



**MIAMI-DADE COUNTY**  
**BUILDING CODE COMPLIANCE OFFICE (BCCO)**  
**PRODUCT CONTROL DIVISION**

**MIAMI-DADE COUNTY, FLORIDA**  
**METRO-DADE FLAGLER BUILDING**  
**140 WEST FLAGLER STREET, SUITE 1603**  
**MIAMI, FLORIDA 33130-1563**  
**(305) 375-2901 FAX (305) 372-6339**

**[www.miamidade.gov/building](http://www.miamidade.gov/building)**

**NOTICE OF ACCEPTANCE (NOA)**

**High Velocity Hurricane Protection**  
**3390 Mercantile Avenue**  
**Naples, FL 34104**

**SCOPE:**

This NOA is being issued under the applicable rules and regulations governing the use of construction materials. The documentation submitted has been reviewed by Miami-Dade County Product Control Division and accepted by the Board of Rules and Appeals (BORA) to be used in Miami Dade County and other areas where allowed by the Authority Having Jurisdiction (AHJ).

This NOA shall not be valid after the expiration date stated below. The Miami-Dade County Product Control Division (In Miami Dade County) and/or the AHJ (in areas other than Miami Dade County) reserve the right to have this product or material tested for quality assurance purposes. If this product or material fails to perform in the accepted manner, the manufacturer will incur the expense of such testing and the AHJ may immediately revoke, modify, or suspend the use of such product or material within their jurisdiction. BORA reserves the right to revoke this acceptance, if it is determined by Miami-Dade County Product Control Division that this product or material fails to meet the requirements of the applicable building code. This product is approved as described herein, and has been designed to comply with the Florida Building Code, including the High Velocity Hurricane Zone.

**DESCRIPTION: Category 5 Aluminum Hurricane Abatement System – L.M.I.**

**APPROVAL DOCUMENT:** Drawing No. **09-HVH-0001**, titled "Category 5 Rolling Hurricane Curtain", prepared by Engineering Express, dated 11/10/10, sheets 1 through 5 of 5, signed and sealed by Frank L. Bennardo, P.E., bearing the Miami-Dade County Product Control revision stamp with the Notice of Acceptance number and expiration date by the Miami-Dade County Product Control Division.

**MISSILE IMPACT RATING: Large and Small Missile Impact Resistant**

**LABELING:** Each unit shall bear a permanent label with the manufacturer's name or logo, city, state and following statement: "Miami-Dade County Product Control Approved", unless otherwise noted herein.

**RENEWAL** of this NOA shall be considered after a renewal application has been filed and there has been no change in the applicable building code negatively affecting the performance of this product.

**TERMINATION** of this NOA will occur after the expiration date or if there has been a revision or change in the materials, use, and/or manufacture of the product or process. Misuse of this NOA as an endorsement of any product, for sales, advertising or any other purposes shall automatically terminate this NOA. Failure to comply with any section of this NOA shall be cause for termination and removal of NOA.

**ADVERTISEMENT:** The NOA number preceded by the words Miami-Dade County, Florida, and followed by the expiration date may be displayed in advertising literature. If any portion of the NOA is displayed, then it shall be done in its entirety.

**INSPECTION:** A copy of this entire NOA shall be provided to the user by the manufacturer or its distributors and shall be available for inspection at the job site at the request of the Building Official. This NOA **revises NOA # 09-0511.02** and consists of this page 1 and evidence pages E-1 and E-2, as well as approval document mentioned above.

The submitted documentation was reviewed by **Carlos M. Utrera, P.E.**



*[Handwritten Signature]*  
 12/02/10

**NOA No. 10-0831.07**  
**Expiration Date: August 12, 2014**  
**Approval Date: December 23, 2010**  
**Page 1**

High Velocity Hurricane Protection

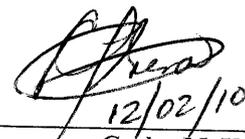
NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED

A. DRAWINGS

1. Drawing No. **09-HVH-0001**, titled "Category 5 Rolling Hurricane Curtain", prepared by Engineering Express, sheets 1 through 5 of 5, dated 11/10/10, signed and sealed by Frank L. Bennardo, P.E.

B. TESTS

1. Test reports on Uniform Static Air Pressure Test per TAS 202 of Category 5 Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-10-3000**, dated 02/12/10, signed and sealed by Candido F. Font, P.E.
  2. Test reports on Large Missile Impact Test per TAS 201-94 and Cyclic Wind Loading Test per TAS 203-94 of Category 5 Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-10-3001**, dated 02/12/10, signed and sealed by Candido F. Font, P.E.
- "Submitted under NOA # 09-0511.02"*
3. Test reports on Uniform Static Air Pressure Test per TAS 202 of Category 5 Dual End Retention Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-09-2503A**, dated 01/30/09, signed and sealed by Candido F. Font, P.E.
  4. Test reports on Large Missile Impact Test per TAS 201-94 and Cyclic Wind Loading Test per TAS 203-94 of Category 5 Dual End Retention Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-09-2503B**, dated 01/30/09, signed and sealed by Candido F. Font, P.E.
  5. Test reports on Uniform Static Air Pressure Test per TAS 202 of Category 5 Dual End Retention Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-09-2504A**, dated 01/30/09, signed and sealed by Candido F. Font, P.E.
  6. Test reports on Large Missile Impact Test per TAS 201-94 and Cyclic Wind Loading Test per TAS 203-94 of Category 5 Dual End Retention Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-09-2504B**, dated 01/30/09, signed and sealed by Candido F. Font, P.E.



Carlos M. Utrera, P.E.  
Product Control Examiner  
NOA No. 10-0831.07

Expiration Date: August 12, 2014  
Approval Date: December 23, 2010

**High Velocity Hurricane Protection**

**NOTICE OF ACCEPTANCE: EVIDENCE SUBMITTED**

**C. TESTS (Continued)**

7. Test reports on Uniform Static Air Pressure Test per TAS 202 of Category 5 Dual End Retention Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-09-2505A**, dated 01/30/09, signed and sealed by Candido F. Font, P.E.
8. Test reports on Large Missile Impact Test per TAS 201-94 and Cyclic Wind Loading Test per TAS 203-94 of Category 5 Dual End Retention Rolling Hurricane Curtain, prepared by Hurricane Engineering & Testing, Inc., Report No. **HETI-09-2505B**, dated 01/30/09, signed and sealed by Candido F. Font, P.E.
9. Test report on Tensile Test of Category 5 Dual End Retention Rolling Hurricane Curtain Slats, Test Report No. **HETI-09-T100**, prepared by Hurricane Engineering & Testing, Inc., dated 01/30/09, signed and sealed by Candido F. Font, P.E.

