

GENERAL NOTES:

1. STORM PANEL SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2026 (9th EDITION) OF THE FLORIDA BUILDING CODE. THIS STORM PANEL SYSTEM SHALL **NOT** BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES (MIAMI-DADE / BROWARD COUNTIES). DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1609 OF THE ABOVE MENTIONED CODE, FOR A WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE THESE SHUTTERS WILL BE INSTALLED AND FOR A DIRECTIONALITY FACTOR $K_d=0.85$, USING **ASCE 7-22** SHALL NOT EXCEED THE MAXIMUM (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 4 & 5.

IN ORDER TO VERIFY THE ABOVE CONDITION, ULTIMATE DESIGN WIND LOADS DETERMINED PER **ASCE 7-22** SHALL FIRST BE REDUCED TO A.S.D. DESIGN WIND LOADS BY MULTIPLYING THEM BY 0.6 IN ORDER TO COMPARE THESE WITH MAX. (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 4 & 5.

STORM PANEL'S ADEQUACY FOR IMPACT AND WIND RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE ABOVE MENTIONED CODE AS PER ATL REPORT #0130.01-01 AND #0703.01-07, PER IMPACT TESTING EQUIVALENT TO ASTM E-1996 STANDARD & ASTM E 330-02 STANDARD, LIMITED TO INSTALLATIONS WITHIN WIND ZONES 1, 2 & 3 AS DEFINED BY ASTM E-1996 STANDARD.

2. CLEAR BERTHA STORM PANEL SHALL BE EXTRUDED USING ANY OF THE FOLLOWING POLYCARBONATE SOURCES WITH THEIR CORRESPONDING MODEL NUMBER:

GENERAL ELECTRIC PLASTICS	LEXAN 103
DOWN CHEMICAL	CALIBRE 302 V-6
CAVESTRO, LLC.	MAKROLON POLYCARBONATE SHEETS

MINIMUM PROPERTIES FOR ALL OF THE ABOVE POLYCARBONATES ARE AS FOLLOWS:

TYPICAL PROPERTIES	APPLICABLE STANDARD REFERENCE	RESULT
PHYSICAL:		
SPECIFIC GRAVITY	ASTM D792	1.20 G/CC
MECHANICAL:		
TENSILE YIELD STRENGTH	ASTM D638	8,700 p.s.i.
FLEXURAL STRENGTH AT YIELD	ASTM D790	12,500 p.s.i.
FLEXURAL MODULUS	ASTM D790	340,000 p.s.i.
IMPACT:		
NOTCHED IZOD	ASTM D256	18 FT-lb/in
FIRE BURNING CHARACTERISTICS:		
SMOKE DENSITY	ASTM D2843	75 (MAX)
RATE OF BURNING (MAX)	ASTM D635	C-1 CLASS
SELF IGNITION	ASTM D1929	650 °F

3. ALL ALUMINUM EXTRUSIONS SHALL BE ALUMINUM ASSOCIATION 6063-T6 ALLOY & TEMPER. ALL ALUMINUM EXTRUSIONS IN CONTACT WITH DISSIMILAR MATERIALS SHALL COMPLY WITH SECTION III-6 OF THE 2020 ALUMINUM DESIGN MANUAL.

4. ALL SCREWS SHALL BE STAINLESS STEEL 304 OR 316 AISI SERIES OR CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018 WITH 50 KSI YIELD STRENGTH AND 90 KSI TENSILE STRENGTH & SHALL COMPLY WITH FLORIDA BUILDING CODE SECTIONS 2411.3.3.4 & 1711.

5. BOLTS SHALL BE ASTM A 307, GALVANIZED OR AISI 304 SERIES STAINLESS STEEL, WITH 36 KSI MIN. YIELD STRENGTH.

6. ANCHORS TO WALL SHALL BE AS FOLLOWS: SEE SHEET 2 OF 5 FOR APPLICATIONS.

(A) TO EXISTING POURED CONCRETE: MIN. $F'_c = 3$ KSI
-1/4" $\varnothing$ 410 S.S TAPCON ANCHORS MANUFACTURED BY I.T.W. BUILDDEX OR 1/4" $\varnothing$ ULTRACON+ OR ULTRACON SS4 BY DEWALT.
-1/4" $\varnothing$ ELCO MALE & FEMALE "PANELMATE" MANUFACTURED BY ELCO CONSTRUCTION PRODUCTS.
-1/4" $\varnothing$ ALL THREADED 304 S.S BY HILLMAN GROUP ANCHORS.

NOTES:

- A.1) MINIMUM EMBEDMENT INTO POURED CONCRETE OF 1/4" $\varnothing$ ANCHORS IS 1 3/4".
- A.2) FEMALE PANELMATE ANCHORS AND 3/4" SOLID SET ANCHORS SHALL BE ENTIRELY EMBEDDED INTO THE POURED CONCRETE. NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED.
1/4" $\varnothing$ -20 SCREWS USED SHALL BE 1 1/2" LONG MINIMUM SHOULD STUCCO EXIST, AND 1" MINIMUM FOR WALLS WITH NO STUCCO.
- A.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE PANELS, OR PAVERS BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS, ANCHORAGE SHALL BE AS INDICATED ON NOTES A.1) & A.2) ABOVE.

- (B) TO EXISTING CONCRETE BLOCK WALL: ASTM C-90
-1/4" $\varnothing$ 410 S.S TAPCON ANCHORS MANUFACTURED BY I.T.W. BUILDDEX OR 1/4" $\varnothing$ ULTRACON+ OR ULTRACON SS4 BY DEWALT.
-1/4" $\varnothing$ ELCO MALE & FEMALE "PANELMATE" MANUFACTURED BY ELCO CONSTRUCTION PRODUCTS.
-1/4" $\varnothing$ ALL THREADED 304 S.S RODS BY HILLMAN GROUP.
- NOTES:
- B.1) MINIMUM EMBEDMENT OF 1/4" $\varnothing$ ANCHORS INTO THE CONCRETE BLOCK UNIT SHALL BE 1 1/4"
- B.2) FEMALE PANEL MATE ANCHORS SHALL BE ENTIRELY EMBEDDED INTO THE CONCRETE BLOCK UNIT. NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED.
1/4" $\varnothing$ -20 SCREWS USED SHALL BE 1 1/2" LONG MINIMUM SHOULD STUCCO EXIST, AND 1" MINIMUM FOR WALLS WITH NO STUCCO.
- B.3) IN CASE THAT PRECAST STONE OR PRECAST CONCRETE PANELS BE FOUND ON THE EXISTING WALL, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS. ANCHORAGE SHALL BE AS INDICATED ON NOTES IN B.1) & B.2) ABOVE.
- (C) ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER. ONLY STAINLESS STEEL ANCHORS ARE ALLOWED AT INSTALLATIONS WITHIN 300ft OF THE COASTAL SHORELINE.
7. PANEL MAY ALSO BE INSTALLED HORIZONTALLY FOLLOWING INSTALLATION DETAILS SHOWN ON SECTIONS 1 THRU 5, SHEET 3 OF 5.
8. STORM PANEL SHALL BE REMOVED AFTER THE HURRICANE AND SHALL BE STORED AND PROPERLY MAINTAINED.
9. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE THE SHUTTER IS TO BE ATTACHED TO ENSURE PROPER ANCHORAGE.
10. SHUTTER MANUFACTURER'S LABEL SHALL BE LOCATED AT A READILY VISIBLE LOCATION ON THE STORM PANEL SHUTTER IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABELING SHALL COMPLY WITH SECTION 1709.9.2 OF THE FLORIDA BUILDING CODE.
11. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL SHUTTER TRACKS ALL AROUND THE FULL LENGTH.
12. STORM PANEL INSTALLATION SHALL COMPLY WITH SPECS INDICATED IN THIS DRAWING PLUS ANY BUILDING AND ZONING REGULATIONS PROVIDED BY THE JURISDICTION WHERE A PERMIT IS APPLIED FOR.
13. (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) THE CONTRACTOR IS 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 THE 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 FLORIDA REGISTERED ENGINEER OR ARCHITECT WHO 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 THE LATTER THE SITE SPECIFIC DRAWINGS FOR REVIEW.
- (E) THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD WHO PREPARED IT.

