PRI Construction Materials Technologies LLC
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Laboratory Test Report

WATER RESISTANCE EVALUATION SERIES 3540 FLANGE PVC, SINGLE HUNG, STEEL REINFORCED WINDOW IN A CMU AND WOOD-FRAMED STUCCO WALL ASSEMBLY IN ACCORDANCE WITH ASTM E 331 AND SECTION R703.1.1, EXCEPTION 2 OF THE FLORIDA BUILDING CODE, 6TH EDITION (2017), RESIDENTIAL

(PROJECT NO. 1809T0004)

For

KONING CONSTRUCTION CONSULTANTS
8301 JOLIET STREET
HUDSON, FL 34667

JUNE 22, 2020

Purpose: Evaluate for water resistance in accordance with **Section R703.1.1, Exception 2 of the Florida Building Code, 6th Edition (2017), Residential** and **ASTM E 331: *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*.** In addition, this testing conforms with Section 1403.2, Exception 2 of the Florida Building Code, 6th Edition (2017), Building, and the 2012 and 2015 International Building Code (IBC).

Test Methods: Testing was conducted in accordance with ASTM E 331-09(2009): *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*. Testing was modified in accordance with Section R703.1.1 as follows:

> The tested assembly was tested in a 4 feet by 8 feet exterior wall format containing at least one opening, one control joint, one wall/eave interface and one wall sill. The wall assembly was tested at a minimal differential pressure of 6.24 pounds per square foot (299 Pa) for a minimum 2 hours.
>
> The "passing" criteria for this test is that the exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that the water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetrations or intersections with dissimilar materials.

Sampling: All products applied to the assembly were provided by Koning Construction Consultants. Below is an itemized list of products that are used in the Sealed Cladding System.

Product Identification	Manufacturer
GreenGuard Building Wrap	Kingspan
GreegGuard Flashing	Kingspan
StructaLath No. 17 SFRC Twin Trac 2.5	Structa Wire Corp.
DRYLOK® Extreme Masonry Waterproofer	United Gilsonite Laboratories
Vinyl Corp E-Flange Casing Beads	ClarkDietrich
Florida Super Stucco	Argos Cement LLC
DRYLOK® Extreme Masonry Waterproofer	United Gilsonite Laboratories
Series 3540 Flange PVC, single hung, steel reinforced window	MI Windows and Doors

Specimen #1 (Wood): Framing: A 8-ft x 8-ft mock-up was constructed from No.2 2x6 dimensional lumber with studs located 16-inch o.c. and sheathed with CAT 7/16 PS 2-10 OSB sheathing attached 6" o.c. with #8 x 2" bugle head wood screws. The OSB was installed with a single horizontal and single vertical joint.

Building Wrap: Kingspan GreenGuard BuildingWrap was installed with a T-Joint, having a minimum 6" overlap. All joints were taped with 4" wide Kingspan GreenGuard Flashing. The building wrap was tacked in place with 1" plastic cap nails placed randomly to hold in place.

Stucco Finish: Vinyl Corp 3/4" E-Flange Casing Beads was attached along the perimeter

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of the water with #8 x 1” lath screws spaced 24” o.c. StructaLath No. 17 SFRC Twin Trac 2.5 was installed with #8 x 1” truss-head, K-lath screws spaced maximum 16” o.c. along the horizontal dimension on the twin track. The attachment rows were spaced vertically a maximum 6” o.c. and offset 8” o.c. from the preceding row. The stucco finish was prepared by mixing Florida Super Stucco and sand at a 1:4 ratio and applied in two (2) 3/8” coats for a total thickness of 3/4”. The walls were coated with DRYLOK® Extreme Masonry Waterproofer at a rate of 100 ft^2/gal applied in two coats (13-21 wet mils per coat).

Opening: Prior to installing the building wrap, Kingspan GreenGuard Flashing was applied to the OSB sheathing over the head of the opening. The Kingspan GreenGuard BuildingWrap was cut and folded inside the opening and connected to the back of the stud. Kingspan GreenGuard Flashing was applied to the, of the inside of opening over the Kingspan Green Guard BuildingWrap. At each corner, a 4” x 12” piece of Kingspan GreenGuard Flashing was placed at 45° angle extending 12” onto the face of the wall.

