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**Product Approval**  
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- ▶ COMMUNITY PLANNING
- ▶ HOUSING & COMMUNITY DEVELOPMENT
- ▶ EMERGENCY MANAGEMENT
- ▶ OFFICE OF THE SECRETARY

|  |  |                         |
|--|--|-------------------------|
| <p>FL #</p> <p>Application Type</p> <p>Code Version</p> <p>Application Status</p> <p>Comments</p> <p>Archived</p> <p>Product Manufacturer</p> <p>Address/Phone/Email</p> <p>Authorized Signature</p> <p>Technical Representative</p> <p>Address/Phone/Email</p> <p>Quality Assurance Representative</p> <p>Address/Phone/Email</p> <p>Category</p> <p>Subcategory</p> <p>Compliance Method</p> <p>Florida Engineer or Architect Name who developed the Evaluation Report</p> <p>Florida License</p> <p>Quality Assurance Entity</p> <p>Quality Assurance Contract Expiration Date</p> <p>Validated By</p> <p>Certificate of Independence</p> <p>Referenced Standard and Year (of Standard)</p> | <p>FL13363</p> <p>New</p> <p>2007</p> <p>Approved</p> <p>1/24/11: Recommended for revocation process due to non-compliance.</p> <p><input type="checkbox"/></p> <p>Expert Shutter Services, Inc.</p> <p>1626 SW Biltmore ST<br/>Port St. Lucie, FL 34984<br/>(772) 871-1915 Ext 106<br/>callexpert@aol.com</p> <p>Michael Heissenberg<br/>callexpert@aol.com</p> <p>Michael Heissenberg<br/>1626 SW Biltmore St<br/>Port St Lucie, FL 34984<br/>(772) 871-1915 Ext 106<br/>CallExpert@aol.com</p> <p>Michael Heissenberg<br/>1626 SW Biltmore St<br/>Port St Lucie, FL 34984<br/>(772) 871-1915 Ext 106<br/>CallExpert@aol.com</p> <p>Shutters</p> <p>Roll-up</p> <p>Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer</p> <p><input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received</p> <p>Walter A. Tillit Jr., P.E.</p> <p>PE-44167</p> <p>National Accreditation and Management Institute</p> <p>12/31/2012</p> <p>John Henry Kampmann Jr.</p> <p><input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received</p> <p><a href="#">FL13363_RO_COI_DWG No.09-210__CERTIFICATION OF INDEPENDENCE.pdf</a></p> <p><b>Standard</b></p> <p>Section 1626, TAS 201, 202, 203</p> | <p>Year</p> <p>1994</p> |
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**GENERAL NOTES:**

- 1. NAUTILUS ROLLING HURRICANE ABATEMENT SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2007 EDITION OF THE FLORIDA BUILDING CODE.
- 2. THIS PRODUCT MAY BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES. DESIGN WIND LOADS SHALL BE DETERMINED AS PER SECTION 1620 OF THE ABOVE MENTIONED CODE.  
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 SPACING TO WOOD HAVE BEEN DETERMINED IN ACCORDANCE WITH N.D.S. 2005.  
THIS PRODUCT'S ADEQUACY FOR IMPACT AND WIND RESISTANCE HAS BEEN VERIFIED IN ACCORDANCE WITH SECTION 1626 OF THE ABOVE MENTIONED CODE AS PER AMERICAN TEST LAB OF SOUTH FLORIDA. REPORT # 1030.01-08 AS PER TAS-201, TAS-202 AND TAS-203 PROTOCOLS.
- 3. ALL ALUMINUM EXTRUSIONS SHALL BE 6063-T6 ALLOY (UNLESS OTHERWISE NOTED), SEE SHEET 2.
- 4. ALL SCREWS (EXCEPT END RETENTION SCREW (C)) 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.
- 5. BOLTS TO BE ASTM A-307, GALVANIZED OR AISI 304 OR 316 SERIES STAINLESS STEEL WITH 36 KSI MINIMUM YIELD STRENGTH.
- 6. THIS PRODUCT BEARS U.S. PATENTS #6,095,225 AND #7,409,980.
- 7. ANCHORS TO WALL FOR (C) SIDE RAIL SHALL BE AS FOLLOWS:
  - (A) TO EXISTING POURED CONCRETE: MIN. 3000 p.s.i. COMPRESSIVE STRENGTH.
    - 5/16" TAPCON XL ANCHORS AS MANUFACTURED BY ITW BUILDEX, INC.
    - 3/8" KWIK BOLT 3 ANCHORS AS MANUFACTURED BY HILTI, INC.
  - A.1) MINIMUM EMBEDMENT INTO POURED CONCRETE SHALL BE:
    - 2 1/4" FOR 5/16" TAPCON XL ANCHORS & 2 1/2" FOR 3/8" 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" TAPCON XL ANCHORS & 5" FOR 3/8" 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" TAPCON XL ANCHORS, AS MANUFACTURED BY ITW BUILDEX, INC.
- B.1) MINIMUM EMBEDMENT OF 5/16" 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" 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" 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 1/2" 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 XL ANCHORS, INTO WOOD SHALL BE 2". 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" x 1 1/4" CALK-IN MANUFACTURED BY POWER FASTENERS, INC.
  - 1/4" x 3/4" SOLID-SET MANUFACTURED BY ALL POINT, INC.
  - 3/8" KWIK BOLT TZ MANUFACTURED BY HILTI, INC.
  - 5/16" 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 @ 100% | EDGE DISTANCE @ 100% | CONCRETE          | EMBEDMENT @ 100%               |
|-----------------------|----------------|----------------------|-------------------|--------------------------------|
| 3/8" x 1 1/4" CALK-IN | 3 3/4"         | 4 1/2"               | 1 1/4" (3000 psi) | GROUT FILLED OR CONCRETE BLOCK |
| 1/4" x 3/4" SOLID-SET | 3"             | 3"                   | 7/8" (3000 psi)   | NOT ALLOWED                    |
| 3/8" KWIK BOLT TZ     | 9"             | 4"                   | 2 1/2" (3000 psi) | NOT ALLOWED                    |
| 5/16" 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 POWER FASTENERS, INC.

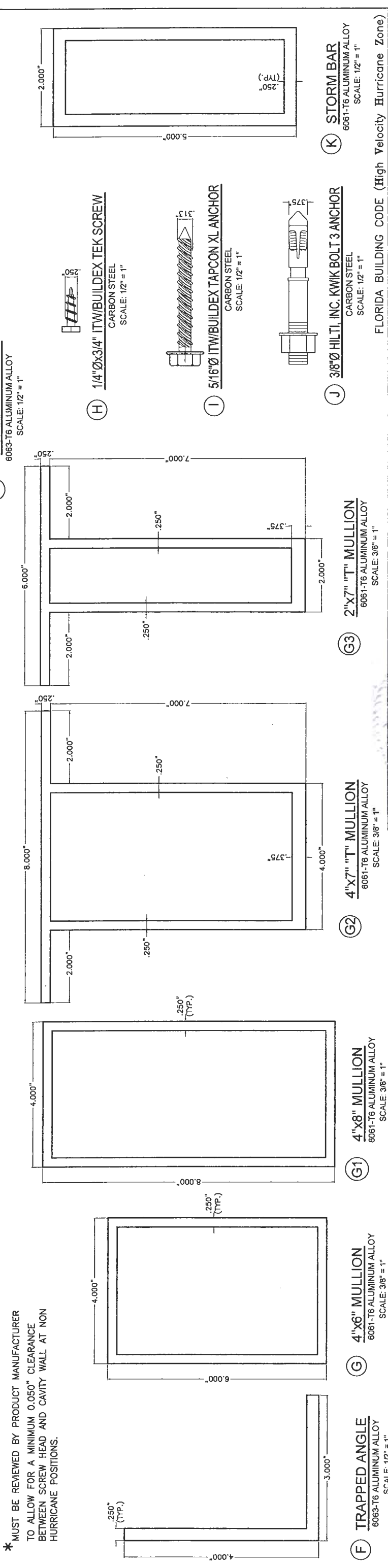
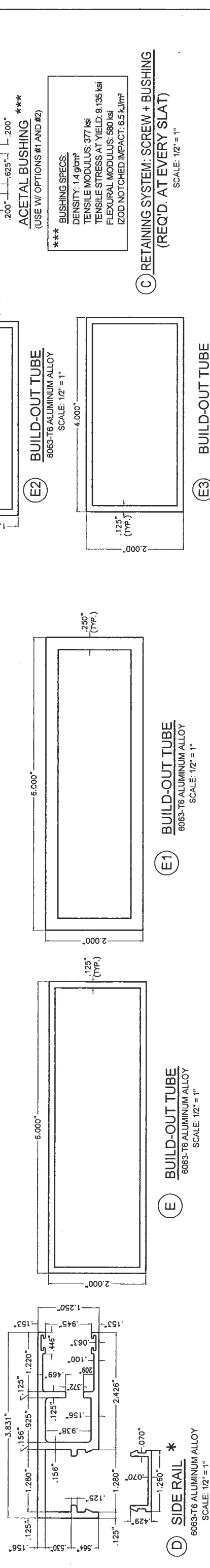
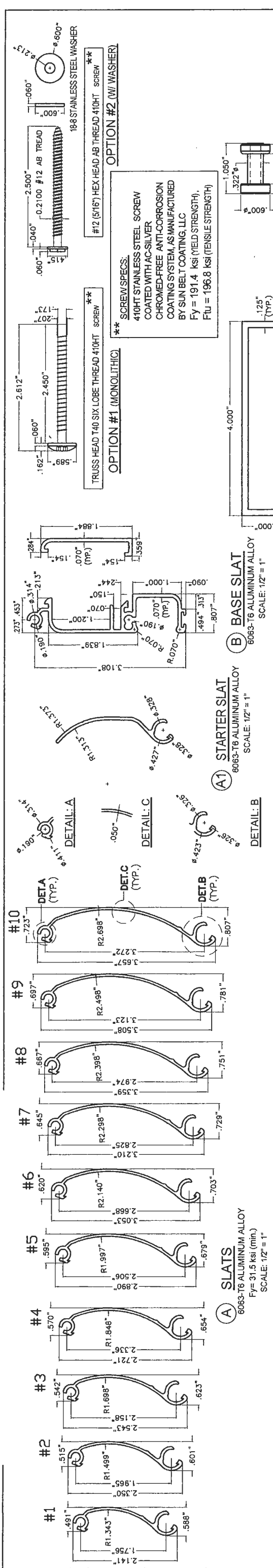
MINIMUM EDGE DISTANCE AND SPACING FOR ABOVE MENTIONED ANCHORS SHALL BE AS INDICATED BELOW OR AT ABOVE MENTIONED SHEET. EDGE DISTANCE AND EMBEDMENTS ARE BEYOND ANY FINISH MATERIAL.

| ANCHOR                         | SPACING @ 100% | EDGE DISTANCE @ 100% | CONCRETE          | EMBEDMENT @ 100%               |
|--------------------------------|----------------|----------------------|-------------------|--------------------------------|
| 3/4" KWIK BOLT TZ              | 27"            | 9"                   | 4 3/4" (3000 psi) | GROUT FILLED OR CONCRETE BLOCK |
| 1/2" KWIK BOLT TZ              | 22 1/2"        | 7 1/2"               | 3 1/4" (3000 psi) | NOT ALLOWED                    |
| 3/8" KWIK BOLT TZ              | 6"             | 4 3/8"               | 2" (3000 psi)     | NOT ALLOWED                    |
| 3/8" HUS-H SCREW               | 4"             | 5"                   | 2" (3000 psi)     | NOT ALLOWED                    |
| 3/8" WEDGE-BOLT                | 4 1/2"         | 4 1/2"               | 2 1/2" (3000 psi) | NOT ALLOWED                    |
| 1/2" HUS-H SCREW OR WEDGE BOLT | 6"             | 6"                   | 3" (3000 psi)     | NOT ALLOWED                    |
| 5/8" 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. (g) 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 1714.8.3 OF FLORIDA BUILDING CODE.  
ONE LABEL SHALL BE PLACED FOR EVERY OPENING. LABELING TO COMPLY WITH SECTION 1714.8.2 OF THE FLORIDA BUILDING CODE.

|   |  |  |      |                          |
|---|--|--|------|--------------------------|
|  <p>TILECO INC.<br/>TILLIT TESTING &amp; ENGINEERING COMPANY<br/>6355 N.W. 36th St., Ste. 305, VIRGINIA GARDENS, FL 33166<br/>Phone : (305)871-1530 . Fax : (305)871-1531<br/>e-mail: tileco@aol.com<br/>EB-0006719<br/>WALTER A. TILLIT JR., P.E.<br/>FLORIDA Lic. # 44167</p> |  |  <p><b>Nautilus</b><br/>Rolling Hurricane Abatement</p> |      | DRAWN BY:<br>M.C.Y./L.G. |
|   |  | EXPERT SHUTTER SERVICES INC.<br>1626 S.W. BILTMORE STREET<br>PORT ST. LUCIE, FL 34984<br>PHONE: (800) 749-8056 . FAX: (772) 871-0990       |      | DATE<br>12/03/09         |
|  <p>P.E. SEAL/SIGNATURE/DATE<br/>12/16/09</p>  |  | REV. No  | DATE | DESCRIPTION              |
|   |  | 1  |      | 4                        |
|   |  | 2  |      | 5                        |

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)



\* MUST BE REVIEWED BY PRODUCT MANUFACTURER TO ALLOW FOR A MINIMUM 0.050" CLEARANCE BETWEEN SCREW HEAD AND CAVITY WALL AT NON HURRICANE POSITIONS.

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WALTER A. TILLIT JR. P.E.  
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12/16/09

P.E. SEAL/SIGNATURE/DATE

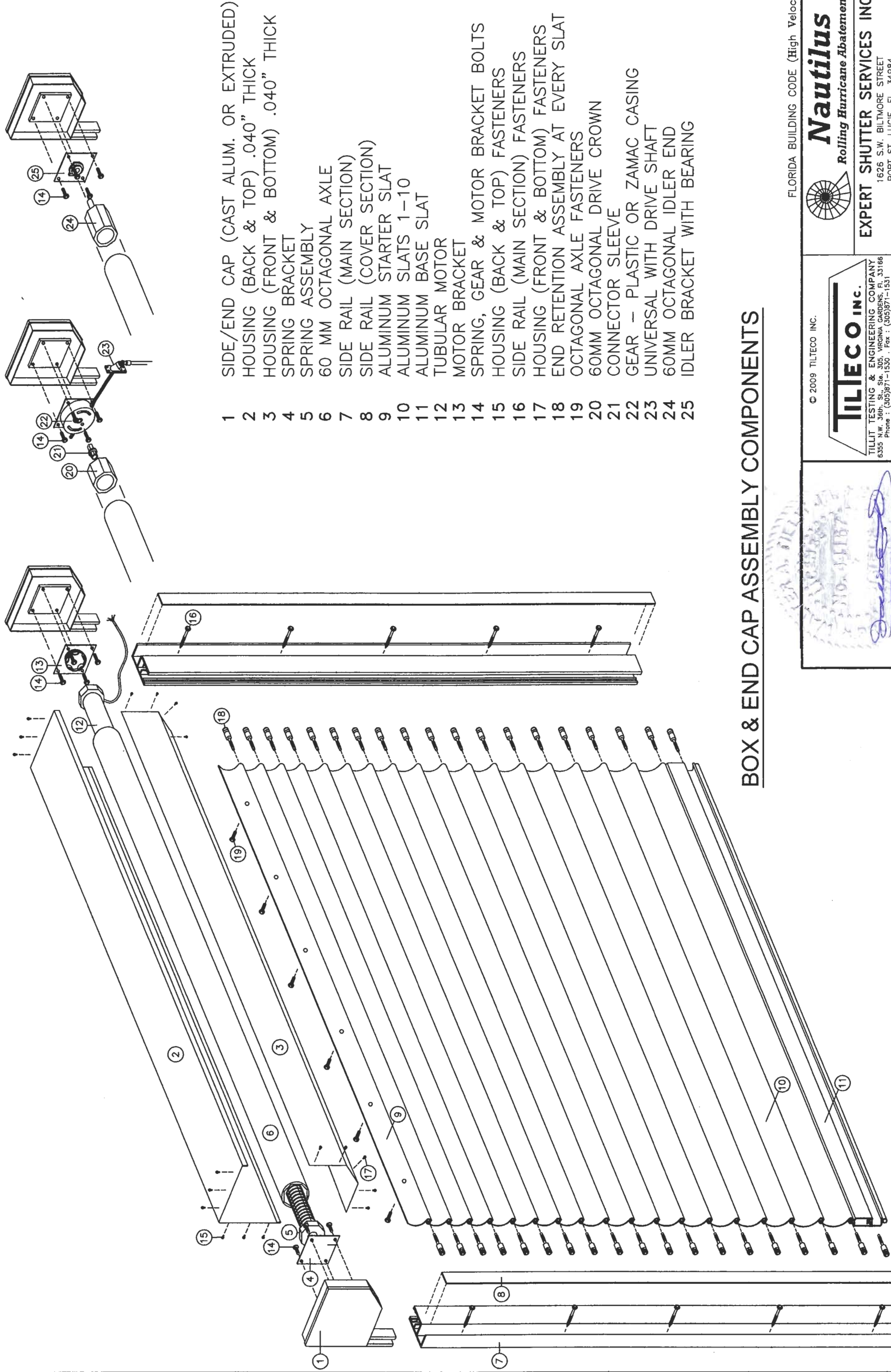
**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
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FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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DATE: 12/03/09  
09-210 DRAWING No  
SHEET 2 OF 26



- 1 SIDE/END CAP (CAST ALUM. OR EXTRUDED)
- 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 AT EVERY SLAT
- 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**

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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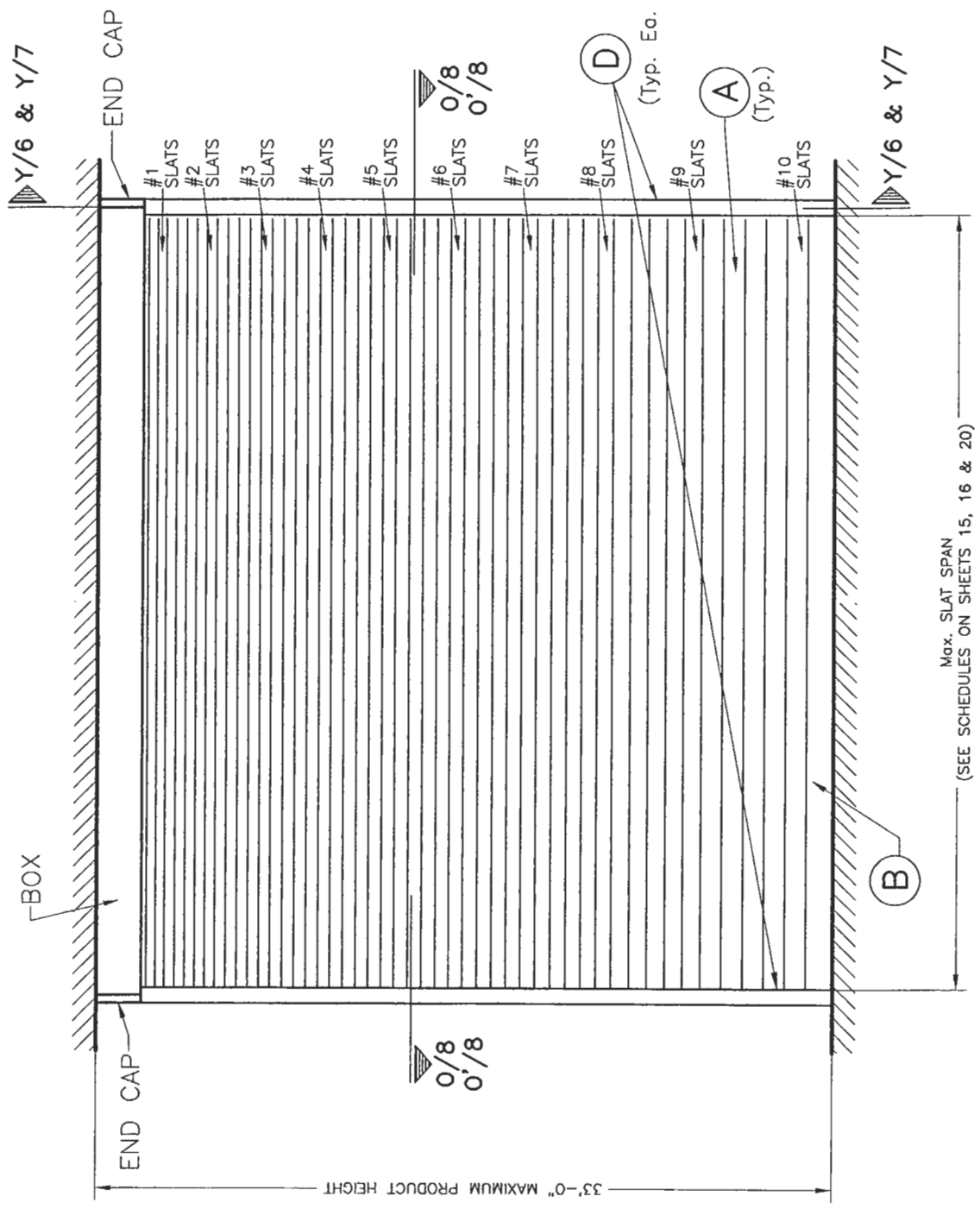
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*[Signature]*  
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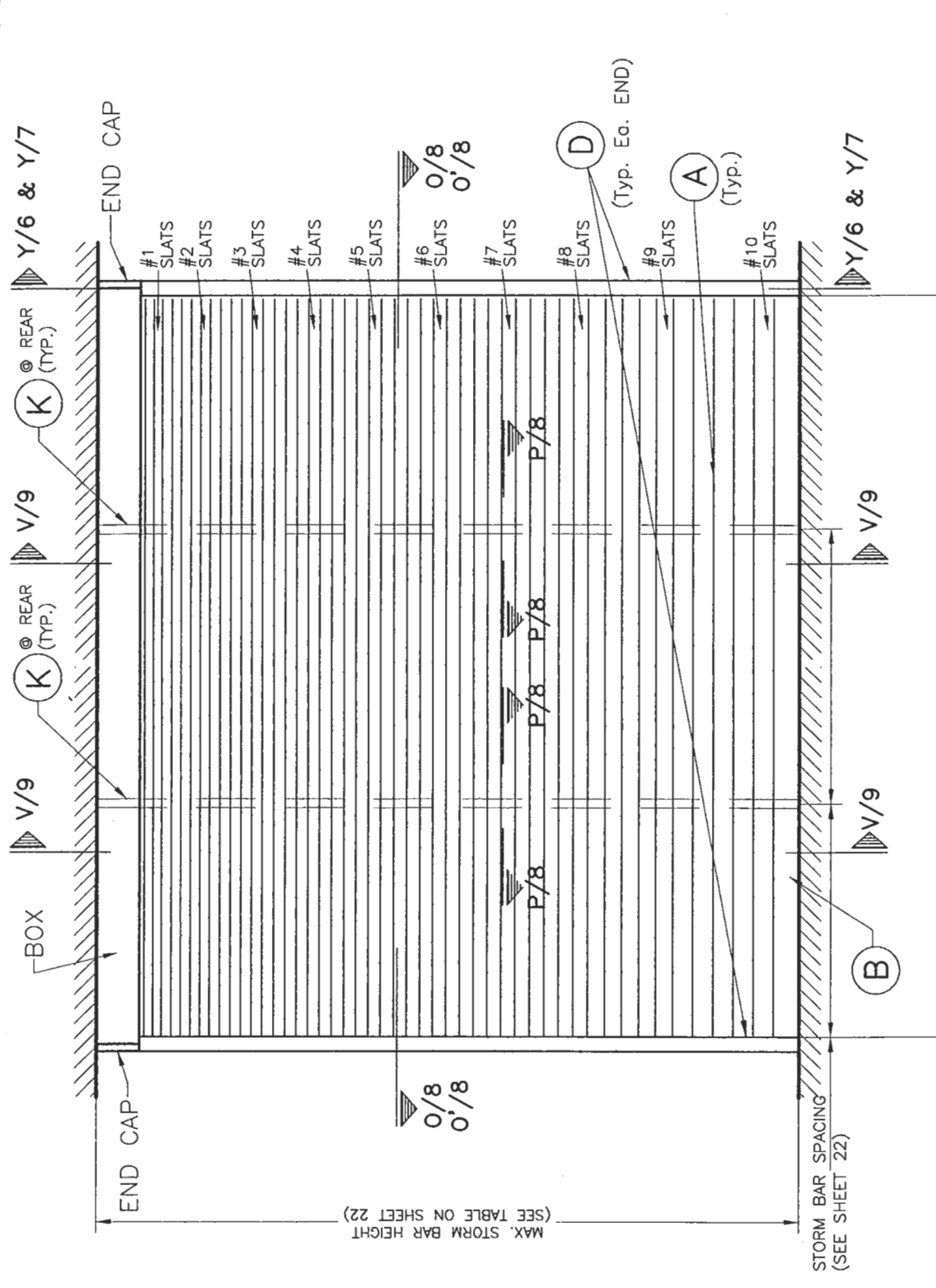


