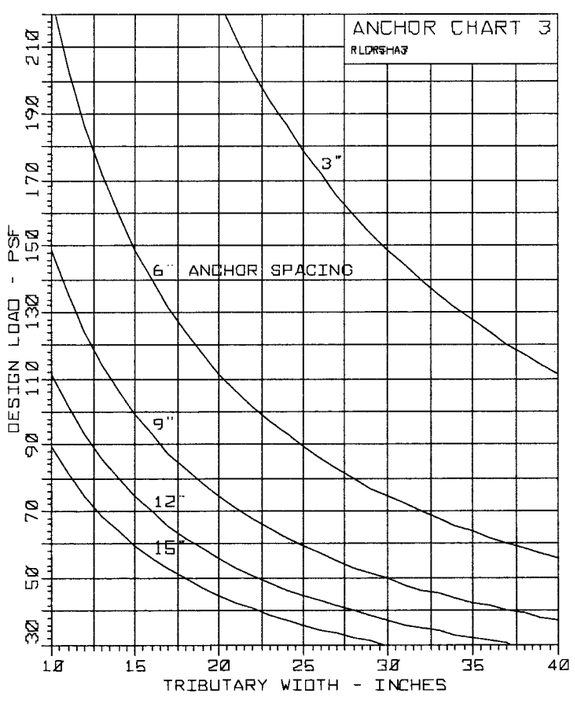

MAXIMUM ANCHOR SPACING IN ALL CASES SHALL NOT EXCEED 8" O.C.

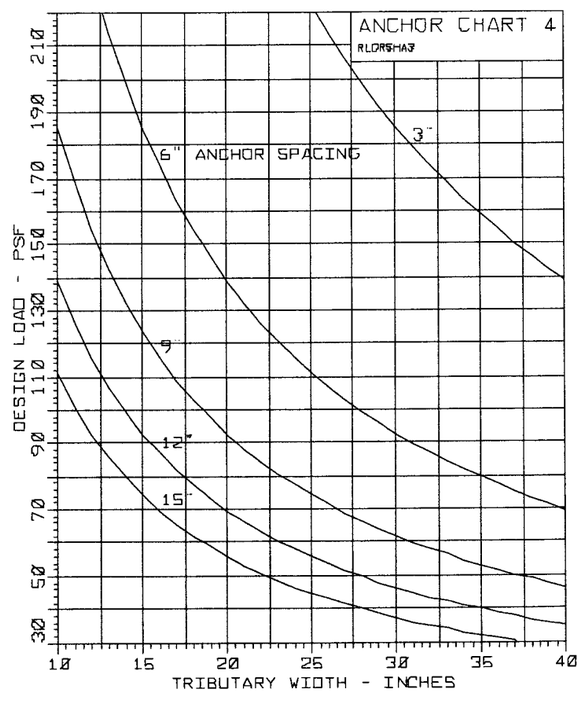
$$\text{TRIBUTARY WIDTH} = \frac{\text{SW}}{2 \times (\text{\# OF SPANS})}$$

| 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




## TYPICAL ANCHORS:

ANCHOR (A) = 1/4" DIA. TAPCONS
1-3/4" EMBEDMENT INTO 3000 PSI CONC.
1-1/4" EMBEDMENT INTO C-90 BLOCK

ANCHOR (B) = #14 SMS W/ RAWL SCRU-LEAD
1-1/2" EMBEDMENT INTO 3000 PSI CONC.

ANCHOR (C) = 1/4" ZAMAC NAILIN ANCHORS
1-1/4" EMBEDMENT INTO 3000 PSI CONC.
OR C-90 BLOCK

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

ANCHOR (E) = 1/4" DIA. TAPCONS
1-1/2" MIN PENETRATION INTO WOOD (S.G.=0.55)

ANCHOR (F) #14 SMS OR SELF DRILLING (TEKS) SCREWS
INTO METAL STRUCTURES
(STEEL OR ALUMINUM 1/8" MIN. THICK.)

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

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

MAR 07 2008

PRODUCT RENEWED
as complying with the Florida Building Code
Acceptance No 08-0313.07
Expiration Date 06/06/09
By
Miami Dade Product Control Division


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
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ROLLUP\95-12RI

RollShutter Details

ROLLADEN INC.
550 ANSIN BOULEVARD
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(305) 757 - 8591

revisions:

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|---|---|---|---|
| A | 8.22.95 | | ANCHOR GRAPHS REV. |
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| D | 5.17.04 | | NO CHANGE THIS SHEET |
| E | 02.01.06 | | UPDATED FOR 2004 FBC |

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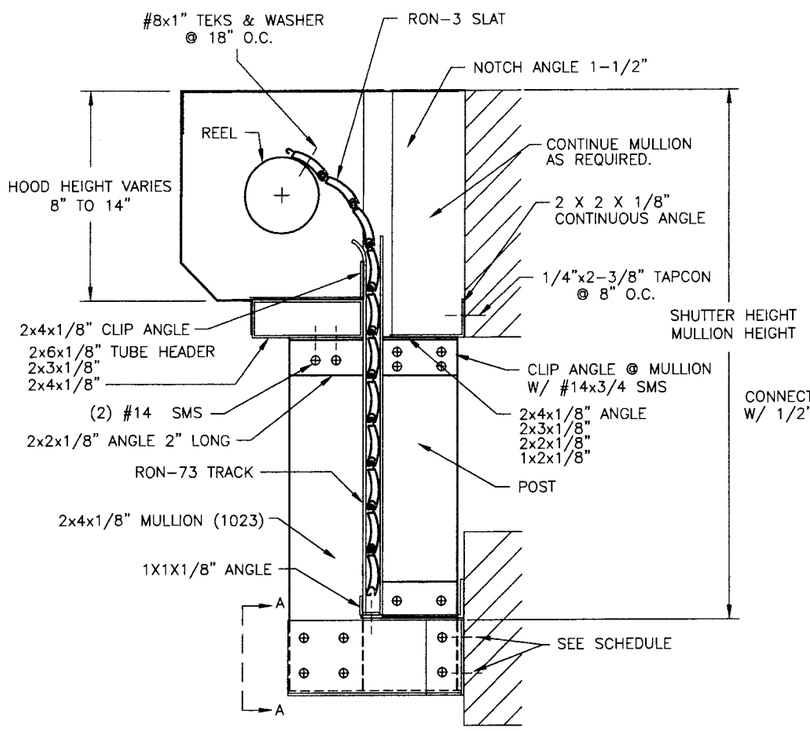
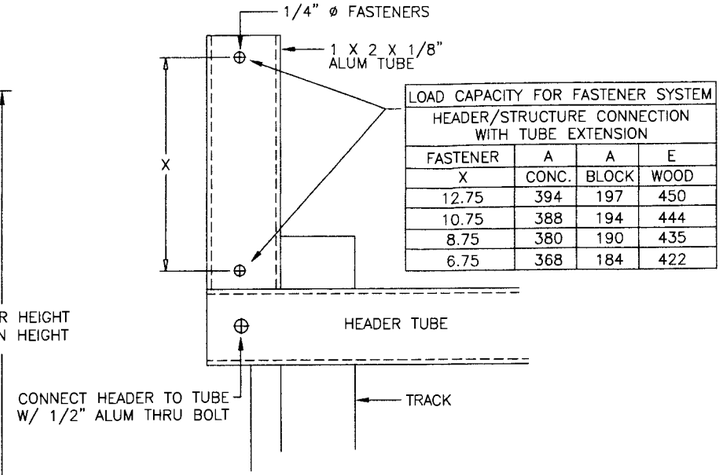
dr. by: HAMID
chk. by:

drawing no.
95-12



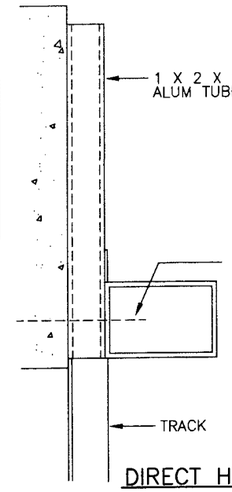

MULTIPLE SPAN SECTION

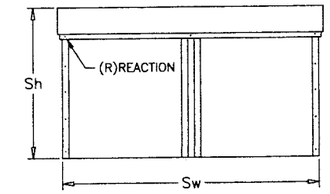
FOR MULLION ANCHOR SEE DETAIL




| LOAD CAPACITY FOR FASTENER SYSTEM HEADER/STRUCTURE CONNECTION WITH TUBE EXTENSION | | | |
|---|---|---|---|
| FASTENER | A | A | E |
| X | CONC. | BLOCK | WOOD |
| 12.75 | 394 | 197 | 450 |
| 10.75 | 388 | 194 | 444 |
| 8.75 | 380 | 190 | 435 |
| 6.75 | 368 | 184 | 422 |

HEADER/STRUCTURE CONNECTION WITH TUBE EXTENSION



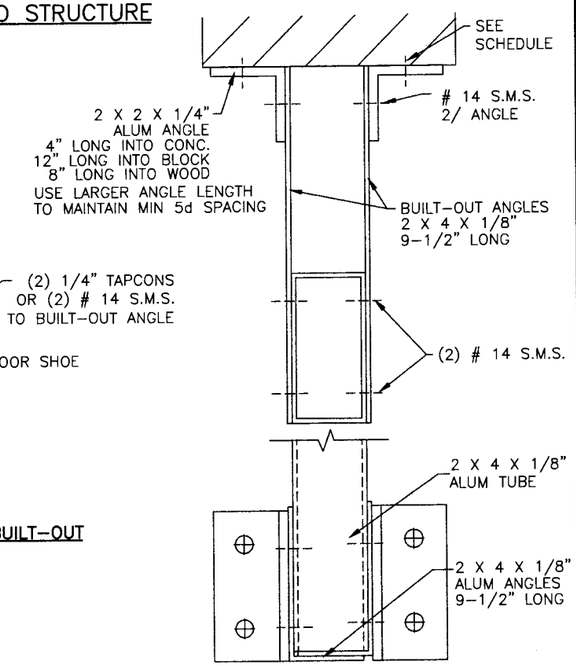




| ADDITIONAL CAPACITY OF DIRECT FASTENER | | | |
|---|---|---|---|
| STRUCTURE | FASTENER | EMBED | P1 |
| CONC. | 3/8"øKWIK BOLT | 2-1/2" | 1290 |
| | 1/2"øKWIK BOLT | 3-1/2" | 2130 |
| | 5/8"øKWIK BOLT | 4" | 2850 |
| BLOCK | 1/4" SLEEVE ANCHOR | 1-1/8" | 350 |
| | 5/16" SLEEVE ANCHOR | 1-1/4" | 375 |
| | 3/8" SLEEVE ANCHOR | 1-1/2" | 438 |
| WOOD | 1/4" DIA. TAPCONS | 1-1/2" | 499 |

DIRECT HEADER CONNECTION TO STRUCTURE

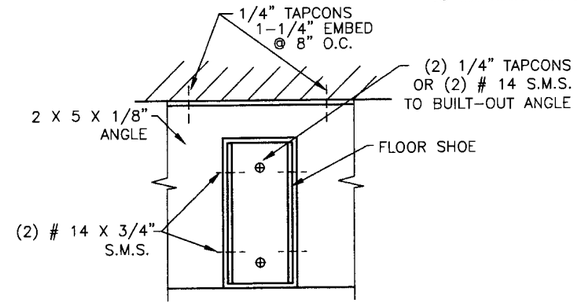
$$\text{REACTION} = R = \frac{1}{4} \times Sh \times Sw \times Pd$$

USE DIRECT CONNECTION AND/OR TUBE EXTENSION CAPACITY CHART TO DETERMINE ALLOWABLE CAPACITY.
FOR COMBINATION OF DIRECT ANCHOR AND TUBE EXTENSION USE THE TOTAL CAPACITY AS THE SUM OF THE TWO TYPES

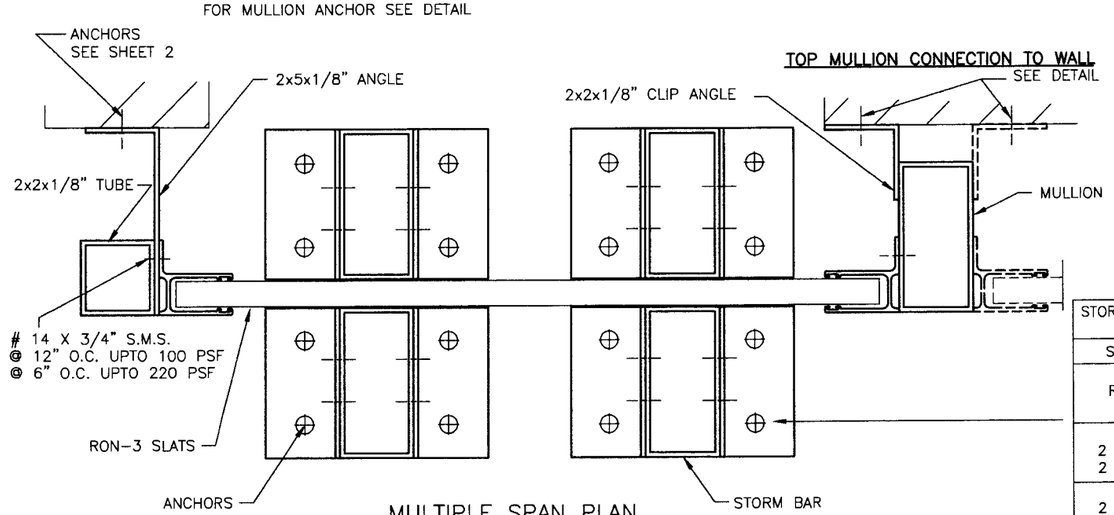



STORM BAR BOTTOM CONNECTION

VIEW "A-A"




BOTTOM MULLION CONNECTION TO BUILT-OUT




MULTIPLE SPAN PLAN
HEADER NOT SHOWN

| STORM BAR CONNECTION TO FLOOR & CEILING NO. OF FASTENERS REQD. EACH SIDE | | | |
|---|---|---|---|
| STORM BARS | FASTENERS | CONC. | WOOD |
| RON 24 RON 24&23 RON 57 | A, D | 2 | – |
| | E | – | 2 |
| RON 56 2 X 2 X 1/8" 2 X 3 X 1/8" | A, D | 2 | – |
| | E | – | 3 |
| 2 X 4 X 1/8" | A, D | 2 | – |
| | E | – | 3 |
| 2 X 4 X 1/8" W/ STIFFENER | A, D | 2 | – |
| | E | – | 4 |
| 2 X 6 X 1/8" | A, D | 3 | – |
| | E | – | 5 |
| 2 X 6 X 1/8" W/ STIFFENER | A, D | 3 | – |
| | E | – | 6 |

NO. OF FASTENERS IN WOOD ON EACH SIDE MAY BE CALCULATED AS. $\# \text{ REQD.} = \frac{\text{LOAD ON STORM BAR ANCHOR}}{232 \times 2}$

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Miami-Dade Product Control Division


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revisions:

| no | date | by | description |
|---|---|---|---|
| A | 8.22.95 | | SHEET 3 REV. |
| B | 4.17.96 | | DEFL. REV. |
| C | 5.15.03 | | WOOD ANCHORS REV. |
| D | 5.17.04 | | NO CHANGE THIS SHEET |
| E | 02.01.06 | | UPDATED FOR 2004 FBC |

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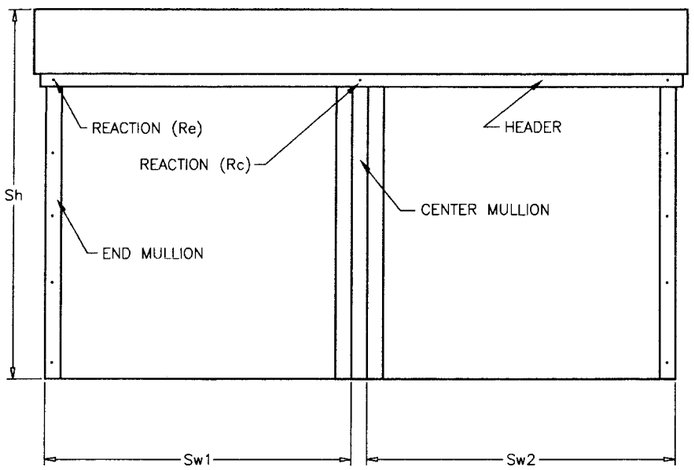
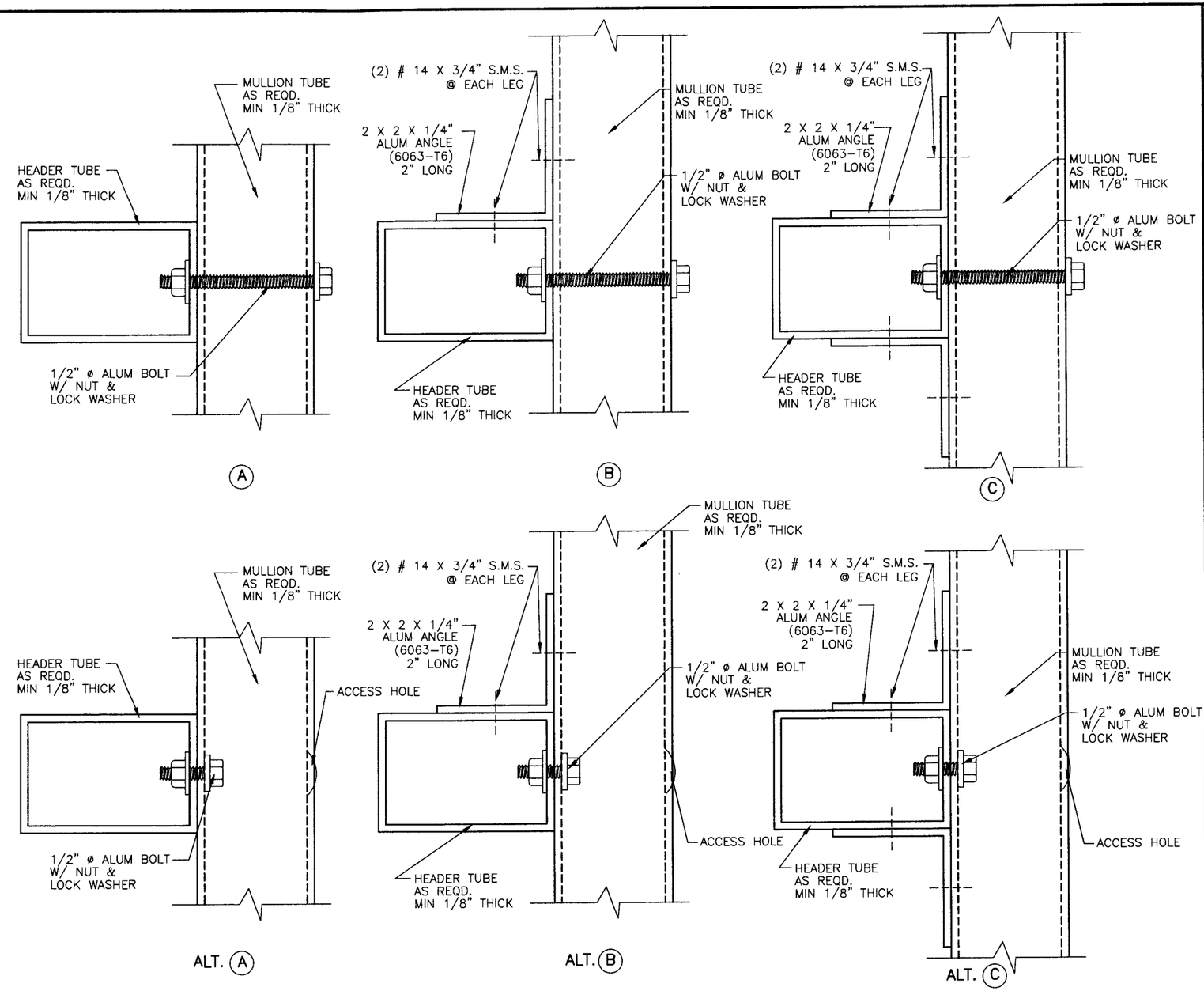
dr. by: HAMID
chk. by:

drawing no.
95-12




DESIGN LOAD = Pd = PSF

| Sh | Sw1 | Sw2 |
|---|---|---|
| | | |

HEADER CONNECTION TO CENTER MULLION

$$Rc = \frac{Sh\ (Sw1 + Sw2)\ Pd}{4}$$

$$Rc = \frac{\qquad}{4} =$$

HEADER CONNECTION TO END MULLION

$$Re = \frac{Sh\ (Sw1\ OR\ Sw2)\ Pd}{4}$$

$$Re = \frac{\qquad}{4} =$$

FOR Re/Rc< 3000 lbs USE CONNECTION DETAIL Ⓐ
Re/Rc< 3721 lbs USE CONNECTION DETAIL Ⓑ
Re/Rc< 4442 lbs USE CONNECTION DETAIL Ⓒ

ALL DIMENSIONS SHOWN Sh, Sw, Sw1 ETC. ARE IN FEET.

