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

FL # Application Type Code Version Application Status Comments Archived	FL12246 New 2007 Approved <input type="checkbox"/>						
Product Manufacturer Address/Phone/Email	Expert Shutter Services, Inc. 1626 SW Biltmore ST Port St. Lucie, FL 34984 (772) 871-1915 Ext 106 callexpert@aol.com						
Authorized Signature	Michael Heissenberg callexpert@aol.com						
Technical Representative Address/Phone/Email							
Quality Assurance Representative Address/Phone/Email							
Category Subcategory	Shutters Roll-up						
Compliance Method	Evaluation Report from a Florida Registered Architect or a Licensed Florida Professional Engineer <input checked="" type="checkbox"/> Evaluation Report - Hardcopy Received						
Florida Engineer or Architect Name who developed the Evaluation Report Florida License Quality Assurance Entity Quality Assurance Contract Expiration Date Validated By	Walter A. Tillit Jr., P.E. PE-44167 National Accreditation and Management Institute 12/31/2012 John Henry Kampmann Jr. <input checked="" type="checkbox"/> Validation Checklist - Hardcopy Received						
Certificate of Independence	<a href="#">FL12246_RO_COI_Certification of Independence.PDF</a>						
Referenced Standard and Year (of Standard)	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Standard</u></th> <th style="text-align: left;"><u>Year</u></th> </tr> </thead> <tbody> <tr> <td>SECTION 1609.1.2 ASTM E-1996, E-1886</td> <td>2005</td> </tr> <tr> <td>SECTION 1714.5.3 ASTM E-330</td> <td>2002</td> </tr> </tbody> </table>	<u>Standard</u>	<u>Year</u>	SECTION 1609.1.2 ASTM E-1996, E-1886	2005	SECTION 1714.5.3 ASTM E-330	2002
<u>Standard</u>	<u>Year</u>						
SECTION 1609.1.2 ASTM E-1996, E-1886	2005						
SECTION 1714.5.3 ASTM E-330	2002						
Equivalence of Product Standards Certified By							
Sections from the Code							

Product Approval Method	Method 1 Option D
Date Submitted	03/04/2009
Date Validated	04/10/2009
Date Pending FBC Approval	04/28/2009
Date Approved	06/09/2009

**Summary of Products**

FL #	Model, Number or Name	Description
12246.1	Nautilus	Rolling Shutter System
<b>Limits of Use</b> <b>Approved for use in HVHZ:</b> No <b>Approved for use outside HVHZ:</b> Yes <b>Impact Resistant:</b> Yes <b>Design Pressure:</b> +160/-160 <b>Other:</b> State Missile Level "D" wind zones 1, 2, 3 and 4 (basic protection only). Pressure rating: +30,-30 p.s.f. at 20'-0" span and +160, -160 p.s.f. at 8'-0" span with 1/2" slip. See sheets 15, 16 and 20 for additional pressures and spans.		<b>Installation Instructions</b> <a href="#">FL12246_R0_II_Drawing 08-255.PDF</a> Verified By: Walter A. Tillit Jr. PE-44167 Created by Independent Third Party: Yes <b>Evaluation Reports</b> <a href="#">FL12246_R0_AE_Product Evaluation Report.PDF</a> Created by Independent Third Party: Yes

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*Department of Community Affairs*  
*Florida Building Code Online*  
*Codes and Standards*  
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 Tallahassee, Florida 32399-2100  
 (850) 487-1824, Fax (850) 414-8436  
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**Product Approval Accepts:**



**GENERAL NOTES:**

1. NAUTILUS ROLLING SHUTTER SYSTEM SHOWN ON THIS PRODUCT EVALUATION DOCUMENT (P.E.D.) HAS BEEN VERIFIED FOR COMPLIANCE IN ACCORDANCE WITH THE 2007 EDITION OF THE FLORIDA BUILDING CODE.
2. NAUTILUS ROLLING SHUTTER SYSTEM SHALL NOT BE INSTALLED AT HIGH VELOCITY HURRICANE ZONES (MIAMI-DADE/BROWARD COUNTY). DESIGN SPEEDS SHALL BE DETERMINED AS PER SECTION 1609 OF THE ABOVE MENTIONED CODE FOR A BASIC FACTOR OF 0.85. IN ACCORDANCE WITH ASCE 7-05 SHUTTER WILL BE INSTALLED, AND FOR A DIRECTIONALITY FACTOR OF 0.85. IN ACCORDANCE WITH ASCE 7-05 SHUTTER, AS TESTED, WERE NOT OVER STRESSED, 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 AS SET FORTH IN THEIR ANALYSIS. PASTENERS SPACING TO WOOD HAVE BEEN DETERMINED BY THE ABOVE MENTIONED CODE. NAUTILUS ROLLING SHUTTER SYSTEM'S OF THE ABOVE MENTIONED CODE AS AMERICAN TEST LAB OF SOUTH FLORIDA. TESTS FOR WIND LOADS 1, 2, 3 & 4, MISSILE TYPE D AND ONLY APPLICABLE TO BASIC PROTECTION INSTALLATIONS, AS DEFINED BY SECTIONS 6.2.1.1, 6.2.1.2 AND 6.3 OF ASTM E 1996-05. SEE NOTES 1 & 2 ON SHEETS 19 & 20 FOR ADDITIONAL LIMITATIONS.
3. ALL ALUMINUM EXTRUSIONS SHALL BE 6063-T6 ALLOY (UNLESS OTHERWISE NOTED). SEE SHEET 2.
4. ALL SCREWS (EXCEPT END RETENTION SCREWS) TO BE STAINLESS STEEL 304 OR 316 SERIES WITH 50 ksi YIELD STRENGTH AND 90 ksi TENSILE STRENGTH AS CORROSION RESISTANT COATED CARBON STEEL AS PER DIN 50018. ALL S.D.S.'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. NAUTILUS ROLLING SHUTTER SYSTEM BEARS U.S. PATENTS #6,095,225 AND #7,409,980.
7. ANCHORS TO WALL FOR @ SIDE RAIL SHALL BE AS FOLLOWS:
  - (A) TO EXISTING POURED CONCRETE: MIN. 3000 p.s.i. COMPRESSIVE STRENGTH.
  - 5/16" KWIK BOLT 3 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=0.48) OR SOUTHERN PINE #2 W/ C = 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 PENETRATIONS SHALL BE CONSIDERED AS PART OF THE REQUIRED EMBEDMENT.
  - C.2) MINIMUM EDGE DISTANCE (E.D.) OF TAPCON 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"x1 1/4" CALK-INS MANUFACTURED BY POWER FASTENERS, INC.
  - 1/4"x3/4" 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 | GROUT FILLED OR CONCRETE BLOCK |
|---------------------|----------------|----------------------|-------------------|-----------|--------------------------------|
| 3/8"x1 1/4" CALK-IN | 3 3/4"         | 4 1/2"               | 1 1/4" (3000 psi) | 4"        | NOT ALLOWED                    |
| 1/4"x3/4" SOLID-SET | 3"             | 3"                   | 1/8" (3000 psi)   | 4"        | NOT ALLOWED                    |
| 3/8" KWIK BOLT TZ   | 5"             | 4"                   | 2 1/2" (3000 psi) | 4"        | NOT ALLOWED                    |
| 5/16" TAPCON XL     | 3 3/4"         | 3 1/8"               | 2 1/4" (2889 psi) | 4"        | NOT ALLOWED                    |

**10. ANCHORS REQUIRED FOR MULLION CONNECTIONS SHALL BE AS SPECIFIED ON APPLICABLE SECTIONS SHOWN ON SHEETS 10, 11, 12 & 13.**

- KWIK BOLT TZ EXPANSION ANCHORS TO BE AS MANUFACTURED BY HILTI, 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.
- | OR ANCHOR         | SPACING @ 100% | EDGE DISTANCE @ 100% | CONCRETE          | EMBEDMENT | GROUT FILLED OR CONCRETE BLOCK |
|-------------------|----------------|----------------------|-------------------|-----------|--------------------------------|
| 3/4" KWIK BOLT TZ | 27"            | 9"                   | 4 3/4" (3000 psi) | 4"        | NOT ALLOWED                    |

**11. THE INSTALLATION CONTRACTOR IS TO SEAL/CAULK ALL SHUTTER COMPONENT EDGES WHICH REMAIN IN CONTINUOUS CONTACT WITH THE BUILDING TO PREVENT WIND/RAIN INTRUSION. CAULK AND SEAL SHUTTER TRACKS ALL AROUND FULL LENGTH.**

12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE SOUNDNESS OF THE STRUCTURE WHERE SHUTTER IS TO BE ATTACHED TO INSURE PROPER ANCHORAGE. THIS SHUTTER SHALL ONLY BE ATTACHED TO CONCRETE, CONCRETE BLOCK OR WOOD FRAME BUILDINGS.
13. SHUTTER'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, BUT SHALL BE CERTIFIED BY AN INDEPENDENT TESTING AGENCY.
15. (c) 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) THE 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. SHUTTER MANUFACTURER'S LABEL SHALL BE LOCATED ON A READILY VISIBLE LOCATION AT SHUTTER 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.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter System

**EXPERT SHUTTER SERVICES INC.**  
1628 SW BILKORE STREET  
PO BOX 1100 LUCIE FL 34984  
PHONE: (800) 749-8056 FAX: (772) 871-0890

