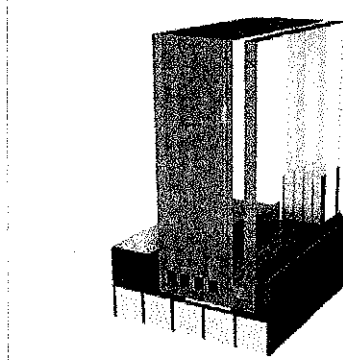


CONTRAFLAM® 60 IGU Vetrotech HI

Fire-Rated Clear Tempered Safety Glass - Hurricane Impact HMHZ Application

CLASSIFICATION

PRODUCT FEATURES



TECHNICAL SPECIFICATION

Fire Rating	60 min. Fire-Resistance-Rated
Testing / Standard Conformity	UL 10b, 10c, 263 NFPA 80/251/252/257 ASTM N/A CAN/ULC-S101, S104, S106
Building Code Marking	D-H-T-60, OH-60
Impact Safety Rating	CPSC 16CFR 1201-CAT II; CAN/CGSB-12.1-M
Nominal Thickness (in.; mm)	1-3/4" (44 mm)
Tolerance (in.; mm)	+ 1/8" to - 1/8" (+3 mm to -1.5 mm)
U-Value (BTU/hr*sq.ft**F)	0.34
STC Rating (dB)	46
Visible Light Transmission (%)	75
Weight (lbs./ft.²; kg/m²)	16
Groove (in.; mm)	Depth: 3/4" (20mm) Width: 1-7/8" (47mm)


MAXIMUM DIMENSIONS

	Window, Transom Sidelight	Door Non-Temp Rise	Door Temp Rise
Maximum Exposed Height (in.; m)*	72 (1.82)	46 7/8 1.19	46 7/8 1.19
Maximum Exposed Width (in.; m)*	60 1.52	31 5/16 (0.79)	31 5/16 (0.79)
Maximum Exposed Area (in.²; m²)	4,320 (2.78)	1467 (0.94)	1467 (0.94)

*Height multiplied by width cannot exceed maximum exposed area.

APPLICATION OPTIONS

- VDS Lite Door
- VDS Lite Frame
- Vetrotech HI



BLACKWATER TESTING INC.

Verified Dimensions Only

Date: OCT 20 2015

Test #: BT-CUN-15-018

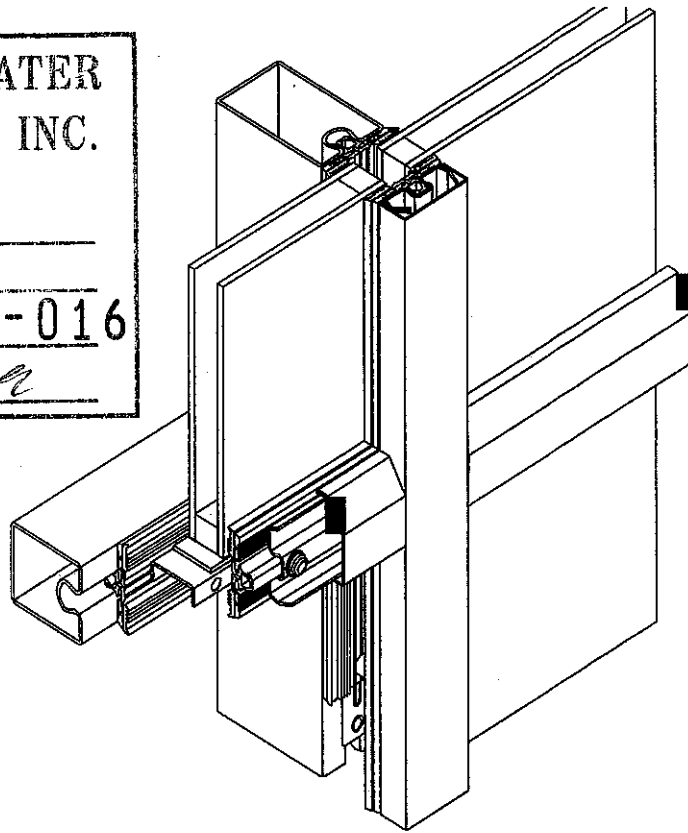
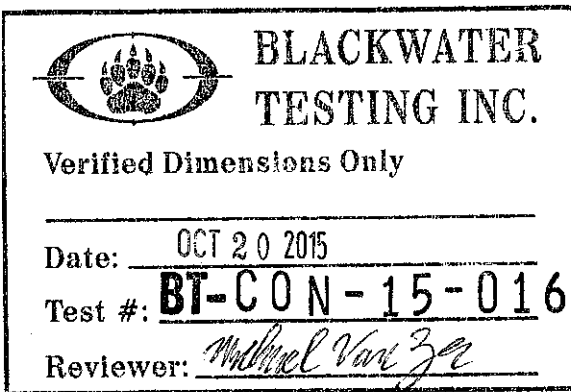
Reviewer: *Michael Van Zee*

VETROTECH HI STEEL CURTAIN WALL

INSTALLATION INSTRUCTIONS



HVHZ VDS HI CURTAINWALL SYSTEM

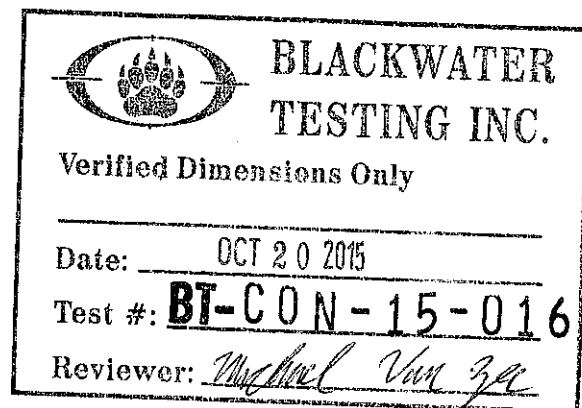


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INSTALLATION INSTRUCTION CONTENTS

These instructions show the general installation sequence and procedure for typical installations. They supplement the shop details and notations on installation and glazing.

SECTION	PAGE	
I	3-4	GENERAL NOTES * HANDLING, STORING, AND PROTECTION * GENERAL INSTALLATION INSTRUCTIONS
II	5, 6	PARTS IDENTIFICATION
III	7 - 9	FRAME ASSEMBLY
IV	10	INSTALL INTERNAL WEATHERING
V	11	PERIMETER SEALS / SETTING BLOCK SHELF
VI	12	INSTALL PERIMETER FILLER / SEAL INTERNAL WEATHERING
VII	13	INSTALL SETTING BLOCKS / TEMPORARY RETAINERS
VIII	14	INSTALL EXTERNAL WEATHERING
IX	15	INSTALL COVERS / REMOVE COVERS



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GENERAL NOTES

HANDLING, STORING, AND PROTECTION

The material must be protected against damage. The following precautions are recommended to assure early acceptance of your products and workmanship.


- A. **HANDLE CAREFULLY** - Don't drop from the truck. Stack with adequate separation so material will not rub together. Store off ground. Protect against elements and other construction trades. Wear hand protection to prevent injury due to sharp edges of cut framing members.
- B. **KEEP MATERIAL AWAY FROM WATER, MUD AND SPRAY** - Prevent cement, plaster, or other materials from damaging the finish.
- C. **PROTECT THE MATERIALS AFTER ERECTION** - Protect by wrapping with Kraft paper or by erecting Visqueen or canvas splatter screen. Cement, plaster, terrazzo, other alkaline solutions and acid based materials used to clean masonry are very harmful to the finish and should be removed with water and mild soap IMMEDIATELY.