**TYPICAL SINGLE UNIT ELEVATION W/O STORM BARS \*\*, \*\***

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

**PROCEDURE FOR SLAT INSTALLATION GIVEN A PRODUCT HEIGHT:**

- \* **CASE 1:** PRODUCT 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 PRODUCT HEIGHT IS COMPLETED. QUANTITY OF FINAL SLAT NUMBER INSTALLED BEFORE BOTTOM SLAT (B) MAY VARY WITH PRODUCT'S HEIGHT.
  - (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.
- \*\* **CASE 2:** PRODUCT 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 PRODUCT HEIGHT.
  - (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.



**TYPICAL SINGLE UNIT ELEVATION W/ STORM BARS \***

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

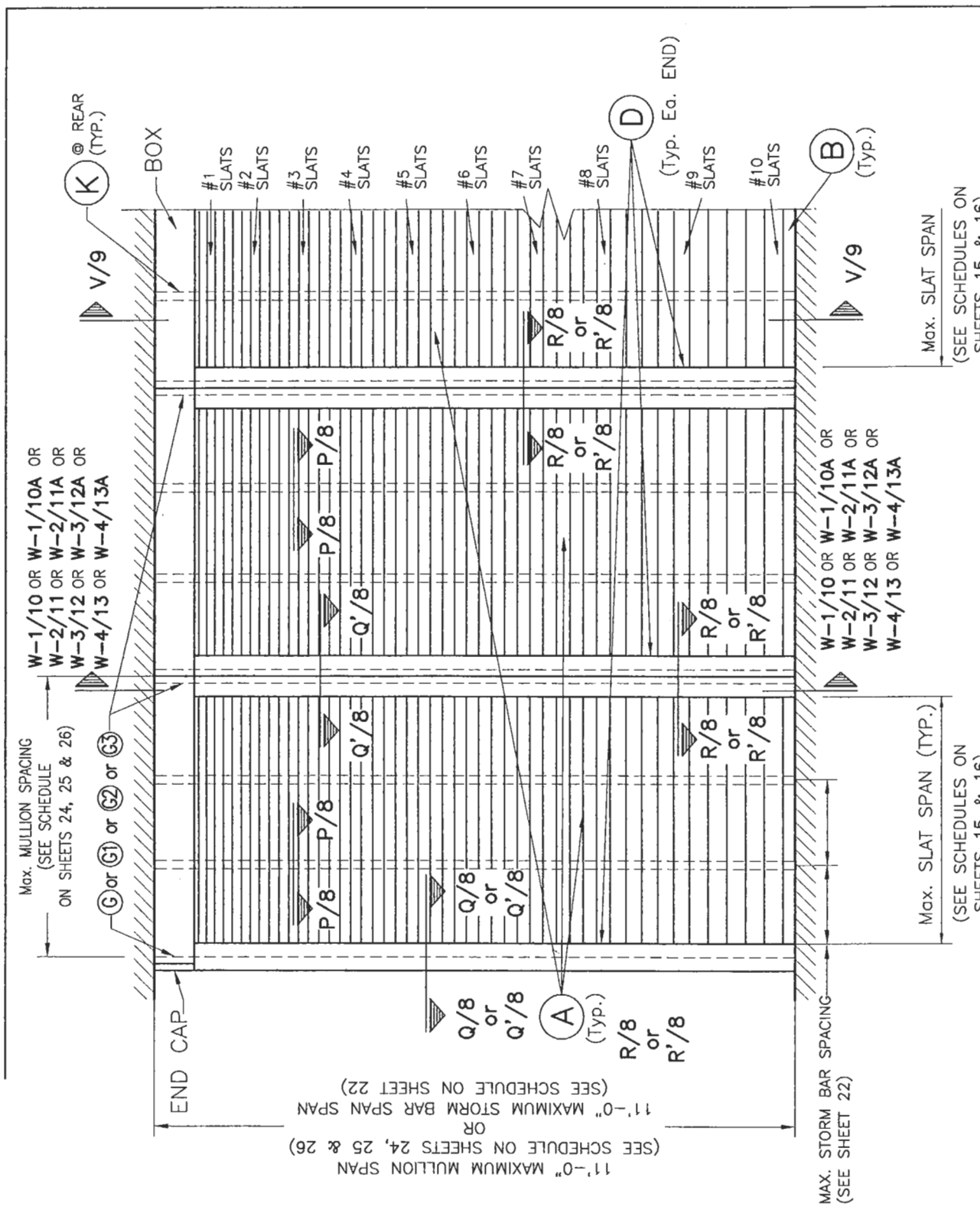
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SHEET 4 OF 26

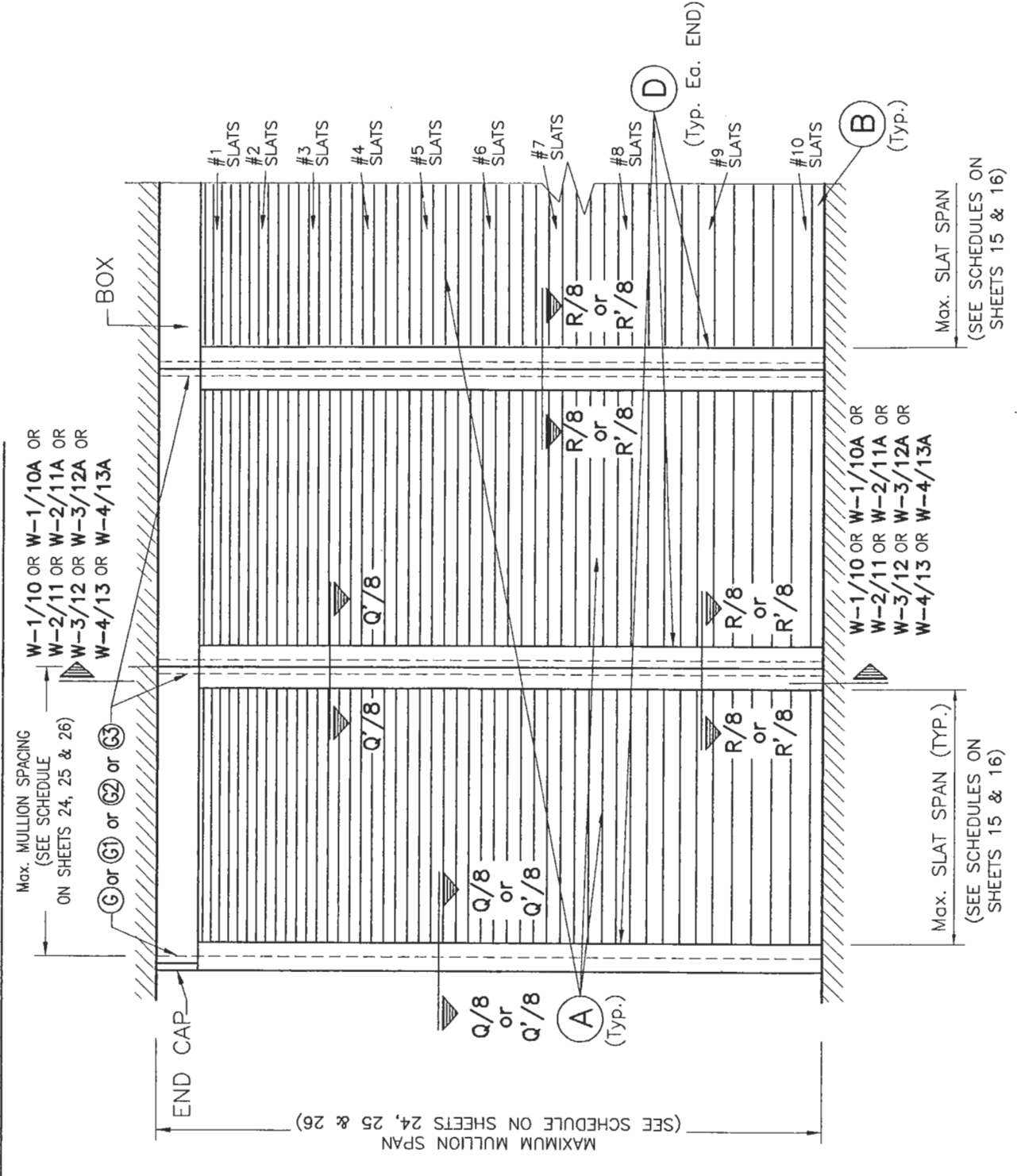
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P.E. SEAL/SIGNATURE/DATE  
12/16/09



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

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



**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 PRODUCT HEIGHT:**

- \* **CASE 1:** PRODUCT 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 PRODUCT HEIGHT IS COMPLETED. QUANTITY OF FINAL SLAT NUMBER INSTALLED BEFORE BOTTOM SLAT (B) MAY VARY WITH PRODUCT HEIGHT.
- (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.
- \*\* **CASE 2:** PRODUCT 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 PRODUCT HEIGHT.
- (b) BOTTOM SLAT (B) MUST BE ALWAYS INSTALLED.

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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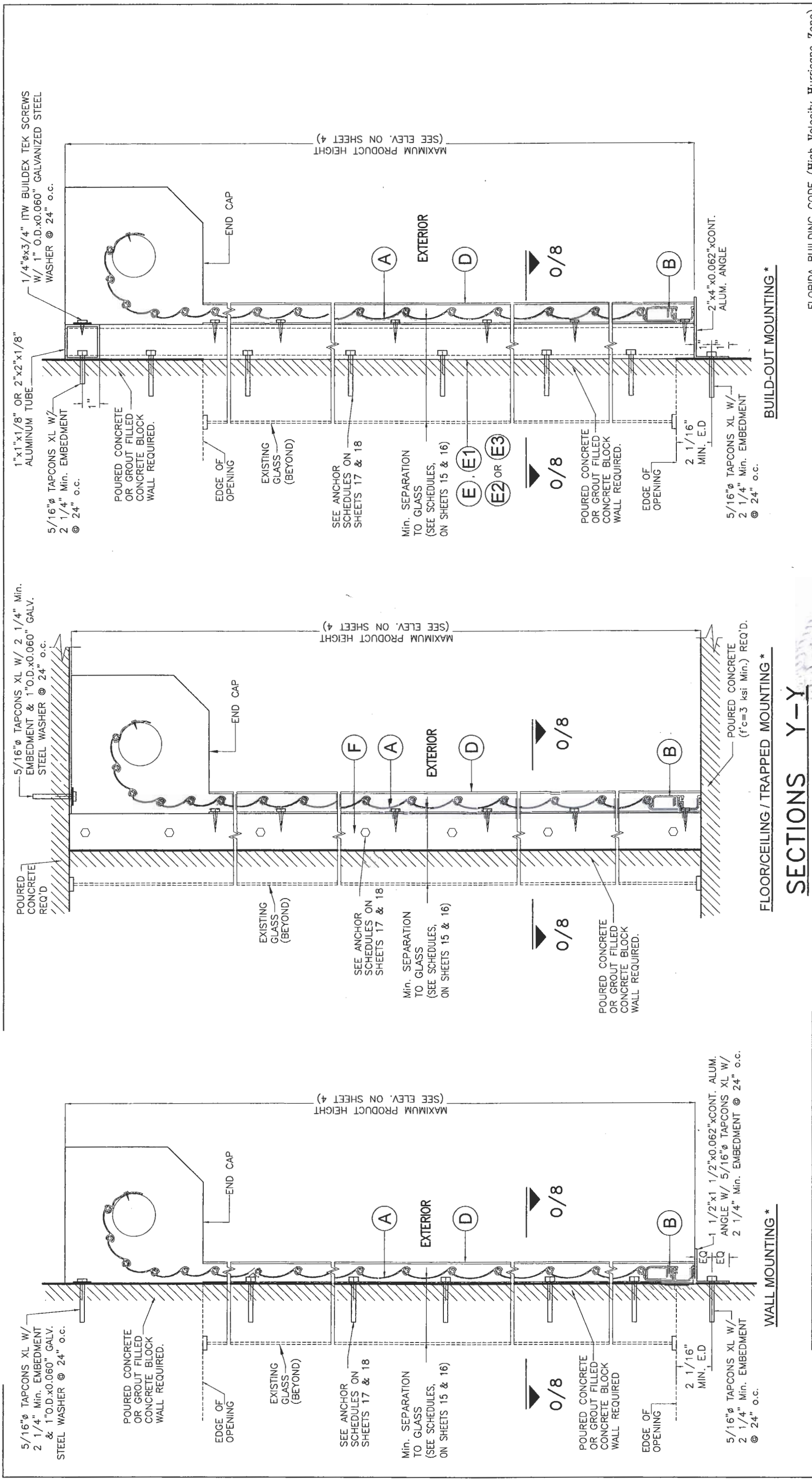
SHEET 5 OF 26

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EB-0006719  
WALTER A. TILIT JR. P.E.  
FLORIDA Lic. # 44167

*[Signature]*  
12/10/09

P.E. SEAL/SIGNATURE/DATE



FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BILTMORE STREET  
 PORT ST. LUCIE, FL 34984  
 PHONE: (800) 749-9056 FAX: (772) 871-0990

**SECTION Y-Y**

P.E. SEAL/SIGNATURE/DATE  
  
 12/16/09

**SECTION Y-Y**

P.E. SEAL/SIGNATURE/DATE  
  
 12/16/09

**SECTION Y-Y**

P.E. SEAL/SIGNATURE/DATE  
  
 12/16/09

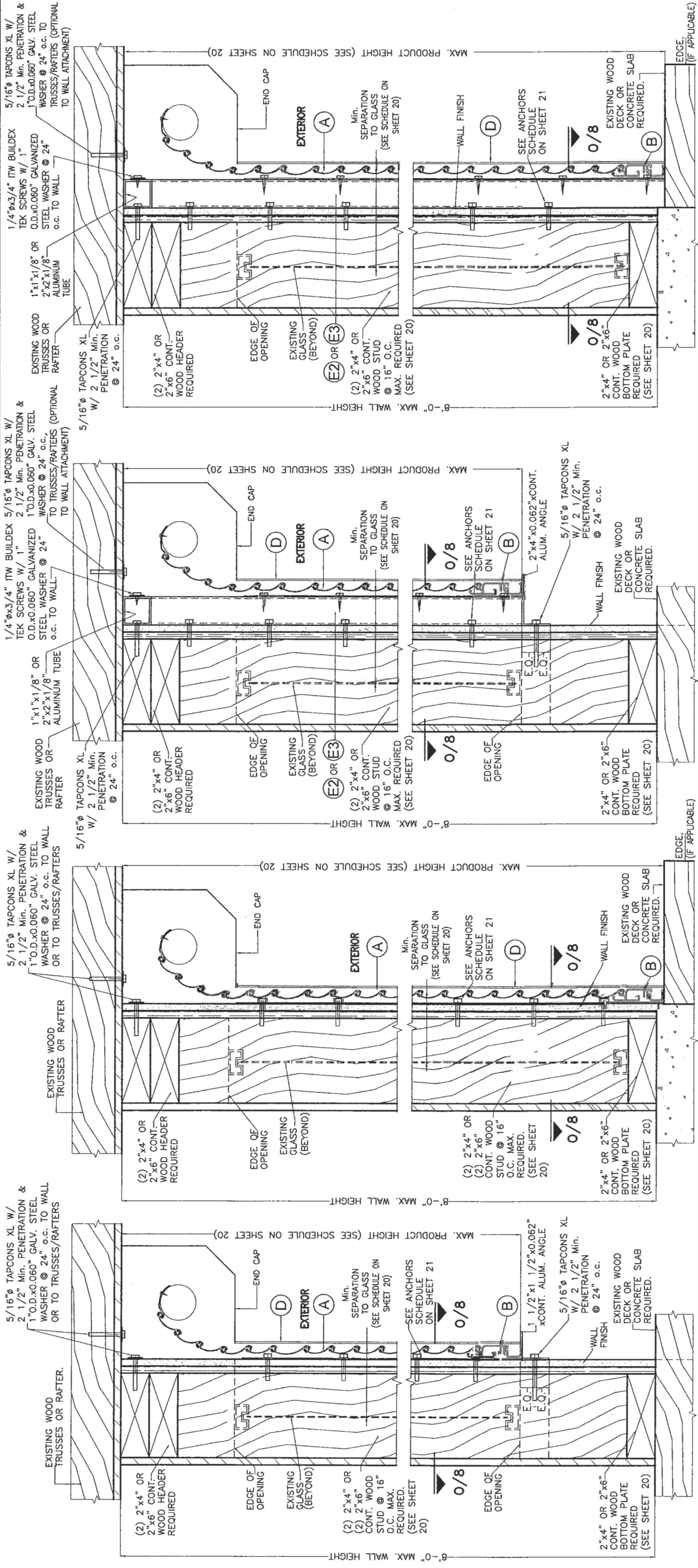
# INSTALLATION DETAILS ON EXISTING POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK BUILDINGS

SCALE: 3/16" = 1"

**\* NOTE:** SECTIONS Y-Y: BOX MAY BE ALTERNATIVELY ATTACHED TO A WOOD CEILING FOLLOWING SPECS ON SHEET 7.

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 DATE: 12/03/09  
 09-210  
 DRAWING No  
 SHEET 6 OF 26





WALL MOUNTING

WALL MOUNTING

WALL MOUNTING

WALL MOUNTING

WALL MOUNTING

**SECTIONS Y-Y**

**INSTALLATION DETAILS ON EXISTING WOOD BUILDINGS**

N.T.S.