DRAWN BY: M.C.V./L.S.  
DATE: 11/18/08

08-255  
DRAWING NO

SHEET 1 OF 26

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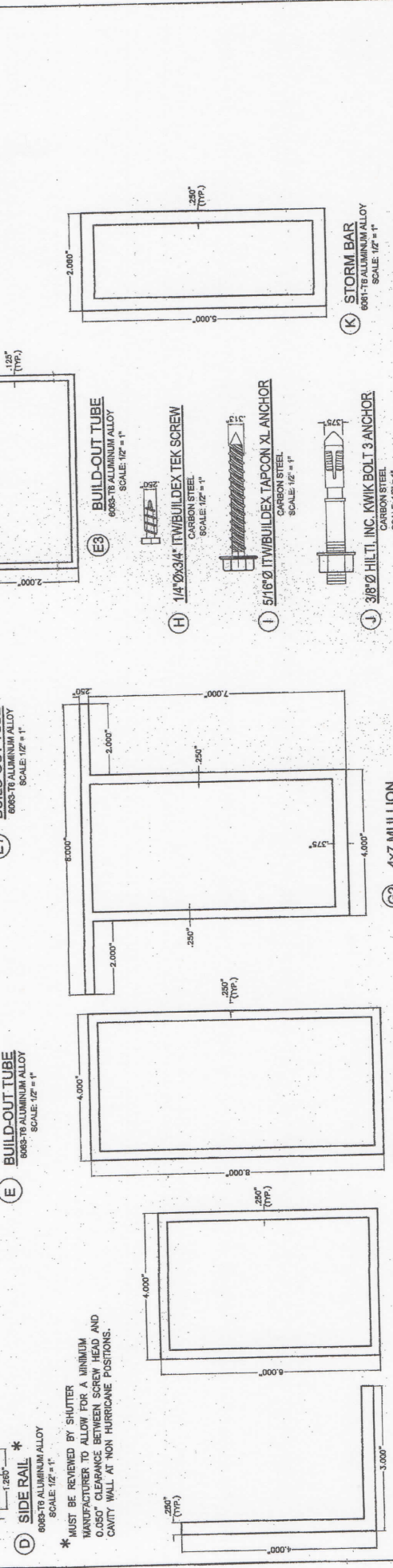
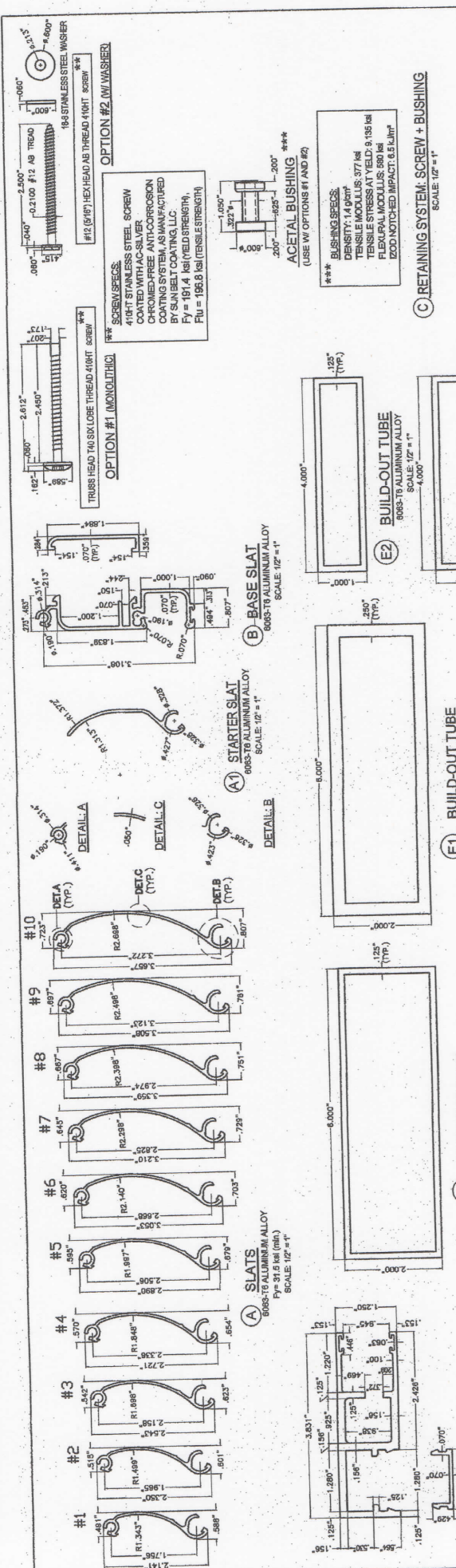
**TILECO INC.**  
TILT TESTING & ENGINEERING COMPANY  
6500 N.W. 39th St., Suite 200, Miramar, FL 33189  
Phone: 305-866-1111 Fax: 305-866-1531  
E-mail: tiltco@tilco.com

WALTER A. HILTI P.E.  
EB-0006719  
FLORIDA Lic. # 44,167

MAR 18 2009

P.E. SEAL/SIGNATURE/DATE

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)



FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

DRAWN BY: MCK/L/LG  
DATE: 11/18/08

08-255  
DRAWING NO

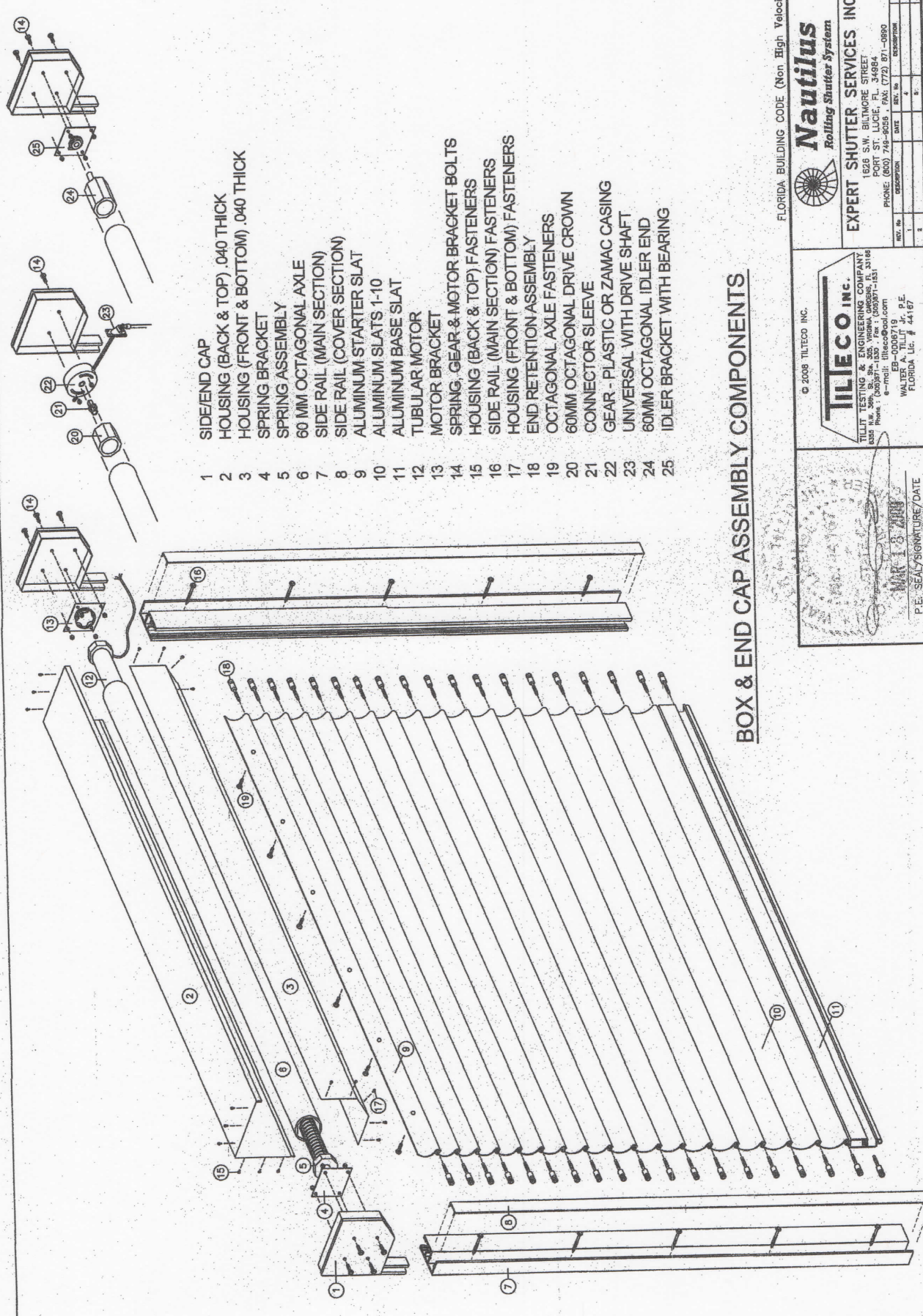
SHEET 2 OF 26

**Nautilus**  
Rolling Shutter Systems  
EXPERT SHUTTER SERVICES INC.  
1625 S.W. BILTMORE STREET  
JULIE F. 34984  
PHONE: (800) 746-0055 FAX: (772) 871-0990

**TILECO INC.**  
TILECO TESTING & ENGINEERING COMPANY  
4355 N.W. 35th St., Suite 200, Venice, FL 33586  
Phone: (813) 977-1631  
E-mail: tileco@tileco.com  
WALTER A. TILLOT, J., P.E.  
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**COMPONENTS**



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

**BOX & END CAP ASSEMBLY COMPONENTS**

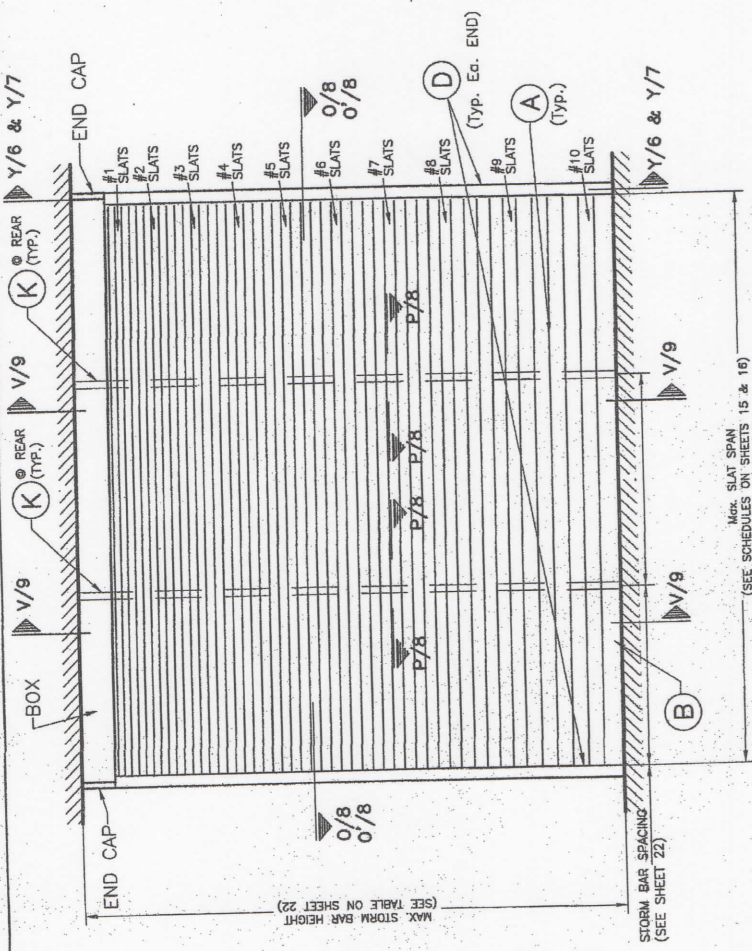
FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