GENERAL INSTALLATION INSTRUCTIONS

The following practices are recommended for all installations:

- A. **CHECK SHOP DRAWINGS, INSTALLATION INSTRUCTIONS and GLAZING INSTRUCTIONS** to become thoroughly familiar with the project. The SHOP DRAWINGS take precedence and include specific details for the project. The INSTALLATION INSTRUCTIONS are of a general nature and cover most common conditions.
- B. All materials are to be **INSTALLED PLUMB, LEVEL, AND TRUE**.
- C. All work should start from bench marks and/or column lines as established by the ARCHITECTURAL DRAWINGS and the GENERAL CONTRACTOR. Check mullion spacing from both ends of masonry opening to prevent dimensional build-up of day light opening.
- D. Make certain that construction which will receive your materials is in accordance with the contract documents. If not, notify the GENERAL CONTRACTOR IN WRITING and resolve differences before proceeding with your work.
- E. Check all materials on arrival for quantity and be sure you have everything required to begin installation.
- F. Sealants must be compatible with all materials with which they have contact, including other sealant surfaces. Consult with sealant manufacturer for recommendations relative to joint size, shelf life, compatibility, priming, tooling, adhesion, etc.
- G. **FASTENING** - "Fastening" means any method of securing one part to another or to adjacent materials. These instructions specify only those fasteners used within the system. Due to varying perimeter conditions and job performance requirements, anchor fasteners are not specified in these instructions. For anchor fastening, refer to the Shop Drawings for detailed anchoring options.
- H. **CHECK OPENINGS** - Make certain that the opening which will receive your materials is in accordance with the contract documents. If not, notify the General Contractor *in writing* and resolve differences before proceeding with your work.
- I. **BUILDING CODES** - Glass and glazing codes governing the design and use of products vary widely. Vetrotech Saint-Gobain does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility for these design considerations. It is the responsibility of the owner, specifier, architect, general contractor and the installer to make these selections in strict conformance with all applicable codes.
- J. **EXPANSION JOINTS** - Expansion joints and perimeter seals shown in these instructions and in the shop drawings are shown at normal size. Actual dimensions may vary due to perimeter conditions and/ or difference in metal temperature between the time of fabrication and time of installation. Any movement potential should be accounted for at the time of installation.

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BLACKWATER
INSULATING INC.

Verified Dimensions Only

Date: OCT 20 2015

Test #: BT-CON-15-016

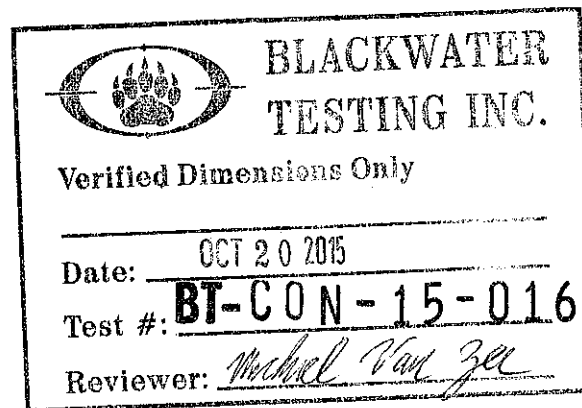
Reviewer: Mohad Vm 32




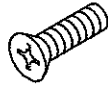

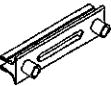
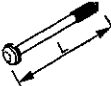
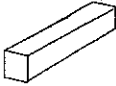
GENERAL NOTES


K. FIELD TESTING - It is recommended that a Water Hose Test be conducted once a sufficient portion of the framing is installed, glazed and caulked to ensure proper installation. The Water Hose test shall be conducted in accordance with AAMA 501.2. In addition, larger projects should have periodic Water Hose Tests as additional precautionary measures.

L. GASKET INVENTORY ROTATION - These high quality rubber extrusions are coated with silicone lubricant. Silicone will dry over time leaving a white "chalky" residue. Please rotate your stock "FIRST IN - FIRST OUT". If the rubber becomes dry, you may use water ONE TIME to reconstitute the silicone, after that, use a soap water solution.



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<p>935460</p> 	<p>Exterior weather stripping (EPDM)</p>	<p>K 10-24-0.5</p> 	<p>#10-24 x 1/2" Shear Block Fasteners</p>
<p>935461</p> 	<p>Interior weather stripping with drip cap (EPDM)</p>		
<p>936570</p> 	<p>Fastener Receiver</p>		
<p>936806</p> 	<p>Locking Screw Part number and screw length vary depending on glass thickness.</p>		
	<p>Perimeter Filler or Hardwood Spacer</p>		



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Verified Dimensions Only

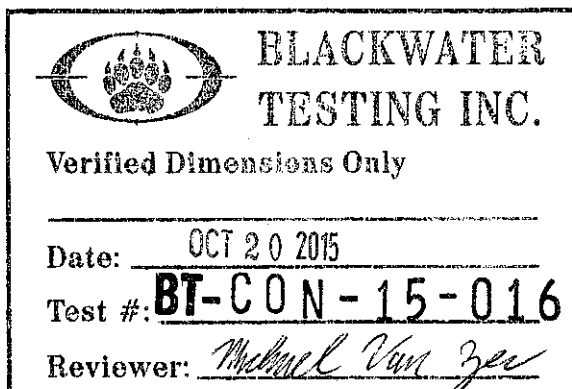
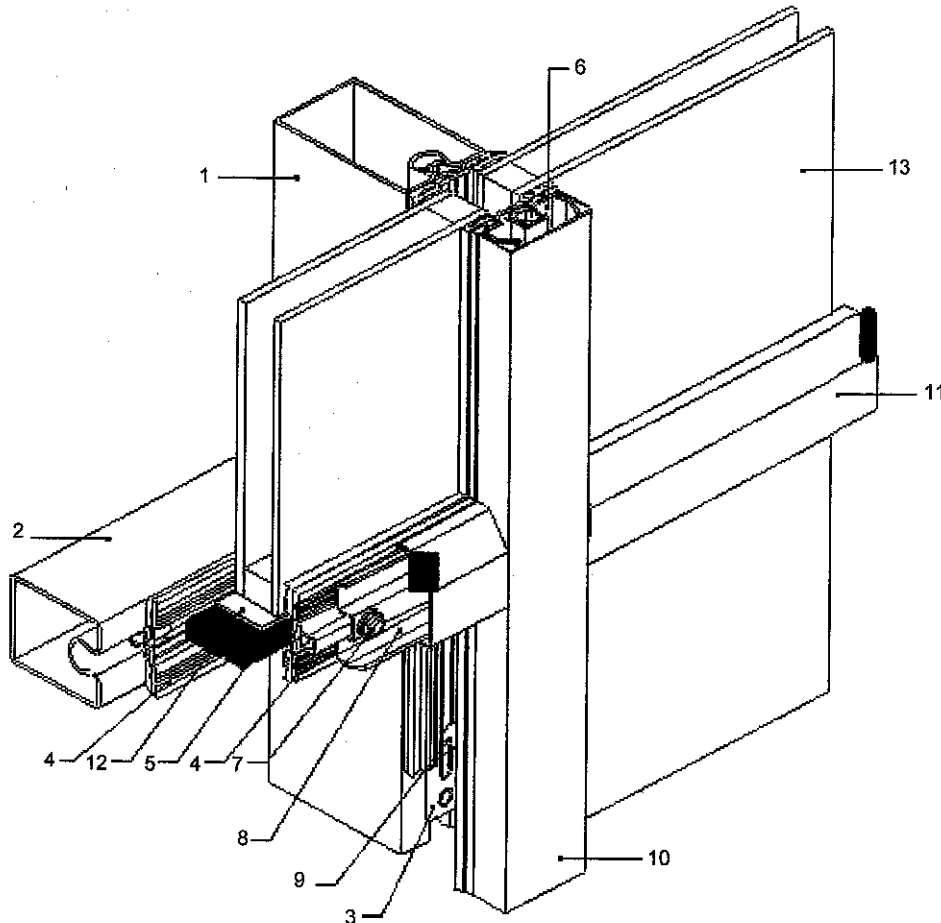
Date: OCT 20 2015