Window: MI Window Series 3540 36” x 62”. An ASTM C 920 Sealant was used between the flange of the window and the OSB sheathing on the head of the window; and between the flange of the window and the Kingspan GreenGuard BuildingWrap on the Jambs. The window was fastened in through the flange at 4” in from each corner and 12” o.c. between the corners using a #6 x 2” wood screws. After the Stucco was applied and cured, an ASTM C 920 sealant was used around the perimeter of the window. After the ASTM C 920 sealant was applied and cured, DRYLOK® Extreme Masonry Waterproofer was applied around the perimeter of the window and allowed to cure.

Specimen #2 (CMU):

Wall: An 8-ft x 8-ft mock-up was constructed using CMU blocks, and Amerimix pre-blended mortar type S.

Stucco Finish: The stucco finish was prepared by mixing Florida Super Stucco and sand at a 1:4 ratio and applied in one 3/8” coat. The walls were coated with DRYLOK® Extreme Masonry Waterproofer at a rate of 100 ft^2/gal applied in two coats (13-21 wet mils per coat).

Window: MI Window Series 3540 36” x 62.5”. A 1x wood buck was installed around the head and the jambs of the opening using 3/16” x 2-3/4” tapcon screws. After the 1x wood buck was installed an ASTM C 920 sealant was applied around the perimeter of the buck. The window was installed using 3/16” x 2-3/4” tapcon screws 4” in from each Jamb in the head. Each jamb was installed 4” down from the head then 16.25”, 22”, and 16.25” using 3/16” x 2-3/4” tapcon screws.

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Results: The specimen was tested May 27, 2020. Results of testing are shown below.

Table 1. Results for ASTM E 331 (Modified per Section R703.1.1, Exception 2)

Property	Test Method	Result	Requirement
IBC 2015: Section 1403.2			
Water-penetration of Specimen #1 *[Pass/Fail]* 8' x 8' wood frame wall assembly; ΔP=6.24psf for 2h; 3.4 L/m^2·min water spray	ASTM E 331	Pass	Water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetrations or intersections with dissimilar materials.
Water-penetration of Specimen #2 *[Pass/Fail]* 8' x 8' CMU wall assembly; ΔP=6.24psf for 2h; 3.4 L/m^2·min water spray	ASTM E 331	Pass	Water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetrations or intersections with dissimilar materials.

Note(s): None

Statement of Attestation:

The performance evaluation of the Sealed Cladding System was conducted in accordance with ASTM E 330-02(2010): *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference* as described herein. The laboratory test results presented in this report are representative of the material supplied.

Signed: _____

Zachary Priest, P.E.
Director

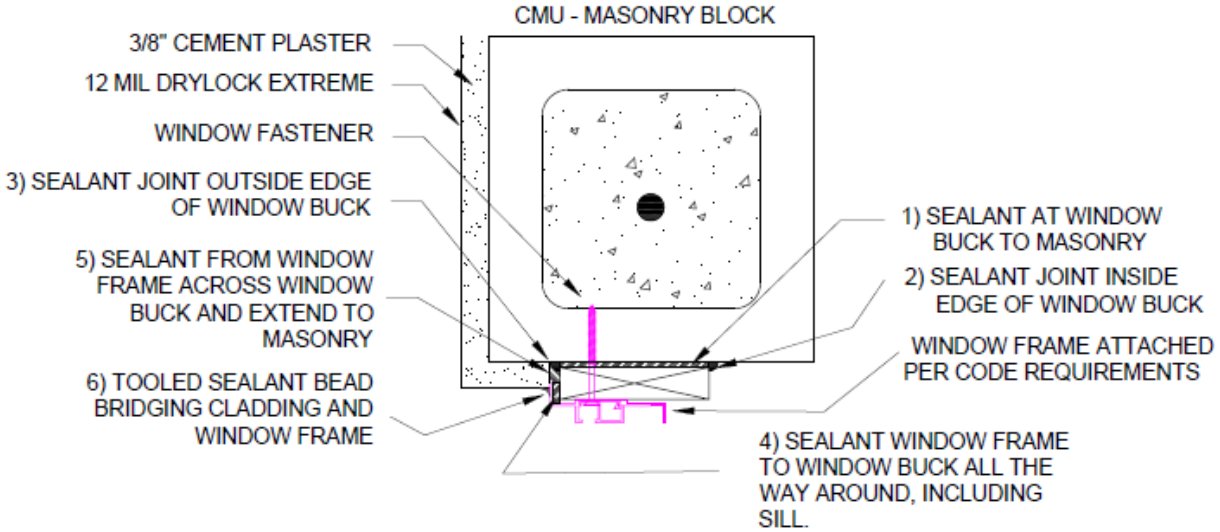
Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	06/22/2020	15	NA

