

Manufacturers:

Greenheck Fan Corporation, PO Box 410, 400 Ross Ave, Schofield, WI 54476
The Airolite Company, LLC, PO Box 410, 400 Ross Ave, Schofield, WI 54476

Product Lines:

Greenheck Louver Model ESS-502D, and equivalent nameplated Airolite Louver Model K605MD.

Compliance Method:

The above products have been evaluated for compliance with the requirements of the Florida Department of Business and Professional Regulation for Statewide Acceptance per Rule 61G20-3 of the FL Administrative Code and comply with the 7th Edition (2020) Florida Building Code.

Product Description:

Aluminum louver with fixed blades and butt-type frame corner construction with blade/frame material as noted in its Miami-Dade NOA.

Performance Summary (for entire product line):

Tested design pressure is +/- 110 PSF. Passed ANSI/AMCA Standard 540-08 at Enhanced Impact Missile Level E (80 fps impact speed). Passed TAS 201-94 (large missile, 50 fps impact speed), TAS 202-94, and TAS 203-94. Product can be used inside and outside of the HVHZ and is impact resistant.

Performance Standards:

1. ANSI/AMCA Standard 540-08, Test Method for Louvers Impacted by Wind Borne Debris.
2. FBC TAS 201-94, Impact Test Procedures.
3. FBC TAS 202-94, Criteria for Testing Impact & Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure.
4. FBC TAS 203-94, Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.

Supporting Technical Documents:

1. Approval Documents:
 - a. NOA 21-0526.09 for ESS-502D, approved on 8/12/2021
 - b. NOA 21-0526.14 for K605MD, approved on 8/12/2021
2. Listing Documents:
 - a. AMCA License Agreement to use the AMCA Listing Label for ANSI/AMCA 540 (Enhanced Impact Missile Level E, 80 fps):
 - i. ESS-502D, dated 3/5/2020
 - ii. K605MD, dated 3/5/2020
3. Test Reports:
 - a. 89882.01-602-18, signed and sealed on 04/30/2009 by Joseph A. Reed, P.E., Architectural Testing, Inc., Schofield, WI
 - i. FBC TAS 201-94, FBC TAS 202-94, and FBC TAS 203-94
 - b. B7037.01-602-44, signed and sealed on 05/18/2012 by Shawn G. Collins, P.E., Architectural Testing, Inc., Schofield, WI
 - i. ANSI/AMCA Standard 540-08
 - c. B7037.02-602-44, signed and sealed on 09/10/2012 by Shawn G. Collins, P.E., Architectural Testing, Inc., Schofield, WI
 - i. ANSI/AMCA Standard 540-08

Limits and Conditions Use:

1. Limits/Conditions are as per their Miami-Dade NOA and AMCA Listing documents.
2. Constructed from materials as noted in the NOA Approval Document.
3. Maximum Design Pressure is +/- 110 PSF.
4. Maximum Panel Size is 72" wide x 144" high or 144" wide x 72" high.
5. Rated to be used inside and outside of the HVHZ.
6. Impact resistant for both Basic Impact Missile Level D (50 fps) and Enhanced Impact Missile Level E (80 fps).
7. With blades fully open, the louver may be installed in a location where the room behind the louver is NOT designed to drain water penetrating into the room and the room may house NON-water resistant/proof equipment, components, and/or supplies.

Installation:

Must be installed in accordance with its Miami-Dade NOA document.

Certification of Independence:

Design Dynamics, Inc. and Chander P. Nangia, P.E. do not have and will not acquire a financial interest in any company manufacturing or distributing the products for which this report is being issued. Design Dynamics, Inc., and Chander P. Nangia, P.E. do not have and will not acquire a financial interest in any other entity involved in the approval process of the above listed products.

Statement of Standard Equivalency:

The requirements of ANSI/AMCA 540-08 (as tested) meet or exceed the requirements of ANSI/AMCA 540-13 for the purpose of evaluating the above referenced product testing for Enhanced Missile Impact per the 7th Edition (2020) Florida Building Code.

Evaluation Report By and PE Stamp:

Prepared By :

Thomas M. Shingler, PE, M.ASCE
Design Dynamics, Inc.

Reviewed By :

Mr. Nangia P.E. Consulting Engineer Structural/Civil 7423 Hollow Ridge Dr. Houston, TX 77095 <i>This document was produced under the direct supervision of Mr. Nangia P.E.</i>	CHANDER R. NANGIA LICENSE No. 21938 STATE OF FLORIDA PROFESSIONAL ENGINEER <i>CP Nangia</i> <i>8/20/21</i>
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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

Greenheck Fan Corporation
1110 Greenheck Drive (PO Box 410)
Schofield, WI 54476

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 ESS-502D Aluminum Louver

APPROVAL DOCUMENT: Drawing No. **ESS-502D**, titled "ESS-502D Louver", sheets 1 through 16 of 16, dated 04/27/2009, prepared by Greenheck Fan Corporation, signed and sealed by Chander P. Nangia, P.E. on 01/21/2019, 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 # **19-0205.06** 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 **Ishaq I. Chanda, P.E.**



Ishaq I. Chanda

NOA No. 21-0526.09
Expiration Date: August 5, 2024
Approval Date: August 12, 2021
Page 1

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

1. Evidence submitted under previous NOA's

A. DRAWINGS “Submitted under NOA # 09-0519.14”

1. Drawing No. **ESS-502D**, titled “ESS-502D Louver”, sheets 1 through 16 of 16, dated 04/27/2009, prepared by Greenheck Fan Corporation, signed and sealed by Chander P. Nangia, P.E.

B. TESTS “Submitted under NOA # 09-0519.14”

1. Test report on 1) Uniform Static Air Pressure Test per FBC, TAS 202-94
2) Large Missile Impact Test per FBC, TAS 201-94,
3) Cyclic Wind Pressure Test per FBC, TAS 203-94,
along with marked-up drawings and installation diagram of Model ESS-502D fixed aluminum louvers, prepared by Architectural Testing, Inc., Test Report No. **89882.01-602-18**, dated 04/30/2009, signed and sealed by Joseph A. Reed, P.E.

C. CALCULATIONS “Submitted under NOA # 09-0519.14”

1. Structural load calculations prepared by Greenheck Fan Corporation, dated 04/14/2009, signed and sealed by Chander P. Nangia, P.E.

D. QUALITY ASSURANCE

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

E. MATERIAL CERTIFICATIONS

1. None.

F. STATEMENTS “Submitted under NOA # 16-0201.08”

1. Statement letter of code compliance to the 5th edition (2014) FBC issued by Chander P. Nangia, P.E., dated 01/11/2016, signed and sealed by Chander P. Nangia, P.E.

“Submitted under NOA # 14-0624.16”

2. Statement letter of code compliance to 2010 FBC issued by Chander P. Nangia, P.E., dated 06/19/2014, signed and sealed by Chander P. Nangia, P.E.

“Submitted under NOA # 09-0519.14”

3. No financial interest letter issued by Chander P. Nangia, P.E., dated 04/27/2009, signed and sealed by Chander P. Nangia, P.E.

Ishaq I. Chanda

Ishaq I. Chanda, P.E.
Product Control Unit Supervisor
NOA No. 21-0526.09
Expiration Date: August 5, 2024
Approval Date: August 12, 2021

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

2. Evidence submitted under previous approval

A. DRAWINGS

1. Drawing No. **ESS-502D**, titled “ESS-502D Louver”, sheets 1 through 16 of 16, dated 04/27/2009, prepared by Greenheck Fan Corporation, signed and sealed by Chander P. Nangia, P.E. on 01/21/2019.

B. TESTS

1. None.

C. CALCULATIONS

1. None.

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 compliance to the 6th edition (2017) FBC and of no financial interest issued by Chander P. Nangia, P.E., dated 01/21/2019, signed and sealed by Chander P. Nangia, P.E.

Ishaq I. Chanda

Ishaq I. Chanda, P.E.
Product Control Unit Supervisor
NOA No. 21-0526.09
Expiration Date: August 5, 2024
Approval Date: August 12, 2021

NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

3. New evidence submitted

A. DRAWINGS

2. Drawing No. **ESS-502D**, titled “ESS-502D Louver”, sheets 1 through 16 of 16, dated 04/27/2009, prepared by Greenheck Fan Corporation, signed and sealed by Chander P. Nangia, P.E. on 01/21/2019.

B. TESTS

1. None.

C. CALCULATIONS

1. None.

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 compliance to FBC 2020 (7th Edition) and of no financial interest issued by Chander P. Nangia, P.E., dated May 13, 2021, signed and sealed by Chander P. Nangia, P.E.

G. OTHER

1. This NOA revises NOA # **19-0205.06**, expiring 08/05/24.

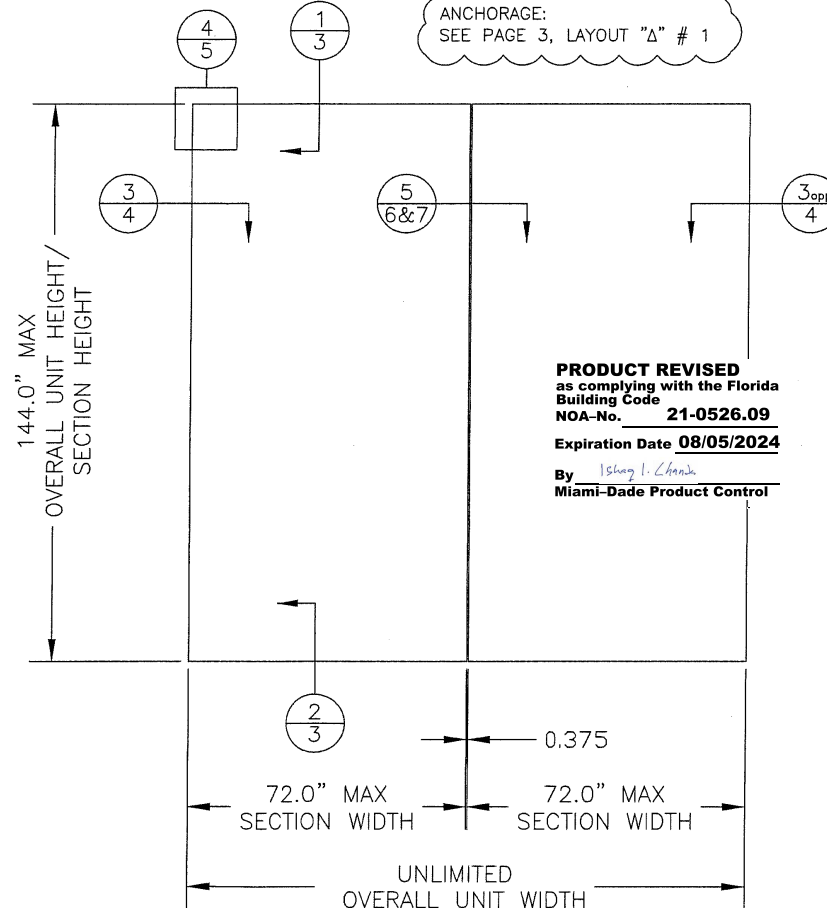
Ishaq I. Chanda

Ishaq I. Chanda, P.E.
Product Control Unit Supervisor
NOA No. 21-0526.09
Expiration Date: August 5, 2024
Approval Date: August 12, 2021

DETAIL #
PAGE #

DETAIL CALLOUT (TYPICAL)

