

GENERAL NOTES:

1. STORM PANEL SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2023 (8th EDITION) OF THE FLORIDA BUILDING CODE.
THIS STORM PANEL SYSTEM SHALL **NOT** BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES (MIAMI-DADE / BROWARD COUNTY).
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 Kd=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 BE FIRST REDUCED TO A.S.D. DESIGN WIND LOADS BY MULTIPLYING THEM BY 0.6 IN ORDER TO COMPARE THESE W/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 TO BE STAINLESS STEEL 304 OR 316 AISI SERIES OR CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018 W/ 50 KSI YIELD STRENGTH AND 90 KSI TENSILE STRENGTH & SHALL COMPLY W/ FLORIDA BUILDING CODE **SECTION 2411.3.3.4**.
5. BOLTS TO 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" Ø TAPCON ANCHORS MANUFACTURED BY I.T.W. BUILDEX.
-1/4" Ø X 7/8" CALK-IN ANCHORS OR ELCO MALE & FEMALE "PANELMATE" MANUFACTURED BY DEWALT, INC AND ELCO CONSTRUCTION PRODUCTS, RESPECTIVELY.
-1/4" Ø X 3/4" ALL POINTS SOLID-SET ANCHORS AS DISTRIBUTED BY ALL POINTS SCREW, BOLT & SPECIALTY COMPANY.

NOTES:

- A.1) MINIMUM EMBEDMENT INTO POURED CONCRETE OF TAPCON ANCHORS IS 1 3/4" AND FOR ELCO PANELMATES IS 1 3/4".
- A.2) 7/8" CALK-IN ANCHORS AND 3/4" SOLID SET ANCHORS SHALL BE ENTIRELY EMBEDDED INTO THE POURED CONCRETE. NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED.
1/4" Ø-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" Ø TAPCON ANCHORS MANUFACTURED BY I.T.W. BUILDEX.
-1/4" Ø X 7/8" CALK-IN ANCHORS OR ELCO MALE & FEMALE "PANELMATE" MANUFACTURED BY DEWALT, INC. AND ELCO CONSTRUCTION PRODUCTS, RESPECTIVELY.
-1/4" Ø X 3/4" ALL POINTS SOLID-SET ANCHORS AS DISTRIBUTED BY ALL POINTS SCREW, BOLT & SPECIALTY COMPANY.

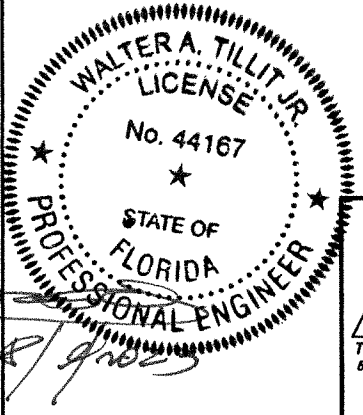
NOTES:

- B.1) MINIMUM EMBEDMENT OF TAPCON ANCHORS AND ELCO PANELMATES INTO THE CONCRETE BLOCK UNIT SHALL BE 1 1/4"
- B.2) 7/8" CALK-IN ANCHORS AND 3/4" SOLID SET ANCHORS SHALL BE ENTIRELY EMBEDDED INTO THE CONCRETE BLOCK UNIT. NO EMBEDMENT INTO STUCCO SHALL BE PERMITTED.
1/4" Ø-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.

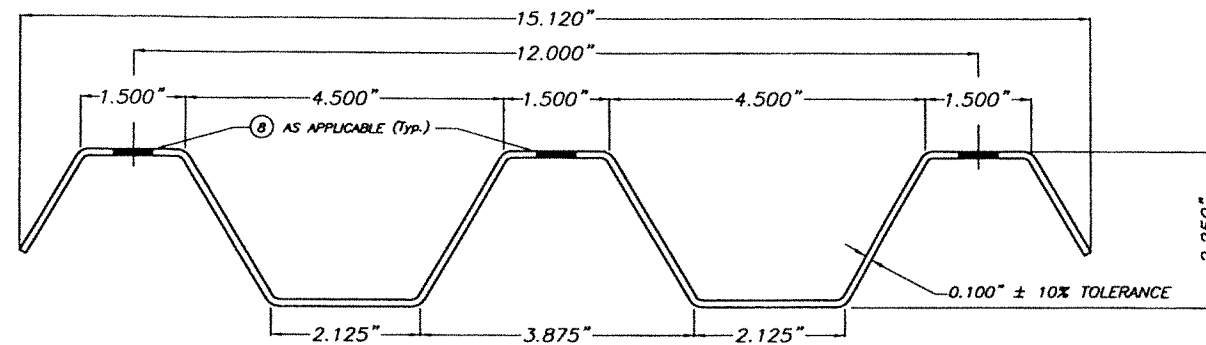
- (C) ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.

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 SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE.
10. SHUTTER MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT STORM PANEL SHUTTER IN ACCORDANCE WITH SECTION 1709.9.3 OF FLORIDA BUILDING CODE. ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABELING TO 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 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 PERMIT IS APPLIED TO.
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) 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 FLORIDA REGISTERED 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) THIS P.E.D. SHALL BEAR THE DATE AND ORIGINAL SEAL AND SIGNATURE OF THE PROFESSIONAL ENGINEER OF RECORD THAT PREPARED IT.

