GENERAL NOTES:

1. ALUMINUM LOUVER SYSTEM MODEL FL-D-4 SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2006 EDITION OF THE INTERNATIONAL BUILDING CODE, (I.B.C) AND INTERNATIONAL RESIDENTIAL CODE, (I.R.C) WITH THE 2006 TEXAS REVISIONS, EFFECTIVE JANUARY 1, 2008.

   DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE INTERNATIONAL BUILDING CODE, FOR A BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE PRODUCT WILL BE INSTALLED, AND FOR A DIRECTIONALITY FACTOR Kd = 0.85, IN ACCORDANCE WITH ASCE 7-05 STANDARD, AND SHALL NOT EXCEED THE DESIGN PRESSURE RATING INDICATED ON THIS SHEET.

   IN ORDER TO VERIFY THAT ANCHORS ON THIS P.E.D., AS TESTED, WERE NOT OVERSTRESSED, A 33% INCREASE IN ALLOWABLE STRESS FOR WIND LOADS WAS NOT USED IN THEIR ANALYSIS. FASTENERS SPACING TO WOOD HAS BEEN DETERMINED IN ACCORDANCE WITH N.D.S. 2005.

   ALUMINUM LOUVER SYSTEM MODEL FL-D-4 ADEQUACY FOR IMPACT AND CYCLIC RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTIONS 1609.1.4 AND R301.2.1.2 OF THE ABOVE MENTIONED CODES RESPECTIVELY, AS PER FLORIDA BUILDING CODE HIGH VELOCITY HURRICANE ZONES PROTOCOLS TAS-201, TAS-202, TAS-203, PER AMERICAN TESTING LAB OF SOUTH FLORIDA REPORTS # 0604.01-01 AND 1207.01, AS WELL AS PER ANSI/AMCA IMPACT STANDARD 540, PER INTERTEK/ARCHITECTURAL TESTING REPORT # E 0370.1-550-18, AND AS PER SUBMITTED STRUCTURAL CALCULATIONS, PERFORMED AS PER SECTION 1604 OF THE ABOVE MENTIONED BUILDING CODE.

2. ALL ALUMINUM EXTRUSIONS SHALL BE 6063-T6 ALLOY (UNLESS OTHERWISE NOTED).

3. ALL SCREWS AND BOLTS INSTALLED AT SEAWARD AREAS TO BE STAINLESS STEEL 304 OR 316 AISI SERIES AND MEET ASTM A167, OR HOT DIPPED GALVANIZED (AFTER FABRICATION) CARBON STEEL AS PER ASTM A 123 OR ASTM A153, OR HOT DIPPED GALVANIZED OR GALVANNEALED (PRIOR TO FABRICATION) AND MEET ASTM A653 WITH 50 ksi YIELD STRENGTH AND 90 hsi TENSILE STRENGTH, PER 2006 TEXAS REVISIONS TO SECTION TO SECTION 1716.1.2 OF THE 2006 I.B.C AND SECTION R324.1.1 OF THE 2006 I.R.C.

   ALL SCREWS AND BOLTS INSTALLED AT INLAND I AREAS TO BE STAINLESS STEEL 304 OR 316 AISI SERIES AND MEET ASTM A167, OR HOT SIPPED GALVANIZED (AFTER FABRICATION) CARBON STEEL AS PER ASTM A123 OR ASTM A153, OR HOT DIPPED GALVANIZED OR GALVANNEALED (PRIOR TO FABRICATION) AND MEET ASTM A653; HOT DIP GALVANIZED OR ELECTRO GALVANIZED PER ASTM A641, MECHANICALLY DEPOSITED ZINC COATING PER ASTM B695 OR ELECTRO DEPOSITED ZINC COATINGS PER ASTM BL33, PER THE 2006 TEXAS REVISIONS TO SECTION 1716.1.2 OF THE 2006 I.B.C AND TO SECTION R324.1.2 OF THE 2006 I.R.C.

4. ALL WELDING OF ALUMINUM FRAMING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY A.W.S. D.1.2 2004 EDITION REGULATIONS. USE CERTIFIED WELDERS. USE ER-5356 ELECTRODES.

5. JAMB ANCHOR REQUIREMENTS: EMBEDMENT AND EDGE DISTANCE ARE BEYOND ANY FINISH.

(A) TO EXISTING POURED CONCRETE: (MIN. f'c = 3192 psi), MIN. EDGE DISTANCE (E.D.) = 2 1/2".
- 1/4"ø TAPCON ANCHORS W/ 1 3/4" MIN. EMBEDMENT, AS MANUFACTURED BY ITW BUILDEX.

(B) TO EXISTING A.S.T.M. C-90 CONCRETE BLOCK WALL. MIN. EDGE DISTANCE (E.D.) = 2 1/2".
- 1/4"ø TAPCON ANCHORS W/ 1 1/4" MIN. EMBEDMENT, AS MANUFACTURED BY ITW BUILDEX.

(C) TO EXISTING 2x P.T. WOOD BUCK. MIN. EDGE DISTANCE (E.D.) = 1 1/2".
- 1/4"ø LAG SCREWS W/ 1 1/2" MIN. EMBEDMENT, AS PER N.D.S. 2012

(D) TO EXISTING MIN. 1/8" THICK STEEL MEMBER (ASTM A-500, A-653 OR A-36) MIN. EDGE DISTANCE (E.D.) = 1/2".
- 1/4"øx3/4", AS MANUFACTURED BY ITW BUILDEX.

(E)ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

6. ANCHORS REQUIRED FOR MULLION CONNECTIONS: SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 6, 7 & 8 RESPECTIVELY, AND SHEETS 10, 10A, 11 AND 12 RESPECTIVELY.

   ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

7. THIS LOUVER SYSTEM SHALL ONLY 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/WATER PROOF EQUIPMENT, COMPONENTS OR SUPPLIES.

8. THIS LOUVER SHALL BE ONLY 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 RESISTENT/WATER PROOF EQUIPMENT, COMPONENTS OR SUPPLIES.

9. ALL ALUMINUM EXTRUSIONS IN CONTACT WITH STEEL, CONCRETE, GROUT FILLED CONCRETE BLOCK AND WOOD SHALL COMPLY WITH SECTION 6.7 OF THE ALUMINUM DESIGN MANUAL 2005 EDITION.

10. SHOP DRAWINGS PREPARED BASED ON THIS T.D.I REPORT AND TAKING INTO ACCOUNT THE SPECIFIC JOB CONDITIONS, SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AS PART OF THE PERMIT DOCUMENTS.

11. SUBSTRATE MATERIAL NOTED ON THIS DRAWING AS EXISTING BY OTHERS, POURED CONCRETE, GROUT FILLED CONCRETE BLOCK AND WOOD MUST WITHSTAND THE LOADS IMPOSED BY THIS PRODUCT.

12. THIS PRODUCT'S INSTALLATION SHALL COMPLY WITH ALL SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE PERMIT IS APPLIED TO.

13. WOOD BUCKS BY OTHERS, MUST BE ANCHORED PROPERLY TO TRANSFER LOADS TO THE BUILDING STRUCTURE. WOOD BUCKS MUST BE SOUTHERN PINE, G = 0.55.

14. (a) THIS P.E.D. PREPARED BY THIS ENGINEER IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SITE SPECIFIC PROJECT; i.e. WHERE THE SITE CONDITIONS DEVIATE FROM THE P.E.D.

    (b) CONTRACTOR TO BE RESPONSIBLE FOR THE SELECTION, PURCHASE AND INSTALLATION INCLUDING LIFE SAFETY OF THIS PRODUCT, BASED ON THIS P.E.D., PROVIDED HE/SHE DOES NOT DEVIATE FROM THE CONDITIONS DETAILED ON THIS DOCUMENT. CONSTRUCTION SAFETY AT SITE IS THE CONTRACTOR'S RESPONSIBILITY.

    (c) THIS P.E.D. WILL BE CONSIDERED INVALID IF ALTERED BY ANY MEANS.

    (d) SITE SPECIFIC PROJECTS SHALL BE PREPARED BY A PROFESSIONAL ENGINEER OR ARCHITECT WHICH WILL BECOME THE ENGINEER OF RECORD (E.O.R.) FOR THE PROJECT AND WHO WILL BE RESPONSIBLE FOR THE PROPER USE OF THE P.E.D. ENGINEER OF RECORD, ACTING AS A DELEGATED ENGINEER TO THE P.E.D. ENGINEER, SHALL SUBMIT TO THIS LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.

    (e) ORIGINAL P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

15. PRODUCT MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT PRODUCT IN ACCORDANCE WITH TEXAS DEPARTMENT OF INSURANCE REQUIREMENTS. ONE LABEL SHALL BE PLACED FOR EVERY OPENING.

MAXIMUM DESIGN PRESSURE RATING
+150.0, -150.0 psf.
LARGE MISSILE IMPACT RESISTANCE.

THIS DRAWING SHALL ONLY BE USED TO OBTAIN PERMITS UNDER THE TEXAS DEPARTMENT OF INSURANCE JURISDICTION

STATE OF TEXAS
WALTER A. TILLIT JR.
90691
PROFESSIONAL ENGINEER
1/21/16
P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE - 2006

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PHONE(305) 871-1530 FAX (305) 871-1531
TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

ALUMINUM LOUVER SYSTEM MODEL FL-D-4

UNITED ENERTECH, INC.
3005 SOUTH HICKORY ST.
CHATTANOOGA, TN 37407
PHONE: (423)698-7715 FAX:(423)698-6629

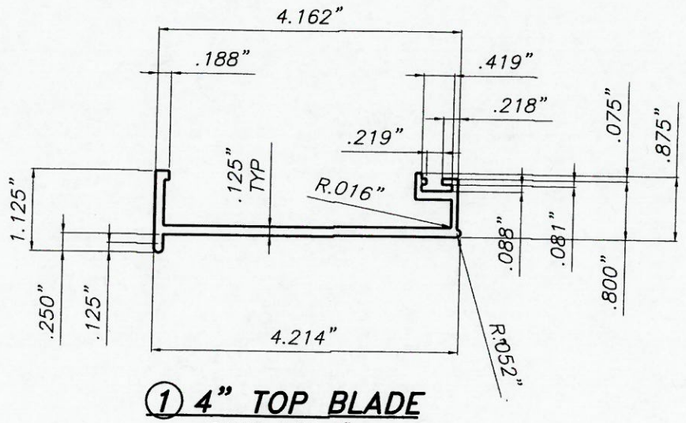
REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	-	-	3	-	-
2	-	-	4	-	-

M.L.
DRAWN BY:

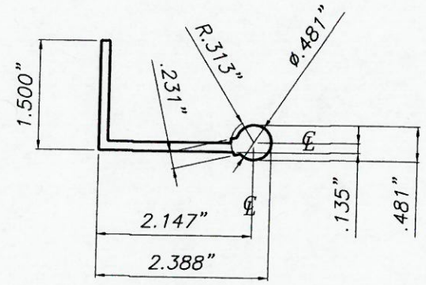
01/20/16
DATE:

16-006
DRAWING No.

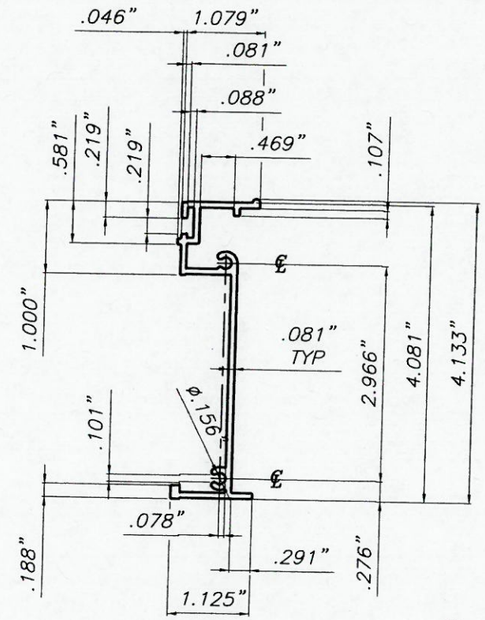
SHEET 1 OF 13



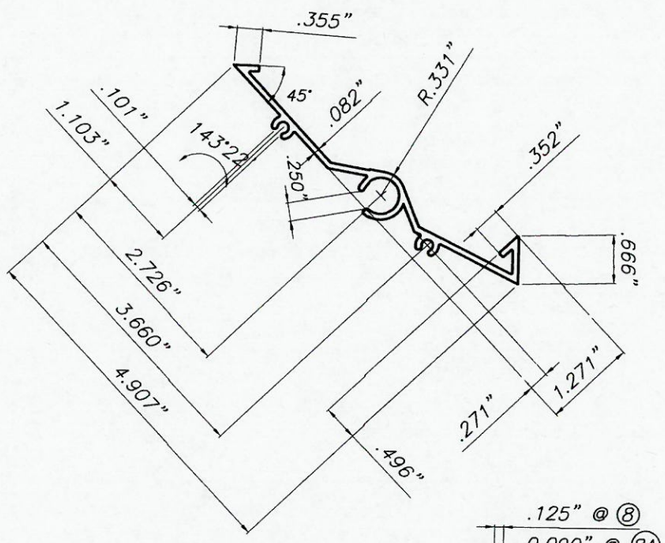
① 4" TOP BLADE
SCALE: 3/8"=1"