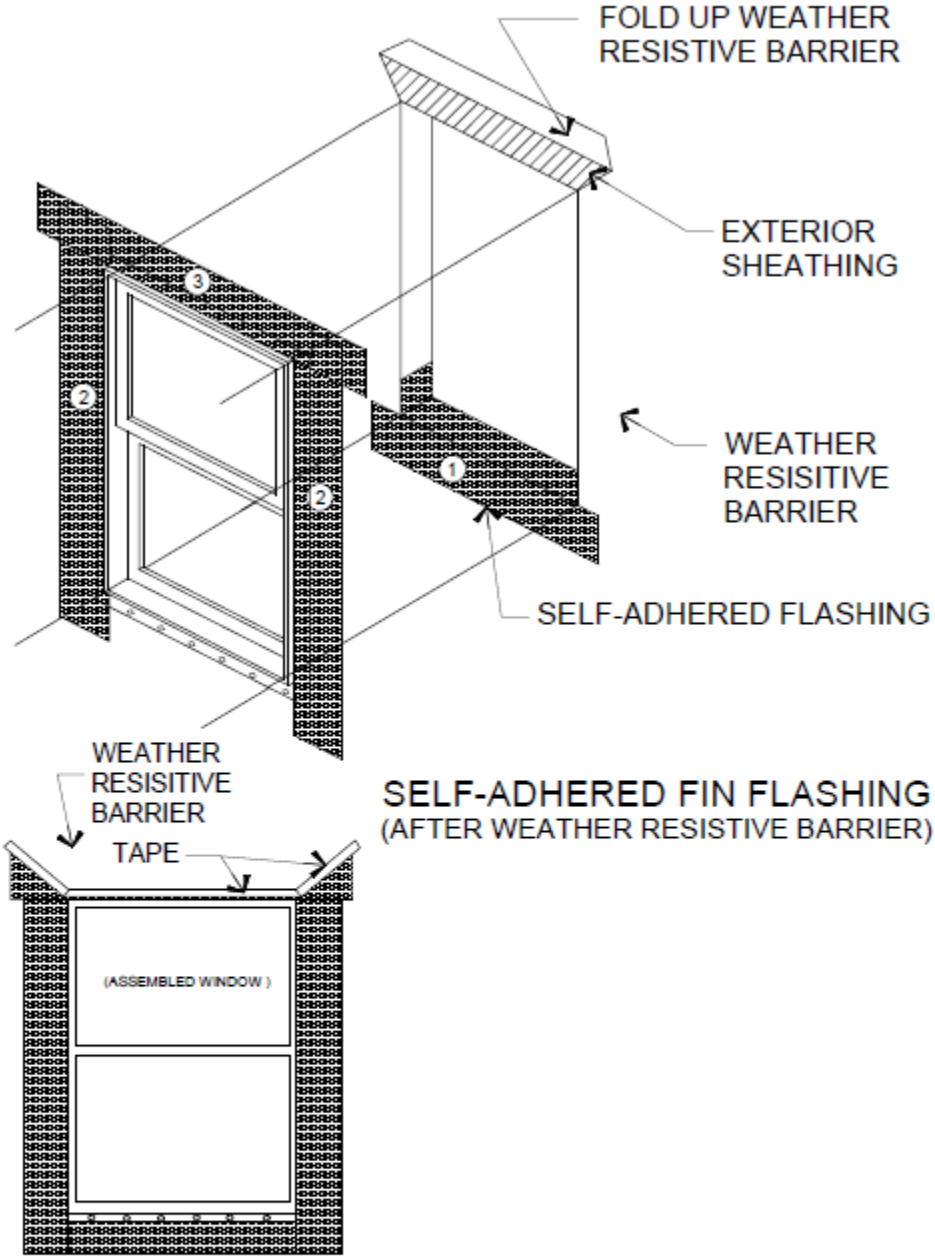
APPENDIX FOLLOWS

PRI Construction Materials Technologies LLC 6412 Badger Drive Tampa, FL 33610 Tel: 813-621-5777 Fax: 813-621-5840 e-mail: materialstesting@pricmt.com WebSite: http://www.pricmt.com