HEADER/MULLION CONNECTION DETAILS

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

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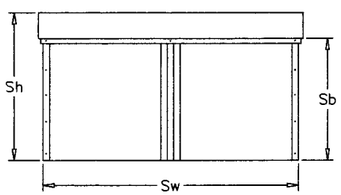
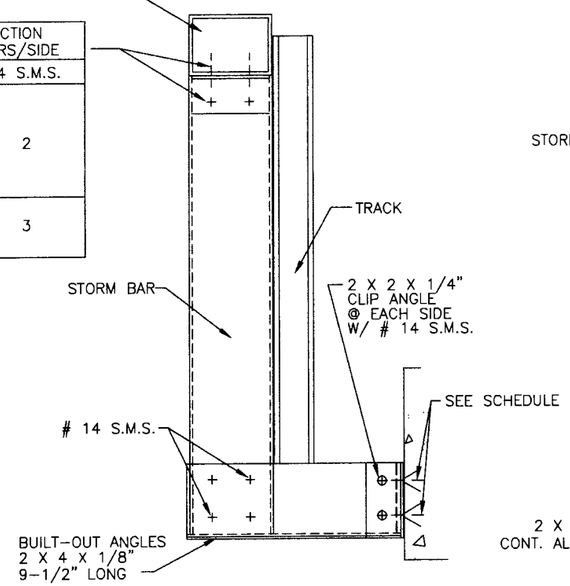
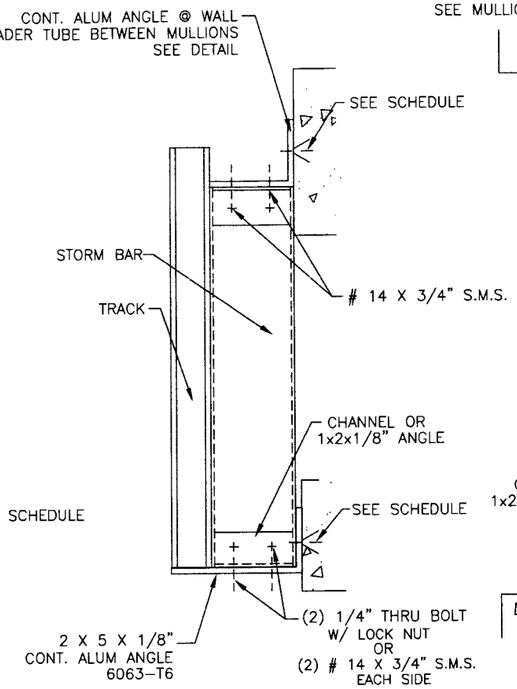
| CLIP ANGLE CONNECTION NUMBER OF FASTENERS/SIDE | |
|---|---|
| STORM BAR SIZE | # 14 S.M.S. |
| RON-24<br>RON-24&23<br>RON-57<br>RON-56<br>2 X 2 X 1/8"<br>2 X 3 X 1/8"<br>2 X 4 X 1/8" | 2 |
| 2 X 6 X 1/8"<br>2 X 6 X 1/8"<br>W/ STIFFENER | 3 |

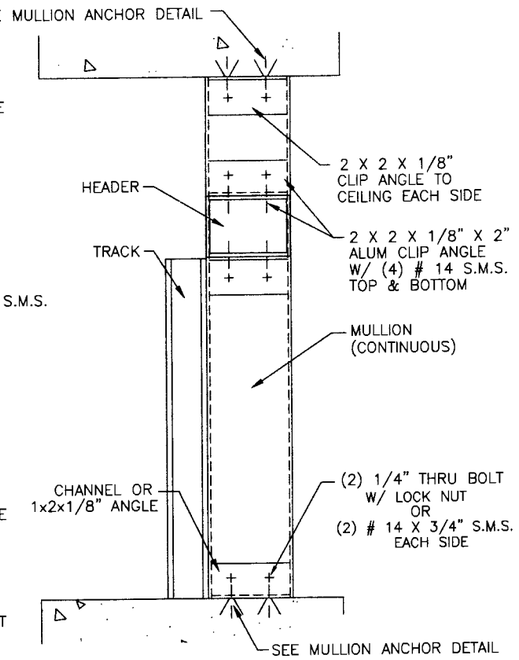



OUTSIDE STORM BAR
BUILT-OUT ANCHOR DETAIL




INSIDE STORM BAR TO WALL
ANCHOR DETAIL




INSIDE/OUTSIDE STORM BAR
MULLION TO FLOOR ANCHOR DETAIL

| STORM BAR WALL ANCHOR CAPACITY (Lbs) | | | | | |
|---|---|---|---|---|---|
| ANGLE LENGTH (IN.) | # ANCHORS/SIDE | ANCHOR TYPE | BASE MATERIAL | ALUM ANGLE 2 X 2 X 1/4" | ALUM ANGLE 2 X 2 X 1/8" |
| 2 | 1 | A | CONC. | 545 | 278 |
| | | D | BLOCK | 273 | 273 |
| | | E | WOOD | 624 | 278 |
| 3 | 2 | A | CONC. | 763 | 417 |
| | | D | BLOCK | 382 | 382 |
| | | E | WOOD | 1248 | 417 |
| 4 | 2 | A | CONC. | 1090 | 556 |
| | | D | BLOCK | 545 | 545 |
| | | E | WOOD | 1248 | 556 |
| 5 | 3 | A | CONC. | 1226 | 695 |
| | | D | BLOCK | 613 | 613 |
| | | E | WOOD | 1871 | 695 |

LOAD ON STORM BAR ANCHOR $= P = \dfrac{Sw \times Sb \times Pd \times FACTOR}{2 \times (\#\ OF\ SPANS)}$

IF P > CAPACITY OF FASTENERS SHOWN, ANCHORAGE SYSTEM SHALL BE DESIGNED ON JOB TO JOB BASIS.

FACTOR = 1.25 FOR 2 SPANS
= 1.10 FOR 3 SPANS
Sb = STORM BAR HEIGHT

ALL DIMENSIONS SHOWN Sh, Sw, Sb ETC. ARE IN FEET.

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

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Miami Dade Product Control Division


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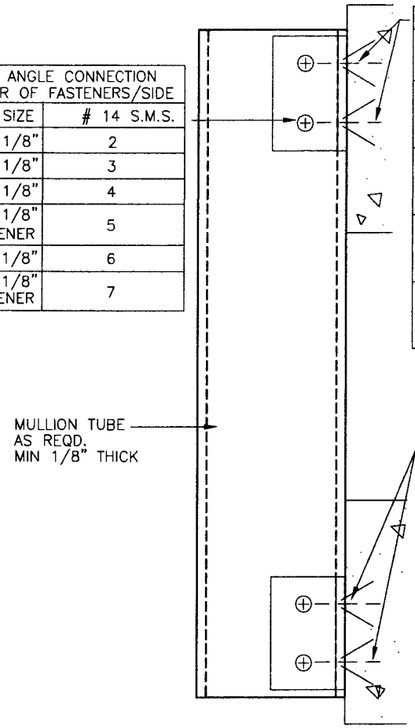
scale: 1/2" = 1"
dr. by: HAMID
chk. by:

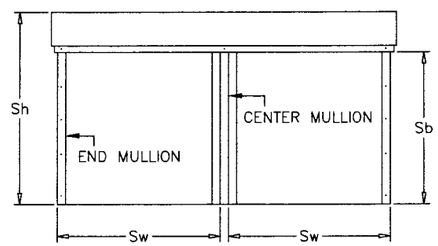
drawing no.
95-12

| CLIP ANGLE CONNECTION NUMBER OF FASTENERS/SIDE | |
|---|---|
| MULLION SIZE | # 14 S.M.S. |
| 2 X 2 X 1/8" | 2 |
| 2 X 3 X 1/8" | 3 |
| 2 X 4 X 1/8" | 4 |
| 2 X 4 X 1/8" W/ STIFFENER | 5 |
| 2 X 6 X 1/8" | 6 |
| 2 X 6 X 1/8" W/ STIFFENER | 7 |

| MULLION WALL ANCHOR CAPACITY (Lbs) | | | | |
|---|---|---|---|---|
| ANGLE LENGTH (IN.) 2 X 2 X 1/4" | # ANCHORS/SIDE | ANCHOR TYPE | BASE MATERIAL | CAPACITY OF CONNECTION |
| 6.25 | 3 | A | CONC. | 1635 |
| | | D | BLOCK | 818 |
| | | E | WOOD | 1871 |
| 8.75 | 4 | A | CONC. | 2180 |
| | | D | BLOCK | 1090 |
| | | E | WOOD | 2495 |
| 11.25 | 5 | A | CONC. | 2725 |
| | | D | BLOCK | 1363 |
| | | E | WOOD | 3119 |
| 13.75 | 6 | A | CONC. | 3270 |
| | | D | BLOCK | 1635 |
| | | E | WOOD | 3743 |




WALL CONNECTION




TOTAL LOAD ON MULLION

$P = \frac{Sh \times Sw}{4} Pd =$ Lbs (END MULLION)

$P = \frac{Sh \times Sw}{2} Pd =$ Lbs (CENTER MULLION)

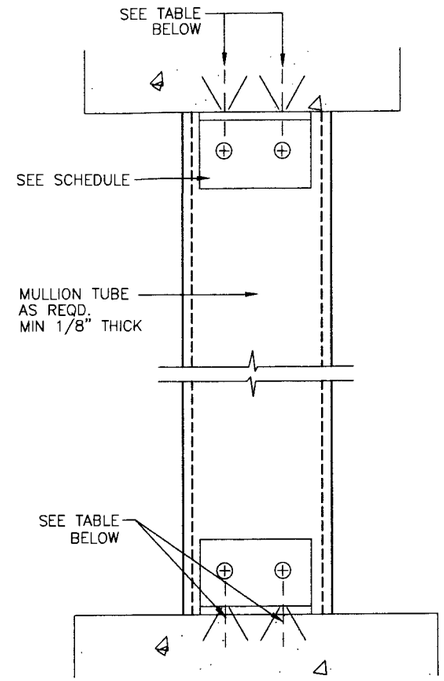
LOAD AT ANCHOR

AT TOP = Pt = $\frac{P * Sb}{Sh}$ = Lbs

AT BOTTOM = Pb = P − Pt = Lbs

IF Pt OR Pb > ANCHOR CAPACITY OF FASTENER SHOWN
ANCHORAGE SYSTEM SHALL BE DESIGNED ON JOB TO JOB BASIS.

ALL DIMENSIONS SHOWN Sh, Sw, Sb ETC. ARE IN FEET.




SLAB CONNECTION

| MULLION CONNECTION TO FLOOR & CEILING NO. OF FASTENERS REQD. EACH SIDE | | | | | |
|---|---|---|---|---|---|
| MULLION SIZE | FASTENER TYPE | TOP | | BOTTOM | |
| | | CONC. | WOOD | CONC. | WOOD |
| 2 X 2 X 1/8" 2 X 3 X 1/8" | A | 2 | – | 1 | – |
| | B | 4 | – | 3 | – |
| | C | 2 | – | 2 | – |
| | E | – | 3 | – | 2 |
| 2 X 4 X 1/8" | A | 3 | – | 2 | – |
| | B | 7 | – | 5 | – |
| | C | 4 | – | 3 | – |
| | E | – | 5 | – | 3 |
| 2 X 4 X 1/8" W/ STIFFENER | 1/2" ø KWIK BOLT | 1 | – | 1 | – |
| 2 X 6 X 1/8" 2 X 6 X 1/8" W/ STIFFENER | 1/2" ø KWIK BOLT | 2 | – | 1 | – |

**ANCHOR DESCRIPTION:**

ANCHOR (A) = 1/4" DIA. TAPCONS
1-3/4" EMBEDMENT INTO 3000 PSI CONC.
1-1/4" EMBEDMENT INTO C-90 BLOCK

ANCHOR (B) = #14 SMS W/ RAWL SCRU-LEAD
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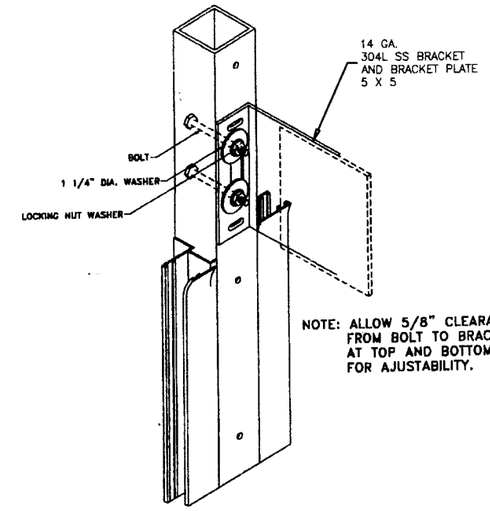
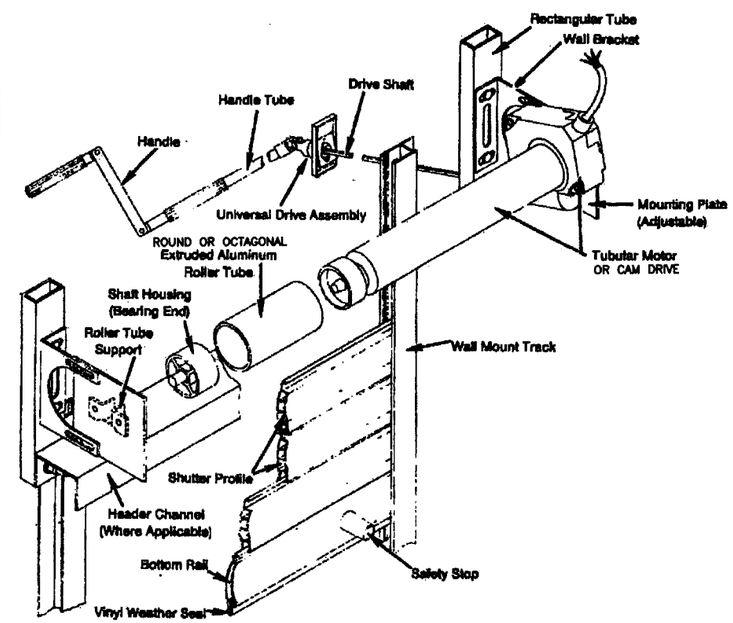
TOTAL ANCHOR BODY INTO 3000 PSI CONC.
OR C-90 BLOCK

ANCHOR (E) = 1/4" DIA. TAPCONS
1-1/2" MIN PENETRATION INTO WOOD (S.G.=0.55)

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

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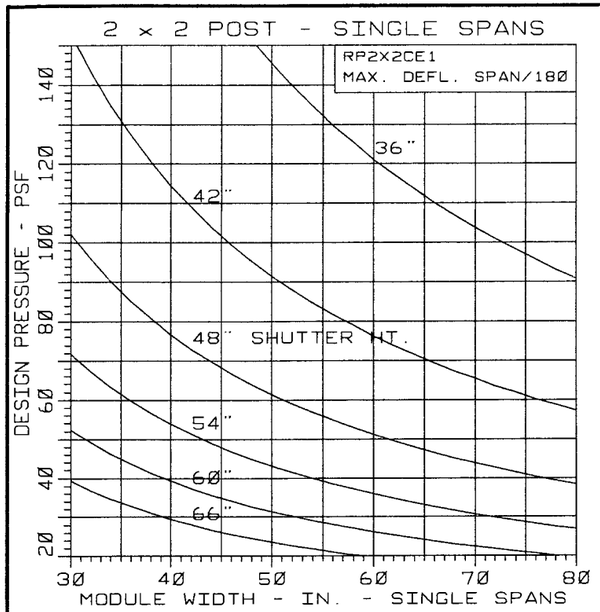
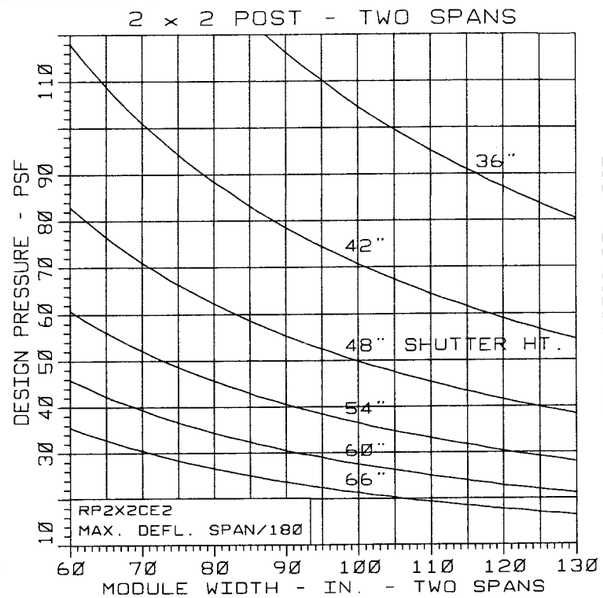
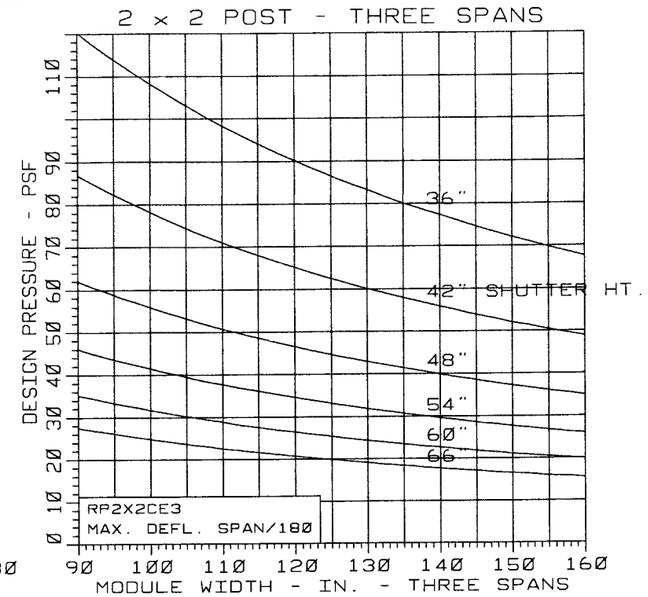
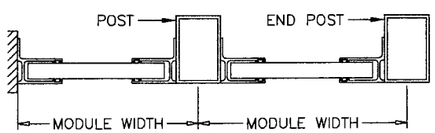
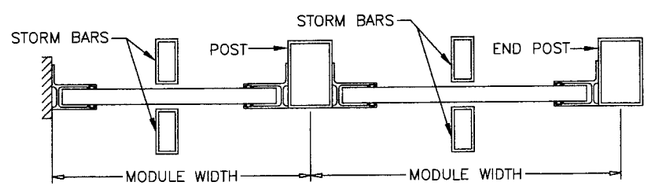



SINGLE SPANS

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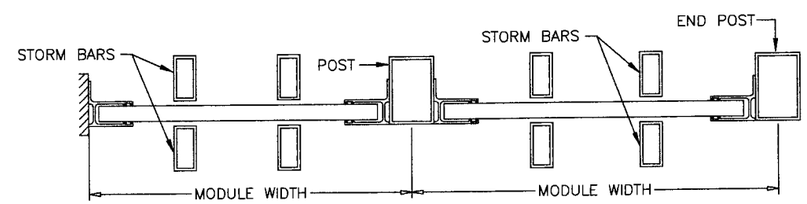