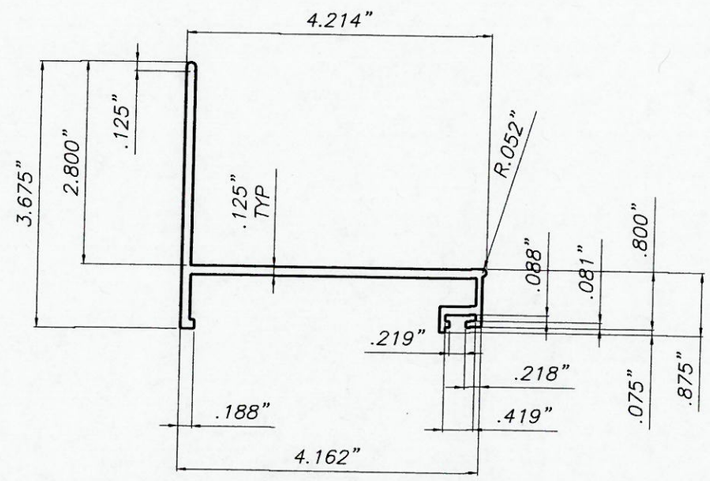
③ 4" BLADE SUPPORT
SCALE: 3/8"=1"



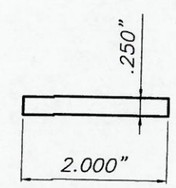
⑤ 4" SIDE JAMB
SCALE: 3/8"=1"



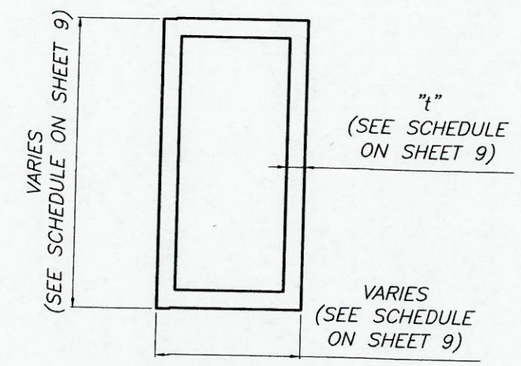
② 4" BLADE
SCALE: 3/8"=1"



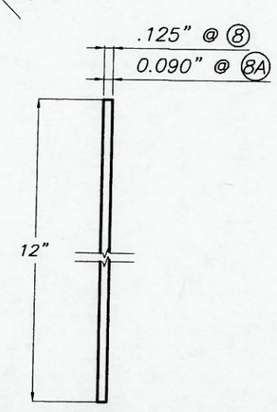
④ 4" BOTTOM BLADE
SCALE: 3/8"=1"



⑥ LOUVER IMPACT STRAP
6463-T6 ALLOY
SCALE: 3/8"=1"



⑦ MULLION
6063-T6 ALLOY
SCALE: 3/8"=1"



⑧ & ⑧A ALUMINUM SLEEVES
(OPTIONAL)
3003-H14 ALLOY

COMPONENTS
SCALE: 3/8"=1"

STATE OF TEXAS
WALTER A. TILLIT, JR.
90691
LICENSED
PROFESSIONAL ENGINEER
1/21/16

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

WALTER A. TILLIT Jr P.E.
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FIRM REGISTRATION # F-13790

ALUMINUM LOUVER SYSTEM MODEL FL-D-4

UNITED ENERTECH, INC.
3005 SOUTH HICKORY ST.
CHATTANOOGA, TN 37407
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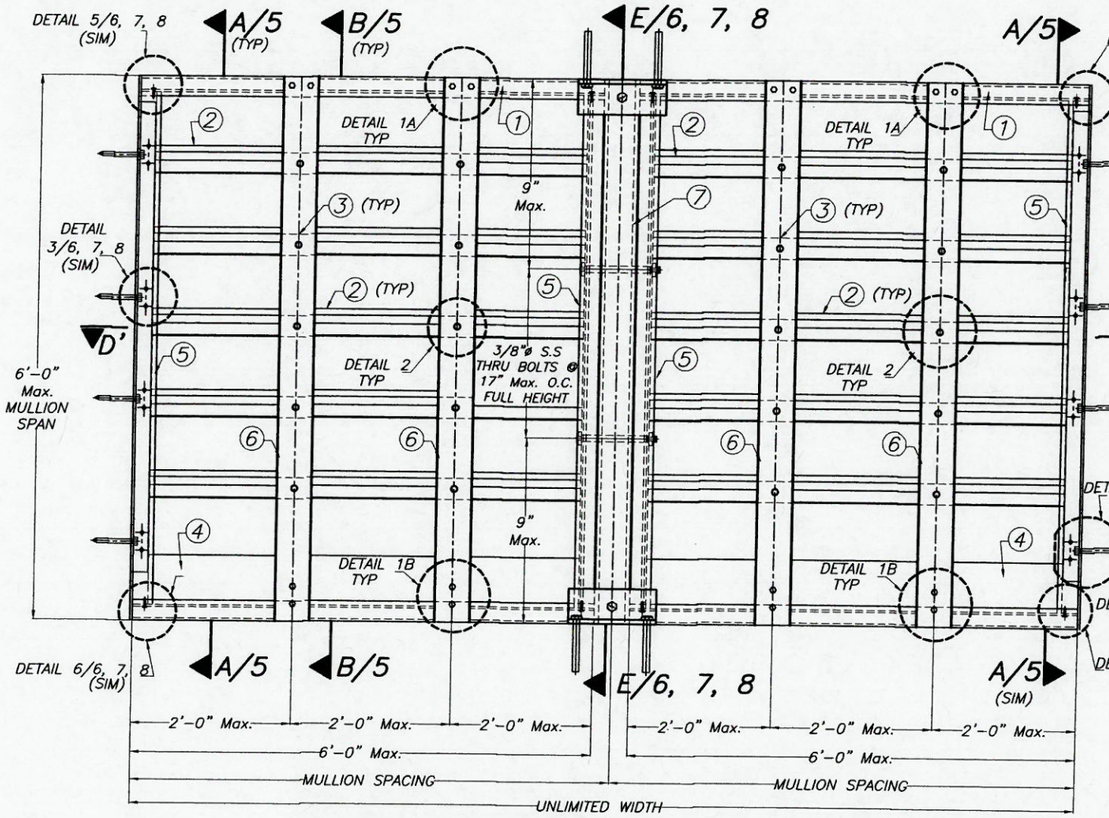
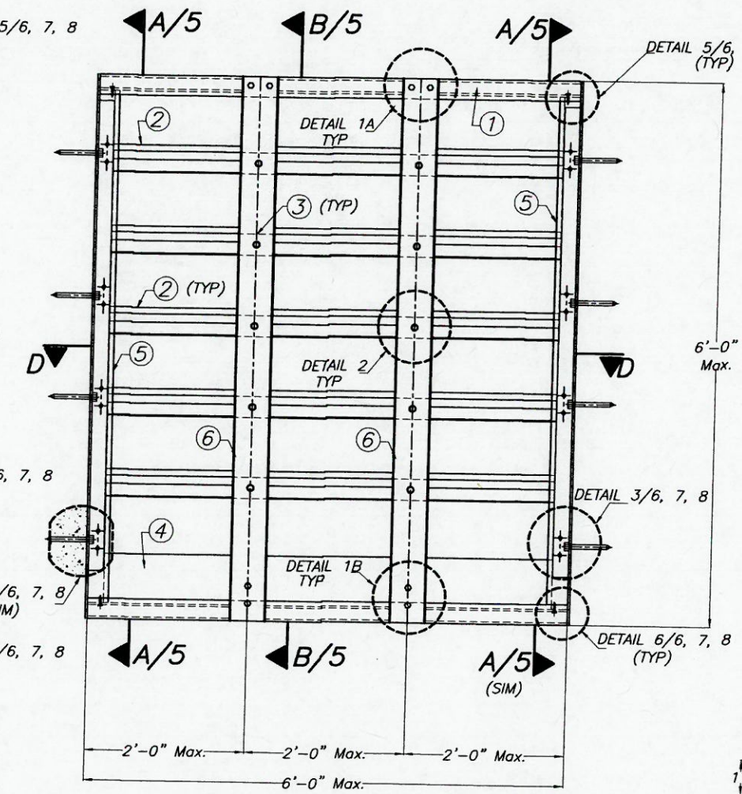
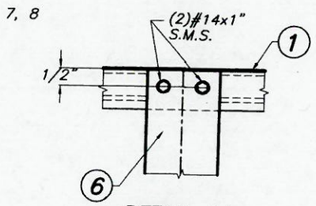
SHEET 2 OF 13



MULTIPLE UNITS HORIZONTALLY EXPANDED (INTERIOR ELEVATION)
N.T.S.



SINGLE UNIT (INTERIOR ELEVATION)
N.T.S.



DETAIL 1A
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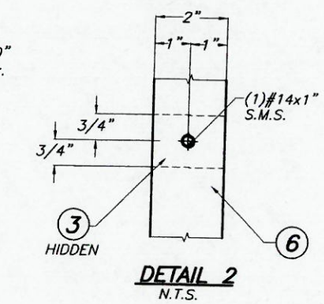
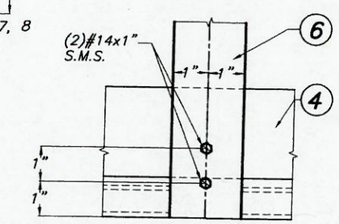


DETAIL 2
N.T.S.



DETAIL 1B
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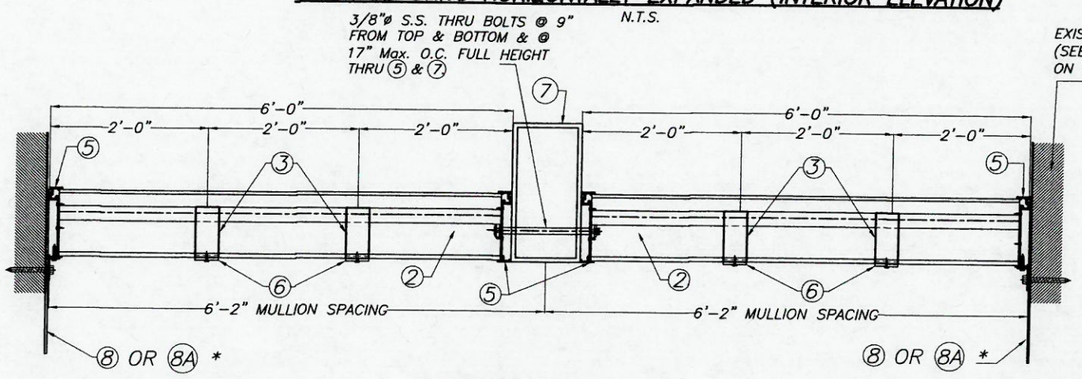
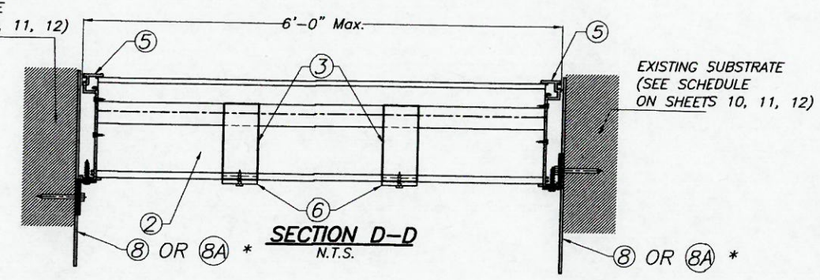


SECTION D'-D'
N.T.S.



SECTION D-D
N.T.S.