Construction Photos

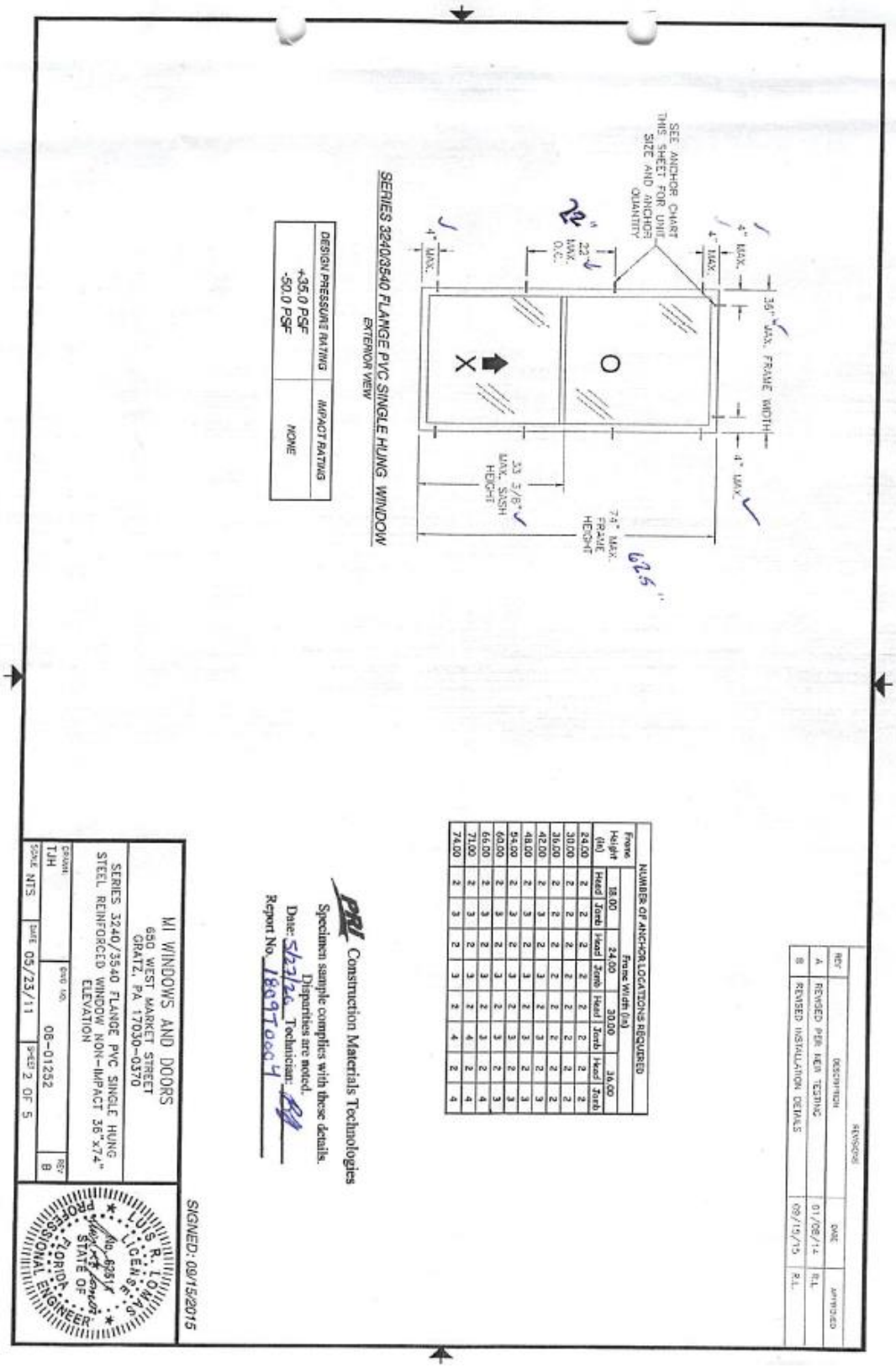


CMU INSTALLATION
6 POINT BUCK AND FENESTRATION
INSTALLATION AND INTERFACE



HEAD FLASHING TIE-IN INSTRUCTIONS:

1. Cut, fold up & temporarily secure weather resistive barrier above header to allow for flashing installation
