



DEPARTMENT OF REGULATORY AND ECONOMIC RESOURCES (RER)
BOARD AND CODE ADMINISTRATION DIVISION

NOTICE OF ACCEPTANCE (NOA)

MIAMI-DADE COUNTY
PRODUCT CONTROL SECTION

11805 SW 26 Street, Room 208
Miami, Florida 33175-2474
T (786) 315-2590 F (786) 315-2599

www.miamidade.gov/economy

Industrial Louvers, Inc.
511 South 7th Street
Delano, MN 55328

SCOPE:

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed and accepted by Miami-Dade County RER-Product Control Section 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 Section (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. RER reserves the right to revoke this acceptance if it is determined by Miami-Dade County Product Control Section 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: Model 653XPDC 6" Deep Drainable Blade Aluminum Louver System

APPROVAL DOCUMENT: Drawing titled "Model 653XPDC 6" Deep Drainable Blade Louver", sheets 1 through 17 of 17, dated 03/06/2023, prepared by Industrial Louvers, Inc, signed and sealed by Wayne K. Helmila, P.E., bearing the Miami-Dade County Product Control revision stamp with the Notice of Acceptance number and expiration date by the Miami-Dade County Product Control Section.

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, model/series, 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 **revises NOA # 22-0125.05** and consists of this page 1 and evidence pages E-1, E-2, and E-3, as well as approval document mentioned above.

The submitted documentation was reviewed by **Carlos M. Utrera, P.E.**



NOA No. 23-0117.06
Expiration Date: February 02, 2027
Approval Date: August 03, 2023
Page 1

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. EVIDENCE SUBMITTED UNDER PREVIOUS NOA's

A. DRAWINGS “Submitted under NOA # 13-0909.09”

1. Drawing No. **DCT**, titled “653XPDC 6” Deep Drainable Blade Louver”, sheets 1 through 8 of 8, dated 10/07/2009, with revision 7 dated 08/06/2013, prepared by Industrial Louvers, Inc, signed and sealed by L. David Rice, P.E.

“Submitted under NOA # 21-0203.05”

2. Drawing No. **DCT**, titled “653XPDC 6” Deep Drainable Blade Louver”, sheets 1 through 8 of 8, dated 10/07/2009, with revision 8 dated 01/29/2021, prepared by Industrial Louvers, Inc, signed and sealed by Wayne K. Helmila, P.E.

B. TESTS “Submitted under NOA # 10-1006.15”

1. Test reports on 1) Uniform Static Air Pressure Test, Loading per FBC TAS 202-94
2) Large Missile Impact Test per FBC, TAS 201-94
3) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of three Series/Model 653XPDC, aluminum louvers, prepared by Architectural Testing, Inc., Test Report No. **99545.01-202-18**, dated 08/31/2010, signed and sealed by Joseph A. Reed, P.E.

C. CALCULATIONS “Submitted under NOA # 13-0909.09”

1. Model 653 XPDC 6” Drainable blade louver calculations, prepared by Rice Engineering, dated 09/03/2013, signed and sealed by L. David Rice, P.E.

“Submitted under NOA # 10-1006.15”

2. Model 653 XPDC 6” drainable blade louver calculations, prepared by Rice Engineering, dated 09/28/2010, signed and sealed by L. David Rice, P.E.

“Submitted under NOA # 21-0203.05”

3. Model 653 XPDC 6” Drainable blade louver calculations, prepared by Rice Engineering, dated 01/29/2021, signed and sealed by Wayne K. Helmila, P.E.



Carlos M. Utrera, P.E.
Product Control Examiner
NOA No. 23-0117.06
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D. QUALITY ASSURANCE

1. Miami-Dade Department of Regulatory and Economic Resources (RER).

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS “Submitted under NOA # 14-1204.01”

1. Statement letter of code conformance to the 5th edition (2014) FBC issued by Rice Engineering, dated 08/25/2014, signed and sealed by L. David Rice, P.E.

“Submitted under NOA # 13-0909.09”

2. Statement letter of no financial Interest issued by Rice Engineering, dated 09/03/2013, signed and sealed by L. David Rice, P.E.

“Submitted under NOA # 21-0203.05”

3. Statement letter of code conformance to the 7th edition (2020) FBC issued by Rice Engineering, dated 01/29/2021, signed and sealed by Wayne K. Helmila, P.E.



Carlos M. Utrera, P.E.
Product Control Examiner
NOA No. 23-0117.06
Expiration Date: February 02, 2027
Approval Date: August 03, 2023

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

2. NEW EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing titled “Model **653XPDC 6**” Deep Drainable Blade Louver”, sheets 1 through 17 of 17, dated 03/06/2023, prepared by Industrial Louvers, Inc, signed and sealed by Wayne K. Helmila, P.E.

B. TESTS

1. Test reports on 1) Large Missile Impact Test, per AMCA 540-13 (Level E)
2) Large Missile Impact Test per FBC, TAS 201-94 (Level E)
3) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of a Model 653XPDC aluminum louver, prepared by Intertek, Test Report No. **P9272.01-201-18**, dated 04/26/2023, signed and sealed by Tanya A. Dolby, P.E.
2. Test reports on 1) Uniform Static Air Pressure Test, Loading per FBC TAS 202-94
2) Large Missile Impact Test per FBC, TAS 201-94
3) Cyclic Wind Pressure Loading per FBC, TAS 203-94
along with marked-up drawings and installation diagram of four (4) Model 653XPDC aluminum louvers, prepared by Intertek, Test Report No. **M7141.01-201-18**, dated 12/02/2021, signed and sealed by Vinu J. Abraham, P.E.
3. Test reports on Large Missile Impact Test, per AMCA 540-13 (Level E)
along with marked-up drawings and installation diagram of a Model 653XPDC aluminum louver, prepared by Intertek, Test Report No. **M7141.02-201-18**, dated 12/02/2021, signed and sealed by Vinu J. Abraham, P.E.

C. CALCULATIONS

1. Model 653 XPDC louver calculations, prepared by Rice Engineering, dated 12/23/2021, signed and sealed by Wayne K. Helmila, P.E.

D. QUALITY ASSURANCE

1. Miami-Dade Department of Regulatory and Economic Resources (RER).

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS

1. Statement letter of code conformance to the 7th Edition (2020) of the FBC, issued by Rice Engineering, dated 12/16/2021, signed and sealed by Wayne K. Helmila, P.E.
2. Statement letter of no financial interest, issued by Rice Engineering, dated 12/16/2021, signed and sealed by Wayne K. Helmila, P.E.



Carlos M. Utrera, P.E.
Product Control Examiner
NOA No. 23-0117.06

Expiration Date: February 02, 2027
Approval Date: August 03, 2023

Model 653XPDC

6" Deep Drainable Blade Louver

Manufactured by Industrial Louvers, Inc.

GENERAL NOTES

1.

IT SHALL BE THE RESPONSIBILITY OF THE PERMIT HOLDER TO VERIFY THE STRUCTURAL INTEGRITY OF THE EXISTING STRUCTURE TO SUPPORT THE LOADS IMPOSED BY THE LOUVER SYSTEM.
2.

ALL ALLOWABLE DESIGN PRESSURES AS DETERMINED FROM SHEETS 2 - 5 AND 8 - 14 MUST EQUAL OR EXCEED THE BUILDING REQUIREMENTS.
3.

THIS LOUVER SYSTEM HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH THE 7TH EDITION (2020) FLORIDA BUILDING CODE (FBC) AND FBC PROTOCOLS TAS-201, TAS-202, AND TAS-203 FOR AREAS INCLUDING HIGH VELOCITY HURRICANE ZONES.
4.

THIS LOUVER SYSTEM HAS BEEN DESIGNED AND TESTED IN ACCORDANCE WITH AMCA 540 ENHANCED LEVEL E.
5.

EACH LOUVER ASSEMBLY SHALL BE PERMANENTLY LABELED AS FOLLOWS:

INDUSTRIAL LOUVERS, INC.
DELANO, MN
MIAMI-DADE COUNTY PRODUCT CONTROL APPROVED
MODEL: 653XPDC
6.

ALL STRUCTURAL STEEL SUBSTRATE SHALL BE MINIMUM 36 KSI.
7.

ALL CONCRETE SUBSTRATE SHALL BE MINIMUM 4000 PSI.
8.

ALL GROUT FILLED CMU SHALL BE ASTM C90 TYPE II MINIMUM 1500 PSI.
9.

ALL WOOD SUBSTRATE SHALL BE MINIMUM G = 0.55.
10.

ALL METAL FRAMING SUBSTRATE SHALL BE MINIMUM 16 GAUGE AND MINIMUM Fy = 33 KSI.
11.

ALL ALUMINUM SUBSTRATE SHALL BE MINIMUM 1/8" THICK AND 6063-T5 OR BETTER.
12.

ALL ANCHORS AND FASTENERS SHALL BE 18-8 OR 300 SERIES STAINLESS STEEL.
13.

PANEL WIDTHS AND HEIGHTS ARE LIMITED AS SHOWN IN THESE DRAWINGS.
14.

SINGLE NON-REINFORCED PANELS MAY BE STACKED VERTICALLY TO AN UNLIMITED HEIGHT. SEE SPECIMEN #4 AND SPECIMEN #5.
15.

SINGLE PANELS WITH BLADE STIFFENERS MAY BE STACKED VERTICALLY TO A MAXIMUM HEIGHT OF 12'. SEE SPECIMEN #1.
16.

PANELS MAY BE PLACED HORIZONTALLY IN A ROW TO AN UNLIMITED WIDTH WITH MULLIONS PROVIDED AT PANEL JOINTS. SEE SPECIMEN #2 AND SPECIMEN #3.
17.

VERTICAL STACKING OF PANELS TO AN UNLIMITED HEIGHT IS PERMITTED WITH THE INCLUSION OF STRUCTURAL SUPPORT CAPABLE OF WITHSTANDING ALL LOADS IMPOSED BY THE LOUVER SYSTEM. ALL STRUCTURAL SUPPORT MUST BE POSITIONED TO ACCOMMODATE LOUVER SIZE LIMITATIONS AS SHOWN IN THESE DRAWINGS.
18.

SEPARATION OF DISSIMILAR MATERIALS MUST BE MAINTAINED PER SECTION 2003.8.4 OF THE FBC.
19.

THIS SYSTEM HAS NOT BEEN TESTED FOR WATER INFILTRATION RESISTANCE AND IS NOT A WATER RESISTANT SYSTEM.
20.

THE LOUVER IS TO BE INSTALLED IN A LOCATION WHERE THE ROOM BEHIND THE LOUVER IS DESIGNED TO DRAIN WATER PENETRATING INTO THE ROOM, AND THE ROOM WILL HOUSE WATER RESISTANT EQUIPMENT, COMPONENTS, AND/OR SUPPLIES.

DRAWING CONTENTS

DESCRIPTION	SHEET(S)
COVER PAGE	1
SPECIMEN DRAWING	2 - 5
MISCELLANEOUS DETAIL	6
BLADE STIFFENER DETAIL	7
JAMB ANCHORAGE DETAIL	8
JAMB ANCHORAGE TABLES	9
MULLION ANCHORAGE DETAIL	10 - 11
MULLION ANCHORAGE TABLES	12
SHELF ANGLE ANCHORAGE DETAIL	13
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PARTS LIST	15 - 17

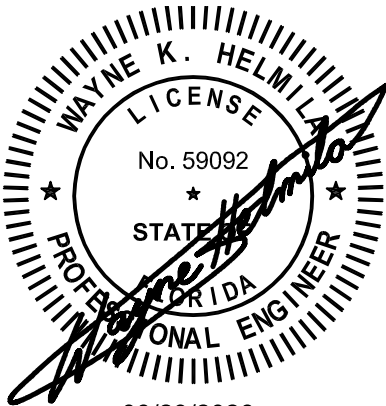
REVISIONS

REV.	BY	DESCRIPTION	DATE
0	DG	FIRST DRAWING	11/20/2020
1	DG	REVISED PER ENGINEERING CALCULATIONS	08/20/2021
2	DG	REVISED SPECIMEN #1	11/19/2021
3	DG	REVISED SPECIMEN #1 DESIGN PRESSURE	11/23/2021
4	DG	REVISED PER FINALIZED ENGINEERING CALCULATIONS	12/22/2021
5	DG	REVISED PER DORER-PCS REQUEST	02/13/2023
6	DG	UPDATED NOTES ON SHEETS 9, 12, AND 14	03/06/2023

RICEENGINEERING

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Certificate of Authorization: #9090
Wayne K. Helmila
Registration No: 59092



03/29/2023
COA: 9090

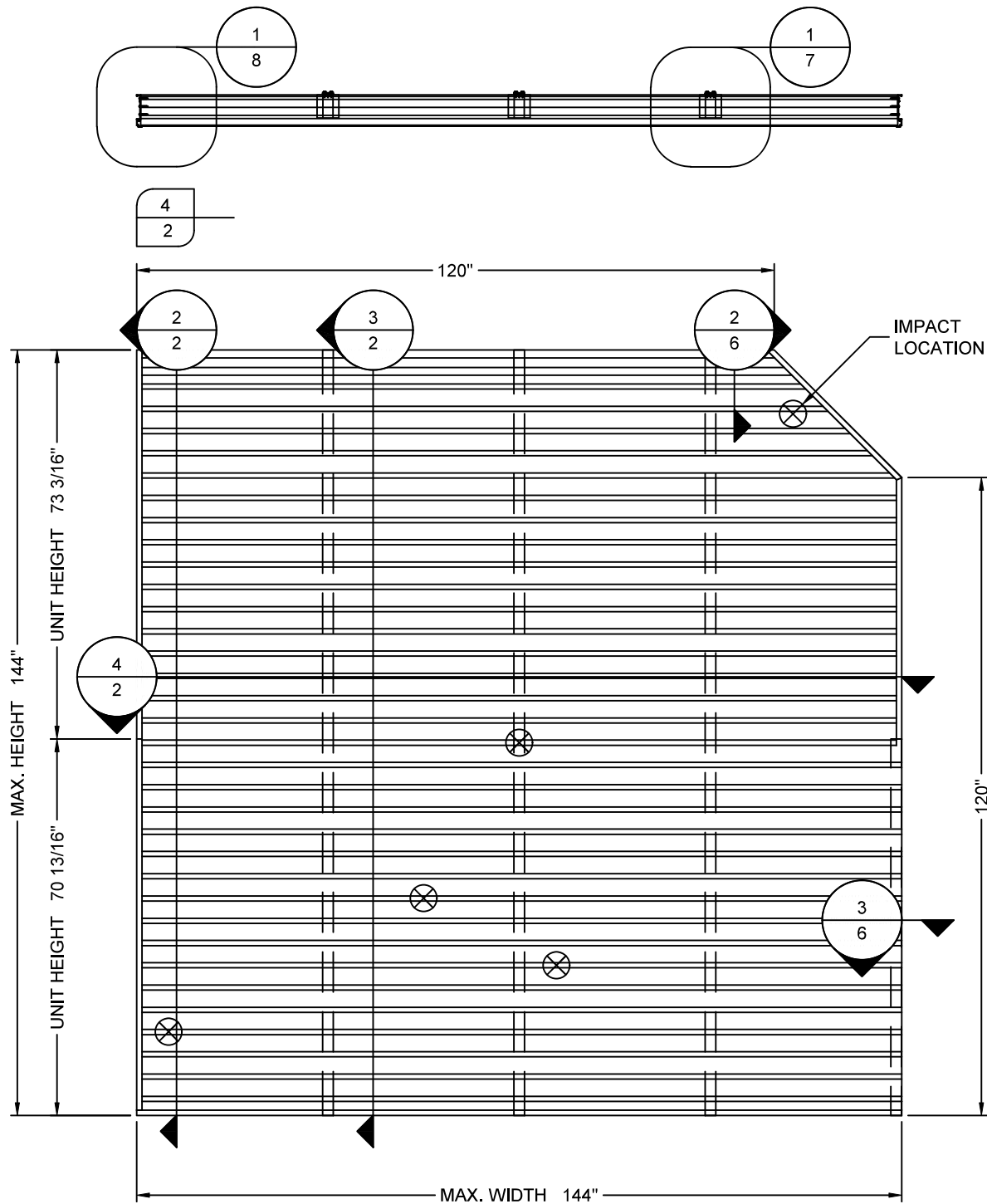
PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. 23-0117.06

Expiration Date 02/02/2027

By 
Miami-Dade Product Control

Model: 653XPDC
Revision: 6
Revision Date: 03/06/2023
Start Date: 11/20/2020
Scale: 1:1
Sheet: 1 OF 17

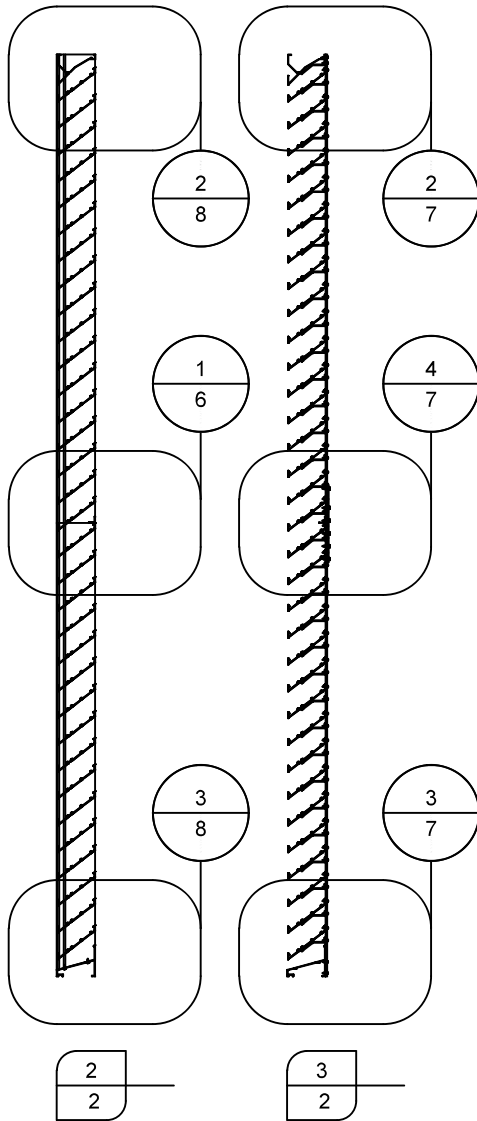




1
2 ELEVATION - SPECIMEN #1 - 42 PSF DESIGN PRESSURE

DESIGN PRESSURE TABLE - BLADE AND BLADE STIFFENER									
STIFFENER QUANTITY	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
0	120 PSF	61 PSF	NA	NA	NA	NA	NA	NA	NA
1	135 PSF	108 PSF	90 PSF	77 PSF	53 PSF	37 PSF	27 PSF	NA	NA
2	175 PSF	175 PSF	153 PSF	131 PSF	98 PSF	68 PSF	50 PSF	37 PSF	29 PSF
3	175 PSF	175 PSF	175 PSF	169 PSF	142 PSF	100 PSF	73 PSF	54 PSF	42 PSF

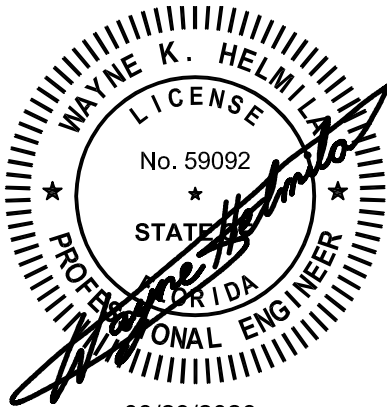
- Note:
1. Max. Test Pressure = 1.5 X Design Pressure
 2. Shaped louvers such as round, triangle, trapezoid, etc. are also approved.
 3. Design pressures are based on louver blade and blade stiffener performance only. Jamb anchorage may control the design, and must also be checked. See sheets 9 - 10 for jamb anchorage requirements.
 4. Single non-reinforced panels may be stacked vertically to an unlimited height.
 5. Single panels with blade stiffeners may be stacked vertically to a maximum height of 12'.