* (8) OR (8A) ARE OPTIONAL

STATE OF TEXAS
WALTER A. TILLIT, JR.
90691
LICENSED PROFESSIONAL ENGINEER
1/2/16

P.E. SEAL/SIGNATURE/DATE

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FIRM REGISTRATION # F-13790

TEXAS DEPARTMENT OF INSURANCE – 2006

ALUMINUM LOUVER SYSTEM MODEL FL-D-4

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PHONE: (423)698-7715 FAX:(423)698-6629

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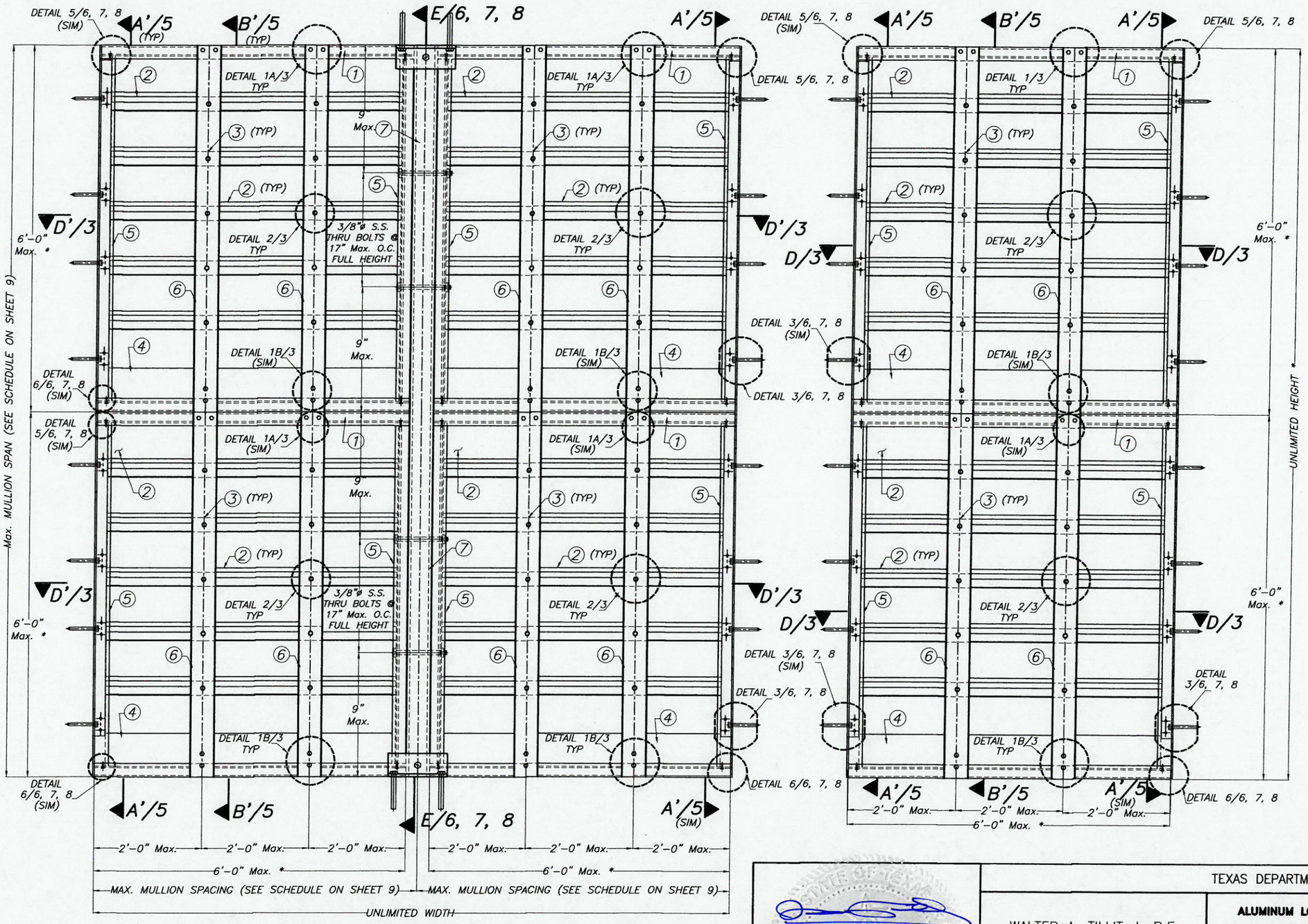
DATE:
16-006
DRAWING No.
SHEET 3 OF 13



MULTIPLE UNITS HORIZONTALLY & VERTICALLY EXPANDED (INTERIOR ELEVATION)
N.T.S.

* NUMBER OF LOUVER PANEL UNITS NEEDED TO ACHIEVE THE OPENING HEIGHT AND WIDTH MAY VARY HOWEVER MAXIMUM UNIT HEIGHT AND WIDTH SHALL NO EXCEED 6'-0".

SINGLE UNIT (INTERIOR ELEVATION)
N.T.S.

1/24/16

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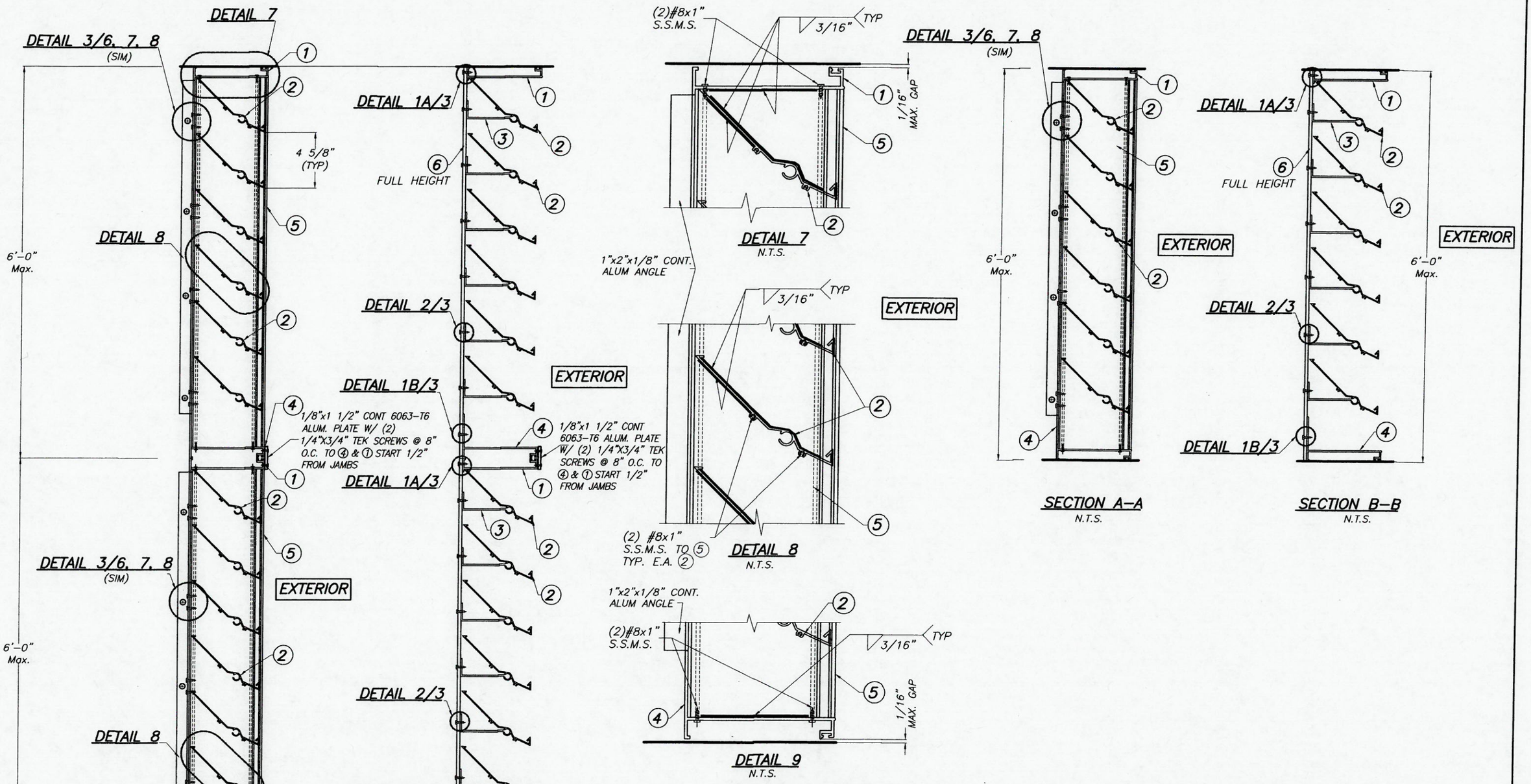
SHEET 4 OF 13



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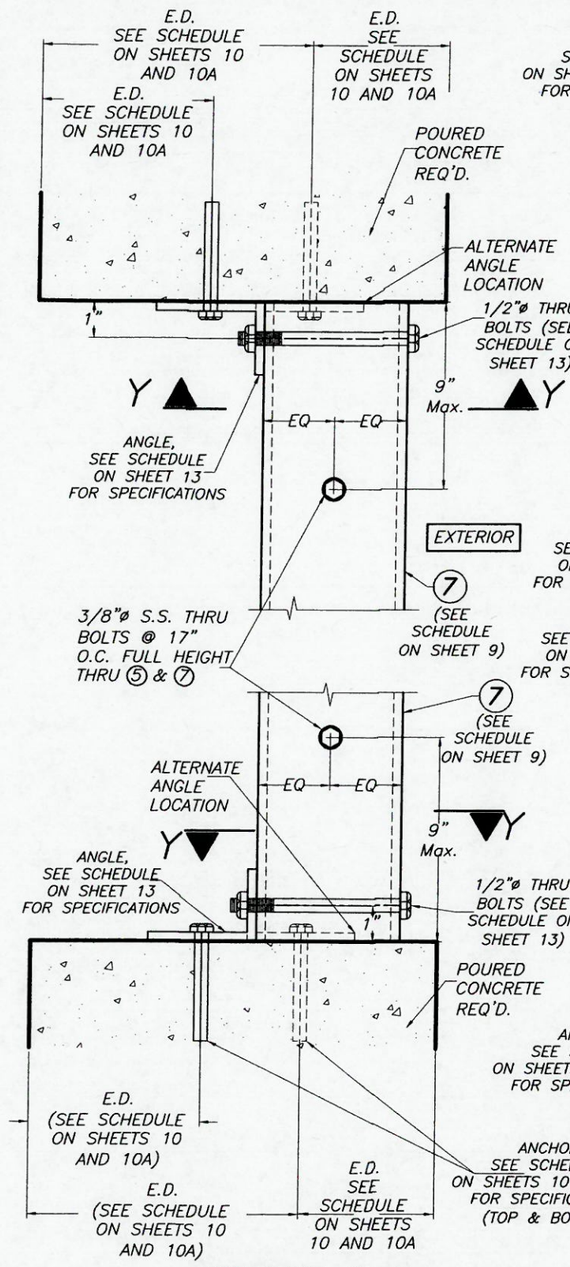
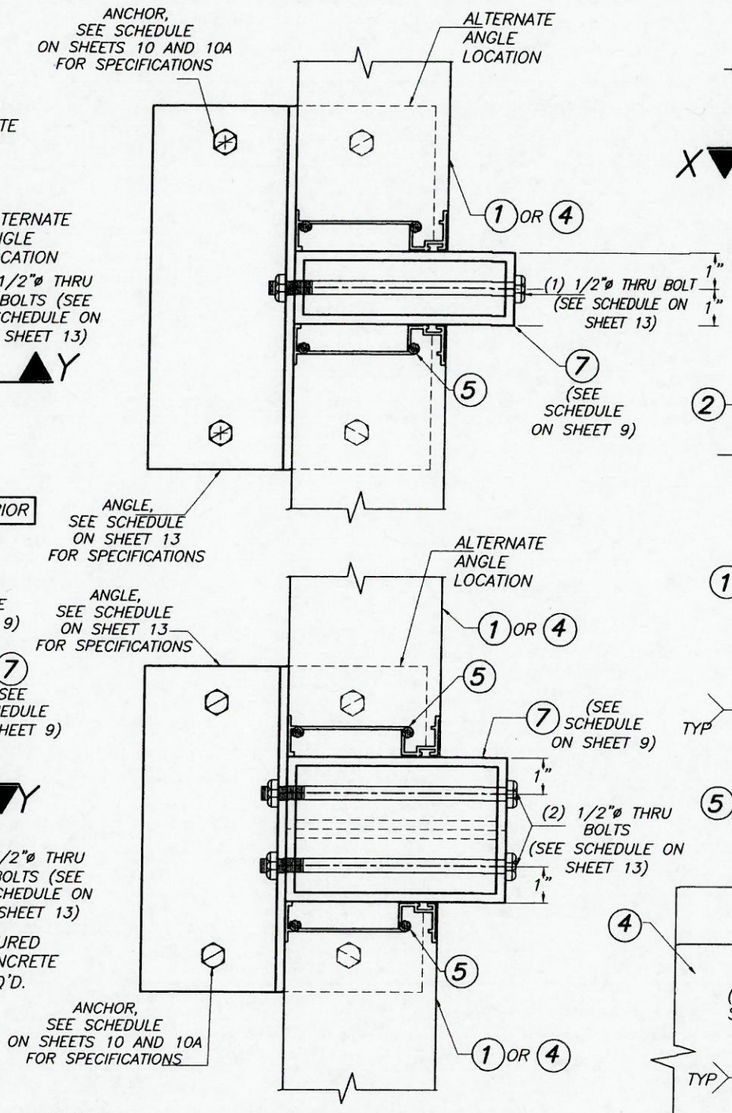
SHEET 5 OF 13