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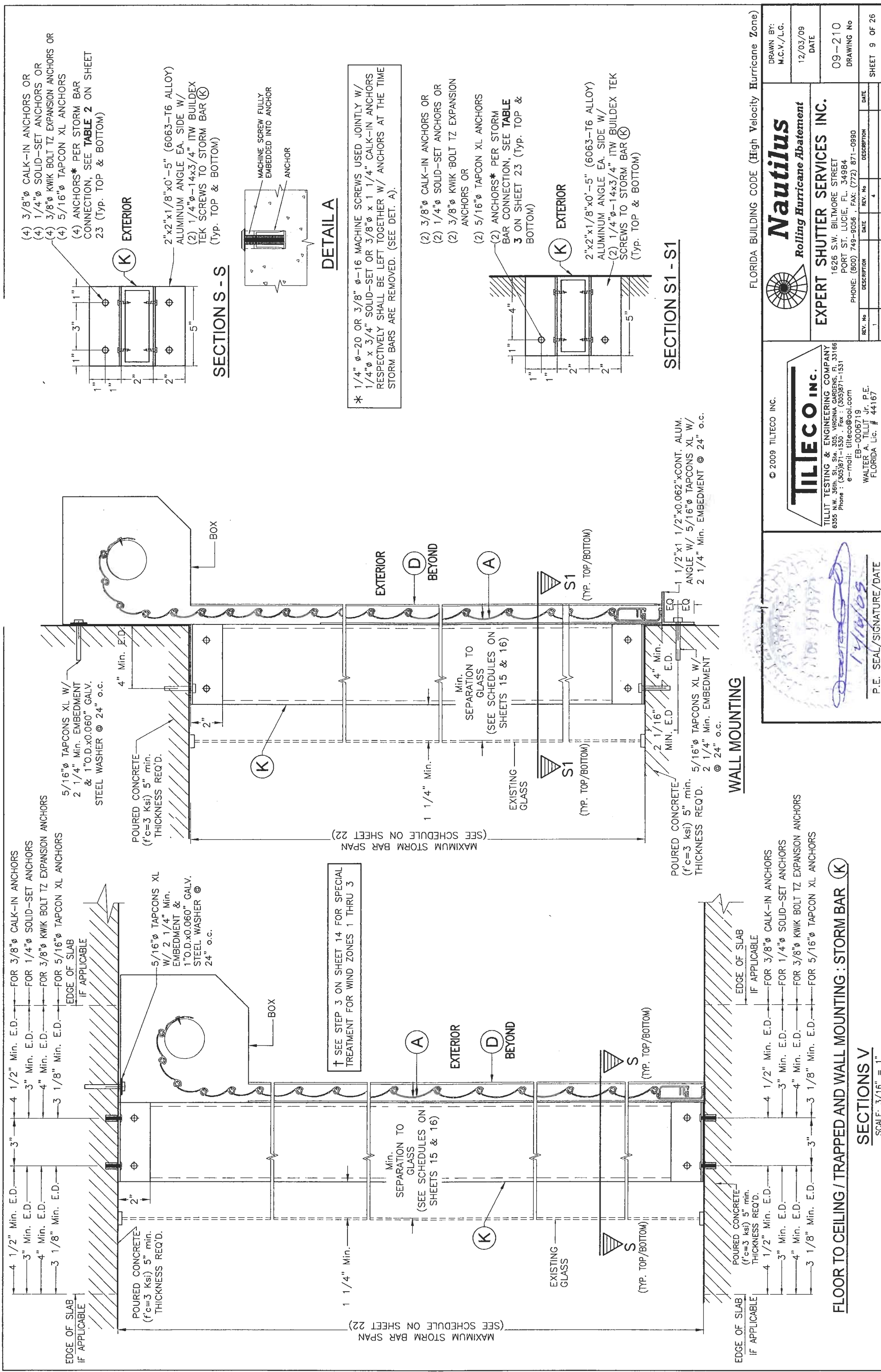
TILLIT TESTING & ENGINEERING COMPANY  
6355 N.W. 36th Ave., Ste. 305, WILMINGTON, GA 31826  
Phone: (809) 871-1539 · Fax: (809) 871-1931  
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12/16/09

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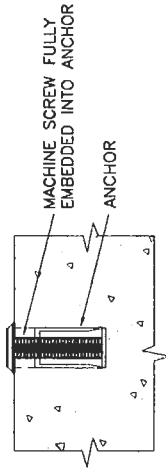


- (4) 3/8"Ø CALK-IN ANCHORS OR
- (4) 1/4"Ø SOLID-SET ANCHORS OR
- (4) 3/8"Ø KWIK BOLT TZ EXPANSION ANCHORS OR
- (4) 5/16"Ø TAPCON XL ANCHORS
- (4) ANCHORS\* PER STORM BAR CONNECTION, SEE TABLE 2 ON SHEET 23 (Typ. TOP & BOTTOM)

**EXTERIOR**

2"x2"x1/8"x0'-5" (6063-T6 ALLOY) ALUMINUM ANGLE EA. SIDE W/ (2) 1/4"Ø-14x3/4" ITW BUILDEX TEK SCREWS TO STORM BAR (K) (Typ. TOP & BOTTOM)

**SECTION S - S**



**DETAIL A**

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

- (2) 3/8"Ø CALK-IN ANCHORS OR
- (2) 1/4"Ø SOLID-SET ANCHORS OR
- (2) 3/8"Ø KWIK BOLT TZ EXPANSION ANCHORS OR
- (2) 5/16"Ø TAPCON XL ANCHORS
- (2) ANCHORS\* PER STORM BAR CONNECTION, SEE TABLE 3 ON SHEET 23 (Typ. TOP & BOTTOM)

**EXTERIOR**

2"x2"x1/8"x0'-5" (6063-T6 ALLOY) ALUMINUM ANGLE EA. SIDE W/ (2) 1/4"Ø-14x3/4" ITW BUILDEX TEK SCREWS TO STORM BAR (K) (Typ. TOP & BOTTOM)

**SECTION S1 - S1**

**WALL MOUNTING**

- 4 1/2" Min. E.D. FOR 3/8"Ø CALK-IN ANCHORS
- 3" Min. E.D. FOR 1/4"Ø SOLID-SET ANCHORS
- 4" Min. E.D. FOR 3/8"Ø KWIK BOLT TZ EXPANSION ANCHORS
- 3 1/8" Min. E.D. FOR 5/16"Ø TAPCON XL ANCHORS

- 4 1/2" Min. E.D. FOR 3/8"Ø CALK-IN ANCHORS
- 3" Min. E.D. FOR 1/4"Ø SOLID-SET ANCHORS
- 4" Min. E.D. FOR 3/8"Ø KWIK BOLT TZ EXPANSION ANCHORS
- 3 1/8" Min. E.D. FOR 5/16"Ø TAPCON XL ANCHORS

**FLOOR TO CEILING / TRAPPED AND WALL MOUNTING : STORM BAR (K)**

**SECTIONS V**  
SCALE: 3/16" = 1"

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Rolling Hurricane Abatement

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| REV. No | DATE | REV. No | DATE | DESCRIPTION |
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| 2       |      | 5       |      |             |

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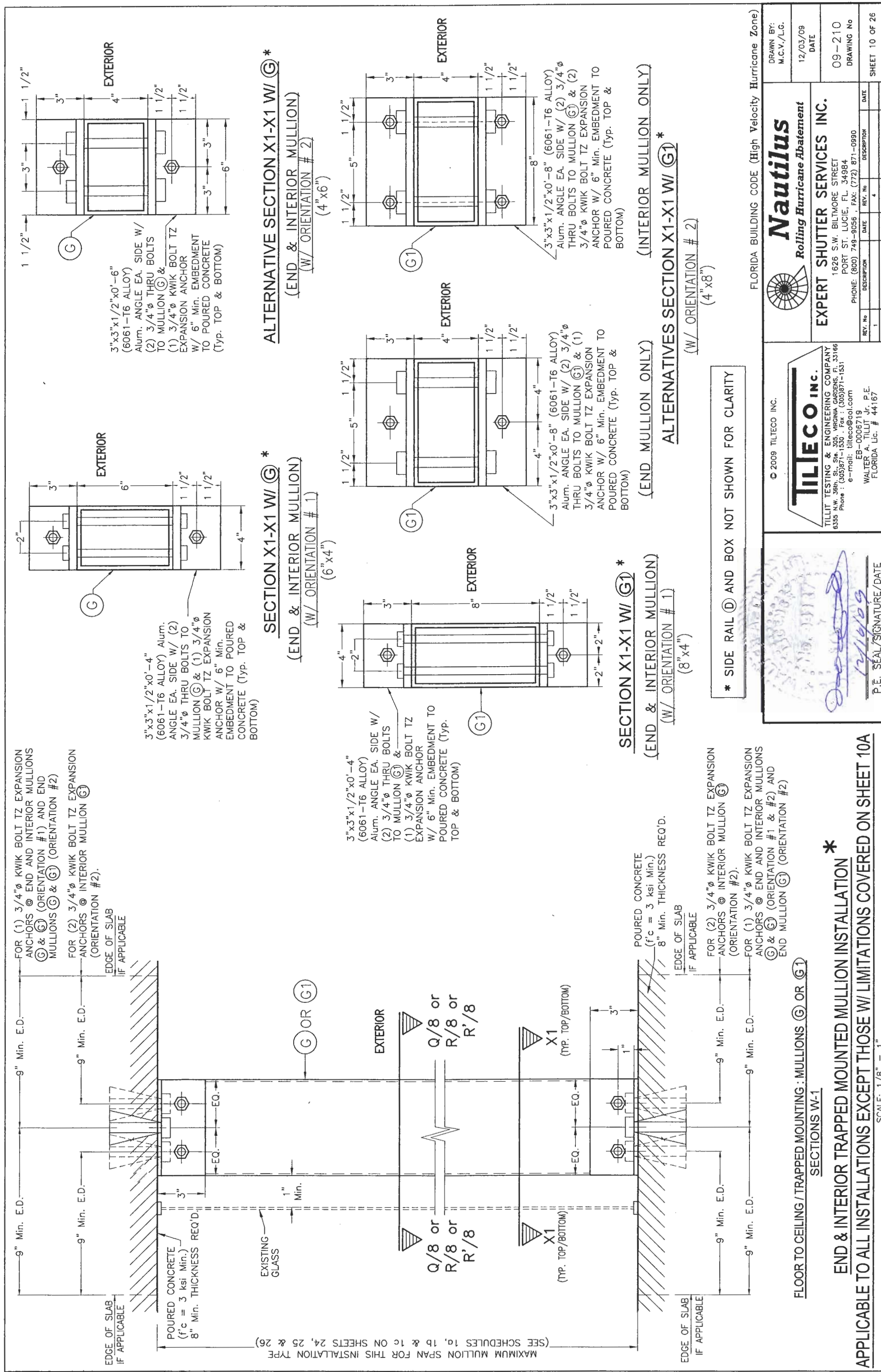
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P.E. SEAL/SIGNATURE/DATE

*[Signature]*



FOR (1) 3/4" KWIK BOLT TZ EXPANSION ANCHORS @ END AND INTERIOR MULLIONS (G) & (G1) (ORIENTATION #1) AND END MULLIONS (G) & (G1) (ORIENTATION #2)

FOR (2) 3/4" KWIK BOLT TZ EXPANSION ANCHORS @ INTERIOR MULLION (G) (ORIENTATION #2)

EDGE OF SLAB IF APPLICABLE

EDGE OF SLAB IF APPLICABLE

POURED CONCRETE (f'c = 3 ksi Min.) 8" Min. THICKNESS REQ'D.

EXISTING GLASS

MAXIMUM MULLION SPAN FOR THIS INSTALLATION TYPE (SEE SCHEDULES 1a, 1b & 1c ON SHEETS 24, 25 & 26)

POURED CONCRETE (f'c = 3 ksi Min.) 8" Min. THICKNESS REQ'D.

EDGE OF SLAB IF APPLICABLE

EDGE OF SLAB IF APPLICABLE

FOR (2) 3/4" KWIK BOLT TZ EXPANSION ANCHORS @ INTERIOR MULLION (G) (ORIENTATION #2).

FOR (1) 3/4" KWIK BOLT TZ EXPANSION ANCHORS @ END AND INTERIOR MULLIONS (G) & (G1) (ORIENTATION #1 & #2) AND END MULLION (G) (ORIENTATION #2)

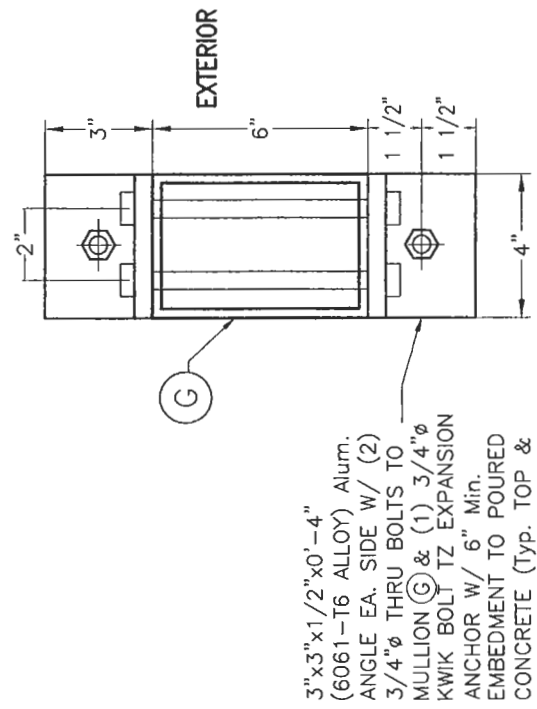
FLOOR TO CEILING / TRAPPED MOUNTING : MULLIONS (G) OR (G1)

SECTIONS W-1

END & INTERIOR TRAPPED MOUNTED MULLION INSTALLATION \*

APPLICABLE TO ALL INSTALLATIONS EXCEPT THOSE W/ LIMITATIONS COVERED ON SHEET 10A

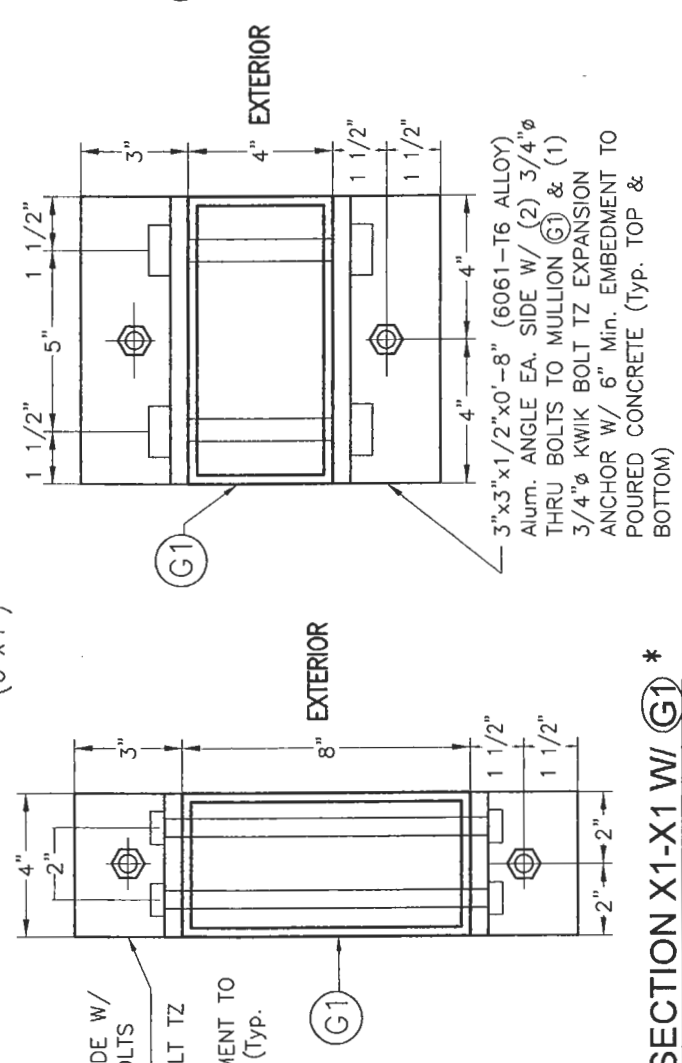
SCALE: 1/8" = 1"



SECTION X1-X1 W/ (G) \*

(END & INTERIOR MULLION) (W/ ORIENTATION # 1) (6" x 4")

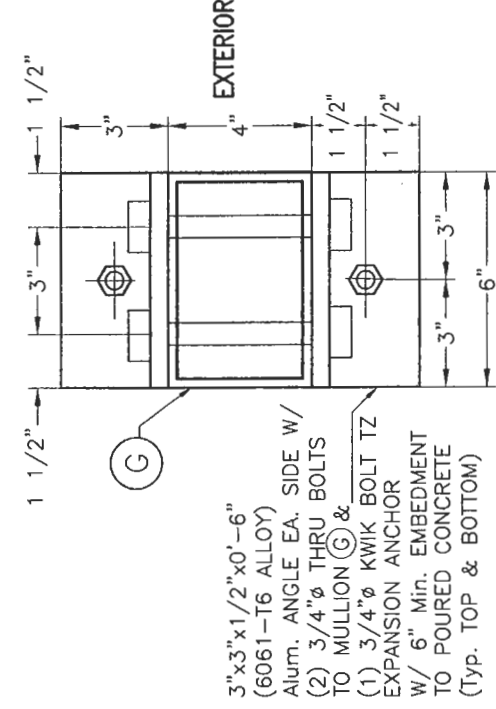
3"x3"x1/2"x0'-4" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE W/ (2) 3/4" THRU BOLTS TO MULLION (G) & (1) 3/4" KWIK BOLT TZ EXPANSION ANCHOR W/ 6" Min. EMBEDMENT TO POURED CONCRETE (Typ. TOP & BOTTOM)



SECTION X1-X1 W/ (G1) \*

(END & INTERIOR MULLION) (W/ ORIENTATION # 1) (8" x 4")

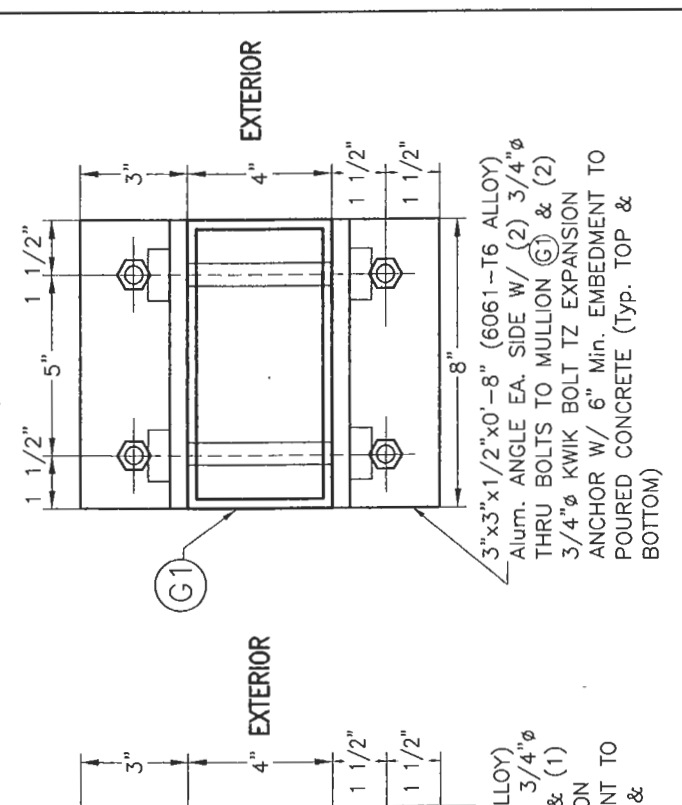
3"x3"x1/2"x0'-4" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE W/ (2) 3/4" THRU BOLTS TO MULLION (G) & (1) 3/4" KWIK BOLT TZ EXPANSION ANCHOR W/ 6" Min. EMBEDMENT TO POURED CONCRETE (Typ. TOP & BOTTOM)



ALTERNATIVE SECTION X1-X1 W/ (G) \*

(END & INTERIOR MULLION) (W/ ORIENTATION # 2) (4" x 6")

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



ALTERNATIVE SECTION X1-X1 W/ (G1) \*

(INTERIOR MULLION ONLY) (W/ ORIENTATION # 2) (4" x 8")

3"x3"x1/2"x0'-8" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE W/ (2) 3/4" THRU BOLTS TO MULLION (G) & (2) 3/4" KWIK BOLT TZ EXPANSION ANCHOR W/ 6" Min. EMBEDMENT TO POURED CONCRETE (Typ. TOP & BOTTOM)

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

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BALTIMORE STREET  
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DATE: 12/03/09