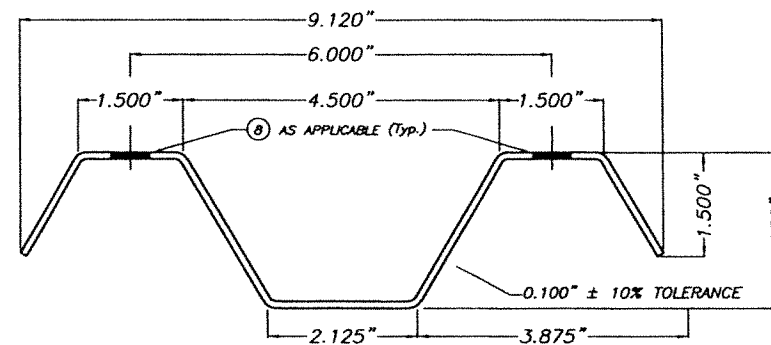
THIS DRAWING SHALL ONLY BE USED TO
OBTAIN PERMITS IN THE STATE OF FLORIDA



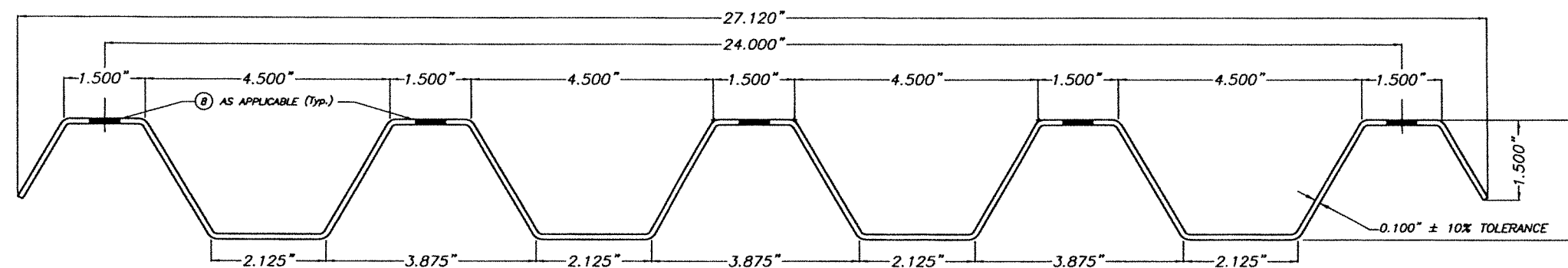
© 2023 TILTECO, INC.					
TILTECO INC.					
TILLIT TESTING & ENGINEERING COMPANY 6355 N.W. 36th St., Ste. 305, VERO BEACH, FL 33466 Phone: (305) 871-1530 Fax: (305) 871-1531 CA-0006719 WALTER A. TILLIT Jr. P.E. FLORIDA Lic. # 44167					
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)					
CLEAR 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
1	OLD 20-184	8/9/2023	3	-	-
2	-	-	4	-	-
Y.M. DRAWN BY: 8/9/2023 DATE 23-165 DRAWING No SHEET 1 OF 5					



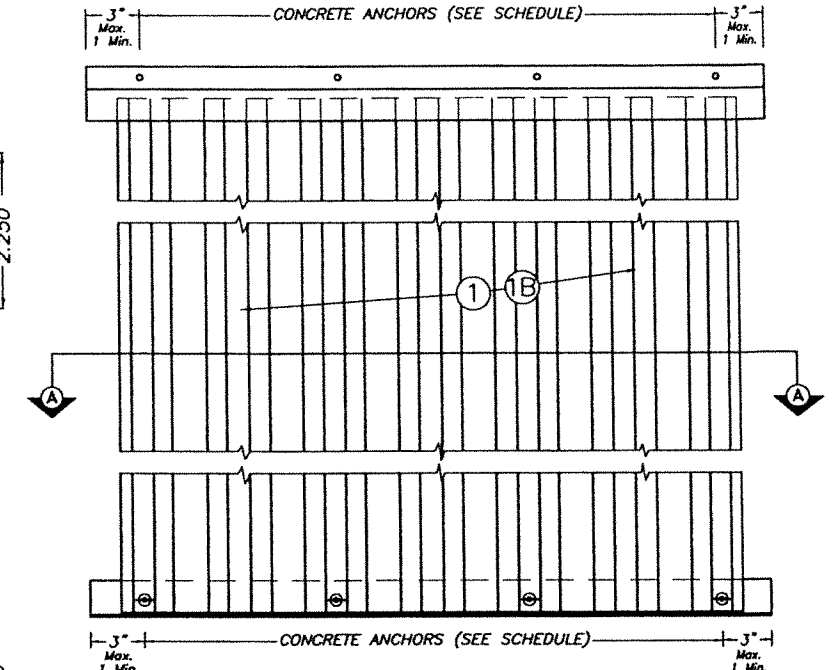
① **CLEAR PANEL**



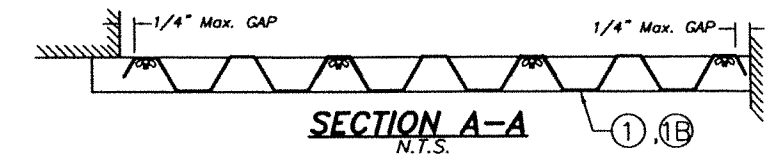
①A **HALF CLEAR PANEL**



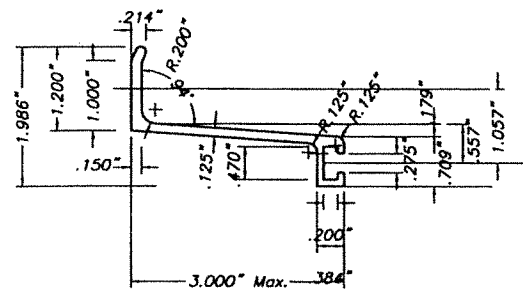
①B **DOUBLE WIDE CLEAR PANEL**



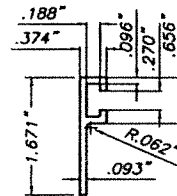
STORM PANEL TYPICAL ELEVATION
N.T.S.



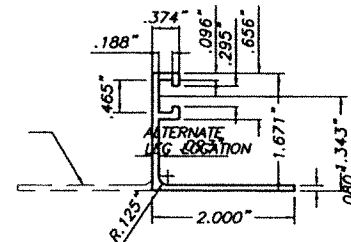
SECTION A-A
N.T.S.