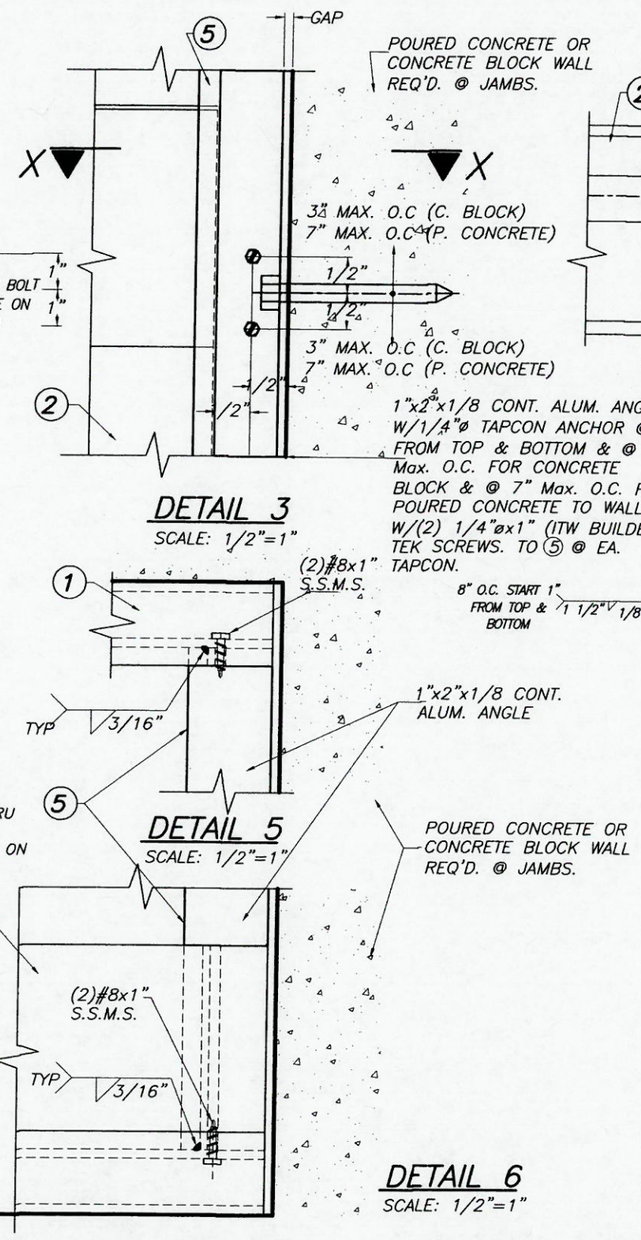
SECTION E–E

SCALE: 1/4"=1"



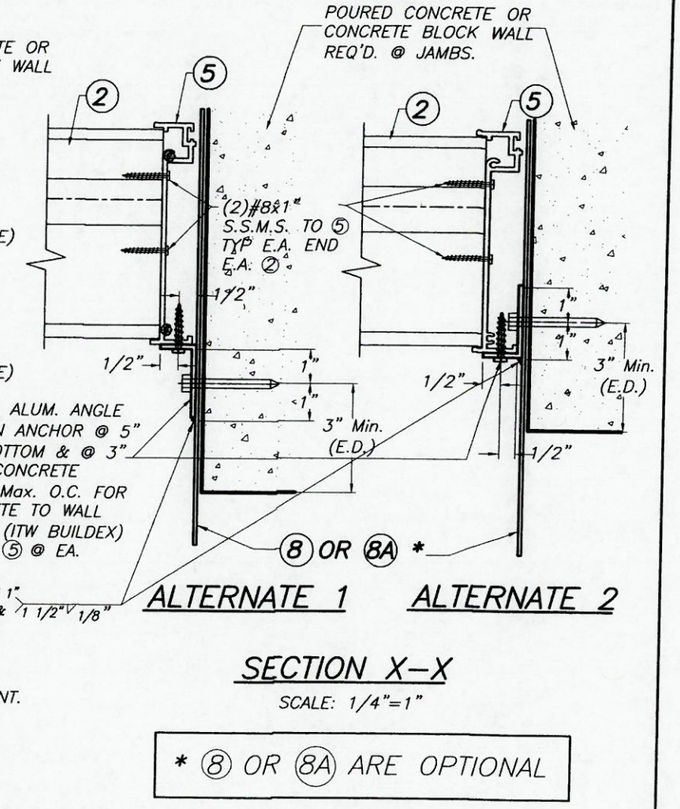
2"x4"xVARIESx0'–8" ANGLE
SECTION Y–Y

SCALE: 1/4"=1"



DETAIL 3

SCALE: 1/2"=1"



ALTERNATE 1 ALTERNATE 2

SECTION X–X

SCALE: 1/4"=1"

* 8 OR 8A ARE OPTIONAL

DETAIL 5

SCALE: 1/2"=1"

DETAIL 6

SCALE: 1/2"=1"

MULLION AND JAMB INSTALLATION INTO POURED CONCRETE OR CONCRETE BLOCK.

STATE OF TEXAS
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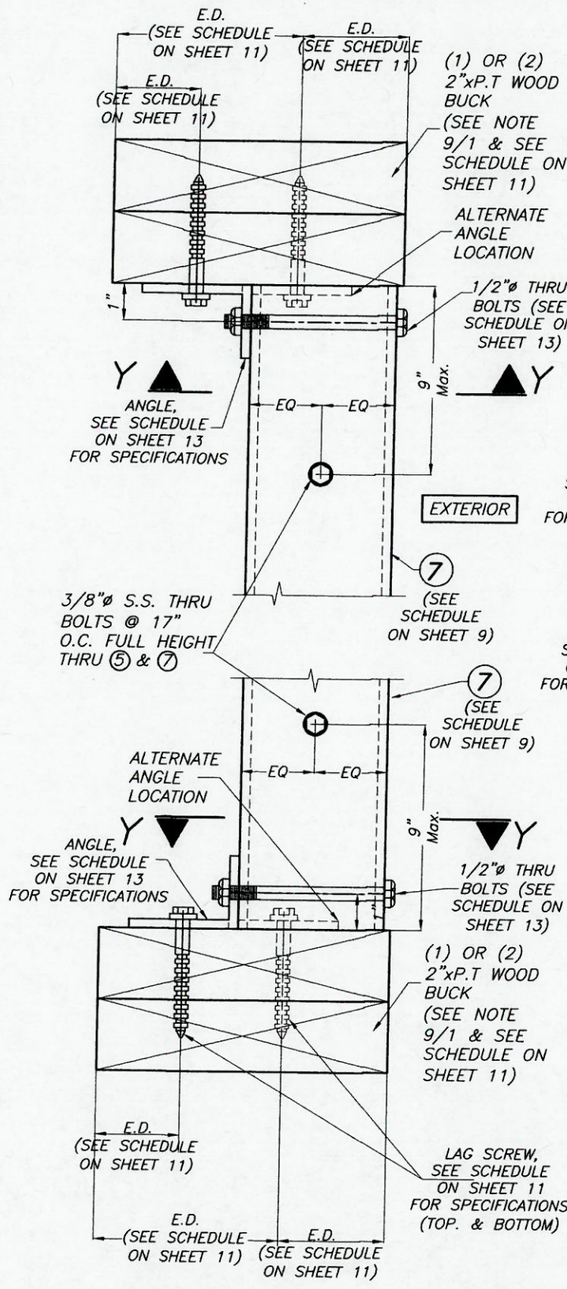
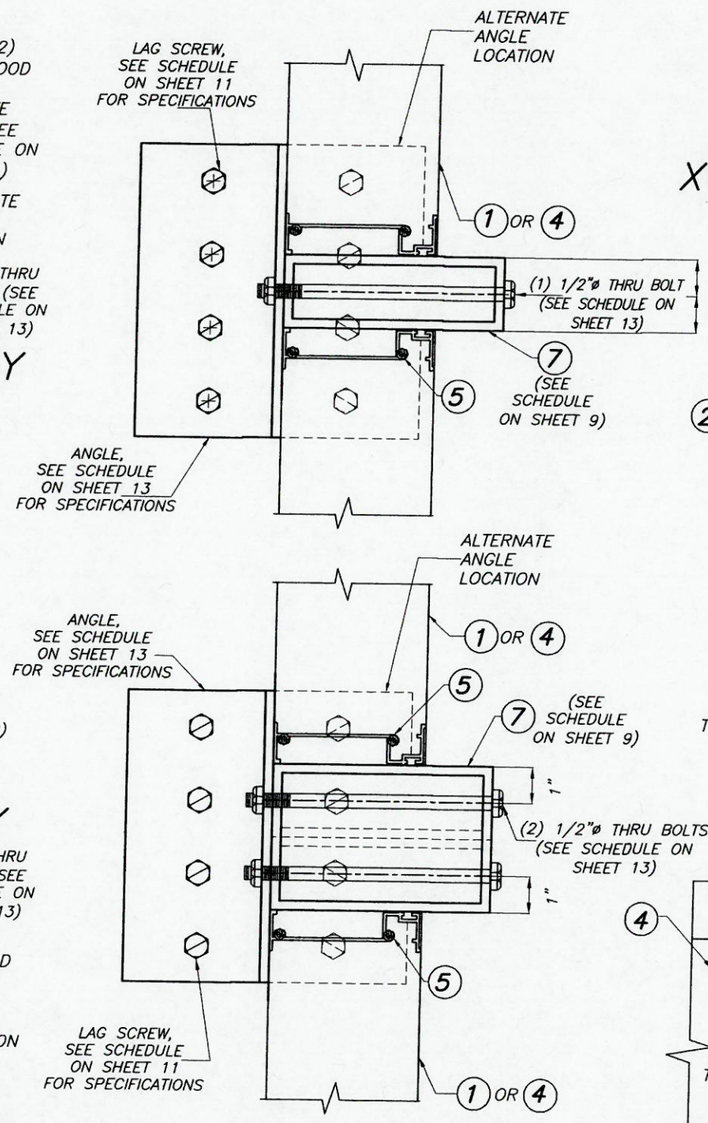
SHEET 6 OF 13



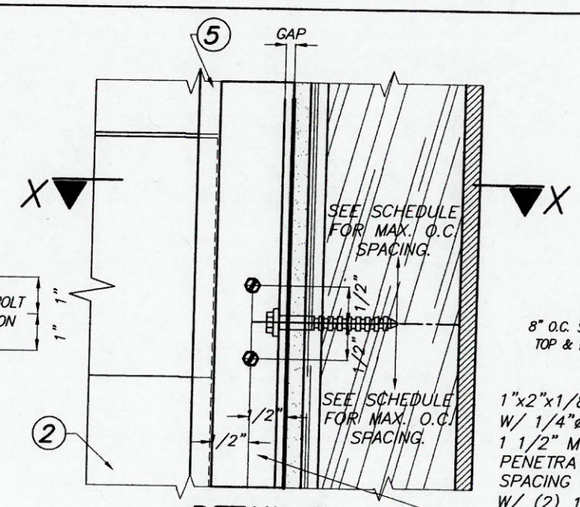
SECTION E–E

SCALE: 1/4"=1"



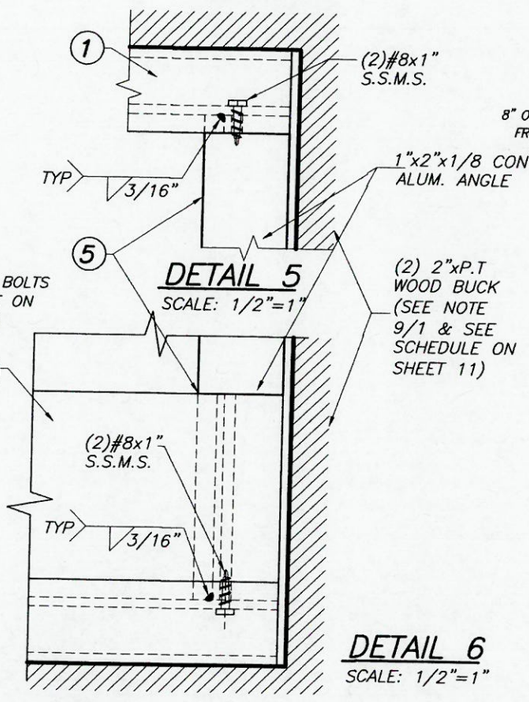
2"x4"xVARIESx0'–8" ANGLE
SECTION Y–Y

SCALE: 1/4"=1"



DETAIL 3

SCALE: 1/2"=1"

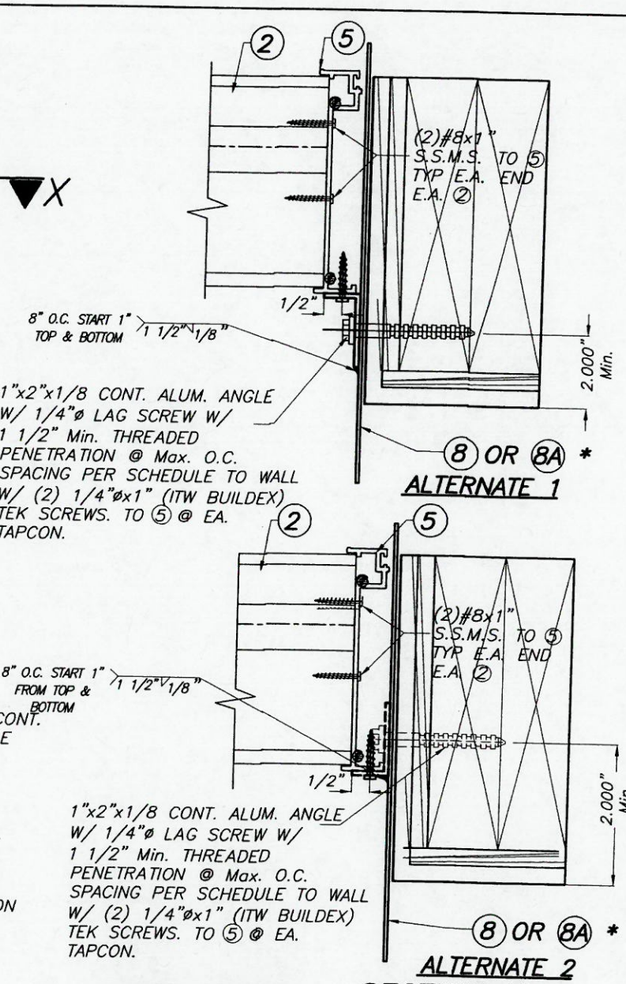


DETAIL 5

SCALE: 1/2"=1"