DRAWN BY: M.C.V./L.G.	DATE 11/16/08			
<b>EXPERT SHUTTER SERVICES INC.</b> 1826 S.W. BILMORE STREET PORT ST. LUCIE, FL 34984 PHONE: (888) 748-8258 • FAX: (772) 871-0890				
INC. No.	DATE	REV. No.	DATE	DESCRIPTION
1		1		

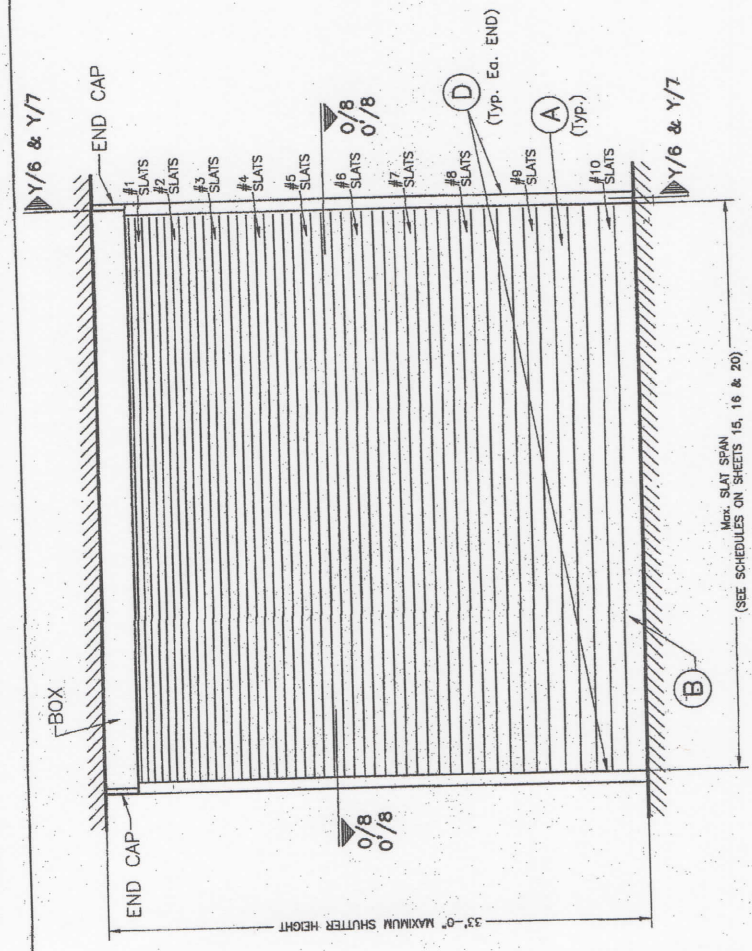
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**TILTECO INC.**  
 TILT TESTING & ENGINEERING COMPANY  
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 EP-0006719 R.E.  
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P.E. SEAL SIGNATURE / DATE



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



**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 SHUTTER HEIGHT:**

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

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
 Rolling Shutter Systems

**EXPERT SHUTTER SERVICES INC.**  
 1028 S.W. BILMORE  
 MIAMI, FL 33134  
 PHONE: (800) 748-8088 FAX: (772) 871-0980

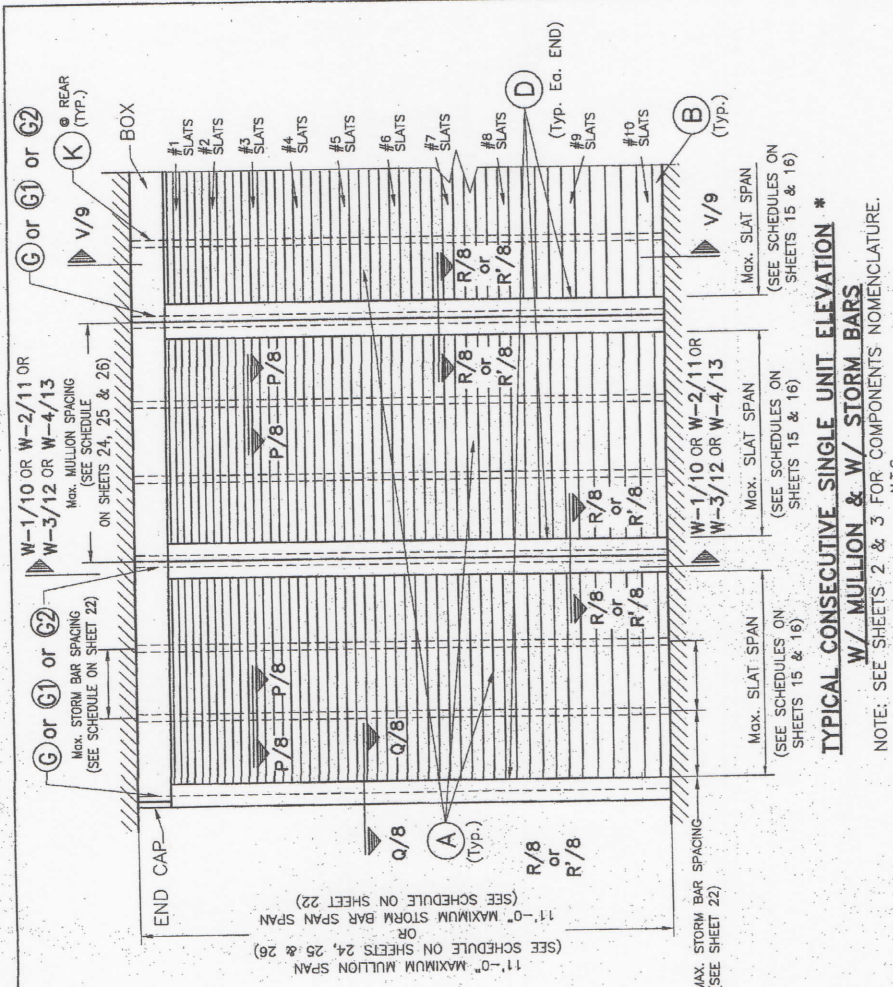
DATE: 11/19/08  
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 SHEET 4 OF 26

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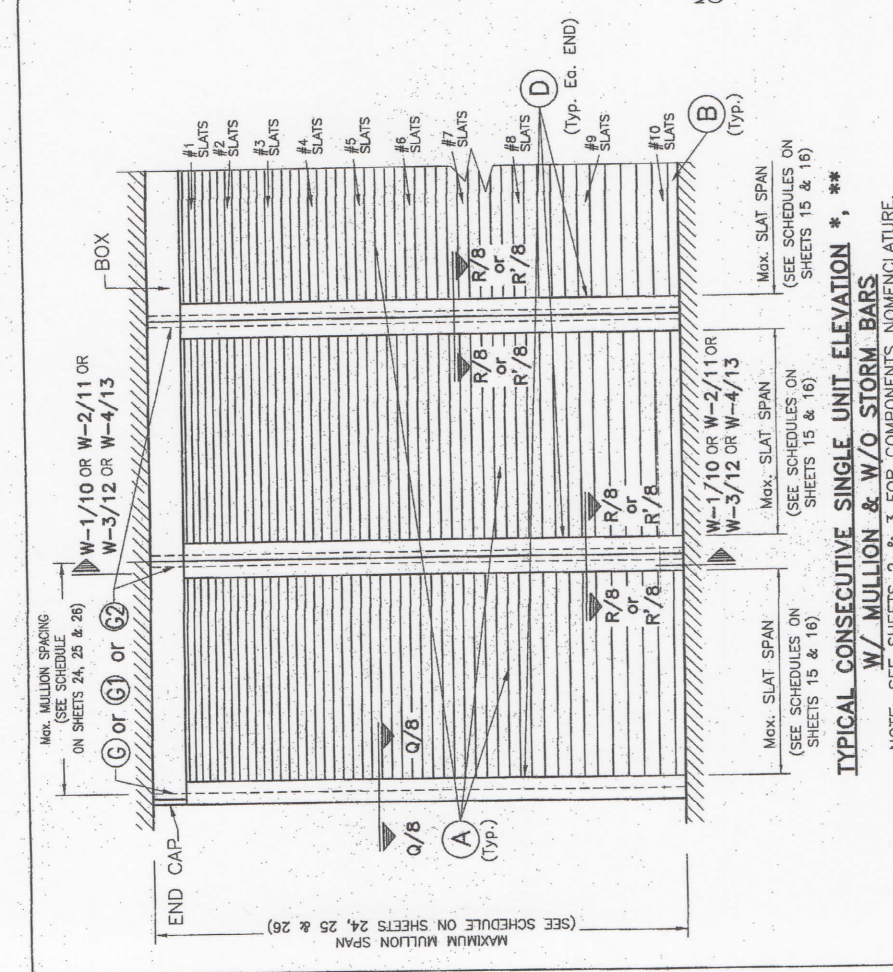
WALTER A. TILIT JR., P.E.  
 FLORIDA LIC. # 44167

P.E. SEAL/SIGNATURE/DATE



**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.

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

FLORIDA BUILDING CODE (Non High Velocity Hurricanes Zone)

**Nautilus**  
Rolling Shutter Systems

EXPERT SHUTTER SERVICES INC.  
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DATE: 11/19/08  
DRAWING NO: 08-255  
SHEET 5 OF 26