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Model: 653XPDC

Revision: 6

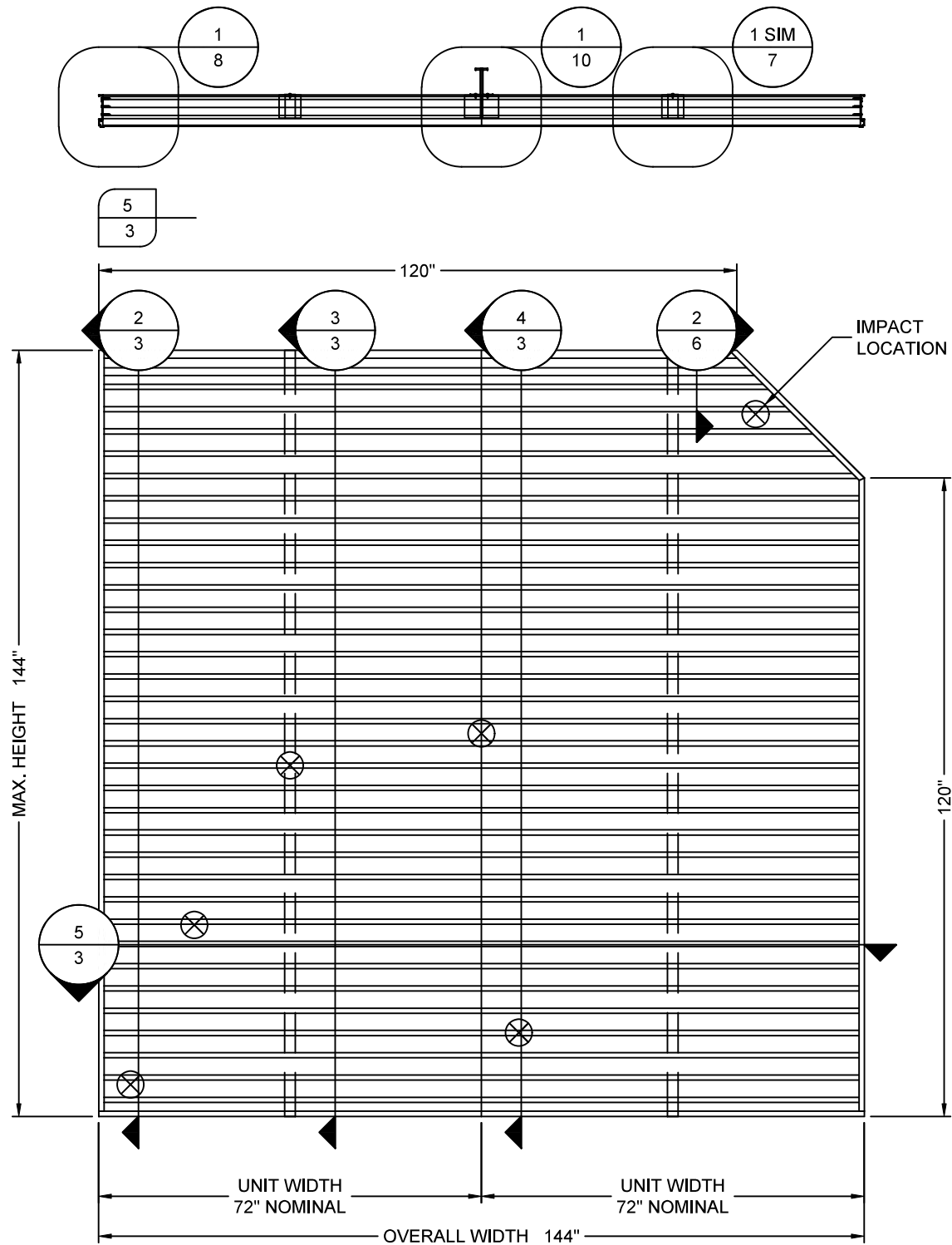
Revision Date: 03/06/2023

Start Date: 11/20/2020

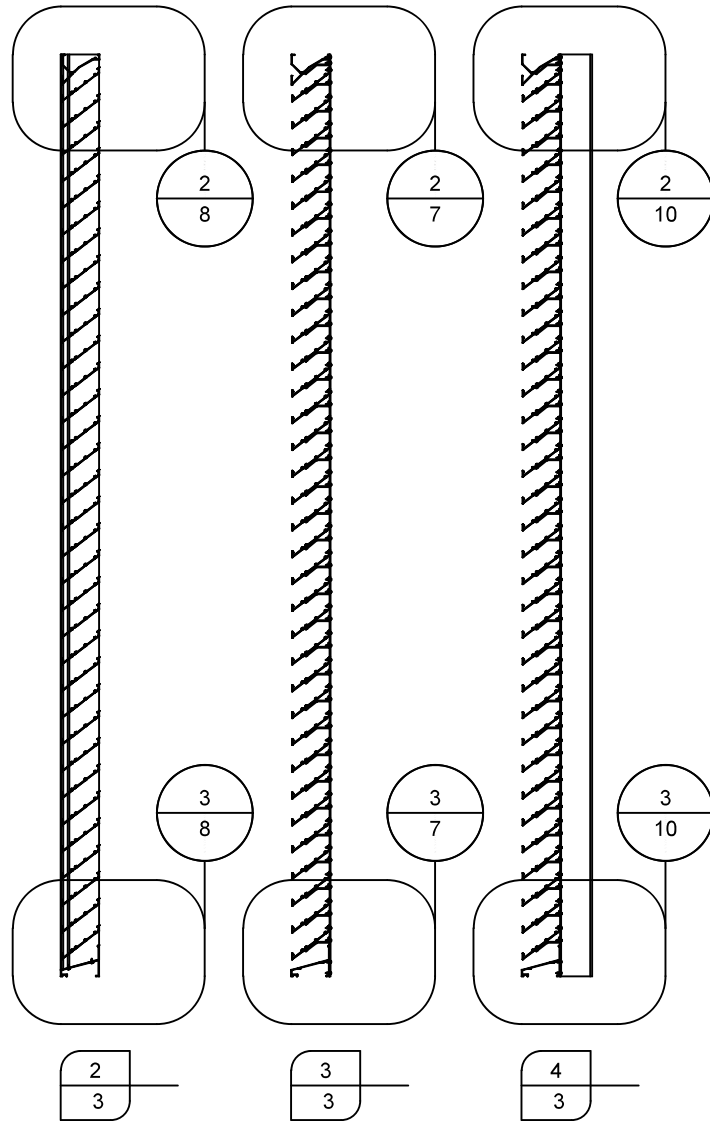
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Sheet: 2 OF 17





1
3 ELEVATION - SPECIMEN #2 - 23 PSF DESIGN PRESSURE

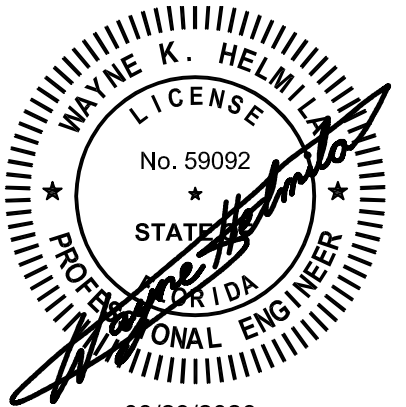


DESIGN PRESSURE TABLE - 5" MULLION CHANNEL									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	35 PSF	28 PSF	23 PSF	NA	NA	NA	NA	NA	NA
132"	46 PSF	36 PSF	30 PSF	NA	NA	NA	NA	NA	NA
120"	61 PSF	49 PSF	40 PSF	NA	NA	NA	NA	NA	NA
108"	84 PSF	67 PSF	56 PSF	NA	NA	NA	NA	NA	NA
96"	119 PSF	95 PSF	79 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	143 PSF	119 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	175 PSF	154 PSF	134 PSF	119 PSF	107 PSF	98 PSF	89 PSF
60"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	172 PSF	155 PSF	141 PSF	129 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF

- Note:
1. Max. Test Pressure = 1.5 X Design Pressure
 2. Shaped louvers such as round, triangle, trapezoid, etc. are also approved.
 3. Design pressures are based on mullion performance only. Louver blade, blade stiffener, jamb anchorage, and/or mullion anchorage may control the design and must also be checked.
 4. Panels may be placed horizontally in a row to an unlimited width with mullions provided at panel joints.
 5. Vertical stacking of panels to an unlimited height is permitted with the inclusion of structural support capable of withstanding all loads imposed by the louver system. All structural support must be positioned to accommodate louver size limitations.

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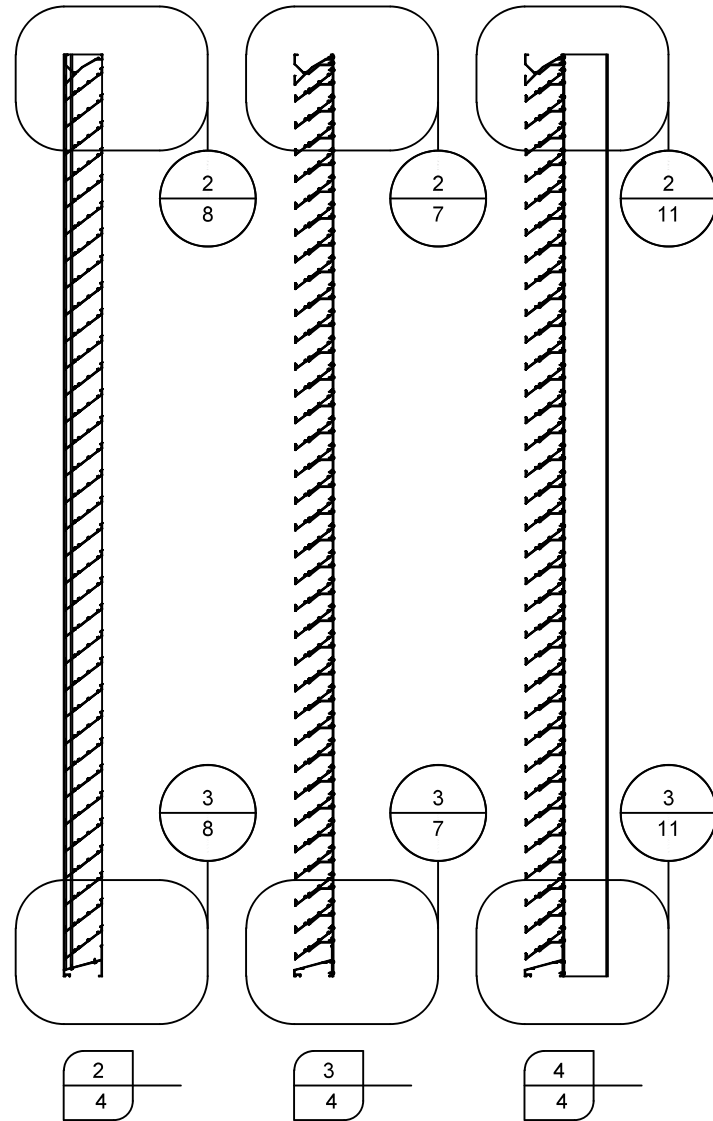
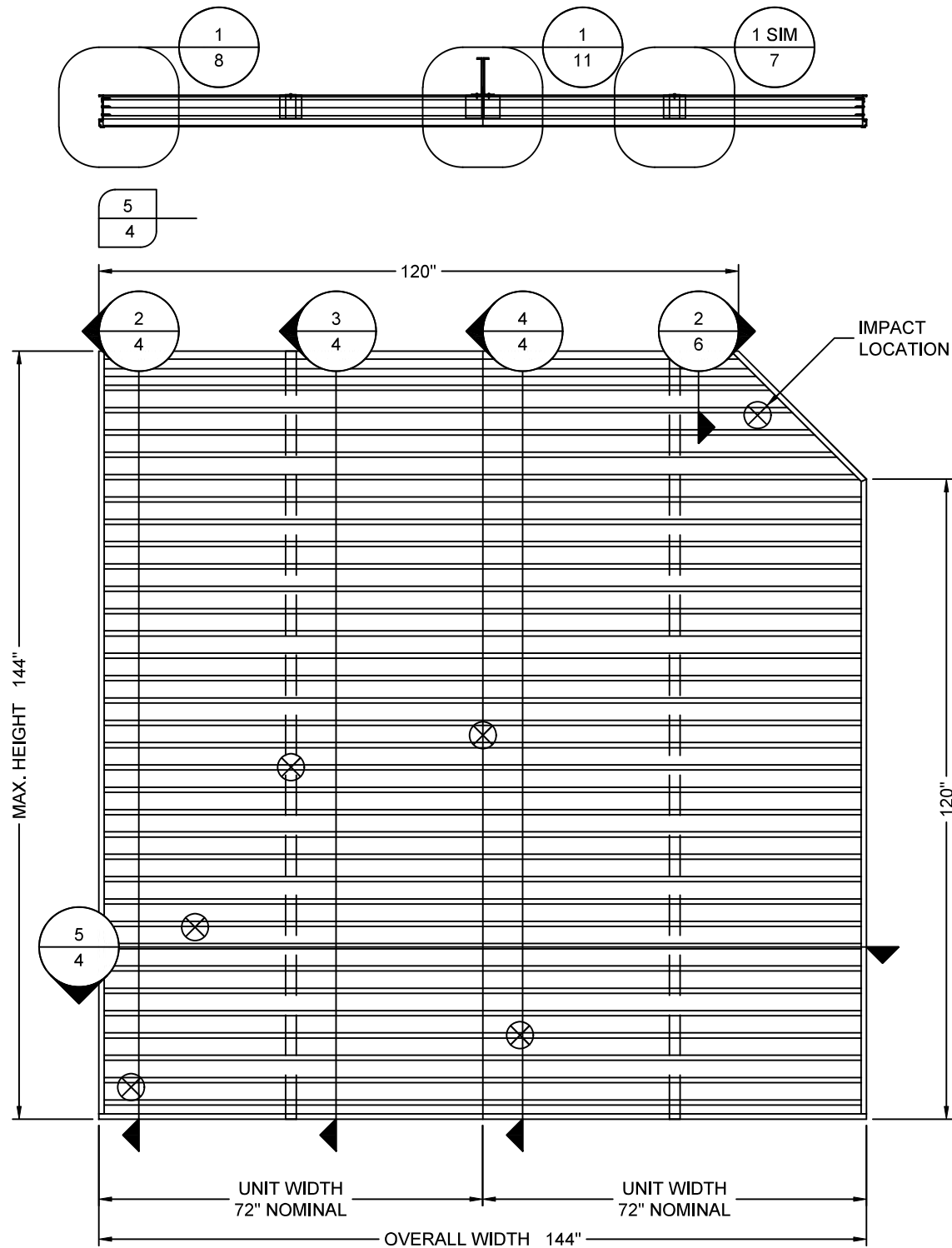


03/29/2023
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Model: 653XPDC
Revision: 6
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Scale: 1:30
Sheet: 3 OF 17





DESIGN PRESSURE TABLE - 7" MULLION CHANNEL									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	99 PSF	79 PSF	66 PSF	NA	NA	NA	NA	NA	NA
132"	129 PSF	103 PSF	86 PSF	NA	NA	NA	NA	NA	NA
120"	172 PSF	137 PSF	114 PSF	NA	NA	NA	NA	NA	NA
108"	175 PSF	175 PSF	150 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	175 PSF	175 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	175 PSF	175 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	168 PSF
60"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF

- Note:
1. Max. Test Pressure = 1.5 X Design Pressure
 2. Shaped louvers such as round, triangle, trapezoid, etc. are also approved.
 3. Design pressures are based on mullion performance only. Louver blade, blade stiffener, jamb anchorage, and/or mullion anchorage may control the design and must also be checked.
 4. Panels may be placed horizontally in a row to an unlimited width with mullions provided at panel joints.
 5. Vertical stacking of panels to an unlimited height is permitted with the inclusion of structural support capable of withstanding all loads imposed by the louver system. All structural support must be positioned to accommodate louver size limitations.

1
4 ELEVATION - SPECIMEN #3 - 66 PSF DESIGN PRESSURE

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COA: 9090

Model: 653XPDC
Revision: 6
Revision Date: 03/06/2023
Start Date: 11/20/2020
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DESIGN PRESSURE TABLE - SINGLE SPAN BLADE			
UNIT WIDTH			
42"	48"	54"	60"
175 PSF	120 PSF	84 PSF	61 PSF

- Note:
1. Max. Test Pressure = 1.5 X Design Pressure
 2. Shaped louvers such as round, triangle, trapezoid, etc. are also approved.
 3. Design pressures are based on louver blade performance only. Jamb anchorage may control the design, and must also be checked. See sheets 9 - 10 for jamb anchorage requirements.
 4. Single non-reinforced panels may be stacked vertically to an unlimited height. See detail 1 on sheet 6 for typical joint between panels.