DETAIL 6

SCALE: 1/2"=1"



ALTERNATE 1

ALTERNATE 2
SECTION X–X

SCALE: 1/4"=1"

MAXIMUM LAG SCREW SPACING AT JAMBS

DESIGN PRESSURE RATING (psf)	MAX.O.C. SPACING
UP TO 50	8"
>50 TO 70	7"
>70 TO 90	5 1/2"
>90 TO 110	4 1/2"
>110 TO 130	3 1/2"
>130 TO 150	3"

MULLION AND JAMB INSTALLATION INTO WOOD

* 8 OR 8A ARE OPTIONAL

1/21/16

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

WALTER A. TILLIT Jr P.E.
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TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

ALUMINUM LOUVER SYSTEM MODEL FL-D-4

UNITED ENERTECH, INC.
3005 SOUTH HICKORY ST.
CHATTANOOGA, TN 37407
PHONE: (423)698-7715 FAX:(423)698-6629

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	–	–	3	–	–
2	–	–	4	–	–

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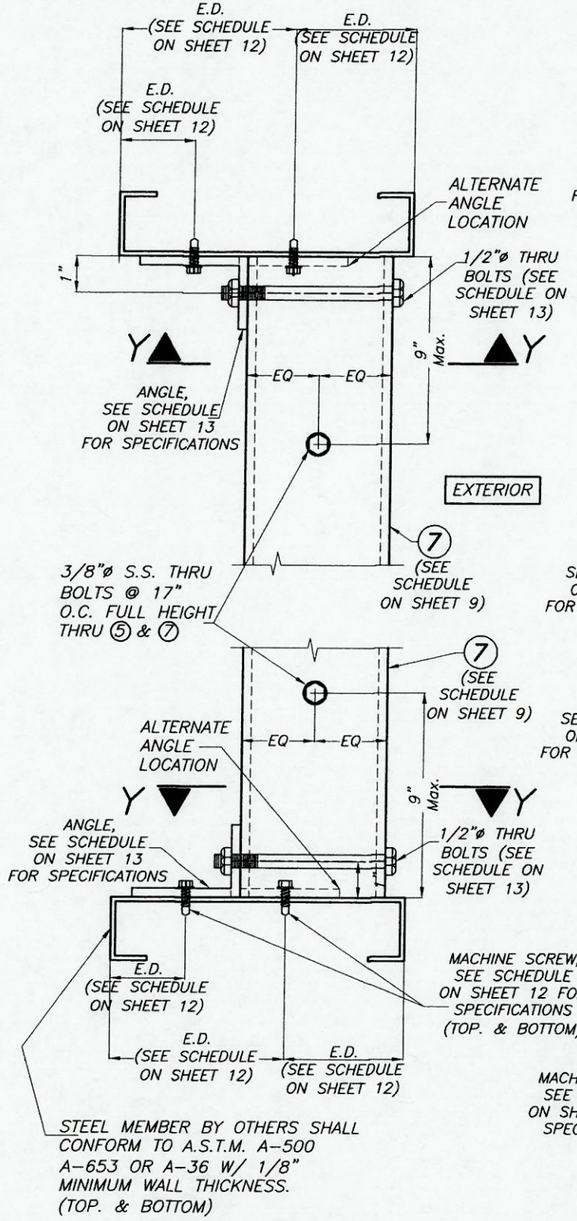
01/20/16
DATE:

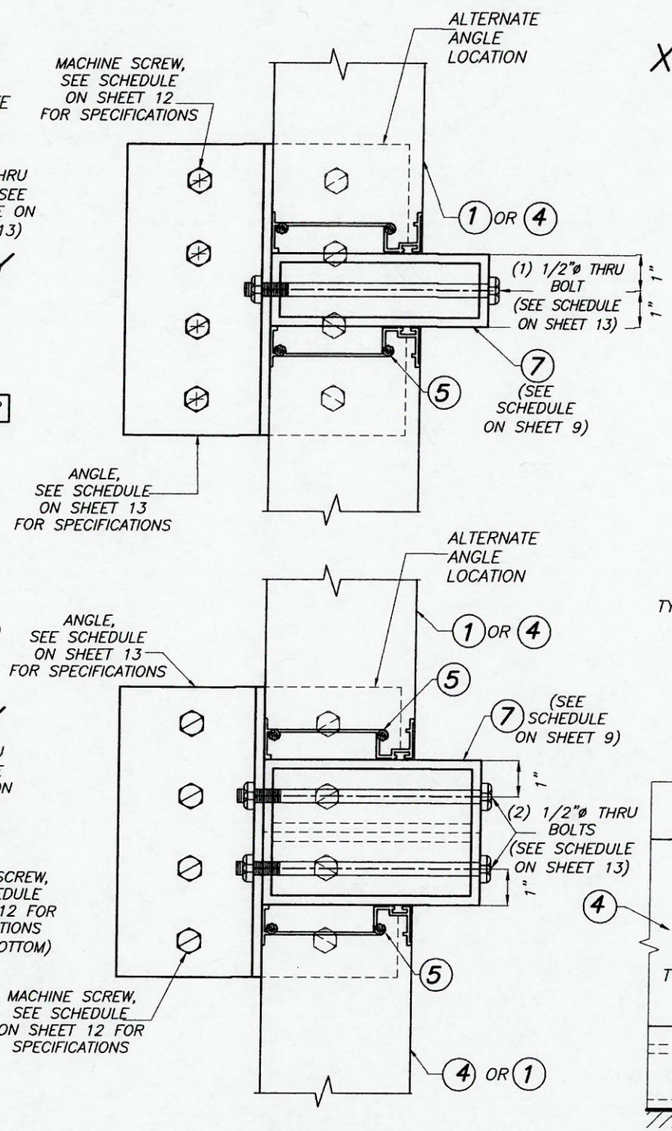
16-006
DRAWING No.

SHEET 7 OF 13



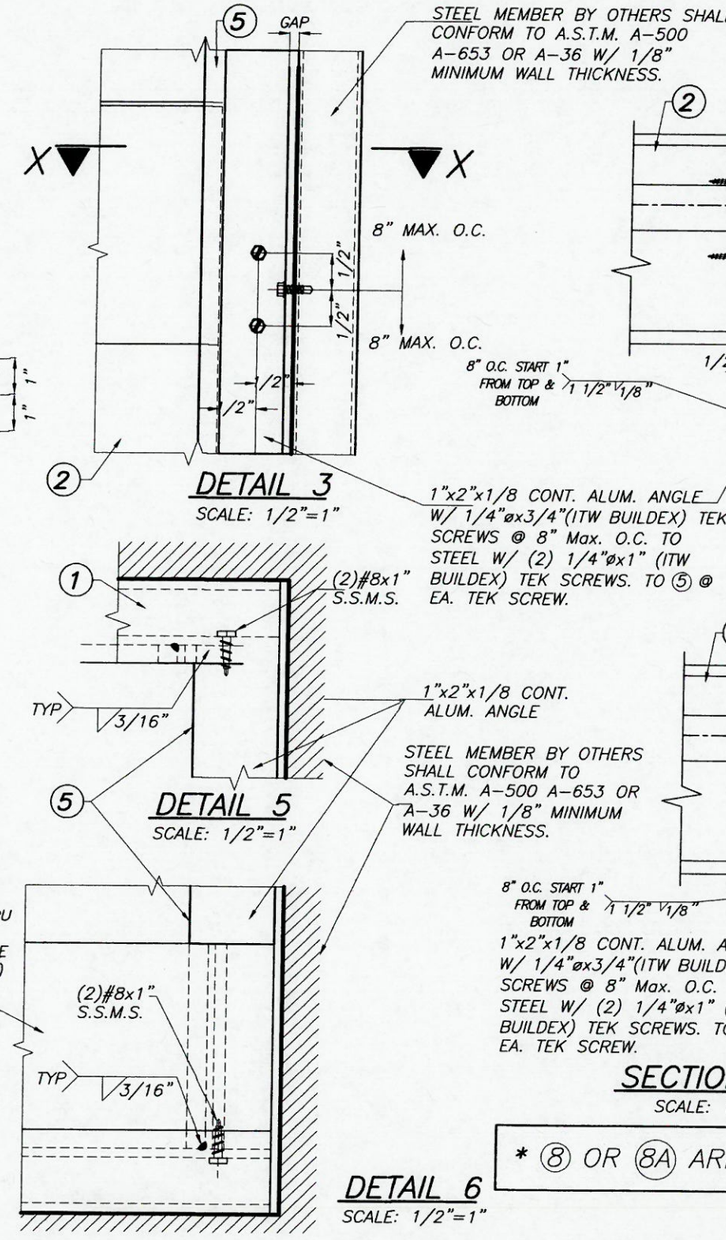
SECTION E-E

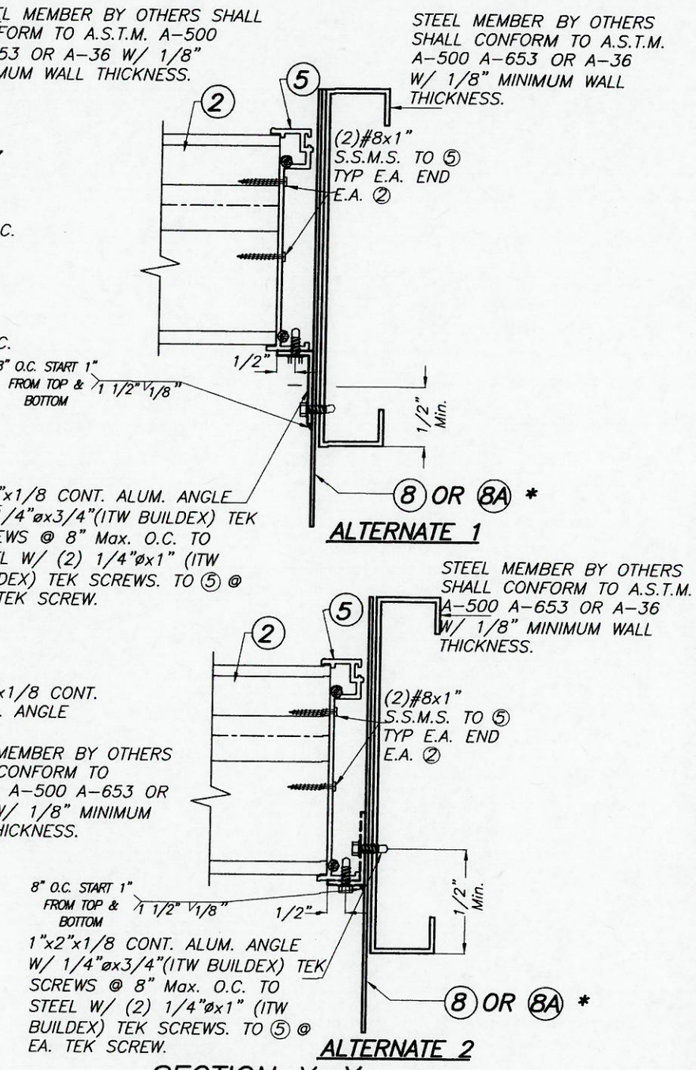
SCALE: 1/4"=1"



2"x4"xVARIESx0'-8" ANGLE
SECTION Y-Y

SCALE: 1/4"=1"





SECTION X-X

SCALE: 1/4"=1"

* 8 OR 8A ARE OPTIONAL

MULLION AND JAMB INSTALLATION INTO 1/8" THICK MIN. STEEL

1/21/16

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REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	-	-	3	-	-
2	-	-	4	-	-

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DATE:

16-006
DRAWING No.