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2041 N.W. 30th St., Ft. Lauderdale, FL 33308  
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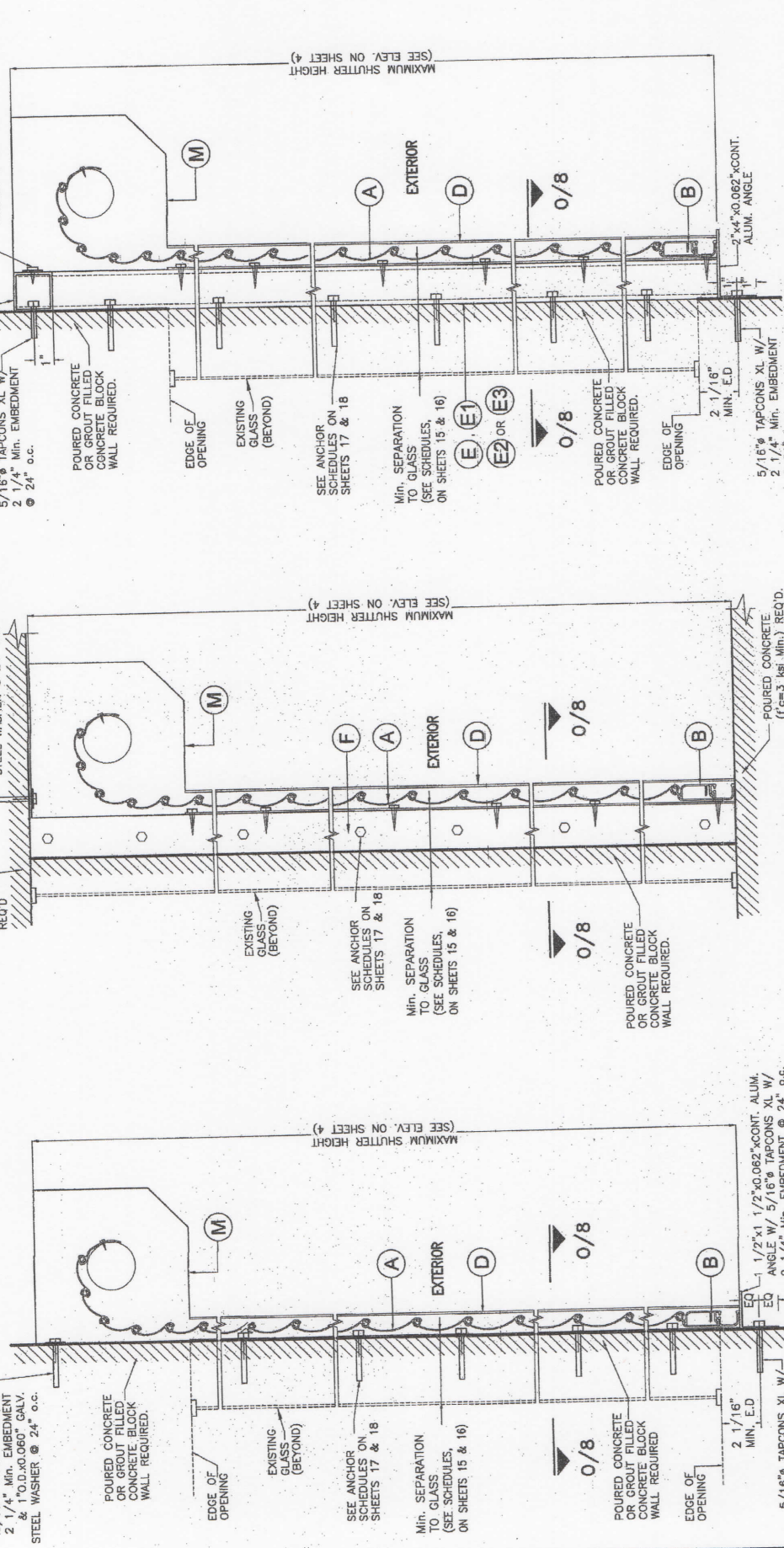
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MAR 13 2009

1 1/4" x 1/8" ALUMINUM TUBE  
 5/16" TAPCONS XL W/ 2 1/4" O.D. x 0.060" GALV. WASHER @ 24" o.c.  
 2 1/4" Min. EMBEDMENT @ 24" o.c.

POURED CONCRETE REQ'D.  
 5/16" TAPCONS XL W/ 2 1/4" O.D. x 0.060" GALV. STEEL WASHER @ 24" o.c.

5/16" TAPCONS XL W/ 2 1/4" Min. EMBEDMENT & 1" O.D. x 0.060" GALV. STEEL WASHER @ 24" o.c.



WALL MOUNTING

FLOOR/CEILING / TRAPPED MOUNTING

BUILD-OUT MOUNTING

SCALE: 3/16" = 1"

SECTIONS Y-Y

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

**TILECO INC.**  
 TILT TESTING & ENGINEERING COMPANY  
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**Nautilus**  
 Rolling Shutter Systems  
 EXPERT SHUTTER SERVICES INC.  
 1628 S.W. BULTORE STREET  
 FORT ST. LUCIE, FL 34984  
 PHONE: (800) 749-8086 - FAX: (772) 871-0690

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

DRAWN BY: M.C.V./L.G.	DATE 11/18/08
DESIGNATION	NO. 1
DESCRIPTION	2
DATE	3
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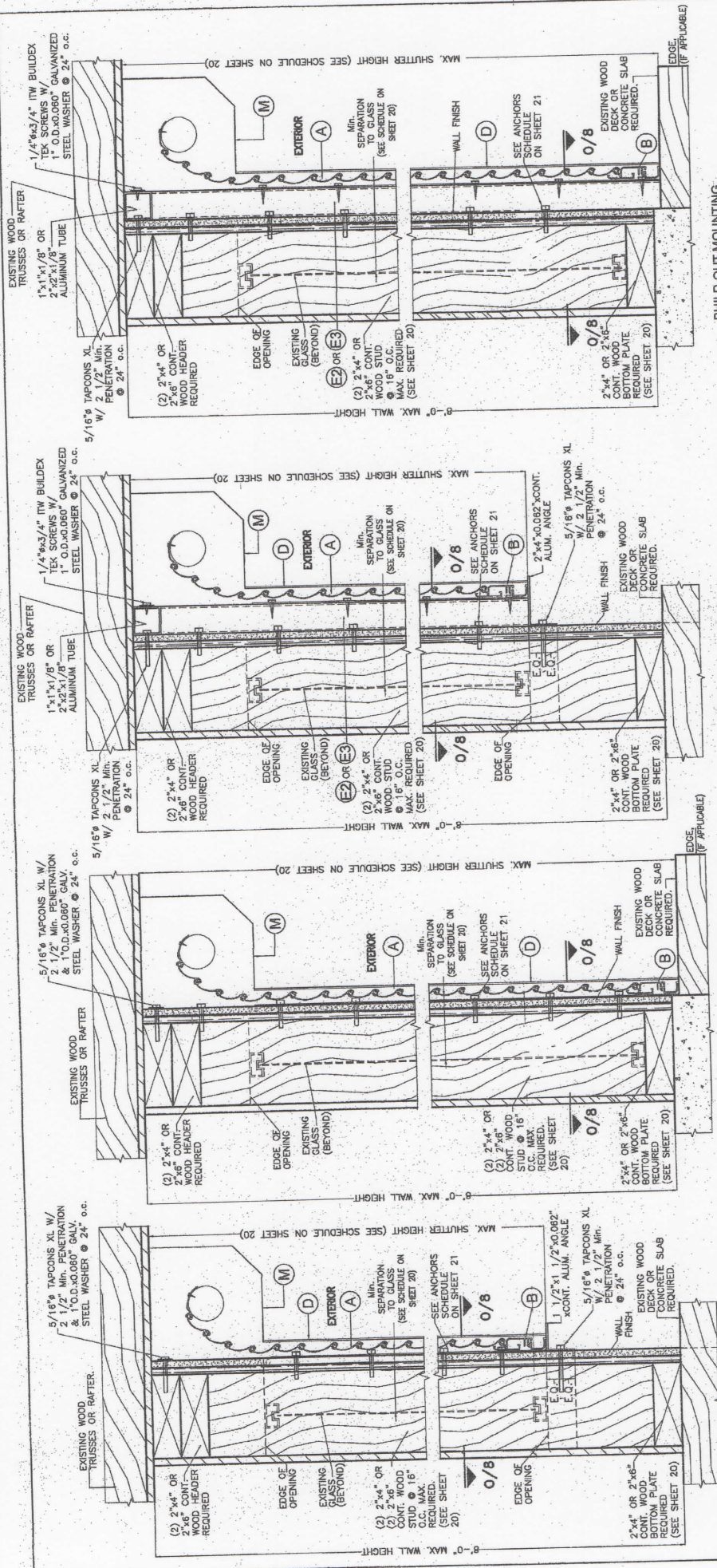
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SHEET 6 OF 26



P.E. SEAL / SIGNATURE / DATE





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WALL MOUNTING

WALL MOUNTING

SECTIONS Y-Y

INSTALLATION DETAILS ON EXISTING WOOD BUILDINGS

N.T.S.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

DRAWN BY: M.C.V./L.G.  
DATE: 11/15/08

**Nautilus**  
Rolling Shutter System

EXPERT SHUTTER SERVICES INC.  
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REV. NO. DATE DESCRIPTION

1 11/15/08

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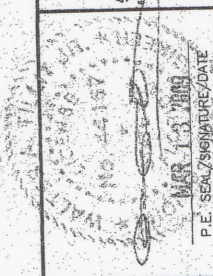
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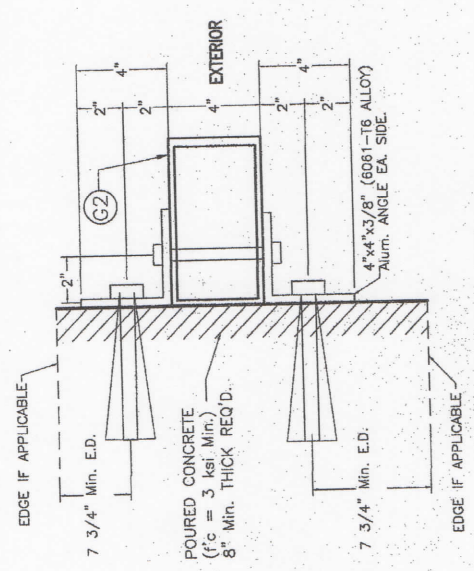
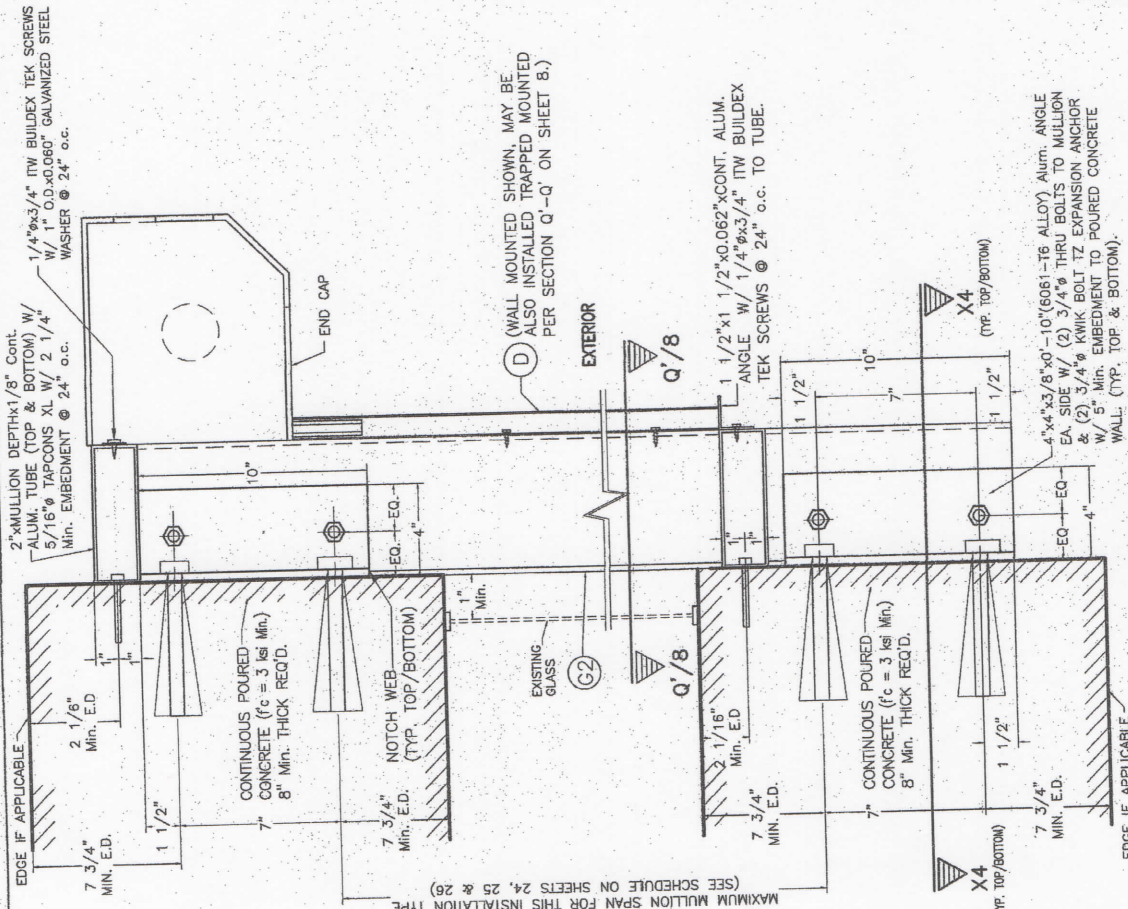