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DRAWING No

DATE: 12/16/09  
DESCRIPTION: 4  
REV. No: 5

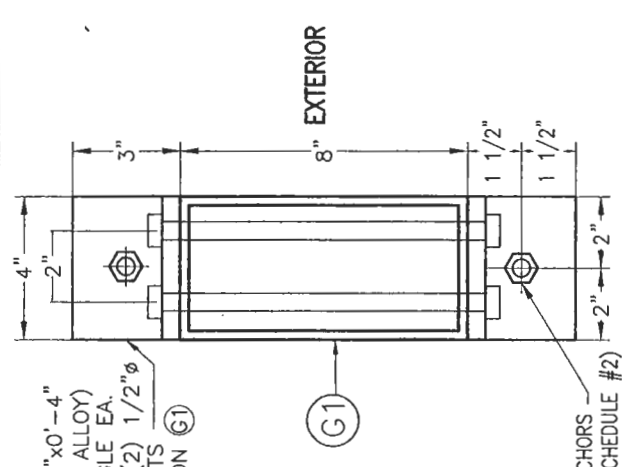
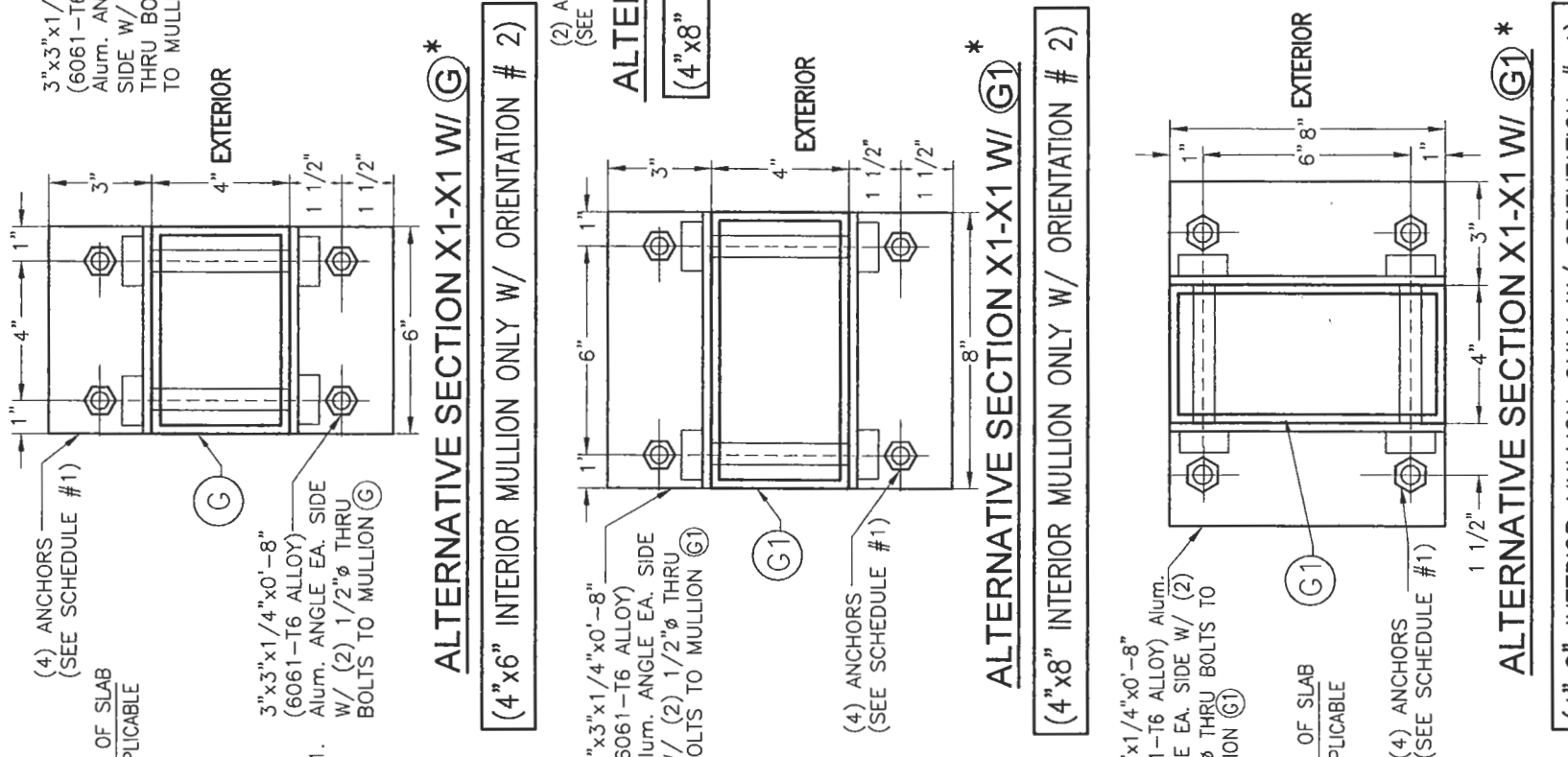
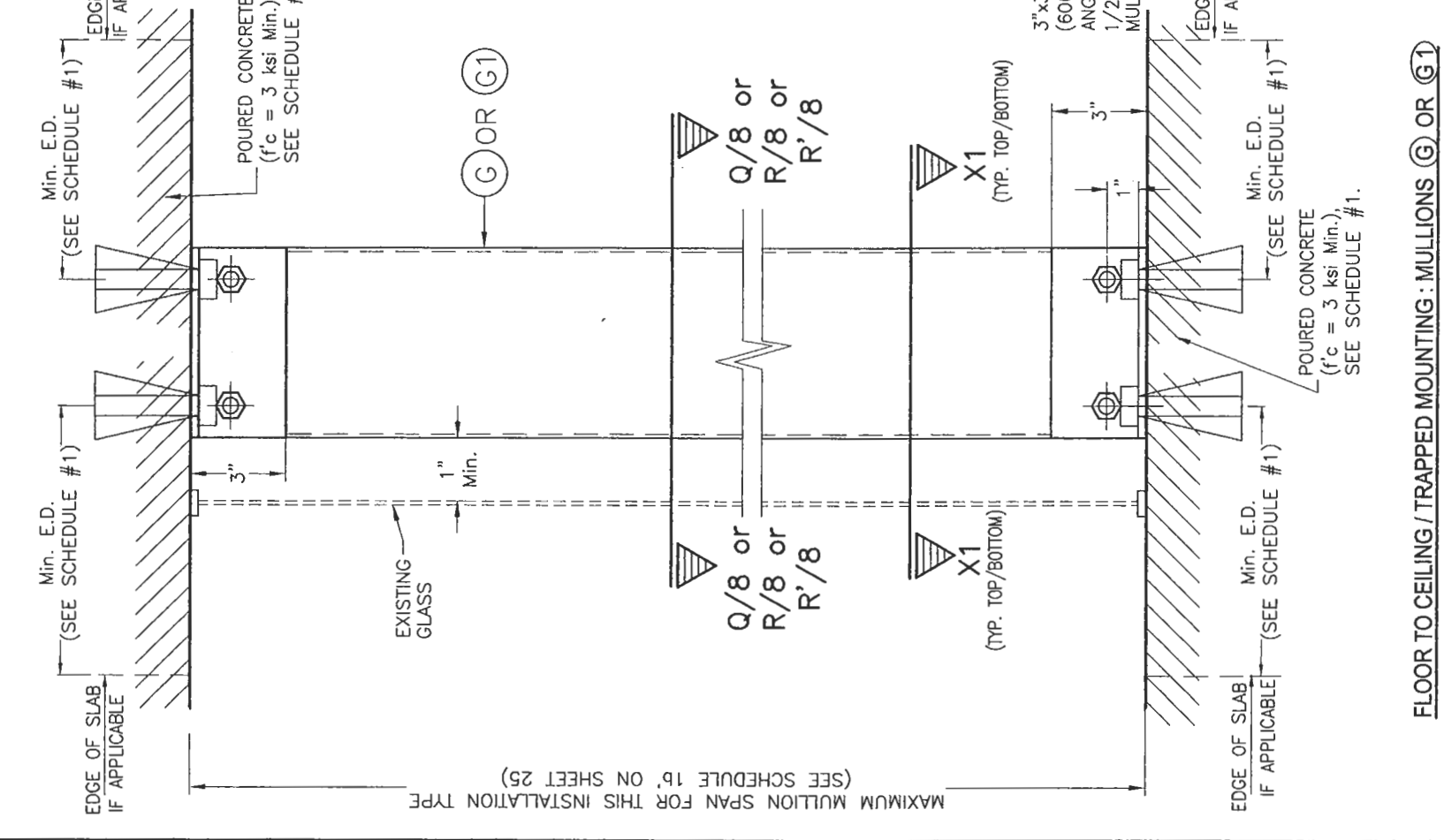
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P.E. SEAL/SIGNATURE/DATE



**ALTERNATIVE SECTION X1-X1 W/ (G1) \***  
 (4" x 8" INTERIOR MULLION W/ ORIENTATION # 1)

| 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"                        |
| Ia                 | 4"                         | 1/2" HILTI INC HUS-H SCREW & 1/2" POWER FASTENER WEDGE-BOLT ANCHOR FOR (G) (END & INTERIOR) MULLION W/ ORIENTATION #1.      | 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). | 2 1/2"                | 5 1/2"                        |
| 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"                        |

**SCHEDULE #1**

**SCHEDULE #2**

FLOOR TO CEILING / TRAPPED MOUNTING : MULLIONS (G) OR (G1)

SECTIONS W-1

◇ **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

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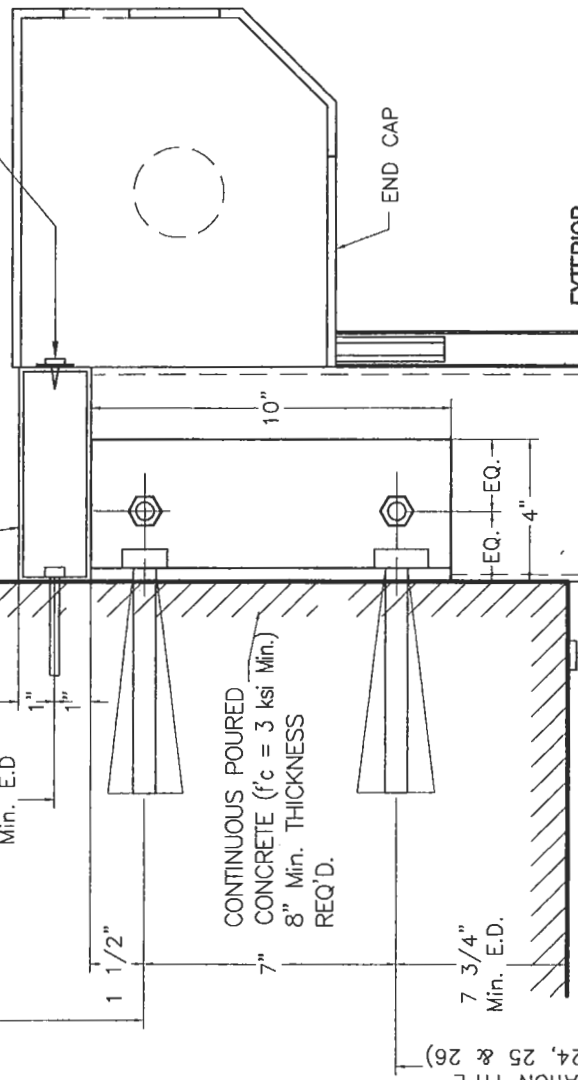
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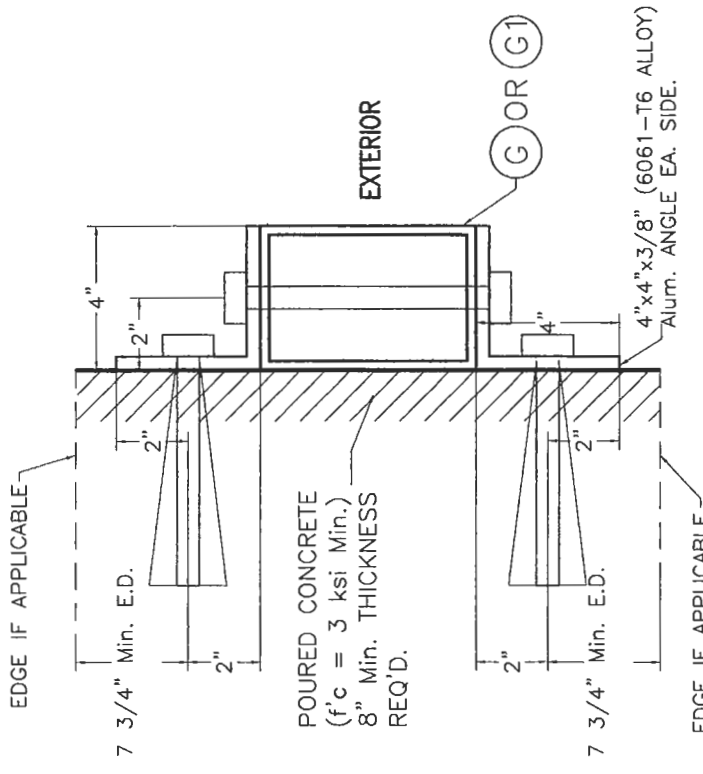
DATE DESCRIPTION

SHEET 10A OF 26

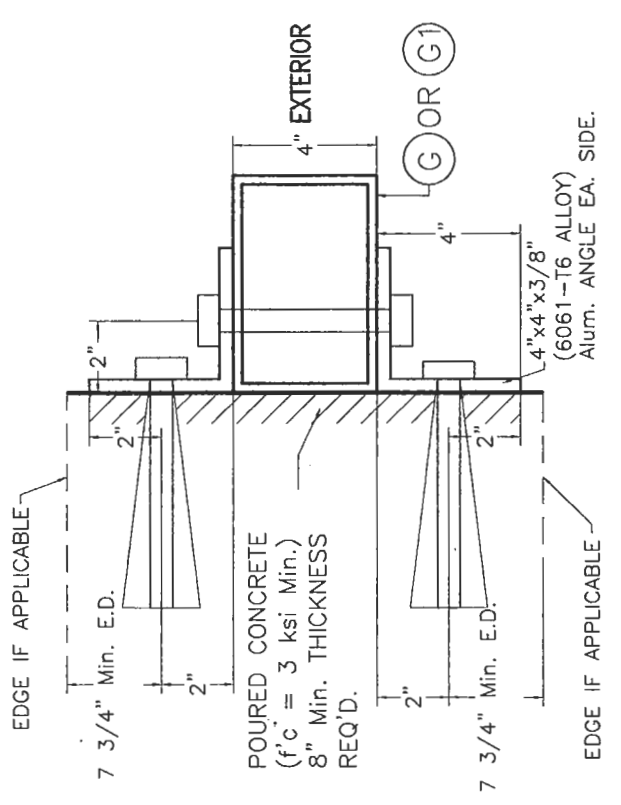
EDGE IF APPLICABLE  
 7 3/4" MIN. E.D.  
 2 1/2" MIN. E.D.  
 1/4" x 3/4" ITW BUILDDEX TEK SCREWS W/ 1" O.D. x 0.060" GALVANIZED STEEL WASHER @ 24" o.c.  
 2" x MULLION DEPTH x 1/8" Cont. ALUM. TUBE (TOP & BOTTOM) W/ 5/16" TAPCONS XL W/ 2 1/4" Min. EMBEDMENT @ 24" o.c.



CONTINUOUS POURED CONCRETE (f'c = 3 ksi Min.) 8" Min. THICKNESS REQ'D.  
 7 3/4" MIN. E.D.  
 1 1/2"  
 7"  
 2 1/2" MIN. E.D.  
 1 1/2"  
 10"  
 END CAP  
 EXTERIOR  
 Q/8 or R/8 or R'/8  
 (WALL MOUNTED SHOWN, MAY BE ALSO INSTALLED TRAPPED MOUNTED PER SECTION R'-R' ON SHEET 8.)  
 (D)  
 1 1/2" x 1 1/2" x 0.062" x CONT. ALUM. ANGLE W/ 1/4" x 3/4" ITW BUILDDEX TEK SCREWS @ 24" o.c. TO TUBE.



EDGE IF APPLICABLE  
 7 3/4" Min. E.D.  
 2"  
 4"  
 4" x 4" x 3/8" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE.  
 POURED CONCRETE (f'c = 3 ksi Min.) 8" Min. THICKNESS REQ'D.  
 EXTERIOR  
 G OR G1  
 SECTION X2-X2 W/ G OR G1\*  
 (END & INTERIOR MULLION)  
 (W/ ORIENTATION # 1)  
 (6" x 4" or 8" x 4")



EDGE IF APPLICABLE  
 7 3/4" Min. E.D.  
 2"  
 4"  
 4" x 4" x 3/8" (6061-T6 ALLOY) Alum. ANGLE EA. SIDE.  
 POURED CONCRETE (f'c = 3 ksi Min.) 8" Min. THICKNESS REQ'D.  
 EXTERIOR  
 G OR G1  
 ALTERNATIVE SECTION X2-X2 W/ G OR G1\*  
 (END & INTERIOR MULLION)  
 (W/ ORIENTATION # 2)  
 (4" x 6" or 4" x 8")

\* SIDE RAIL (D) NOT SHOWN FOR CLARITY

WALL MOUNTING : MULLIONS (G OR G1)  
 POURED CONCRETE WALL  
 SECTION W-2

END & INTERIOR WALL MOUNTED MULLION INSTALLATION \*

APPLICABLE TO ALL INSTALLATIONS EXCEPT THOSE W/ LIMITATIONS COVERED ON SHEET 11A

SCALE: 1/8" = 1"

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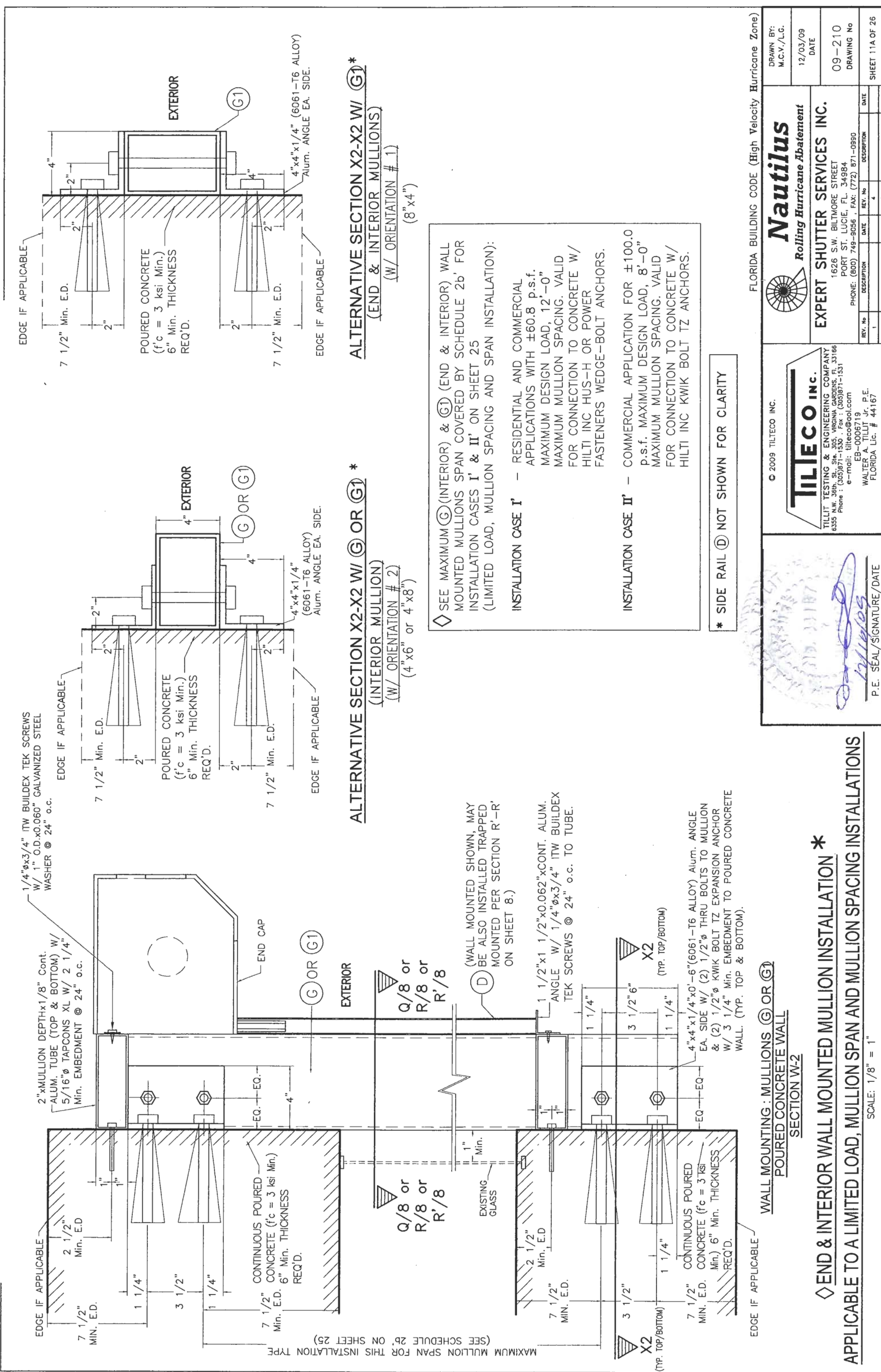
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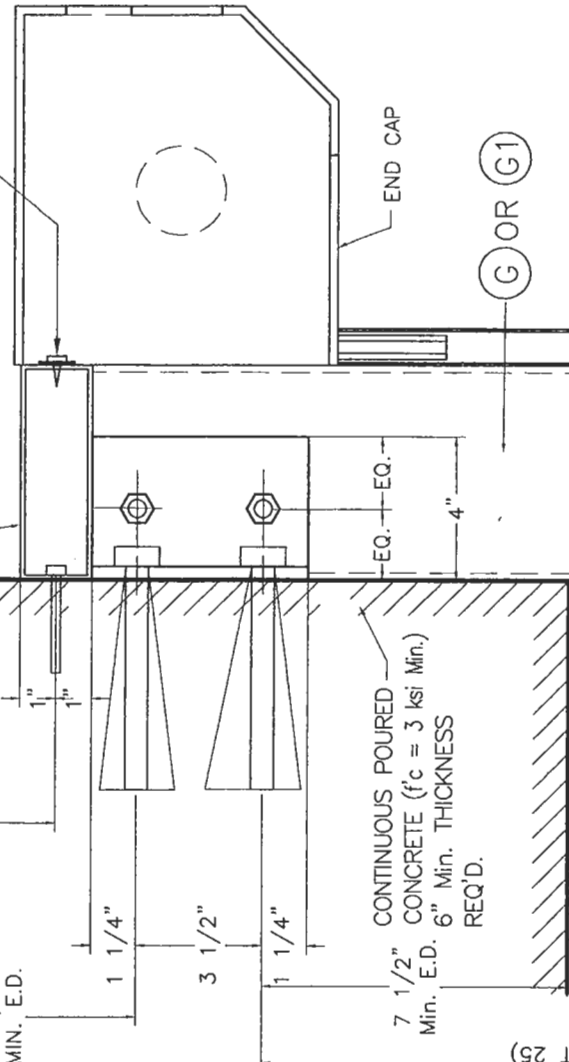
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 DESCRIPTION DATE REV. No. 4 5  
 DATE 12/03/09  
 DRAWING No. 09-210  
 SHEET 11 OF 26

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 DATE



1/4"φx3/4" ITW BUILDEX TEK SCREWS  
W/ 1" O.D.x0.060" GALVANIZED STEEL  
WASHER @ 24" o.c.

EDGE IF APPLICABLE  
7 1/2" Min. E.D.  
2" x MULLION DEPTH x 1/8" Cont.  
ALUM. TUBE (TOP & BOTTOM) W/  
5/16"φ TAPCONS XL W/ 2 1/4"  
Min. EMBEDMENT @ 24" o.c.