2. Self-adhered flashing plus head flashing under weather resistive barrier
3. Fold weather resistive barrier back over head flashing and seal with tape



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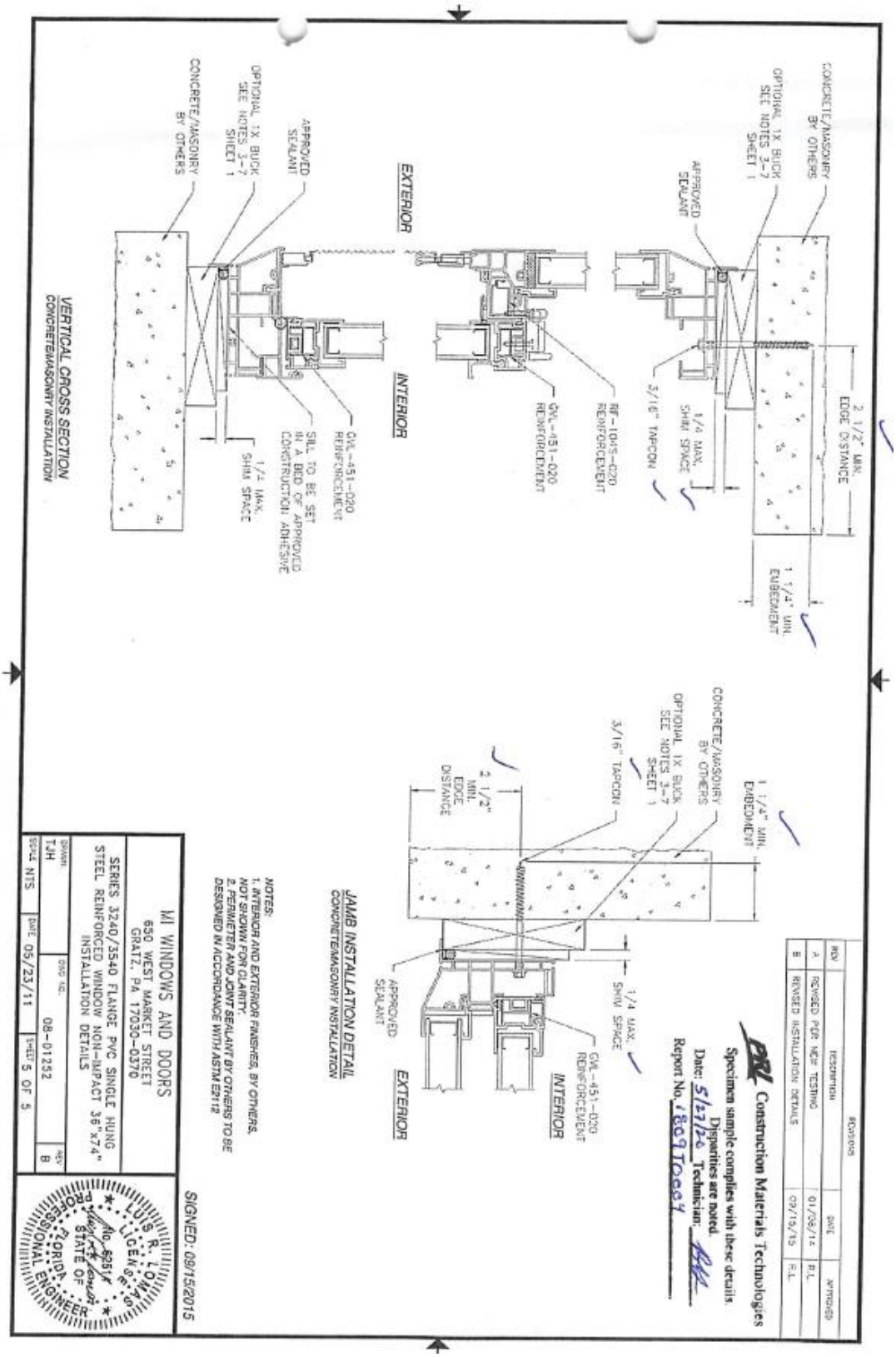