SHEET 8 OF 13

MAXIMUM MULLION SPAN SCHEDULE FOR A GIVEN DESIGN PRESSURE RATING (psf) AND MULLION SPACING *

DESIGN PRESSURE RATING	MULLIONS															
	2"x4"x1/4"				2"x6"x1/4"				4"x6"x1/4" OR (2) 2"x6"x1/4"				4"x8"x1/4"			
	MULLION SPACING				MULLION SPACING				MULLION SPACING				MULLION SPACING			
	3'	4'	5'	6'	3'	4'	5'	6'	3'	4'	5'	6'	3'	4'	5'	6'
30	8' - 0"	8' - 0"	8' - 0"	8' - 0"	10' - 0"	10' - 0"	10' - 0"	10' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
40	8' - 0"	8' - 0"	8' - 0"	8' - 0"	10' - 0"	10' - 0"	10' - 0"	10' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
50	8' - 0"	8' - 0"	8' - 0"	8' - 0"	10' - 0"	10' - 0"	10' - 0"	10' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
60	8' - 0"	8' - 0"	8' - 0"	8' - 0"	10' - 0"	10' - 0"	10' - 0"	10' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
70	8' - 0"	8' - 0"	8' - 0"	8' - 0"	10' - 0"	10' - 0"	10' - 0"	10' - 0"	12' - 0"	12' - 0"	12' - 0"	11' - 10"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
80	8' - 0"	8' - 0"	8' - 0"	8' - 0"	10' - 0"	10' - 0"	10' - 0"	9' - 9"	12' - 0"	12' - 0"	12' - 0"	11' - 4"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
90	8' - 0"	8' - 0"	8' - 0"	7' - 9"	10' - 0"	10' - 0"	10' - 0"	9' - 5"	12' - 0"	12' - 0"	11' - 7"	10' - 11"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
100	8' - 0"	8' - 0"	7' - 11"	7' - 5"	10' - 0"	10' - 0"	9' - 8"	9' - 0"	12' - 0"	12' - 0"	11' - 2"	10' - 6"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
110	8' - 0"	8' - 0"	7' - 8"	7' - 3"	10' - 0"	10' - 0"	9' - 4"	8' - 7"	12' - 0"	11' - 8"	10' - 10"	10' - 2"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
120	8' - 0"	8' - 0"	7' - 5"	7' - 0"	10' - 0"	9' - 9"	9' - 0"	8' - 2"	12' - 0"	11' - 4"	10' - 6"	9' - 11"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
130	8' - 0"	7' - 10"	7' - 3"	6' - 8"	10' - 0"	9' - 6"	8' - 7"	7' - 10"	12' - 0"	11' - 0"	10' - 3"	9' - 8"	12' - 0"	12' - 0"	12' - 0"	12' - 0"
140	8' - 0"	7' - 8"	7' - 1"	6' - 5"	10' - 0"	9' - 3"	8' - 4"	7' - 7"	11' - 10"	10' - 9"	10' - 0"	9' - 5"	12' - 0"	12' - 0"	12' - 0"	11' - 11"
150	8' - 0"	7' - 5"	6' - 10"	6' - 0"	10' - 0"	9' - 0"	8' - 0"	7' - 4"	11' - 7"	10' - 6"	9' - 9"	9' - 2"	12' - 0"	12' - 0"	12' - 0"	11' - 6"

* SEE ADDITIONAL LIMITATIONS FOR MAXIMUM MULLION SPAN ON SHEETS 10, 10A, 11, 12 & 13 FOR A MULLION CONNECTION TYPE. MAXIMUM FINAL MULLION SPAN SHALL BE THE MINIMUM VALUE BETWEEN THIS SCHEDULE AND ANY OTHER SCHEDULE GIVEN ON ABOVE MENTIONED SHEETS.

1/21/16

90691

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

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ALUMINUM LOUVER SYSTEM MODEL FL-D-4

UNITED ENERTECH, INC.
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CHATTANOOGA, TN 37407
PHONE: (423)698-7715 FAX:(423)698-6629

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	–	–	3	–	–
2	–	–	4	–	–

M.L.
DRAWN BY:

01/20/16
DATE:

16-006
DRAWING No.

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 1 CONNECTION✱

A.S.D. DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	11'- 3"
80	12'- 0"	12'- 0"	11'- 9"	9'- 10"
90	12'- 0"	12'- 0"	10'- 6"	8'- 9"
100	12'- 0"	12'- 0"	9'- 5"	7'- 10"
110	12'- 0"	12'- 0"	8'- 7"	7'- 2"
120	12'- 0"	12'- 0"	7'- 10"	6'- 7"
130	12'- 0"	12'- 0"	7'- 3"	6'- 1"
140	12'- 0"	8'- 5"	6'- 9"	5'- 7"
150	10'- 6"	7'- 10"	6'- 3"	5'- 3"

TYPE 1 CONNECTION TO POURED CONCRETE:
2 -1/2"ø KWIK BOLT TZ (HILTI, INC.) W/ 4" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 3" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 2 CONNECTION✱

A.S.D. DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	11'- 3"
90	12'- 0"	12'- 0"	12'- 0"	10'- 0"
100	12'- 0"	12'- 0"	10'- 10"	9'- 0"
110	12'- 0"	12'- 0"	9'- 10"	8'- 2"
120	12'- 0"	11'- 3"	9'- 0"	7'- 6"
130	12'- 0"	10'- 5"	8'- 4"	6'- 11"
140	12'- 0"	9'- 8"	7'- 9"	6'- 5"
150	12'- 0"	9'- 0"	7'- 2"	6'- 0"

TYPE 2 CONNECTION TO POURED CONCRETE:
2 -5/8"ø KWIK BOLT TZ (HILTI, INC.) W/ 5" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 3" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESING PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 3 CONNECTION✱

A.S.D. DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	11'- 9"
90	12'- 0"	12'- 0"	12'- 0"	10'- 5"
100	12'- 0"	12'- 0"	11'- 3"	9'- 5"
110	12'- 0"	12'- 0"	10'- 3"	8'- 6"
120	12'- 0"	11'- 9"	9'- 5"	7'- 10"
130	12'- 0"	10'- 10"	8'- 8"	7'- 3"
140	12'- 0"	10'- 1"	8'- 0"	6'- 8"
150	12'- 0"	9'- 5"	7'- 6"	6'- 3"

TYPE 3 CONNECTION TO POURED CONCRETE:
2 -3/4"ø KWIK BOLT TZ (HILTI, INC.) W/ 5" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 3" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 4 CONNECTION✱

A.S.D.DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	11'- 0"
100	12'- 0"	12'- 0"	11'- 10"	9'- 10"
110	12'- 0"	12'- 0"	10'- 9"	9'- 0"
120	12'- 0"	12'- 0"	9'- 10"	8'- 3"
130	12'- 0"	11'- 5"	9'- 1"	7'- 7"
140	12'- 0"	10'- 7"	8'- 6"	7'- 1"
150	12'- 0"	9'- 10"	7'- 11"	6'- 7"

TYPE 4 CONNECTION TO POURED CONCRETE:
2 -M16 HSL-3 HEAVY DUTY (HILTI, INC) W/ 5" MIN. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 3" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 5 CONNECTION✱

A.S.D.DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	11'- 11"
80	12'- 0"	12'- 0"	12'- 0"	10'- 5"
90	12'- 0"	12'- 0"	11'- 1"	9'- 3"
100	12'- 0"	12'- 0"	10'- 0"	8'- 4"
110	12'- 0"	11'- 4"	9'- 1"	7'- 7"
120	12'- 0"	10'- 5"	8'- 4"	6'- 11"
130	12'- 0"	9'- 7"	7'- 8"	6'- 5"
140	11'- 11"	8'- 11"	7'- 2"	5'- 11"
150	11'- 1"	8'- 4"	6'- 8"	5'- 7"

TYPE 5 CONNECTION TO POURED CONCRETE:
2 -1/2"ø KWIK BOLT TZ (HILTI, INC.) W/ 4" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 4" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 6 CONNECTION✱

A.S.D.DESING PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	11'- 10"
90	12'- 0"	12'- 0"	12'- 0"	10'- 7"
100	12'- 0"	12'- 0"	11'- 5"	9'- 6"
110	12'- 0"	12'- 0"	10'- 4"	8'- 8"
120	12'- 0"	11'- 10"	9'- 6"	7'- 11"
130	12'- 0"	11'- 0"	8'- 9"	7'- 4"
140	12'- 0"	10'- 2"	8'- 2"	6'- 9"
150	12'- 0"	9'- 6"	7'- 7"	6'- 4"

TYPE 6 CONNECTION TO POURED CONCRETE:
2 -5/8"ø KWIK BOLT TZ (HILTI, INC.) W/ 5" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 4" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 7 CONNECTION✱

A.S.D.DESING PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	11'- 0"
100	12'- 0"	12'- 0"	11'- 10"	9'- 10"
110	12'- 0"	12'- 0"	10'- 9"	9'- 0"
120	12'- 0"	12'- 0"	9'- 10"	8'- 3"
130	12'- 0"	11'- 5"	9'- 1"	7'- 7"
140	12'- 0"	10'- 7"	8'- 6"	7'- 1"
150	12'- 0"	9'- 10"	7'- 11"	6'- 7"

TYPE 7 CONNECTION TO POURED CONCRETE:
2 -3/4"ø KWIK BOLT TZ (HILTI, INC.) W/ 5" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 4" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 8 CONNECTION✱

A.S.D.DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	11'- 6"
100	12'- 0"	12'- 0"	12'- 0"	10'- 4"
110	12'- 0"	12'- 0"	11'- 4"	9'- 5"
120	12'- 0"	12'- 0"	10'- 4"	8'- 8"
130	12'- 0"	12'- 0"	9'- 7"	8'- 0"
140	12'- 0"	11'- 1"	8'- 11"	7'- 5"
150	12'- 0"	10'- 4"	8'- 4"	6'- 11"

TYPE 8 CONNECTION TO POURED CONCRETE:
2 -M16 HSL-3 HEAVY DUTY (HILTI, INC) W/ 5" MIN. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 4" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 9 CONNECTION✱

A.S.D.DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	11'- 3"
90	12'- 0"	12'- 0"	12'- 0"	10'- 0"
100	12'- 0"	12'- 0"	10'- 10"	9'- 0"
110	12'- 0"	12'- 0"	9'- 10"	8'- 2"
120	12'- 0"	11'- 3"	9'- 0"	7'- 6"
130	12'- 0"	10'- 5"	8'- 4"	6'- 11"
140	12'- 0"	9'- 8"	7'- 9"	6'- 5"
150	12'- 0"	9'- 0"	7'- 2"	6'- 0"

TYPE 9 CONNECTION TO POURED CONCRETE:
2 -1/2"ø KWIK BOLT TZ (HILTI, INC.) W/ 4" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 6" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 10 CONNECTION✱

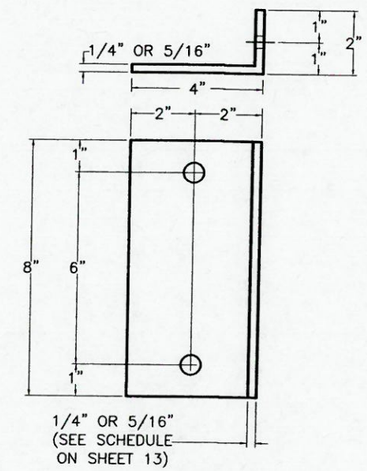
A.S.D.DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	12'- 0"
100	12'- 0"	12'- 0"	12'- 0"	11'- 0"
110	12'- 0"	12'- 0"	12'- 0"	10'- 0"
120	12'- 0"	12'- 0"	11'- 0"	9'- 2"
130	12'- 0"	12'- 0"	10'- 2"	8'- 6"
140	12'- 0"	11'- 9"	9'- 5"	7'- 10"
150	12'- 0"	11'- 0"	8'- 10"	7'- 4"

TYPE 10 CONNECTION TO POURED CONCRETE:
2 -5/8"ø KWIK BOLT TZ (HILTI, INC.) W/ 5" Min. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 6.75" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 11 CONNECTION✱

A.S.D.DESIGN PRESSURE RATING	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	12'- 0"
100	12'- 0"	12'- 0"	12'- 0"	12'- 0"
110	12'- 0"	12'- 0"	12'- 0"	12'- 0"
120	12'- 0"	12'- 0"	12'- 0"	11'- 3"
130	12'- 0"	12'- 0"	12'- 0"	10'- 5"
140	12'- 0"	12'- 0"	11'- 7"	9'- 8"
150	12'- 0"	12'- 0"	10'- 10"	9'- 0"

TYPE 11 CONNECTION TO POURED CONCRETE:
2 -M16 HSL-3 HEAVY DUTY (HILTI, INC) W/ 5" MIN. EMBEDMENT & 8" MIN. MEMBER THICKNESS. W/ 10" MIN. E.D & 6" MIN. SPACING



2"x4"xVARIESx0'-8"
ALUMINUM ANGLE

SCHEDULE FOR MULLION CONNECTION TO POURED CONCRETE

(Min. f'c = 3 ksi)

*** NOTES:**

(1) SEE SHEET 9 FOR ADDITIONAL MAXIMUM MULLION SPAN LIMITATIONS FOR A GIVEN DESIGN PRESSURE RATING AND MAXIMUM SPACING. MAXIMUM MULLION SPAN SHALL BE THE MINIMUM BETWEEN SCHEDULES ON SHEETS 9, 10 AND 10A FOR A CONNECTION TYPE.

(2) SEE SHEET 13 FOR ANGLE SCHEDULE INDICATING MAXIMUM ALLOWABLE DESIGN PRESSURE RATING, MULLION SPACING AND MULLION SPAN FOR 1/4" THICK & 5/16" THICK ALUMINUM ANGLES USED TOP & BOTTOM FOR MULLION CONNECTION TO SUBSTRATE.