**C. CALCULATIONS**

1. Anchoring calculations and comparative analysis prepared Engineering Express, sheets 1 through 12 of 12, dated 08/25/10, signed and sealed by Frank L. Bennardo, P.E.

**D. QUALITY ASSURANCE**

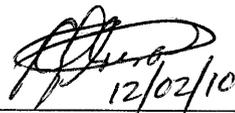
1. Miami Dade Building Code Compliance Office (BCCO)

**E. MATERIAL CERTIFICATIONS**

1. None.

**F. STATEMENTS**

1. Statement letter of code conformance to FBC 2007, issued by Engineering Express, dated 08/25/10, signed and sealed by Frank L. Bennardo, PE.
2. No financial interest letter issued by Engineering Express, dated 08/25/10, signed and sealed by Frank L. Bennardo, P.E.



12/02/10

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Carlos M. Utrera, P.E.  
Product Control Examiner  
NOA No. 10-0831.07  
Expiration Date: August 12, 2014  
Approval Date: December 23, 2010

# CATEGORY 5 ROLLING HURRICANE CURTAIN

## LARGE MISSILE IMPACT RESISTANT FOR USE WITHIN AND OUTSIDE THE HVHZ

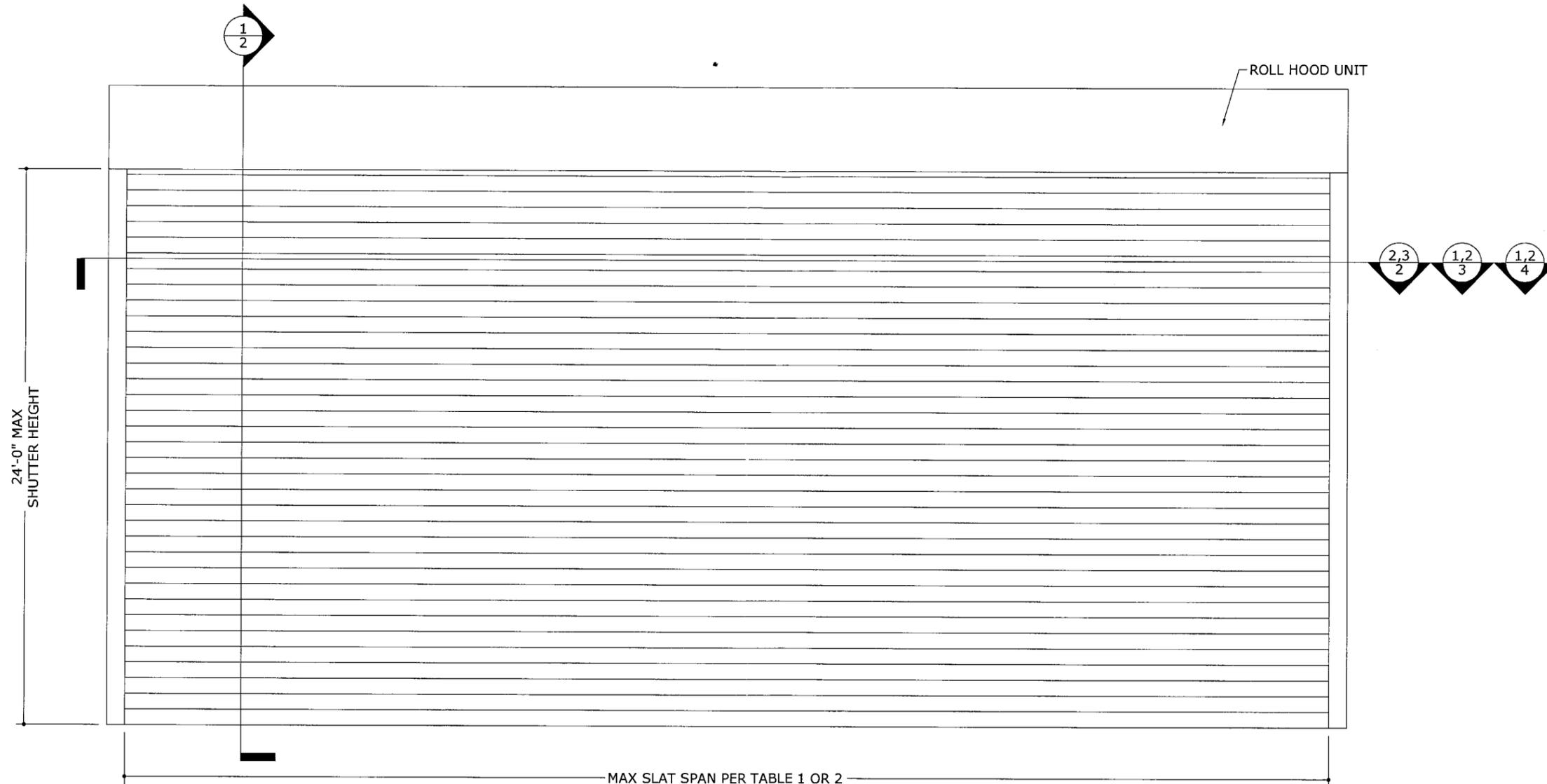
FRANK L. BENNARDO, P.E.  
# PE0046549

11/10/2010



160 SW 12th AVENUE, #106  
DEERFIELD BEACH, FL 33442  
Ph: (954) 354-0660 Fax: (954) 354-0443  
WWW.ENGEXP.COM

CERT OF AUTH #9885  
A FRANK L. BENNARDO, P.E., INC. INNOVATION



1
1
**TYPICAL ELEVATION**  
 N.T.S. EXTERIOR ELEV

### GENERAL NOTES

1. THE SYSTEM DESCRIBED HEREIN HAS BEEN DESIGNED AND TESTED AS AN IMPACT RESISTANT HURRICANE ABATEMENT PRODUCT IN ACCORDANCE WITH THE 2007 FLORIDA BUILDING CODE, FOR USE INSIDE AND OUTSIDE THE HIGH VELOCITY HURRICANE ZONE, PER TAS 201 / 202 / 203 TEST STANDARDS.
2. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM.
3. POSITIVE AND NEGATIVE DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED BY OTHERS ON A JOB-SPECIFIC BASIS IN ACCORDANCE WITH THE GOVERNING CODE.
4. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.
5. PERMIT HOLDER SHALL VERIFY THE ADEQUACY OF THE EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS.
6. ALL EXTRUSIONS SHALL BE OF THE MATERIALS INDICATED HEREIN.
7. ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH A MINIMUM TENSILE YIELD STRENGTH OF 60 KSI.
8. ALL STEEL IN CONTACT WITH ALUMINUM SHALL BE PAINTED OR PLATED.