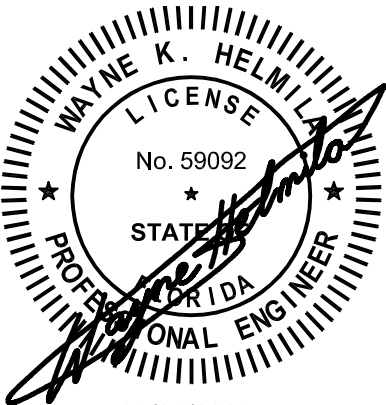
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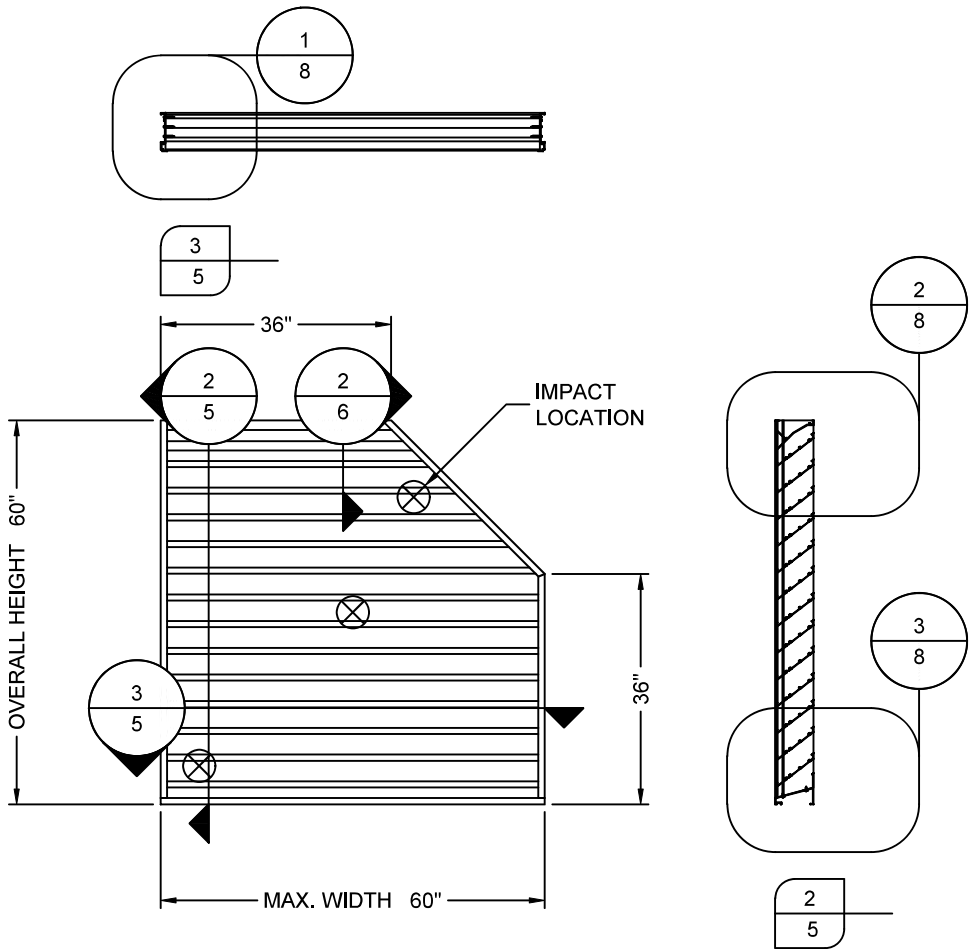
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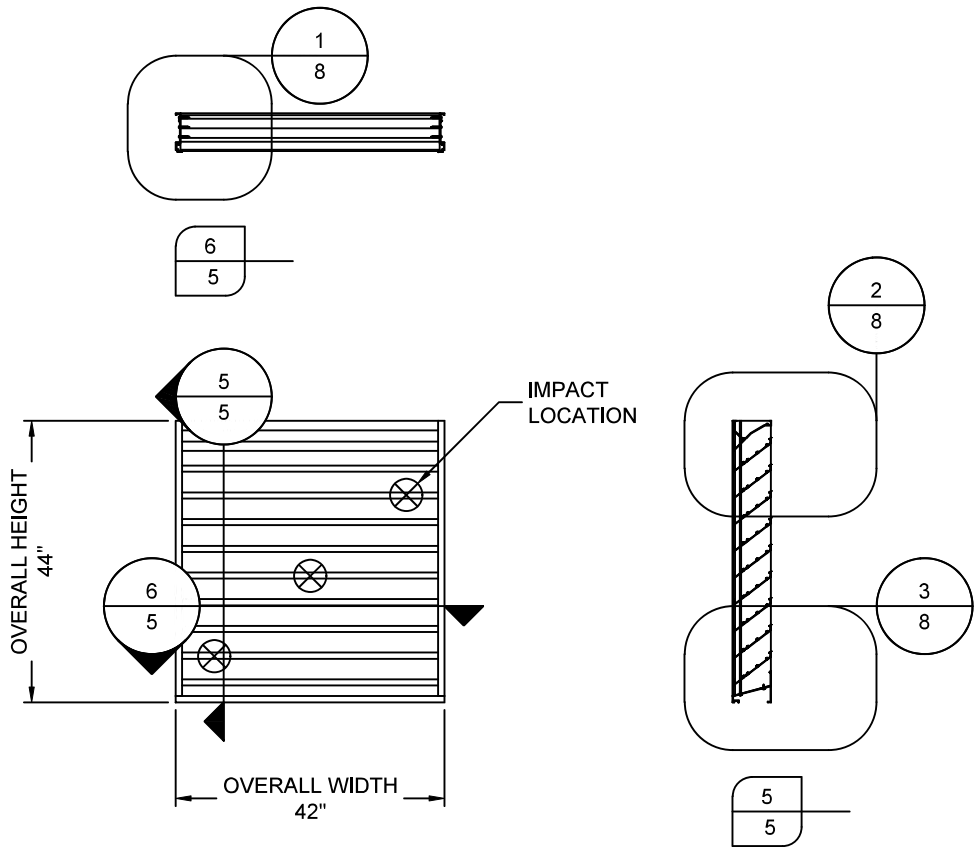
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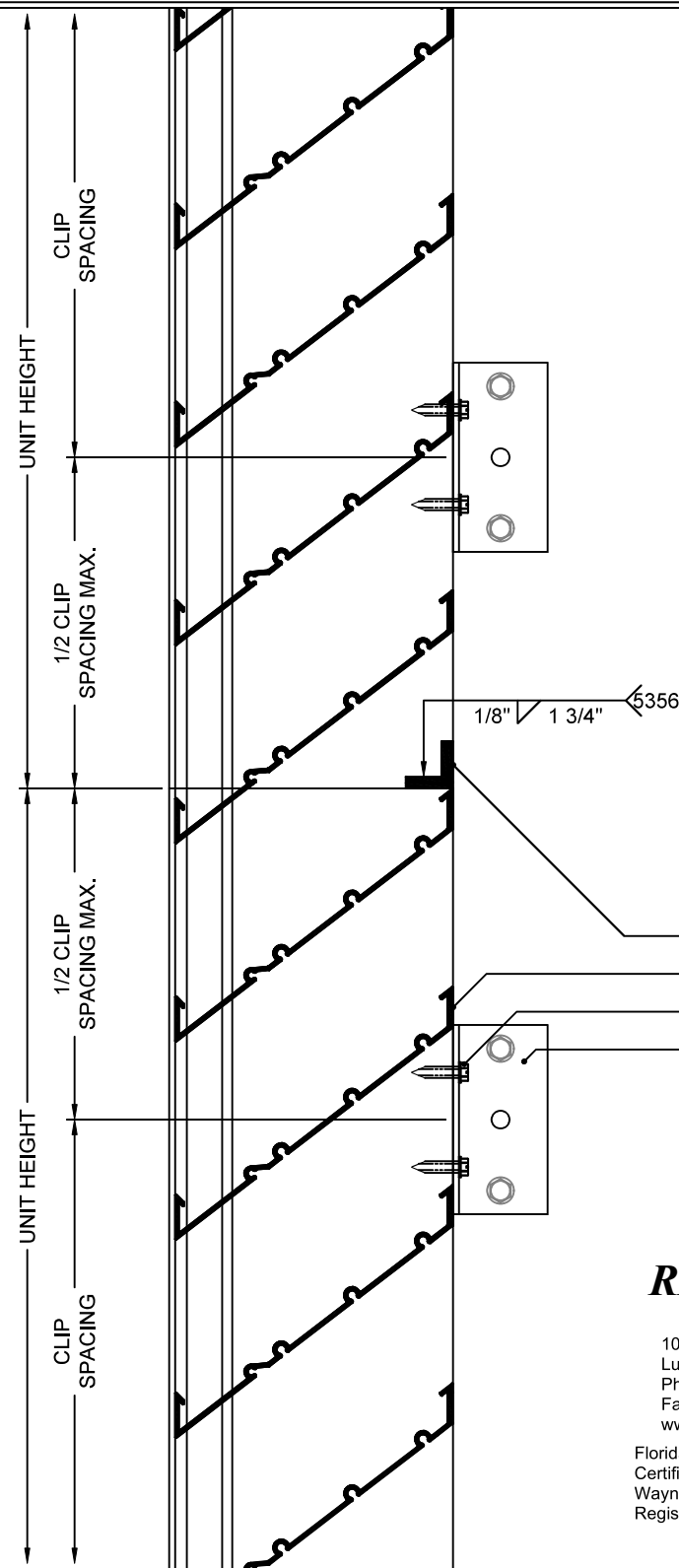
1
5 ELEVATION - SPECIMEN #4 - 61 PSF DESIGN PRESSURE



4
5 ELEVATION - SPECIMEN #5 - 175 PSF DESIGN PRESSURE

Model: 653XPDC
Revision: 6
Revision Date: 03/06/2023
Start Date: 11/20/2020
Scale: 1:30
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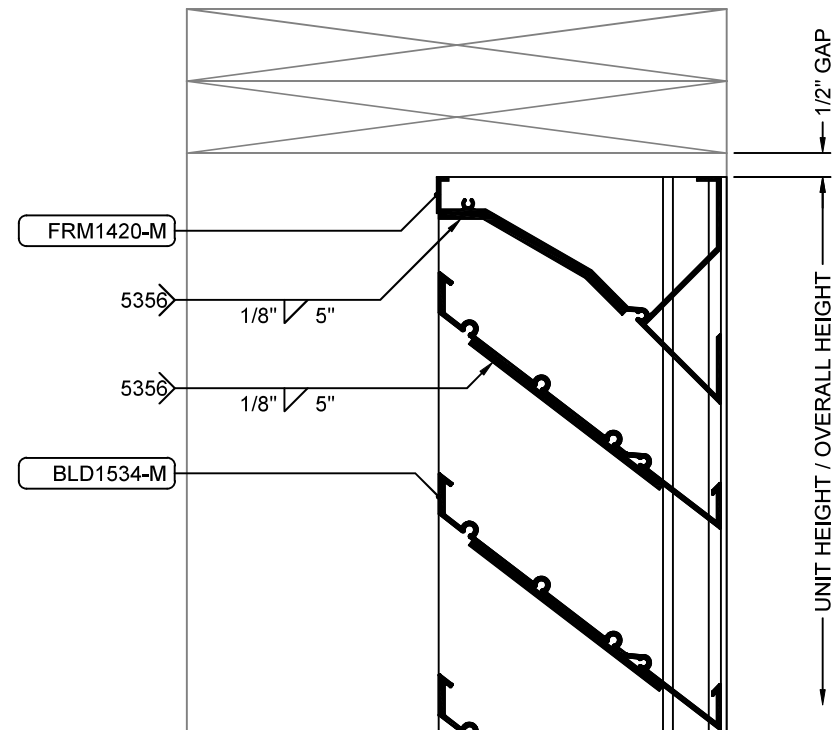




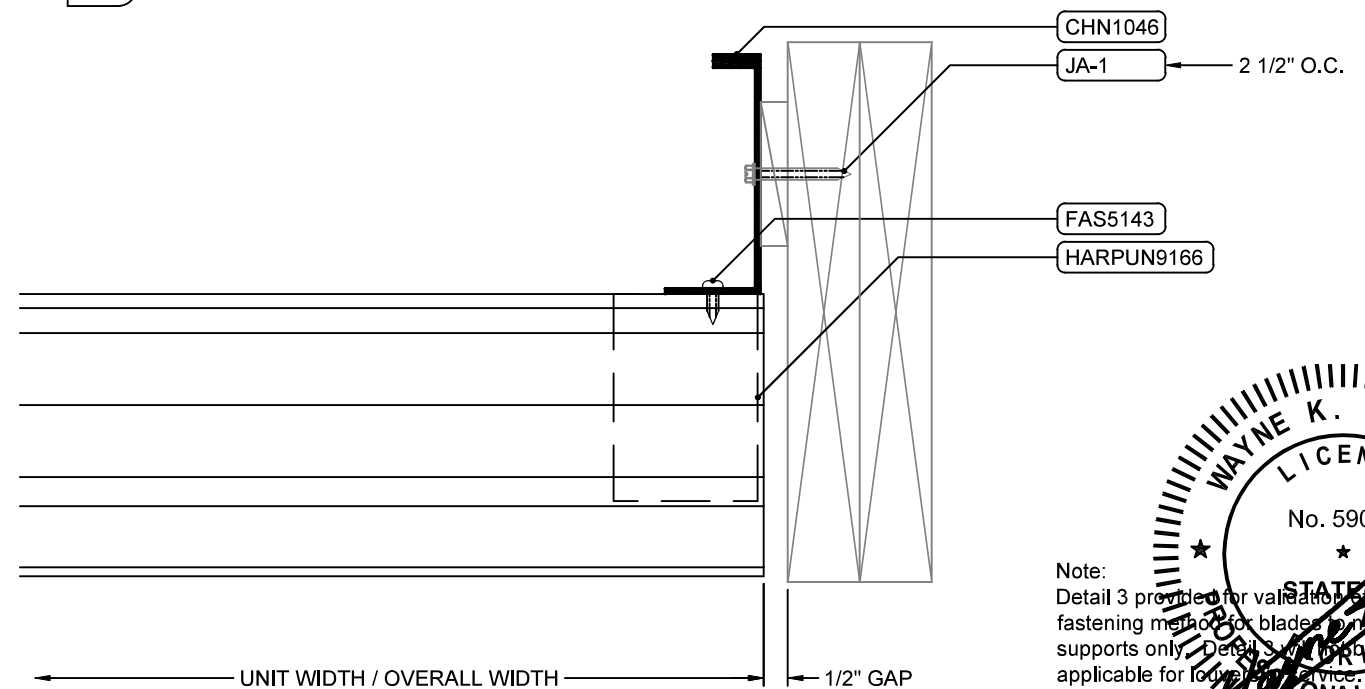
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 NOA-No. 23-0117.06
 Expiration Date 02/02/2027
 By *[Signature]*
 Miami-Dade Product Control

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 BLD1534-M
 FAS5135
 HAR9336

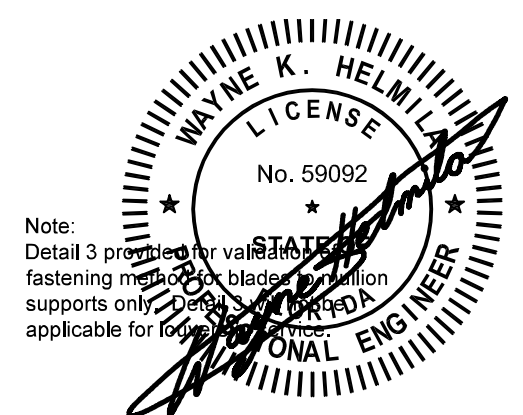
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 105 School Creek Trail
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 Phone: (920) 617-1042
 Fax: (920) 617-1100
 www.rice-inc.com
 Florida Firm No: F-01000005061
 Certificate of Authorization: #9090
 Wayne K. Helmila
 Registration No: 59092



2 CROSS SECTION - WELDED JOINT
 6



3 PLAN VIEW DETAIL - MULLION/JAMB
 6



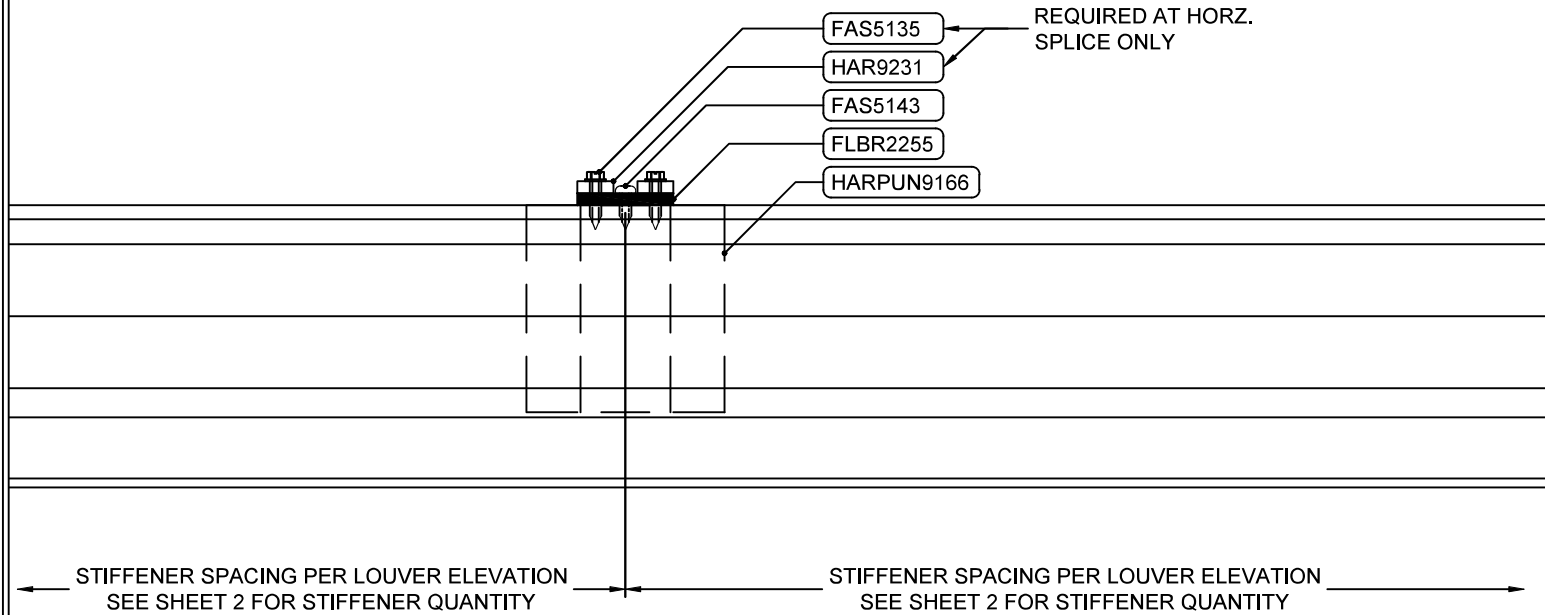
Note:
 Detail 3 provided for validation of
 fastening method for blades on mullion
 supports only. Detail 3 will not be
 applicable for louvers in service.

03/29/2023
 COA: 9090

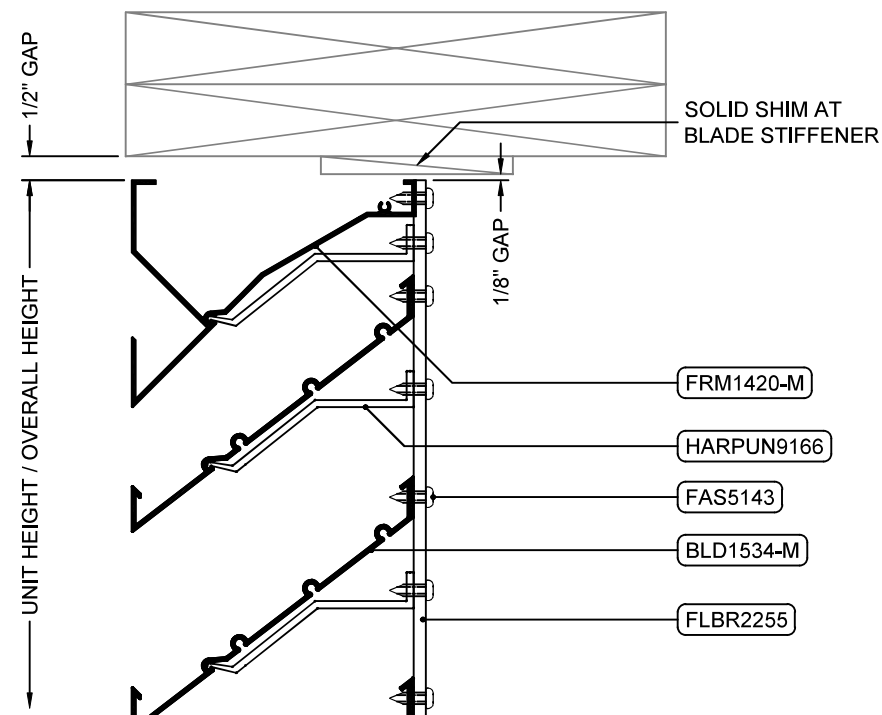
1 CROSS SECTION - SIDE FRAME SPLICE
 6

Model: 653XPDC
Revision: 6
Revision Date: 03/06/2023
Start Date: 11/20/2020
Scale: 1:4
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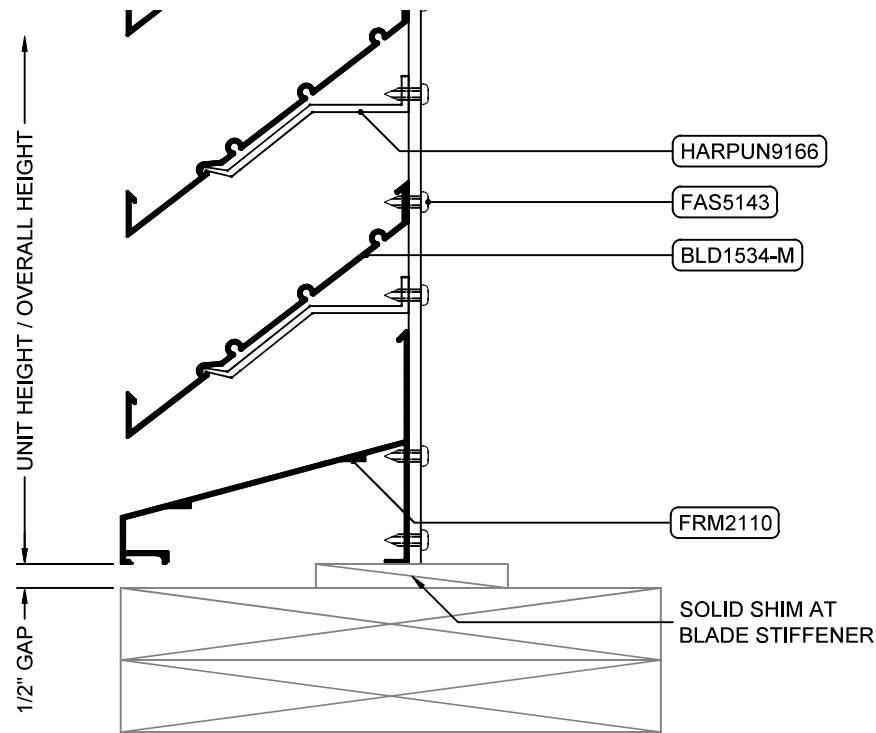