1 LOUVER ELEV.
SHORT LOUVER LAYOUT

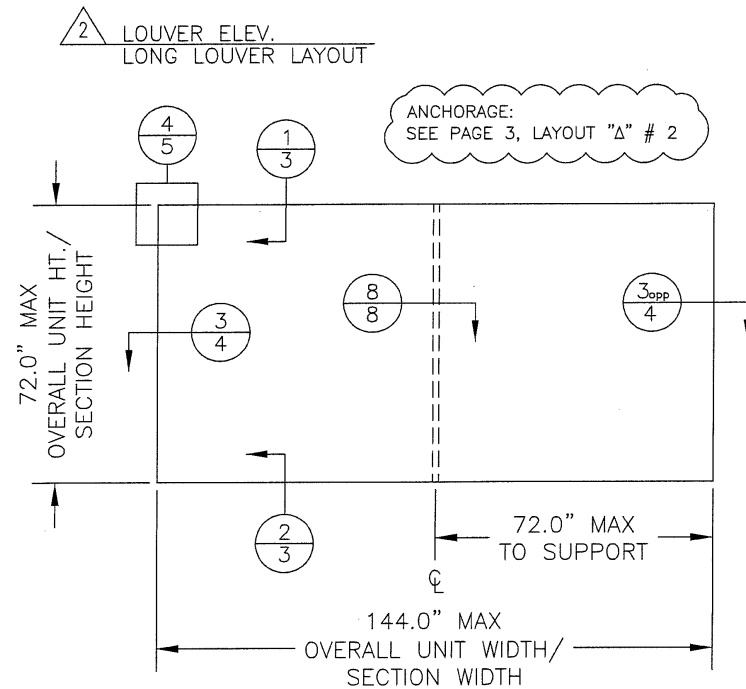


PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By *Isang I. Chank*
Miami-Dade Product Control

NOTE: MULLION REQUIRED ONLY IF BOTH OF
THE FOLLOWING ARE TRUE: OVERALL UNIT WIDTH
IS >72", AND SECTION HEIGHT IS >72".

REV: 01, 1/11/19, ADDED ANCHORAGE NOTE

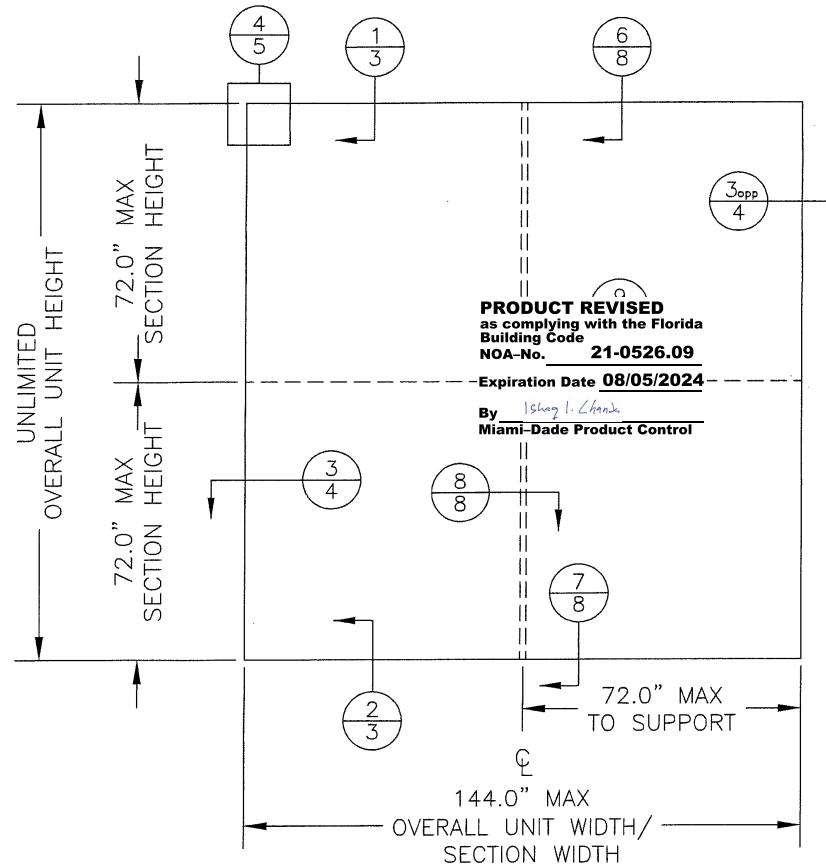
 P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE 3/8"=1'	SHEET NO. 1 OF 16
TITLE ESS-502D LOUVER		
SHORT LOUVER LAYOUT ELEVATION CONFIGURATION		
CAD DRAWING NO. ESS-502D		
STRUCTURAL ONLY CHANDER P. NANGIA LICENSE No. 21338 PROFESSIONAL ENGINEER FLORIDA		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <i>Isang I. Chank</i> Miami-Dade Product Control		
CHANDER P. NANGIA 7423 HOLLOW RIDGE DR. HOUSTON, TX 77095 FLORIDA PE # 21938		



NOTE: BLADE SUPPORT REQUIRED ONLY IF
SECTION WIDTH IS >72".

REV: 01, 1/11/19, ADDED ANCHORAGE NOTES

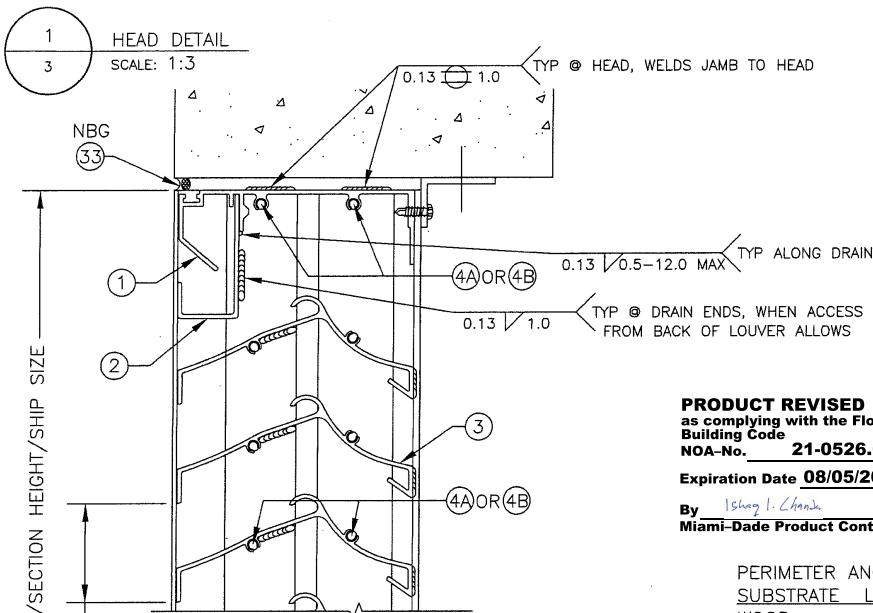
3 LOUVER ELEV.
LONG LOUVER LAYOUT, SPLICED JAMBS & BLADE SUPPORT



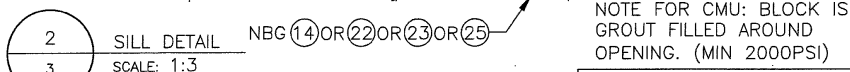
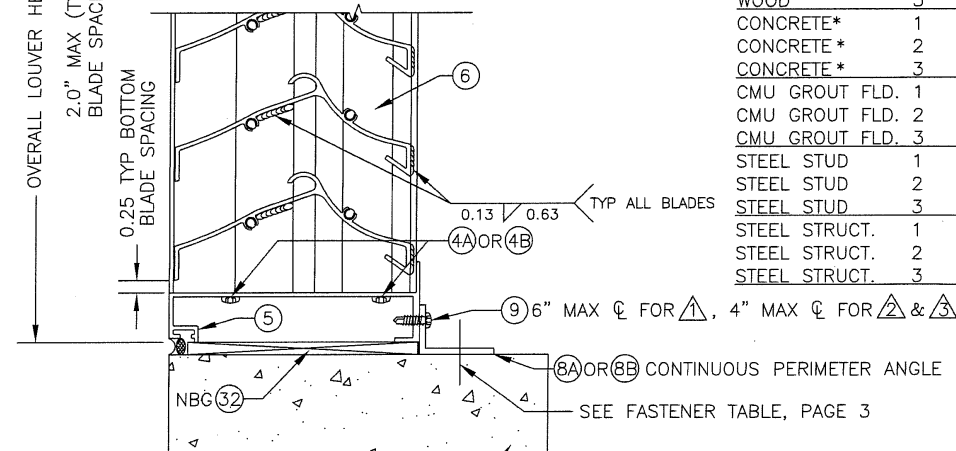
NOTE: BLADE SUPPORT REQUIRED ONLY IF
SECTION WIDTH IS >72".

ANCHORAGE:
SEE PAGE 3, LAYOUT "Δ" # 3

GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE 3/8"=1'	SHEET NO. 2 OF 16
TITLE ESS-502D LOUVER		
LONG LOUVER LAYOUT ELEVATION CONFIGURATIONS		
CAD DRAWING NO. ESS-502D		
CHANDER P. NANGA LICENSE No. 21338 STATE OF FLORIDA PROFESSIONAL ENGINEER JAN 21 2018		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <i>Isang I. Chank</i> Miami-Dade Product Control		



PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By *Isang I. Chan*
Miami-Dade Product Control

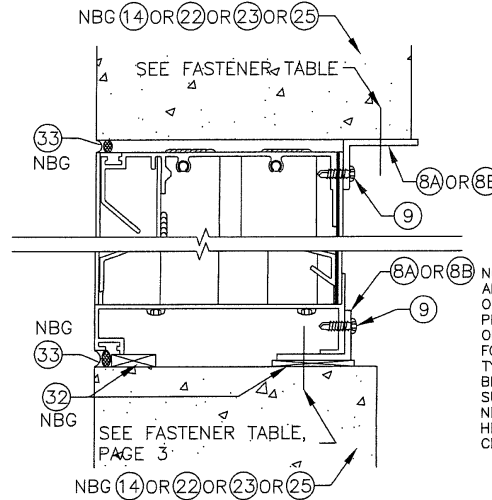


NOTE FOR CMU: BLOCK IS
GROUT FILLED AROUND
OPENING. (MIN 2000PSI)

NBG=NOT BY MANUFACTURER

REV: 01, 1/11/19, ADDED "Δ" CLARIFICATION, ITEM # 8A/8B SPELLING UPDATE, ADDED CRACKED CONCRETE NOTE

OPTIONAL CONTINUOUS ANGLE CONFIGURATION,
FOR THIS PAGE ONLY



PERIMETER ANGLE SUBSTRATE FASTENER TABLE (FASTENERS NOT BY MANUFACTURER):

SUBSTRATE	LAYOUT "Δ"	MIN	FASTENER	SPACING & MIN EDGE DISTANCE
WOOD	1	G=0.55	27	9" O.C. MAX, 1.5" MIN WOOD EDGE DISTANCE
WOOD	2	G=0.55	27	4" O.C. MAX, 1.5" MIN WOOD EDGE DISTANCE
WOOD	3	G=0.55	27	4" O.C. MAX, 1.5" MIN WOOD EDGE DISTANCE
CONCRETE*	1	2000PSI	21	6" O.C. MAX, 1.5" MIN CONCRETE EDGE DISTANCE
CONCRETE *	2	2000PSI	21	3" O.C. MAX, 1.5" MIN CONCRETE EDGE DISTANCE
CONCRETE *	3	2000PSI	21	3" O.C. MAX, 1.5" MIN CONCRETE EDGE DISTANCE
CMU GROUT FLD.	1	2000PSI	21	6" O.C. MAX, 1.5" MIN CMU EDGE DISTANCE
CMU GROUT FLD.	2	2000PSI	21	3" O.C. MAX, 1.5" MIN CMU EDGE DISTANCE
CMU GROUT FLD.	3	2000PSI	21	3" O.C. MAX, 1.5" MIN CMU EDGE DISTANCE
STEEL STUD	1	14GA	24	6" O.C. MAX, 0.5" MIN STEEL EDGE DISTANCE
STEEL STUD	2	14GA	24	3" O.C. MAX, 0.5" MIN STEEL EDGE DISTANCE
STEEL STUD	3	14GA	24	3" O.C. MAX, 0.5" MIN STEEL EDGE DISTANCE
STEEL STRUCT.	1	0.375	24	6" O.C. MAX, 0.5" MIN STEEL EDGE DISTANCE
STEEL STRUCT.	2	0.375	24	3" O.C. MAX, 0.5" MIN STEEL EDGE DISTANCE
STEEL STRUCT.	3	0.375	24	3" O.C. MAX, 0.5" MIN STEEL EDGE DISTANCE

REFERENCES OF Δ, Δ, & Δ,
RELATE TO THE ELEVATION
LAYOUT TYPE AS NOTED ON
PAGES 1 & 2.