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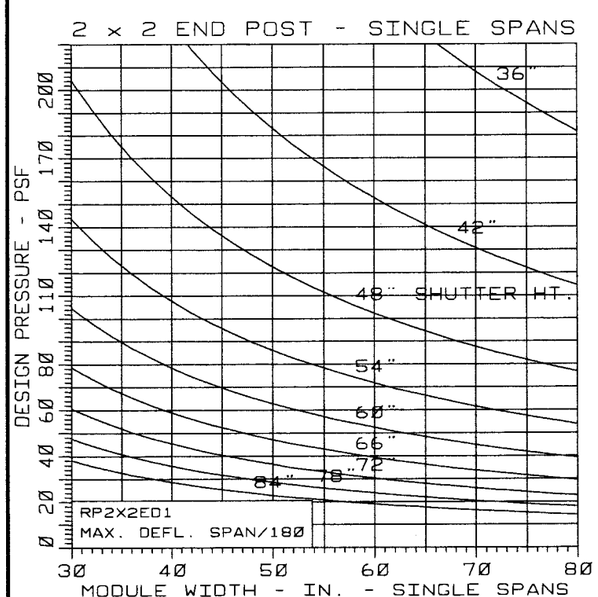


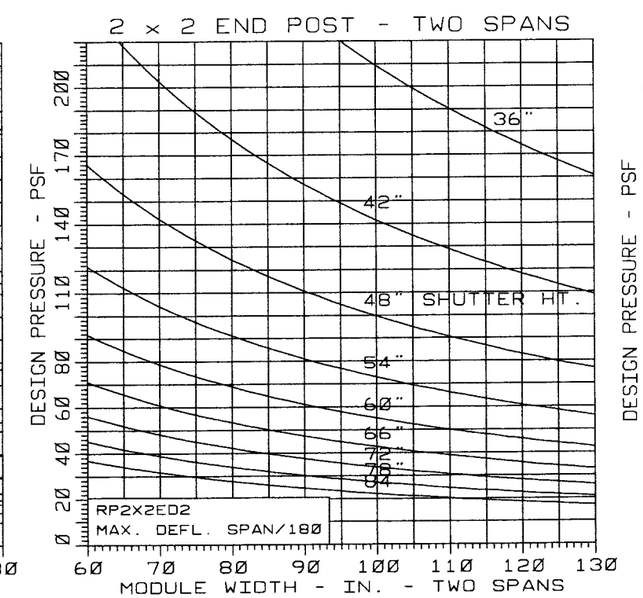


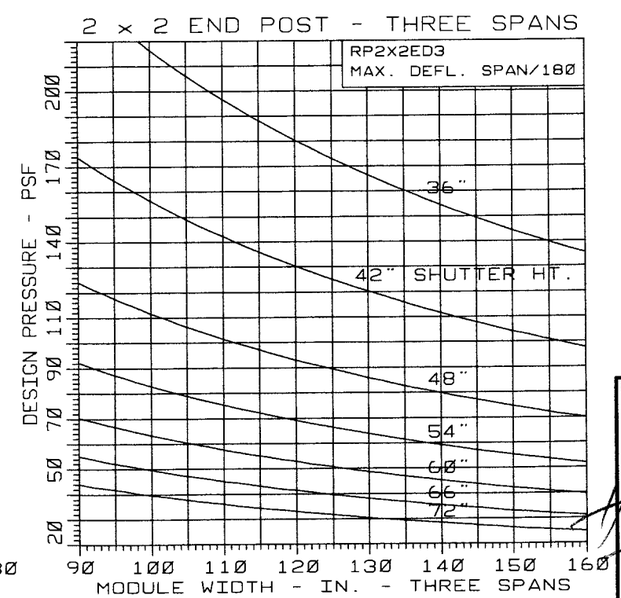


PRODUCT RENEWED
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Building Code
Acceptance No 08-0313.07
Expiration Date 06/06/09
By [signature]
Miami Dade Product Control
Division

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

MAR 0 7 2008

AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978

ROLLUP\95-12RI

RollShutter Details

ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591

revisions:

| no | date | by | description |
|---|---|---|---|
| C | 5.15.03 | | NO CHANGE THIS SHEET |
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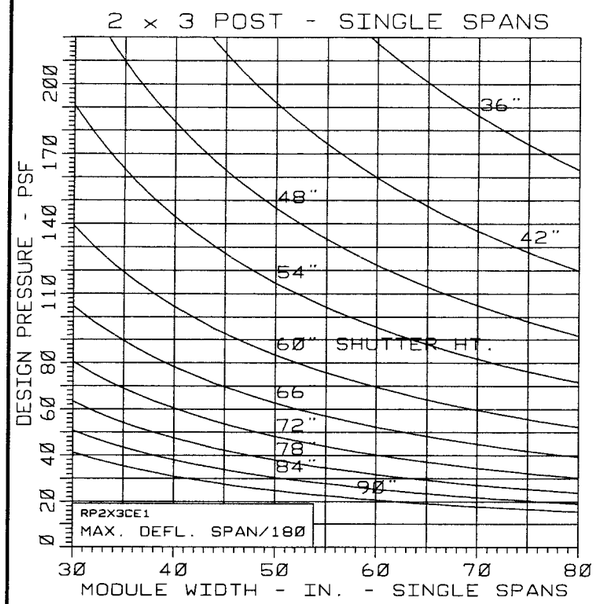
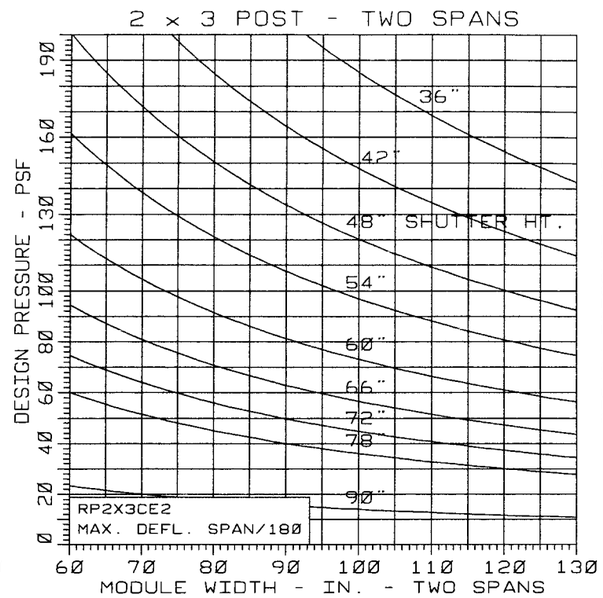
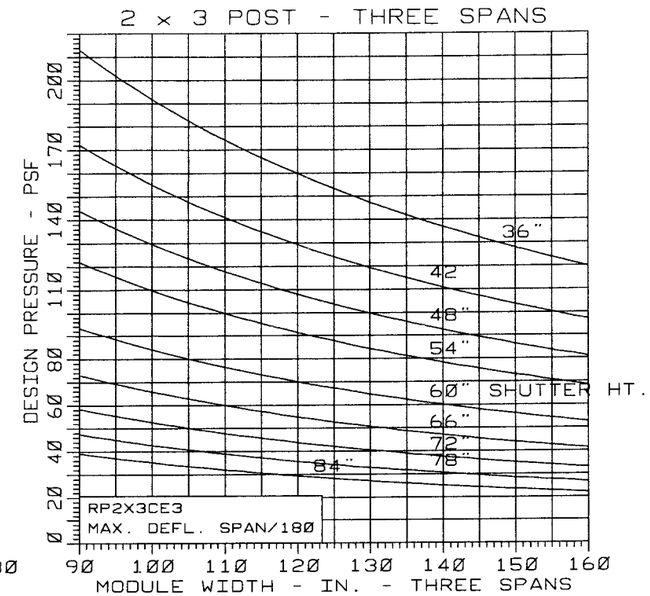
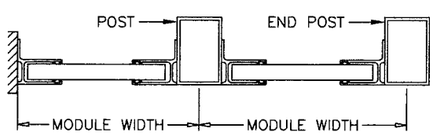
date: 02-27-95
scale: -
dr. by: HAMID
chk. by:

drawing no.
95-12

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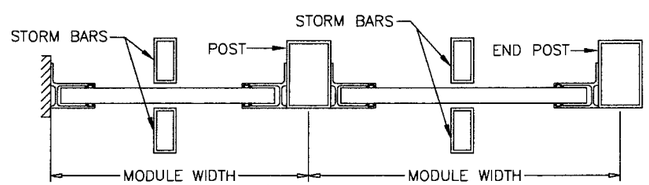


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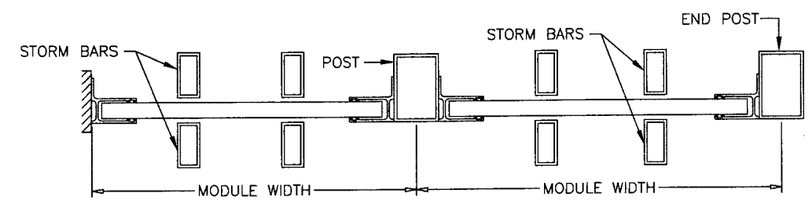


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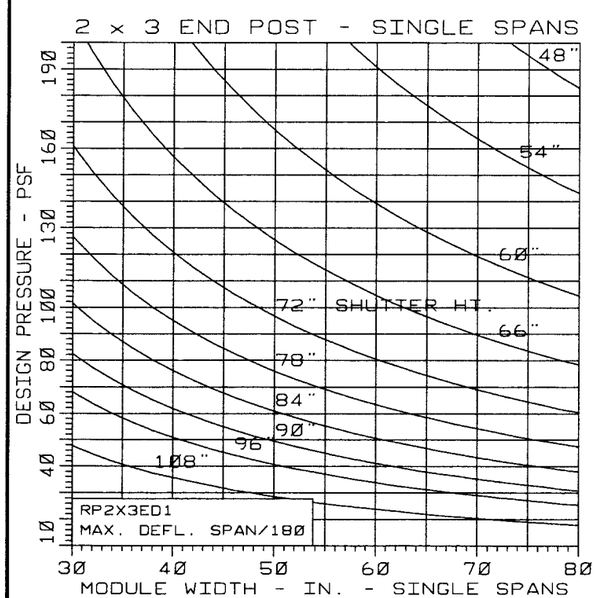


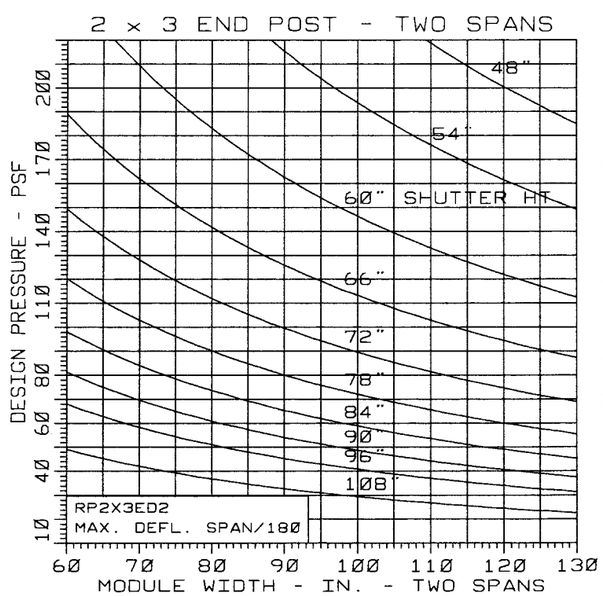


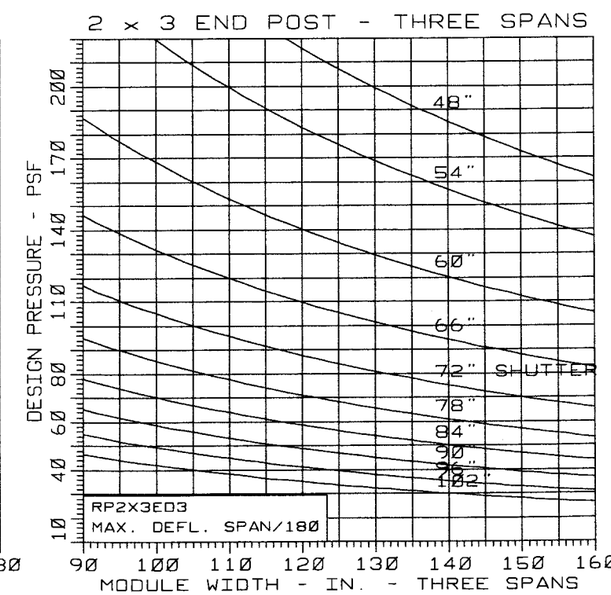


PRODUCT RENEWED
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Engr: DR. HUMAYOUN FAROOQ
STRUCTURES
FLA. PE # 16557
C.A.N. 3538

MAR 07 2008


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
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ROLLUP\95-12RI

RollShutter Details

ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591

revisions:

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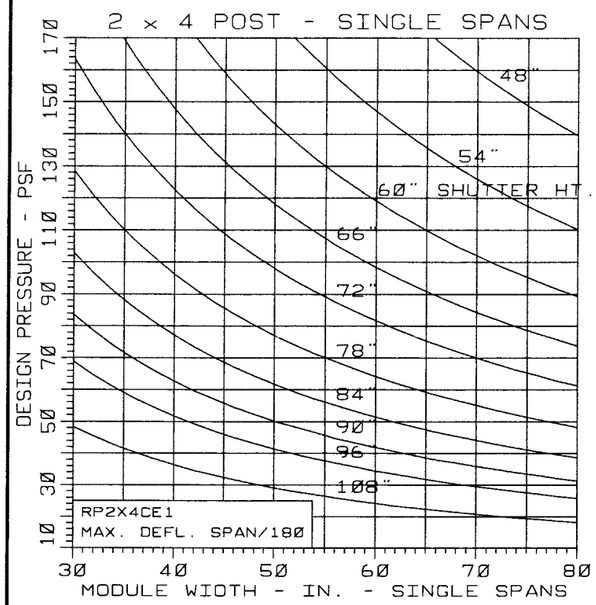
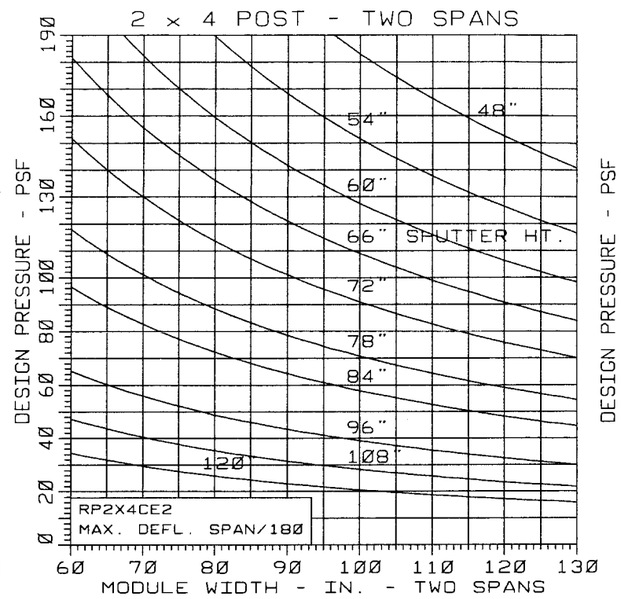
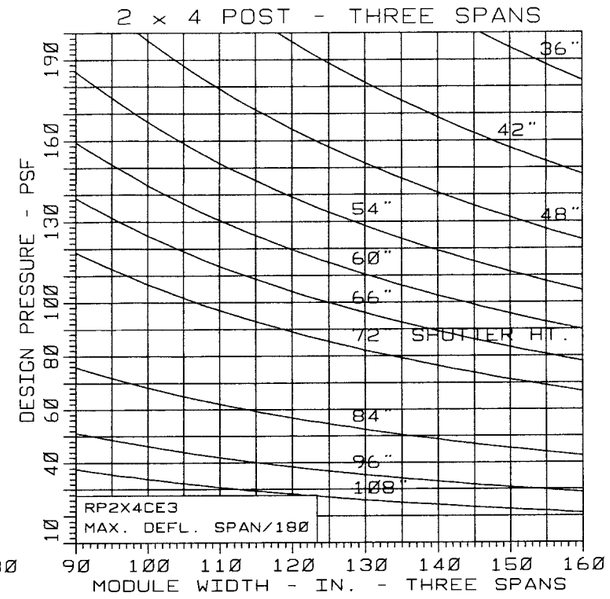
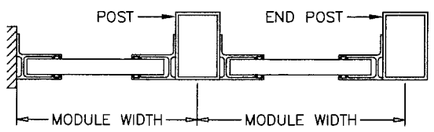
scale: -
dr. by: HAMID
chk. by:

drawing no.
95-12

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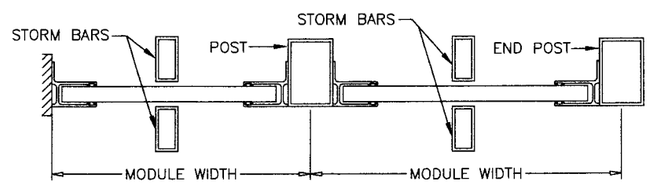


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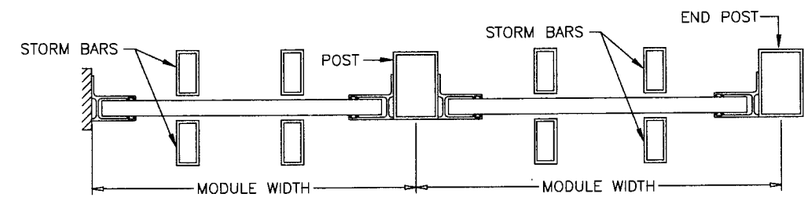


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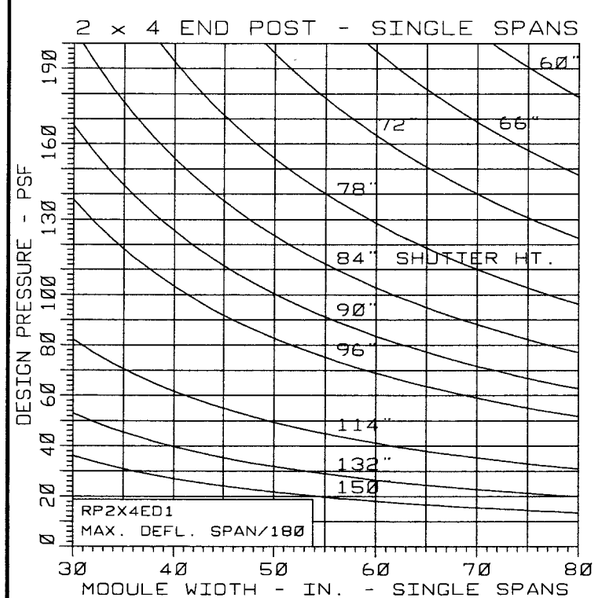


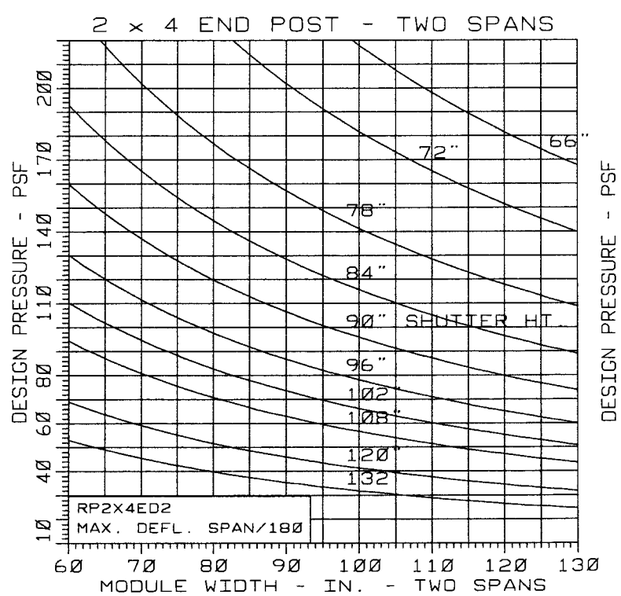


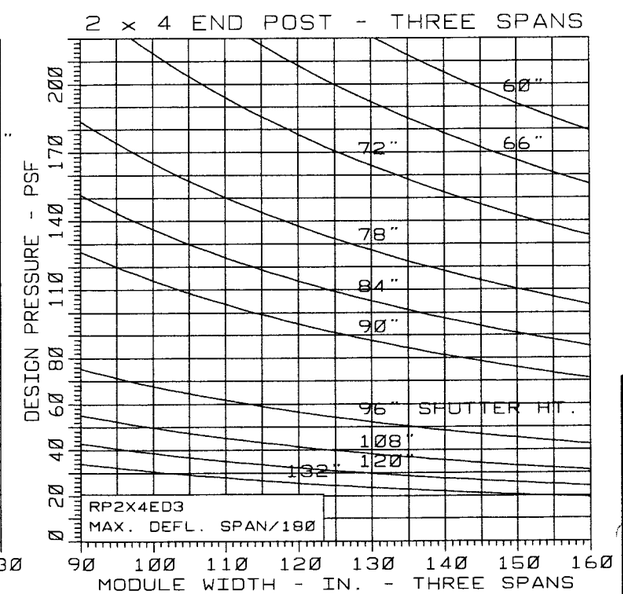


PRODUCT RENEWED
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Miami-Dade Product Control
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Engr: DR. HUMAYOUN FARDOOQ
STRUCTURES
FLA. PE # 16557
C.A.N. 3538