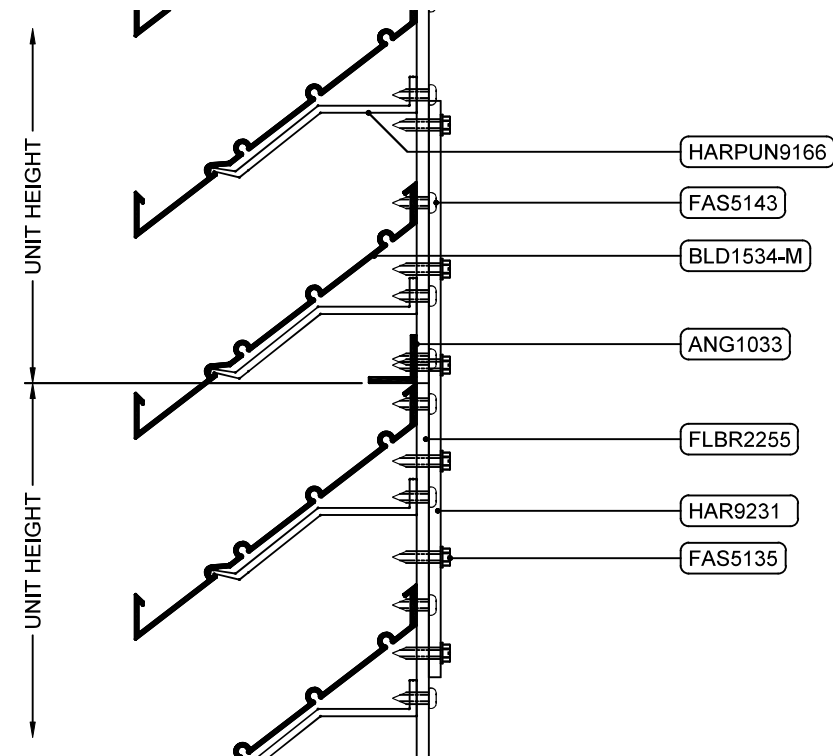
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7 PLAN VIEW DETAIL - BLADE STIFFENER



2
7 CROSS SECTION - LOUVER HEAD



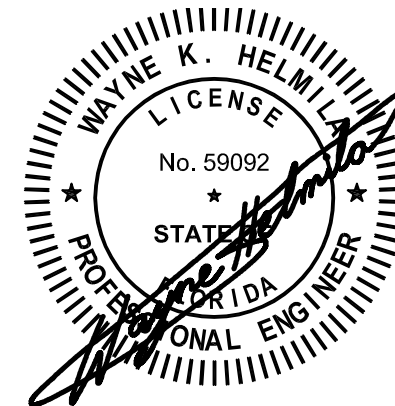
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7 CROSS SECTION - LOUVER SILL



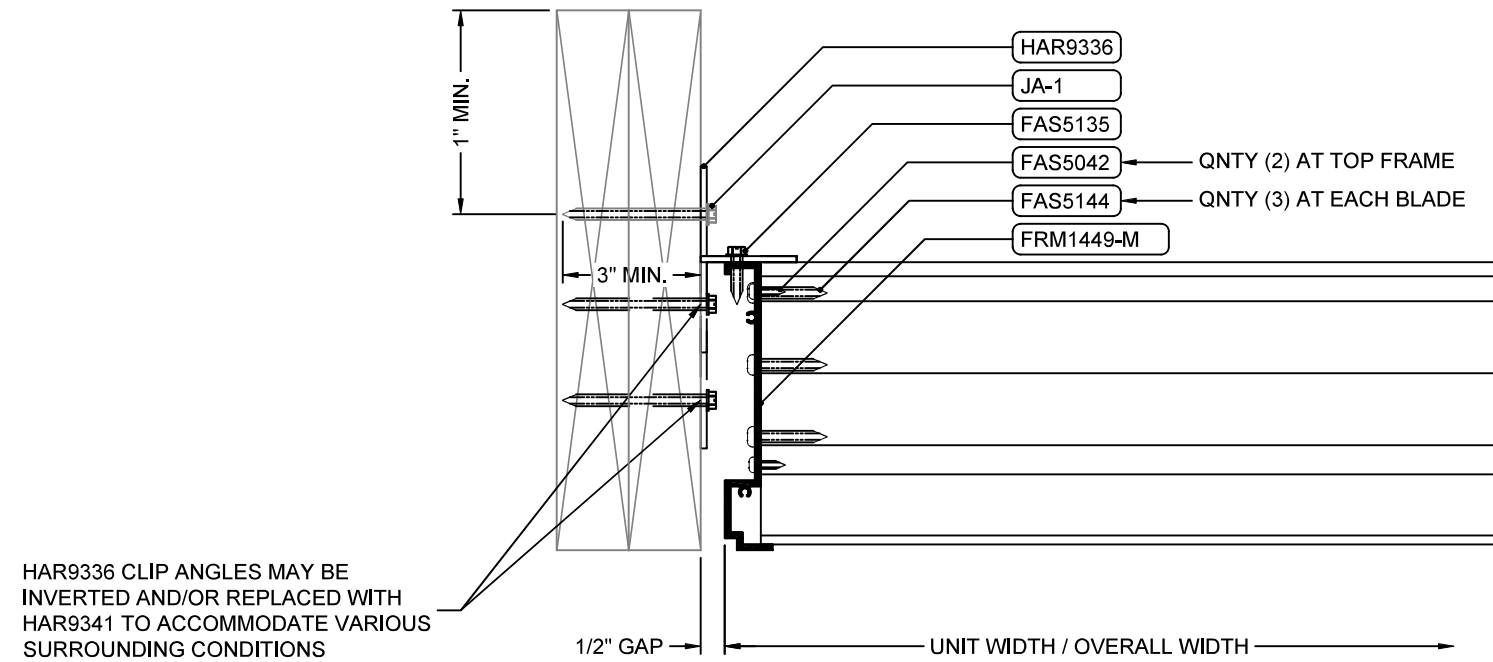
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7 CROSS SECTION - STIFFENER SPLICE

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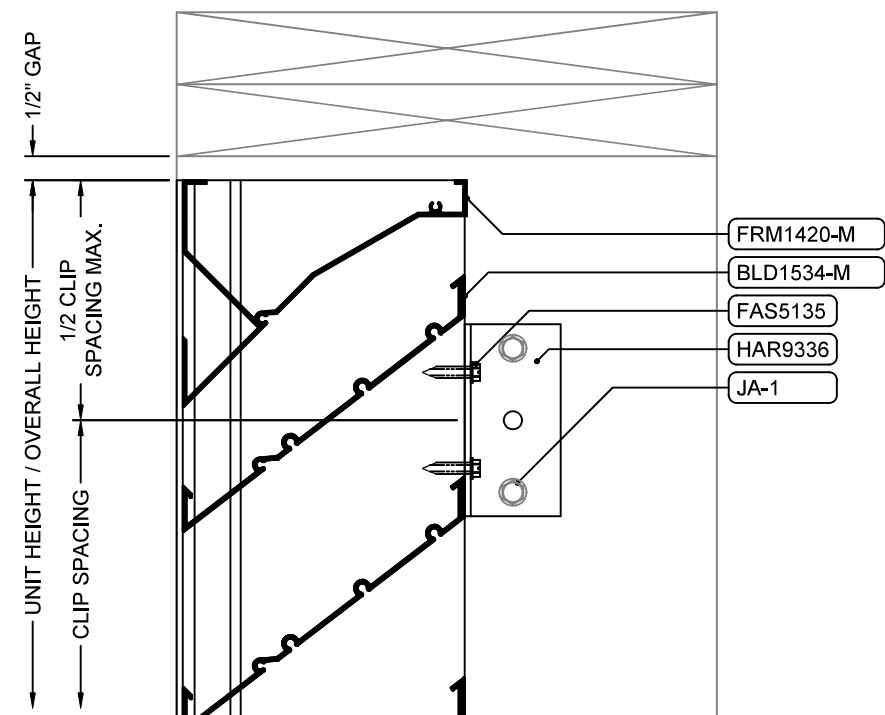
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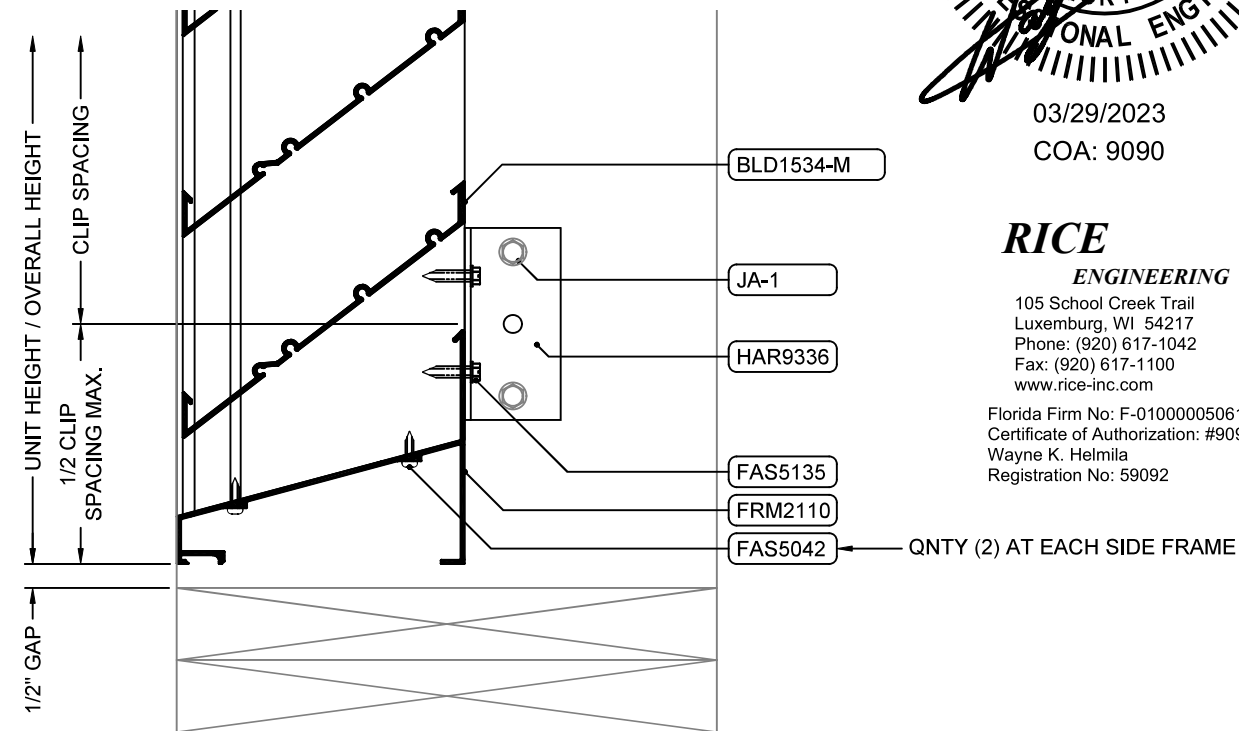


1
8 PLAN VIEW DETAIL - LOUVER JAMB



2
8 CROSS SECTION - LOUVER HEAD

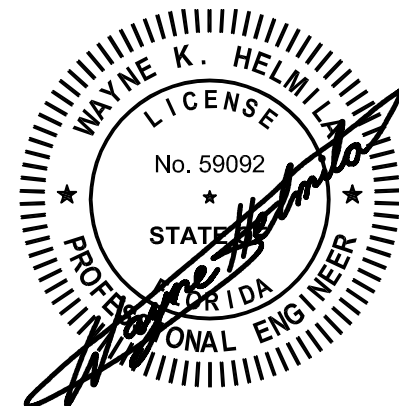
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3
8 CROSS SECTION - LOUVER SILL

DESIGN PRESSURE TABLE - JAMB CLIP ANCHOR TYPE JA-1									
CLIP SPACING	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
18" O.C.	113 PSF	90 PSF	75 PSF	64 PSF	56 PSF	50 PSF	45 PSF	41 PSF	37 PSF
16" O.C.	127 PSF	102 PSF	85 PSF	72 PSF	63 PSF	56 PSF	51 PSF	46 PSF	42 PSF
14" O.C.	145 PSF	116 PSF	97 PSF	83 PSF	72 PSF	64 PSF	58 PSF	52 PSF	48 PSF
12" O.C.	170 PSF	136 PSF	113 PSF	97 PSF	85 PSF	75 PSF	68 PSF	61 PSF	56 PSF
10" O.C.	175 PSF	163 PSF	136 PSF	116 PSF	102 PSF	90 PSF	81 PSF	74 PSF	68 PSF
8" O.C.	175 PSF	175 PSF	170 PSF	145 PSF	127 PSF	113 PSF	102 PSF	92 PSF	85 PSF
6" O.C.	175 PSF	175 PSF	175 PSF	175 PSF	170 PSF	151 PSF	136 PSF	123 PSF	113 PSF

- Note:
1. Type JA-1 jamb clip anchorage is used at wood substrates.
 2. Wood structure shall have a minimum specific gravity of 0.55.
 3. Type JA-1 jamb clip anchorage allows a maximum of 425 lb load (ASD) per clip angle.
 4. Design of all substrate is the responsibility of others.
 5. Anchor Specifications:
 - 5.1. 1/4" DIAMETER SS LAG SCREW (JA-1)
 - 5.2. QNTY (2) PER EACH CLIP ANGLE
 - 5.3. 3" MINIMUM OVERALL PENETRATION
 - 5.4. 2 1/4" MINIMUM THREAD ENGAGEMENT
 - 5.5. 1" MINIMUM EDGE DISTANCE
 - 5.6. 2 3/4" O.C. MINIMUM SPACING



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Wayne K. Helmila
Registration No: 59092

Model: 653XPDC
Revision: 6
Revision Date: 03/06/2023
Start Date: 11/20/2020
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DESIGN PRESSURE TABLE - JAMB CLIP ANCHOR TYPE JA-2										
CLIP SPACING	UNIT WIDTH									
	48"	60"	72"	84"	96"	108"	120"	132"	144"	
18" O.C.	97 PSF	77 PSF	64 PSF	55 PSF	48 PSF	43 PSF	38 PSF	35 PSF	32 PSF	
16" O.C.	109 PSF	87 PSF	73 PSF	62 PSF	54 PSF	48 PSF	43 PSF	39 PSF	36 PSF	
14" O.C.	125 PSF	100 PSF	83 PSF	71 PSF	62 PSF	55 PSF	50 PSF	45 PSF	41 PSF	
12" O.C.	146 PSF	116 PSF	97 PSF	83 PSF	73 PSF	64 PSF	58 PSF	53 PSF	48 PSF	
10" O.C.	175 PSF	140 PSF	116 PSF	100 PSF	87 PSF	77 PSF	70 PSF	63 PSF	58 PSF	
8" O.C.	175 PSF	175 PSF	146 PSF	125 PSF	109 PSF	97 PSF	87 PSF	79 PSF	73 PSF	
6" O.C.	175 PSF	175 PSF	175 PSF	166 PSF	146 PSF	129 PSF	116 PSF	106 PSF	97 PSF	

- Note:
1. Type JA-2 jamb clip anchorage is used at metal framing substrates.
 2. Metal framing shall have be minimum 16 gauge and Fy = 33 ksi.
 3. Use clip angle HAR9336.
 4. Type JA-2 jamb clip anchorage allows a maximum of 365 lb load (ASD) per clip angle
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/4" DIAMETER SS SCREW (JA-2)
 - 6.2. QNTY (2) PER EACH CLIP ANGLE
 - 6.3. 1" MINIMUM EDGE DISTANCE
 - 6.4. 2 3/4" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - JAMB CLIP ANCHOR TYPE JA-4										
CLIP SPACING	UNIT WIDTH									
	48"	60"	72"	84"	96"	108"	120"	132"	144"	
18" O.C.	117 PSF	93 PSF	78 PSF	67 PSF	58 PSF	52 PSF	46 PSF	42 PSF	39 PSF	
16" O.C.	132 PSF	105 PSF	88 PSF	75 PSF	66 PSF	58 PSF	52 PSF	48 PSF	44 PSF	
14" O.C.	150 PSF	120 PSF	100 PSF	86 PSF	75 PSF	67 PSF	60 PSF	54 PSF	50 PSF	
12" O.C.	175 PSF	140 PSF	117 PSF	100 PSF	88 PSF	78 PSF	70 PSF	64 PSF	58 PSF	
10" O.C.	175 PSF	168 PSF	140 PSF	120 PSF	105 PSF	93 PSF	84 PSF	76 PSF	70 PSF	
8" O.C.	175 PSF	175 PSF	175 PSF	150 PSF	132 PSF	117 PSF	105 PSF	96 PSF	88 PSF	
6" O.C.	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	156 PSF	140 PSF	128 PSF	117 PSF	

- Note:
1. Type JA-4 jamb clip anchorage is used at structural steel substrates.
 2. Structural steel shall be minimum 3/16" thick and Fy = 36 ksi.
 3. Use clip angle HAR9336.
 4. Type JA-4 jamb clip anchorage allows a maximum of 440 lb load (ASD) per clip angle.
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 5/16" DIAMETER SS BOLT/SCREW (JA-4)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 1" MINIMUM EDGE DISTANCE

DESIGN PRESSURE TABLE - JAMB CLIP ANCHOR TYPE JA-6										
CLIP SPACING	UNIT WIDTH									
	48"	60"	72"	84"	96"	108"	120"	132"	144"	
18" O.C.	110 PSF	88 PSF	73 PSF	63 PSF	55 PSF	49 PSF	44 PSF	40 PSF	36 PSF	
16" O.C.	124 PSF	99 PSF	83 PSF	71 PSF	62 PSF	55 PSF	49 PSF	45 PSF	41 PSF	
14" O.C.	142 PSF	113 PSF	94 PSF	81 PSF	71 PSF	63 PSF	56 PSF	51 PSF	47 PSF	
12" O.C.	166 PSF	132 PSF	110 PSF	94 PSF	83 PSF	73 PSF	66 PSF	60 PSF	55 PSF	
10" O.C.	175 PSF	159 PSF	132 PSF	113 PSF	99 PSF	88 PSF	79 PSF	72 PSF	66 PSF	
8" O.C.	175 PSF	175 PSF	166 PSF	142 PSF	124 PSF	110 PSF	99 PSF	90 PSF	83 PSF	
6" O.C.	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	147 PSF	132 PSF	120 PSF	110 PSF	

- Note:
1. Type JA-6 jamb clip anchorage is used at aluminum substrates.
 2. Aluminum shall be minimum 1/8" thick and 6063-T5.
 3. Use clip angle HAR9336.
 4. Type JA-6 jamb clip anchorage allows a maximum of 415 lb load (ASD) per clip angle.
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/4" DIAMETER SS SCREW (JA-6)
 - 6.2. QNTY (2) PER EACH CLIP ANGLE
 - 6.3. 1" MINIMUM EDGE DISTANCE
 - 6.4. 2 3/4" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - JAMB CLIP ANCHOR TYPE JA-3										
CLIP SPACING	UNIT WIDTH									
	48"	60"	72"	84"	96"	108"	120"	132"	144"	
18" O.C.	69 PSF	55 PSF	46 PSF	39 PSF	34 PSF	30 PSF	27 PSF	25 PSF	23 PSF	
16" O.C.	78 PSF	62 PSF	52 PSF	44 PSF	39 PSF	34 PSF	31 PSF	28 PSF	26 PSF	
14" O.C.	89 PSF	71 PSF	59 PSF	50 PSF	44 PSF	39 PSF	35 PSF	32 PSF	29 PSF	
12" O.C.	104 PSF	83 PSF	69 PSF	59 PSF	52 PSF	46 PSF	41 PSF	37 PSF	34 PSF	
10" O.C.	124 PSF	99 PSF	83 PSF	71 PSF	62 PSF	55 PSF	49 PSF	45 PSF	41 PSF	
8" O.C.	156 PSF	124 PSF	104 PSF	89 PSF	78 PSF	69 PSF	62 PSF	56 PSF	52 PSF	
6" O.C.	175 PSF	166 PSF	138 PSF	118 PSF	104 PSF	92 PSF	83 PSF	75 PSF	69 PSF	