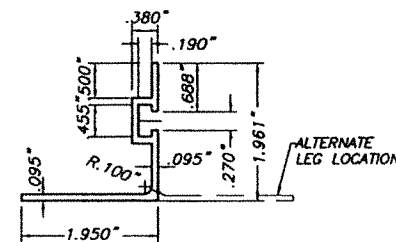
② **3\"/>**



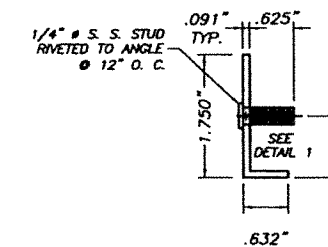
③ **3/8\"/>**



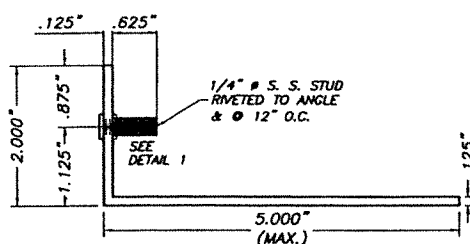
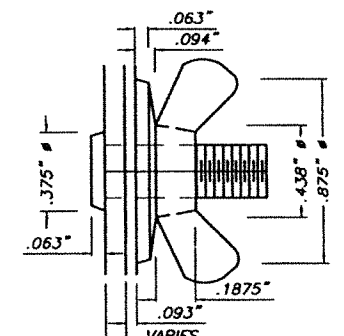
④ **\"/>**



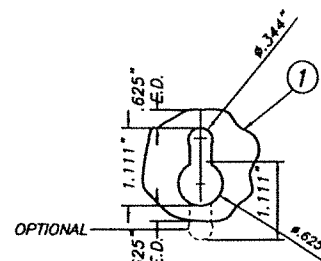
⑤ **REVERSED \"/>**



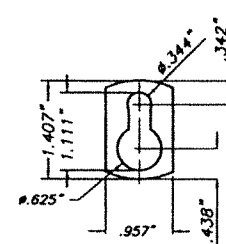
⑥ **MINI WALL 1.75\"/>**



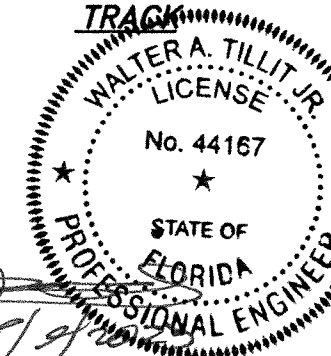
⑦ **2\"/>**



⑧ **KEY HOLE AT PANEL**



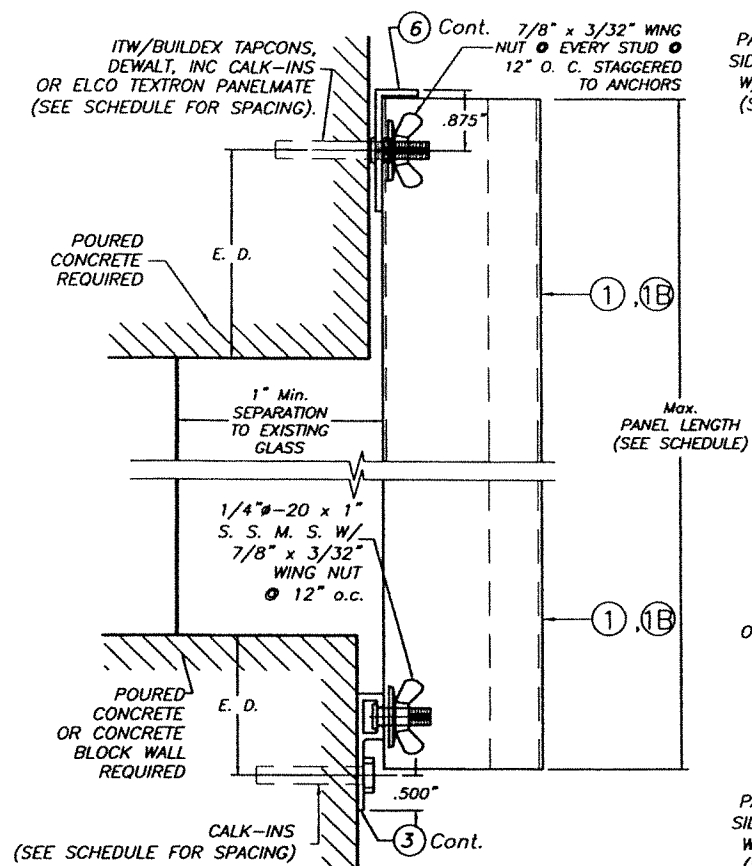
⑨ **KEY HOLE WASHER**
3105-H154 Alum. ALLOY



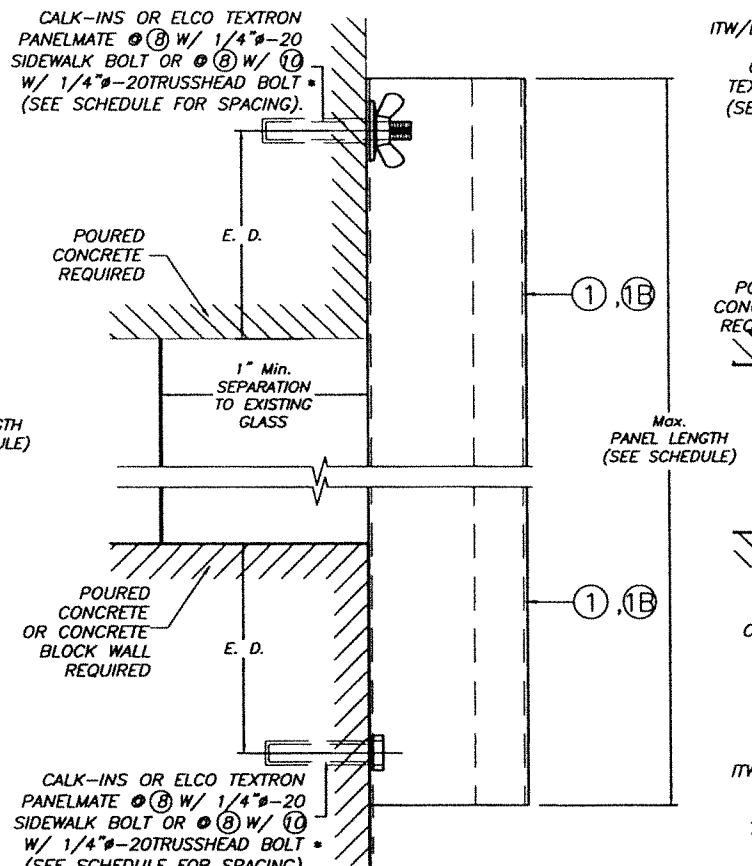
COMPONENTS

SCALE: 3/8" = 1"

