

GENERAL NOTES:

1. NAUTILUS ROLLING SHUTTER SYSTEM 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. NAUTILUS ROLLING SHUTTER 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 BASIC WIND SPEED AS REQUIRED BY THE JURISDICTION WHERE THESE SHUTTERS WILL BE INSTALLED FOR A DIRECTIONALITY FACTOR $K_d=0.85$. USING ASCE 7-22 FOR INSTALLATIONS UNDER 2020 FBC AND SHALL NOT EXCEED THE MAXIMUM (A.S.D.) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 15 THRU 18 & 20 THRU 26. 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 TO COMPARE THESE W/ MAX. (A.S.D) DESIGN PRESSURE RATINGS INDICATED ON SHEETS 15 THRU 18 & 20 THRU 26.
2. IN ORDER TO VERIFY THAT COMPONENTS AND ANCHORS ON THIS P.E.D. AS TESTED WERE NOT OVER STRESSED, A 33% INCREASE IN ALLOWABLE STRESS FOR WIND LOADS WAS NOT USED IN THEIR ANALYSIS. FASTENERS SPACINGS TO WOOD HAVE BEEN DETERMINED IN ACCORDANCE WITH N.D.S. 2018. NAUTILUS ROLLING SHUTTER SYSTEM'S ADEQUACY FOR IMPACT AND CYCLIC RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1609.1.2 OF THE ABOVE MENTIONED CODE AS AMERICAN TEST LAB OF SOUTH FLORIDA. REPORT # 1030.01-08 AS PER ASTM E 1996, E 1886 AND E 330 STANDARDS, QUALIFYING INSTALLATIONS FOR WIND ZONES 1, 2, 3 & 4, MISSILE TYPE D AND ONLY APPLICABLE TO BASIC PROTECTION INSTALLATIONS, AS DEFINED BY ASTM E 1996 SEE SHEETS 19 & 20 FOR ADDITIONAL LIMITATIONS.
3. ALL ALUMINUM EXTRUSIONS SHALL BE 6063-T6 ALLOY (UNLESS OTHERWISE NOTED), SEE SHEET 2.
4. ALL SCREWS (EXCEPT END RETENTION SCREW ) TO BE STAINLESS STEEL 304 OR 316 SERIES WITH 50 ksi YIELD STRENGTH AND 90 ksi TENSILE STRENGTH OR CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018. ALL S.D.S. ARE TEK SCREWS MANUFACTURED BY ITW BUILDEX & SHALL COMPLY W/ FLORIDA BUILDING CODE SECTION 2411.3.3.4.
5. BOLTS TO BE ASTM A-307, GALVANIZED OR AISI 304 OR 316 SERIES STAINLESS STEEL WITH 36 ksi MINIMUM YIELD STRENGTH.
6. NAUTILUS ROLLING SHUTTER SYSTEM BEARS U.S. PATENTS #6,095,225 AND #7,409,980.
7. ANCHORS TO WALL FOR  SIDE RAIL SHALL BE AS FOLLOWS:
- (A) TO EXISTING POURED CONCRETE: MIN. 3000 p.s.i. COMPRESSIVE STRENGTH.
- 5/16" ϕ TAPCON XL ANCHORS AS MANUFACTURED BY ITW BUILDEX, INC.
-3/8" ϕ KWIK BOLT 3 ANCHORS AS MANUFACTURED BY HILTI, INC.
- A.1) MINIMUM EMBEDMENT INTO POURED CONCRETE SHALL BE:
2 1/4" FOR 5/16" ϕ TAPCON XL ANCHORS & 2 1/2" FOR 3/8" ϕ KWIK BOLT 3 ANCHORS.
NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
- A.2) MINIMUM EDGE DISTANCE (E.D.) INTO POURED CONCRETE SHALL BE:
4" FOR 5/16" ϕ TAPCON XL ANCHORS & 5" FOR 3/8" ϕ KWIK BOLT 3 ANCHORS. EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.
- A.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS.
- (B) TO EXISTING GROUT FILLED CELL CONCRETE BLOCK WALL: ASTM C-90
- 5/16" ϕ TAPCON XL ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.
- B.1) MINIMUM EMBEDMENT OF 5/16" ϕ TAPCON XL ANCHORS INTO THE GROUT FILLED CELL CONCRETE BLOCK UNIT SHALL BE 2 1/4".
NO EMBEDMENT INTO STUCCO SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
- B.2) MINIMUM EDGE DISTANCE (E.D.) OF 5/16" ϕ TAPCON XL ANCHORS INTO GROUT FILLED CELL CONCRETE BLOCK SHALL BE 4". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.
- B.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS.
- (C) TO EXISTING WOOD FRAME BUILDING: SPRUCE PINE-FIR-SOUTH (G=0.36), DOUGLAS-FIR-SOUTH (G=0.46) OR SOUTHERN PINE #2 W/ G = 0.55 MIN.
- 5/16" ϕ TAPCON XL ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.
- C.1) MINIMUM EMBEDMENT OF TAPCON XL ANCHORS, INTO THE WOOD FRAME UNIT SHALL BE 2 1/4" PHYSICAL THREADED PENETRATION.
NO EMBEDMENT INTO FINISH MATERIAL SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
- C.2) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON ANCHORS, INTO WOOD SHALL BE 2 1/4". EDGE DISTANCE IS BEYOND ANY FINISH MATERIAL.
- C.3) IN CASE THAT PRECAST STONE, PRECAST CONCRETE OR BRICK PANELS, VENEER OR PAVERS BE FOUND ON THE EXISTING WALL OR FLOOR, ANCHORS SHALL BE LONG ENOUGH TO REACH THE MAIN STRUCTURE BEHIND SUCH PANELS.

8. ANCHORS SHALL BE INSTALLED FOLLOWING ALL OF THE RECOMMENDATIONS AND SPECIFICATIONS OF THE ANCHOR'S MANUFACTURER.
9. ANCHORS REQUIRED FOR STORM BARS CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEET 9.
- 3/8" ϕ x 1 1/4" CALK-INS MANUFACTURED BY DEWALT, INC.
-1/4" ϕ x 3/4" SOLID-SET MANUFACTURED BY ALL POINT, INC.
-3/8" ϕ KWIK BOLT TZ MANUFACTURED BY HILTI, INC.
-5/16" ϕ TAPCON MANUFACTURED BY ITW BUILDEX, INC
- MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT ABOVE MENTIONED SHEET.
EDGE DISTANCE AND EMBEDMENTS ARE BEYOND ANY FINISH MATERIAL.
- | ANCHOR | SPACING ϕ 100% | EDGE DISTANCE ϕ 100% | CONCRETE | EMBEDMENT | GROUT FILLED OR CONCRETE BLOCK |
|------------------------------|---------------------|---------------------------|-------------------|-----------|--------------------------------|
| 3/8" ϕ x 1 1/4" CALK-IN | 3 3/4" | 4 1/2" | 1 1/4" (3000 psi) | | NOT ALLOWED |
| 1/4" ϕ x 3/4" SOLID-SET | 3" | 3" | 7/8" (3000 psi) | | NOT ALLOWED |
| 3/8" ϕ KWIK BOLT TZ | 9" | 4" | 2 1/2" (3000 psi) | | NOT ALLOWED |
| 5/16" ϕ TAPCON XL | 3 3/4" | 3 1/8" | 2 1/4" (2899 psi) | | NOT ALLOWED |
10. ANCHORS REQUIRED FOR MULLION CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 10, 10A, 11, 11A, 12, 12A, 13 & 13A.
- KWIK BOLT TZ EXPANSION ANCHOR MANUFACTURED BY HILTI, INC.
-HUS-H SCREW ANCHOR MANUFACTURED BY HILTI, INC.
-WEDGE-BOLT ANCHOR MANUFACTURED BY DEWALT, INC.
- MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT ABOVE MENTIONED SHEET.
EDGE DISTANCE AND EMBEDMENTS ARE BEYOND ANY FINISH MATERIAL.
- | ANCHOR | SPACING ϕ 100% | EDGE DISTANCE ϕ 100% | CONCRETE | EMBEDMENT ϕ 100% | GROUT FILLED OR CONCRETE BLOCK |
|---------------------------------------|---------------------|---------------------------|-------------------|-----------------------|--------------------------------|
| 3/4" ϕ KWIK BOLT TZ | 27" | 9" | 4 3/4" (3000 psi) | | NOT ALLOWED |
| 1/2" ϕ KWIK BOLT TZ | 22 1/2" | 7 1/2" | 3 1/4" (3000 PSI) | | NOT ALLOWED |
| 3/8" ϕ KWIK BOLT TZ | 6" | 4 3/8" | 2" (3000 PSI) | | NOT ALLOWED |
| 3/8" ϕ HUS-H SCREW | 4" | 5" | 2" (3000 PSI) | | NOT ALLOWED |
| 3/8" ϕ WEDGE-BOLT | 4 1/2" | 4 1/2" | 2 1/2" (3000 PSI) | | NOT ALLOWED |
| 1/2" ϕ HUS-H SCREW OR WEDGE BOLT | 6" | 6" | 3" (3000 PSI) | | NOT ALLOWED |
| 5/8" ϕ HUS-H SCREW OR WEDGE BOLT | 7 1/2" | 7 1/2" | 2 1/2" (3000 PSI) | | NOT ALLOWED |
11. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL PRODUCT COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL PRODUCT TRACKS ALL AROUND FULL LENGTH.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE PRODUCT IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. THIS PRODUCT SHALL ONLY BE ATTACHED TO CONCRETE, CONCRETE BLOCK OR WOOD FRAME BUILDINGS.
13. 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.
14. LIFTING MECHANISM NOT PART OF THIS APPROVAL.
15. (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.

16. PRODUCT MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT PRODUCT IN ACCORDANCE WITH SECTION 1709.9.2 OF FLORIDA BUILDING CODE. ONE LABEL SHALL BE PLACED FOR EVERY OPENING.

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

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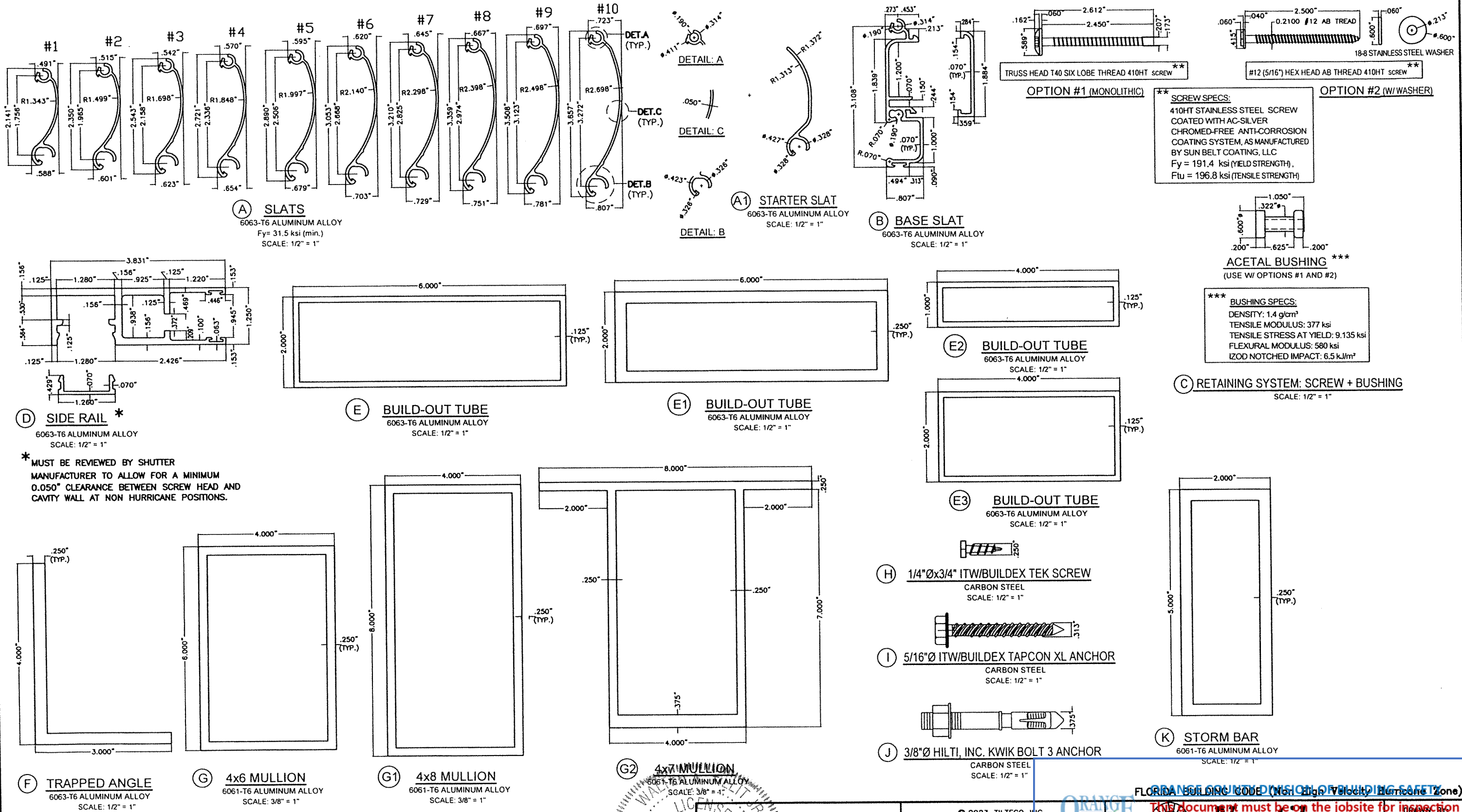
TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone: (305)871-1530 Fax: (305)871-1531
e-mail: tilteco@atl.com
CA-0006715
WALTER A. TILLIT Jr., P.E.
FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document must be on the jobsite for inspection
Permit # B25007701
We're Taking The Shutter Industry By Storm!
1-844-320-4800
668 SW 11th St. PORT ST. LUCIE, FL 34984
Date: 05/12/23

REV. No DESCRIPTION DATE REV. No DESCRIPTION DATE
1 01-30-004 02/18/23 2

23-100
DRAWING No
SHEET 1 OF 26



COMPONENTS

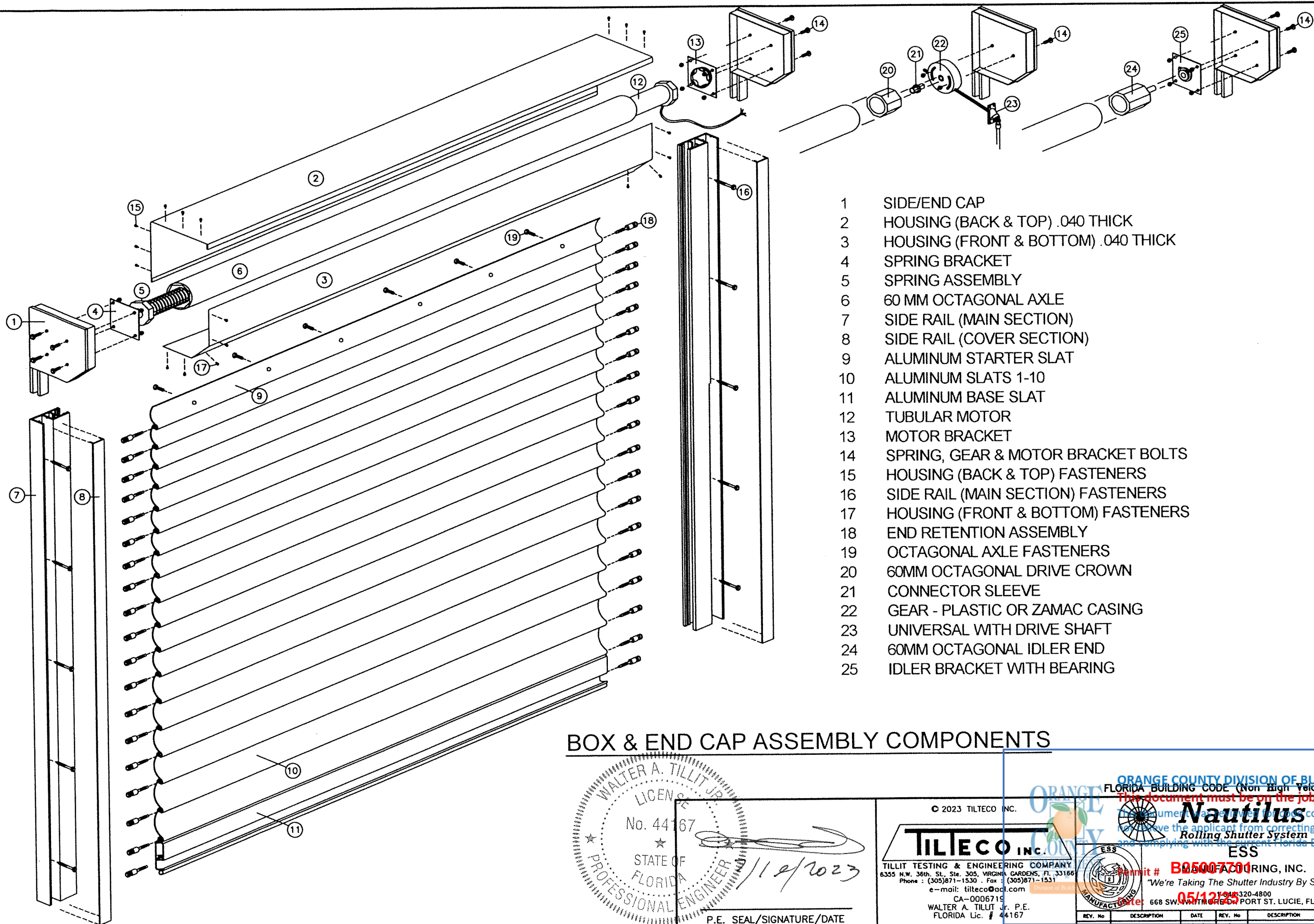
WALTER A. TILTECO, INC.
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.
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ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
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This document was reviewed for code compliance; this does not relieve the manufacturer of any errors and omissions.
Rolling Shutter System
ESS
Permit # **B25007701**
DATE: **05/12/25**
MANUFACTURING, INC.
"We're Taking The Shutter Industry By Storm!"
1-844-320-4800
668 SW. 9th Ave. PORT ST. LUCIE, FL 34984

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-064	07/19/23	2		

23-100
DRAWING No
SHEET 2 OF 26



- 1 SIDE/END CAP
- 2 HOUSING (BACK & TOP) .040 THICK
- 3 HOUSING (FRONT & BOTTOM) .040 THICK
- 4 SPRING BRACKET
- 5 SPRING ASSEMBLY
- 6 60 MM OCTAGONAL AXLE
- 7 SIDE RAIL (MAIN SECTION)
- 8 SIDE RAIL (COVER SECTION)
- 9 ALUMINUM STARTER SLAT
- 10 ALUMINUM SLATS 1-10
- 11 ALUMINUM BASE SLAT
- 12 TUBULAR MOTOR
- 13 MOTOR BRACKET
- 14 SPRING, GEAR & MOTOR BRACKET BOLTS
- 15 HOUSING (BACK & TOP) FASTENERS
- 16 SIDE RAIL (MAIN SECTION) FASTENERS
- 17 HOUSING (FRONT & BOTTOM) FASTENERS
- 18 END RETENTION ASSEMBLY
- 19 OCTAGONAL AXLE FASTENERS
- 20 60MM OCTAGONAL DRIVE CROWN
- 21 CONNECTOR SLEEVE
- 22 GEAR - PLASTIC OR ZAMAC CASING
- 23 UNIVERSAL WITH DRIVE SHAFT
- 24 60MM OCTAGONAL IDLER END
- 25 IDLER BRACKET WITH BEARING

BOX & END CAP ASSEMBLY COMPONENTS

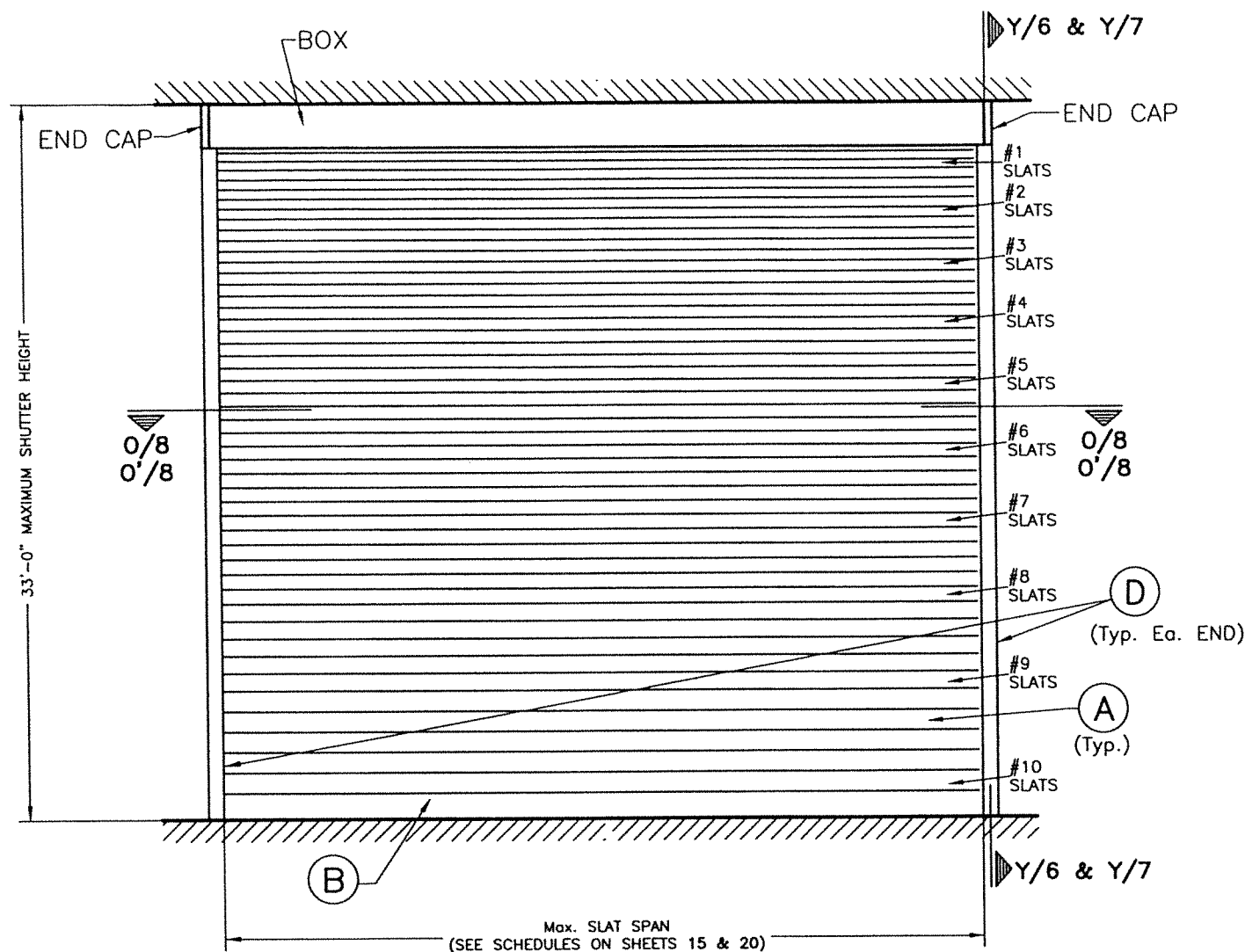
WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
1/12/2023
P.E. SEAL/SIGNATURE/DATE

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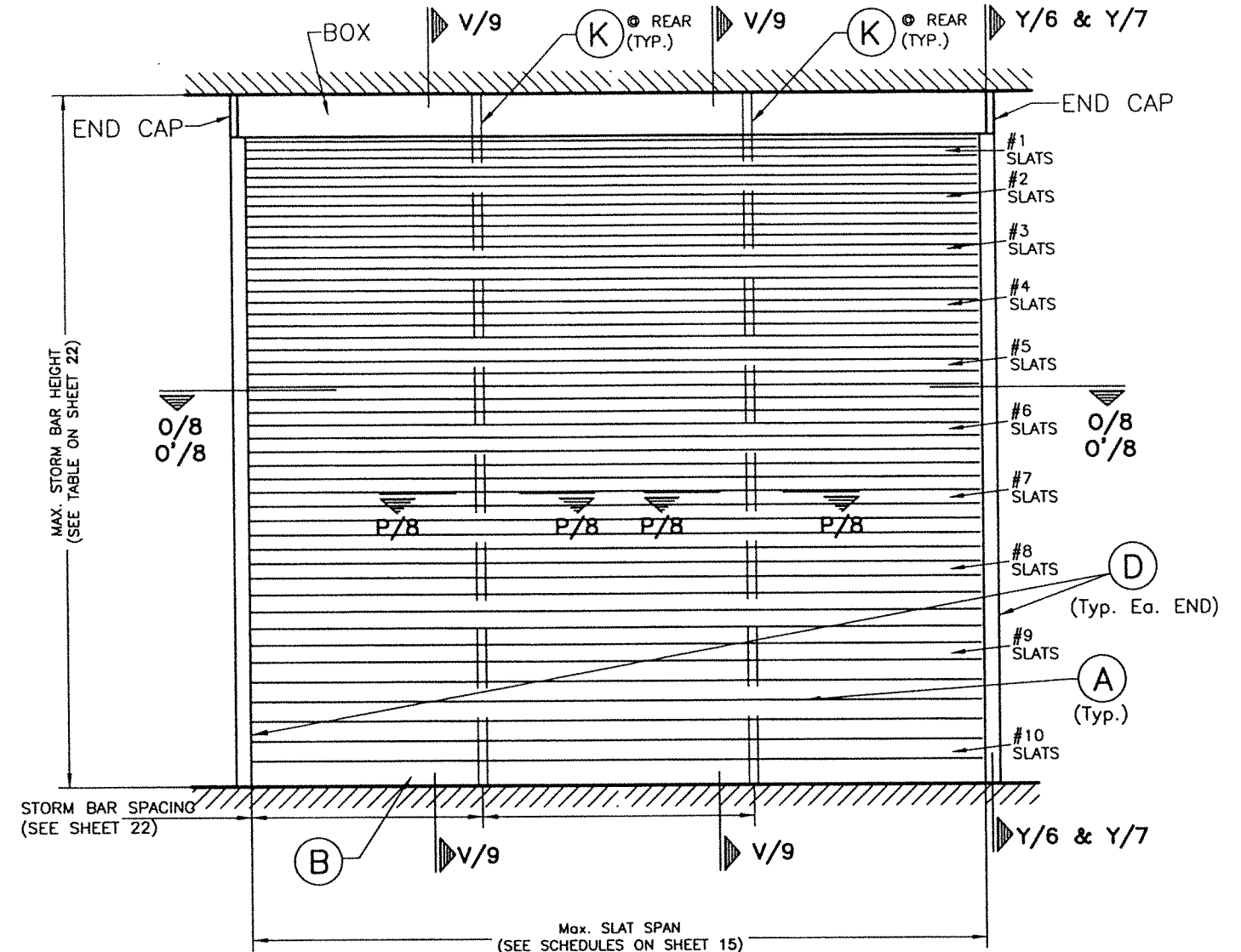
ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
Nautilus
Rolling Shutter System
ESS
Permit # **B25007701**
"We're Taking The Shutter Industry By Storm!"
DATE: 05/12/23
668 SW. 11th Ave. 2nd FL. PORT ST. LUCIE, FL. 34984

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-06A	07/19/23	-		

23-100
DRAWING No
SHEET 3 OF 26



TYPICAL SINGLE UNIT ELEVATION W/O STORM BARS *, **
NOTE: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.
N.T.S.