Test #: **BT-CON-15-016**

Reviewer: *Michael Van Zee*

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SECTION II - PARTS IDENTIFICATION



- 1 Vertical Mullion profile
- 2 Horizontal Mullion profile
- 3 Fastener Receiver
- 4 Weather stripping int./ext.
- 5 Solid Steel Setting Block Shelf
- 6 Pressure Plate (Vertical)
- 7 Pressure Plate (Horizontal)
- 8 Pressure Plate Screw
- 9 Spacer
- 10 Cover (Vertical)
- 11 Cover (Horizontal - Shown with optional beveled cover)
- 12 Setting block

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Principle of construction Curtain Wall (OPTION 1: Modular Assembly)



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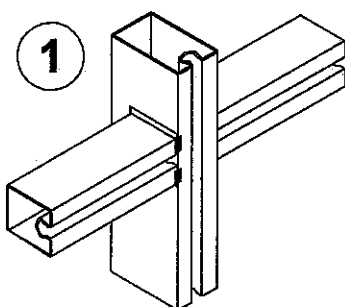
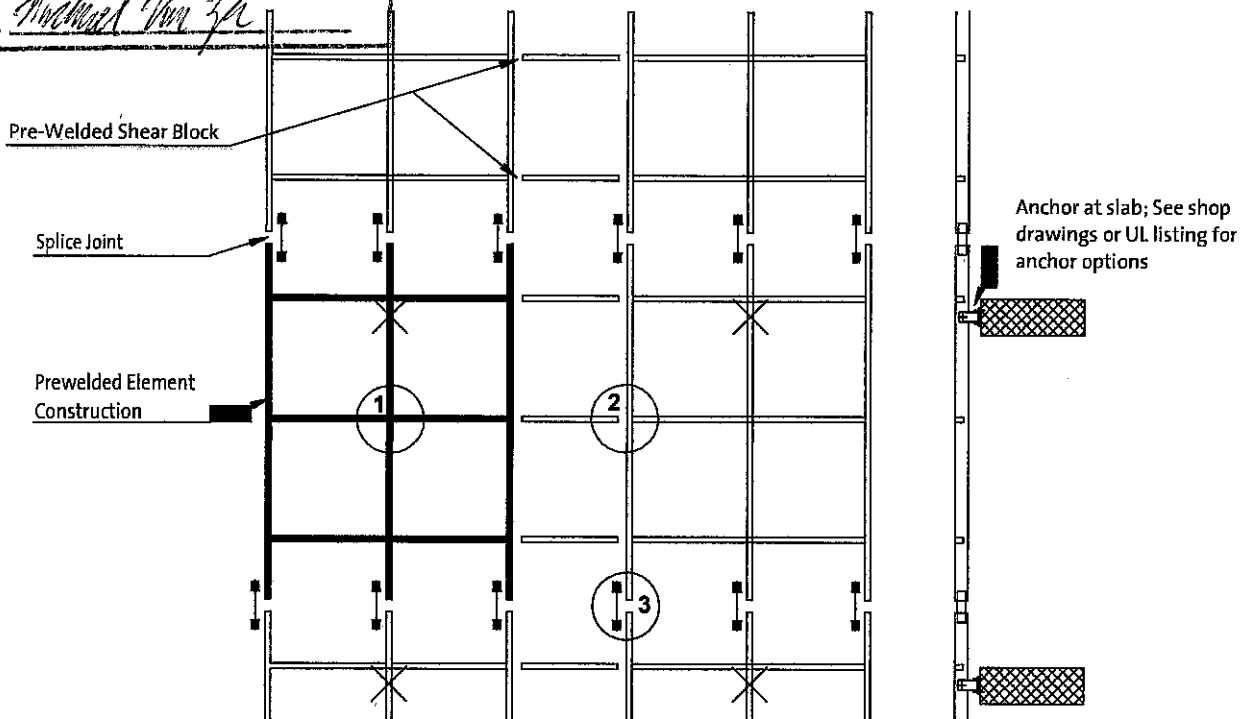
Reviewer: *Michael Van Zyl*

ELEMENTS PRE-WELDED IN WORK SHOP

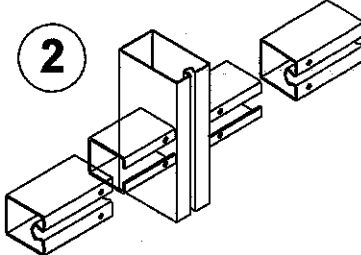
✕ ANCHOR POINT

▬ SPLICE JOINT

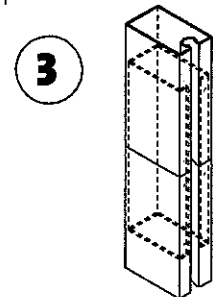
Vertical spliced joints are not UL Certified.
Vertical spliced joints will be evaluated on a project basis by an approved Florida P.E.



Pre-Welded Module



Pre-welded Shear Block



Splice Joint

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SECTION III - FRAME ASSEMBLY

Principle of construction
Curtain Wall (OPTION 2: Stick Assembly)