MAXIMUM MULLION SPAN FOR THIS INSTALLATION TYPE (SEE SCHEDULE 2b' ON SHEET 25)

**ALTERNATIVE SECTION X2-X2 W/ (G) OR (G1) \***  
(INTERIOR MULLION)  
(W/ ORIENTATION # 2)  
(4" x 6" or 4" x 8")

**ALTERNATIVE SECTION X2-X2 W/ (G1) \***  
(END & INTERIOR MULLIONS)  
(W/ ORIENTATION # 1)  
(8" x 4")

◇ 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 I'** - RESIDENTIAL AND COMMERCIAL APPLICATIONS WITH ±60.8 p.s.f. MAXIMUM DESIGN LOAD, 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 DESIGN LOAD, 8'-0" MAXIMUM MULLION SPACING. VALID FOR CONNECTION TO CONCRETE W/ HILTI INC KWIK BOLT TZ ANCHORS.

\* SIDE RAIL (D) NOT SHOWN FOR CLARITY

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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FLORIDA Lic. # 44167

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DRAWN BY: M.C.V./L.G.  
DATE: 12/03/09

09-210  
DRAWING No

REVISIONS

| REV. No | DESCRIPTION | DATE | REV. No | DESCRIPTION | DATE |
|---------|-------------|------|---------|-------------|------|
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| 2       |             |      | 5       |             |      |

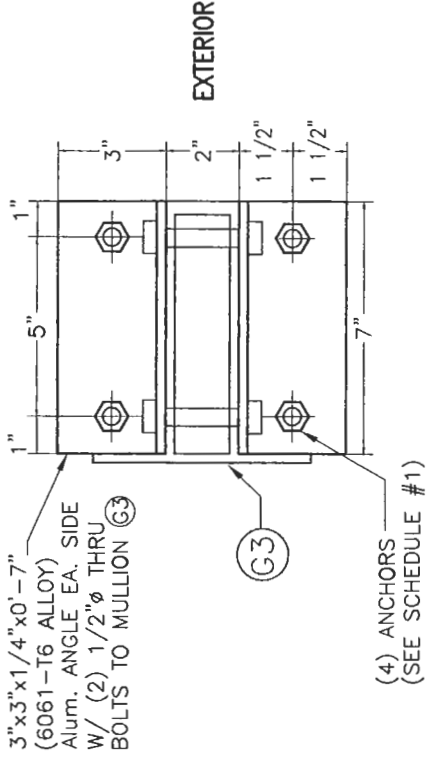
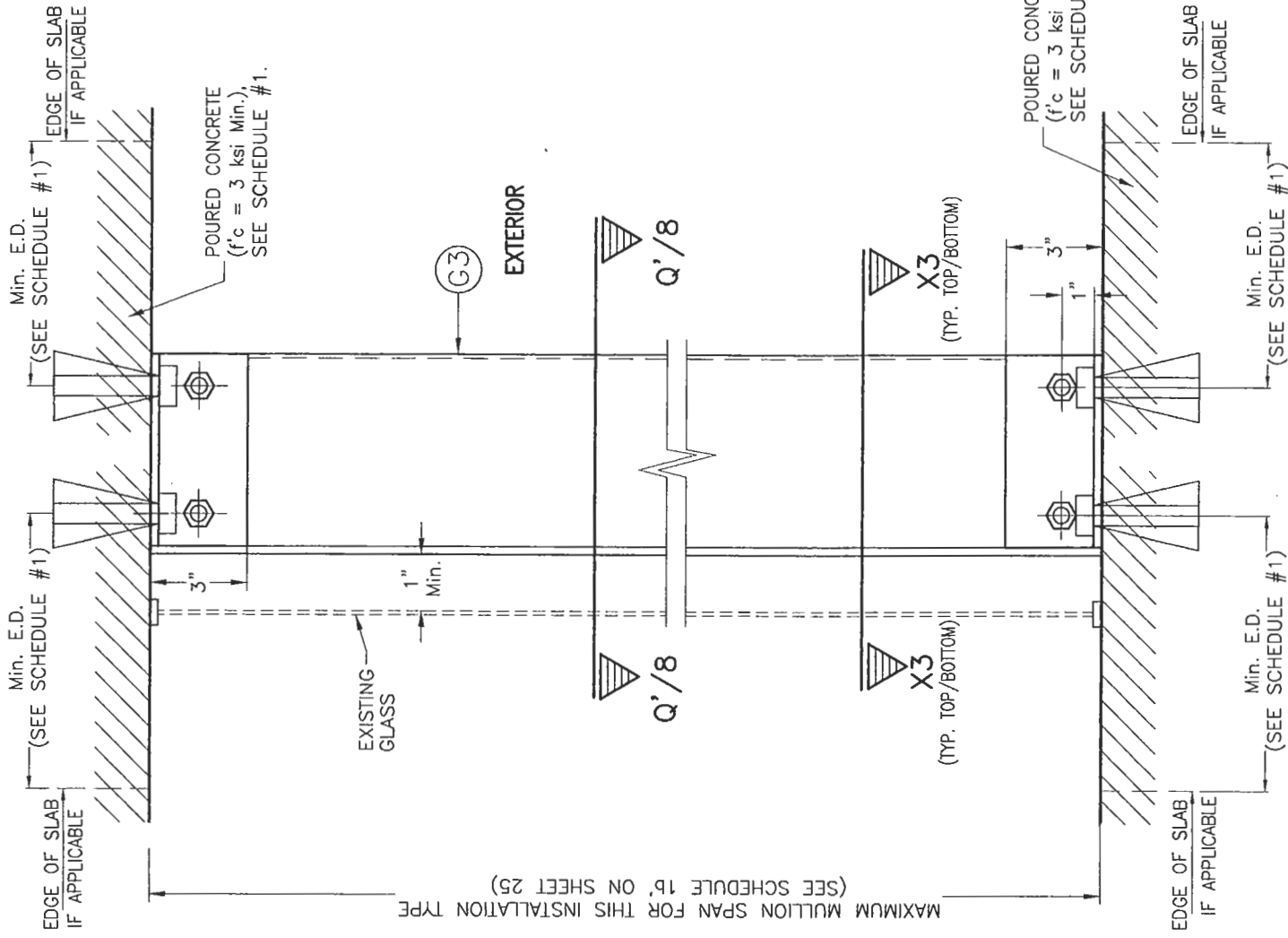
SHEET 11A OF 26

SCALE: 1/8" = 1"

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







**ALTERNATIVE SECTION X3-X3 W/ G3\***  
(W/ ORIENTATION # 2)  
(2" x 7" INTERIOR MULLION ONLY)

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

**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"

◇ 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 DESIGN LOAD, 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 DESIGN LOAD, 8'-0" MAXIMUM MULLION SPACING. SEE SCHEDULE #1 FOR ADDITIONAL SPECS.

**INSTALLATION CASE II** -- COMMERCIAL APPLICATION FOR ±100.0 p.s.f. MAXIMUM DESIGN LOAD, 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"φ HILTI INC HUS-H SCREW,<br>3/8"φ POWER FASTENER WEDGE- BOLT ANCHOR | 2 1/2"                | 5 1/2"                        |
| Ia                 | 4"                         | 1/2"φ HILTI INC KWIK BOLT TZ  | 2 1/2"                | 5 1/2"                        |
| II                 | 6"                         | 1/2"φ HILTI INC KWIK BOLT TZ  | 3 1/4"                | 7 1/2"                        |

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SHEET 12A OF 25

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*[Signature]*





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

**STEP 1:** OBTAIN JOB SITE'S DESIGN LOAD (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 I (Ia OR Ib) THRU IV ON SHEETS 15 & 16 TO DETERMINE, BASED ON AN ASSUMED SLAT SLIP (in), ANCHOR TYPE AT SIDE RAILS; DESIGN LOAD (p.s.f.); AND SLAT SPAN "L" (ft.); THE REQUIRED FINAL SLAT SLIP THAT SLATS MUST BE INSTALLED WITH TO MEET THE REQUIRED LOAD AND DESIRED SLAT SPAN.

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

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

**L<sub>MAX</sub>:** THIS IS THE MAXIMUM ALLOWABLE SLAT SPAN FOR WHICH A GIVEN SLAT SLIP (1/2", 1/4", 1/8", 1/8") MAY BE USED, FOR A GIVEN DESIGN LOAD.

**L<sub>MIN</sub>:** THIS IS THE MINIMUM ALLOWABLE SLAT SPAN FOR WHICH A GIVEN SLIP (1/2", 1/4", 1/8") MAY BE USED, FOR A GIVEN DESIGN LOAD. IN CASE JOB SITE DESIRED SLAT SPAN (L) WAS SHORTER THAN L<sub>MIN</sub>, THEN GO TO THE OTHER CHARTS WITH A SHORTER SLAT SLIP AND VERIFY THAT (L) IS ALLOWED FOR THAT OTHER SHORTER SLIP.

- MINIMUM REQUIRED SEPARATION TO GLASS IS PROVIDED ON CHARTS I<sub>c</sub>, II<sub>c</sub>, III & IV: 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 ON SHEETS 17 & 18. ENTER SCHEDULES WITH FINALLY DETERMINED ANCHOR TYPE, SUBSTRATE, MOUNTING TYPE, DESIGN LOAD & 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

1. MINIMUM SEPARATION TO GLASS FOR SLATS IF STORM BARS ARE USED SHALL BE BASED ON CHART I<sub>c</sub>, ON SHEET 15, IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS.
2. ENTER TABLE 1 ON SHEET 22 W/ DESIGN LOAD ; STORM BAR SPACING AND DETERMINE MAXIMUM ALLOWABLE STORM BAR SPAN (HEIGHT).
3. ENTER TABLES 2 OR 3 ON SHEET 23, WITH DESIGN LOAD 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

1. MINIMUM SEPARATION TO GLASS FOR SLATS IF MULLIONS ARE USED BUT W/O STORM BARS SHALL BE BASED ON CHARTS I<sub>c</sub>, II<sub>c</sub>, III & IV ON SHEETS 15 & 16. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS.
2. ENTER SCHEDULES 1a THRU 2c ON SHEETS 24, 25 & 26 W/ 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 (G), (G1), (G2 & G3), MULLION TYPE & MULLION ORIENTATION.
3. 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 (G), (G1), (G2 & G3).

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

1. MINIMUM SEPARATION TO GLASS FOR SLATS IF BOTH STORM BARS AND MULLIONS ARE USED SHALL BE BASED ON CHART I<sub>c</sub>, ON SHEET 15, IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS.
2. ENTER TABLE 1 ON SHEET 22 W/ DESIGN LOAD AND STORM BAR SPACING AND DETERMINE MAXIMUM STORM BAR SPAN (HEIGHT).
3. ENTER TABLES 2 OR 3 ON SHEET 23, WITH DESIGN LOAD 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.
4. ENTER SCHEDULES 1a THRU 2c ON SHEETS 24, 25 & 26 W/ 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 (G), (G1), (G2 & G3), MULLION TYPE & MULLION ORIENTATION.
5. 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 (G), (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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SHEET 14 OF 26

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

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

| DESIGN LOAD (psf) | CHART Ia   |                              |   |  | CHART Ib   |                              |   |  | USE W/ CHARTS Ia & Ib               | CHART Ic                        |    |
|-------------------|--|------------------------------|---|--|--|------------------------------|---|--|-------------------------------------|---------------------------------|----|
|                   | USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD |                              |   |  |  |                              |   |  |                                     |                                 |    |
|                   | 3/8"Ø KWIK BOLT 3 ANCHOR<br>POURED CONCRETE          |                              |   |  | 5/16"Ø TAPCON XL ANCHOR<br>TO POURED CONCRETE OR<br>GROUT FILLED CELL CONCRETE BLOCK |                              |   |  |                                     |                                 |    |
|                   | WALL MOUNT<br>SEE NOTES *                            | TRAPPED MOUNT<br>SEE NOTES * | BUILD-OUT MOUNT W/ (E1) & (E2)<br>SEE NOTES * | BUILD-OUT MOUNT W/ (E3)<br>SEE NOTES * | WALL MOUNT<br>SEE NOTES *  | TRAPPED MOUNT<br>SEE NOTES * | BUILD-OUT MOUNT W/ (E1) & (E2)<br>SEE NOTES * | BUILD-OUT MOUNT W/ (E3)<br>SEE NOTES * | MIN. SPAN "L <sub>MIN.</sub> " (FT) | USE MAXIMUM POSITIVE LOAD VALUE |    |
| 30.0              | 20'-0"   | 15'-4"                       | 20'-0"  | 20'-0"                                 | 20'-0"   | 15'-4"                       | 20'-0"  | 18'-0"                                 | 8'-1"                               | 11 1/2"                         | 4" |
| 35.0              | 20'-0"   | 15'-3"                       | 20'-0"  | 18'-0"                                 | 20'-0"   | 15'-0"                       | 19'-0"  | 16'-3"                                 | 7'-9"                               | 11 1/2"                         | 4" |
| 40.0              | 20'-0"   | 15'-2"                       | 19'-7"  | 16'-6"                                 | 20'-0"   | 14'-5"                       | 17'-4"  | 14'-10"                                | 7'-5"                               | 11 1/2"                         | 4" |
| 45.0              | 20'-0"   | 15'-0"                       | 18'-0"  | 15'-3"                                 | 20'-0"   | 14'-2"                       | 16'-0"  | 13'-9"                                 | 7'-2"                               | 11 1/2"                         | 4" |
| 50.0              | 20'-0"   | 14'-10"                      | 16'-9"  | 14'-2"                                 | 19'-1"   | 13'-1"                       | 14'-10"                                       | 12'-10"                                | 7'-0"                               | 11 1/2"                         | 4" |
| 55.0              | 20'-0"   | 14'-8"                       | 15'-8"  | 13'-4"                                 | 17'-9"   | 12'-4"                       | 13'-11"                                       | 12'-1"                                 | 6'-9"                               | 11 1/2"                         | 4" |
| 60.0              | 19'-5"   | 13'-9"                       | 14'-9"  | 12'-7"                                 | 16'-9"   | 11'-8"                       | 13'-2"  | 11'-5"                                 | 6'-9"                               | 11 1/2"                         | 4" |
| 65.0              | 18'-4"   | 12'-11"                      | 13'-11"                                       | 11'-11"                                | 15'-9"   | 11'-0"                       | 12'-5"  | 10'-11"                                | 6'-9"                               | 11"                             | 4" |
| 70.0              | 17'-4"   | 12'-1"                       | 13'-3"  | 11'-4"                                 | 15'-0"   | 10'-6"                       | 11'-10"                                       | 10'-4"                                 | 6'-9"                               | 11"                             | 4" |
| 75.0              | 16'-6"   | 11'-7"                       | 12'-7"  | 10'-10"                                | 14'-3"   | 10'-0"                       | 11'-4"  | 9'-11"                                 | 6'-9"                               | 10 1/2"                         | 4" |
| 80.0              | 15'-9"   | 11'-0"                       | 12'-0"  | 10'-5"                                 | 13'-7"   | 9'-5"                        | 10'-10"                                       | 9'-7"                                  | 6'-9"                               | 10 1/2"                         | 4" |
| 85.0              | 15'-0"   | 10'-6"                       | 11'-7"  | 10'-0"                                 | 13'-0"   | 9'-3"                        | 10'-5"  | 9'-3"                                  | 6'-9"                               | 10"                             | 4" |
| 90.0              | 14'-2"   | 10'-1"                       | 11'-2"  | 9'-8"                                  | 12'-6"   | 8'-10"                       | 10'-1"  | 8'-11"                                 | 6'-9"                               | 10"                             | 4" |
| 95.0              | 13'-5"   | 9'-8"                        | 10'-9"  | 9'-4"                                  | 12'-0"   | 8'-5"                        | 9'-9"   | 8'-7"                                  | 6'-9"                               | 9 1/2"                          | 4" |
| 100.0             | 12'-9"   | 9'-4"                        | 10'-5"  | 9'-1"                                  | 11'-8"   | 8'-14"                       | 9'-5"   | 8'-4"                                  | 6'-9"                               | 9 1/2"                          | 4" |
| 105.0             | 12'-2"   | 9'-0"                        | 10'-1"  | 8'-9"                                  | 11'-3"   | 8'-0"                        | 9'-2"   | 8'-2"                                  | 6'-9"                               | 9"                              | 4" |
| 110.0             | 11'-7"   | 8'-8"                        | 9'-9"   | 8'-6"                                  | 10'-11"  | 7'-10"                       | 8'-10"  | 7'-11"                                 | 6'-9"                               | 9"                              | 4" |
| 115.0             | 11'-1"   | 8'-5"                        | 9'-6"   | 8'-4"                                  | 10'-7"   | 7'-8"                        | 8'-8"   | 7'-8"                                  | 6'-9"                               | 9"                              | 4" |
| 120.0             | 10'-8"   | 8'-1"                        | 9'-3"   | 8'-2"                                  | 10'-3"   | 7'-5"                        | 8'-5"   | 7'-6"                                  | 6'-9"                               | 9"                              | 4" |
| 125.0             | 10'-2"   | 7'-9"                        | 9'-0"   | 7'-11"                                 | 10'-0"   | 7'-2"                        | 8'-2"   | 7'-4"                                  | 6'-9"                               | 9"                              | 4" |
| 130.0             | 9'-10"   | 7'-6"                        | 8'-9"   | 7'-9"                                  | 9'-9"  | 7'-0"                        | 8'-0"   | 7'-2"                                  | 6'-9"                               | 9"                              | 4" |
| 135.0             | 9'-5"  | 7'-2"                        | 8'-6"   | 7'-7"                                  | 9'-6"  | 6'-10"                       | 7'-10"  | 7'-1"                                  | 6'-9"                               | 9"                              | 4" |
| 140.0             | 9'-1"  | 6'-11"                       | 8'-4"   | 7'-5"                                  | 9'-1"  | -                            | 7'-8"   | 6'-11"                                 | 6'-9"                               | 9"                              | 4" |
| 145.0             | 8'-10"   | -                            | 8'-2"   | 7'-3"                                  | 8'-10"   | -                            | 7'-6"   | -                                      | 6'-9"                               | 8"                              | 4" |
| 150.0             | 8'-6"  | -                            | 8'-0"   | 7'-2"                                  | 8'-6"  | -                            | 7'-4"   | -                                      | 6'-9"                               | 8"                              | 4" |
| 155.0             | 8'-3"  | -                            | 7'-10"  | 7'-0"                                  | 8'-3"  | -                            | 7'-2"   | -                                      | 6'-9"                               | 8"                              | 4" |
| 160.0             | 8'-0"  | -                            | 7'-8"   | 6'-10"                                 | 8'-0"  | -                            | 7'-1"   | -                                      | 6'-9"                               | 8"                              | 4" |

**\* 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 DESIGN LOAD.
- 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.