### HIGH VELOCITY HURRICANE

3390 MERCANTILE AVENUE  
NAPLES, FL 34104  
PHONE: (239) 403-2650

CATEGORY 5 ROLLING HURRICANE CURTAIN  
LARGE MISSILE IMPACT RESISTANT  
FOR USE WITHIN AND OUTSIDE THE HVHZ

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RKB	CL	04/15/09
REV. PER ADDL. TESTING	KL	FLB	06/03/10
REV. PER BCCO COMMENTS	KL	FLB	11/10/10

**09-HVH-0001**

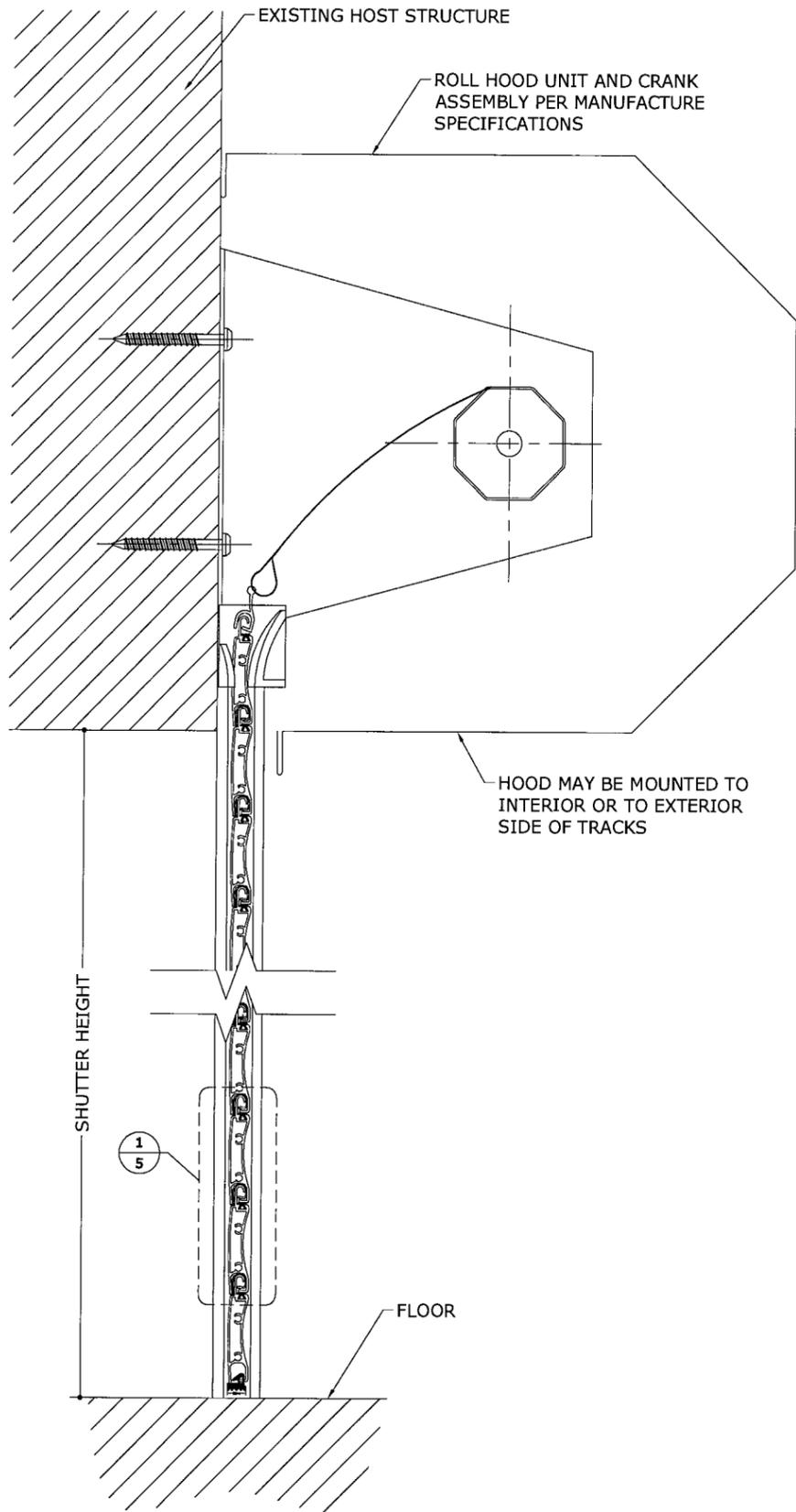
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PAGE DESCRIPTION:

**PRODUCT REVISED**  
as complying with the Florida  
Building Code  
Acceptance No. 12-083107  
Expiration Date 09/12/2019  
By: *[Signature]*  
Miami Dade Product Control  
Division