* PRODUCT HAS NOT BEEN
EVALUATED FOR INSTALLATION
INTO CRACKED CONCRETE
SUBSTRATE.

GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410 TITLE ESS-502D LOUVER	DRAWN BY M. STEELE	DATE 4/27/09	3 OF 16 CAD DRAWING NO. ESS-502D
	SCALE 1:2.5	SHEET NO.	
DETAILS - HEAD/SILL			

CHANDER P. NANGIA
LICENSE
No. 21933
STATE OF FLORIDA
PROFESSIONAL ENGINEER
JAN 21 2019

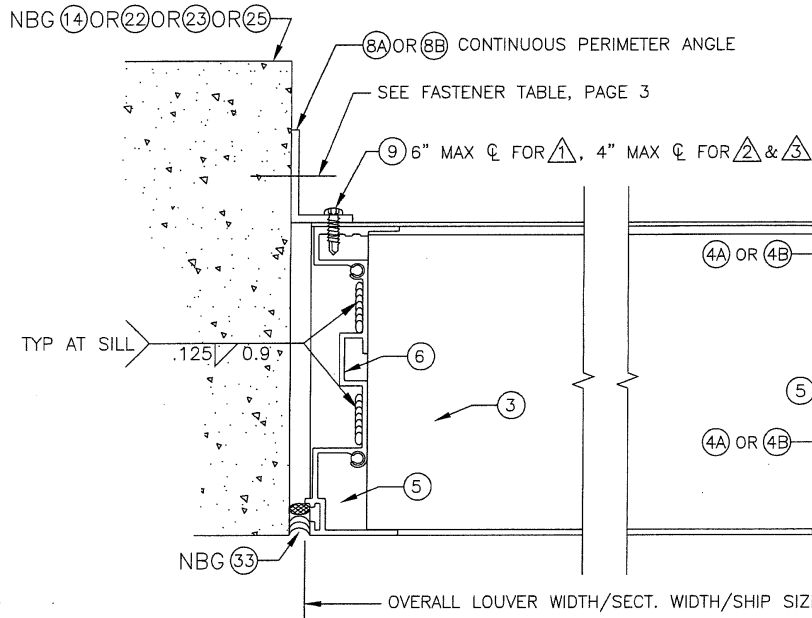
PRODUCT RENEWED
as complying with the Florida
Building Code
NOA-No. **19-0205.06**
Expiration Date **08/05/2024**
By *[Signature]*
Miami-Dade Product Control

REFERENCES OF Δ , Δ , & Δ ,
RELATE TO THE ELEVATION
LAYOUT TYPE AS NOTED ON
PAGES 1 & 2.

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**

Expiration Date **08/05/2024**

By Ishag I. Chanku
Miami-Dade Product Control



NOTE: CONTINUOUS PERIMETER
ANGLE MAY BE POSITIONED
ON JAMBS WITH ANGLE LEG
PROJECTED TOWARD EXTERIOR
OR INTERIOR OF WALL. VALID
FOR ALL BUILDING SUBSTRATE
TYPES. ADDITIONAL SPACING
BETWEEN LOUVER AND
SUBSTRATE MAY BE
NECESSARY DUE TO FASTENER
HEAD-LOUVER INSTALLATION
CLEARANCE.

SEE FASTENER TABLE,
PAGE 3

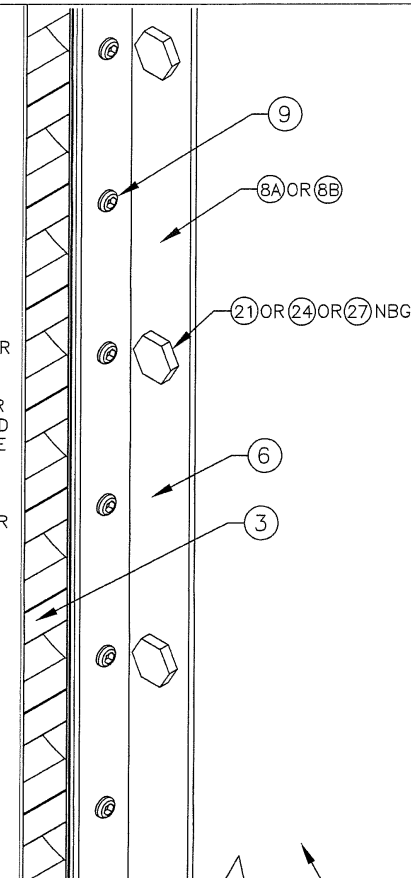
NOTE FOR CMU:
BLOCK IS GROUT FILLED
AROUND OPENING. (MIN
2000PSI)

OVERALL LOUVER WIDTH/SECT. WIDTH/SHIP SIZE

NBG=NOT BY MANUFACTURER

3 JAMB DETAIL
4 SCALE: 1:2
SEE "3 ISO" FOR ISOMETRIC DETAIL

3opp JAMB DETAIL
4 SCALE: 1:2



NBG 14 OR 22 OR 23 OR 25

3 ISO JAMB DETAIL
4 SCALE: 1:2

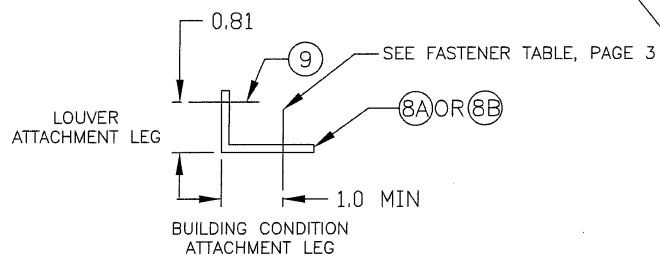
DRAWN BY M. STEELE	DATE 4/27/09	SCALE 1:2	SHEET NO. 4 OF 16	CAD DRAWING NO. ESS-502D
GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410 TITLE ESS-502D LOUVER DETAILS - JAMBS				
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>Ishag I. Chanku</u> Miami-Dade Product Control				

REV: 01, 1/11/19, ADDED "Δ" CLARIFICATION, SPELLING UPDATE IN CONTINUOUS ANGLE NOTE

REFERENCES OF 1, 2, & 3,
RELATE TO THE ELEVATION
LAYOUT TYPE AS NOTED ON
PAGES 1 & 2.

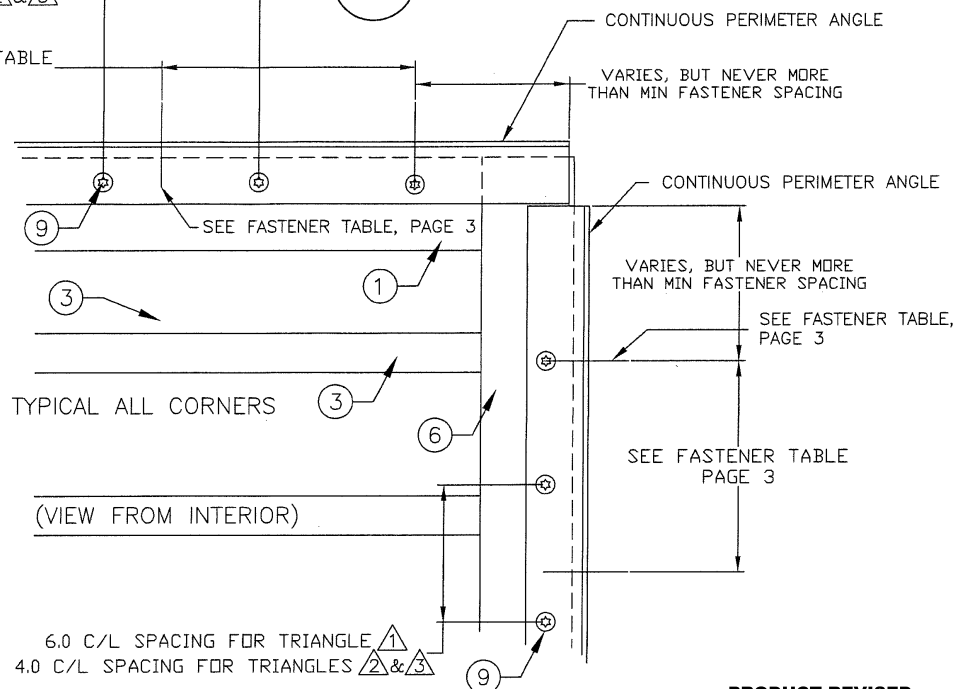
TRIANGLE  = MILLION UNIT
TRIANGLE  = LONG BLADE UNIT
TRIANGLE  = SPLICED UNIT

CONTINUOUS ANGLE FASTENER DISTANCES

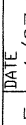


(BUILDING CONDITION NOT SHOWN)

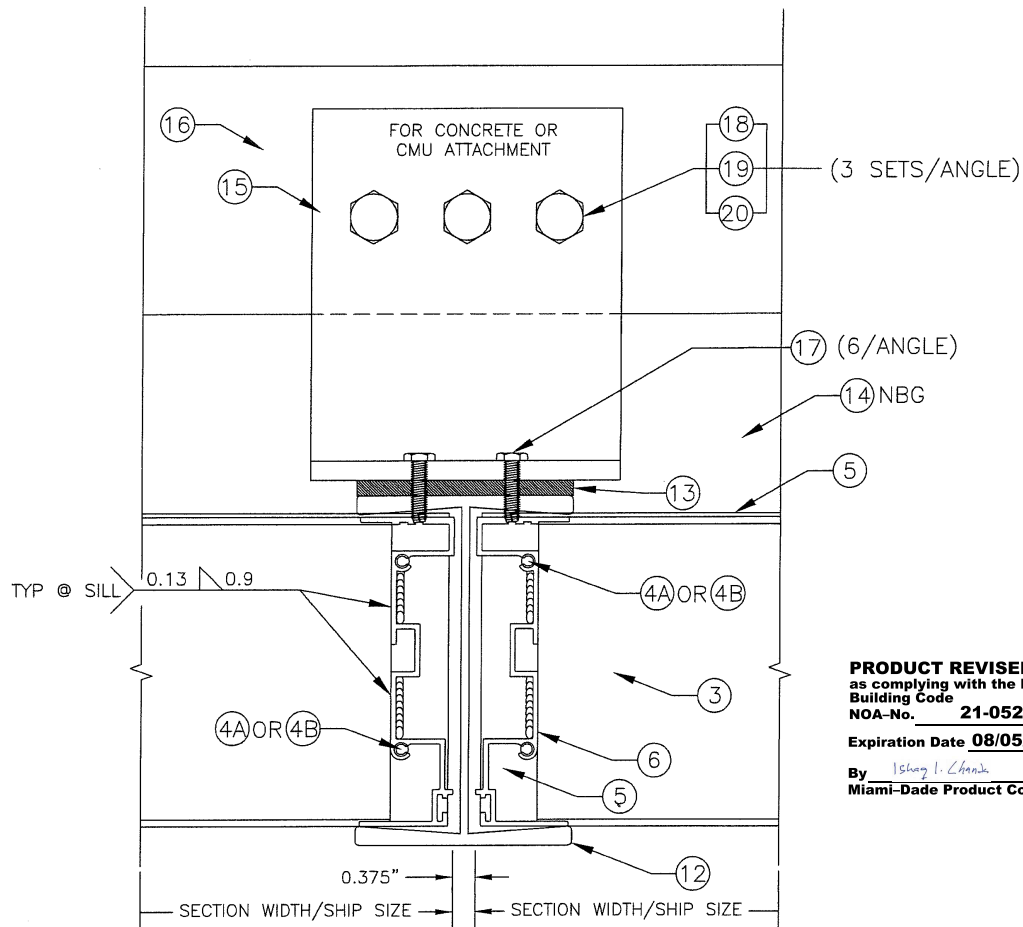
4 CONTINUOUS ANGLE, INTERIOR VIEW
5 SCALE: 1:2



PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By Ismael L. Chanda
Miami-Dade Product Control

 GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE 1:2	
	SHEET NO. 5 OF 16	
TITLE ESS-502D LOUVER		
CAD DRAWING NO. ESS-502D		
DETAILS - CONTINUOUS ANGLE		

REV: 01, 1/11/19, ADDED "Δ" CLARIFICATION NOTE, ADDED "Δ" AROUND NINE LAYOUT NUMBERS, CORRECTED MODEL NAME, AND SPELLING UPDATE IN TITLE BLOCK

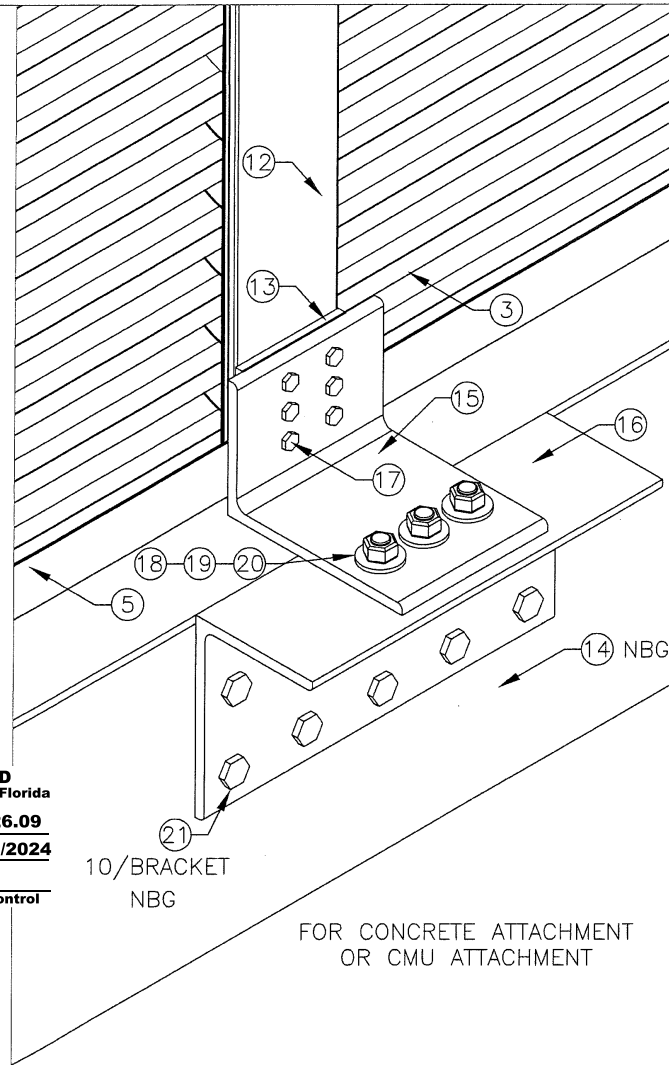


PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By Shang L. Chan
Miami-Dade Product Control

5A
6
"I" MULLION DETAIL
SCALE: 1:2
SEE "5 ISO" FOR ISOMETRIC DETAIL

NOTE: CONTINUOUS PERIMETER
ANGLE NOT SHOWN ON THIS PAGE.

NBG=NOT BY MANUFACTURER



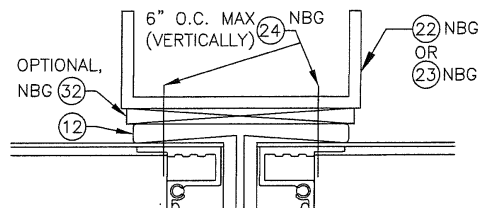
5A ISO
6
ISOMETRIC (MULLION DETAIL)
(TYPICAL @HEAD AND SILL)
SCALE: 1:3

REV: 01, 1/11/19, ITEM #21 SPELLING UPDATE

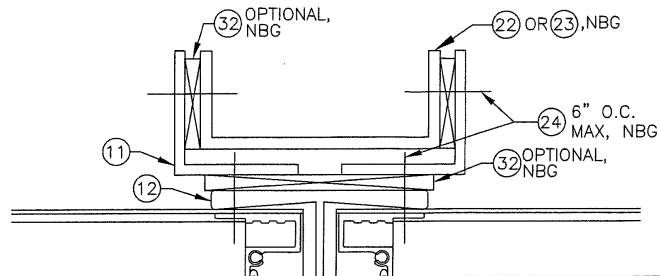
DRAWN BY M. STEELE	DATE 4/27/09	SHEET NO. 6 OF 16	CAD DRAWING NO. ESS-502D
SCALE VARIES			
GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410		TITLE ESS-502D LOUVER	
CHANDER P. NANGA LICENSE No. 21848 STATE OF FLORIDA PROFESSIONAL ENGINEER JAN 27 2019		DETAILS - CMU & CONCRETE MULLION SUPPORT	
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>Shang L. Chan</u> Miami-Dade Product Control			

5 B STEEL MULLION ATTACHMENT 1
SCALE: 1:2

FOR STRUCTURAL STEEL OR STEEL STUD ATTACHMENT
OPTION ONE



FOR STRUCTURAL STEEL OR STEEL STUD ATTACHMENT
OPTION TWO

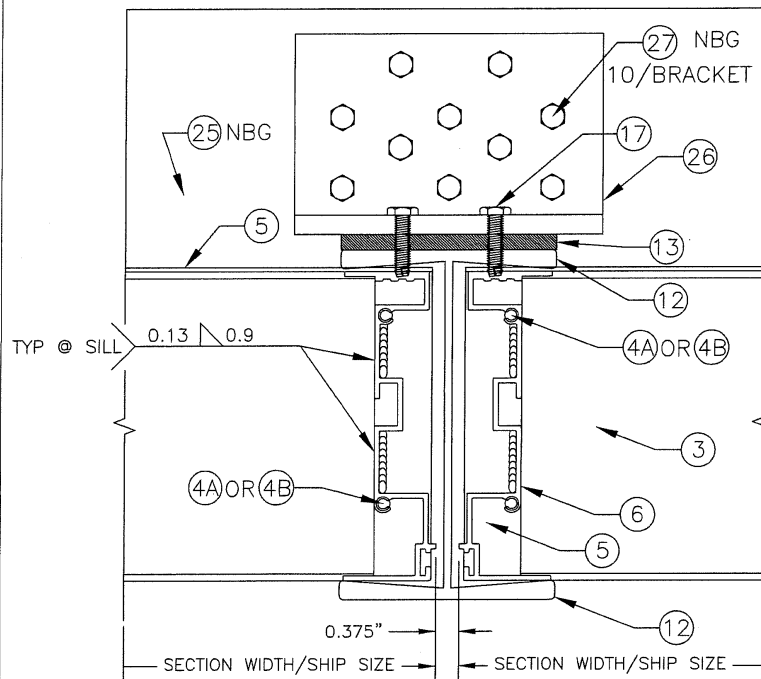


5 C STEEL MULLION ATTACHMENT 2
SCALE: 1:2

NOTE: STRUCTURAL STEEL AND STEEL STUD MULLION SUPPORT TYPES (NOT BY GREENHECK) MUST BE CAPABLE OF WITHSTANDING ALL LOADS TRANSFERRED BY THE LOUVER SECTIONS AT THE TOP AND BOTTOM OF THE VERTICAL MULLION CONDITION(S). THE FORMULA TO DETERMINE THE TRANSFERRED POINT LOAD IN POUNDS IS (SECTION WIDTH FEET X SECTION HEIGHT FEET X 110 PSF)/2.

5 D WOOD MULLION ATTACHMENT
SCALE: 1:2

SEE "5 D ISO" FOR ISOMETRIC DETAIL

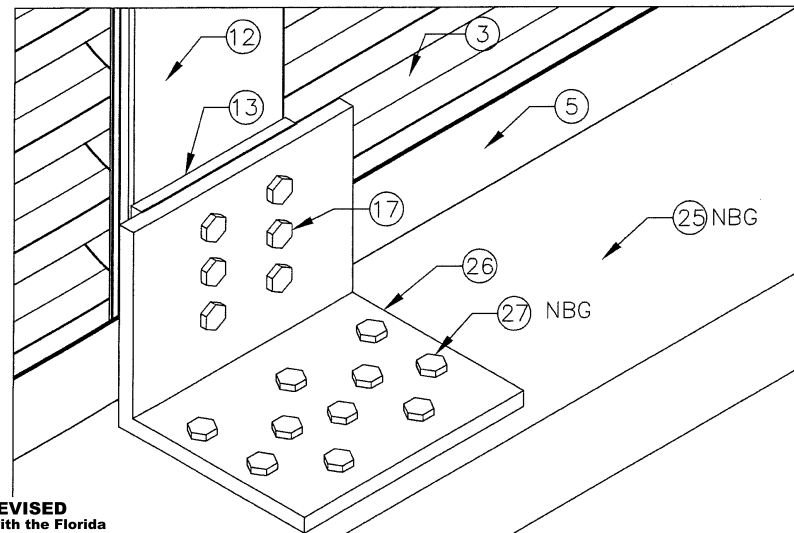


NOTE: CONTINUOUS PERIMETER
ANGLE NOT SHOWN ON THIS PAGE. NBG=NOT BY MANUFACTURER

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**

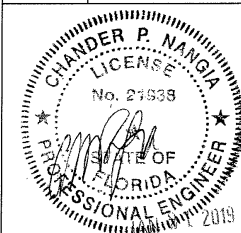
Expiration Date **08/05/2024**

By *Shang L. Chan*
Miami-Dade Product Control



5 D ISO WOOD MULLION ATTACHMENT
SCALE: 1:2

DRAWN BY M. STEELE	DATE 4/27/09
SCALE 1:2	SHEET NO. 7 OF 16
CAD DRAWING NO. ESS-502D	
TITLE ESS-502D LOUVER DETAILS - STEEL STUD, STRUCTURAL STEEL, & WOOD MULLION SUPPORT	