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Date: OCT 20 2015

Test #: BT-CON-15-016

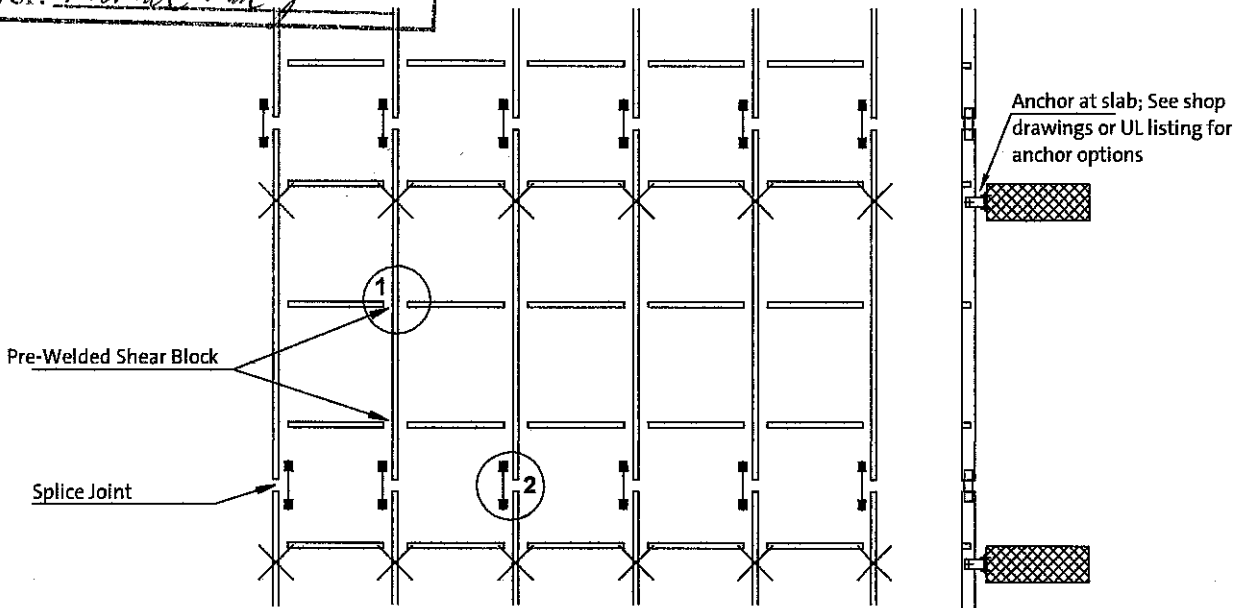
Reviewer: *Michael Van Zyl*

SLOT IN ELEMENT CONSTRUCTION

ANCHOR POINT

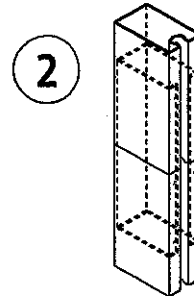
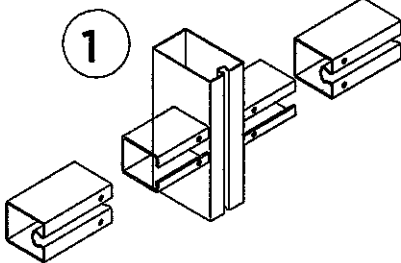
SPLICE JOINT

Vertical spliced joints are not UL Certified.
Vertical spliced joints will be evaluated on a project basis by an approved Florida P.E.



Pre-Welded Shear Block

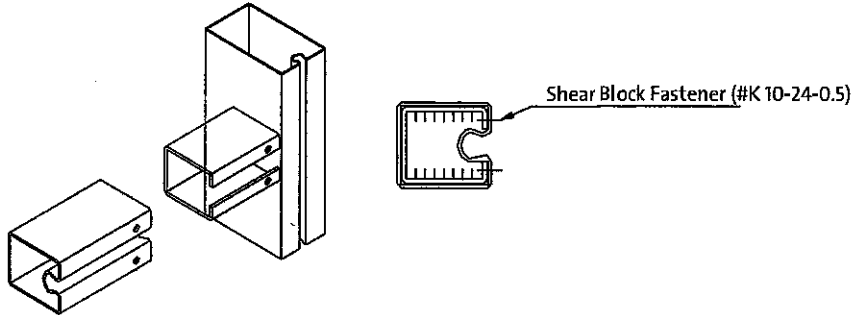
Splice Joint



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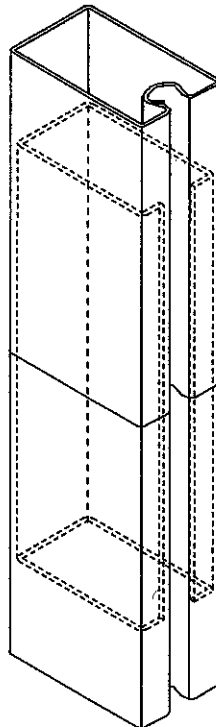
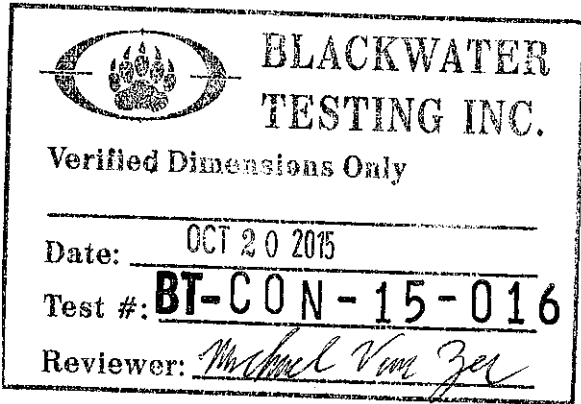
FRAME ASSEMBLY

Attach horizontals to verticals at the pre-installed, welded shear blocks. Line up the pre-drilled holes and attach using (2) #10-24x1/2" screws per joint, (Part no. K 10-24-0.5). Continue until frame is fully assembled in the opening.



FRAME ASSEMBLY - SPLICE JOINTS

Splice sleeves are pre-installed into top of vertical mullion. Slide the next length of vertical mullion over splice sleeve and let it drop down onto the lower vertical mullion section. Upper portion of mullion will not be fastened to the splice sleeve to allow for movement.



- Vertical spliced joints are not UL Certified. Vertical spliced joints will be evaluated on a project basis by an approved Florida P.E.

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SECTION IV - INSTALL INTERNAL WEATHERING

INSTALLING INTERNAL WEATHER STRIPPING**INSTALLATION FOR AN EXTERIOR APPLICATION**

Refer to the approved shop drawings to identify weather stripping which is keyed to the elevations. Pay attention to the notches in the horizontal weather strippings to ensure they line up with the vertical mullions before installing. Align notches in weather stripping with fastener receivers in mullion.

Install pre-notched horizontal weather stripping with drip cap (part #935461) across horizontals first, starting from the left side and working towards the right. The drip cap flap must be installed with the flap to the bottom of mullion (See detail below). Drip cap flap must lay over the top of glass below after installation to prevent water infiltration.

Install pre-notched vertical weather stripping (part #935460) into vertical mullions, weathering will overlap the horizontal weathering at each joint.

NOTE: The horizontal weather stripping will be pre-notched to clear the pressure plate / fastener receivers and the vertical mullions. The top of the weather stripping will also be notched at the verticals. If additional notching is required in the field, carefully trim off the back of the weather stripping, being careful not to cut through the front of the weathering.

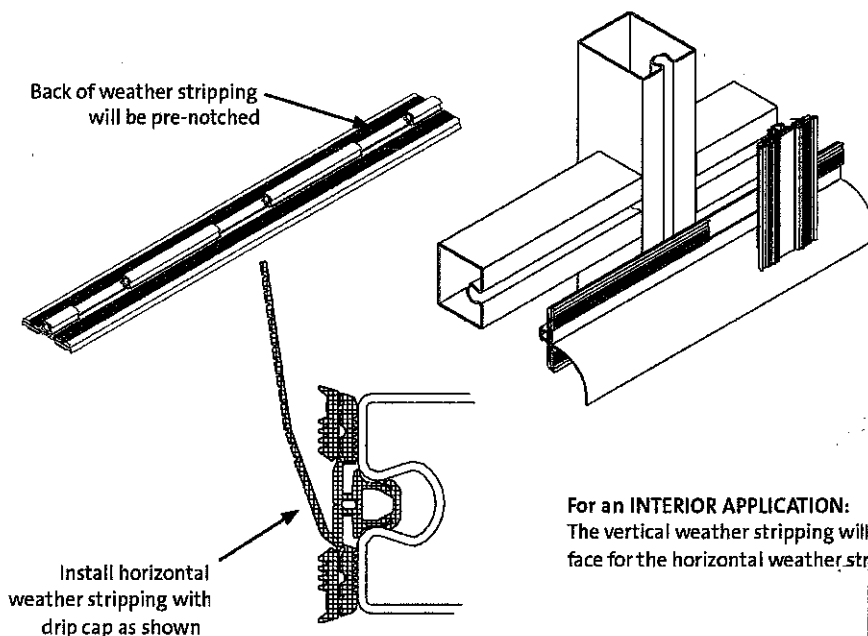
INSTALLATION FOR AN INTERIOR APPLICATION

Refer to the approved shop drawings to identify weather stripping which is keyed to the elevations. Pay attention to the notches in the vertical weather strippings to ensure they line up with the horizontal mullions before installing. Align notches in weather stripping with fastener receivers in mullion. Weather stripping is only notched on one side at the vertical iambs.

Install pre-notched vertical weather stripping (part #935460) on vertical mullions first.