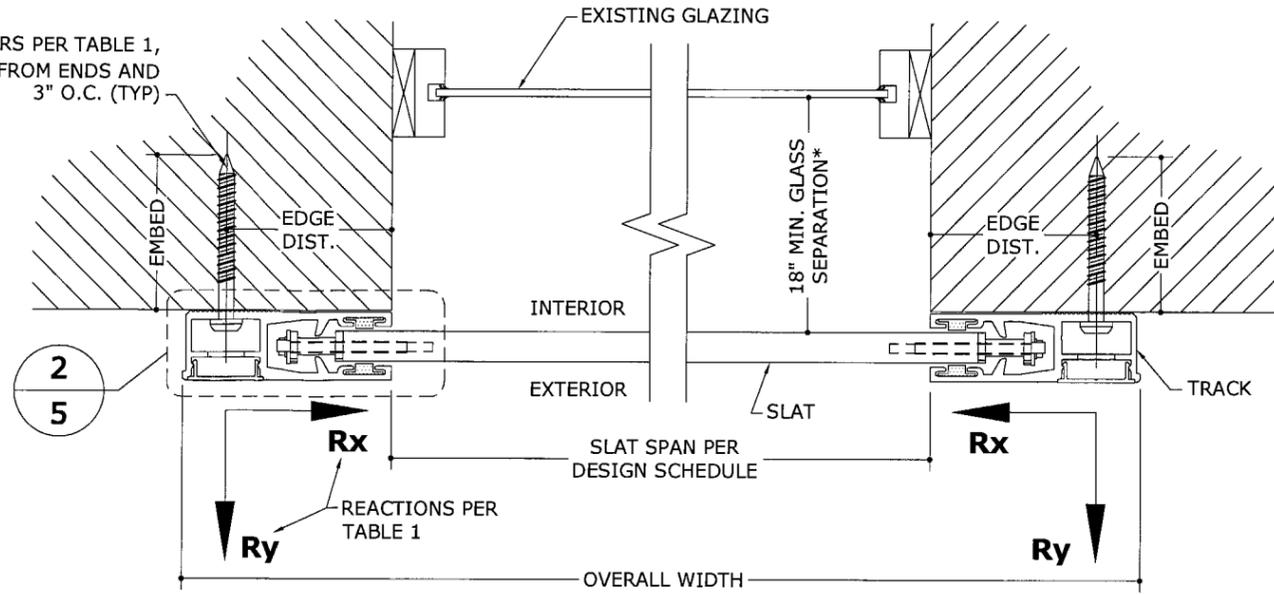
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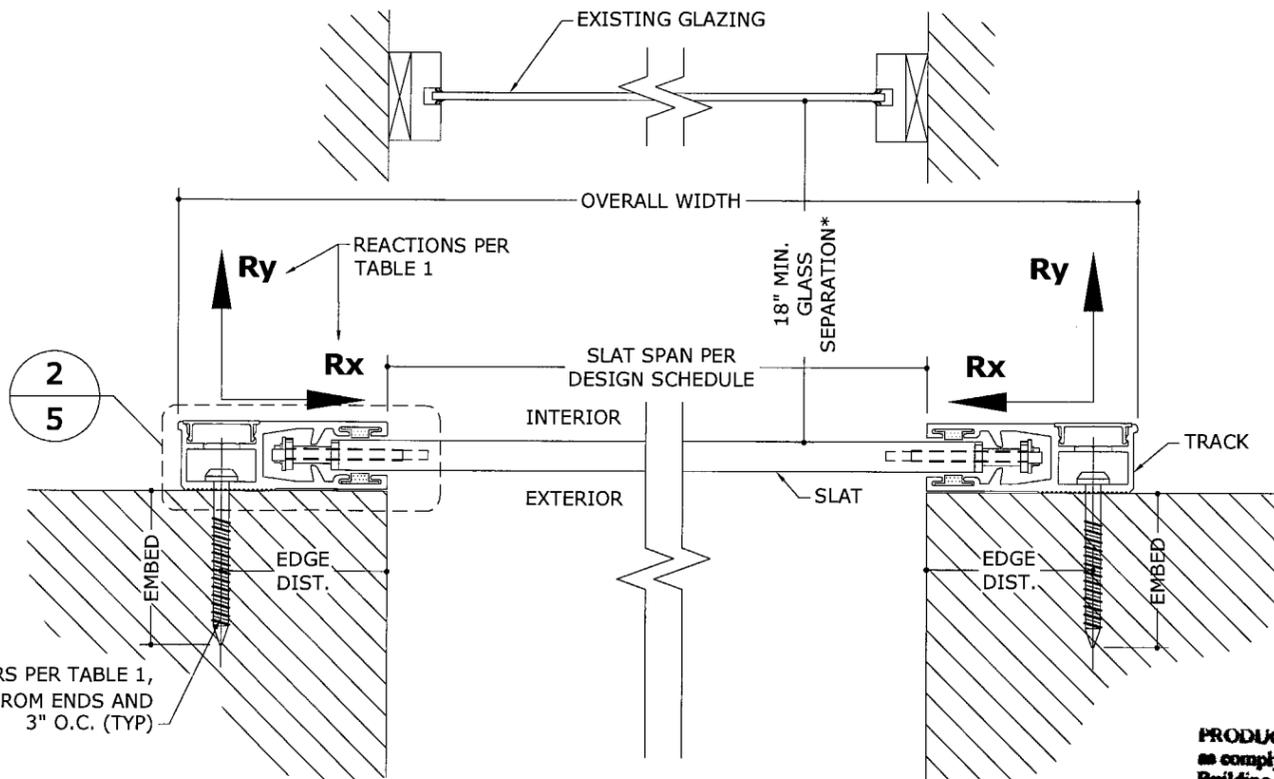
**1** TYPICAL SECTION  
**2** N.T.S. VERT SECTION

ANCHORS PER TABLE 1,  
 1 3/4" FROM ENDS AND  
 3" O.C. (TYP)



**2** TYPICAL EXTERIOR MOUNT  
**2** N.T.S. HORIZ SECTION

\*NOTE: NO MINIMUM SEPARATION FROM GLASS REQUIRED FOR USE OUTSIDE THE HVHZ AND OUTSIDE ASTM WIND ZONE 4.



**3** TYPICAL INTERIOR MOUNT  
**2** N.T.S. HORIZ SECTION

NOTE: NOT APPROVED FOR USE WITH 26'-0" SPAN

PRODUCT REVISED as complying with the Florida Building Code  
 Acceptance No 10-0931.07  
 Expiration Date 08/12/2014  
 By *[Signature]*  
 Miami Trade Product Control Division