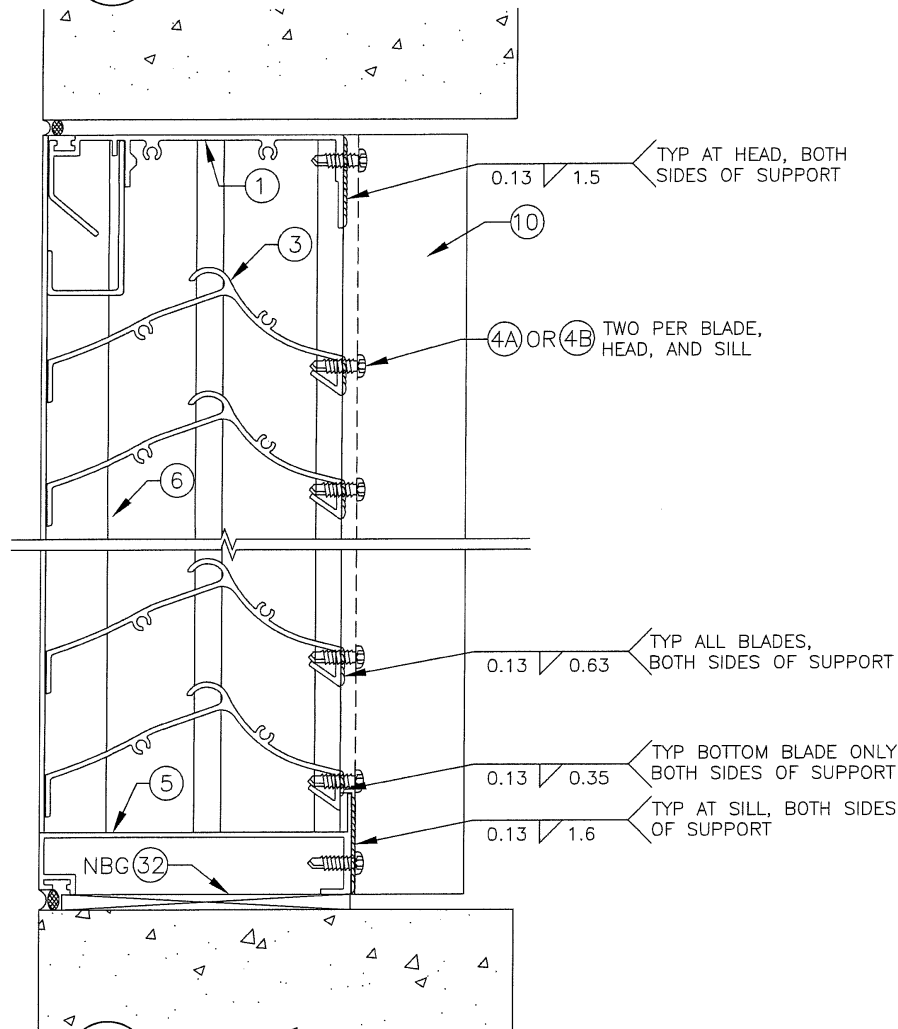
PRODUCT RENEWED
as complying with the Florida
Building Code
NOA-No. **19-0205.06**

Expiration Date **08/05/2024**

By *Shang L. Chan*
Miami-Dade Product Control

6
8

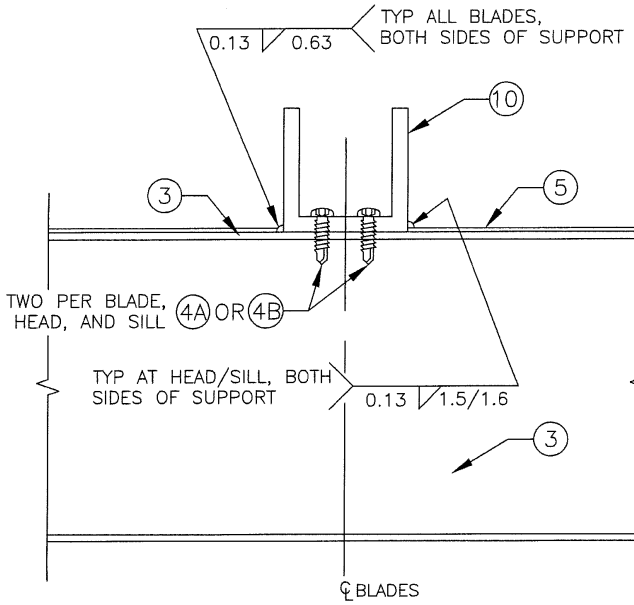
BLADE SUPPORT HEAD DETAIL (SECTIONS >72" WIDE) SIDE VIEW
SCALE: 1:2



7
8

BLADE SUPPORT SILL DETAIL (SECTIONS >72" WIDE) SIDE VIEW
SCALE: 1:2

NBG=NOT BY MANUFACTURER



8
8

BLADE SUPPORT DETAIL (SECTIONS >72" WIDE) TOP VIEW
SCALE: 1:2

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**

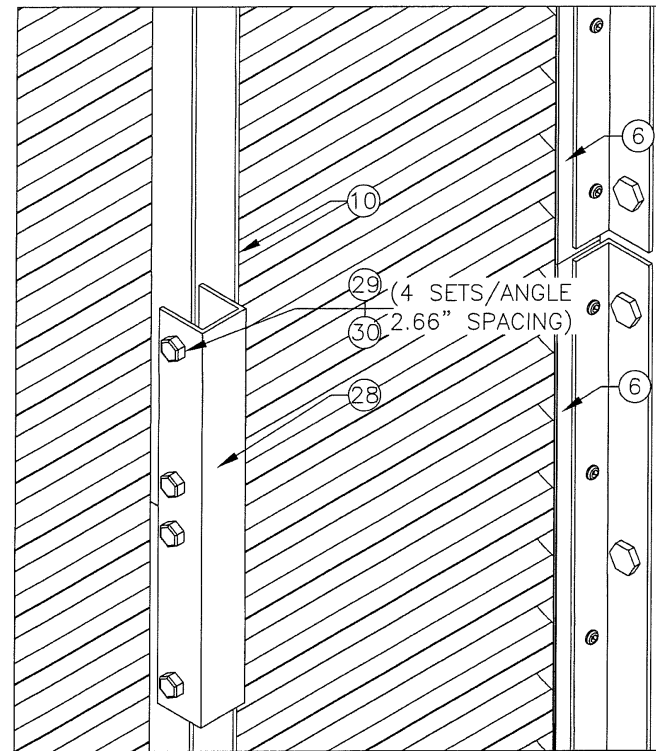
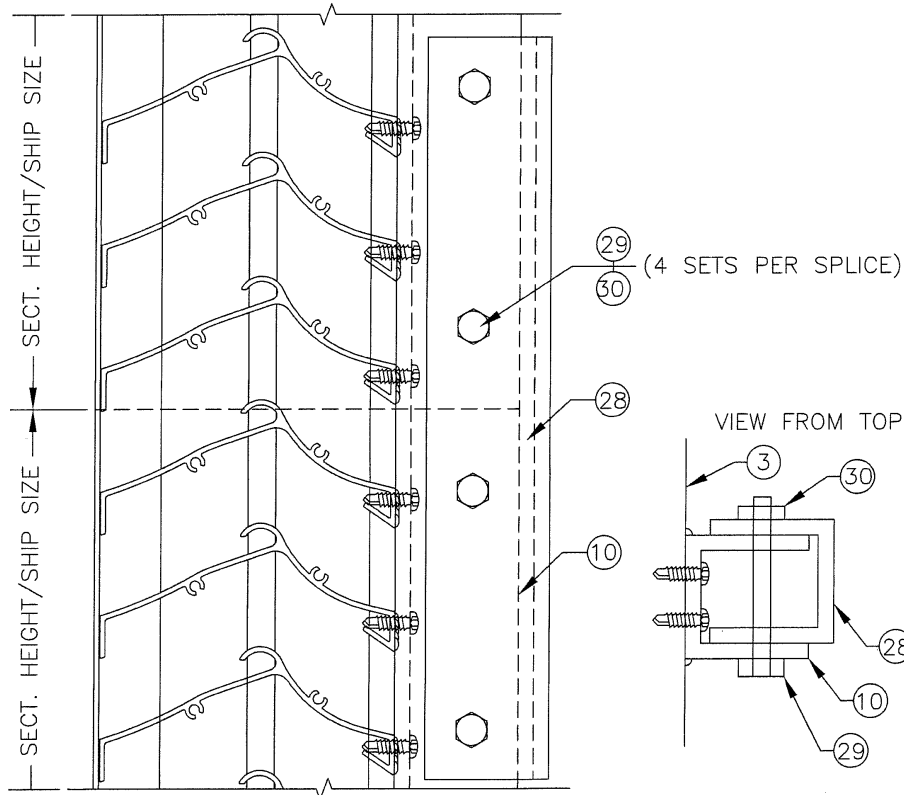
By Shing I. Chandra
Miami-Dade Product Control

 P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410 TITLE: ESS-502D LOUVER	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE 1:2	SHEET NO. 8 OF 16
CAD DRAWING NO. ESS-502D		
DETAILS - BLADE SUPPORT		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>[Signature]</u> Miami-Dade Product Control		

REV: 01, 1/11/19, REMOVED LINE CROSSING OVER ITEM "4A OR 4B" CALLOUT

9
9

VERTICAL SPLICE/STACK DETAIL
SCALE: 1:2
SEE "9 ISO" FOR ISOMETRIC DETAIL



9 ISO
9

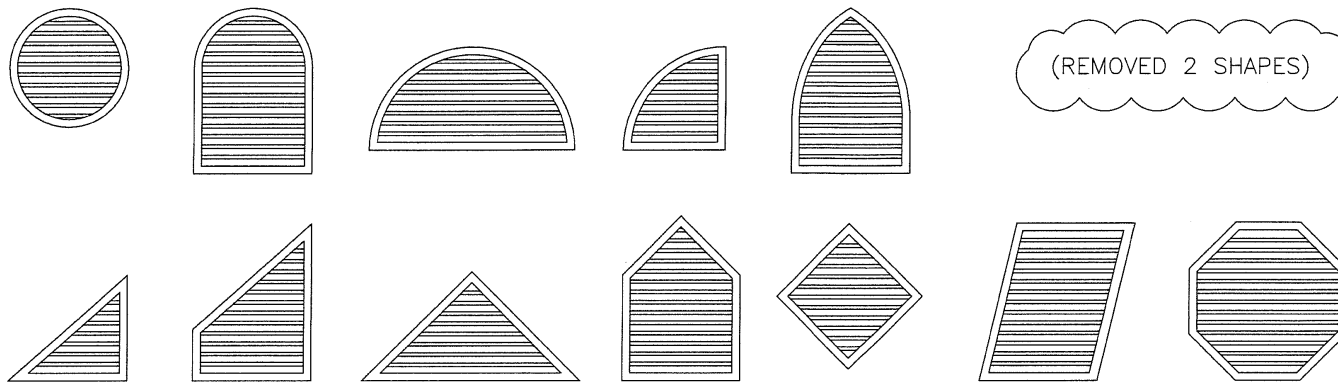
ISOMETRIC (SPLICE/STACK DETAIL)
SCALE: 1:3

PRODUCT REVISED
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Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By *Isahay I. Chank*
Miami-Dade Product Control

 GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE VARIES	SHEET NO. 9 OF 16
TITLE ESS-502D LOUVER		
DETAILS - SPLICED BLADE SUPPORT		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <i>[Signature]</i> Miami-Dade Product Control		