1/21/16

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

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FIRM REGISTRATION # F-13790

ALUMINUM LOUVER SYSTEM MODEL FL-D-4

UNITED ENERTECH, INC.
3005 SOUTH HICKORY ST.
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PHONE: (423)698-7715 FAX:(423)698-6629

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1	–	–	3	–	–
2	–	–	4	–	–

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SHEET 10 OF 13

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 12 CONNECTION *

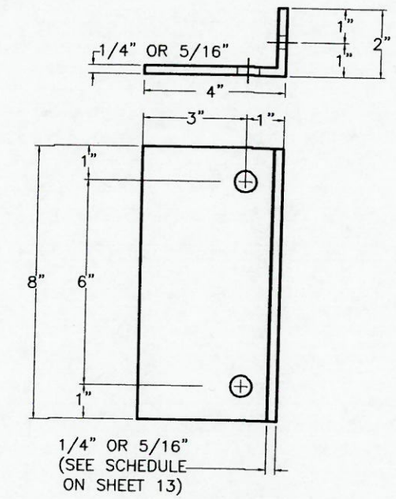
A.S.D. DESIGN PRESSURE RATING	MULLION SPACING			
	3	4	5	6
30	12 '- 0 "	11 '- 3 "	9 '- 0 "	7 '- 6 "
40	12 '- 0 "	8 '- 5 "	6 '- 9 "	5 '- 8 "
50	11 '- 3 "	6 '- 9 "	5 '- 5 "	4 '- 6 "
60	9 '- 0 "	5 '- 8 "	4 '- 6 "	3 '- 9 "
70	7 '- 6 "	4 '- 10 "	3 '- 10 "	3 '- 3 "
80	6 '- 5 "	4 '- 3 "	3 '- 5 "	2 '- 10 "
90	5 '- 8 "	3 '- 9 "	3 '- 0 "	2 '- 6 "
100	5 '- 0 "	3 '- 5 "	2 '- 8 "	2 '- 3 "
110	4 '- 6 "	3 '- 1 "	2 '- 6 "	2 '- 1 "
120	4 '- 1 "	2 '- 10 "	2 '- 3 "	1 '- 11 "
130	3 '- 9 "	2 '- 7 "	2 '- 1 "	1 '- 9 "
140	3 '- 6 "	2 '- 5 "	1 '- 11 "	1 '- 7 "
150	3 '- 0 "	2 '- 3 "	1 '- 10 "	1 '- 6 "

TYPE 12 CONNECTION TO POURED CONCRETE:
2 -1/4"ø CRETE-FLEX SS4(ELCO CONSTRUCTION PRODUCTS) W/ 2" MIN. EMBEDMENT TO POURED CONCRETE:
8" MIN. MEMBER THICKNESS. W/ 2 1/2" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 13 CONNECTION *

A.S.D. DESIGN PRESSURE RATING	MULLION SPACING			
	3	4	5	6
30	12 '- 0 "	11 '- 7 "	9 '- 3 "	7 '- 8 "
40	11 '- 7 "	8 '- 8 "	6 '- 11 "	5 '- 9 "
50	9 '- 3 "	6 '- 11 "	5 '- 7 "	4 '- 7 "
60	7 '- 8 "	5 '- 9 "	4 '- 7 "	3 '- 10 "
70	6 '- 7 "	4 '- 11 "	3 '- 12 "	3 '- 4 "
80	5 '- 9 "	4 '- 4 "	3 '- 6 "	2 '- 11 "
90	5 '- 2 "	3 '- 10 "	3 '- 1 "	2 '- 1 "
100	4 '- 7 "	3 '- 6 "	2 '- 9 "	2 '- 4 "
110	4 '- 2 "	3 '- 2 "	2 '- 6 "	2 '- 1 "
120	3 '- 10 "	2 '- 11 "	2 '- 4 "	1 '- 11 "
130	3 '- 7 "	2 '- 8 "	2 '- 2 "	1 '- 9 "
140	3 '- 4 "	2 '- 6 "	1 '- 12 "	1 '- 8 "
150	3 '- 1 "	2 '- 4 "	1 '- 10 "	1 '- 7 "

TYPE 13 CONNECTION TO POURED CONCRETE:
2 -5/16"ø ULTRACON (ELCO CONSTRUCTION PRODUCTS) W/1 3/4" Min EMBEDMENT TO POURED CONCRETE:
8" MIN. MEMBER THICKNESS. W/2 3/16" MIN. E.D & 6" MIN. SPACING



2"x4"xVARIESx0'-8"
ALUMINUM ANGLE

MAX. MULLION SPAN (L ft) FOR A GIVEN DESING PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 14 CONNECTION *

A.S.D. DESIGN PRESSURE RATING	MULLION SPACING			
	3	4	5	6
30	12 '- 0 "	10 '- 10 "	8 '- 8 "	7 '- 2 "
40	10 '- 10 "	8 '- 1 "	6 '- 6 "	5 '- 5 "
50	8 '- 8 "	6 '- 6 "	5 '- 2 "	4 '- 4 "
60	7 '- 2 "	5 '- 5 "	4 '- 4 "	3 '- 7 "
70	6 '- 2 "	4 '- 8 "	3 '- 8 "	3 '- 1 "
80	5 '- 5 "	4 '- 1 "	3 '- 3 "	2 '- 8 "
90	4 '- 10 "	3 '- 7 "	2 '- 11 "	2 '- 5 "
100	4 '- 4 "	3 '- 3 "	2 '- 7 "	2 '- 2 "
110	3 '- 11 "	2 '- 11 "	2 '- 4 "	1 '- 12 "
120	3 '- 7 "	2 '- 8 "	2 '- 2 "	1 '- 10 "
130	3 '- 4 "	2 '- 6 "	1 '- 12 "	1 '- 8 "
140	3 '- 1 "	2 '- 4 "	1 '- 10 "	1 '- 7 "
150	2 '- 11 "	2 '- 2 "	1 '- 9 "	1 '- 5 "

TYPE 14 CONNECTION TO POURED CONCRETE:
2 -5/16"ø TAPPER PLUS (POWER FASTENERS) W/ 3" Min. EMBEDMENT TO POURED CONCRETE:
8" MIN. MEMBER THICKNESS. W/ 2 1/2" MIN. E.D & 6" MIN. SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING (psf) & MULLION SPACING FOR TYPE 15 CONNECTION *

A.S.D.DESIGN PRESSURE RATING	MULLION SPACING			
	3	4	5	6
30	12 '- 0 "	12 '- 0 "	12 '- 0 "	10 '- 3 "
40	12 '- 0 "	11 '- 7 "	9 '- 3 "	7 '- 8 "
50	12 '- 0 "	9 '- 3 "	7 '- 5 "	6 '- 2 "
60	10 '- 3 "	7 '- 8 "	6 '- 2 "	5 '- 2 "
70	8 '- 10 "	6 '- 7 "	5 '- 3 "	4 '- 5 "
80	7 '- 8 "	5 '- 9 "	4 '- 7 "	3 '- 10 "
90	6 '- 10 "	5 '- 2 "	4 '- 1 "	3 '- 5 "
100	6 '- 2 "	4 '- 7 "	3 '- 8 "	3 '- 1 "
110	5 '- 7 "	4 '- 2 "	3 '- 4 "	2 '- 10 "
120	5 '- 2 "	3 '- 10 "	3 '- 1 "	2 '- 7 "
130	4 '- 9 "	3 '- 7 "	2 '- 10 "	2 '- 4 "
140	4 '- 5 "	3 '- 4 "	2 '- 8 "	2 '- 2 "
150	4 '- 1 "	3 '- 1 "	2 '- 6 "	2 '- 1 "

TYPE 15 CONNECTION TO POURED CONCRETE:
2 -3/8"ø WEDGE BOLT(POWER FASTENERS) W/ 3" MIN. EMBEDMENT TO POURED CONCRETE:
8" MIN. MEMBER THICKNESS. W/ 2 1/2" MIN. E.D & 6" MIN. SPACING

SCHEDULE FOR MULLION CONNECTION TO POURED CONCRETE

(Min. f'c = 3 ksi)

*** NOTES:**

(1) SEE SHEET 9 FOR ADDITIONAL MAXIMUM MULLION SPAN LIMITATIONS FOR A GIVEN DESIGN PRESSURE RATING AND MAXIMUM SPACING. MAXIMUM MULLION SPAN SHALL BE THE MINIMUM BETWEEN SCHEDULES ON SHEETS 9, 10 AND 10A FOR A CONNECTION TYPE.

(2) SEE SHEET 13 FOR ANGLE SCHEDULE INDICATING MAXIMUM ALLOWABLE DESIGN PRESSURE RATING, MULLION SPACING AND MULLION SPAN FOR 1/4" THICK & 5/16" THICK ALUMINUM ANGLES USED TOP & BOTTOM FOR MULLION CONNECTION TO SUBSTRATE.

1/21/16

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

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16-006
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SHEET 10A OF 13

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 12 CONNECTION *

A.S.D. D.P.R (psf)	MULLION SPACING 3	4	5	6
50	6'- 6"	4'- 10"	3'- 11"	3'- 3"
60	5'- 0"	4'- 1"	3'- 3"	2'- 8"
70	4'- 0"	3'- 6"	2'- 9"	2'- 4"
80	4'- 0"	3'- 0"	2'- 5"	2'- 0"
90	3'- 0"	2'- 8"	2'- 2"	1'- 10"

TYPE 12 CONNECTION W/ 1/4" THICK ALUMINUM ANGLE TO WOOD
4 -3/8"ø LAG SCREWS W/ 1.5" Min. THREADED PENETRATION
W/ 2" E.D & 2" SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 13 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	12'- 0"	9'- 11"	7'- 11"	6'- 7"
60	11'- 0"	8'- 3"	6'- 7"	5'- 6"
70	9'- 0"	7'- 1"	5'- 8"	4'- 9"
80	8'- 0"	6'- 2"	4'- 11"	4'- 2"
90	7'- 0"	5'- 6"	4'- 5"	3'- 8"
55	**12'- 0"**	**9'- 0"**	**7'- 2"**	**6'- 0"**

TYPE 13 CONNECTION W/ 1/4" THICK ALUMINUM ANGLE TO WOOD
4 -3/8"ø LAG SCREWS W/ 3" Min. THREADED PENETRATION
W/ 2" E.D & 2" SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 14 CONNECTION *

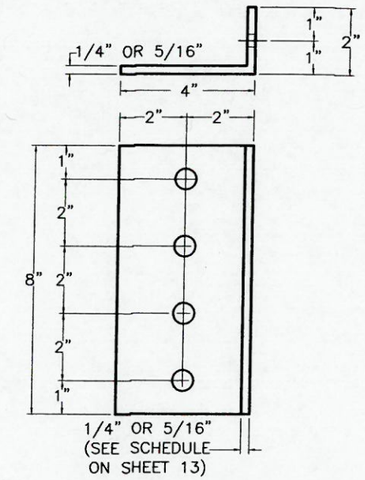
A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	7'- 2"	5'- 5"	4'- 4"	3'- 7"
60	6'- 0"	4'- 6"	3'- 7"	3'- 0"
70	5'- 0"	3'- 10"	3'- 1"	2'- 7"
80	4'- 0"	3'- 5"	2'- 8"	2'- 3"
90	4'- 0"	3'- 0"	2'- 5"	2'- 0"

TYPE 14 CONNECTION W/ 5/16" THICK ALUMINUM ANGLE TO WOOD
4 -3/8"ø LAG SCREWS W/ 1.5" Min. THREADED PENETRATION
W/ 2" E.D & 2" SPACING

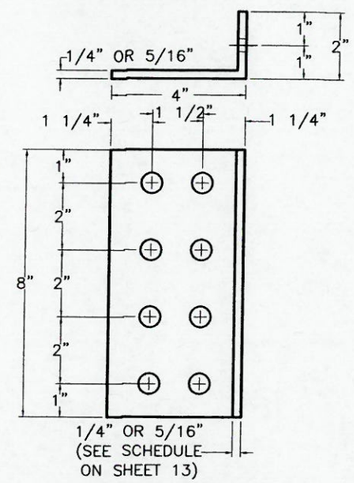
MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 15 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	12'- 0"	10'- 10"	8'- 8"	7'- 2"
60	12'- 0"	9'- 0"	7'- 2"	6'- 0"
70	10'- 0"	7'- 9"	6'- 2"	5'- 2"
80	9'- 0"	6'- 9"	5'- 5"	4'- 6"
90	8'- 0"	6'- 0"	4'- 10"	4'- 0"
60	**12'- 0"**	**9'- 0"**	**7'- 2"**	**6'- 0"**

TYPE 15 CONNECTION W/ 5/16" THICK ALUMINUM ANGLE TO WOOD
4 -3/8"ø LAG SCREWS W/ 3" Min. THREADED PENETRATION
W/ 2" E.D & 2" SPACING