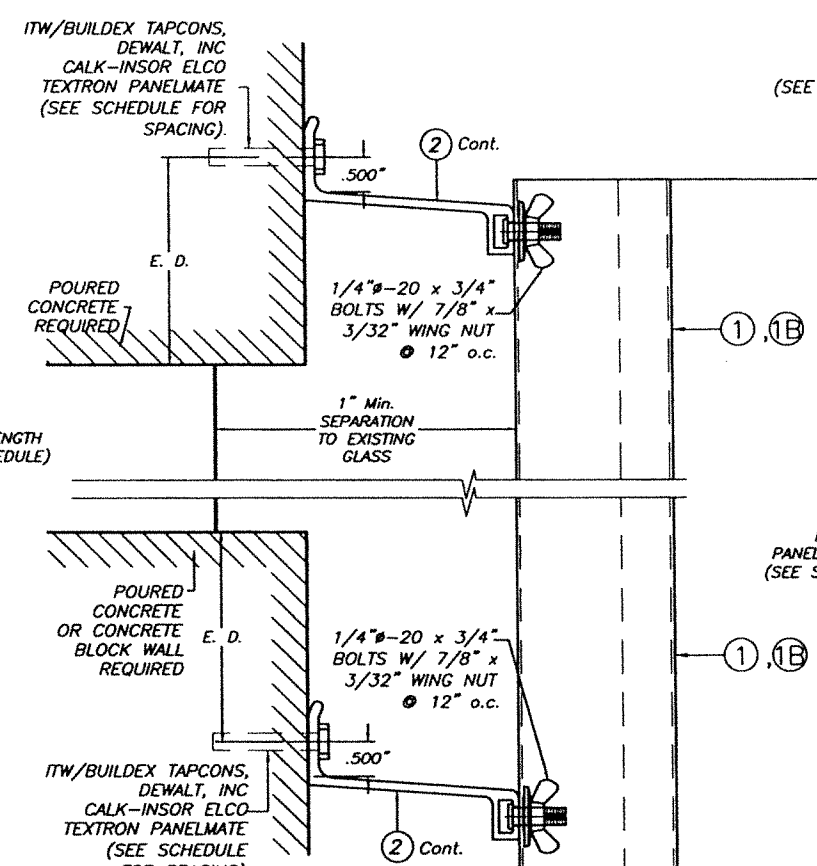
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)					
CLEAR BERTHA STORM PANEL (2.25" DEEP)				Y.M. DRAWN BY:	
EASTERN METAL SUPPLY, INC				8/9/2023 DATE	
4268 WEST ROADS DRIVE WEST PALM BEACH, FL 33407				23-165 DRAWING No	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-184	8/9/2023	3	-	-
2	-	-	4	-	-