Install pre-notched horizontal weather stripping (part #935460) into horizontal mullions, weathering will overlap the vertical weathering at each joint. (Note: horizontal drip cap not required for interior applications)

NOTE: The vertical weather stripping will be pre-notched to clear the pressure plate / fastener receivers and the horizontal mullions. If additional notching is required in the field, carefully trim off the back of the weather stripping, being careful not to cut through the front of the weathering.

**For an EXTERIOR APPLICATION:**

The horizontal weather stripping will have a notch on the face for the vertical weather stripping to overlap.

Horizontal weather stripping with drip cap.

NOTE: Drip cap must lay over top of glass below.

For an INTERIOR APPLICATION:

The vertical weather stripping will have a notch on the face for the horizontal weather stripping to overlap.



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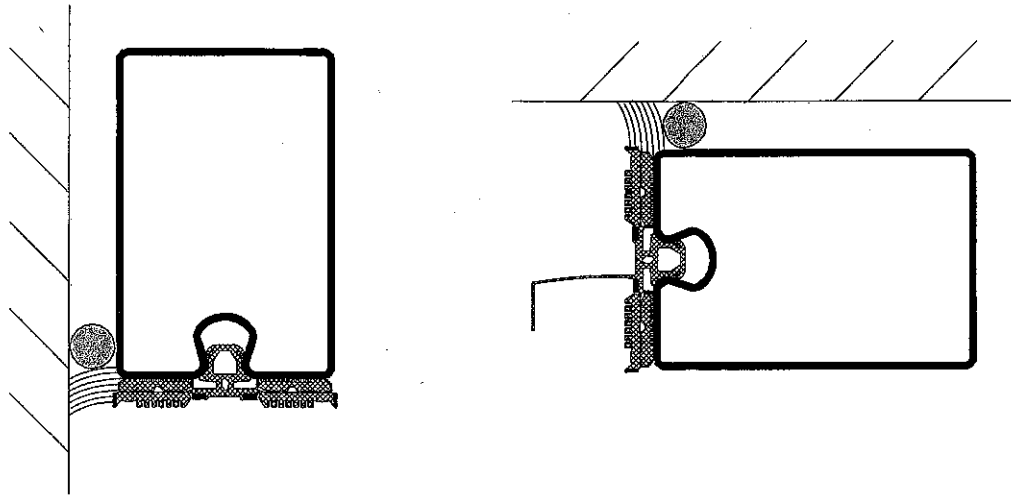
Test #: **BT-CON-15-016**

Reviewer: *Michael Van Zee*

SECTION V - PERIMETER SEALS / SETTING BLOCK SHELF

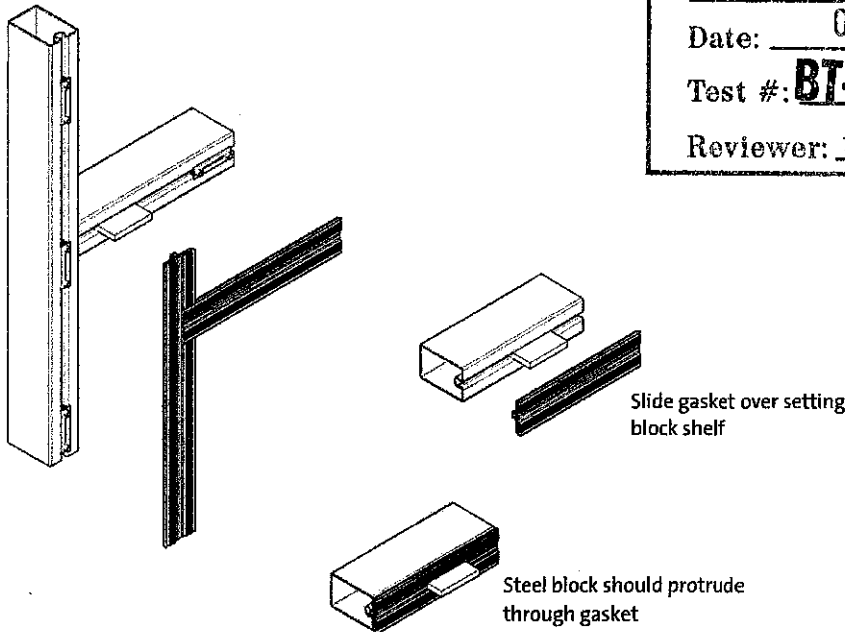
APPLY PERIMETER SEALS

Insert backer rod and sealant as shown around perimeter of frame.



Setting Block Shelf Mounting

Setting block shelf should slide through gasket as shown below.



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	Verified Dimensions Only
Date:	OCT 20 2015
Test #:	BT-CON-15-016
Reviewer:	<i>Michael Van Zyl</i>

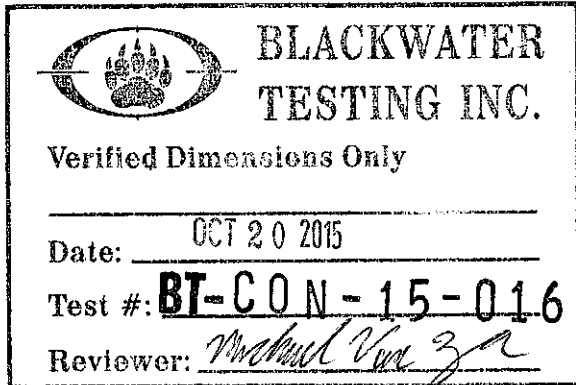
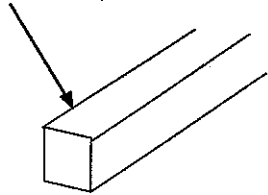
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SECTION VI - INSTALL PERIMETER FILLER / SEAL INTERNAL WEATHERING