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**SLAT PERFORMANCE CHARTS IIa, IIb & IIc: (ONLY VALID FOR 1/4" SLIP)**

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

| CHART IIa         |                             | CHART IIb   |                        |   |   | CHART IIc   |                             |
|-------------------|-----------------------------|---|------------------------|---|---|---|-----------------------------|
| POURED CONCRETE   |                             | 5/16" Ø TAPCON XL ANCHOR<br>TO POURED CONCRETE OR<br>GROUT FILLED CELL CONCRETE BLOCK |                        |   |   | 3/8" Ø KWIK BOLT 3 ANCHOR & 5/16" Ø TAPCON XL ANCHOR<br>TO POURED CONCRETE OR<br>GROUT FILLED CELL CONCRETE BLOCK |                             |
| DESIGN LOAD (psf) | MAX. SLAT SPAN "LMAX." (FT) |   | WALL MOUNT SEE NOTES * | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES * | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES * | TRAPPED MOUNT SEE NOTES *   | MIN. SLAT SPAN "LMIN." (FT) |
|                   | WALL MOUNT SEE NOTES *      | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES *   |                        |   |   |   |                             |
| 30.0              | 8'-3"                       | 8'-3"   | 8'-3"                  | 8'-3"                                     | 8'-3"                                     | 8'-3"   | 7'-7"                       |
| 35.0              | 7'-9"                       | 7'-9"   | 7'-9"                  | 7'-9"                                     | 7'-9"                                     | 7'-9"   | 7'-3"                       |
| 40.0              | 7'-7"                       | 7'-7"   | 7'-7"                  | 7'-7"                                     | 7'-7"                                     | 7'-7"   | 7'-0"                       |
| 45.0              | 7'-4"                       | 7'-4"   | 7'-4"                  | 7'-4"                                     | 7'-4"                                     | 7'-4"   | 6'-9"                       |
| 50.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 6'-6"                       |
| 55.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 6'-4"                       |
| 60.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 6'-2"                       |
| 65.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 6'-1"                       |
| 70.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 5'-11"                      |
| 75.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 5'-10"                      |
| 80.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 5'-10"                      |
| 85.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 5'-10"                      |
| 90.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 5'-10"                      |
| 95.0              | 7'-3"                       | 7'-3"   | 7'-3"                  | 7'-3"                                     | 7'-3"                                     | 7'-3"   | 5'-10"                      |
| 100.0             | 7'-2"                       | 7'-2"   | 7'-2"                  | 7'-2"                                     | 7'-2"                                     | 7'-2"   | 5'-10"                      |
| 105.0             | 6'-10"                      | 6'-10"  | 6'-10"                 | 6'-10"                                    | 6'-10"                                    | 6'-10"  | 5'-10"                      |
| 110.0             | 6'-8"                       | 6'-8"   | 6'-8"                  | 6'-8"                                     | 6'-8"                                     | 6'-8"   | 5'-10"                      |
| 115.0             | 6'-6"                       | 6'-6"   | 6'-6"                  | 6'-6"                                     | 6'-6"                                     | 6'-6"   | 5'-9"                       |
| 120.0             | 6'-4"                       | 6'-4"   | 6'-4"                  | 6'-4"                                     | 6'-4"                                     | 6'-4"   | 5'-9"                       |
| 125.0             | 6'-2"                       | 6'-2"   | 6'-2"                  | 6'-2"                                     | 6'-2"                                     | 6'-2"   | 5'-7"                       |
| 130.0             | 6'-0"                       | 6'-1"   | 6'-1"                  | 6'-1"                                     | 6'-1"                                     | 6'-1"   | 5'-6"                       |
| 135.0             | 5'-10"                      | 6'-1"   | 6'-1"                  | 6'-1"                                     | 6'-1"                                     | 6'-1"   | 5'-5"                       |
| 140.0             | 5'-9"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 6'-0"                                     | 6'-0"   | 5'-4"                       |
| 145.0             | 5'-9"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 6'-0"                                     | 6'-0"   | 5'-3"                       |
| 150.0             | 6'-0"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 6'-0"                                     | 6'-0"   | 5'-2"                       |
| 155.0             | 6'-0"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 6'-0"                                     | 6'-0"   | 5'-2"                       |
| 160.0             | 6'-0"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 6'-0"                                     | 6'-0"   | 5'-2"                       |

5 1/8"

**SLAT PERFORMANCE CHART III: (ONLY VALID FOR 1/8" SLIP)**

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

| POURED CONCRETE   |                             | 5/16" Ø TAPCON XL ANCHOR<br>TO POURED CONCRETE OR<br>GROUT FILLED CELL CONCRETE BLOCK |                        |   |                             |
|-------------------|-----------------------------|---|------------------------|---|-----------------------------|
| DESIGN LOAD (psf) | MAX. SLAT SPAN "LMAX." (FT) |   | WALL MOUNT SEE NOTES * | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES * | MIN. SLAT SPAN "LMIN." (FT) |
|                   | WALL MOUNT SEE NOTES *      | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES *   |                        |   |                             |
| 30.0              | 7'-6"                       | 7'-6"   | 7'-6"                  | 7'-6"                                     | 6'-7"                       |
| 35.0              | 7'-2"                       | 7'-2"   | 7'-2"                  | 7'-2"                                     | 6'-4"                       |
| 40.0              | 6'-9"                       | 6'-9"   | 6'-9"                  | 6'-9"                                     | 6'-1"                       |
| 45.0              | 6'-8"                       | 6'-8"   | 6'-8"                  | 6'-8"                                     | 5'-11"                      |
| 50.0              | 6'-5"                       | 6'-5"   | 6'-5"                  | 6'-5"                                     | 5'-9"                       |
| 55.0              | 6'-3"                       | 6'-3"   | 6'-3"                  | 6'-3"                                     | 5'-7"                       |
| 60.0              | 6'-1"                       | 6'-1"   | 6'-1"                  | 6'-1"                                     | 5'-5"                       |
| 65.0              | 6'-0"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 5'-4"                       |
| 70.0              | 5'-10"                      | 5'-10"  | 5'-10"                 | 5'-10"                                    | 5'-2"                       |
| 75.0              | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 5'-1"                       |
| 80.0              | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 5'-0"                       |
| 85.0              | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-11"                      |
| 90.0              | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-10"                      |
| 95.0              | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-9"                       |
| 100.0             | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-8"                       |
| 105.0             | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-8"                       |
| 110.0             | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-7"                       |
| 115.0             | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 4'-6"                       |
| 120.0             | 5'-8"                       | 5'-8"   | 5'-8"                  | 5'-8"                                     | 4'-6"                       |
| 125.0             | 5'-6"                       | 5'-6"   | 5'-6"                  | 5'-6"                                     | 4'-5"                       |
| 130.0             | 5'-5"                       | 5'-5"   | 5'-5"                  | 5'-5"                                     | 4'-4"                       |
| 135.0             | 5'-4"                       | 5'-4"   | 5'-4"                  | 5'-4"                                     | 4'-4"                       |
| 140.0             | 5'-3"                       | 5'-3"   | 5'-3"                  | 5'-3"                                     | 4'-3"                       |
| 145.0             | 5'-2"                       | 5'-2"   | 5'-2"                  | 5'-2"                                     | 4'-3"                       |
| 150.0             | 5'-1"                       | 5'-1"   | 5'-1"                  | 5'-1"                                     | 4'-3"                       |
| 155.0             | 5'-0"                       | 5'-0"   | 5'-0"                  | 5'-0"                                     | 4'-3"                       |
| 160.0             | 4'-11"                      | 4'-11"  | 4'-11"                 | 4'-11"                                    | 4'-3"                       |

5"

**SLAT PERFORMANCE CHART IV: (LESS THAN 1/8" SLIP)**

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

| POURED CONCRETE   |                             | 3/8" Ø KWIK BOLT 3 ANCHOR & 5/16" Ø TAPCON XL ANCHOR<br>TO POURED CONCRETE OR<br>GROUT FILLED CELL CONCRETE BLOCK |                        |   |                             |
|-------------------|-----------------------------|---|------------------------|---|-----------------------------|
| DESIGN LOAD (psf) | MAX. SLAT SPAN "LMAX." (FT) |   | WALL MOUNT SEE NOTES * | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES * | MIN. SLAT SPAN "LMIN." (FT) |
|                   | WALL MOUNT SEE NOTES *      | BUILD-OUT MOUNT W/ (E) & (E2) SEE NOTES *   |                        |   |                             |
| 30.0              | 6'-6"                       | 6'-6"   | 6'-6"                  | 6'-6"                                     | 0'-0"                       |
| 35.0              | 6'-3"                       | 6'-3"   | 6'-3"                  | 6'-3"                                     | 0'-0"                       |
| 40.0              | 6'-0"                       | 6'-0"   | 6'-0"                  | 6'-0"                                     | 0'-0"                       |
| 45.0              | 5'-10"                      | 5'-10"  | 5'-10"                 | 5'-10"                                    | 0'-0"                       |
| 50.0              | 5'-9"                       | 5'-9"   | 5'-9"                  | 5'-9"                                     | 0'-0"                       |
| 55.0              | 5'-7"                       | 5'-7"   | 5'-7"                  | 5'-7"                                     | 0'-0"                       |
| 60.0              | 5'-5"                       | 5'-5"   | 5'-5"                  | 5'-5"                                     | 0'-0"                       |
| 65.0              | 5'-4"                       | 5'-4"   | 5'-4"                  | 5'-4"                                     | 0'-0"                       |
| 70.0              | 5'-3"                       | 5'-3"   | 5'-3"                  | 5'-3"                                     | 0'-0"                       |
| 75.0              | 5'-1"                       | 5'-1"   | 5'-1"                  | 5'-1"                                     | 0'-0"                       |
| 80.0              | 4'-11"                      | 4'-11"  | 4'-11"                 | 4'-11"                                    | 0'-0"                       |
| 85.0              | 4'-10"                      | 4'-10"  | 4'-10"                 | 4'-10"                                    | 0'-0"                       |
| 90.0              | 4'-8"                       | 4'-8"   | 4'-8"                  | 4'-8"                                     | 0'-0"                       |
| 95.0              | 4'-6"                       | 4'-6"   | 4'-6"                  | 4'-6"                                     | 0'-0"                       |
| 100.0             | 4'-5"                       | 4'-5"   | 4'-5"                  | 4'-5"                                     | 0'-0"                       |
| 105.0             | 4'-4"                       | 4'-4"   | 4'-4"                  | 4'-4"                                     | 0'-0"                       |
| 110.0             | 4'-3"                       | 4'-3"   | 4'-3"                  | 4'-3"                                     | 0'-0"                       |
| 115.0             | 4'-1"                       | 4'-1"   | 4'-1"                  | 4'-1"                                     | 0'-0"                       |
| 120.0             | 4'-0"                       | 4'-0"   | 4'-0"                  | 4'-0"                                     | 0'-0"                       |
| 125.0             | 3'-11"                      | 3'-11"  | 3'-11"                 | 3'-11"                                    | 0'-0"                       |
| 130.0             | 3'-11"                      | 3'-11"  | 3'-11"                 | 3'-11"                                    | 0'-0"                       |
| 135.0             | 3'-10"                      | 3'-10"  | 3'-10"                 | 3'-10"                                    | 0'-0"                       |
| 140.0             | 3'-9"                       | 3'-9"   | 3'-9"                  | 3'-9"                                     | 0'-0"                       |
| 145.0             | 3'-8"                       | 3'-8"   | 3'-8"                  | 3'-8"                                     | 0'-0"                       |
| 150.0             | 3'-7"                       | 3'-7"   | 3'-7"                  | 3'-7"                                     | 0'-0"                       |
| 155.0             | 3'-7"                       | 3'-7"   | 3'-7"                  | 3'-7"                                     | 0'-0"                       |
| 160.0             | 3'-6"                       | 3'-6"   | 3'-6"                  | 3'-6"                                     | 0'-0"                       |

W/O STORM BARS

W/O STORM BARS

**\* 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 DESIGN LOAD.
- 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 INTERPOLATION LOADS MAY BE DETERMINED BY LINEAR INTERPOLATION BETWEEN END VALUES.



**Nautilus**  
Rolling Hurricane Abatement

|   |      |                      |
|---|------|----------------------|
| DRAWN BY:<br>M.C.V./L.G.  |      | DATE<br>12/03/09     |
| EXPERT SHUTTER SERVICES INC.<br>1626 S.W. BILTMORE STREET<br>PORT ST. LUCIE, FL 34984<br>PHONE: (800) 749-9056, FAX: (772) 871-0990 |      | DRAWING No<br>09-210 |
| REV. No   | DATE | DESCRIPTION          |
| 1   |      |                      |
| 2   |      |                      |

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**TILTECO INC.**

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

Signature: *Walter A. Tillit Jr.*  
P.E. SEAL/SIGNATURE/DATE

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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

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

**WALL MOUNT**

| DESIGN LOAD RANGE (p.s.f.) | SLAT SPAN RANGE |           |           |           |           |            |             |
|----------------------------|-----------------|-----------|-----------|-----------|-----------|------------|-------------|
|                            | 0'-4' †         | > 4'-5' † | > 5'-6' † | > 6'-7' † | > 7'-9' † | > 9'-12' † | > 12'-16' † |
| ≤ 30.0                     | 9"              | 9"        | 9"        | 9"        | 9"        | 9"         | 9"          |
| >31-40                     | 9"              | 9"        | 9"        | 9"        | 9"        | 9"         | 8"          |
| >41-60                     | 9"              | 9"        | 9"        | 9"        | 9"        | 9"         | 5 5/8"      |
| >61-80                     | 9"              | 9"        | 9"        | 9"        | 9"        | 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"        | -          | -           |

**TRAPPED MOUNT**

| DESIGN LOAD RANGE (p.s.f.) | SLAT SPAN RANGE |           |           |           |           |            |             |
|----------------------------|-----------------|-----------|-----------|-----------|-----------|------------|-------------|
|                            | 0'-4' †         | > 4'-5' † | > 5'-6' † | > 6'-7' † | > 7'-9' † | > 9'-12' † | > 12'-16' † |
| ≤ 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**

| DESIGN LOAD 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                     | E1              | E2 | E3        | E1 | E2        | E3 | E1        | E2 | E3        | E1 | E2         | E3 | E1          | E2 | E3          | E1     | E2     | E3     |        |
| >31-40                     | 9"              | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"         | 9" | 9"          | 9" | 9"          | 7"     | 7"     | 7"     | 5 5/8" |
| >41-60                     | 9"              | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"         | 9" | 9"          | 9" | 9"          | 7"     | 7"     | 6"     | 5 5/8" |
| >61-80                     | 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" |
| >81-105                    | 9"              | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"         | 9" | 9"          | 9" | 9"          | 5 5/8" | 5 5/8" | 5 5/8" | 5 5/8" |
| >106-120                   | 9"              | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"         | 9" | 9"          | 9" | 9"          | 6 3/4" | 6 3/4" | 6 3/4" | 5 5/8" |
| >121-140                   | 9"              | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"         | 9" | 9"          | 9" | 9"          | 8"     | 8"     | 8"     | 5 5/8" |
| >141-160                   | 9"              | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"        | 9" | 9"         | 9" | 9"          | 9" | 9"          | 7"     | 7"     | 6"     | 5 5/8" |

† NOTE: MAX. SLAT SPAN FOR A GIVEN DESIGN LOAD SHALL NEVER EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEETS 15 & 16.



**SLAT SPAN DEFINITION**

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
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DRAWN BY: M.C.V./L.G.  
DATE: 12/03/09

09-210  
DRAWING No

SHEET 17 OF 26

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

*[Signature]*

12/16/09

P.E. SEAL/SIGNATURE/DATE

**MAX. ANCHOR'S SPACING SCHEDULE Vb**  
 FOR A GIVEN PRODUCT MOUNTING TYPE, W/ 5/16"Ø TAPCON XL ANCHORS TO POURED CONCRETE WALL  
 OR GROUT FILLED CELL CONCRETE BLOCK WALL, DESIGN LOAD & SLAT SPAN RANGE

WALL MOUNT

| DESIGN LOAD 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"         | 7 1/2"      | 5 1/2"      |  |  |
| >31-40                     | 8"              | 8"        | 8"        | 8"        | 8"        | 8"         | 6"          | 4"          |  |  |
| >41-60                     | 8"              | 8"        | 8"        | 8"        | 7"        | 4 1/2"     | 3 3/4"      | 3 3/4"      |  |  |
| >61-80                     | 8"              | 8"        | 8"        | 8"        | 5"        | 3 3/4"     | 3 3/4"      | -           |  |  |
| >81-105                    | 8"              | 8"        | 8"        | 8"        | 4 1/2"    | 3 3/4"     | -           | -           |  |  |
| >106-120                   | 8"              | 7 1/2"    | 6"        | 4 1/2"    | 4"        | 3 3/4"     | -           | -           |  |  |
| >121-140                   | 8"              | 6"        | 5"        | 4"        | 4"        | -          | -           | -           |  |  |
| >141-160                   | 8"              | 5"        | 4"        | 4"        | 4"        | -          | -           | -           |  |  |

TRAPPED MOUNT

| DESIGN LOAD 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"         | 6"          | -           |  |  |
| >41-60                     | 6"              | 6"        | 6"        | 6"        | 6"        | 5 1/2"     | -           | -           |  |  |
| >61-80                     | 6"              | 6"        | 6"        | 6"        | 6"        | 5 1/2"     | -           | -           |  |  |
| >81-105                    | 6"              | 6"        | 6"        | 6"        | 5 1/2"    | -          | -           | -           |  |  |
| >106-120                   | 6"              | 6"        | 6"        | 5"        | 5 1/2"    | -          | -           | -           |  |  |
| >121-140                   | 6"              | 6"        | 5 3/4"    | 4 1/2"    | -         | -          | -           | -           |  |  |
| >141-160                   | 6"              | 6"        | 5"        | 4 1/2"    | -         | -          | -           | -           |  |  |

BUILD-OUT MOUNT

| DESIGN LOAD 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) | (E1) | (E2) | (E3) |    |    |    |
| ≤ 30.0                     | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >31-40                     | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >41-60                     | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >61-80                     | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >81-105                    | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >106-120                   | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >121-140                   | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |
| >141-160                   | 6"              | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"        | 6"   | 6"   | 6"         | 6"   | 6"   | 6"          | 6"   | 6"   | 6"          | 6"   | 6"   | 6"   | 6"   | 6"   | 6" | 6" | 6" |

† NOTE: MAX. SLAT SPAN FOR A GIVEN DESIGN LOAD SHALL NEVER EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHART ON SHEETS 15 & 16.



SLAT SPAN DEFINITION

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)



**Nautilus**  
 Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**

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SHEET 18 OF 26



**SCHEDULE Vc:**  
**Vx FORCES (Lb/FT) & Vy FORCES (Lb/FT) ACTING AT JAMBS FOR A DESIGN LOAD RANGE, SLAT SPAN RANGE FOR POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK WALL BUILDINGS \***

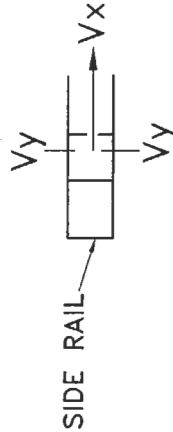
(USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD)

| DESIGN LOAD RANGE (p.s.f.) | SLAT SPAN RANGE |     |         |     |         |     |         |     |         |     |          |     |           |     |           |     |
|----------------------------|-----------------|-----|---------|-----|---------|-----|---------|-----|---------|-----|----------|-----|-----------|-----|-----------|-----|
|                            | 0'-4'           |     | > 4'-5' |     | > 5'-6' |     | > 6'-7' |     | > 7'-9' |     | > 9'-12' |     | > 12'-16' |     | > 16'-20' |     |
|                            | Vx              | Vy  | Vx      | Vy  | Vx      | Vy  | Vx      | Vy  | Vx      | Vy  | Vx       | Vy  | Vx        | Vy  | Vx        | Vy  |
| ≤ 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 Vx AND Vy FORCES IN POUNDS PER UNIT FOOT OF PRODUCT HEIGHT AT BOTH JAMBS. SEE THIS SHEET FOR Vx & Vy VALUES.



FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

**Nautilus**  
Rolling Hurricane Abatement

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

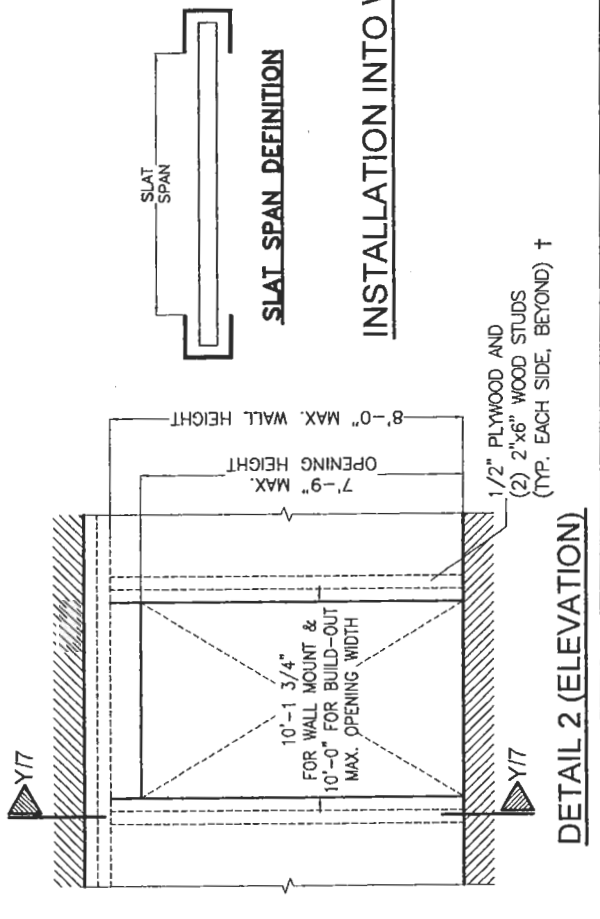
FOR A GIVEN MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

| CHART Ib1  |                             | USE W/<br>Ib1                               | CHART Ic1   |        |
|--|-----------------------------|---|---|--------|
| USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD |                             | MIN. SLAT SPAN "LMIN." (ft)                 | USE MAXIMUM POSITIVE LOAD VALUE                                 |        |
| 5/16"Ø TAPCON XL ANCHOR                              |                             |   | REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) |        |
| DESIGN LOAD (p.s.f.)                                 | MAX. SLAT SPAN "LMAX." (ft) |   | W/O STORM BARS  |        |
|  | WALL MOUNT (SEE NOTES A)    | BUILD-OUT MOUNT W/ (E) & (E3) (SEE NOTES A) |   |        |
| 30.0 *   | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |
| 35.0 **  | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |
| 40.0 **  | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |
| 45.0 ***   | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |
| 50.0 ***   | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |
| 55.0 ***   | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |
| 60.0 ***   | 10'-0"                      | 10'-0"                                      | 10'-0"  | 7 1/2" |

**SLAT PERFORMANCE CHART III1: (ONLY VALID FOR 1/8" SLIP)**

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

| CHART IIIb1  |                             | USE W/<br>IIIb1                             | CHART IIIc1   |    |
|--|-----------------------------|---|---|----|
| USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD |                             | MIN. SLAT SPAN "LMIN." (ft)                 | USE MAXIMUM POSITIVE LOAD VALUE                                 |    |
| 5/16"Ø TAPCON XL ANCHOR                              |                             |   | REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) |    |
| DESIGN LOAD (psf)                                    | MAX. SLAT SPAN "LMAX." (FT) |   | W/O STORM BARS  |    |
|  | WALL MOUNT (SEE NOTES A)    | BUILD-OUT MOUNT W/ (E) & (E3) (SEE NOTES A) |   |    |
| 30.0 *   | 7'-6"                       | 7'-6"                                       | 6'-7"   | 5" |
| 35.0 **  | 7'-2"                       | 7'-2"                                       | 6'-4"   | 5" |
| 40.0 **  | 6'-9"                       | 6'-9"                                       | 6'-1"   | 5" |
| 45.0 ***   | 6'-8"                       | 6'-8"                                       | 5'-11"  | 5" |
| 50.0 ***   | 6'-5"                       | 6'-5"                                       | 5'-9"   | 5" |
| 55.0 ***   | 6'-3"                       | 6'-3"                                       | 5'-7"   | 5" |
| 60.0 ***   | 6'-1"                       | 6'-1"                                       | 5'-5"   | 5" |