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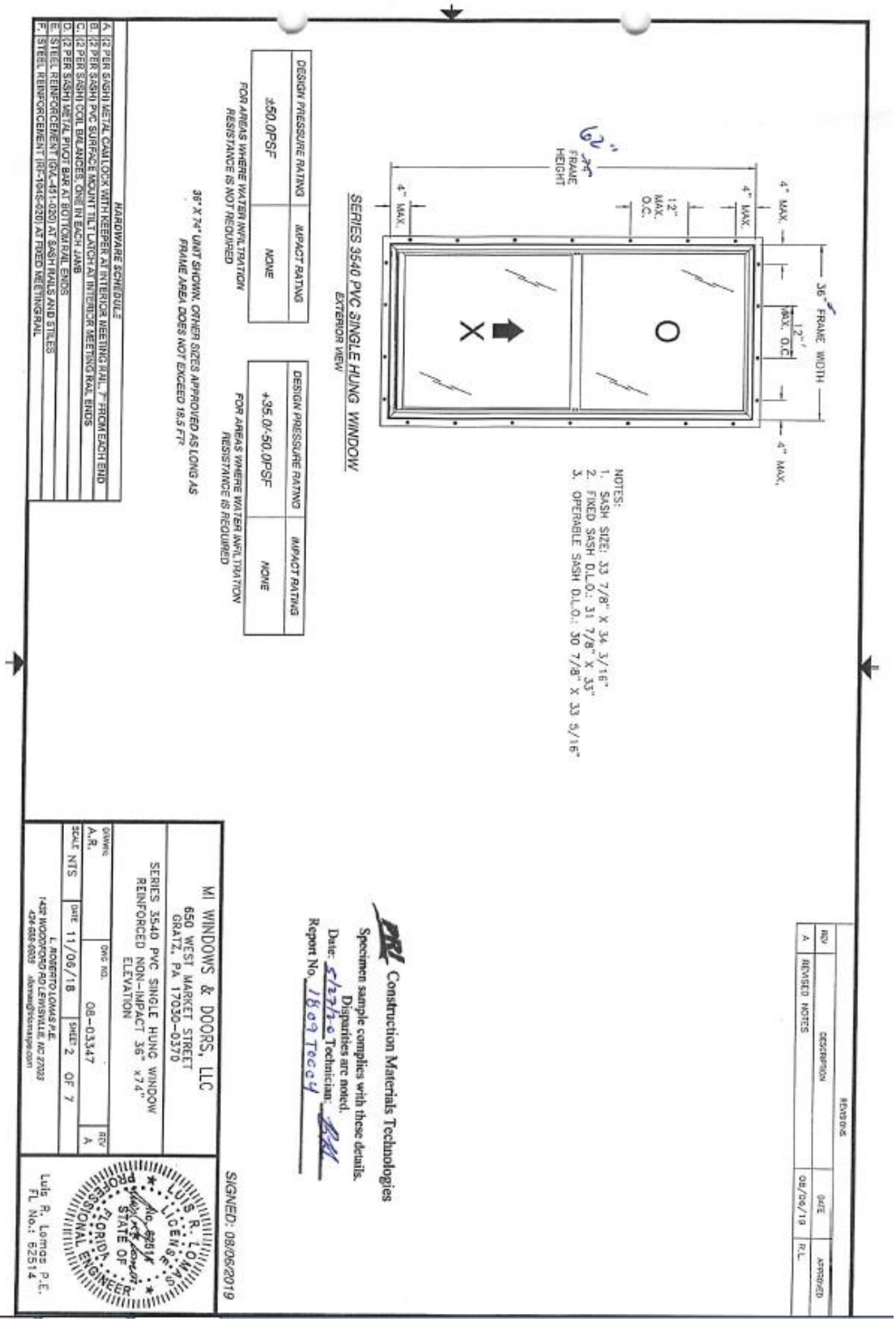