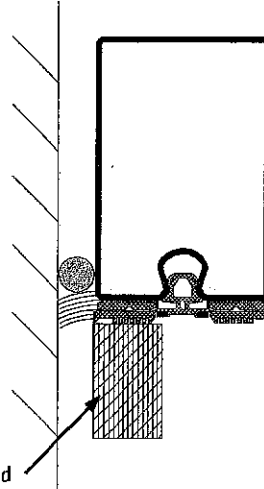
INSTALL PERIMETER FILLER

1. Install perimeter filler or hardwood spacer (Part no. 938014) to perimeter of head, sill and jambs.

Perimeter filler/Hardwood spacer

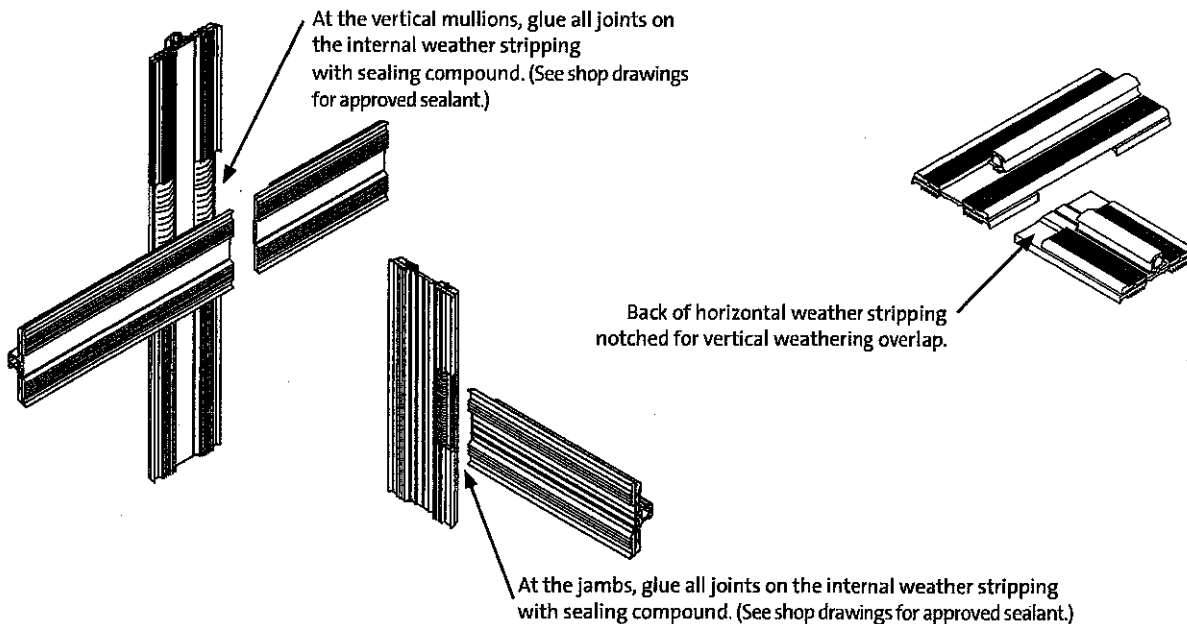


Install perimeter filler or hardwood spacer around frame

**SEAL INTERNAL WEATHER STRIPPING (FOR EXTERIOR APPLICATIONS ONLY)**

The overlapping of the internal weather stripping has to be glued with the sealing compound (Part. No. 908001) directly before glazing. Seal weather stripping at each lite as they are installed.

NOTE: For interior applications the internal weather stripping does not need to be glued.



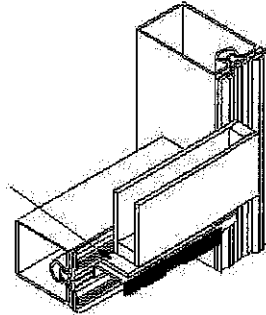
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SECTION VII - SETTING BLOCKS / TEMPORARY RETAINERS

INSTALL SETTING BLOCKS

Place setting blocks on setting block shelves.
 Set glass on setting blocks and secure with temporary retainers to the mullions. (Shown Below)
 Maximum temporary spacing is 30". If winds are greater than 50 MPH (80 KPH) are expected, additional temporaries may be required.
 Consult your infill supplier for spacing recommendations.

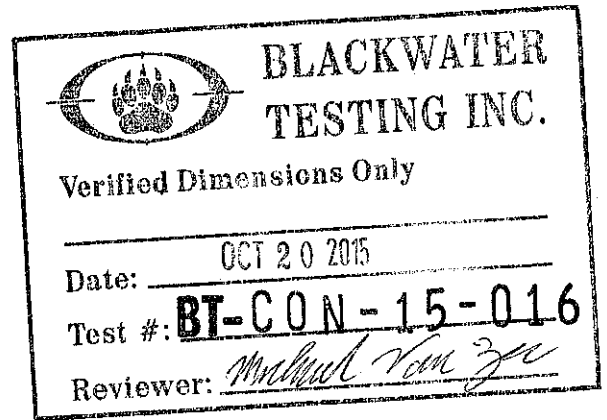
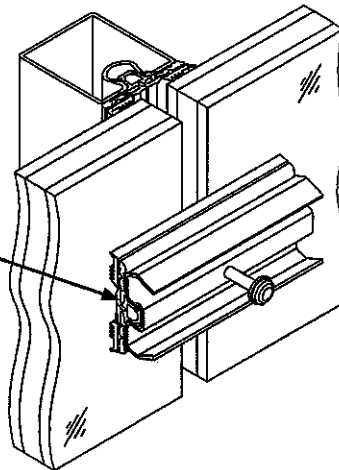
Place setting block onto setting block shelf



INSTALL TEMPORARY RETAINERS

After glass is set in place, install temporary retainers horizontally and vertically. Retainers should be rotated to hold glass on both sides of mullion.

Rotate temporary retainers to hold both lites of glass.

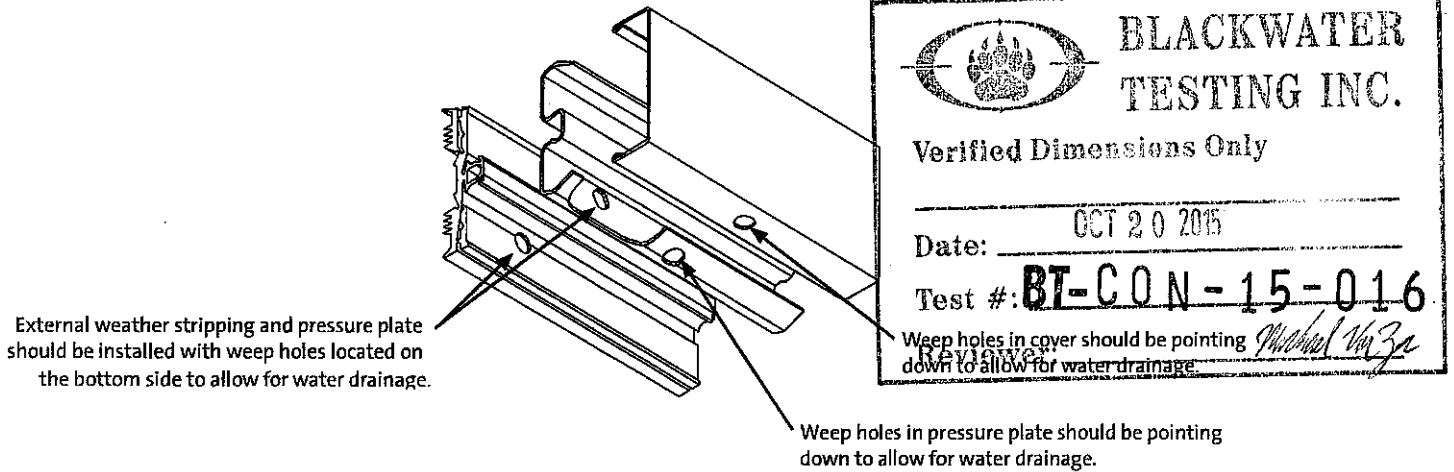


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SECTION VIII - INSTALL EXTERNAL WEATHERING

WEEP HOLES

The external weather stripping, pressure plate and cover are pre-drilled for weep holes. Ensure that these holes are pointing down to allow for water drainage as shown.