THIS DRAWING SHALL ONLY BE USED TO OBTAIN PERMITS IN THE STATE OF FLORIDA



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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6355 W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
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CA-0006719
WALTER A. TILLIT Jr. P.E.
FLORIDA Lic. # 44167

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

CLEAR BERTHA STORM PANEL
(2.25" DEEP)

EASTERN METAL SUPPLY, INC

4268 WEST ROADS DRIVE
WEST PALM BEACH, FL 33407

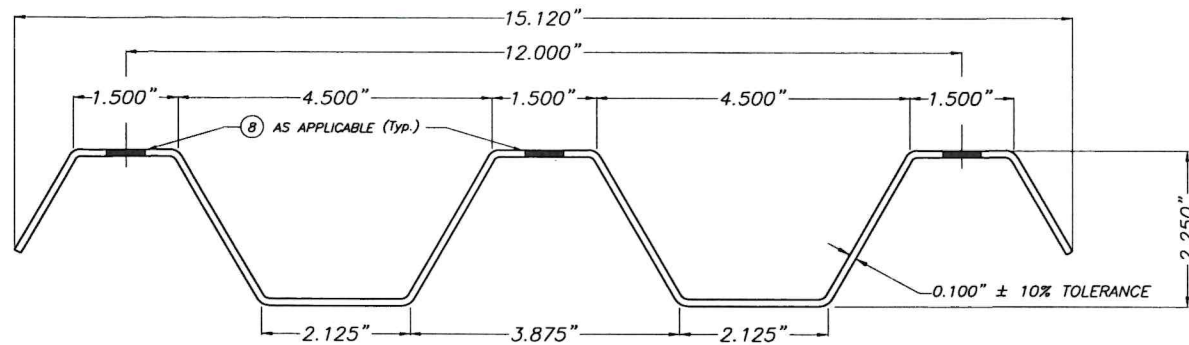
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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2	-	-	4	-	-

W.H.
DRAWN BY:

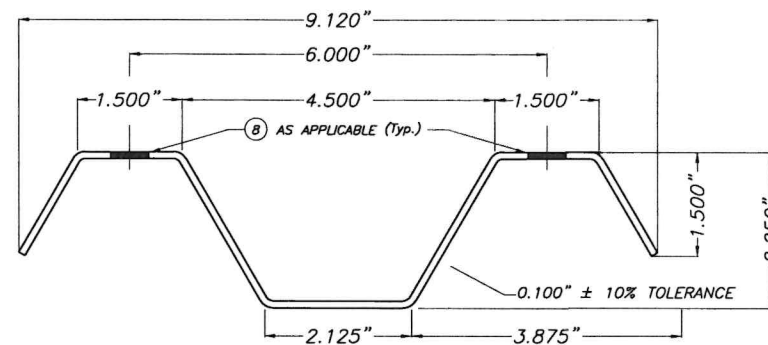
7/23/2026
DATE

26-229
DRAWING No

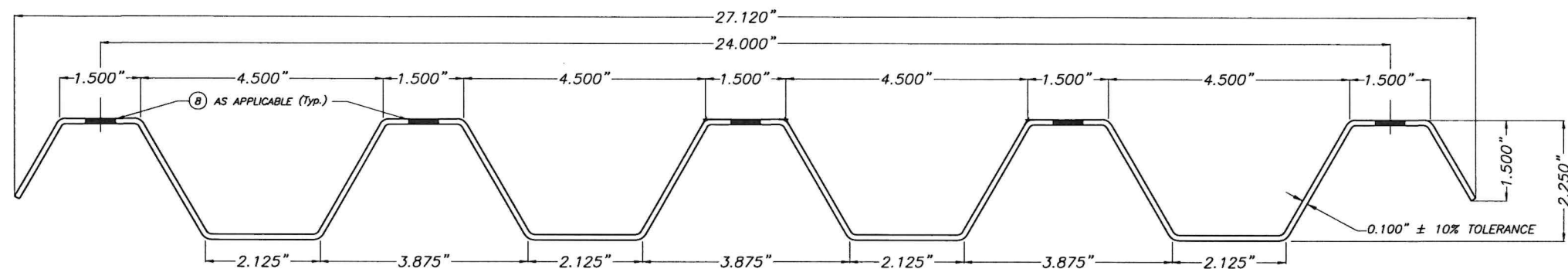
SHEET 1 OF 5



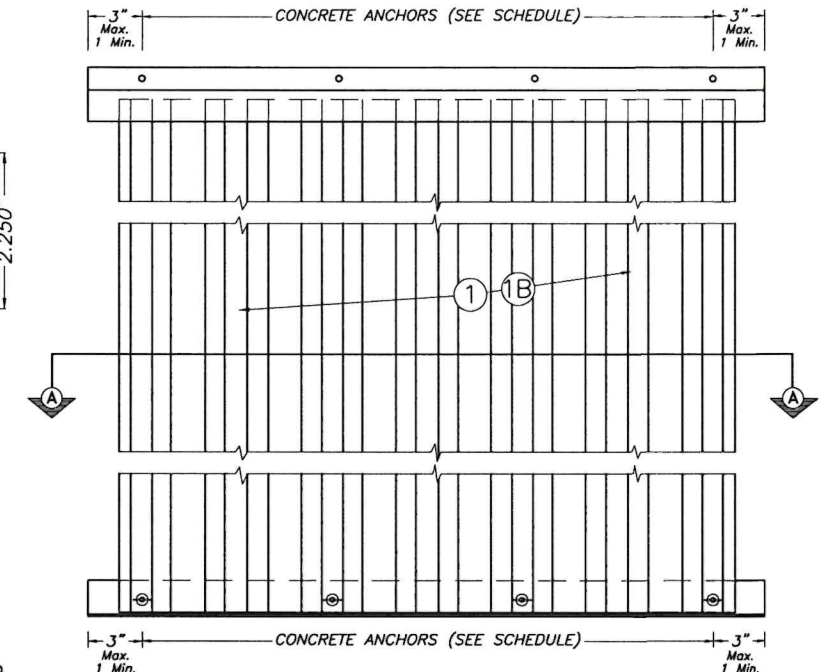
1 CLEAR PANEL



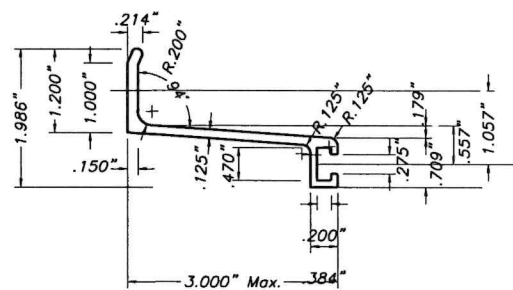
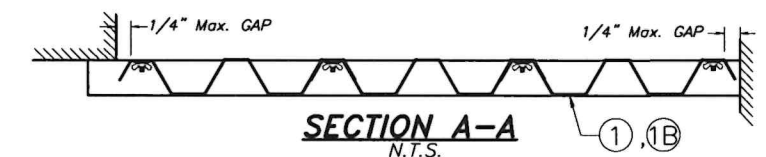
1A HALF CLEAR PANEL



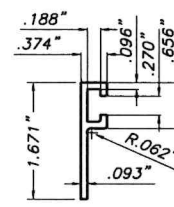
1B DOUBLE WIDE CLEAR PANEL



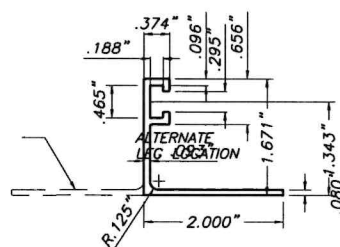
STORM PANEL TYPICAL ELEVATION
N.T.S.



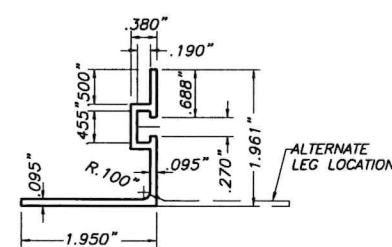
2 3" ANGLE BUILD OUT BRACKET



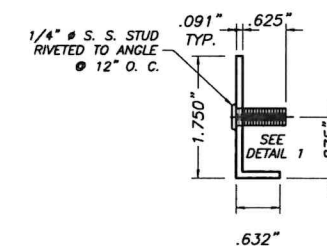
3 3/8" B.O. "F" TRACK



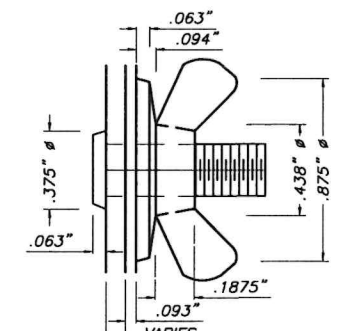
4 "F" TRACK ANGLE



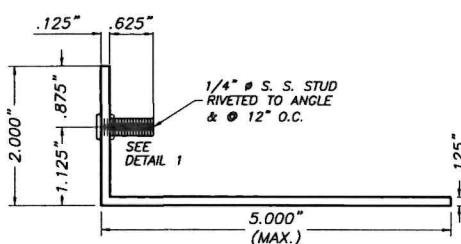
5 REVERSED "F" ANGLE TRACK



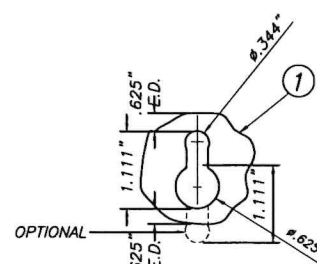
6 MINI WALL 1.75"x0.632" ANGLE WITH STUD



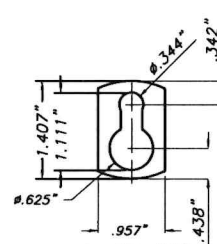
DETAIL 1: STUD W/ DIE CAST ZINC NICKEL PLATED WING NUT



7 2"x5"(MAX.)x1/8" ANGLE WITH STUD



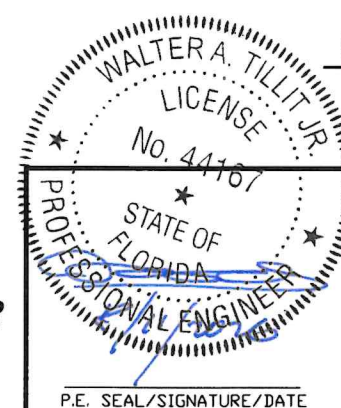
8 KEY HOLE AT PANEL



9 KEY HOLE WASHER
3105-H154 Alum. ALLOY

COMPONENTS

SCALE: 3/8" = 1"



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CLEAR BERTHA STORM PANEL
(2.25" DEEP)

EASTERN METAL SUPPLY, INC

4268 WEST ROADS DRIVE
WEST PALM BEACH, FL 33407

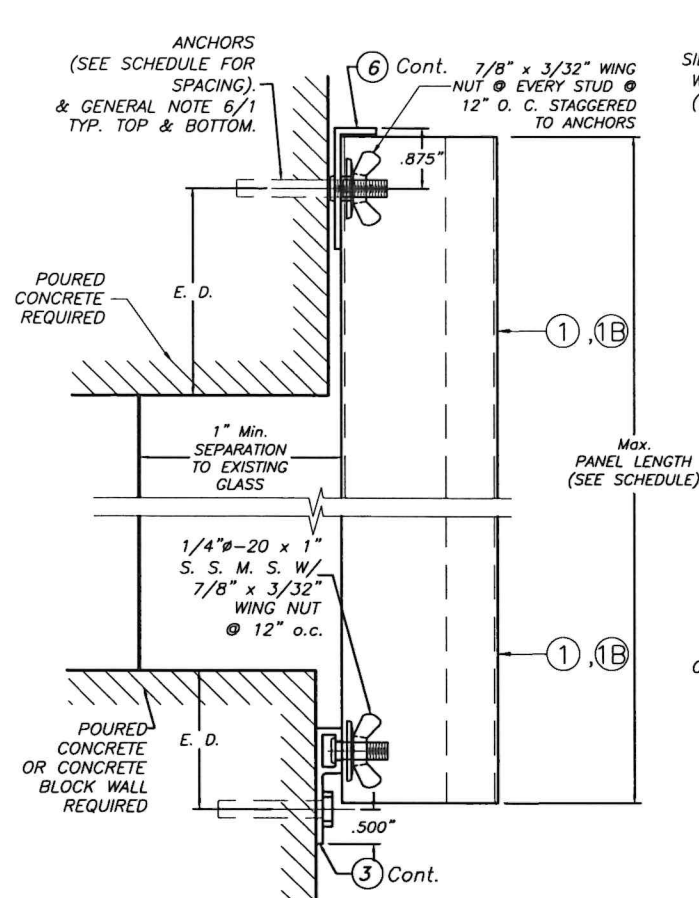
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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2	-	-	4	-	-