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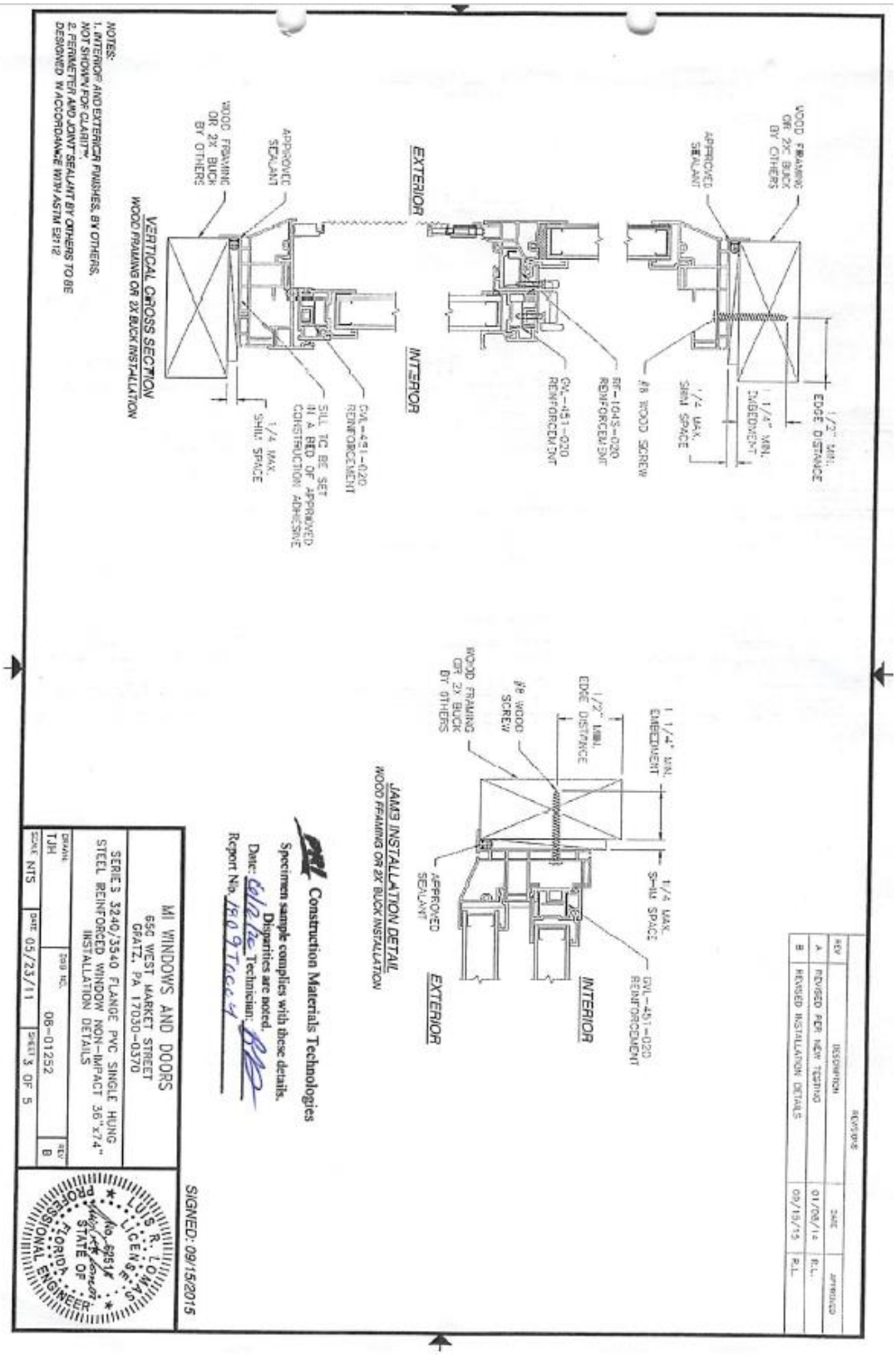