TYPICAL SINGLE UNIT ELEVATION W/ STORM BARS *
NOTE: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.
N.T.S.

PROCEDURE FOR SLAT INSTALLATION GIVEN A SHUTTER HEIGHT:

- * **CASE 1:** SHUTTER HEIGHT EQUAL OR LESS THAN 11'-0" APPLICABLE TO INSTALLATIONS W/O STORM BARS, W/ STORM BARS OR W/ STORM BARS & MULLIONS W/ HEIGHTS UP TO 11'-0".
- (a) CURTAIN SHALL START W/ #1 SLATS AT TOP, FOLLOWED BY #2, #3, THEREAFTER, ALL THE WAY DOWN. EACH SLAT # SHALL CONSIST OF MIN. FIVE (5) SLATS OF THAT SLAT NUMBER. PROCEDURE FOR ADDING SLATS DOWNWARD BELOW #1 SLAT SHALL BE CONTINUED UNTIL TOTAL SHUTTER HEIGHT IS COMPLETED. QUANTITY OF FINAL SLAT NUMBER INSTALLED BEFORE BOTTOM SLAT (B) MAY VARY WITH SHUTTER'S HEIGHT.
- (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.
- ** **CASE 2:** SHUTTER HEIGHT LARGER THAN 11'-0" APPLICABLE TO INSTALLATIONS W/O STORM BARS AND W/ OR W/O MULLIONS W/ HEIGHTS LARGER THAN 11'-0".
- (a) CURTAIN SHALL START W/ #1 SLATS AT TOP, FOLLOWED BY #2, #3, THEREAFTER, ALL THE WAY DOWN. EACH SLAT # SHALL CONSIST OF MIN. FIVE (5) SLATS OF THAT SLAT NUMBER. PROCEDURE FOR ADDING SLATS DOWNWARD BELOW #1 SLAT SHALL BE CONTINUED UNTIL #10 SLAT IS INSTALLED. AFTER #10 SLAT IS INSTALLED, ADDITIONAL #10 SLATS MUST BE USED TO COMPLETE THE TOTAL SHUTTER HEIGHT.
- (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.

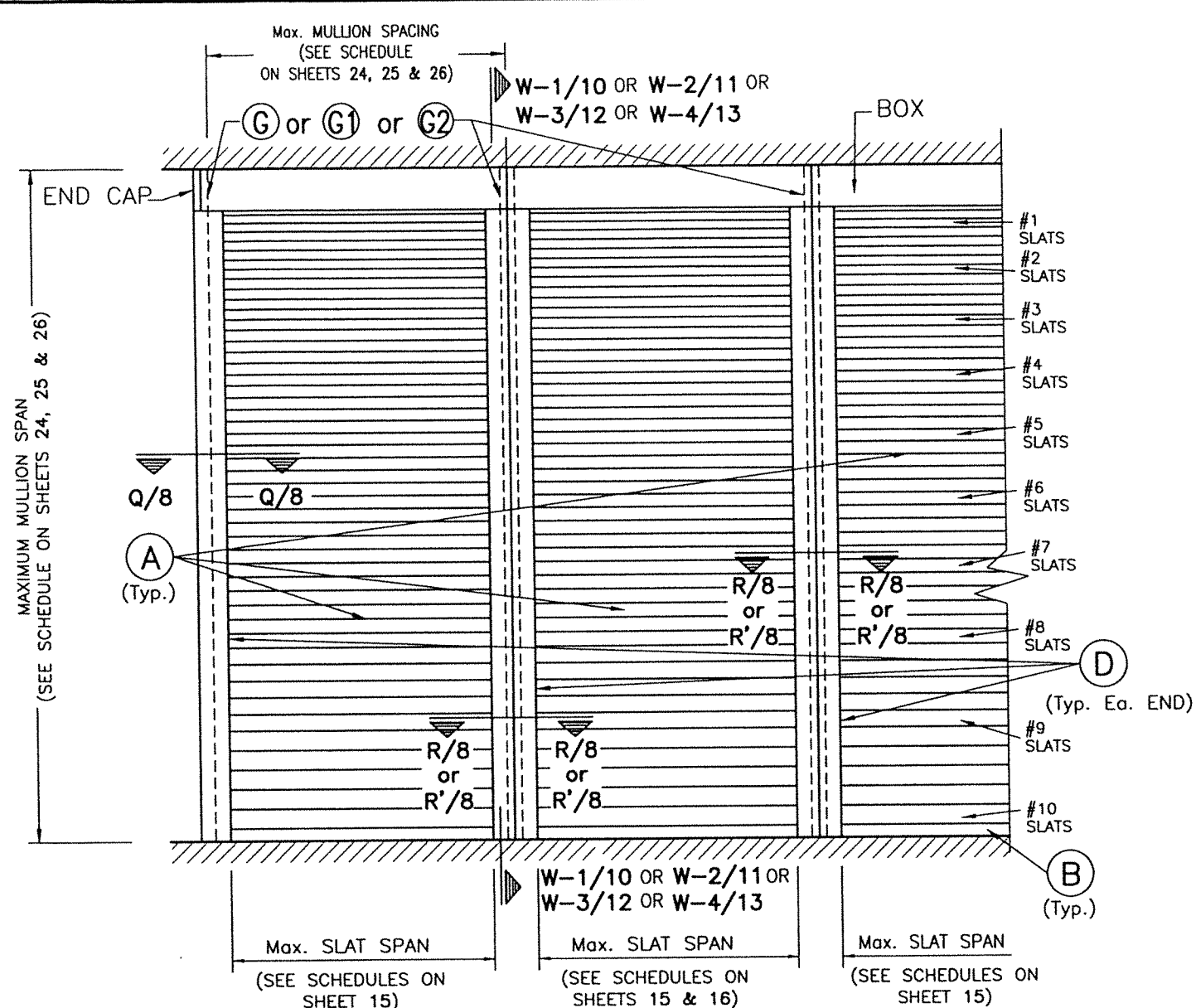
WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
9/2023
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ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
Nautilus
Rolling Shutter System
ESS
Permit # **B25007701**
"We're Taking The Shutter Industry By Storm!"
668 SW 10th Ave. PORT ST. LUCIE, FL. 34984
1-844-320-4800
Date: **05/12/23**

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
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23-100
DRAWING No
SHEET 4 OF 26

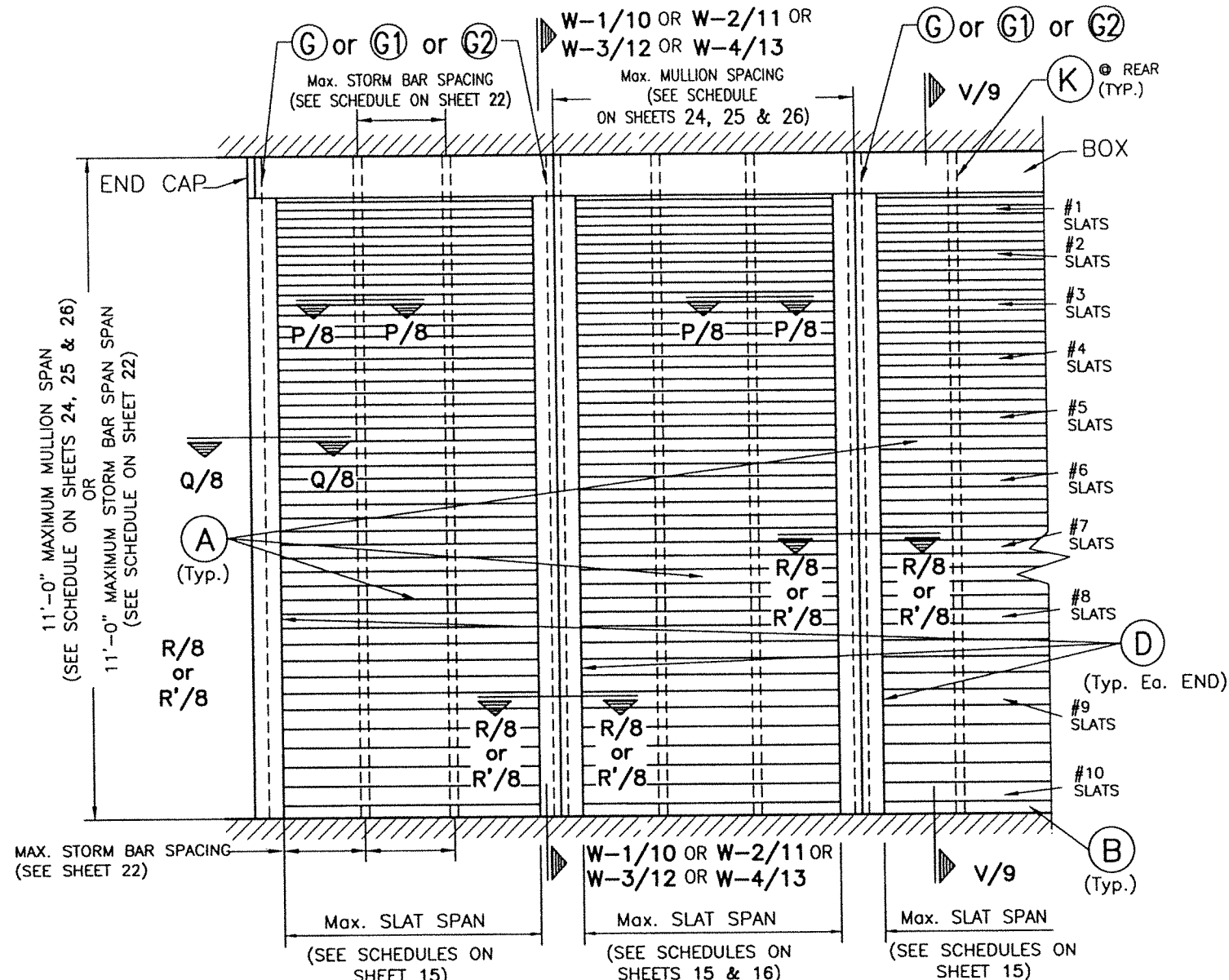


TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION *, **
W/ MULLION & W/O STORM BARS

NOTE: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.
 N.T.S.

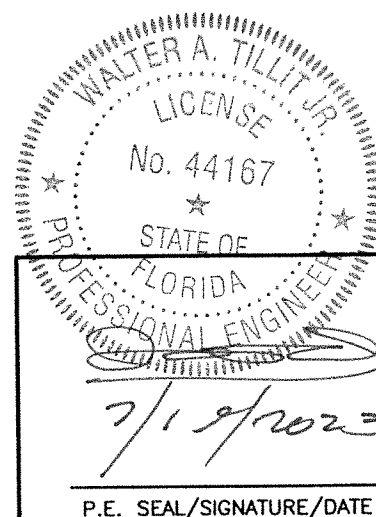
PROCEDURE FOR SLAT INSTALLATION GIVEN A SHUTTER HEIGHT:

- * **CASE 1:** SHUTTER HEIGHT EQUAL OR LESS THAN 11'-0". APPLICABLE TO INSTALLATIONS W/O STORM BARS, W/ STORM BARS OR W/ STORM BARS & MULLIONS W/ HEIGHTS UP TO 11'-0".
 - (a) CURTAIN SHALL START W/ #1 SLATS AT TOP, FOLLOWED BY #2, #3, THEREAFTER ALL THE WAY DOWN. EACH SLAT # SHALL CONSIST OF FIVE (5) SLATS OF THAT SLAT NUMBER. PROCEDURE FOR ADDING SLATS DOWNWARD BELOW #1 SLAT SHALL BE CONTINUE UNTIL TOTAL SHUTTER HEIGHT IS COMPLETED. QUANTITY OF FINAL SLAT NUMBER INSTALLED BEFORE BOTTOM SLAT (B) MAY VARY WITH SHUTTER'S HEIGHT.
 - (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.
- ** **CASE 2:** SHUTTER HEIGHT LARGER THAN 11'-0" APPLICABLE TO INSTALLATION W/O STORM BAR AND W/ MULLIONS W/ HEIGHTS LARGER THAN 11'-0".
 - (a) CURTAIN SHALL START W/ #1 SLATS AT TOP, FOLLOWED BY #2, #3, THEREAFTER ALL THE WAY DOWN. EACH SLAT # SHALL CONSIST OF FIVE (5) SLATS OF THAT SLAT NUMBER. PROCEDURE FOR ADDING SLATS DOWNWARD BELOW #1 SLAT SHALL BE CONTINUE UNTIL #10 SLAT IS INSTALLED. AFTER #10 SLAT IS INSTALLED, ADDITIONAL #10 SLATS MUST BE USED TO COMPLETE THE TOTAL SHUTTER HEIGHT.
 - (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.



TYPICAL CONSECUTIVE SINGLE UNIT ELEVATION *
W/ MULLION & W/ STORM BARS

NOTE: SEE SHEETS 2 & 3 FOR COMPONENTS NOMENCLATURE.
 N.T.S.



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 WALTER A. TILLIT Jr., P.E.
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ORANGE COUNTY DIVISION OF BUILDING SAFETY FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone) This document must be on the jobsite for inspection The document was reviewed for compliance; this does not relieve the applicant from correcting errors and omissions and complying with the current Florida Building Code			
Nautilus Rolling Shutter System ESS		DRAWN BY: [Signature] DATE: 07/19/2023	
Permit # B25007701 "We're Taking The Shutter Industry By Storm!" 668 SW 10th Ave. PORT ST. LUCIE, FL 34984 320-4800		23-100 DRAWING No	
SHEET 5 OF 26			

5/16"Ø TAPCONS XL W/
2 1/4" Min. EMBEDMENT
& 1"O.D.x0.060" GALV.
STEEL WASHER @ 24" o.c.

POURED CONCRETE
OR GROUT FILLED
CONCRETE BLOCK
WALL REQUIRED.

EDGE OF
OPENING

EXISTING
GLASS
(BEYOND)

SEE ANCHOR
SCHEDULES ON
SHEETS 16, 17
& 18

Min. SEPARATION
TO GLASS
(SEE SCHEDULES,
ON SHEET 15)

0/8

POURED CONCRETE
OR GROUT FILLED
CONCRETE BLOCK
WALL REQUIRED

EDGE OF
OPENING

2 1/16"
MIN. E.D.

5/16"Ø TAPCONS XL W/
2 1/4" Min. EMBEDMENT
@ 24" o.c.

WALL MOUNTING

1 1/2"x1 1/2"x0.062"xCONT. ALUM.
ANGLE W/ 5/16"Ø TAPCONS XL W/
2 1/4" Min. EMBEDMENT @ 24" o.c.

POURED
CONCRETE
REQ'D

5/16"Ø TAPCONS XL W/ 2 1/4" Min.
EMBEDMENT & 1"O.D.x0.060" GALV.
STEEL WASHER @ 24" o.c.

EXISTING
GLASS
(BEYOND)

SEE ANCHOR
SCHEDULES ON
SHEETS 16, 17
& 18

Min. SEPARATION
TO GLASS
(SEE SCHEDULES,
ON SHEET 15)

0/8

POURED CONCRETE
OR GROUT FILLED
CONCRETE BLOCK
WALL REQUIRED.

FLOOR/CEILING / TRAPPED MOUNTING

SECTIONS Y-Y

1"x1"x1/8" OR 2"x2"x1/8"
ALUMINUM TUBE

5/16"Ø TAPCONS XL W/
2 1/4" Min. EMBEDMENT
@ 24" o.c.

POURED CONCRETE
OR GROUT FILLED
CONCRETE BLOCK
WALL REQUIRED.

EDGE OF
OPENING

EXISTING
GLASS
(BEYOND)

SEE ANCHOR
SCHEDULES ON
SHEETS 16, 17
& 18

Min. SEPARATION
TO GLASS
(SEE SCHEDULES,
ON SHEET 15)

E E1
E2 OR E3

0/8

POURED CONCRETE
OR GROUT FILLED
CONCRETE BLOCK
WALL REQUIRED.

EDGE OF
OPENING

2 1/16"
MIN. E.D.

5/16"Ø TAPCONS XL W/
2 1/4" Min. EMBEDMENT
@ 24" o.c.

BUILD-OUT MOUNTING

1/4"Øx3/4" ITW BUILDDEX TEK SCREWS
W/ 1" O.D.x0.060" GALVANIZED STEEL
WASHER @ 24" o.c.

A

EXTERIOR

D

0/8

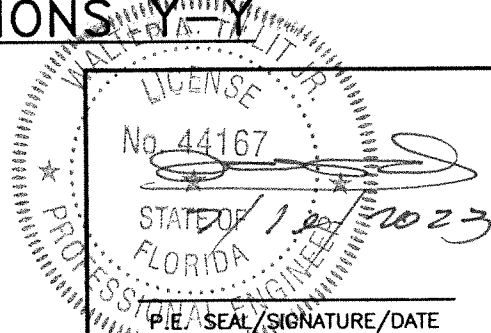
B

2"x4"x0.062"xCONT.
ALUM. ANGLE

MAXIMUM SHUTTER HEIGHT
(SEE ELEV. ON SHEET 4)

INSTALLATION DETAILS ON EXISTING POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK BUILDINGS

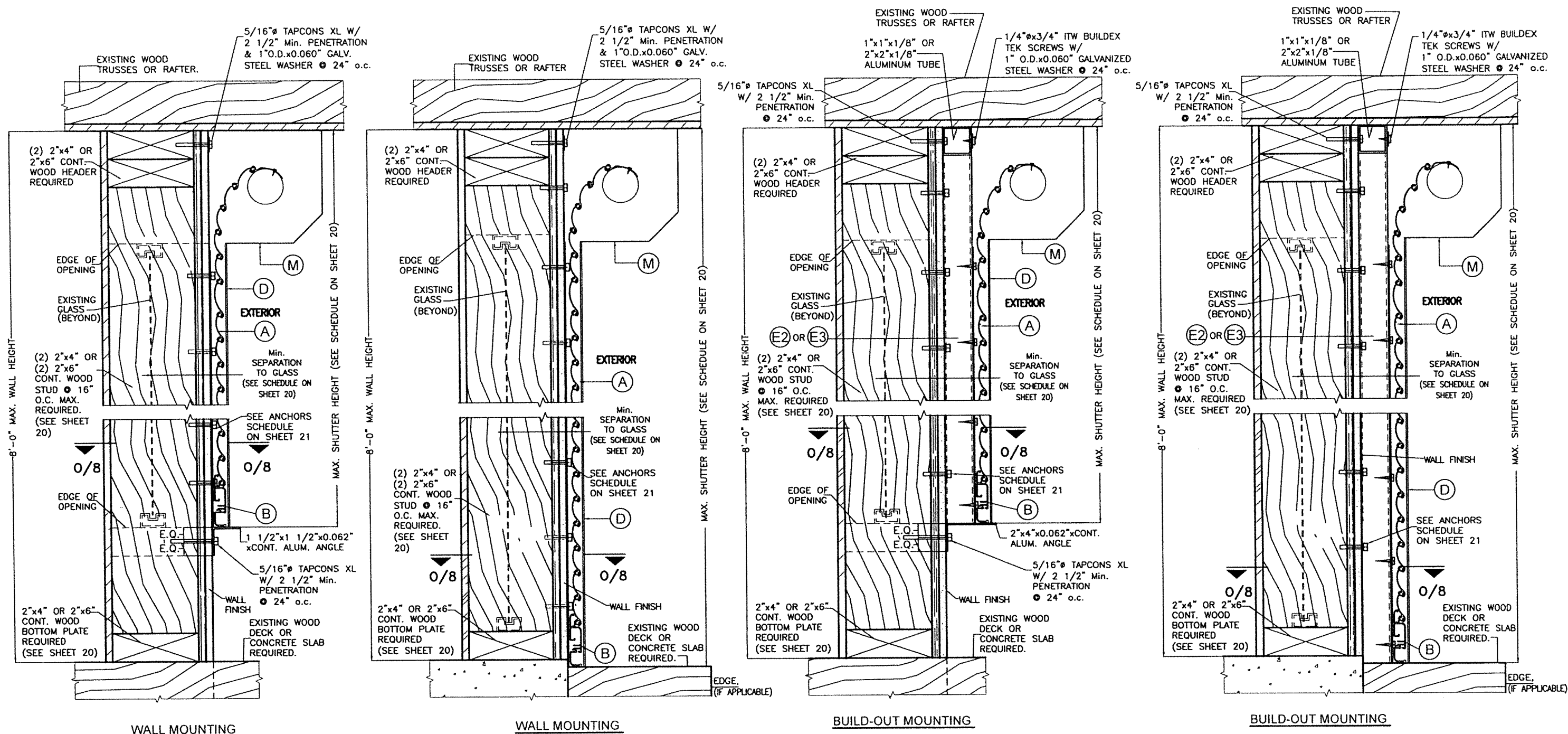
SCALE: 3/16" = 1"



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CA-0006719
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
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Nautilus
Rolling Shutter System
ESS
MANUFACTURING, INC.
Permit # **B25007791**
"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE DR. PORT ST. LUCIE, FL. 34984
DATE: **05/12/25**
DRAWN BY: W.H.
DATE: 07/19/2023
23-100
DRAWING No
SHEET 6 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-044	07/18/23	2		



SECTIONS Y-Y

INSTALLATION DETAILS ON EXISTING WOOD BUILDINGS

P.E. SEAL/SIGNATURE/DATE

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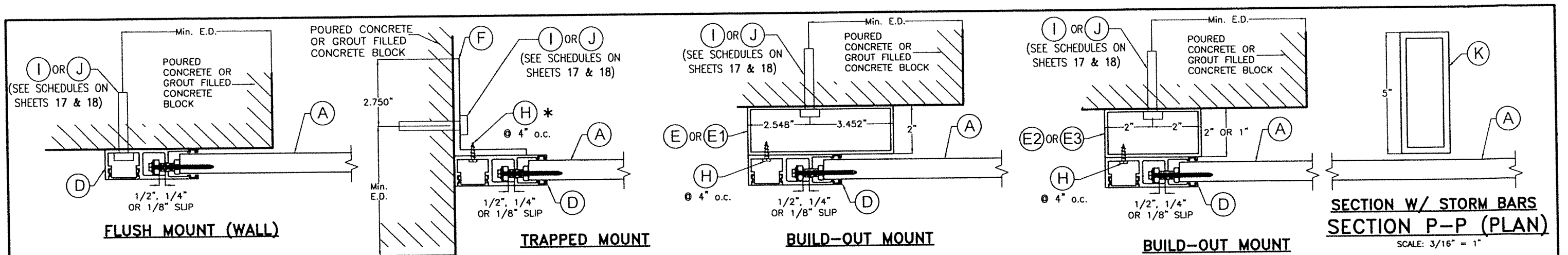
Nautilus
 Rolling Shutter System
 ESS
 Permit # **B25007701**
 "We're Taking The Shutter Industry By Storm!"
 Date: 668 SW. WHITMORE ST. PORT ST. LUCIE, FL 34984

DRAWN BY: **W.A. TILLIT JR.**
 DATE: **07/19/2023**

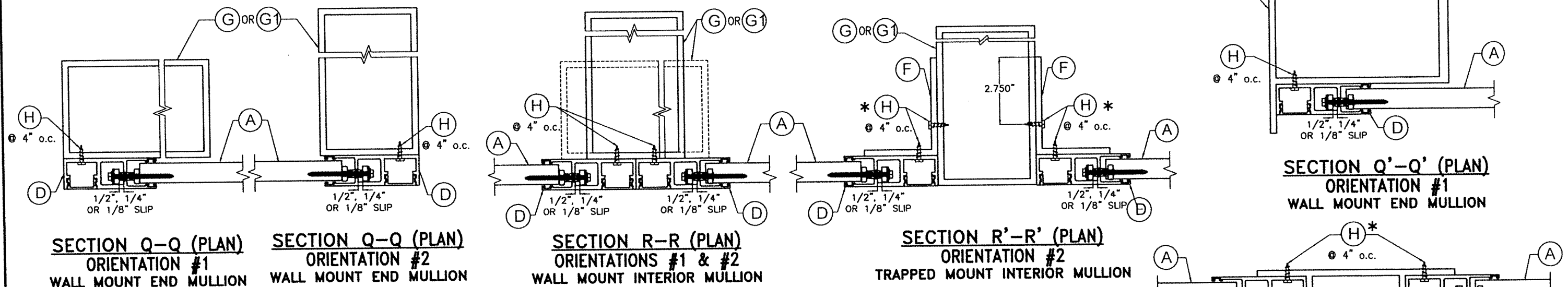
23-100
 DRAWING No

SHEET 7 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-084	07/19/23	4		

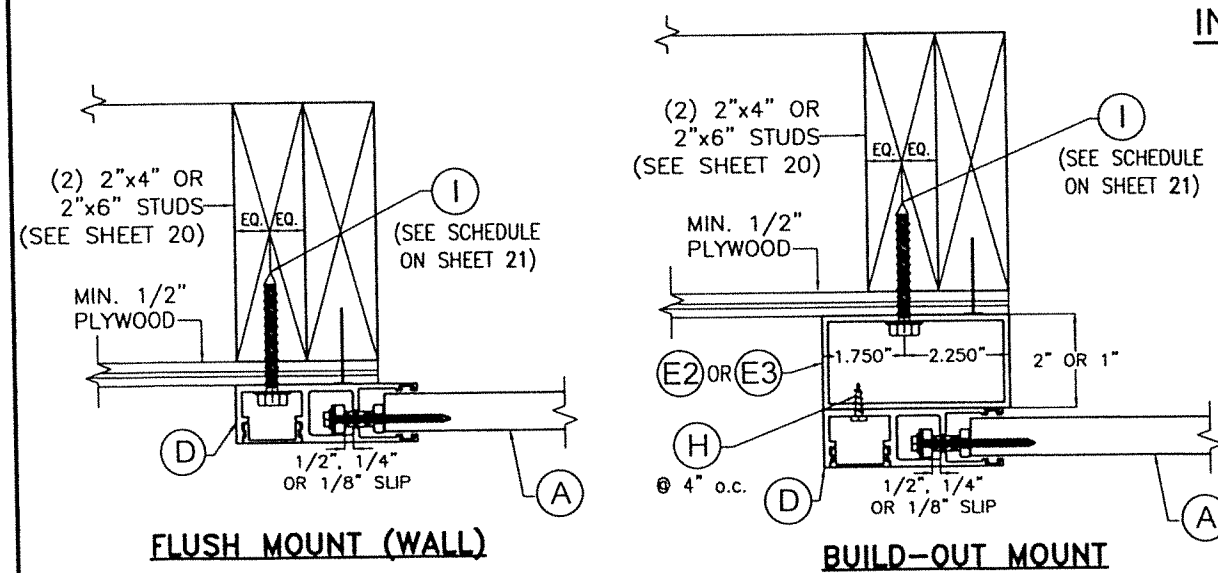


SECTIONS O-O (PLAN)
 INSTALLATION DETAILS INTO EXISTING POURED CONCRETE OR GROUT FILLED CONCRETE BLOCK BUILDINGS
 SCALE: 1/4" = 1"