**SECTION X4-X4 W/ G2**  
 (END & INTERIOR MULLION)  
 (W/ ORIENTATION # 2)  
 (4" x 7")

\* SIDE RAIL (D) NOT SHOWN FOR CLARITY

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter System

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

DATE  
11/18/08

DRAWING NO.  
08-255

SHEET 13 OF 26

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**TILECO INC.**  
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---

P.E. SEAL/SIGNATURE/DATE

**END & INTERIOR WALL MOUNTED MULLION INSTALLATION**  
 SCALE: 1/8" = 1"

# TYPICAL MANDATORY PROCEDURE FOR VERIFYING SHUTTER CODE 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 SHUTTER SPAN "L" (ft) TO PROTECT IT (SEE GENERAL NOTE #2, SHEET 1).

**STEP 2:** ENTER TO CHARTS I (1a OR 1b) 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 SHUTTER SPAN "L" (ft); THE REQUIRED FINAL SLAT SLIP THAT SLATS MUST BE INSTALLED WITH TO MEET THE REQUIRED LOAD AND DESIRED SHUTTER SPAN. THE FOLLOWING INFORMATION IS PROVIDED AT CHARTS I THRU IV TO PROCEED WITH SHUTTER INSTALLATION VERIFICATION:

- ENTER DESIGN LOAD: SEE STEP (1) ABOVE.
- FOR A SPECIFIC SHUTTER MOUNTING INSTALLATION TYPE, INCLUDING ANCHOR TYPE, THE FOLLOWING DEFINITION FOR SLAT SPAN SHALL BE CONSIDERED:  
L<sub>max</sub>: THIS IS THE MAXIMUM ALLOWABLE SHUTTER SPAN FOR WHICH A GIVEN SLAT SLIP (1/2", 1/4", 1/8") MAY BE USED, FOR A GIVEN DESIGN LOAD.  
L<sub>min</sub>: THIS IS THE MINIMUM ALLOWABLE SHUTTER 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 SHUTTER 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 Ic, IIc, III & IV; PROVIDES SEPARATION TO GLASS FOR SHUTTERS W/O OR W/ STORM BARS (SEE STEP 4) BASED ON SHUTTER INSTALLATIONS WITHIN WIND ZONES 1 THRU 4, AS DEFINED BY ASTM E 1996-05, SECTION 6.2.2.

**STEP 3:** OBTAIN INFORMATION ON SHUTTER'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 & SHUTTER SPAN AND OBTAIN MAXIMUM ANCHOR SPACING (INCHES ON CENTERS). SEE GENERAL NOTE 7 ON SHEET 1 FOR ANCHOR SPECS.

**STEP 4:** IF SHUTTER 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 INSTALLATIONS PERFORMED WITHIN ASTM WIND ZONES 1 THRU 4 INDICATED ON CHART Ic. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS. FOR INSTALLATIONS WITHIN ASTM WIND ZONES 1 THRU 3 WHERE MINIMIZING OF THE PROBABILITY OF BREACHING OF GLASS IS DESIRED EVEN THOUGH IT IS NOT REQUIRED BY THE FLORIDA BUILDING CODE, MINIMUM SEPARATION TO GLASS FOR SLATS SHALL BE IDENTICAL TO WIND ZONE 4 VALUES.

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 INSTALLATIONS PERFORMED WITHIN ASTM WIND ZONES 1 THRU 4 INDICATED ON CHARTS Ic, IIc, III & IV ON SHEETS 15 & 16. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS. FOR INSTALLATIONS WITHIN ASTM WIND ZONES 1 THRU 3 WHERE MINIMIZING OF THE PROBABILITY OF BREACHING OF GLASS IS DESIRED EVEN THOUGH IT IS NOT REQUIRED BY THE FLORIDA BUILDING CODE, MINIMUM SEPARATION TO GLASS FOR SLATS SHALL BE IDENTICAL TO WIND ZONE 4 VALUES.

2. ENTER SCHEDULES 1a THRU 2c ON SHEETS 24, 25 & 26 W/ DESIGN LOAD; MAXIMUM MULLION SPACING (MAX. 12' OR 7'), AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN (G, G1, G2), MULLION TYPE & MULLION ORIENTATION.

3. SEE SHEETS 10 THRU 13 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).

**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 INSTALLATIONS PERFORMED WITHIN ASTM WIND ZONES 1 THRU 4 INDICATED ON CHART Ic, SHEET 15. IT SHALL BE MEASURED FROM BACK OF SLATS TO GLASS. FOR INSTALLATIONS WITHIN ASTM WIND ZONES 1 THRU 3 WHERE MINIMIZING OF THE PROBABILITY OF BREACHING OF GLASS IS DESIRED, MINIMUM SEPARATION TO GLASS FOR SLATS SHALL BE IDENTICAL TO WIND ZONE 4 VALUES.

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' OR 7'), AND DETERMINE MAXIMUM MULLION SPAN (HEIGHT) W/ ALLOWABLE INTERPOLATION IN BETWEEN SPACINGS FOR A GIVEN (G, G1, G2), MULLION TYPE & MULLION ORIENTATION.

5. SEE SHEETS 10 THRU 13 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).

\* 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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EP-000719 P.E.  
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FLORIDA Lic. #

Nautilus

Rolling Shutter System

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

DRAWN BY: M.C.V./L.G.  
DATE: 11/19/08

08-255  
DRAWING No

1928 S.W. BILTMORE STREET  
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EXAMINER DATE EXP. No DESCRIPTION DATE

1 3/23/09 4 5

SHEET 14 OF 28

P.E. SEAL/SIGNATURE/DATE



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

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

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

**\* NOTES:**

- ABOVE INDICATED MAX. SLAT SPANS MAY BE USED AS LONG AS ANCHOR SPACING SCHEDULES ON SHEETS 17 & 18 INDICATE THAT AN ANCHOR SPACING IS AVAILABLE FOR THE CORRESPONDING SLAT SPAN AND DESIGN LOAD.
- REQUIRES SIDE RAILS FASTENED TO EXISTING STRUCTURE WITH 3/8" KWIK BOLT 3 ANCHOR OR 5/16" TAPCON XL ANCHOR, INTO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK, OR WITH 1/4" 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.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter System

EXPERT SHUTTER SERVICES INC.  
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DATE: 11/18/08  
DRAWING No: 08-255  
SHEET 15 OF 26

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

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DATE: MAR 13 2009  
P.E. SEAL/SIGNATURE/DATE

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

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

DESIGN LOAD (psf)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MIN. SLAT SPAN "L" MIN." (FT)	W/O STORM BARS WIND ZONES	WIND ZONE
	MAX. SLAT SPAN "L" MAX." (FT)	WALL MOUNT	TRAPPED MOUNT	BUILD-OUT MOUNT W/ ANCHOR			
30.0	7'-8"	8'-3"	8'-3"	8'-3"	6'-7"	1-3	4
35.0	7'-2"	7'-9"	7'-9"	7'-9"	6'-4"	1-3	4
40.0	6'-9"	7'-8"	7'-8"	7'-8"	6'-1"	1-3	4
45.0	6'-8"	7'-7"	7'-7"	7'-7"	5'-11"	1-3	4
50.0	6'-5"	7'-4"	7'-4"	7'-4"	5'-9"	1-3	4
55.0	6'-3"	7'-3"	7'-3"	7'-3"	5'-7"	1-3	4
60.0	6'-1"	7'-3"	7'-3"	7'-3"	5'-4"	1-3	4
65.0	6'-0"	7'-3"	7'-3"	7'-3"	5'-2"	1-3	4
70.0	5'-10"	7'-3"	7'-3"	7'-3"	5'-1"	1-3	4
75.0	5'-9"	7'-3"	7'-3"	7'-3"	5'-0"	1-3	4
80.0	5'-9"	7'-3"	7'-3"	7'-3"	4'-11"	1-3	4
85.0	5'-8"	7'-3"	7'-3"	7'-3"	4'-9"	1-3	4
90.0	5'-8"	7'-3"	7'-3"	7'-3"	4'-8"	1-3	4
95.0	5'-8"	7'-3"	7'-3"	7'-3"	4'-8"	1-3	4
100.0	5'-9"	7'-3"	7'-3"	7'-3"	4'-8"	1-3	4
105.0	5'-9"	7'-3"	7'-3"	7'-3"	4'-7"	1-3	4
110.0	5'-9"	7'-3"	7'-3"	7'-3"	4'-6"	1-3	4
115.0	5'-8"	7'-3"	7'-3"	7'-3"	4'-6"	1-3	4
120.0	5'-8"	7'-3"	7'-3"	7'-3"	4'-5"	1-3	4
125.0	5'-6"	7'-3"	7'-3"	7'-3"	4'-5"	1-3	4
130.0	5'-5"	7'-3"	7'-3"	7'-3"	4'-4"	1-3	4
135.0	5'-4"	7'-3"	7'-3"	7'-3"	4'-4"	1-3	4
140.0	5'-2"	7'-3"	7'-3"	7'-3"	4'-3"	1-3	4
145.0	5'-1"	7'-3"	7'-3"	7'-3"	4'-3"	1-3	4
150.0	5'-0"	7'-3"	7'-3"	7'-3"	4'-3"	1-3	4
155.0	5'-0"	7'-3"	7'-3"	7'-3"	4'-3"	1-3	4
160.0	4'-11"	7'-3"	7'-3"	7'-3"	4'-3"	1-3	4