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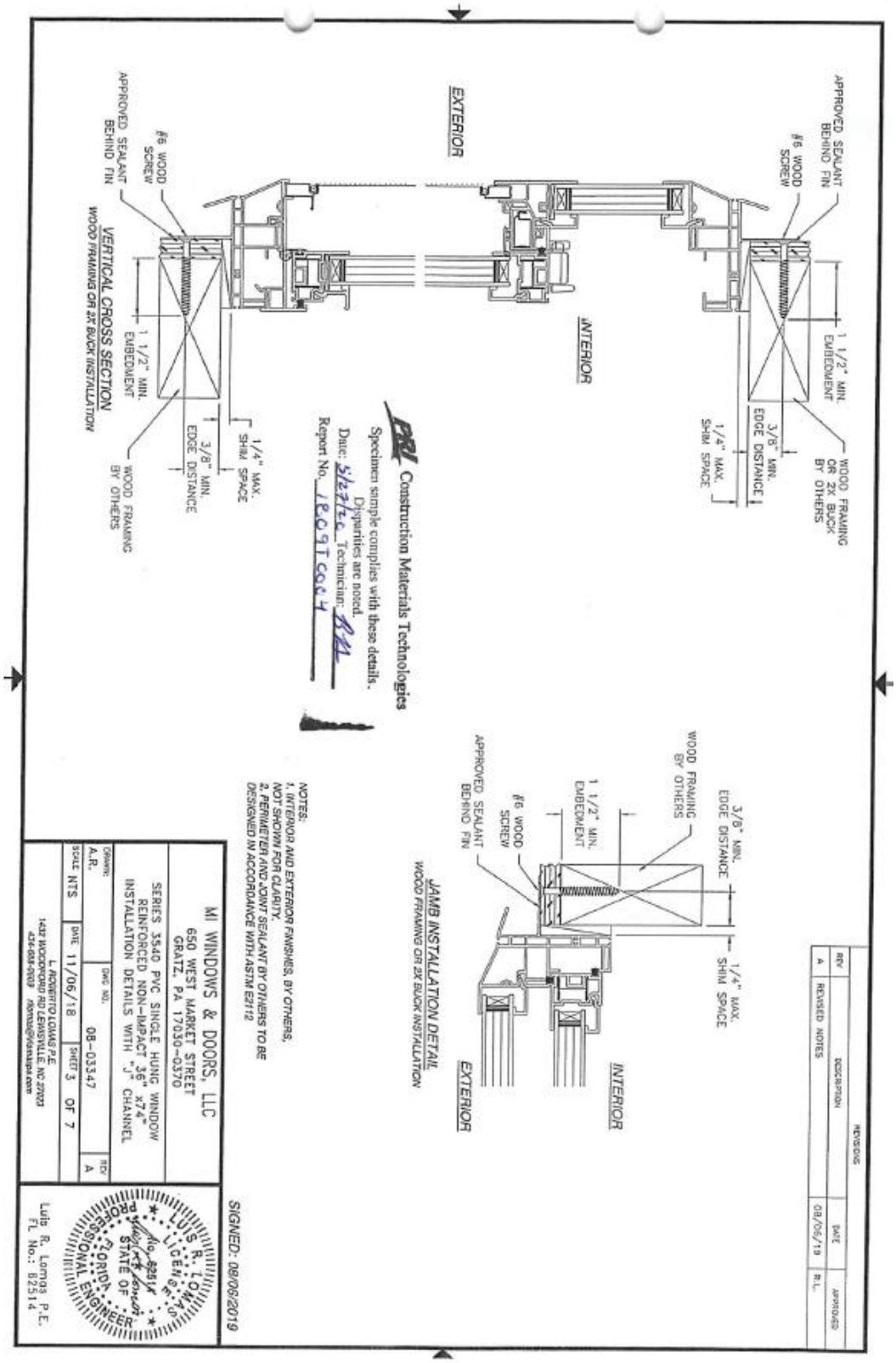

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