MAR 0 7 2008


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978
ROLLUP\95-12R


RollShutter Details

ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591

revisions:

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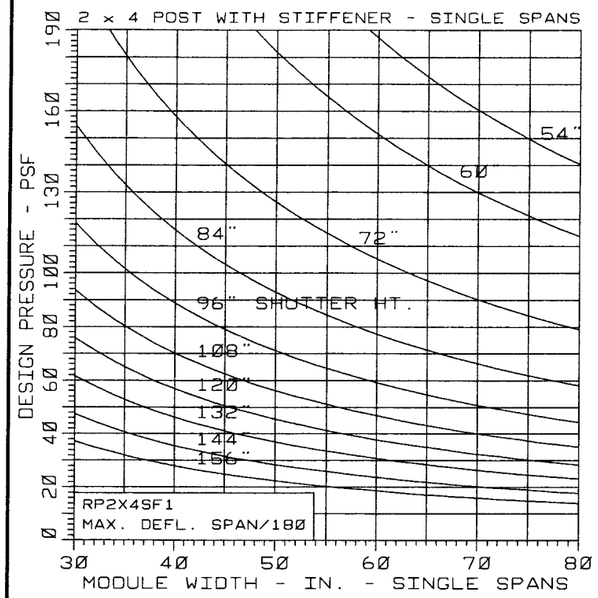
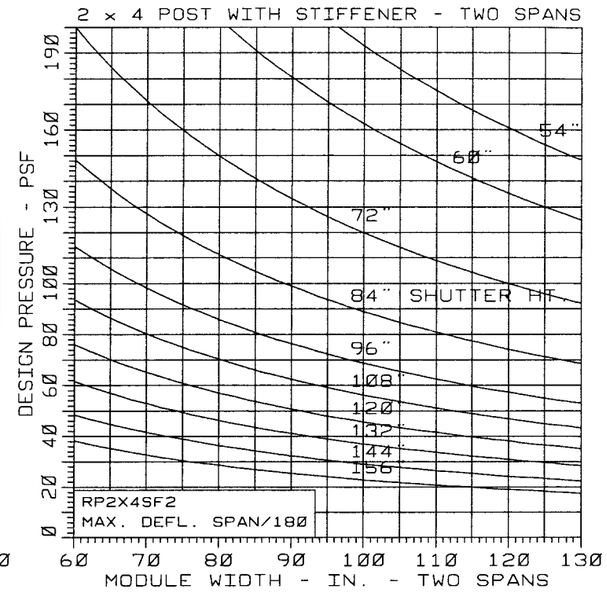
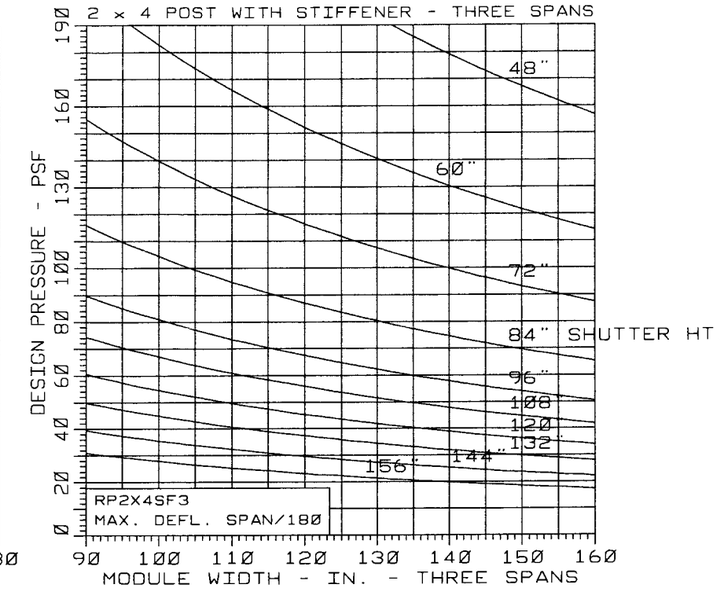
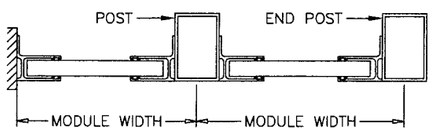
scale: -
dr. by: HAMID
chk. by:

drawing no.
95-12

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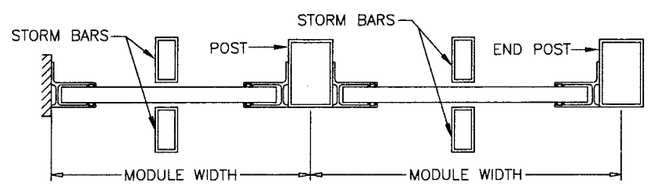


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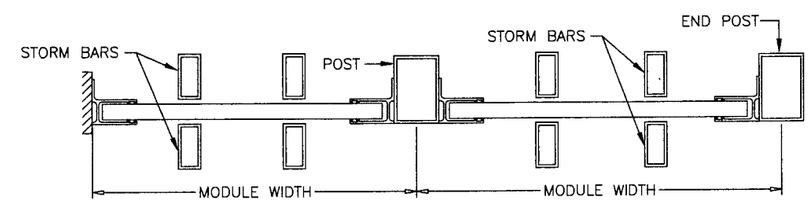


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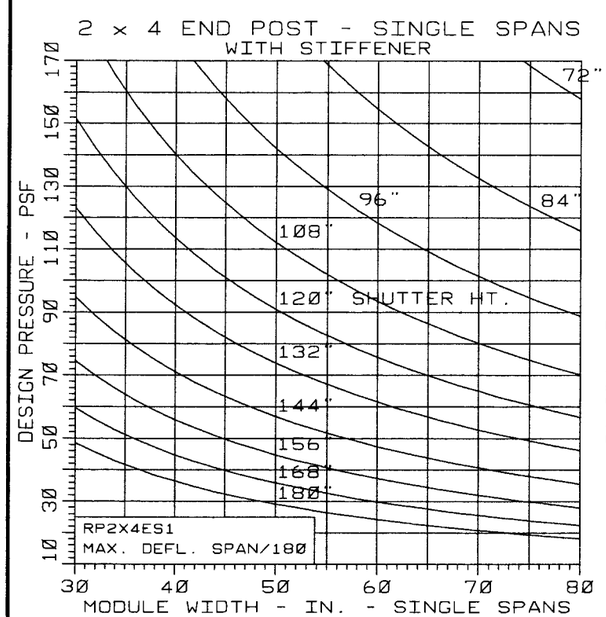


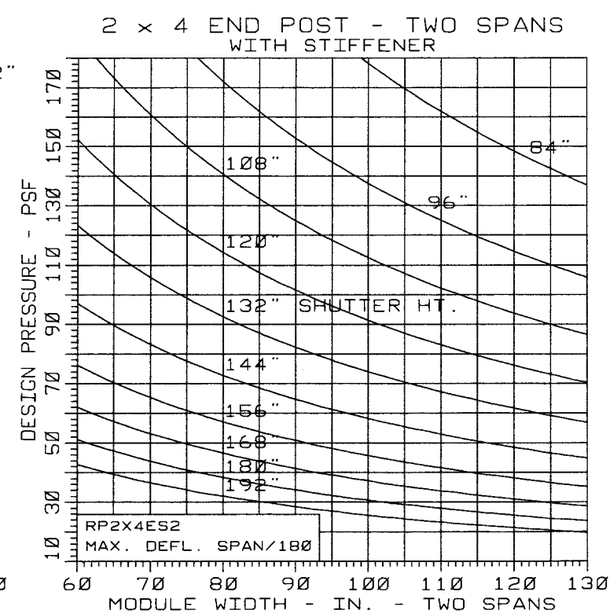


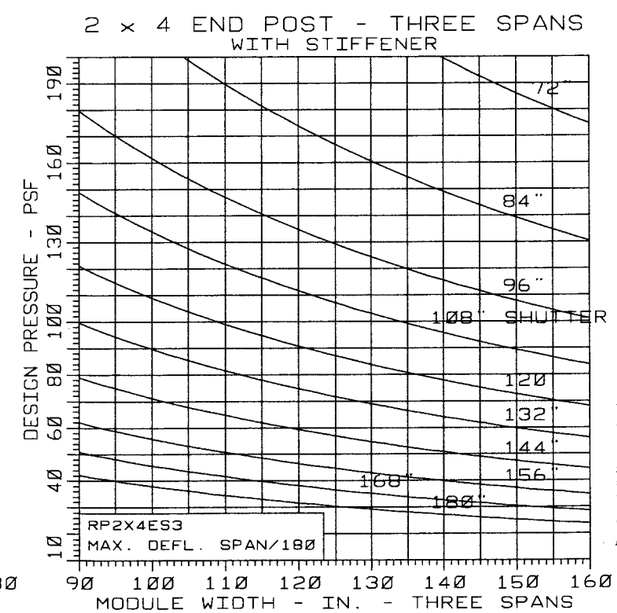


PRODUCT RENEWED
Approving with the Florida
Building Code
Acceptance No 08-6313.07
Expiration Date 06/06/09
By [signature]
Miami Dade Product Control
Division

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

MAR 0 7 2008

AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978

ROLLUP\95-12RI

RollShutter Details

ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591

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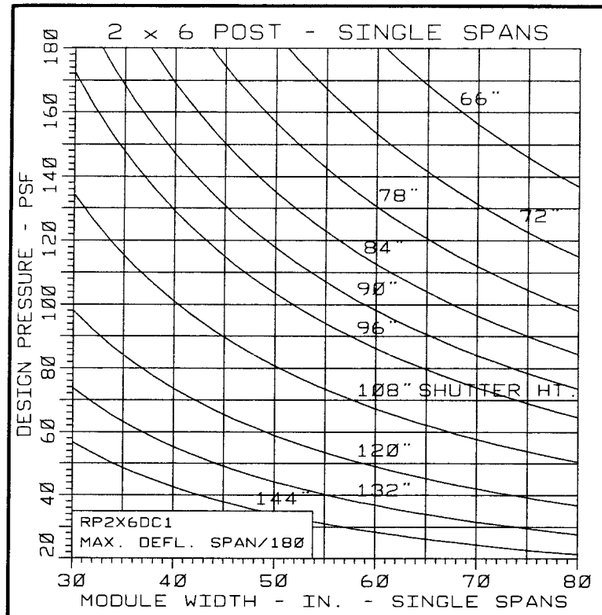
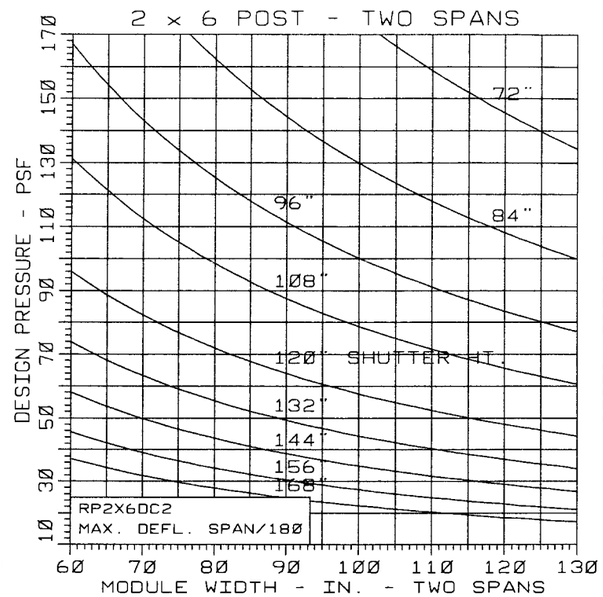
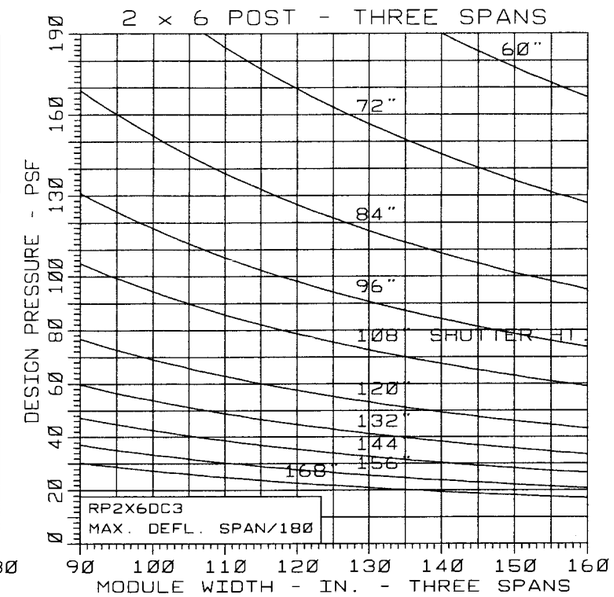
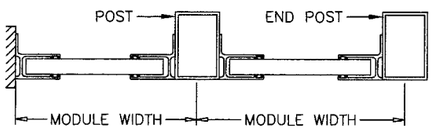
dr. by: HAMID
chk. by:

drawing no.
95-12

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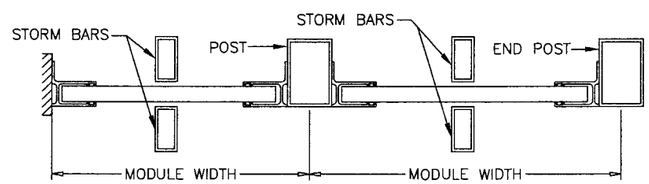


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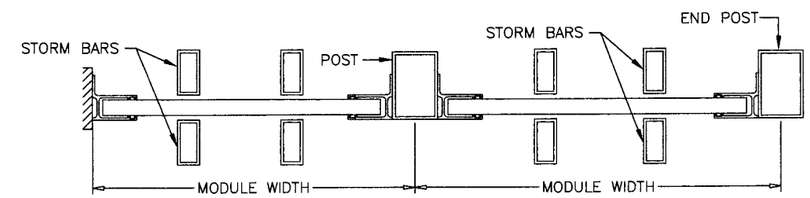


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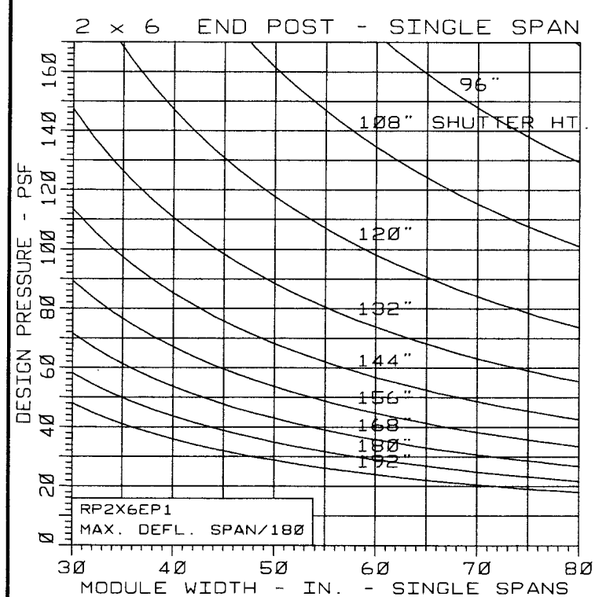


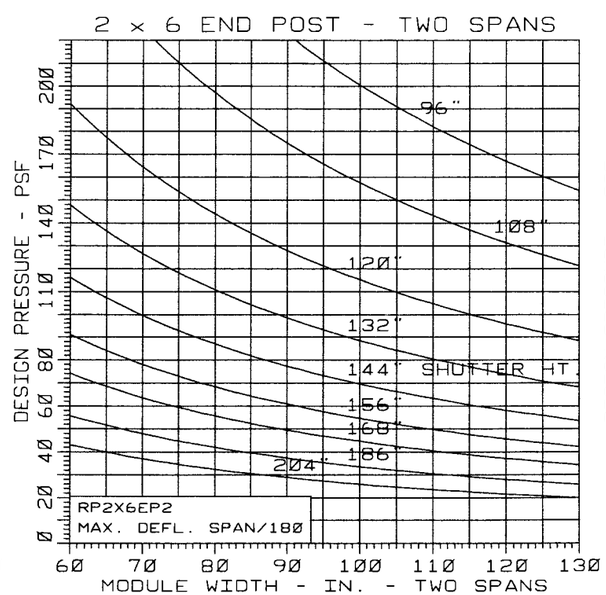


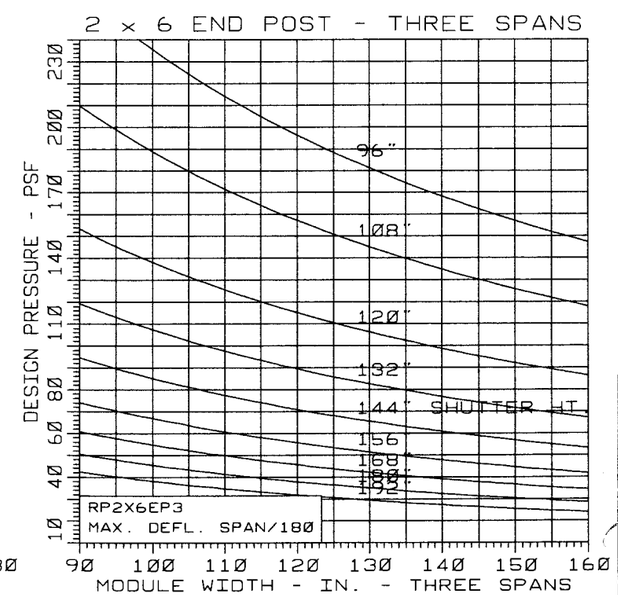


REVIEWED
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Building Code
Application No. 08-0313.07
Product Date 06/05/09
By: MHand
Building Code Product Control
Division

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

MAR 07 2008


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
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TEL. (305) 264-8100 FAX. (305) 262-6978