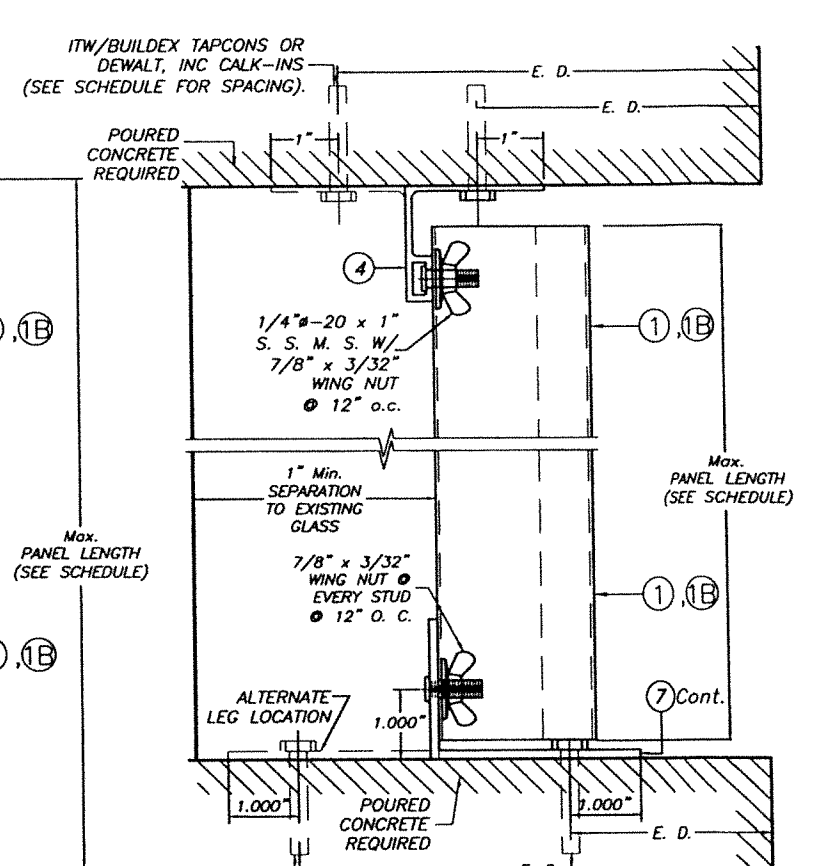
WALL MOUNTING INSTALLATION
SECTION 1



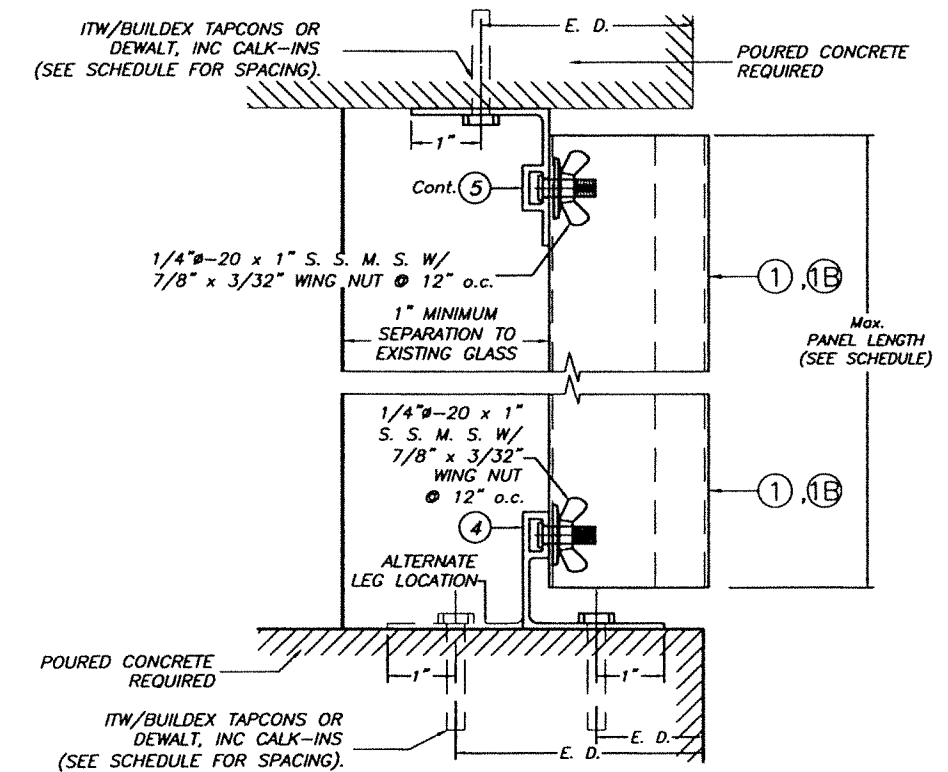
WALL MOUNTING INSTALLATION (D. M.)
SECTION 2



BUILD OUT INSTALLATION
SECTION 3



CEILING & FLOOR MOUNTING INSTALLATION
SECTION 4



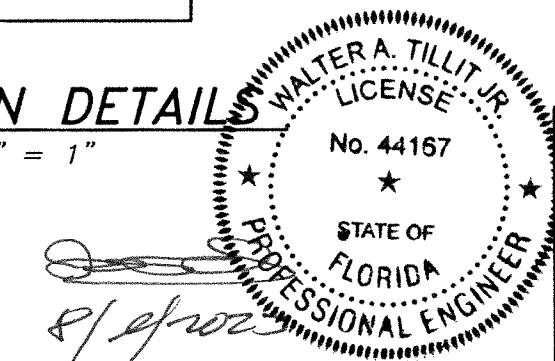
CEILING & FLOOR MOUNTING INSTALLATION
SECTION 5

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

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

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

INSTALLATION DETAILS
SCALE: 3/8" = 1"



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TILTECO INC.

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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					Y.M. DRAWN BY:
4268 WEST ROADS DRIVE WEST PALM BEACH, FL 33407					8/9/2023 DATE
					23-165 DRAWING No
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-184	8/9/2023	3	-	-
2	-	-	4	-	-

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"

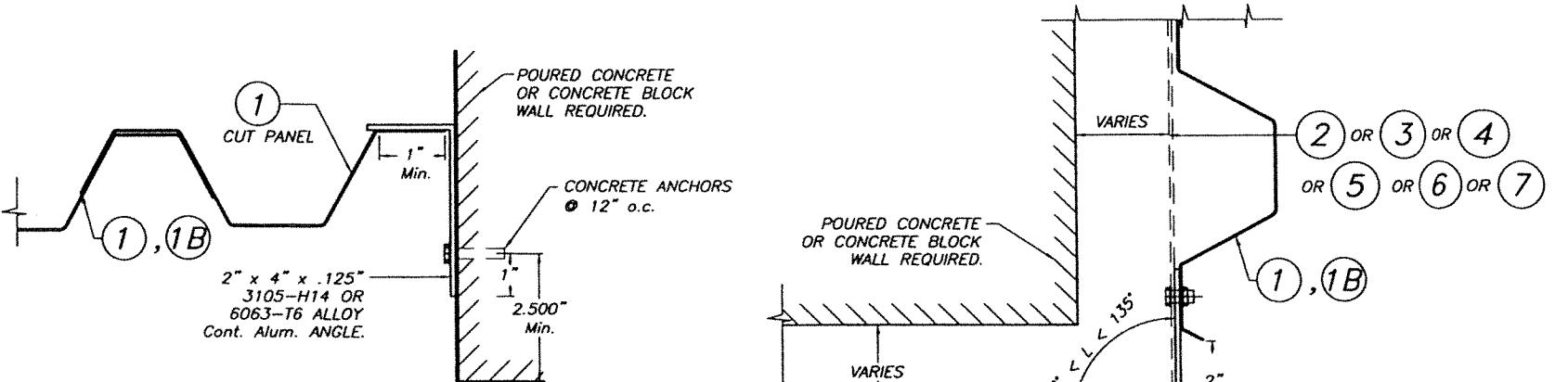
* Min. PANEL LENGTH IS 3'-0"

** 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. (NOTE : Min. E. D. FOR CALK-IN ANCHORS IS 2 1/2"). 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.