FRANK L. BENNARDO, P.E.  
 #PE0046549

11/10/2010

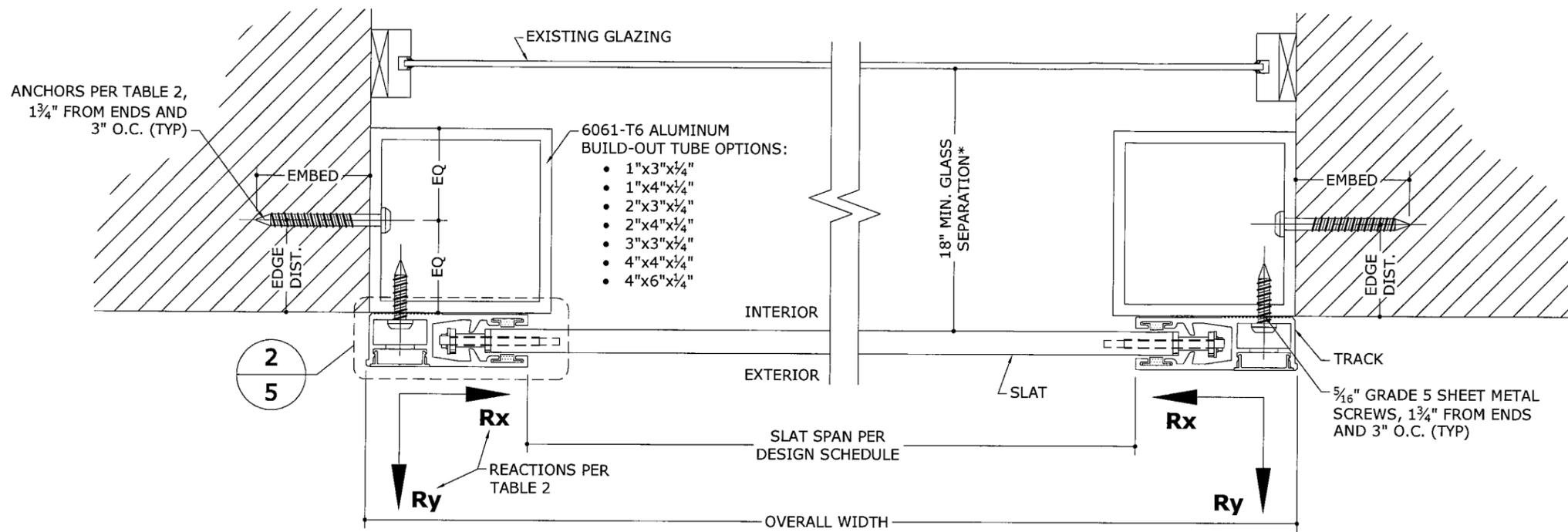
**ENGINEERING EXPRESS**  
 160 SW 12th AVENUE, #106  
 DEERFIELD BEACH, FL 33442  
 Ph: (954) 354-0660 Fax: (954) 354-0443  
 WWW.ENGEXP.COM  
 CERT. OF AUTH. #9885  
 A FRANK L. BENNARDO, P.E., INC. INNOVATION

**HIGH VELOCITY HURRICANE**  
 3390 MERCANTILE AVENUE  
 NAPLES, FL 34104  
 PHONE: (239) 403-2650  
 CATEGORY 5 ROLLING HURRICANE CURTAIN  
 LARGE MISSILE IMPACT RESISTANT  
 FOR USE WITHIN AND OUTSIDE THE HVHZ

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RKB	CL	04/15/09
REV. PER ADDL. TESTING	KL	FLB	06/03/10
REV. PER BCCO COMMENTS	KL	FLB	11/10/10

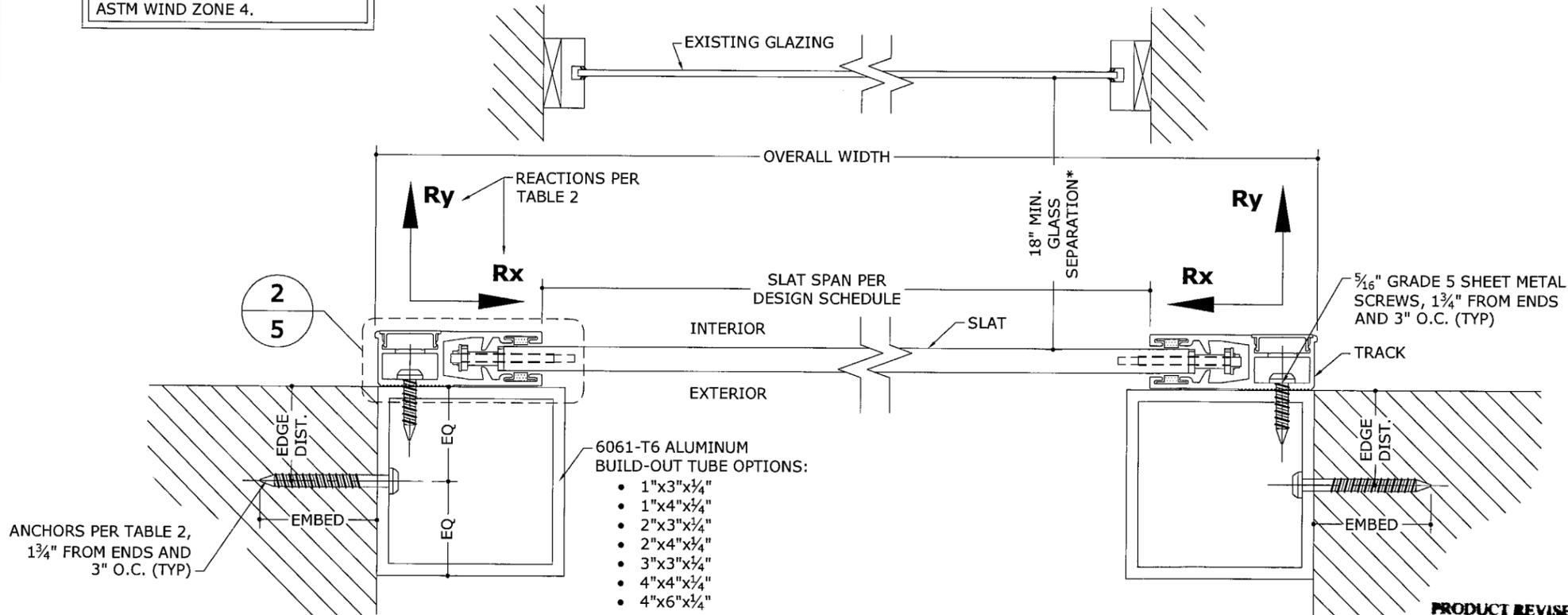
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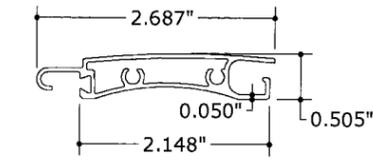
**1** TYPICAL EXTERIOR BUILD-OUT TUBE MOUNT  
**3** N.T.S. HORIZ SECTION

\*NOTE: NO MINIMUM SEPARATION FROM GLASS REQUIRED FOR USE OUTSIDE THE HVHZ AND OUTSIDE ASTM WIND ZONE 4.