INSTALLATION DETAILS INTO MULLIONS G, G1, G2
 SCALE: 1/4" = 1"

* ALTERNATIVELY TO (H), A 1/4"Ø-20x3/4" S.S. M.S. W/ NUT MAY BE USED FOR THIS CONNECTION



SECTIONS O'-O' (PLAN)
 INSTALLATION DETAILS INTO EXISTING WOOD BUILDINGS
 SCALE: 1/4" = 1"

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 No. 44167
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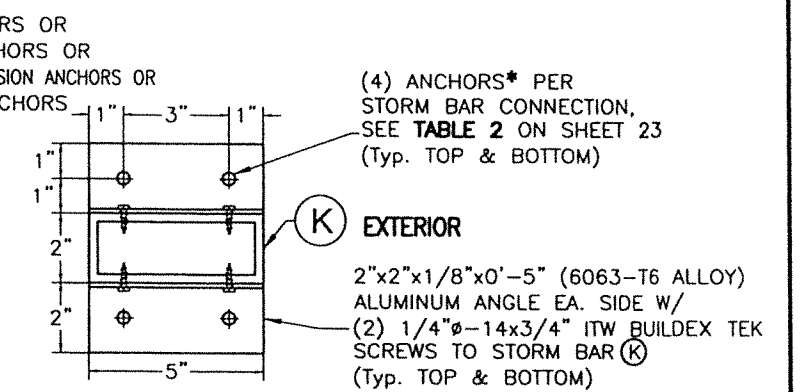
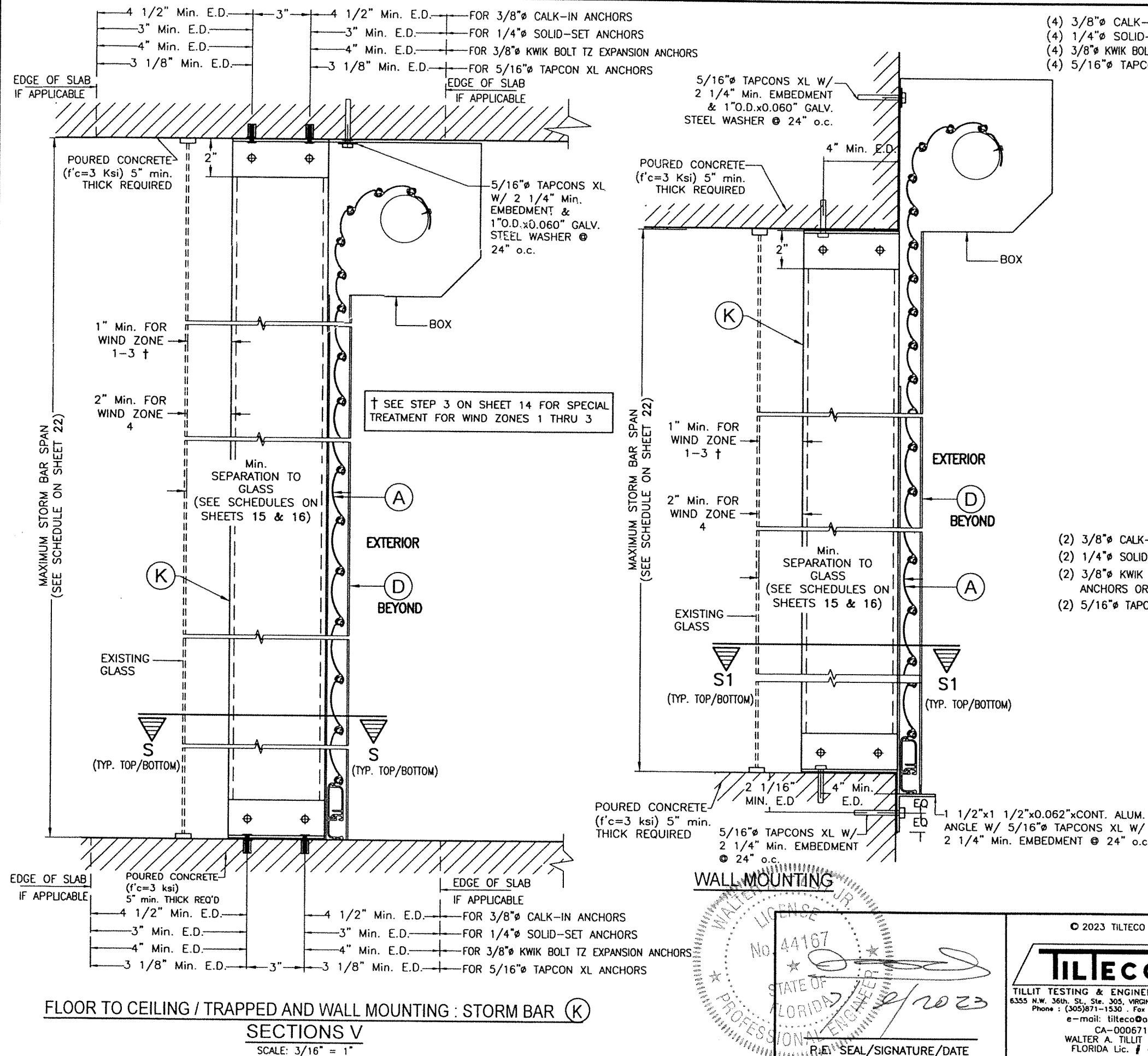
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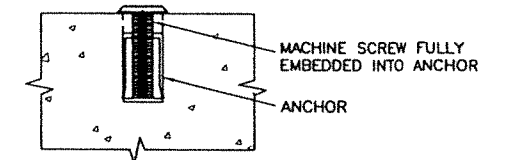
Nautilus
 Rolling Shutter System
 ESS
 Permit # B25007701
 "We're Taking The Shutter Industry By Storm!"
 668 SW WHITMORE ST. PORT ST. LUCIE, FL 34984
 Date: 05/12/23

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-084	07/19/23			

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 DATE: 07/19/2023
 23-100
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 SHEET 8 OF 26

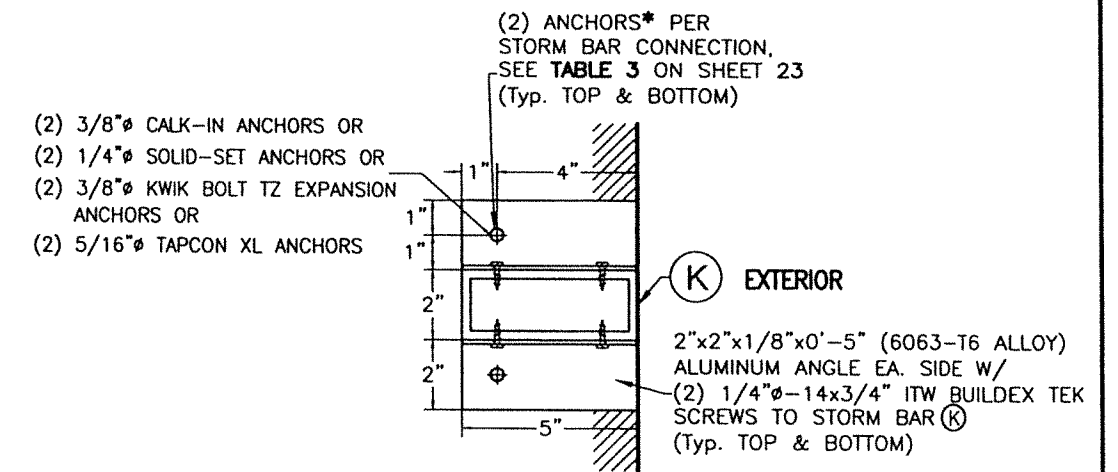


SECTION S - S



DETAIL A

* 1/4" ϕ -20 OR 3/8" ϕ -16 MACHINE SCREWS USED JOINTLY W/
1/4" ϕ x 3/4" SOLID-SET OR 3/8" ϕ x 1 1/4" CALK-IN ANCHORS
RESPECTIVELY SHALL BE LEFT TOGETHER W/ ANCHORS AT THE TIME
STORM BARS ARE REMOVED. (SEE DET. A).



SECTION S1 - S1

WALL MOUNTING

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ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

Nautilus

Bellingh Shutter-Flashes

ESS

B25007701
MANUFACTURING, INC.

05/12/25

DATE	REV. No	DESCRIPTION
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7/19/2023
DATE

DATE _____

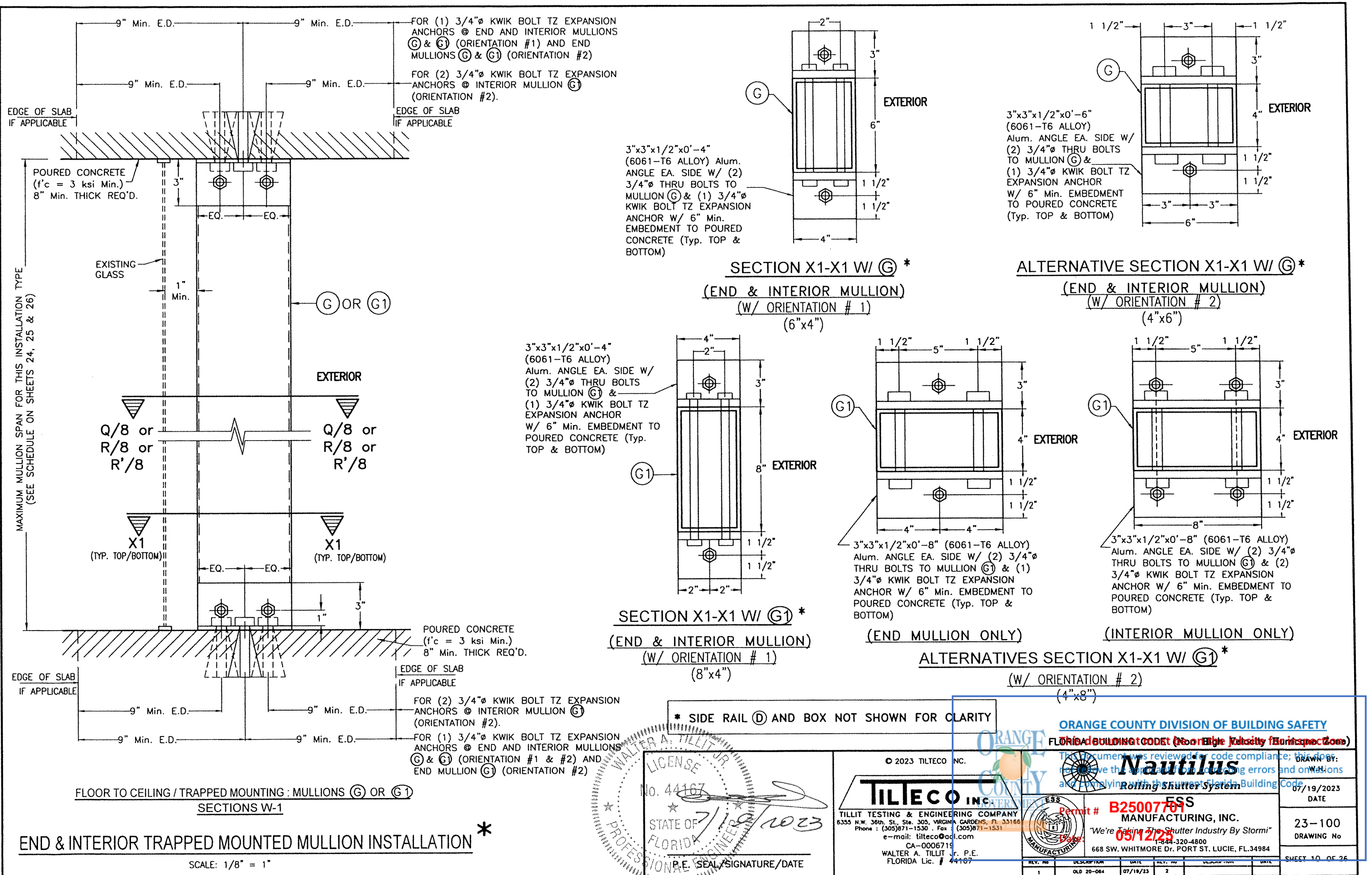
23-100
DRAWING No.

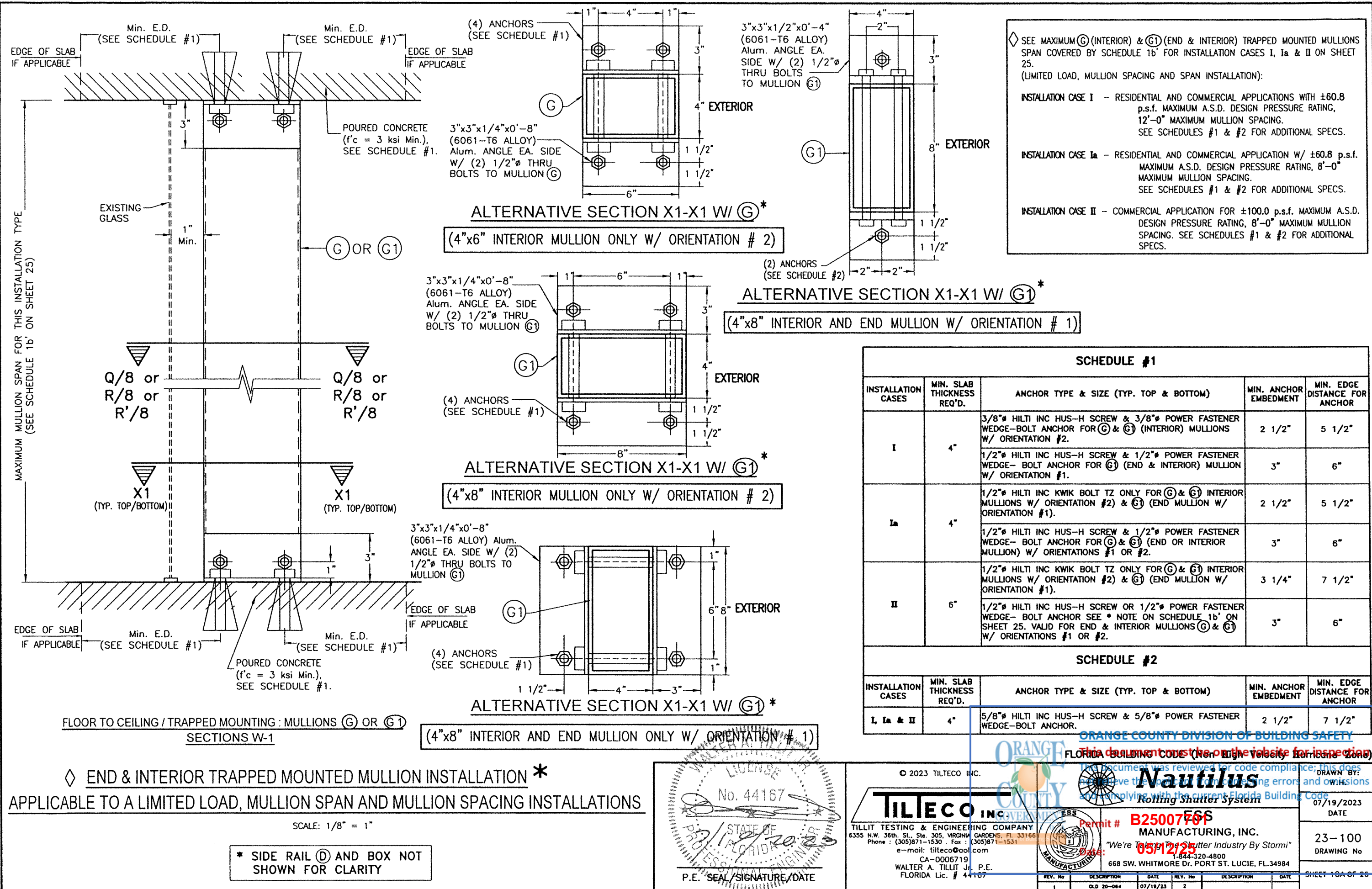
DRAWING NO.

ET 9 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-064	07/18/23	2		

SHEET 9 OF 26





◇ SEE MAXIMUM (G) (INTERIOR) & (G1) (END & INTERIOR) TRAPPED MOUNTED MULLIONS SPAN COVERED BY SCHEDULE 1b' FOR INSTALLATION CASES I, Ia & II ON SHEET 25.
(LIMITED LOAD, MULLION SPACING AND SPAN INSTALLATION):

INSTALLATION CASE I - RESIDENTIAL AND COMMERCIAL APPLICATIONS WITH ±60.8 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 12'-0" MAXIMUM MULLION SPACING. SEE SCHEDULES #1 & #2 FOR ADDITIONAL SPECS.

INSTALLATION CASE Ia - RESIDENTIAL AND COMMERCIAL APPLICATION W/ ±60.8 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 8'-0" MAXIMUM MULLION SPACING. SEE SCHEDULES #1 & #2 FOR ADDITIONAL SPECS.

INSTALLATION CASE II - COMMERCIAL APPLICATION FOR ±100.0 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 8'-0" MAXIMUM MULLION SPACING. SEE SCHEDULES #1 & #2 FOR ADDITIONAL SPECS.

SCHEDULE #1				
INSTALLATION CASES	MIN. SLAB THICKNESS REQ'D.	ANCHOR TYPE & SIZE (TYP. TOP & BOTTOM)	MIN. ANCHOR EMBEDMENT	MIN. EDGE DISTANCE FOR ANCHOR
I	4"	3/8" HILTI INC HUS-H SCREW & 3/8" POWER FASTENER WEDGE-BOLT ANCHOR FOR (G) & (G1) (INTERIOR) MULLIONS W/ ORIENTATION #2.	2 1/2"	5 1/2"
		1/2" HILTI INC HUS-H SCREW & 1/2" POWER FASTENER WEDGE-BOLT ANCHOR FOR (G1) (END & INTERIOR) MULLION W/ ORIENTATION #1.	3"	6"
Ia	4"	1/2" HILTI INC KWIK BOLT TZ ONLY FOR (G) & (G1) INTERIOR MULLIONS W/ ORIENTATION #2) & (G1) (END MULLION W/ ORIENTATION #1).	2 1/2"	5 1/2"
		1/2" HILTI INC HUS-H SCREW & 1/2" POWER FASTENER WEDGE-BOLT ANCHOR FOR (G) & (G1) (END OR INTERIOR MULLION) W/ ORIENTATIONS #1 OR #2.	3"	6"
II	6"	1/2" HILTI INC KWIK BOLT TZ ONLY FOR (G) & (G1) INTERIOR MULLIONS W/ ORIENTATION #2) & (G1) (END MULLION W/ ORIENTATION #1).	3 1/4"	7 1/2"
		1/2" HILTI INC HUS-H SCREW OR 1/2" POWER FASTENER WEDGE-BOLT ANCHOR SEE * NOTE ON SCHEDULE 1b' ON SHEET 25. VALID FOR END & INTERIOR MULLIONS (G) & (G1) W/ ORIENTATIONS #1 OR #2.	3"	6"

SCHEDULE #2				
INSTALLATION CASES	MIN. SLAB THICKNESS REQ'D.	ANCHOR TYPE & SIZE (TYP. TOP & BOTTOM)	MIN. ANCHOR EMBEDMENT	MIN. EDGE DISTANCE FOR ANCHOR
I, Ia & II	4"	5/8" HILTI INC HUS-H SCREW & 5/8" POWER FASTENER WEDGE-BOLT ANCHOR.	2 1/2"	7 1/2"

◇ END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION *
APPLICABLE TO A LIMITED LOAD, MULLION SPAN AND MULLION SPACING INSTALLATIONS

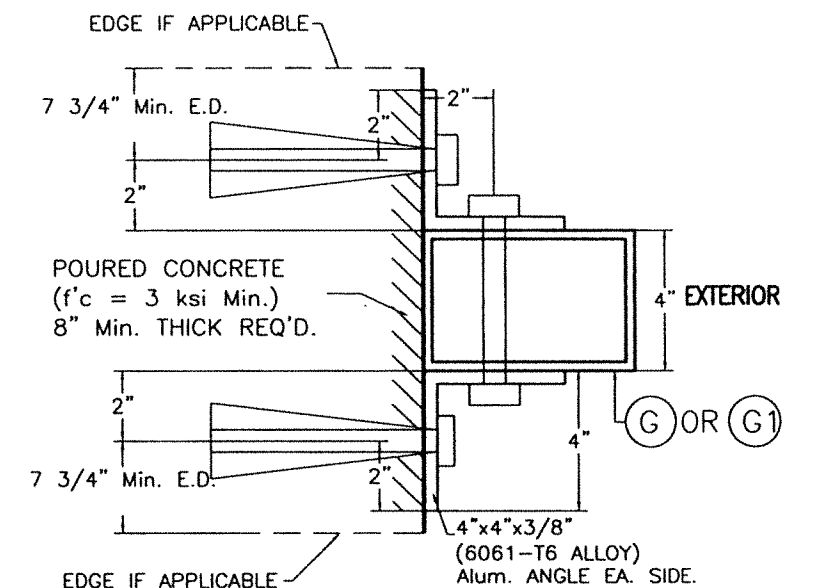
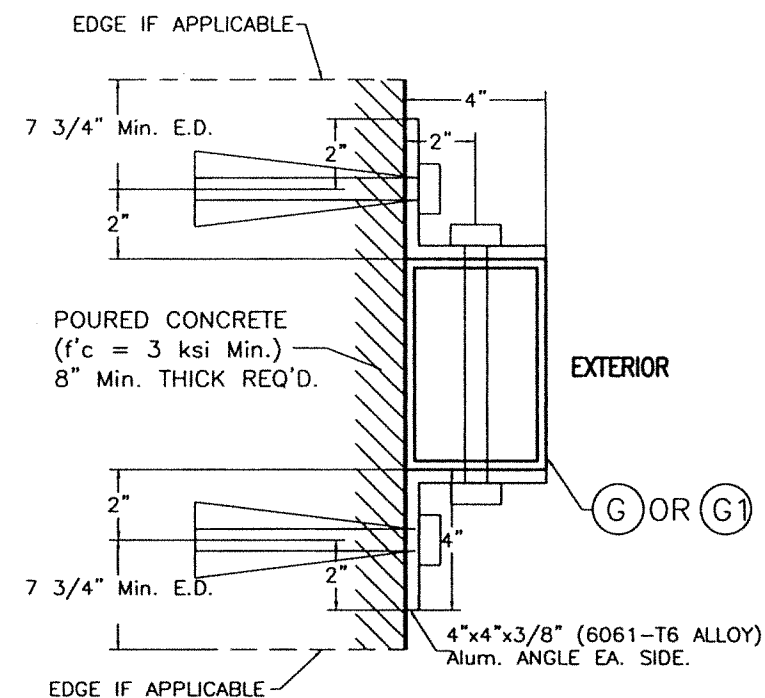
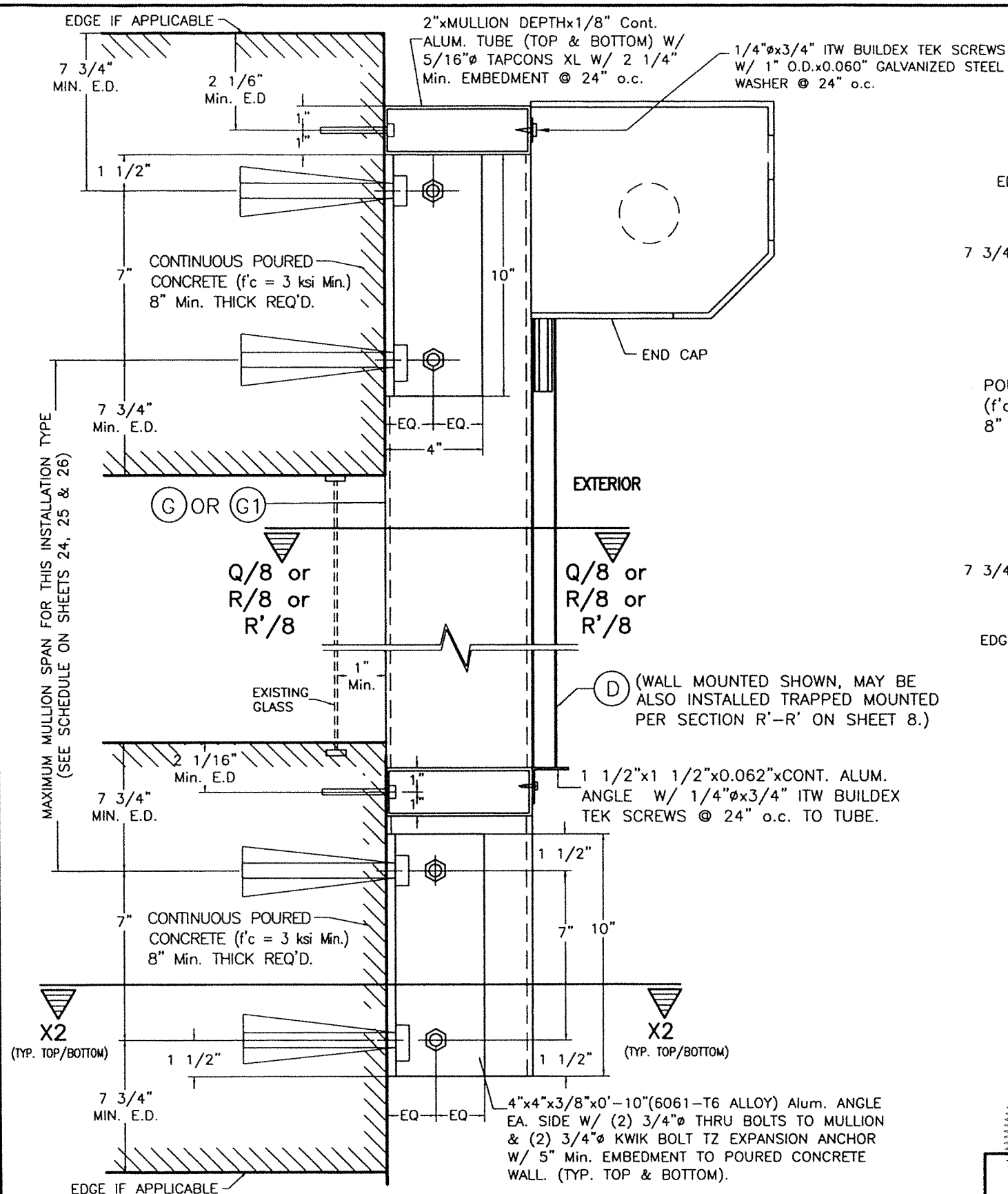
SCALE: 1/8" = 1"