W.H.
DRAWN BY:

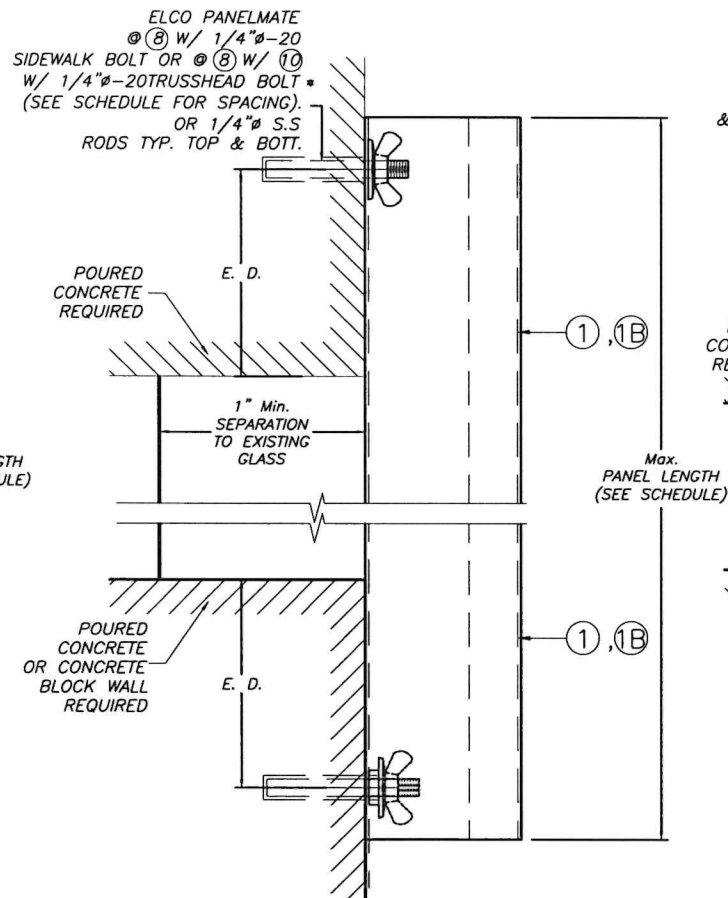
7/23/2026
DATE

26-229
DRAWING No

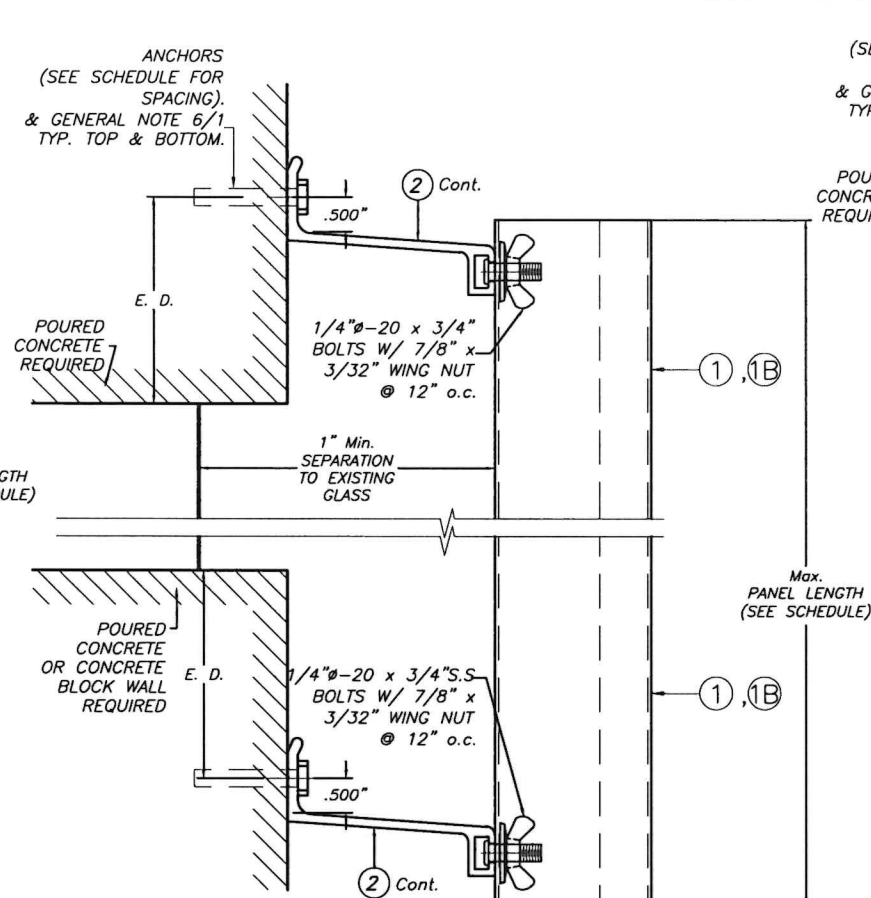
SHEET 2 OF 5



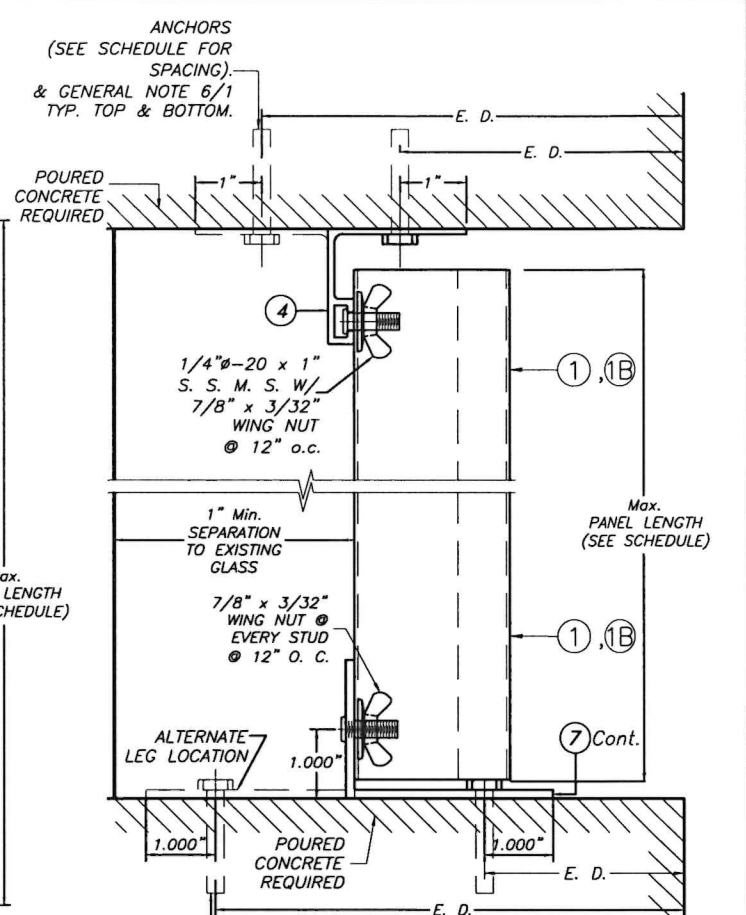
WALL MOUNTING INSTALLATION
SECTION 1



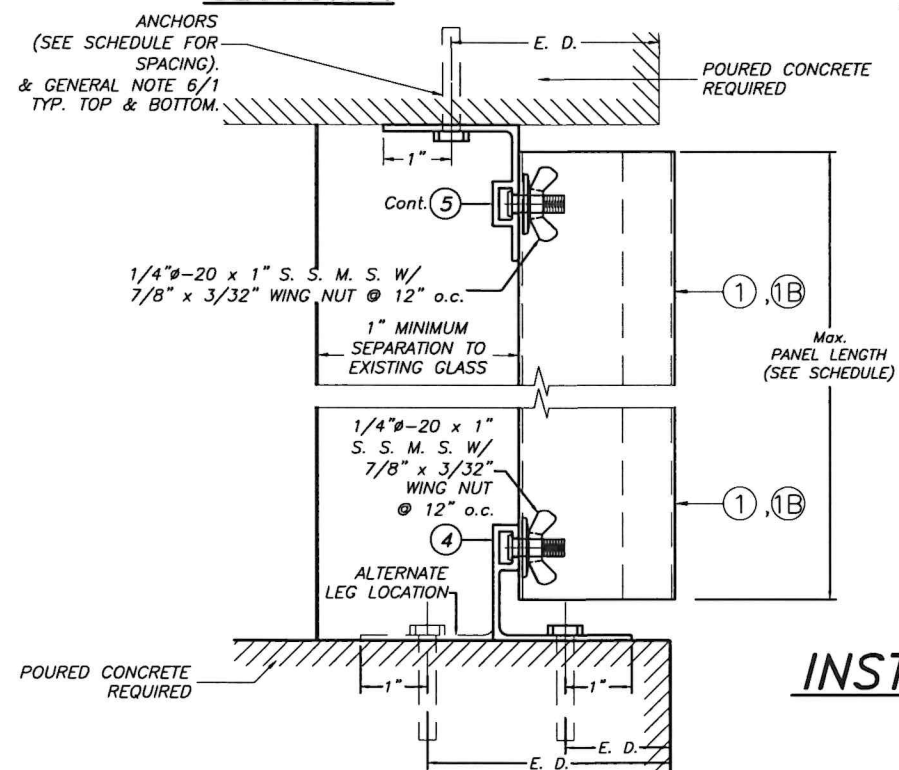
WALL MOUNTING INSTALLATION (D. M.)
SECTION 2



BUILD OUT INSTALLATION
SECTION 3



CEILING & FLOOR MOUNTING INSTALLATION
SECTION 4



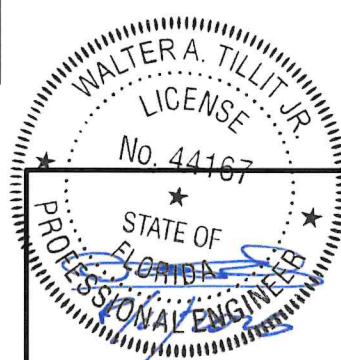
CEILING & FLOOR MOUNTING INSTALLATION
SECTION 5

* SIDE WALK BOLTS ARE 3/4"x3/32" THICK HEAD S.S. MACHINE SCREW W/LENGTH AS PER NOTES A.2 & B.2 (SHEET 1)
* TRUSS HEAD BOLTS ARE 1/2"x1/8" THICK HEAD MACHINE S.S. SCREW W/LENGTH AS PER NOTES A.2 & B.2 (SHEET 1)

E. D. = EDGE DISTANCE
(SEE SCHEDULE ON SHEET 4 OF 5)

NOTE FOR COMBINATION OF SECTIONS :
WALL/FLOOR/CEILING MOUNTING SECTIONS CAN BE COMBINED IN ANY WAY TO SUIT ANY INSTALLATION.

INSTALLATION DETAILS
SCALE: 3/8" = 1"



P.E. SEAL/SIGNATURE/DATE

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)					
CLEAR BERTHA STORM PANEL (2.25" DEEP)					W.H. DRAWN BY:
EASTERN METAL SUPPLY, INC					7/23/2026 DATE
4268 WEST ROADS DRIVE WEST PALM BEACH, FL 33407					26-229 DRAWING No
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 23-165	7/23/26	3	-	-
2	-	-	4	-	-

SHEET 3 OF 5

MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.) WITH CORRESPONDING MAXIMUM PANEL LENGTH "L" (Ft.) AND CORRESPONDING ANCHOR SPACING "S" (in.) SCHEDULE FOR INSTALLATIONS IN CONCRETE, CONCRETE BLOCK AND WOOD FRAME STRUCTURES *