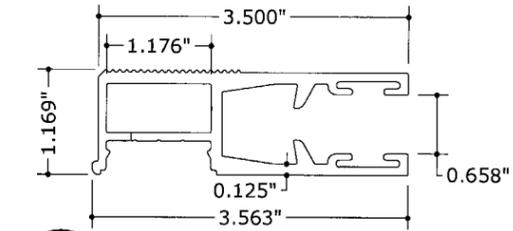


**2** TYPICAL INTERIOR BUILD-OUT TUBE MOUNT  
**3** N.T.S. HORIZ SECTION

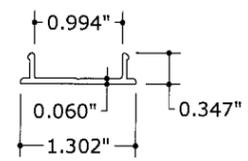
NOTE: NOT APPROVED FOR USE WITH 26-0" SPAN



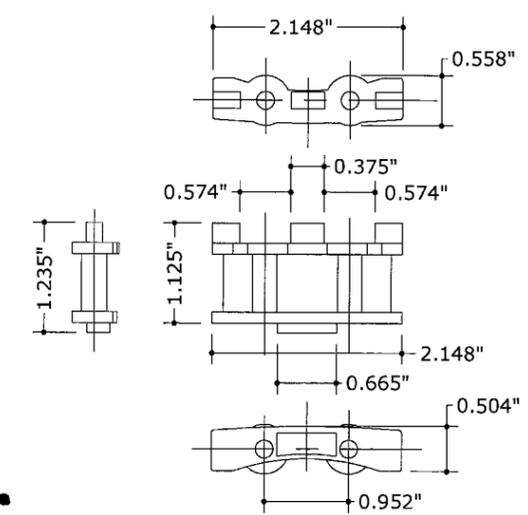
**3** SLAT  
**3** 6063-T6 ALUM. ALLOY  
 6" = 1'-0"



**4** TRACK  
**3** 6063-T6 ALUM. ALLOY  
 6" = 1'-0"



**5** TRACK COVER  
**3** 6063-T5 ALUM. ALLOY  
 6" = 1'-0"



**6** WINDLOCK  
**3** REINF. NYLON (MFD BY M&M PLASTICS)  
 6" = 1'-0"

PRODUCT REVISED as complying with the Florida Building Code  
 Acceptance No 10-0831.07  
 Expiration Date 09/12/2014  
 By *[Signature]*  
 Miami Dade Product Control Division

FRANK L. BENNARDO, P.E.  
 #PE0046549

11/10/2010

**ENGINEERING EXPRESS**  
 160 SW 12th AVENUE, #106  
 DEERFIELD BEACH, FL 33442  
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 CERT OF AUTH #6885  
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DRWN	CHKD	DATE
RKB	CL	04/15/09
KL	FLB	06/03/10
KL	FLB	11/10/10

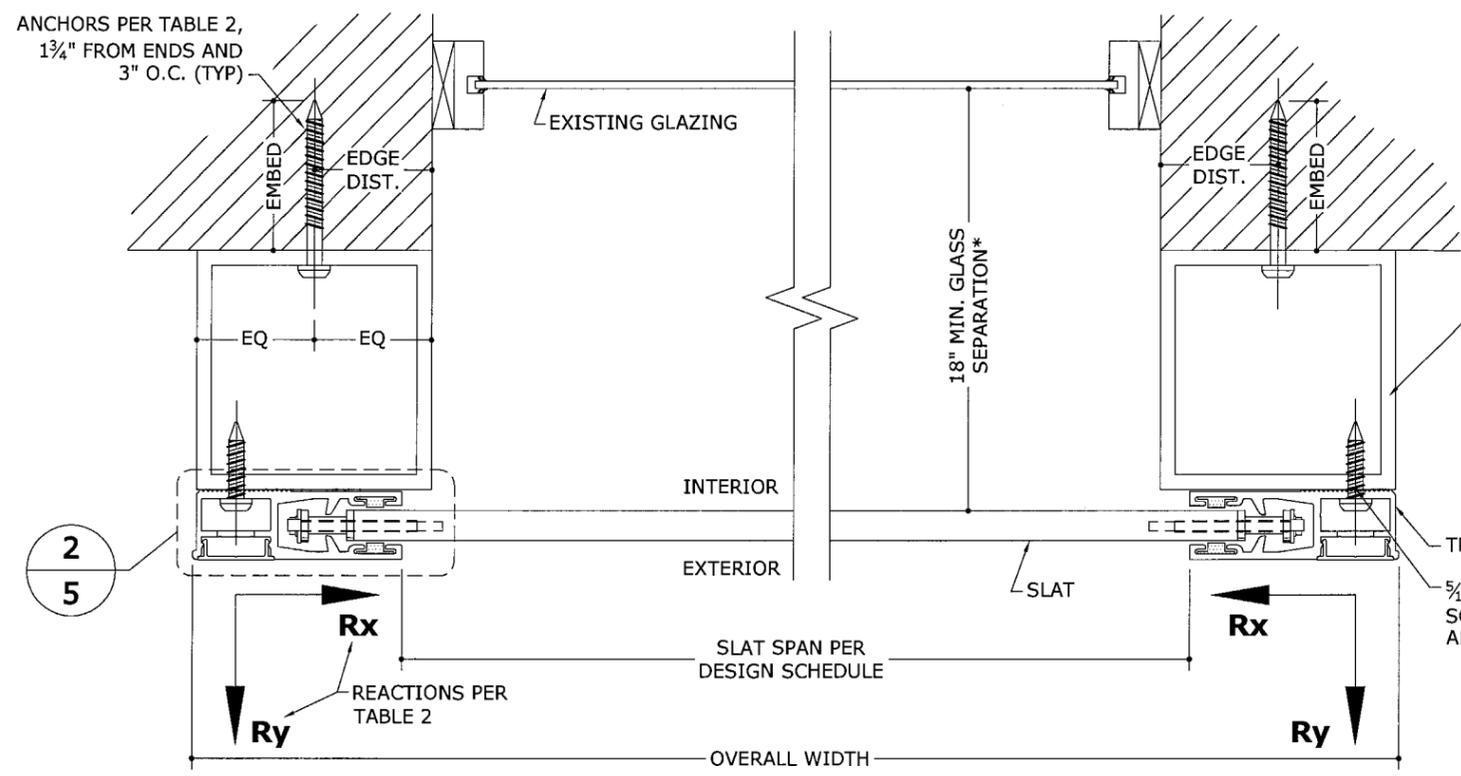
  

REMARKS
INT ISSUE
REV. PER ADDL. TESTING
REV. PER BCCO COMMENTS

09-HVH-0001  
 SCALE: 02  
 PAGE DESCRIPTION:

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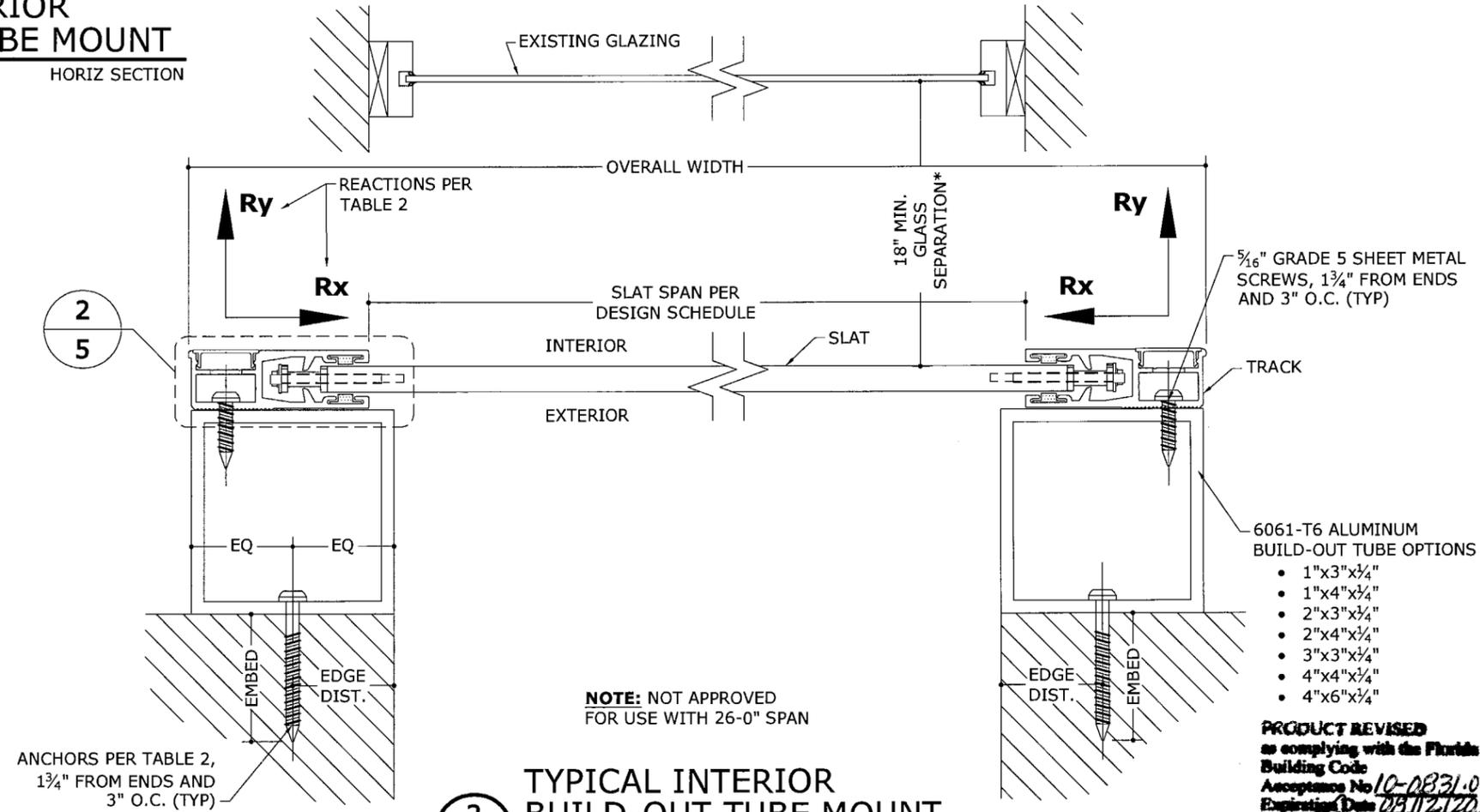
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- 6061-T6 ALUMINUM BUILD-OUT TUBE OPTIONS:
- 1"x3"x $\frac{1}{4}$ "
  - 1"x4"x $\frac{1}{4}$ "
  - 2"x3"x $\frac{1}{4}$ "
  - 2"x4"x $\frac{1}{4}$ "
  - 3"x3"x $\frac{1}{4}$ "
  - 4"x4"x $\frac{1}{4}$ "
  - 4"x6"x $\frac{1}{4}$ "

**1**  
**4** N.T.S. **TYPICAL EXTERIOR BUILD-OUT TUBE MOUNT**  
HORIZ SECTION

\*NOTE: NO MINIMUM SEPARATION FROM GLASS REQUIRED FOR USE OUTSIDE THE HVHZ AND OUTSIDE ASTM WIND ZONE 4.



**2**  
**4** N.T.S. **TYPICAL INTERIOR BUILD-OUT TUBE MOUNT**  
HORIZ SECTION

NOTE: NOT APPROVED FOR USE WITH 26'-0" SPAN

**PRODUCT REVISED**  
as complying with the Florida Building Code  
Acceptance No 10-0831-07  
Expiration Date 03/12/2010  
By *[Signature]*  
Miami Dade Product Control Division

FRANK L. BENNARDO, P.E.  
#PE0046549  
**11/10/2010**

**ENGINEERING EXPRESS**  
160 SW 12th AVENUE, # 106  
DEERFIELD BEACH, FL 33442  
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REMARKS	DRWN	CHKD	DATE
INIT ISSUE	RKB	CL	04/15/09
REV. PER ADD'L TESTING	KL	FLB	06/03/10
REV. PER BCCO COMMENTS	KL	FLB	11/10/10

**09-HVH-0001**  
SCALE: **1/2**

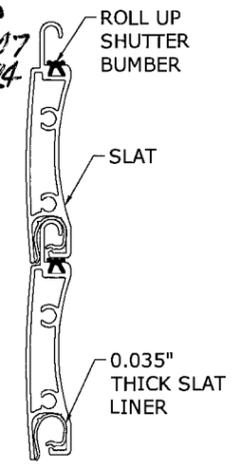
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**TABLE 1: DIRECT MOUNT INSTALLATION**