REV: 01, 1/11/19, REMOVED LINES CROSSING OVER ITEM "29-30" CALLOUT ON PAGE RIGHT

BELOW ARE THE SHAPE UNITS THAT THE NOA WILL ALLOW



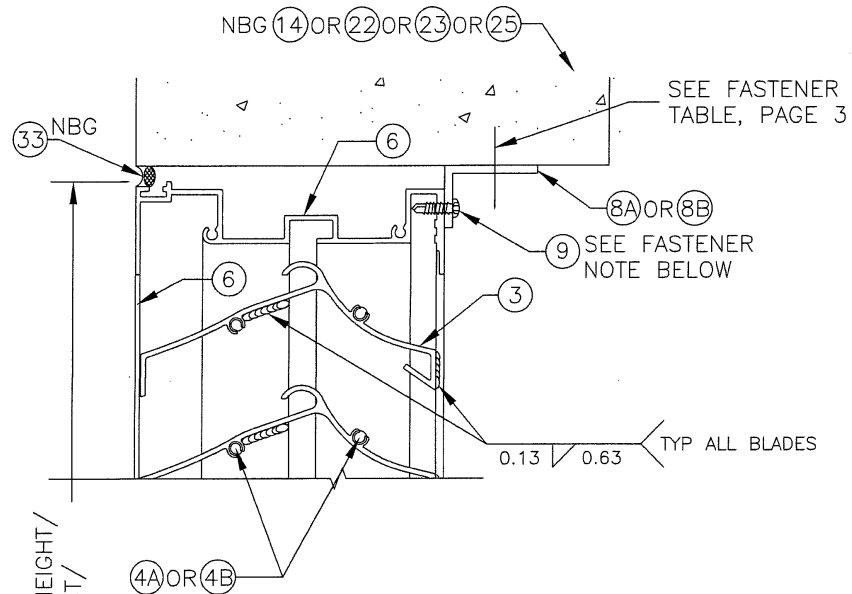
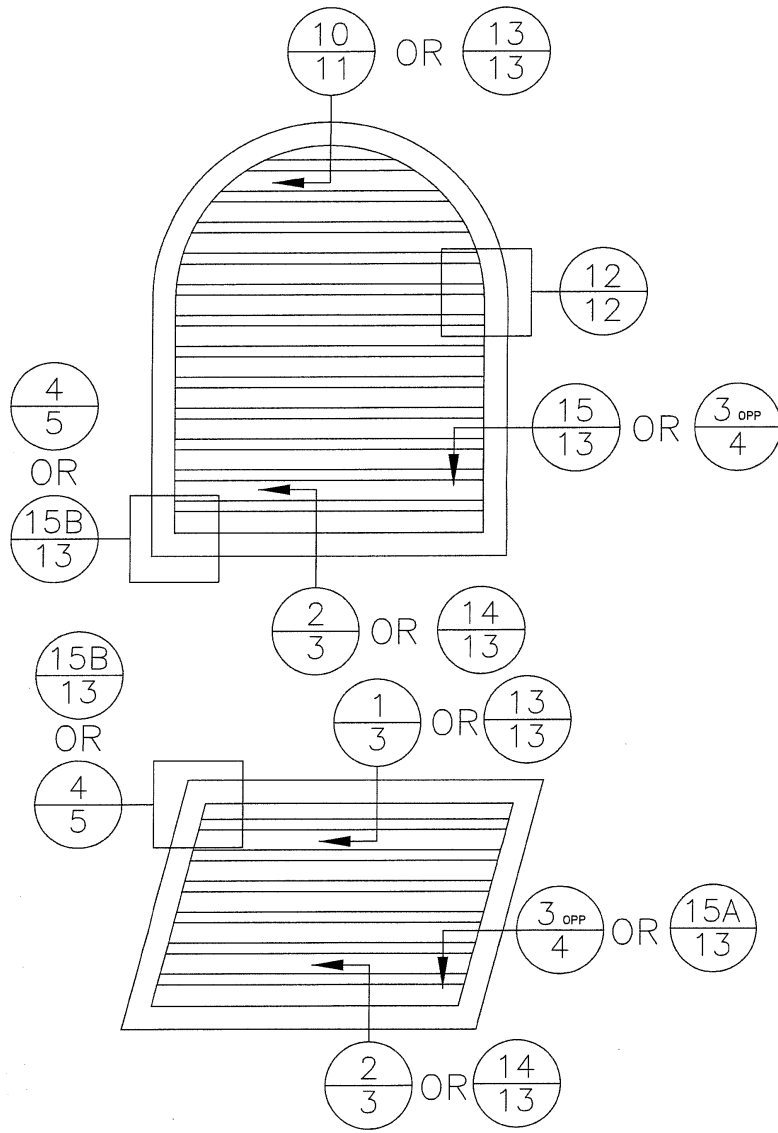
NOTES:

1. OTHER SHAPES MAY APPLY PROVIDING THEY ARE SIMILAR TO THOSE SHOWN AND HAVE CONSTRUCTION AS DESCRIBED IN THIS PACKET.
2. ALL SHAPE LOUVERS ARE TO HAVE THE SAME WIDTH, HEIGHT, AND PRESSURE RESTRICTIONS AS RECTANGULAR LOUVERS, AND MAY BE SPLICED/STACKED VERTICALLY AND HORIZONTALLY (MULLED UNITS) IN THE SAME MANNER AS RECTANGULAR LOUVERS.
3. IF THE SHAPE LOUVER SECTION WIDTH EXCEEDS 72", A BLADE SUPPORT IS REQUIRED.
4. A MULLION REQUIRED FOR SHAPE LOUVERS ONLY IF BOTH OF THE FOLLOWING ARE TRUE: OVERALL UNIT WIDTH IS >72", AND SECTION HEIGHT IS >72".
5. FOLLOW THE SAME GUIDELINES AS NON-SHAPED UNITS FOR FASTENING OF SHAPE UNITS TO THE BUILDING CONDITION.

REV: 01, 1/11/19, REMOVED TWO SHAPES, NOTE #5 SPELLING UPDATE

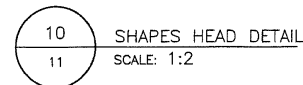
GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE 0.5" = 1'	SHEET NO. 10 OF 16
TITLE ESS-502D LOUVER		
SHAPE STYLES, ELEVATION CONFIGURATIONS		
CAD DRAWING NO. ESS-502D		
PRODUCT REVISED as complying with the Florida Building Code NOA-No. 21-0526.09 Expiration Date 08/05/2024 By <u>Ismael L. Chacon</u> Miami-Dade Product Control		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>[Signature]</u> Miami-Dade Product Control		

4 TYPICAL SHAPE LOUVER CALLOUTS



OVERALL LOUVER HEIGHT/
SECTION HEIGHT/
SHIP SIZE

FASTENER NOTES FOR 9:
6" MAX $\varnothing$ FOR 1, 4" MAX $\varnothing$ FOR 2 & 3

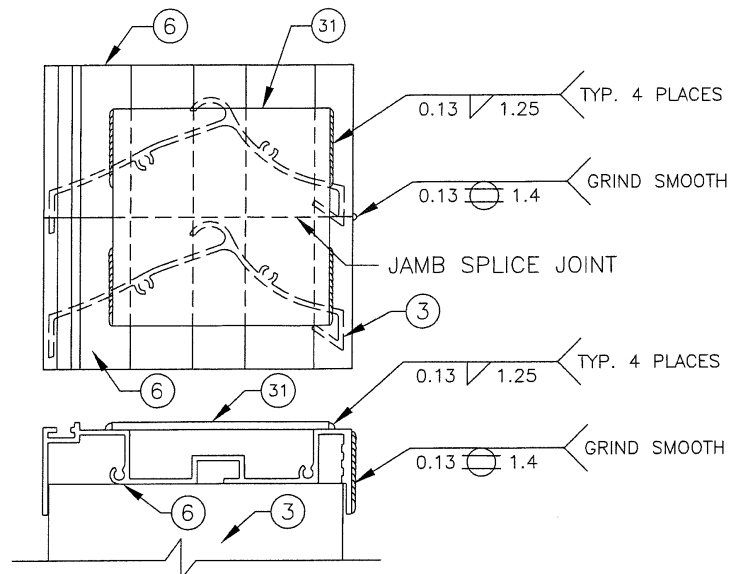


PRODUCT REVISED
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Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By Isaac L. Chandra
Miami-Dade Product Control

NBG=NOT BY MANUFACTURER

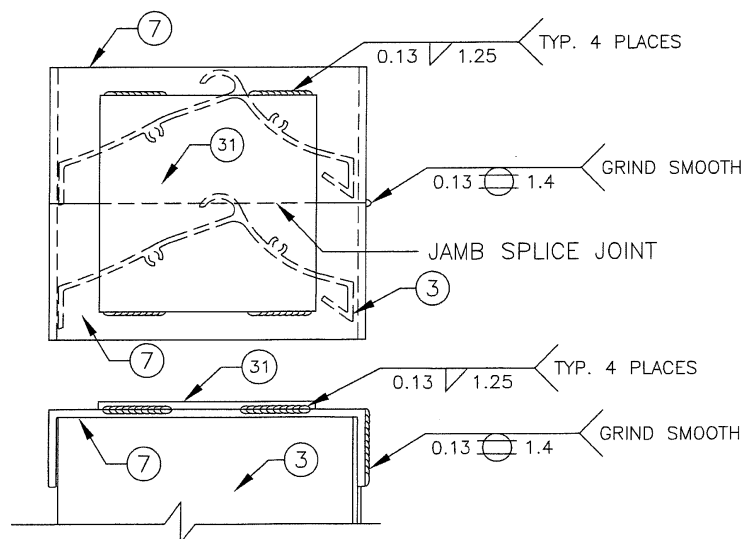
DRAWN BY M. STEELE	DATE 4/27/09	SCALE VARIES	SHEET NO. 11 OF 16	CAD DRAWING NO. ESS-502D
GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410 TITLE ESS-502D LOUVER SHAPE ELEVATIONS, DETAILS - SHAPE				
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>Isaac L. Chandra</u> Miami-Dade Product Control				

12 A JAMB SPLICE DETAIL
SCALE: 1:2



THIS IS ONLY ON SHAPE UNITS WHEN A CURVED EXTRUDED JAMB MEETS A STRAIGHT JAMB (THIS IS NOT FOR A "SPliced" UNIT WHERE ONE LOUVER SIT ON TOP OF ANOTHER).

12 B CHANNEL JAMB SPLICE DETAIL
SCALE: 1:2



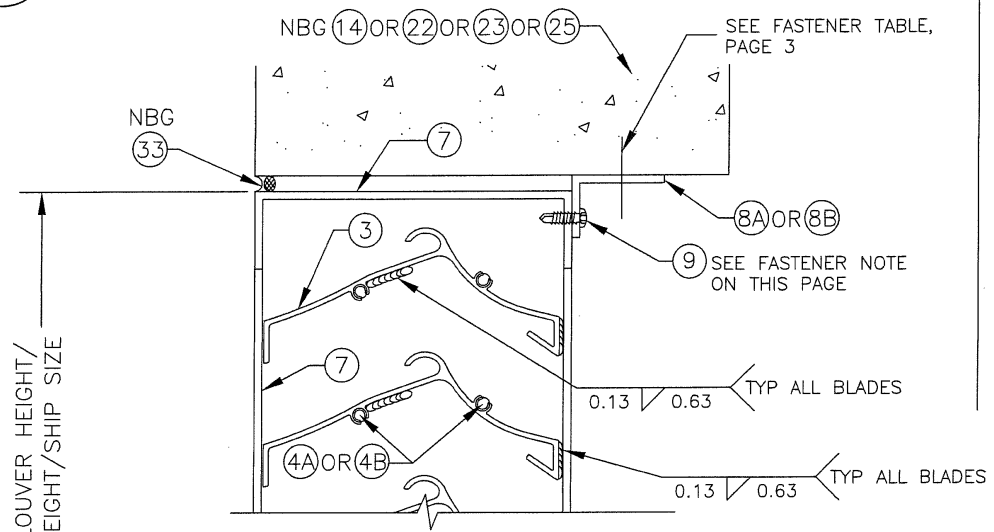
THIS IS ONLY ON SHAPE UNITS WHEN A CURVED C-CHANNEL JAMB MEETS A STRAIGHT JAMB (THIS IS NOT FOR A "SPliced" UNIT WHERE ONE LOUVER SIT ON TOP OF ANOTHER).