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

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

DESIGN LOAD (psf)	USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD				MIN. SLAT SPAN "L" MIN." (FT)	W/O STORM BARS WIND ZONES	WIND ZONE
	MAX. SLAT SPAN "L" MAX." (FT)	WALL MOUNT	TRAPPED MOUNT	BUILD-OUT MOUNT W/ ANCHOR			
30.0	6'-3"	8'-3"	8'-3"	8'-3"	6'-3"	1-3	4
35.0	6'-3"	8'-3"	8'-3"	8'-3"	6'-3"	1-3	4
40.0	6'-0"	8'-3"	8'-3"	8'-3"	6'-0"	1-3	4
45.0	5'-10"	8'-3"	8'-3"	8'-3"	5'-10"	1-3	4
50.0	5'-8"	8'-3"	8'-3"	8'-3"	5'-8"	1-3	4
55.0	5'-7"	8'-3"	8'-3"	8'-3"	5'-7"	1-3	4
60.0	5'-5"	8'-3"	8'-3"	8'-3"	5'-5"	1-3	4
65.0	5'-4"	8'-3"	8'-3"	8'-3"	5'-4"	1-3	4
70.0	5'-3"	8'-3"	8'-3"	8'-3"	5'-3"	1-3	4
75.0	5'-1"	8'-3"	8'-3"	8'-3"	5'-1"	1-3	4
80.0	4'-11"	8'-3"	8'-3"	8'-3"	4'-11"	1-3	4
85.0	4'-10"	8'-3"	8'-3"	8'-3"	4'-10"	1-3	4
90.0	4'-8"	8'-3"	8'-3"	8'-3"	4'-8"	1-3	4
95.0	4'-6"	8'-3"	8'-3"	8'-3"	4'-6"	1-3	4
100.0	4'-5"	8'-3"	8'-3"	8'-3"	4'-5"	1-3	4
105.0	4'-4"	8'-3"	8'-3"	8'-3"	4'-4"	1-3	4
110.0	4'-3"	8'-3"	8'-3"	8'-3"	4'-3"	1-3	4
115.0	4'-3"	8'-3"	8'-3"	8'-3"	4'-3"	1-3	4
120.0	4'-0"	8'-3"	8'-3"	8'-3"	4'-0"	1-3	4
125.0	3'-11"	8'-3"	8'-3"	8'-3"	3'-11"	1-3	4
130.0	3'-10"	8'-3"	8'-3"	8'-3"	3'-10"	1-3	4
135.0	3'-8"	8'-3"	8'-3"	8'-3"	3'-8"	1-3	4
140.0	3'-8"	8'-3"	8'-3"	8'-3"	3'-8"	1-3	4
145.0	3'-7"	8'-3"	8'-3"	8'-3"	3'-7"	1-3	4
150.0	3'-7"	8'-3"	8'-3"	8'-3"	3'-7"	1-3	4
155.0	3'-6"	8'-3"	8'-3"	8'-3"	3'-6"	1-3	4
160.0	3'-6"	8'-3"	8'-3"	8'-3"	3'-6"	1-3	4

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

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

DESIGN LOAD (psf)	CHART IIa				CHART IIb				CHART IIc			
	WALL MOUNT	TRAPPED MOUNT	BUILD-OUT MOUNT W/ ANCHOR	BUILD-OUT MOUNT W/ ANCHOR	WALL MOUNT	TRAPPED MOUNT	BUILD-OUT MOUNT W/ ANCHOR	BUILD-OUT MOUNT W/ ANCHOR	WALL MOUNT	TRAPPED MOUNT	BUILD-OUT MOUNT W/ ANCHOR	BUILD-OUT MOUNT W/ ANCHOR
30.0	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"	8'-3"
35.0	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"
40.0	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"	7'-7"
45.0	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"	7'-4"
50.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
55.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
60.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
65.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
70.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
75.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
80.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
85.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
90.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
95.0	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"
100.0	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"	7'-2"
105.0	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"	7'-0"
110.0	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"	6'-10"
115.0	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"	6'-8"
120.0	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"	6'-6"
125.0	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"	6'-4"
130.0	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"
135.0	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"	6'-3"
140.0	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"	6'-1"
145.0	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"
150.0	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"
155.0	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"
160.0	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"

**\* 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" KWIK BOLT 3 ANCHOR OR 5/16" TAPON XL ANCHOR INTO POURED CONCRETE OR GROUT FILLED CELL CONCRETE BLOCK, OR WITH 1/4" TEK SCREWS AT MILLIONS 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.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter System

**EXPERT SHUTTER SERVICES INC.**  
1628 S.W. BILTMORE STREET  
PORT ST. LUCIE, FL 34984  
PHONE: (888) 749-8256 FAX: (772) 871-0980

DATE: 11/19/08  
DRAWING No: 08-255  
SHEET 16 OF 26

**TILECO INC.**  
TILT TESTING & ENGINEERING COMPANY  
1335 N.W. 130th Ave., Ft. Lauderdale, FL 33306  
e-mail: tileco@tileco.com

WALTER A. LEE, P.E.  
FLORIDA Lic. # 44167

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

MAX. ANCHOR SPACING SCHEDULE Va

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	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>31-40	9"	9"	9"	9"	9"	9"	9"	9"	8"	8"
>41-60	9"	9"	9"	9"	9"	9"	7"	5 5/8"	5 5/8"	5 5/8"
>61-80	9"	9"	9"	9"	9"	8"	6 1/2"	5 5/8"	5 5/8"	5 5/8"
>81-105	9"	9"	9"	9"	9"	8"	6"	5 5/8"	5 5/8"	5 5/8"
>106-120	9"	9"	9"	9"	9"	8"	7"	5 5/8"	5 5/8"	5 5/8"
>121-140	9"	9"	9"	9"	9"	8"	7"	5 5/8"	5 5/8"	5 5/8"
>141-160	9"	9"	9"	9"	9"	7"	7"	5 5/8"	5 5/8"	5 5/8"

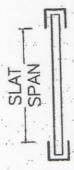
TRAPPED MOUNT

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	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>31-40	9"	9"	9"	9"	9"	9"	9"	9"	7"	7"
>41-60	9"	9"	9"	9"	9"	9"	6 1/2"	5 5/8"	5 5/8"	5 5/8"
>61-80	9"	9"	9"	9"	9"	9"	7"	5 5/8"	5 5/8"	5 5/8"
>81-105	9"	9"	9"	9"	9"	8"	6"	5 5/8"	5 5/8"	5 5/8"
>106-120	9"	9"	9"	9"	9"	8 1/2"	7"	5 5/8"	5 5/8"	5 5/8"
>121-140	9"	9"	9"	9"	9"	7"	6"	5 5/8"	5 5/8"	5 5/8"
>141-160	9"	9"	9"	9"	9"	6"	6"	5 5/8"	5 5/8"	5 5/8"

BUILD-OUT MOUNT

DESIGN LOAD RANGE (p.s.f.)	SLAT SPAN RANGE																										
	> 0'-4" †			> 4'-5" †			> 5'-6" †			> 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	E1	E2	E3	E1	E2	E3			
>31-40	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>41-60	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>61-80	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>81-105	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>106-120	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>121-140	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"
>141-160	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"	9"

† NOTE: 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 (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter System

EXPERT SHUTTER SERVICES INC.  
1826 S.W. BILTMORE STREET  
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DRAWN BY: M.C.V./L.G. DATE: 11/18/08  
08-255 DRAWING No.  
SHEET 17 OF 26

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**TILTECO INC.**  
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WALTER A. TILTECO, P.E.  
FLORIDA Lic. # 44167

MAX 19 2008  
P.E. SEAL/SIGNATURE/DATE

**MAX. ANCHOR SPACING SCHEDULE Vb**  
**FOR A GIVEN SHUTTER MOUNTING TYPE, W/ 5/16" 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"	8"	8"	4"	3 3/4"		
>61-80	8"	8"	8"	8"	7"	4 1/2"	3 3/4"	-		
>81-105	8"	8"	8"	6 1/2"	5"	3 3/4"	3 3/4"	-		
>106-120	8"	8"	8"	5 1/2"	4 1/2"	3 3/4"	-	-		
>121-140	8"	7 1/2"	6"	4 1/2"	4"	3 3/4"	-	-		
>141-160	8"	6"	5"	4"	4"	-	-	-		

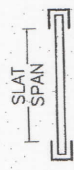
**TRAPPED MOUNT**

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

**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	E1	E2	E3	E1	E2	E3	E1	E2	E3	E1	E2	E3
>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 (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter Systems

**EXPERT SHUTTER SERVICES INC.**  
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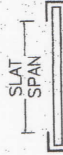
TILTIT TESTING & ENGINEERING COMPANY  
13350 W. 31ST AVE., SUITE 100  
FLORIDA, FL 32911  
PHONE: (888) 371-1330 ; FAX: (352) 371-1351  
E-mail: tiltiteco@tilteco.com  
EP-000719 P.E.  
WALTER J. ZIEGLER  
FLORIDA Lic. # 44167

P.E. SEAL/SIGNATURE/DATE

**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 SHUTTER HEIGHT AT BOTH JAMBS. SEE THIS SHEET FOR Vx & Vy VALUES.

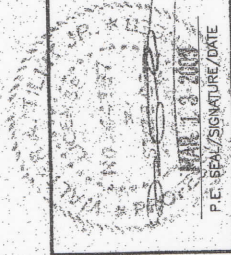


FLORIDA BUILDING CODE (Non-High Velocity Hurricane Zone)

**TILECO INC.**  
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 8355 NW 30th Street, Suite 1316  
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 Rolling Shutter Systems  
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 08-255 DRAWING NO.  
 SHEET 19 OF 26