ROLLUP\95-12R1

RollShutter Details


ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591


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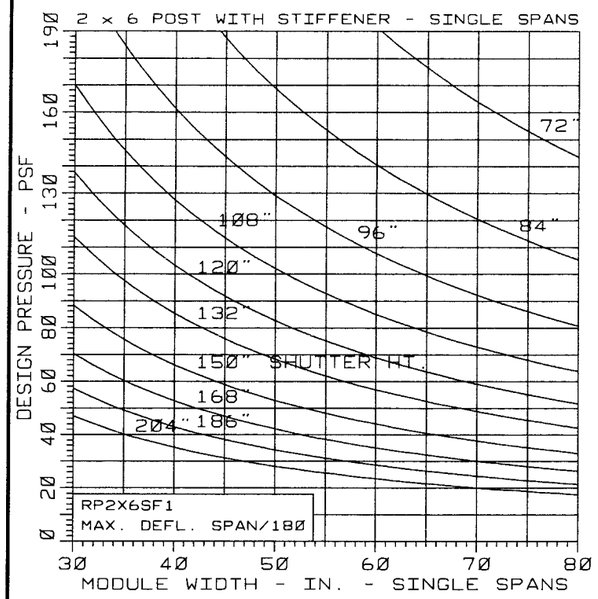
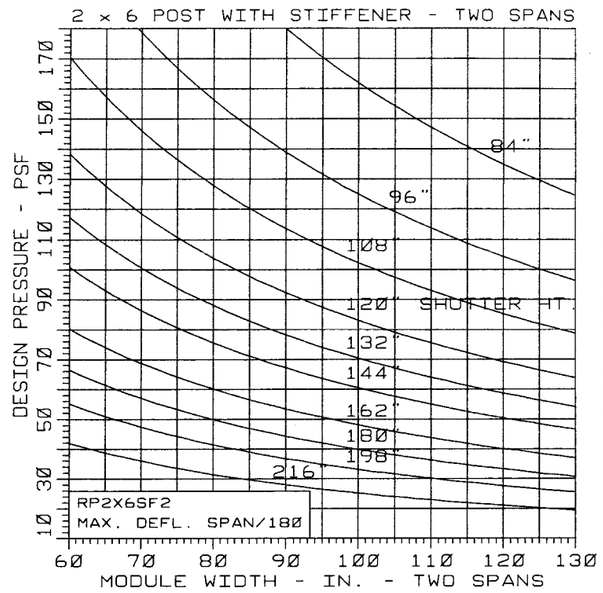
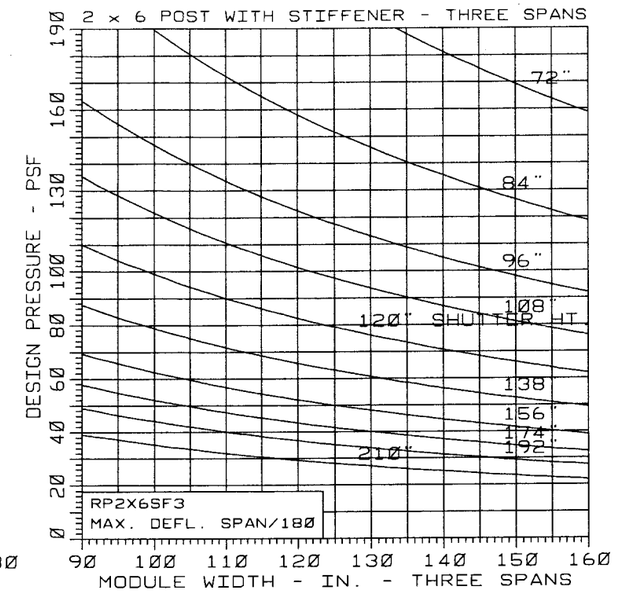
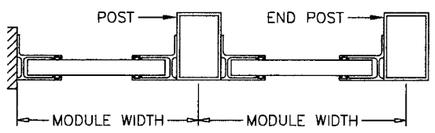
chk. by:

drawing no.
95-12

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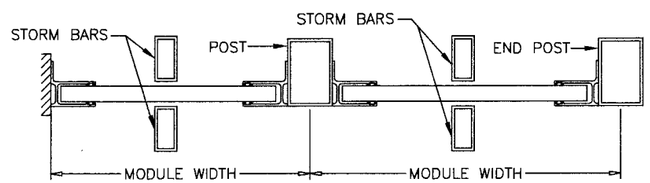


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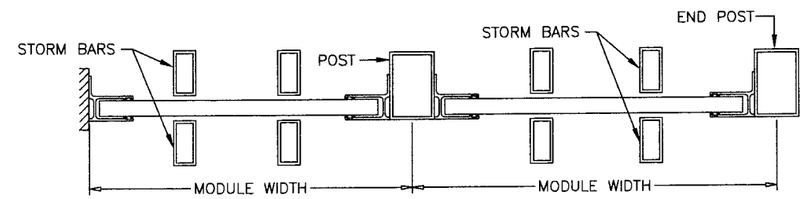


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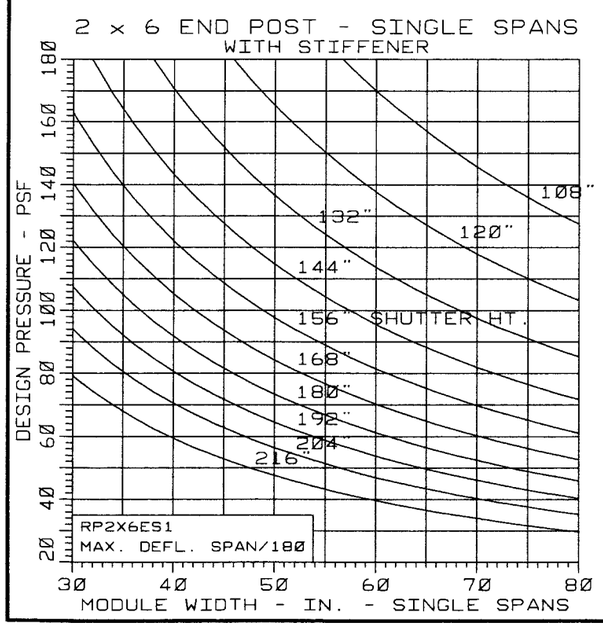


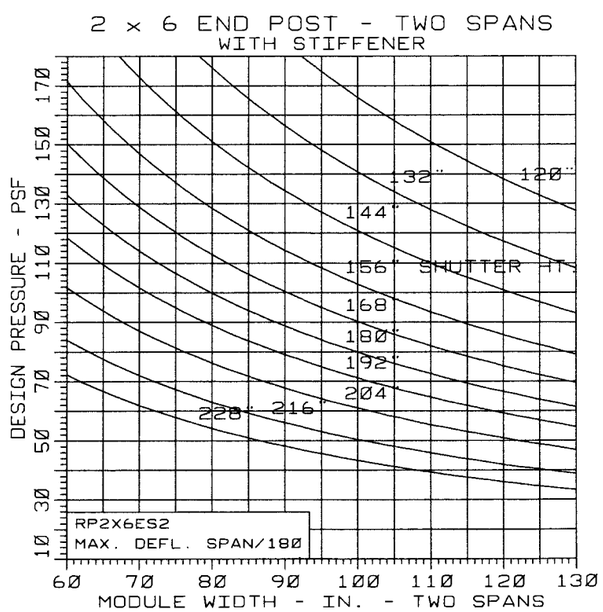


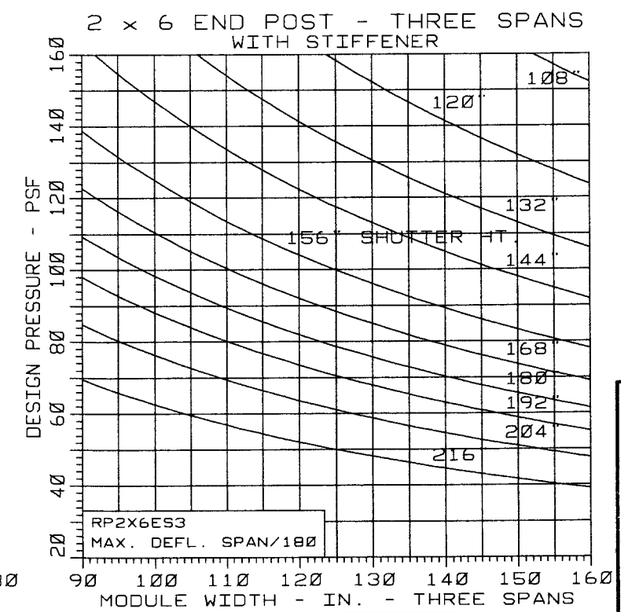


PRODUCT RENEWED
As complying with the Florida Building Code
Acceptance No 08-0313.07
Expiration Date 06/06/09
By M Thaub
Miami Dade Product Control Division

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

MAR 07 2008


AL-FAROOQ CORPORATION
ENGINEERS, PLANNERS & PRODUCT DESIGN
1235 SW 87 AVE
MIAMI, FLORIDA 33174
TEL. (305) 264-8100 FAX. (305) 262-6978


ROLLUP\95-12RI

RollShutter Details

ROLLADEN INC.
550 ANSIN BOULEVARD
HALLANDALE, FL. 33009
(305) 757 - 8591

revisions:

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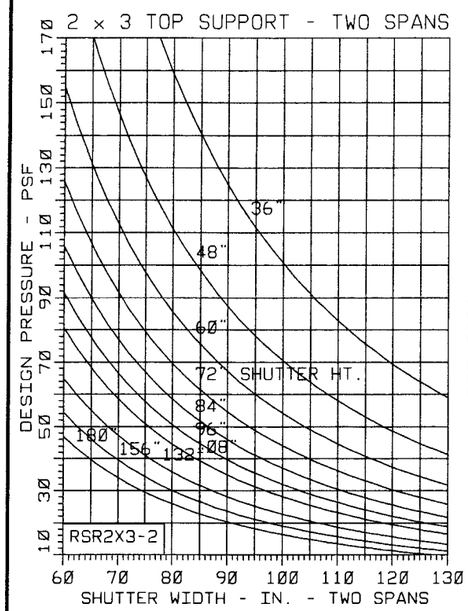
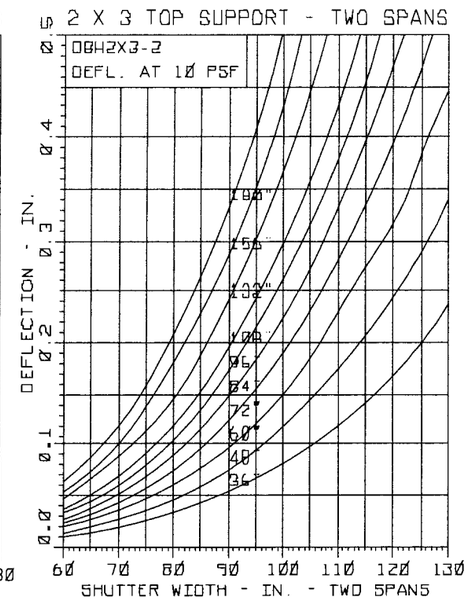
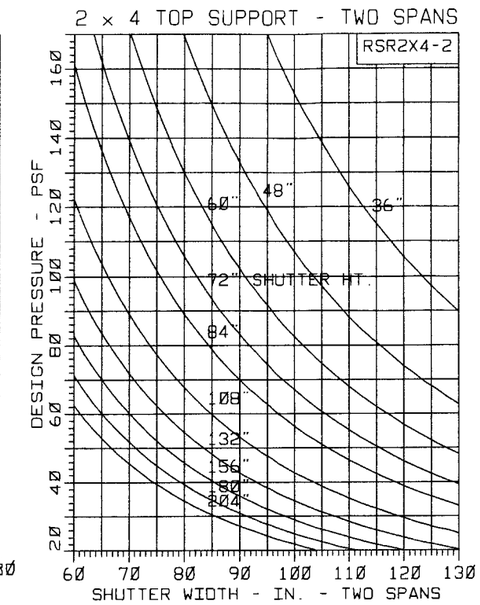
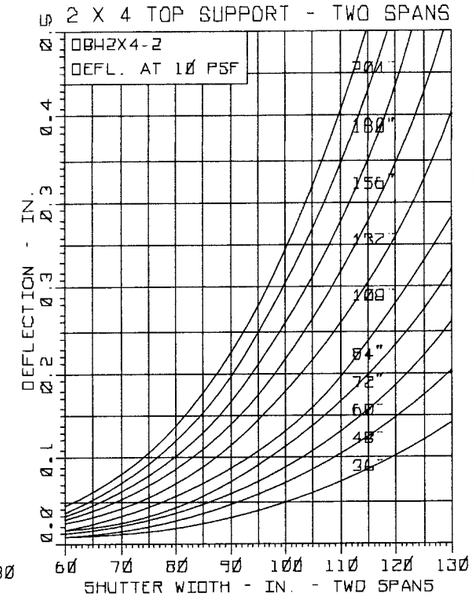
dr. by: HAMID
chk. by:

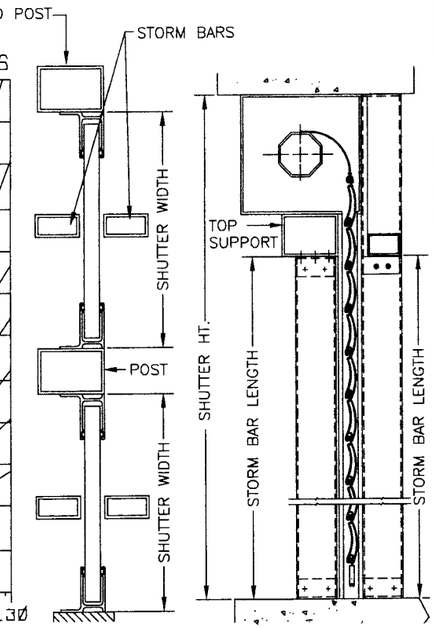
drawing no.
95-12




TWO SPANS

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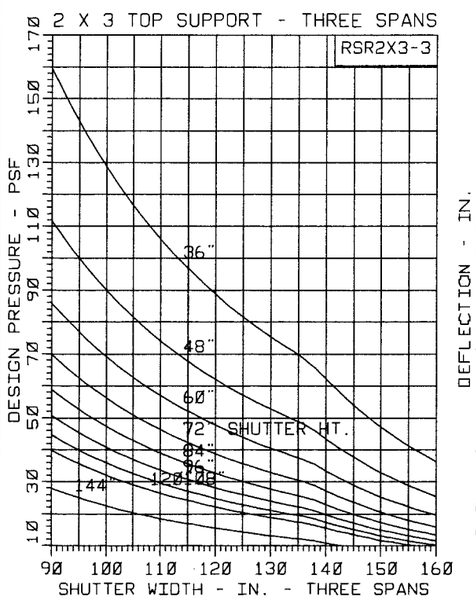


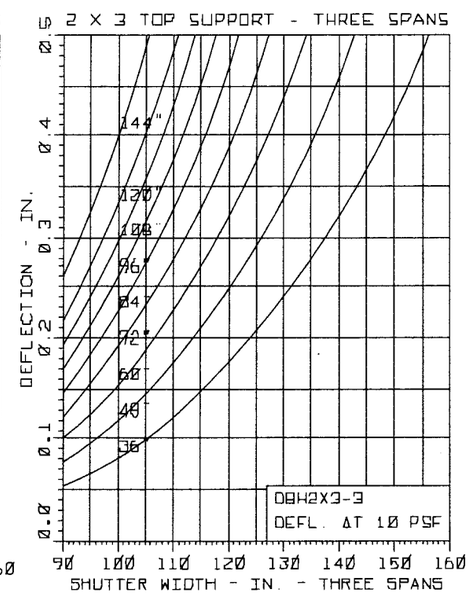


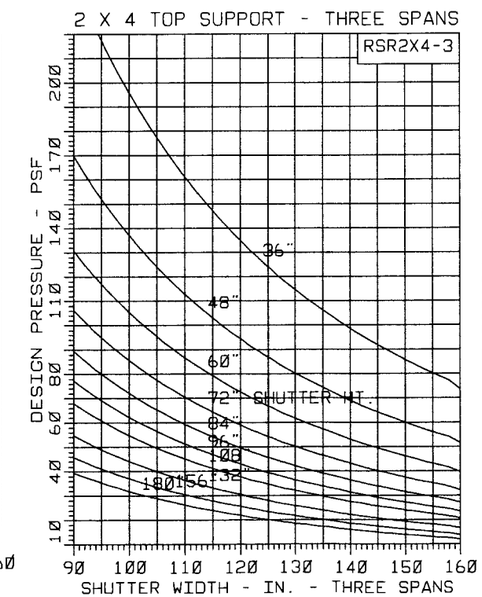


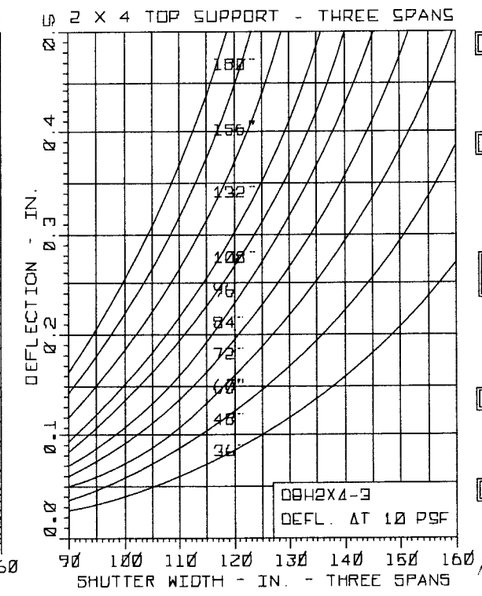


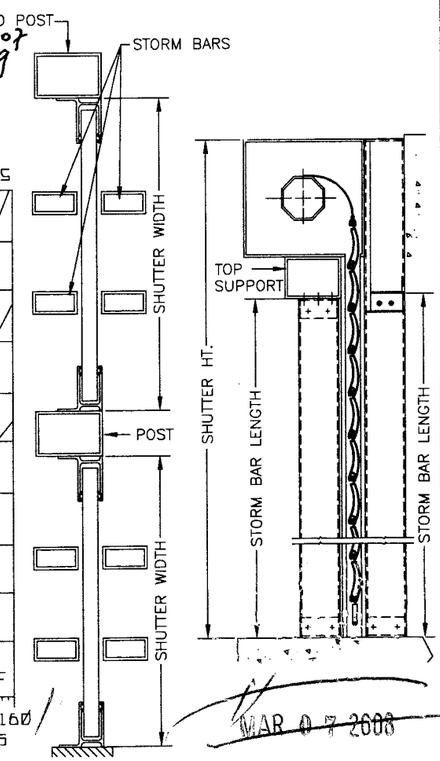


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ROLLUP\95-12R1

RollShutter Details

ROLLADEN INC.
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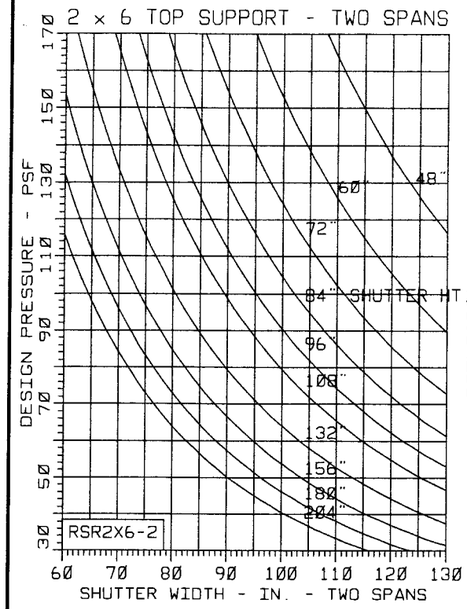


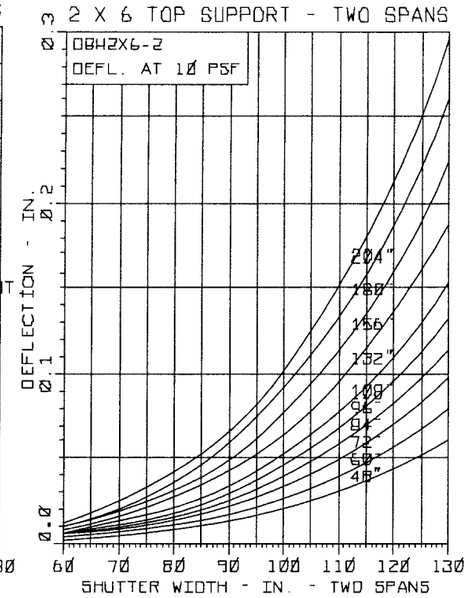


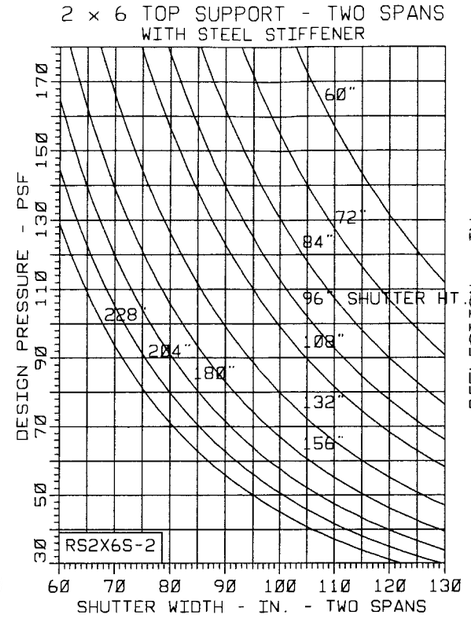


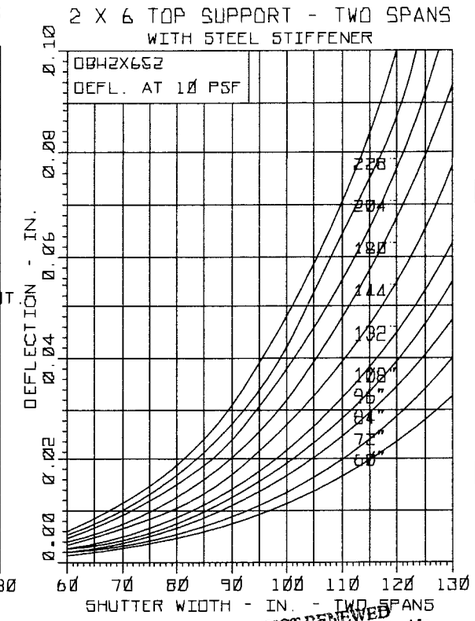


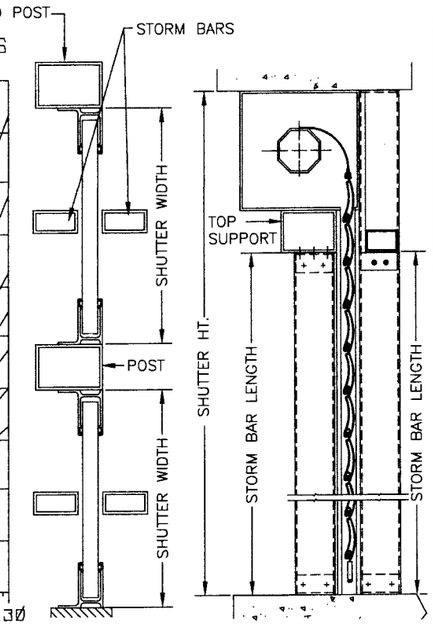


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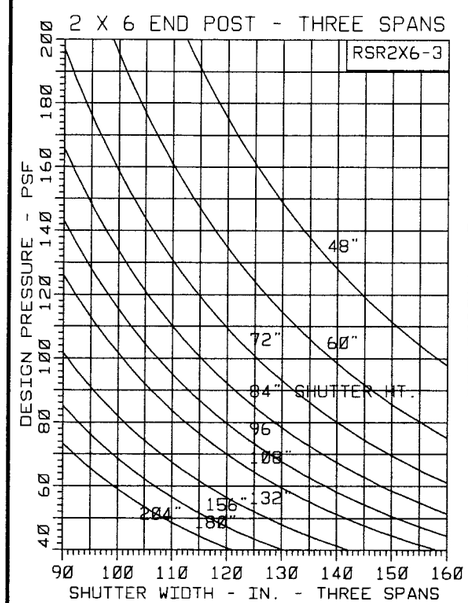