* SIDE RAIL (D) AND BOX NOT SHOWN FOR CLARITY

PROFESSIONAL ENGINEER
No. 44167
STATE OF FLORIDA
P.E. SEAL/SIGNATURE/DATE

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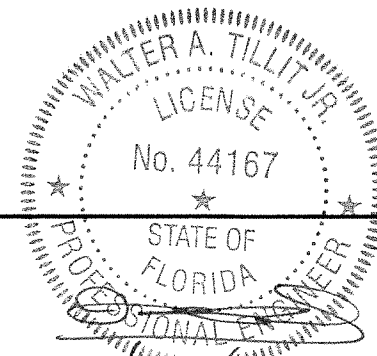
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Rolling Shutter System
Permit # **B25007766**
MANUFACTURING, INC.
"We're Tearing The Shutter Industry By Storm!"
668 SW. WHITMORE DR. PORT ST. LUCIE, FL 34984
Phone: 888-320-4800
DATE: 07/19/2023
DRAWN BY: [Signature]
23-100
DRAWING No
SHEET 10A OF 26



SECTION X2-X2 W/ (G) OR (G1)*
(END & INTERIOR MULLION)
(W/ ORIENTATION # 1)
(6"x4" or 8"x4")

ALTERNATIVE SECTION X2-X2 W/ (G) OR (G1)*
(END & INTERIOR MULLION)
(W/ ORIENTATION # 2)
(4"x6" or 4"x8")

* SIDE RAIL (D) NOT SHOWN FOR CLARITY



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FLORIDA Lic. # 44167

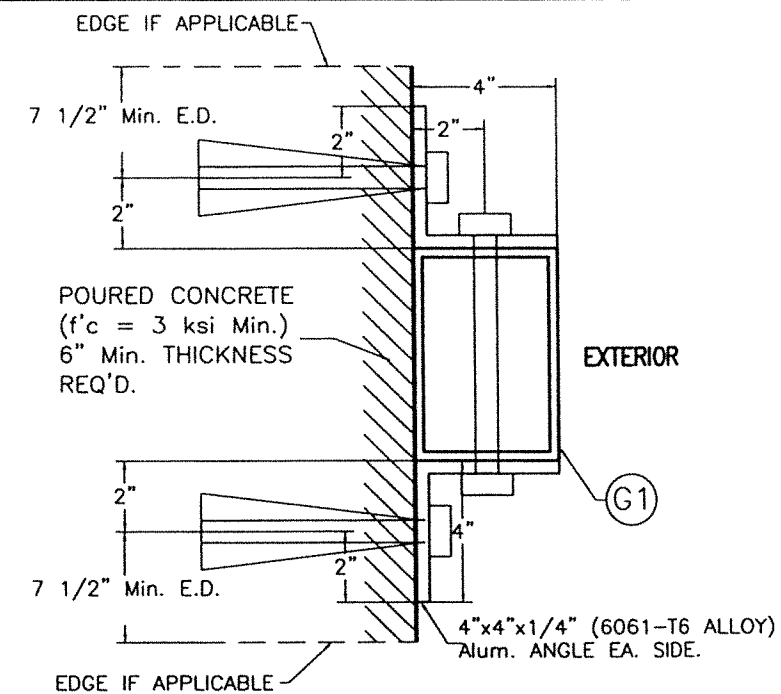
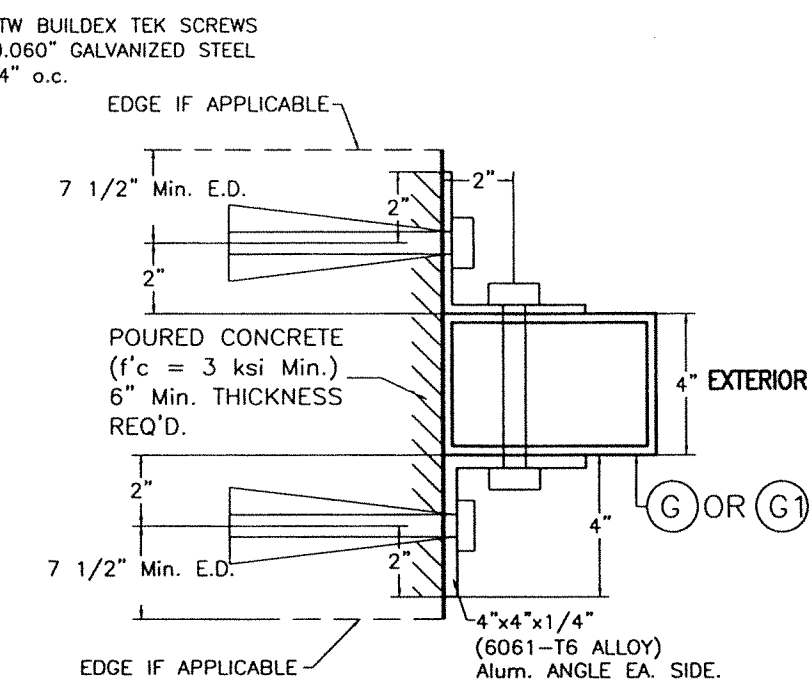
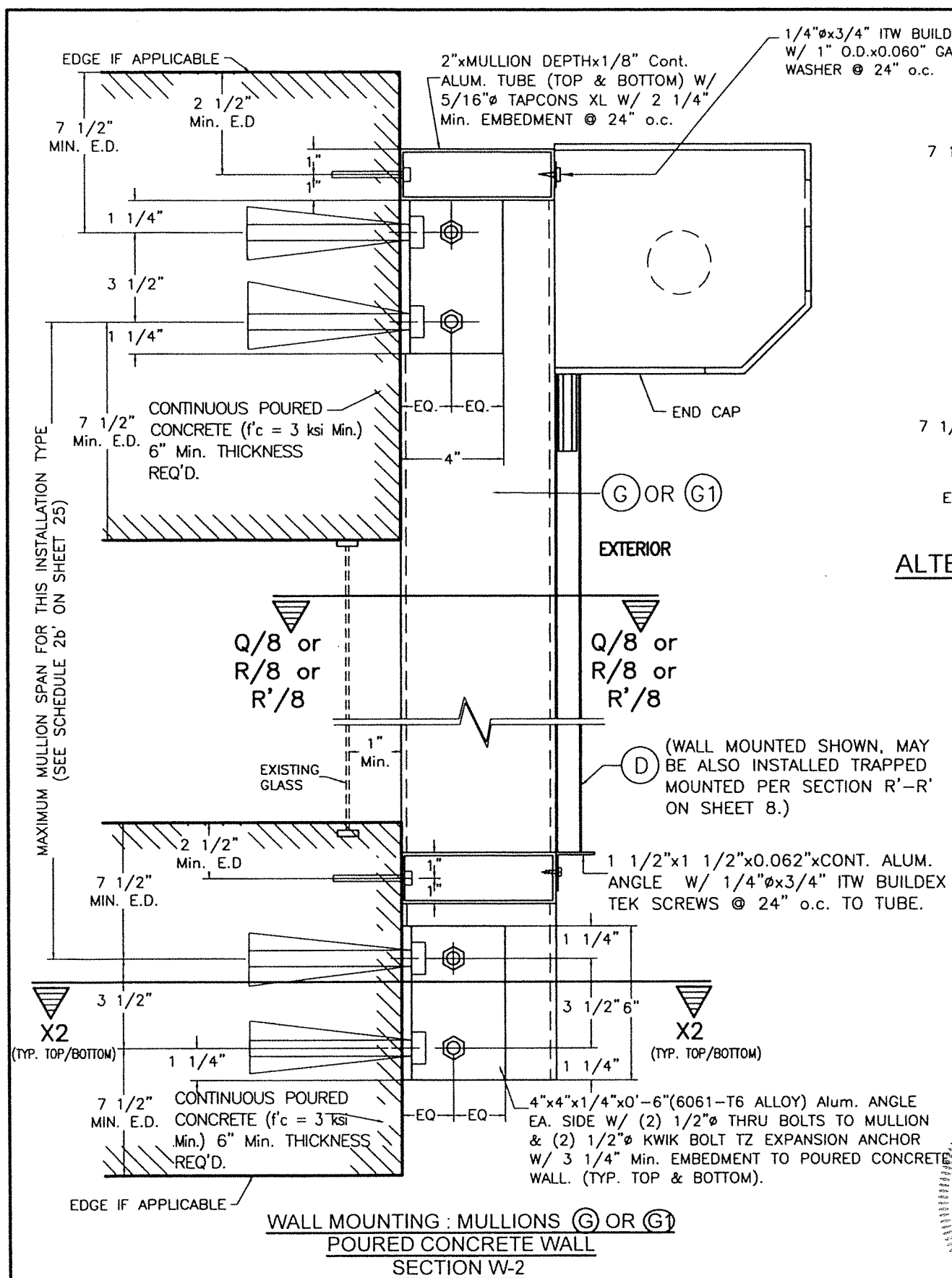
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Nautilus
Rolling Shutter System

DRAWN BY: **OW**
DATE: **07/19/2023**

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			23-100 DRAWING No
SHEET 11 OF 26			



ALTERNATIVE SECTION X2-X2 W/ (G) OR (G1) *
(INTERIOR MULLION)
(W/ ORIENTATION # 2)
(4"x6" or 4"x8")

ALTERNATIVE SECTION X2-X2 W/ (G1)*
(END & INTERIOR MULLIONS)
(W/ ORIENTATION # 1)
(8"x4")

SEE MAXIMUM (G) (INTERIOR) & (G1) (END & INTERIOR) WALL MOUNTED MULLIONS SPAN COVERED BY SCHEDULE 2b' FOR INSTALLATION CASES I' & II' ON SHEET 25 (LIMITED LOAD, MULLION SPACING AND SPAN INSTALLATION):

INSTALLATION CASE 1' - RESIDENTIAL AND COMMERCIAL APPLICATIONS WITH ± 60.8 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 12'-0" MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO CONCRETE W/ HILTI INC HUS-H OR POWER FASTENERS WEDGE-BOLT ANCHORS.

INSTALLATION CASE II' - COMMERCIAL APPLICATION FOR ± 100.0
p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 8'-0"
MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO
CONCRETE W/ HILTI INC KWIK BOLT TZ ANCHORS.

* SIDE RAIL (D) NOT SHOWN FOR CLARITY

◇ END & INTERIOR WALL MOUNTED MULLION INSTALLATION *

APPLICABLE TO A LIMITED LOAD, MULLION SPAN AND MULLION SPACING INSTALLATIONS

SCALE: $1/8" = 1'$

A circular professional engineer seal for the State of Florida. The outer ring contains the text "WALTER A. TILLIT JR." at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by three stars. The inner circle contains the word "LICENSE" at the top and "No. 44167" in the center. Below the license number, the words "STATE OF FLORIDA" are visible. A portion of a drawing, showing a cross-section of a mechanical part, is visible in the bottom right corner, partially overlapping the seal.

P.E. SEAL/SIGNATURE/DATE

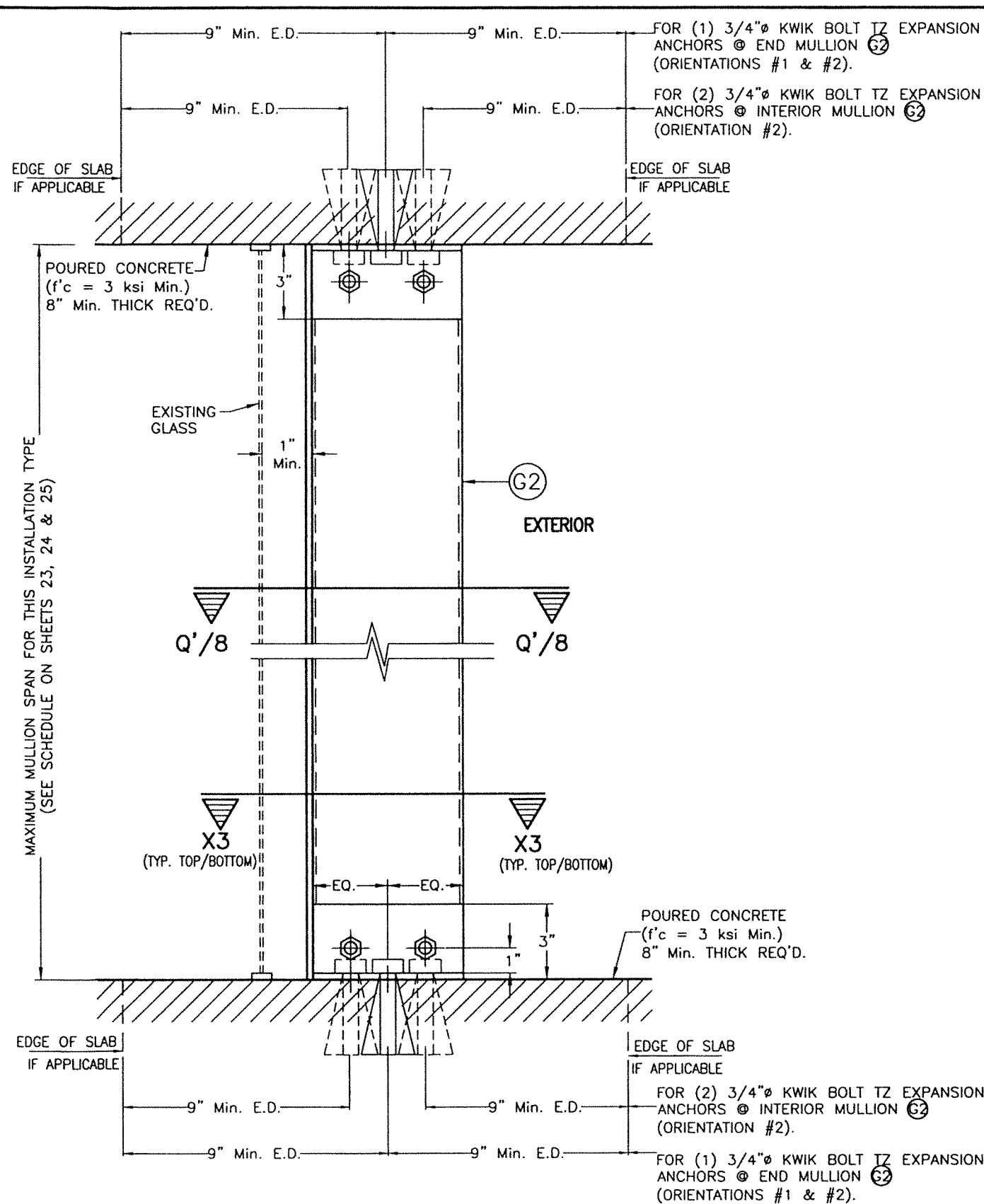
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FLORIDA BUILDING CODE (No High Velocity Hurricane Zone)

	This document was reviewed for code compliance; this does not constitute an endorsement of the product or the company. Nautilus Rolling Shutter System	DRAWN BY: W.H.H. 07/19/2023
	The document was reviewed for code compliance; this does not constitute an endorsement of the product or the company.	

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	DESCRIPTION DATE E.S.Y. No DESCRIPTION DATE		SHEET 11A OF 26



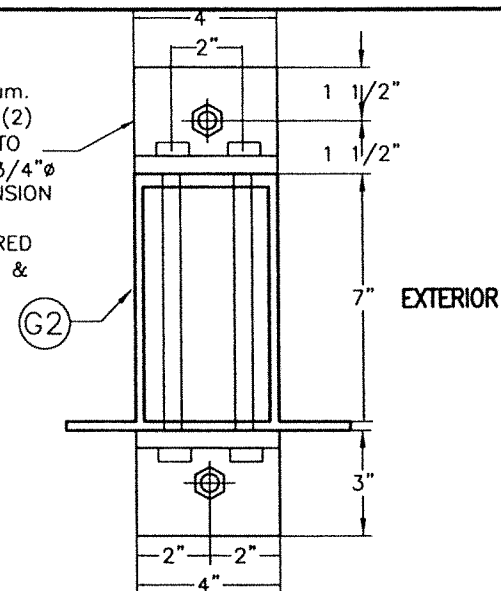
FLOOR TO CEILING / TRAPPED MOUNTING : MULLION (G2)

SECTION W-3

END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION *

SCALE: 1/8" = 1"

3"x3"x1/2"x0'-4" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE W/ (2) 3/4" Ø THRU BOLTS TO MULLION (G2) & (1) 3/4" Ø KWIK BOLT TZ EXPANSION ANCHOR W/ 6" Min. EMBEDMENT TO POURED CONCRETE (Typ. TOP & BOTTOM)

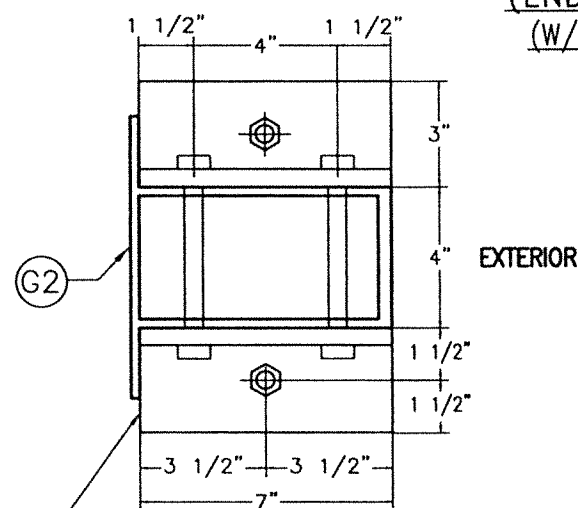


SECTION X3-X3 W/ (G2) *

(END MULLION ONLY)

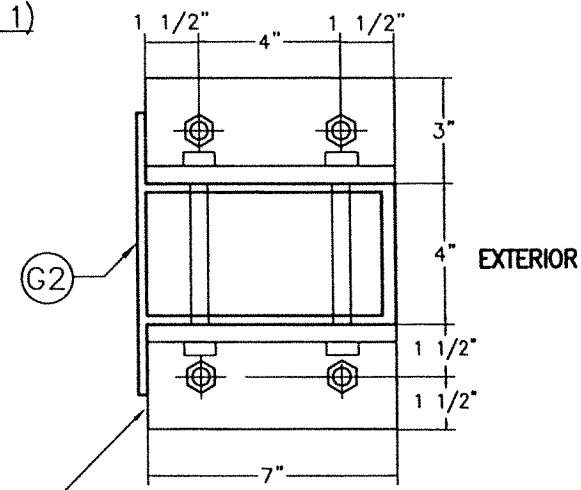
(W/ ORIENTATION # 1)

(7"x4")



3"x3"x1/2"x0'-7" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE W/ (2) 3/4" Ø THRU BOLTS TO MULLION (G2) & (1) 3/4" Ø KWIK BOLT TZ EXPANSION ANCHOR W/ 6" Min. EMBEDMENT TO POURED CONCRETE (Typ. TOP & BOTTOM)

(END MULLION ONLY)



3"x3"x1/2"x0'-7" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE W/ (2) 3/4" Ø THRU BOLTS TO MULLION (G2) & (2) 3/4" Ø KWIK BOLT TZ EXPANSION ANCHOR W/ 6" Min. EMBEDMENT TO POURED CONCRETE (Typ. TOP & BOTTOM)

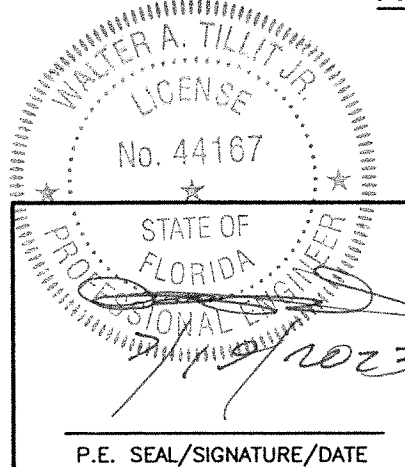
(INTERIOR MULLION ONLY)

ALTERNATIVE SECTIONS X3-X3 W/ (G2) *

(W/ ORIENTATION # 2)

(4"x7")

* SIDE RAIL (D) AND BOX NOT SHOWN FOR CLARITY.



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CA-0006719

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FLORIDA Lic. # 44167

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Nautilus

Rolling Shutter System

ESS

MANUFACTURING, INC.

Permit # B25007701

Date: 05/12/25

"We're Taking The Shutter Industry By Storm!"

668 SW. WHITMORE Dr. PORT ST. LUCIE, FL. 34984

320-4800

07/19/2023

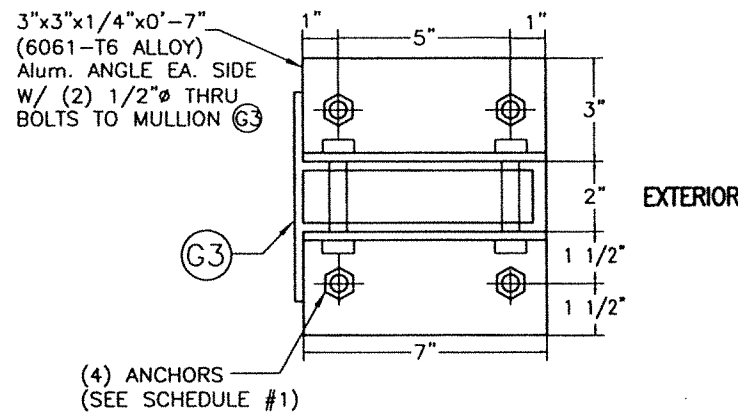
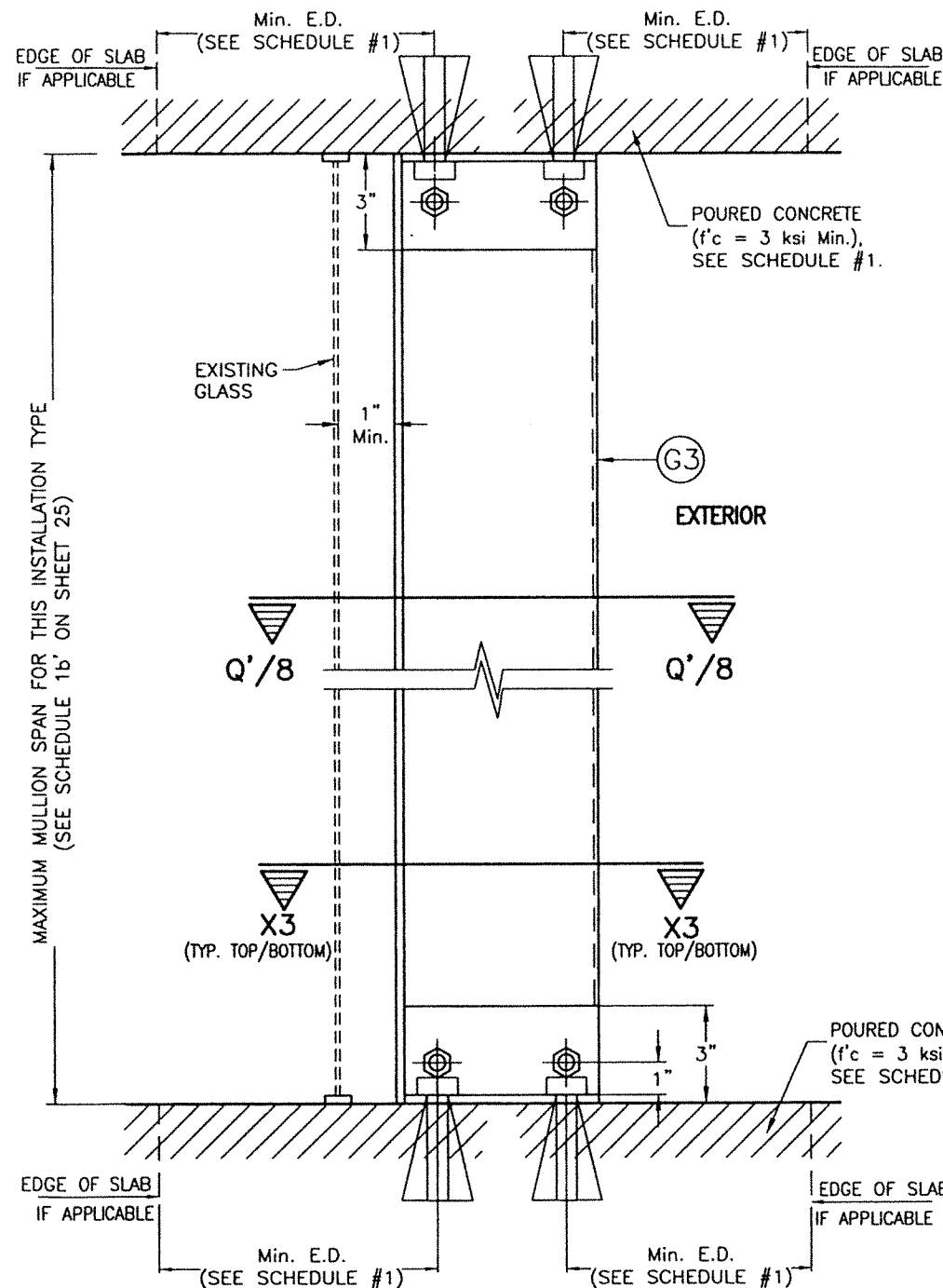
DATE

23-100

DRAWING No

SHEET 12 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-044	07/19/23	2		



ALTERNATIVE SECTION X3-X3 W/ **G3** *
(W/ ORIENTATION # 2)
(2"x7" INTERIOR MULLION ONLY)

* SIDE RAIL **D** AND BOX NOT SHOWN FOR CLARITY.

◇ SEE MAXIMUM **G3** (INTERIOR) TRAPPED MOUNTED MULLIONS SPAN COVERED BY SCHEDULE 1b' FOR INSTALLATION CASES I, Ia & II ON SHEET 25.
(LIMITED LOAD, MULLION SPACING AND SPAN INSTALLATION):

INSTALLATION CASE I - RESIDENTIAL AND COMMERCIAL APPLICATIONS WITH ±60.8 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 12'-0" MAXIMUM MULLION SPACING. SEE SCHEDULE #1 FOR ADDITIONAL SPECS.

INSTALLATION CASE Ia - RESIDENTIAL AND COMMERCIAL APPLICATION W/ ±60.8 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 8'-0" MAXIMUM MULLION SPACING. SEE SCHEDULE #1 FOR ADDITIONAL SPECS.

INSTALLATION CASE II - COMMERCIAL APPLICATION FOR ±100.0 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 8'-0" MAXIMUM MULLION SPACING. SEE SCHEDULE #1 FOR ADDITIONAL SPECS.