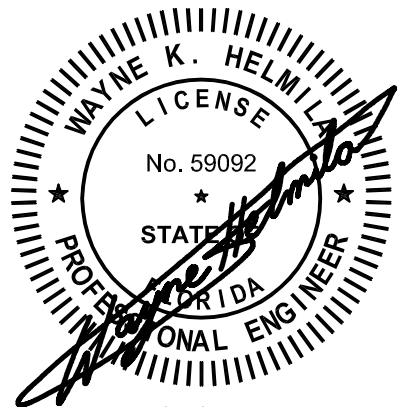
- Note:
1. Type JA-3 jamb clip anchorage is used at concrete substrates.
 2. Concrete shall be minimum 4000 psi.
 3. Use clip angle HAR9336.
 4. Type JA-3 jamb clip anchorage allows a maximum of 260 lb load (ASD) per clip angle.
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/4" DIAMETER SS HILTI KWIK HUS-EZ (JA-3)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 2 1/2" MINIMUM EMBEDMENT
 - 6.4. 2 3/8" MINIMUM EDGE DISTANCE

DESIGN PRESSURE TABLE - JAMB CLIP ANCHOR TYPE JA-5										
CLIP SPACING	UNIT WIDTH									
	48"	60"	72"	84"	96"	108"	120"	132"	144"	
18" O.C.	109 PSF	87 PSF	72 PSF	62 PSF	54 PSF	48 PSF	43 PSF	39 PSF	36 PSF	
16" O.C.	123 PSF	98 PSF	82 PSF	70 PSF	61 PSF	54 PSF	49 PSF	44 PSF	41 PSF	
14" O.C.	140 PSF	112 PSF	93 PSF	80 PSF	70 PSF	62 PSF	56 PSF	51 PSF	46 PSF	
12" O.C.	164 PSF	131 PSF	109 PSF	93 PSF	82 PSF	72 PSF	65 PSF	59 PSF	54 PSF	
10" O.C.	175 PSF	157 PSF	131 PSF	112 PSF	98 PSF	87 PSF	78 PSF	71 PSF	65 PSF	
8" O.C.	175 PSF	175 PSF	164 PSF	140 PSF	123 PSF	109 PSF	98 PSF	89 PSF	82 PSF	
6" O.C.	175 PSF	175 PSF	175 PSF	175 PSF	164 PSF	145 PSF	131 PSF	119 PSF	109 PSF	

- Note:
1. Type JA-5 jamb clip anchorage is used at CMU substrates.
 2. CMU shall be grout filled minimum 1500 psi.
 3. Use clip angle HAR9336.
 4. Type JA-5 jamb clip anchorage allows a maximum of 410 lb load (ASD) per clip angle.
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/4" DIAMETER SS DeWALT AGGRE-GATOR (JA-5)
 - 6.2. QNTY (2) PER EACH CLIP ANGLE
 - 6.3. 2" MINIMUM EMBEDMENT
 - 6.4. 2" MINIMUM EDGE DISTANCE
 - 6.5. 3" O.C. MINIMUM SPACING

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Registration No: 59092



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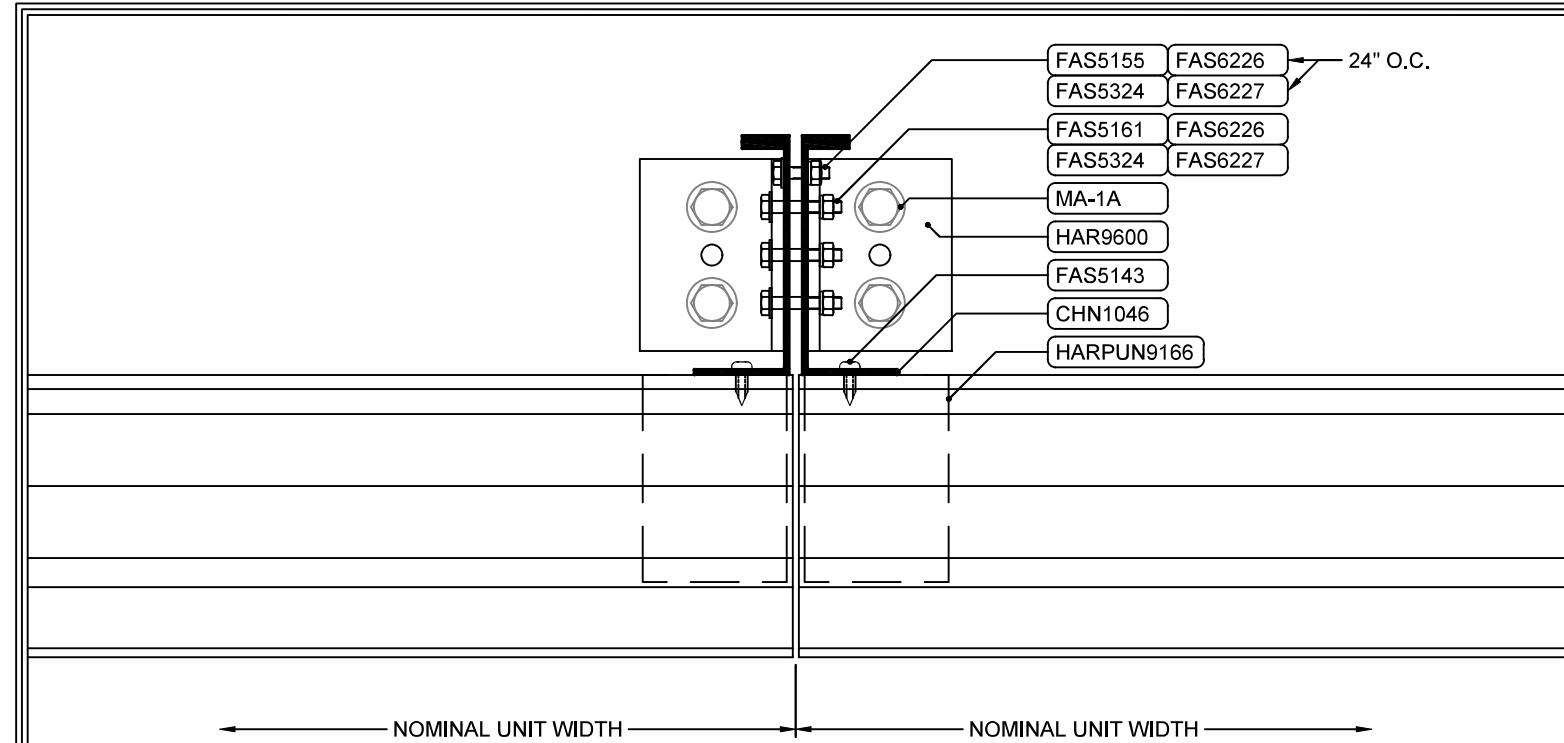
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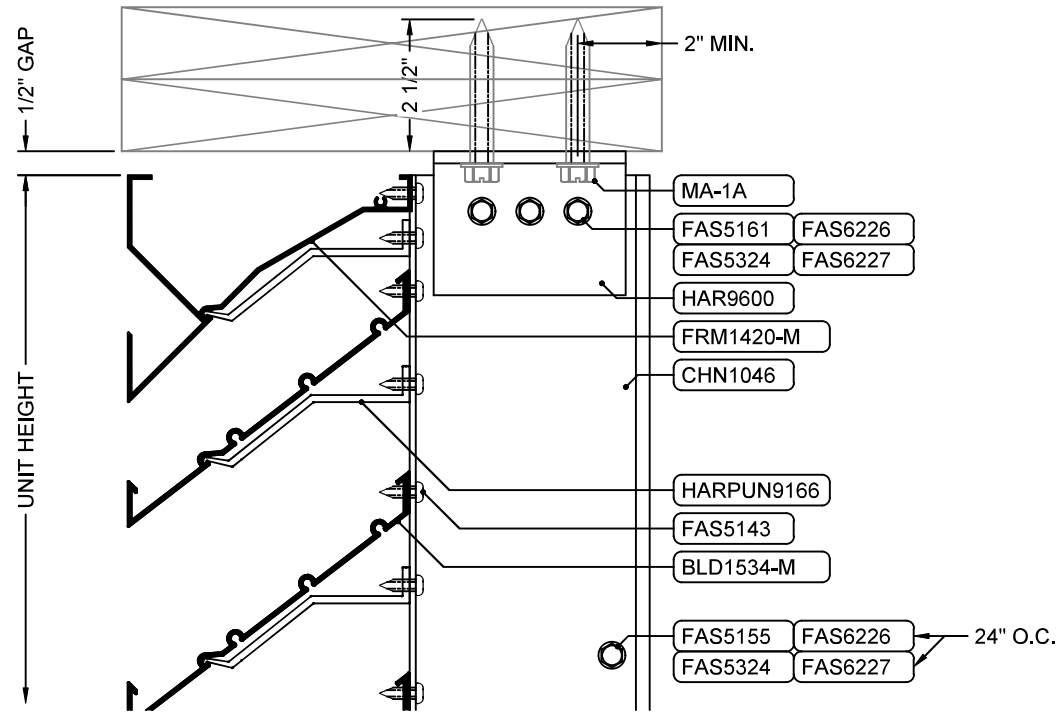
NOTE:
DETAILS FOR THE JAMB ANCHORAGE PRESENTED ON THIS SHEET ARE SIMILAR TO THE DETAILS SHOWN ON SHEET 8. DIFFERENCES WILL INCLUDE SUBSTRATE TYPE, ANCHOR TYPE, AND ANCHOR QUANTITY. PLEASE CONTACT INDUSTRIAL LOUVERS FOR JAMB ANCHORAGE DETAILS TO ACCOMPANY THE DESIGN PRESSURE TABLES SHOWN ON THIS SHEET.

Model: 653XPDC
Revision: 6
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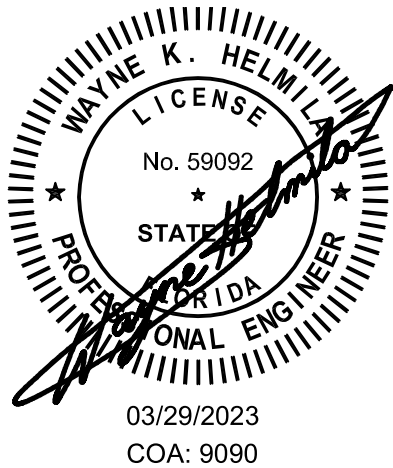





1
10 PLAN VIEW DETAIL - LOUVER MULLION



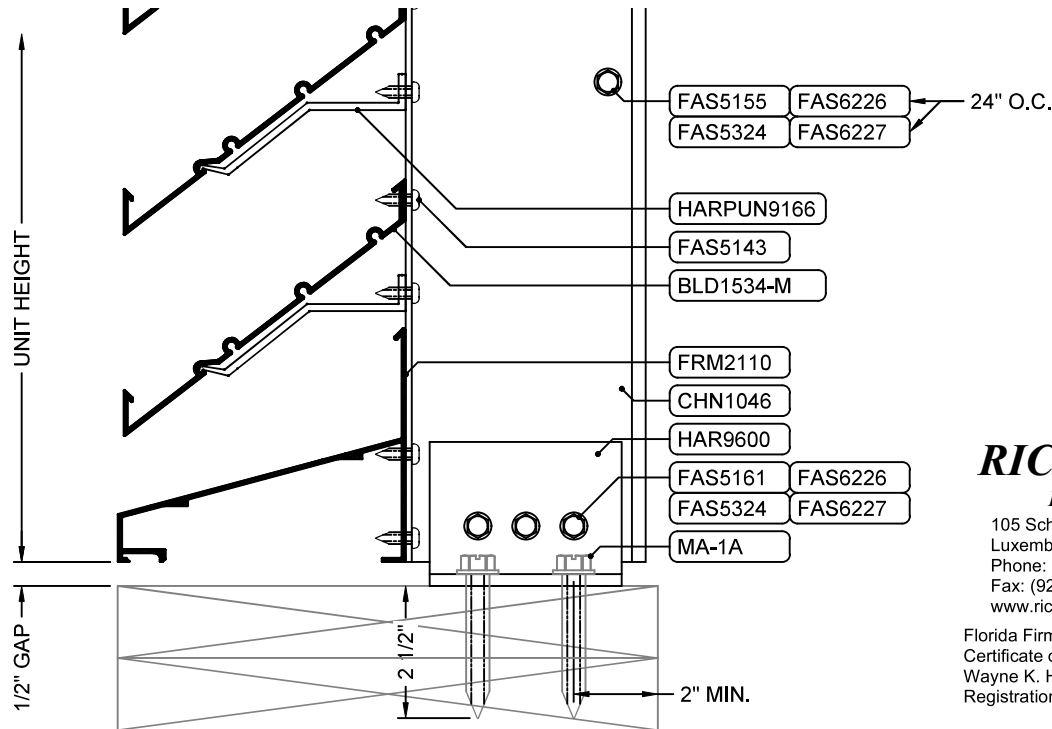
2
10 CROSS SECTION - LOUVER HEAD



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DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-1A									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	79 PSF	63 PSF	52 PSF	NA	NA	NA	NA	NA	NA
132"	86 PSF	69 PSF	57 PSF	NA	NA	NA	NA	NA	NA
120"	95 PSF	76 PSF	63 PSF	NA	NA	NA	NA	NA	NA
108"	105 PSF	84 PSF	70 PSF	NA	NA	NA	NA	NA	NA
96"	118 PSF	95 PSF	79 PSF	NA	NA	NA	NA	NA	NA
84"	135 PSF	108 PSF	90 PSF	NA	NA	NA	NA	NA	NA
72"	158 PSF	126 PSF	105 PSF	90 PSF	79 PSF	70 PSF	63 PSF	57 PSF	52 PSF
60"	175 PSF	152 PSF	126 PSF	108 PSF	95 PSF	84 PSF	76 PSF	69 PSF	63 PSF
48"	175 PSF	175 PSF	158 PSF	135 PSF	118 PSF	105 PSF	95 PSF	86 PSF	79 PSF

- Note:
1. Type MA-1A mullion anchorage is used at wood substrates.
 2. Wood structure shall have a minimum specific gravity of 0.55.
 3. Type MA-1A mullion anchorage allows a maximum of 1900 lb mullion reaction load (ASD).
 4. Design of all substrate is the responsibility of others.
 5. Anchor Specifications:
 - 5.1. 1/2" DIAMETER SS LAG SCREW (MA-1A)
 - 5.2. QNTY (2) PER EACH CLIP ANGLE
 - 5.3. 2 1/2" OVERALL PENETRATION
 - 5.4. 2 1/2" THREAD ENGAGEMENT
 - 5.5. 2" EDGE DISTANCE
 - 5.6. 2" O.C. MINIMUM SPACING

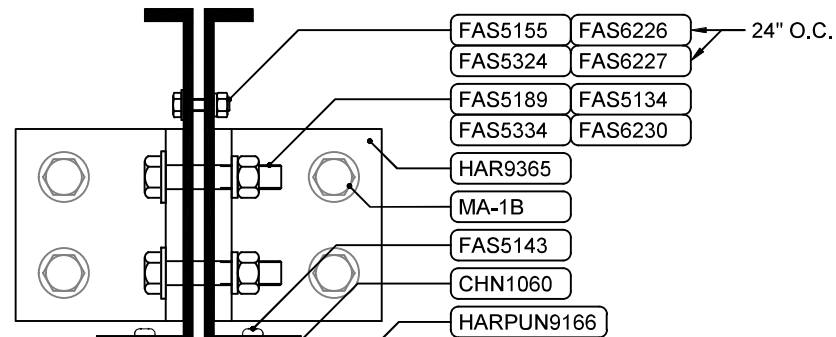


3
10 CROSS SECTION - LOUVER SILL

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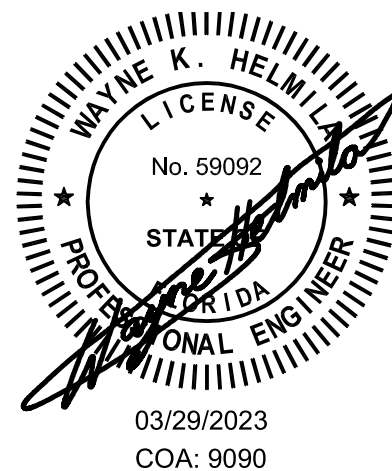
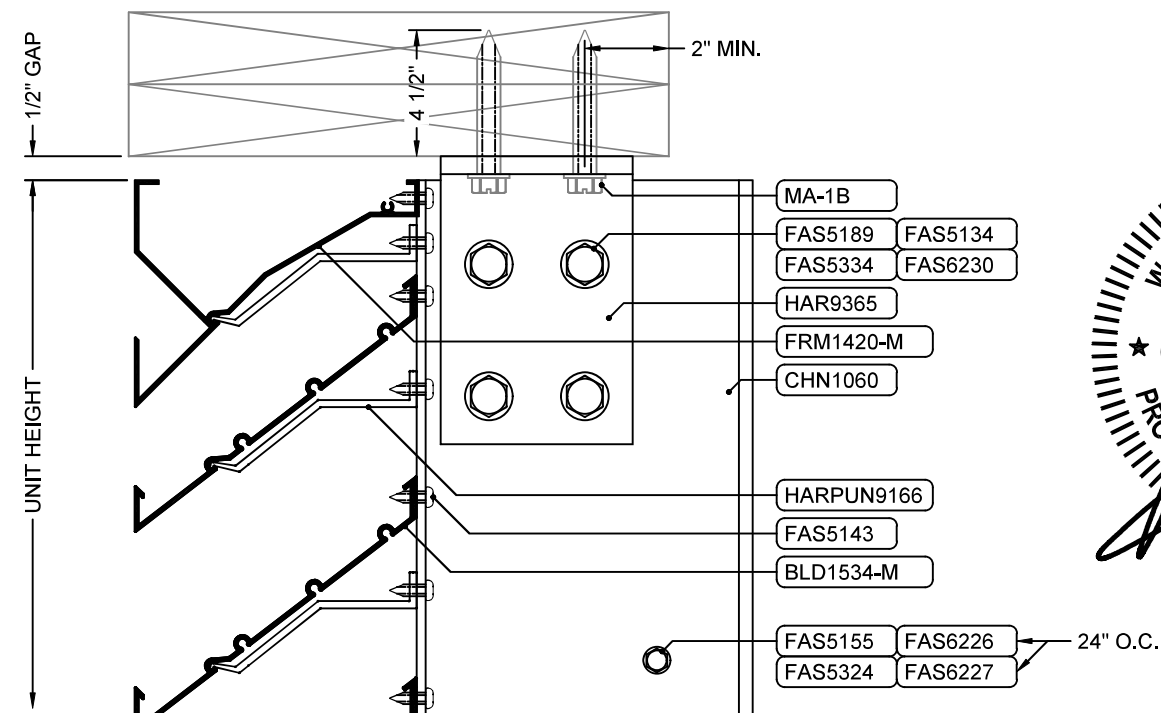
DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-1B									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	114 PSF	91 PSF	76 PSF	NA	NA	NA	NA	NA	NA
132"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
120"	137 PSF	110 PSF	91 PSF	NA	NA	NA	NA	NA	NA
108"	152 PSF	122 PSF	101 PSF	NA	NA	NA	NA	NA	NA
96"	171 PSF	137 PSF	114 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	157 PSF	130 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	152 PSF	130 PSF	114 PSF	101 PSF	91 PSF	83 PSF	76 PSF
60"	175 PSF	175 PSF	175 PSF	157 PSF	137 PSF	122 PSF	110 PSF	100 PSF	91 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	171 PSF	152 PSF	137 PSF	125 PSF	114 PSF