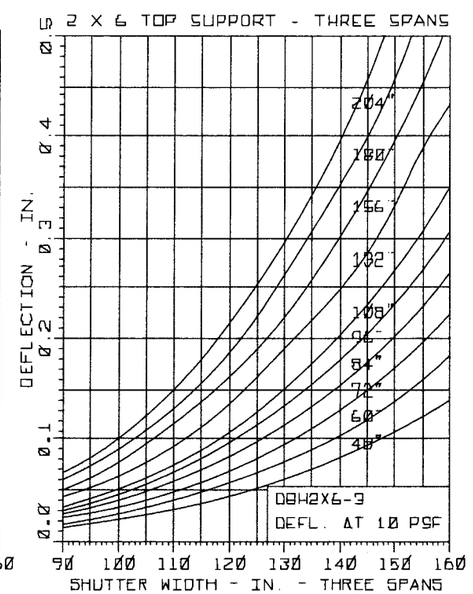


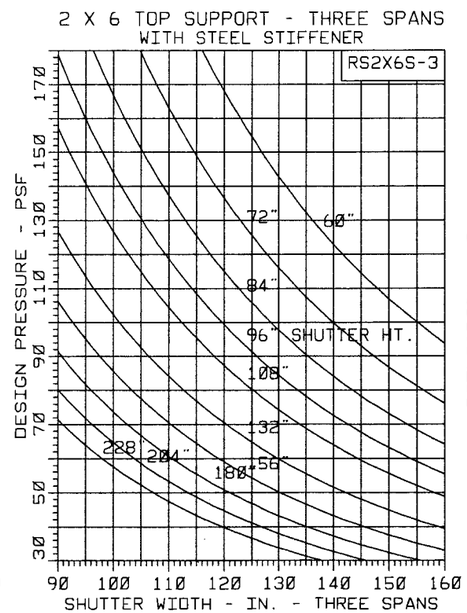


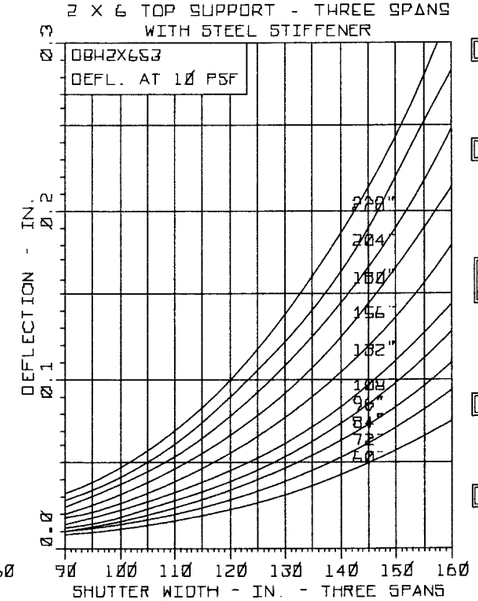


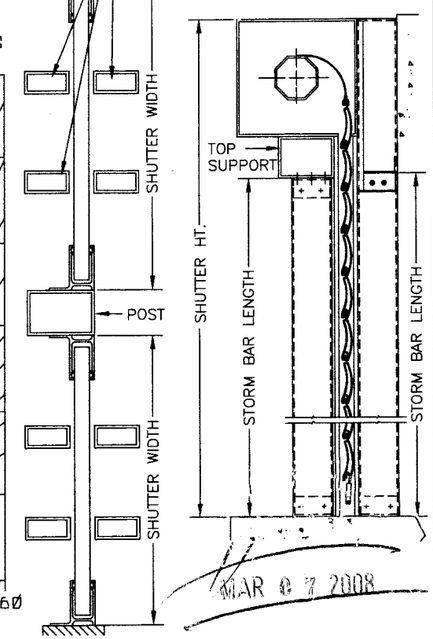


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ROLLUP\95-12RI

RollShutter Details

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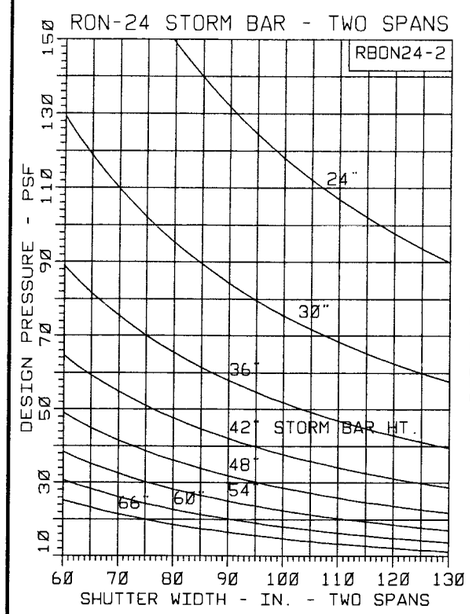


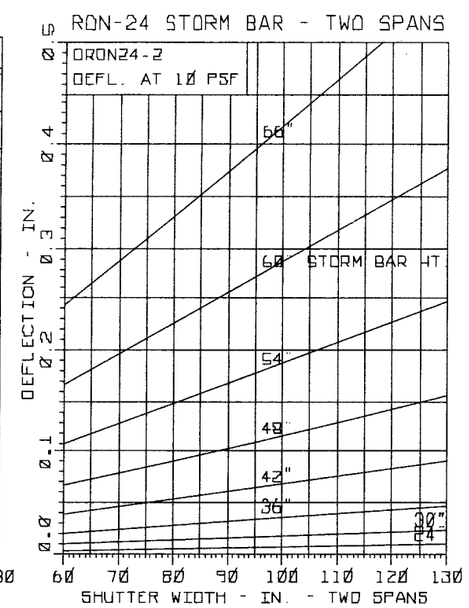


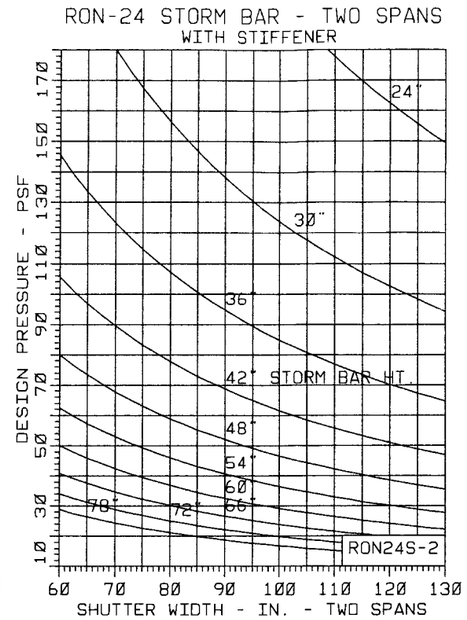


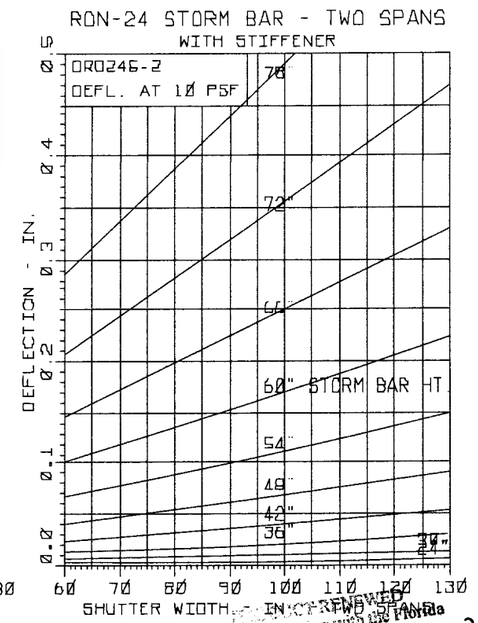


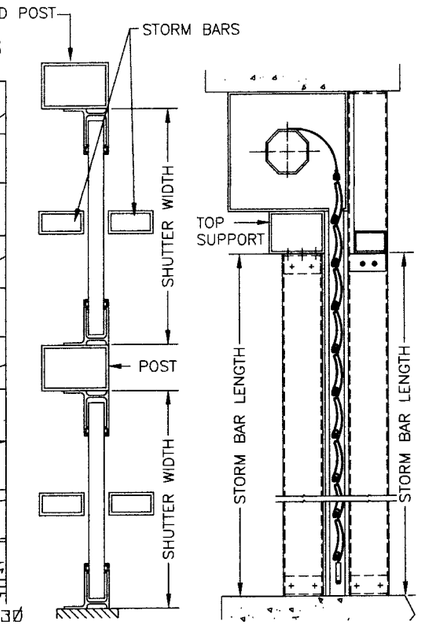


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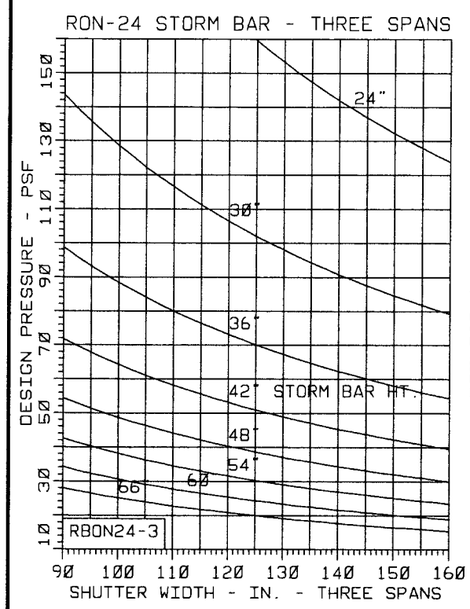


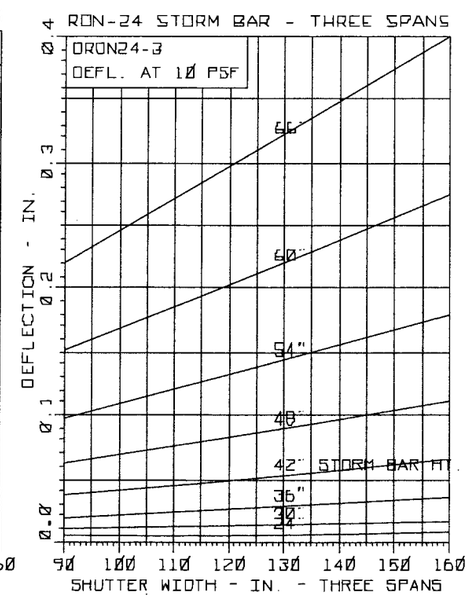


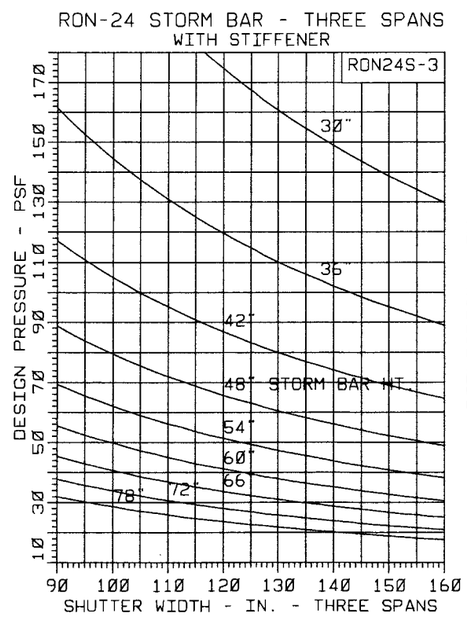


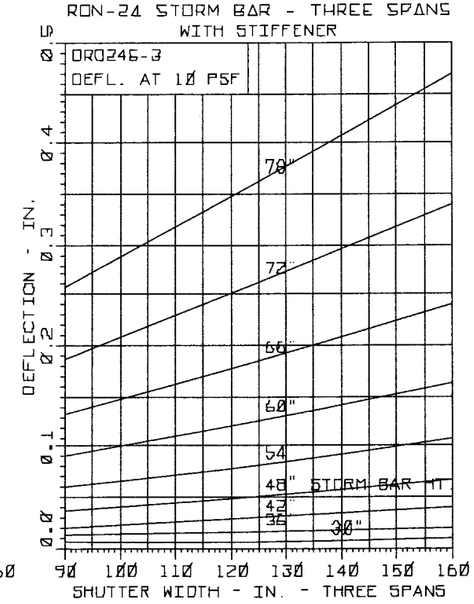


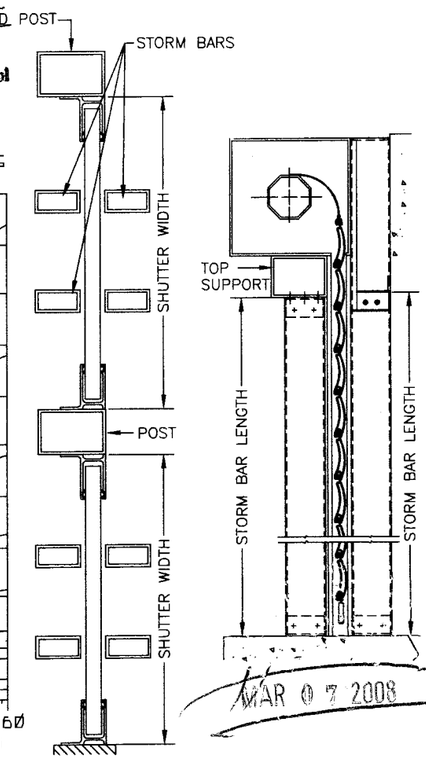


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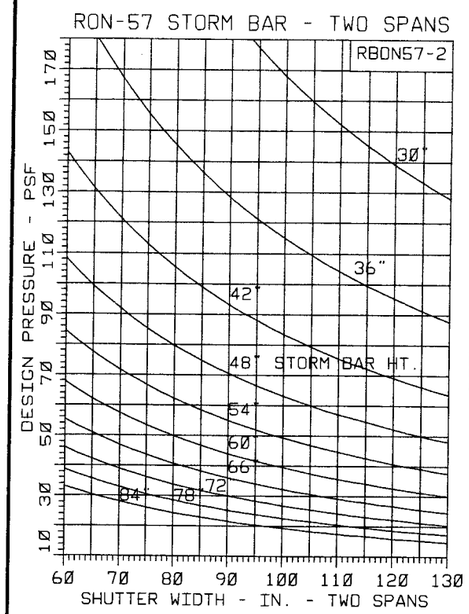


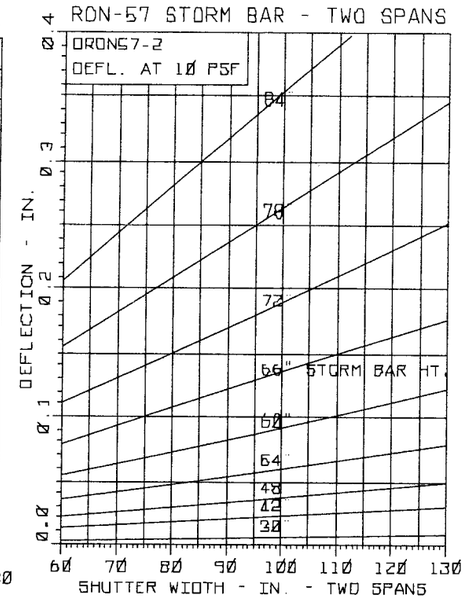


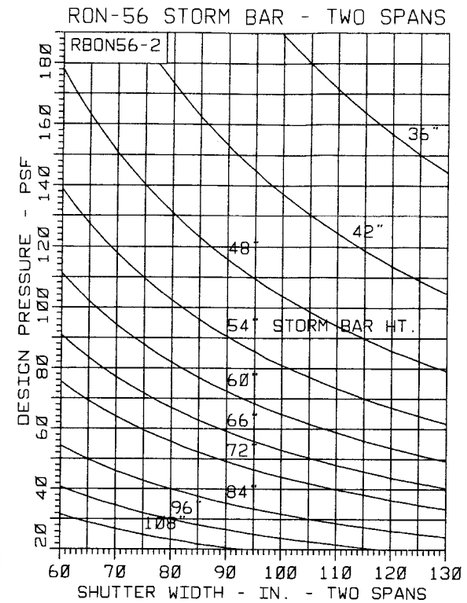


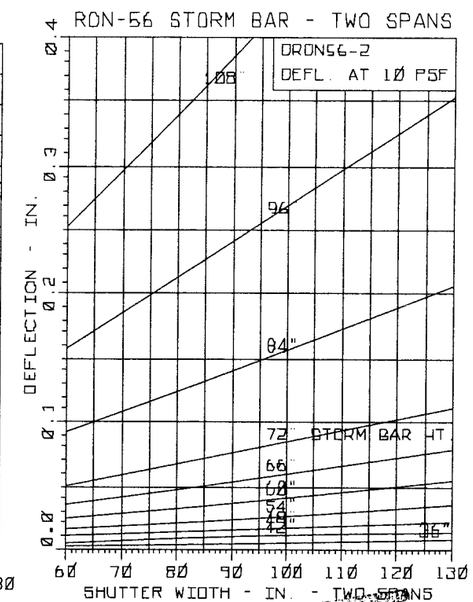


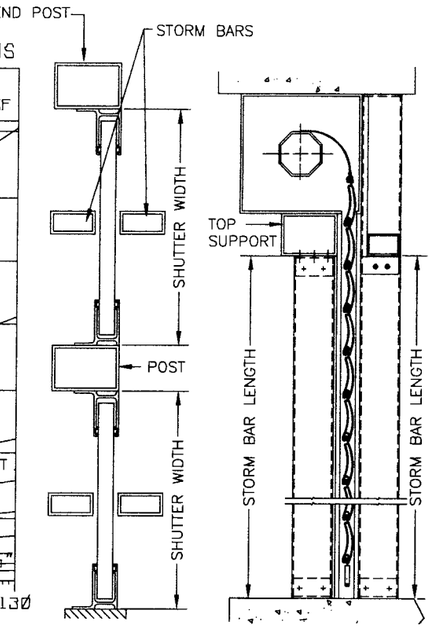


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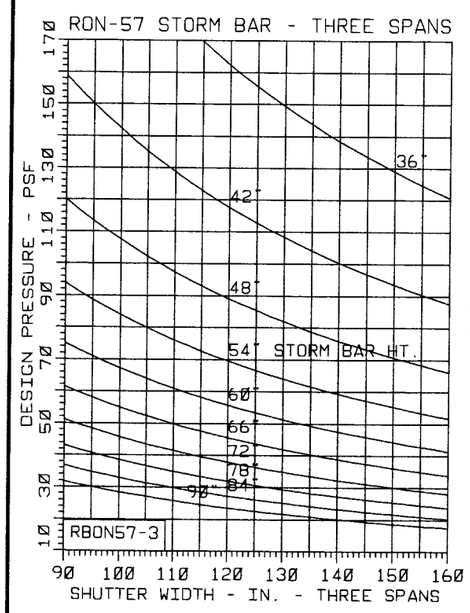