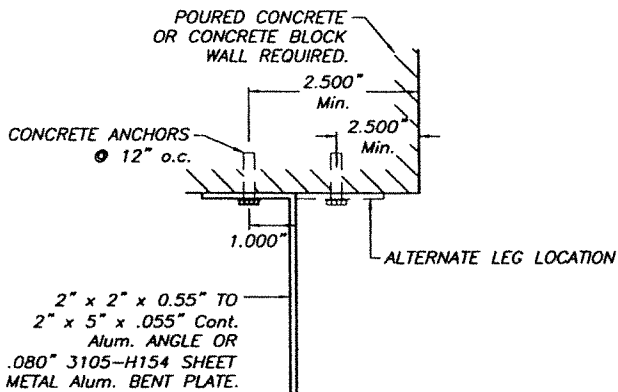
ACTUAL E. D.	FACTOR	
	TAPCON/PANELMATES	CALK-IN
3"	.86	.75
2 1/2"	.71	.50
2"	.50	-

ANCHORS LEGEND

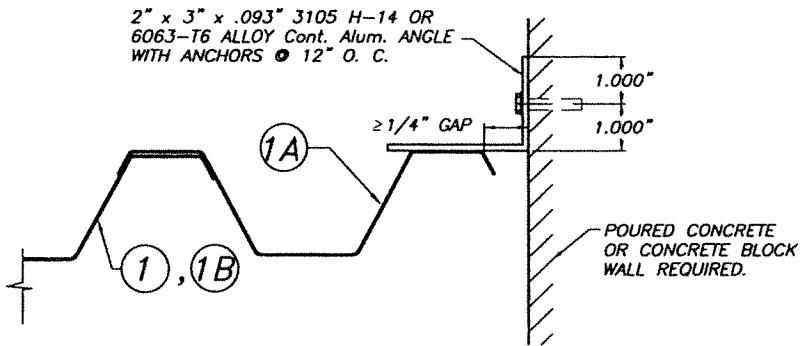
ANCHORS TYPE	ANCHOR MIN. SPACING
TAPCON/PANELMATES	3.0"
CALK-IN	2.5"



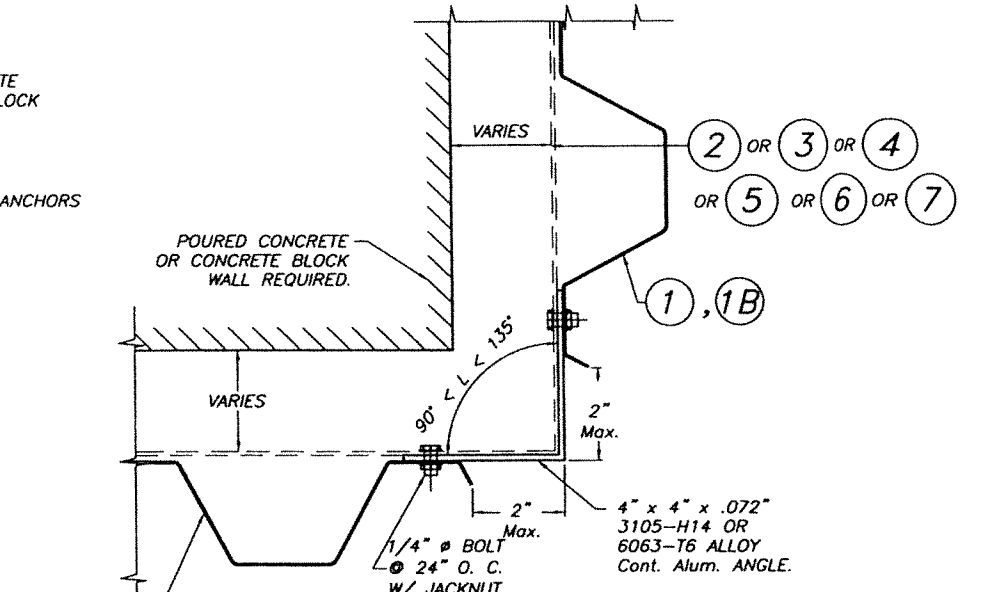
CASE A (Plan)



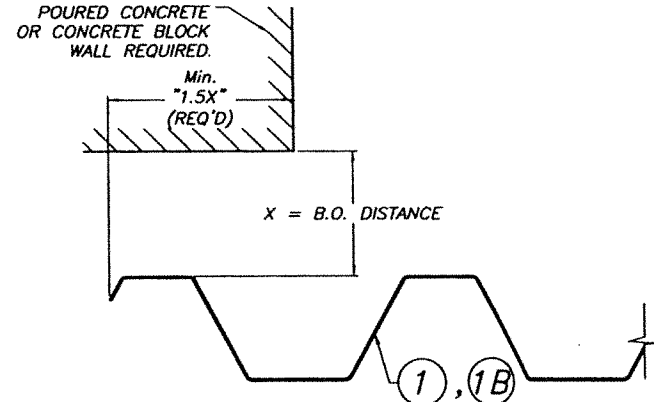
CASE C (Plan)



CASE D (Plan)



CASE B (Plan)



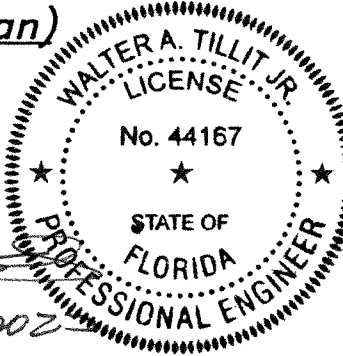
CASE E (Plan) *

SCALE: 1/4" = 1"

END CLOSURES DETAILS

SCALE: 1/4" = 1"

CASE D (Plan)



FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

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TILTECO INC.

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

CLEAR BERTHA STORM PANEL
(2.25" DEEP)