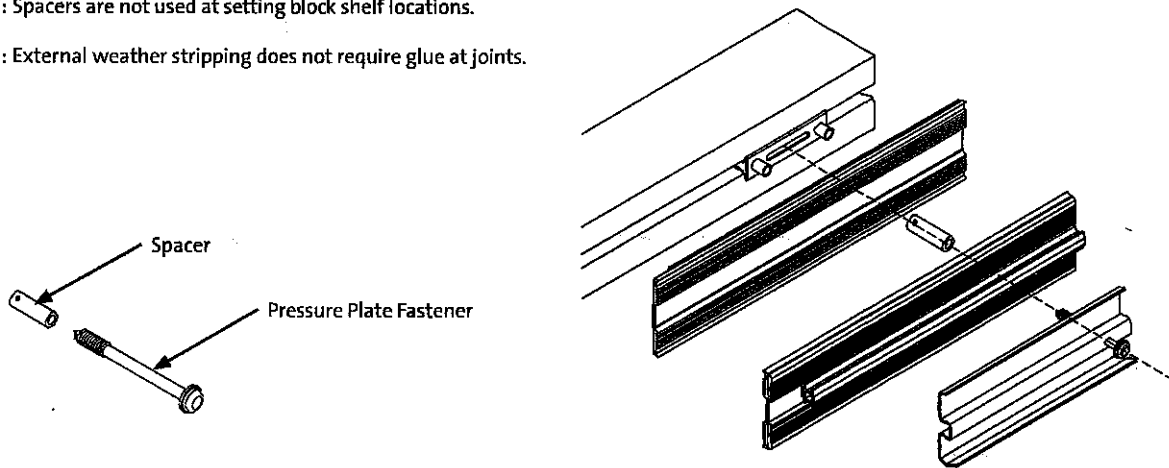


INSTALL EXTERNAL WEATHER STRIPPING AND PRESSURE PLATES

1. Install horizontal pressure plates with external weather stripping first.
 Remove horizontal temporary retainers. Install pressure plate fasteners into holes on pressure plate, then press through external weather stripping at an angle. Install pressure plate fastener spacer onto Pressure Plate Fastener. Then push fastener through the internal weather stripping and into the pressure plate fastener receiver. Lightly attach horizontal pressure plate fasteners, do not secure completely.
2. Install vertical pressure plates with external weather stripping.
 Remove vertical temporary retainers. Install pressure plate fasteners into holes on pressure plate, then press through external weather stripping at an angle. Install pressure plate fastener spacer onto pressure plate fastener. Then push fastener through the internal weather stripping and into the pressure plate fastener receiver. Lightly attach horizontal pressure plate fasteners, do not secure completely.
 After all pressure plates have been installed, torque all horizontal and vertical pressure plate fasteners to 35 inch pounds (4Nm).

NOTE: Spacers are not used at setting block shelf locations.

NOTE: External weather stripping does not require glue at joints.



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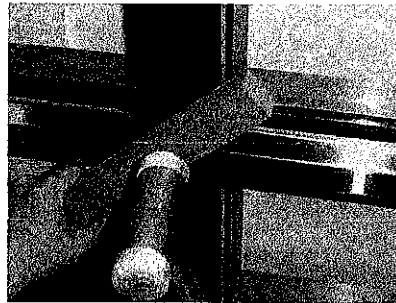
SECTION IX - INSTALL COVERS / REMOVE COVERS

INSTALL COVERS

Use a rubber mallet and a block of wood to install covers as shown below.

Install vertical covers first.

Install horizontal covers between the verticals ensuring that they are centered and do not scratch the verticals.



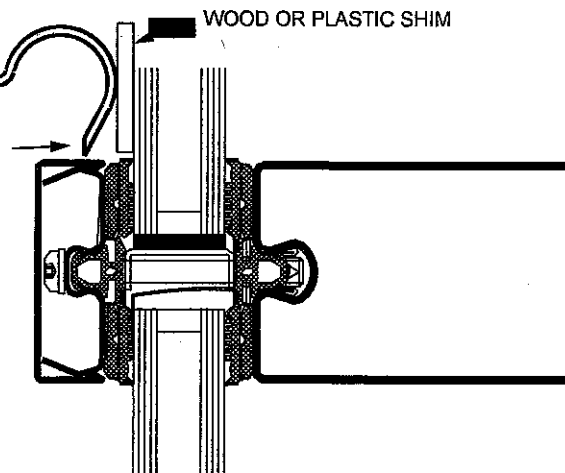
	BLACKWATER TESTING INC.
	Verified Dimensions Only
Date:	OCT 20 2015
Test #:	BT-CON-15-016
Reviewer:	<i>Michael Van Zee</i>

REMOVING COVERS

COVERS CAN BE SAVED IF TOLERANCES ARE NOT TOO TIGHT AND THE COVER IS REMOVED WITH EXTREME CARE


PRY BAR WITH SHARP POINT AND FLAT THIS SIDE

PUSH BACK THE GASKET TRIM LIP
START AT ONE END TO DISENGAGE
DO THIS IN PROGRESSION FOR THE COMPLETE LENGTH



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Reviewer:	<i>Michael Valza</i>

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SAINT-GOBAINVETROTECH SAINT-GOBAIN
2018 B Street Suite 110
Auburn, WA 98001
888.803.9533

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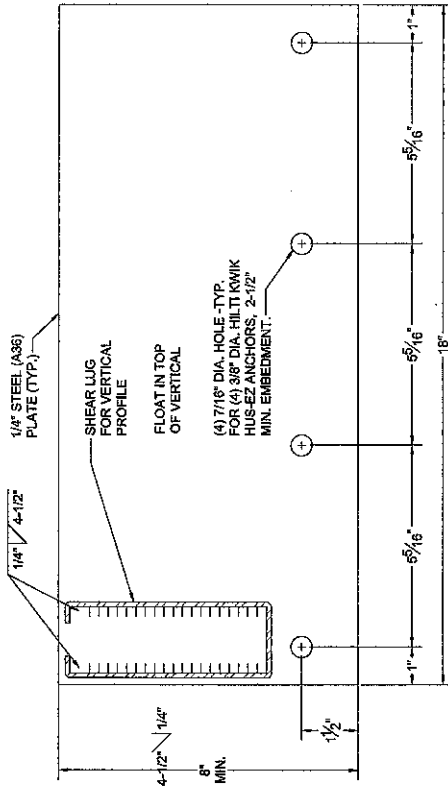
TITLE:

ANCHOR DETAILS VDS HI CURTAIN WALL SYSTEM

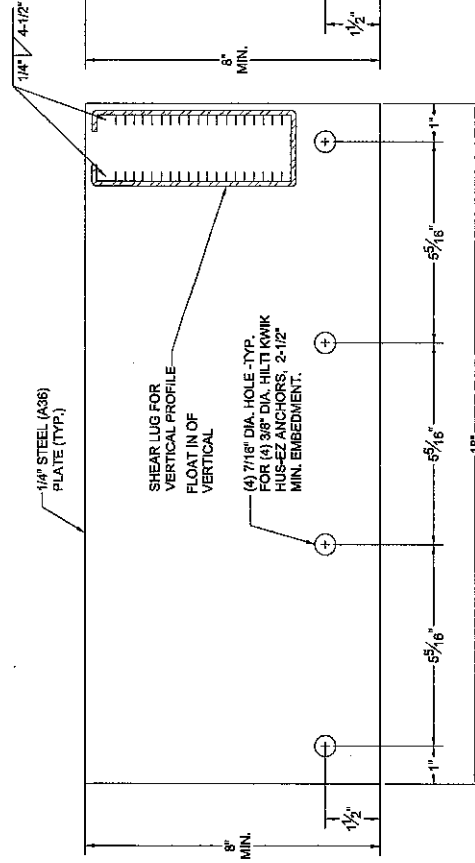
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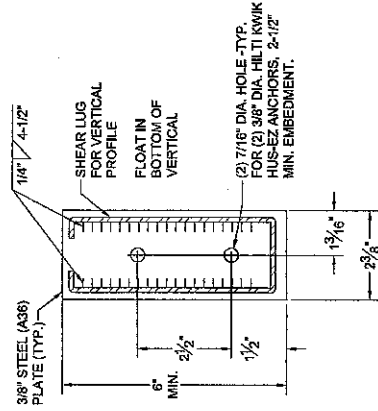
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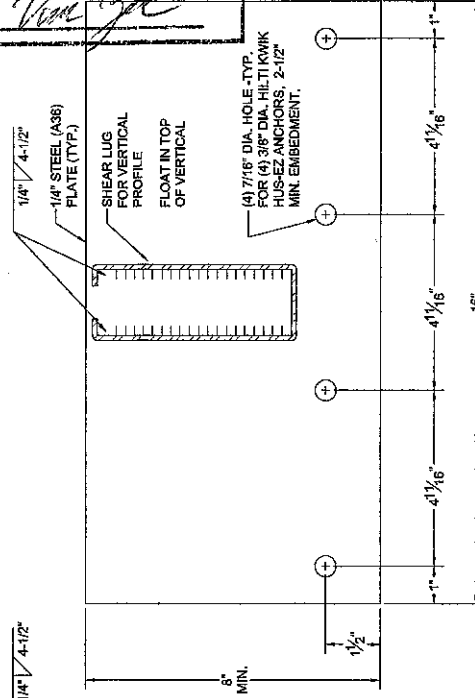
A
ANCHOR PLATE WIDE LEFT