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as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By *Isang I. Chan*
Miami-Dade Product Control

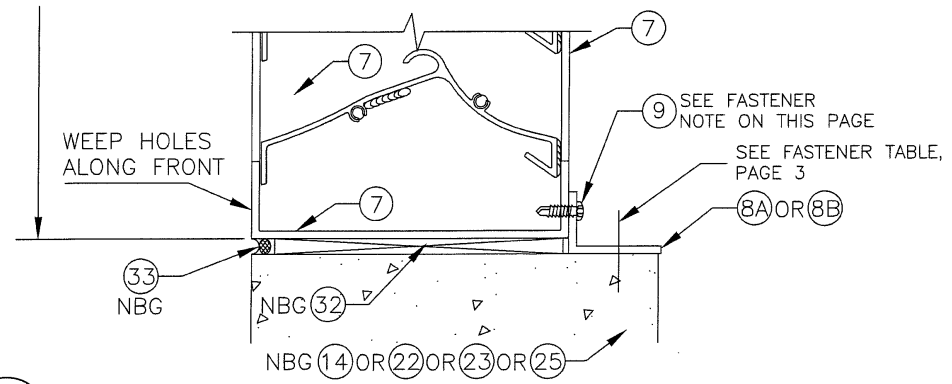
GREENHECK P.O.BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE 1:2	SHEET NO. 12 OF 16
TITLE ESS-502D LOUVER		
SHAPE LOUVERS, DETAILS - SPICED JAMBS		
CAD DRAWING NO. ESS-502D		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <i>[Signature]</i> Miami-Dade Product Control		

13 SHAPES HEAD DETAIL - CHANNEL FRAME
SCALE: 1:2

13 SETUP FOR OPTIONAL CHANNEL FRAME



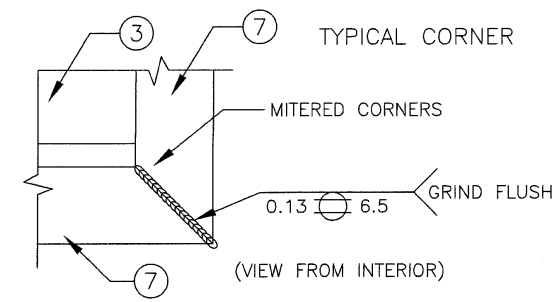
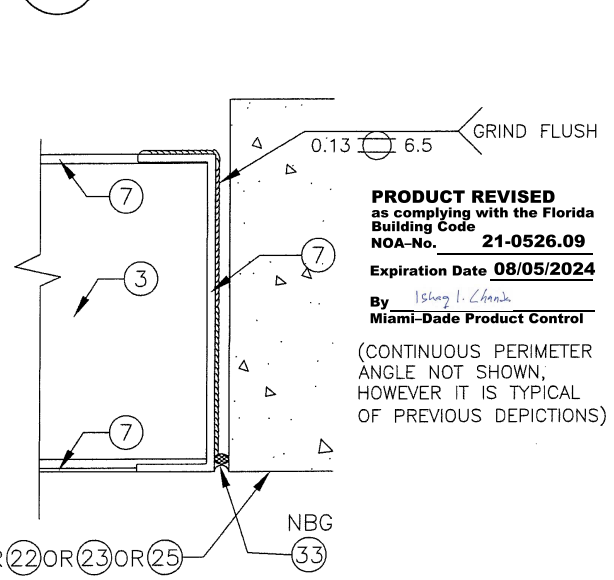
FASTENER NOTES FOR (9):
6" MAX ϕ FOR (1), 4" MAX ϕ FOR (2) & (3)



14 SHAPES SILL DETAIL - CHANNEL JAMB
SCALE: 1:2

NBG=NOT BY MANUFACTURER

15 A SHAPES CHANNEL JAMB DETAIL
SCALE: 1:2

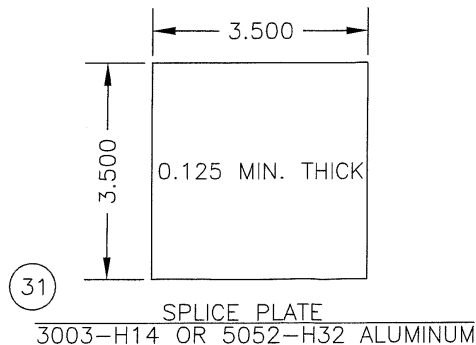
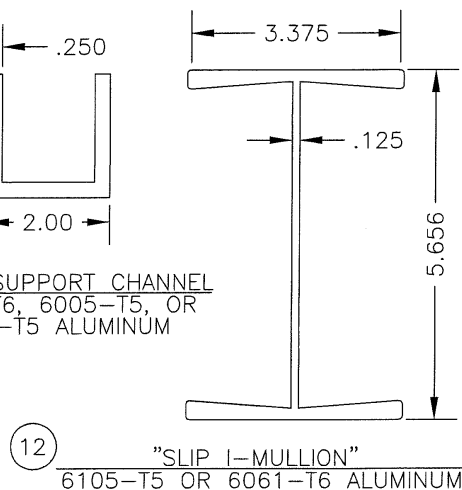
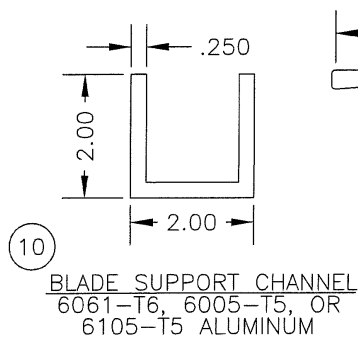
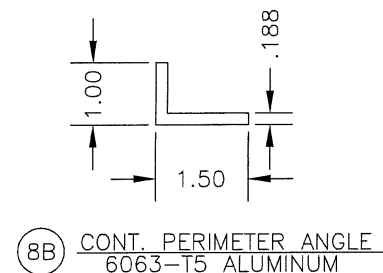
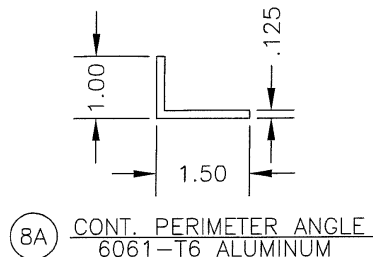
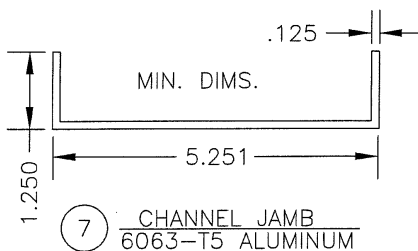
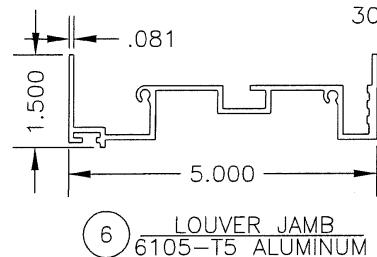
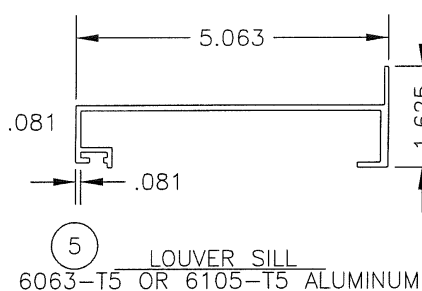
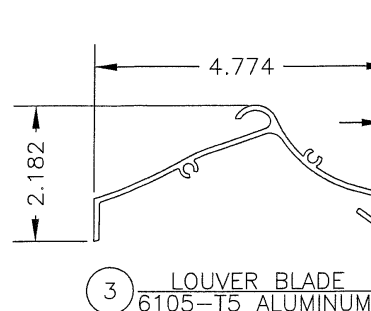
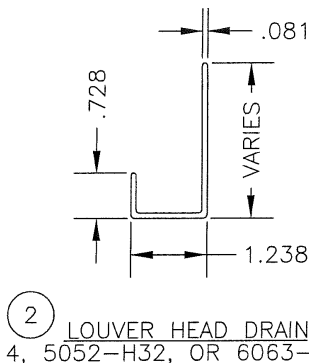
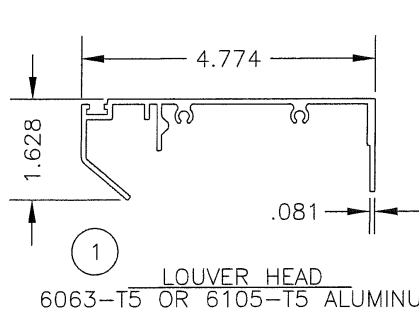


(CONTINUOUS PERIMETER ANGLE & WALL CONDITION NOT SHOWN, HOWEVER IT IS TYPICAL OF PREVIOUS DEPICTIONS)

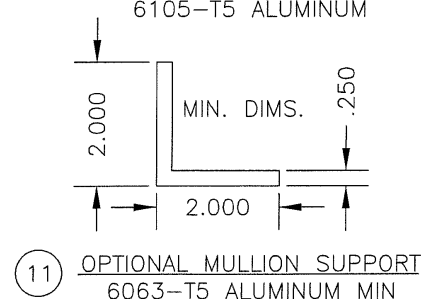
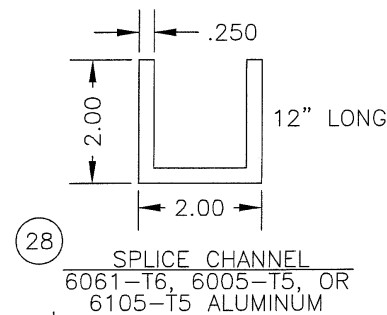
15 B SHAPES SILL DETAIL - CHANNEL JAMB INTERIOR
SCALE: 1:2

REV: 01, 1/11/19, SPELLING UPDATE IN CONTINUOUS ANGLE NOTES

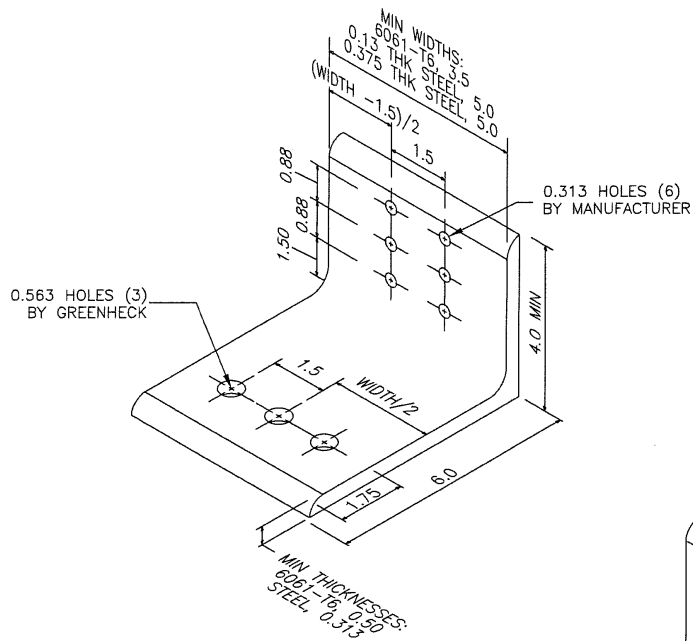
DRAWN BY M. STEELE	DATE 4/27/09	SCALE 1:2	SHEET NO. 13 OF 16	CAD DRAWING NO. ESS-502D
GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410 TITLE: ESS-502D LOUVER SHAPE LOUVERS, DETAILS - CHANNEL FRAME				
CHANDER P. NANGIA LICENSE No. 21938 STATE OF FLORIDA PROFESSIONAL ENGINEER JAN 21 2019				
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By: [Signature] Miami-Dade Product Control				