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

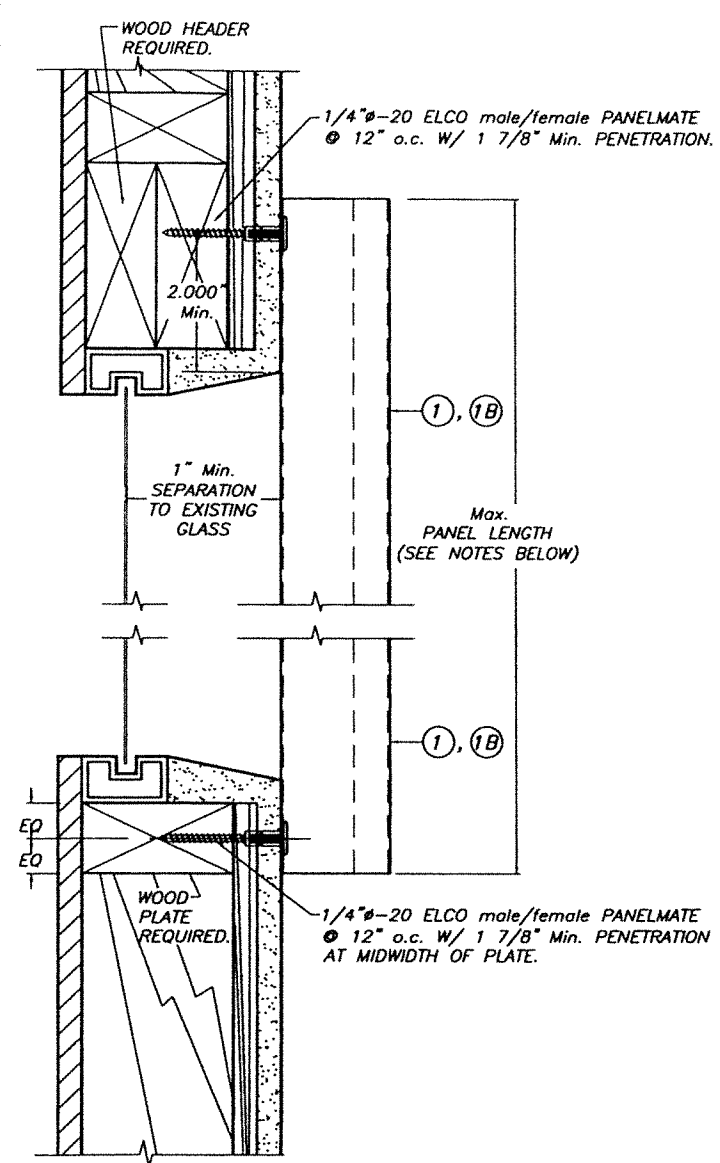
Y.M.
DRAWN BY:

8/9/2023
DATE

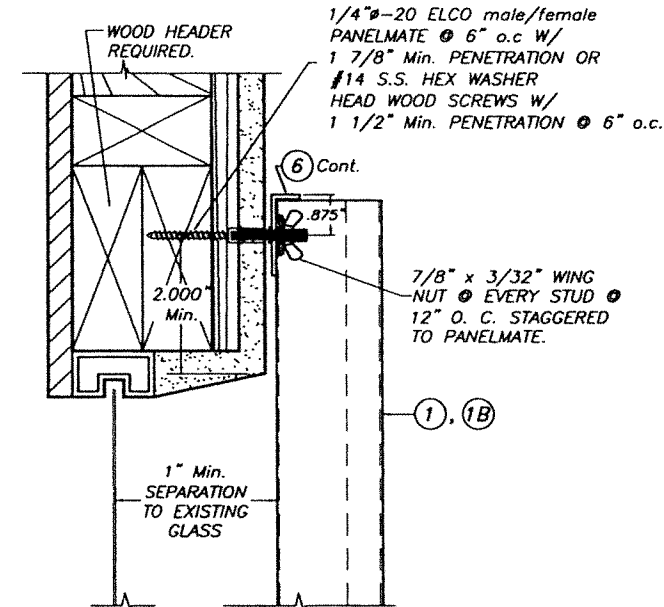
23-165
DRAWING No

SHEET 4 OF 5

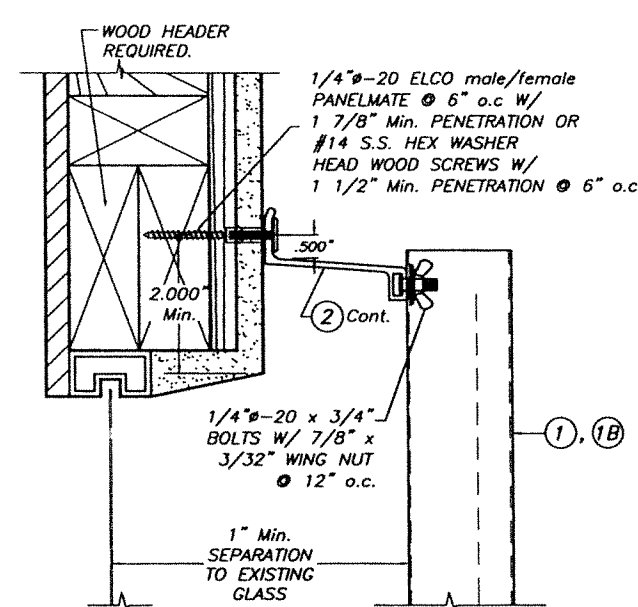
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-184	8/9/2023	3	-	-
2	-	-	4	-	-