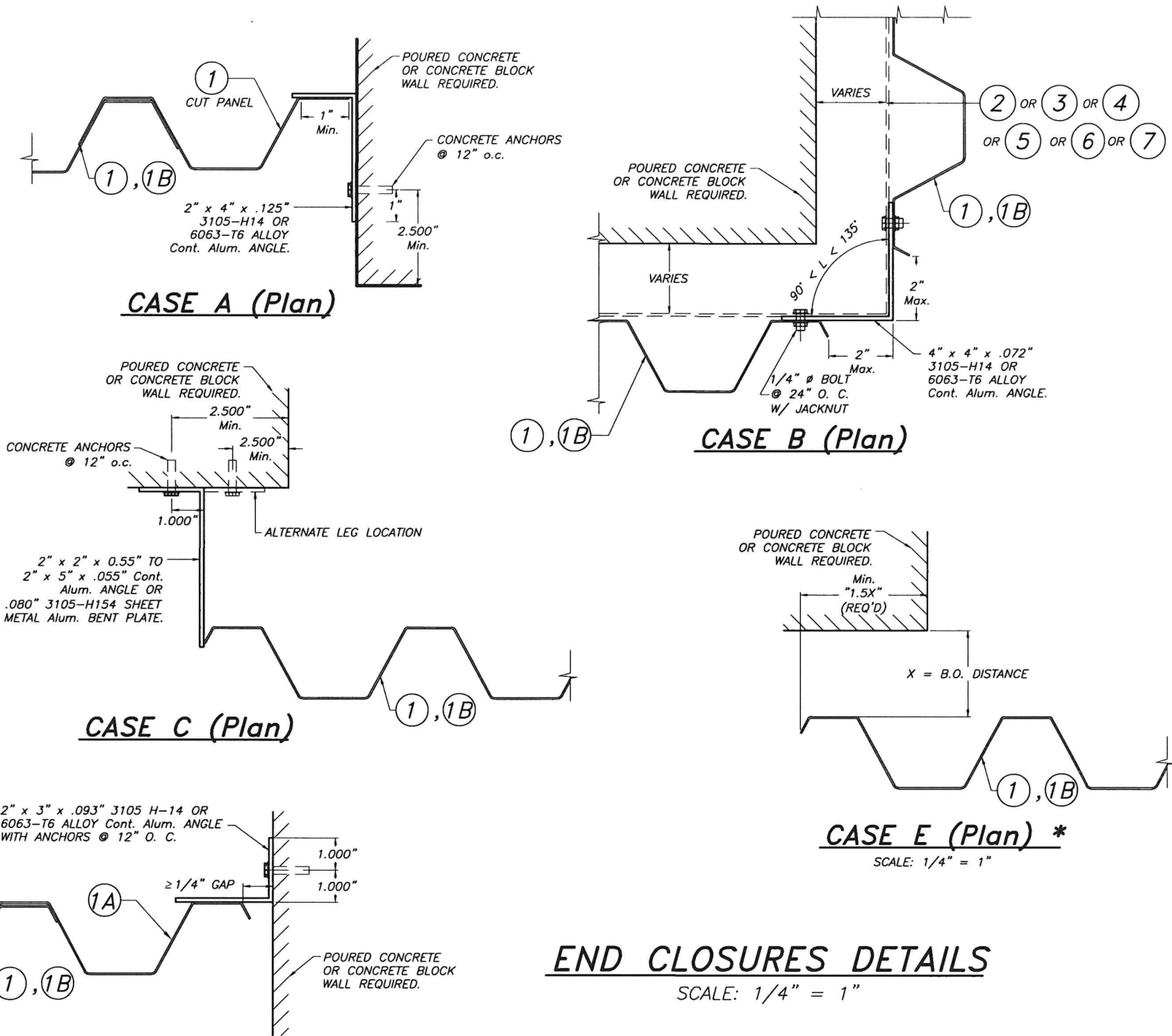
MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.)	Max. PANEL LENGTH L (ft.) * .093" CLEAR LEXAN STORM PANEL	ANCHORS SPACINGS "S" (in.) **		
		SECTION 4 (BOTTOM)	SECTIONS 2, 3, 5 (TOP/BOTTOM) & SECTION 1 (BOTTOM)	SECTION 1 (TOP) & SECTION 4 (TOP)
+28.0, -28.0	10'-0"	7"	12"	12"
+28.0, -30.0	9'-8"	7"	12"	12"
+30.0, -35.0	8'-11"	7"	12"	12"
+35.0, -40.0	8'-4"	7"	12"	12"
+40.0, -45.0	7'-11"	7"	12"	12"
+45.0, -50.0	7'-6"	7"	12"	12"
+50.0, -55.0	7'-2"	7"	12"	12"
+55.0, -60.0	6'-10"	7"	12"	12"
+60.0, -65.0	6'-7"	7"	12"	12"
+65.0, -70.0	6'-3"	7"	12"	12"
+70.0, -75.0	5'-10"	7"	12"	12"
+75.0, -80.0	5'-6"	7"	12"	12"
+80.0, -85.0	5'-2"	7"	12"	12"
+85.0, -90.0	4'-11"	7"	12"	12"
+90.0, -95.0	4'-8"	7"	12"	12"
+95.0, -100.0	4'-5"	7"	12"	12"
+100.0, -105.0	4'-2"	7"	12"	12"
+105.0, -110.0	4'-0"	7"	12"	12"

* Min. PANEL LENGTH IS 3'-0"

** MAXIMUM ANCHOR SPACINGS ARE VALID FOR 3 1/2" EDGE DISTANCE. FOR E. D. LESS THAN 3 1/2", REDUCE ANCHOR SPACING BY MULTIPLYING SPACING SHOWN ON SCHEDULE BY THE FOLLOWING FACTORS. FOR THIS OPERATION TO BE POSSIBLE, REDUCED SPACING OBTAINED USING FACTOR SHALL NOT BE LESS THAN MINIMUM SPACING INDICATED FOR EACH ANCHOR TYPE AT ANCHORS LEGEND.

ACTUAL E. D.	FACTOR	
	ULTRACONS/ S.S RODS/ TAPCON/ PANELMATES	
3"	.86	
2 1/2"	.71	
2"	.50	

ANCHORS LEGEND	
ANCHORS TYPE	ANCHOR MIN. SPACING
ULTRACONS/ S.S RODS/ TAPCON/ PANELMATES	3.0"



END CLOSURES DETAILS
SCALE: 1/4" = 1"

CASE D (Plan)

WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
P.E. SEAL/SIGNATURE/DATE

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CLEAR BERTHA STORM PANEL
(2.25" DEEP)