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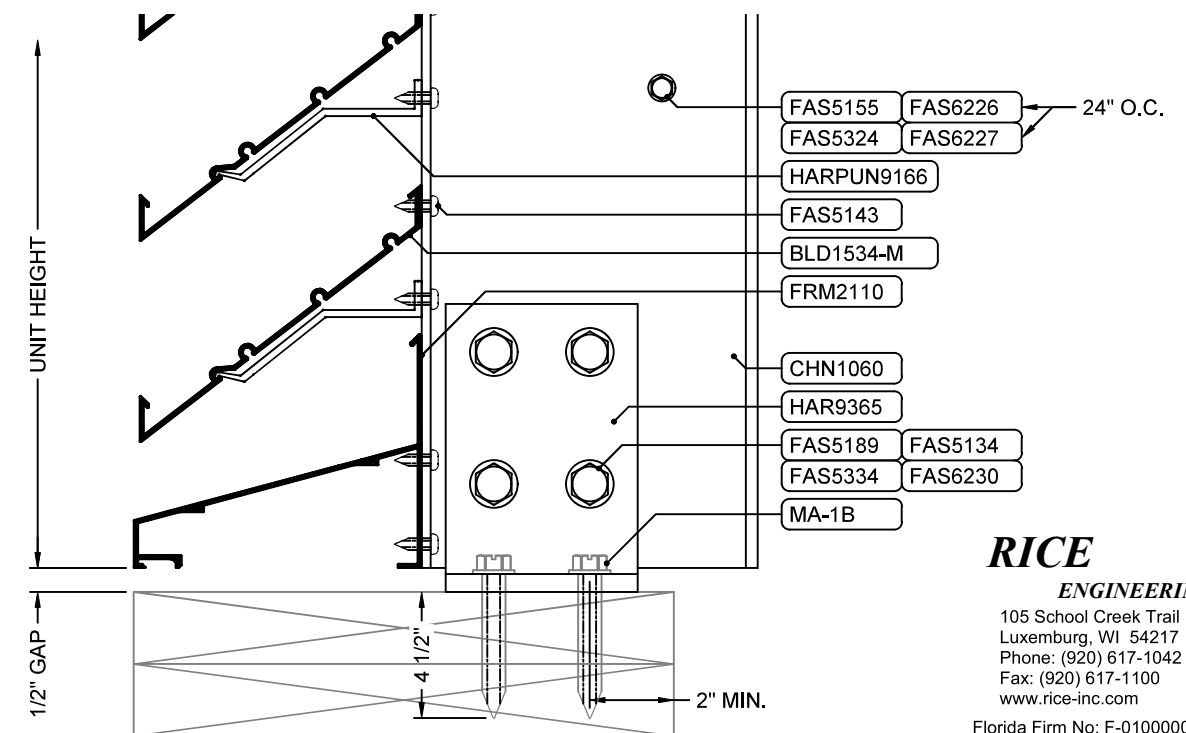
1. Type MA-1B mullion anchorage is used at wood substrates.
2. Wood structure shall have a minimum specific gravity of 0.55.
3. Type MA-1B mullion anchorage allows a maximum of 2750 lb mullion reaction load (ASD).
4. Design of all substrate is the responsibility of others.
5. Anchor Specifications:
 - 5.1. 1/2" DIAMETER SS LAG SCREW (MA-1B)
 - 5.2. QNTY (2) PER EACH CLIP ANGLE
 - 5.3. 4 1/2" OVERALL PENETRATION
 - 5.4. 3" THREAD ENGAGEMENT
 - 5.5. 2" EDGE DISTANCE
 - 5.6. 2" O.C. MINIMUM SPACING

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1 PLAN VIEW DETAIL - LOUVER MULLION



2 CROSS SECTION - LOUVER HEAD



3 CROSS SECTION - LOUVER SILL

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DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-2A									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	79 PSF	63 PSF	52 PSF	NA	NA	NA	NA	NA	NA
132"	86 PSF	69 PSF	57 PSF	NA	NA	NA	NA	NA	NA
120"	95 PSF	76 PSF	63 PSF	NA	NA	NA	NA	NA	NA
108"	105 PSF	84 PSF	70 PSF	NA	NA	NA	NA	NA	NA
96"	118 PSF	95 PSF	79 PSF	NA	NA	NA	NA	NA	NA
84"	135 PSF	108 PSF	90 PSF	NA	NA	NA	NA	NA	NA
72"	158 PSF	126 PSF	105 PSF	90 PSF	79 PSF	70 PSF	63 PSF	57 PSF	52 PSF
60"	175 PSF	152 PSF	126 PSF	108 PSF	95 PSF	84 PSF	76 PSF	69 PSF	63 PSF
48"	175 PSF	175 PSF	158 PSF	135 PSF	118 PSF	105 PSF	95 PSF	86 PSF	79 PSF

- Note:
1. Type MA-2A mullion anchorage is used at metal framing substrate.
 2. Metal framing shall be minimum 16 gauge and Fy = 33 ksi.
 3. Use clip angle HAR9601.
 4. Type MA-2A mullion anchorage allows a maximum of 1900 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/4" DIAMETER SS SCREW (MA-2A)
 - 6.2. QNTY (6) PER EACH CLIP ANGLE
 - 6.3. 1/2" EDGE DISTANCE
 - 6.4. 5/8" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-2B									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
132"	136 PSF	109 PSF	90 PSF	NA	NA	NA	NA	NA	NA
120"	150 PSF	120 PSF	100 PSF	NA	NA	NA	NA	NA	NA
108"	166 PSF	133 PSF	111 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	150 PSF	125 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	171 PSF	142 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	166 PSF	142 PSF	125 PSF	111 PSF	100 PSF	90 PSF	83 PSF
60"	175 PSF	175 PSF	175 PSF	171 PSF	150 PSF	133 PSF	120 PSF	109 PSF	100 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	150 PSF	136 PSF	125 PSF

- Note:
1. Type MA-2B mullion anchorage is used at metal framing substrate.
 2. Metal framing shall be minimum 16 gauge and Fy = 33 ksi.
 3. Use clip angle HAR9367.
 4. Type MA-2B mullion anchorage allows a maximum of 3000 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/4" DIAMETER SS SCREW (MA-2B)
 - 6.2. QNTY (6) PER EACH CLIP ANGLE
 - 6.3. 1/2" EDGE DISTANCE
 - 6.4. 5/8" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-3A									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	58 PSF	46 PSF	38 PSF	NA	NA	NA	NA	NA	NA
132"	63 PSF	50 PSF	42 PSF	NA	NA	NA	NA	NA	NA
120"	70 PSF	56 PSF	46 PSF	NA	NA	NA	NA	NA	NA
108"	77 PSF	62 PSF	51 PSF	NA	NA	NA	NA	NA	NA
96"	87 PSF	70 PSF	58 PSF	NA	NA	NA	NA	NA	NA
84"	100 PSF	80 PSF	66 PSF	NA	NA	NA	NA	NA	NA
72"	116 PSF	93 PSF	77 PSF	66 PSF	58 PSF	51 PSF	46 PSF	42 PSF	38 PSF
60"	140 PSF	112 PSF	93 PSF	80 PSF	70 PSF	62 PSF	56 PSF	50 PSF	46 PSF
48"	175 PSF	140 PSF	116 PSF	100 PSF	87 PSF	77 PSF	70 PSF	63 PSF	58 PSF

- Note:
1. Type MA-3A mullion anchorage is used at concrete substrate.
 2. Concrete shall be minimum 4000 psi.
 3. Use clip angle HAR9600.
 4. Type MA-3A mullion anchorage allows a maximum of 1400 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 3/8" DIAMETER SS HILTI KWIK BOLT TZ2 (MA-3A)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 3" MINIMUM EMBEDMENT
 - 6.4. 3 1/2" MINIMUM EDGE DISTANCE
 - 6.5. 3 1/2" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-3B									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	75 PSF	60 PSF	50 PSF	NA	NA	NA	NA	NA	NA
132"	81 PSF	65 PSF	54 PSF	NA	NA	NA	NA	NA	NA
120"	90 PSF	72 PSF	60 PSF	NA	NA	NA	NA	NA	NA
108"	100 PSF	80 PSF	66 PSF	NA	NA	NA	NA	NA	NA
96"	112 PSF	90 PSF	75 PSF	NA	NA	NA	NA	NA	NA
84"	128 PSF	102 PSF	85 PSF	NA	NA	NA	NA	NA	NA
72"	150 PSF	120 PSF	100 PSF	85 PSF	75 PSF	66 PSF	60 PSF	54 PSF	50 PSF
60"	175 PSF	144 PSF	120 PSF	102 PSF	90 PSF	80 PSF	72 PSF	65 PSF	60 PSF
48"	175 PSF	175 PSF	150 PSF	128 PSF	112 PSF	100 PSF	90 PSF	81 PSF	75 PSF

- Note:
1. Type MA-3B mullion anchorage is used at concrete substrate.
 2. Concrete shall be minimum 4000 psi.
 3. Use clip angle HAR9600.
 4. Type MA-3B mullion anchorage allows a maximum of 1800 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 3/8" DIAMETER SS HILTI KWIK BOLT TZ2 (MA-3B)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 3" MINIMUM EMBEDMENT
 - 6.4. 8" MINIMUM EDGE DISTANCE
 - 6.5. 3 1/2" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-3C									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
132"	136 PSF	109 PSF	90 PSF	NA	NA	NA	NA	NA	NA
120"	150 PSF	120 PSF	100 PSF	NA	NA	NA	NA	NA	NA
108"	166 PSF	133 PSF	111 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	150 PSF	125 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	171 PSF	142 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	166 PSF	142 PSF	125 PSF	111 PSF	100 PSF	90 PSF	83 PSF
60"	175 PSF	175 PSF	175 PSF	171 PSF	150 PSF	133 PSF	120 PSF	109 PSF	100 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	150 PSF	136 PSF	125 PSF

- Note:
1. Type MA-3C mullion anchorage is used at concrete substrate.
 2. Concrete shall be minimum 4000 psi.
 3. Use clip angle HAR9365.
 4. Type MA-3C mullion anchorage allows a maximum of 3000 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/2" DIAMETER SS HILTI KWIK BOLT TZ2 (MA-3C)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 3" MINIMUM EMBEDMENT
 - 6.4. 7" MINIMUM EDGE DISTANCE
 - 6.5. 5 5/8" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-4A									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	79 PSF	63 PSF	52 PSF	NA	NA	NA	NA	NA	NA
132"	86 PSF	69 PSF	57 PSF	NA	NA	NA	NA	NA	NA
120"	95 PSF	76 PSF	63 PSF	NA	NA	NA	NA	NA	NA
108"	105 PSF	84 PSF	70 PSF	NA	NA	NA	NA	NA	NA
96"	118 PSF	95 PSF	79 PSF	NA	NA	NA	NA	NA	NA
84"	135 PSF	108 PSF	90 PSF	NA	NA	NA	NA	NA	NA
72"	158 PSF	126 PSF	105 PSF	90 PSF	79 PSF	70 PSF	63 PSF	57 PSF	52 PSF
60"	175 PSF	152 PSF	126 PSF	108 PSF	95 PSF	84 PSF	76 PSF	69 PSF	63 PSF
48"	175 PSF	175 PSF	158 PSF	135 PSF	118 PSF	105 PSF	95 PSF	86 PSF	79 PSF

- Note:
1. Type MA-4A mullion anchorage is used at structural steel substrate.
 2. Structural steel shall be minimum 1/4" thick and Fy = 36 ksi.
 3. Use clip angle HAR9600.
 4. Type MA-4A mullion anchorage allows a maximum of 1900 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 3/8" DIAMETER SS BOLT (MA-4A)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 1/4" MINIMUM THREAD ENGAGEMENT
 - 6.4. 2" MINIMUM EDGE DISTANCE
 - 6.5. 1 1/2" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - MULLION ANCHOR TYPE MA-4B									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
132"	136 PSF	109 PSF	90 PSF	NA	NA	NA	NA	NA	NA
120"	150 PSF	120 PSF	100 PSF	NA	NA	NA	NA	NA	NA
108"	166 PSF	133 PSF	111 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	150 PSF	125 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	171 PSF	142 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	166 PSF	142 PSF	125 PSF	111 PSF	100 PSF	90 PSF	83 PSF
60"	175 PSF	175 PSF	175 PSF	171 PSF	150 PSF	133 PSF	120 PSF	109 PSF	100 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	150 PSF	136 PSF	125 PSF

- Note:
1. Type MA-4B mullion anchorage is used at structural steel substrate.
 2. Structural steel shall be minimum 1/4" thick and Fy = 36 ksi.
 3. Use clip angle HAR9365.
 4. Type MA-4B mullion anchorage allows a maximum of 3000 lb mullion reaction load (ASD).
 5. Design of all substrate is the responsibility of others.
 6. Anchor Specifications:
 - 6.1. 1/2" DIAMETER SS BOLT (MA-4B)
 - 6.2. QNTY (1) PER EACH CLIP ANGLE
 - 6.3. 1/4" MINIMUM THREAD ENGAGEMENT
 - 6.4. 1" MINIMUM EDGE DISTANCE
 - 6.5. 1 1/2" O.C. MINIMUM SPACING

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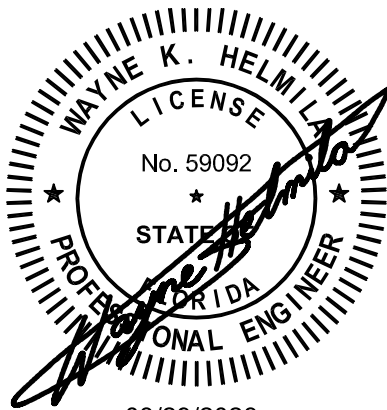
105 School Creek Trail
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www.rice-inc.com

Florida Firm No: F-01000005061
Certificate of Authorization: #9090
Wayne K. Helmila
Registration No: 59092

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. 23-0117.06

Expiration Date 02/02/2027

By 
Miami-Dade Product Control



03/29/2023
COA: 9090

NOTE:
DETAILS FOR THE MULLION ANCHORAGE PRESENTED ON THIS SHEET ARE SIMILAR TO THE DETAILS SHOWN ON SHEET 10 AND SHEET 11. DIFFERENCES WILL INCLUDE SUBSTRATE TYPE, ANCHOR TYPE, AND ANCHOR QUANTITY. PLEASE CONTACT INDUSTRIAL LOUVERS FOR MULLION ANCHORAGE DETAILS TO ACCOMPANY THE DESIGN PRESSURE TABLES SHOWN ON THIS SHEET.

Model: 653XPDC

Revision: 6

Revision Date: 03/06/2023

Start Date: 11/20/2020

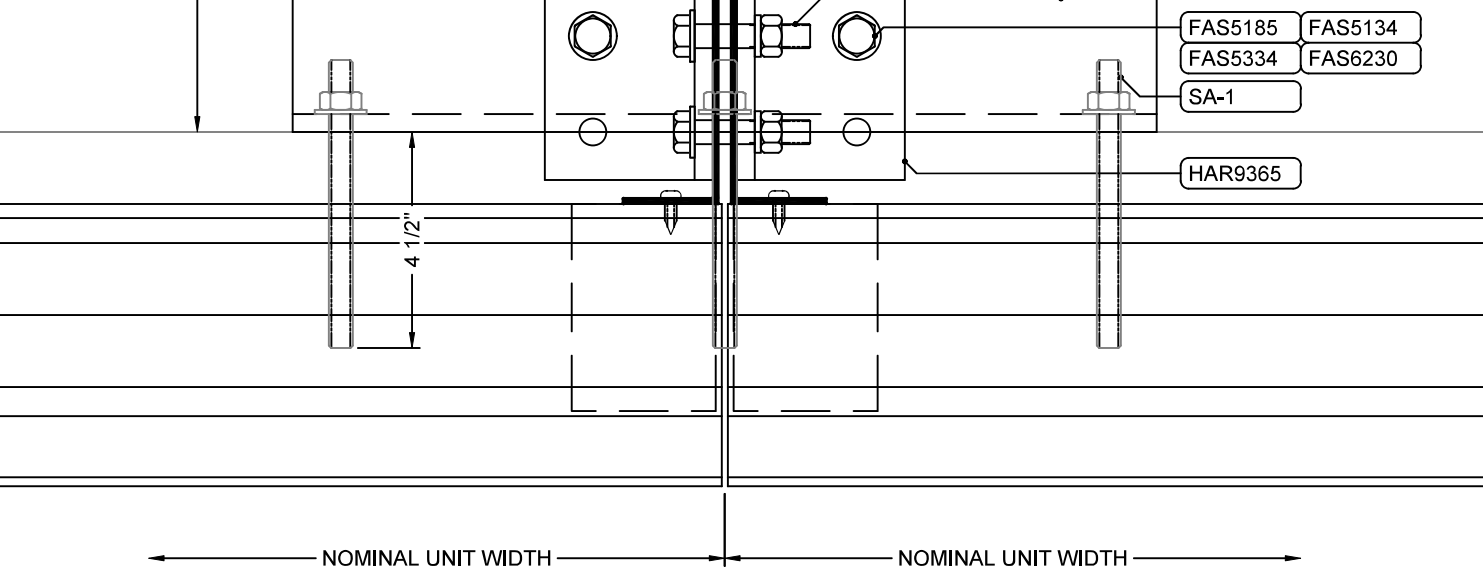
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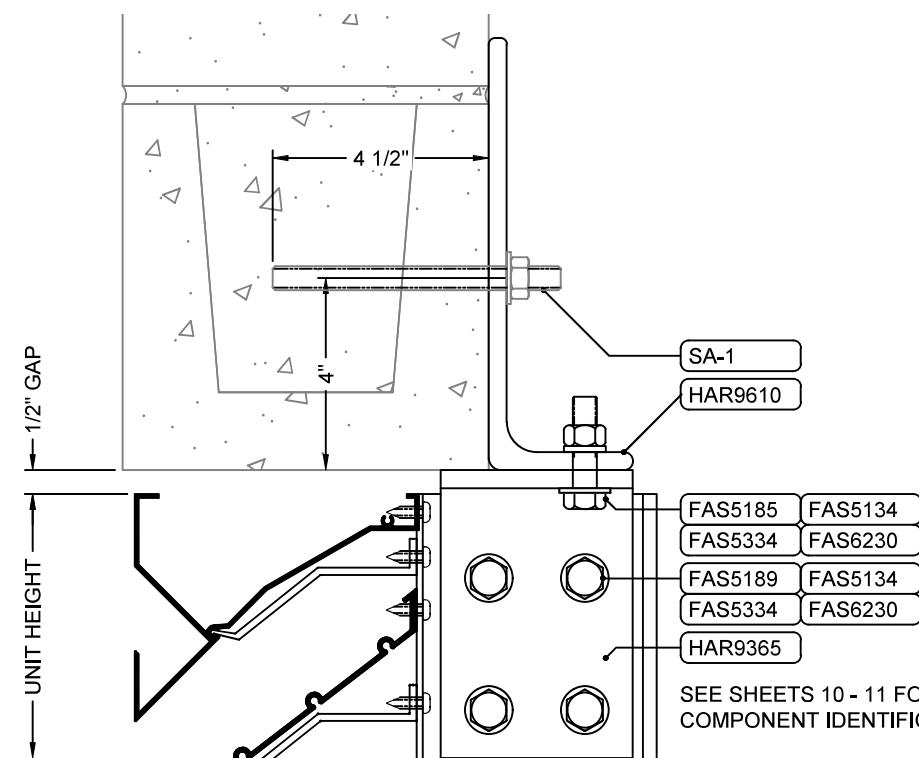


SEE SHEETS 10 - 11 FOR LOUVER
COMPONENT IDENTIFICATION

FACE OF CMU



1
13 PLAN VIEW DETAIL - LOUVER MULLION



2
13 CROSS SECTION - LOUVER HEAD

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. 23-0117.06

Expiration Date 02/02/2027

By *[Signature]*
Miami-Dade Product Control

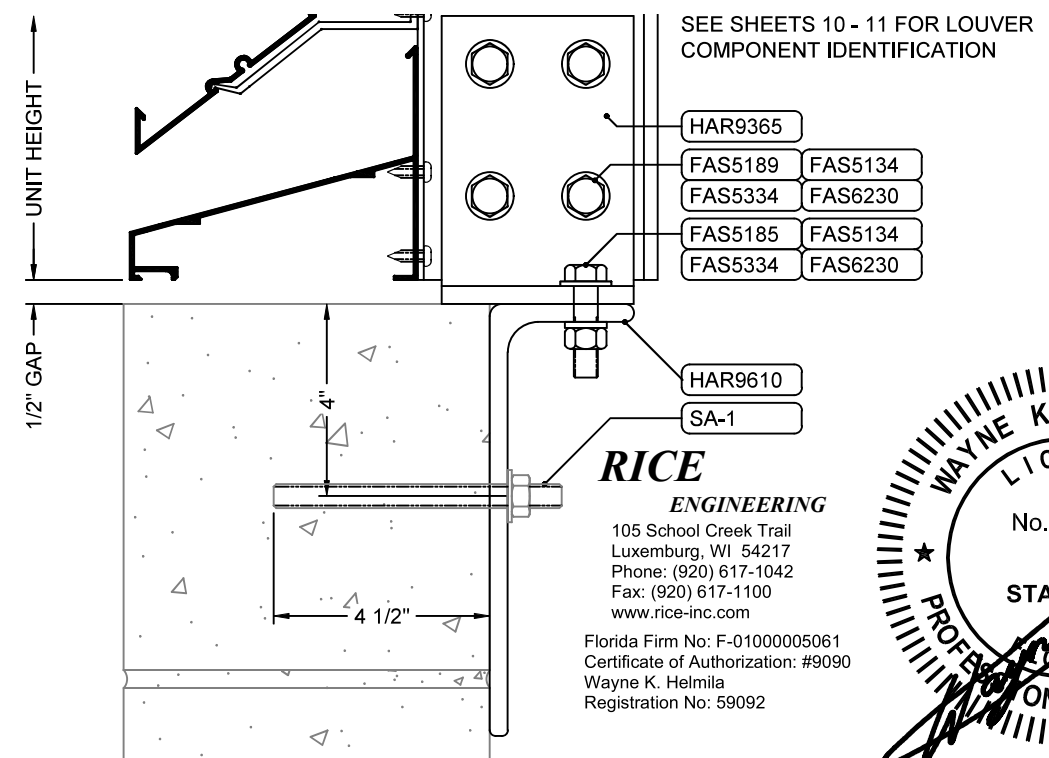
SEE SHEETS 10 - 11 FOR LOUVER
COMPONENT IDENTIFICATION