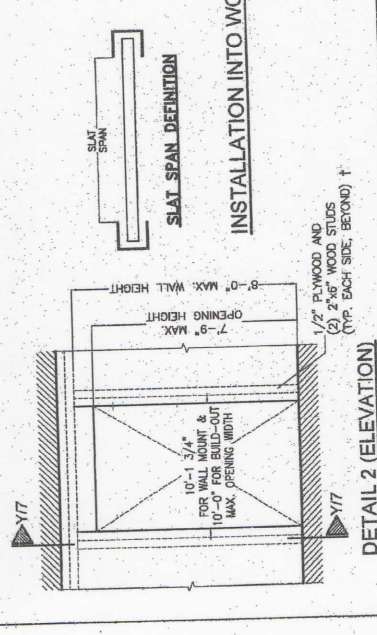
P.E. SEAL / SIGNATURE / DATE

**SLAT PERFORMANCE CHART Ib1 & Ic1 (ONLY VALID FOR 1/2" SLIP)**  
 FOR A GIVEN MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND SHUTTER MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

CHART Ib1		CHART Ic1	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD		USE MAXIMUM POSITIVE LOAD VALUE	
5/16" TAPCON XL ANCHOR		5/16" TAPCON XL ANCHOR	
DESIGN LOAD (p.s.f.)	WALL MOUNT (SEE NOTES A)	MIN. SLAT SPAN "L <sub>MIN</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)
30.0	10'-0"	10'-0"	1"
35.0	10'-0"	10'-0"	1"
40.0	10'-0"	10'-0"	1"
45.0	10'-0"	10'-0"	1"
50.0	10'-0"	10'-0"	1"
55.0	10'-0"	10'-0"	1"
60.0	10'-0"	10'-0"	1"

**SLAT PERFORMANCE CHART IIIb1 (ONLY VALID FOR 1/8" SLIP)**  
 FOR A GIVEN MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND SHUTTER MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

CHART IIIb1		CHART IIIc1	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD		USE MAXIMUM POSITIVE LOAD VALUE	
5/16" TAPCON XL ANCHOR		5/16" TAPCON XL ANCHOR	
DESIGN LOAD (p.s.f.)	WALL MOUNT (SEE NOTES A)	MIN. SLAT SPAN "L <sub>MIN</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)
30.0	7'-8"	7'-8"	1"
35.0	7'-2"	7'-2"	1"
40.0	6'-9"	6'-9"	1"
45.0	6'-8"	6'-8"	1"
50.0	6'-5"	6'-5"	1"
55.0	6'-3"	6'-3"	1"
60.0	6'-1"	6'-1"	1"

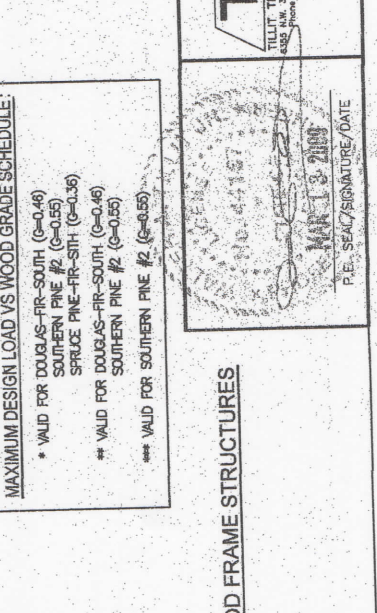


**SLAT PERFORMANCE CHART IIb1 & IIc1 (ONLY VALID FOR 1/4" SLIP)**  
 FOR A GIVEN MAXIMUM DESIGN PRESSURE RATING (p.s.f.) AND SHUTTER MOUNT CONDITION FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

CHART IIb1		CHART IIc1	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD		USE MAXIMUM POSITIVE LOAD VALUE	
5/16" TAPCON XL ANCHOR		5/16" TAPCON XL ANCHOR	
DESIGN LOAD (p.s.f.)	WALL MOUNT (SEE NOTES A)	MIN. SLAT SPAN "L <sub>MIN</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)
30.0	8'-3"	8'-3"	1"
35.0	7'-9"	7'-9"	1"
40.0	7'-7"	7'-7"	1"
45.0	7'-4"	7'-4"	1"
50.0	7'-3"	7'-3"	1"
55.0	7'-3"	7'-3"	1"
60.0	7'-3"	7'-3"	1"

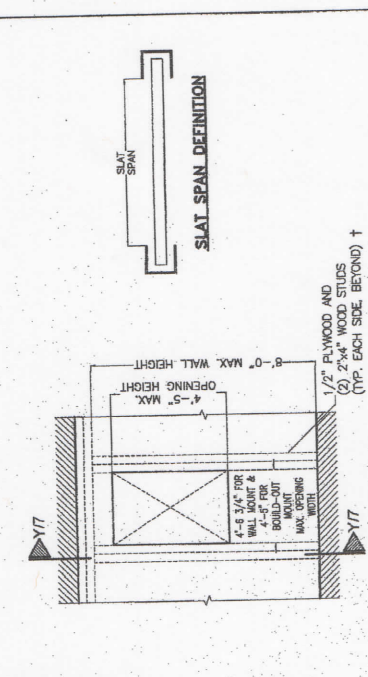
**SLAT PERFORMANCE CHART IV (LESS THAN 1/8" SLIP)**  
 FOR A GIVEN DESIGN LOAD (p.s.f.) SHUTTER MOUNT CONDITION INCLUDING ANCHOR TYPE AND FOR INSTALLATIONS W/O STORM BARS PER DETAIL 2 BELOW

5/16" TAPCON XL ANCHOR		5/16" TAPCON XL ANCHOR	
USE MAXIMUM VALUE BETWEEN POSITIVE AND NEGATIVE LOAD		USE MAXIMUM POSITIVE LOAD VALUE	
DESIGN LOAD (p.s.f.)	WALL MOUNT (SEE NOTES A)	MIN. SLAT SPAN "L <sub>MIN</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)
30.0	6'-8"	6'-8"	1"
35.0	6'-3"	6'-3"	1"
40.0	6'-0"	6'-0"	1"
45.0	5'-10"	5'-10"	1"
50.0	5'-9"	5'-9"	1"
55.0	5'-7"	5'-7"	1"
60.0	5'-5"	5'-5"	1"



**MAXIMUM SLAT SPAN AND MINIMUM SEPARATION TO GLASS FOR A GIVEN WOOD GRADE, DESIGN LOAD (p.s.f.), SLAT SLIP, 1/8" AND SHUTTER 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		USE MAXIMUM POSITIVE LOAD VALUE	
	DESIGN LOAD (p.s.f.)	WALL MOUNT (SEE NOTES A)	MIN. SLAT SPAN "L <sub>MIN</sub> " (ft)	REQUIRED MIN. SEPARATION TO GLASS MEASURED TO BACK OF SLAT (in)
SOUTHERN PINE #2 (G=0.55)	60	4'-5"	4'-5"	1"
DOUGLAS-FIR-SOUTH (G=0.46)	60	4'-5"	4'-5"	1"
SPRUCE PINE-FR-SITH (G=0.36)	60	4'-5"	4'-5"	1"



**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 (Non High Velocity Hurricane Zone)

**Nautilus**  
 Rolling Shutter System

**EXPERT SHUTTER SERVICES INC.**  
 1626 S.W. BILTMORE STREET  
 FORT ST. LUCIE, FL 34986  
 PHONE: (800) 746-9056, FAX: (772) 871-0890

**TILTECO INC.**  
 TILTING TESTING & ENGINEERING COMPANY  
 6801 W. US HWY 1, SUITE 100  
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 FLORIDA Lic. # 44167

DRAWN BY: M.C.V./L.G.  
 DATE: 11/16/08  
 SHEET 20 OF 26

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

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

WOOD GRADE	MAXIMUM DESIGN LOAD RANGE (psf)	SLAT SPAN RANGE				
		0' to 4'	> 4' to 5'	> 5' to 6'	> 6' to 7'	> 7' to 10'
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"
	40	6"	6"	6"	6"	4 3/4"
	50	6"	6"	6"	6"	4 3/4"
DOUGLAS-FIR-SOUTH (G=0.46)	60	6"	5 3/4"	5 1/4"	3 3/4"	3"
	≤ 30.0	6"	6"	6"	6"	6"
	40	6"	6"	5 1/4"	5 1/4"	4 1/4"
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	6"
	40	6"	6"	6"	6"	5 1/4"

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

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

**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 (psf)	SLAT SPAN RANGE					
		0'-3"	> 4'-5"	> 5'-6"	> 6'-7"	> 7'-9"	> 8'-10"
SOUTHERN PINE #2 (G=0.55)	≤ 30.0	6"	6"	6"	6"	6"	6"
	40	6"	6"	6"	6"	5 1/4"	5 1/4"
	50	6"	6"	6"	6"	5 1/4"	4"
DOUGLAS-FIR-SOUTH (G=0.46)	60	6"	6"	6"	5 3/4"	4"	3"
	≤ 30.0	6"	6"	6"	6"	6"	6"
	40	6"	6"	6"	5 1/2"	5 1/2"	4 1/2"
SPRUCE PINE-FIR-SOUTH (G=0.36)	≤ 30.0	6"	6"	6"	6"	6"	5 1/4"
	40	6"	6"	6"	6"	6"	5"

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

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter Systems

**EXPERT SHUTTER SERVICES INC.**  
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DATE: 11/19/08  
DRAWING NO: 08-255  
SHEET 21 OF 28

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P.O. Box 1000719  
P.E. # 44167

DATE: MAR 13 2009  
P.E. SIGNATURE/DATE

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

DESIGN LOAD (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"	
35.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	
40.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	
45.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	
50.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	
55.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	
60.0	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	11'-0"	
65.0	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"	
75.0	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"	
85.0	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"	
95.0	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"	
105.0	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"	
115.0	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"	
125.0	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"	
135.0	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"	
145.0	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"	
155.0	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"	

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

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

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

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
 Rolling Shutter Systems

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DATE: 11/19/08  
 DRAWING NO: 08-255  
 SHEET 22 OF 26

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EP-0006719 P.E.  
 WALTER A. TILLY  
 FLORIDA LIC. # 44167

STAMP: TILTECO INC. TILT TESTING & ENGINEERING COMPANY  
 DATE: MAR 13 2009  
 P.E. SEAL/SIGNATURE/DATE



**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)

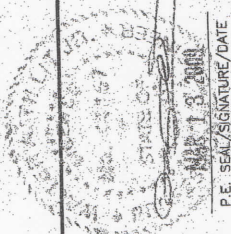
DESIGN LOAD (p.s.f.)	STORM BAR SPACING "a" (ft)									
	2'	2.667'	3'	3.5'	4'	4.5'	5'	5.5'	6'	6.667'
30.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
35.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
40.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
45.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
50.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
55.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
60.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
65.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
70.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
75.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
80.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
85.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
90.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
95.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
100.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
105.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
110.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
115.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
120.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
125.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
130.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
135.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
140.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
145.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
150.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
155.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
160.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD

**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	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
35.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
40.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
45.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
50.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
55.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
60.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
65.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
70.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
75.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
80.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
85.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
90.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
95.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
100.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
105.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
110.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
115.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
120.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
125.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
130.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
135.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
140.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
145.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
150.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
155.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD
160.0	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD	ABCD

ANCHORS TYPE LEGEND	
A	3/8" 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" x 1 1/4" POWERS CALK-IN ANCHORS W/ 1 1/4" Min. EMBEDMENT* TO POURED CONCRETE (f'c = 3000 psi) & 3/8" x 16 MACHINE SCREWS
C	1/4" x 3/4" ALL POINTS SOLID-SET ANCHORS W/ 7/8" Min. EMBEDMENT* TO POURED CONCRETE (f'c = 3000 psi) & 1/4" x 20, 18-8 STAINLESS STEEL MACHINE SCREWS
D	5/16" ITW/BUILDEX TAPCON ANCHORS W/ 2 1/4" Min. EMBEDMENT* TO POURED CONCRETE (f'c = 2899 psi)

\* EMBEDMENT IS BEYOND ANY FLOOR / CEILING FINISH



STATE OF FLORIDA  
 DEPARTMENT OF CONSTRUCTION

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**TILTECO INC.**  
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 e-mail: info@tilteco.com

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
 Rolling Shutter System

**EXPERT SHUTTER SERVICES INC.**  
 1626 S.W. BILMORE STREET  
 PORT ST. LUCIE, FL 34984  
 PHONE: (888) 749-9058 FAX: (772) 871-0590

REV. No. 1

DATE 11/19/08

DESCRIPTION

REV. No. 1

DATE 11/19/08

DESCRIPTION

WALTER A. TILIT, J., 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) \*

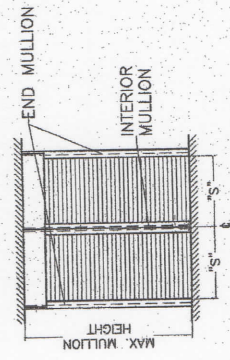
DESIGN LOAD (p.s.f.)	MAXIMUM MULLION SPAN (FT)											
	ⓐ 4"x6"x1/4" MULLION						ⓑ 4"x7"x1/4" THICK (3/8" FLANGE) MULLION					
	ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2	
30.0	11'-7"	11'-6"	9'-9"	12'-6"	12'-6"	12'-6"	12'-6"	11'-3"	11'-3"	12'-6"	12'-6"	
35.0	10'-7"	10'-11"	9'-2"	12'-6"	12'-6"	12'-6"	12'-6"	10'-4"	10'-4"	12'-6"	12'-6"	
40.0	9'-10"	10'-5"	8'-9"	12'-6"	12'-6"	12'-6"	12'-6"	9'-7"	9'-7"	12'-6"	12'-6"	
45.0	9'-3"	10'-1"	8'-4"	12'-5"	12'-6"	12'-6"	12'-6"	9'-0"	9'-0"	12'-6"	12'-6"	
50.0	8'-9"	9'-5"	8'-1"	12'-5"	12'-6"	12'-6"	12'-6"	8'-6"	8'-6"	12'-6"	12'-6"	
55.0	8'-4"	8'-4"	7'-10"	11'-5"	12'-6"	12'-6"	12'-6"	8'-1"	8'-1"	12'-6"	12'-6"	
60.0	8'-0"	8'-0"	7'-6"	11'-4"	12'-6"	12'-6"	12'-6"	7'-8"	7'-8"	12'-6"	12'-6"	
65.0	7'-8"	8'-11"	7'-2"	11'-4"	12'-6"	12'-6"	12'-6"	7'-5"	7'-5"	12'-6"	12'-6"	
70.0	7'-4"	7'-8"	6'-11"	10'-9"	12'-6"	12'-6"	12'-6"	7'-2"	7'-2"	12'-6"	12'-6"	
75.0	7'-1"	8'-6"	6'-8"	10'-6"	12'-6"	12'-6"	12'-6"	6'-11"	6'-11"	12'-6"	12'-6"	
80.0	6'-11"	8'-4"	6'-5"	10'-3"	12'-6"	12'-6"	12'-6"	6'-8"	6'-8"	12'-6"	12'-6"	
85.0	6'-8"	8'-2"	6'-2"	10'-3"	12'-6"	12'-6"	12'-6"	6'-6"	6'-6"	12'-6"	12'-6"	
90.0	6'-5"	8'-0"	6'-0"	9'-9"	12'-6"	12'-6"	12'-6"	6'-4"	6'-4"	12'-6"	12'-6"	
95.0	6'-4"	7'-10"	5'-11"	9'-8"	12'-6"	12'-6"	12'-6"	6'-2"	6'-2"	12'-6"	12'-6"	
100.0	6'-2"	7'-8"	5'-9"	8'-3"	12'-6"	12'-6"	12'-6"	6'-0"	6'-0"	12'-6"	12'-6"	
105.0	6'-0"	7'-7"	5'-8"	7'-10"	11'-6"	11'-6"	11'-6"	5'-10"	5'-10"	12'-6"	12'-6"	

**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 SPAN (FT)											
	ⓐ 4"x6"x1/4" MULLION						ⓑ 4"x7"x1/4" THICK (3/8" FLANGE) MULLION					
	ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2		ORIENTATION #1		ORIENTATION #2	
30.0	9'-9"	11'-6"	9'-2"	12'-6"	12'-6"	12'-6"	12'-6"	11'-3"	11'-3"	12'-6"	12'-6"	
35.0	9'-2"	10'-11"	8'-9"	12'-6"	12'-6"	12'-6"	12'-6"	10'-4"	10'-4"	12'-6"	12'-6"	
40.0	8'-9"	10'-5"	8'-4"	12'-6"	12'-6"	12'-6"	12'-6"	9'-7"	9'-7"	12'-6"	12'-6"	
45.0	8'-4"	10'-1"	8'-1"	12'-5"	12'-6"	12'-6"	12'-6"	9'-0"	9'-0"	12'-6"	12'-6"	
50.0	8'-1"	9'-8"	7'-10"	11'-5"	12'-6"	12'-6"	12'-6"	8'-6"	8'-6"	12'-6"	12'-6"	
55.0	7'-10"	9'-5"	7'-6"	11'-4"	12'-6"	12'-6"	12'-6"	8'-1"	8'-1"	12'-6"	12'-6"	
60.0	7'-6"	9'-2"	7'-2"	11'-4"	12'-6"	12'-6"	12'-6"	7'-8"	7'-8"	12'-6"	12'-6"	
65.0	7'-2"	8'-11"	6'-11"	10'-9"	12'-6"	12'-6"	12'-6"	7'-5"	7'-5"	12'-6"	12'-6"	
70.0	6'-11"	8'-8"	6'-8"	10'-6"	12'-6"	12'-6"	12'-6"	7'-2"	7'-2"	12'-6"	12'-6"	
75.0	6'-8"	8'-6"	6'-5"	10'-3"	12'-6"	12'-6"	12'-6"	6'-11"	6'-11"	12'-6"	12'-6"	
80.0	6'-5"	8'-4"	6'-5"	10'-3"	12'-6"	12'-6"	12'-6"	6'-8"	6'-8"	12'-6"	12'-6"	
85.0	6'-3"	8'-2"	6'-2"	10'-3"	12'-6"	12'-6"	12'-6"	6'-6"	6'-6"	12'-6"	12'-6"	
90.0	6'-1"	8'-0"	6'-0"	9'-9"	12'-6"	12'-6"	12'-6"	6'-4"	6'-4"	12'-6"	12'-6"	
95.0	5'-11"	7'-10"	5'-11"	9'-8"	12'-6"	12'-6"	12'-6"	6'-2"	6'-2"	12'-6"	12'-6"	
100.0	5'-9"	7'-8"	5'-9"	8'-3"	12'-6"	12'-6"	12'-6"	6'-0"	6'-0"	12'-6"	12'-6"	
105.0	5'-8"	7'-7"	5'-8"	7'-10"	11'-6"	11'-6"	11'-6"	5'-10"	5'-10"	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 SHUTTER.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

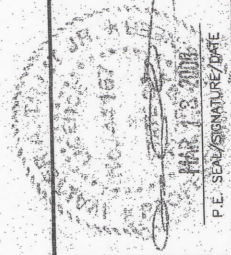
**Nautilus**  
Rolling Shutter Systems

**EXPERT SHUTTER SERVICES INC.**  
1624 S.W. BILMORE STREET  
PORT ST. LUCIE, FL 34984  
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**TILECO INC.**  
TILE TESTING & ENGINEERING COMPANY  
4352 N.W. 30th St., Suite 300, Fort Lauderdale, FL 33309  
Phone: 1-800-368-1431  
e-mail: tileco@col.com

DATE: 11/18/08  
DRAWING No: 08-255  
SHEET 25 OF 26

DATE: 11/18/08  
DRAWING No: 08-255  
SHEET 25 OF 26

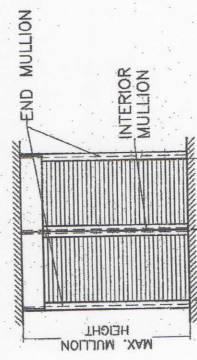


**SCHEDULE 1c**

**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 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	ORIENTATION #1	ORIENTATION #2	ORIENTATION #1	ORIENTATION #2		
30.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
35.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
40.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
45.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
50.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
55.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
60.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
65.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
70.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
75.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
80.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
85.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
90.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
95.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
100.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
105.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
110.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
115.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
120.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
125.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
130.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
135.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
140.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
145.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
150.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
155.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
160.0	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	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 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	ORIENTATION #1	ORIENTATION #2	ORIENTATION #1	ORIENTATION #2		
30.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
35.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"		
40.0	7'-0"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	12'-6"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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"	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 SHUTTER.

FLORIDA BUILDING CODE (Non High Velocity Hurricane Zone)

**Nautilus**  
Rolling Shutter System

**EXPERT SHUTTER SERVICES INC.**  
1626 S.W. BILTMORE STREET  
PORT ST. LUCIE, FL 34984  
PHONE: (800) 749-8066 • FAX: (772) 871-0990

DRAWN BY: M.C.V./L.G.  
DATE: 11/18/08

OR-255  
DRAWING NO

SHEET 26 OF 26

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**TILTECO INC.**

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