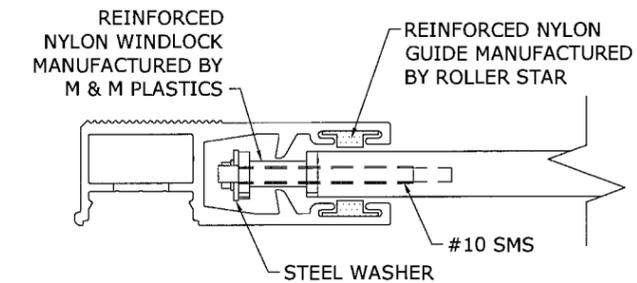
SUBSTRATE	ANCHOR TYPE	SLAT SPAN															
		12'-0"				16'-0"				20'-0"				26'-0"			
		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)	
+	-	Ry	Rx	+	-	Ry	Rx	+	-	Ry	Rx	+	-	Ry	Rx		
A36 STEEL (3/16" MIN)	5/16" GRADE 5 SHEET METAL SCREW	80.0	80.0	480.0	2560.0	80.0	80.0	640.0	3014.7	61.7	56.2	617.2	3828.9	37.6	45.1	585.7	3893.7
6061-T6 ALUMINUM (1/4" MIN)	5/16" GRADE 5 SHEET METAL SCREW	80.0	80.0	480.0	2560.0	70.3	73.1	585.0	2647.5	44.7	40.7	447.5	2772.6	27.2	32.6	424.4	2815.2
CONCRETE (3000 PSI MIN)	5/16" ITW TAPCON WITH 2-1/4" MIN EMBED AND 3-1/8" MIN EDGE DISTANCE	59.2	59.6	357.7	1895.7	49.3	51.3	410.5	1859.6	31.6	28.7	315.6	1958.4	19.3	23.0	299.5	1992.3
	3/8" HILTI HIT-RE 500 EPOXY ANCHOR WITH 4-1/2" MIN EMBED, 4" MIN EDGE DISTANCE AND S.S. HAS ROD	80.0	80.0	480.0	2560.0	80.0	80.0	640.0	3014.7	80.0	80.0	800.0	5454.5	50.0	60.0	780.0	5173.5
	3/8" POWERS WEDGE-BOLT WITH 3-1/2" MIN EMBED AND 3" MIN EDGE DISTANCE	80.0	80.0	480.0	2560.0	80.0	80.0	640.0	3014.7	50.5	45.7	504.6	3113.5	30.4	36.7	477.4	3144.6
GROUT-FILLED BLOCK	5/16" ITW TAPCON WITH 2-1/4" MIN EMBED AND 4" MIN EDGE DISTANCE	67.9	68.3	410.0	2172.5	56.6	58.9	471.5	2134.4	36.1	32.8	361.1	2238.4				

\*NOTE: 26'-0" SPAN IS NOT APPROVED FOR INTERIOR MOUNT CONDITIONS

**PRODUCT REVISED**  
 Complying with the Florida Building Code  
 Acceptance No. 10-0831.07  
 Expiration Date 12/12/2014  
 By: [Signature]  
 Mission/Design Product Control Division



**1 SLAT ASSEMBLY**  
 5 6" = 1'-0" VERT SECTION



**2 TRACK ASSEMBLY**  
 5 6" = 1'-0" HORIZ SECTION

**TABLE 2: BUILD-OUT TUBE MOUNT INSTALLATION**

SUBSTRATE	ANCHOR TYPE	SLAT SPAN															
		12'-0"				16'-0"				20'-0"				26'-0"			
		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)		ALLOWABLE DESIGN PRESSURES (PSF)		REACTIONS (LB/FT)	
+	-	Ry	Rx	+	-	Ry	Rx	+	-	Ry	Rx	+	-	Ry	Rx		
A36 STEEL (3/16" MIN)	5/16" GRADE 5 SHEET METAL SCREW	80.0	80.0	480.0	2560.0	70.3	73.1	585.0	2647.5	44.7	40.7	447.5	2772.6	27.2	32.6	424.4	2815.2
6061-T6 ALUMINUM (1/4" MIN)	5/16" GRADE 5 SHEET METAL SCREW	80.0	80.0	480.0	2560.0	70.3	73.1	585.0	2647.5	44.7	40.7	447.5	2772.6	27.2	32.6	424.4	2815.2
CONCRETE (3000 PSI MIN)	5/16" ITW TAPCON WITH 2-1/4" MIN EMBED AND 3-1/8" MIN EDGE DISTANCE	59.2	59.6	357.7	1895.7	49.3	51.3	410.5	1859.6	31.6	28.7	315.6	1958.4	19.3	23.0	299.5	1992.3
	3/8" HILTI HIT-RE 500 EPOXY ANCHOR WITH 4-1/2" MIN EMBED, 4" MIN EDGE DISTANCE AND S.S. HAS ROD	80.0	80.0	480.0	2560.0	70.3	73.1	585.0	2647.5	44.7	40.7	447.5	2772.6	27.2	32.6	424.4	2815.2
	3/8" POWERS WEDGE-BOLT WITH 3-1/2" MIN EMBED AND 3" MIN EDGE DISTANCE	80.0	80.0	480.0	2560.0	70.3	73.1	585.0	2647.5	44.7	40.7	447.5	2772.6	27.2	32.6	424.4	2815.2
GROUT-FILLED BLOCK	5/16" ITW TAPCON WITH 2-1/4" MIN EMBED AND 4" MIN EDGE DISTANCE	67.9	68.3	410.0	2172.5	56.6	58.9	471.5	2134.4	36.1	32.8	361.1	2238.4				

\*NOTE: 26'-0" SPAN IS NOT APPROVED FOR INTERIOR MOUNT CONDITIONS

**TABLE NOTES:**

1. DETERMINE WHICH MOUNTING CONDITION IS APPLICABLE AND SELECT TABLE 1 OR 2 ACCORDINGLY.
2. TO DETERMINE THE ALLOWABLE DESIGN PRESSURES AND REACTIONS, MATCH THE ANCHOR TYPE WITH THE CORRESPONDING SLAT SPAN.
3. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
4. EDGE DISTANCE OF 1/2" IS ACCEPTABLE FOR ANCHORS TO STEEL OR ALUMINUM.
5. MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR SCHEDULE. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
6. MACHINE SCREWS SHALL BE INSTALLED WITH FULL ENGAGEMENT OF THREADS INTO METAL HOST STRUCTURE AND MAY HAVE EITHER A FLAT HEAD, PAN HEAD, TRUSS HEAD, OR OTHER HEAD STYLES.
7. [Hatched Box] DENOTES CONDITIONS NOT APPROVED FOR USE.

FRANK L. BENNARDO, P.E.  
 #PE0046549

11/10/2010

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REMARKS	DRWN	CHKD	DATE
INIT ISSU	RLB	CL	04/15/09
REV. PER ADDL TESTING	KL	FLB	08/03/10
REV. PER BCCO COMMENTS	KL	FLB	11/10/10

**09-HVH-0001**  
 SCALE: 1/2"  
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