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

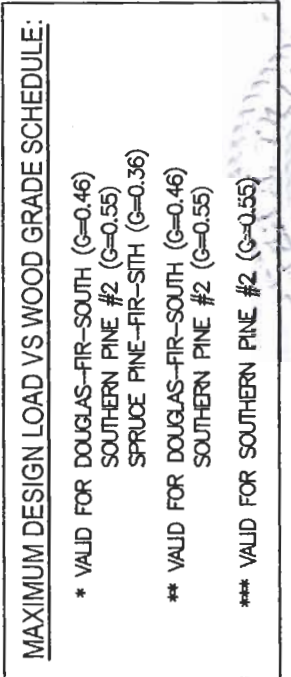
FOR A GIVEN MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND PRODUCT MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

| CHART IIb1   |                                      | USE W/<br>IIb1                              | CHART IIc1  |        |
|--|--------------------------------------|---|---|--------|
| USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD |                                      | MIN. SLAT SPAN "LMIN." (ft)                 | USE MAXIMUM POSITIVE LOAD VALUE                                 |        |
| 5/16"Ø TAPCON XL ANCHOR                              |                                      |   | REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) |        |
| DESIGN LOAD (p.s.f.)                                 | REQUIRED MAX. SLAT SPAN "LMAX." (ft) |   | W/O STORM BARS  |        |
|  | WALL MOUNT (SEE NOTES A)             | BUILD-OUT MOUNT W/ (E) & (E3) (SEE NOTES A) |   |        |
| 30.0 *   | 8'-3"                                | 8'-3"                                       | 7'-7"   | 5 1/8" |
| 35.0 **  | 7'-9"                                | 7'-9"                                       | 7'-3"   | 5 1/8" |
| 40.0 **  | 7'-7"                                | 7'-7"                                       | 7'-0"   | 5 1/8" |
| 45.0 ***   | 7'-4"                                | 7'-4"                                       | 6'-9"   | 5 1/8" |
| 50.0 ***   | 7'-3"                                | 7'-3"                                       | 6'-6"   | 5 1/8" |
| 55.0 ***   | 7'-3"                                | 7'-3"                                       | 6'-4"   | 5 1/8" |
| 60.0 ***   | 7'-3"                                | 7'-3"                                       | 6'-2"   | 5 1/8" |

**SLAT PERFORMANCE CHART IV: (LESS THAN 1/8" SLIP)**

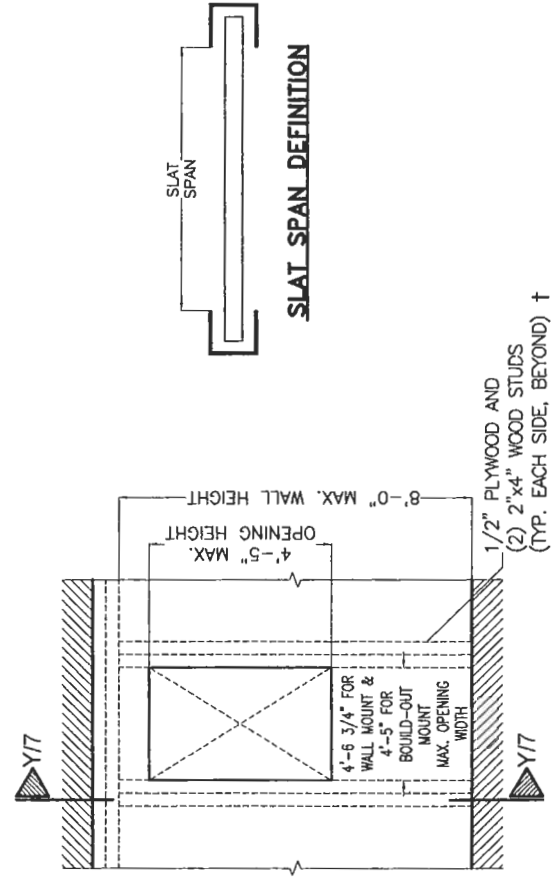
FOR A GIVEN DESIGN LOAD (p.s.f.) PRODUCT MOUNT CONDITION INCLUDING ANCHOR TYPE AND FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

| 5/16"Ø TAPCON XL ANCHOR                              |   | USE MAXIMUM POSITIVE LOAD VALUE                                 |
|--|---|---|
| USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD |   | REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) |
| DESIGN LOAD (psf)                                    | MIN. SLAT SPAN "LMIN." (FT)                                 |   |
|  | WALL, TRAPPED & BUILD-OUT MOUNT W/ (E) & (E3) (SEE NOTES A) | W/O STORM BARS  |
| 30.0 *   | 6'-6"   | 0'-0"   |
| 35.0 **  | 6'-3"   | 0'-0"   |
| 40.0 **  | 6'-0"   | 0'-0"   |
| 45.0 ***   | 5'-10"  | 0'-0"   |
| 50.0 ***   | 5'-9"   | 0'-0"   |
| 55.0 ***   | 5'-7"   | 0'-0"   |
| 60.0 ***   | 5'-5"   | 0'-0"   |



**MAXIMUM SLAT SPAN AND MINIMUM SEPARATION TO GLASS FOR A GIVEN WOOD GRADE, DESIGN LOAD (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**

| WOOD GRADE                    | USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD |   | MIN. SLAT SPAN "LMIN." (FT) | USE MAXIMUM POSITIVE LOAD VALUE |
|-------------------------------|--|---|-----------------------------|---------------------------------|
|                               | MAX. SLAT SPAN "LMAX." (ft)                          | REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in) |                             |                                 |
| SOUTHERN PINE #2 (G=0.55)     | 4'-5"  | 4'-5"   | 0'-0"                       | 5"                              |
| DOUGLAS-FIR-SOUTH (G=0.46)    | 4'-5"  | 4'-5"   | 0'-0"                       | 5"                              |
| SPRUCE PINE-FIR-SITH (G=0.36) | 4'-5"  | 4'-5"   | 0'-0"                       | 5"                              |



**DETAIL 1 (ELEVATION)**

**Δ NOTES:**

1. 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 DESIGN LOAD.

†: 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".

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

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SHEET 20 OF 26

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

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

| WOOD GRADE                        | MAXIMUM DESIGN LOAD RANGE (p.s.f.) | SLAT SPAN RANGE  |    |
|-----------------------------------|------------------------------------|------------------|----|
|                                   |                                    | 0'-0" to 4'-5" * | 6" |
| SOUTHERN PINE #2<br>(G=0.55)      | ≤ 30.0                             | 6"               | 6" |
|                                   | 40                                 | 6"               | 6" |
|                                   | 50                                 | 6"               | 6" |
| DOUGLAS-FIR-SOUTH<br>(G=0.46)     | 60                                 | 6"               | 6" |
|                                   | ≤ 30.0                             | 6"               | 6" |
| SPRUCE PINE-FIR-SOUTH<br>(G=0.36) | 40                                 | 6"               | 6" |
|                                   | ≤ 30.0                             | 6"               | 6" |

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


| WOOD GRADE                        | MAXIMUM DESIGN LOAD 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' * |
| SOUTHERN PINE #2<br>(G=0.55)      | ≤ 30.0                             | 6"              | 6"           | 6"           | 6"           | 6"           | 6"            |
|                                   | 40                                 | 6"              | 6"           | 6"           | 6"           | 6"           | 4 3/4"        |
|                                   | 50                                 | 6"              | 6"           | 6"           | 6"           | 4 3/4"       | 3 1/2"        |
| DOUGLAS-FIR-SOUTH<br>(G=0.46)     | 60                                 | 6"              | 6"           | 5 3/4"       | 5 1/4"       | 3 3/4"       | 3"            |
|                                   | ≤ 30.0                             | 6"              | 6"           | 6"           | 6"           | 6"           | 6"            |
| SPRUCE PINE-FIR-SOUTH<br>(G=0.36) | 40                                 | 6"              | 6"           | 6"           | 5 1/4"       | 5 1/4"       | 4 1/4"        |
|                                   | ≤ 30.0                             | 6"              | 6"           | 6"           | 6"           | 6"           | 5 1/4"        |

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

| WOOD GRADE                        | MAXIMUM DESIGN LOAD RANGE (p.s.f.) | SLAT SPAN RANGE |           |           |           |           |            |        |
|-----------------------------------|------------------------------------|-----------------|-----------|-----------|-----------|-----------|------------|--------|
|                                   |                                    | 0'-4" *         | > 4'-5" * | > 5'-6" * | > 6'-7" * | > 7'-9" * | > 9'-10" * |        |
| SOUTHERN PINE #2<br>(G=0.55)      | ≤ 30.0                             | 6"              | 6"        | 6"        | 6"        | 6"        | 6"         | 6"     |
|                                   | 40                                 | 6"              | 6"        | 6"        | 6"        | 6"        | 5 1/4"     | 5 1/4" |
|                                   | 50                                 | 6"              | 6"        | 6"        | 6"        | 5 1/4"    | 4"         | 4"     |
| DOUGLAS-FIR-SOUTH<br>(G=0.46)     | 60                                 | 6"              | 6"        | 6"        | 5 3/4"    | 4"        | 3"         | 3"     |
|                                   | ≤ 30.0                             | 6"              | 6"        | 6"        | 6"        | 6"        | 6"         | 6"     |
| SPRUCE PINE-FIR-SOUTH<br>(G=0.36) | 40                                 | 6"              | 6"        | 6"        | 5 1/2"    | 5 1/2"    | 4 1/2"     | 4 1/2" |
|                                   | ≤ 30.0                             | 6"              | 6"        | 6"        | 6"        | 6"        | 5 1/4"     | 5"     |

**\* NOTE:**  
MAX. SPAN FOR SLAT FOR A GIVEN DESIGN LOAD SHALL **NEVER** EXCEED MAX. SLAT SPAN INDICATED ON SLAT PERFORMANCE CHARTS ON SHEET 20.

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)



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TABLE 1

MAX. ALLOWABLE STORM BAR SPAN (ft) FOR A GIVEN DESIGN LOAD

(p.s.f.), & A GIVEN STORM BAR SPACING (ft) \*\*

| DESIGN LOAD<br>(p.s.f.) | 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" | 11'-0" | 6.667' |
| 35.0                    | 11'-0"                 | 11'-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" | 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" | 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" | 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" | 11'-0" | 11'-0" |
| 60.0                    | 11'-0"                 | 11'-0" | 11'-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" | 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" | 11'-0" | 11'-0" | 11'-0" |
| 75.0                    | 11'-0"                 | 11'-0" | 11'-0" | 11'-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" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 85.0                    | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-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" | 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" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 100.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 105.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 110.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 115.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 120.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 125.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 130.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 135.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 140.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 145.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 150.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 155.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |
| 160.0                   | 11'-0"                 | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" | 11'-0" |

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

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

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

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BILTMORE STREET  
PORT ST. LUCIE, FL 34984  
PHONE: (800) 749-9056 . FAX: (772) 871-0990

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12/03/09 DATE  
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SHEET 22 OF 26

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**TILTECO INC.**  
TILLIT TESTING & ENGINEERING COMPANY  
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EB-0006719  
WALTER A. TILLIT Jr., P.E.  
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P.E. SEAL/SIGNATURE/DATE

12/16/09

TABLE 2

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

| DESIGN LOAD (p.s.f.) | 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,D | 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,C   | A       | A       | A       | A       |  |
| 100.0                | A,B,C,D                    | A,B,C,D | A,B,C   | 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       | 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   | 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       | 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       | A       |  |
| 140.0                | A,B,C,D                    | A,B,C   | A,B     | A       | A       | A       | A       | A       | A       | A       |  |
| 145.0                | A,B,C,D                    | A,B,C   | A,B     | A       | A       | A       | A       | A       | A       | A       |  |
| 150.0                | A,B,C,D                    | A,B,C   | A       | A       | A       | A       | A       | A       | A       | A       |  |
| 155.0                | A,B,C                      | A,B     | A       | A       | A       | A       | A       | A       | A       | A       |  |
| 160.0                | A,B,C                      | A,B     | A       | A       | A       | 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 DESIGN LOAD (p.s.f.), & STORM BAR SPACING (ft)


| DESIGN LOAD (p.s.f.) | 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,C   | A       | A       | A       | A     | A     | A      |  |
| 65.0                 | A,B,C,D                    | A,B,C   | A,B     | A       | A       | A       | A       | A     | A     | A      |  |
| 70.0                 | A,B,C,D                    | A,B,C   | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 75.0                 | A,B,C,D                    | A,B,C   | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 80.0                 | A,B,C                      | A,B     | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 85.0                 | A,B,C                      | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 90.0                 | A,B,C                      | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 95.0                 | A,B,C                      | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 100.0                | A,B,C                      | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 105.0                | A,B                        | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 110.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 115.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 120.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 125.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 130.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 135.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 140.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 145.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 150.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 155.0                | A                          | A       | A       | A       | A       | A       | A       | A     | A     | A      |  |
| 160.0                | A                          | A       | A       | A       | A       | A       | A       | A     | 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

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FLORIDA BUILDING CODE (High Velocity Hurricane Zone)



**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BILTMORE STREET  
PORT ST. LUCIE, FL 34984  
PHONE: (800) 749-9056, FAX: (772) 871-0990



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

| REV. No. | DESCRIPTION | DATE | REV. No. | DESCRIPTION | DATE |
|----------|-------------|------|----------|-------------|------|
| 1        |             |      | 4        |             |      |
| 2        |             |      | 5        |             |      |

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12/03/09  
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09-210  
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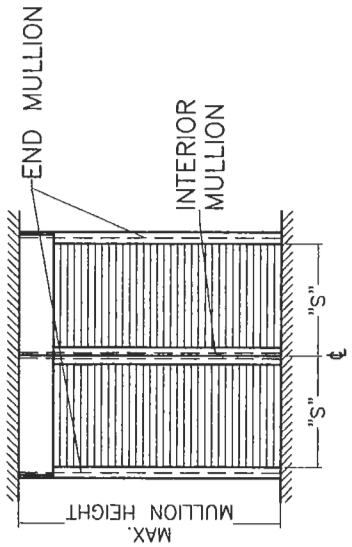
SHEET 23 OF 26

**SCHEDULE 1a**

**FLOOR TO CEILING (TRAPPED) MOUNTING**

**MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (p.s.f.), & A MAX. MULLION SPACING (ft) \***

| DESIGN LOAD (p.s.f.) | 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                 | 7'-10"                    | 9'-8"    | 7'-3"               | 12'-0"   | 9'-4"                | 10'-7"   | 8'-0"               | 12'-6"   | 9'-8"                                    | 7'-3"    | 7'-6"               | 12'-6"   |
| 35.0                 | 7'-4"                     | 9'-3"    | 6'-9"               | 11'-5"   | 8'-8"                | 10'-0"   | 7'-7"               | 12'-6"   | 8'-11"                                   | 8'-11"   | 6'-11"              | 12'-6"   |
| 40.0                 | 6'-10"                    | 8'-10"   | 6'-4"               | 10'-11"  | 8'-1"                | 9'-7"    | 7'-3"               | 12'-6"   | 8'-5"                                    | 7'-3"    | 6'-6"               | 12'-6"   |
| 45.0                 | 6'-6"                     | 8'-6"    | 6'-6"               | 10'-6"   | 7'-8"                | 9'-3"    | 6'-11"              | 12'-6"   | 7'-11"                                   | 6'-2"    | 6'-2"               | 12'-6"   |
| 50.0                 | 6'-2"                     | 8'-2"    | 6'-0"               | 9'-11"   | 7'-4"                | 8'-11"   | 6'-7"               | 12'-6"   | 7'-4"                                    | 6'-7"    | 5'-11"              | 12'-6"   |
| 55.0                 | 5'-11"                    | 7'-11"   | 5'-9"               | 9'-0"    | 6'-8"                | 8'-7"    | 6'-3"               | 12'-4"   | 6'-8"                                    | 6'-3"    | 5'-7"               | 12'-6"   |
| 60.0                 | 5'-9"                     | 7'-9"    | 5'-6"               | 8'-6"    | 6'-4"                | 8'-6"    | 6'-2"               | 12'-0"   | 6'-4"                                    | 6'-2"    | 5'-6"               | 12'-6"   |
| 65.0                 | 5'-9"                     | 7'-9"    | 5'-4"               | 8'-4"    | 6'-4"                | 8'-4"    | 6'-2"               | 11'-10"  | 6'-4"                                    | 6'-2"    | 5'-6"               | 12'-6"   |
| 70.0                 | 5'-9"                     | 7'-8"    | 5'-4"               | 8'-2"    | 6'-3"                | 8'-2"    | 6'-2"               | 11'-9"   | 6'-3"                                    | 6'-2"    | 5'-6"               | 12'-6"   |
| 75.0                 | 5'-9"                     | 7'-7"    | 5'-4"               | 8'-0"    | 6'-3"                | 8'-0"    | 6'-2"               | 11'-7"   | 6'-3"                                    | 6'-2"    | 5'-6"               | 12'-6"   |
| 80.0                 | 5'-9"                     | 7'-7"    | 5'-4"               | 7'-10"   | 6'-3"                | 7'-10"   | 6'-2"               | 11'-6"   | 6'-3"                                    | 6'-2"    | 5'-6"               | 12'-4"   |
| 85.0                 | 5'-9"                     | 7'-7"    | 5'-4"               | 7'-9"    | 6'-3"                | 7'-9"    | 6'-2"               | 11'-5"   | 6'-3"                                    | 6'-2"    | 5'-6"               | 12'-3    |
| 90.0                 | 5'-10"                    | 7'-7"    | 5'-5"               | 7'-9"    | 6'-4"                | 7'-9"    | 6'-3"               | 11'-5"   | 6'-4"                                    | 6'-3"    | 5'-7"               | 12'-3    |
| 95.0                 | 5'-10"                    | 7'-7"    | 5'-6"               | 7'-9"    | 6'-5"                | 7'-9"    | 6'-4"               | 11'-5"   | 6'-5"                                    | 6'-4"    | 5'-8"               | 12'-3    |
| 100.0                | 5'-11"                    | 7'-7"    | 5'-7"               | 7'-9"    | 6'-6"                | 7'-9"    | 6'-4"               | 11'-5"   | 6'-6"                                    | 6'-4"    | 5'-9"               | 12'-3    |
| 105.0                | 6'-0"                     | 7'-7"    | 5'-7"               | 7'-9"    | 6'-7"                | 7'-9"    | 6'-5"               | 11'-5"   | 6'-7"                                    | 6'-5"    | 5'-9"               | 12'-3    |
| 110.0                | 6'-0"                     | 7'-7"    | 5'-8"               | 7'-9"    | 6'-8"                | 7'-9"    | 6'-6"               | 11'-5"   | 6'-8"                                    | 6'-6"    | 5'-10"              | 12'-3    |
| 115.0                | 6'-1"                     | 7'-7"    | 5'-9"               | 7'-9"    | 6'-9"                | 7'-9"    | 6'-7"               | 11'-5"   | 6'-9"                                    | 6'-7"    | 5'-11"              | 12'-3    |
| 120.0                | 6'-1"                     | 7'-6"    | 5'-9"               | 7'-9"    | 6'-10"               | 7'-9"    | 6'-7"               | 11'-5"   | 6'-10"                                   | 6'-7"    | 6'-0"               | 12'-3    |
| 125.0                | 6'-2"                     | 7'-6"    | 5'-10"              | 7'-9"    | 6'-10"               | 7'-10"   | 6'-9"               | 11'-5"   | 6'-10"                                   | 6'-9"    | 6'-1"               | 12'-3    |
| 130.0                | 6'-3"                     | 7'-6"    | 5'-10"              | 7'-9"    | 7'-0"                | 7'-10"   | 6'-9"               | 11'-5"   | 7'-0"                                    | 6'-9"    | 6'-1"               | 12'-3    |
| 135.0                | 6'-4"                     | 7'-6"    | 5'-11"              | 7'-10"   | 7'-2"                | 7'-10"   | 6'-10"              | 11'-5"   | 7'-2"                                    | 6'-10"   | 6'-2"               | 12'-3    |
| 140.0                | 6'-4"                     | 7'-7"    | 6'-0"               | 7'-10"   | 7'-3"                | 7'-10"   | 6'-11"              | 11'-5"   | 7'-3"                                    | 6'-11"   | 6'-3"               | 12'-3    |
| 145.0                | 6'-5"                     | 7'-6"    | 6'-0"               | 7'-9"    | 7'-4"                | 7'-9"    | 6'-11"              | 11'-5"   | 7'-4"                                    | 6'-11"   | 6'-3"               | 12'-3    |
| 150.0                | 6'-6"                     | 7'-7"    | 6'-1"               | 7'-9"    | 7'-5"                | 7'-9"    | 7'-0"               | 11'-5"   | 7'-5"                                    | 7'-0"    | 6'-4"               | 12'-3    |
| 155.0                | 6'-6"                     | 7'-7"    | 6'-2"               | 7'-9"    | 7'-6"                | 7'-9"    | 7'-1"               | 11'-5"   | 7'-6"                                    | 7'-1"    | 6'-5"               | 12'-3    |
| 160.0                | 6'-7"                     | 7'-6"    | 6'-2"               | 7'-9"    | 7'-7"                | 7'-9"    | 7'-2"               | 11'-5"   | 7'-7"                                    | 7'-2"    | 6'-6"               | 12'-3    |