DESIGN PRESSURE TABLE - SHELF ANGLE ANCHOR TYPE SA-1

LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	70 PSF	56 PSF	47 PSF	NA	NA	NA	NA	NA	NA
132"	77 PSF	61 PSF	51 PSF	NA	NA	NA	NA	NA	NA
120"	85 PSF	68 PSF	56 PSF	NA	NA	NA	NA	NA	NA
108"	94 PSF	75 PSF	62 PSF	NA	NA	NA	NA	NA	NA
96"	106 PSF	85 PSF	70 PSF	NA	NA	NA	NA	NA	NA
84"	121 PSF	97 PSF	80 PSF	NA	NA	NA	NA	NA	NA
72"	141 PSF	113 PSF	94 PSF	80 PSF	70 PSF	62 PSF	56 PSF	51 PSF	47 PSF
60"	170 PSF	136 PSF	113 PSF	97 PSF	85 PSF	75 PSF	68 PSF	61 PSF	56 PSF
48"	175 PSF	170 PSF	141 PSF	121 PSF	106 PSF	94 PSF	85 PSF	77 PSF	70 PSF

Note:

1. Type SA-1 shelf angle anchorage is used at CMU substrate.
2. CMU shall be grout filled minimum 1500 psi.
3. Type SA-1 shelf angle anchorage allows a maximum of 1700 lb mullion reaction load (ASD).
4. Design of all substrate is the responsibility of others.
5. Anchor Specifications:
 - 5.1. 1/2" DIAMETER SS THREADED ROD W/ HILTI HY-270 ADHESIVE (SA-1)
 - 5.2. QNTY (3) PER EACH SHELF ANGLE
 - 5.3. 4 1/2" MINIMUM EMBEDMENT
 - 5.4. 4" MINIMUM EDGE DISTANCE
 - 5.5. 8" O.C. MINIMUM SPACING

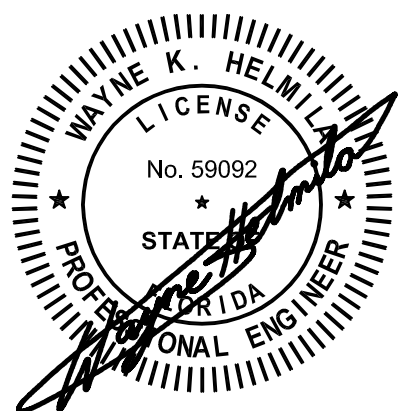


3
13 CROSS SECTION - LOUVER SILL

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Wayne K. Helmila
Registration No: 59092



03/29/2023
COA: 9090

DESIGN PRESSURE TABLE - SHELF ANGLE ANCHOR TYPE SA-2									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	75 PSF	60 PSF	50 PSF	NA	NA	NA	NA	NA	NA
132"	81 PSF	65 PSF	54 PSF	NA	NA	NA	NA	NA	NA
120"	90 PSF	72 PSF	60 PSF	NA	NA	NA	NA	NA	NA
108"	100 PSF	80 PSF	66 PSF	NA	NA	NA	NA	NA	NA
96"	112 PSF	90 PSF	75 PSF	NA	NA	NA	NA	NA	NA
84"	128 PSF	102 PSF	85 PSF	NA	NA	NA	NA	NA	NA
72"	150 PSF	120 PSF	100 PSF	85 PSF	75 PSF	66 PSF	60 PSF	54 PSF	50 PSF
60"	175 PSF	144 PSF	120 PSF	102 PSF	90 PSF	80 PSF	72 PSF	65 PSF	60 PSF
48"	175 PSF	175 PSF	150 PSF	128 PSF	112 PSF	100 PSF	90 PSF	81 PSF	75 PSF

- Note:
1. Type SA-2 shelf angle anchorage is used at concrete substrate.
 2. Concrete shall be minimum 4000 psi.
 3. Use shelf angle HAR9379.
 4. Use mullion clip angle HAR9600.
 5. Type SA-2 shelf angle anchorage allows a maximum of 1800 lb mullion reaction load (ASD).
 6. Design of all substrate is the responsibility of others.
 7. Anchor Specifications:
 - 7.1. 1/2" DIAMETER SS HILTI KWIK BOLT TZ2 (SA-2)
 - 7.2. QNTY (2) PER EACH SHELF ANGLE
 - 7.3. 3" MINIMUM EMBEDMENT
 - 7.4. 3" MINIMUM EDGE DISTANCE
 - 7.5. 6" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - SHELF ANGLE ANCHOR TYPE SA-3									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
132"	136 PSF	109 PSF	90 PSF	NA	NA	NA	NA	NA	NA
120"	150 PSF	120 PSF	100 PSF	NA	NA	NA	NA	NA	NA
108"	166 PSF	133 PSF	111 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	150 PSF	125 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	171 PSF	142 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	166 PSF	142 PSF	125 PSF	111 PSF	100 PSF	90 PSF	83 PSF
60"	175 PSF	175 PSF	175 PSF	171 PSF	150 PSF	133 PSF	120 PSF	109 PSF	100 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	150 PSF	136 PSF	125 PSF

- Note:
1. Type SA-3 shelf angle anchorage is used at concrete substrate.
 2. Concrete shall be minimum 4000 psi.
 3. Use shelf angle HAR9377.
 4. Use mullion clip angle HAR9365.
 5. Type SA-3 shelf angle anchorage allows a maximum of 3000 lb mullion reaction load (ASD).
 6. Design of all substrate is the responsibility of others.
 7. Anchor Specifications:
 - 7.1. 1/2" DIAMETER SS THREADED ROD WITH HILTI HIT-HY 200 ADHESIVE (SA-3)
 - 7.2. QNTY (3) PER EACH SHELF ANGLE
 - 7.3. 6 3/4" MINIMUM EMBEDMENT
 - 7.4. 3" MINIMUM EDGE DISTANCE
 - 7.5. 10" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - SHELF ANGLE ANCHOR TYPE SA-4									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
132"	136 PSF	109 PSF	90 PSF	NA	NA	NA	NA	NA	NA
120"	150 PSF	120 PSF	100 PSF	NA	NA	NA	NA	NA	NA
108"	166 PSF	133 PSF	111 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	150 PSF	125 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	171 PSF	142 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	166 PSF	142 PSF	125 PSF	111 PSF	100 PSF	90 PSF	83 PSF
60"	175 PSF	175 PSF	175 PSF	171 PSF	150 PSF	133 PSF	120 PSF	109 PSF	100 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	150 PSF	136 PSF	125 PSF

- Note:
1. Type SA-4 shelf angle anchorage is used at concrete substrate.
 2. Concrete shall be minimum 4000 psi.
 3. Use shelf angle HAR9378.
 4. Use mullion clip angle HAR9365.
 5. Type SA-4 shelf angle anchorage allows a maximum of 3000 lb mullion reaction load (ASD).
 6. Design of all substrate is the responsibility of others.
 7. Anchor Specifications:
 - 7.1. 1/2" DIAMETER SS HILTI KWIK BOLT TZ2 (SA-4)
 - 7.2. QNTY (4) PER EACH SHELF ANGLE
 - 7.3. 3" MINIMUM EMBEDMENT
 - 7.4. 3" MINIMUM EDGE DISTANCE
 - 7.5. 8" O.C. MINIMUM SPACING

DESIGN PRESSURE TABLE - SHELF ANGLE ANCHOR TYPE SA-5									
LOUVER HEIGHT	UNIT WIDTH								
	48"	60"	72"	84"	96"	108"	120"	132"	144"
144"	125 PSF	100 PSF	83 PSF	NA	NA	NA	NA	NA	NA
132"	136 PSF	109 PSF	90 PSF	NA	NA	NA	NA	NA	NA
120"	150 PSF	120 PSF	100 PSF	NA	NA	NA	NA	NA	NA
108"	166 PSF	133 PSF	111 PSF	NA	NA	NA	NA	NA	NA
96"	175 PSF	150 PSF	125 PSF	NA	NA	NA	NA	NA	NA
84"	175 PSF	171 PSF	142 PSF	NA	NA	NA	NA	NA	NA
72"	175 PSF	175 PSF	166 PSF	142 PSF	125 PSF	111 PSF	100 PSF	90 PSF	83 PSF
60"	175 PSF	175 PSF	175 PSF	171 PSF	150 PSF	133 PSF	120 PSF	109 PSF	100 PSF
48"	175 PSF	175 PSF	175 PSF	175 PSF	175 PSF	166 PSF	150 PSF	136 PSF	125 PSF

- Note:
1. Type SA-5 shelf angle anchorage is used at structural steel substrate.
 2. Structural steel shall be minimum 1/4" thick and Fy = 36 ksi.
 3. Use shelf angle HAR9379.
 4. Use mullion clip angle HAR9365.
 5. Type SA-5 shelf angle anchorage allows a maximum of 3000 lb mullion reaction load (ASD).
 6. Design of all substrate is the responsibility of others.
 7. Anchor Specifications:
 - 7.1. 1/2" DIAMETER SS BOLT (SA-5)
 - 7.2. QNTY (2) PER EACH SHELF ANGLE
 - 7.3. 1/4" MINIMUM THREAD ENGAGEMENT
 - 7.4. 3" MINIMUM EDGE DISTANCE
 - 7.5. 6" O.C. MINIMUM SPACING

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Building Code
NOA-No. 23-0117.06

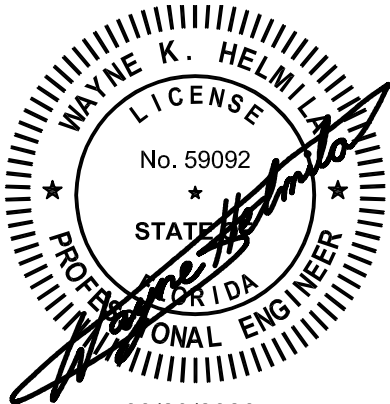
Expiration Date 02/02/2027

By 
Miami-Dade Product Control

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Wayne K. Helmila
Registration No: 59092



03/29/2023

COA: 9090

NOTE:
DETAILS FOR THE SHELF ANGLE ANCHORAGE PRESENTED
ON THIS SHEET ARE SIMILAR TO THE DETAILS SHOWN ON
SHEET 13. DIFFERENCES WILL INCLUDE SUBSTRATE
TYPE, ANCHOR TYPE, ANCHOR QUANTITY, SHELF ANGLE
TYPE AND MULLION CLIP ANGLE TYPE. PLEASE CONTACT
INDUSTRIAL LOUVERS FOR SHELF ANGLE ANCHORAGE
DETAILS TO ACCOMPANY THE DESIGN PRESSURE TABLES
SHOWN ON THIS SHEET.

Model: 653XPDC

Revision: 6

Revision Date: 03/06/2023

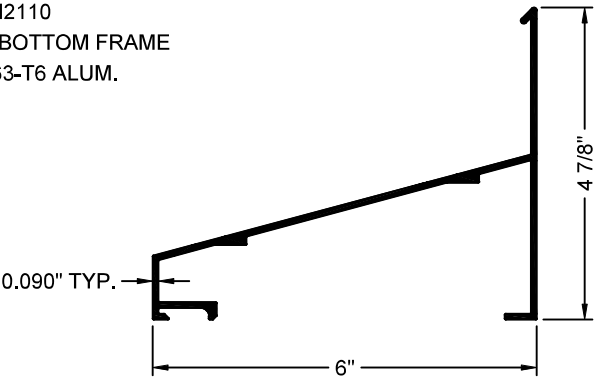
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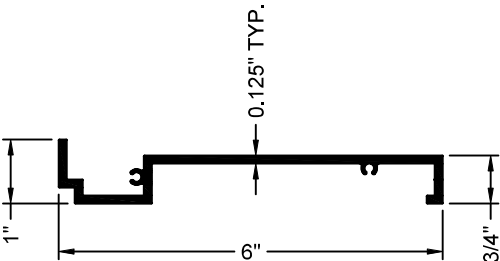
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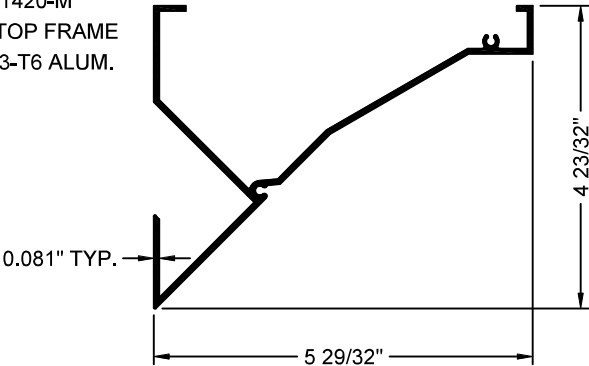
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Description: BOTTOM FRAME
Material: 6063-T6 ALUM.
Scale: 1:3



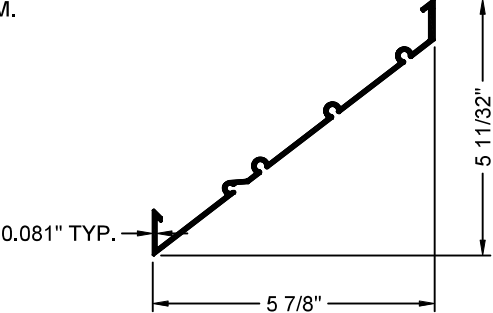
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Description: SIDE FRAME
Material: 6063-T6 ALUM.
Scale: 1:3



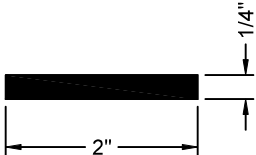
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Description: TOP FRAME
Material: 6063-T6 ALUM.
Scale: 1:3



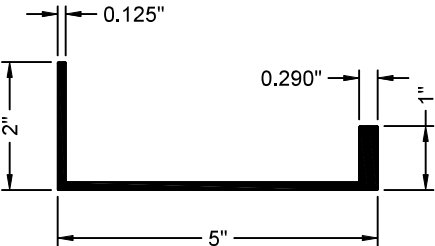
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Description: BLADE
Material: 6063-T6 ALUM.
Scale: 1:4



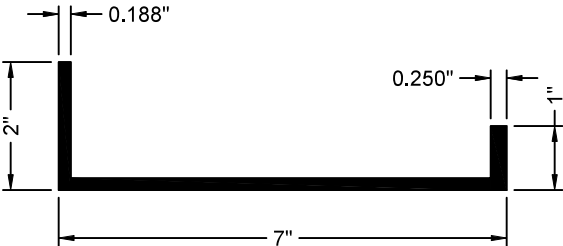
Part ID: FLBR2255
Description: 1/4" X 2" STIFFENER
Material: 6061-T6 ALUM.
Scale: 1:2



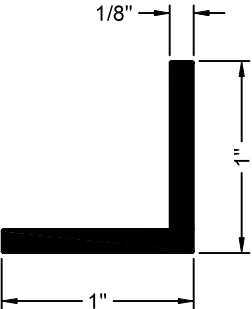
Part ID: CHN1046
Description: 5" CHANNEL
Material: 6061-T6 ALUM.
Scale: 1:3



Part ID: CHN1060
Description: 7" CHANNEL
Material: 6061-T6 ALUM.
Scale: 1:3




Part ID: ANG1033
Description: 1" X 1" X 1/8" ANGLE
Material: 6063-T52 ALUM.
Scale: 1:1



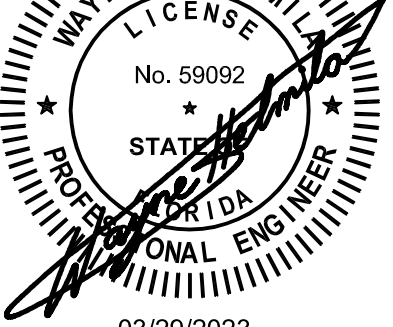
PARTS LIST - EXTRUSIONS (ILLUSTRATED ON SHEET 15)		
PART ID	DESCRIPTION	MATERIAL SPECIFICATION
ANG1033	1" X 1" X 1/8" ANGLE	6063-T52 ALUM. 0.125" THICK
BLD1534-M	653XPDC BLADE	6063-T6 ALUM. 0.081" THICK
CHN1046	5" CHANNEL	6061-T6 ALUM. 0.125" THICK
CHN1060	7" CHANNEL	6061-T6 ALUM. 0.188" THICK
FLBR2255	1/4" X 2" STIFFENER	6061-T6 ALUM. 0.250" THICK
FRM1420-M	TOP FRAME	6063-T6 ALUM. 0.081" THICK
FRM1449-M	SIDE FRAME	6063-T6 ALUM. 0.125" THICK
FRM2110	BOTTOM FRAME	6063-T6 ALUM. 0.090" THICK

PARTS LIST - FABRICATED PARTS (ILLUSTRATED ON SHEETS 16 - 17)		
PART ID	DESCRIPTION	MATERIAL SPECIFICATION
HAR9231	STIFFENER SPLICE PLATE	6061-T6 ALUM. 0.250" THICK
HAR9336	2" X 2" X 1/8" X 4" LONG CLIP ANGLE	6061-T6 ALUM. 0.125" THICK
HAR9341	2" X 4" X 1/8" X 4" LONG CLIP ANGLE	6061-T6 ALUM. 0.125" THICK
HAR9365	3 1/2" X 6" X 3/8" X 4" LONG CLIP ANGLE	6061-T6 ALUM. 0.375" THICK
HAR9367	3 1/2" X 6" X 3/8" X 4" LONG CLIP ANGLE	6061-T6 ALUM. 0.375" THICK
HAR9377	4" X 6" X 1/2" X 22" LONG SHELF ANGLE	6061-T6 ALUM. 0.500" THICK
HAR9378	4" X 6" X 1/2" X 27" LONG SHELF ANGLE	6061-T6 ALUM. 0.500" THICK
HAR9379	4" X 6" X 1/2" X 8" LONG SHELF ANGLE	6061-T6 ALUM. 0.500" THICK
HAR9600	3" X 3" X 1/4" X 4" LONG CLIP ANGLE	6061-T6 ALUM. 0.250" THICK
HAR9601	3" X 3" X 1/4" X 4" LONG CLIP ANGLE	6061-T6 ALUM. 0.250" THICK
HAR9610	3" X 9" X 3/8" X 18" LONG SHELF ANGLE	6061-T6 ALUM. 0.375" THICK
HARPUN9166	BLADE BRACE 3" LONG	6063-T6 ALUM. 0.150" THICK