SCHEDULE #1

INSTALLATION CASES	MIN. SLAB THICKNESS REQ'D.	ANCHOR TYPE & SIZE (TYP. TOP & BOTTOM)	MIN. ANCHOR EMBEDMENT	MIN. EDGE DISTANCE FOR ANCHOR
I	4"	3/8"Ø HILTI INC HUS-H SCREW, 3/8"Ø POWER FASTENER WEDGE- BOLT ANCHOR	2 1/2"	5 1/2"
Ia	4"	1/2"Ø HILTI INC KWIK BOLT TZ	2 1/2"	5 1/2"
II	6"	1/2"Ø HILTI INC KWIK BOLT TZ	3 1/4"	7 1/2"

FLOOR TO CEILING / TRAPPED MOUNTING : MULLIONS **G3**
SECTION W-3

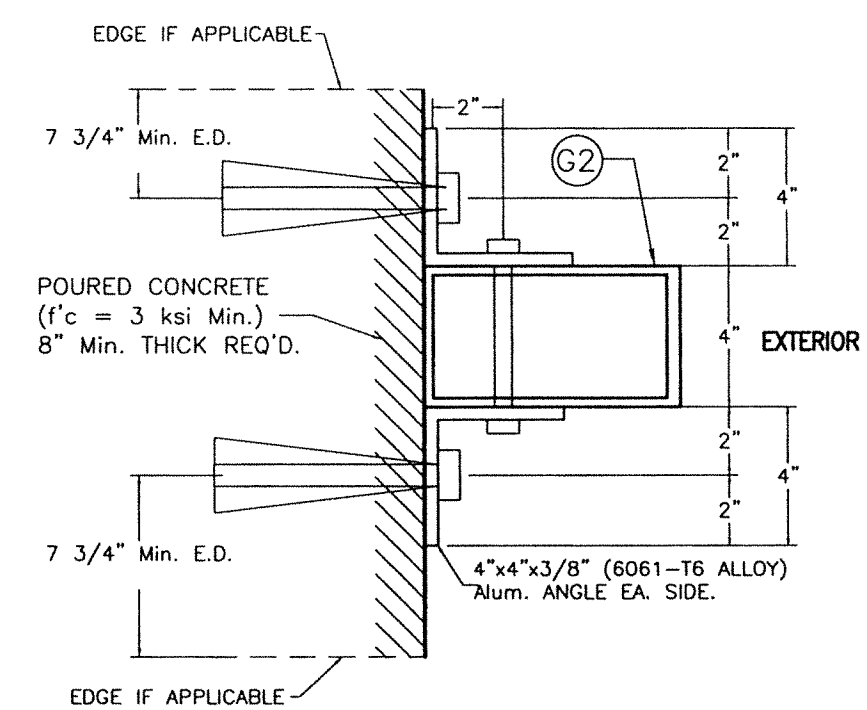
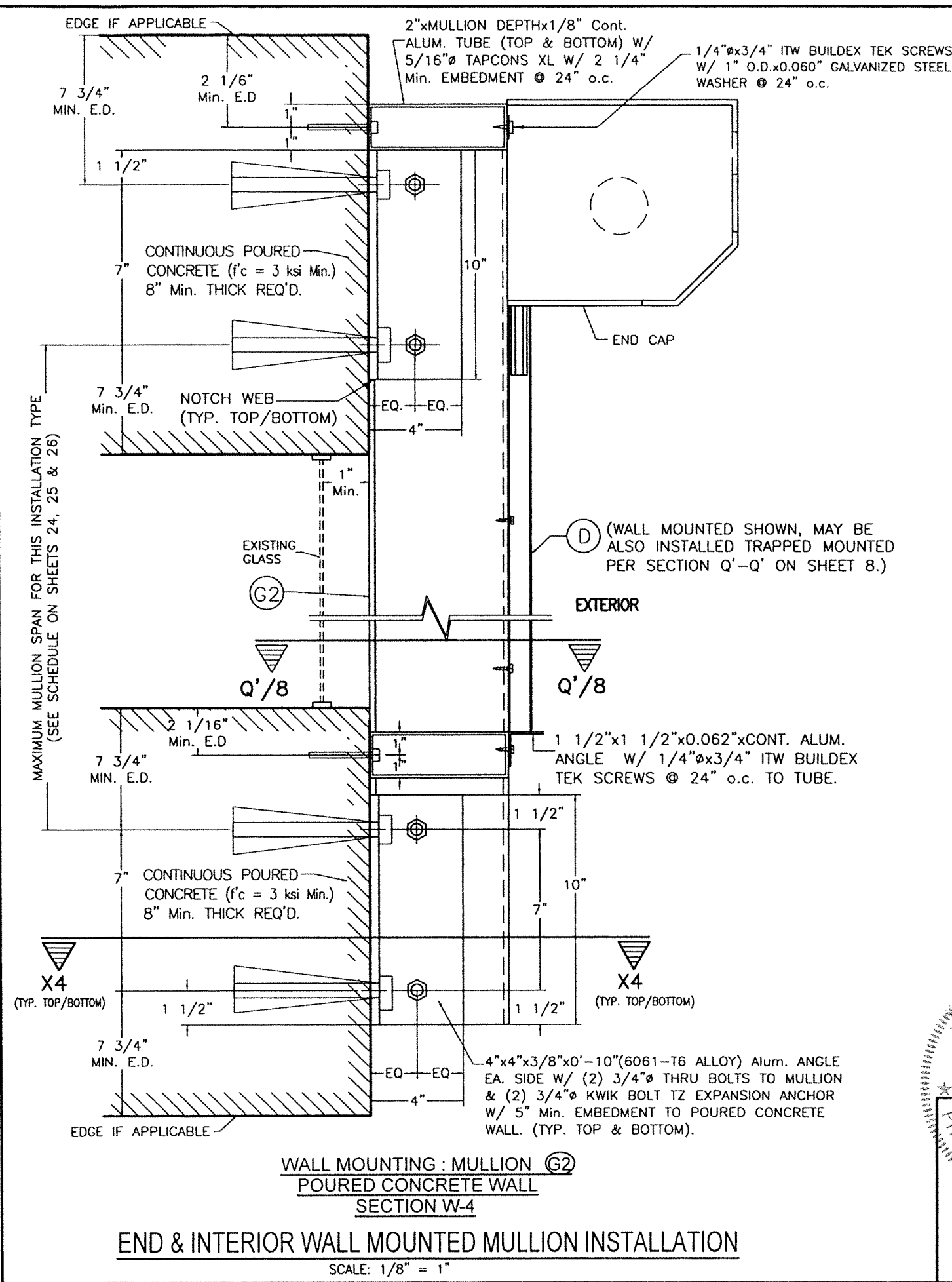
◇ INTERIOR TRAPPED MOUNTED MULLION INSTALLATION *
APPLICABLE TO A LIMITED LOAD, MULLION SPAN AND MULLION SPACING INSTALLATIONS

SCALE: 1/8" = 1"

WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
7/19/2023
P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone : (305)871-1530 . Fax : (305)871-1531
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CA-0006719
WALTER A. TILLIT JR. P.E.
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ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document was reviewed for code compliance; I, the undersigned, hereby approve the applicant from correcting errors and omissions and complying with the current Florida Building Code.
Nautilus
Rolling Shutter System
ESS
Permit # **B25007701**
MANUFACTURING, INC.
"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE Dr. PORT ST. LUCIE, FL. 34984
320-4800
DATE: 05/12/25
REV. No. 1 DESCRIPTION OLD 20-064 DATE 07/19/23 REV. No. 2 DESCRIPTION DATE
DRAWN BY: W.H.
DATE: 07/19/2023
23-100
DRAWING No
SHEET 12A OF 26



SECTION X4-X4 W/ G2 *
 (END & INTERIOR MULLION)
 (W/ ORIENTATION # 2)
 (4"x7")

* SIDE RAIL D NOT SHOWN FOR CLARITY

WALTER A. TILLIT JR.
 LICENSE
 No. 44167
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER
 7/17/2023
 P.E. SEAL/SIGNATURE/DATE

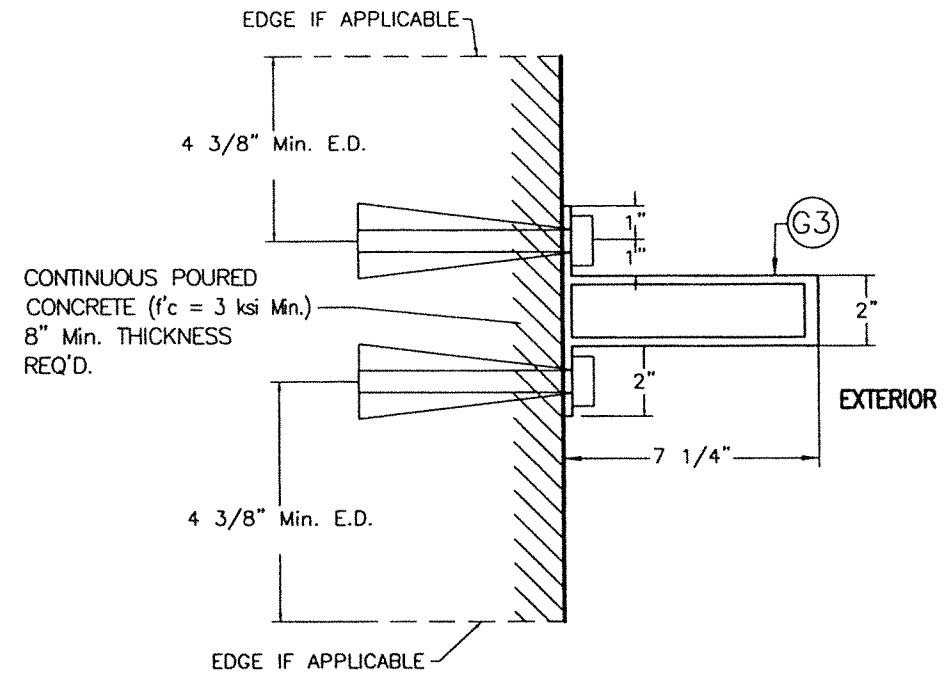
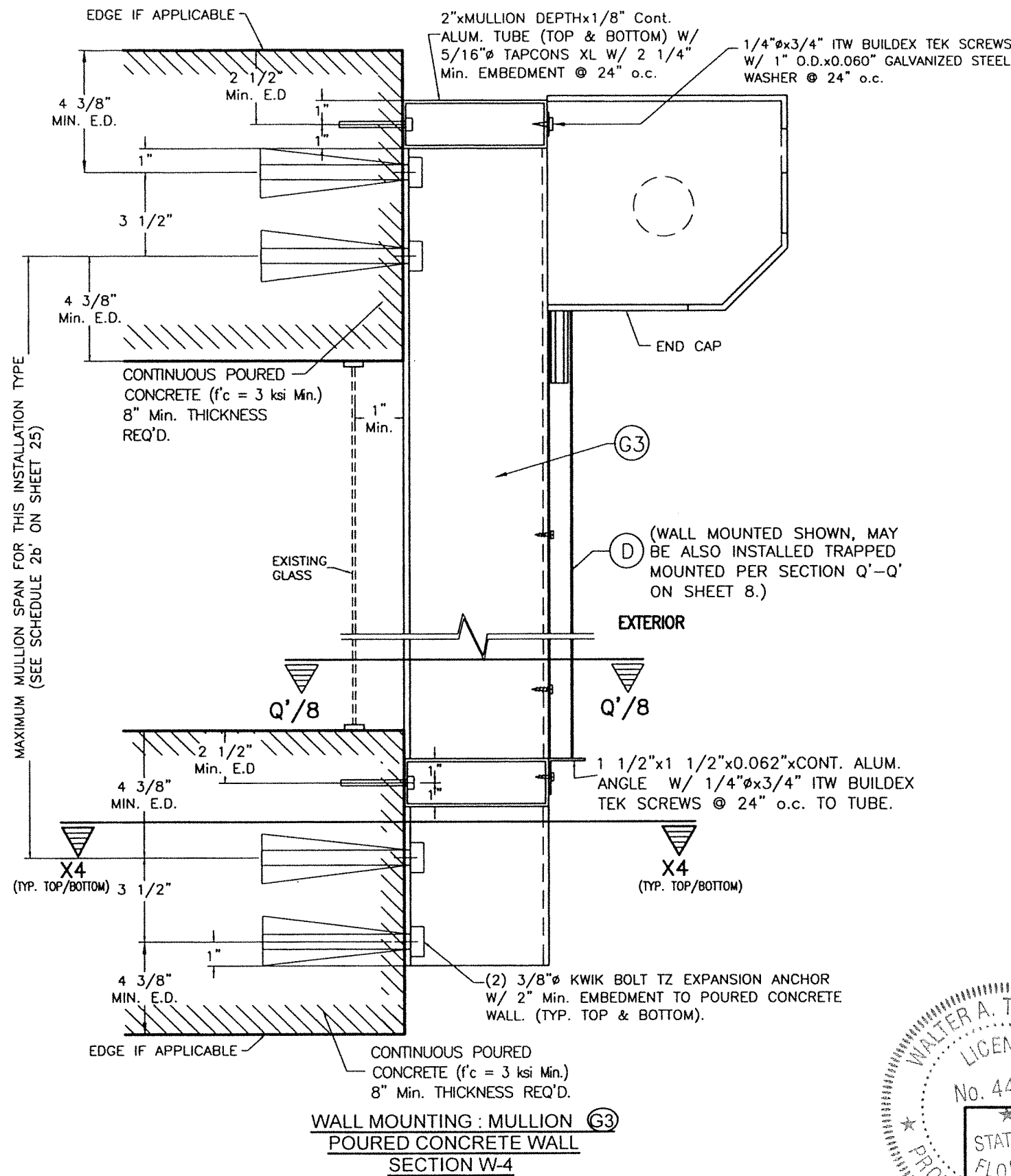
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 TILLIT TESTING & ENGINEERING COMPANY
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ORANGE COUNTY DIVISION OF BUILDING SAFETY
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Nautilus
 Rolling Shutter System
 Permit # **B2500761**
 MANUFACTURING, INC.
 "We're the Shutter Industry By Storm!"
 1-844-320-4800
 668 SW. WHITMORE Dr. PORT ST. LUCIE, FL. 34984

DRAWN BY: [Signature]
 DATE: 07/19/2023
 23-100
 DRAWING No
 SHEET 13 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-064	07/19/23	2		



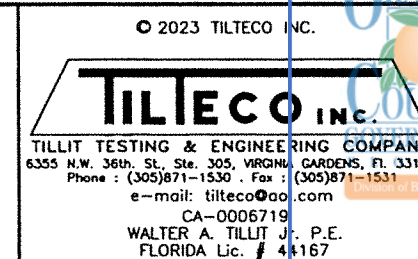
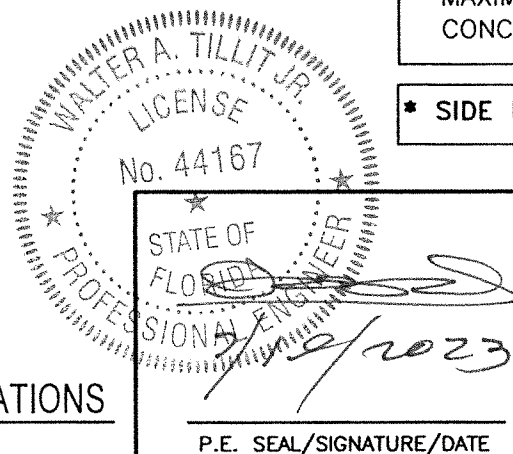
SECTION X4-X4 W/ G3 *
(INTERIOR MULLION)
(W/ ORIENTATION # 2)
(2"x7")

SEE MAXIMUM G3 (INTERIOR) WALL MOUNTED MULLION SPAN COVERED BY SCHEDULE 2b' FOR INSTALLATION CASES I' & II' ON SHEET 25 (LIMITED LOAD, MULLION SPACING AND SPAN INSTALLATION):

INSTALLATION CASE I' - RESIDENTIAL AND COMMERCIAL APPLICATIONS WITH ± 60.8 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 12'-0" MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO CONCRETE W/ HILTI INC HUS-H OR POWER FASTENERS WEDGE-BOLT ANCHORS.

INSTALLATION CASE II' - COMMERCIAL APPLICATION FOR ± 100.0 p.s.f. MAXIMUM A.S.D. DESIGN PRESSURE RATING, 8'-0" MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO CONCRETE W/ HILTI INC KWIK BOLT TZ ANCHORS.

* SIDE RAIL D NOT SHOWN FOR CLARITY



ORANGE COUNTY DIVISION OF BUILDING SAFETY FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone) This document must be on the jobsite for inspection.				DRAWN BY: W.H.	
Nautilus Rolling Shutter System ESS Permit # B25007701 "We're Taking The Shutter Industry By Storm!" 668 SW. WHITMORE DR. PORT ST. LUCIE, FL 34984 Phone: (305)320-4800				DATE 07/19/2023	
23-100 DRAWING No				SHEET 13A OF 26	
REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-064	07/19/23	2		

◇ **INTERIOR WALL MOUNTED MULLION INSTALLATION ***
APPLICABLE TO A LIMITED LOAD, MULLION SPAN AND MULLION SPACING INSTALLATIONS
SCALE: 1/8" = 1"

TYPICAL MANDATORY PROCEDURE FOR VERIFYING PRODUCT CODE COMPLIANCE RELATED TO ITS INSTALLATION INTO EXISTING POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK STRUCTURES (*)

STEP 1: OBTAIN JOB SITE'S A.S.D. DESIGN PRESSURE RATING (p.s.f.) FOR THE OPENING AND DESIRED SLAT SPAN "L" (ft) TO PROTECT IT (SEE GENERAL NOTE #2, SHEET 1).

STEP 2: ENTER TO CHARTS (Ia, Ib & Ib') THRU IC ON SHEET 15 TO DETERMINE, BASED ON AN 1/2" SLAT SLIP (in), ANCHOR TYPE AT SIDE RAILS; A.S.D. DESIGN PRESSURE RATING (p.s.f.); THE REQUIRED MAX SLAT SPAN "L" ft.

THE FOLLOWING INFORMATION IS PROVIDED AT CHARTS I THRU IC TO PROCEED WITH PRODUCT INSTALLATION VERIFICATION:

- ENTER A.S.D. DESIGN PRESSURE RATING: SEE STEP (1) ABOVE.
- FOR A SPECIFIC PRODUCT MOUNTING INSTALLATION TYPE, INCLUDING ANCHOR TYPE, THE FOLLOWING DEFINITION FOR SLAT SPAN SHALL BE CONSIDERED:

Lmax: THIS IS THE MAXIMUM ALLOWABLE SLAT SPAN FOR WHICH A GIVEN 1/2" SLAT SLIP MAY BE USED, FOR A GIVEN A.S.D. DESIGN PRESSURE RATING.

- MINIMUM REQUIRED SEPARATION TO GLASS IS PROVIDED ON CHART Ic: PROVIDES SEPARATION TO GLASS FOR PRODUCTS W/O OR W/ STORM BARS (SEE STEP 4).

STEP 3: OBTAIN INFORMATION ON PRODUCT'S SIDE RAIL ANCHOR SPACING REQUIREMENTS FOR CONNECTION TO EXISTING STRUCTURE FROM ANCHOR SCHEDULES Va, Vb & Vb' ON SHEETS 16 THRU 18. ENTER SCHEDULES WITH FINALLY DETERMINED ANCHOR TYPE, SUBSTRATE, MOUNTING TYPE, A.S.D. DESIGN PRESSURE RATING & SLAT SPAN AND OBTAIN MAXIMUM ANCHOR SPACING (INCHES ON CENTERS). SEE GENERAL NOTE 7 ON SHEET 1 FOR ANCHOR SPECS.

STEP 4: IF PRODUCT INSTALLATION INCLUDES STORM BARS, MULLIONS OR STORM BARS & MULLIONS, THE FOLLOWING MANDATORY ADDITIONAL PROCEDURES ARE APPLICABLE.

PROCEDURE 4a: IF STORM BARS ARE USED

- MINIMUM SEPARATION TO GLASS FOR SLATS IF STORM BARS ARE USED SHALL BE BASED ON CHART Ic, ON SHEET 15, IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS.
- ENTER TABLE 1 ON SHEET 22 W/ A.S.D DESIGN LOAD ; STORM BAR SPACING AND DETERMINE MAXIMUM ALLOWABLE STORM BAR SPAN (HEIGHT).
- ENTER TABLES 2 OR 3 ON SHEET 23, WITH A.S.D. DESIGN PRESSURE RATING AND STORM BAR SPACING AND DETERMINE APPLICABLE OPTIONS FOR STORM BAR CONNECTION TO CONCRETE TOP & BOTTOM. OPTIONS PROVIDE ANCHOR SPECS AT ANCHORS TYPE LEGEND FOR VARIOUS ANCHOR TYPES COVERING PERMANENT (ANCHORS A & D) OR REMOVABLE (ANCHORS B & C) INSTALLATIONS & A CHOICE OF 2 OR 4 ANCHORS PER CONNECTION DEPENDING ON LOAD AND STORM BAR SPACING.

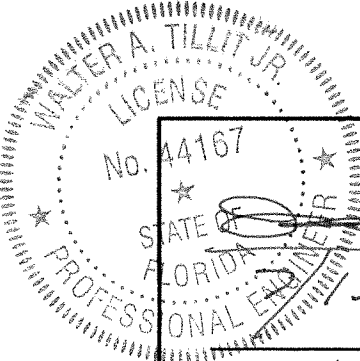
PROCEDURE 4b: IF MULLIONS ARE USED BUT W/O STORM BARS

- MINIMUM SEPARATION TO GLASS FOR SLATS IF MULLIONS ARE USED BUT W/O STORM BARS SHALL BE BASED ON CHART Ic ON SHEET 15. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS.
- ENTER SCHEDULES 1a THRU 2c ON SHEETS 24, 25 & 26 W/ A.S.D. DESIGN LOAD ; MAXIMUM MULLION SPACING (MAX., 12', 8' OR 7'), AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN (G1, G2 & G3), MULLION TYPE & MULLION ORIENTATION.
- SEE SHEETS 10, 10A, 11, 11A, 12, 12A, 13 & 13A FOR REQUIRED MULLION CONNECTION DETAILS AT TOP & BOTTOM FOR FLOOR TO CEILING (TRAPPED) OR WALL MOUNTINGS OF MULLIONS INTO CONCRETE FOR A GIVEN MULLION TYPE (G1, G2 & G3).

PROCEDURE 4c: IF BOTH STORM BARS & MULLIONS ARE USED

- MINIMUM SEPARATION TO GLASS FOR SLATS IF BOTH STORM BARS AND MULLIONS ARE USED SHALL BE BASED ON CHART Ic, ON SHEET 15, IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS.
- ENTER TABLE 1 ON SHEET 22 W/ A.S.D. DESIGN LOAD AND STORM BAR SPACING AND DETERMINE MAXIMUM STORM BAR SPAN (HEIGHT).
- ENTER TABLES 2 OR 3 ON SHEET 23, WITH A.S.D. DESIGN PRESSURE RATING AND STORM BAR SPACING AND DETERMINE APPLICABLE OPTIONS FOR STORM BAR CONNECTION TO CONCRETE TOP & BOTTOM. OPTIONS PROVIDE ANCHOR SPECS AT ANCHORS TYPE LEGEND FOR VARIOUS ANCHOR TYPES COVERING PERMANENT (ANCHORS A & D) OR REMOVABLE (ANCHORS B & C) INSTALLATIONS & A CHOICE OF 2 OR 4 ANCHORS PER CONNECTION DEPENDING ON LOAD AND STORM BAR SPACING.
- ENTER SCHEDULES 1a THRU 2c ON SHEETS 24, 25 & 26 W/ A.S.D. DESIGN PRESSURE RATING ; MAXIMUM MULLION SPACING (MAX., 12', 8' OR 7'), AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN (G1, G2 & G3), MULLION TYPE & MULLION ORIENTATION.
- SEE SHEETS 10, 10A, 11, 11A, 12, 12A, 13 & 13A FOR MULLION CONNECTION DETAILS AT TOP & BOTTOM FOR FLOOR TO CEILING (TRAPPED) OR WALL MOUNTINGS OF MULLIONS INTO CONCRETE FOR A GIVEN MULLION TYPE (G1, G2 & G3).

* PROCEDURE PER STEPS 1 THRU 3 IS SIMILAR FOR INSTALLATIONS INTO WOOD FRAME STRUCTURES. SEE SHEETS 20 & 21 FOR LIMITATIONS APPLICABLE TO INSTALLATIONS INTO WOOD FRAME STRUCTURES.