**MULLION SPACING: "S"**

**SCHEDULE 2a**

**WALL MOUNTING**

**MAX. SPAN (FT) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (P.S.F.), & A MAX. MULLION SPACING (FT) \***

| DESIGN LOAD (p.s.f.) | 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                 | 7'-10"                    | 9'-8"    | 7'-3"               | 12'-0"   | 9'-4"                | 10'-7"   | 8'-0"               | 12'-6"   | 9'-4"                                    | 8'-0"    | 7'-6"               | 12'-6"   |
| 35.0                 | 7'-4"                     | 9'-3"    | 6'-9"               | 11'-5"   | 8'-8"                | 10'-0"   | 7'-7"               | 12'-6"   | 8'-8"                                    | 7'-7"    | 6'-11"              | 12'-6"   |
| 40.0                 | 6'-10"                    | 8'-10"   | 6'-4"               | 10'-11"  | 8'-1"                | 9'-7"    | 7'-3"               | 12'-6"   | 8'-1"                                    | 7'-3"    | 6'-6"               | 12'-6"   |
| 45.0                 | 6'-6"                     | 8'-6"    | 6'-6"               | 10'-6"   | 7'-8"                | 9'-3"    | 6'-11"              | 12'-6"   | 7'-8"                                    | 6'-11"   | 6'-2"               | 12'-6"   |
| 50.0                 | 6'-2"                     | 8'-2"    | 6'-0"               | 9'-11"   | 7'-4"                | 8'-11"   | 6'-7"               | 12'-6"   | 7'-4"                                    | 6'-3"    | 5'-11"              | 12'-6"   |
| 55.0                 | 5'-11"                    | 7'-11"   | 5'-9"               | 9'-10"   | 6'-8"                | 8'-7"    | 6'-3"               | 12'-4"   | 7'-0"                                    | 4'-10"   | 5'-7"               | 12'-6"   |
| 60.0                 | 5'-9"                     | 7'-9"    | 5'-6"               | 8'-6"    | 6'-4"                | 8'-6"    | 6'-2"               | 12'-0"   | 6'-10"                                   | 4'-8"    | 5'-6"               | 12'-6"   |
| 65.0                 | 5'-9"                     | 7'-9"    | 5'-4"               | 8'-4"    | 6'-4"                | 8'-4"    | 6'-2"               | 11'-10"  | 6'-10"                                   | 4'-8"    | 5'-6"               | 12'-6"   |
| 70.0                 | 5'-9"                     | 7'-8"    | 5'-4"               | 8'-2"    | 6'-3"                | 8'-2"    | 6'-2"               | 11'-9"   | 6'-10"                                   | 4'-8"    | 5'-6"               | 12'-6"   |
| 75.0                 | 5'-9"                     | 7'-7"    | 5'-4"               | 8'-0"    | 6'-3"                | 8'-0"    | 6'-2"               | 11'-7"   | 6'-10"                                   | 4'-8"    | 5'-6"               | 12'-6"   |
| 80.0                 | 5'-9"                     | 7'-7"    | 5'-4"               | 7'-10"   | 6'-3"                | 7'-10"   | 6'-2"               | 11'-6"   | 6'-10"                                   | 4'-8"    | 5'-6"               | 12'-6"   |
| 85.0                 | 5'-9"                     | 7'-7"    | 5'-4"               | 7'-9"    | 6'-3"                | 7'-9"    | 6'-2"               | 11'-5"   | 6'-10"                                   | 4'-8"    | 5'-6"               | 12'-5"   |
| 90.0                 | 5'-10"                    | 7'-7"    | 5'-5"               | 7'-9"    | 6'-4"                | 7'-9"    | 6'-3"               | 11'-5"   | 6'-11"                                   | 4'-8"    | 5'-7"               | 12'-3    |
| 95.0                 | 5'-10"                    | 7'-7"    | 5'-6"               | 7'-9"    | 6'-5"                | 7'-9"    | 6'-4"               | 11'-5"   | 6'-11"                                   | 4'-8"    | 5'-8"               | 12'-3    |
| 100.0                | 5'-11"                    | 7'-7"    | 5'-7"               | 7'-9"    | 6'-6"                | 7'-9"    | 6'-4"               | 11'-5"   | 7'-0"                                    | 5'-0"    | 5'-9"               | 12'-3    |
| 105.0                | 6'-0"                     | 7'-7"    | 5'-7"               | 7'-9"    | 6'-7"                | 7'-9"    | 6'-5"               | 11'-5"   | 7'-1"                                    | 5'-1"    | 5'-9"               | 12'-3    |
| 110.0                | 6'-0"                     | 7'-7"    | 5'-8"               | 7'-9"    | 6'-8"                | 7'-9"    | 6'-6"               | 11'-5"   | 7'-2"                                    | 5'-3"    | 5'-10"              | 12'-3    |
| 115.0                | 6'-1"                     | 7'-7"    | 5'-9"               | 7'-9"    | 6'-9"                | 7'-9"    | 6'-7"               | 11'-5"   | 7'-2"                                    | 5'-4"    | 5'-11"              | 12'-3    |
| 120.0                | 6'-1"                     | 7'-6"    | 5'-9"               | 7'-9"    | 6'-10"               | 7'-9"    | 6'-7"               | 11'-5"   | 7'-3"                                    | 5'-5"    | 6'-0"               | 12'-3    |
| 125.0                | 6'-2"                     | 7'-6"    | 5'-10"              | 7'-9"    | 6'-10"               | 7'-10"   | 6'-9"               | 11'-5"   | 7'-4"                                    | 5'-5"    | 6'-1"               | 12'-3    |
| 130.0                | 6'-3"                     | 7'-6"    | 5'-10"              | 7'-9"    | 7'-0"                | 7'-10"   | 6'-9"               | 11'-5"   | 7'-4"                                    | 5'-5"    | 6'-1"               | 12'-3    |
| 135.0                | 6'-4"                     | 7'-6"    | 5'-11"              | 7'-10"   | 7'-2"                | 7'-10"   | 6'-10"              | 11'-5"   | 7'-5"                                    | 5'-5"    | 6'-2"               | 12'-3    |
| 140.0                | 6'-4"                     | 7'-7"    | 6'-0"               | 7'-10"   | 7'-3"                | 7'-10"   | 6'-11"              | 11'-5"   | 7'-6"                                    | 5'-5"    | 6'-3"               | 12'-3    |
| 145.0                | 6'-5"                     | 7'-6"    | 6'-0"               | 7'-9"    | 7'-4"                | 7'-9"    | 6'-11"              | 11'-5"   | 7'-6"                                    | 5'-5"    | 6'-3"               | 12'-3    |
| 150.0                | 6'-6"                     | 7'-7"    | 6'-1"               | 7'-9"    | 7'-5"                | 7'-9"    | 7'-0"               | 11'-5"   | 7'-7"                                    | 5'-5"    | 6'-4"               | 12'-3    |
| 155.0                | 6'-6"                     | 7'-7"    | 6'-2"               | 7'-9"    | 7'-6"                | 7'-9"    | 7'-1"               | 11'-5"   | 7'-8"                                    | 5'-5"    | 6'-5"               | 12'-3    |
| 160.0                | 6'-7"                     | 7'-6"    | 6'-2"               | 7'-9"    | 7'-7"                | 7'-9"    | 7'-2"               | 11'-5"   | 7'-9"                                    | 5'-5"    | 6'-6"               | 12'-3    |

\* 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.

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BALTIMORE STREET  
PORT ST. LUCIE, FL. 34984  
PHONE: (800) 749-9056, FAX: (772) 871-0990

REV. No. 1, 2, 3, 4, 5  
DATE, DESCRIPTION, REV. No., DATE, DESCRIPTION

DRAWN BY: M.C.V./L.G.  
DATE: 12/03/09  
DRAWING No: 09-210  
SHEET 24 OF 26

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EB-0006719  
WALTER A. TILIT Jr., P.E.  
FLORIDA Lic. # 44167

P.E. SEAL/SIGNATURE/DATE

SCHEDULE 1b

FLOOR TO CEILING (TRAPPED) MOUNTING MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (p.s.f.) & A 12'-0" MAX. MULLION SPACING (ft) \*

| DESIGN LOAD (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 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) †                     | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † |
| 30.0                 | 12'-0"                         | 11'-7"                    | 11'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               | 12'-6"               |
| 35.0                 | 12'-0"                         | 10'-7"                    | 10'-11"              | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               | 12'-6"               |
| 40.0                 | 12'-0"                         | 9'-10"                    | 10'-5"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               | 12'-6"               |
| 45.0                 | 12'-0"                         | 9'-3"                     | 10'-1"               | 12'-5"               | 12'-5"               | 12'-5"               | 12'-5"               | 12'-5"               | 12'-5"               | 12'-5"                                   | 12'-5"               | 12'-5"               | 12'-5"               |
| 50.0                 | 12'-0"                         | 8'-9"                     | 9'-8"                | 12'-0"               | 12'-0"               | 12'-0"               | 12'-0"               | 12'-0"               | 12'-0"               | 12'-0"                                   | 12'-0"               | 12'-0"               | 12'-0"               |
| 55.0                 | 12'-0"                         | 8'-4"                     | 9'-5"                | 11'-8"               | 11'-8"               | 11'-8"               | 11'-8"               | 11'-8"               | 11'-8"               | 11'-8"                                   | 11'-8"               | 11'-8"               | 11'-8"               |
| 60.0                 | 12'-0"                         | 8'-0"                     | 9'-2"                | 11'-4"               | 11'-4"               | 11'-4"               | 11'-4"               | 11'-4"               | 11'-4"               | 11'-4"                                   | 11'-4"               | 11'-4"               | 11'-4"               |
| 65.0                 | 12'-0"                         | 7'-8"                     | 8'-11"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"                                   | 10'-9"               | 10'-9"               | 10'-9"               |
| 70.0                 | 12'-0"                         | 7'-4"                     | 8'-8"                | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"               | 10'-9"                                   | 10'-9"               | 10'-9"               | 10'-9"               |
| 75.0                 | 12'-0"                         | 7'-1"                     | 8'-6"                | 10'-6"               | 10'-6"               | 10'-6"               | 10'-6"               | 10'-6"               | 10'-6"               | 10'-6"                                   | 10'-6"               | 10'-6"               | 10'-6"               |
| 80.0                 | 12'-0"                         | 6'-11"                    | 8'-4"                | 10'-3"               | 10'-3"               | 10'-3"               | 10'-3"               | 10'-3"               | 10'-3"               | 10'-3"                                   | 10'-3"               | 10'-3"               | 10'-3"               |
| 85.0                 | 12'-0"                         | 6'-6"                     | 8'-2"                | 9'-9"                | 9'-9"                | 9'-9"                | 9'-9"                | 9'-9"                | 9'-9"                | 9'-9"                                    | 9'-9"                | 9'-9"                | 9'-9"                |
| 90.0                 | 12'-0"                         | 6'-6"                     | 8'-0"                | 9'-2"                | 9'-2"                | 9'-2"                | 9'-2"                | 9'-2"                | 9'-2"                | 9'-2"                                    | 9'-2"                | 9'-2"                | 9'-2"                |
| 95.0                 | 12'-0"                         | 6'-4"                     | 7'-10"               | 8'-8"                | 8'-8"                | 8'-8"                | 8'-8"                | 8'-8"                | 8'-8"                | 8'-8"                                    | 8'-8"                | 8'-8"                | 8'-8"                |
| 100.0                | 12'-0"                         | 6'-2"                     | 7'-8"                | 8'-3"                | 8'-3"                | 8'-3"                | 8'-3"                | 8'-3"                | 8'-3"                | 8'-3"                                    | 8'-3"                | 8'-3"                | 8'-3"                |
| 105.0                | 12'-0"                         | 6'-0"                     | 7'-7"                | 7'-10"               | 7'-10"               | 7'-10"               | 7'-10"               | 7'-10"               | 7'-10"               | 7'-10"                                   | 7'-10"               | 7'-10"               | 7'-10"               |

SCHEDULE 2b

WALL MOUNTING MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (p.s.f.) & A 12'-0" MAX. MULLION SPACING (ft) \*

| DESIGN LOAD (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 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) †                     | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † |
| 30.0                 | 12'-0"                         | 9'-9"                     | 11'-6"               | 9'-9"                | 12'-6"               | 9'-9"                | 12'-6"               | 9'-9"                | 12'-6"               | 9'-9"                                    | 12'-6"               | 9'-9"                | 12'-6"               |
| 35.0                 | 12'-0"                         | 9'-2"                     | 10'-11"              | 9'-2"                | 12'-6"               | 9'-2"                | 12'-6"               | 9'-2"                | 12'-6"               | 9'-2"                                    | 12'-6"               | 9'-2"                | 12'-6"               |
| 40.0                 | 12'-0"                         | 8'-9"                     | 10'-5"               | 8'-9"                | 12'-6"               | 8'-9"                | 12'-6"               | 8'-9"                | 12'-6"               | 8'-9"                                    | 12'-6"               | 8'-9"                | 12'-6"               |
| 45.0                 | 12'-0"                         | 8'-4"                     | 10'-1"               | 8'-4"                | 12'-5"               | 8'-4"                | 12'-5"               | 8'-4"                | 12'-5"               | 8'-4"                                    | 12'-5"               | 8'-4"                | 12'-5"               |
| 50.0                 | 12'-0"                         | 8'-1"                     | 9'-8"                | 8'-1"                | 12'-0"               | 8'-1"                | 12'-0"               | 8'-1"                | 12'-0"               | 8'-1"                                    | 12'-0"               | 8'-1"                | 12'-0"               |
| 55.0                 | 12'-0"                         | 7'-10"                    | 9'-5"                | 7'-10"               | 11'-4"               | 7'-10"               | 11'-4"               | 7'-10"               | 11'-4"               | 7'-10"                                   | 11'-4"               | 7'-10"               | 11'-4"               |
| 60.0                 | 12'-0"                         | 7'-6"                     | 9'-2"                | 7'-6"                | 11'-0"               | 7'-6"                | 11'-0"               | 7'-6"                | 11'-0"               | 7'-6"                                    | 11'-0"               | 7'-6"                | 11'-0"               |
| 65.0                 | 12'-0"                         | 7'-2"                     | 8'-11"               | 7'-2"                | 10'-9"               | 7'-2"                | 10'-9"               | 7'-2"                | 10'-9"               | 7'-2"                                    | 10'-9"               | 7'-2"                | 10'-9"               |
| 70.0                 | 12'-0"                         | 6'-11"                    | 8'-8"                | 6'-11"               | 10'-9"               | 6'-11"               | 10'-9"               | 6'-11"               | 10'-9"               | 6'-11"                                   | 10'-9"               | 6'-11"               | 10'-9"               |
| 75.0                 | 12'-0"                         | 6'-8"                     | 8'-6"                | 6'-8"                | 10'-6"               | 6'-8"                | 10'-6"               | 6'-8"                | 10'-6"               | 6'-8"                                    | 10'-6"               | 6'-8"                | 10'-6"               |
| 80.0                 | 12'-0"                         | 6'-5"                     | 8'-4"                | 6'-5"                | 10'-3"               | 6'-5"                | 10'-3"               | 6'-5"                | 10'-3"               | 6'-5"                                    | 10'-3"               | 6'-5"                | 10'-3"               |
| 85.0                 | 12'-0"                         | 6'-3"                     | 8'-2"                | 6'-3"                | 10'-1"               | 6'-3"                | 10'-1"               | 6'-3"                | 10'-1"               | 6'-3"                                    | 10'-1"               | 6'-3"                | 10'-1"               |
| 90.0                 | 12'-0"                         | 6'-1"                     | 8'-0"                | 6'-1"                | 9'-11"               | 6'-1"                | 9'-11"               | 6'-1"                | 9'-11"               | 6'-1"                                    | 9'-11"               | 6'-1"                | 9'-11"               |
| 95.0                 | 12'-0"                         | 5'-11"                    | 7'-10"               | 5'-11"               | 9'-8"                | 5'-11"               | 9'-8"                | 5'-11"               | 9'-8"                | 5'-11"                                   | 9'-8"                | 5'-11"               | 9'-8"                |
| 100.0                | 12'-0"                         | 5'-9"                     | 7'-8"                | 5'-9"                | 9'-7"                | 5'-9"                | 9'-7"                | 5'-9"                | 9'-7"                | 5'-9"                                    | 9'-7"                | 5'-9"                | 9'-7"                |
| 105.0                | 12'-0"                         | 5'-8"                     | 7'-7"                | 5'-8"                | 8'-8"                | 5'-8"                | 8'-8"                | 5'-8"                | 8'-8"                | 5'-8"                                    | 8'-8"                | 5'-8"                | 8'-8"                |

SCHEDULE 1b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)

FLOOR TO CEILING (TRAPPED) MOUNTING MAX. SPAN (ft) FOR END & INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (p.s.f.) AND FOR 12'-0" (CASE I) & 8'-0" (CASE II) MAX. MULLION SPACING (ft) \*

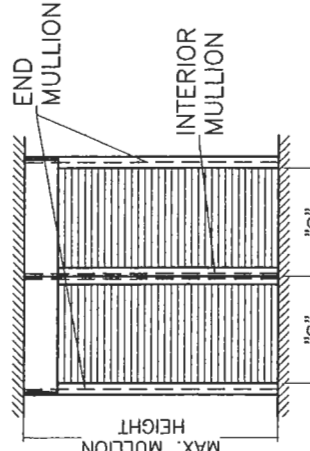
| INSTALLATION CASES | DESIGN LOAD (p.s.f.) | MAXIMUM MULLION SPACING (ft) * | MAXIMUM MULLION SPAN (ft)  |                      |                      |                      |                            |                      |                      |                      |  |                      |                      |                      |
|--------------------|----------------------|--------------------------------|----------------------------|----------------------|----------------------|----------------------|----------------------------|----------------------|----------------------|----------------------|--|----------------------|----------------------|----------------------|
|                    |                      |                                | ⓐ 4"x6"x1/4" THICK MULLION |                      |                      |                      | ⓑ 4"x8"x1/4" THICK MULLION |                      |                      |                      | ⓒ 2"x7"x1/4" THICK (3/8" FLANGE) MULLION |                      |                      |                      |
|                    |                      |                                | ORIENTATION #1 (⊕) †       | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) †       | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) †                     | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † |
| CASE I             | 30.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 35.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 40.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 45.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 50.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 55.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
| CASE Ia            | 30.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 35.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 40.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 45.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 50.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 55.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
| CASE II            | 30.0                 | 8'-0"                          | 9'-0"                      | 9'-0"                | 9'-0"                | 9'-0"                | 9'-0"                      | 9'-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"                      | 9'-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"                      | 9'-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"                      | 9'-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"                      | 9'-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"                      | 9'-0"                | 9'-0"                | 9'-0"                | 9'-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.

SCHEDULE 2b' (LIMITED LOAD, MULLION SPACING & SPAN INSTALLATION)

WALL MOUNTED MAX. SPAN (ft) FOR END & INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (p.s.f.) AND FOR 12'-0" (CASE I) & 8'-0" (CASE II) MAX. MULLION SPACING (ft) \*

| INSTALLATION CASES | DESIGN LOAD (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 #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) †       | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) †                     | ORIENTATION #2 (⊕) † | ORIENTATION #1 (⊕) † | ORIENTATION #2 (⊕) † |
| CASE I'            | 30.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 35.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 40.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 45.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 50.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 55.0                 | 12'-0"                         | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
| CASE II'           | 30.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 35.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 40.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 45.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 50.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |
|                    | 55.0                 | 8'-0"                          | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                     | 12'-6"               | 12'-6"               | 12'-6"               | 12'-6"                                   | 12'-6"               | 12'-6"               |                      |



MULLION SPACING: "S"

\* 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.

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

**Nautilus**  
Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BALTIMORE STREET  
PORT ST. LUCIE, FL 34984  
PHONE: (800) 749-9056, FAX: (772) 871-0990

DATE: 12/03/09

DRAWN BY: M.C.V./L.G.

DATE: 09-210

DRAWING NO: 25 OF 26

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**TILTECO INC.**

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EB-0006719  
WALTER A. TILIT JR. P.E.  
FLORIDA Lic. # 44167

P.E. SEAL/SIGNATURE/DATE

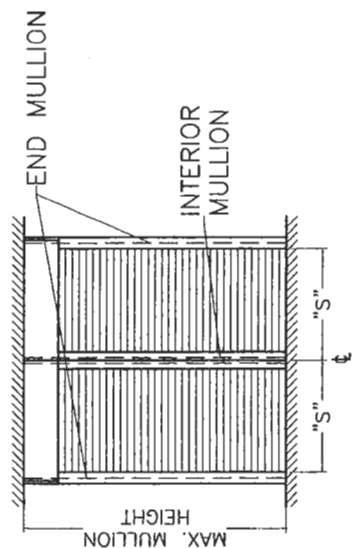
*[Signature]*  
12/16/09

**SCHEDULE 1c**

**FLOOR TO CEILING (TRAPPED) MOUNTING**

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (p.s.f.), & A 7'-0" MAX. MULLION SPACING (ft) \*

| DESIGN LOAD (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                 | 7'-0"                          | 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"              |  |
| 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"              |  |
| 45.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 50.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 55.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 60.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 65.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 70.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 75.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 80.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 85.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 90.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 95.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 100.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 105.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 110.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 115.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 120.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 125.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 130.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 135.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 140.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 145.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 150.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 155.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 160.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |



MULLION SPACING: "S"

**SCHEDULE 2c**

**WALL MOUNTING**

MAX. SPAN (ft) FOR END AND INTERIOR MULLIONS FOR A GIVEN DESIGN LOAD (P.S.F.), & AND 7'-0" MAX. MULLION SPACING (FT) \*

| DESIGN LOAD (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                 | 7'-0"                          | 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"              |  |
| 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"              |  |
| 45.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 50.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 55.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 60.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 65.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 70.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 75.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 80.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 85.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 90.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 95.0                 | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 100.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 105.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 110.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 115.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 120.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 125.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 130.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 135.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 140.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 145.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 150.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 155.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |
| 160.0                | 7'-0"                          | 12'-6"                    | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"               | 12'-6"   | 12'-6"              | 12'-6"   | 12'-6"                                   | 12'-6"   | 12'-6"              |  |

\* 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.

FLORIDA BUILDING CODE (High Velocity Hurricane Zone)

**Nautilus**  
 Rolling Hurricane Abatement

**EXPERT SHUTTER SERVICES INC.**  
 1626 S.W. BILTMORE STREET  
 PORT ST. LUCIE, FL. 34984  
 PHONE: (800) 749-9056, FAX: (772) 871-0990

DRAWN BY: M.C.V./L.G.  
 DATE: 12/03/09

09-210  
 DRAWING No

SHEET 26 OF 26

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P.E. SEAL/SIGNATURE/DATE