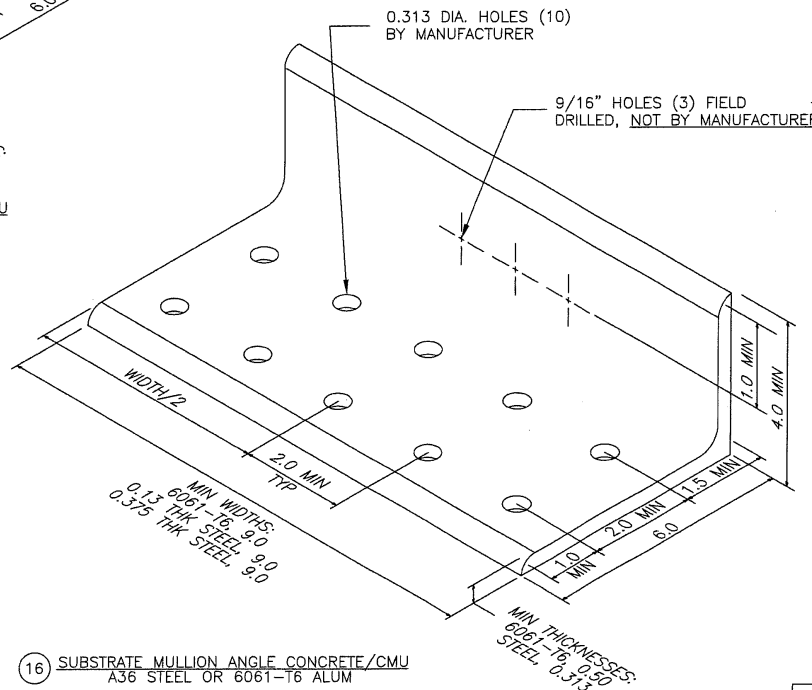
PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. 21-0526.09
Expiration Date 08/05/2024
By Ishtay I. Chandra
Miami-Dade Product Control



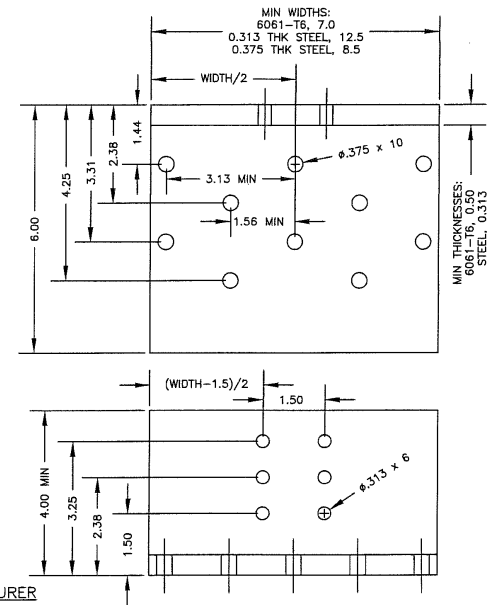
GREENHECK P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410 	DRAWN BY M. STEELE	DATE 4/27/09	14 OF 16	CAD DRAWING NO. ESS-502D
	SCALE 1:2	SHEET NO.		
TITLE ESS-502D LOUVER		DETAILS - PART DETAILS		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>Ishtay I. Chandra</u> Miami-Dade Product Control				



15 LOUVER MULLION ANGLE CONCRETE/CMU
A36 STEEL OR 6061-T6 ALUM



16 SUBSTRATE MULLION ANGLE CONCRETE/CMU
A36 STEEL OR 6061-T6 ALUM



26 MULLION SUPPORT WOOD
6061-T6 ALUMINUM,
OR A36 STEEL

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**
Expiration Date **08/05/2024**
By *Ishtay I. Chandra*
Miami-Dade Product Control

REV: 01, 1/11/19, ITEM #16 SPELLING UPDATE

 GREENHECK P.O.BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M STEELE	DATE 4/27/09	ESS-502D LOUVER 15 OF 16 CAD DRAWING NO. ESS-502D
	SCALE 1:2		
	SHEET NO.		
TITLE ESS-502D LOUVER			
DETAILS - PART DETAILS			
 PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By  Miami-Dade Product Control			

ITEM	DESCRIPTION	MATERIAL	NOTES
1	LOUVER HEAD	ALUM	
2	LOUVER HEAD DRAIN	ALUM	
3	LOUVER BLADE	ALUM	
4A	#10 x 0.5 MIN THREAD, SCREW, 7075-T6 ALUM	ALUM	USED ON ANODIZED UNITS
4B	#10 OR #12 x 0.5 MIN THREAD, SCREW, STAINLESS	SS	TYPICALLY USED
5	LOUVER SILL	ALUM	
6	LOUVER JAMB	ALUM	
7	OPTIONAL C-CHANNEL JAMB	ALUM	OPTIONAL FOR SHAPE UNITS
8A	CONTINUOUS MTG ANGLE, 1.0x1.5x0.125 MIN, 6061-T6	ALUM	
8B	CONTINUOUS MTG ANGLE, 1.0x1.5x0.188 MIN, 6063-T5	ALUM	
9	#10-24 OR #12-24 x 0.5 MIN THREAD, SCREW	SS	
10	BLADE SUPPORT CHANNEL, 2x2x2x0.25	ALUM	
11	OPTIONAL ADDITIONAL MULLION SUPPORT ANGLE	ALUM	OPTIONAL
12	SLIP *1" MULLION	ALUM	
13	GASKET, 3.5x4x0.25 MIN (BY MANUFACTURER)	VARIES	RUBBER/NEOPRENE LIKE
14	CONCRETE OR GROUT FILLED CMU, 2000 PSI MIN	VARIES	NOT BY MANUFACTURER
15	LOUVER MULLION ANGLE FOR CONCRETE/CMU	STEEL/ALUM	
16	SUBSTRATE MULLION ANGLE FOR CONCRETE/CMU	STEEL/ALUM	
17	0.25-20x1 MIN, SCREW (BY MANUFACTURER)	SS	
18	BOLT, 0.5-13x1 MIN (BY MANUFACTURER)	SS	
19	NUT, 0.5-13 MIN (BY MANUFACTURER)	SS	
20	WASHER, 0.5 MIN (BY MANUFACTURER)	SS	
21	0.25 DIA. ITW BUILDEX TAPCON w/ ADV. THREADFORM, 1.75 MIN EMBEDMENT	SS/STEEL	NOT BY MANUFACTURER
22	STRUCTURAL STEEL, 0.075 MIN THICKNESS	SS/STEEL	NOT BY MANUFACTURER
23	STEEL STUD, 14GA MIN	SS/STEEL	NOT BY MANUFACTURER
24	0.25 DIAMETER SCREW, MUST FULLY ENGAGE STEEL	SS/STEEL	NOT BY MANUFACTURER
25	WOOD SUBSTRATE, G=0.55 MIN DENSITY	WOOD	NOT BY MANUFACTURER
26	MULLION ANGLE FOR WOOD	STEEL/ALUM	
27	0.375 DIA. LAG SCREW, 3.0 MIN EMBEDMENT	SS/STEEL	NOT BY MANUFACTURER
28	SPLICE CHANNEL, 2x2x2x0.25, 12' LONG	ALUM	
29	BOLT, 0.313x2.5 MIN (BY MANUFACTURER)	SS	
30	NUT, 0.313(5X16) (BY MANUFACTURER)	SS	
31	SPLICE PLATE	ALUM	
32	SHIMS, OPTIONAL, AS REQUIRED, INCOMPRESSIBLE	VARIES	NOT BY MANUFACTURER
33	SEALANT AND BACKER ROD	VARIES	NOT BY MANUFACTURER

PRODUCT REVISED
as complying with the Florida
Building Code
NOA-No. **21-0526.09**

Expiration Date **08/05/2024**

By Iskang I. Chanin
Miami-Dade Product Control

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 PENTHOUSE ASSEMBLY.

2. THE ESS-502D HAS BEEN DESIGNED AND QUALIFIED IN ACCORDANCE WITH THE FLORIDA BUILDING CODE (FBC) AND TEST PROTOCOLS TAS-201 (IMPACT), TAS-202 (UNIFORM STATIC PRESSURE), AND TAS-203 (CYCLIC FATIGUE) TO A MAXIMUM DESIGN LOAD OF +/- 110 PSF.

3. THE MAXIMUM UNSUPPORTED BLADE LENGTH SHALL NOT EXCEED 72" WITHOUT STIFFENER AND 144" WITH STIFFENER.

4. THE MAXIMUM OVERALL UNIT HEIGHT IS UNLIMITED BY MEANS OF STACKING AND USE OF SPLICED BLADE SUPPORTS. THE MAXIMUM OVERALL UNIT WIDTH IS UNLIMITED BY USE OF MULLIONS WITH A MAXIMUM SPACING OF 72".

5. LOUVER CONSTRUCTION: HEAD, SILL, JAMBS, AND BLADES ARE SQUARE CUT AT BOTH ENDS. BLADE SPACING IS 2" MAX. EACH JAMB IS SECURED TO THE SILL WITH (2) SCREWS AND WELDED. BLADES AND HEADS ARE SECURED TO JAMBS WITH (2) SCREWS AND WELDED.

6. ALL WOOD SUBSTRATE SHALL BE G = 0.55 DENSITY OR BETTER.

7. ALL STEEL STUD SUBSTRATE SHALL BE MIN. 14 GA. FY = 50 KSI.

8. ALL STRUCTURAL STEEL SUBSTRATE SHALL BE MIN. 0.075" THICK FY = 36 KSI.

9. ALL CONCRETE SUBSTRATE SHALL BE MIN. 2000 PSI.

10. CONCRETE MASONRY SHALL BE ASTM C90, TYPE II, MIN. 2000 PSI GROUT-FILLED.

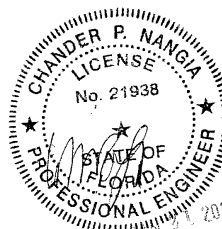
11. THE LOUVER MANUFACTURER DOES NOT DETERMINE THE STRUCTURAL INTEGRITY OF THE SUBSTRATE STRUCTURE.

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

13. INSTALLER TO PROVIDE SEPARATION OF DISSIMILAR MATERIALS AS REQUIRED.

14. MATERIAL ALLOYS ON PAGE 14 ARE MINIMUMS.

15. PRODUCT HAS NOT BEEN EVALUATED FOR INSTALLATION INTO CRACKED CONCRETE SUBSTRATE.

 P.O. BOX 410 SCHOFIELD, WISCONSIN 54476-0410	DRAWN BY M. STEELE	DATE 4/27/09
	SCALE NA	SHEET NO. 16 OF 16
TITLE ESS-502D LOUVER		
ITEMIZED PART LISTING & GENERAL NOTES		
		
PRODUCT RENEWED as complying with the Florida Building Code NOA-No. 19-0205.06 Expiration Date 08/05/2024 By <u>Iskang I. Chanin</u> Miami-Dade Product Control		