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WALTER A. TILLIT Jr., P.E.
FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Per Florida Building Code)

Nautilus
Rolling Shutter System

Permit # B25007701
Date: 05/12/25

"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE Dr. PORT ST. LUCIE, FL. 34984

DATE: 07/19/2023
DRAWING No: 23-100
SHEET 14 OF 26

SLAT PERFORMANCE CHARTS **Ia, Ib, Ib' & Ic:** (ONLY VALID FOR 1/2" SLIP)

FOR A GIVEN A.S.D. DESIGN PRESSURE RATING (p.s.f), PRODUCT MOUNT CONDITION INCLUDING ANCHOR TYPE AND FOR INSTALLATIONS W/ OR W/O STORM BARS

CHART Ia					CHART Ib				CHART Ib'				CHART Ic			
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD													USE MAXIMUM POSITIVE A.S.D. LOAD VALUE			
3/8"Ø KWIK BOLT 3 ANCHOR POURED CONCRETE					5/16"Ø TAPCON XL ANCHOR TO POURED CONCRETE				5/16"Ø TAPCON XL ANCHOR TO GROUT FILLED CELL CONCRETE BLOCK							
MAX. A.S.D. DESIGN PRESSURE RATING (psf)	MAX. SLAT SPAN "L _{MAX.} " (FT)				MAX. SLAT SPAN "L _{MAX.} " (FT)				MAX. SLAT SPAN "L _{MAX.} " (FT)				REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)			
	WALL MOUNT SEE NOTES *	TRAPPED MOUNT SEE NOTES *	BUILD-OUT MOUNT W/ Ⓔ1 & Ⓔ2 SEE NOTES *	BUILD-OUT MOUNT W/ Ⓔ3 SEE NOTES *	WALL MOUNT SEE NOTES *	TRAPPED MOUNT SEE NOTES *	BUILD-OUT MOUNT W/ Ⓔ1 & Ⓔ2 SEE NOTES *	BUILD-OUT MOUNT W/ Ⓔ3 SEE NOTES *	WALL MOUNT SEE NOTES *	TRAPPED MOUNT SEE NOTES *	BUILD-OUT MOUNT W/ Ⓔ1 & Ⓔ2 SEE NOTES *	BUILD-OUT MOUNT W/ Ⓔ3 SEE NOTES *	W/O STORM BARS		W/ STORM BARS	
													WIND ZONES 1-3	WIND ZONE 4	WIND ZONES 1-3	WIND ZONE 4
30.0	20'-0"	15'-4"	20'-0"	20'-0"	20'-0"	15'-4"	20'-0"	18'-0"	20'-0"	15'-4"	18'-0"	15'-6"	1"	14 1/2"	6"	7"
35.0	20'-0"	15'-3"	20'-0"	18'-0"	20'-0"	15'-0"	19'-0"	16'-3"	20'-0"	15'-0"	16'-3"	14'-0"	1"	14 1/2"	6"	7"
40.0	20'-0"	15'-2"	19'-7"	16'-6"	20'-0"	14'-5"	17'-4"	14'-10"	18'-11"	14'-5"	14'-10"	12'-9"	1"	14 1/2"	6"	7"
45.0	20'-0"	15'-0"	18'-0"	15'-3"	20'-0"	14'-2"	16'-0"	13'-9"	17'-4"	14'-2"	13'-9"	12'-0"	1"	14 1/2"	6"	7"
50.0	20'-0"	14'-10"	16'-9"	14'-2"	19'-1"	13'-1"	14'-10"	12'-10"	16'-2"	13'-1"	12'-9"	11'-0"	1"	14 1/2"	6"	7"
55.0	20'-0"	14'-8"	15'-8"	13'-4"	17'-9"	12'-4"	13'-11"	12'-1"	15'-0"	12'-4"	12'-0"	10'-6"	1"	14 1/2"	6"	7"
60.0	19'-5"	13'-9"	14'-9"	12'-7"	16'-9"	11'-8"	13'-2"	11'-5"	14'-2"	11'-8"	11'-4"	10'-0"	1"	14 1/2"	6"	7"
65.0	18'-4"	12'-11"	13'-11"	11'-11"	15'-9"	11'-0"	12'-5"	10'-11"	13'-4"	11'-0"	10'-10"	9'-6"	1"	14"	6"	7"
70.0	17'-4"	12'-1"	13'-3"	11'-4"	15'-0"	10'-6"	11'-10"	10'-4"	12'-9"	10'-6"	10'-4"	9'-0"	1"	13 1/2"	6"	7"
75.0	16'-6"	11'-7"	12'-7"	10'-10"	14'-3"	10'-0"	11'-4"	9'-11"	12'-0"	10'-0"	9'-10"	8'-10"	1"	13 1/2"	6"	7"
80.0	15'-9"	11'-0"	12'-0"	10'-5"	13'-7"	9'-5"	10'-10"	9'-7"	11'-7"	9'-5"	9'-3"	8'-6"	1"	13"	6"	7"
85.0	15'-0"	10'-6"	11'-7"	10'-0"	13'-0"	9'-3"	10'-5"	9'-3"	11'-2"	9'-3"	9'-0"	8'-3"	1"	13"	6"	7"
90.0	14'-2"	10'-1"	11'-2"	9'-8"	12'-6"	8'-10"	10'-1"	8'-11"	10'-9"	8'-10"	8'-10"	8'-0"	1"	12 1/2"	6"	7"
95.0	13'-5"	9'-8"	10'-9"	9'-4"	12'-0"	8'-5"	9'-9"	8'-7"	10'-4"	8'-5"	8'-6"	7'-9"	1"	12 1/2"	6"	7"
100.0	12'-9"	9'-4"	10'-5"	9'-1"	11'-8"	8'-4"	9'-5"	8'-4"	10'-0"	8'-4"	8'-3"	7'-6"	1"	12"	6"	7"
105.0	12'-2"	9'-0"	10'-1"	8'-9"	11'-3"	8'-0"	9'-2"	8'-2"	9'-8"	8'-0"	8'-0"	7'-4"	1"	11 1/2"	6"	7"
110.0	11'-7"	8'-8"	9'-9"	8'-6"	10'-11"	7'-10"	8'-10"	7'-11"	9'-3"	7'-10"	7'-9"	7'-2"	1"	11 1/2"	6"	7"
115.0	11'-1"	8'-5"	9'-6"	8'-4"	10'-7"	7'-8"	8'-8"	7'-8"	9'-0"	7'-8"	7'-8"	7'-0"	1"	11 1/2"	6"	7"
120.0	10'-8"	8'-1"	9'-3"	8'-2"	10'-3"	7'-5"	8'-5"	7'-6"	8'-11"	7'-5"	7'-5"	6'-10"	1"	11"	6"	7"
125.0	10'-2"	7'-9"	9'-0"	7'-11"	10'-0"	7'-2"	8'-2"	7'-4"	8'-8"	7'-2"	7'-3"	6'-8"	1"	11"	6"	7"
130.0	9'-10"	7'-6"	8'-9"	7'-9"	9'-9"	7'-0"	8'-0"	7'-2"	8'-5"	7'-0"	7'-2"	6'-6"	1"	10 1/2"	6"	7"
135.0	9'-5"	7'-2"	8'-6"	7'-7"	9'-6"	6'-10"	7'-10"	7'-1"	8'-2"	6'-10"	7'-0"	6'-5"	1"	10 1/2"	6"	7"
140.0	9'-1"	6'-11"	8'-4"	7'-5"	9'-1"	-	7'-8"	6'-11"	8'-0"	-	6'-10"	6'-4"	1"	10 1/2"	6"	7"
145.0	8'-10"	-	8'-2"	7'-3"	8'-10"	-	7'-6"	-	7'-10"	-	-	-	1"	10"	6"	7"
150.0	8'-6"	-	8'-0"	7'-2"	8'-6"	-	7'-4"	-	7'-9"	-	-	-	1"	10"	6"	7"
155.0	8'-3"	-	7'-10"	7'-0"	8'-3"	-	7'-2"	-	7'-7"	-	-	-	1"	10"	6"	7"
160.0	8'-0"	-	7'-8"	6'-10"	8'-0"	-	7'-1"	-	7'-5"	-	-	-	1"	10"	6"	7"

* **NOTES:**

- ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEETS 17 & 18 INDICATE THAT AN ANCHOR SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND A.S.D. DESIGN PRESSURE RATING.
- REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH 3/8"Ø KWIK BOLT 3 ANCHOR OR 5/16"Ø TAPCON XL ANCHOR, INTO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK, OR WITH 1/4"Ø TEK SCREWS AT MULLIONS CONNECTION. VALID FOR WALL MOUNTED, TRAPPED MOUNTED, AND BUILD-OUT MOUNTED.
- MAXIMUM SLAT SPANS FOR INTERMEDIATE LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.

WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
9/2023
P.E. SEAL/SIGNATURE/DATE

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ORANGE COUNTY DIVISION OF BUILDING SAFETY
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ESS
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"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE DR., PORT ST. LUCIE, FL 34984

Permit # **B25907701**
Date: **05/12/23**

REV. No. DESCRIPTION DATE

1 OLD 20-084 07/19/23

DRAWN BY: W.H.
DATE: 07/19/2023

23-100
DRAWING No

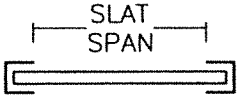
SHEET 15 OF 26

MAX. ANCHOR'S SPACING SCHEDULE **Va**

FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 3/8"Ø KWIK BOLT 3 ANCHORS TO POURED CONCRETE WALL, A.S.D. DESIGN PRESSURE RATING & SLAT SPAN RANGE †

WALL MOUNT

MAX. A.S.D. DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE							
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †	> 16'-20' †
≤ 30.0	9"	9"	9"	9"	9"	9"	9"	9"
>31-40	9"	9"	9"	9"	9"	9"	9"	8"
>41-60	9"	9"	9"	9"	9"	9"	7"	5 5/8"
>61-80	9"	9"	9"	9"	9"	8"	5 5/8"	5 5/8"
>81-105	9"	9"	9"	9"	9"	6 1/2"	5 5/8"	—
>106-120	9"	9"	9"	9"	8"	6"	—	—
>121-140	9"	9"	9"	8"	7"	6"	—	—
>141-160	9"	9"	9"	7"	7"	—	—	—



SLAT SPAN DEFINITION

† NOTE:
MAX. SLAT SPAN FOR A GIVEN A.S.D. DESIGN PRESSURE RATING SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 15.

TRAPPED MOUNT

MAX. A.S.D. DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE							
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †	> 16'-20' †
≤ 30.0	9"	9"	9"	9"	9"	9"	9"	—
>31-40	9"	9"	9"	9"	9"	9"	9"	—
>41-60	9"	9"	9"	9"	9"	9"	7 1/2"	—
>61-80	9"	9"	9"	9"	9"	8"	—	—
>81-105	9"	9"	9"	9"	8"	—	—	—
>106-120	9"	9"	9"	8 1/2"	8"	—	—	—
>121-140	9"	9"	9"	7"	—	—	—	—
>141-160	9"	9"	8"	6"	—	—	—	—

BUILD-OUT MOUNT

MAX. A.S.D. DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE																								
	0'-4' †			> 4'-5' †			> 5'-6' †			> 6'-7' †			> 7'-9' †			> 9'-12' †			> 12'-16' †			> 16'-20' †			
	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	
≤ 30.0	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	7 3/4"	7"	7"	5 5/8"
>31-40	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	7"	7"	6"	5 5/8"	5 5/8"	5 5/8"
>41-60	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	7 1/2"	7 1/2"	6"	5 5/8"	5 5/8"	5 5/8"	5 5/8"	5 5/8"	—	
>61-80	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	7"	5 5/8"	5 5/8"	5 5/8"	5 5/8"	5 5/8"	—	—	—	—	
>81-105	9"	9"	9"	9"	9"	9"	9"	9"	9"	8"	8"	6 1/2"	6 3/4"	6 3/4"	5 5/8"	5 5/8"	5 5/8"	5 5/8"	—	—	—	—	—	—	
>106-120	9"	9"	9"	9"	9"	9"	9"	9"	8"	8"	8"	6 1/2"	6"	6"	5 5/8"	5 5/8"	5 5/8"	—	—	—	—	—	—	—	
>121-140	9"	9"	9"	9"	9"	7 1/2"	8"	8"	6 1/2"	8"	8"	6"	5 5/8"	5 5/8"	5 5/8"	—	—	—	—	—	—	—	—	—	
>141-160	9"	9"	9"	8"	8"	6"	7"	7"	5 5/8"	6 3/4"	6 3/4"	5 5/8"	5 5/8"	5 5/8"	—	—	—	—	—	—	—	—	—	—	

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

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TILTECO INC.

TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone : (305)871-1530 . Fax : (305)871-1531
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FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document must be on file for inspection
We're Taking The Shutter Industry By Storm!
668 SW. WHITMORE Dr. PORT ST. LUCIE, FL 34984
320-4800

Nautilus
Rolling Shutter System
ESS
MANUFACTURING, INC.

Permit # **B25007701**
Date: **05/12/25**

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-044	07/19/23	2		

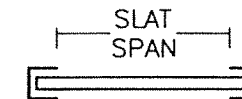
DRAWN BY: W.H.
DATE: 07/19/2023
23-100
DRAWING No
SHEET 16 OF 26

MAX. ANCHOR'S SPACING SCHEDULE Vb

FOR A GIVEN SHUTTER MOUNTING TYPE, W/ 5/16"Ø TAPCON XL ANCHORS TO POURED CONCRETE WALL
A.S.D. DESIGN LOAD & SLAT SPAN RANGE †

WALL MOUNT

MAXIMUM A.S.D. DESIGN PRESSURE RATING RANGE(psf)	SLAT SPAN RANGE							
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †	> 16'-20' †
≤ 30.0	8"	8"	8"	8"	8"	8"	7 1/2"	5 1/2"
>31-40	8"	8"	8"	8"	8"	8"	6"	4"
>41-60	8"	8"	8"	8"	8"	6"	4"	3 3/4"
>61-80	8"	8"	8"	8"	7"	4 1/2"	3 3/4"	-
>81-105	8"	8"	8"	6 1/2"	5"	3 3/4"	3 3/4"	-
>106-120	8"	8"	8"	5 1/2"	4 1/2"	3 3/4"	-	-
>121-140	8"	7 1/2"	6"	4 1/2"	4"	3 3/4"	-	-
>141-160	8"	6"	5"	4"	4"	-	-	-



SLAT SPAN DEFINITION

† NOTE:
MAX. SLAT SPAN FOR A
GIVEN A.S.D. DESIGN LOAD
SHALL **NEVER** EXCEED MAX.
SLAT SPAN INDICATED ON
SLAT PERFORMANCE CHART
ON SHEET 15.

TRAPPED MOUNT

MAXIMUM A.S.D. DESIGN PRESSURE RATING RANGE(psf)	SLAT SPAN RANGE							
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †	> 16'-20' †
≤ 30.0	6"	6"	6"	6"	6"	6"	6"	5 1/2"
>31-40	6"	6"	6"	6"	6"	6"	5 1/2"	4 1/2"
>41-60	6"	6"	6"	6"	6"	5 1/2"	4"	4"
>61-80	6"	6"	6"	6"	6"	4"	4"	-
>81-105	6"	6"	6"	6"	4 3/4"	3 3/4"	3 3/4"	-
>106-120	6"	6"	6"	5"	4"	3 3/4"	-	-
>121-140	6"	6"	5 3/4"	4"	3 3/4"	3 3/4"	-	-
>141-160	6"	6"	5"	3 3/4"	3 3/4"	-	-	-

BUILD-OUT MOUNT

MAXIMUM A.S.D. DESIGN PRESSURE RATING RANGE(psf)	SLAT SPAN RANGE																							
	0'-4' †			> 4'-5' †			> 5'-6' †			> 6'-7' †			> 7'-9' †			> 9'-12' †			> 12'-16' †			> 16'-20' †		
	(E)	(E2)	(E3)	(E)	(E2)	(E3)	(E)	(E2)	(E3)	(E)	(E2)	(E3)	(E)	(E2)	(E3)	(E)	(E2)	(E3)	(E)	(E2)	(E3)	(E)	(E2)	(E3)
≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5 1/2"	5 1/2"	4 1/2"	4"	4"	3 3/4"
>31-40	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5"	4"	4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"
>41-60	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	4"	4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	-	-	-
>61-80	6"	6"	6"	6"	6"	6"	6"	6"	5 1/2"	6"	6"	5"	5"	5"	4"	3 3/4"	3 3/4"	-	3 3/4"	3 3/4"	-	-	-	-
>81-105	6"	6"	6"	6"	6"	6"	6"	6"	5 3/4"	4 1/2"	4 1/2"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	-	-	-	-	-	-	-
>106-120	6"	6"	6"	6"	6"	5 1/2"	5 3/4"	5 3/4"	4 1/2"	4 1/2"	4 1/2"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	-	-	-	-	-	-	-	-	-
>121-140	6"	6"	6"	5"	5"	4"	4 3/4"	4 3/4"	3 3/4"	4 1/2"	4 1/2"	3 3/4"	3 3/4"	3 3/4"	-	-	-	-	-	-	-	-	-	-
>141-160	6"	6"	5"	4 1/2"	4 1/2"	3 3/4"	4"	4"	-	4"	4"	3 3/4"	3 3/4"	-	-	-	-	-	-	-	-	-	-	-

WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF FLORIDA
PROFESSIONAL ENGINEER
9/2023
P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
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CA-0006719
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FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Per the website for inspection)
This document was reviewed for code compliance; this does not relieve the applicant of correcting errors and omissions and complying with the current Florida Building Code.
Nautilus
Rolling Shutter System
Permit # **B25007761**
MANUFACTURING, INC.
"We're Taking The Shutter Industry By Storm!"
1-844-320-4800
668 SW. WHITMORE Dr. PORT ST. LUCIE, FL 34984
DRAWN BY: 07/19/2023 DATE
23-100 DRAWING No
SHEET 17 OF 26

MAX. ANCHOR'S SPACING SCHEDULE Vb

FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 5/16"Ø TAPCON XL ANCHORS TO
GROUT FILLED CELL CONCRETE BLOCK WALL, A.S.D. DESIGN PRESSURE RATING & SLAT SPAN RANGE †

WALL MOUNT

MAX. A.S.D. DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE							
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †	> 16'-20' †
≤ 30.0	8"	8"	8"	8"	8"	8"	6"	4 1/2"
>31-40	8"	8"	8"	8"	8"	7"	4 1/2"	-
>41-60	8"	8"	8"	8"	8"	4 1/2"	-	-
>61-80	8"	8"	7 1/2"	7"	5 1/2"	-	-	-
>81-105	8"	8"	7 1/2"	5"	4"	-	-	-
>106-120	8"	7 1/2"	6"	4"	-	-	-	-
>121-140	8"	6"	5"	-	-	-	-	-
>141-160	7"	5"	4"	-	-	-	-	-



SLAT SPAN DEFINITION

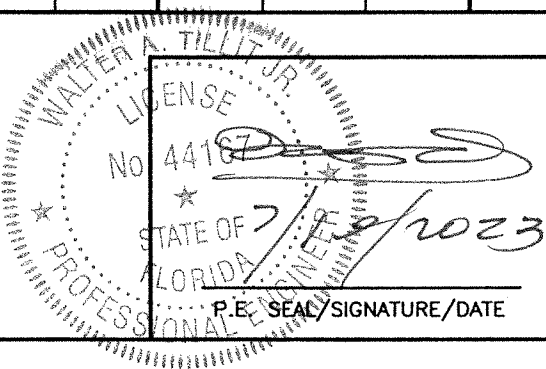
† NOTE:
MAX. SLAT SPAN FOR A GIVEN A.S.D. DESIGN PRESSURE RATING SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEET 15.

TRAPPED MOUNT

MAX. A.S.D. DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE							
	0'-4' †	> 4'-5' †	> 5'-6' †	> 6'-7' †	> 7'-9' †	> 9'-12' †	> 12'-16' †	> 16'-20' †
≤ 30.0	6"	6"	6"	6"	6"	6"	6"	-
>31-40	6"	6"	6"	6"	6"	6"	4 1/2"	-
>41-60	6"	6"	6"	6"	6"	4 1/2"	-	-
>61-80	6"	6"	6"	6"	5"	4 1/2"	-	-
>81-105	6"	6"	6"	4 1/2"	4 1/2"	-	-	-
>106-120	6"	6"	5 1/2"	4"	4 1/2"	-	-	-
>121-140	6"	5"	4 1/2"	3 3/4"	-	-	-	-
>141-160	6"	5"	4"	-	-	-	-	-

BUILD-OUT MOUNT

MAX. A.S.D. DESIGN PRESSURE RATING RANGE (p.s.f.)	SLAT SPAN RANGE																							
	0'-4' †			> 4'-5' †			> 5'-6' †			> 6'-7' †			> 7'-9' †			> 9'-12' †			> 12'-16' †			> 16'-20' †		
	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)	(E1)	(E2)	(E3)
≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5 1/2"	4"	4 1/2"	-	-	-	-
>31-40	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5 1/2"	5"	4"	-	4"	-	-	-	-
>41-60	6"	6"	6"	6"	6"	6"	5 1/2"	5 1/2"	6"	6"	6"	6"	6"	5 1/2"	4 1/2"	-	-	-	-	3 3/4"	-	-	-	-
>61-80	6"	6"	6"	6"	6"	5 1/2"	5 1/2"	5 1/2"	4 1/2"	5"	5"	4"	4"	4"	-	-	-	-	-	3 3/4"	-	-	-	-
>81-105	6"	6"	6"	6"	6"	5 1/2"	5 1/2"	5 1/2"	4 1/2"	3 3/4"	3 3/4"	-	-	-	-	-	-	-	-	-	-	-	-	-
>106-120	6"	6"	6"	5 1/2"	5 1/2"	4 1/2"	4 1/2"	4 1/2"	3 3/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>121-140	6"	6"	5 1/2"	4"	4"	-	3 3/4"	3 3/4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>141-160	5"	5"	4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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TILTECO INC.

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CA-0006719
WALTER A. TILLIT JR., P.E.
FLORIDA Lic. # 44-167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document must be on the jobsite for inspection

Nautilus
Rolling Shutter System
ESS
MANUFACTURING, INC.
"We're Taking The Shutter Industry By Storm!"
Permit # **B25007791**
Note: 668 SW. WHITMORE DR. PORT ST. LUCIE, FL.34984
Phone: 888-3320-4800

05/12/25

DRAWN BY: W.H.
07/19/2023
DATE

23-100
DRAWING No

SHEET 18 OF 26

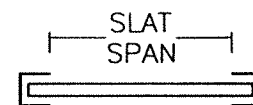
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1	OLD 20-044	07/19/23	2		

SCHEDULE V_c :

V_x FORCES (Lb/FT) & V_y FORCES (Lb/FT) ACTING AT JAMBS FOR AN A.S.D. DESIGN LOAD RANGE, SLAT SPAN RANGE FOR
POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK WALL BUILDINGS

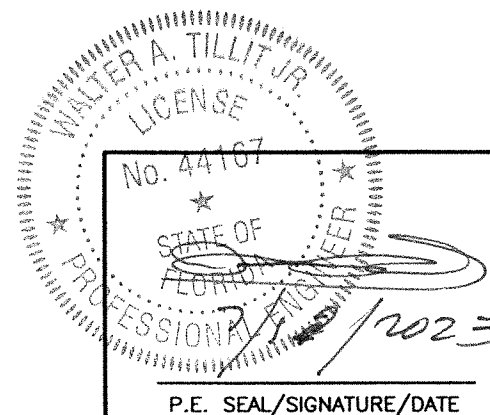
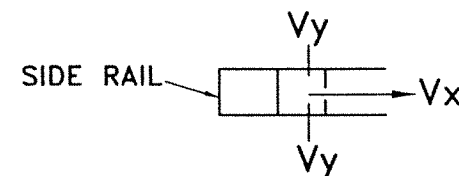
(USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (psf)	SLAT SPAN RANGE															
	0'-4'		> 4'-5'		> 5'-6'		> 6'-7'		> 7'-9'		> 9'-12'		> 12'-16'		> 16'-20'	
	V_x	V_y	V_x	V_y	V_x	V_y	V_x	V_y	V_x	V_y	V_x	V_y	V_x	V_y	V_x	V_y
≤ 30.0	10	60	10	75	165	90	238	105	421	135	594	180	999	240	1390	300
>31-40	10	80	10	100	386	120	440	140	398	180	823	240	1328	320	1823	400
>41-60	10	120	290	150	794	180	509	210	708	270	1266	360	1962	480	2553	582
>61-80	10	160	616	200	767	240	796	280	1007	360	1695	480	2422	600	2547	596
>81-105	123	210	550	263	711	315	1142	368	1372	473	2009	591	2492	638	—	—
>106-120	313	240	728	300	881	360	1345	420	1587	540	2112	640	—	—	—	—
>121-140	552	280	960	350	1003	420	1612	490	1869	630	2039	635	—	—	—	—
>141-160	781	320	1186	400	1322	480	1873	560	1740	640	—	—	—	—	—	—



SLAT SPAN DEFINITION

* NOTE:
IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR OR PERMIT HOLDER TO VERIFY THAT EXISTING STRUCTURE IS DESIGNED TO SUPPORT V_x AND V_y FORCES IN POUNDS PER UNIT FOOT OF SHUTTER HEIGHT AT BOTH JAMBS. SEE THIS SHEET FOR V_x & V_y VALUES.



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FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)		This document was reviewed for code compliance; the reviewer hereby certifies that the applicant has corrected errors and omissions and is complying with the current Florida Building Code.
Nautilus Rolling Shutter System Permit # B25007701 ESS MANUFACTURING, INC. "We're Taking The Shutter Industry By Storm!" 668 SW. WHITMORE Dr. PORT ST. LUCIE, FL. 34984 Phone: 320-4800	DRAWN BY: W.H. DATE: 07/19/2023 23-100 DRAWING No SHEET 19 OF 26	DATE: 05/12/25

SLAT PERFORMANCE CHART **Ib1 & Ic1**: (ONLY VALID FOR 1/2" SLIP)

FOR A GIVEN MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

CHART Ib1				CHART Ic1	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE	
5/16"Ø TAPCON XL ANCHOR					
MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT SPAN "L _{MAX.} " (ft)			REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	
	WALL MOUNT (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E2) (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E3) (SEE NOTES Δ)	W/O STORM BARS	
				WIND ZONES 1-3	WIND ZONE 4
30.0 *	10'-0"	10'-0"	10'-0"	1"	7 1/2"
35.0 **	10'-0"	10'-0"	10'-0"	1"	7 1/2"
40.0 **	10'-0"	10'-0"	10'-0"	1"	7 1/2"
45.0 ***	10'-0"	10'-0"	10'-0"	1"	7 1/2"
50.0 ***	10'-0"	10'-0"	10'-0"	1"	7 1/2"
55.0 ***	10'-0"	10'-0"	10'-0"	1"	7 1/2"
60.0 ***	10'-0"	10'-0"	10'-0"	1"	7 1/2"

SLAT PERFORMANCE CHART **III1**: (ONLY VALID FOR 1/2" SLIP)

FOR A GIVEN MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

CHART IIb1				CHART IIc1	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE	
5/16"Ø TAPCON XL ANCHOR					
MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT SPAN "L _{MAX.} " (ft)			REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	
	WALL MOUNT (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E2) (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E3) (SEE NOTES Δ)	W/O STORM BARS	
				WIND ZONES 1-3	WIND ZONE 4
30.0 *	12'-0"	12'-0"	12'-0"	1"	9"
35.0 **	12'-0"	12'-0"	12'-0"	1"	9"
40.0 **	12'-0"	12'-0"	12'-0"	1"	9"
45.0 ***	12'-0"	12'-0"	12'-0"	1"	9"

SLAT PERFORMANCE CHART **IIb1 & IIc1**: (ONLY VALID FOR 1/4" SLIP)

FOR A GIVEN MAXIMUM A.S.D. DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

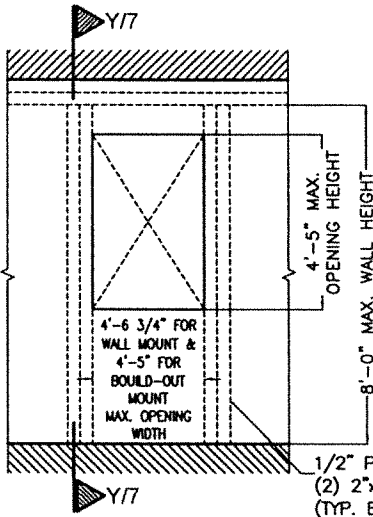
CHART IIb1				CHART IIc1	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE	
5/16"Ø TAPCON XL ANCHOR					
MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	REQUIRED MAX. SLAT SPAN "L _{MAX.} " (ft)			REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	
	WALL MOUNT (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E2) (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E3) (SEE NOTES Δ)	W/O STORM BARS	
				WIND ZONES 1-3	WIND ZONE 4
30.0 *	8'-3"	8'-3"	8'-3"	1"	5 1/8"
35.0 **	7'-9"	7'-9"	7'-9"	1"	5 1/8"
40.0 **	7'-7"	7'-7"	7'-7"	1"	5 1/8"
45.0 ***	7'-4"	7'-4"	7'-4"	1"	5 1/8"
50.0 ***	7'-3"	7'-3"	7'-3"	1"	5 1/8"
55.0 ***	7'-3"	7'-3"	7'-3"	1"	5 1/8"
60.0 ***	7'-3"	7'-3"	7'-3"	1"	5 1/8"

MAXIMUM A.S.D. DESIGN LOAD VS WOOD GRADE SCHEDULE:

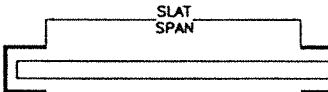
- * VALID FOR DOUGLAS-FIR-SOUTH (G=0.46)
SOUTHERN PINE #2 (G=0.55)
SPRUCE PINE-FIR-SITH (G=0.36)
- ** VALID FOR DOUGLAS-FIR-SOUTH (G=0.46)
SOUTHERN PINE #2 (G=0.55)
- *** VALID FOR SOUTHERN PINE #2 (G=0.55)

MAXIMUM SLAT SPAN AND MINIMUM SEPARATION TO GLASS FOR A GIVEN WOOD GRADE, A.S.D. DESIGN PRESSURE RATING (p.s.f.), SLAT SLIP 1/8" AND PRODUCT MOUNTING TYPE FOR WOOD FRAME WALLS W/ 2"x4" STUDS, AS PER LIMITATIONS ON DETAIL 1

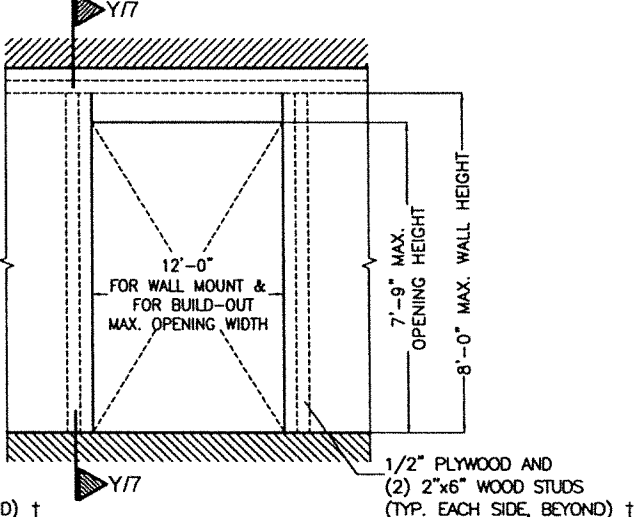
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE A.S.D. LOAD				USE MAXIMUM POSITIVE A.S.D. LOAD VALUE	
WOOD GRADE	MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAX. SLAT SPAN "L _{MAX.} " (ft)		REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)	
		WALL MOUNT (SEE NOTES Δ)	BUILD-OUT MOUNT W/ (E2) (SEE NOTES Δ)	W/O STORM BARS	
				WIND ZONES 1-3	WIND ZONE 4
SOUTHERN PINE #2 (G=0.55)	60	4'-5"	4'-5"	1"	5 1/2"
DOUGLAS-FIR-SOUTH (G=0.46)	60	4'-5"	4'-5"		
SPRUCE PINE-FIR-SITH (G=0.36)	60	4'-5"	4'-5"		



DETAIL 1 (ELEVATION)



SLAT SPAN DEFINITION



DETAIL 2 (ELEVATION)



SLAT SPAN DEFINITION

Δ NOTES:

- ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEET 21 INDICATE THAT A SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND A.S.D. DESIGN PRESSURE RATING.