EASTERN METAL SUPPLY, INC
4268 WEST ROADS DRIVE
WEST PALM BEACH, FL 33407

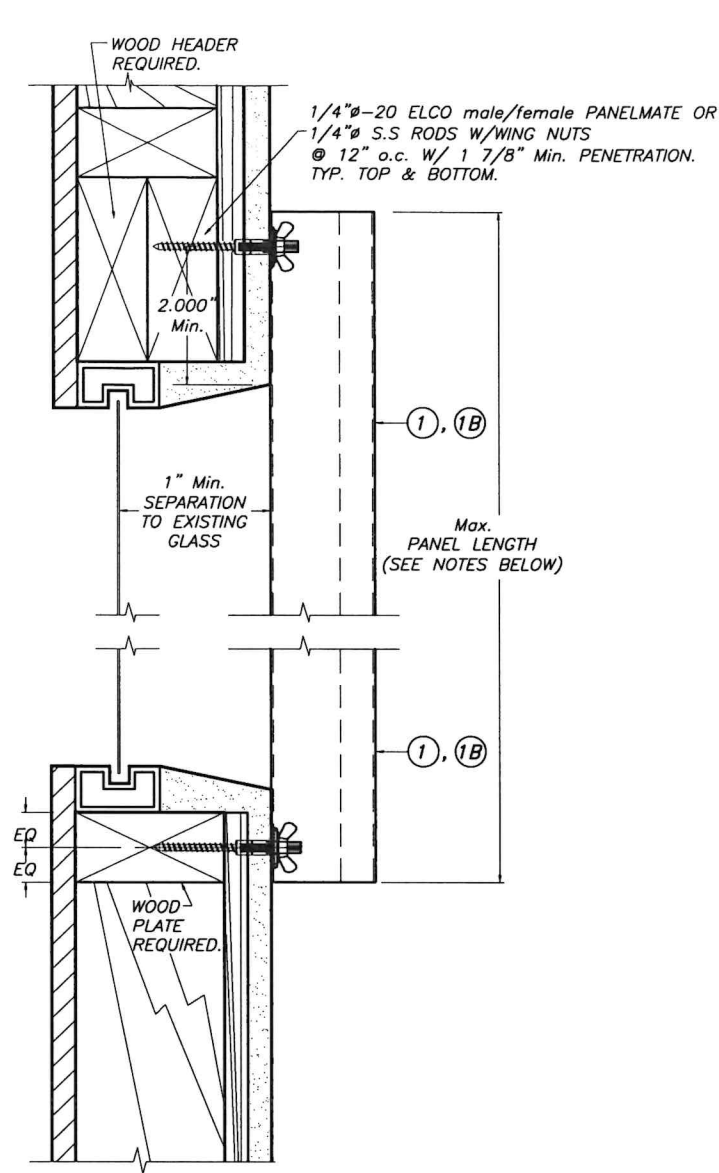
REV. No. DESCRIPTION DATE REV. No. DESCRIPTION DATE
1 OLD 23-165 7/23/26 3 - -
2 - - 4 - -

W.H.
DRAWN BY:

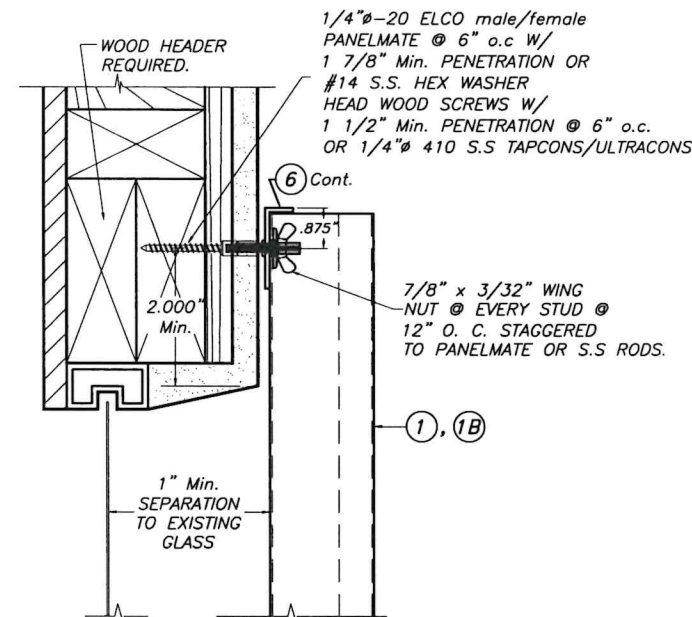
7/23/2026
DATE

26-229
DRAWING No

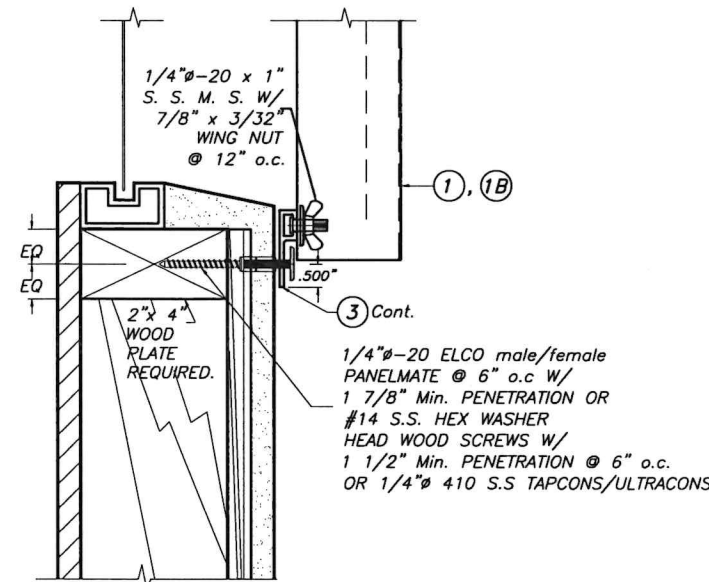
SHEET 4 OF 5



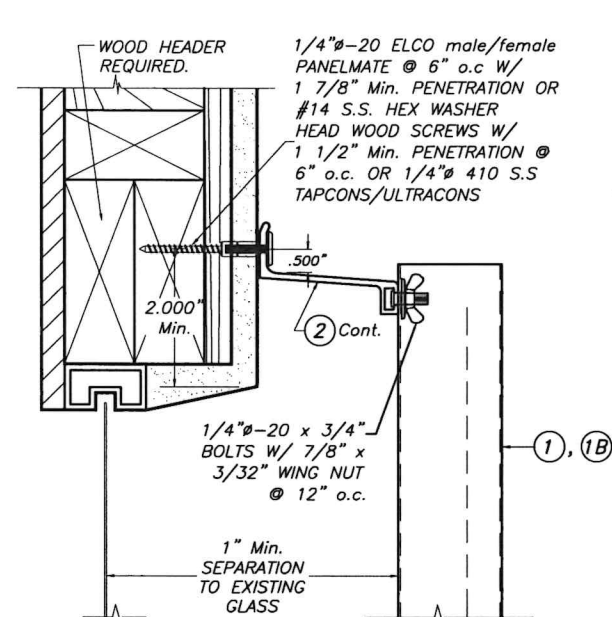
**WALL MOUNTING (D. M.)
ALTERNATIVE 1**



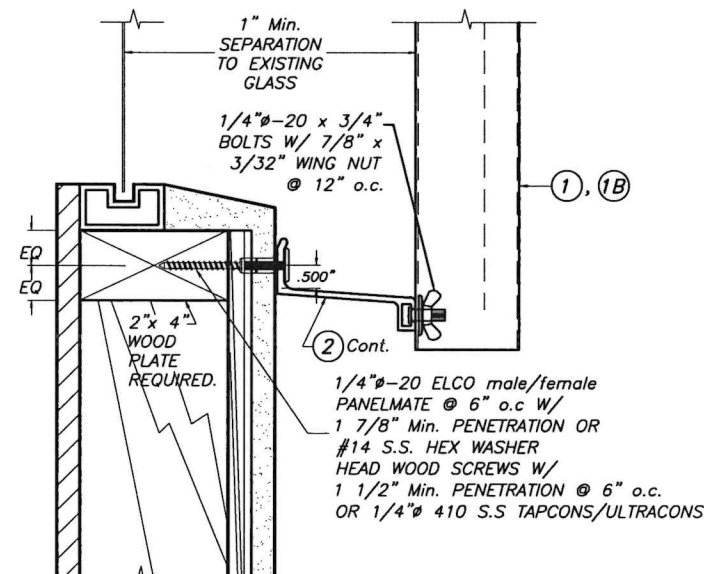
**WALL MOUNTING INSTALLATION
ALTERNATIVE 2**



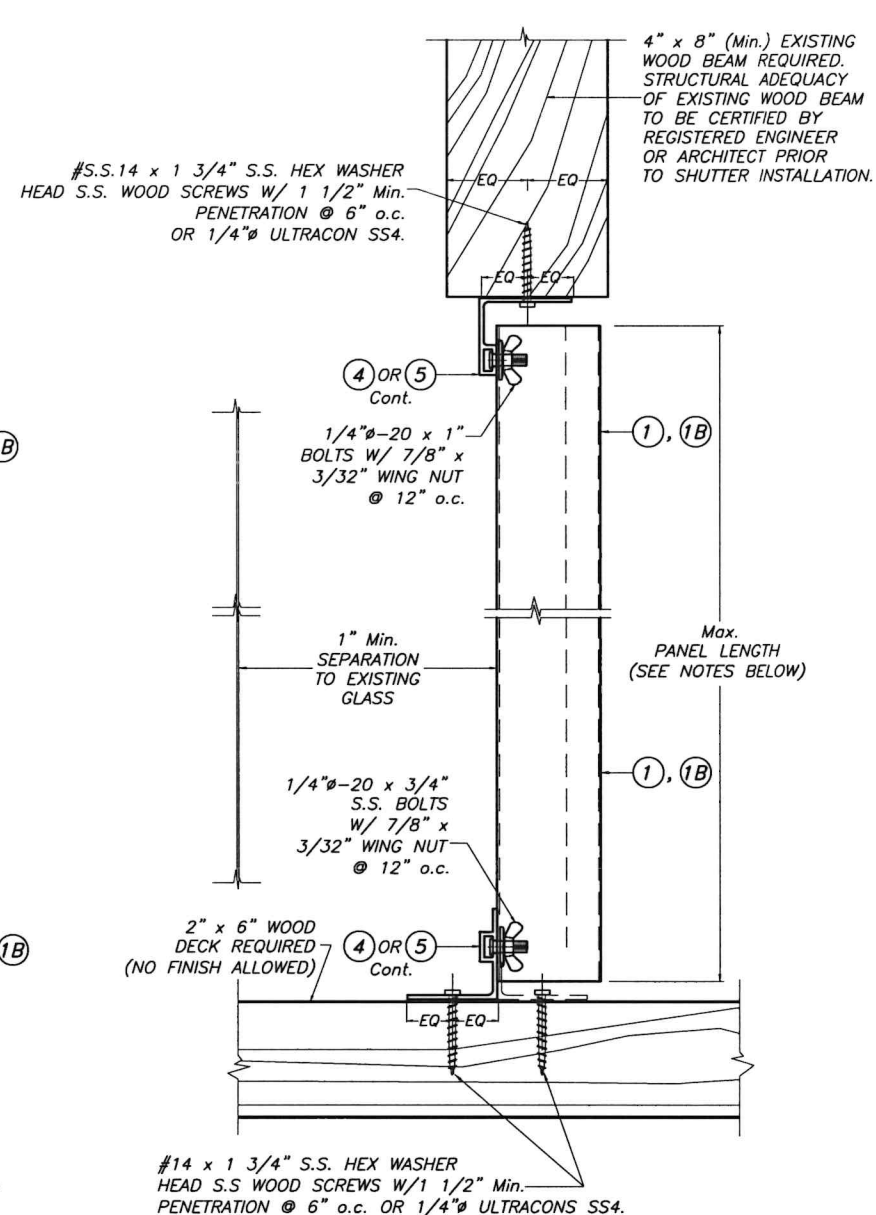
**WALL MOUNTING INSTALLATION
ALTERNATIVE 3**



**BUILD OUT INSTALLATION
ALTERNATIVE 4**



**BUILD OUT INSTALLATION
ALTERNATIVE 5**



**CEILING & FLOOR MOUNTING INSTALLATION
ALTERNATIVE 6**

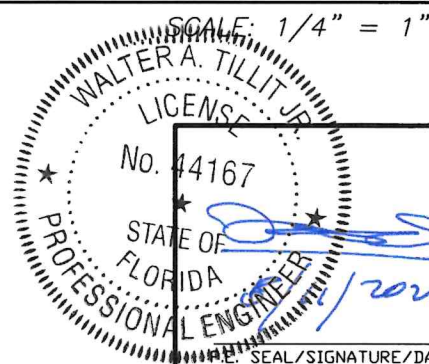
NOTE FOR COMBINATION OF SECTION:

WALL MOUNTING SECTIONS CAN BE COMBINED
IN ANY WAY TO SUIT ANY INSTALLATION.

NOTES:

1. INSTALLATION ARE ONLY VALID FOR MAX. A.S.D. DESIGN PRESSURE RATING AND PANEL'S LENGTHS AS PER SCHEDULE SHOWN ON SHEETS 4 OF 5.
2. FOR WOOD FRAME CONSTRUCTION: WOOD MEMBERS TO BE SOUTHERN PINE No. 2, W/ SPECIFIC DENSITY OF 0.55 OR EQUAL.
3. ONLY STAINLESS STEEL ANCHORS ARE ALLOWED AT INSTALLATIONS WITHIN 300ft OF THE COASTAL SHORELINE.

INSTALLATION DETAILS ON EXISTING WOOD BUILDINGS



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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
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WALTER A. TILLIT Jr., P.E.
FLORIDA Lic. # 44167

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**CLEAR BERTHA STORM PANEL
(2.25" DEEP)**

EASTERN METAL SUPPLY, INC

4268 WEST ROADS DRIVE
WEST PALM BEACH, FL 33407

W.H.
DRAWN BY:

7/23/2026
DATE

26-229
DRAWING No

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 23-165	7/23/26	3	-	-
2	-	-	4	-	-

SHEET 5 OF 5