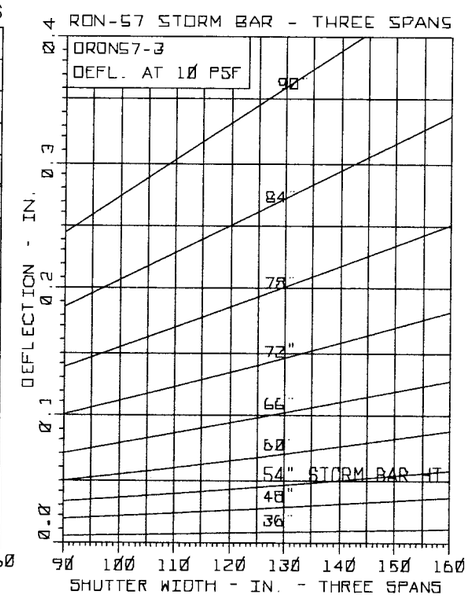


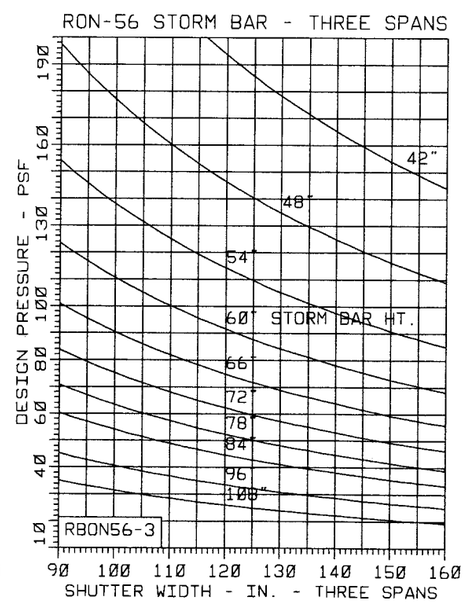


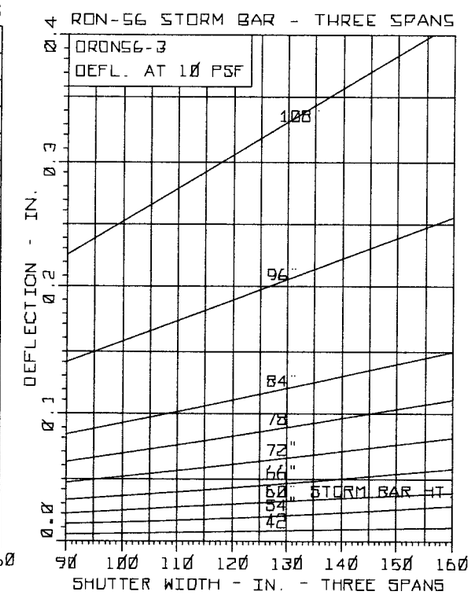


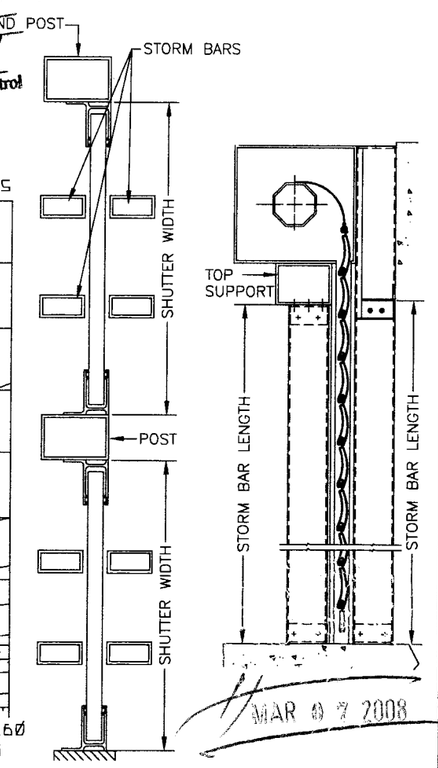


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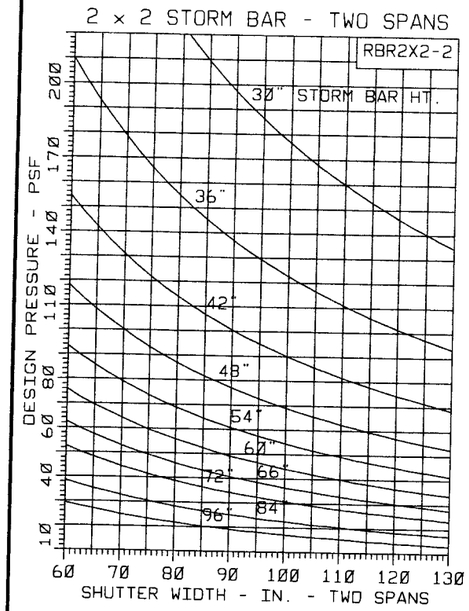


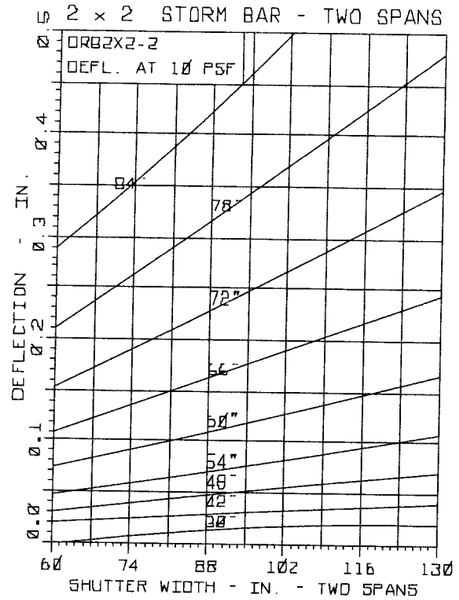


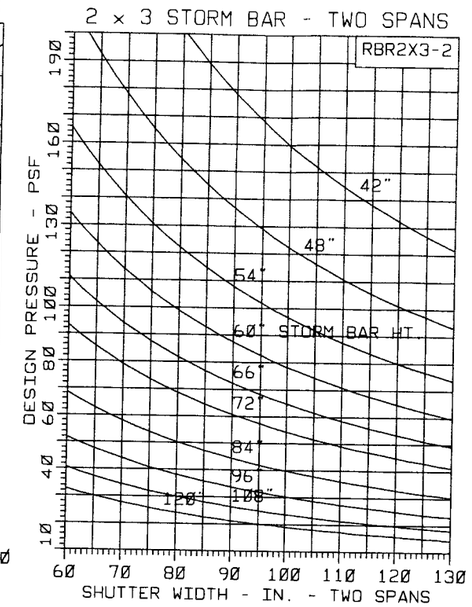


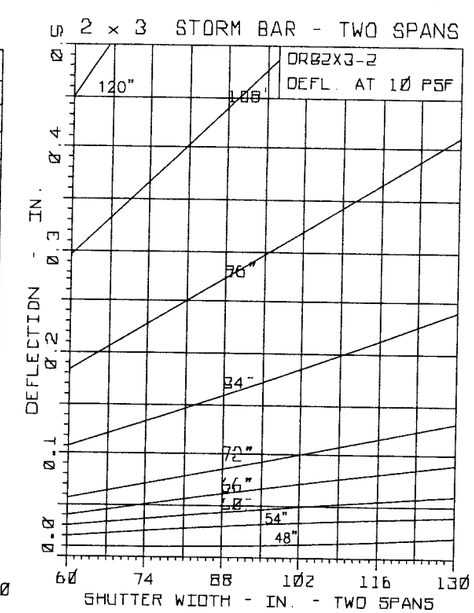


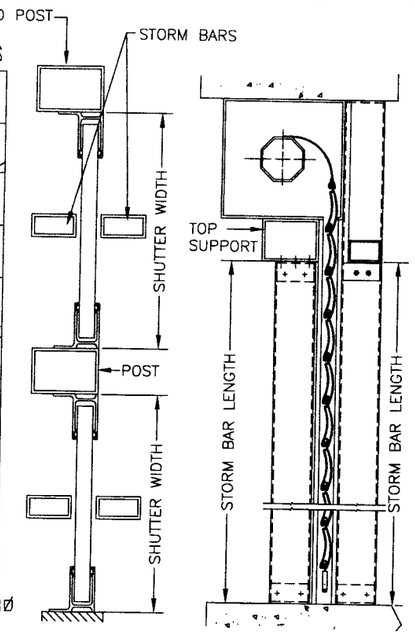


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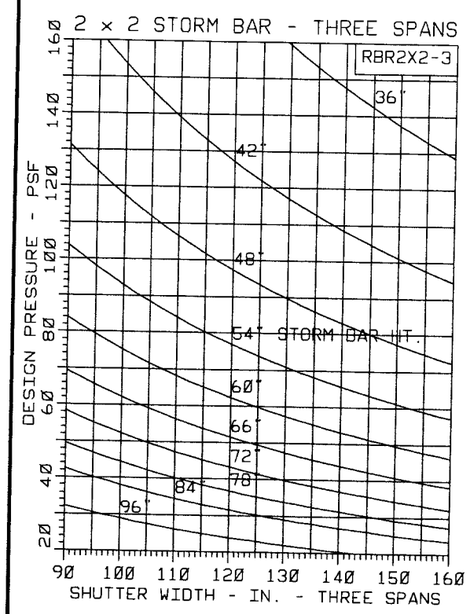


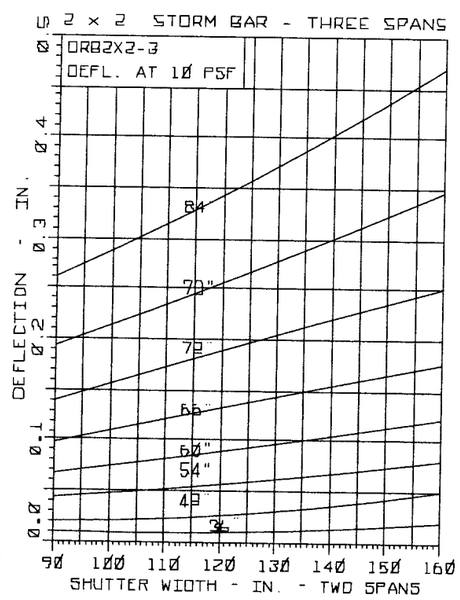


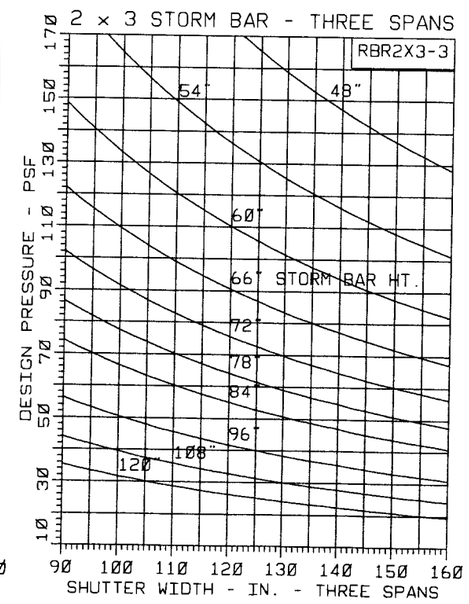


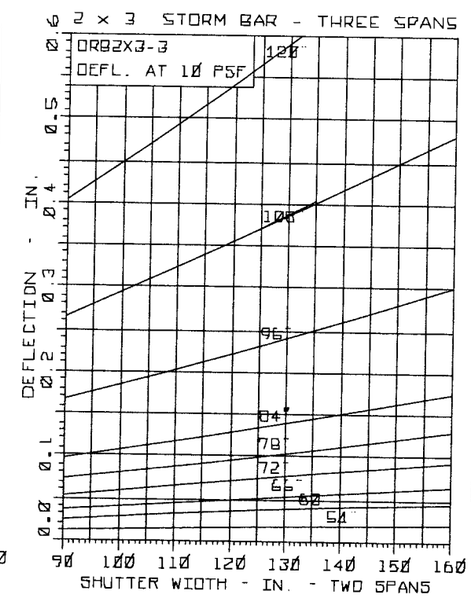


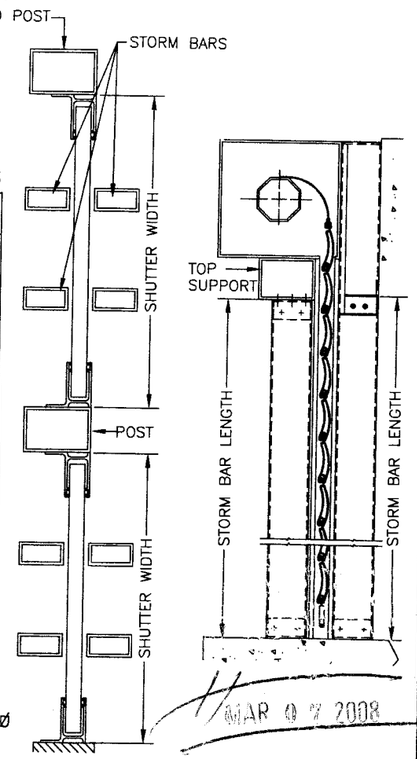


THREE SPANS

Florida
08-03/13.07
Product Control
Division
MAR 0 7 2008

AL-FAROOQ CORPORATION
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ROLLUP\95-12R1

RollShutter Details

ROLLADEN INC.
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HALLANDALE, FL. 33009
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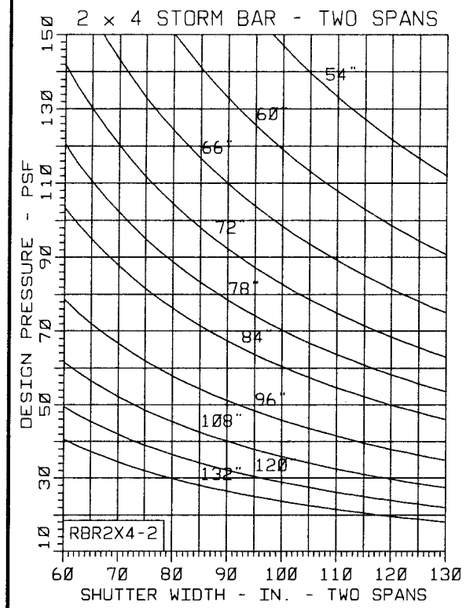
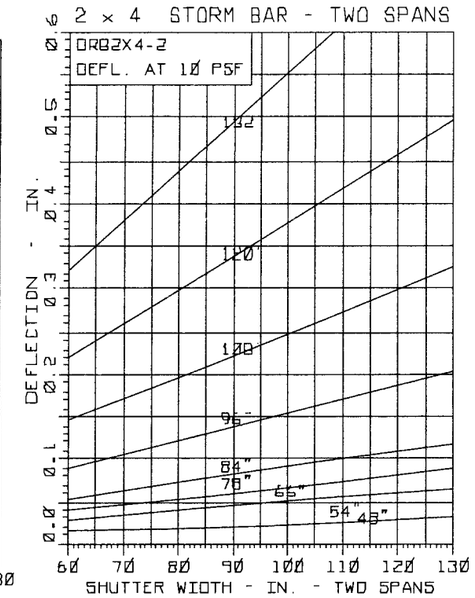
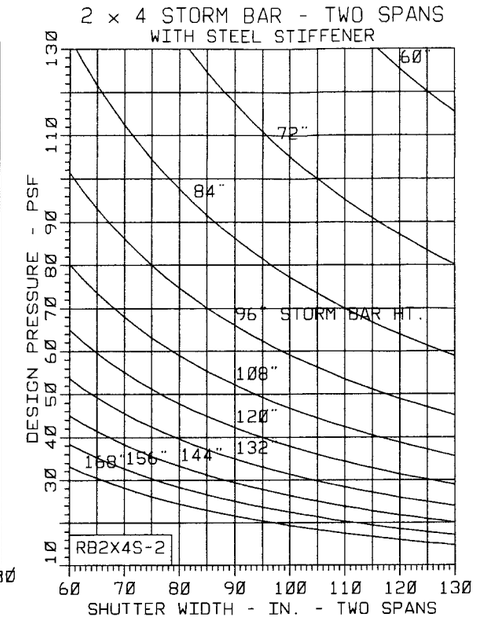
| revisions: | | | |
|---|---|---|---|
| no | date | by | description |
| C | 5.15.03 | | NO CHANGE THIS SHEET |
| D | 5.17.04 | | 2X2 CHART CORRECTED |
| E | 02.01.06 | | GRAPHS REV. |

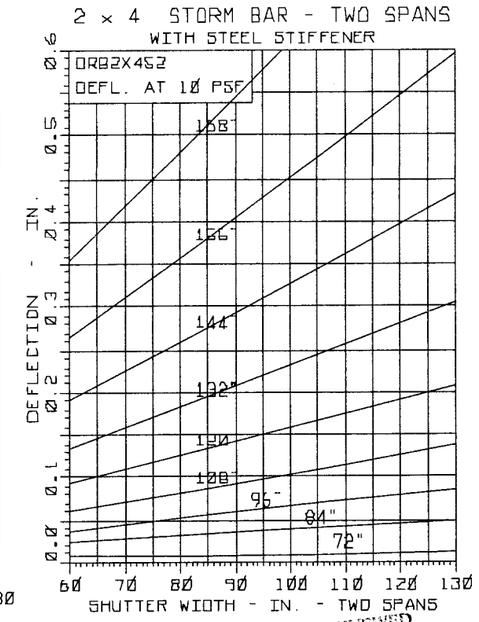
date: 02-27-95
scale: -
dr. by: HAMID
chk. by:

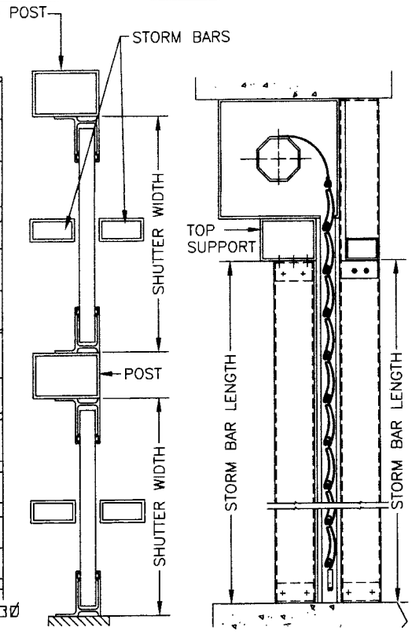
drawing no.
95-12



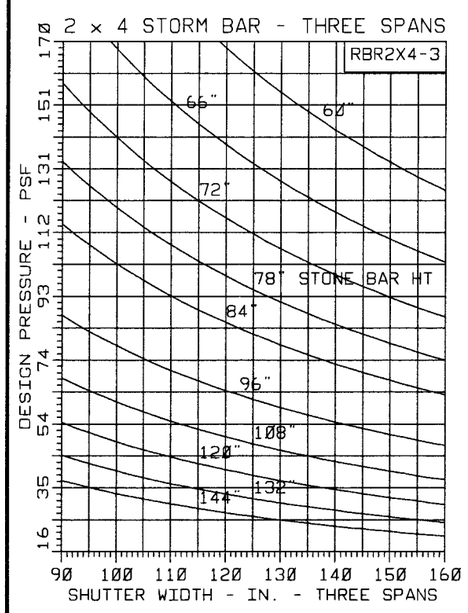



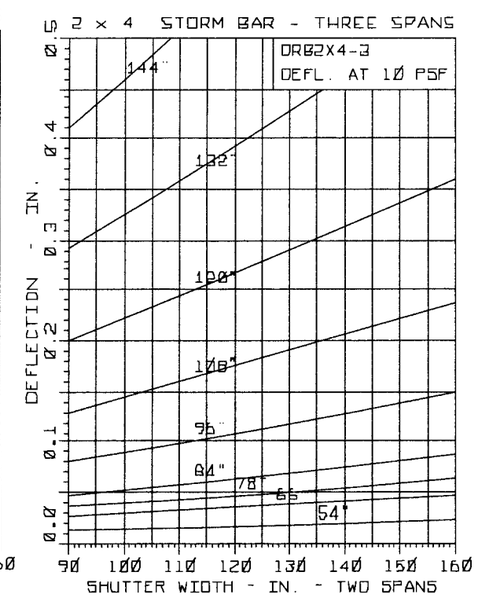



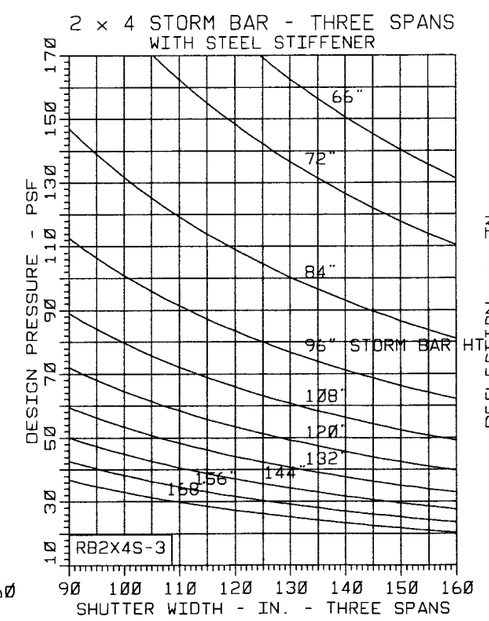



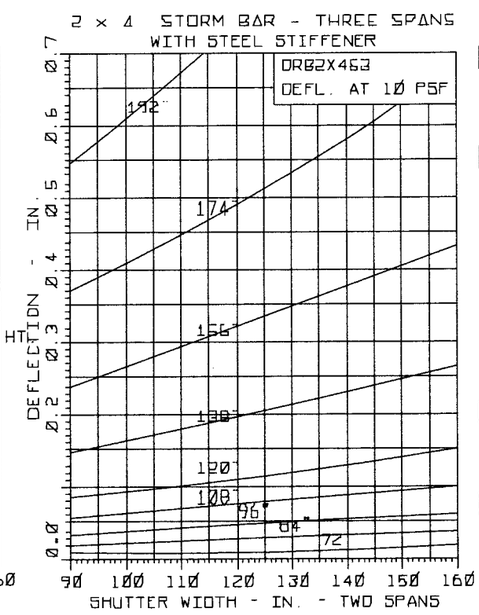

TWO SPANS

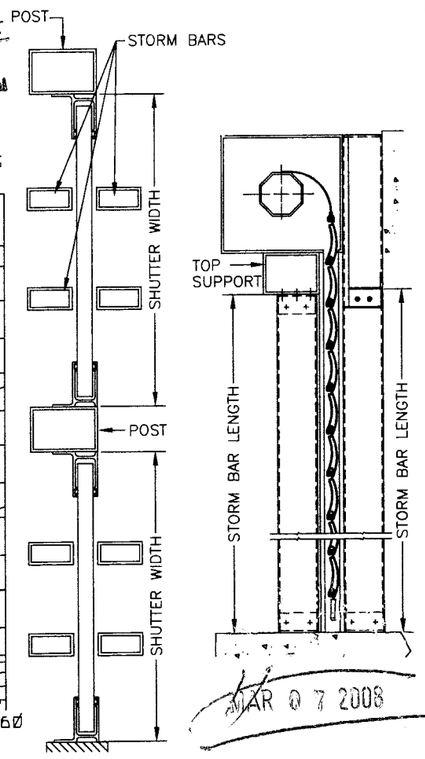
THE CURVES ON THESE GRAPHS SHOW STORM BAR LENGTHS
SEE SKETCH FOR REFERENCE




THREE SPANS

PRODUCT RENEWED
in compliance with the Florida
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Acceptance No. 08-0313.07
Expiration Date 06/06/09
By
Miami Dade Product Control
Division

MAR 07 2008


AL-FAROOQ CORPORATION
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ROLLUP\95-12R1

RollShutter Details


ROLLADEN INC.
550 ANSIN BOULEVARD
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(305) 757 - 8591


revisions:

| no | date | by | description |
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| C | 5.15.03 | | NO CHANGE THIS SHEET |
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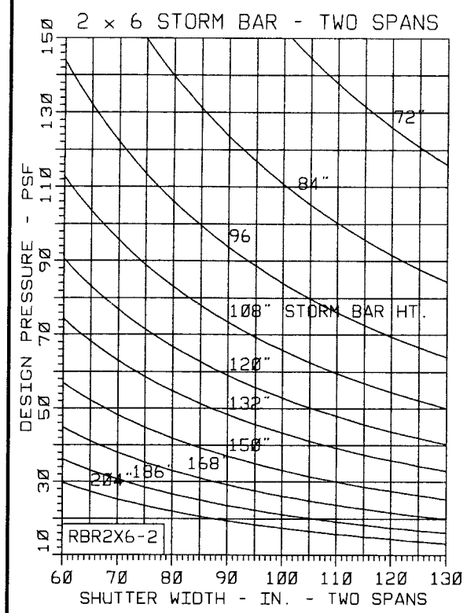
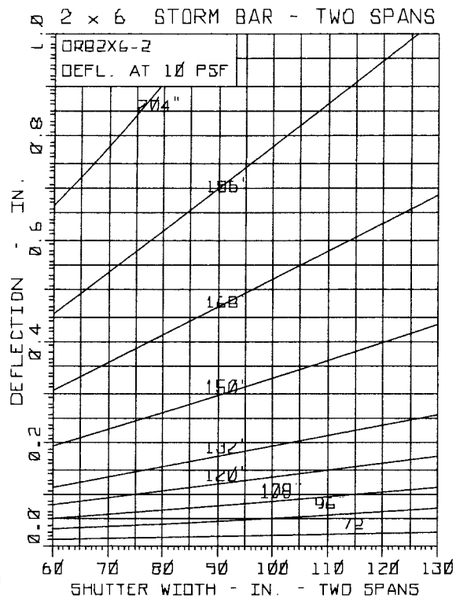
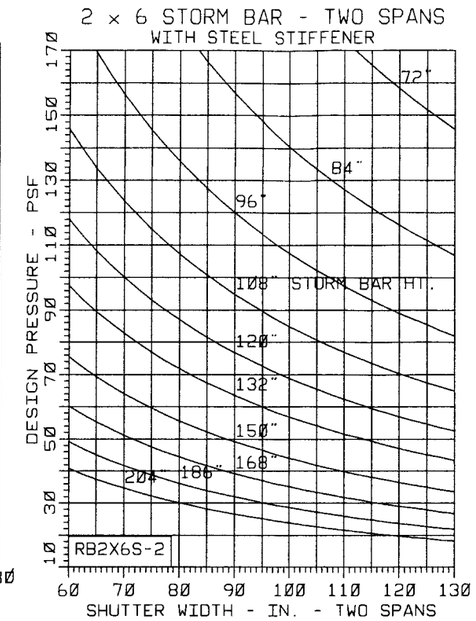
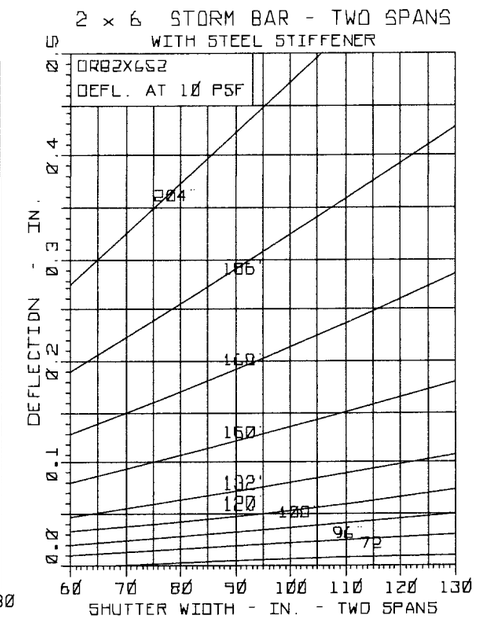
date: 02-27-95
scale: -
dr. by: HAMID
chk. by:

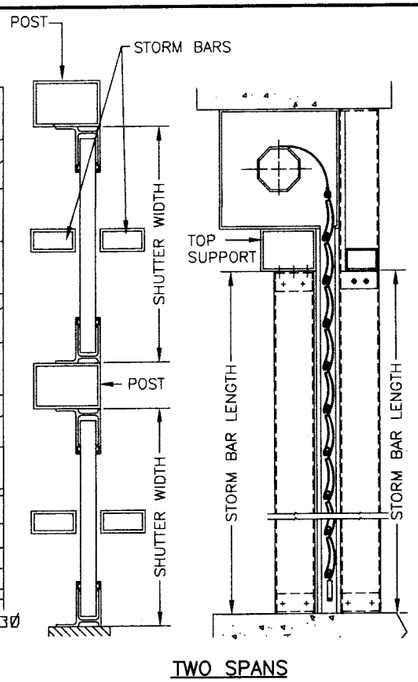
drawing no.
95-12

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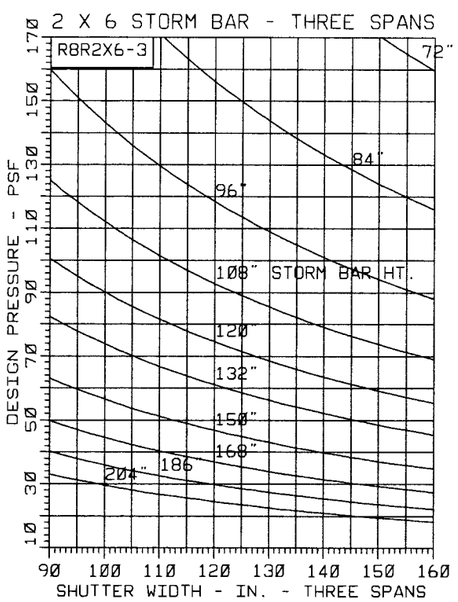


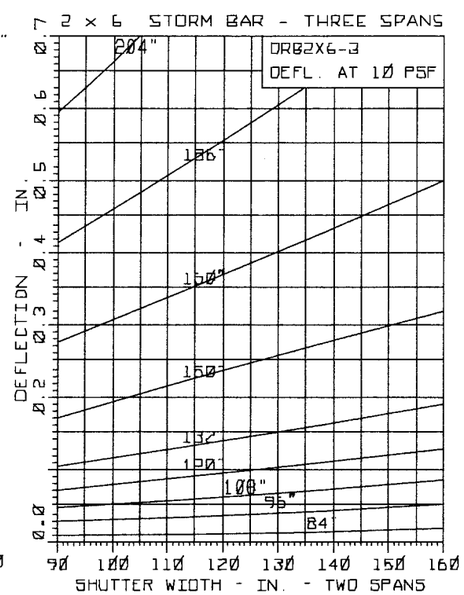


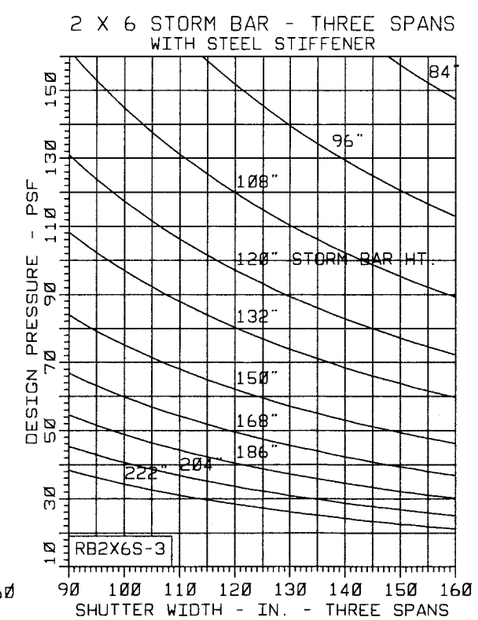


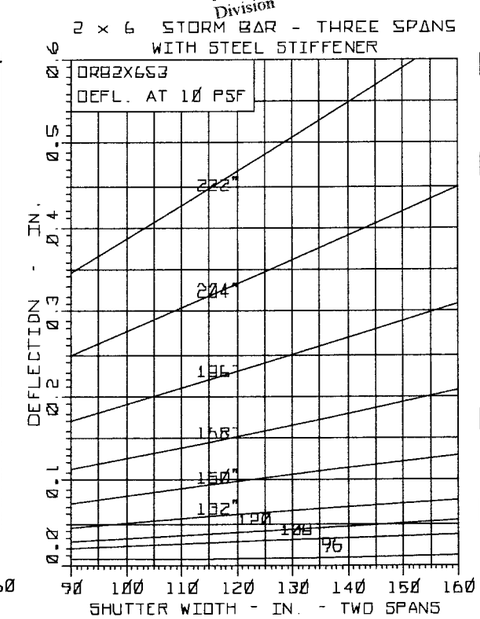


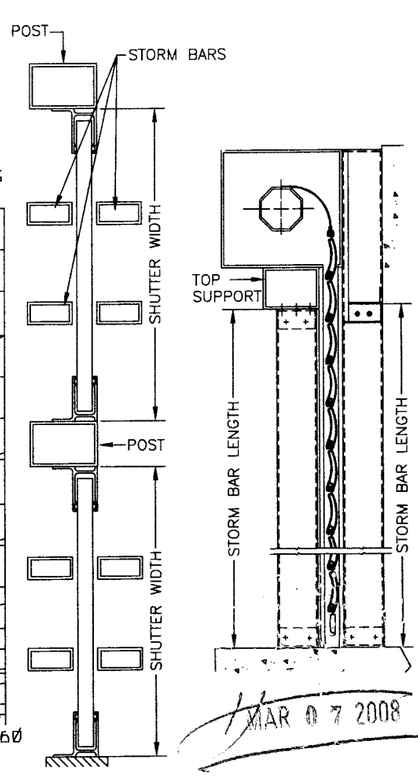


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ROLLUP\95-12R1

RollShutter Details


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HALLANDALE, FL. 33009
(305) 757 - 8591


revisions:

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| C | 5.15.03 | | NO CHANGE THIS SHEET |
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date: 02-27-95
scale: -
dr. by: HAMID
chk. by:

drawing no.
95-12

# ROLL SHUTTER OVERALL DEFLECTION CALCULATION SHEET

## POSITIVE LOAD

ASCE 7-88: DESIGN LOAD = Pd = PSF
MULTIPLIER FACTOR = K = Pd/10 =

| | | | |
|---|---|---|---|
| SHUTTER WIDTH = Sw = 1N. | | | |
| NO. OF STORM BARS USED = N = | | | |
| SPAN CONDITION = N+1 = | | | |
| SHUTTER HEIGHT = Sh = IN. | | | |
| BOX HEIGHT = BOXh = IN. | | | |
| STORM BAR HEIGHT = BL = SH-BOXh = IN. | | | |
| TRACK WIDTH = Tw = IN. | | | |
| | STEP | | |
| SLAT | 1 | SLAT SPAN = Ls = (Sw − 2 * Tw)/(N + 1)<br>FROM GRAPHS CHECK SLAT SPAN FOR DESIGN LOAD<br>AND SPAN CONDITION TO MEET DEFLECTION < L/30 OR 2".<br>AND STRESSES LESS THAN ALLOWABLE | |
| | 2 | FROM DEFLECTION GRAPH FOR 10 PSF<br>READING FOR ABOVE SLAT SPAN = R1<br>DEFLECTION OF SLAT = D1 = K * R1 | → |
| STORM BAR | 3 | FROM GRAPHS SELECT STORM BAR FOR ABOVE SHUTTER<br>WIDTH, SHUTTER HEIGHT, DESIGN LOAD & SPAN CONDITION<br>TO MEET DEFLECTION < L/30 OR 2".<br>AND STRESSES LESS THAN ALLOWABLE<br>TRY STORM BAR SIZE : | |
| | 4 | FROM DEFLECTION GRAPH FOR 10 PSF<br>READING FOR ABOVE STORM BAR = R2<br>DEFLECTION OF STORM BAR = Db = K * R2<br>EFFECT ON SLATS = D2 = Db/2 | → |
| HEADER<br>(IF THERE IS NO HEADER SKIP STEPS 5 & 6.) | 5 | FROM GRAPHS SELECT HEADER SIZE FOR ABOVE SHUTTER<br>WIDTH, SHUTTER HEIGHT, DESIGN LOAD & SPAN CONDITION<br>TO MEET DEFLECTION < L/30 OR 2".<br>AND STRESSES LESS THAN ALLOWABLE.<br>TRY HEADER SIZE: | |
| | 6 | FROM DEFLECTION GRAPH FOR 10 PSF<br>READING FOR ABOVE HEADER = R3<br>DEFLECTION OF HEADER = Dh = K * R3<br>EFFECT ON SLATS = D3 = Dh/4 | → |
| | 7 | TOTAL DEFLECTION = D = D1+D2+D3 IN. | → |
| | | Ls/30 | → |

## NEGATIVE LOAD

ASCE 7-88: DESIGN LOAD = Pd = PSF
MULTIPLIER FACTOR = K = Pd/10 =

| | | | |
|---|---|---|---|
| SHUTTER WIDTH = Sw = 1N. | | | |
| NO. OF STORM BARS USED = N = | | | |
| SPAN CONDITION = N+1 = | | | |
| SHUTTER HEIGHT = Sh = IN. | | | |
| BOX HEIGHT = BOXh = IN. | | | |
| STORM BAR HEIGHT = BL = SH-BOXh = IN. | | | |
| TRACK WIDTH = Tw = IN. | | | |
| | STEP | | |
| SLAT | 1 | SLAT SPAN = Ls = (Sw − 2 * Tw)/(N + 1)<br>FROM GRAPHS CHECK SLAT SPAN FOR DESIGN LOAD<br>AND SPAN CONDITION TO MEET DEFLECTION < L/30 OR 2".<br>AND STRESSES LESS THAN ALLOWABLE | |
| | 2 | FROM DEFLECTION GRAPH FOR 10 PSF<br>READING FOR ABOVE SLAT SPAN = R1<br>DEFLECTION OF SLAT = D1 = K * R1 | → |
| STORM BAR | 3 | FROM GRAPHS SELECT STORM BAR FOR ABOVE SHUTTER<br>WIDTH, SHUTTER HEIGHT, DESIGN LOAD & SPAN CONDITION<br>TO MEET DEFLECTION < L/30 OR 2".<br>AND STRESSES LESS THAN ALLOWABLE<br>TRY STORM BAR SIZE : | |
| | 4 | FROM DEFLECTION GRAPH FOR 10 PSF<br>READING FOR ABOVE STORM BAR = R2<br>DEFLECTION OF STORM BAR = Db = K * R2<br>EFFECT ON SLATS = D2 = Db/2 | → |
| HEADER | 5 | FROM GRAPHS SELECT HEADER SIZE FOR ABOVE SHUTTER<br>WIDTH, SHUTTER HEIGHT, DESIGN LOAD & SPAN CONDITION<br>TO MEET DEFLECTION < L/30 OR 2".<br>AND STRESSES LESS THAN ALLOWABLE.<br>TRY HEADER SIZE: | |
| | 6 | FROM DEFLECTION GRAPH FOR 10 PSF<br>READING FOR ABOVE HEADER = R3<br>DEFLECTION OF HEADER = Dh = K * R3<br>EFFECT ON SLATS = D3 = Dh/4 | → |
| | 7 | TOTAL DEFLECTION = D = D1+D2+D3 IN. | → |
| | | Ls/30 | → |

**NOTES:**
1. IF FOR NEGATIVE LOAD D > Ls/30
   OR IF FOR POSITIVE LOAD D > Ls/30 OR 2".
   REPEAT ABOVE CALCULATIONS WITH LARGER STORM BARS AND OR LARGER HEADER.
2. DIFFERENT SIZE STORM BARS/HEADERS MAY BE USED FOR POSITIVE AND NEGATIVE LOADS.
3. USE ADDITIONAL CALCULATION SHEETS FOR DIFFERENT SHUTTERS ON THE SAME JOB.

Engr: DR. HUMAYOUN FAROOQ
STRUCTUPES
FLA. P.E. # 16557
C.A.M. 3538

MAR 0 7 2008

PRODUCT RENEWED
as complying with the Florida Building Code
Acceptance No 08-0313.07
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By: M Khan
Miami-Dade Product Control Division


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sheet 21 of 21