†: WOOD FRAME WALL TO BE BUILT STRICTLY IN ACCORDANCE WITH SPECS GIVEN ON DETAIL AND PROVISIONS FROM CHAPTER 23 OF THE FLORIDA BUILDING CODE. MINIMUM LENGTH OF WALL AT EITHER SIDE OF OPENING SHALL BE 33".

INSTALLATION INTO WOOD FRAME STRUCTURES

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document must be on the jobsite for inspection
The applicant has reviewed for code compliance; this does not relieve the applicant from correcting errors and omissions and complying with the current Florida Building Code

Permit # **B25007701**
DATE: **05/12/25**

ESS
"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE ST. PORT ST. LUCIE, FL. 34984

REV. No. DESCRIPTION DATE REV. No. DESCRIPTION DATE
1 OLD 20-084 07/19/23 2

23-100
DRAWING No

SHEET 20 OF 26

WALTER A. TILTECO, P.E.
No. 44167
9/2023
P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone: (305)871-1530, Fax: (305)871-1531
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CA-0006719
WALTER A. TILTECO, P.E.
FLORIDA Lic. # 44-167

MAX. ANCHOR'S SPACING SCHEDULE VI FOR A GIVEN PRODUCT MOUNTING TYPE, WOOD
GRADE, A.S.D. DESIGN PRESSURE RATING (psf) AND SLAT SPAN RANGE *

WALL MOUNT & BUILD-OUT MOUNT TO 2"x4" WOOD STUD
(SEE DETAIL 1 ON SHEET 20)

WOOD GRADE	MAX.A.S.D. DESIGN PRESSURE RATING RANGE(p.s.f)	SLAT SPAN RANGE 0'-0" to 4'-5" *
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"
	40	6"
	45	6"
	50	6"
	60	6"
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	6"
	40	6"
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"

WALL MOUNT TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD
(SEE DETAIL 2 ON SHEET 20)

WOOD GRADE	MAX.A.S.D. DESIGN PRESSURE RATING RANGE(p.s.f)	SLAT SPAN RANGE						
		0' to 4' *	> 4' to 5' *	> 5' to 6' *	> 6' to 7' *	> 7' to 9' *	> 9' to 10' *	> 10' to 12' *
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"	6"	5"
	40	6"	6"	6"	6"	6"	4 3/4"	4"
	45	6"	6"	6"	6"	5"	4"	3 1/2"
	50	6"	6"	6"	6"	4 3/4"	3 1/2"	—
	60	6"	6"	5 3/4"	5 1/4"	3 3/4"	3"	—
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	6"	6"	6"	6"	6"	6"	5"
	40	6"	6"	6"	5 1/4"	5 1/4"	4 1/4"	4"
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	6"	5 1/4"	4"

BUILD-OUT MOUNT TO 2"x6" WOOD STUD WITH MINIMUM 1/2" PLYWOOD
(SEE DETAIL 2 ON SHEET 20)

WOOD GRADE	MAX.A.S.D. DESIGN PRESSURE RATING RANGE(p.s.f)	SLAT SPAN RANGE													
		0'-4' *		> 4'-5' *		> 5'-6' *		> 6'-7' *		> 7'-9' *		> 9'-10' *		> 10'-12' *	
		BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)	BUILD-OUT MOUNT W/(E)
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	4 1/2"	4 1/2"
	40	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5 1/4"	5 1/4"	4 1/2"	4 1/2"
	45	6"	6"	6"	6"	6"	6"	6"	6"	5 1/2"	5 1/4"	5"	5"	4"	4"
	50	6"	6"	6"	6"	6"	6"	6"	6"	5 1/4"	5 1/4"	4"	4"	—	—
	60	6"	6"	6"	6"	6"	6"	5 3/4"	5 3/4"	4"	4"	3"	3"	—	—
DOUGLAS-FIR-SOUTH (G=0.46)	≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5"	5"
	40	6"	6"	6"	6"	6"	6"	5 1/2"	5 1/2"	5 1/2"	5 1/2"	4 1/2"	4 1/2"	4"	4"
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	5 1/4"	5"	4"	4"

* NOTE:
MAX. SPAN FOR SLAT FOR
A GIVEN A.S.D. DESIGN
PRESSURE RATING SHALL
NEVER EXCEED MAX. SLAT
SPAN INDICATED ON SLAT
PERFORMANCE CHARTS ON
SHEET 20.

WALTER A. TILLIT JR.
LICENSE
No. 44167
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
9/2023
P.E. SEAL/SIGNATURE/DATE

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CA-0006719
WALTER A. TILLIT Jr. P.E.
FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document must be on the jobsite for inspection

Nautilus

Rolling Shutter System

Permit # B25007701

05/12/25

DATE: 07/19/2023

ESS
MANUFACTURING, INC.
"We're Taking The Shutter Industry By Storm!"
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320-4800

REV. No. DESCRIPTION DATE REV. No. DESCRIPTION DATE
1 OLD 20-064 07/19/23 2

23-100
DRAWING No

SHEET 21 OF 26

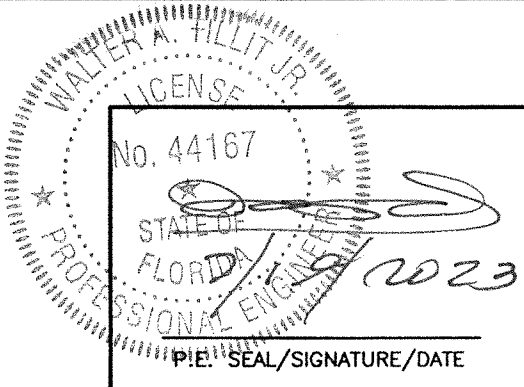
TABLE 1
MAX. ALLOWABLE STORM BAR SPAN (ft) FOR A GIVEN A.S.D. DESIGN
LOAD (p.s.f.), & A GIVEN STORM BAR SPACING (ft) **

MAXIMUM A.S.D. DESIGN PRESSURE RATING (psf)	STORM BAR SPACING (FT)									
	2'	2.667'	3'	3.5'	4'	4.5'	5'	5.5'	6'	6.667'
30.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"
35.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"
40.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"
45.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"
50.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *
55.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *
60.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *	-
65.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *	-
70.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *	11'-0" *	-
75.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *	-	-
80.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	10'-10" *	-	-
85.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0" *	-	-	-
90.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	-	-	-	-
95.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	-	-	-	-
100.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	-	-	-	-	-
105.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	-	-	-	-	-
110.0	11'-0"	11'-0"	11'-0"	11'-0"	10'-10"	-	-	-	-	-
115.0	11'-0"	11'-0"	11'-0"	11'-0"	-	-	-	-	-	-
120.0	11'-0"	11'-0"	11'-0"	11'-0"	-	-	-	-	-	-
125.0	11'-0"	11'-0"	11'-0"	10'-10"	-	-	-	-	-	-
130.0	11'-0"	11'-0"	11'-0"	-	-	-	-	-	-	-
135.0	11'-0"	11'-0"	11'-0"	-	-	-	-	-	-	-
140.0	11'-0"	11'-0"	11'-0"	-	-	-	-	-	-	-
145.0	11'-0"	11'-0"	10'-11"	-	-	-	-	-	-	-
150.0	11'-0"	11'-0"	-	-	-	-	-	-	-	-
155.0	11'-0"	11'-0"	-	-	-	-	-	-	-	-
160.0	11'-0"	11'-0"	-	-	-	-	-	-	-	-

THIS REGION IS ONLY VALID FOR INSTALLATIONS
W/ 1 OR MORE STORM BARS PER SHUTTER.

*THIS REGION IS ONLY VALID FOR INSTALLATIONS
W/ 2 OR MORE STORM BARS PER SHUTTER.

** MEASURED IN BETWEEN CENTER LINES OF STORM BARS IN
FEET OR FROM TIP OF SIDE RAIL TO CENTER OF STORM BAR.



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TILTECO INC.
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FLORIDA Lic. # 44-167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
Nautilus
Rolling Shutter System
ESS
Permit # **B25007701**
"We're Taking The Shutter Industry By Storm!"
668 SW. 16th Ave. #100, PORT ST. LUCIE, FL. 34984
Date: **05/12/25**

REV. No. DESCRIPTION DATE REV. No. DESCRIPTION DATE
1 20-30-004 07/18/23 2

DRAWN BY: **W.H. Hoes**
DATE: 07/19/2023
23-100
DRAWING No
SHEET 22 OF 26

TABLE 2

REQUIREMENTS FOR STORM BAR CONNECTION TO CONCRETE TOP AND BOTTOM PER SECTION S-S (SHEET 9) FOR A GIVEN A.S.D. DESIGN LOAD (p.s.f.), & STORM BAR SPACING (ft)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (psf)	STORM BAR SPACING "a" (FT)									
	2'	2.667'	3'	3.5'	4'	4.5'	5'	5.5'	6'	6.667'
30.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D
35.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D
40.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D
45.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C
50.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C
55.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C
60.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C
65.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A,B
70.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A,B	A
75.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B	A	A
80.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A	A	A
85.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B	A	A	A
90.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A	A	A	A
95.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B	A	A	A	A
100.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A
105.0	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B	A	A	A	A	A
110.0	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A
115.0	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A
120.0	A,B,C,D	A,B,C	A,B,C	A,B	A	A	A	A	A	A
125.0	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A	A
130.0	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A	A
135.0	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A	-
140.0	A,B,C,D	A,B,C	A,B	A	A	A	A	A	A	-
145.0	A,B,C,D	A,B,C	A,B	A	A	A	A	A	A	-
150.0	A,B,C,D	A,B,C	A	A	A	A	A	A	-	-
155.0	A,B,C	A,B	A	A	A	A	A	A	-	-
160.0	A,B,C	A,B	A	A	A	A	A	-	-	-

TABLE 3

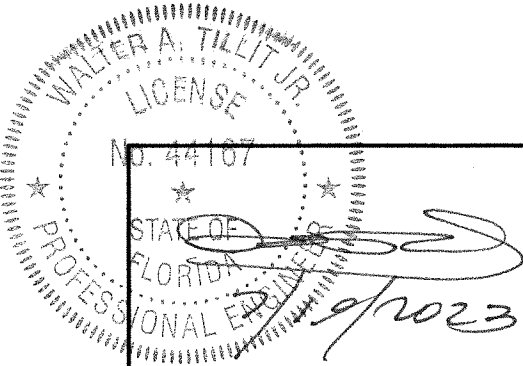
REQUIREMENTS FOR STORM BAR CONNECTION TO CONCRETE TOP AND BOTTOM PER SECTION S1-S1 (SHEET 9) FOR A GIVEN A.S.D. DESIGN LOAD (p.s.f.), & STORM BAR SPACING (ft)

MAXIMUM A.S.D. DESIGN PRESSURE RATING (psf)	STORM BAR SPACING "a" (FT)									
	2'	2.667'	3'	3.5'	4'	4.5'	5'	5.5'	6'	6.667'
30.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C
35.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A,B	A
40.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A	A	A
45.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A,B,C	A	A	A	A
50.0	A,B,C,D	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A
55.0	A,B,C,D	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A
60.0	A,B,C,D	A,B,C	A,B,C	A,B	A	A	A	A	A	A
65.0	A,B,C,D	A,B,C	A,B,C	A	A	A	A	A	A	A
70.0	A,B,C,D	A,B,C	A,B	A	A	A	A	A	A	-
75.0	A,B,C,D	A,B,C	A	A	A	A	A	A	-	-
80.0	A,B,C	A,B	A	A	A	A	A	-	-	-
85.0	A,B,C	A	A	A	A	A	A	-	-	-
90.0	A,B,C	A	A	A	A	A	-	-	-	-
95.0	A,B,C	A	A	A	A	A	-	-	-	-
100.0	A,B,C	A	A	A	A	-	-	-	-	-
105.0	A,B	A	A	A	A	-	-	-	-	-
110.0	A	A	A	A	-	-	-	-	-	-
115.0	A	A	A	A	-	-	-	-	-	-
120.0	A	A	A	A	-	-	-	-	-	-
125.0	A	A	A	-	-	-	-	-	-	-
130.0	A	A	A	-	-	-	-	-	-	-
135.0	A	A	A	-	-	-	-	-	-	-
140.0	A	A	A	-	-	-	-	-	-	-
145.0	A	A	A	-	-	-	-	-	-	-
150.0	A	A	-	-	-	-	-	-	-	-
155.0	A	A	-	-	-	-	-	-	-	-
160.0	A	A	-	-	-	-	-	-	-	-

ANCHORS TYPE LEGEND

- A 3/8"Ø CARBON STEEL KWIK BOLT TZ EXPANSION ANCHOR W/ 2 1/2" Min. EMBEDMENT* & 5" Min. THICK POURED CONCRETE (f'c = 3000 psi)
- B 3/8"Øx1 1/4" POWERS CALK-IN ANCHORS W/ 1 1/4" Min. EMBEDMENT* TO POURED CONCRETE (f'c = 3000 psi) & 3/8"Ø-16 MACHINE SCREWS
- C 1/4"Øx3/4" ALL POINTS SOLID-SET ANCHORS W/ 7/8" Min. EMBEDMENT* TO POURED CONCRETE (f'c = 3000 psi) & 1/4"Ø-20, 18-8 STAINLESS STEEL MACHINE SCREWS
- D 5/16"Ø ITW/BUILDEX TAPCON ANCHORS W/ 2 1/4" Min. EMBEDMENT* TO POURED CONCRETE (f'c = 2899 psi)

* EMBEDMENT IS BEYOND ANY FLOOR / CEILING FINISH



P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.

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WALTER A. TILLIT Jr., P.E.
FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non-High Velocity Hurricane Zone)
This document must be on the jobsite for inspection.
This document was reviewed for code compliance; DRAWN BY W.H.
and approved by the applicant from correcting errors and omissions.
and applying the Florida Building Code.

Nautilus
Rolling Shutter System
ESS
Permit # **B25007701**
MANUFACTURING, INC.
"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE DR. PORT ST. LUCIE, FL. 34984
Tel: 888-320-4800

07/19/2023
DATE

23-100
DRAWING No

SHEET 23 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-044	07/19/23	2		

SCHEDULE 1a
FLOOR TO CEILING (TRAPPED) MOUNTING
MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN
A.S.D. DESIGN PRESSURE RATING (p.s.f.), & A MAX. MULLION
SPACING (ft) *

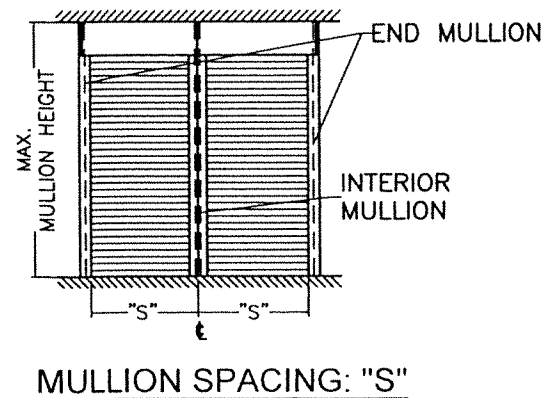
MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)											
		Ⓞ 4"x6"x1/4" MULLION				Ⓞ1 4"x8"x1/4" MULLION				Ⓞ2 4"x7"x1/4" THICK (3/8" FLANGE) MULLION			
		ORIENTATION #1 (⇌) †		ORIENTATION #2 (⌈) †		ORIENTATION #1 (⇌) †		ORIENTATION #2 (⌈) †		ORIENTATION #1 (⇌) †		ORIENTATION #2 (⌈) †	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	20'-0"	7'-10"	9'-8"	7'-3"	12'-0"	9'-4"	10'-7"	8'-0"	12'-6"	9'-8"	7'-6"	12'-6"	
35.0	20'-0"	7'-4"	9'-3"	6'-9"	11'-5"	8'-8"	10'-0"	7'-7"	12'-6"	8'-11"	6'-11"	12'-6"	
40.0	20'-0"	6'-10"	8'-10"	6'-4"	10'-11"	8'-1"	9'-7"	7'-3"	12'-6"	8'-5"	6'-6"	12'-6"	
45.0	20'-0"	6'-6"	8'-6"	6'-6"	10'-6"	7'-8"	9'-3"	6'-11"	12'-6"	7'-11"	6'-2"	12'-6"	
50.0	20'-0"	6'-2"	8'-2"	6'-0"	9'-11"	7'-4"	8'-11"	6'-7"	12'-6"	7'-4"	5'-11"	12'-6"	
55.0	20'-0"	5'-11"	7'-11"	5'-9"	9'-0"	6'-8"	8'-7"	6'-3"	12'-4"	6'-8"	5'-7"	12'-6"	
60.0	19'-5"	5'-9"	7'-9"	5'-6"	8'-6"	6'-4"	8'-6"	6'-2"	12'-0"	6'-4"	5'-6"	12'-6"	
65.0	18'-4"	5'-9"	7'-9"	5'-4"	8'-4"	6'-4"	8'-4"	6'-2"	11'-10"	6'-4"	5'-6"	12'-6"	
70.0	17'-4"	5'-9"	7'-8"	5'-4"	8'-2"	6'-3"	8'-2"	6'-2"	11'-9"	6'-3"	5'-6"	12'-6"	
75.0	16'-6"	5'-9"	7'-7"	5'-4"	8'-0"	6'-3"	8'-0"	6'-2"	11'-7"	6'-3"	5'-6"	12'-5"	
80.0	15'-9"	5'-9"	7'-7"	5'-4"	7'-10"	6'-3"	7'-10"	6'-2"	11'-6"	6'-3"	5'-6"	12'-4"	
85.0	15'-0"	5'-9"	7'-7"	5'-4"	7'-9"	6'-3"	7'-9"	6'-2"	11'-5"	6'-3"	5'-6"	12'-3"	
90.0	14'-2"	5'-10"	7'-7"	5'-5"	7'-9"	6'-4"	7'-9"	6'-3"	11'-5"	6'-4"	5'-7"	12'-3"	
95.0	13'-5"	5'-10"	7'-7"	5'-6"	7'-9"	6'-5"	7'-9"	6'-4"	11'-5"	6'-5"	5'-8"	12'-3"	
100.0	12'-9"	5'-11"	7'-7"	5'-7"	7'-9"	6'-6"	7'-9"	6'-4"	11'-5"	6'-6"	5'-9"	12'-3"	
105.0	12'-2"	6'-0"	7'-7"	5'-7"	7'-9"	6'-7"	7'-9"	6'-5"	11'-5"	6'-7"	5'-9"	12'-3"	
110.0	11'-7"	6'-0"	7'-7"	5'-8"	7'-9"	6'-8"	7'-9"	6'-6"	11'-5"	6'-8"	5'-10"	12'-3"	
115.0	11'-1"	6'-1"	7'-7"	5'-9"	7'-9"	6'-9"	7'-9"	6'-7"	11'-5"	6'-9"	5'-11"	12'-3"	
120.0	10'-8"	6'-1"	7'-6"	5'-9"	7'-9"	6'-10"	7'-9"	6'-7"	11'-5"	6'-10"	6'-0"	12'-3"	
125.0	10'-2"	6'-2"	7'-7"	5'-10"	7'-10"	7'-0"	7'-10"	6'-9"	11'-5"	7'-0"	6'-1"	12'-3"	
130.0	9'-10"	6'-3"	7'-7"	5'-10"	7'-9"	7'-0"	7'-9"	6'-9"	11'-5"	7'-0"	6'-1"	12'-3"	
135.0	9'-5"	6'-4"	7'-7"	5'-11"	7'-10"	7'-2"	7'-10"	6'-10"	11'-5"	7'-2"	6'-2"	12'-3"	
140.0	9'-1"	6'-4"	7'-7"	6'-0"	7'-10"	7'-3"	7'-10"	6'-11"	11'-5"	7'-3"	6'-3"	12'-3"	
145.0	8'-10"	6'-5"	7'-6"	6'-0"	7'-9"	7'-4"	7'-9"	6'-11"	11'-5"	7'-4"	6'-3"	12'-3"	
150.0	8'-6"	6'-6"	7'-7"	6'-1"	7'-9"	7'-5"	7'-9"	7'-0"	11'-5"	7'-5"	6'-4"	12'-3"	
155.0	8'-3"	6'-6"	7'-7"	6'-2"	7'-9"	7'-6"	7'-9"	7'-1"	11'-5"	7'-6"	6'-5"	12'-3"	
160.0	8'-0"	6'-7"	7'-6"	6'-2"	7'-9"	7'-7"	7'-9"	7'-2"	11'-5"	7'-7"	6'-6"	12'-3"	

SCHEDULE 2a
WALL MOUNTING
MAX. SPAN (FT) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D.
DESIGN PRESSURE RATING (P.S.F.), & A MAX. MULLION SPACING (FT) *

MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)											
		Ⓞ 4"x6"x1/4" MULLION				Ⓞ1 4"x8"x1/4" MULLION				Ⓞ2 4"x7"x1/4" THICK (3/8" FLANGE) MULLION			
		ORIENTATION #1 (⇌) †		ORIENTATION #2 (⌈) †		ORIENTATION #1 (⇌) †		ORIENTATION #2 (⌈) †		ORIENTATION #1 (⇌) †		ORIENTATION #2 (⌈) †	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	20'-0"	7'-10"	9'-8"	7'-3"	12'-0"	9'-4"	10'-7"	8'-0"	12'-6"	9'-8"	7'-6"	12'-6"	
35.0	20'-0"	7'-4"	9'-3"	6'-9"	11'-5"	8'-8"	10'-0"	7'-7"	12'-6"	8'-11"	6'-11"	12'-6"	
40.0	20'-0"	6'-10"	8'-10"	6'-4"	10'-11"	8'-1"	9'-7"	7'-3"	12'-6"	8'-5"	6'-6"	12'-6"	
45.0	20'-0"	6'-6"	8'-6"	6'-6"	10'-6"	7'-8"	9'-3"	6'-11"	12'-6"	7'-11"	6'-2"	12'-6"	
50.0	20'-0"	6'-2"	8'-2"	6'-0"	9'-11"	7'-4"	8'-11"	6'-7"	12'-6"	7'-4"	5'-11"	12'-6"	
55.0	20'-0"	5'-11"	7'-11"	5'-9"	9'-10"	6'-8"	8'-7"	6'-3"	12'-4"	6'-8"	5'-7"	12'-6"	
60.0	19'-5"	5'-9"	7'-9"	5'-6"	8'-6"	6'-4"	8'-6"	6'-2"	12'-0"	6'-4"	5'-6"	12'-6"	
65.0	18'-4"	5'-9"	7'-9"	5'-4"	8'-4"	6'-4"	8'-4"	6'-2"	11'-10"	6'-4"	5'-6"	12'-6"	
70.0	17'-4"	5'-9"	7'-8"	5'-4"	8'-2"	6'-3"	8'-2"	6'-2"	11'-9"	6'-3"	5'-6"	12'-6"	
75.0	16'-6"	5'-9"	7'-7"	5'-4"	8'-0"	6'-3"	8'-0"	6'-2"	11'-7"	6'-3"	5'-6"	12'-5"	
80.0	15'-9"	5'-9"	7'-7"	5'-4"	7'-10"	6'-3"	7'-10"	6'-2"	11'-6"	6'-3"	5'-6"	12'-4"	
85.0	15'-0"	5'-9"	7'-7"	5'-4"	7'-9"	6'-3"	7'-9"	6'-2"	11'-5"	6'-3"	5'-6"	12'-3"	
90.0	14'-2"	5'-10"	7'-7"	5'-5"	7'-9"	6'-4"	7'-9"	6'-3"	11'-5"	6'-4"	5'-7"	12'-3"	
95.0	13'-5"	5'-10"	7'-7"	5'-6"	7'-9"	6'-5"	7'-9"	6'-4"	11'-5"	6'-5"	5'-8"	12'-3"	
100.0	12'-9"	5'-11"	7'-7"	5'-7"	7'-9"	6'-6"	7'-9"	6'-4"	11'-5"	6'-6"	5'-9"	12'-3"	
105.0	12'-2"	6'-0"	7'-7"	5'-7"	7'-9"	6'-7"	7'-9"	6'-5"	11'-5"	6'-7"	5'-9"	12'-3"	
110.0	11'-7"	6'-0"	7'-7"	5'-8"	7'-9"	6'-8"	7'-9"	6'-6"	11'-5"	6'-8"	5'-10"	12'-3"	
115.0	11'-1"	6'-1"	7'-7"	5'-9"	7'-9"	6'-9"	7'-9"	6'-7"	11'-5"	6'-9"	5'-11"	12'-3"	
120.0	10'-8"	6'-1"	7'-6"	5'-9"	7'-9"	6'-10"	7'-9"	6'-7"	11'-5"	6'-10"	6'-0"	12'-3"	
125.0	10'-2"	6'-2"	7'-7"	5'-10"	7'-10"	7'-0"	7'-10"	6'-9"	11'-5"	7'-0"	6'-1"	12'-3"	
130.0	9'-10"	6'-3"	7'-7"	5'-10"	7'-9"	7'-0"	7'-9"	6'-9"	11'-5"	7'-0"	6'-1"	12'-3"	
135.0	9'-5"	6'-4"	7'-7"	5'-11"	7'-10"	7'-2"	7'-10"	6'-10"	11'-5"	7'-2"	6'-2"	12'-3"	
140.0	9'-1"	6'-4"	7'-7"	6'-0"	7'-10"	7'-3"	7'-10"	6'-11"	11'-5"	7'-3"	6'-3"	12'-3"	
145.0	8'-10"	6'-5"	7'-6"	6'-0"	7'-9"	7'-4"	7'-9"	6'-11"	11'-5"	7'-4"	6'-3"	12'-3"	
150.0	8'-6"	6'-6"	7'-7"	6'-1"	7'-9"	7'-5"	7'-9"	7'-0"	11'-5"	7'-5"	6'-4"	12'-3"	
155.0	8'-3"	6'-6"	7'-7"	6'-2"	7'-9"	7'-6"	7'-9"	7'-1"	11'-5"	7'-6"	6'-5"	12'-3"	
160.0	8'-0"	6'-7"	7'-6"	6'-2"	7'-9"	7'-7"	7'-9"	7'-2"	11'-5"	7'-7"	6'-6"	12'-3"	

* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX. ALLOWABLE SLAT SPAN FOR THAT A.S.D. DESIGN PRESSURE RATING SHALL NOT BE EXCEEDED.

† MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF PRODUCT.



P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.
 TILLIT TESTING & ENGINEERING COMPANY
 6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33186
 Phone : (305)871-1530 . Fax : (305)871-1531
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 CA-0006719
 WALTER A. TILLIT J. P.E.
 FLORIDA Lic. # 44167

ORANGE COUNTY DIVISION OF BUILDING SAFETY
 FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
 This document must be on the jobsite for inspection

Nautilus
 Rolling Shutter System
 ESS
 Permit # **B25007791**
 "We're Taking The Shutter Industry By Storm!"
 668 SW. WHITMORE DR. PORT ST. LUCIE, FL 34984

DRAWN BY: W.H.
 DATE: 07/19/2023
 23-100
 DRAWING No
 SHEET 24 OF 26

REV. No	DESCRIPTION	DATE	REV. No	DESCRIPTION	DATE
1	OLD 20-084	07/19/23	2		

SCHEDULE 1b
FLOOR TO CEILING (TRAPPED) MOUNTING MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN
A.S.D. DESIGN PRESSURE RATING (p.s.f.), & A 12'-0" MAX. MULLION SPACING (ft) *

MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)											
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION				ⓒ 4"x7"x1/4" THICK (3/8" FLANGE) MULLION			
		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	12'-0"	11'-7"	11'-6"	9'-9"	12'-6"	12'-6"	12'-6"	10'-7"	12'-6"	12'-6"	11'-3"	12'-6"	
35.0	12'-0"	10'-7"	10'-11"	9'-2"	12'-6"	12'-6"	11'-11"	10'-0"	12'-6"	12'-6"	10'-4"	12'-6"	
40.0	12'-0"	9'-10"	10'-5"	8'-9"	12'-6"	11'-8"	11'-4"	9'-6"	12'-6"	11'-10"	9'-7"	12'-6"	
45.0	12'-0"	9'-3"	10'-1"	8'-4"	12'-5"	10'-11"	10'-11"	9'-1"	12'-6"	11'-2"	9'-0"	12'-6"	
50.0	12'-0"	8'-9"	9'-8"	8'-1"	12'-0"	10'-4"	10'-7"	8'-9"	12'-6"	10'-7"	8'-6"	12'-6"	
55.0	12'-0"	8'-4"	9'-5"	7'-10"	11'-8"	9'-10"	10'-3"	8'-6"	12'-6"	10'-1"	8'-1"	12'-6"	
60.0	12'-0"	8'-0"	9'-2"	7'-6"	11'-4"	9'-5"	9'-11"	8'-3"	12'-6"	9'-7"	7'-9"	12'-6"	
65.0	12'-0"	7'-8"	8'-11"	7'-2"	11'-0"	9'-1"	9'-8"	8'-0"	12'-6"	9'-3"	7'-5"	12'-6"	
70.0	12'-0"	7'-4"	8'-8"	6'-11"	10'-9"	8'-9"	9'-5"	7'-10"	12'-6"	8'-11"	7'-2"	12'-6"	
75.0	12'-0"	7'-1"	8'-6"	6'-8"	10'-6"	8'-5"	9'-3"	7'-8"	12'-6"	8'-7"	6'-11"	12'-6"	
80.0	12'-0"	6'-11"	8'-4"	6'-5"	10'-3"	8'-2"	9'-0"	7'-5"	12'-6"	8'-4"	6'-8"	12'-6"	
85.0	12'-0"	6'-8"	8'-2"	6'-3"	9'-9"	7'-11"	8'-10"	7'-2"	12'-6"	8'-1"	6'-6"	12'-6"	
90.0	12'-0"	6'-6"	8'-0"	6'-1"	9'-2"	7'-8"	8'-8"	7'-0"	12'-5"	7'-10"	6'-4"	12'-6"	
95.0	12'-0"	6'-4"	7'-10"	5'-11"	8'-8"	7'-5"	8'-6"	6'-10"	12'-1"	7'-5"	6'-2"	12'-6"	
100.0	12'-0"	6'-2"	7'-8"	5'-9"	8'-3"	7'-0"	8'-3"	6'-8"	11'-9"	7'-0"	6'-0"	12'-6"	
105.0	12'-0"	6'-0"	7'-7"	5'-8"	7'-10"	6'-8"	7'-10"	6'-6"	11'-6"	6'-8"	5'-10"	12'-4"	

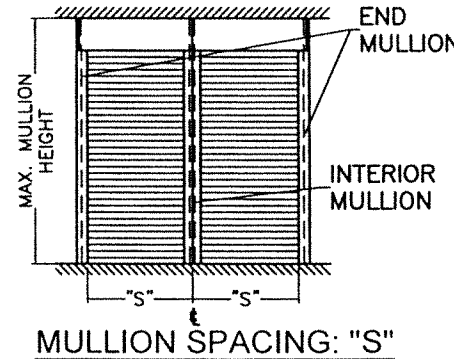
SCHEDULE 2b
WALL MOUNTING MAX. SPAN (FT) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D.
DESIGN PRESSURE RATING (P.S.F.), & A 12'-0" MAX. MULLION SPACING (FT) *

MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)											
		ⓐ 4"x6"x1/4" MULLION				ⓑ 4"x8"x1/4" MULLION				ⓒ 4"x7"x1/4" THICK (3/8" FLANGE) MULLION			
		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	12'-0"	9'-9"	11'-6"	9'-9"	12'-6"	12'-6"	12'-6"	10'-7"	12'-6"	11'-3"	12'-6"		
35.0	12'-0"	9'-2"	10'-11"	9'-2"	12'-6"	12'-6"	11'-11"	10'-0"	12'-6"	10'-4"	12'-6"		
40.0	12'-0"	8'-9"	10'-5"	8'-9"	12'-6"	11'-8"	11'-4"	9'-6"	12'-6"	9'-7"	12'-6"		
45.0	12'-0"	8'-4"	10'-1"	8'-4"	12'-5"	10'-11"	10'-11"	9'-1"	12'-6"	9'-0"	12'-6"		
50.0	12'-0"	8'-1"	9'-8"	8'-1"	12'-0"	10'-4"	10'-7"	8'-9"	12'-6"	8'-6"	12'-6"		
55.0	12'-0"	7'-10"	9'-5"	7'-10"	11'-8"	9'-10"	10'-3"	8'-6"	12'-6"	8'-1"	12'-6"		
60.0	12'-0"	7'-6"	9'-2"	7'-6"	11'-4"	9'-5"	9'-11"	8'-3"	12'-6"	7'-9"	12'-6"		
65.0	12'-0"	7'-2"	8'-11"	7'-2"	11'-0"	9'-1"	9'-8"	8'-0"	12'-6"	7'-5"	12'-6"		
70.0	12'-0"	6'-11"	8'-8"	6'-11"	10'-9"	8'-9"	9'-5"	7'-10"	12'-6"	7'-2"	12'-6"		
75.0	12'-0"	6'-8"	8'-6"	6'-8"	10'-6"	8'-5"	9'-3"	7'-8"	12'-6"	6'-11"	12'-6"		
80.0	12'-0"	6'-5"	8'-4"	6'-5"	10'-3"	8'-2"	9'-0"	7'-5"	12'-6"	6'-8"	12'-6"		
85.0	12'-0"	6'-3"	8'-2"	6'-3"	10'-1"	7'-11"	8'-10"	7'-2"	12'-6"	6'-6"	12'-6"		
90.0	12'-0"	6'-1"	8'-0"	6'-1"	9'-11"	7'-8"	8'-8"	7'-0"	12'-5"	6'-4"	12'-6"		
95.0	12'-0"	5'-11"	7'-10"	5'-11"	9'-8"	7'-6"	8'-6"	6'-10"	12'-1"	6'-2"	12'-6"		
100.0	12'-0"	5'-9"	7'-8"	5'-9"	9'-7"	7'-4"	8'-5"	5'-6"	11'-9"	6'-0"	12'-6"		
105.0	12'-0"	5'-8"	7'-7"	5'-8"	9'-4"	7'-1"	8'-3"	5'-3"	11'-6"	5'-10"	12'-4"		

SCHEDULE 1b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)
FLOOR TO CEILING (TRAPPED) MOUNTED MAX. SPAN (ft) FOR END & INTERIOR MULLIONS FOR A
GIVEN A.S.D. DESIGN PRESSURE (p.s.f.) AND FOR 12'-0" (CASE I) & 8'-0" (CASES Ia & II) MAX. MULLION
SPACING (ft) *

INSTALLATION CASES	MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)							
			ⓐ 4"x6"x1/4" THICK MULLION		ⓑ 4"x8"x1/4" THICK MULLION		ⓒ 2"x7"x1/4" THICK (3/8" FLANGE) MULLION			
			ORIENTATION #1 (⇌)†		ORIENTATION #1 (⇌)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†	
			END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
CASE I	30.0	12'-0"	-	12'-6"	12'-6"	12'-6"	-	-	11'-0"	-
	35.0	12'-0"	-	12'-6"	12'-6"	11'-11"	12'-6"	-	11'-0"	-
	40.0	12'-0"	-	12'-6"	11'-8"	11'-4"	12'-6"	-	11'-0"	-
	45.0	12'-0"	-	12'-5"	10'-11"	10'-11"	12'-6"	-	11'-0"	-
	50.0	12'-0"	-	12'-0"	10'-4"	10'-7"	12'-6"	-	11'-0"	-
	55.0	12'-0"	-	11'-8"	9'-10"	10'-3"	12'-6"	-	11'-0"	-
	60.0	12'-0"	-	11'-4"	9'-5"	9'-11"	12'-6"	-	11'-0"	-
	60.8	12'-0"	-	11'-3"	9'-4"	9'-11"	12'-6"	-	11'-0"	-
CASE Ia	30.0	8'-0"	-	12'-6"	12'-6"	12'-6"	12'-6"	-	11'-0"	-
	35.0	8'-0"	-	12'-6"	12'-6"	12'-6"	12'-6"	-	11'-0"	-
	40.0	8'-0"	-	12'-6"	12'-6"	12'-6"	12'-6"	-	11'-0"	-
	45.0	8'-0"	-	12'-6"	12'-6"	12'-6"	12'-6"	-	11'-0"	-
	50.0	8'-0"	-	12'-6"	12'-6"	12'-1"	12'-6"	-	11'-0"	-
	55.0	8'-0"	-	12'-6"	12'-6"	11'-8"	12'-6"	-	11'-0"	-
	60.0	8'-0"	-	12'-2"	12'-2"	11'-4"	12'-2"	-	11'-0"	-
	60.8	8'-0"	-	12'-0"	12'-0"	11'-4"	12'-0"	-	11'-0"	-
CASE II	30.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	35.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	40.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	45.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	50.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	55.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	60.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	65.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	70.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	75.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	80.0	8'-0"	-	9'-0"	9'-0"	8'-9"	9'-0"	-	9'-0"	-
	85.0	8'-0"	-	9'-0"	8'-9"	8'-3"	9'-0"	-	9'-0"	-
	90.0	8'-0"	-	9'-0"	8'-2"	7'-9"	9'-0"	-	9'-0"	-
	95.0	8'-0"	-	9'-0"	7'-8"	7'-4"	9'-0"	-	9'-0"	-
	100.0	8'-0"	-	9'-0"	7'-3"	7'-0"	9'-0"	-	9'-0"	-

* NOTE: USE 9'-0" IF ANCHOR CONSISTS OF HILTI, INC HUS-H SCREW OR POWER FASTENERS, WEDGE-BOLT ANCHOR. SEE SCHEDULES 1 & 2 ON SHEET 10A.



* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX. ALLOWABLE SLAT SPAN FOR THAT DESIGN LOAD SHALL NOT BE EXCEEDED.
† MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF PRODUCT.

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

SCHEDULE 2b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)
WALL MOUNTED MAX. SPAN (ft) FOR END & INTERIOR MULLIONS FOR A GIVEN
A.S.D. DESIGN PRESSURE RATING (p.s.f.) AND FOR 12'-0" (CASE I) & 8'-0" (CASE II) MAX.
MULLION SPACING (ft) *

INSTALLATION CASES	MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)							
			ⓐ 4"x6"x1/4" THICK MULLION		ⓑ 4"x8"x1/4" THICK MULLION		ⓒ 2"x7"x1/4" THICK (3/8" FLANGE) MULLION			
			ORIENTATION #1 (⇌)†		ORIENTATION #1 (⇌)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⌈)†	
			END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
CASE I'	30.0	12'-0"	-	12'-6"	12'-6"	12'-6"	12'-6"	-	11'-0"	-
	35.0	12'-0"	-	12'-6"	12'-6"	11'-11"	12'-6"	-	11'-0"	-
	40.0	12'-0"	-	12'-6"	11'-8"	11'-4"	12'-6"	-	11'-0"	-
	45.0	12'-0"	-	12'-5"	10'-11"	10'-11"	12'-6"	-	11'-0"	-
	50.0	12'-0"	-	12'-0"	10'-4"	10'-7"	12'-6"	-	11'-0"	-
	55.0	12'-0"	-	11'-8"	9'-10"	10'-3"	12'-6"	-	11'-0"	-
	60.0	12'-0"	-	11'-4"	9'-5"	9'-11"	12'-6"	-	11'-0"	-
	60.8	12'-0"	-	11'-3"	9'-4"	9'-11"	12'-6"	-	11'-0"	-
CASE II'	30.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	35.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	40.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	45.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	50.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	55.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	60.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	65.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	70.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	75.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	80.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	85.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	90.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	95.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-
	100.0	8'-0"	-	9'-0"	9'-0"	9'-0"	9'-0"	-	9'-0"	-

ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)
This document must be on the jobsite for inspection
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DATE: 07/19/2023
SHEET 25 OF 26

ORANGE COUNTY
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"We're Taking The Shutter Industry By Storm!"
DATE: 05/12/23
668 SW. 11th Street, Suite 100, Fort St. Lucie, FL 34984
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TILTECO INC.
TILLIT TESTING & ENGINEERING COMPANY
6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166
Phone: (305)871-1530 Fax: (305)871-1531
e-mail: tilteco@aol.com
CA-0006719
WALTER A. TILLIT JR. P.E.
FLORIDA Lic. # 44167

SCHEDULE 1c
FLOOR TO CEILING (TRAPPED) MOUNTING
MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN
A.S.D. DESIGN PRESSURE RATING (p.s.f.), & A 7'-0" MAX. MULLION
SPACING (ft) *

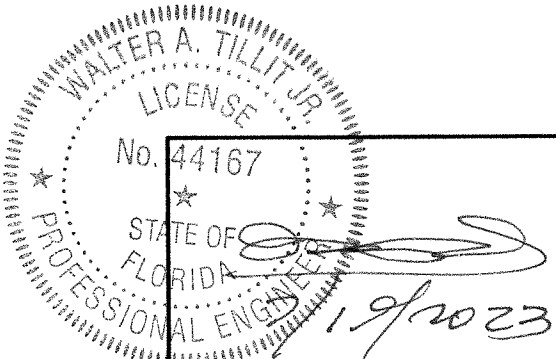
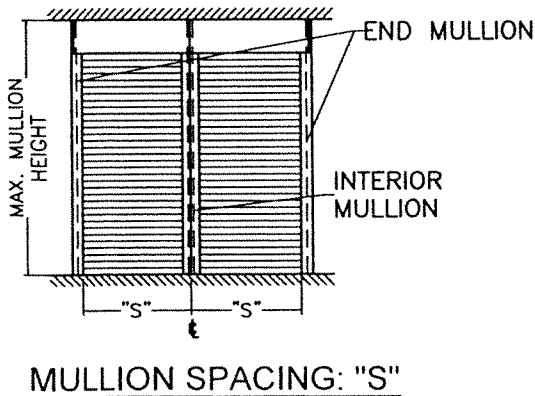
MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)											
		⊙ 4"x6"x1/4" MULLION				⊙1 4"x8"x1/4" MULLION				⊙2 4"x7"x1/4" THICK (3/8" FLANGE) MULLION			
		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⊥)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⊥)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⊥)†	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
35.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
40.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
45.0	7'-0"	12'-6"	12'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
50.0	7'-0"	12'-6"	11'-7"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
55.0	7'-0"	12'-6"	11'-3"	12'-6"	12'-6"	12'-6"	12'-3"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
60.0	7'-0"	12'-6"	10'-11"	12'-6"	12'-6"	12'-6"	11'-11"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
65.0	7'-0"	12'-6"	10'-8"	12'-1"	12'-6"	12'-6"	11'-7"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
70.0	7'-0"	12'-6"	10'-5"	11'-6"	12'-6"	12'-6"	11'-3"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
75.0	7'-0"	12'-1"	10'-2"	10'-11"	12'-6"	12'-6"	11'-0"	11'-11"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
80.0	7'-0"	11'-6"	9'-11"	10'-6"	12'-4"	12'-6"	10'-10"	11'-5"	12'-6"	12'-6"	11'-11"	12'-6"	12'-6"
85.0	7'-0"	11'-0"	9'-9"	10'-2"	12'-1"	12'-6"	10'-7"	11'-0"	12'-6"	12'-6"	11'-4"	12'-6"	12'-6"
90.0	7'-0"	10'-7"	9'-7"	9'-10"	11'-10"	12'-5"	10'-5"	10'-8"	12'-6"	12'-2"	10'-10"	12'-6"	12'-6"
95.0	7'-0"	10'-2"	9'-5"	9'-6"	11'-7"	11'-11"	10'-2"	10'-4"	12'-6"	11'-9"	10'-5"	12'-6"	12'-6"
100.0	7'-0"	9'-10"	9'-3"	9'-3"	11'-5"	11'-6"	10'-0"	10'-1"	12'-6"	11'-5"	10'-1"	12'-6"	12'-6"
105.0	7'-0"	9'-6"	9'-1"	9'-1"	11'-3"	11'-2"	9'-10"	9'-10"	12'-6"	11'-1"	9'-8"	12'-6"	12'-6"
110.0	7'-0"	9'-3"	8'-11"	8'-10"	11'-1"	10'-10"	9'-9"	9'-7"	12'-6"	10'-9"	9'-5"	12'-6"	12'-6"
115.0	7'-0"	9'-0"	8'-10"	8'-7"	10'-11"	10'-7"	9'-7"	9'-5"	12'-6"	10'-5"	9'-1"	12'-6"	12'-6"
120.0	7'-0"	8'-9"	8'-8"	8'-5"	10'-9"	10'-3"	9'-5"	9'-3"	12'-6"	10'-2"	9'-10"	12'-6"	12'-6"
125.0	7'-0"	8'-6"	8'-7"	8'-2"	10'-7"	10'-0"	9'-4"	9'-1"	12'-6"	9'-11"	8'-7"	12'-6"	12'-6"
130.0	7'-0"	8'-4"	8'-5"	8'-0"	10'-6"	9'-9"	9'-2"	8'-11"	12'-6"	9'-9"	8'-5"	12'-6"	12'-6"
135.0	7'-0"	8'-2"	8'-4"	7'-9"	10'-4"	9'-7"	9'-1"	8'-9"	12'-6"	9'-6"	8'-2"	12'-6"	12'-6"
140.0	7'-0"	8'-0"	8'-3"	7'-7"	10'-1"	9'-4"	9'-0"	8'-7"	12'-6"	9'-4"	8'-0"	12'-6"	12'-6"
145.0	7'-0"	7'-10"	8'-2"	7'-5"	9'-9"	9'-2"	8'-10"	8'-6"	12'-6"	9'-2"	7'-10"	12'-6"	12'-6"
150.0	7'-0"	7'-8"	8'-1"	7'-4"	9'-5"	9'-0"	8'-9"	8'-4"	12'-6"	8'-11"	7'-8"	12'-6"	12'-6"
155.0	7'-0"	7'-6"	8'-0"	7'-2"	9'-2"	8'-10"	8'-8"	8'-3"	12'-5"	8'-9"	7'-6"	12'-6"	12'-6"
160.0	7'-0"	7'-4"	7'-11"	7'-0"	8'-10"	8'-8"	8'-7"	8'-1"	12'-2"	8'-8"	7'-5"	12'-6"	12'-6"

SCHEDULE 2c
WALL MOUNTING
MAX. SPAN (FT) FOR END AND INTERIOR MULLIONS FOR A GIVEN A.S.D.
DESIGN PRESSURE RATING (P.S.F.), & AND 7'-0" MAX. MULLION SPACING
(FT) *

MAX. A.S.D. DESIGN PRESSURE RATING (p.s.f.)	MAXIMUM MULLION SPACING (ft) *	MAXIMUM MULLION SPAN (FT)											
		⊙ 4"x6"x1/4" MULLION				⊙1 4"x8"x1/4" MULLION				⊙2 4"x7"x1/4" THICK (3/8" FLANGE) MULLION			
		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⊥)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⊥)†		ORIENTATION #1 (⇌)†		ORIENTATION #2 (⊥)†	
		END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR	END	INTERIOR
30.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
35.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
40.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
45.0	7'-0"	12'-6"	12'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
50.0	7'-0"	12'-6"	11'-7"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
55.0	7'-0"	12'-6"	11'-3"	12'-6"	12'-6"	12'-6"	12'-3"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
60.0	7'-0"	12'-6"	10'-11"	12'-6"	12'-6"	12'-6"	11'-11"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
65.0	7'-0"	12'-6"	10'-8"	12'-1"	12'-6"	12'-6"	11'-7"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
70.0	7'-0"	12'-6"	10'-5"	11'-6"	12'-6"	12'-6"	11'-3"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
75.0	7'-0"	12'-1"	10'-2"	10'-11"	12'-6"	12'-6"	11'-0"	11'-11"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"
80.0	7'-0"	11'-6"	9'-11"	10'-6"	12'-4"	12'-6"	10'-10"	11'-5"	12'-6"	12'-6"	11'-11"	12'-6"	12'-6"
85.0	7'-0"	11'-0"	9'-9"	10'-2"	12'-1"	12'-6"	10'-7"	11'-0"	12'-6"	12'-6"	11'-4"	12'-6"	12'-6"
90.0	7'-0"	10'-7"	9'-7"	9'-10"	11'-10"	12'-5"	10'-5"	10'-8"	12'-6"	12'-2"	10'-10"	12'-6"	12'-6"
95.0	7'-0"	10'-2"	9'-5"	9'-6"	11'-7"	11'-11"	10'-2"	10'-4"	12'-6"	11'-9"	10'-5"	12'-6"	12'-6"
100.0	7'-0"	9'-10"	9'-3"	9'-3"	11'-5"	11'-6"	10'-0"	10'-1"	12'-6"	11'-5"	10'-1"	12'-6"	12'-6"
105.0	7'-0"	9'-6"	9'-1"	9'-1"	11'-3"	11'-2"	9'-10"	9'-10"	12'-6"	11'-1"	9'-8"	12'-6"	12'-6"
110.0	7'-0"	9'-3"	8'-11"	8'-10"	11'-1"	10'-10"	9'-9"	9'-7"	12'-6"	10'-9"	9'-5"	12'-6"	12'-6"
115.0	7'-0"	9'-0"	8'-10"	8'-7"	10'-11"	10'-7"	9'-7"	9'-5"	12'-6"	10'-5"	9'-1"	12'-6"	12'-6"
120.0	7'-0"	8'-9"	8'-8"	8'-5"	10'-9"	10'-3"	9'-5"	9'-3"	12'-6"	10'-2"	9'-10"	12'-6"	12'-6"
125.0	7'-0"	8'-6"	8'-7"	8'-2"	10'-7"	10'-0"	9'-4"	9'-1"	12'-6"	9'-11"	8'-7"	12'-6"	12'-6"
130.0	7'-0"	8'-4"	8'-5"	8'-0"	10'-6"	9'-9"	9'-2"	8'-11"	12'-6"	9'-9"	8'-5"	12'-6"	12'-6"
135.0	7'-0"	8'-2"	8'-4"	7'-9"	10'-4"	9'-7"	9'-1"	8'-9"	12'-6"	9'-6"	8'-2"	12'-6"	12'-6"
140.0	7'-0"	8'-0"	8'-3"	7'-7"	10'-1"	9'-4"	9'-0"	8'-7"	12'-6"	9'-4"	8'-0"	12'-6"	12'-6"
145.0	7'-0"	7'-10"	8'-2"	7'-5"	9'-9"	9'-2"	8'-10"	8'-6"	12'-6"	9'-2"	7'-10"	12'-6"	12'-6"
150.0	7'-0"	7'-8"	8'-1"	7'-4"	9'-5"	9'-0"	8'-9"	8'-4"	12'-6"	8'-11"	7'-8"	12'-6"	12'-6"
155.0	7'-0"	7'-6"	8'-0"	7'-2"	9'-2"	8'-10"	8'-8"	8'-3"	12'-5"	8'-9"	7'-6"	12'-6"	12'-6"
160.0	7'-0"	7'-4"	7'-11"	7'-0"	8'-10"	8'-8"	8'-7"	8'-1"	12'-2"	8'-8"	7'-5"	12'-6"	12'-6"

* MAXIMUM MULLION SPACING SHALL BE SUCH THAT MAX. ALLOWABLE SLAT SPAN FOR THAT A.S.D. DESIGN PRESSURE RATING SHALL NOT BE EXCEEDED.

† MULLION ORIENTATION IS AS SEEN FROM THE OUTSIDE (EXTERIOR) OF PRODUCT.



P.E. SEAL/SIGNATURE/DATE

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TILTECO INC.

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ORANGE COUNTY DIVISION OF BUILDING SAFETY
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

This document has been reviewed for code compliance; any deviations shall be the responsibility of the applicant from correcting errors and omissions and complying with the Florida Building Code.

Nautilus
Rolling Shutter System
ESS
MANUFACTURING, INC.
Permit # **B25007701**
"We're Taking The Shutter Industry By Storm!"
668 SW. WHITMORE Dr. PORT ST. LUCIE, FL 34984
320-4800

REV. No.	DESCRIPTION	DATE	REV. No.	DESCRIPTION	DATE
1	OLD 20-044	07/19/23	2		

DATE: 01/19/2023
DRAWING No: 23-100
SHEET 26 OF 26