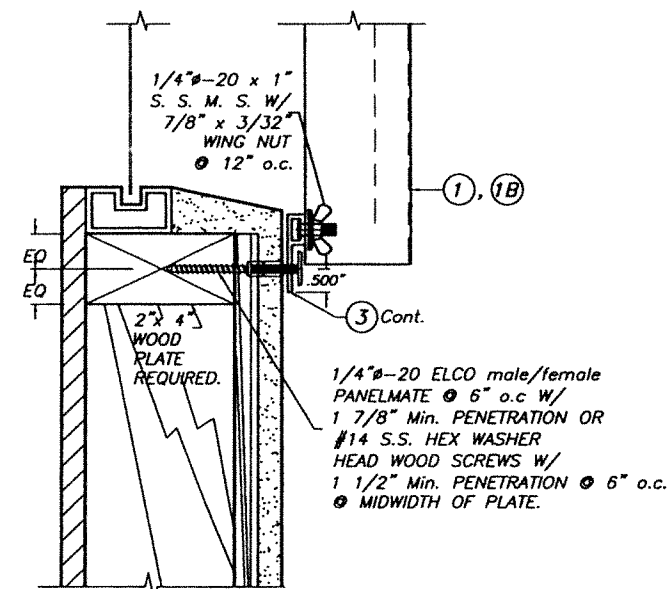
**WALL MOUNTING (D. M.)
ALTERNATIVE 1**



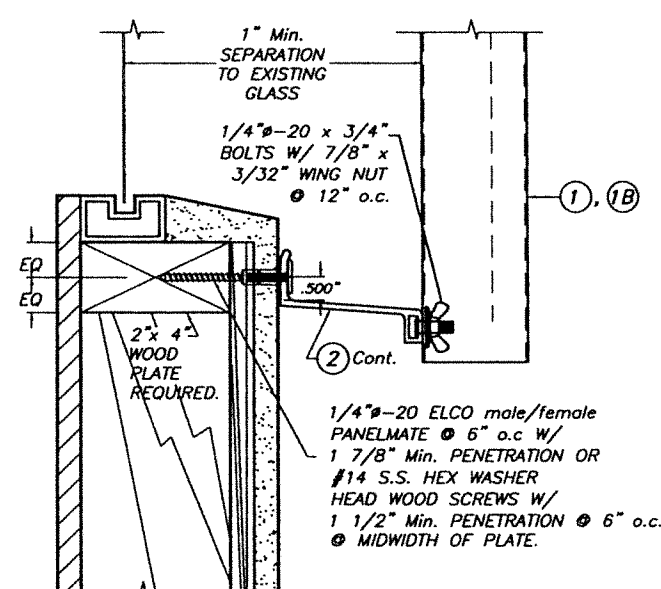
**WALL MOUNTING INSTALLATION
ALTERNATIVE 2**



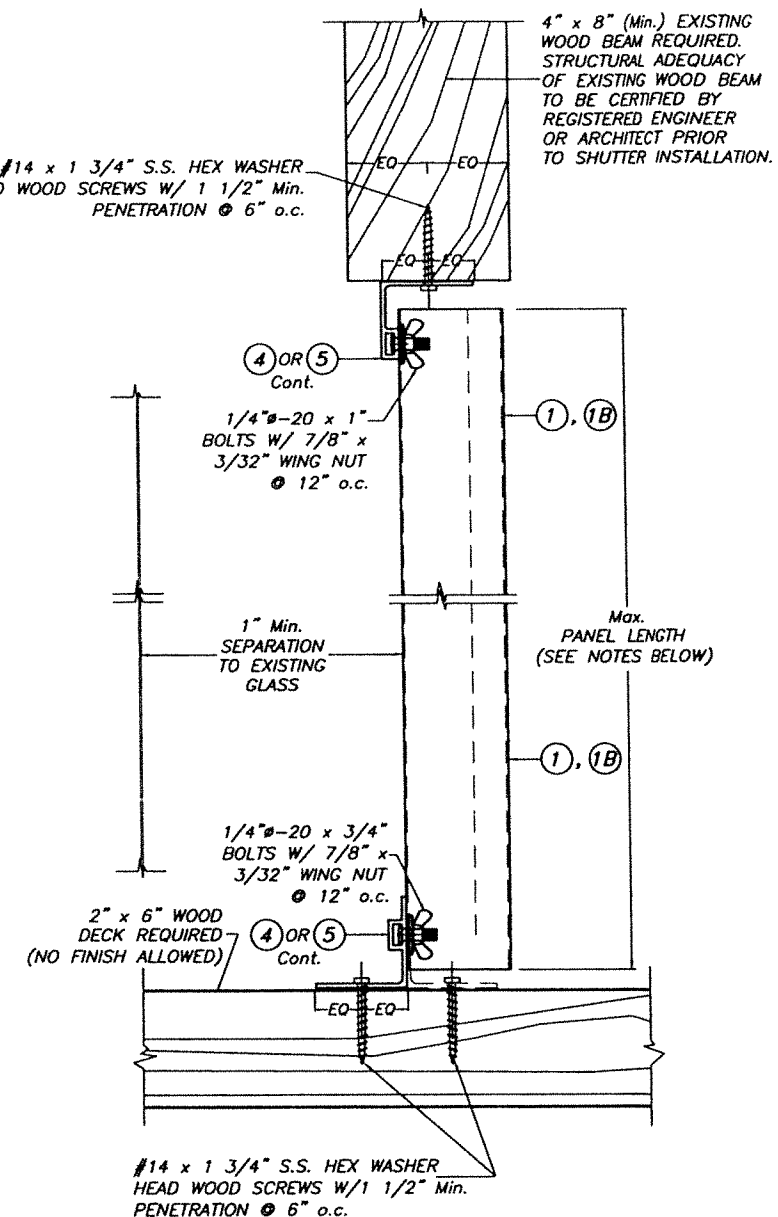
**BUILD OUT INSTALLATION
ALTERNATIVE 4**



**WALL MOUNTING INSTALLATION
ALTERNATIVE 3**



**BUILD OUT INSTALLATION
ALTERNATIVE 5**



**CEILING & FLOOR MOUNTING INSTALLATION
ALTERNATIVE 6**

NOTE FOR COMBINATION OF SECTION:

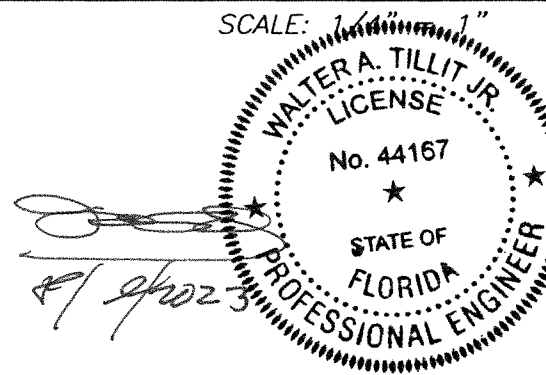
WALL MOUNTING SECTIONS CAN BE COMBINED
IN ANY WAY TO SUIT ANY INSTALLATION.

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.

INSTALLATION DETAILS ON EXISTING WOOD BUILDINGS

SCALE: 1/4" = 1'



FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)					
© 2023 TILTECO, INC.				Y.M. DRAWN BY:	
TILTECO INC.				8/9/2023 DATE	
TILLIT TESTING & ENGINEERING COMPANY 6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166 Phone : (305) 871-1530 . Fax : (305) 871-1531 CA-0006719 WALTER A. TILLIT JR. P.E. FLORIDA Lic. # 44167				23-165 DRAWING No	
EASTERN METAL SUPPLY, INC 4268 WEST ROADS DRIVE WEST PALM BEACH, FL 33407				SHEET 5 OF 5	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-184	8/9/2023	3	-	-
2	-	-	4	-	-