PARTS LIST - FASTENERS		
PART ID	DESCRIPTION	MATERIAL SPECIFICATION
FAS5042	#8 X 5/8" PH SCREW	18-8 SS CW
FAS5133	3/8" FLAT WASHER	18-8 SS CW
FAS5134	1/2" FLAT WASHER	18-8 SS CW
FAS5135	#12 X 1" HWH SCREW	18-8 SS CW
FAS5143	#12 X 3/4" PH SCREW	18-8 SS CW
FAS5144	#12 X 1 1/2" PH SCREW	18-8 SS CW
FAS5155	1/4"-20 X 1" HEX BOLT	18-8 SS CW
FAS5161	1/4"-20 X 1 1/2" HEX BOLT	18-8 SS CW
FAS5183	3/8"-16 X 1 1/2" HEX BOLT	18-8 SS CW
FAS5185	1/2"-13 X 2" HEX BOLT	18-8 SS CW
FAS5189	1/2"-13 X 2 1/2" HEX BOLT	18-8 SS CW
FAS5324	1/4"-20 HEX NUT	18-8 SS CW
FAS5332	3/8"-16 HEX NUT	18-8 SS CW
FAS5334	1/2"-13 HEX NUT	18-8 SS CW
FAS6226	1/4" LOCK WASHER	18-8 SS CW
FAS6227	1/4" FLAT WASHER	18-8 SS CW
FAS6228	3/8" LOCK WASHER	18-8 SS CW
FAS6230	1/2" LOCK WASHER	18-8 SS CW


PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. 23-0117.06
Expiration Date 02/02/2027
By 
Miami-Dade Product Control

WAYNE K. HELMILA
LICENSE
No. 59092
STATE OF FLORIDA
PROFESSIONAL ENGINEER


03/29/2023
COA: 9090

RICE
ENGINEERING
105 School Creek Trail
Luxemburg, WI 54217
Phone: (920) 617-1042
Fax: (920) 617-1100
www.rice-inc.com
Florida Firm No: F-01000005061
Certificate of Authorization: #9090
Wayne K. Helmila
Registration No: 59092

Model: 653XPDC
Revision: 6
Revision Date: 03/06/2023
Start Date: 11/20/2020
Scale: VARIES
Sheet: 15 OF 17




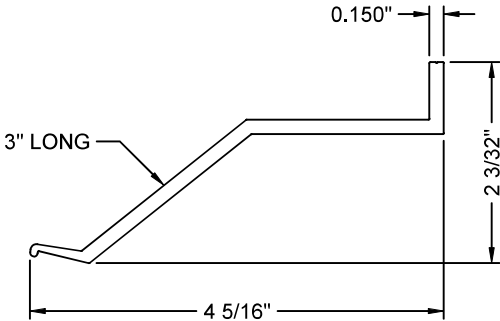
Industrial Louvers, Inc. | 511 South 7th Street Delano, MN 55328 | 763-972-2981 | www.IndustrialLouvers.com

ILLUSTRATED PARTS LIST

All Dimension Are Inches UNO

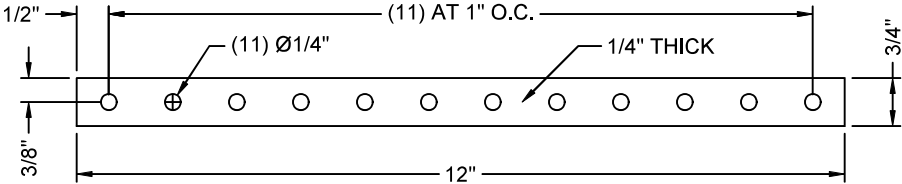
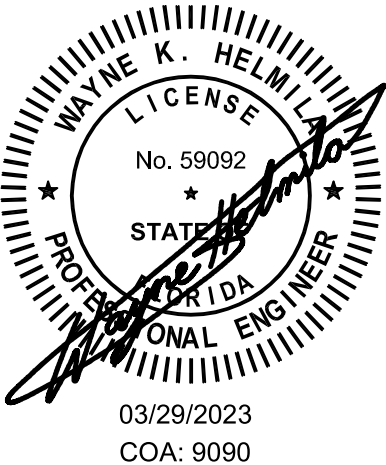
Part ID: HARPUN9166
Description: BLADE BRACE
Material: 6063-T6 ALUM.
Scale: 1:2

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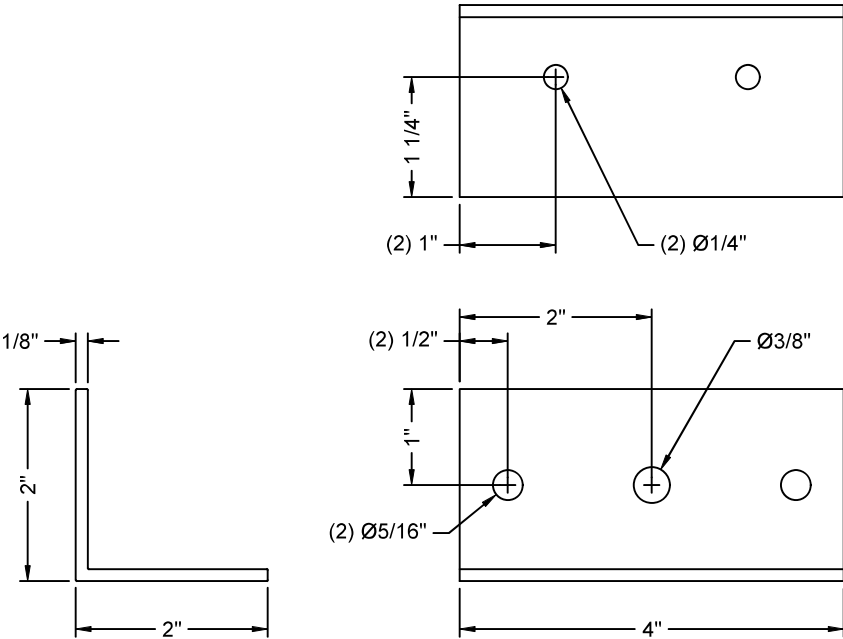


Part ID: HAR9231
Description: MULLION SPLICE PLATE
Material: 6061-T6 ALUM.
Scale: 1:3

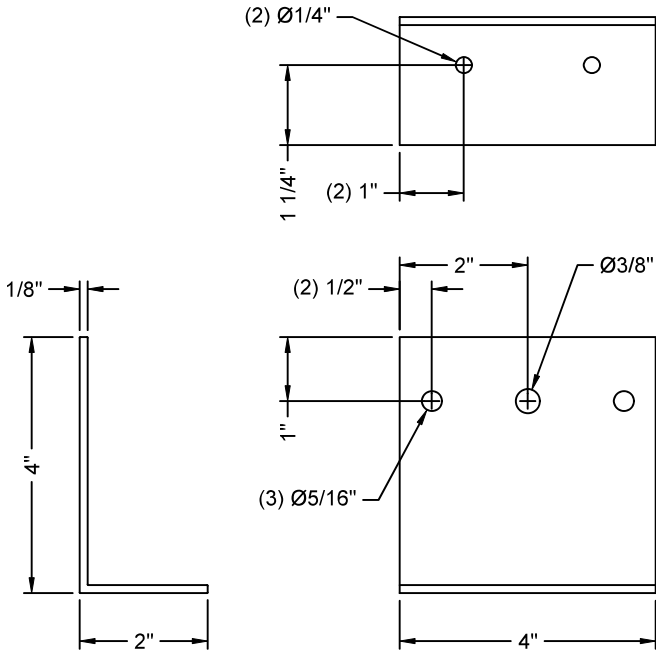
RICE
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Florida Firm No: F-01000005061
Certificate of Authorization: #9090
Wayne K. Helmila
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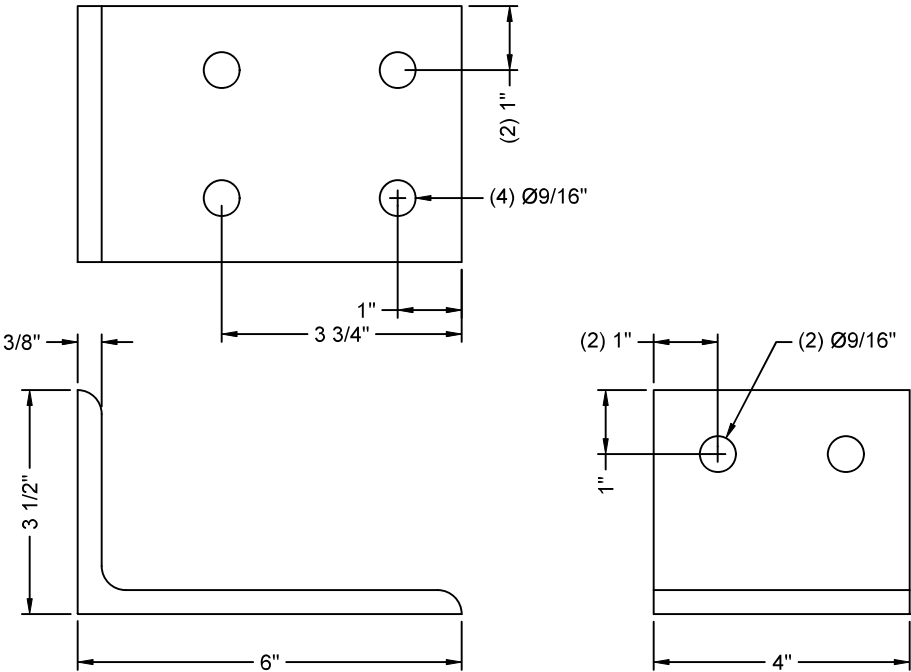
Part ID: HAR9336
Description: 2" X 2" X 1/8" X 4" LONG CLIP ANGLE
Material: 6061-T6 ALUM.
Scale: 1:2



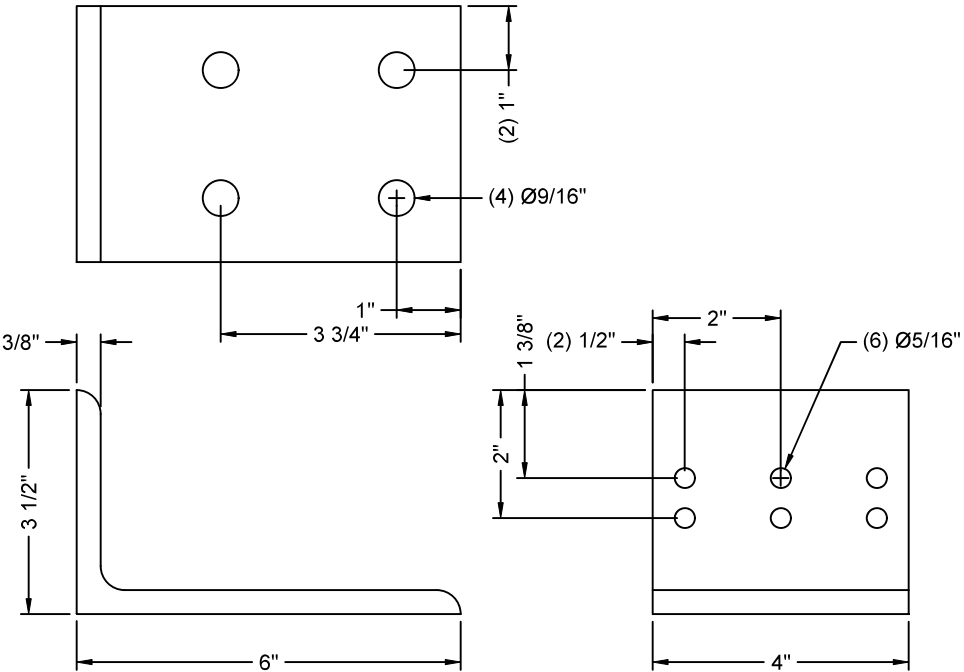
Part ID: HAR9341
Description: 2" X 4" X 1/8" X 4" LONG CLIP ANGLE
Material: 6061-T6 ALUM.
Scale: 1:3



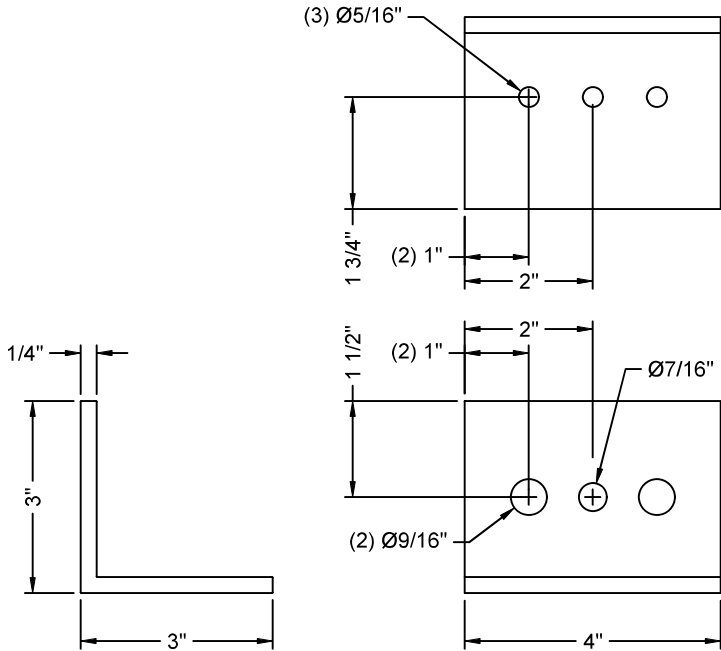
Part ID: HAR9365
Description: 3 1/2" X 6" X 3/8" X 4" LONG CLIP ANGLE
Material: 6061-T6 ALUM.
Scale: 1:3



Part ID: HAR9367
Description: 3 1/2" X 6" X 3/8" X 4" LONG CLIP ANGLE
Material: 6061-T6 ALUM.
Scale: 1:3

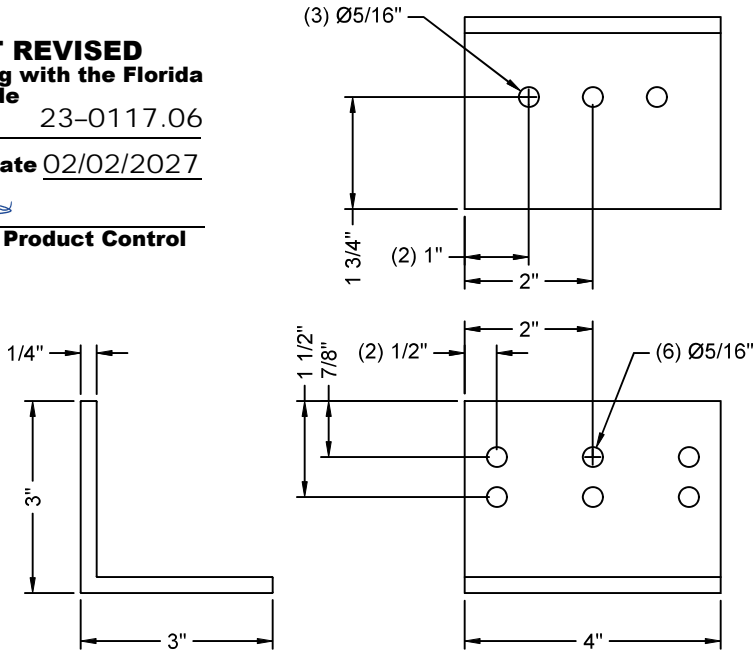


Part ID: HAR9600
Description: 3" X 3" X 1/4" X 4" LONG CLIP ANGLE
Material: 6061-T6 ALUM.
Scale: 1:3

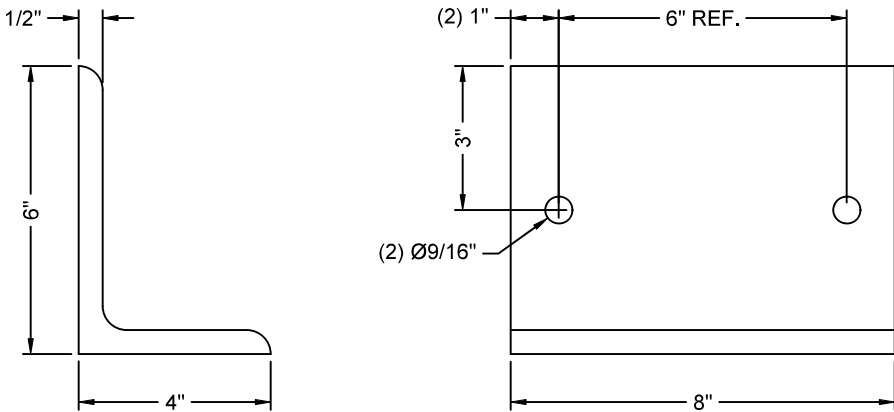


Part ID: HAR9601
Description: 3" X 3" X 1/4" X 4" LONG CLIP ANGLE
Material: 6061-T6 ALUM.
Scale: 1:3

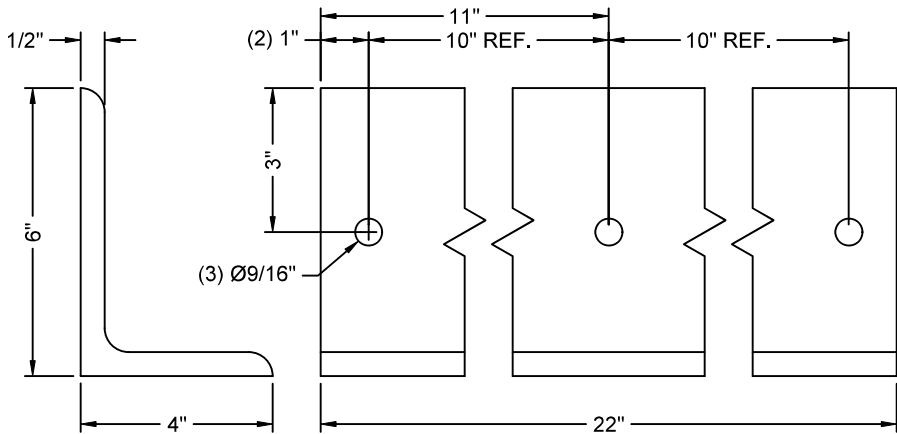
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as complying with the Florida
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NOA-No. 23-0117.06
Expiration Date 02/02/2027
By *[Signature]*
Miami-Dade Product Control



Part ID: HAR9379
Description: 4" X 6" X 1/2" X 8" LONG SHELF ANGLE
Material: 6061-T6 ALUM.
Scale: 1:4



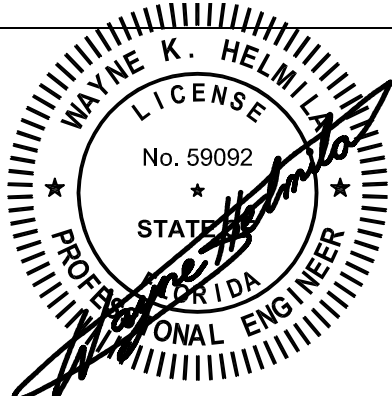
Part ID: HAR9377
Description: 4" X 6" X 1/2" X 22" LONG SHELF ANGLE
Material: 6061-T6 ALUM.
Scale: 1:4



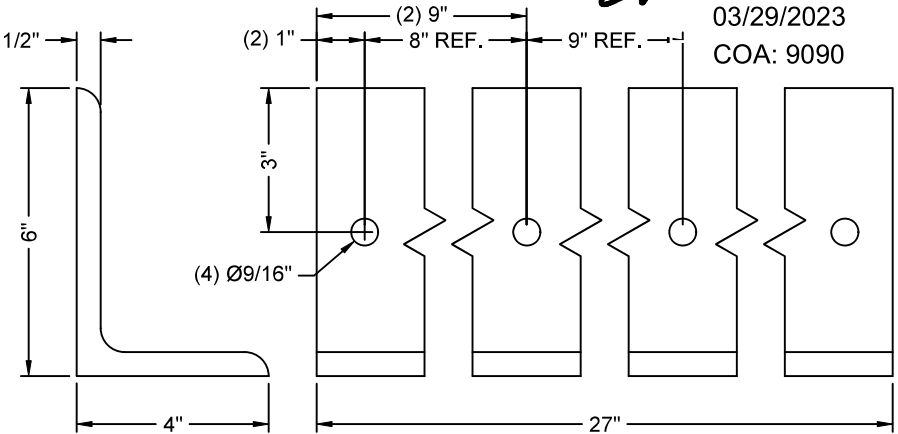
Part ID: HAR9378
Description: 4" X 6" X 1/2" X 27" LONG SHELF ANGLE
Material: 6061-T6 ALUM.
Scale: 1:4

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Wayne K. Helmila
Registration No: 59092



03/29/2023
COA: 9090



Part ID: HAR9610
Description: 3" X 9" X 3/8" X 18" LONG SHELF ANGLE
Material: 6061-T6 ALUM.
Scale: 1:4