2"x4"xVARIESx0'-8" ALUMINUM ANGLE



2"x4"xVARIESx0'-8" ALUMINUM ANGLE

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 16 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	12'- 0"	9'- 4"	7'- 6"	6'- 3"
60	10'- 0"	7'- 10"	6'- 3"	5'- 2"
70	8'- 0"	6'- 8"	5'- 4"	4'- 5"
80	7'- 0"	5'- 10"	4'- 8"	3'- 11"
90	6'- 0"	5'- 2"	4'- 2"	3'- 6"
52	**12'- 0"**	**9'- 0"**	**7'- 2"**	**6'- 0"**

TYPE 16 CONNECTION W/ 1/4" THICK ALUMINUM ANGLE TO WOOD
8 -3/8"ø LAG SCREWS W/ 1.5" Min. THREADED PENETRATION
W/ 1.25" E.D & 2" SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 17 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	10'- 6"
70	12'- 0"	12'- 0"	10'- 10"	9'- 0"
80	12'- 0"	11'- 10"	9'- 5"	7'- 11"
90	12'- 0"	10'- 6"	8'- 5"	7'- 0"
105	**12'- 0"**	**9'- 0"**	**7'- 2"**	**6'- 0"**

TYPE 17 CONNECTION W/ 1/4" THICK ALUMINUM ANGLE TO WOOD
8 -3/8"ø LAG SCREWS W/ 3" Min. THREADED PENETRATION
W/ 1.25" E.D & 2" SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 18 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	12'- 0"	9'- 9"	7'- 9"	6'- 6"
60	10'- 0"	8'- 1"	6'- 6"	5'- 5"
70	9'- 0"	6'- 11"	5'- 7"	4'- 8"
80	8'- 0"	6'- 1"	4'- 10"	4'- 1"
90	7'- 0"	5'- 5"	4'- 4"	3'- 7"
54	**12'- 0"**	**9'- 0"**	**7'- 2"**	**6'- 0"**

TYPE 18 CONNECTION W/ 5/16" THICK ALUMINUM ANGLE TO WOOD
8 -3/8"ø LAG SCREWS W/ 1.5" Min. THREADED PENETRATION
W/ 1.25" E.D & 2" SPACING

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 19 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	10'- 5"
80	12'- 0"	12'- 0"	11'- 0"	9'- 2"
90	12'- 0"	12'- 0"	9'- 9"	8'- 2"
122	**12'- 0"**	**9'- 0"**	**7'- 2"**	**6'- 0"**

TYPE 19 CONNECTION W/ 5/16" THICK ALUMINUM ANGLE TO WOOD
8 -3/8"ø LAG SCREWS W/ 3" Min. THREADED PENETRATION
W/ 1.25" E.D & 2" SPACING

SCHEDULE FOR MULLION CONNECTION TO WOOD

(Min. G=0.55)

*** NOTES:**

(1) SEE SHEET 9 FOR ADDITIONAL MAXIMUM MULLION SPAN LIMITATIONS FOR A GIVEN DESIGN PRESSURE RATING AND MAXIMUM SPACING. MAXIMUM MULLION SPAN SHALL BE THE MINIMUM BETWEEN SCHEDULES ON SHEET 9 AND THIS SHEET FOR A CONNECTION TYPE.

(2) SEE SHEET 13 FOR ANGLE SCHEDULE INDICATING MAXIMUM ALLOWABLE DESIGN PRESSURE RATING, MULLION SPACING AND MULLION SPAN FOR 1/4" THICK & 5/16" THICK ALUMINUM ANGLES USED TOP & BOTTOM FOR MULLION CONNECTION TO SUBSTRATE.

1/20/16

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

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REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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SHEET 11 OF 13

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 20 CONNECTION *

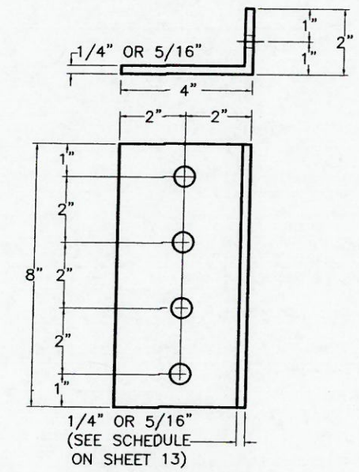
A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	12'- 0"
100	12'- 0"	12'- 0"	12'- 0"	11'- 9"
110	12'- 0"	12'- 0"	12'- 0"	10'- 8"
120	12'- 0"	12'- 0"	11'- 9"	9'- 9"
130	12'- 0"	12'- 0"	10'- 10"	9'- 0"
140	12'- 0"	12'- 0"	10'- 1"	8'- 5"
150	12'- 0"	11'- 9"	9'- 5"	7'- 10"

TYPE 20 CONNECTION W/ 1/4" THICK ALUMINUM ANGLE* TO STEEL
4 -3/8"ø-16 MACHINE SCREWS W/ 3/4" E.D.
& W/ 1/8" MIN. MEMBER THICKNESS

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 21 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	12'- 0"
100	12'- 0"	12'- 0"	12'- 0"	11'- 9"
110	12'- 0"	12'- 0"	12'- 0"	10'- 8"
120	12'- 0"	12'- 0"	11'- 9"	9'- 9"
130	12'- 0"	12'- 0"	10'- 10"	9'- 0"
140	12'- 0"	12'- 0"	10'- 1"	8'- 5"
150	12'- 0"	11'- 9"	9'- 5"	7'- 10"

TYPE 21 CONNECTION W/ 5/16" THICK ALUMINUM ANGLE* TO STEEL
4 -3/8"ø-16 MACHINE SCREWS W/ 3/4" E.D.
& W/ 1/8" MIN. MEMBER THICKNESS



2"x4"xVARIESx0'-8" ALUMINUM ANGLE

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 22 CONNECTION *

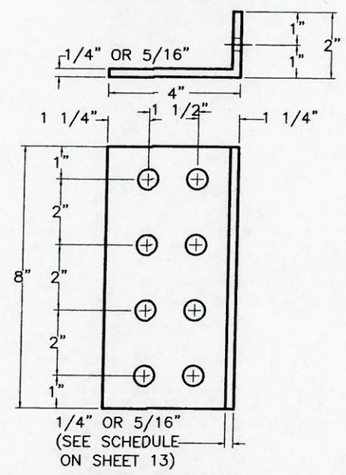
A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	12'- 0"
100	12'- 0"	12'- 0"	12'- 0"	12'- 0"
110	12'- 0"	12'- 0"	12'- 0"	12'- 0"
120	12'- 0"	12'- 0"	12'- 0"	12'- 0"
130	12'- 0"	12'- 0"	12'- 0"	12'- 0"
140	12'- 0"	12'- 0"	12'- 0"	12'- 0"
150	12'- 0"	12'- 0"	12'- 0"	12'- 0"

TYPE 22 CONNECTION W/ 1/4" THICK ALUMINUM ANGLE* TO STEEL
8 -3/8"ø-16 MACHINE SCREWS W/ 3/4" E.D.
& W/ 1/8" MIN. MEMBER THICKNESS

MAX. MULLION SPAN (L ft) FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING FOR TYPE 23 CONNECTION *

A.S.D. D.P.R. (psf)	MULLION SPACING 3	4	5	6
30	12'- 0"	12'- 0"	12'- 0"	12'- 0"
40	12'- 0"	12'- 0"	12'- 0"	12'- 0"
50	12'- 0"	12'- 0"	12'- 0"	12'- 0"
60	12'- 0"	12'- 0"	12'- 0"	12'- 0"
70	12'- 0"	12'- 0"	12'- 0"	12'- 0"
80	12'- 0"	12'- 0"	12'- 0"	12'- 0"
90	12'- 0"	12'- 0"	12'- 0"	12'- 0"
100	12'- 0"	12'- 0"	12'- 0"	12'- 0"
110	12'- 0"	12'- 0"	12'- 0"	12'- 0"
120	12'- 0"	12'- 0"	12'- 0"	12'- 0"
130	12'- 0"	12'- 0"	12'- 0"	12'- 0"
140	12'- 0"	12'- 0"	12'- 0"	12'- 0"
150	12'- 0"	12'- 0"	12'- 0"	12'- 0"

TYPE 23 CONNECTION W/ 5/16" THICK ALUMINUM ANGLE* TO STEEL
8 -3/8"ø-16 MACHINE SCREWS W/ 3/4" E.D.
& W/ 1/8" MIN. MEMBER THICKNESS



2"x4"xVARIESx0'-8" ALUMINUM ANGLE

SCHEDULE FOR MULLION CONNECTION TO STEEL

(Min. Fy=33 ksi)

*** NOTES:**

(1) SEE SHEET 9 FOR ADDITIONAL MAXIMUM MULLION SPAN LIMITATIONS FOR A GIVEN DESIGN PRESSURE RATING AND MAXIMUM SPACING. MAXIMUM MULLION SPAN SHALL BE THE MINIMUM BETWEEN SCHEDULES ON SHEET 9 AND THIS SHEET FOR A CONNECTION TYPE.

(2) SEE SHEET 13 FOR ANGLE SCHEDULE INDICATING MAXIMUM ALLOWABLE DESIGN PRESSURE RATING, MULLION SPACING AND MULLION SPAN FOR 1/4" THICK & 5/16" THICK ALUMINUM ANGLES USED TOP & BOTTOM FOR MULLION CONNECTION TO SUBSTRATE.

STATE OF TEXAS
1/21/16
WALTER A. TILLIT, JR.
90691
REGISTERED PROFESSIONAL ENGINEER

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE - 2006

WALTER A. TILLIT Jr P.E.
PROFESSIONAL ENGINEER
6355 N.W 36 STREET, STE. 305
VIRGINIA GARDENS, FL 33166
PHONE(305) 871-1530 FAX (305) 871-1531
TEXAS LIC. # 90691
FIRM REGISTRATION # F-13790

ALUMINUM LOUVER SYSTEM MODEL FL-D-4

UNITED ENERTECH, INC.
3005 SOUTH HICKORY ST.
CHATTANOOGA, TN 37407
PHONE: (423)698-7715 FAX:(423)698-6629

REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	-	-	3	-	-
2	-	-	4	-	-

M.L.
DRAWN BY:

01/20/16
DATE:

16-006
DRAWING No.

SHEET 12 OF 13

SCHEDULE FOR MAX. MULLION SPAN FOR A GIVEN DESIGN PRESSURE RATING & MULLION SPACING IN ORDER TO USE 1/4" THICK ALUMINUM ANGLE FOR MULLION CONNECTION TO SUBSTRATE

D.P.R. (psf)	MULLION SPACING (ft)			
	3	4	5	6
30	12 '- 0 "	12 '- 0 "	12 '- 0 "	12 '- 0 "
40	12 '- 0 "	12 '- 0 "	12 '- 0 "	12 '- 0 "
50	12 '- 0 "	12 '- 0 "	12 '- 0 "	12 '- 0 "
60	12 '- 0 "	12 '- 0 "	12 '- 0 "	12 '- 0 "
70	12 '- 0 "	12 '- 0 "	12 '- 0 "	12 '- 0 "
80	12 '- 0 "	12 '- 0 "	12 '- 0 "	11 '- 3 "
90	12 '- 0 "	12 '- 0 "	12 '- 0 "	10 '- 0 "
100	12 '- 0 "	12 '- 0 "	10 '- 10 "	9 '- 0 "
110	12 '- 0 "	12 '- 0 "	9 '- 10 "	8 '- 2 "
120	12 '- 0 "	11 '- 3 "	9 '- 0 "	7 '- 6 "
130	12 '- 0 "	10 '- 5 "	8 '- 4 "	6 '- 11 "
140	12 '- 0 "	9 '- 8 "	7 '- 9 "	6 '- 5 "
150	12 '- 0 "	9 '- 0 "	7 '- 2 "	6 '- 0 "

* **NOTES:**

(1) ANY MULLION SPACING OR MULLION SPAN LARGER THAN THE ONES INCLUDED ON THIS SCHEDULE WILL REQUIRE A 5/16" THICK ALUMINUM ANGLE INSTEAD OF 1/4" THICK ALUMINUM ANGLE

(2) SEE SHEET 9 FOR ADDITIONAL MAXIMUM MULLION SPAN LIMITATIONS FOR A GIVEN DESIGN PRESSURE RATING AND MAXIMUM SPACING. MAXIMUM MULLION SPAN SHALL BE THE MINIMUM BETWEEN SCHEDULES ON SHEETS 9, 10, 10A, 11 AND 12 FOR A CONNECTION TYPE, AND SCHEDULE ON THIS SHEET.

1/2"ø THRU BOLT REQUIREMENTS FOR CONNECTION OF ALUMINUM ANGLE TO MULLION FOR MULLION END CONNECTION TO SUBSTRATE.

MULLION TYPE	1/2"ø THRU BOLT REQUIRED
2"x4" & 2"x6"	(1) REQUIRED
(2) 2"x6"	(2) REQUIRED & (1) EACH TUBE
4"x6" & 4"x8"	(2) REQUIRED

1/21/16

P.E. SEAL/SIGNATURE/DATE

TEXAS DEPARTMENT OF INSURANCE – 2006

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REV. NO	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	–	–	3	–	–
2	–	–	4	–	–

M.L.
DRAWN BY:

01/20/16
DATE:

16-006
DRAWING No.

SHEET 13 OF 13