C
ANCHOR PLATE WIDE RIGHT



B
ANCHOR PLATE NARROW DOOR



D
ANCHOR PLATE CENTER

****NOTE:**
- FOR OTHER ANCHORING METHODS TO
DIFFERENT SUBSTRATES CONTACT
VETROTECH OR YOUR LOCAL AUTHORITY
HAVING JURISDICTION



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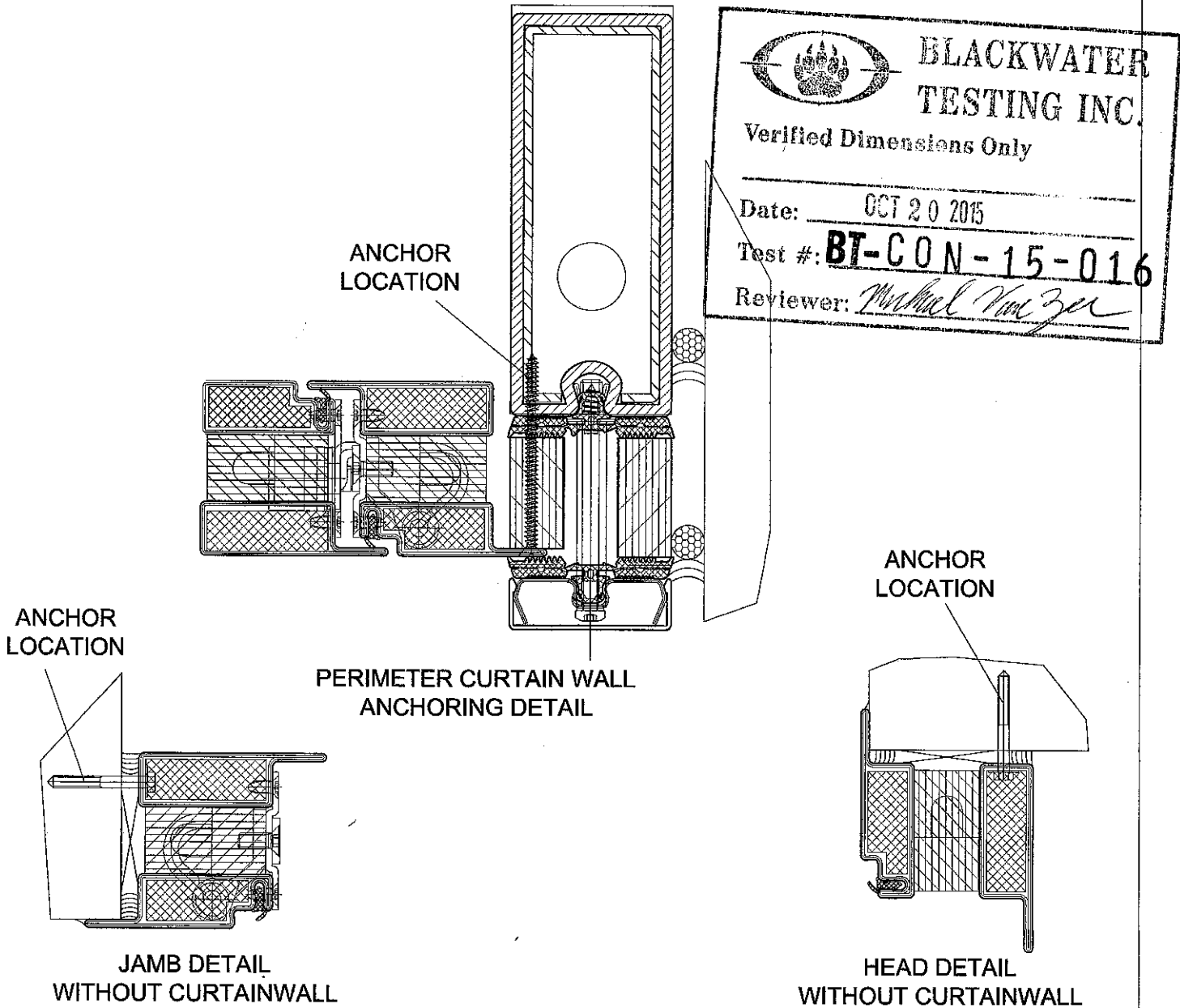
Reviewer: Muhammad Yousef

DOOR PERIMETER ANCHORING

PERIMETER ANCHORING:

TO ANCHOR THE PERIMETER, USE #12 x 3" PHILLIPS FLAT HEAD SCREWS SPACED APPROX. 18-20" O.C.
 FOR OTHER ANCHORING METHODS IN DIFFERENT SUBSTRATES (STEEL, CONCRETE, ETC.) CONTACT VETROTECH SAINT-GOBAIN OR YOUR LOCAL AUTHORITY HAVING JURISDICTION (AJH) FOR OTHER OPTIONS.

ANCHORING LOCATIONS FOR DOORS WILL BE PRE-DRILLED AND COMPLETED AT THE FACTORY BEFORE SHIPPING.



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CERTIFICATE OF COMPLIANCE

Certificate Number 20140304-R27724
Report Reference R27724-20140303
Issue Date 2014-MARCH-04

Issued to: VETROTECH SAINT-GOBAIN NORTH AMERICA INC
SUITE 110 ,2108 B ST NW
AUBURN WA 98001

This is to certify that
representative samples of

PRODUCTS FOR USE IN WINDSTORM-RATED ASSEMBLIES

" Glazing Material for Use in Wind-Storm Rated Assembly


1. Contraflam 60 HI (IGU)
2. Contraflam 90 HI (IGU)
3. Contraflam 120 HI (IGU)

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.


Standard(s) for Safety: See Next page For Standards

Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Classification Mark should be considered as being covered by
UL's Classification and Follow-Up Service.

The UL Classification Mark includes: UL in a circle, with the word "CLASSIFIED"  (as shown); a control
number (may be alphanumeric) assigned by UL; a statement to indicate the extent of UL's evaluation of
the product; and the product category name (product identity) as indicated in the appropriate UL
Directory.

Look for the UL Classification Mark on the product.

	BLACKWATER TESTING INC.
Verified Dimensions Only	
Date:	OCT 20 2015
Test #:	BT-CON-15-016
Reviewer:	<i>Michael Vore JEL</i>

William R. Carney

William R. Carney, Director, North American Certification Programs
UL LLC

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contact a local UL Customer Service Representative at www.ul.com/contactus



CERTIFICATE OF COMPLIANCE

Certificate Number 20140304-R27724
Report Reference R27724-20140303
Issue Date 2014-MARCH-04

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Standards

TAS 201 - Impact Test Procedures

TAS 202 - Criteria for Testing Impact and Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure

TAS 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading

ANSI/ASTM E330-2002 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference

ANSI/ASTM E1886-2005 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials

ASTM E1996-2009 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes



BLACKWATER
TESTING INC.

Verified Dimensions Only

Date: OCT 20 2015

Test #: BT-CON-15-016

Reviewer: Michael Van Zee

William R. Carney

William R. Carney, Director, North American Certification Programs
UL LLC

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